

# ALP500 低压保护测控装置

ALP500 Low voltage protection  
measurement and control device

安装使用说明书 V1.0

Installation Manual V1.0

安科瑞电气股份有限公司

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# 申明

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## 1 概述

### 1.General

ALP500 低压保护测控装置（以下简称低压保护装置）适用于额定电压至 AC660V 低压配电回路，集电力监控、馈线保护、分合闸控制、通讯组网、节点测温、运维管理等功能于一体。具备反时限过流、三段式过流、过功率、零序过流、欠压、过压、不平衡（电压、电流）、零线过电流、漏电流等多种保护功能。可选配不同通讯模块适应现场通讯需求。

该产品采用嵌入式安装，由主体、互感器和选配的功能模块组成。

ALP500 low-voltage protection measurement and control device (hereinafter referred to as low-voltage protection device) is suitable for low-voltage power distribution circuit with rated voltage to AC660V , integrating power monitoring, feeder protection, opening and closing control, communication networking, node temperature measurement, operation and maintenance management and other functions. It has various protection functions such as inverse time overcurrent, three-stage overcurrent, overpower, zero sequence overcurrent, undervoltage, overvoltage, unbalance (voltage, current), neutral line overcurrent, and leakage current. Different communication modules can be selected to meet the needs of on-site communication.

The product adopts embedded installation and consists of a main body, a transformer and optional functional modules.

## 2 产品特点

### 2.Product Description

- 辅助电源宽电压输入，支持 AC85-265V/DC100-300V 供电。
- 支持基波和全波全电参量测量（U、I、P、Q、S、PF、F、EP、EQ），电压及电流不平衡度，电压、电流正序、负序、零序分量，三相电压相角，剩余电流，电压、电流 2-63 次分次谐波测量，分次谐波含有率及总谐波畸变率，母线及电气节点测温，零线电流检测，负荷率，需量。
- 保护功能包括反时限过流、三段式过流、过功率、零序过流、欠电压、过电压、不平衡（电压、电流）、零线过流、漏电流、温度、瞬时速断、负序保护、欠功率、相序、PT 断线、温度传感器故障等。
- 标配 4 路可编程 DI 输入，可选配开关量模块额外增加 10 路可编程 DI，默认采用内置 DC24V 电源，也可选择外部有源湿接点（详见选型表格）。
- 4 路可编程 DO 输出，可选配开关量模块额外增加 3 路可编程 DO。
- 灵活丰富的通讯功能，主体标配 2 路 MODBUS\_RTU 通讯，还有 1 路 MODBUS-TCP 模块、1 路 PROFIBUS-DPV0、2 路 PROFIBUS-DPV0 模块、1 路 4G 通讯、1 路 Lora 通讯可供选配（选其一）。
- 可选配 1-2 路 DC4-20mA 模拟量输出接口，与 DCS 系统相接，可实现对现场设备的监控。
- 具有分合闸记录、DI 变位记录、故障记录、故障录波等多种事件记录，并显示分合闸状态、断路器异常、运行时间、断路器正常跳闸次数、故障跳闸次数、电压暂降、暂升等各类运行信息及事件。
- 具备 USB 接口，可通过 U 盘导出故障记录、写入设置数据、升级程序。

- Auxiliary power supply with wide voltage input, supporting AC85-265V/DC100-300V power supply.
- Support fundamental wave and full wave full electric parameter measurement (U, I, P, Q, S, PF, F, EP, EQ), voltage and current unbalance, voltage and current positive sequence, negative sequence, zero sequence components, three-phase voltage phase angle, residual current, voltage and current 2-63 sub-harmonic measurement, sub-harmonic content rate and total harmonic distortion rate, bus and electrical node temperature measurement, zero line current detection, load rate, demand.
- Protection functions include inverse time overcurrent, three-stage overcurrent, overpower, zero sequence overcurrent, undervoltage, overvoltage, unbalance (voltage, current), zero line overcurrent, leakage current, temperature, instantaneous quick break, Negative sequence protection, under power, phase sequence, PT disconnection, temperature sensor failure, etc.
- 4 channels of programmable DI input as standard, 10 channels of programmable DI can be added as an optional switch module, built-in DC24V power supply is used by default, and external active wet contacts can also be selected (see the selection table for details).
- 4-way programmable DO output, optional switch module can add 3-way programmable DO.
- Flexible and rich communication functions, the main body is equipped with 2 channels of MODBUS\_RTU communication as standard, and 1 channel of MODBUS-TCP module, 1 channel of PROFIBUS-DPV0, 2 channels of PROFIBUS-DPV0 module, 1 channel of 4G communication, and 1 channel of Lora communication are optional (choose one).
- 1-2 channels of DC4-20mA analog output interface can be selected to connect with DCS system, which can realize the monitoring of field equipment.
- It has various event records such as opening and closing records, DI displacement records, fault records, and fault recordings, and displays opening and closing status, abnormality of circuit breakers, running time, times of normal trips of circuit breakers, times of fault trips, voltage temporary Various operating information and events such as descent and sudden rise.
- Equipped with a USB interface, which can export fault records, write setting data, and upgrade programs through the U disk.
- 4-way programmable DO output, optional switch module can add 3-way programmable DO.

- Flexible and rich communication functions, the main body is equipped with 2 channels of MODBUS\_RTU communication as standard, and 1 channel of MODBUS-TCP module, 1 channel of PROFIBUS-DPV0, 2 channels of PROFIBUS-DPV0 module, 1 channel of 4G communication, and 1 channel of Lora communication are optional (choose one).
- 1-2 channels of DC4-20mA analog output interface can be selected to connect with DCS system, which can realize the monitoring of field equipment.
- It has various event records such as opening and closing records, DI displacement records, fault records, and fault recordings, and displays opening and closing status, abnormality of circuit breakers, running time, times of normal trips of circuit breakers, times of fault trips, voltage temporary Various operating information and events such as descent and sudden rise.
- Equipped with a USB interface, which can export fault records, write setting data, and upgrade programs through the U disk.

### 3 型号说明

#### 3. Model Description

ALP500 系列低压保护测控装置 ALP500 Low voltage protection measurement and control device

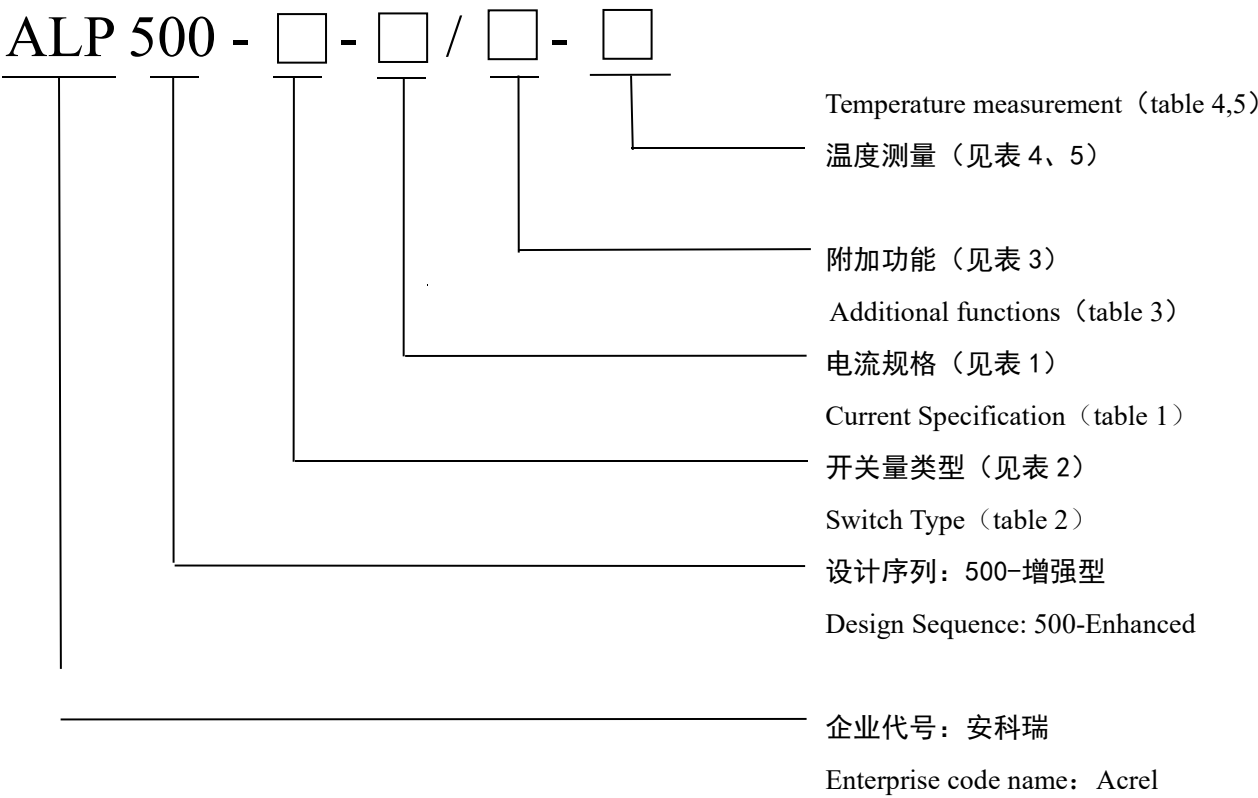


表 1 额定电流

Table 1 Rated Current

| 电流规格 | 变比设置 | 适用额定电流范围 (A) |
|------|------|--------------|
| 1    | 支持   | 0.5-6300     |
| 5    |      | 0.5-6300     |
| 25   | 不支持  | 6-25         |
| 100  |      | 25-100       |

| Current Specification | Ratio Setting | Applicable rated current range (A) |
|-----------------------|---------------|------------------------------------|
| 1                     | YES           | 0.5-6300                           |
| 5                     |               | 0.5-6300                           |
| 25                    | No            | 6-25                               |
| 100                   |               | 25-100                             |

标配开关量数量为 4DI、4DO，开关量类型见表 2：

The standard switch quantity is 4DI, 4DO, and the switch quantity type is shown in Table 2:

表 2 主体开关量类型

Table 2 Main Switch Quantity Type

| 主体开关量类型                           | 代号 |
|-----------------------------------|----|
| DI 为干结点，DO 外部电源为 AC220V           | K1 |
| DI 为湿结点，DC110V 输入，DO 外部电源为 AC220V | K2 |
| DI 为湿结点，DC220V 输入，DO 外部电源为 AC220V | K3 |
| DI 为湿结点，AC220V 输入，DO 外部电源为 AC220V | K4 |

| Main Switch Quantity Type                                           | Code Name |
|---------------------------------------------------------------------|-----------|
| DI is a dry node, DO external power supply is AC220V                | K1        |
| DI is wet node, DC110V input,<br>DO external power supply is AC220V | K2        |
| DI is wet node, DC220V input,<br>DO external power supply is AC220V | K3        |
| DI is wet node, AC220V input,<br>DO external power supply is AC220V | K4        |

附加功能见表 3:

Additional Functions are listed in Table 3:

表 3 附加功能

Table 3 Additional Functions

| 附加功能          |                      | 代号   | 附加功能            | 代号 |
|---------------|----------------------|------|-----------------|----|
| 2-63 次谐波电压、电流 |                      | H    | 波形记录            | WR |
| 通讯模块<br>(选一)  | 1 路 PROFIBUS DPV0 通讯 | CP   | 漏电保护            | L  |
|               | 2 路 PROFIBUS DPV0 通讯 | 2CP  | 计量模块            | S  |
|               | 以太网通讯(MODBUS TCP 协议) | MCE  | 1 路 4-20mA 变送输出 | M1 |
|               | 4G                   | 4G   | 2 路 4-20mA 变送输出 | M2 |
|               | Lora                 | LORA | 开关量模块           | MD |

| Additional Functions                           |                                                 | Code Name | Additional Functions               | Code Name |
|------------------------------------------------|-------------------------------------------------|-----------|------------------------------------|-----------|
| 2-63 harmonic voltage and current              |                                                 | H         | Waveform record                    | WR        |
| communi<br>cation<br>module<br>(choose<br>one) | 1way PROFIBUS<br>DPV0communication              | CP        | Leakage Protection                 | L         |
|                                                | 2way PROFIBUS<br>DPV0communication              | 2CP       | Metering module                    | S         |
|                                                | Ethernet communication<br>(MODBUS TCP protocol) | MCE       | 1way 4-20mA<br>Transmission Output | M1        |
|                                                | 4G                                              | 4G        | 2way 4-20mA<br>Transmission Output | M2        |
|                                                | Lora                                            | LORA      | Switch module                      | MD        |

有线测温: WxPx 见表 4:

Wired Temperature Measurement: WxPx Refer to Table 4:

表 4 有线测温模块

Table 4 Wired Temperature Measurement module

| 代号 | 定义               |
|----|------------------|
| W1 | 测温传感器类型为 PT100   |
| W2 | 测温传感器类型为 PT1000  |
| W3 | 测温传感器类型为 NTC     |
| Px | 有线测温节点数, 范围: 1-9 |

| Code Name | Definition                                                  |
|-----------|-------------------------------------------------------------|
| W1        | The temperature sensor type : PT100                         |
| W2        | The temperature sensor type : PT1000                        |
| W3        | The temperature sensor type : NTC                           |
| Px        | Number of wired temperature measurement nodes,<br>range:1-9 |

无线测温：NxPxx 见表 5:

Wireless Temperature Measurement: NxPxx Refer to Table 5:

表 5 无线测温模块

Table 4 Wireless Temperature Measurement module

| 代号  | 定义                         |
|-----|----------------------------|
| N1  | 测温传感器类型为 ATE100,带电池，螺栓式安装  |
| N2  | 测温传感器类型为 ATE200,带电池，表带式安装  |
| N3  | 测温传感器类型为 ATE400,感应取电，表带式安装 |
| Pxx | 无线测温节点数，范围：1-60            |

| Code Name | Definition                                                           |
|-----------|----------------------------------------------------------------------|
| N1        | The temperature sensor type : ATE100,with battery, bolt-on           |
| N2        | The temperature sensor type : ATE200,<br>With battery, strap-mounted |
| N3        | The temperature sensor type : ATE400,<br>CT Powered, strap-mounted   |
| Pxx       | Number of wireless temperature measurement nodes,<br>range:1-60      |

备注：

(1)、额定电流超过 100A 的馈线回路可选择 1A 或 5A 规格的 ALP500 低压线路保护测控装置，用户需额外配置 3 只 XXX/1 或 XXX/5 的保护型互感器；

(2)、需要零线电流监测的用户需额外下单 1 只用于监测零线电流的 XXX/5 的电流互感器。

Remark:

(1) The feeder circuit with a rated current exceeding 100A can choose the ALP500 low-voltage line protection measurement and control device with a specification of 1A or 5A, and the user needs to configure 3 additional protective transformers of XXX/1 or XXX/5;

(2) Users who need neutral line current monitoring need to place an additional order for 1 XXX/5 current transformer for monitoring neutral line current.

4 主要参数

4.Main Parameters

4.1 技术指标

4.1 technical indicators

ALP500 主要技术指标见表 6:

ALP500 Main technical indicators refer to table 6:

表 6 技术指标

| 技术参数      |      | 技术指标                              |                                       |
|-----------|------|-----------------------------------|---------------------------------------|
| 辅助电源      |      | 支持 AC 85-265V/DC 100-300V 宽范围电源输入 |                                       |
| 额定工作电压    |      | AC 380V / 660V，50Hz / 60Hz        |                                       |
| 额定工作电流    |      | 1 (0.5A-6300A)                    | XXX/1 互感器搭配外置电流互感器                    |
|           |      | 5 (0.5A-6300A)                    | XXX/5 互感器搭配外置电流互感器                    |
|           |      | 25(6A-25A)                        | 外置电流互感器                               |
|           |      | 100(25A-100A)                     |                                       |
| 精度        | 保护精度 | 三相电流                              | 1.0 级                                 |
|           |      | 三相电压                              | 0.5 级                                 |
|           |      | 功率、电能                             | 2.5 级                                 |
|           | 计量精度 | 三相电流、电压                           | 0.5 级                                 |
|           |      | 有功功率、电能                           | 0.5 级                                 |
|           |      | 无功功率、电能                           | 1.0 级                                 |
| 继电器输出触点容量 |      | 标配 4 路                            | 阻性负载、AC250V/10A                       |
|           |      | 选配 3 路                            |                                       |
| 开关量输入     |      | 标配 4 路无源干结点                       | 可 选 配 有 源 DC110V 、 DC220V 、 AC220V 输入 |
|           |      | 选配 10 路无源干结点                      |                                       |
| 通讯功能      |      | 标配                                | 2 路 MODBUS RTU 通讯                     |
|           |      | 选配（任选其一）                          | 1 路 MODBUS-TCP                        |
|           |      |                                   | 1 路 PROFIBUS-DPV0                     |
|           |      |                                   | 2 路 PROFIBUS-DPV0                     |
|           |      |                                   | 1 路 4G 通讯                             |
|           |      |                                   | 1 路 Lora 通讯                           |

|      |                     |                  |
|------|---------------------|------------------|
| 使用环境 | 工作温度                | -10℃～55℃         |
|      | 贮存温度                | -25℃～70℃         |
|      | 相对湿度                | ≤95 % 不结露，无腐蚀性气体 |
|      | 海拔                  | ≤2000m           |
| 污染等级 | 3 级                 |                  |
| 防护等级 | 主体 IP54，附加功能模块 IP20 |                  |
| 安装类别 | III 级               |                  |

Table 6 technical indicators

| Technical Parameters          |                     | Technical Indicators                                   |                                                    |
|-------------------------------|---------------------|--------------------------------------------------------|----------------------------------------------------|
| Auxiliary power               |                     | Support AC 85-265V/DC 100-300V Wide range power input  |                                                    |
| Rated Voltage                 |                     | AC 380V / 660V， 50Hz / 60Hz                            |                                                    |
| Rated Current                 |                     | 1 (0.5A-6300A)                                         | XXX/1Transformer with external current transformer |
|                               |                     | 5 (0.5A-6300A)                                         | XXX/5Transformer with external current transformer |
|                               |                     | 25(6A-25A)                                             | external current transformer                       |
|                               |                     | 100(25A-100A)                                          |                                                    |
| Accuracy                      | Protection Accuracy | 3-phase Current                                        | 1.0 Class                                          |
|                               |                     | 3-phase Voltage                                        | 0.5 Class                                          |
|                               |                     | Power， Electrical Energy                               | 2.5 Class                                          |
|                               | Measuring Accuracy  | 3-phase Current、 Voltage                               | 0.5 Class                                          |
|                               |                     | Active Power， Electrical Energy                        | 0.5 Class                                          |
|                               |                     | Reactive Power， Electrical Energy                      | 1.0 Class                                          |
| Relay output contact capacity |                     | Standard configuration 4 channels                      | resistive load、 AC250V/10A                         |
|                               |                     | Optional 3 channels                                    |                                                    |
| Switch Quantity Input         |                     | Standard configuration 4 channels passive dry junction | Optional active DC110V 、 DC220V 、 AC220V input     |
|                               |                     | Optional 10 channels passive dry junction              |                                                    |
| Communication                 |                     | Standard configuration                                 | 2 way MODBUS RTU Communication                     |

|                         |                                                  |                                         |
|-------------------------|--------------------------------------------------|-----------------------------------------|
|                         | Optional (Choose one)                            | 1 way MODBUS-TCP                        |
|                         |                                                  | 1 way PROFIBUS-DPV0                     |
|                         |                                                  | 2 way PROFIBUS-DPV0                     |
|                         |                                                  | 1 way 4G communication                  |
|                         |                                                  | 1 way Lora communication                |
| Application Environment | Working Temperature                              | -10°C~55°C                              |
|                         | Storage temperature                              | -25°C~70°C                              |
|                         | Relative humidity                                | ≤95 % No condensation, no corrosive gas |
|                         | Altitude                                         | ≤2000m                                  |
| pollution level         | 3 Class                                          |                                         |
| Protection Grade        | Main Body IP54, Additional function modules IP20 |                                         |
| Installation Type       | III Class                                        |                                         |

## 4.2 功能配置

### 4.2 Functions Configuration

表 7 功能配置

| 功能   |                   | 说明 | 功能配置 |      |
|------|-------------------|----|------|------|
|      |                   |    | 标配功能 | 选配功能 |
| 保护功能 | 过流（三段定时限过流、反时限过流） |    | √    |      |
|      | 零序电流保护（三段定时限、反时限） |    | √    |      |
|      | 负序过流              |    | √    |      |
|      | 零线过流              |    | √    |      |
|      | 电流需量              |    | √    |      |
|      | 电流不平衡             |    | √    |      |
|      | 断相                |    | √    |      |
|      | 欠载                |    | √    |      |
|      | 漏电                |    |      | √    |
|      | 短路                |    | √    |      |
|      | 欠电压               |    | √    |      |
|      | 过电压               |    | √    |      |
|      | 相序                |    | √    |      |
|      | 欠功率               |    | √    |      |
|      | 过功率               |    | √    |      |
|      | 电压不平衡             |    | √    |      |

|       |                                         |   |        |
|-------|-----------------------------------------|---|--------|
|       | 联动                                      | √ |        |
|       | 内部故障                                    | √ |        |
|       | 合闸时间                                    | √ |        |
|       | PT 断线                                   | √ |        |
|       | 控制回路异常                                  | √ |        |
|       | 温度传感器故障                                 |   | √      |
|       | 过温                                      |   | √      |
| 控制方式  | 面板按键分合闸                                 | √ |        |
|       | 本地按钮分合闸                                 |   |        |
|       | 远程遥控分合闸                                 |   |        |
|       | 总线通讯分合闸                                 |   |        |
|       | 条件控制（下单前沟通）                             |   |        |
|       | 时段控制（下单前沟通）                             |   |        |
| 测量功能  | 三相电流、三相线电压、有功功率、无功功率、功率因数、频率、有功电能、无功电能等 | √ |        |
|       | 2-63 次电流、电压谐波、谐波含有率、总谐波畸变率              |   | √      |
|       | 漏电流                                     |   | √      |
|       | 零线电流                                    |   | √      |
| 通讯功能  | 2 路 Modbus-RTU 通讯                       | √ |        |
|       | 1 路 Profibus-DP 通讯                      |   | √(选其一) |
|       | 2 路 Profibus-DP 通讯                      |   |        |
|       | 1 路 Modbus-TCP 通讯                       |   |        |
|       | 1 路 4G 通讯                               |   |        |
|       | 1 路 Lora                                |   |        |
| 开关量输入 | 4 路 DI                                  | √ |        |
|       | 10 路 DI                                 |   | √      |
| 继电器输出 | 4 路 DO                                  | √ |        |
|       | 3 路 DO                                  |   | √      |
| 模拟量输出 | 1 路 4-20mA 输出                           |   | √      |
|       | 2 路 4-20mA 输出                           |   | √      |
| 事件记录  | 合闸记录、分闸记录、DI 变位记录、故障记录、运行信息             | √ |        |
|       | 故障录波                                    |   | √      |

Table 7 Functions Configuration

| Functions            |                                                                               | Statement | Functions Configuration |          |
|----------------------|-------------------------------------------------------------------------------|-----------|-------------------------|----------|
|                      |                                                                               |           | Standard                | Optional |
| Protection Functions | Over current (three-stage fixed time over current, inverse time over current) |           | √                       |          |
|                      | Zero-sequence current protection (three-stage fixed time, inverse time)       |           | √                       |          |
|                      | Negative sequence over current                                                |           | √                       |          |
|                      | neutral line over current                                                     |           | √                       |          |
|                      | current demand                                                                |           | √                       |          |
|                      | Current Unbalance                                                             |           | √                       |          |
|                      | phase failure                                                                 |           | √                       |          |
|                      | under load                                                                    |           | √                       |          |
|                      | Leakage                                                                       |           |                         | √        |
|                      | short circuit                                                                 |           | √                       |          |
|                      | Under voltage                                                                 |           | √                       |          |
|                      | Over voltage                                                                  |           | √                       |          |
|                      | phase sequence                                                                |           | √                       |          |
|                      | under power                                                                   |           | √                       |          |
|                      | Over Power                                                                    |           | √                       |          |
|                      | Voltage Unbalance                                                             |           | √                       |          |
|                      | linkage                                                                       |           | √                       |          |
|                      | internal failure                                                              |           | √                       |          |
|                      | Closing time                                                                  |           | √                       |          |
|                      | PT Disconnection                                                              |           | √                       |          |
|                      | control abnormal loop                                                         |           | √                       |          |
|                      | Temperature Sensor Failure                                                    |           |                         | √        |
|                      | Over Temperature                                                              |           |                         | √        |
| Controlling method   | Panel button opening and closing                                              |           | √                       |          |
|                      | Local button opening and closing                                              |           |                         |          |
|                      | Remote control opening and closing                                            |           |                         |          |
|                      | Bus communication opening and closing                                         |           |                         |          |

|                     |                                                                                                                                            |   |               |
|---------------------|--------------------------------------------------------------------------------------------------------------------------------------------|---|---------------|
|                     | Condition control (communication before placing an order)                                                                                  |   |               |
|                     | Time period control (communication before placing an order)                                                                                |   |               |
| Measuring Functions | Three-phase current, three-phase line voltage, active power, reactive power, power factor, frequency, active energy, reactive energy, etc. | √ |               |
|                     | 2-63 Sub- current, voltage harmonics, harmonic content rate, total harmonic distortion rate                                                |   | √             |
|                     | Leakage current                                                                                                                            |   | √             |
|                     | Neutral current                                                                                                                            |   | √             |
| Communication       | 2 way Modbus-RTU Communication                                                                                                             | √ |               |
|                     | 1 way Profibus-DP Communication                                                                                                            |   | √(choose one) |
|                     | 2 way Profibus-DP Communication                                                                                                            |   |               |
|                     | 1way Modbus-TCP Communication                                                                                                              |   |               |
|                     | 1 way 4G Communication                                                                                                                     |   |               |
|                     | 1 way Lora Communication                                                                                                                   |   |               |
| Switch Input        | 4 way DI                                                                                                                                   | √ |               |
|                     | 10 way DI                                                                                                                                  |   | √             |
| Relay output        | 4 way DO                                                                                                                                   | √ |               |
|                     | 3 way DO                                                                                                                                   |   | √             |
| Analog output       | 1 way 4-20mA output                                                                                                                        |   | √             |
|                     | 2 way 4-20mA output                                                                                                                        |   | √             |

|              |                                                                                           |   |   |
|--------------|-------------------------------------------------------------------------------------------|---|---|
| Event Record | Closing record, opening record, DI displacement record, fault record, running information | √ |   |
|              | Fault recording                                                                           |   | √ |

## 5 外形及接线端子

### 5.Dimension and terminals

#### 5.1 外形尺寸

##### 5.1 Dimension

5.1.1 ALP500 主体外形尺寸如图 1 所示：

5.1.1 ALP500 The overall dimensions of the main body are shown in Figure 1:

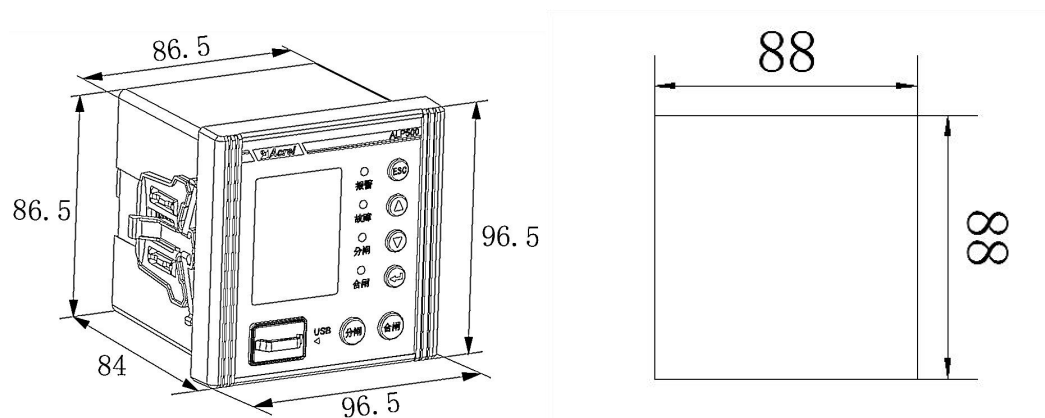


图 1 主体外形尺寸（开孔尺寸 88\*88）

Figure 1 Overall dimensions of the main body (opening size 88\*88)

5.1.2 附加功能模块外形尺寸如图 2 所示：

5.1.2 The dimensions of the additional functional modules are shown in Figure 2:

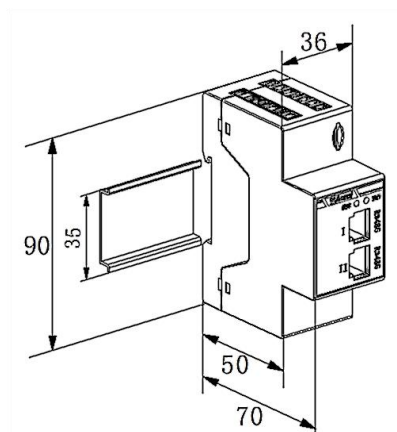


图 2 附加功能模块外形尺寸

Figure 2 Dimensions of additional function modules

5.1.3 电流互感器外形尺寸图如图 3 所示：

5.1.3 Dimensions of the current transformer are shown in Figure 3:

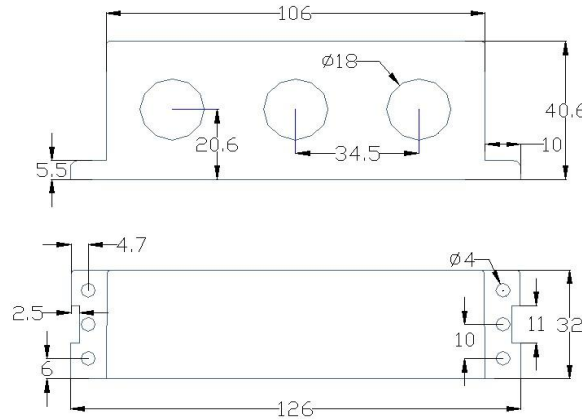


图 3：电流互感器外形尺寸

Figure 3: Outline Dimensions of Current Transformer

5.2 端子定义

5.2 Terminal definition

ALP500 主体端子号与功能定义见表 8：

Refer to Table 8 for the terminal code and function definitions of the main body of the ALP500:

表 8 主体端子

| 端子号   | 功能定义          | 备注                                           |
|-------|---------------|----------------------------------------------|
| 1     | 电源输入 L（直流时为+） | 辅助电源接入此两端子                                   |
| 2     | 电源输入 N（直流时为-） |                                              |
| 3     | Un 输入         | 三相电压输入                                       |
| 4     | Ua 相电压输入      |                                              |
| 5     | Ub 相电压输入      |                                              |
| 6     | Uc 相电压输入      |                                              |
| 7、8   | DO1（合闸输出）     | 4 路可编程继电器输出（DO）<br>（功能定义为出厂默认设置，用户可根据需要自行设置） |
| 9、10  | DO2（分闸输出）     |                                              |
| 11、12 | DO3（故障输出）     |                                              |
| 95、96 | DO4（报警输出）     |                                              |
| 14    | DI1（断路器状态）    | 4 路可编程开关量输入（DI）<br>（功能定义为出厂默认设置，用            |
| 15    | DI2（本地分闸）     |                                              |

|    |                 |                  |
|----|-----------------|------------------|
| 16 | DI3 (本地合闸)      | 户可根据需要自行设置)      |
| 17 | DI4 (复位)        |                  |
| 23 | COM2 (DI 输入公共端) |                  |
| 25 | A1              | 第一路 MODBUS 通讯    |
| 26 | B1              |                  |
| 27 | A2              | 第二路 MODBUS 通讯    |
| 28 | B2              |                  |
| 29 | TP+             | IRIG-B 对时        |
| 30 | TP-             |                  |
| 34 | 第一路模拟量输出 AO1+   | 2 路 4-20mA 模拟量输出 |
| 35 | 第二路模拟量输出 AO2+   |                  |
| 36 | 模拟量输出公共端 AO-    |                  |
| 40 | IL              | 漏电流测量            |
| 41 | IL*             |                  |
| 42 | COM3(电流输入公共端)   | 三相电流输入           |
| 43 | Ia 相电流输入        |                  |
| 44 | Ib 相电流输入        |                  |
| 45 | Ic 相电流输入        |                  |
| 50 | In              | 零线电流测量           |
| 51 | In*             |                  |

Table 8 Main Body terminal

| Terminal code | Function Definition                 | Remark                                                                                                                                            |
|---------------|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------|
| 1             | Power input L (+ for DC)            | Auxiliary power is connected to the two terminals                                                                                                 |
| 2             | Power input N (- for DC)            |                                                                                                                                                   |
| 3             | Un Input                            | Three-phase Voltage Input                                                                                                                         |
| 4             | Ua Phase voltage input              |                                                                                                                                                   |
| 5             | Ub Phase voltage input              |                                                                                                                                                   |
| 6             | Uc Phase voltage input              |                                                                                                                                                   |
| 7、8           | DO1 (closing output)                | 4 programmable relay outputs (DO)<br><br>(The function is defined as the factory default setting, and the user can set it according to the needs) |
| 9、10          | DO2 (opening output)                |                                                                                                                                                   |
| 11、12         | DO3 (fault output)                  |                                                                                                                                                   |
| 95、96         | DO4 (Alarm Output)                  |                                                                                                                                                   |
| 14            | DI1 (The status of circuit breaker) | 4-way programmable digital input                                                                                                                  |

|    |                                 |                                                                                                                      |
|----|---------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 15 | DI2 (Local opening)             | (DI)<br><br>(The function is defined as the factory default setting, and the user can set it according to the needs) |
| 16 | DI3 (Local closing)             |                                                                                                                      |
| 17 | DI4 (Reset)                     |                                                                                                                      |
| 23 | COM2 (DI input common terminal) |                                                                                                                      |
| 25 | A1                              | First way MODBUS communication                                                                                       |
| 26 | B1                              |                                                                                                                      |
| 27 | A2                              | Second way MODBUS communication                                                                                      |
| 28 | B2                              |                                                                                                                      |
| 29 | TP+                             | IRIG-B On time                                                                                                       |
| 30 | TP-                             |                                                                                                                      |
| 34 | First way analog output AO1+    | 2 way4-20mA Analog output                                                                                            |
| 35 | Second way analog output AO2+   |                                                                                                                      |
| 36 | Analog output common port AO-   |                                                                                                                      |
| 40 | IL                              | Leakage Current Measurement                                                                                          |
| 41 | IL*                             |                                                                                                                      |
| 42 | COM3(Current input common port) | Three Phase Current Input                                                                                            |
| 43 | Ia Phase Current Input          |                                                                                                                      |
| 44 | Ib Phase Current Input          |                                                                                                                      |
| 45 | Ic Phase Current Input          |                                                                                                                      |
| 50 | In                              | Neutral current measurement                                                                                          |
| 51 | In*                             |                                                                                                                      |

ALP500 开关量模块端子号与功能定义见表 9:

The terminal numbers and function definitions of the ALP500 switch module are shown in Table 9:

表 9 开关量模块端子

| 端子号 | 功能定义        | 备注                                          |
|-----|-------------|---------------------------------------------|
| 1、2 | DO5 (普通 DO) | 3 路可编程 DO 输出(功能定义出厂默认为普通 DO,用户可根据需要自行设置)    |
| 3、4 | DO6         |                                             |
| 5、6 | DO7         |                                             |
| 7   | COM1        | 10 路可编程 DI 输入 (功能定义出厂默认为普通 DI, 用户可根据需要自行设置) |
| 8   | COM2        |                                             |
| 9   | DI5 (普通 DI) |                                             |
| 10  | DI6         |                                             |
| 11  | DI7         |                                             |
| 12  | DI8         |                                             |

|    |      |  |
|----|------|--|
| 13 | DI9  |  |
| 14 | COM3 |  |
| 15 | COM4 |  |
| 16 | DI10 |  |
| 17 | DI11 |  |
| 18 | DI12 |  |
| 19 | DI13 |  |
| 20 | DI14 |  |

Table 9 Switch module terminal

| Terminal code | Function Definition | Remark                                                                                                                                      |
|---------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| 1、2           | DO5 (Common DO)     | 3-way programmable DO output<br>(function definition factory default is normal DO, users can set it by themselves according to their needs) |
| 3、4           | DO6                 |                                                                                                                                             |
| 5、6           | DO7                 |                                                                                                                                             |
| 7             | COM1                | 10-way programmable DI input<br>(function definition factory default is common DI, users can set it by themselves according to their needs) |
| 8             | COM2                |                                                                                                                                             |
| 9             | DI5 (common DI)     |                                                                                                                                             |
| 10            | DI6                 |                                                                                                                                             |
| 11            | DI7                 |                                                                                                                                             |
| 12            | DI8                 |                                                                                                                                             |
| 13            | DI9                 |                                                                                                                                             |
| 14            | COM3                |                                                                                                                                             |
| 15            | COM4                |                                                                                                                                             |
| 16            | DI10                |                                                                                                                                             |
| 17            | DI11                |                                                                                                                                             |
| 18            | DI12                |                                                                                                                                             |
| 19            | DI13                |                                                                                                                                             |
| 20            | DI14                |                                                                                                                                             |

ALP500 计量模块端子号与功能定义见表 10:

The terminal numbers and function definitions of the ALP500 metering module are shown in Table 10:

表 10 计量模块端子

| 端子号 | 功能定义         | 备注     |
|-----|--------------|--------|
| 4   | IA+(A 相电流进线) | 三相电流输入 |
| 5   | IA-(A 相电流进线) |        |
| 6   | IB+(B 相电流进线) |        |
| 7   | IB-(B 相电流进线) |        |
| 8   | IC+(C 相电流进线) |        |
| 9   | IC-(C 相电流进线) |        |
| 11  | UA(A 相电压)    | 三相电压输入 |
| 12  | UB(B 相电压)    |        |
| 13  | UC(C 相电压)    |        |
| 14  | UN(N 相接入)    |        |

Table 10 Metering Module Terminals

| Terminal Code | Function Definition                | Remark                    |
|---------------|------------------------------------|---------------------------|
| 4             | IA+(A Phase current incoming line) | Three Phase Current Input |
| 5             | IA-(A Phase current incoming line) |                           |
| 6             | IB+(B Phase current incoming line) |                           |
| 7             | IB-(B Phase current incoming line) |                           |
| 8             | IC+(C Phase current incoming line) |                           |
| 9             | IC-(C Phase current incoming line) |                           |
| 11            | UA(A phase voltage)                | Three Phase Voltage Input |
| 12            | UB(B phase voltage)                |                           |
| 13            | UC(C phase voltage)                |                           |
| 14            | UN(N phase input)                  |                           |

ALP500 有线测温模块端子号与功能定义见表 11:

The terminal numbers and function definitions of the ALP500 wired temperature measurement module are shown in Table 11:

表 11 有线测温模块端子

|   |     |              |
|---|-----|--------------|
| 1 | T1A | 第 1 路测温      |
| 2 | T1B |              |
| 3 | C   | 第 1、2 路测温公共端 |
| 4 | T2B | 第 2 路测温      |
| 5 | T2A |              |

|    |     |              |
|----|-----|--------------|
| 6  | T3A | 第 3 路测温      |
| 7  | T3B |              |
| 8  | C   | 第 3、4 路测温公共端 |
| 9  | T4B | 第 4 路测温      |
| 10 | T4A |              |
| 11 | T5A | 第 5 路测温      |
| 12 | T5B |              |
| 13 | C   | 第 5、6 路测温公共端 |
| 14 | T6B | 第 6 路测温      |
| 15 | T6A |              |
| 16 | T7A | 第 7 路测温      |
| 17 | T7B |              |
| 18 | C   | 第 7、8 路测温公共端 |
| 19 | T8B | 第 8 路测温      |
| 20 | T8A |              |
| 21 | C   | 第 9 路测温公共端   |
| 22 | T9B | 第 9 路测温      |
| 23 | T9A |              |

Table 11 Wired temperature measurement module terminal

|    |     |                                                          |
|----|-----|----------------------------------------------------------|
| 1  | T1A | First way Temp Measuring                                 |
| 2  | T1B |                                                          |
| 3  | C   | The 1st and 2nd temperature measurement public terminals |
| 4  | T2B | Second way Temp Measuring                                |
| 5  | T2A |                                                          |
| 6  | T3A | The 3rd way Temp Measuring                               |
| 7  | T3B |                                                          |
| 8  | C   | The 3rd and 4th temperature measurement public terminals |
| 9  | T4B | The 4th way Temp Measuring                               |
| 10 | T4A |                                                          |
| 11 | T5A | The 5th way Temp Measuring                               |
| 12 | T5B |                                                          |
| 13 | C   | The 5th and 6th temperature measurement public terminals |

|    |     |                                                          |
|----|-----|----------------------------------------------------------|
| 14 | T6B | The 6th way Temp Measuring                               |
| 15 | T6A |                                                          |
| 16 | T7A | The 7th way Temp Measuring                               |
| 17 | T7B |                                                          |
| 18 | C   | The 7th and 8th temperature measurement public terminals |
| 19 | T8B | The 8th way Temp Measuring                               |
| 20 | T8A |                                                          |
| 21 | C   | The 9th temperature measurement public terminals         |
| 22 | T9B | The 9th way Temp Measuring                               |
| 23 | T9A |                                                          |

ALP500-Profibus 通讯模块端子号与功能定义见表 12:

The terminal codes and function definitions of the ALP500-Profibus communication module are shown in Table 12:

表 12 通讯模块端子

| 端子号 | 功能定义 | 备注              |
|-----|------|-----------------|
| 1   | A1   | 第一路 Profibus 通讯 |
| 2   | B1   |                 |
| 3   | A2   | 第二路 Profibus 通讯 |
| 4   | B2   |                 |

Table 12 Communication module terminal

| Terminal Code | Function Definition | Remark                                |
|---------------|---------------------|---------------------------------------|
| 1             | A1                  | The first way Profibus communication  |
| 2             | B1                  |                                       |
| 3             | A2                  | The second way Profibus communication |
| 4             | B2                  |                                       |

## 6 保护功能说明 6 Protection function description

### 6.1 过流保护 6.1 Over Current Protection

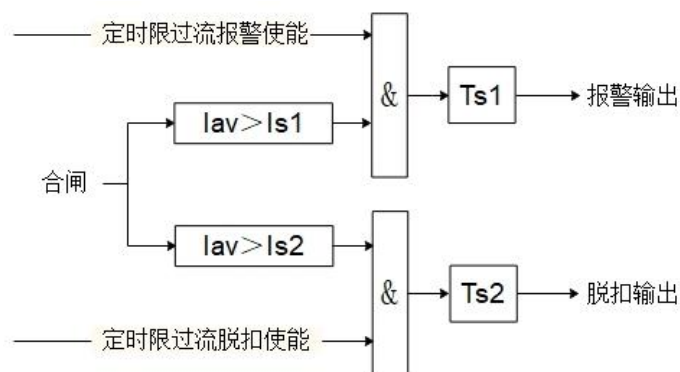
#### 6.1.1 定时限过流保护 6.1.1 Fixed Time Over Current Protection

在测控装置显示合闸状态下，当线路平均电流  $I_{av}$  超过设定阈值  $I_s$  时，会触发定时限过流保护，可设定延迟时间  $T_s$ ，保护动作将在延迟时间之后触发。

本装置具备三段定时限过流保护，可设定不同的过流阈值及分闸时间。

When the measurement and control device shows the closed state, when the line average current  $I_{av}$  exceeds the set threshold  $I_s$ , the fixed time over current protection will be triggered, and the delay time  $T_s$  can be set, and the protection action will be triggered after the delay time.

This device has three-stage fixed time over current protection, which can set different over current thresholds and opening time.



定时限过流报警使能 Fixed time over current alarm enable

定时限过流脱扣使能 Fixed time over current trip enable

合闸 Closing 报警输出 Alarm output 脱扣输出 Trip output

#### 6.1.2 反时限过流 6.1.2 Inverse time over current

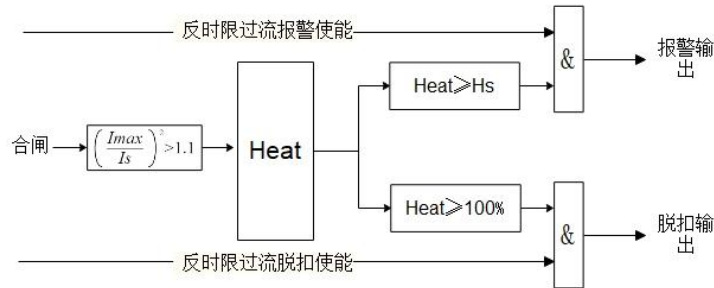
当线路在过负荷情况下长时间运行时，会导致线缆过热，绝缘降低产生危险，保护器根据线缆的发热特性，计算线缆的热容量，从而对线路以及负载进行保护。

反时限过流保护起动条件为，在测控装置显示合闸状态下，三相电流最大值  $I_{max}$  与设定动作值  $I_s$  的比值的平方大于 1.1 时，计算线路热容量百分比，当热容量达到设定的报警阈值  $H_s$  时，产生报警动作，热容量达到 100%时，产生保护动作。

When the line runs under overload for a long time, it will cause the cable to overheat, and the insulation will be reduced to cause danger. The protector calculates the heat capacity of the cable according to the heating characteristics of the cable, so as to protect the line and the load.

The starting condition of the inverse time over current protection is that when the measurement and control device shows the closed state, when the square of the ratio of the maximum value of the three-phase current  $I_{max}$  to

the set action value  $I_s$  is greater than 1.1, calculate the percentage of heat capacity of the line, and when the heat capacity reaches the set alarm When the threshold  $H_s$  is reached, an alarm action is generated, and when the heat capacity reaches 100%, a protection action is generated.



反时限过流报警使能 Inverse time over current alarm enable

反时限过流脱扣使能 Inverse time over current trip enable

合闸 Closing 报警输出 Alarm output 脱扣输出 Trip output

反时限过流保护共有 8 簇反时限特性曲线可供选择，通过对三相电流的监测，实现保护功能  
反时限过流保护时间特性：

There are 8 clusters of inverse time characteristic curves to choose from in the inverse time over current protection, and the protection function is realized by monitoring the three-phase current

Inverse time over current protection time characteristics:

$$t = T_p \times \left( \frac{K}{\left( \frac{I}{I_s} \right)^\alpha - 1} + L \right)$$

其中：

$t$  = 跳闸时间

$K$  = 系数（见表）

$I$  = 电流测量值

$I_s$  = 程序设定的门限值

$\alpha$  = 系数（见表）

$L$  = ANSI/IEEE 系数（对 IEC 曲线为 0）

$T_p$  = 时间因子

in:

$t$  = trip time

$K$  = factor (see table)

$I$  = current measurement

$I_s$  = Threshold value set by the program

$\alpha$  = coefficient (see table)

L = ANSI/IEEE coefficient (0 for IEC curve)

Tp = time factor

表 13 反时限过流保护曲线动作特性

| 特性序号  | 特性类型  | 标准        | K 因子    | $\alpha$ 因子 | L 因子    |
|-------|-------|-----------|---------|-------------|---------|
| IEC1  | 标准反时限 | IEC       | 0.14    | 0.02        | 0       |
| IEC2  | 非常反时限 | IEC       | 13.5    | 1           | 0       |
| IEC3  | 极端反时限 | IEC       | 80      | 2           | 0       |
| CO2   | 短时反时限 | CO2       | 0.00342 | 0.02        | 0.00242 |
| CO8   | 长时反时限 | CO8       | 5.95    | 2           | 0.18    |
| IEEE1 | 中度反时限 | ANSI/IEEE | 0.0515  | 0.02        | 0.114   |
| IEEE2 | 非常反时限 | ANSI/IEEE | 19.61   | 2           | 0.491   |
| IEEE3 | 极端反时限 | ANSI/IEEE | 28.2    | 2           | 0.1215  |

Table 13 Action characteristics of inverse time over current protection curve

| characteristic serial number | Type               | Standard  | K Factor | $\alpha$ Factor | L Factor |
|------------------------------|--------------------|-----------|----------|-----------------|----------|
| IEC1                         | standard inverse   | IEC       | 0.14     | 0.02            | 0        |
| IEC2                         | Uncommon Inverse   | IEC       | 13.5     | 1               | 0        |
| IEC3                         | Extreme Inverse    | IEC       | 80       | 2               | 0        |
| CO2                          | Short time Inverse | CO2       | 0.00342  | 0.02            | 0.00242  |
| CO8                          | Long Time Inverse  | CO8       | 5.95     | 2               | 0.18     |
| IEEE1                        | Medium Inverse     | ANSI/IEEE | 0.0515   | 0.02            | 0.114    |
| IEEE2                        | Uncommon Inverse   | ANSI/IEEE | 19.61    | 2               | 0.491    |
| IEEE3                        | Extreme Inverse    | ANSI/IEEE | 28.2     | 2               | 0.1215   |

反时限过流保护复位时间特性：

IEC1、IEC2、IEC3 复位特性：

反时限过流保护动作前：

当三相电流回复到  $I < I_s$  时返回。

反时限过流保护动作后：

报警在故障原因消失后返回。

脱扣保持，脱扣复位通过复位键或者接收到复位命令复位。

适用于 CO2、CO8、IEEE1、IEEE2、IEEE3 复位特性：

适用于这 5 中曲线的复位特性是：

Inverse time over current protection reset time characteristics:

IEC1, IEC2, IEC3 reset characteristics:

Before inverse time over current protection action:

Return when the three-phase current returns to  $I < I_s$ .

After inverse time over current protection action:

The alarm returns after the cause of the fault disappears.

Trip hold, trip reset reset by reset key or receive reset command.

Applicable to CO2, CO8, IEEE1, IEEE2, IEEE3 reset characteristics:

The reset characteristics applicable to these 5 curves are:

$$t = Tre \times \left( \frac{K}{1 - (I / I_s)^\alpha} \right)$$

其中：

t = 复位时间

K = 系数（见表）

I = 电流测量值

$I_s$  = 程序设定的门限值（起动值）

$\alpha$  = 系数（见表）

Tre = 复位时间因子

in:

t = reset time

K = factor (see table)

I = current measurement

$I_s$  = Threshold value set by the program (starting value)

$\alpha$  = coefficient (see table)

Tre = reset time factor

表 14 反时限过流保护曲线复位特性

| 特性序号  | 特性类型  | 标准        | K 因子  | $\alpha$ 因子 |
|-------|-------|-----------|-------|-------------|
| C02   | 短时反时限 | C02       | 0.323 | 2           |
| C08   | 长时反时限 | C08       | 5.95  | 2           |
| IEEE1 | 中度反时限 | ANSI/IEEE | 4.85  | 2           |
| IEEE2 | 非常反时限 | ANSI/IEEE | 21.6  | 2           |
| IEEE3 | 极端反时限 | ANSI/IEEE | 29.1  | 2           |

反时限过流保护动作前：

当三相电流回复到  $I < I_s$  时，按复位公式返回。

反时限过流保护动作后：

报警在报警条件消失后返回。

脱扣保持，脱扣复位通过复位键或者接收到复位命令复位。

Table 14 Reset characteristics of inverse time over current protection curve

| characteristic serial number | Type               | Standard  | K Factor | $\alpha$ Factor |
|------------------------------|--------------------|-----------|----------|-----------------|
| CO2                          | Short Time Inverse | CO2       | 0.323    | 2               |
| CO8                          | Long Time Inverse  | CO8       | 5.95     | 2               |
| IEEE1                        | Medium Inverse     | ANSI/IEEE | 4.85     | 2               |
| IEEE2                        | Uncommon Inverse   | ANSI/IEEE | 21.6     | 2               |
| IEEE3                        | Extreme Inverse    | ANSI/IEEE | 29.1     | 2               |

Before inverse time over current protection action:

When the three-phase current returns to  $I < I_s$ , return according to the reset formula.

After inverse time over current protection action:

Alarm returns after the alarm condition disappears.

Trip hold, trip reset reset by reset key or receive reset command.

## 6.2 零序电流保护 6.2 Zero sequence current protection

### 6.2.1 定时限零序过流 6.2.1 Definite-time zero-sequence over current

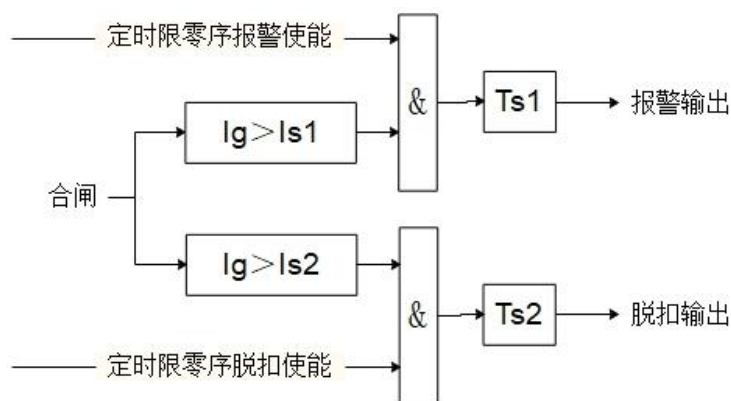
在测控装置显示合闸状态下，通过测量三相电流计算出零序电流，当零序电流  $I_g$  超过设定阈值  $I_s$  时，

会触发定时限过流保护，可设定延迟时间  $T_s$ ，保护动作将在延迟时间之后触发。

本装置具备三段定时限零序过流保护，可设定不同的过流阈值及分闸时间。

When the measurement and control device shows the closed state, the zero-sequence current is calculated by measuring the three-phase current. When the zero-sequence current  $I_g$  exceeds the set threshold  $I_s$ , the fixed time over current protection will be triggered. The delay time  $T_s$  can be set, and the protection action will be Triggered after a delay time.

The device is equipped with three-stage definite-time zero-sequence over current protection, and different over current thresholds and opening times can be set.



定时限零序报警使能 Fixed time zero sequence alarm enable

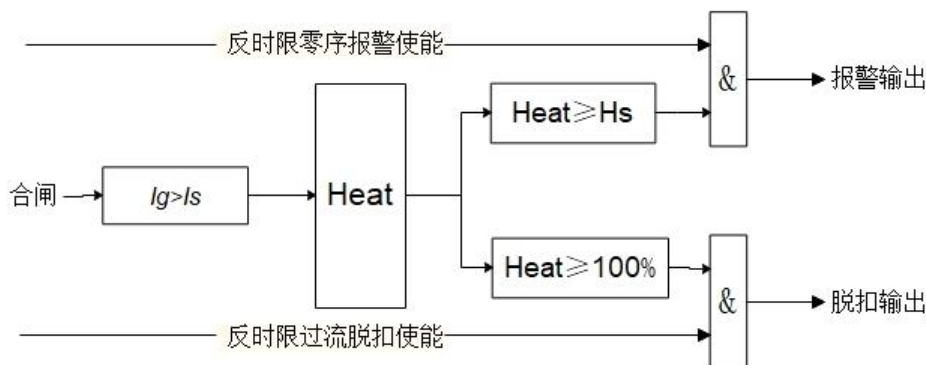
定时限零序脱扣使能 Fixed time zero sequence trip enable

合闸 Closing 报警输出 Alarm output 脱扣输出 Trip output

## 6.2.2 反时限零序过流 6.2.2 Inverse time zero sequence over current

反时限零序过流保护起动条件为，在测控装置显示合闸状态下，零序电流  $I_g$  大于设定动作值  $I_s$  时，计算线路热容量百分比，当热容量达到设定的报警阈值  $H_s$  时，产生报警动作，热容量达到 100%时，产生保护动作。

The starting condition of the inverse time zero-sequence over current protection is that when the measurement and control device shows the closed state, when the zero-sequence current  $I_g$  is greater than the set action value  $I_s$ , calculate the percentage of heat capacity of the line, and when the heat capacity reaches the set alarm threshold  $H_s$ , an alarm is generated Action, when the heat reaches 100% of the capacity, a protection action will occur.



定时限零序报警使能 Fixed time zero sequence alarm enable

反时限过流脱扣使能 Inverse time over current trip enable

合闸 Closing 报警输出 Alarm output 脱扣输出 Trip output

注：反时限零序保护曲线有且仅有 IEC1、IEC2、IEC3，其对应的保护曲线动作特性和复位特性与反时限过流部分相同。

Note: There are only IEC1, IEC2, and IEC3 inverse-time zero-sequence protection curves, and the corresponding action characteristics and reset characteristics of the protection curves are the same as those of the inverse-time over current part.

### 6.3 负序过流保护 6.3 Negative sequence over current protection

在测控装置显示合闸状态下，通过检测三相电流数据，计算出负序电流，当负序电流百分比  $I_{neg}$  高于设定的保护阈值  $I_s$  时，在设定的保护延时  $T_s$  之后输出报跳闸指令。

When the measurement and control device shows the closed state, the negative sequence current is calculated by detecting the three-phase current data. When the negative sequence current percentage  $I_{neg}$  is higher than the set protection threshold  $I_s$ , the output will report tripping after the set protection delay  $T_s$  instruction.



负序报警使能 Negative sequence alarm enable

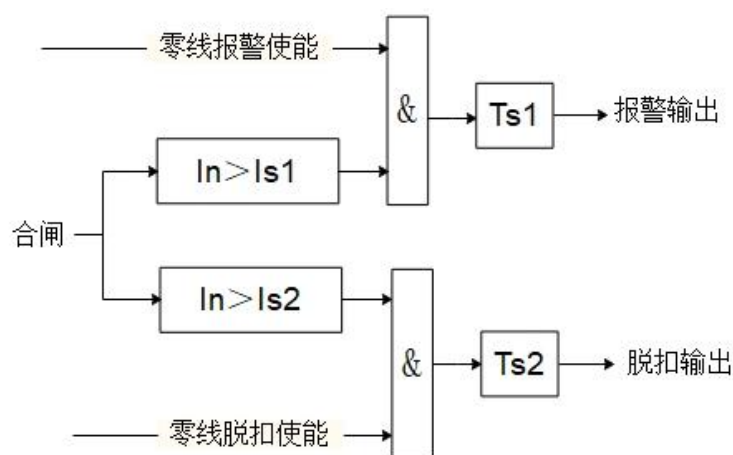
负序脱扣使能 Negative sequence trip enable

合闸 Closing 报警输出 Alarm output 脱扣输出 Trip output

### 6.4 零线过流保护 6.4 Neutral line over current protection

在测控装置显示合闸状态下，通过零线互感器采集零线电流  $I_n$ ，当零线电流  $I_n$  高于设定的保护阈值时，在设定的保护延时之后输出跳闸指令。

When the measurement and control device shows the closed state, the neutral current  $I_n$  is collected through the neutral transformer. When the neutral current  $I_n$  is higher than the set protection threshold, a trip command is output after the set protection delay.



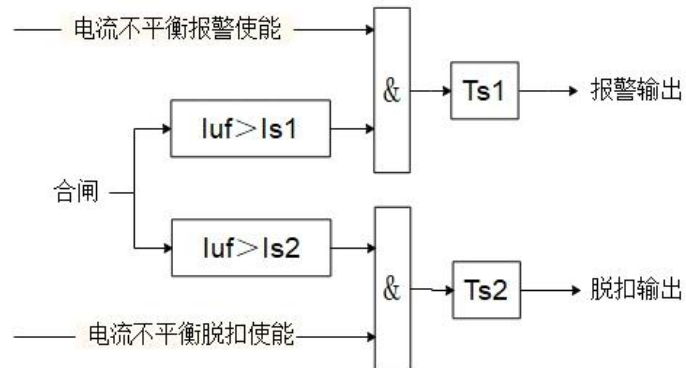
零线报警使能 Neutral alarm enable    零线脱扣使能 Neutral trip enable

合闸 Closing    报警输出 Alarm output    脱扣输出 Trip output

## 6.5 电流不平衡保护 6.5 Current unbalance protection

在测控装置显示合闸状态下，通过采集到的三相电流计算电流不平衡度  $I_{uf}$ ，当电流不平度高于设定阈值  $I_s$  时，在设定的保护延时  $T_s$  之后输出报警或跳闸指令。

When the measurement and control device shows the closed state, the current unbalance  $I_{uf}$  is calculated by the collected three-phase current. When the current unbalance is higher than the set threshold  $I_s$ , an alarm or trip command is output after the set protection delay  $T_s$ .



电流不平衡报警使能 Current unbalance alarm enable

电流不平衡脱扣使能 Current unbalance trip enable

合闸 Closing    报警输出 Alarm output    脱扣输出 Trip output

## 6.6 电流需量保护 6.6 Current demand protection

采用滑差方式计算需量电流，时间窗口为设定的需量周期  $T_t$ ，在窗口每滑动需量宽度  $T_w$  时，需量电流更新，动作特性如下：

- (1) 需量电流百分比大于等于电流需量报警设定值  $I_{s1}$  持续  $T_{s1}$  时间后，发出报警信号，达到或超过设定的电流需量脱扣设定值  $I_{s2}$  持续时间  $T_{s2}$  后，执行脱扣；
- (2) 发生过 1 次需量保护，重新合闸后，一段时间内，需量电流仍大于等于电流需量报警阈值  $I_{s1}$  且持续需量

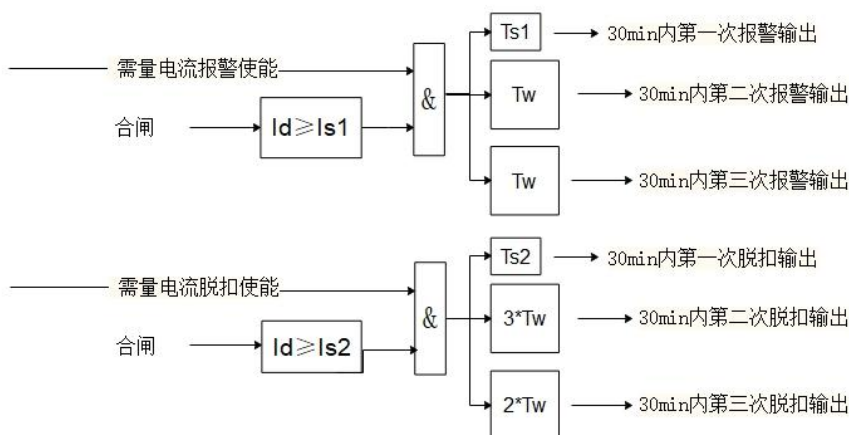
宽度  $T_w$  时，产生第二次报警，超过脱扣阈值  $Is_2$  并持续 3 倍需量宽度  $T_w$  的延时时间时，执行第二次脱扣；

(3) 发生过 2 次需量保护，重新合闸后，一段时间内，需量电流仍大于等于电流需量报警阈值  $Is_1$  且持续需量宽度  $T_w$  时，产生第三次报警，超过脱扣阈值  $Is_2$  并持续 2 倍需量宽度  $T_w$  的延时时间后，执行第三次脱扣。

(4) 在首次执行需量脱扣后，若 30 分钟时间内，没有再次发生需量保护，同时，经过此段时间后，若再次发生需量保护，则应重新执行 (1) - (3) 过程。

The demand current is calculated by the slip method, and the time window is the set demand period  $T_t$ . When the window slides the demand width  $T_w$ , the demand current is updated, and the action characteristics are as follows:

- (1) When the demand current percentage is greater than or equal to the current demand alarm set value  $Is_1$  and lasts for  $Ts_1$ , an alarm signal is sent, and after reaching or exceeding the set current demand trip set value  $Is_2$  for a duration of  $Ts_2$ , the trip is performed;
- (2) Once demand protection has occurred, after reclosing, within a period of time, if the demand current is still greater than or equal to the current demand alarm threshold  $Is_1$  and the demand width  $T_w$  continues, a second alarm will be generated, exceeding the tripping threshold When  $Is_2$  lasts for a delay time that is 3 times the demand width  $T_w$ , the second tripping is performed;
- (3) Demand protection has occurred twice, and after reclosing, within a period of time, when the demand current is still greater than or equal to the current demand alarm threshold  $Is_1$  and the demand width  $T_w$  continues, a third alarm will be generated, exceeding the tripping threshold After  $Is_2$  and the delay time of 2 times the demand width  $T_w$ , the third tripping is performed.
- (4) After the first execution of the demand trip, if the demand protection does not occur again within 30 minutes, and at the same time, after this period of time, if the demand protection occurs again, you should re-execute (1)-(3 )process.



需量电流报警使能 Demand current alarm enable 需量电流脱扣使能 Demand current trip enable

第一次/二次/三次 报警输出 First/second/Third Alarm output

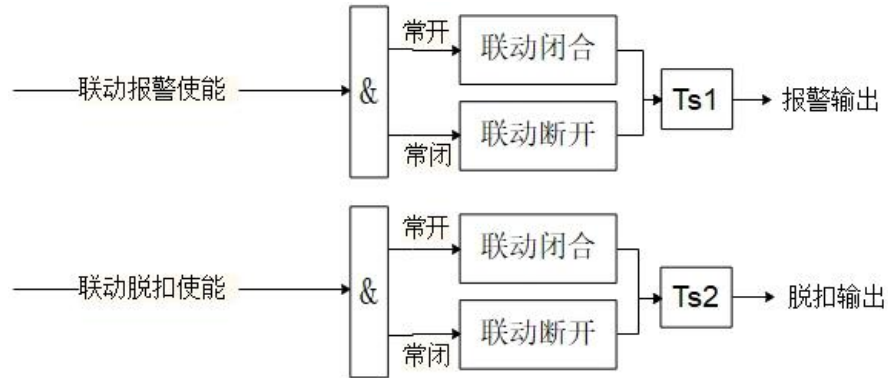
第一次/二次/三次 脱扣输出 First/second/Third Trip output

## 6.7 联动保护 6.7 Linkage protection

设定外部联动的DI，当检测到外部联动信号输入时，在设定的保护延时 $T_s$ 之后输出跳闸指令。

Set the DI of the external linkage, when the external linkage signal input is detected, the trip command will be output

after the set protection delay Ts.

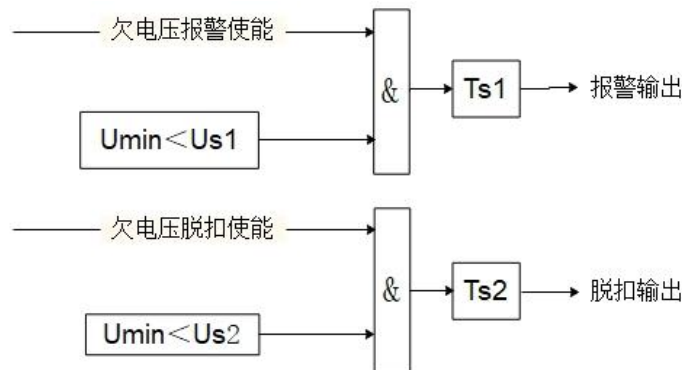


联动报警使能 Linkage alarm enable 联动脱扣使能 Linkage trip enable  
 常开 Normally open 常闭 Normally closed  
 联动闭合 Linkage closed 联动断开 Linkage open  
 报警输出 Alarm output 脱扣输出 Trip output

### 6.8 欠电压保护 6.8 Under voltage Protection

检测三相路线电压，当线路最小线电压 $U_{min}$ 低于设定的欠压阈值 $U_s$ 时，在设定的保护延时之后输出跳闸指令。

Detect the line voltage of the three-phase line. When the minimum line voltage  $U_{min}$  of the line is lower than the set under voltage threshold  $U_s$ , the trip command will be output after the set protection delay.

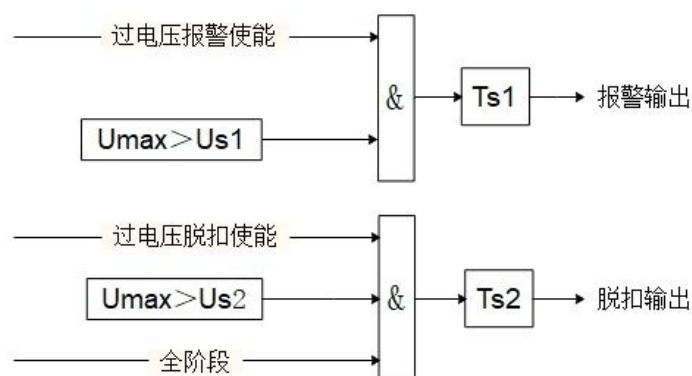


欠电压报警使能 Under voltage alarm enable 欠电压脱扣使能 Under voltage trip enable  
 报警输出 Alarm output 脱扣输出 Trip output

### 6.9 过电压保护 6.9 Over voltage protection

检测三相路线电压，当线路最大线电压 $U_{max}$ 高于设定的过压阈值时，在设定的保护延时之后输出跳闸指令。

$U_{max}$  of the line is higher than the set over voltage threshold, the trip command will be output after the set protection delay.

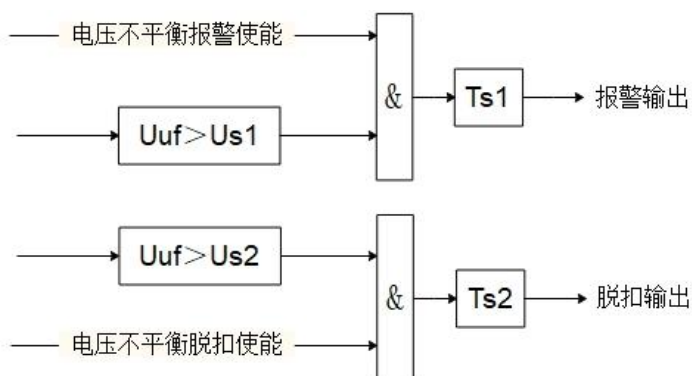


过电压报警使能 Over voltage alarm enable  
 过电压脱扣使能 Over voltage trip enable  
 全阶段 all stages  
 报警输出 Alarm output 脱扣输出 Trip output

## 6.10 电压不平衡保护 6.10 Voltage Unbalance Protection

通过采集到的三相电压计算电压不平衡度，当电压不平衡度  $U_{uf}$  高于设定阈值  $U_s$  时，在设定的保护延时之后输出跳闸指令。

The voltage unbalance is calculated by the collected three-phase voltage, and when the voltage unbalance  $U_{uf}$  is higher than the set threshold  $U_s$ , a trip command is output after the set protection delay.

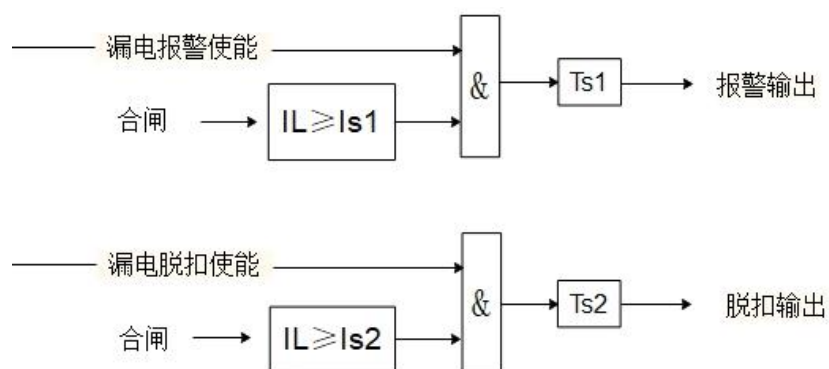


电压不平衡报警使能 Voltage unbalance alarm enable  
 电压不平衡脱扣使能 Voltage unbalance trip enable  
 报警输出 Alarm output 脱扣输出 Trip output

## 6.11 漏电流保护 6.11 Leakage current protection

漏电保护需选配漏电互感器，在测控装置显示合闸状态下，通过漏电互感器检测漏电流  $I_L$ ，当漏电流大于设定值  $I_s$  时，在设定的保护延时之后输出跳闸指令。

Leakage protection needs to be equipped with a leakage transformer. When the measurement and control device shows the closing state, the leakage current  $I_L$  is detected through the leakage transformer. When the leakage current is greater than the set value  $I_s$ , a tripping command is output after the set protection delay.



漏电报警使能 Leakage alarm enable

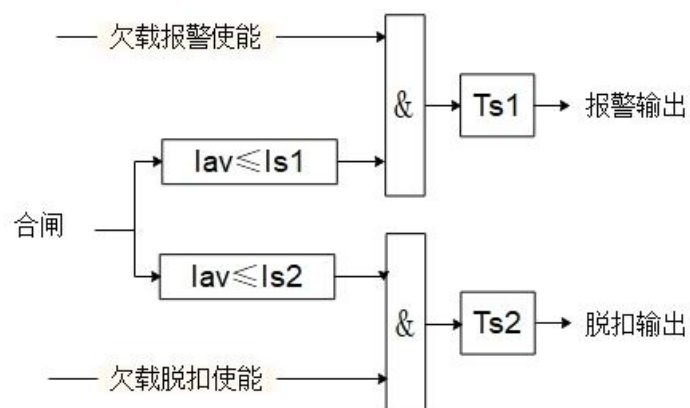
漏电脱扣使能 Leakage trip enable

报警输出 Alarm output 脱扣输出 Trip output

## 6.12 欠载保护 6.12 Under load protection

在测控装置显示合闸状态下，检测到三相平均电流  $I_{av}$  低于设定阈值  $I_s$  时，在设定的保护延时之后输出跳闸指令。

When the measurement and control device shows the closing state, when it detects that the three-phase average current  $I_{av}$  is lower than the set threshold  $I_s$ , a trip command is output after the set protection delay.



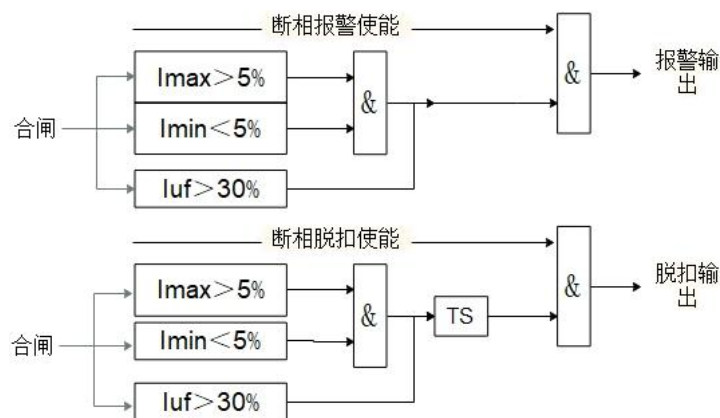
欠载报警使能 Under load alarm enable 欠载脱扣使能 Under load trip enable

合闸 Closing 报警输出 Alarm output 脱扣输出 Trip output

## 6.13 断相保护 6.13 Phase failure protection

在测控装置显示合闸状态下，当最大电流大于 5%额定电流且最小电流小于 5%额定电流时或者三相电流不平衡大于 30%时，在设定的保护延时之后输出跳闸指令。

When the measurement and control device shows the closed state, when the maximum current is greater than 5% of the rated current and the minimum current is less than 5% of the rated current, or the three-phase current imbalance is greater than 30%, the trip command will be output after the set protection delay.



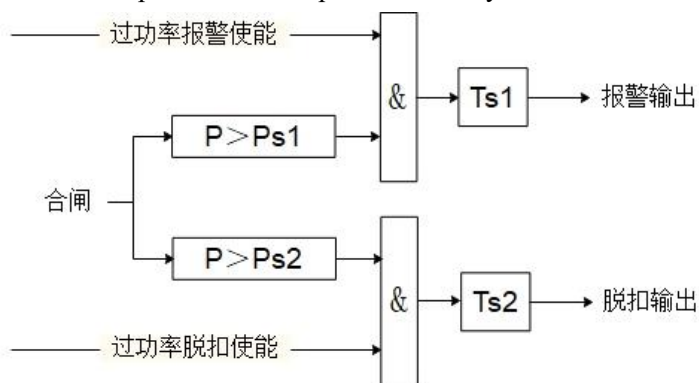
断相报警使能 Phase failure alarm enable 断相脱扣使能 Phase failure trip enable

合闸 Closing 报警输出 Alarm output 脱扣输出 Trip output

#### 6.14 过功率保护 6.14 Over Power Protection

在测控装置显示合闸状态下，当总有功功率  $P$  高于设定阈值  $P_s$  时，在设定的保护延时之后输出跳闸指令。

When the measurement and control device shows the closing state, when the total active power  $P$  is higher than the set threshold  $P_s$ , a trip command is output after the set protection delay.



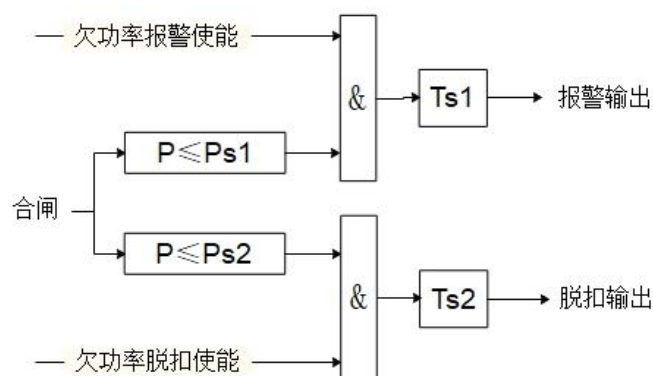
过功率报警使能 Over power alarm enable 过功率脱扣使能 Over power trip enable

合闸 Closing 报警输出 Alarm output 脱扣输出 Trip output

#### 6.15 欠功率保护 6.15 Under-power protection

在测控装置显示合闸状态下，当总有功功率  $P$  低于设定阈值  $P_s$  时，在设定的保护延时之后输出跳闸指令。

When the measurement and control device shows the closing state, when the total active power  $P$  is lower than the set threshold  $P_s$ , a trip command is output after the set protection delay.



欠功率报警使能 Under power alarm enable 欠功率脱扣使能 Under power trip enable

合闸 Closing 报警输出 Alarm output 脱扣输出 Trip output

## 6.16 相序保护 6.16 Phase sequence protection

检测三相电压相角，当出现两相电压相角差  $U_{Angle}$  大于  $130^\circ$  时，判定相序错误，在设定的保护延时之后输出跳闸指令。

Detect the phase angle of the three-phase voltage. When the phase angle difference  $U_{Angle}$  of the two-phase voltage is greater than  $130^\circ$ , it is judged that the phase sequence is wrong, and the trip command is output after the set protection delay.



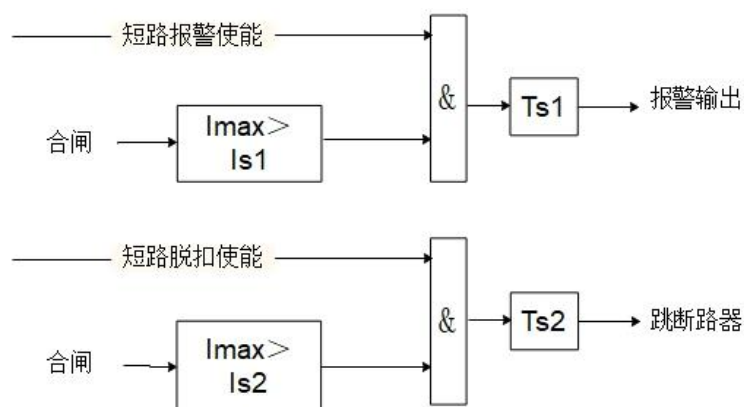
相序报警使能 Phase sequence alarm enable 相序脱扣使能 Phase sequence trip enable

合闸 Closing 报警输出 Alarm output 脱扣输出 Trip output

## 6.17 短路保护 6.17 Short Circuit Protection

在测控装置显示合闸状态下，检测到线路最大电流  $I_{max}$  超过短路设定的电流阈值  $I_s$  时，在设定的保护延时之后输出跳闸指令。

When the measurement and control device shows the closed state, when it is detected that the maximum current  $I_{max}$  of the line exceeds the current threshold  $I_s$  set by the short circuit, a tripping command is output after the set protection delay.



短路报警使能 Short circuit alarm enable 短路脱扣使能 Short circuit trip enable

合闸 Closing 报警输出 Alarm output 脱扣输出 Trip output

## 6.18 合闸时间保护 6.18 Closing Time Protection

从收到合闸信号时开始计时，当合闸时间达到设定的阈值后，保护装置仍没有检测到电流时，判断为合闸超时，在设定的保护延时之后输出跳闸指令。

Start timing when the closing signal is received. When the closing time reaches the set threshold and the protection device still does not detect the current, it will be judged as closing timeout, and the tripping command will be output after the set protection delay.

## 6.19 内部故障保护 6.19 Internal Fault Protection

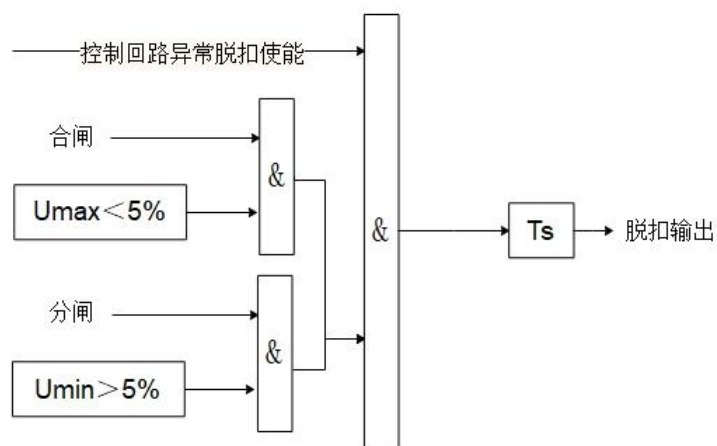
检测到内部故障时，在设定的保护延时之后输出跳闸指令。

When an internal fault is detected, a trip command is output after the set protection delay.

## 6.20 控制回路异常保护 6.20 Abnormal protection of control loop

在测控装置显示合闸状态下，最大线电压  $U_{max}$  小于 5% 额定电压，或在测控装置显示分闸状态下，最小线电压  $U_{min}$  大于 5% 额定电压，判定为控制回路异常故障，在设定的保护延时之后输出跳闸指令。

When the measurement and control device shows that the switch is closed, the maximum line voltage  $U_{max}$  is less than 5% of the rated voltage, or when the measurement and control device shows that the switch is in the open state, the minimum line voltage  $U_{min}$  is greater than 5% of the rated voltage. The trip command is output after the protection delay.



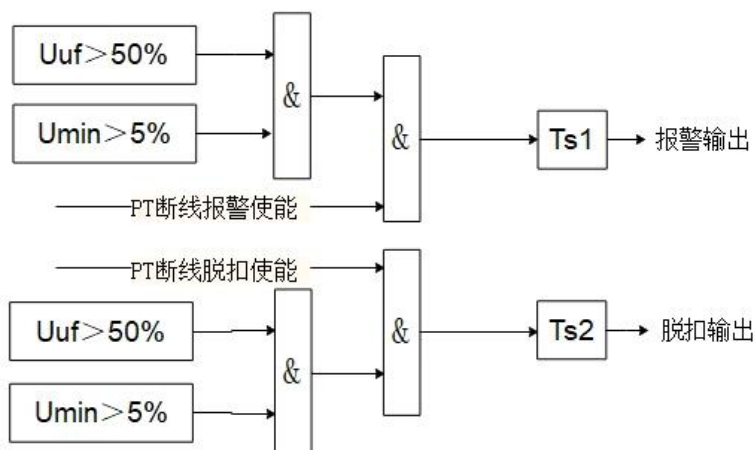
控制回路异常脱扣使能 Controlling circuit abnormal trip enable

合闸 Closing 分闸 Opening 脱扣输出 Trip output

## 6.21 PT 断线保护 6.21 PT disconnection protection

检测到电压不平衡  $U_{uf}$  大于 50%且最大线电压大于 5%额定电压时，判定为 PT 断线故障，在设定的保护延时之后输出跳闸指令。

When it is detected that the voltage unbalance  $U_{uf}$  is greater than 50% and the maximum line voltage is greater than 5% of the rated voltage, it is judged as a PT disconnection fault, and a trip command is output after the set protection delay.



PT断线报警使能 PT disconnection alarm enable PT断线脱扣使能 PT disconnection trip enable

报警输出Alarm output 脱扣输出Trip output

## 6.22 温度传感器故障保护 6.22 Temperature Sensor Fault Protection

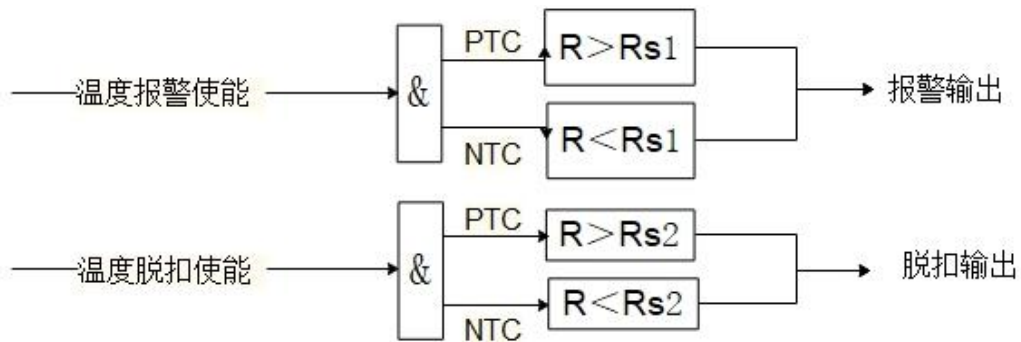
检测温度传感器状态，当检测到故障时，在设定的保护延时之后输出跳闸指令。

Detect the state of the temperature sensor, when a fault is detected, a trip command will be output after the set protection delay.

6.23 过温保护 6.23 Over temperature protection

通过温度传感器检测温度，当传感器类型为 PTC，且温度 R 高于设定温度阈值 Rs 或传感器类型为 NTC，且温度 R 低于设定温度阈值 Rs 时，判定为温度过高，在设定的保护延时之后输出跳闸指令。

The temperature is detected by the temperature sensor. When the sensor type is PTC and the temperature R is higher than the set temperature threshold Rs or the sensor type is NTC and the temperature R is lower than the set temperature threshold Rs, it is determined that the temperature is too high. The trip command is output after the protection delay.



温度报警使能 Temperature alarm enable 温度脱扣使能 Temperature trip enable  
报警输出Alarm output 脱扣输出Trip output

7 功能设置与说明 7 Function setting and description

7.1 主体按钮与 LED 灯 7.1 Main body buttons and LED lights

表 15 按钮与 LED 灯说明

| 序号 | 名称         | 状态    | 功能说明                           |
|----|------------|-------|--------------------------------|
| 1  | 分闸         | 按下    | 面板控制分闸继电器输出                    |
| 2  | 合闸         | 按下    | 面板控制合闸继电器输出                    |
| 3  | ESC        | 按下/长按 | 按下返回上级界面；取消操作/<br>故障状态时，长按复位故障 |
| 4  | 左方向键       | 按下    | 上翻菜单；修改数据时数据移位                 |
| 5  | 右方向键       | 按下    | 下翻菜单；修改数据                      |
| 6  | 回车按键       | 按下    | 进入设置菜单、写入修改后的数据                |
| 7  | 报警 LED 指示灯 | 亮     | 该指示灯亮表示有报警产生                   |
| 8  | 故障 LED 指示灯 | 亮     | 该指示灯亮表示故障脱扣                    |
| 9  | 分闸 LED 指示灯 | 亮     | 该指示灯常亮表示断路器处于分闸状态              |
| 10 | 合闸 LED 指示灯 | 亮     | 该指示灯常亮表示断路器处于合闸状态状态            |

Table 15 Description of buttons and LED lights

| Code | Name                           | Status               | Function Description                                                                                               |
|------|--------------------------------|----------------------|--------------------------------------------------------------------------------------------------------------------|
| 1    | Opening                        | Press                | Press the panel to control the closing relay output                                                                |
| 2    | Closing                        | Press                | Press the panel to control the closing relay output                                                                |
| 3    | ESC                            | Press/<br>Long Press | Press to return to the upper interface; cancel the operation/<br>In the fault state, long press to reset the fault |
| 4    | Left Button                    | Press                | Scroll up the menu; data shift when modifying data                                                                 |
| 5    | Right Button                   | Press                | Scroll down the menu; modify data                                                                                  |
| 6    | Enter Button                   | Press                | Enter the setting menu, write the modified data                                                                    |
| 7    | Alarm LED<br>Indicator Light   | Light up             | The indicator light indicates that there is an alarm                                                               |
| 8    | Fault LED<br>Indicator Light   | Light up             | The indicator light is on to indicate fault tripping                                                               |
| 9    | Opening LED<br>Indicator Light | Light up             | The indicator light is always on, indicating that the circuit breaker is in the opening state                      |
| 10   | Closing LED<br>Indicator Light | Light up             | The indicator light is always on, indicating that the circuit breaker is in the closing state                      |

## 7.2 功能设置菜单介绍

### 7.2 Introduction to function setting menu

表 16 功能菜单设置

| 主菜单  | 功能         | 类别    | 设定范围                                            | 默认值               | Unit |
|------|------------|-------|-------------------------------------------------|-------------------|------|
| 通讯设置 | Modbus Rtu | 地址 1  | 1-247                                           | 1                 | -    |
|      |            | 波特率 1 | 1200-38400                                      | 9600              | bps  |
|      |            | 校验位 1 | None、2 Stop、Odd、Even                            | None              | -    |
|      |            | 地址 2  | 1-247                                           | 1                 | -    |
|      |            | 波特率 2 | 1200-38400                                      | 9600              | bps  |
|      |            | 校验位 2 | None、2 Stop、Odd、Even                            | None              | -    |
|      | 4G/Tcpip   | 功能选择  | 4G Madter、4G Exchange、<br>Modbus Tcp、Tcp Master | 4G Master         | -    |
|      |            | IP    | 0.0.0.0-255.255.255.255                         | 192.168.1.10      | -    |
|      |            | Mask  | 0.0.0.0-255.255.255.255                         | 255.255.255.<br>0 | -    |
|      |            | Gate  | 0.0.0.0-255.255.255.255                         | 192.168.1.1       | -    |

|      |          |           |                                            |              |    |
|------|----------|-----------|--------------------------------------------|--------------|----|
|      |          | Port      | 0-65535                                    | 502          | -  |
|      |          | Dhcp      | Off、On                                     | Off          | -  |
|      |          | 主服务器 Ip   | 0.0.0.0-255.255.255.255                    | 47.96.11.156 | -  |
|      |          | 主服务器 Port | 0-65535                                    | 20071        | -  |
|      |          | 分合闸密码使能   | Off/On                                     | On           | -  |
|      |          | 分合闸控制密码   | 0-99999999                                 | 99999999     | -  |
|      |          | Ip/域名选择   | IP/域名                                      | 域名           | -  |
|      | Profibus | Addr1     | 1-247                                      | 1            | -  |
|      |          | Addr2     | 1-247                                      | 1            | -  |
|      | Lora     | 功能开关      | 开、关                                        | 关            |    |
|      |          | 工作模式      | 透传、测试                                      | 透传           |    |
|      |          | 设备地址      | 1-247                                      | 1            |    |
|      |          | 通讯频段      | 0-91                                       | 5            |    |
|      |          | 扩展因数      | 6-12                                       | 9            |    |
|      |          | 信号带宽      | 0-45                                       | 9            |    |
| 系统参数 | 额定电流     | 1A        | 0.1-6300                                   | 1            | A  |
|      |          | 5A        | 0.5-6300                                   | 5            | A  |
|      |          | 25A       | 6-25                                       | 25           | A  |
|      |          | 100A      | 25-100                                     | 100          | A  |
|      | 额定电压     | -         | 0-2000                                     | 380          | V  |
|      | 额定功率     | -         | 0.1-999.99                                 | 0.1          | kW |
|      | 额定频率     | -         | 40-70                                      | 50           | Hz |
|      | 接线方式     | -         | 1P2L、3P4L、3P3L/3CT、3P3L/2CT                | 3P4L         | -  |
|      | 主体三相 CT  | -         | 1-2000                                     | 1            | -  |
|      | 主体零线 CT  | -         | 1-2000                                     | 1            | -  |
|      | 计量三相 CT  | -         | 1-2000                                     | 1            | -  |
|      | 保护选择     | -         | 全波值/基波值                                    | 全波值          | -  |
|      | 变送设置     | 类型 1      | Ia、Ib、Ic、Iav、In、Uab、Ubc、Uca、Uav、热容量、P、Freq | Ia           | -  |
|      |          | 满度值 1     | -                                          | 2 倍 Ie       | A  |
|      |          | 类型 2      | 同类型 1                                      | -            | -  |
|      |          | 满度值 2     |                                            | -            | -  |
|      | 语言选择     | -         | 中文/英文                                      | 中文           | -  |
|      | 密码       | -         | 1-9999                                     | 1            | -  |
|      | 时间设置     | -         | 20xx-xx-xx<br>xx:xx:xx                     | -            | -  |
|      | 主界面索引    | -         | 1-6                                        | -            | -  |
|      | 电压暂升暂降设置 | 暂升阈值      | 112-150                                    |              | %  |
|      |          | 暂降阈值      | 50-90                                      |              | %  |

|      |      |         |                           |     |   |
|------|------|---------|---------------------------|-----|---|
|      |      | 暂升恢复阈值  | 0-150                     |     | % |
|      |      | 暂降恢复阈值  | 50-90                     |     | % |
|      | 软件版本 | 主体      | xxxx-V1.x.x               | -   | - |
|      |      | 计量      | -                         | -   | - |
|      |      | 测温      | -                         | -   | - |
|      |      | 开关量     | -                         | -   | - |
|      |      | 通讯模块    | -                         | -   | - |
|      |      | 主体开关量类型 | -                         | -   | - |
|      |      | 模块开关量类型 | -                         | -   | - |
|      | 回复出厂 | -       | 是/否                       | 否   | - |
|      | 功能开关 | 计量模块    | 开/关                       | 关   | - |
|      |      | 测温模块    | 开/关                       | 关   | - |
|      |      | 开关量模块   | 开/关                       | 关   | - |
|      |      | 通讯模块    | 开/关                       | 关   | - |
|      |      | 故障录波    | 开/关                       | 关   | - |
|      |      | 谐波功能    | 开/关                       | 关   | - |
| 控制权限 | 权限   | -       | 全控、检修、面板、就地、远程、通讯、二选一、三选一 | 全控  | - |
| 保护设置 | 过流保护 | 一段定时限过流 | 报警阈值：10-800               | 110 | % |
|      |      |         | 脱扣阈值：10-800               | 120 | % |
|      |      |         | 报警延时：0.00-600.00          | 10  | s |
|      |      |         | 脱扣延时：0.00-600.00          | 10  | s |
|      |      |         | 返回系数：5-50                 | 5   | s |
|      |      |         | 报警：禁止/允许                  | 允许  | - |
|      |      |         | 脱扣：禁止/允许                  | 允许  | - |
|      |      | 二段定时限过流 | 报警阈值：10-800               | 160 | % |
|      |      |         | 脱扣阈值：10-800               | 200 | % |
|      |      |         | 报警延时：0.00-600.00          | 5   | % |
|      |      |         | 脱扣延时：0.00-600.00          | 5   | s |
|      |      |         | 返回系数：5-50                 | 5   | s |
|      |      |         | 报警：禁止/允许                  | 允许  | - |
|      |      |         | 脱扣：禁止/允许                  | 允许  | - |
|      |      | 三段定时限过流 | 报警阈值：10-800               | 250 | % |
|      |      |         | 脱扣阈值：10-800               | 300 | % |
|      |      |         | 报警延时：0.00-600.00          | 2   | s |
|      |      |         | 脱扣延时：0.00-600.00          | 2   | s |
|      |      |         | 返回系数：5-50                 | 5   | s |
|      |      |         | 报警：禁止/允许                  | 允许  | - |
|      |      |         | 脱扣：禁止/允许                  | 允许  | - |

|  |        |         |                                                 |       |     |
|--|--------|---------|-------------------------------------------------|-------|-----|
|  |        | 反时限过流   | 保护曲线：IEC1、IEC2 、IEC3 、CO2、CO8、IEEE1、IEEE2、IEEE3 | IEC1  | -   |
|  |        |         | 冷却时间：0-30                                       | 5     | min |
|  |        |         | 时间系数：0.025-1.500                                | 1.000 | s   |
|  |        |         | 复位系数：0.025-3.200                                | 1.000 | s   |
|  |        |         | 报警阈值：10-800                                     | 85    | %   |
|  |        |         | 脱扣阈值：10-800                                     | 100   | %   |
|  |        |         | 复位方式：手动/自动                                      | 手动    | -   |
|  |        |         | 报警：禁止/允许                                        | 允许    | -   |
|  |        |         | 脱扣：禁止/允许                                        | 允许    | -   |
|  | 零序电流保护 | 一段定时限零序 | 报警阈值：10-800                                     | 20    | %   |
|  |        |         | 脱扣阈值：10-800                                     | 30    | %   |
|  |        |         | 报警延时：0.00-600.00                                | 0.5   | s   |
|  |        |         | 脱扣延时：0.00-600.00                                | 0.5   | s   |
|  |        |         | 返回系数：5-50                                       | 5     | s   |
|  |        |         | 报警：禁止/允许                                        | 允许    | -   |
|  |        |         | 脱扣：禁止/允许                                        | 允许    | -   |
|  |        | 二段定时限零序 | 报警阈值：10-800                                     | 40    | %   |
|  |        |         | 脱扣阈值：10-800                                     | 60    | %   |
|  |        |         | 报警延时：0.00-600.00                                | 0.5   | %   |
|  |        |         | 脱扣延时：0.00-600.00                                | 0.5   | s   |
|  |        |         | 返回系数：5-50                                       | 5     | s   |
|  |        |         | 报警：禁止/允许                                        | 允许    | -   |
|  |        |         | 脱扣：禁止/允许                                        | 允许    | -   |
|  |        | 三段定时限零序 | 报警阈值：10-800                                     | 70    | %   |
|  |        |         | 脱扣阈值：10-800                                     | 85    | %   |
|  |        |         | 报警延时：0.00-600.00                                | 0.5   | s   |
|  |        |         | 脱扣延时：0.00-600.00                                | 0.5   | s   |
|  |        |         | 返回系数：5-50                                       | 5     | s   |
|  |        |         | 报警：禁止/允许                                        | 允许    | -   |
|  |        |         | 脱扣：禁止/允许                                        | 允许    | -   |
|  |        | 反时限零序   | 保护曲线：IEC1、IEC2 、IEC3                            | IEC1  | -   |
|  |        |         | 冷却时间：0-30                                       | 5     | min |
|  |        |         | 时间系数：0.025-1.500                                | 1.000 | s   |
|  |        |         | 报警阈值：10-800                                     | 20    | %   |
|  |        |         | 脱扣阈值：10-800                                     | 50    | %   |
|  |        |         | 复位方式：手动/自动                                      | 自动    | -   |
|  |        |         | 报警：禁止/允许                                        | 允许    | -   |
|  |        |         | 脱扣：禁止/允许                                        | 允许    | -   |
|  | 负序电流   | 一段负序电流  | 报警阈值：10-100                                     | 20    | %   |
|  |        |         | 脱扣阈值：10-100                                     | 30    | %   |

|  |       |        |                  |     |     |
|--|-------|--------|------------------|-----|-----|
|  |       |        | 报警延时：0.00-600.00 | 5.0 | s   |
|  |       |        | 脱扣延时：0.00-600.00 | 5.0 | s   |
|  |       |        | 返回系数：5-50        | 5   | s   |
|  |       |        | 报警：禁止/允许         | 禁止  | -   |
|  |       |        | 脱扣：禁止/允许         | 禁止  | -   |
|  |       | 二段负序电流 | 报警阈值：10-100      | 40  | %   |
|  |       |        | 脱扣阈值：10-100      | 60  | %   |
|  |       |        | 报警延时：0.00-600.00 | 5.0 | %   |
|  |       |        | 脱扣延时：0.00-600.00 | 5.0 | s   |
|  |       |        | 返回系数：5-50        | 5   | s   |
|  |       |        | 报警：禁止/允许         | 禁止  | -   |
|  |       |        | 脱扣：禁止/允许         | 禁止  | -   |
|  | 零线电流  | 报警阈值   | 0-5000           | 100 | %   |
|  |       | 脱扣阈值   | 0-5000           | 80  | %   |
|  |       | 报警延时   | 0.00-600.00      | 5   | s   |
|  |       | 脱扣延时   | 0.00-600.00      | 5   | s   |
|  |       | 返回系数   | 5-50             | 5   | %   |
|  |       | 报警使能   | 禁止/允许            | 禁止  | -   |
|  |       | 脱扣使能   | 禁止/允许            | 禁止  | -   |
|  | 电流不平衡 | 报警阈值   | 10-100           | 20  | %   |
|  |       | 脱扣阈值   | 10-100           | 30  | %   |
|  |       | 报警延时   | 0.00-600.00      | 5   | s   |
|  |       | 脱扣延时   | 0.00-600.00      | 5   | s   |
|  |       | 返回系数   | 5-50             | 5   | %   |
|  |       | 报警使能   | 禁止/允许            | 禁止  | -   |
|  |       | 脱扣使能   | 禁止/允许            | 禁止  | -   |
|  | 电流需量  | 报警阈值   | 10-800           | 110 | %   |
|  |       | 脱扣阈值   | 10-800           | 120 | %   |
|  |       | 报警延时   | 1-25             | 5   | min |
|  |       | 脱扣延时   | 1-25             | 5   | min |
|  |       | 返回系数   | 5-50             | 5   | %   |
|  |       | 需量宽度   | 1、2、3、5          | 1   | min |
|  |       | 需量周期   | 5、10、15、30、60    | 5   | min |
|  |       | 报警使能   | 禁止/允许            | 允许  | -   |
|  |       | 脱扣使能   | 禁止/允许            | 允许  | -   |
|  | 漏电    | 报警阈值   | 30-1000          | 80  | mA  |
|  |       | 脱扣阈值   | 30-1000          | 100 | mA  |
|  |       | 报警延时   | 0.00-600.00      | 5   | s   |
|  |       | 脱扣延时   | 0.00-600.00      | 5   | s   |
|  |       | 返回系数   | 5-50             | 5   | %   |
|  |       | 报警使能   | 禁止/允许            | 允许  | -   |

|  |       |      |                  |      |   |
|--|-------|------|------------------|------|---|
|  |       | 脱扣使能 | 禁止/允许            | 允许   | - |
|  | 欠载    | 报警阈值 | 10-95            | 80   | % |
|  |       | 脱扣阈值 | 10-95            | 90   | % |
|  |       | 报警延时 | 0.00-600.00      | 5    | s |
|  |       | 脱扣延时 | 0.00-600.00      | 5    | s |
|  |       | 返回系数 | 5-50             | 5    | % |
|  |       | 报警使能 | 禁止/允许            | 禁止   | - |
|  |       | 脱扣使能 | 禁止/允许            | 禁止   | - |
|  | 短路    | 报警阈值 | 10-800           | 400  | % |
|  |       | 脱扣阈值 | 10-800           | 500  | % |
|  |       | 报警延时 | 0.00-600.00      | 0.5  | s |
|  |       | 脱扣延时 | 0.00-600.00      | 0.5  | s |
|  |       | 返回系数 | 5-50             | 5    | % |
|  |       | 报警使能 | 禁止/允许            | 禁止   | - |
|  |       | 脱扣使能 | 禁止/允许            | 禁止   | - |
|  | 联动保护  | 联动 1 | 报警延时：0.06-600.00 | 5.00 | s |
|  |       |      | 脱扣延时：0.06-600.00 | 5.00 | s |
|  |       |      | 报警：禁止/允许         | 禁止   | - |
|  |       |      | 脱扣：禁止/允许         | 禁止   | - |
|  |       | 联动 2 | 同联动 1            | -    | - |
|  |       | 联动 3 |                  |      |   |
|  | 过电压   | 报警阈值 | 110-150          | 110  | % |
|  |       | 脱扣阈值 | 110-150          | 120  | % |
|  |       | 报警延时 | 0.00-600.00      | 5    | s |
|  |       | 脱扣延时 | 0.00-600.00      | 5    | s |
|  |       | 返回系数 | 5-50             | 5    | % |
|  |       | 报警使能 | 禁止/允许            | 允许   | - |
|  |       | 脱扣使能 | 禁止/允许            | 允许   | - |
|  | 欠电压   | 报警阈值 | 45-90            | 80   | % |
|  |       | 脱扣阈值 | 45-90            | 90   | % |
|  |       | 报警延时 | 0.00-600.00      | 5    | s |
|  |       | 脱扣延时 | 0.00-600.00      | 5    | s |
|  |       | 返回系数 | 5-50             | 5    | % |
|  |       | 报警使能 | 禁止/允许            | 禁止   | - |
|  |       | 脱扣使能 | 禁止/允许            | 禁止   | - |
|  | 电压不平衡 | 报警阈值 | 10-100           | 20   | % |
|  |       | 脱扣阈值 | 10-100           | 30   | % |
|  |       | 报警延时 | 0.00-600.00      | 5    | s |
|  |       | 脱扣延时 | 0.00-600.00      | 5    | s |
|  |       | 返回系数 | 5-50             | 5    | % |
|  |       | 报警使能 | 禁止/允许            | 禁止   | - |

|  |        |         |                |       |    |
|--|--------|---------|----------------|-------|----|
|  |        | 脱扣使能    | 禁止/允许          | 禁止    | -  |
|  | 断相     | 报警延时    | 0.00-600.00    | 0.5   | s  |
|  |        | 脱扣延时    | 0.00-600.00    | 0.5   | s  |
|  |        | 报警使能    | 禁止/允许          | 禁止    | -  |
|  |        | 脱扣使能    | 禁止/允许          | 允许    | -  |
|  | 过功率    | 报警阈值    | 100-200        | 110   | %  |
|  |        | 脱扣阈值    | 100-200        | 120   | %  |
|  |        | 报警延时    | 0.00-600.00    | 5     | s  |
|  |        | 脱扣延时    | 0.00-600.00    | 5     | s  |
|  |        | 返回系数    | 5-50           | 5     | %  |
|  |        | 报警使能    | 禁止/允许          | 禁止    | -  |
|  |        | 脱扣使能    | 禁止/允许          | 禁止    | -  |
|  | 欠功率    | 报警阈值    | 10-95          | 80    | %  |
|  |        | 脱扣阈值    | 10-95          | 90    | %  |
|  |        | 报警延时    | 0.00-600.00    | 5     | s  |
|  |        | 脱扣延时    | 0.00-600.00    | 5     | s  |
|  |        | 返回系数    | 5-50           | 5     | %  |
|  |        | 报警使能    | 禁止/允许          | 禁止    | -  |
|  |        | 脱扣使能    | 禁止/允许          | 禁止    | -  |
|  | 相序     | 报警阈值    | 120-240        | 130   | °  |
|  |        | 脱扣阈值    | 120-240        | 130   | °  |
|  |        | 报警延时    | 0.00-600.00    | 0.5   | s  |
|  |        | 脱扣延时    | 0.00-600.00    | 0.5   | s  |
|  |        | 返回系数    | 5-50           | 5%    | %  |
|  |        | 报警使能    | 禁止/允许          | 禁止    | -  |
|  |        | 脱扣使能    | 禁止/允许          | 允许    | -  |
|  | 运行时间   | 报警阈值    | 1-50000        | 10000 | h  |
|  |        | 报警使能    | 禁止/允许          | 禁止    | -  |
|  | 故障次数   | 故障次数    | 1-50000        | 1000  | 次  |
|  |        | 报警使能    | 禁止/允许          | 禁止    | -  |
|  | 内部故障   | 报警使能    | 禁止/允许          | 禁止    | -  |
|  |        | 脱扣使能    | 禁止/允许          | 禁止    | -  |
|  | 控制回路异常 | 脱扣延时    | 0.00-600.00    | 1.00  | s  |
|  |        | 脱扣使能    | 禁止/允许          | 禁止    | -  |
|  | PT 断线  | 报警延时    | 0.00-600.00    | 0.1   | s  |
|  |        | 脱扣延时    | 0.00-600.00    | 0.1   | s  |
|  |        | 报警使能    | 禁止/允许          | 禁止    | -  |
|  |        | 脱扣使能    | 禁止/允许          | 禁止    | -  |
|  | 温度保护   | 分组 1 过温 | 报警阈值：0.0-120.0 | 60.0  | °C |
|  |        |         | 脱扣阈值：0.0-120.0 | 80.0  | °C |
|  |        |         | 返回系数：0.0-10.0  | 5.0   | °C |

|       |       |                     |                                                                                                       |       |   |
|-------|-------|---------------------|-------------------------------------------------------------------------------------------------------|-------|---|
|       |       |                     | 复位方式：手动/自动                                                                                            | 手动    | - |
|       |       |                     | 报警：禁止/允许                                                                                              | 禁止    | - |
|       |       |                     | 脱扣：禁止/允许                                                                                              | 禁止    | - |
|       |       | 分组 2 过温-<br>分组 6 过温 | 同上                                                                                                    | -     | - |
|       |       | 温度传感器故障             | 复位方式：手动/自动                                                                                            | 手动    | - |
|       |       |                     | 报警：禁止/允许                                                                                              | 禁止    | - |
|       |       |                     | 脱扣：禁止/允许                                                                                              | 禁止    | - |
| 节点测温  | 有线测温  | 传感器类型               | PT100、PT1000、NTC                                                                                      | PT100 | - |
|       |       | 通道使能                | 禁止/允许                                                                                                 | 禁止    | - |
|       |       | 分组选择                | 0-6                                                                                                   | 0     | - |
|       |       | 温度查询                | -                                                                                                     | -     | - |
|       | 无线测温  | ID 设置               | 0000-ffff                                                                                             | 0000  | - |
|       |       | 传感器投入               | 禁止/允许                                                                                                 | 禁止    | - |
|       |       | 分组选择                | 0-6                                                                                                   | 0     | - |
|       |       | 温度查询                | -                                                                                                     | -     | - |
| 可编程设置 | DI 设置 | DI1                 | 类型：常开/常闭                                                                                              | 常开    | - |
|       |       |                     | 定义：普通 DI、断路器状态、本地分闸、本地合闸、远程分闸、远程合闸、联动 1、联动 2、联动 3、复位                                                  | 断路器状态 | - |
|       |       | DI2                 | 同 DI1                                                                                                 | 本地合闸  | - |
|       |       | DI3                 |                                                                                                       | 本地分闸  | - |
|       |       | DI4                 |                                                                                                       | 复位    | - |
|       |       | DI5-DI14            |                                                                                                       | 普通 DI | - |
|       | DO 设置 | DO1                 | 类型：常开/常闭                                                                                              | 常开    |   |
|       |       |                     | 定义：普通 DO、分闸输出、合闸输出、故障输出、报警输出、逻辑图 1 输出、逻辑图 2 输出、逻辑图 3 输出、测温报警输出、测温脱扣输出、装置自检输出、装置电源输出、DI1-DI14 控制 DO 输出 | 合闸输出  | - |
|       |       |                     | 脉冲时间：0.0-25.0<br>(0-电平输出，0.1-25.0 脉冲输出)                                                               | 2.0   | s |
|       |       |                     | 报警输出：开/关                                                                                              | 开     | - |
|       |       |                     | 脱扣输出：开/关                                                                                              | 开     | - |
|       |       | DO2                 | 类型：常开/常闭                                                                                              | 常开    | - |
|       |       |                     | 定义：同 DO1                                                                                              | 分闸输出  | - |
|       |       |                     | 脉冲时间：0.0-25.0                                                                                         | 2.0   | s |

|  |       |               |                                                                                                                                                                                                                                                                                                                                                          |          |    |
|--|-------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|----|
|  |       |               | 报警输出：开/关                                                                                                                                                                                                                                                                                                                                                 | 开        | -  |
|  |       |               | 脱扣输出：开/关                                                                                                                                                                                                                                                                                                                                                 | 开        | -  |
|  |       | DO3           | 类型：常开/常闭                                                                                                                                                                                                                                                                                                                                                 | 常开       | -  |
|  |       |               | 定义：同 DO1                                                                                                                                                                                                                                                                                                                                                 | 故障输出     | -  |
|  |       |               | 脉冲时间：0.0-25.0                                                                                                                                                                                                                                                                                                                                            | 0.0      | s  |
|  |       |               | 报警输出：开/关                                                                                                                                                                                                                                                                                                                                                 | 开        | -  |
|  |       |               | 脱扣输出：开/关                                                                                                                                                                                                                                                                                                                                                 | 开        | -  |
|  |       |               | DO4                                                                                                                                                                                                                                                                                                                                                      | 类型：常开/常闭 | 常开 |
|  |       | 定义：同 DO1      |                                                                                                                                                                                                                                                                                                                                                          | 报警输出     | -  |
|  |       | 脉冲时间：0.0-25.0 |                                                                                                                                                                                                                                                                                                                                                          | 0.0      | s  |
|  |       | 报警输出：开/关      |                                                                                                                                                                                                                                                                                                                                                          | 开        | -  |
|  |       | 脱扣输出：开/关      |                                                                                                                                                                                                                                                                                                                                                          | 开        | -  |
|  |       | DO5-DO7       | 类型：常开/常闭                                                                                                                                                                                                                                                                                                                                                 | 常开       | -  |
|  |       |               | 定义：同 DO1                                                                                                                                                                                                                                                                                                                                                 | 普通 DO    | -  |
|  |       |               | 脉冲时间：0.0-25.0                                                                                                                                                                                                                                                                                                                                            | 0.0      | s  |
|  |       |               | 报警输出：开/关                                                                                                                                                                                                                                                                                                                                                 | 开        | -  |
|  |       |               | 脱扣输出：开/关                                                                                                                                                                                                                                                                                                                                                 | 开        | -  |
|  | 逻辑图设置 | 类型            | A、A*B、A+B、A*B*C、A+B)*C、<br>(A*B)+C、A+B+C、A*B*C*D、<br>(A+B)*C*D、(A*B+C)*D、<br>(A+B+C)*D、A*B*C+D、<br>(A+B)*C+D、A*B+C+D、<br>A+B+C+D、A*B*C*D+E、<br>(A+B)*C*D+E、(A*B+C)*D+E、<br>(A+B+C)*D+E、(A*B*C+D)*E、<br>((A+B)*C+D)*E、<br>(A*B+C+D)*E、(A+B+C+D)*E、<br>A*B*C*D+E、(A+B)*C*D+E、<br>(A*B+C)*D+E、(A+B+C)*D+E、<br>A*B*C+D+E、(A+B)*C+D+E、<br>A*B+C+D+E、A+B+C+D+E | A        | -  |
|  |       | 输入            | 无、DI1-DI14、DO1-DO7、分闸<br>动作、合闸动作、分闸状态、合<br>闸状态、总报警输出、各项报警<br>输出、总脱扣输出、各项脱扣输<br>出                                                                                                                                                                                                                                                                         | DI1      | -  |
|  |       | 逻辑            | 正逻辑/反逻辑                                                                                                                                                                                                                                                                                                                                                  | 正逻辑      | -  |
|  |       | 延时            | 0.0-60.0                                                                                                                                                                                                                                                                                                                                                 | 0.0      | s  |
|  |       | Test          | DO1-7 测试                                                                                                                                                                                                                                                                                                                                                 | 开/关      | 关  |

Table 16 Function menu Settings

| primary menu           | function      | class                              | Set the scope                               | Windows default          | unit |
|------------------------|---------------|------------------------------------|---------------------------------------------|--------------------------|------|
| Communication Settings | Modbus Rtu    | Address 1                          | 1-247                                       | 1                        | -    |
|                        |               | Porter rate 1                      | 1200-38400                                  | 9600                     | bps  |
|                        |               | Check byte 1                       | None、2 Stop、Odd、Even                        | None                     | -    |
|                        |               | Address 2                          | 1-247                                       | 1                        | -    |
|                        |               | Porter rate 2                      | 1200-38400                                  | 9600                     | bps  |
|                        |               | Check byte 2                       | None、2 Stop、Odd、Even                        | None                     | -    |
|                        | 4G/Tcpip      | FS                                 | 4G Madter、4G Exchange、Modbus Tcp、Tcp Master | 4G Master                | -    |
|                        |               | IP                                 | 0.0.0.0-255.255.255.255                     | 192.168.1.10             | -    |
|                        |               | Mask                               | 0.0.0.0-255.255.255.255                     | 255.255.255.0            | -    |
|                        |               | Gate                               | 0.0.0.0-255.255.255.255                     | 192.168.1.1              | -    |
|                        |               | Port                               | 0-65535                                     | 502                      | -    |
|                        |               | Dhcp                               | Off、On                                      | Off                      | -    |
|                        |               | Master Server Ip                   | 0.0.0.0-255.255.255.255                     | 47.96.11.156             | -    |
|                        |               | Master server, Port                | 0-65535                                     | 20071                    | -    |
|                        |               | Opening and closing code to enable | Off/On                                      | On                       | -    |
|                        |               | Switch-on control code             | 0-99999999                                  | 99999999                 | -    |
|                        |               | Ip / domain name selection         | IP/ realm name                              | realm name               | -    |
|                        | Profibus      | Addr1                              | 1-247                                       | 1                        | -    |
|                        |               | Addr2                              | 1-247                                       | 1                        | -    |
|                        | Lora          | functional switch                  | Open, close                                 | close                    |      |
|                        |               | work pattern                       | Through transmission, test                  | unvarnished transmission |      |
|                        |               | device address                     | 1-247                                       | 1                        |      |
|                        |               | Communication frequency band       | 0-91                                        | 5                        |      |
|                        |               | flare factor                       | 6-12                                        | 9                        |      |
|                        |               | signal bandwidth                   | 0-45                                        | 9                        |      |
| system parameter       | rated current | 1A                                 | 0.1-6300                                    | 1                        | A    |
|                        |               | 5A                                 | 0.5-6300                                    | 5                        | A    |
|                        |               | 25A                                | 6-25                                        | 25                       | A    |
|                        |               | 100A                               | 25-100                                      | 100                      | A    |
|                        | rated voltage | -                                  | 0-2000                                      | 380                      | V    |

|  |                                                   |                                               |                                                                         |                      |    |
|--|---------------------------------------------------|-----------------------------------------------|-------------------------------------------------------------------------|----------------------|----|
|  | power rating                                      | -                                             | 0.1-999.99                                                              | 0.1                  | kW |
|  | rated frequency                                   | -                                             | 40-70                                                                   | 50                   | Hz |
|  | mode of connection                                | -                                             | 1P2L、3P4L、3P3L/3CT、3P3L/2CT                                             | 3P4L                 | -  |
|  | Main body three-phase CT                          | -                                             | 1-2000                                                                  | 1                    | -  |
|  | Main body zero line CT                            | -                                             | 1-2000                                                                  | 1                    | -  |
|  | Measurement of three-phase CT                     | -                                             | 1-2000                                                                  | 1                    | -  |
|  | Protect the choice                                | -                                             | Full wave value / base wave value                                       | Full wave value      | -  |
|  | Transform Settings                                | Type 1                                        | Ia, Ib, Ic, Iav, In, Uab, Ub, Ubc, Uca, Uav, heat capacity, P, and Freq | Ia                   | -  |
|  |                                                   | Full value 1                                  | -                                                                       | Two times Ie         | A  |
|  |                                                   | Type 2                                        | Same type 1                                                             | -                    | -  |
|  |                                                   | Full value 2                                  |                                                                         |                      |    |
|  | language selection                                | -                                             | Chinese / English                                                       | the Chinese language | -  |
|  | password                                          | -                                             | 1-9999                                                                  | 1                    | -  |
|  | Time setting                                      | -                                             | 20xx-xx-xx<br>xx:xx:xx                                                  | -                    | -  |
|  | Main interface index                              | -                                             | 1-6                                                                     | -                    | -  |
|  | Temporary voltage rise and temporary drop setting | Temporary rise threshold                      | 112-150                                                                 |                      | %  |
|  |                                                   | Temporarily drop threshold                    | 50-90                                                                   |                      | %  |
|  |                                                   | Temporary rise recovery threshold             | 0-150                                                                   |                      | %  |
|  |                                                   | The recovery threshold is temporarily lowered | 50-90                                                                   |                      | %  |
|  | software release                                  | main body                                     | xxxx-V1.x.x                                                             | -                    | -  |
|  |                                                   | calculate                                     | -                                                                       | -                    | -  |
|  |                                                   | thermometric                                  | -                                                                       | -                    | -  |
|  |                                                   | switching value                               | -                                                                       | -                    | -  |
|  |                                                   | Communication module                          | -                                                                       | -                    | -  |
|  |                                                   | Main body switch quantity type                | -                                                                       | -                    | -  |

|                     |                         |                                      |                                                                                                  |              |     |
|---------------------|-------------------------|--------------------------------------|--------------------------------------------------------------------------------------------------|--------------|-----|
|                     |                         | Module switch quantity type          | -                                                                                                | -            | -   |
|                     | Reply to the factory    | -                                    | Yes / no                                                                                         | deny         | -   |
|                     | functional switch       | Measurement module                   | Open / close                                                                                     | close        | -   |
|                     |                         | Temperature measurement module       | Open / close                                                                                     | close        | -   |
|                     |                         | Switch volume module                 | Open / close                                                                                     | close        | -   |
|                     |                         | Communication module                 | Open / close                                                                                     | close        | -   |
|                     |                         | Fault recording wave                 | Open / close                                                                                     | close        | -   |
|                     |                         | Harmonic function                    | Open / close                                                                                     | close        | -   |
| Control permissions | authority               | -                                    | Full control, maintenance, panel, local, remote, communication, two choose one, three choose one | Full control | -   |
| Protection Settings | Over current protection | A fixed time limit for overflow      | Alarm threshold: 10-800                                                                          | 110          | %   |
|                     |                         |                                      | Withdraw threshold: 10-800                                                                       | 120          | %   |
|                     |                         |                                      | Alarm delay: 0.00-600.00                                                                         | 10           | s   |
|                     |                         |                                      | Delay delay: 0.00-600.00                                                                         | 10           | s   |
|                     |                         |                                      | Return factor: 5-50                                                                              | 5            | s   |
|                     |                         |                                      | Alarm: prohibyted / allowed                                                                      | permit       | -   |
|                     |                         |                                      | Withhold: prohibyted / allowed                                                                   | permit       | -   |
|                     |                         | Two-section set time limit over-flow | Alarm threshold: 10-800                                                                          | 160          | %   |
|                     |                         |                                      | Withdraw threshold: 10-800                                                                       | 200          | %   |
|                     |                         |                                      | Alarm delay: 0.00-600.00                                                                         | 5            | %   |
|                     |                         |                                      | Delay delay: 0.00-600.00                                                                         | 5            | s   |
|                     |                         |                                      | Return factor: 5-50                                                                              | 5            | s   |
|                     |                         |                                      | Alarm: prohibyted / allowed                                                                      | permit       | -   |
|                     |                         |                                      | Withhold: prohibyted / allowed                                                                   | permit       | -   |
|                     |                         | Three set time limit over flow       | Alarm threshold: 10-800                                                                          | 250          | %   |
|                     |                         |                                      | Withdraw threshold: 10-800                                                                       | 300          | %   |
|                     |                         |                                      | Alarm delay: 0.00-600.00                                                                         | 2            | s   |
|                     |                         |                                      | Delay delay: 0.00-600.00                                                                         | 2            | s   |
|                     |                         |                                      | Return factor: 5-50                                                                              | 5            | s   |
|                     |                         |                                      | Alarm: prohibyted / allowed                                                                      | permit       | -   |
|                     |                         |                                      | Withhold: prohibyted / allowed                                                                   | permit       | -   |
|                     |                         | Reverse time limit                   | Protective curve: IEC1, IEC2, IEC3, CO2, CO8, IEEE 1, IEEE 2, IEEE 3                             | IEC1         | -   |
|                     |                         |                                      | Cooling time: 0-30                                                                               | 5            | min |

|  |                             |                                                 |                                    |               |     |
|--|-----------------------------|-------------------------------------------------|------------------------------------|---------------|-----|
|  |                             |                                                 | Time factor: 0.025-1.500           | 1.000         | s   |
|  |                             |                                                 | Reset coefficient: 0.025-3.200     | 1.000         | s   |
|  |                             |                                                 | Alarm threshold: 10-800            | 85            | %   |
|  |                             |                                                 | Withdraw threshold: 10-800         | 100           | %   |
|  |                             |                                                 | Reset mode: manual / automatic     | hand movement | -   |
|  |                             |                                                 | Alarm: prohibyted / allowed        | permit        | -   |
|  |                             |                                                 | Withhold: prohibyted / allowed     | permit        | -   |
|  | sequence current protection | A fixed time limit with a zero-order period     | Alarm threshold: 10-800            | 20            | %   |
|  |                             |                                                 | Withdraw threshold: 10-800         | 30            | %   |
|  |                             |                                                 | Alarm delay: 0.00-600.00           | 0.5           | s   |
|  |                             |                                                 | Delay delay: 0.00-600.00           | 0.5           | s   |
|  |                             |                                                 | Return factor: 5-50                | 5             | s   |
|  |                             |                                                 | Alarm: prohibyted / allowed        | permit        | -   |
|  |                             |                                                 | Withhold: prohibyted / allowed     | permit        | -   |
|  |                             | Two paragraphs set time limit zero order        | Alarm threshold: 10-800            | 40            | %   |
|  |                             |                                                 | Withdraw threshold: 10-800         | 60            | %   |
|  |                             |                                                 | Alarm delay: 0.00-600.00           | 0.5           | %   |
|  |                             |                                                 | Delay delay: 0.00-600.00           | 0.5           | s   |
|  |                             |                                                 | Return factor: 5-50                | 5             | s   |
|  |                             |                                                 | Alarm: prohibyted / allowed        | permit        | -   |
|  |                             |                                                 | Withhold: prohibyted / allowed     | permit        | -   |
|  |                             | Three sections of set time limit and zero order | Alarm threshold: 10-800            | 70            | %   |
|  |                             |                                                 | Withdraw threshold: 10-800         | 85            | %   |
|  |                             |                                                 | Alarm delay: 0.00-600.00           | 0.5           | s   |
|  |                             |                                                 | Delay delay: 0.00-600.00           | 0.5           | s   |
|  |                             |                                                 | Return factor: 5-50                | 5             | s   |
|  |                             |                                                 | Alarm: prohibyted / allowed        | permit        | -   |
|  |                             |                                                 | Withhold: prohibyted / allowed     | permit        | -   |
|  |                             | The reverse time limit is zero                  | Protective curve: IEC1, IEC2, IEC3 | IEC1          | -   |
|  |                             |                                                 | Cooling time: 0-30                 | 5             | min |
|  |                             |                                                 | Time factor: 0.025-1.500           | 1.000         | s   |
|  |                             |                                                 | Alarm threshold: 10-800            | 20            | %   |
|  |                             |                                                 | Withdraw threshold: 10-800         | 50            | %   |
|  |                             |                                                 | Reset mode: manual / automatic     | voluntarily   | -   |
|  |                             |                                                 | Alarm: prohibyted / allowed        | permit        | -   |
|  |                             |                                                 | Withhold: prohibyted / allowed     | permit        | -   |
|  | negative-sequence current   | A negative order current                        | Alarm threshold: 10-100            | 20            | %   |
|  |                             |                                                 | Withdraw threshold: 10-100         | 30            | %   |
|  |                             |                                                 | Alarm delay: 0.00-600.00           | 5.0           | s   |
|  |                             |                                                 | Delay delay: 0.00-600.00           | 5.0           | s   |
|  |                             |                                                 | Return factor: 5-50                | 5             | s   |
|  |                             |                                                 | Alarm: prohibyted / allowed        | prohibyte     | -   |
|  |                             |                                                 | Withhold: prohibyted / allowed     | prohibyte     | -   |
|  |                             | Negative                                        | Alarm threshold: 10-100            | 40            | %   |

|  |                      |                                                 |                                |           |     |
|--|----------------------|-------------------------------------------------|--------------------------------|-----------|-----|
|  |                      | sequence<br>current of the<br>second<br>segment | Withdraw threshold: 10-100     | 60        | %   |
|  |                      |                                                 | Alarm delay: 0.00-600.00       | 5.0       | %   |
|  |                      |                                                 | Delay delay: 0.00-600.00       | 5.0       | s   |
|  |                      |                                                 | Return factor: 5-50            | 5         | s   |
|  |                      |                                                 | Alarm: prohibyted / allowed    | prohibyte | -   |
|  |                      |                                                 | Withhold: prohibyted / allowed | prohibyte | -   |
|  | Zero line current    | Alarm<br>threshold                              | 0-5000                         | 100       | %   |
|  |                      | Debuckle<br>threshold                           | 0-5000                         | 80        | %   |
|  |                      | Alarm delay                                     | 0.00-600.00                    | 5         | s   |
|  |                      | Debuckle<br>delay                               | 0.00-600.00                    | 5         | s   |
|  |                      | drop-off to<br>pick-up ratio                    | 5-50                           | 5         | %   |
|  |                      | Alarm<br>enabling                               | Prohibyted / Allowed           | prohibyte | -   |
|  |                      | Unbuckle<br>enabling                            | Prohibyted / Allowed           | prohibyte | -   |
|  | Current<br>imbalance | Alarm<br>threshold                              | 10-100                         | 20        | %   |
|  |                      | Debuckle<br>threshold                           | 10-100                         | 30        | %   |
|  |                      | Alarm delay                                     | 0.00-600.00                    | 5         | s   |
|  |                      | Debuckle<br>delay                               | 0.00-600.00                    | 5         | s   |
|  |                      | drop-off to<br>pick-up ratio                    | 5-50                           | 5         | %   |
|  |                      | Alarm<br>enabling                               | Prohibyted / Allowed           | prohibyte | -   |
|  |                      | Unbuckle<br>enabling                            | Prohibyted / Allowed           | prohibyte | -   |
|  | current demand       | Alarm<br>threshold                              | 10-800                         | 110       | %   |
|  |                      | Debuckle<br>threshold                           | 10-800                         | 120       | %   |
|  |                      | Alarm delay                                     | 1-25                           | 5         | min |
|  |                      | Debuckle<br>delay                               | 1-25                           | 5         | min |
|  |                      | drop-off to<br>pick-up ratio                    | 5-50                           | 5         | %   |
|  |                      | Demand width                                    | 1、2、3、5                        | 1         | min |
|  |                      | Demand<br>period                                | 5、10、15、30、60                  | 5         | min |
|  |                      | Alarm<br>enabling                               | Prohibyted / Allowed           | permit    | -   |

|  |                        |                           |                                 |           |    |
|--|------------------------|---------------------------|---------------------------------|-----------|----|
|  |                        | Unbuckle enabling         | Prohibyteed / Allowed           | permit    | -  |
|  | leakage of electricity | Alarm threshold           | 30-1000                         | 80        | mA |
|  |                        | Debuckle threshold        | 30-1000                         | 100       | mA |
|  |                        | Alarm delay               | 0.00-600.00                     | 5         | s  |
|  |                        | Debuckle delay            | 0.00-600.00                     | 5         | s  |
|  |                        | drop-off to pick-up ratio | 5-50                            | 5         | %  |
|  |                        | Alarm enabling            | Prohibyteed / Allowed           | permit    | -  |
|  |                        | Unbuckle enabling         | Prohibyteed / Allowed           | permit    | -  |
|  | under load             | Alarm threshold           | 10-95                           | 80        | %  |
|  |                        | Debuckle threshold        | 10-95                           | 90        | %  |
|  |                        | Alarm delay               | 0.00-600.00                     | 5         | s  |
|  |                        | Debuckle delay            | 0.00-600.00                     | 5         | s  |
|  |                        | drop-off to pick-up ratio | 5-50                            | 5         | %  |
|  |                        | Alarm enabling            | Prohibyteed / Allowed           | prohibyte | -  |
|  |                        | Unbuckle enabling         | Prohibyteed / Allowed           | prohibyte | -  |
|  | short                  | Alarm threshold           | 10-800                          | 400       | %  |
|  |                        | Debuckle threshold        | 10-800                          | 500       | %  |
|  |                        | Alarm delay               | 0.00-600.00                     | 0.5       | s  |
|  |                        | Debuckle delay            | 0.00-600.00                     | 0.5       | s  |
|  |                        | drop-off to pick-up ratio | 5-50                            | 5         | %  |
|  |                        | Alarm enabling            | Prohibyteed / Allowed           | prohibyte | -  |
|  |                        | Unbuckle enabling         | Prohibyteed / Allowed           | prohibyte | -  |
|  | Linkage protection     | Linkage 1                 | Alarm delay: 0.06-600.00        | 5.00      | s  |
|  |                        |                           | Delay delay: 0.06-600.00        | 5.00      | s  |
|  |                        |                           | Alarm: prohibyteed / allowed    | prohibyte | -  |
|  |                        |                           | Withhold: prohibyteed / allowed | prohibyte | -  |
|  |                        | Linkage 2                 | With linkage 1                  | -         | -  |

|  |                   |                           |                       |           |   |
|--|-------------------|---------------------------|-----------------------|-----------|---|
|  |                   | Linkage 3                 |                       |           |   |
|  | overvoltage       | Alarm threshold           | 110-150               | 110       | % |
|  |                   | Debuckle threshold        | 110-150               | 120       | % |
|  |                   | Alarm delay               | 0.00-600.00           | 5         | s |
|  |                   | Debuckle delay            | 0.00-600.00           | 5         | s |
|  |                   | drop-off to pick-up ratio | 5-50                  | 5         | % |
|  |                   | Alarm enabling            | Prohibyteed / Allowed | permit    | - |
|  |                   | Unbuckle enabling         | Prohibyteed / Allowed | permit    | - |
|  | undertension      | Alarm threshold           | 45-90                 | 80        | % |
|  |                   | Debuckle threshold        | 45-90                 | 90        | % |
|  |                   | Alarm delay               | 0.00-600.00           | 5         | s |
|  |                   | Debuckle delay            | 0.00-600.00           | 5         | s |
|  |                   | drop-off to pick-up ratio | 5-50                  | 5         | % |
|  |                   | Alarm enabling            | Prohibyteed / Allowed | prohibyte | - |
|  |                   | Unbuckle enabling         | Prohibyteed / Allowed | prohibyte | - |
|  | Voltage imbalance | Alarm threshold           | 10-100                | 20        | % |
|  |                   | Debuckle threshold        | 10-100                | 30        | % |
|  |                   | Alarm delay               | 0.00-600.00           | 5         | s |
|  |                   | Debuckle delay            | 0.00-600.00           | 5         | s |
|  |                   | drop-off to pick-up ratio | 5-50                  | 5         | % |
|  |                   | Alarm enabling            | Prohibyteed / Allowed | prohibyte | - |
|  |                   | Unbuckle enabling         | Prohibyteed / Allowed | prohibyte | - |
|  | loss of phase     | Alarm delay               | 0.00-600.00           | 0.5       | s |
|  |                   | Debuckle delay            | 0.00-600.00           | 0.5       | s |
|  |                   | Alarm enabling            | Prohibyteed / Allowed | prohibyte | - |
|  |                   | Unbuckle                  | Prohibyteed / Allowed | permit    | - |

|  |                    |                           |                       |           |       |
|--|--------------------|---------------------------|-----------------------|-----------|-------|
|  |                    | enabling                  |                       |           |       |
|  | Over power         | Alarm threshold           | 100-200               | 110       | %     |
|  |                    | Debuckle threshold        | 100-200               | 120       | %     |
|  |                    | Alarm delay               | 0.00-600.00           | 5         | s     |
|  |                    | Debuckle delay            | 0.00-600.00           | 5         | s     |
|  |                    | drop-off to pick-up ratio | 5-50                  | 5         | %     |
|  |                    | Alarm enabling            | Prohibyteed / Allowed | prohibyte | -     |
|  |                    | Unbuckle enabling         | Prohibyteed / Allowed | prohibyte | -     |
|  | Overpower          | Alarm threshold           | 10-95                 | 80        | %     |
|  |                    | Debuckle threshold        | 10-95                 | 90        | %     |
|  |                    | Alarm delay               | 0.00-600.00           | 5         | s     |
|  |                    | Debuckle delay            | 0.00-600.00           | 5         | s     |
|  |                    | drop-off to pick-up ratio | 5-50                  | 5         | %     |
|  |                    | Alarm enabling            | Prohibyteed / Allowed | prohibyte | -     |
|  |                    | Unbuckle enabling         | Prohibyteed / Allowed | prohibyte | -     |
|  | phase sequence     | Alarm threshold           | 120-240               | 130       | °     |
|  |                    | Debuckle threshold        | 120-240               | 130       | °     |
|  |                    | Alarm delay               | 0.00-600.00           | 0.5       | s     |
|  |                    | Debuckle delay            | 0.00-600.00           | 0.5       | s     |
|  |                    | drop-off to pick-up ratio | 5-50                  | 5%        | %     |
|  |                    | Alarm enabling            | Prohibyteed / Allowed | prohibyte | -     |
|  |                    | Unbuckle enabling         | Prohibyteed / Allowed | permit    | -     |
|  | performance period | Alarm threshold           | 1-50000               | 10000     | h     |
|  |                    | Alarm enabling            | Prohibyteed / Allowed | prohibyte | -     |
|  | Number of failures | Number of failures        | 1-50000               | 1000      | Times |

|                              |                                  |                                                    |                                 |               |    |
|------------------------------|----------------------------------|----------------------------------------------------|---------------------------------|---------------|----|
|                              |                                  | Alarm enabling                                     | Prohibyteed / Allowed           | prohibyte     | -  |
|                              | internal fault                   | Alarm enabling                                     | Prohibyteed / Allowed           | prohibyte     | -  |
|                              |                                  | Unbuckle enabling                                  | Prohibyteed / Allowed           | prohibyte     | -  |
|                              | Control loop anomaly             | Debuckle delay                                     | 0.00-600.00                     | 1.00          | s  |
|                              |                                  | Unbuckle enabling                                  | Prohibyteed / Allowed           | prohibyte     | -  |
|                              | PT breakage                      | Alarm delay                                        | 0.00-600.00                     | 0.1           | s  |
|                              |                                  | Debuckle delay                                     | 0.00-600.00                     | 0.1           | s  |
|                              |                                  | Alarm enabling                                     | Prohibyteed / Allowed           | prohibyte     | -  |
|                              |                                  | Unbuckle enabling                                  | Prohibyteed / Allowed           | prohibyte     | -  |
|                              | Temperature protection           | Group 1 over temperature                           | Alarm threshold: 0.0-120.0      | 60.0          | °C |
|                              |                                  |                                                    | Withdraw threshold: 0.0-120.0   | 80.0          | °C |
|                              |                                  |                                                    | Return factor: 0.0-10.0         | 5.0           | °C |
|                              |                                  |                                                    | Reset mode: manual / automatic  | hand movement | -  |
|                              |                                  |                                                    | Alarm: prohibyteed / allowed    | prohibyte     | -  |
|                              |                                  |                                                    | Withhold: prohibyteed / allowed | prohibyte     | -  |
|                              |                                  | Group 2 overtemperature-re-group 6 overtemperature | ditto                           | -             | -  |
|                              |                                  | Temperature sensor fault                           | Reset mode: manual / automatic  | hand movement | -  |
|                              |                                  |                                                    | Alarm: prohibyteed / allowed    | prohibyte     | -  |
|                              |                                  |                                                    | Withhold: prohibyteed / allowed | prohibyte     | -  |
| Node temperature measurement | Wired temperature measurement    | Sensor type                                        | PT100、PT1000、NTC                | PT100         | -  |
|                              |                                  | Channel enabling                                   | Prohibyteed / Allowed           | prohibyte     | -  |
|                              |                                  | Group selection                                    | 0-6                             | 0             | -  |
|                              |                                  | Temperature query                                  | -                               | -             | -  |
|                              | Wireless temperature measurement | ID set up                                          | 0000-ffff                       | 0000          | -  |
|                              |                                  | Sensor input                                       | Prohibyteed / Allowed           | prohibyte     | -  |
|                              |                                  | Group selection                                    | 0-6                             | 0             | -  |
|                              |                                  | Temperature query                                  | -                               | -             | -  |

|                          |                                                                                                                                                                                                                                                                     |                              |                                                                                                                                                           |                        |     |
|--------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----|
| Programmable<br>Settings | DI set up                                                                                                                                                                                                                                                           | DI1                          | Type: normally open / closed                                                                                                                              | normally open          | -   |
|                          |                                                                                                                                                                                                                                                                     |                              | Definition: ordinary DI, circuit breaker status, local switching, local closing, remote switching, remote closing, linkage 1, linkage 2, linkage 3, reset | Circuit breaker status | -   |
|                          |                                                                                                                                                                                                                                                                     | DI2                          | The same DI1                                                                                                                                              | Local closing          | -   |
|                          |                                                                                                                                                                                                                                                                     | DI3                          |                                                                                                                                                           | Local separation       | -   |
|                          |                                                                                                                                                                                                                                                                     | DI4                          |                                                                                                                                                           | reset                  | -   |
|                          |                                                                                                                                                                                                                                                                     | DI5-DI14                     |                                                                                                                                                           | common DI              | -   |
|                          |                                                                                                                                                                                                                                                                     |                              |                                                                                                                                                           | DO set up              | DO1 |
|                          | Definition: ordinary DO, switch output, closing output, fault output, alarm output, logic diagram 2 output, logic diagram 3 output, temperature alarm output, temperature tripping output, device self-test output, device power output, DI1-DI14 control DO output | Switch output                | -                                                                                                                                                         |                        |     |
|                          | Pulse time: 0.0-25.0 (0-level output, 0.1-25.0 pulse output)                                                                                                                                                                                                        | 2.0                          | s                                                                                                                                                         |                        |     |
|                          | Alarm output: on / off                                                                                                                                                                                                                                              | open                         | -                                                                                                                                                         |                        |     |
|                          | Untrip output: on / off                                                                                                                                                                                                                                             | open                         | -                                                                                                                                                         |                        |     |
|                          | DO2                                                                                                                                                                                                                                                                 | Type: normally open / closed | normally open                                                                                                                                             |                        |     |
|                          |                                                                                                                                                                                                                                                                     | Definition: the same as DO 1 | Switch output                                                                                                                                             |                        | -   |
|                          |                                                                                                                                                                                                                                                                     | Pulse time: 0.0-25.0         | 2.0                                                                                                                                                       |                        | s   |
|                          |                                                                                                                                                                                                                                                                     | Alarm output: on / off       | open                                                                                                                                                      |                        | -   |
|                          |                                                                                                                                                                                                                                                                     | Untrip output: on / off      | open                                                                                                                                                      |                        | -   |
|                          | DO3                                                                                                                                                                                                                                                                 | Type: normally open / closed | normally open                                                                                                                                             |                        | -   |
|                          |                                                                                                                                                                                                                                                                     | Definition: the same as DO 1 | Failure output                                                                                                                                            |                        | -   |
|                          |                                                                                                                                                                                                                                                                     | Pulse time: 0.0-25.0         | 0.0                                                                                                                                                       |                        | s   |
|                          |                                                                                                                                                                                                                                                                     | Alarm output: on / off       | open                                                                                                                                                      |                        | -   |
|                          |                                                                                                                                                                                                                                                                     | Untrip output: on / off      | open                                                                                                                                                      |                        | -   |
|                          | DO4                                                                                                                                                                                                                                                                 | Type: normally open / closed | normally open                                                                                                                                             |                        | -   |
|                          |                                                                                                                                                                                                                                                                     | Definition: the same as DO 1 | Alarm output                                                                                                                                              |                        | -   |

|  |                       |                 |                                                                                                                                                                                                                                                                                                                                                          |                |   |
|--|-----------------------|-----------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|---|
|  |                       |                 | Pulse time: 0.0-25.0                                                                                                                                                                                                                                                                                                                                     | 0.0            | s |
|  |                       |                 | Alarm output: on / off                                                                                                                                                                                                                                                                                                                                   | open           | - |
|  |                       |                 | Untrip output: on / off                                                                                                                                                                                                                                                                                                                                  | open           | - |
|  |                       | DO5-DO7         | Type: normally open / closed                                                                                                                                                                                                                                                                                                                             | normally open  | - |
|  |                       |                 | Definition: the same as DO 1                                                                                                                                                                                                                                                                                                                             | common DO      | - |
|  |                       |                 | Pulse time: 0.0-25.0                                                                                                                                                                                                                                                                                                                                     | 0.0            | s |
|  |                       |                 | Alarm output: on / off                                                                                                                                                                                                                                                                                                                                   | open           | - |
|  |                       |                 | Untrip output: on / off                                                                                                                                                                                                                                                                                                                                  | open           | - |
|  | Logic diagram setting | type            | A、A*B、A+B、A*B*C、A+B)*C、<br>(A*B)+C、A+B+C、A*B*C*D、<br>(A+B)*C*D、(A*B+C)*D、<br>(A+B+C)*D、A*B*C+D、<br>(A+B)*C+D、A*B+C+D、<br>A+B+C+D、A*B*C*D+E、<br>(A+B)*C*D+E、(A*B+C)*D+E、<br>(A+B+C)*D+E、(A*B*C+D)*E、<br>((A+B)*C+D)*E、<br>(A*B+C+D)*E、(A+B+C+D)*E、<br>A*B*C*D+E、(A+B)*C*D+E、<br>(A*B+C)*D+E、(A+B+C)*D+E、<br>A*B*C+D+E、(A+B)*C+D+E、<br>A*B+C+D+E、A+B+C+D+E | A              | - |
|  |                       | import          | No, DI1-DI14, DO 1-DO 7,<br>closing action, closing action,<br>closing state, closing state, total<br>alarm output, alarm output, total<br>tripping output, all tripping output                                                                                                                                                                          | DI1            | - |
|  |                       | logic           | Positive logic / inverse logic                                                                                                                                                                                                                                                                                                                           | positive logic | - |
|  |                       | delayed         | 0.0-60.0                                                                                                                                                                                                                                                                                                                                                 | 0.0            | s |
|  | Test                  | The DO 1-7 test | Open / close                                                                                                                                                                                                                                                                                                                                             | close          | - |

### 7.3 操作界面说明 7.3 Operation Interface Description

主界面显示，可通过面板上下键翻页显示，详情见图 4:

The main interface is displayed, which can be displayed through the up and down keys on the panel, as shown in Figure 4 for details:

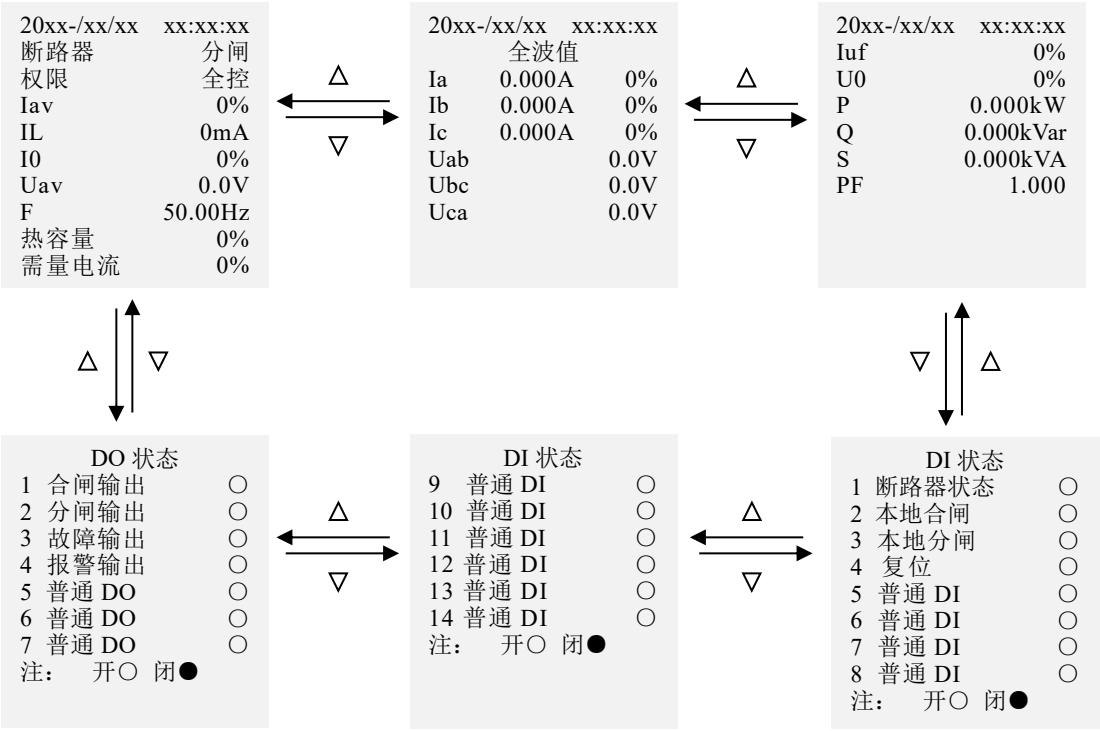


图 4 主界面显示

Figure 4 The main interface Display

主界面按回车进入密码输入界面，按上下键切换输入密码（默认 0001），进入菜单设置界面，详情见图 5:

Press Enter on the main interface to enter the password input interface, press the up and down keys to switch the input password (default 0001), and enter the menu setting interface, see Figure 5 for details:

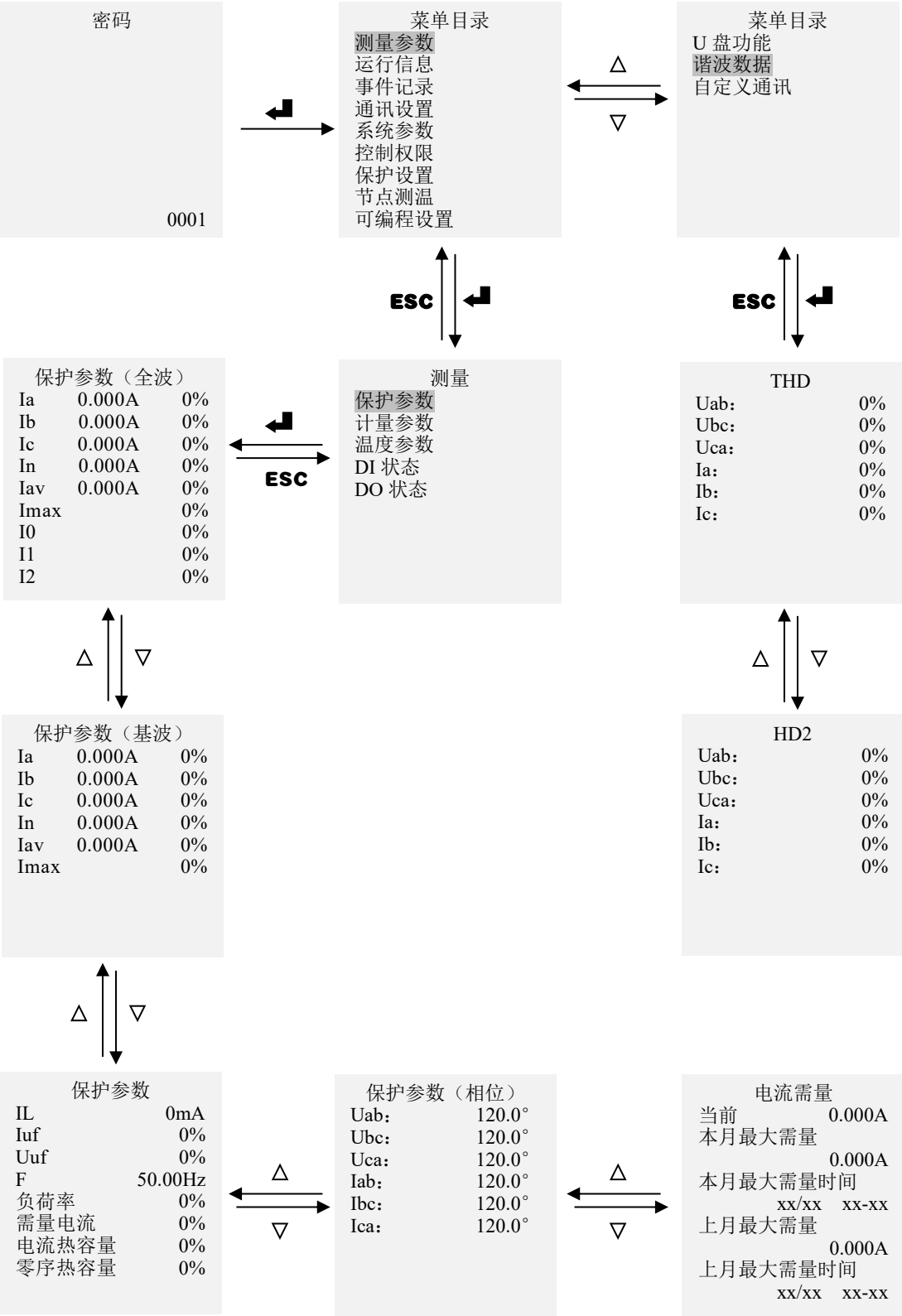


图 5 功能菜单显示

Figure 5 Function menu display

8 通讯设置与说明 8 Communication settings and instructions

通讯协议为标准 Modbus-RTU 协议，数据解析为高字在前，低字在后。

The communication protocol is the standard Modbus-RTU protocol, and the data is analyzed as high word first, low word last.

8.1 测量参数通讯地址 8.1 Measurement parameter communication address

见表 17: Refer to table 17

表 17 测量参数地址表

| 分类            | 地址 | 参数         | 读写属性 | 取值范围                          | 类型   |
|---------------|----|------------|------|-------------------------------|------|
| 保护参数<br>(全波值) | 0  | A 相有效值电流   | R    | 0.001A                        | word |
|               | 1  |            |      |                               | word |
|               | 2  | B 相有效值电流   | R    | 0.001A                        | word |
|               | 3  |            |      |                               | word |
|               | 4  | C 相有效值电流   | R    | 0.001A                        | word |
|               | 5  |            |      |                               | word |
|               | 6  | N 相有效值电流   | R    | 0.001A                        | word |
|               | 7  |            |      |                               | word |
|               | 8  | A 相电压      | R    | 0~999.9V                      | word |
|               | 9  | B 相电压      | R    | 0~999.9V                      | word |
|               | 10 | C 相电压      | R    | 0~999.9V                      | word |
|               | 11 | Uab 有效值线电压 | R    | 0~999.9V                      | word |
|               | 12 | Ubc 有效值线电压 | R    | 0~999.9V                      | word |
|               | 13 | Uca 有效值线电压 | R    | 0~999.9V                      | word |
|               | 14 | 总有功功率      | R    | -2376000 ~ 2376000 (Unit:W)   | word |
|               | 15 |            |      |                               | word |
|               | 16 | 总无功功率      | R    | -2376000 ~ 2376000 (Unit:Var) | word |
|               | 17 |            |      |                               | word |
|               | 18 | 总视在功率      | R    | 0 ~ 2376000 (Unit:VA)         | word |
|               | 19 |            |      |                               | word |
|               | 20 | A 相有功功率    | R    | -792000 ~ 792000 (Unit:W)     | word |
|               | 21 |            | R    |                               | word |
|               | 22 | B 相有功功率    | R    | -792000 ~ 792000 (Unit:W)     | word |
|               | 23 |            |      |                               | word |
|               | 24 | C 相有功功率    | R    | -792000 ~ 792000 (Unit:W)     | word |
|               | 25 |            |      |                               | word |
|               | 26 | A 相无功功率    | R    | -792000 ~ 792000 (Unit:Var)   | word |

|    |            |   |                             |      |
|----|------------|---|-----------------------------|------|
| 27 |            |   |                             | word |
| 28 | B 相无功功率    | R | -792000 ~ 792000 (Unit:Var) | word |
| 29 |            |   |                             | word |
| 30 | C 相无功功率    | R | -792000 ~ 792000 (Unit:Var) | word |
| 31 |            |   |                             | word |
| 32 | A 相视在功率    | R | 0 ~ 2376000 (Unit:VA)       | word |
| 33 |            |   |                             | word |
| 34 | B 相视在功率    | R | 0 ~ 2376000 (Unit:VA)       | word |
| 35 |            |   |                             | word |
| 36 | C 相视在功率    | R | 0 ~ 2376000 (Unit:VA)       | word |
| 37 |            |   |                             | word |
| 38 | 全波功率因数     | R | 0.001                       | word |
| 39 | 全波 A 相功率因数 | R | 0.001                       | word |
| 40 | 全波 B 相功率因数 | R | 0.001                       | word |
| 41 | 全波 C 相功率因数 | R | 0.001                       | word |
| 42 | 频率         | R | 4000-7000, Unit:0.01Hz      | word |
| 43 | 漏电电流       | R | 0-1000mA                    | word |
| 44 | 正序电流百分比    | R | 0-100%                      | word |
| 45 | 负序电流百分比    | R | 0-100%                      | word |
| 46 | 零序电流百分比    | R | 0-100%                      | word |
| 47 | 正序电压百分比    | R | 0-100%                      | word |
| 48 | 负序电压百分比    | R | 0-100%                      | word |
| 49 | 零序电压百分比    |   | 0-100%                      | word |
| 50 | 电流不平衡度     | R | 0-100%                      | word |
| 51 | 电压不平衡      | R | 0-100%                      | word |
| 52 | AB 相电压相角差  | R | 0-2400                      | word |
| 53 | BC 相电压相角差  | R | 0-2400                      | word |
| 54 | CA 相电压相角差  | R | 0-2400                      | word |
| 55 | AB 电流角度    | R | 0-2400                      | word |
| 56 | BC 电流角度    | R | 0-2400                      | word |
| 57 | CA 电流角度    | R | 0-2400                      | word |
| 58 | 负荷率        | R | 0%-999%                     | word |
| 59 | 预留         | R |                             |      |
| 60 | 需量电流       | R | 0.001A                      | word |
| 61 |            |   |                             | word |
| 62 | 过流热容量百分比   | R | 0-100%                      | word |

|               |       |             |     |                               |      |
|---------------|-------|-------------|-----|-------------------------------|------|
|               | 63    | 零序热容量百分比    | R   | 0-100%                        | word |
|               | 64    | A 相有效值电流百分比 | R   | 0-100%                        | word |
|               | 65    | B 相有效值电流百分比 | R   | 0-100%                        | word |
|               | 66    | C 相有效值电流百分比 | R   | 0-100%                        | word |
|               | 67    | N 相有效值电流百分比 | R   | 0-100%                        | word |
|               | 68    | 平均有效值电流百分比  | R   | 0-100%                        | word |
|               | 69    | 最大有效值电流百分比  | R   | 0-100%                        | word |
|               | 70    | 年月          | R/W | 高 byte:00-99, 低 byte:0-12     | word |
|               | 71    | 日时          | R/W | 高 byte:0-31, 低 byte:0-23      | word |
|               | 72    | 分秒          | R/W | 高 byte:0-59, 低 byte:0-59      | word |
|               | 73    | 变送输出 1      | R   | 400~2400                      | word |
|               | 74    | 变送输出 2      | R   | 400~2400                      | word |
|               | 75-99 | 保留          |     |                               |      |
| 保护参数<br>(基波值) | 100   | A 相基波电流     | R   | 0.001A                        | word |
|               | 101   |             |     |                               | word |
|               | 102   | B 相基波电流     | R   | 0.001A                        | word |
|               | 103   |             |     |                               | word |
|               | 104   | C 相基波电流     | R   | 0.001A                        | word |
|               | 105   |             |     |                               | word |
|               | 106   | N 相基波电流     | R   | 0.001A                        | word |
|               | 107   |             |     |                               | word |
|               | 108   | Ua 基波相电压    | R   | 0~999.9V                      | word |
|               | 109   | Ub 基波相电压    | R   | 0~999.9V                      | word |
|               | 110   | Uc 基波相电压    | R   | 0~999.9V                      | word |
|               | 111   | Uab 基波线电压   | R   | 0~999.9V                      | word |
|               | 112   | Ubc 基波线电压   | R   | 0~999.9V                      | word |
|               | 113   | Uca 基波线电压   | R   | 0~999.9V                      | word |
|               | 114   | 基波总有功功率     | R   | -2376000 ~ 2376000 (Unit:W)   | word |
|               | 115   |             |     |                               | word |
|               | 116   | 基波总无功功率     | R   | -2376000 ~ 2376000 (Unit:Var) | word |
|               | 117   |             |     |                               | word |
|               | 118   | 基波总视在功率     | R   | 0 ~ 2376000 (Unit:VA)         | word |
|               | 119   |             |     |                               | word |
|               | 120   | 基波 A 相有功功率  | R   | -792000 ~ 792000 (Unit:W)     | word |
|               | 121   |             |     |                               | word |
|               | 122   | 基波 B 相有功功率  | R   | -792000 ~ 792000 (Unit:W)     | word |

|              |         |            |   |                             |      |
|--------------|---------|------------|---|-----------------------------|------|
|              | 123     |            |   |                             | word |
|              | 124     | 基波 C 相有功功率 | R | -792000 ~ 792000 (Unit:W)   | word |
|              | 125     |            |   |                             | word |
|              | 126     | 基波 A 相无功功率 | R | -792000 ~ 792000 (Unit:Var) | word |
|              | 127     |            |   |                             | word |
|              | 128     | 基波 B 相无功功率 | R | -792000 ~ 792000 (Unit:Var) | word |
|              | 129     |            |   |                             | word |
|              | 130     | 基波 C 相无功功率 | R | -792000 ~ 792000 (Unit:Var) | word |
|              | 131     |            |   |                             | word |
|              | 132     | 基波 A 相视在功率 | R | 0 ~ 2376000 (Unit:VA)       | word |
|              | 133     |            |   |                             | word |
|              | 134     | 基波 B 相视在功率 | R | 0 ~ 2376000 (Unit:VA)       | word |
|              | 135     |            |   |                             | word |
|              | 136     | 基波 C 相视在功率 | R | 0 ~ 2376000 (Unit:VA)       | word |
|              | 137     |            | R |                             | word |
|              | 138     | 基波功率因数     | R | 0.001                       | word |
|              | 139     | 基波 A 相功率因数 | R | 0.001                       | word |
|              | 140     | 基波 B 相功率因数 | R | 0.001                       | word |
|              | 141     | 基波 C 相功率因数 | R | 0.001                       | word |
|              | 142     | A 相基波电流百分比 | R | 0-100%                      | word |
|              | 143     | B 相基波电流百分比 | R | 0-100%                      | word |
|              | 144     | C 相基波电流百分比 | R | 0-100%                      | word |
|              | 145     | N 相基波电流百分比 | R | 0-100%                      | word |
|              | 146     | 平均基波电流百分比  | R | 0-100%                      | word |
|              | 147     | 最大基波电流百分比  | R | 0-100%                      | word |
|              | 148-149 | 保留         | R |                             |      |
| 计量参数<br>(全波) | 200     | A 相有效值电流   | R | 0.001A                      | word |
|              | 201     |            |   |                             | word |
|              | 202     | B 相有效值电流   | R | 0.001A                      | word |
|              | 203     |            |   |                             | word |
|              | 204     | C 相有效值电流   | R | 0.001A                      | word |
|              | 205     |            |   |                             | word |
|              | 206     | A 相电压      | R | 0~999.9V                    | word |
|              | 207     | B 相电压      | R | 0~999.9V                    | word |
|              | 208     | C 相电压      | R | 0~999.9V                    | word |

|     |                 |   |                               |      |
|-----|-----------------|---|-------------------------------|------|
| 209 | Uab 有效值线电压      | R | 0~999.9V                      | word |
| 210 | Ubc 有效值线电压      | R | 0~999.9V                      | word |
| 211 | Uca 有效值线电压      | R | 0~999.9V                      | word |
| 212 | 全波总有功功率         | R | -2376000 ~ 2376000 (Unit:W)   | word |
| 213 |                 |   |                               | word |
| 214 | 全波总无功功率         | R | -2376000 ~ 2376000 (Unit:Var) | word |
| 215 |                 |   |                               | word |
| 216 | 全波总视在功率         | R | 0 ~ 2376000 (Unit:VA)         | word |
| 217 |                 |   |                               | word |
| 218 | 全波 A 相有功功率      | R | -792000 ~ 792000 (Unit:W)     | word |
| 219 |                 |   |                               | word |
| 220 | 全波 B 相有功功率      | R | -792000 ~ 792000 (Unit:W)     | word |
| 221 |                 |   |                               | word |
| 222 | 全波 C 相有功功率      | R | -792000 ~ 792000 (Unit:W)     | word |
| 223 |                 |   |                               | word |
| 224 | 全波 A 相无功功率      | R | -792000 ~ 792000 (Unit:Var)   | word |
| 225 |                 |   |                               | word |
| 226 | 全波 B 相无功功率      | R | -792000 ~ 792000 (Unit:Var)   | word |
| 227 |                 |   |                               | word |
| 228 | 全波 C 相无功功率      | R | -792000 ~ 792000 (Unit:Var)   | word |
| 229 |                 |   |                               | word |
| 230 | 全波 A 相视在功率      | R | 0 ~ 2376000 (Unit:VA)         | word |
| 231 |                 |   |                               | word |
| 232 | 全波 B 相视在功率      | R | 0 ~ 2376000 (Unit:VA)         | word |
| 233 |                 |   |                               | word |
| 234 | 全波 C 相视在功率      | R | 0 ~ 2376000 (Unit:VA)         | word |
| 235 |                 |   |                               | word |
| 236 | 全波功率因数          | R | 0.001                         | word |
| 237 | 全波 A 相功率因数      | R | 0.001                         | word |
| 238 | 全波 B 相功率因数      | R | 0.001                         | word |
| 239 | 全波 C 相功率因数      | R | 0.001                         | word |
| 240 | 频率              | R | 0.01HZ                        | word |
| 241 | A 相电压相角差        | R | 0.1 度                         | word |
| 242 | B 相电压相角差（相对 UA） | R | 0.1 度                         | word |
| 243 | C 相电压相角差（相对     | R | 0.1 度                         | word |

|              |         |               |   |                               |      |
|--------------|---------|---------------|---|-------------------------------|------|
|              |         | UA)           |   |                               |      |
|              | 244     | IA 角度 (相对 UA) | R | 0.1 度                         | word |
|              | 245     | IB 角度 (相对 UA) | R | 0.1 度                         | word |
|              | 246     | IC 角度 (相对 UA) | R | 0.1 度                         | word |
|              | 247-249 | 保留            |   |                               |      |
| 计量参数<br>(基波) | 250     | A 相基波电流       | R | 0.001A                        | word |
|              | 251     |               |   |                               | word |
|              | 252     | B 相基波电流       | R | 0.001A                        | word |
|              | 253     |               |   |                               | word |
|              | 254     | C 相基波电流       | R | 0.001A                        | word |
|              | 255     |               |   |                               | word |
|              | 256     | A 相电压         | R | 0~999.9V                      | word |
|              | 257     | B 相电压         | R | 0~999.9V                      | word |
|              | 258     | C 相电压         | R | 0~999.9V                      | word |
|              | 259     | Uab 基波线电压     | R | 0~999.9V                      | word |
|              | 260     | Ubc 基波线电压     | R | 0~999.9V                      | word |
|              | 261     | Uca 基波线电压     | R | 0~999.9V                      | word |
|              | 262     | 基波总有功功率       | R | -2376000 ~ 2376000 (Unit:W)   | word |
|              | 263     |               |   |                               | word |
|              | 264     | 基波总无功功率       | R | -2376000 ~ 2376000 (Unit:Var) | word |
|              | 265     |               |   |                               | word |
|              | 266     | 基波总视在功率       | R | 0 ~ 2376000 (Unit:VA)         | word |
|              | 267     |               |   |                               | word |
|              | 268     | 基波 A 相有功功率    | R | -792000 ~ 792000 (Unit:W)     | word |
|              | 269     |               |   |                               | word |
|              | 270     | 基波 B 相有功功率    | R | -792000 ~ 792000 (Unit:W)     | word |
|              | 271     |               |   |                               | word |
|              | 272     | 基波 C 相有功功率    | R | -792000 ~ 792000 (Unit:W)     | word |
|              | 273     |               |   |                               | word |
|              | 274     | 基波 A 相无功功率    | R | -792000 ~ 792000 (Unit:Var)   | Word |
|              | 275     |               |   |                               | word |
|              | 276     | 基波 B 相无功功率    | R | -792000 ~ 792000 (Unit:Var)   | word |
|              | 277     |               |   |                               | word |
|              | 278     | 基波 C 相无功功率    | R | -792000 ~ 792000 (Unit:Var)   | word |
|              | 279     |               |   |                               | word |

|      |         |             |   |                       |      |
|------|---------|-------------|---|-----------------------|------|
|      | 280     | 基波 A 相视在功率  | R | 0 ~ 2376000 (Unit:VA) | word |
|      | 281     |             |   |                       | word |
|      | 282     | 基波 B 相视在功率  | R | 0 ~ 2376000 (Unit:VA) | word |
|      | 283     |             |   |                       | word |
|      | 284     | 基波 C 相视在功率  | R | 0 ~ 2376000 (Unit:VA) | word |
|      | 285     |             |   |                       | word |
|      | 286     | 基波功率因数      | R | 0.001                 | word |
|      | 287     | 基波 A 相功率因数  | R | 0.001                 | word |
|      | 288     | 基波 B 相功率因数  | R | 0.001                 | word |
|      | 289     | 基波 C 相功率因数  | R | 0.001                 | word |
|      | 290     | 测量模块版本      | R |                       | word |
|      | 291     | 测量模块编号      | R |                       | word |
|      | 292-299 | 保留          |   |                       |      |
|      | 9       |             |   |                       |      |
| 电能数据 | 300     | 全波总有功电能     | R | Unit1kwh              | word |
|      | 301     |             |   |                       | word |
|      | 302     | 全波正向有功电能    | R | Unit1kwh              | word |
|      | 303     |             |   |                       | word |
|      | 304     | 全波反向有功电能    | R | Unit1kwh              | word |
|      | 305     |             |   |                       | word |
|      | 306     | 全波总无功电能     | R | Unit1kwh              | word |
|      | 307     |             |   |                       | word |
|      | 308     | 全波感性无功电能    | R | Unit1kwh              | word |
|      | 309     |             |   |                       | word |
|      | 310     | 全波容性无功电能    | R | Unit1kwh              | word |
|      | 311     |             |   |                       | word |
|      | 312     | 全波总有功电能小数位  | R | 0-999 wh              | word |
|      | 313     | 全波正向电能小数位   | R | 0-999 wh              | word |
|      | 314     | 全波反向有功电能小数位 | R | 0-999 wh              | word |
|      | 315     | 全波总有功电能小数位  | R | 0-999 wh              | word |
|      | 316     | 全波感性无功电能小数位 | R | 0-999 wh              | word |
|      | 317     | 全波容性无功电能小数位 | R | 0-999 wh              | word |

|    |         |             |   |            |      |
|----|---------|-------------|---|------------|------|
|    | 318     | 全波总有功电能进位   | R | 0-65535    | word |
|    | 319     | 全波正向电能进位    | R | 0-65535    | word |
|    | 320     | 全波反向有功电能进位  | R | 0-65535    | word |
|    | 321     | 全波总有功电能进位   | R | 0-65535    | word |
|    | 322     | 全波感性无功电能进位  | R | 0-65535    | word |
|    | 323     | 全波容性无功电能进位  | R | 0-65535    | word |
|    | 324     | 基波总有功电能     | R | Unit1kwh   | word |
|    | 325     |             | R |            |      |
|    | 326     | 基波正向有功电能    | R | Unit1kwh   | word |
|    | 327     |             | R |            |      |
|    | 328     | 基波反向有功电能    | R | Unit1kwh   | word |
|    | 329     |             | R |            |      |
|    | 330     | 基波总无功电能     | R | Unit1kwh   | word |
|    | 331     |             | R |            |      |
|    | 332     | 基波感性无功电能    | R | Unit1kwh   | word |
|    | 333     |             | R |            |      |
|    | 334     | 基波容性无功电能    | R | Unit1kwh   | word |
|    | 335     |             | R |            |      |
|    | 336     | 基波总有功电能小数位  | R | 0-999 wh   | word |
|    | 337     | 基波正向电能小数位   | R | 0-999 wh   | word |
|    | 338     | 基波反向有功电能小数位 | R | 0-999 wh   | word |
|    | 339     | 基波总有功电能小数位  | R | 0-999 wh   | word |
|    | 340     | 基波感性无功电能小数位 | R | 0-999 wh   | word |
|    | 341     | 基波容性无功电能小数位 | R | 0-999 wh   | word |
|    | 342     | 基波总有功电能进位   | R | 0-65535    | word |
|    | 343     | 基波正向电能进位    | R | 0-65535    | word |
|    | 344     | 基波反向有功电能进位  | R | 0-65535    | word |
|    | 345     | 基波总有功电能进位   | R | 0-65535    | word |
|    | 346     | 基波感性无功电能进位  | R | 0-65535    | word |
|    | 347     | 基波容性无功电能进位  | R | 0-65535    | word |
|    | 348-399 | 保留          | R |            |      |
| 需量 | 400     | 当前电流需量      | R | Unit0.001A | word |

|  |     |            |   |            |      |
|--|-----|------------|---|------------|------|
|  | 401 |            |   |            | word |
|  | 402 | 本月最大电流需量   | R | Unit0.001A | word |
|  | 403 |            |   |            | word |
|  | 404 | 本月最大需量发生月日 | R | 高字节月，低字节日  | word |
|  | 405 | 本月最大需量发生时分 | R | 高字节时，低字节分  | word |
|  | 406 | 上月最大电流需量   | R | Unit0.001A | word |
|  | 407 |            |   |            | word |
|  | 408 | 上月最大需量发生月日 | R | 高字节月，低字节日  | word |
|  | 409 | 上月最大需量发生时分 | R | 高字节时，低字节分  | word |
|  | 410 | 当前有功功率需量   | R | Unit1W     | word |
|  | 411 |            |   |            | word |
|  | 412 | 本月最大有功功率需量 | R | Unit1W     | word |
|  | 413 |            |   |            | word |
|  | 414 | 本月最大需量发生月日 | R | 高字节月，低字节日  | word |
|  | 415 | 本月最大需量发生时分 | R | 高字节时，低字节分  | word |
|  | 416 | 上月最大有功功率需量 | R | Unit1W     | word |
|  | 417 |            |   |            | word |
|  | 418 | 上月最大需量发生月日 | R | 高字节月，低字节日  | word |
|  | 419 | 上月最大需量发生时分 | R | 高字节时，低字节分  | word |
|  | 420 | 当前无功功率需量   | R | Unit1var   | word |
|  | 421 |            |   |            | word |
|  | 422 | 本月最大无功功率需量 | R | Unit1var   | word |
|  | 423 |            |   |            | word |
|  | 424 | 本月最大需量发生月日 | R | 高字节月，低字节日  | word |
|  | 425 | 本月最大需量发生时分 | R | 高字节时，低字节分  | word |
|  | 426 | 上月最大无功功率需量 | R | Unit1var   | word |
|  | 427 |            |   |            | word |
|  | 428 | 上月最大需量发生月日 | R | 高字节月，低字节日  | word |
|  | 429 | 上月最大需量发生时分 | R | 高字节时，低字节分  | word |
|  | 430 | 当前视在功率需量   | R | Unit1VA    | word |
|  | 431 |            |   |            | word |
|  | 432 | 本月最大视在功率需量 | R | Unit1VA    | word |
|  | 433 |            |   |            | word |
|  | 434 | 本月最大需量发生月日 | R | 高字节月，低字节日  | word |
|  | 435 | 本月最大需量发生时分 | R | 高字节时，低字节分  | word |
|  | 436 | 上月最大视在功率需量 | R | Unit1VA    | word |

|      |     |            |     |           |      |
|------|-----|------------|-----|-----------|------|
|      | 437 |            |     |           | word |
|      | 438 | 上月最大需量发生月日 | R   | 高字节月，低字节日 | word |
|      | 439 | 上月最大需量发生时分 | R   | 高字节时，低字节分 | word |
| 母线测温 | 500 | 有线测温温度值 1  | R   | 0.1 度     | word |
|      | 501 | 有线测温温度值 2  | R   | 0.1 度     | word |
|      | 502 | 有线测温温度值 3  | R   | 0.1 度     | word |
|      | 503 | 有线测温温度值 4  | R   | 0.1 度     | word |
|      | 504 | 有线测温温度值 5  | R   | 0.1 度     | word |
|      | 505 | 有线测温温度值 6  | R   | 0.1 度     | word |
|      | 506 | 有线测温温度值 7  | R   | 0.1 度     | word |
|      | 507 | 有线测温温度值 8  | R   | 0.1 度     | word |
|      | 508 | 有线测温温度值 9  | R   | 0.1 度     | word |
|      | 509 | 有线温度传感器类型  | R/W | 0.1 度     | word |
|      | 510 | 无线测温温度值 1  | R   | 0.1 度     | word |
|      | 511 | 无线测温温度值 2  | R   | 0.1 度     | word |
|      | 512 | 无线测温温度值 3  | R   | 0.1 度     | word |
|      | 513 | 无线测温温度值 4  | R   | 0.1 度     | word |
|      | 514 | 无线测温温度值 5  | R   | 0.1 度     | word |
|      | 515 | 无线测温温度值 6  | R   | 0.1 度     | word |
|      | 516 | 无线测温温度值 7  | R   | 0.1 度     | word |
|      | 517 | 无线测温温度值 8  | R   | 0.1 度     | word |
|      | 518 | 无线测温温度值 9  | R   | 0.1 度     | word |
|      | 519 | 无线测温温度值 10 | R   | 0.1 度     | word |
|      | 520 | 无线测温温度值 11 | R   | 0.1 度     | word |
|      | 521 | 无线测温温度值 12 | R   | 0.1 度     | word |
|      | 522 | 无线测温温度值 13 | R   | 0.1 度     | word |
|      | 523 | 无线测温温度值 14 | R   | 0.1 度     | word |
|      | 524 | 无线测温温度值 15 | R   | 0.1 度     | word |
|      | 525 | 无线测温温度值 16 | R   | 0.1 度     | word |
|      | 526 | 无线测温温度值 17 | R   | 0.1 度     | word |
|      | 527 | 无线测温温度值 18 | R   | 0.1 度     | word |
|      | 528 | 无线测温温度值 19 | R   | 0.1 度     | word |
|      | 529 | 无线测温温度值 20 | R   | 0.1 度     | word |
|      | 530 | 无线测温温度值 21 | R   | 0.1 度     | word |
|      | 531 | 无线测温温度值 22 | R   | 0.1 度     | word |
|      | 532 | 无线测温温度值 23 | R   | 0.1 度     | word |

|  |         |               |     |       |      |
|--|---------|---------------|-----|-------|------|
|  | 533     | 无线测温温度值 24    | R   | 0.1 度 | word |
|  | 534     | 无线测温温度值 25    | R   | 0.1 度 | word |
|  | 535     | 无线测温温度值 26    | R   | 0.1 度 | word |
|  | 536     | 无线测温温度值 27    | R   | 0.1 度 | word |
|  | 537     | 无线测温温度值 28    | R   | 0.1 度 | word |
|  | 538     | 无线测温温度值 29    | R   | 0.1 度 | word |
|  | 539     | 无线测温温度值 30    | R   | 0.1 度 | word |
|  | 540-569 | 无线测温温度值 31-60 | R   | 0.1 度 | word |
|  | 570     | 无线测温 ID 值 1   | R/W |       | word |
|  | 571     | 无线测温 ID 值 2   | R/W |       | word |
|  | 572     | 无线测温 ID 值 3   | R/W |       | word |
|  | 573     | 无线测温 ID 值 4   | R/W |       | word |
|  | 574     | 无线测温 ID 值 5   | R/W |       | word |
|  | 575     | 无线测温 ID 值 6   | R/W |       | word |
|  | 576     | 无线测温 ID 值 7   | R/W |       | word |
|  | 577     | 无线测温 ID 值 8   | R/W |       | word |
|  | 578     | 无线测温 ID 值 9   | R/W |       | word |
|  | 579     | 无线测温 ID 值 10  | R/W |       | word |
|  | 580     | 无线测温 ID 值 11  | R/W |       | word |
|  | 581     | 无线测温 ID 值 12  | R/W |       | word |
|  | 582     | 无线测温 ID 值 13  | R/W |       | word |
|  | 583     | 无线测温 ID 值 14  | R/W |       | word |
|  | 584     | 无线测温 ID 值 15  | R/W |       | word |
|  | 585     | 无线测温 ID 值 16  | R/W |       | word |
|  | 586     | 无线测温 ID 值 17  | R/W |       | word |
|  | 587     | 无线测温 ID 值 18  | R/W |       | word |
|  | 588     | 无线测温 ID 值 19  | R/W |       | word |
|  | 589     | 无线测温 ID 值 20  | R/W |       | word |
|  | 590     | 无线测温 ID 值 21  | R/W |       | word |
|  | 591     | 无线测温 ID 值 22  | R/W |       | word |
|  | 592     | 无线测温 ID 值 23  | R/W |       | word |
|  | 593     | 无线测温 ID 值 24  | R/W |       | word |
|  | 594     | 无线测温 ID 值 25  | R/W |       | word |
|  | 595     | 无线测温 ID 值 26  | R/W |       | word |
|  | 596     | 无线测温 ID 值 27  | R/W |       | word |

|  |         |                   |     |                             |      |
|--|---------|-------------------|-----|-----------------------------|------|
|  | 597     | 无线测温 ID 值 28      | R/W |                             | word |
|  | 598     | 无线测温 ID 值 29      | R/W |                             | word |
|  | 599     | 无线测温 ID 值 30      | R/W |                             | word |
|  | 600-629 | 无线测温 ID 值 31-60   | R/W |                             | word |
|  | 630     | 有线测温是否投入          | R/W | byte0-8 对应有线第 1-9 通道        | word |
|  | 631     | 无线测温是否投入          | R/W | byte0-15 对应无线第 1-16 路       | word |
|  | 632     | 无线测温是否投入          | R/W | byte0-15 对应无线第 17-32 路      | word |
|  | 633     | 无线测温是否投入          | R/W | byte0-15 对应无线第 33-48 路      | word |
|  | 634     | 无线测温是否投入          | R/W | byte0-11 对应无线第 49-60 路      | word |
|  | 635     | 有线测温通道 2-1 分组选择   | R/W | 低字节有线 1，高字节有线 2<br>数值范围：1-6 | word |
|  | 636     | 有线测温通道 4-3 分组选择   | R/W |                             | word |
|  | 637     | 有线测温通道 6-5 分组选择   | R/W |                             | word |
|  | 638     | 有线测温通道 8-7 分组选择   | R/W |                             | word |
|  | 639     | 有线测温通道 9 分组选择     | R/W |                             | word |
|  | 640     | 无线测温通道 2-1 分组选择   | R/W |                             | word |
|  | 641     | 无线测温通道 4-3 分组选择   | R/W |                             | word |
|  | 642     | 无线测温通道 6-5 分组选择   | R/W |                             | word |
|  | 643     | 无线测温通道 8-7 分组选择   | R/W |                             | word |
|  | 644     | 无线测温通道 10-9 分组选择  | R/W |                             | word |
|  | 645     | 无线测温通道 12-11 分组选择 | R/W |                             | word |
|  | 646     | 无线测温通道 14-13 分组选择 | R/W |                             | word |
|  | 647     | 无线测温通道 16-15 分组选择 | R/W |                             | word |

|  |         |                     |     |                      |      |
|--|---------|---------------------|-----|----------------------|------|
|  | 648     | 无线测温通道 18-17 分组选择   | R/W |                      | word |
|  | 649     | 无线测温通道 20-19 分组选择   | R/W |                      | word |
|  | 650     | 无线测温通道 22-21 分组选择   | R/W |                      | word |
|  | 651     | 无线测温通道 24-23 分组选择   | R/W |                      | word |
|  | 652     | 无线测温通道 26-25 分组选择   | R/W |                      | word |
|  | 653     | 无线测温通道 28-27 分组选择   | R/W |                      | word |
|  | 654     | 无线测温通道 30-29 分组选择   | R/W |                      | word |
|  | 655-669 | 无线测温 ID 值 60-31 保留  | R/W |                      | word |
|  | 670     | 温度模块的内部数据, AD 值和欧姆值 | R   | 0-1000, Unit0.1%, 下同 | word |
|  | 671     |                     |     |                      | word |
|  | 672-699 |                     |     |                      | word |

Table 17 Measurement parameter address table

| Classification                          | Address | Parameters      | Read and write properties | Range    | Type |
|-----------------------------------------|---------|-----------------|---------------------------|----------|------|
| Protection parameters (full wave value) | 0       | A Phase         | R                         | 0.001A   | word |
|                                         | 1       | RMS current     |                           |          | word |
|                                         | 2       | B Phase         | R                         | 0.001A   | word |
|                                         | 3       | RMS current     |                           |          | word |
|                                         | 4       | C Phase         | R                         | 0.001A   | word |
|                                         | 5       | RMS current     |                           |          | word |
|                                         | 6       | N Phase         | R                         | 0.001A   | word |
|                                         | 7       | RMS current     |                           |          | word |
|                                         | 8       | A phase voltage | R                         | 0~999.9V | word |
|                                         | 9       | B phase voltage | R                         | 0~999.9V | word |
|                                         | 10      | C phase voltage | R                         | 0~999.9V | word |

|  |    |                                      |   |                                 |      |
|--|----|--------------------------------------|---|---------------------------------|------|
|  | 11 | Uab RMS<br>line voltage              | R | 0~999.9V                        | word |
|  | 12 | Ubc RMS<br>line voltage              | R | 0~999.9V                        | word |
|  | 13 | Uca RMS<br>line voltage              | R | 0~999.9V                        | word |
|  | 14 | Total                                | R | -2376000 ~<br>2376000(Unit:W)   | word |
|  | 15 | Active Power                         |   |                                 | word |
|  | 16 | Total                                | R | -2376000 ~<br>2376000(Unit:Var) | word |
|  | 17 | Reactive Power                       |   |                                 | word |
|  | 18 | total apparent power                 | R | 0 ~ 2376000(Unit:VA)            | word |
|  | 19 |                                      |   |                                 | word |
|  | 20 | A phase                              | R | -792000 ~ 792000(Unit:W)        | word |
|  | 21 | Active Power                         | R |                                 | word |
|  | 22 | B phase                              | R | -792000 ~ 792000(Unit:W)        | word |
|  | 23 | Active Power                         |   |                                 | word |
|  | 24 | C phase                              | R | -792000 ~ 792000(Unit:W)        | word |
|  | 25 | Active Power                         |   |                                 | word |
|  | 26 | A phase                              | R | -792000 ~ 792000(Unit:Var)      | word |
|  | 27 | Reactive Power                       |   |                                 | word |
|  | 28 | B phase                              | R | -792000 ~ 792000(Unit:Var)      | word |
|  | 29 | Reactive Power                       |   |                                 | word |
|  | 30 | C phase                              | R | -792000 ~ 792000(Unit:Var)      | word |
|  | 31 | Reactive Power                       |   |                                 | word |
|  | 32 | A phase                              | R | 0 ~ 2376000(Unit:VA)            | word |
|  | 33 | apparent power                       |   |                                 | word |
|  | 34 | B phase                              | R | 0 ~ 2376000(Unit:VA)            | word |
|  | 35 | apparent power                       |   |                                 | word |
|  | 36 | C phase                              | R | 0 ~ 2376000(Unit:VA)            | word |
|  | 37 | apparent power                       |   |                                 | word |
|  | 38 | full wave power factor               | R | 0.001                           | word |
|  | 39 | full wave<br>A phase<br>power factor | R | 0.001                           | word |
|  | 40 | full wave<br>B phase                 | R | 0.001                           | word |

|    |  |                                             |   |                       |      |
|----|--|---------------------------------------------|---|-----------------------|------|
|    |  | power factor                                |   |                       |      |
| 41 |  | full wave<br>C phase<br>power factor        | R | 0.001                 | word |
| 42 |  | Frequency                                   | R | 4000-7000, Unit0.01Hz | word |
| 43 |  | Leakage Current                             | R | 0-1000mA              | word |
| 44 |  | Positive sequence<br>current percentage     | R | 0-100%                | word |
| 45 |  | Negative sequence<br>current percentage     | R | 0-100%                | word |
| 46 |  | Zero sequence current<br>percentage         | R | 0-100%                | word |
| 47 |  | Positive sequence<br>voltage percentage     | R | 0-100%                | word |
| 48 |  | Negative sequence<br>voltage percentage     | R | 0-100%                | word |
| 49 |  | Zero sequence voltage<br>percentage         |   | 0-100%                | word |
| 50 |  | current unbalance                           | R | 0-100%                | word |
| 51 |  | voltage imbalance                           | R | 0-100%                | word |
| 52 |  | AB phase voltage<br>phase angle difference  | R | 0-2400                | word |
| 53 |  | BC phase voltage<br>phase angle difference  | R | 0-2400                | word |
| 54 |  | CA phase voltage<br>phase angle difference  | R | 0-2400                | word |
| 55 |  | AB current angle                            | R | 0-2400                | word |
| 56 |  | BC current angle                            | R | 0-2400                | word |
| 57 |  | CA current angle                            | R | 0-2400                | word |
| 58 |  | Load factor                                 | R | 0%-999%               | word |
| 59 |  | reserve                                     | R |                       |      |
| 60 |  | demand current                              | R | 0.001A                | word |
| 61 |  |                                             |   |                       | word |
| 62 |  | Over current thermal<br>capacity percentage | R | 0-100%                | word |
| 63 |  | Zero sequence                               | R | 0-100%                | word |

|                                              |       |                                      |     |                                   |      |
|----------------------------------------------|-------|--------------------------------------|-----|-----------------------------------|------|
|                                              |       | heat capacity percentage             |     |                                   |      |
|                                              | 64    | A Phase RMS current percentage       | R   | 0-100%                            | word |
|                                              | 65    | B Phase RMS current percentage       | R   | 0-100%                            | word |
|                                              | 66    | C Phase RMS current percentage       | R   | 0-100%                            | word |
|                                              | 67    | N Phase RMS current percentage       | R   | 0-100%                            | word |
|                                              | 68    | Average Phase RMS current percentage | R   | 0-100%                            | word |
|                                              | 69    | Maximum Phase RMS current percentage | R   | 0-100%                            | word |
|                                              | 70    | Year/Month                           | R/W | High byte:00-99,<br>Low byte:0-12 | word |
|                                              | 71    | Day/Hour                             | R/W | High byte:0-31,<br>Low byte:0-23  | word |
|                                              | 72    | 分秒                                   | R/W | High byte:0-59,<br>Low byte:0-59  | word |
|                                              | 73    | Transmission output 1                | R   | 400~2400                          | word |
|                                              | 74    | Transmission output 2                | R   | 400~2400                          | word |
|                                              | 75-99 | Reserve                              |     |                                   |      |
| Protection parameters<br>(fundamental value) | 100   | A Phase<br>fundamental current       | R   | 0.001A                            | word |
|                                              | 101   |                                      |     |                                   | word |
|                                              | 102   | B Phase<br>fundamental current       | R   | 0.001A                            | word |
|                                              | 103   |                                      |     |                                   | word |
|                                              | 104   | C Phase<br>fundamental current       | R   | 0.001A                            | word |
|                                              | 105   |                                      |     |                                   | word |
|                                              | 106   | N Phase<br>fundamental current       | R   | 0.001A                            | word |
|                                              | 107   |                                      |     |                                   | word |
|                                              | 108   | Ua Fundamental phase voltage         | R   | 0~999.9V                          | word |
|                                              | 109   | Ub Fundamental phase voltage         | R   | 0~999.9V                          | word |
|                                              | 110   | Uc Fundamental phase                 | R   | 0~999.9V                          | word |

|  |     |                                     |   |                                 |      |
|--|-----|-------------------------------------|---|---------------------------------|------|
|  |     | voltage                             |   |                                 |      |
|  | 111 | Uab Fundamental<br>phase voltage    | R | 0~999.9V                        | word |
|  | 112 | Ubc Fundamental<br>phase voltage    | R | 0~999.9V                        | word |
|  | 113 | Uca Fundamental<br>phase voltage    | R | 0~999.9V                        | word |
|  | 114 | Fundamental total                   | R | -2376000 ~<br>2376000(Unit:W)   | word |
|  | 115 | active power                        |   |                                 | word |
|  | 116 | Fundamental total                   | R | -2376000 ~<br>2376000(Unit:Var) | word |
|  | 117 | reactive power                      |   |                                 | word |
|  | 118 | Fundamental total                   | R | 0 ~ 2376000(Unit:VA)            | word |
|  | 119 | apparent power                      |   |                                 | word |
|  | 120 | Fundamental A Phase                 | R | -792000 ~ 792000(Unit:W)        | word |
|  | 121 | active power                        |   |                                 | word |
|  | 122 | Fundamental B Phase                 | R | -792000 ~ 792000(Unit:W)        | word |
|  | 123 | active power                        |   |                                 | word |
|  | 124 | Fundamental C Phase                 | R | -792000 ~ 792000(Unit:W)        | word |
|  | 125 | active power                        |   |                                 | word |
|  | 126 | Fundamental A Phase                 | R | -792000 ~ 792000(Unit:Var)      | word |
|  | 127 | reactive power                      |   |                                 | word |
|  | 128 | Fundamental B Phase                 | R | -792000 ~ 792000(Unit:Var)      | word |
|  | 129 | reactive power                      |   |                                 | word |
|  | 130 | Fundamental C Phase                 | R | -792000 ~ 792000(Unit:Var)      | word |
|  | 131 | reactive power                      |   |                                 | word |
|  | 132 | Fundamental A phase                 | R | 0 ~ 2376000(Unit:VA)            | word |
|  | 133 | apparent power                      |   |                                 | word |
|  | 134 | Fundamental B phase                 | R | 0 ~ 2376000(Unit:VA)            | word |
|  | 135 | apparent power                      |   |                                 | word |
|  | 136 | Fundamental C phase                 | R | 0 ~ 2376000(Unit:VA)            | word |
|  | 137 | apparent power                      | R |                                 | word |
|  | 138 | Fundamental<br>Power Factor         | R | 0.001                           | word |
|  | 139 | Fundamental A phase<br>Power Factor | R | 0.001                           | word |
|  | 140 | Fundamental B phase                 | R | 0.001                           | word |

|                                          |         |                                              |   |          |      |
|------------------------------------------|---------|----------------------------------------------|---|----------|------|
|                                          |         | Power Factor                                 |   |          |      |
|                                          | 141     | Fundamental C phase<br>Power Factor          | R | 0.001    | word |
|                                          | 142     | A phase<br>Fundamental current<br>percentage | R | 0-100%   | word |
|                                          | 143     | B phase<br>Fundamental<br>current percentage | R | 0-100%   | word |
|                                          | 144     | C phase<br>Fundamental<br>current percentage | R | 0-100%   | word |
|                                          | 145     | N phase<br>Fundamental<br>current percentage | R | 0-100%   | word |
|                                          | 146     | Average<br>Fundamental<br>current percentage | R | 0-100%   | word |
|                                          | 147     | Maximum<br>Fundamental<br>current percentage | R | 0-100%   | word |
|                                          | 148-149 | Reserve                                      | R |          |      |
| Measurement<br>parameters<br>(full wave) | 200     | A phase RMS current                          | R | 0.001A   | word |
|                                          | 201     |                                              |   |          | word |
|                                          | 202     | B phase RMS current                          | R | 0.001A   | word |
|                                          | 203     |                                              |   |          | word |
|                                          | 204     | C phase RMS current                          | R | 0.001A   | word |
|                                          | 205     |                                              |   |          | word |
|                                          | 206     | A phase Voltage                              | R | 0~999.9V | word |
|                                          | 207     | B phase Voltage                              | R | 0~999.9V | word |
|                                          | 208     | C phase Voltage                              | R | 0~999.9V | word |
|                                          | 209     | Uab RMS<br>line voltage                      | R | 0~999.9V | word |
|                                          | 210     | Ubc RMS<br>line voltage                      | R | 0~999.9V | word |
|                                          | 211     | Uca RMS                                      | R | 0~999.9V | word |

|  |     |                                        |   |                              |      |
|--|-----|----------------------------------------|---|------------------------------|------|
|  |     | line voltage                           |   |                              |      |
|  | 212 | Full wave total active power           | R | -2376000 ~ 2376000(Unit:W)   | word |
|  | 213 |                                        |   |                              | word |
|  | 214 | Full wave Total Reactive Power         | R | -2376000 ~ 2376000(Unit:Var) | word |
|  | 215 |                                        |   |                              | word |
|  | 216 | Full wave Total apparent power         | R | 0 ~ 2376000(Unit:VA)         | word |
|  | 217 |                                        |   |                              | word |
|  | 218 | Full wave A phase active power         | R | -792000 ~ 792000(Unit:W)     | word |
|  | 219 |                                        |   |                              | word |
|  | 220 | Full wave B phase active power         | R | -792000 ~ 792000(Unit:W)     | word |
|  | 221 |                                        |   |                              | word |
|  | 222 | Full wave C phase active power         | R | -792000 ~ 792000(Unit:W)     | word |
|  | 223 |                                        |   |                              | word |
|  | 224 | Full wave A phase Reactive Power       | R | -792000 ~ 792000(Unit:Var)   | word |
|  | 225 |                                        |   |                              | word |
|  | 226 | Full wave B phase Reactive Power       | R | -792000 ~ 792000(Unit:Var)   | word |
|  | 227 |                                        |   |                              | word |
|  | 228 | Full wave C phase Reactive Power       | R | -792000 ~ 792000(Unit:Var)   | word |
|  | 229 |                                        |   |                              | word |
|  | 230 | Full wave A phase apparent Power       | R | 0 ~ 2376000(Unit:VA)         | word |
|  | 231 |                                        |   |                              | word |
|  | 232 | Full wave B phase apparent Power       | R | 0 ~ 2376000(Unit:VA)         | word |
|  | 233 |                                        |   |                              | word |
|  | 234 | Full wave C phase apparent Power       | R | 0 ~ 2376000(Unit:VA)         | word |
|  | 235 |                                        |   |                              | word |
|  | 236 | Full Wave Power Factor                 | R | 0.001                        | word |
|  | 237 | Full Wave A phase Power Factor         | R | 0.001                        | word |
|  | 238 | Full Wave B phase Power Factor         | R | 0.001                        | word |
|  | 239 | Full Wave C phase Power Factor         | R | 0.001                        | word |
|  | 240 | Frequency                              | R | 0.01HZ                       | word |
|  | 241 | A phase Voltage phase Angle difference | R | 0.1 度                        | word |

|                                                    |         |                                                      |   |                                 |      |
|----------------------------------------------------|---------|------------------------------------------------------|---|---------------------------------|------|
|                                                    | 242     | B phase Voltage phase<br>Angle difference (to<br>UA) | R | 0.1 度                           | word |
|                                                    | 243     | C phase Voltage phase<br>Angle difference (to<br>UA) | R | 0.1 度                           | word |
|                                                    | 244     | IA angle (to UA)                                     | R | 0.1 度                           | word |
|                                                    | 245     | IB angle (to UA)                                     | R | 0.1 度                           | word |
|                                                    | 246     | IC angle (to UA)                                     | R | 0.1 度                           | word |
|                                                    | 247-249 | reserve                                              |   |                                 |      |
| Measurement<br>parameters<br>(fundamental<br>wave) | 250     | A Phase<br>fundamental current                       | R | 0.001A                          | word |
|                                                    | 251     |                                                      |   |                                 | word |
|                                                    | 252     | B Phase<br>fundamental current                       | R | 0.001A                          | word |
|                                                    | 253     |                                                      |   |                                 | word |
|                                                    | 254     | C Phase<br>fundamental current                       | R | 0.001A                          | word |
|                                                    | 255     |                                                      |   |                                 | word |
|                                                    | 256     | A phase Voltage                                      | R | 0~999.9V                        | word |
|                                                    | 257     | B phase Voltage                                      | R | 0~999.9V                        | word |
|                                                    | 258     | C phase Voltage                                      | R | 0~999.9V                        | word |
|                                                    | 259     | Uab Fundamental line<br>voltage                      | R | 0~999.9V                        | word |
|                                                    | 260     | Ubc Fundamental line<br>voltage                      | R | 0~999.9V                        | word |
|                                                    | 261     | Uca Fundamental line<br>voltage                      | R | 0~999.9V                        | word |
|                                                    | 262     | Fundamental total<br>Active Power                    | R | -2376000 ~<br>2376000(Unit:W)   | word |
|                                                    | 263     |                                                      |   |                                 | word |
|                                                    | 264     | Fundamental total<br>Reactive Power                  | R | -2376000 ~<br>2376000(Unit:Var) | word |
|                                                    | 265     |                                                      |   |                                 | word |
|                                                    | 266     | Fundamental total<br>Apparent Power                  | R | 0 ~ 2376000(Unit:VA)            | word |
|                                                    | 267     |                                                      |   |                                 | word |
|                                                    | 268     | Fundamental A phase<br>Active Power                  | R | -792000 ~ 792000(Unit:W)        | word |
|                                                    | 269     |                                                      |   |                                 | word |
|                                                    | 270     | Fundamental B phase<br>Active Power                  | R | -792000 ~ 792000(Unit:W)        | word |
|                                                    | 271     |                                                      |   |                                 | word |
|                                                    | 272     | Fundamental C phase                                  | R | -792000 ~ 792000(Unit:W)        | word |

|             |         |                                  |   |                            |      |
|-------------|---------|----------------------------------|---|----------------------------|------|
|             | 273     | Active Power                     |   |                            | word |
|             | 274     | Fundamental A phase              | R | -792000 ~ 792000(Unit:Var) | Word |
|             | 275     | Reactive Power                   |   |                            | word |
|             | 276     | Fundamental B phase              | R | -792000 ~ 792000(Unit:Var) | word |
|             | 277     | Reactive Power                   |   |                            | word |
|             | 278     | Fundamental C phase              | R | -792000 ~ 792000(Unit:Var) | word |
|             | 279     | Reactive Power                   |   |                            | word |
|             | 280     | Fundamental A phase              | R | 0 ~ 2376000(Unit:VA)       | word |
|             | 281     | Apparent Power                   |   |                            | word |
|             | 282     | Fundamental B phase              | R | 0 ~ 2376000(Unit:VA)       | word |
|             | 283     | Apparent Power                   |   |                            | word |
|             | 284     | Fundamental C phase              | R | 0 ~ 2376000(Unit:VA)       | word |
|             | 285     | Apparent Power                   |   |                            | word |
|             | 286     | Fundamental Power Factor         | R | 0.001                      | word |
|             | 287     | Fundamental A Phase Power Factor | R | 0.001                      | word |
|             | 288     | Fundamental B Phase Power Factor | R | 0.001                      | word |
|             | 289     | Fundamental C Phase Power Factor | R | 0.001                      | word |
|             | 290     | Measure Module Version           | R |                            | word |
|             | 291     | Measure Module Code              | R |                            | word |
|             | 292-299 | Reserve                          |   |                            |      |
| Energy data | 300     | Full wave total active energy    | R | Unit1kwh                   | word |
|             | 301     |                                  |   |                            | word |
|             | 302     | Full wave Forward active energy  | R | Unit1kwh                   | word |
|             | 303     |                                  |   |                            | word |
|             | 304     | Full wave Reverse active energy  | R | Unit1kwh                   | word |
|             | 305     |                                  |   |                            | word |
|             | 306     | Full wave total reactive energy  | R | Unit1kwh                   | word |
|             | 307     |                                  |   |                            | word |
|             | 308     | Full wave inductive              | R | Unit1kwh                   | word |

|  |     |                                                    |   |          |      |
|--|-----|----------------------------------------------------|---|----------|------|
|  | 309 | reactive energy                                    |   |          | word |
|  | 310 | Full wave capacitive                               | R | Unit1kwh | word |
|  | 311 | reactive energy                                    |   |          | word |
|  | 312 | Full wave total active energy decimal place        | R | 0-999 wh | word |
|  | 313 | Full wave forward energy decimal places            | R | 0-999 wh | word |
|  | 314 | Full wave reverse active energy decimal places     | R | 0-999 wh | word |
|  | 315 | Full wave total active energy decimal places       | R | 0-999 wh | word |
|  | 316 | full wave inductive reactive energy decimal places | R | 0-999 wh | word |
|  | 317 | Full wave capacitive reactive energy decimal place | R | 0-999 wh | word |
|  | 318 | Full wave total active energy carry                | R | 0-65535  | word |
|  | 319 | Full wave positive energy carry                    | R | 0-65535  | word |
|  | 320 | Full wave reverse active energy carry              | R | 0-65535  | word |
|  | 321 | Full wave total active energy carry                | R | 0-65535  | word |
|  | 322 | Full wave inductive reactive energy carry          | R | 0-65535  | word |
|  | 323 | Full wave capacitive reactive energy carry         | R | 0-65535  | word |

|  |     |                                                                 |   |          |      |
|--|-----|-----------------------------------------------------------------|---|----------|------|
|  | 324 | Fundamental total                                               | R | Unit1kwh | word |
|  | 325 | active energy                                                   | R |          |      |
|  | 326 | Fundamental forward                                             | R | Unit1kwh | word |
|  | 327 | active energy                                                   | R |          |      |
|  | 328 | Fundamental reverse                                             | R | Unit1kwh | word |
|  | 329 | active energy                                                   | R |          |      |
|  | 330 | Fundamental total                                               | R | Unit1kwh | word |
|  | 331 | reactive energy                                                 | R |          |      |
|  | 332 | Fundamental wave                                                | R | Unit1kwh | word |
|  | 333 | inductive reactive<br>energy                                    |   |          |      |
|  | 334 | Fundamental capacitive                                          | R | Unit1kwh | word |
|  | 335 | reactive energy                                                 | R |          |      |
|  | 336 | Decimal places of<br>fundamental total<br>active energy         | R | 0-999 wh | word |
|  | 337 | Decimal places of<br>fundamental reverse<br>active energy       | R | 0-999 wh | word |
|  | 338 | Fundamental Reverse<br>active energy decimal<br>places          | R | 0-999 wh | word |
|  | 339 | Fundamental total<br>active energy decimal<br>places            | R | 0-999 wh | word |
|  | 340 | Fundamental wave<br>inductive reactive<br>energy decimal places | R | 0-999 wh | word |
|  | 341 | Fundamental capacitive<br>reactive energy<br>decimal places     | R | 0-999 wh | word |
|  | 342 | Fundamental capacitive<br>reactive energy<br>decimal places     | R | 0-65535  | word |
|  | 343 | Fundamental wave                                                | R | 0-65535  | word |

|        |         |                                                                          |   |                                 |      |
|--------|---------|--------------------------------------------------------------------------|---|---------------------------------|------|
|        |         | forward electric energy carry                                            |   |                                 |      |
|        | 344     | Fundamental reverse active energy carry                                  | R | 0-65535                         | word |
|        | 345     | Fundamental total active energy carry                                    | R | 0-65535                         | word |
|        | 346     | Fundamental wave inductive reactive energy carry                         | R | 0-65535                         | word |
|        | 347     | Fundamental wave capacitive reactive energy carry                        | R | 0-65535                         | word |
|        | 348-399 | Reserve                                                                  | R |                                 |      |
| Demand | 400     | current demand at present                                                | R | Unit0.001A                      | word |
|        | 401     |                                                                          |   |                                 | word |
|        | 402     | The maximum current demand of this month                                 | R | Unit0.001A                      | word |
|        | 403     |                                                                          |   |                                 | word |
|        | 404     | The month and day when the maximum demand occurs in this month           | R | high byte month, low byte day   | word |
|        | 405     | The time when the maximum demand occurs in this month                    | R | high byte hour, low byte minute | word |
|        | 406     | Maximum current demand last month                                        | R | Unit0.001A                      | word |
|        | 407     |                                                                          |   |                                 | word |
|        | 408     | The month and day when the maximum demand occurred in the previous month | R | high byte month, low byte day   | word |
|        | 409     | The time when the maximum demand occurred in the previous month          | R | high byte hour, low byte minute | word |
|        | 410     | Current Active                                                           | R | Unit1W                          | word |

|  |     |                                                                          |   |                                 |      |
|--|-----|--------------------------------------------------------------------------|---|---------------------------------|------|
|  | 411 | Power Demand                                                             |   |                                 | word |
|  | 412 | The maximum active power demand in this month                            | R | Unit1W                          | word |
|  | 413 |                                                                          |   |                                 | word |
|  | 414 | The month and day when the maximum demand occurs in this month           | R | high byte month, low byte day   | word |
|  | 415 | The time when the maximum demand occurs in this month                    | R | high byte hour, low byte minute | word |
|  | 416 | Maximum active power demand last month                                   | R | Unit1W                          | word |
|  | 417 |                                                                          |   |                                 | word |
|  | 418 | The month and day when the maximum demand occurred in the previous month | R | high byte month, low byte day   | word |
|  | 419 | The time when the maximum demand occurred in the previous month          | R | high byte hour, low byte minute | word |
|  | 420 | Current reactive power demand                                            | R | Unit1var                        | word |
|  | 421 |                                                                          |   |                                 | word |
|  | 422 | The maximum reactive power demand of this month                          | R | Unit1var                        | word |
|  | 423 |                                                                          |   |                                 | word |
|  | 424 | The month and day when the maximum demand occurs in this month           | R | high byte month, low byte day   | word |
|  | 425 | The time when the maximum demand occurs in this month                    | R | high byte hour, low byte minute | word |
|  | 426 | Maximum reactive                                                         | R | Unit1var                        | word |

|      |     |                                                                          |   |                                    |      |
|------|-----|--------------------------------------------------------------------------|---|------------------------------------|------|
|      | 427 | power demand last month                                                  |   |                                    | word |
|      | 428 | The month and day when the maximum demand occurred in the previous month | R | high byte month,<br>low byte day   | word |
|      | 429 | The time when the maximum demand occurred in the previous month          | R | high byte hour,<br>low byte minute | word |
|      | 430 | Current Apparent Power Demand                                            | R | Unit1VA                            | word |
|      | 431 |                                                                          |   |                                    | word |
|      | 432 | The maximum apparent power demand of the month                           | R | Unit1VA                            | word |
|      | 433 |                                                                          |   |                                    | word |
|      | 434 | The month and day when the maximum demand occurs in this month           | R | high byte month,<br>low byte day   | word |
|      | 435 | The time when the maximum demand occurs in this month                    | R | high byte hour,<br>low byte minute | word |
|      | 436 | Maximum apparent power demand last month                                 | R | Unit1VA                            | word |
|      | 437 |                                                                          |   |                                    | word |
|      | 438 | The month and day when the maximum demand occurred in the previous month | R | high byte month,<br>low byte day   | word |
|      | 439 | The time when the maximum demand occurred in the previous month          | R | high byte hour,<br>low byte minute | word |
| 母线测温 | 500 | Wired temperature                                                        | R | 0.1℃                               | word |

|  |     |                                                           |     |       |      |
|--|-----|-----------------------------------------------------------|-----|-------|------|
|  |     | measurement<br>temperature value1                         |     |       |      |
|  | 501 | Wired temperature<br>measurement<br>temperature value2    | R   | 0.1°C | word |
|  | 502 | Wired temperature<br>measurement<br>temperature value3    | R   | 0.1°C | word |
|  | 503 | Wired temperature<br>measurement<br>temperature value4    | R   | 0.1°C | word |
|  | 504 | Wired temperature<br>measurement<br>temperature value5    | R   | 0.1°C | word |
|  | 505 | Wired temperature<br>measurement<br>temperature value6    | R   | 0.1°C | word |
|  | 506 | Wired temperature<br>measurement<br>temperature value7    | R   | 0.1°C | word |
|  | 507 | Wired temperature<br>measurement<br>temperature value8    | R   | 0.1°C | word |
|  | 508 | Wired temperature<br>measurement<br>temperature value9    | R   | 0.1°C | word |
|  | 509 | Wired temperature<br>measurement<br>sensor type           | R/W | 0.1°C | word |
|  | 510 | Wireless temperature<br>measurement<br>temperature value1 | R   | 0.1°C | word |
|  | 511 | Wireless temperature<br>measurement<br>temperature value2 | R   | 0.1°C | word |
|  | 512 | Wireless temperature                                      | R   | 0.1°C | word |

|  |     |                                                            |   |       |      |
|--|-----|------------------------------------------------------------|---|-------|------|
|  |     | measurement<br>temperature value3                          |   |       |      |
|  | 513 | Wireless temperature<br>measurement<br>temperature value4  | R | 0.1°C | word |
|  | 514 | Wireless temperature<br>measurement<br>temperature value5  | R | 0.1°C | word |
|  | 515 | Wireless temperature<br>measurement<br>temperature value6  | R | 0.1°C | word |
|  | 516 | Wireless temperature<br>measurement<br>temperature value7  | R | 0.1°C | word |
|  | 517 | Wireless temperature<br>measurement<br>temperature value8  | R | 0.1°C | word |
|  | 518 | Wireless temperature<br>measurement<br>temperature value9  | R | 0.1°C | word |
|  | 519 | Wireless temperature<br>measurement<br>temperature value10 | R | 0.1°C | word |
|  | 520 | Wireless temperature<br>measurement<br>temperature value11 | R | 0.1°C | word |
|  | 521 | Wireless temperature<br>measurement<br>temperature value12 | R | 0.1°C | word |
|  | 522 | Wireless temperature<br>measurement<br>temperature value13 | R | 0.1°C | word |
|  | 523 | Wireless temperature<br>measurement<br>temperature value14 | R | 0.1°C | word |
|  | 524 | Wireless temperature                                       | R | 0.1°C | word |

|  |     |                                                            |   |       |      |
|--|-----|------------------------------------------------------------|---|-------|------|
|  |     | measurement<br>temperature value15                         |   |       |      |
|  | 525 | Wireless temperature<br>measurement<br>temperature value16 | R | 0.1°C | word |
|  | 526 | Wireless temperature<br>measurement<br>temperature value17 | R | 0.1°C | word |
|  | 527 | Wireless temperature<br>measurement<br>temperature value18 | R | 0.1°C | word |
|  | 528 | Wireless temperature<br>measurement<br>temperature value19 | R | 0.1°C | word |
|  | 529 | Wireless temperature<br>measurement<br>temperature value20 | R | 0.1°C | word |
|  | 530 | Wireless temperature<br>measurement<br>temperature value21 | R | 0.1°C | word |
|  | 531 | Wireless temperature<br>measurement<br>temperature value22 | R | 0.1°C | word |
|  | 532 | Wireless temperature<br>measurement<br>temperature value23 | R | 0.1°C | word |
|  | 533 | Wireless temperature<br>measurement<br>temperature value24 | R | 0.1°C | word |
|  | 534 | Wireless temperature<br>measurement<br>temperature value25 | R | 0.1°C | word |
|  | 535 | Wireless temperature<br>measurement<br>temperature value26 | R | 0.1°C | word |
|  | 536 | Wireless temperature                                       | R | 0.1°C | word |

|  |         |                                                                   |     |       |      |
|--|---------|-------------------------------------------------------------------|-----|-------|------|
|  |         | measurement<br>temperature value27                                |     |       |      |
|  | 537     | Wireless temperature<br>measurement<br>temperature value28        | R   | 0.1°C | word |
|  | 538     | Wireless temperature<br>measurement<br>temperature value29        | R   | 0.1°C | word |
|  | 539     | Wireless temperature<br>measurement<br>temperature value30        | R   | 0.1°C | word |
|  | 540-569 | Wireless temperature<br>measurement<br>temperature value<br>31-60 | R   | 0.1°C | word |
|  | 570     | Wireless temperature<br>measurement<br>ID value1                  | R/W |       | word |
|  | 571     | Wireless temperature<br>measurement<br>ID value2                  | R/W |       | word |
|  | 572     | Wireless temperature<br>measurement<br>ID value3                  | R/W |       | word |
|  | 573     | Wireless temperature<br>measurement<br>ID value4                  | R/W |       | word |
|  | 574     | Wireless temperature<br>measurement<br>ID value5                  | R/W |       | word |
|  | 575     | Wireless temperature<br>measurement<br>ID value6                  | R/W |       | word |
|  | 576     | Wireless temperature<br>measurement<br>ID value7                  | R/W |       | word |

|  |     |                                                   |     |  |      |
|--|-----|---------------------------------------------------|-----|--|------|
|  | 577 | Wireless temperature<br>measurement<br>ID value8  | R/W |  | word |
|  | 578 | Wireless temperature<br>measurement<br>ID value9  | R/W |  | word |
|  | 579 | Wireless temperature<br>measurement<br>ID value10 | R/W |  | word |
|  | 580 | Wireless temperature<br>measurement<br>ID value11 | R/W |  | word |
|  | 581 | Wireless temperature<br>measurement<br>ID value12 | R/W |  | word |
|  | 582 | Wireless temperature<br>measurement<br>ID value13 | R/W |  | word |
|  | 583 | Wireless temperature<br>measurement<br>ID value14 | R/W |  | word |
|  | 584 | Wireless temperature<br>measurement<br>ID value15 | R/W |  | word |
|  | 585 | Wireless temperature<br>measurement<br>ID value16 | R/W |  | word |
|  | 586 | Wireless temperature<br>measurement<br>ID value17 | R/W |  | word |
|  | 587 | Wireless temperature<br>measurement<br>ID value18 | R/W |  | word |
|  | 588 | Wireless temperature<br>measurement<br>ID value19 | R/W |  | word |

|  |         |                                                      |     |  |      |
|--|---------|------------------------------------------------------|-----|--|------|
|  | 589     | Wireless temperature<br>measurement<br>ID value20    | R/W |  | word |
|  | 590     | Wireless temperature<br>measurement<br>ID value21    | R/W |  | word |
|  | 591     | Wireless temperature<br>measurement<br>ID value22    | R/W |  | word |
|  | 592     | Wireless temperature<br>measurement<br>ID value23    | R/W |  | word |
|  | 593     | Wireless temperature<br>measurement<br>ID value24    | R/W |  | word |
|  | 594     | Wireless temperature<br>measurement<br>ID value25    | R/W |  | word |
|  | 595     | Wireless temperature<br>measurement<br>ID value26    | R/W |  | word |
|  | 596     | Wireless temperature<br>measurement<br>ID value27    | R/W |  | word |
|  | 597     | Wireless temperature<br>measurement<br>ID value28    | R/W |  | word |
|  | 598     | Wireless temperature<br>measurement<br>ID value29    | R/W |  | word |
|  | 599     | Wireless temperature<br>measurement<br>ID value30    | R/W |  | word |
|  | 600-629 | Wireless temperature<br>measurement<br>ID value31-60 | R/W |  | word |

|  |     |                                                          |     |                                                         |      |
|--|-----|----------------------------------------------------------|-----|---------------------------------------------------------|------|
|  | 630 | If wired temperature measurement enabled                 | R/W | byte0-8 Corresponding to wired channels 1-9             | word |
|  | 631 | If wireless temperature measurement enabled              | R/W | byte0-15 Corresponding to wired channels 1-16           | word |
|  | 632 | If wireless temperature measurement enabled              | R/W | byte0-15 Corresponding to wireless channels 17-32       | word |
|  | 633 | If wireless temperature measurement enabled              | R/W | byte0-15 Corresponding to wireless channels 33-48       | word |
|  | 634 | If wireless temperature measurement enabled              | R/W | byte0-11 Corresponding to wireless channels 49-60       | word |
|  | 635 | Wired temperature measurement channel2-1 group selection | R/W | Low byte wired 1, high byte wired 2<br>Value range: 1-6 | word |
|  | 636 | Wired temperature measurement channel4-3group selection  | R/W |                                                         | word |
|  | 637 | Wired temperature measurement channel6-5group selection  | R/W |                                                         | word |
|  | 638 | Wired temperature measurement channel8-7group selection  | R/W |                                                         | word |
|  | 639 | Wired temperature measurement channel9group selection    | R/W |                                                         | word |
|  | 640 | Wireless temperature                                     | R/W |                                                         | word |

|  |     |                                                                       |     |  |      |
|--|-----|-----------------------------------------------------------------------|-----|--|------|
|  |     | measurement<br>channel2-1group<br>selection                           |     |  |      |
|  | 641 | Wireless temperature<br>measurement<br>channel4-3group<br>selection   | R/W |  | word |
|  | 642 | Wireless temperature<br>measurement<br>channel6-5group<br>selection   | R/W |  | word |
|  | 643 | Wireless temperature<br>measurement<br>channel8-7group<br>selection   | R/W |  | word |
|  | 644 | Wireless temperature<br>measurement<br>channel10-9group<br>selection  | R/W |  | word |
|  | 645 | Wireless temperature<br>measurement<br>channel12-11group<br>selection | R/W |  | word |
|  | 646 | Wireless temperature<br>measurement<br>channel14-13group<br>selection | R/W |  | word |
|  | 647 | Wireless temperature<br>measurement<br>channel16-15group<br>selection | R/W |  | word |
|  | 648 | Wireless temperature<br>measurement<br>channel18-17group<br>selection | R/W |  | word |
|  | 649 | Wireless temperature                                                  | R/W |  | word |

|  |         |                                                                       |     |                                       |      |
|--|---------|-----------------------------------------------------------------------|-----|---------------------------------------|------|
|  |         | measurement<br>channel20-19group<br>selection                         |     |                                       |      |
|  | 650     | Wireless temperature<br>measurement<br>channel22-21group<br>selection | R/W |                                       | word |
|  | 651     | Wireless temperature<br>measurement<br>channel24-23group<br>selection | R/W |                                       | word |
|  | 652     | Wireless temperature<br>measurement<br>channel26-25group<br>selection | R/W |                                       | word |
|  | 653     | Wireless temperature<br>measurement<br>channel28-27group<br>selection | R/W |                                       | word |
|  | 654     | Wireless temperature<br>measurement<br>channel30-29group<br>selection | R/W |                                       | word |
|  | 655-669 | Wireless temperature<br>measurement<br>ID value60-31<br>reserve       | R/W |                                       | word |
|  | 670     | Internal data of<br>temperature module,<br>AD value and ohm<br>value  | R   | 0-1000, Unit0.1%, Below is as<br>same | word |
|  | 671     |                                                                       |     |                                       | word |
|  | 672-699 |                                                                       |     |                                       | word |

## 8.2 谐波数据通讯地址 8.2 Harmonic data communication address

见表 18: Refer to table 18:

表 18 谐波参数地址表

| 分类 | 地址        | 参数                 | 读写属性 | 取值范围   | 类型   |
|----|-----------|--------------------|------|--------|------|
| 谐波 | 700       | AB 线电压总谐波含量        | R    | 0-1000 | word |
|    | 701       | BC 线相电压总谐波含量       | R    | 0-1000 | word |
|    | 702       | CA 线相电压总谐波含量       | R    | 0-1000 | word |
|    | 703       | A 相电流总谐波含量         | R    | 0-1000 | word |
|    | 704       | B 相电流总谐波含量         | R    | 0-1000 | word |
|    | 705       | C 相电流总谐波含量         | R    | 0-1000 | word |
|    | 706-767   | A 相电压 2~63 次电压谐波含量 | R    | 0-1000 | word |
|    | 768-829   | B 相电压 2~63 次电压谐波含量 | R    | 0-1000 | word |
|    | 830-891   | C 相电压 2~63 次电压谐波含量 | R    | 0-1000 | word |
|    | 892-953   | A 相电流 2~63 次电流谐波含量 | R    | 0-1000 | word |
|    | 954-1015  | B 相电流 2~63 次电流谐波含量 | R    | 0-1000 | word |
|    | 1016-1077 | C 相电流 2~63 次电流谐波含量 | R    | 0-1000 | word |
|    | 1078-1099 | 保留                 |      |        |      |

Table 18 Harmonic parameter address table

| Category | Address | Parameters                                   | Read-write attribute | Range  | Type |
|----------|---------|----------------------------------------------|----------------------|--------|------|
| Harmonic | 700     | AB line voltage total harmonic content       | R                    | 0-1000 | word |
|          | 701     | BC line phase voltage total harmonic content | R                    | 0-1000 | word |
|          | 702     | CA line phase voltage total harmonic content | R                    | 0-1000 | word |
|          | 703     | A phase Current total harmonic content       | R                    | 0-1000 | word |
|          | 704     | B phase Current total                        | R                    | 0-1000 | word |

|  |           |                                                     |   |        |      |
|--|-----------|-----------------------------------------------------|---|--------|------|
|  |           | harmonic content                                    |   |        |      |
|  | 705       | C phase Current total<br>harmonic content           | R | 0-1000 | word |
|  | 706-767   | A Phase voltage 2~63<br>voltage harmonic<br>content | R | 0-1000 | word |
|  | 768-829   | B Phase voltage 2~63<br>voltage harmonic<br>content | R | 0-1000 | word |
|  | 830-891   | C Phase voltage 2~63<br>voltage harmonic<br>content | R | 0-1000 | word |
|  | 892-953   | A Phase current 2~63<br>current harmonic<br>content | R | 0-1000 | word |
|  | 954-1015  | B Phase voltage 2~63<br>voltage harmonic<br>content | R | 0-1000 | word |
|  | 1016-1077 | C Phase voltage 2~63<br>voltage harmonic<br>content | R | 0-1000 | word |
|  | 1078-1099 | Reserve                                             |   |        |      |

### 8.3 系统参数通讯地址 8.3 System parameter communication address

见表 19: Refer to table 19

表 19 系统参数地址表

| 分类   | 地址   | 参数     | 读写属性 | 取值范围                                                                                                                        | 类型   |
|------|------|--------|------|-----------------------------------------------------------------------------------------------------------------------------|------|
| 运行信息 | 1100 | 控制权限   | R    | 0-检修, 1 面板, 2-本地, 3-远程, 4-通讯, 5-全控                                                                                          | word |
|      | 1101 | 脱扣状态 1 | R    | byte0: 反时限过流; byte1: 反时限零序; byte2: 一段定时限过流; byte3: 二段定时限过流; byte4: 三段定时限过流; byte5: 一段定时限零序; byte6: 二段定时限零序; byte7: 三段定时限零序; | word |

|  |      |        |     |                                                                                                                                                                                                                                                                         |      |
|--|------|--------|-----|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|  |      |        |     | byte8: 一段负序电流; byte9: 二段负序电流;<br>byte10: 零线电流; byte11: 电流不平衡;<br>byte12: 电流需量; byte13: 联动 1; byte14:<br>联动 2; byte15: 联动 3;                                                                                                                                             |      |
|  | 1102 | 脱扣状态 2 | R   | byte0: 欠压; byte1: 过压; byte2: 电压不平<br>衡; byte3: 漏电; byte4: 欠载; byte5: 断相;<br>byte6: 过功率; byte7: 欠功率; byte8: 相序;<br>byte9: 短路; byte12: 内部故障, byte13 控<br>制回路异常, byte14 PT 断线, byte15 温度传<br>感器故障                                                                          | word |
|  | 1103 | 脱扣状态 3 | R   | byte0: 分组 1 过温, byte1: 分组 2 过温, byte2:<br>分组 3 过温, byte3: 分组 4 过温, byte4: 分<br>组 5 过温, byte5: 分组 6 过温                                                                                                                                                                   | word |
|  | 1104 | 报警状态 1 | R   | byte0: 反时限过流; byte1: 反时限零序; byte2:<br>一段定时限过流; byte3: 二段定时限过流;<br>byte4: 三段定时限过流;<br>byte5: 一段定时限零序; byte6: 二段定时限<br>零序; byte7: 三段定时限零序;<br>byte8: 一段负序电流; byte9: 二段负序电流;<br>byte10: 零线电流; byte11: 电流不平衡;<br>byte12: 电流需量; byte13: 联动 1; byte14:<br>联动 2; byte15: 联动 3; | word |
|  | 1105 | 报警状态 2 | R   | byte0: 欠压; byte1: 过压; byte2: 电压不平<br>衡; byte3: 漏电; byte4: 欠载; byte5: 断相;<br>byte6: 过功率; byte7: 欠功率; byte8: 相序;<br>byte9: 短路; byte10: 运行时间; byte11: 故<br>障次数; byte12: 内部故障, byte14 PT 断<br>线, byte15 温度传感器故障                                                             | word |
|  | 1106 | 报警状态 3 | R   | byte0: 分组 1 过温, byte1: 分组 2 过温, byte2:<br>分组 3 过温, byte3: 分组 4 过温, byte4: 分<br>组 5 过温, byte5: 分组 6 过温                                                                                                                                                                   | word |
|  | 1107 | DI 状态  | R   | byte0-byte13 对应开关量输入 DI1-DI14                                                                                                                                                                                                                                           | word |
|  | 1108 | DO 状态  | R/W | byte0 继电器 1、byte1 继电器 2、byte2 继电<br>器 3、byte3 继电器 4、byte4 继电器 5、byte5                                                                                                                                                                                                   | word |

|      |                |   |  |                   |      |
|------|----------------|---|--|-------------------|------|
|      |                |   |  | 继电器 6、byte6 继电器 7 |      |
| 1109 | 运行状态           | R |  | 1: 合闸; 0: 分闸      | word |
| 1110 | 总合闸次数          | R |  |                   | word |
| 1111 | 总分闸次数          | R |  |                   | word |
| 1112 | 总故障脱扣次数        | R |  |                   | word |
| 1113 | 本次合闸时间         | R |  | Unit min          | word |
| 1114 | 本次分闸时间         | R |  | Unit min          | word |
| 1115 | 总合闸时间          | R |  | Unit h            | word |
| 1116 | 总分闸时间          | R |  | Unit h            | word |
| 1117 | 断路器正常跳闸次数      | R |  |                   | word |
| 1118 | 断路器异常跳闸次数      | R |  |                   | word |
| 1119 | 电流需量故障次数       | R |  |                   | word |
| 1120 | 需量保护剩余时间       | R |  | min               | word |
| 1121 | 合闸超时剩余时间       | R |  | h                 | word |
| 1122 | 故障剩余次数         | R |  |                   | word |
| 1123 | 最新故障记录通讯地址     | R |  |                   | word |
| 1124 | 最新 DI 变位记录通讯地址 | R |  |                   | word |
| 1125 | 最新合闸记录通讯地址     | R |  |                   | word |
| 1126 | 最新分闸记录通讯地址     | R |  |                   | word |
| 1127 | 最新电压暂升记录通讯地址   | R |  |                   | word |
| 1128 | 最新电压暂降记录通讯地址   | R |  |                   | word |
| 1129 | 最新故障录波通讯地址     | R |  |                   | word |

|        |           |               |     |                                                  |      |
|--------|-----------|---------------|-----|--------------------------------------------------|------|
|        | 1130      | 最新参数设置通讯地址    | R   |                                                  | word |
|        | 1131      | 最新装置上电记录通讯地址  | R   |                                                  | word |
|        | 1132      | 最新装置断电记录通讯地址  | R   |                                                  | word |
|        | 1133      | 当前记录到的上电次数    | R   | 0-60000                                          | word |
|        | 1134      | 当前记录到的断电次数    | R   | 0-60000                                          | word |
|        | 1135-199  | 保留            |     |                                                  |      |
| 控制参数   | 1200      | 控制权限设置        | R/W | 0-检修, 1-面板, 2-就地, 3-远程, 4-通讯, 5-二选一, 6-三选一, 7 全控 | word |
|        | 1201      | 三选一控制权限编程输出 1 | R/W | 0-检修, 1-面板, 2-就地, 3-远程, 4-通讯, 默认 0               | word |
|        | 1202      | 三选一控制权限编程输出 2 | R/W | 0-检修, 1-面板, 2-就地, 3-远程, 4-通讯, 默认 1               | word |
|        | 1203      | 三选一控制权限编程输出 3 | R/W | 0-检修, 1-面板, 2-就地, 3-远程, 4-通讯, 默认 2               | word |
|        | 1204      | 三选一控制权限编程输出 4 | R/W | 0-检修, 1-面板, 2-就地, 3-远程, 4-通讯, 默认 3               | word |
|        | 1205-1249 | 保留            |     |                                                  |      |
| 清除记录功能 | 1250      | 清除电能          | W   | 0xa5b5                                           | word |
|        | 1251      | 清除运行信息        | W   | 0xa5b5                                           | word |
|        | 1252      | 清除记录          | W   | 0xa5b5                                           | word |
| 系统参数   | 1300      | 恢复出厂设置        | W   | 0xFFFF                                           | word |
|        | 1301      | 电流规格          | R   | 10-1A、50-5A、250-25A、1000-100A                    | word |
|        | 1302      | 运行控制位         | R   | 1、合闸；0、分闸；2、复位                                   | word |
|        | 1303      | 基波开关          | R/W | 0 有效值, 1 基波                                      | word |
|        | 1304      | CT 变比(三相)     | R/W | 1A: 1-5000 5A: 1-1000                            | word |
|        | 1305      | CT 变比(零线)     | R/W | 1A: 1-5000 5A: 1-1000                            | word |
|        | 1306      | 计量模块 CT       | R/W | 1A: 1-5000 5A: 1-1000                            | word |
|        | 1307      | 额定频率          | R/W | 45-70                                            | word |
|        | 1308      | 额定电流          | R/W | 1A: 0.1-6300.0A 5A:0.5-6300.0A                   | word |

|      |               |     |  |                                                                                                                  |      |
|------|---------------|-----|--|------------------------------------------------------------------------------------------------------------------|------|
|      |               |     |  | 25A:5.0-25.0 100A:25.0-100.0                                                                                     |      |
| 1309 | 额定电压          | R/W |  | 0-20000                                                                                                          | word |
| 1310 | 额定功率          | R/W |  | 高位                                                                                                               | word |
| 1311 |               | R/W |  | 低位                                                                                                               | word |
| 1312 | 接线方式          | R/W |  | 0 单相模式 1 三相四线, 2 三相三线                                                                                            | word |
| 1313 | 主界面当前页面索引号    | R/W |  | 1~7                                                                                                              | word |
| 1314 | 中英文切换         | R/W |  | 0-中文, 1-英文                                                                                                       | word |
| 1315 | 电流屏蔽值         | R/W |  |                                                                                                                  | word |
| 1316 | 密码            | R/W |  | 4 位数显示                                                                                                           | word |
| 1317 | 功能开关          | R/W |  | byte0-计量模块(含 Lora); byte1-测温模块;<br>byte2-开关量; byte3-通讯模块;<br>byte4-谐波开关; byte5-录波开关(谐波开关和录波开关出厂调试写入, 其他功能支持菜单设置) | word |
| 1318 | 运行记录最大时间      | R/W |  | 1-5 小时                                                                                                           | word |
| 1319 | 校准使能          | R/W |  |                                                                                                                  | word |
| 1320 | 变送模块 1 设定     | R/W |  | 变送类型;<br>0-Ia, 1-Ib, 2-Ic, 3-Iav, 4-In, 5-Uab, 6-Ubc,<br>7-Uca, 8-Uav, 9-热容量, 10-P, 11-F                         | word |
| 1321 | 变送模块 1 的满度对应值 | R/W |  | 电流默认同 2 倍额定值                                                                                                     | word |
| 1322 |               |     |  |                                                                                                                  |      |
| 1323 | 变送模块 2 设定     | R/W |  | 变送类型;<br>0-Ia, 1-Ib, 2-Ic, 3-Iav, 4-In, 5-Uab, 6-Ubc,<br>7-Uca, 8-Uav, 9-热容量, 10-P, 11-F                         | word |
| 1324 | 变送模块 2 的满度对应值 | R/W |  | 电流默认同 2 倍额定值                                                                                                     | word |
| 1325 |               |     |  |                                                                                                                  |      |
| 1326 | 主体软件版本        | R   |  |                                                                                                                  | word |
| 1327 | 主体软件编号        | R   |  |                                                                                                                  | word |
| 1328 | 主体开关量类型       | R   |  |                                                                                                                  | word |
| 1329 | 计量模块软件版本      | R   |  |                                                                                                                  | word |
| 1330 | 计量模块软件编号      | R   |  |                                                                                                                  | word |
| 1331 | 测温模块软件版       | R   |  |                                                                                                                  | word |

|  |           |                                           |     |                                                      |      |
|--|-----------|-------------------------------------------|-----|------------------------------------------------------|------|
|  |           | 本                                         |     |                                                      |      |
|  | 1332      | 测温模块软件编号                                  | R   |                                                      | word |
|  | 1333      | 开关量模块软件版本                                 | R   |                                                      | word |
|  | 1334      | 开关量模块软件编号                                 | R   |                                                      | word |
|  | 1335      | 开关量开关量类型                                  | R   |                                                      | word |
|  | 1336      | 通讯模块 1 (4G、以太网, profibus, profi net) 软件版本 | R   | 允许内部通信写, 禁止外部通信写                                     | word |
|  | 1337      | 通讯模块 1 (4G、以太网, profibus, profi net) 软件编号 | R   | 允许内部通信写, 禁止外部通信写                                     | word |
|  | 1338      | 4G 模块与服务器通讯状态                             | R   |                                                      | word |
|  | 1339      | 以太网模块与服务器通讯状态                             | R   |                                                      | word |
|  | 1340-1341 | 保留                                        |     |                                                      |      |
|  | 1342      | 主体与模块通讯状态                                 | R   | 1: 正常; 0: 断开; byte0 计量 byte1 测温 byte2 开关量 byte3 通信 1 | word |
|  | 1343      | 电压暂升阈值                                    | R/W | 100-150%                                             | word |
|  | 1344      | 电压暂降阈值                                    | R/W | 50-99                                                | word |
|  | 1345      | 电压暂升恢复大小                                  | R/W | 100-150                                              | word |
|  | 1346      | 电压暂降恢复大小                                  | R/W | 50-99                                                | word |
|  | 1347-1399 | 保留                                        |     |                                                      |      |

Table 19 System parameter address table

| category | addre | parameters | Read-Write | Range | Type |
|----------|-------|------------|------------|-------|------|
|----------|-------|------------|------------|-------|------|

|                          | ss   |                      | Attribute |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |      |
|--------------------------|------|----------------------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Operation<br>Information | 1100 | Control<br>Privilege | R         | 0-inspection, 1 panel, 2-local, 3-remote,<br>4-communication, 5-full control                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | word |
|                          | 1101 | Trip<br>condition1   | R         | byte0: Inverse time over current; byte1: Inverse<br>time zero sequence; byte2: One-stage definite<br>over current; byte3: Two-stage definite over<br>current; byte4: Three-stage definite over current;<br>byte5: One-stage definite-time zero-sequence;<br>byte6: Two-stage definite-time zero-sequence;<br>byte7: Three-stage definite-time zero-sequence;<br>byte8: Negative sequence current of one stage;<br>byte9: Negative sequence current of two stages;<br>byte10: Zero line current; byte11: Current<br>imbalance; byte12: Current demand; byte13:<br>Linkage 1; byte14: Linkage 2; byte15: Linkage 3; | word |
|                          | 1102 | Trip<br>condition2   | R         | byte0: Under voltage; byte1: Over voltage; byte2:<br>Voltage imbalance; byte3: Leakage; byte4: Under<br>load; byte5: Phase failure; byte6: Overpower;<br>byte7: Under power; byte8: Phase sequence;<br>byte9: Short circuit; byte12 : Internal fault,<br>byte13 control circuit abnormality, byte14 PT<br>disconnection, byte15 temperature sensor fault                                                                                                                                                                                                                                                          | word |
|                          | 1103 | Trip<br>condition3   | R         | byte0: group 1 over temperature, byte1: group 2<br>over temperature, byte2: group 3 over<br>temperature, byte3: group 4 over temperature,<br>byte4: group 5 over temperature, byte5: group 6<br>over temperature                                                                                                                                                                                                                                                                                                                                                                                                  | word |
|                          | 1104 | Alarm<br>condition1  | R         | byte0: Inverse time over current; byte1: Inverse<br>time zero sequence; byte2: One-stage definite<br>over current; byte3: Two-stage definite over<br>current; byte4: Three-stage definite over current;<br>byte5: One-stage definite-time zero-sequence;<br>byte6: Two-stage definite-time zero-sequence;<br>byte7: Three-stage definite-time zero-sequence;<br>byte8: Negative sequence current of one stage;<br>byte9: Negative sequence current of two stages;                                                                                                                                                 | word |

|      |                        |     |  |                                                                                                                                                                                                                                                                                                                                               |      |
|------|------------------------|-----|--|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|      |                        |     |  | byte10: Zero line current; byte11: Current imbalance; byte12: Current demand; byte13: Linkage 1; byte14: Linkage 2; byte15: Linkage 3;                                                                                                                                                                                                        |      |
| 1105 | Alarm condition2       | R   |  | byte0: Under voltage; byte1: Over voltage; byte2: Voltage imbalance; byte3: Leakage; byte4: Under load; byte5: Phase failure; byte6: Overpower; byte7: Under power; byte8: Phase sequence; byte9: Short circuit; byte10 : running time; byte11: fault times; byte12: internal fault, byte14 PT disconnection, byte15 temperature sensor fault | word |
| 1106 | Alarm condition3       | R   |  | byte0: group 1 over temperature, byte1: group 2 over temperature, byte2: group 3 over temperature, byte3: group 4 over temperature, byte4: group 5 over temperature, byte5: group 6 over temperature                                                                                                                                          | word |
| 1107 | DI Status              | R   |  | byte0-byte13 Relevant digital input DI1-DI14                                                                                                                                                                                                                                                                                                  | word |
| 1108 | DO Status              | R/W |  | byte0Relay1、 byte1Relay2、 byte2Relay3、 byte3Relay4、 byte4Relay5、 byte5Relay6、 byte6Relay7                                                                                                                                                                                                                                                     | word |
| 1109 | Operation Status       | R   |  | 1: opening; 0: closing                                                                                                                                                                                                                                                                                                                        | word |
| 1110 | Total closing times    | R   |  |                                                                                                                                                                                                                                                                                                                                               | word |
| 1111 | Total opening times    | R   |  |                                                                                                                                                                                                                                                                                                                                               | word |
| 1112 | Total fault trip times | R   |  |                                                                                                                                                                                                                                                                                                                                               | word |
| 1113 | This closing time      | R   |  | Unit min                                                                                                                                                                                                                                                                                                                                      | word |
| 1114 | This opening time      | R   |  | Unit min                                                                                                                                                                                                                                                                                                                                      | word |
| 1115 | Total closing time     | R   |  | Unit h                                                                                                                                                                                                                                                                                                                                        | word |

|  |      |                                                         |   |        |      |
|--|------|---------------------------------------------------------|---|--------|------|
|  | 1116 | Total opening time                                      | R | Unit h | word |
|  | 1117 | Circuit breaker normal trip times                       | R |        | word |
|  | 1118 | Circuit breaker Abnormal trip times                     | R |        | word |
|  | 1119 | Current demand failure times                            | R |        | word |
|  | 1120 | Demand protection remaining time                        | R | min    | word |
|  | 1121 | Closing timeout remaining time                          | R | h      | word |
|  | 1122 | Failure remaining                                       | R |        | word |
|  | 1123 | Communication address of the latest fault record        | R |        | word |
|  | 1124 | The latest DI displacement record communication address | R |        | word |
|  | 1125 | Latest closing record mailing address                   | R |        | word |
|  | 1126 | Mailing                                                 | R |        | word |

|  |      |                                                           |   |         |      |
|--|------|-----------------------------------------------------------|---|---------|------|
|  |      | address of the latest opening record                      |   |         |      |
|  | 1127 | Mailing address of the latest voltage swell record        | R |         | word |
|  | 1128 | Mailing address of the latest voltage sag records         | R |         | word |
|  | 1129 | The latest fault record communication address             | R |         | word |
|  | 1130 | The latest parameter setting communication address        | R |         | word |
|  | 1131 | Mailing address of the latest device power-on record      | R |         | word |
|  | 1132 | Mailing address of the latest device power failure record | R |         | word |
|  | 1133 | The number of power-on times currently recorded           | R | 0-60000 | word |
|  | 1134 | The number                                                | R | 0-60000 | word |

|                        |           |                                                            |     |                                                                                                                     |      |
|------------------------|-----------|------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------|------|
|                        |           | of power outages currently recorded                        |     |                                                                                                                     |      |
|                        | 1135-1199 | reserve                                                    |     |                                                                                                                     |      |
| Controlling parameters | 1200      | Control permissions settings                               | R/W | 0-overhaul, 1-panel, 2-local, 3-remote, 4-communication, 5-choose one of two, 6-choose one of three, 7 full control | word |
|                        | 1201      | Choose one of three control authority programming output 1 | R/W | 0-inspection, 1-panel, 2-local, 3-remote, 4-communication, default 0                                                | word |
|                        | 1202      | Choose one of three control authority programming output 2 | R/W | 0-inspection, 1-panel, 2-local, 3-remote, 4-communication, default 1                                                | word |
|                        | 1203      | Choose one of three control authority programming output 3 | R/W | 0-inspection, 1-panel, 2-local, 3-remote, 4-communication, default 2                                                | word |
|                        | 1204      | Choose one of three control authority programming output 4 | R/W | 0-inspection, 1-panel, 2-local, 3-remote, 4-communication, default 3                                                | word |
|                        | 1205-1249 | Reserve                                                    |     |                                                                                                                     |      |
|                        |           |                                                            |     |                                                                                                                     |      |
| Clear record function  | 1250      | Clear energy                                               | W   | 0xa5b5                                                                                                              | word |
|                        | 1251      | Clear running information                                  | W   | 0xa5b5                                                                                                              | word |
|                        | 1252      | clear record                                               | W   | 0xa5b5                                                                                                              | word |
| System                 | 1300      | restore factory                                            | W   | 0xFFFF                                                                                                              | word |

| parameter |      | settings                                            |     |                                                                                                            |      |
|-----------|------|-----------------------------------------------------|-----|------------------------------------------------------------------------------------------------------------|------|
|           |      |                                                     |     |                                                                                                            |      |
|           | 1301 | Current Specifications                              | R   | 10-1A、50-5A、250-25A、1000-100A                                                                              | word |
|           | 1302 | Running control byte                                | R   | 1、合闸；0、分闸；2、复位                                                                                             | word |
|           | 1303 | fundamental wave switch                             | R/W | 0 有效值，1 基波                                                                                                 | word |
|           | 1304 | CT ratio (three-phase)                              | R/W | 1A: 1-5000 5A: 1-1000                                                                                      | word |
|           | 1305 | CT ratio (zero line)                                | R/W | 1A: 1-5000 5A: 1-1000                                                                                      | word |
|           | 1306 | metering module CT                                  | R/W | 1A: 1-5000 5A: 1-1000                                                                                      | word |
|           | 1307 | Rated frequency                                     | R/W | 45-70                                                                                                      | word |
|           | 1308 | Rated current                                       | R/W | 1A: 0.1-6300.0A 5A:0.5-6300.0A 25A:5.0-25.0<br>100A:25.0-100.0                                             | word |
|           | 1309 | Rated voltage                                       | R/W | 0-20000                                                                                                    | word |
|           | 1310 | Rated Power                                         | R/W | High order                                                                                                 | word |
|           | 1311 |                                                     | R/W | Low order                                                                                                  | word |
|           | 1312 | wiring method                                       | R/W | 0 Single-phase mode 1 Three-phase four-wire, 2<br>Three-phase three-wire                                   | word |
|           | 1313 | The current page index number of the main interface | R/W | 1~7                                                                                                        | word |
|           | 1314 | Switch between Chinese and English                  | R/W | 0-Chinese, 1-English                                                                                       | word |
|           | 1315 | current Block value                                 | R/W |                                                                                                            | word |
|           | 1316 | password                                            | R/W | 4 digits display                                                                                           | word |
|           | 1317 | function switch                                     | R/W | byte0-measurement module (including Lora);<br>byte1-temperature measurement module;<br>byte2-switch value; | word |

|  |      |                                                                   |     |                                                                                                                                                                                       |      |
|--|------|-------------------------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|  |      |                                                                   |     | byte3-communication module;<br>byte4-harmonic switch;<br>byte5-recording switch (harmonic switch and recording switch factory debugging write, other functions Support menu settings) |      |
|  | 1318 | maximum time of running record                                    | R/W | 1-5hours                                                                                                                                                                              | word |
|  | 1319 | Calibration enable                                                | R/W |                                                                                                                                                                                       | word |
|  | 1320 | Transmitter module 1 setting                                      | R/W | transmission type;<br>0-Ia,1-Ib,2-Ic,3-Iav,4-In,5-Uab,6-Ubc,<br>7-Uca,8-Uav,9-Heat capacity,10-P,11-F                                                                                 | word |
|  | 1321 | The                                                               |     |                                                                                                                                                                                       | word |
|  | 1322 | corresponding value of the full scale of the transmitter module 1 | R/W | Current default is 2 times the rated value                                                                                                                                            |      |
|  | 1323 | Transmitter module 2 setting                                      | R/W | transmission type;<br>transmission type;<br>0-Ia,1-Ib,2-Ic,3-Iav,4-In,5-Uab,6-Ubc,<br>7-Uca,8-Uav,9-Heat capacity,10-P,11-F                                                           | word |
|  | 1324 | The                                                               |     |                                                                                                                                                                                       | word |
|  | 1325 | corresponding value of the full scale of the transmitter module 2 | R/W | Current default is 2 times the rated value                                                                                                                                            |      |
|  | 1326 | Main software version                                             | R   |                                                                                                                                                                                       | word |
|  | 1327 | Main software number                                              | R   |                                                                                                                                                                                       | word |
|  | 1328 | Main switch                                                       | R   |                                                                                                                                                                                       | word |

|  |      |                                                                                               |   |                                                                                     |      |
|--|------|-----------------------------------------------------------------------------------------------|---|-------------------------------------------------------------------------------------|------|
|  |      | type                                                                                          |   |                                                                                     |      |
|  | 1329 | Metering<br>Module<br>Software<br>Version                                                     | R |                                                                                     | word |
|  | 1330 | Metering<br>module<br>software<br>number                                                      | R |                                                                                     | word |
|  | 1331 | Temperature<br>measurement<br>module<br>software<br>version                                   | R |                                                                                     | word |
|  | 1332 | Temperature<br>measurement<br>module<br>software<br>number                                    | R |                                                                                     | word |
|  | 1333 | Switch<br>module<br>software<br>version                                                       | R |                                                                                     | word |
|  | 1334 | Digital<br>module<br>software<br>number                                                       | R |                                                                                     | word |
|  | 1335 | switch type                                                                                   | R |                                                                                     | word |
|  | 1336 | Communicati<br>on module 1<br>(4G, Ethernet,<br>profibus,<br>profinet)<br>software<br>version | R | Allow internal communication to write, prohibyte<br>external communication to write | word |
|  | 1337 | Communicati                                                                                   | R | Allow internal communication to write, prohibyte                                    | word |

|  |               |                                                                               |     |                                                                                                                               |      |
|--|---------------|-------------------------------------------------------------------------------|-----|-------------------------------------------------------------------------------------------------------------------------------|------|
|  |               | on module 1<br>(4G, Ethernet,<br>profibus,<br>profinet)<br>software<br>number |     | external communication to write                                                                                               |      |
|  | 1338          | 4G module<br>and server<br>communication status                               | R   |                                                                                                                               | word |
|  | 1339          | Ethernet<br>module and<br>server<br>communication status                      | R   |                                                                                                                               | word |
|  | 1340-<br>1341 | reserve                                                                       |     |                                                                                                                               |      |
|  | 1342          | Main body<br>and module<br>communication status                               | R   | 1: normal; 0: disconnected; byte0 measurement<br>byte1 temperature measurement byte2 switching<br>value byte3 communication 1 | word |
|  | 1343          | Voltage swell<br>threshold                                                    | R/W | 100-150%                                                                                                                      | word |
|  | 1344          | Voltage Sag<br>Threshold                                                      | R/W | 50-99                                                                                                                         | word |
|  | 1345          | Voltage swell<br>recovery size                                                | R/W | 100-150                                                                                                                       | word |
|  | 1346          | Voltage sag<br>recovery size                                                  | R/W | 50-99                                                                                                                         | word |
|  | 1347-<br>1399 | reserve                                                                       |     |                                                                                                                               |      |

#### 8.4 保护功能通讯地址 8.4 Protection function communication address

见表 20: refer to table 20:

表 20 保护参数地址表

| 分类   | 地址   | 参数     | 读写属性 | 取值范围                                                                                                                                                                                                                                           | 类型   |
|------|------|--------|------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 基本保护 | 1400 | 报警使能 1 | R/W  | byte0: 反时限过流; byte1: 反时限零序; byte2: 一段定时限过流; byte3: 二段定时限过流; byte4: 三段定时限过流; byte5: 一段定时限零序; byte6: 二段定时限零序; byte7: 三段定时限零序; byte8: 一段负序电流; byte9: 二段负序电流; byte10: 零线电流; byte11: 电流不平衡; byte12: 电流需量; byte13: 联动 1; byte14: 联动 2; byte15: 联动 3; | word |
|      | 1401 | 报警使能 2 | R/W  | byte0: 欠压; byte1: 过压; byte2: 电压不平衡; byte3: 漏电; byte4: 欠载; byte5: 断相; byte6: 过功率; byte7: 欠功率; byte8: 相序; byte9: 短路; byte10: 合闸时间; byte11: 故障次数; byte12: 内部故障, byte14 PT 断线, byte15 温度传感器故障                                                      | word |
|      | 1402 | 报警使能 3 |      | byte0: 分组 1 过温, byte1: 分组 2 过温, byte2: 分组 3 过温, byte3: 分组 4 过温, byte4: 分组 5 过温, byte5: 分组 6 过温                                                                                                                                                 | word |
|      | 1403 | 脱扣使能 1 | R/W  | byte0: 反时限过流; byte1: 反时限零序; byte2: 一段定时限过流; byte3: 二段定时限过流; byte4: 三段定时限过流; byte5: 一段定时限零序; byte6: 二段定时限零序; byte7: 三段定时限零序; byte8: 一段负序电流; byte9: 二段负序电流; byte10: 零线电流; byte11: 电流不平衡; byte12: 电流需量; byte13: 联动 1; byte14: 联动 2; byte15: 联动 3; | word |
|      | 1404 | 脱扣使能 2 | R/W  | byte0: 欠压; byte1: 过压; byte2: 电压不平衡; byte3: 漏电; byte4: 欠载; byte5: 断相; byte6: 过功率; byte7: 欠功率; byte8: 相序; byte9: 短路; byte12: 内部故障, byte13 控制回路异常, byte14 PT 断线, byte15 温度传感器故障                                                                   | word |
|      | 1405 | 脱扣使能 3 |      | byte0: 分组 1 过温, byte1: 分组 2 过温, byte2: 分组 3 过温, byte3: 分组 4 过温, byte4: 分                                                                                                                                                                       | word |

|      |                 |     |                                                             |                        |  |
|------|-----------------|-----|-------------------------------------------------------------|------------------------|--|
|      |                 |     |                                                             | 组 5 过温, byte5: 分组 6 过温 |  |
| 1406 | 反时限过流保护<br>曲线   | R/W | 0-IEC1 1-IEC2 2-IEC3 3-C02 4-C08 5-IEEE1<br>6-IEEE2 7-IEEE3 | word                   |  |
| 1407 | 反时限过流保护<br>冷却时间 | R/W | 0-30min                                                     | word                   |  |
| 1408 | 反时限过流时间<br>系数   | R/W | 0.025s-1.500s                                               | word                   |  |
| 1409 | 反时限过流复位<br>时间系数 | R/W | 0.025s-3.200s                                               | word                   |  |
| 1410 | 反时限过流保护<br>动作值  | R/W | 10%-800%                                                    | word                   |  |
| 1411 | 反时限过流保护<br>报警值  | R/W | 10%-800%                                                    | word                   |  |
| 1412 | 反时限过流保护<br>复位方式 | R/W | 0-手动 1-自动                                                   | word                   |  |
| 1413 | 反时限零序保护<br>曲线   | R/W | 0-IEC1 1-IEC2 2-IEC3                                        | word                   |  |
| 1414 | 反时限零序保护<br>冷却时间 | R/W | 0-30min                                                     | word                   |  |
| 1415 | 反时限零序时间<br>系数   | R/W | 0.025s-1.500s                                               | word                   |  |
| 1416 | 反时限零序保护<br>动作值  | R/W | 10%-800%                                                    | word                   |  |
| 1417 | 反时限零序保护<br>报警值  | R/W | 10%-800%                                                    | word                   |  |
| 1418 | 反时限零序保护<br>复位方式 | R/W | 0-手动 1-自动                                                   | word                   |  |
| 1419 | 一段定时限过流<br>报警阈值 | R/W | 10%-800%                                                    | word                   |  |
| 1420 | 一段定时限过流<br>保护阈值 | R/W | 10%-800%                                                    | word                   |  |
| 1421 | 一段定时限过流<br>报警延时 | R/W | 0.00s-600.00s                                               | word                   |  |
| 1422 | 一段定时限过流<br>保护延时 | R/W | 0.00s-600.00s                                               | word                   |  |

|      |                   |     |               |      |
|------|-------------------|-----|---------------|------|
| 1423 | 一段定时限过流<br>保护返回系数 | R/W | 5%~50%        | word |
| 1424 | 二段定时限过流<br>报警阈值   | R/W | 10%~800%      | word |
| 1425 | 二段定时限过流<br>保护阈值   | R/W | 10%~800%      | word |
| 1426 | 二段定时限过流<br>报警延时   | R/W | 0.00s~600.00s | word |
| 1427 | 二段定时限过流<br>保护延时   | R/W | 0.00s~600.00s | word |
| 1428 | 二段定时限过流<br>保护返回系数 | R/W | 5%~50%        | word |
| 1429 | 三段定时限过流<br>报警阈值   | R/W | 10%~800%      | word |
| 1430 | 三段定时限过流<br>保护阈值   | R/W | 10%~800%      | word |
| 1431 | 三段定时限过流<br>报警延时   | R/W | 0.00s~600.00s | word |
| 1432 | 三段定时限过流<br>保护延时   | R/W | 0.00s~600.00s | word |
| 1433 | 三段定时限过流<br>保护返回系数 | R/W | 5%~50%        | word |
| 1434 | 一段定时限零序<br>报警阈值   | R/W | 10%~800%      | word |
| 1435 | 一段定时限零序<br>脱扣阈值   | R/W | 10%~800%      | word |
| 1436 | 一段定时限零序<br>报警延时   | R/W | 0.00s~600.00s | word |
| 1437 | 一段定时限零序<br>脱扣延时   | R/W | 0.00s~600.00s | word |
| 1438 | 一段定时限零序<br>保护返回系数 | R/W | 5%~50%        | word |
| 1439 | 二段定时限零序<br>报警阈值   | R/W | 10%~800%      | word |
| 1440 | 二段定时限零序<br>脱扣阈值   | R/W | 10%~800%      | word |

|      |               |     |               |      |
|------|---------------|-----|---------------|------|
| 1441 | 二段定时限零序报警延时   | R/W | 0.00s-600.00s | word |
| 1442 | 二段定时限零序脱扣延时   | R/W | 0.00s-600.00s | word |
| 1443 | 二段定时限零序保护返回系数 | R/W | 5%-50%        | word |
| 1444 | 三段定时限零序报警阈值   | R/W | 10%-800%      | word |
| 1445 | 三段定时限零序脱扣阈值   | R/W | 10%-800%      | word |
| 1446 | 三段定时限零序报警延时   | R/W | 0.00s-600.00s | word |
| 1447 | 三段定时限零序脱扣延时   | R/W | 0.00s-600.00s | word |
| 1448 | 三段定时限零序保护返回系数 | R/W | 5%-50%        | word |
| 1449 | 一段负序电流报警阈值    | R/W | 10%-100%      | word |
| 1450 | 一段负序电流脱扣阈值    | R/W | 10%-100%      | word |
| 1451 | 一段负序电流报警延时    | R/W | 0.00s-600.00s | word |
| 1452 | 一段负序电流脱扣延时    | R/W | 0.00s-600.00s | word |
| 1453 | 一段负序电流返回系数    | R/W | 5%-50%        | word |
| 1454 | 二段负序电流报警阈值    | R/W | 10%-100%      | word |
| 1455 | 二段负序电流脱扣阈值    | R/W | 10%-100%      | word |
| 1456 | 二段负序电流报警延时    | R/W | 0.00s-600.00s | word |
| 1457 | 二段负序电流脱扣延时    | R/W | 0.00s-600.00s | word |
| 1458 | 二段负序电流返回系数    | R/W | 5%-50%        | word |

|      |            |     |                  |      |
|------|------------|-----|------------------|------|
| 1459 | 零线电流报警阈值   | R/W | 0A-5000A         | word |
| 1460 | 零线电流脱扣阈值   | R/W | 0A-5000A         | word |
| 1461 | 零线电流报警延时   | R/W | 0.00s-600.00s    | word |
| 1462 | 零线电流脱扣延时   | R/W | 0.00s-600.00s    | word |
| 1463 | 零线电流返回系数   | R/W | 5%-50%           | word |
| 1464 | 电流不平衡报警阈值  | R/W | 10%-100%         | word |
| 1465 | 电流不平衡脱扣阈值  | R/W | 10%-100%         | word |
| 1466 | 电流不平衡报警延时  | R/W | 0.00s-600.00s    | word |
| 1467 | 电流不平衡脱扣延时  | R/W | 0.00s-600.00s    | word |
| 1468 | 电流不平衡返回系数  | R/W | 5%-50%           | word |
| 1469 | 电流需量报警阈值   | R/W | 10%-800%         | word |
| 1470 | 电流需量脱扣阈值   | R/W | 10%-800%         | word |
| 1471 | 电流需量报警时间长度 | R/W | 1-25min          | word |
| 1472 | 电流需量脱扣时间长度 | R/W | 1-25min          | word |
| 1473 | 电流需量保护返回系数 | R/W | 5%-50%           | word |
| 1474 | 需量宽度       | R/W | 1、2、3、5min       | word |
| 1475 | 需量周期       | R/W | 5、10、15、30、60min | word |
| 1476 | 联动 1 报警延时  | R/W | 0.06s-600.00s    | word |
| 1477 | 联动 1 脱扣延时  | R/W | 0.06s-600.00s    | word |
| 1478 | 联动 2 报警延时  | R/W | 0.06s-600.00s    | word |
| 1479 | 联动 2 脱扣延时  | R/W | 0.06s-600.00s    | word |

|      |                 |     |               |      |
|------|-----------------|-----|---------------|------|
| 1480 | 联动 3 报警延时       | R/W | 0.06s-600.00s | word |
| 1481 | 联动 3 脱扣延时       | R/W | 0.06s-600.00s | word |
| 1482 | 欠压报警阈值          | R/W | 45%-90%       | word |
| 1483 | 欠压脱扣阈值          | R/W | 45%-90%       | word |
| 1484 | 欠压报警延时          | R/W | 0.00s-600.00s | word |
| 1485 | 欠压脱扣延时          | R/W | 0.00s-600.00s | word |
| 1486 | 欠压返回系数          | R/W | 5%-50%        | word |
| 1487 | 过压报警阈值          | R/W | 110%-150%     | word |
| 1488 | 过压脱扣阈值          | R/W | 110%-150%     | word |
| 1489 | 过压报警延时          | R/W | 0.00s-600.00s | word |
| 1490 | 过压脱扣延时          | R/W | 0.00s-600.00s | word |
| 1491 | 过压返回系数          | R/W | 5%-50%        | word |
| 1492 | 电压不平衡报警<br>域值设定 | R/W | 10%-100%      | word |
| 1493 | 电压不平衡脱扣<br>域值设定 | R/W | 10%-100%      | word |
| 1494 | 电压不平衡报警<br>延时设定 | R/W | 0.00s-600.00s | word |
| 1495 | 电压不平衡脱扣<br>延时设定 | R/W | 0.00s-600.00s | word |
| 1496 | 电压不平衡返回<br>系数   | R/W | 5%-50%        | word |
| 1497 | 漏电报警阈值          | R/W | 30mA-1000mA   | word |
| 1498 | 漏电脱扣阈值          | R/W | 30mA-1000mA   | word |
| 1499 | 漏电报警延时          | R/W | 0.00s-600.00s | word |
| 1500 | 漏电脱扣延时          | R/W | 0.00s-600.00s | word |
| 1501 | 漏电返回系数          | R/W | 5%-50%        | word |
| 1502 | 预留              | R/W |               | word |
| 1503 | 欠载报警域值设<br>定    | R/W | 10%-95%       | word |
| 1504 | 欠载脱扣域值设<br>定    | R/W | 10%-95%       | word |
| 1505 | 欠载报警延时设<br>定    | R/W | 0.00s-600.00s | word |
| 1506 | 欠载脱扣延时设<br>定    | R/W | 0.00s-600.00s | word |

|      |               |     |               |      |
|------|---------------|-----|---------------|------|
| 1507 | 欠载返回系数        | R/W | 5%-50%        | word |
| 1508 | 断相报警延时        | R/W | 0.00s-600.00s | word |
| 1509 | 断相脱扣延时        | R/W | 0.00s-600.00s | word |
| 1510 | 过功率报警域值<br>设定 | R/W | 100%-200%     | word |
| 1511 | 过功率脱扣域值<br>设定 | R/W | 100%-200%     | word |
| 1512 | 过功率报警延时       | R/W | 0.00s-600.00s | word |
| 1513 | 过功率脱扣延时       | R/W | 0.00s-600.00s | word |
| 1514 | 过功率返回系数       | R/W | 5%-50%        | word |
| 1515 | 欠功率报警域值<br>设定 | R/W | 10%-95%       | word |
| 1516 | 欠功率脱扣域值<br>设定 | R/W | 10%-95%       | word |
| 1517 | 欠功率报警延时       | R/W | 0.00s-600.00s | word |
| 1518 | 欠功率脱扣延时       | R/W | 0.00s-600.00s | word |
| 1519 | 欠功率返回系数       | R/W | 5%-50%        | word |
| 1520 | 相序报警阈值        | R/W | 120° -240°    | word |
| 1521 | 相序脱扣阈值        | R/W | 120° -240°    | word |
| 1522 | 相序报警延时        | R/W | 0.00s-600.00s | word |
| 1523 | 相序脱扣延时        | R/W | 0.00s-600.00s | word |
| 1524 | 相序返回系数        | R/W | 5%-50%        | word |
| 1525 | 短路报警阈值        | R/W | 10%-800%      | word |
| 1526 | 短路脱扣阈值        | R/W | 10%-800%      | word |
| 1527 | 短路报警延时        | R/W | 0.00s-600.00s | word |
| 1528 | 短路脱扣延时        | R/W | 0.00s-600.00s | word |
| 1529 | 短路返回系数        | R/W | 5%-50%        | word |
| 1530 | 合闸时间报警条<br>件  | R/W | 1-50000H      | word |
| 1531 | 故障次数报警条<br>件  | R/W | 1-50000 次     | word |
| 1532 | 控制回路异常延<br>时  | R/W | 0.00s-600.00s | word |
| 1533 | PT 断线报警延<br>时 | R/W | 0.00s-600.00s | word |
| 1534 | PT 断线脱扣延      | R/W | 0.00s-600.00s | word |

|      |                 |     |                                                                 |      |  |
|------|-----------------|-----|-----------------------------------------------------------------|------|--|
|      |                 | 时   |                                                                 |      |  |
| 1535 | 过温恢复设置          | R/W | byte0:分组 1 恢复, 0-手动; 1-自动;<br>byte1-byte5:分组 2-6 恢复, 0-手动; 1-自动 | word |  |
| 1536 | 过温分组 1 报警<br>阈值 | R/W | 0.0-120.0℃                                                      | word |  |
| 1537 | 过温分组 1 脱扣<br>阈值 | R/W | 0.0-120.0℃                                                      | word |  |
| 1538 | 过温分组 1 返回<br>温度 | R/W | 0.0-10.0℃                                                       | word |  |
| 1539 | 过温分组 2 报警<br>阈值 | R/W | 0.0-120.0℃                                                      | word |  |
| 1540 | 过温分组 2 脱扣<br>阈值 | R/W | 0.0-120.0℃                                                      | word |  |
| 1541 | 过温分组 2 返回<br>系数 | R/W | 0.0-10.0℃                                                       | word |  |
| 1542 | 过温分组 3 报警<br>阈值 | R/W | 0.0-120.0℃                                                      | word |  |
| 1543 | 过温分组 3 脱扣<br>阈值 | R/W | 0.0-120.0℃                                                      | word |  |
| 1544 | 过温分组 3 返回<br>系数 | R/W | 0.0-10.0℃                                                       | word |  |
| 1545 | 过温分组 4 报警<br>阈值 | R/W | 0.0-120.0℃                                                      | word |  |
| 1546 | 过温分组 4 脱扣<br>阈值 | R/W | 0.0-120.0℃                                                      | word |  |
| 1547 | 过温分组 4 返回<br>系数 | R/W | 0.0-10.0℃                                                       | word |  |
| 1548 | 过温分组 5 报警<br>阈值 | R/W | 0.0-120.0℃                                                      | word |  |
| 1549 | 过温分组 5 脱扣<br>阈值 | R/W | 0.0-120.0℃                                                      | word |  |
| 1550 | 过温分组 5 返回<br>系数 | R/W | 0.0-10.0℃                                                       | word |  |
| 1551 | 过温分组 6 报警<br>阈值 | R/W | 0.0-120.0℃                                                      | word |  |
| 1552 | 过温分组 6 脱扣       | R/W | 0.0-120.0℃                                                      | word |  |

|  |           |             |     |            |      |
|--|-----------|-------------|-----|------------|------|
|  |           | 阈值          |     |            |      |
|  | 1553      | 过温分组 6 返回系数 | R/W | 0.0-10.0℃  | word |
|  | 1554      | 合闸屏蔽时间      | R/W | 0.0s-10.0s | word |
|  | 1555-1699 | 预留          |     |            |      |

Table 20 Protection parameter address table

| Category         | address | parameters    | Read-Write Attribute | Range                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Type |
|------------------|---------|---------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Basic Protection | 1400    | Alarm enable1 | R/W                  | byte0: Inverse time over current;<br>byte1: Inverse time zero sequence;<br>byte2: One-stage definite over current; byte3: Two-stage definite over current; byte4: Three-stage definite over current;<br>byte5: One-stage definite-time zero-sequence;<br>byte6: Two-stage definite-time zero-sequence;<br>byte7: Three-stage definite-time zero-sequence;<br>byte8: Negative sequence current of one stage;<br>byte9: Negative sequence current of two stages;<br>byte10: Zero line current; byte11: Current imbalance; byte12: Current demand; byte13: Linkage 1; byte14: Linkage 2; byte15: Linkage 3; | word |
|                  | 1401    | Alarm enable2 | R/W                  | byte0: Under voltage; byte1: Over voltage; byte2: Voltage imbalance; byte3: Leakage; byte4: Under load; byte5: Phase failure; byte6: Overpower;<br>byte7: Under power; byte8: Phase sequence;<br>byte9: Short circuit; byte10: closing time;<br>byte11: fault times; byte12: internal fault, byte14 PT disconnection, byte15 temperature sensor fault                                                                                                                                                                                                                                                    | word |
|                  | 1402    | Alarm enable3 |                      | byte0: group 1 over temperature,<br>byte1: group 2 over temperature, byte2: group 3 over temperature, byte3: group 4 over temperature, byte4: group 5 over temperature, byte5: group 6 over temperature                                                                                                                                                                                                                                                                                                                                                                                                  | word |

|  |      |                                                   |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |
|--|------|---------------------------------------------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|  | 1403 | Trip enable 1                                     | R/W | byte0: Inverse time over current;<br>byte1: Inverse time zero sequence;<br>byte2: One-stage definite over current; byte3:<br>Two-stage definite over current; byte4:<br>Three-stage definite over current;<br>byte5: One-stage definite-time zero-sequence;<br>byte6: Two-stage definite-time zero-sequence;<br>byte7: Three-stage definite-time zero-sequence;<br>byte8: Negative sequence current of one stage;<br>byte9: Negative sequence current of two stages;<br>byte10: Zero line current; byte11: Current<br>imbalance; byte12: Current demand; byte13:<br>Linkage 1; byte14: Linkage 2; byte15: Linkage 3; | word |
|  | 1404 | Trip enable 2                                     | R/W | byte0: Under voltage; byte1: Over voltage; byte2:<br>Voltage imbalance; byte3: Leakage; byte4: Under<br>load; byte5: Phase failure; byte6: Overpower;<br>byte7: Under power; byte8: Phase sequence;<br>byte9: Short circuit; byte12 : Internal fault,<br>byte13 control circuit abnormality, byte14 PT<br>disconnection, byte15 temperature sensor fault                                                                                                                                                                                                                                                             | word |
|  | 1405 | Trip enable 3                                     |     | byte0: group 1 over temperature, byte1: group 2<br>over temperature, byte2: group 3 over<br>temperature, byte3: group 4 over temperature,<br>byte4: group 5 over temperature, byte5: group 6<br>over temperature                                                                                                                                                                                                                                                                                                                                                                                                     | word |
|  | 1406 | Inverse time over current protection curve        | R/W | 0-IEC1 1-IEC2 2-IEC3 3-CO2 4-CO8 5-IEEE1<br>6-IEEE2 7-IEEE3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | word |
|  | 1407 | Inverse time over current protection cooling time | R/W | 0-30min                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | word |
|  | 1408 | Inverse time over current                         | R/W | 0.025s-1.500s                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | word |

|  |      |                                                                |     |                      |      |
|--|------|----------------------------------------------------------------|-----|----------------------|------|
|  |      | time<br>coefficient                                            |     |                      |      |
|  | 1409 | Inverse time<br>over current<br>reset time<br>coefficient      | R/W | 0.025s-3.200s        | word |
|  | 1410 | Action value<br>of inverse time<br>over current<br>protection  | R/W | 10%-800%             | word |
|  | 1411 | Inverse time<br>over current<br>protection<br>alarm value      | R/W | 10%-800%             | word |
|  | 1412 | Inverse time<br>over current<br>protection<br>reset mode       | R/W | 0-Manual 1-Automatic | word |
|  | 1413 | Inverse time<br>zero sequence<br>protection<br>curve           | R/W | 0-IEC1 1-IEC2 2-IEC3 | word |
|  | 1414 | Inverse time<br>zero sequence<br>protection<br>cooling time    | R/W | 0-30min              | word |
|  | 1415 | Inverse time<br>zero sequence<br>time<br>coefficient           | R/W | 0.025s-1.500s        | word |
|  | 1416 | Action value<br>of inverse time<br>zero sequence<br>protection | R/W | 10%-800%             | word |
|  | 1417 | Inverse time<br>zero sequence                                  | R/W | 10%-800%             | word |

|  |      |                                                                                   |     |                      |      |
|--|------|-----------------------------------------------------------------------------------|-----|----------------------|------|
|  |      | protection<br>alarm value                                                         |     |                      |      |
|  | 1418 | Inverse time<br>zero sequence<br>protection<br>reset mode                         | R/W | 0-Manual 1-Automatic | word |
|  | 1419 | A definite<br>time over<br>current alarm<br>threshold                             | R/W | 10%-800%             | word |
|  | 1420 | A definite<br>period of over<br>current<br>protection<br>threshold                | R/W | 10%-800%             | word |
|  | 1421 | A definite<br>time delay for<br>over current<br>alarm                             | R/W | 0.00s-600.00s        | word |
|  | 1422 | A definite<br>time delay for<br>over current<br>protection                        | R/W | 0.00s-600.00s        | word |
|  | 1423 | One-stage<br>definite time<br>over current<br>protection<br>return<br>coefficient | R/W | 5%-50%               | word |
|  | 1424 | Two-stage<br>definite time<br>limit<br>overcurrent<br>alarm<br>threshold          | R/W | 10%-800%             | word |

|  |      |                                                                                   |     |               |      |
|--|------|-----------------------------------------------------------------------------------|-----|---------------|------|
|  | 1425 | Two-stage<br>definite time<br>over current<br>protection<br>threshold             | R/W | 10%-800%      | word |
|  | 1426 | Two-stage<br>definite time<br>limit over<br>current alarm<br>delay                | R/W | 0.00s-600.00s | word |
|  | 1427 | Two-stage<br>definite time<br>over current<br>protection<br>delay                 | R/W | 0.00s-600.00s | word |
|  | 1428 | Two-stage<br>definite time<br>over current<br>protection<br>return<br>coefficient | R/W | 5%-50%        | word |
|  | 1429 | Three-stage<br>definite time<br>over current<br>alarm<br>threshold                | R/W | 10%-800%      | word |
|  | 1430 | Three-stage<br>definite time<br>over current<br>protection<br>threshold           | R/W | 10%-800%      | word |
|  | 1431 | Three Stage<br>definite time<br>limit over<br>current alarm<br>delay              | R/W | 0.00s-600.00s | word |

|  |      |                                                                                     |     |               |      |
|--|------|-------------------------------------------------------------------------------------|-----|---------------|------|
|  | 1432 | Three stage<br>definite time<br>over current<br>protection<br>delay                 | R/W | 0.00s-600.00s | word |
|  | 1433 | Three stage<br>definite time<br>over current<br>protection<br>return<br>coefficient | R/W | 5%-50%        | word |
|  | 1434 | A definite<br>time zero<br>sequence<br>alarm<br>threshold                           | R/W | 10%-800%      | word |
|  | 1435 | Zero-sequence<br>tripping<br>threshold for a<br>period of<br>definite time          | R/W | 10%-800%      | word |
|  | 1436 | A definite<br>time zero<br>sequence<br>alarm delay                                  | R/W | 0.00s-600.00s | word |
|  | 1437 | A definite<br>time delay for<br>zero sequence<br>tripping                           | R/W | 0.00s-600.00s | word |
|  | 1438 | One-stage<br>definite time<br>zero-sequence<br>protection<br>return<br>coefficient  | R/W | 5%-50%        | word |
|  | 1439 | Two-stage                                                                           | R/W | 10%-800%      | word |

|  |      |                                                                                    |     |               |      |
|--|------|------------------------------------------------------------------------------------|-----|---------------|------|
|  |      | definite time<br>zero sequence<br>alarm<br>threshold                               |     |               |      |
|  | 1440 | Two-stage<br>definite time<br>zero-sequence<br>tripping<br>threshold               | R/W | 10%-800%      | word |
|  | 1441 | Two-stage<br>definite time<br>zero sequence<br>alarm delay                         | R/W | 0.00s-600.00s | word |
|  | 1442 | Two-stage<br>definite time<br>zero-sequence<br>tripping delay                      | R/W | 0.00s-600.00s | word |
|  | 1443 | Two-stage<br>definite time<br>zero sequence<br>protection<br>return<br>coefficient | R/W | 5%-50%        | word |
|  | 1444 | Three-stage<br>definite time<br>zero sequence<br>alarm<br>threshold                | R/W | 10%-800%      | word |
|  | 1445 | Three-stage<br>definite time<br>zero-sequence<br>tripping<br>threshold             | R/W | 10%-800%      | word |
|  | 1446 | Three-stage<br>definite time<br>zero sequence                                      | R/W | 0.00s-600.00s | word |

|  |      |                                                                                      |     |               |      |
|--|------|--------------------------------------------------------------------------------------|-----|---------------|------|
|  |      | alarm delay                                                                          |     |               |      |
|  | 1447 | Three-stage<br>definite time<br>delay for<br>zero-sequence<br>tripping               | R/W | 0.00s-600.00s | word |
|  | 1448 | Three-stage<br>definite time<br>zero sequence<br>protection<br>return<br>coefficient | R/W | 5%-50%        | word |
|  | 1449 | One-stage<br>negative<br>sequence<br>current alarm<br>threshold                      | R/W | 10%-100%      | word |
|  | 1450 | One stage<br>negative<br>sequence<br>current<br>tripping<br>threshold                | R/W | 10%-100%      | word |
|  | 1451 | One-stage<br>negative<br>sequence<br>current alarm<br>delay                          | R/W | 0.00s-600.00s | word |
|  | 1452 | One-stage<br>negative<br>sequence<br>current trip                                    | R/W | 0.00s-600.00s | word |

|  |      |                                                                       |     |               |      |
|--|------|-----------------------------------------------------------------------|-----|---------------|------|
|  |      | delay                                                                 |     |               |      |
|  | 1453 | One-stage<br>negative<br>sequence<br>current return<br>coefficient    | R/W | 5%-50%        | word |
|  | 1454 | Two-stage<br>negative<br>sequence<br>current alarm<br>threshold       | R/W | 10%-100%      | word |
|  | 1455 | Two-stage<br>negative<br>sequence<br>current<br>tripping<br>threshold | R/W | 10%-100%      | word |
|  | 1456 | Two-stage<br>negative<br>sequence<br>current alarm<br>delay           | R/W | 0.00s-600.00s | word |
|  | 1457 | Two-stage<br>negative<br>sequence<br>current trip<br>delay            | R/W | 0.00s-600.00s | word |
|  | 1458 | Two stage<br>negative<br>sequence<br>current return<br>coefficient    | R/W | 5%-50%        | word |
|  | 1459 | Neutral<br>current alarm<br>threshold                                 | R/W | 0A-5000A      | word |
|  | 1460 | Neutral                                                               | R/W | 0A-5000A      | word |

|  |      |                                      |     |               |      |
|--|------|--------------------------------------|-----|---------------|------|
|  |      | current trip threshold               |     |               |      |
|  | 1461 | Neutral current alarm delay          | R/W | 0.00s-600.00s | word |
|  | 1462 | Neutral current trip delay           | R/W | 0.00s-600.00s | word |
|  | 1463 | Neutral current return coefficient   | R/W | 5%-50%        | word |
|  | 1464 | Current unbalance alarm threshold    | R/W | 10%-100%      | word |
|  | 1465 | Current unbalance trip threshold     | R/W | 10%-100%      | word |
|  | 1466 | Current unbalance alarm delay        | R/W | 0.00s-600.00s | word |
|  | 1467 | Current unbalance trip delay         | R/W | 0.00s-600.00s | word |
|  | 1468 | Current unbalance return coefficient | R/W | 5%-50%        | word |
|  | 1469 | Current Demand Alarm Threshold       | R/W | 10%-800%      | word |
|  | 1470 | Current Demand Trip Threshold        | R/W | 10%-800%      | word |
|  | 1471 | Current                              | R/W | 1-25min       | word |

|  |      |                                                             |     |                  |      |
|--|------|-------------------------------------------------------------|-----|------------------|------|
|  |      | demand alarm<br>time length                                 |     |                  |      |
|  | 1472 | Current<br>demand trip<br>time length                       | R/W | 1-25min          | word |
|  | 1473 | Return<br>coefficient of<br>current<br>demand<br>protection | R/W | 5%-50%           | word |
|  | 1474 | demand width                                                | R/W | 1、2、3、5min       | word |
|  | 1475 | demand cycle                                                | R/W | 5、10、15、30、60min | word |
|  | 1476 | Linkage 1<br>alarm delay                                    | R/W | 0.06s-600.00s    | word |
|  | 1477 | Linkage 1<br>tripping delay                                 | R/W | 0.06s-600.00s    | word |
|  | 1478 | Linkage 2<br>alarm delay                                    | R/W | 0.06s-600.00s    | word |
|  | 1479 | Linkage 2<br>tripping delay                                 | R/W | 0.06s-600.00s    | word |
|  | 1480 | Linkage 3<br>alarm delay                                    | R/W | 0.06s-600.00s    | word |
|  | 1481 | Linkage 3<br>tripping delay                                 | R/W | 0.06s-600.00s    | word |
|  | 1482 | Under voltage<br>Alarm<br>Threshold                         | R/W | 45%-90%          | word |
|  | 1483 | Under voltage<br>trip threshold                             | R/W | 45%-90%          | word |
|  | 1484 | Under voltage<br>alarm delay                                | R/W | 0.00s-600.00s    | word |
|  | 1485 | Under voltage<br>trip delay                                 | R/W | 0.00s-600.00s    | word |
|  | 1486 | Under voltage<br>Return<br>Coefficient                      | R/W | 5%-50%           | word |

|  |      |                                                          |     |               |      |
|--|------|----------------------------------------------------------|-----|---------------|------|
|  | 1487 | Over voltage<br>alarm<br>threshold                       | R/W | 110%-150%     | word |
|  | 1488 | Over voltage<br>trip threshold                           | R/W | 110%-150%     | word |
|  | 1489 | Over voltage<br>alarm delay                              | R/W | 0.00s-600.00s | word |
|  | 1490 | Over voltage<br>trip delay                               | R/W | 0.00s-600.00s | word |
|  | 1491 | Over voltage<br>Return<br>Coefficient                    | R/W | 5%-50%        | word |
|  | 1492 | Voltage<br>unbalance<br>alarm<br>threshold<br>setting    | R/W | 10%-100%      | word |
|  | 1493 | Voltage<br>unbalance<br>tripping<br>threshold<br>setting | R/W | 10%-100%      | word |
|  | 1494 | Voltage<br>unbalance<br>alarm delay<br>setting           | R/W | 0.00s-600.00s | word |
|  | 1495 | Voltage<br>unbalance trip<br>delay setting               | R/W | 0.00s-600.00s | word |
|  | 1496 | Voltage<br>unbalance<br>return<br>coefficient            | R/W | 5%-50%        | word |
|  | 1497 | Leakage alarm<br>threshold                               | R/W | 30mA-1000mA   | word |
|  | 1498 | Leakage trip                                             | R/W | 30mA-1000mA   | word |

|  |      |                                               |     |               |      |
|--|------|-----------------------------------------------|-----|---------------|------|
|  |      | threshold                                     |     |               |      |
|  | 1499 | Leakage alarm<br>delay                        | R/W | 0.00s-600.00s | word |
|  | 1500 | Leakage trip<br>delay                         | R/W | 0.00s-600.00s | word |
|  | 1501 | Leakage<br>Return<br>Coefficient              | R/W | 5%-50%        | word |
|  | 1502 | reserve                                       | R/W |               | word |
|  | 1503 | Under load<br>alarm<br>threshold<br>setting   | R/W | 10%-95%       | word |
|  | 1504 | Under load<br>trip threshold<br>setting       | R/W | 10%-95%       | word |
|  | 1505 | Under load<br>alarm delay<br>setting          | R/W | 0.00s-600.00s | word |
|  | 1506 | Under load<br>trip delay<br>setting           | R/W | 0.00s-600.00s | word |
|  | 1507 | Under load<br>return factor                   | R/W | 5%-50%        | word |
|  | 1508 | Phase failure<br>alarm delay                  | R/W | 0.00s-600.00s | word |
|  | 1509 | Phase failure<br>trip delay                   | R/W | 0.00s-600.00s | word |
|  | 1510 | Overpower<br>alarm<br>threshold<br>setting    | R/W | 100%-200%     | word |
|  | 1511 | Overpower<br>tripping<br>threshold<br>setting | R/W | 100%-200%     | word |

|  |      |                                                 |     |               |      |
|--|------|-------------------------------------------------|-----|---------------|------|
|  | 1512 | Over power<br>alarm delay                       | R/W | 0.00s-600.00s | word |
|  | 1513 | Overpower<br>trip delay                         | R/W | 0.00s-600.00s | word |
|  | 1514 | over power<br>return factor                     | R/W | 5%-50%        | word |
|  | 1515 | Under power<br>alarm<br>threshold<br>setting    | R/W | 10%-95%       | word |
|  | 1516 | Under power<br>tripping<br>threshold<br>setting | R/W | 10%-95%       | word |
|  | 1517 | Under power<br>alarm delay                      | R/W | 0.00s-600.00s | word |
|  | 1518 | Under power<br>trip delay                       | R/W | 0.00s-600.00s | word |
|  | 1519 | Under power<br>return factor                    | R/W | 5%-50%        | word |
|  | 1520 | Phase<br>Sequence<br>Alarm<br>Threshold         | R/W | 120°-240°     | word |
|  | 1521 | Phase<br>sequence trip<br>threshold             | R/W | 120°-240°     | word |
|  | 1522 | Phase<br>sequence<br>alarm delay                | R/W | 0.00s-600.00s | word |
|  | 1523 | Phase<br>sequence trip<br>delay                 | R/W | 0.00s-600.00s | word |
|  | 1524 | Phase<br>sequence<br>return                     | R/W | 5%-50%        | word |

|  |      |                                                   |     |                                                                                                    |      |
|--|------|---------------------------------------------------|-----|----------------------------------------------------------------------------------------------------|------|
|  |      | coefficient                                       |     |                                                                                                    |      |
|  | 1525 | Short circuit<br>alarm<br>threshold               | R/W | 10%-800%                                                                                           | word |
|  | 1526 | Short circuit<br>trip threshold                   | R/W | 10%-800%                                                                                           | word |
|  | 1527 | Short circuit<br>alarm delay                      | R/W | 0.00s-600.00s                                                                                      | word |
|  | 1528 | Short circuit<br>trip delay                       | R/W | 0.00s-600.00s                                                                                      | word |
|  | 1529 | Short circuit<br>return factor                    | R/W | 5%-50%                                                                                             | word |
|  | 1530 | Closing time<br>alarm<br>condition                | R/W | 1-50000H                                                                                           | word |
|  | 1531 | Fault times<br>alarm<br>condition                 | R/W | 1-50000 次                                                                                          | word |
|  | 1532 | Control loop<br>abnormal<br>delay                 | R/W | 0.00s-600.00s                                                                                      | word |
|  | 1533 | PT<br>disconnection<br>alarm delay                | R/W | 0.00s-600.00s                                                                                      | word |
|  | 1534 | PT<br>disconnection<br>trip delay                 | R/W | 0.00s-600.00s                                                                                      | word |
|  | 1535 | Over<br>temperature<br>recovery<br>setting        | R/W | byte0: group 1 recovery, 0-manual; 1-auto;<br>byte1-byte5: group 2-6 recovery, 0-manual;<br>1-auto | word |
|  | 1536 | Over<br>temperature<br>group 1 alarm<br>threshold | R/W | 0.0-120.0°C                                                                                        | word |
|  | 1537 | Over                                              | R/W | 0.0-120.0°C                                                                                        | word |

|  |      |                                                         |     |             |      |
|--|------|---------------------------------------------------------|-----|-------------|------|
|  |      | temperature<br>group 1<br>tripping<br>threshold         |     |             |      |
|  | 1538 | Over<br>temperature<br>group 1 return<br>temperature    | R/W | 0.0-10.0°C  | word |
|  | 1539 | Over<br>temperature<br>group 2 alarm<br>threshold       | R/W | 0.0-120.0°C | word |
|  | 1540 | Over<br>temperature<br>group 2<br>tripping<br>threshold | R/W | 0.0-120.0°C | word |
|  | 1541 | Over<br>temperature<br>group 2 return<br>temperature    | R/W | 0.0-10.0°C  | word |
|  | 1542 | Over<br>temperature<br>group 3 alarm<br>threshold       | R/W | 0.0-120.0°C | word |
|  | 1543 | Over<br>temperature<br>group 3<br>tripping<br>threshold | R/W | 0.0-120.0°C | word |
|  | 1544 | Over<br>temperature<br>group 3 return<br>coefficient    | R/W | 0.0-10.0°C  | word |
|  | 1545 | Over<br>temperature                                     | R/W | 0.0-120.0°C | word |

|  |      |                                             |     |             |      |
|--|------|---------------------------------------------|-----|-------------|------|
|  |      | group 4 alarm threshold                     |     |             |      |
|  | 1546 | Over temperature group 4 tripping threshold | R/W | 0.0-120.0°C | word |
|  | 1547 | Over temperature group 5 return coefficient | R/W | 0.0-10.0°C  | word |
|  | 1548 | Over temperature group 5 alarm threshold    | R/W | 0.0-120.0°C | word |
|  | 1549 | Over temperature group 5 tripping threshold | R/W | 0.0-120.0°C | word |
|  | 1550 | Over temperature group 5 return coefficient | R/W | 0.0-10.0°C  | word |
|  | 1551 | Over temperature group 6 alarm threshold    | R/W | 0.0-120.0°C | word |
|  | 1552 | Over temperature group 6 tripping threshold | R/W | 0.0-120.0°C | word |
|  | 1553 | Over                                        | R/W | 0.0-10.0°C  | word |

|  |               |                                                 |     |            |      |
|--|---------------|-------------------------------------------------|-----|------------|------|
|  |               | temperature<br>group 6<br>return<br>coefficient |     |            |      |
|  | 1554          | Closing<br>shielding time                       | R/W | 0.0s-10.0s | word |
|  | 1555-16<br>99 | Reserve                                         |     |            |      |

## 8.5 可编程定义通讯地址 8.5 Programmable definition of communication address

见表 21: refer to table 21:

表 21 可编程定义地址表

| 分类        | 地址            | 参数                 | 读写属性 | 取值范围                                                                                                                                                     | 类型   |
|-----------|---------------|--------------------|------|----------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| 可编程<br>设定 | 1700          | 继电器初始状态<br>设定      | R/W  | 0-常开, 1-常闭; byte0-byte6 对应 D01-D07                                                                                                                       | word |
|           | 1701          | D01 可编程定义          | R/W  | 0-普通 D0; 1-分闸输出; 2-合闸输出; 3-故障<br>输出; 4-报警输出; 5-逻辑图 1 输出; 6-逻辑<br>图 2 输出; 7-逻辑图 3 输出; 8-测温报警输出;<br>9-测温脱扣输出; 10-装置自检输出; 11-装置<br>电源输出; 12-25 DI 控制 D0 输出; | word |
|           | 1702          | D01 动作设定<br>(时间)   | R/W  | 0-电平; (3-250)-脉冲宽度, Unit0.1S                                                                                                                             | word |
|           | 1703          | D01 脱扣故障具<br>体设定 1 | R/W  | 对应脱扣允许位 1 定义                                                                                                                                             | word |
|           | 1704          | D01 脱扣故障具<br>体设定 2 | R/W  | 对应脱扣允许位 2 定义                                                                                                                                             | word |
|           | 1705          | D01 脱扣故障具<br>体设定 3 | R/W  |                                                                                                                                                          | word |
|           | 1706          | D01 报警故障具<br>体设定 1 | R/W  | 对应报警允许位 1 定义                                                                                                                                             | word |
|           | 1707          | D01 报警故障具<br>体设定 2 | R/W  | 对应报警允许位 2 定义                                                                                                                                             | word |
|           | 1708          | D01 报警故障具<br>体设定 3 | R/W  |                                                                                                                                                          | word |
|           | 1709-1<br>716 | D02 可编程            | R/W  | 同 D01 可编程设定                                                                                                                                              | word |

|  |               |           |     |                                                                                                                          |                        |
|--|---------------|-----------|-----|--------------------------------------------------------------------------------------------------------------------------|------------------------|
|  | 1717-1<br>724 | D03 可编程   | R/W |                                                                                                                          | word                   |
|  | 1725-1<br>732 | D04 可编程定义 | R/W |                                                                                                                          | word                   |
|  | 1733-1<br>740 | D05 可编程定义 | R/W |                                                                                                                          | word                   |
|  | 1741-1<br>748 | D06 可编程定义 | R/W |                                                                                                                          | word                   |
|  | 1749-1<br>756 | D07 可编程   | R/W |                                                                                                                          | word                   |
|  | 1757-1<br>999 | 预留        | R/W |                                                                                                                          | word                   |
|  | 2000          | DI 常开常闭设置 | R/W | byte0-byte13 对应 DI1-14, 0-常开; 1-常闭                                                                                       | word                   |
|  | 2001          | DI1 可编程   | R/W | 0-普通 DI; 1-断路器状态; 2-本地分闸; 3-本地合闸; 4-远程分闸; 5-远程合闸; 6-联动 1; 7 联动 2; 8-联动 3; 9-复位; 10-控制权限 1; 11-控制权限 2 12-弹簧储能监视 13-控制回路监视 | word                   |
|  | 2002          | DI2 可编程   | R/W | 同 DI1 可编程设定                                                                                                              | wordword<br>rd<br>word |
|  | 2003          | DI3 可编程   |     |                                                                                                                          |                        |
|  | 2004          | DI4 可编程   |     |                                                                                                                          |                        |
|  | 2005          | DI5 可编程   |     |                                                                                                                          |                        |
|  | 2006          | DI6 可编程   |     |                                                                                                                          |                        |
|  | 2007          | DI7 可编程   |     |                                                                                                                          |                        |
|  | 2008          | DI8 可编程   |     |                                                                                                                          |                        |
|  | 2009          | DI9 可编程   |     |                                                                                                                          |                        |
|  | 2010          | DI10 可编程  |     |                                                                                                                          |                        |
|  | 2011          | DI11 可编程  |     |                                                                                                                          |                        |
|  | 2012          | DI12 可编程  |     |                                                                                                                          |                        |
|  | 2013          | DI13 可编程  |     |                                                                                                                          |                        |
|  | 2014          | DI14 可编程  |     |                                                                                                                          |                        |
|  | 2015-2<br>099 | 预留        | R/W |                                                                                                                          |                        |

|  |        |              |     |                                                                                                                                                                                                                                                                                                                                                                                                    |      |
|--|--------|--------------|-----|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|  | 2100   | 逻辑图输入定义<br>1 | R/W | 0-关<br>闭;1-A;2-A*B;3-A+B;4-A*B*C;5-(A+B)*C;6-(A*B)+C;7-A+B+C;8-A*B*C*D;9-(A+B)*C*D;10-(A*B+C)*D;11-(A+B+C)*D;12-A*B*C+D;13-(A+B)*C+D;14-A*B+C+D;15-A+B+C+D;16-A*B*C*D+E;17-(A+B)*C*D+E;18-(A*B+C)*D+E;19-(A+B+C)*D+E;20-(A*B*C+D)*E;21-((A+B)*C+D)*E;22-(A*B+C+D)*E;23-(A+B+C+D)*E;24-A*B*C*D+E;25-(A+B)*C*D+E;26-(A*B+C)*D+E;27-(A+B+C)*D+E;28-A*B*C+D+E;29-(A+B)*C+D+E;30-A*B+C+D+E;31-A+B+C+D+E | word |
|  | 2101   | 输入条件 A       | R/W | 低字节:<br>0-无输入;<br>1-14 DI1-DI14;<br>15-21 DO1-DO7<br>26-分闸动作<br>27-合闸动作<br>28-分闸状态<br>29-合闸状态<br>30-总报警输出<br>31-69 报警输出 (对应报警使能 (报警使能 1byte0 对应 1))<br>80-总脱扣输出<br>81-120 脱扣输出 (对应脱扣使能 (脱扣使能 1byte0 对应 41))<br>0-正逻辑 1-反逻辑                                                                                                                                                                         | word |
|  | 2102   | 输入条件 B       | R/W | 同输入条件 A                                                                                                                                                                                                                                                                                                                                                                                            | word |
|  | 2103   | 输入条件 C       |     |                                                                                                                                                                                                                                                                                                                                                                                                    |      |
|  | 2104   | 输入条件 D       |     |                                                                                                                                                                                                                                                                                                                                                                                                    |      |
|  | 2105   | 输入条件 E       |     |                                                                                                                                                                                                                                                                                                                                                                                                    |      |
|  | 2106   | 输入 A 延时时间    | R/W | 0.0s-60.0s                                                                                                                                                                                                                                                                                                                                                                                         | word |
|  | 2107   | 输入 B 延时时间    | R/W | 0.0s-60.0s                                                                                                                                                                                                                                                                                                                                                                                         | word |
|  | 2108   | 输入 C 延时时间    | R/W | 0.0s-60.0s                                                                                                                                                                                                                                                                                                                                                                                         | word |
|  | 2109   | 输入 D 延时时间    | R/W | 0.0s-60.0s                                                                                                                                                                                                                                                                                                                                                                                         | word |
|  | 2110   | 输入 E 延时时间    | R/W | 0.0s-60.0s                                                                                                                                                                                                                                                                                                                                                                                         | word |
|  | 2111-2 | 逻辑图输入定义      | R/W | 同逻辑图输入定义 1                                                                                                                                                                                                                                                                                                                                                                                         | word |

|  |               |                   |     |  |      |
|--|---------------|-------------------|-----|--|------|
|  | 121           | 2                 |     |  | word |
|  | 2122-2<br>132 | 逻辑图输入定义<br>3      |     |  |      |
|  | 2133          | 普通 DO 写入 DO<br>状态 | R/W |  | word |
|  | 2134-2<br>299 | 保留                |     |  |      |

Table 21 Programmable defined address table

| Category                | address | parameter                                   | Read-write<br>attribute | Range                                                                                                                                                                                                                                                                                                                | Type |
|-------------------------|---------|---------------------------------------------|-------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
| Programmable<br>Setting | 1700    | Relay initial<br>state setting              | R/W                     | 0-normally open, 1-normally closed; byte0-byte6<br>corresponds to DO1-DO7                                                                                                                                                                                                                                            | word |
|                         | 1701    | DO1<br>programmable<br>definition           | R/W                     | 0-common DO; 1-opening output; 2-closing<br>output; 3-fault output; 4-alarm output; 5-logic<br>diagram 1 output; Logic diagram 3 output;<br>8-temperature measurement alarm output;<br>9-temperature measurement trip output;<br>10-device self-test output; 11-device power<br>output; 12-25 DI control DO output;: | word |
|                         | 1702    | DO1 action<br>setting (time)                | R/W                     | 0-level; (3-250)-pulse width, Unit0.1S                                                                                                                                                                                                                                                                               | word |
|                         | 1703    | DO1 tripping<br>fault specific<br>setting 1 | R/W                     | corresponding to the definition of tripping allow<br>byte 1                                                                                                                                                                                                                                                          | word |
|                         | 1704    | DO1 trip fault<br>specific setting<br>2     | R/W                     | corresponding to the definition of trip allow byte<br>2                                                                                                                                                                                                                                                              | word |
|                         | 1705    | DO1 trip fault<br>specific setting<br>3     | R/W                     |                                                                                                                                                                                                                                                                                                                      | word |
|                         | 1706    | DO1 alarm<br>failure specific<br>setting 1  | R/W                     | corresponding to the definition of alarm enable<br>byte 1                                                                                                                                                                                                                                                            | word |
|                         | 1707    | DO1 alarm<br>fault specific                 | R/W                     | corresponding to the definition of alarm enable<br>byte 2                                                                                                                                                                                                                                                            | word |

|  |               |                                                |     |                                                                                                                                                                                                                                                                                       |      |
|--|---------------|------------------------------------------------|-----|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|  |               | setting 2                                      |     |                                                                                                                                                                                                                                                                                       |      |
|  | 1708          | DO1 alarm<br>fault specific<br>setting 3       | R/W |                                                                                                                                                                                                                                                                                       | word |
|  | 1709-17<br>16 | DO2<br>programmable                            | R/W | Same as DO1 programmable setting                                                                                                                                                                                                                                                      | word |
|  | 1717-17<br>24 | DO3<br>programmable                            | R/W |                                                                                                                                                                                                                                                                                       | word |
|  | 1725-17<br>32 | DO4<br>programmable<br>setting                 | R/W |                                                                                                                                                                                                                                                                                       | word |
|  | 1733-17<br>40 | DO5<br>programmable<br>setting                 | R/W |                                                                                                                                                                                                                                                                                       | word |
|  | 1741-17<br>48 | DO6<br>programmable<br>setting                 | R/W |                                                                                                                                                                                                                                                                                       | word |
|  | 1749-17<br>56 | DO7<br>programmable                            | R/W |                                                                                                                                                                                                                                                                                       | word |
|  | 1757-19<br>99 | reserve                                        | R/W |                                                                                                                                                                                                                                                                                       | word |
|  | 2000          | DI Normally<br>open normally<br>closed setting | R/W | byte0-byte13 corresponds to DI1-14, 0-normally<br>open; 1-normally closed                                                                                                                                                                                                             | word |
|  | 2001          | DI1<br>programmable                            | R/W | 0-common DI; 1-circuit breaker status; 2-local<br>opening; 3-local closing; 4-remote opening;<br>5-remote closing; 6-linkage 1; 7-linkage 2;<br>8-linkage 3; 9 -Reset; 10-Control authority 1;<br>11-Control authority 2 12-Spring energy<br>monitoring 13-Control circuit monitoring | word |
|  | 2002          | DI2<br>Programmable                            | R/W | Same as DI1 programmable setting                                                                                                                                                                                                                                                      | word |
|  | 2003          | DI3<br>Programmable                            |     |                                                                                                                                                                                                                                                                                       |      |
|  | 2004          | DI4                                            |     |                                                                                                                                                                                                                                                                                       |      |

|  |               |                                        |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|--|---------------|----------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|  |               | Programmable                           |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|  | 2005          | DI5<br>Programmable                    |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|  | 2006          | DI6<br>Programmable                    |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|  | 2007          | DI7<br>Programmable                    |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|  | 2008          | DI8<br>Programmable                    |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|  | 2009          | DI9<br>Programmable                    |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|  | 2010          | DI10<br>Programmable                   |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|  | 2011          | DI11<br>Programmable                   |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|  | 2012          | DI12<br>Programmable                   |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|  | 2013          | DI13<br>Programmable                   |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|  | 2014          | DI14<br>Programmable                   |     |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|  | 2015-20<br>99 | Reserve                                | R/W |                                                                                                                                                                                                                                                                                                                                                                                                                       |      |
|  | 2100          | Logic Diagram<br>Input<br>Definition 1 | R/W | <p>0-Close</p> <p>Close;1-A;2-A*B;3-A+B;4-A*B*C;5-(A+B)*C;6-(A*B)+C;7-A+B+C;8-A*B*C*D;9-(A+B)*C*D;10-(A*B+C)*D;11-(A+B+C)*D;12-A*B*C+D;13-(A+B)*C+D;14-A*B+C+D;15-A+B+C+D;16-A*B*C*D+E;17-(A+B)*C*D+E;18-(A*B+C)*D+E;19-(A+B+C)*D+E;20-(A*B*C+D)*E;21-((A+B)*C+D)*E;22-(A*B+C+D)*E;23-(A+B+C+D)*E;24-A*B*C*D+E;25-(A+B)*C*D+E;26-(A*B+C)*D+E;27-(A+B+C)*D+E;28-A*B*C+D+E;29-(A+B)*C+D+E;30-A*B+C+D+E;31-A+B+C+D+E</p> | word |

|  |               |                        |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |
|--|---------------|------------------------|-----|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|  | 2101          | input condition<br>A   | R/W | <p>low byte:</p> <p>0 - no input;</p> <p>1-14 DI1-DI14;</p> <p>15-21 DO1-DO7</p> <p>26-Opening action</p> <p>27- Closing action</p> <p>28-Open state</p> <p>29- Closing state</p> <p>30-total alarm output</p> <p>31-69 Alarm output (corresponding to alarm enable (alarm enable 1byte0 corresponds to 1))</p> <p>80-total trip output</p> <p>81-120 Trip output (corresponding to trip enable (trip enable 1byte0 corresponds to 41))</p> <p>0-positive logic 1-negative logic</p> | word |
|  | 2102          | input condition<br>B   | R/W | Same as input condition A                                                                                                                                                                                                                                                                                                                                                                                                                                                            | word |
|  | 2103          | input condition<br>C   |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |
|  | 2104          | input condition<br>D   |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |
|  | 2105          | input condition<br>E   |     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |      |
|  | 2106          | Enter A delay<br>time  | R/W | 0.0s-60.0s                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | word |
|  | 2107          | Enter B delay<br>time  | R/W | 0.0s-60.0s                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | word |
|  | 2108          | Enter C delay<br>time  | R/W | 0.0s-60.0s                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | word |
|  | 2109          | Enter D delay<br>time  | R/W | 0.0s-60.0s                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | word |
|  | 2110          | Enter E delay<br>time  | R/W | 0.0s-60.0s                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | word |
|  | 2111-21<br>21 | logic diagram<br>input | R/W | Same as logic diagram input definition 1                                                                                                                                                                                                                                                                                                                                                                                                                                             | word |

|  |           |                                  |     |  |      |
|--|-----------|----------------------------------|-----|--|------|
|  |           | definition 2                     |     |  | word |
|  | 2122-2132 | logic diagram input definition 3 |     |  |      |
|  | 2133      | Ordinary DO write DO status      | R/W |  | word |
|  | 2134-2299 | reserve                          |     |  |      |

## 8.6 通讯参数设定通讯地址 8.6 Communication parameter setting communication address

见表 22: refer to table 22:

表 22 通讯设置地址表

| 分类 | 地址        | 参数                | 读写属性 | 取值范围             | 类型   |
|----|-----------|-------------------|------|------------------|------|
| 通讯 | 2300      | MODBUS RTU1 地址设定  | R/W  | 1~247            | word |
|    | 2301      | MODBUS RTU1 波特率设定 | R/W  | 0                | word |
|    | 2302      | MODBUS RTU1 奇偶校验位 | R/W  | 1~247            | word |
|    | 2303      | MODBUS RTU2 地址设定  | R/W  | 同上               | word |
|    | 2304      | MODBUS RTU2 波特率设定 | R/W  |                  | word |
|    | 2305      | MODBUS RTU2 奇偶校验位 | R/W  |                  | word |
|    | 2306      | profibus 模块 1 地址  | R/W  |                  | word |
|    | 2307      | profibus 模块 2 地址  | R/W  |                  | word |
|    | 2308-2309 | 预留                |      |                  |      |
|    | 2310      | LORA 开关状态         | R/W  | 1-LORA 打开, 0-关闭  | word |
|    | 2311      | lora 模式           | R/W  | 0-透传 1-jasion 主发 | word |

|      |                 |     |                                                                      |      |
|------|-----------------|-----|----------------------------------------------------------------------|------|
| 2312 | lora 设备地址       | R/W | 1-247                                                                | word |
| 2313 | lora 频段 (MHz)   | R/W | 0-91                                                                 | word |
| 2314 | 扩展因数            | R/W | 6-12                                                                 | word |
| 2315 | 信号带宽            | R/W | 0-45                                                                 | word |
| 2316 | 序列号 1           | R/W |                                                                      | word |
| 2317 | 序列号 2           | R/W |                                                                      | word |
| 2318 | 序列号 3           | R/W |                                                                      | word |
| 2319 | 序列号 4           | R/W |                                                                      | word |
| 2320 | 序列号 5/以太网 MAC   | R/W |                                                                      | word |
| 2321 | 序列号 6/以太网 MAC   | R/W |                                                                      | word |
| 2322 | 序列号 7/以太网 MAC   | R/W |                                                                      | word |
| 2323 | 功能选择            | R/W | 0-以太网 modbusTCP 协议, 1-以太网主发 JASIONG 协议, 2-4G 主发 JASION 协议, 3-4G 透传协议 | word |
| 2324 | MODBUS TCP IP   | R/W | IP 地址前两字节, 高字节在前                                                     | word |
| 2325 | MODBUS TCP IP   | R/W | IP 地址后两字节, 高字节在前                                                     | word |
| 2326 | MODBUS TCP 掩码   | R/W | 子网掩码前两字节, 高字节在前                                                      | word |
| 2327 | MODBUS TCP 掩码   | R/W | 子网掩码后两字节, 高字节在前                                                      | word |
| 2328 | MODBUS TCP 网关   | R/W | 网关前两字节, 高字节在前                                                        | word |
| 2329 | MODBUS TCP 网关   | R/W | 网关后两字节, 高字节在前                                                        | word |
| 2330 | MODBUS TCP 端口号  | R/W | 0-65535                                                              | word |
| 2331 | MODBUS TCP DHCP | R/W | 0-关, 1-开                                                             | word |
| 2332 | 主站服务端 IP        | R/W |                                                                      | word |
| 2333 | 主站服务端 IP        | R/W | 4G 和以太网共用                                                            | word |
| 2334 | 主站服务端端口号        | R/W |                                                                      | word |
| 2335 | 操作密码验证设置使能      | R/W | 0 禁止, 1 使能                                                           | word |
| 2336 | 设置操作密码高位        | R/W |                                                                      | word |
| 2337 | 设置操作密码低位        | R/W |                                                                      | word |

|  |           |           |     |                 |      |
|--|-----------|-----------|-----|-----------------|------|
|  | 2338      | Ip/域名功能选择 | R/W | 0=使用 IP, 1=使用域名 | word |
|  | 2339      | 域名数组 1    | R/W |                 | word |
|  | 2340      | 域名数组 2    | R/W |                 | word |
|  | 2341      | 域名数组 3    | R/W |                 | word |
|  | 2342      | 域名数组 4    | R/W |                 | word |
|  | 2343      | 域名数组 5    | R/W |                 | word |
|  | 2344      | 域名数组 6    | R/W |                 | word |
|  | 2345      | 域名数组 7    | R/W |                 | word |
|  | 2346      | 域名数组 8    | R/W |                 | word |
|  | 2347      | 域名数组 9    | R/W |                 | word |
|  | 2348      | 域名数组 10   | R/W |                 | word |
|  | 2349      | 域名数组 11   | R/W |                 | word |
|  | 2350      | 域名数组 12   | R/W |                 | word |
|  | 2351      | 域名数组 13   | R/W |                 | word |
|  | 2352      | 域名数组 14   | R/W |                 | word |
|  | 2353      | 域名数组 15   | R/W |                 | word |
|  | 2354      | 域名数组 16   | R/W |                 | word |
|  | 2355      | 域名数组 17   | R/W |                 | word |
|  | 2356      | 域名数组 18   | R/W |                 | word |
|  | 2357      | 域名数组 19   | R/W |                 | word |
|  | 2358      | 域名数组 20   | R/W |                 | word |
|  | 2359      | 域名数组 21   | R/W |                 | word |
|  | 2360      | 域名数组 22   | R/W |                 | word |
|  | 2361      | 域名数组 23   | R/W |                 | word |
|  | 2362      | 域名数组 24   | R/W |                 | word |
|  | 2363-2366 | 保留        |     |                 |      |

Table 22 Communication setting address table

| Category      | address | parameter                   | Read-write attribute | Range | Type |
|---------------|---------|-----------------------------|----------------------|-------|------|
| Communication | 2300    | MODBUS RTU1 address setting | R/W                  | 1~247 | word |

|  |           |                                        |     |                                                   |      |
|--|-----------|----------------------------------------|-----|---------------------------------------------------|------|
|  | 2301      | MODBUS<br>RTU1<br>Baud rate<br>setting | R/W | 0                                                 | word |
|  | 2302      | MODBUS<br>RTU1<br>parity byte          | R/W | 1~247                                             | word |
|  | 2303      | MODBUS<br>RTU2<br>address<br>setting   | R/W | Same as above                                     | word |
|  | 2304      | MODBUS<br>RTU2<br>Baud rate<br>setting | R/W |                                                   | word |
|  | 2305      | MODBUS<br>RTU2<br>parity byte          | R/W |                                                   | word |
|  | 2306      | Profibus<br>module 1<br>address        | R/W |                                                   | word |
|  | 2307      | Profibus<br>module 2<br>address        | R/W |                                                   | word |
|  | 2308-2309 | reserve                                |     |                                                   |      |
|  | 2310      | LORA<br>switch status                  | R/W | 1-LORA open, 0-closed                             | word |
|  | 2311      | Lora Mode                              | R/W | 0-transparent transmission 1-jasion main transfer | word |
|  | 2312      | Lora device<br>address                 | R/W | 1-247                                             | word |
|  | 2313      | Lora<br>frequency<br>band (MHz)        | R/W | 0-91                                              | word |
|  | 2314      | Expansion<br>factor                    | R/W | 6-12                                              | word |
|  | 2315      | Signal                                 | R/W | 0-45                                              | word |

|      |                                       |           |  |                                                                                                                                                            |      |
|------|---------------------------------------|-----------|--|------------------------------------------------------------------------------------------------------------------------------------------------------------|------|
|      |                                       | Bandwidth |  |                                                                                                                                                            |      |
| 2316 | Serial<br>number 1                    | R/W       |  |                                                                                                                                                            | word |
| 2317 | Serial<br>number 2                    | R/W       |  |                                                                                                                                                            | word |
| 2318 | Serial<br>number 3                    | R/W       |  |                                                                                                                                                            | word |
| 2319 | Serial<br>number 4                    | R/W       |  |                                                                                                                                                            | word |
| 2320 | Serial<br>Number<br>5/Ethernet<br>MAC | R/W       |  |                                                                                                                                                            | word |
| 2321 | Serial<br>Number<br>6/Ethernet<br>MAC | R/W       |  |                                                                                                                                                            | word |
| 2322 | Serial<br>Number<br>7/Ethernet<br>MAC | R/W       |  |                                                                                                                                                            | word |
| 2323 | Function<br>selection                 | R/W       |  | 0-Ethernet modbusTCP protocol, 1-Ethernet<br>mainly sends JASION protocol, 2-4G mainly<br>sends JASION protocol, 3-4G transparent<br>transmission protocol | word |
| 2324 | MODBUS<br>TCP IP                      | R/W       |  | The first two bytes of the IP address, the high<br>byte first                                                                                              | word |
| 2325 | MODBUS<br>TCP IP                      | R/W       |  | IP address last two bytes, high byte first                                                                                                                 | word |
| 2326 | MODBUS<br>TCP mask                    | R/W       |  | Subnet mask first two bytes, high byte first                                                                                                               | word |
| 2327 | MODBUS<br>TCP mask                    | R/W       |  | Subnet mask last two bytes, high byte first                                                                                                                | word |
| 2328 | MODBUS<br>TCP gateway                 | R/W       |  | The first two bytes of the gateway, the high byte<br>first                                                                                                 | word |
| 2329 | MODBUS                                | R/W       |  | The last two bytes of the gateway, the high byte                                                                                                           | word |

|      |                                                            |             |  |                             |      |
|------|------------------------------------------------------------|-------------|--|-----------------------------|------|
|      |                                                            | TCP gateway |  | first                       |      |
| 2330 | MODBUS<br>TCP<br>port number                               | R/W         |  | 0-65535                     | word |
| 2331 | MODBUS<br>TCP DHCP                                         | R/W         |  | 0-Close, 1-Open             | word |
| 2332 | Master<br>station server<br>IP                             | R/W         |  |                             | word |
| 2333 | Master<br>station server<br>IP                             | R/W         |  | 4G and Ethernet shared      | word |
| 2334 | Master<br>station server<br>port number                    | R/W         |  |                             | word |
| 2335 | Operation<br>password<br>verification<br>setting<br>enable | R/W         |  | 0 disable, 1 enable         | word |
| 2336 | Set the high<br>byte of<br>operation<br>password           | R/W         |  |                             | word |
| 2337 | Set operation<br>password<br>low byte                      | R/W         |  |                             | word |
| 2338 | Ip/domain<br>name<br>function<br>selection                 | R/W         |  | 0=use IP, 1=use domain name | word |
| 2339 | Domain<br>name array 1                                     | R/W         |  |                             | word |
| 2340 | Domain<br>name array 2                                     | R/W         |  |                             | word |
| 2341 | Domain                                                     | R/W         |  |                             | word |

|      |                            |              |  |  |      |
|------|----------------------------|--------------|--|--|------|
|      |                            | name array 3 |  |  |      |
| 2342 | Domain<br>name array 4     | R/W          |  |  | word |
| 2343 | Domain<br>name array 5     | R/W          |  |  | word |
| 2344 | Domain<br>name array 6     | R/W          |  |  | word |
| 2345 | Domain<br>name array 7     | R/W          |  |  | word |
| 2346 | Domain<br>name array 8     | R/W          |  |  | word |
| 2347 | Domain<br>name array 9     | R/W          |  |  | word |
| 2348 | Domain<br>name array<br>10 | R/W          |  |  | word |
| 2349 | Domain<br>name array<br>11 | R/W          |  |  | word |
| 2350 | Domain<br>name array<br>12 | R/W          |  |  | word |
| 2351 | Domain<br>name array<br>13 | R/W          |  |  | word |
| 2352 | Domain<br>name array<br>14 | R/W          |  |  | word |
| 2353 | Domain<br>name array<br>15 | R/W          |  |  | word |
| 2354 | Domain<br>name array<br>16 | R/W          |  |  | word |
| 2355 | Domain<br>name array       | R/W          |  |  | word |

|  |           |                            |     |  |      |
|--|-----------|----------------------------|-----|--|------|
|  |           | 17                         |     |  |      |
|  | 2356      | Domain<br>name array<br>18 | R/W |  | word |
|  | 2357      | Domain<br>name array<br>19 | R/W |  | word |
|  | 2358      | Domain<br>name array<br>20 | R/W |  | word |
|  | 2359      | Domain<br>name array<br>21 | R/W |  | word |
|  | 2360      | Domain<br>name array<br>22 | R/W |  | word |
|  | 2361      | Domain<br>name array<br>23 | R/W |  | word |
|  | 2362      | Domain<br>name array<br>24 | R/W |  | word |
|  | 2363-2366 | reserve                    |     |  |      |

8.7 事件记录通讯地址 8.7 Event log communication address

见表 23: refer to table 23:

表 23 事件记录地址表

| 分类            | 地址   | 参数             | 读写属性 | 取值范围      | 类型   |
|---------------|------|----------------|------|-----------|------|
| DI 变位<br>记录 1 | 2500 | 动作 1 时间-年<br>月 | R    | 高字为年，低字为月 | word |
|               | 2501 | 动作 1 时间-日<br>时 | R    | 高字为日，低字为时 | word |
|               | 2502 | 动作 1 时间-分<br>秒 | R    | 高字为分，低字为秒 | word |
|               | 2503 | DI 编号          | R    |           | word |

|                               |           |            |   |                                                |      |
|-------------------------------|-----------|------------|---|------------------------------------------------|------|
|                               | 2504      | DI 状态      | R |                                                | word |
|                               | 2505-2507 | 预留         |   |                                                |      |
| DI 变位记录 2<br>-<br>DI 变位记录 100 | 2508-3244 | 同上         | R |                                                | word |
|                               | 3245-3299 | 预留         |   |                                                |      |
| 合闸记录 1                        | 3300      | 动作 1 时间-年月 | R | 高字为年，低字为月                                      | word |
|                               | 3301      | 动作 1 时间-日时 | R | 高字为时、日，低字为时                                    | word |
|                               | 3302      | 动作 1 时间-分秒 | R | 高字为分，低字为秒                                      | word |
|                               | 3303      | 合闸位置       | R | 0-外部 1-通讯 2-就地 3-面板 4-远程                       | word |
|                               | 3304      | 合闸最大电流     | R | Unit 1%                                        | word |
|                               | 3305      | 合闸最低电压     | R | Unit 1%                                        | word |
|                               | 3306      | 合闸是否成功     | R | 1-合闸失败，当前处于分闸状态 2-进入合闸状态 3-当前处于 Trip condition | word |
|                               | 3307      | 保留         |   |                                                |      |
| 合闸记录 2<br>-<br>合闸记录 8         | 3308-3363 | 同上         | R |                                                | word |
|                               | 3364-3399 | 预留         |   |                                                |      |
| 分闸记录 1                        | 3400      | 动作 1 时间-年月 | R | 高字为年，低字为月                                      | word |
|                               | 3401      | 动作 1 时间-日时 | R | 高字为时、日，低字为时                                    | word |
|                               | 3402      | 动作 1 时间-分秒 | R | 高字为分，低字为秒                                      | word |

|                 |           |           |   |                                              |      |
|-----------------|-----------|-----------|---|----------------------------------------------|------|
|                 | 3403      | 分闸位置      | R | 0-外部 1-通讯 2-就地 3-面板 4-远程 5-脱扣                | word |
|                 | 3404      | 分闸最大电流    | R | Unit 1%                                      | word |
|                 | 3405      | 分闸最低电压    | R | Unit 1%                                      | word |
|                 | 3406      | 分闸是否成功    | R | 1-分闸失败,当前处于合闸状态 2-进入分闸状态 3-进入 Trip condition | word |
|                 | 3407-3408 | 保留        |   |                                              |      |
| 分闸记录 2 - 分闸记录 8 | 3409-3464 | 同上        | R |                                              | word |
|                 | 3465-3699 | 预留        |   |                                              |      |
| 参数修改记录          | 3700      | 修改时间-年月   | R | 高字为年,低字为月                                    | word |
|                 | 3701      | 修改时间-日时   | R | 高字为时、日,低字为时                                  | word |
|                 | 3702      | 修改时间-分秒   | R | 高字为分,低字为秒                                    | word |
|                 | 3703      | 首通讯地址     | R |                                              | word |
|                 | 3704      | 通讯地址长度    | R |                                              | word |
|                 | 3705      | 设置方式      | R | 0=lcd, 1=rs485-1, 2=rs485-2, 3=commModule    | word |
| 参数修改记录 2-8      | 3706-3747 | 同上        | R |                                              | word |
|                 | 3748-4099 | 预留        |   |                                              |      |
| 装置上电记录 1        | 4100      | 装置上电时间-年月 | R | 高字为年,低字为月                                    | word |
|                 | 4101      | 装置上电时间-日时 | R | 高字为时、日,低字为时                                  | word |
|                 | 4102      | 装置上电时间-分秒 | R | 高字为分,低字为秒                                    | word |
|                 | 4103      | 本条上电索引    | R | 记录这一次是第几次上电                                  | word |
| 装置上电记录 2-8      | 4104-4131 | 同上        | R |                                              | word |

|                 |               |                                                     |     |             |      |
|-----------------|---------------|-----------------------------------------------------|-----|-------------|------|
| 装置断电记录<br>1     | 4132          | 装置断电时间-<br>年月                                       | R   | 高字为年，低字为月   | word |
|                 | 4133          | 装置断电时间-<br>日時                                       | R   | 高字为时、日，低字为时 | word |
|                 | 4134          | 装置断电时间-<br>分秒                                       | R   | 高字为分，低字为秒   | word |
|                 | 4135          | 本条断电索引                                              | R   | 记录这一次是第几次断电 | word |
| 装置断电记录<br>2-8   | 4136-41<br>63 | 同上                                                  | R   |             | word |
|                 | 4164-45<br>99 | 预留                                                  |     |             |      |
| 调试记录            | 4600          | 调试时间-年月                                             | R   | 高字为年，低字为月   | word |
|                 | 4601          | 调试时间-日時                                             | R   | 高字为时、日，低字为时 | word |
|                 | 4602          | 调试时间-分秒                                             | R   | 高字为分，低字为秒   | word |
|                 | 4603          | 条形码 1                                               | R   |             | word |
|                 | 4604          | 条形码 2                                               | R   |             | word |
|                 | 4605          | 条形码 3                                               | R   |             | word |
| 自定义<br>通讯地<br>址 | 5000          | 自定义地址 1<br>对应值                                      | R   | 同对应的通讯地址    | word |
|                 | 5001-<br>5199 | 自定义地址 2<br>对应值-<br>自定义地址<br>199 对应值                 | R   |             | word |
|                 | 5300-<br>5499 | 自定义地址 1<br>对应的地址设<br>置-<br>自定义地址<br>199 对应的地<br>址设置 | R/W |             | word |
| 故障记<br>录 1      | 5700          | 动作 1 时间-年<br>月                                      | R   | 高字为年，低字为月   | word |
|                 | 5701          | 动作 1 时间-日<br>时                                      | R   | 高字为时、日，低字为时 | word |
|                 | 5702          | 动作 1 时间-分<br>秒                                      | R   | 高字为分，低字为秒   | word |

|  |      |                           |   |                    |      |
|--|------|---------------------------|---|--------------------|------|
|  | 5703 | 故障 Trip<br>condition1     | R |                    | word |
|  | 5704 | 故障 Trip<br>condition2     | R |                    | word |
|  | 5705 | 故障 Trip<br>condition3     | R |                    | word |
|  | 5706 | Error Alarm<br>condition1 | R |                    | word |
|  | 5707 | Error Alarm<br>condition2 | R |                    | word |
|  | 5708 | Error Alarm<br>condition3 | R |                    | word |
|  | 5709 | 基波开关、接线<br>方式             | R | 低字节:基波开关; 高字节:接线方式 | word |
|  | 5710 | A 相电流                     | R | 0.001A             | word |
|  | 5711 |                           |   |                    |      |
|  | 5712 | B 相电流                     | R | 0.001A             | word |
|  | 5713 |                           |   |                    |      |
|  | 5714 | C 相电流                     | R | 0.001A             | word |
|  | 5715 |                           |   |                    |      |
|  | 5716 | 零线电流                      | R | 0.001A             | word |
|  | 5717 |                           |   |                    |      |
|  | 5718 | A 相电压                     | R | 0~999.9V           | word |
|  | 5719 | B 相电压                     | R | 0~999.9V           | word |
|  | 5720 | C 相电压                     | R | 0~999.9V           | word |
|  | 5721 | A 相电流总谐<br>波含量            | R | 0-1000             | word |
|  | 5722 | B 相电流总谐<br>波含量            | R | 0-1000             | word |
|  | 5723 | C 相电流总谐<br>波含量            | R | 0-1000             | word |
|  | 5724 | AB 线电压总谐<br>波含量           | R | 0-1000             | word |
|  | 5725 | BC 线电压总谐<br>波含量           | R | 0-1000             | word |
|  | 5726 | CA 线电压总谐                  | R | 0-1000             | word |

|                   |            |            |   |                        |      |
|-------------------|------------|------------|---|------------------------|------|
|                   |            | 波含量        |   |                        |      |
|                   | 5727       | 频率         | R |                        | word |
|                   | 5728       | 总视在功率      | R | 0 ~ 2376000 (Unit:VA)  | word |
|                   | 5729       |            |   |                        | word |
|                   | 5730       | 总有功功率      | R | 0 ~ 2376000 (Unit:VA)  | word |
|                   | 5731       |            |   |                        | word |
|                   | 5732       | 总无功功率      | R | 0 ~ 2376000 (Unit:VA)  | word |
|                   | 5733       |            |   |                        | word |
|                   | 5734       | 总功率因数      | R | 0.001                  | word |
|                   | 5735       | 正序电流       | R | 0.001A                 | word |
|                   | 5736       | 负序电流       | R | 0.001A                 | word |
|                   | 5737       | 零序电流       | R | 0.001A                 | word |
|                   | 5738       | 正序电压       | R | 0~999.9V               | word |
|                   | 5739       | 负序电压       | R | 0~999.9V               | word |
|                   | 5740       | 零序电压       | R | 0~999.9V               | word |
|                   | 5741       | 温度故障通道     | R | 高字节：1，无线；0，有线； 低字节：通道号 | word |
|                   | 5742       | 故障温度值      | R |                        | word |
|                   | 5743       | 漏电流        | R |                        | word |
|                   | 5744       | DI 状态      | R |                        | word |
|                   | 5745       | DO 状态      | R |                        | word |
|                   | 5746       | 分合闸状态      | R |                        | word |
|                   | 5747-5749  | 保留         |   |                        |      |
| 故障记录 2 - 故障记录 100 | 5750-10699 | 同上         | R |                        | word |
| 电压暂升 1            | 11000      | 动作 1 时间-年月 | R | 高字为年，低字为月              | word |
|                   | 11001      | 动作 1 时间-日时 | R | 高字为时、日，低字为时            | word |
|                   | 11002      | 动作 1 时间-分秒 | R | 高字为分，低字为秒              | word |
|                   | 11003      | A 相电压      | R |                        | word |
|                   | 11004      | B 相电压      | R |                        | word |

|                       |                 |            |   |                    |      |
|-----------------------|-----------------|------------|---|--------------------|------|
|                       | 11005           | C 相电压      | R |                    | word |
|                       | 11006           | 接线方式       | R |                    | word |
|                       | 11007           | 状态         | R | 1 事件记录中, 0 已经完成的事件 | word |
|                       | 11008           | 持续时间 (低字)  | R |                    | word |
|                       | 11009           | 持续时间 (高字)  | R |                    | word |
| 电压暂升 2<br>-<br>电压暂升 8 | 11010-1<br>1079 | 同上         | R |                    | word |
| 电压暂降 1                | 11080           | 动作 1 时间-年月 | R | 高字为年, 低字为月         | word |
|                       | 11081           | 动作 1 时间-日时 | R | 高字为日, 低字为时         | word |
|                       | 11082           | 动作 1 时间-分秒 | R | 高字为分, 低字为秒         | word |
|                       | 11083           | A 相电压      | R |                    | word |
|                       | 11084           | B 相电压      | R |                    | word |
|                       | 11085           | C 相电压      | R |                    | word |
|                       | 11086           | 接线方式       | R |                    | word |
|                       | 11087           | 状态         | R | 1 事件记录中, 0 已经完成的事件 | word |
|                       | 11088           | 持续时间 (低字)  | R | 组合成长整形, Unit 毫秒    | word |
|                       | 11089           | 持续时间 (高字)  | R |                    | word |
| 电压暂降 2<br>-<br>电压暂降 8 | 11190-1<br>1159 | 同上         | R |                    | word |
|                       | 11160-1<br>1999 | 预留         |   |                    |      |
| 本月报表                  | 12000           | 总有功电能      | R |                    | word |
|                       | 12001           |            |   |                    | word |
|                       | 12002           | 总无功电能      | R |                    | word |
|                       | 12003           |            |   |                    | word |

|                        |                 |          |   |       |      |
|------------------------|-----------------|----------|---|-------|------|
|                        | 12004           | 正向有功电能   | R |       | word |
|                        | 12005           |          |   |       | word |
|                        | 12006           | 反向有功电能   | R |       | word |
|                        | 12007           |          |   |       | word |
|                        | 12008           | 正向无功电能   | R |       | word |
|                        | 12009           |          |   |       | word |
|                        | 12010           | 反向无功电能   | R |       | word |
|                        | 12011           |          |   |       | word |
|                        | 12012-1<br>2019 | 保留       |   |       |      |
| 上 1 月-<br>上 12 月<br>报表 | 12020-1<br>2039 | 上 1 月报表  | R | 同本月报表 | word |
|                        | 12040-1<br>2059 | 上 2 月报表  | R |       |      |
|                        | 12060-1<br>2079 | 上 3 月报表  | R |       |      |
|                        | 12080-1<br>2099 | 上 4 月报表  | R |       |      |
|                        | 12100-1<br>2119 | 上 5 月报表  | R |       |      |
|                        | 12120-1<br>2139 | 上 6 月报表  | R |       |      |
|                        | 12140-1<br>2159 | 上 7 月报表  | R |       |      |
|                        | 12160-1<br>2179 | 上 8 月报表  | R |       |      |
|                        | 12180-1<br>2199 | 上 9 月报表  | R |       |      |
|                        | 12200-1<br>2219 | 上 10 月报表 | R |       |      |
|                        | 12220-1<br>2239 | 上 11 月报表 | R |       |      |
|                        | 12240-1<br>2259 | 上 12 月报表 | R |       |      |

Table 23 Event record address table

| Category                                                    | Addresses | Parameter                       | Read-Write Attribute | Range                                             | Type |
|-------------------------------------------------------------|-----------|---------------------------------|----------------------|---------------------------------------------------|------|
| DI displacement record 1                                    | 2500      | Action 1 time-year, month       | R                    | high byte is year, low byte is month              | word |
|                                                             | 2501      | Action 1 time-day and hour      | R                    | high byte is day, low byte is hour                | word |
|                                                             | 2502      | Action 1 time-minute and second | R                    | The high byte is minutes, the low byte is seconds | word |
|                                                             | 2503      | DI Code                         | R                    |                                                   | word |
|                                                             | 2504      | DI status                       | R                    |                                                   | word |
|                                                             | 2505-2507 | Reserve                         |                      |                                                   |      |
| DI displacement record 2<br>-<br>DI displacement record 100 | 2508-3244 | Same as above                   | R                    |                                                   | word |
|                                                             | 3245-3299 | Reserve                         |                      |                                                   |      |
| Closing Record 1                                            | 3300      | Action 1 time-year, month       | R                    | high byte is year, low byte is month              | word |
|                                                             | 3301      | Action 1 time-day and hour      | R                    | high byte is hour, day, low byte is hour          | word |
|                                                             | 3302      | Action 1 time-minute and        | R                    | high byte is minute, low byte is second           | word |

|                                                 |               |                                                   |   |                                                                                                                        |      |
|-------------------------------------------------|---------------|---------------------------------------------------|---|------------------------------------------------------------------------------------------------------------------------|------|
|                                                 |               | second                                            |   |                                                                                                                        |      |
|                                                 | 3303          | Closing position                                  | R | 0-external 1-communication 2-local 3-panel<br>4-remote                                                                 | word |
|                                                 | 3304          | Closing<br>maximum<br>current                     | R | Unit 1%                                                                                                                | word |
|                                                 | 3305          | Minimum<br>closing voltage                        | R | Unit 1%                                                                                                                | word |
|                                                 | 3306          | Whether the<br>closing is<br>successful or<br>not | R | 1-failed to close, currently in the opening state<br>2-entering the closing state 3-currently in the trip<br>condition | word |
|                                                 | 3307          | Reserve                                           |   |                                                                                                                        |      |
| Closing<br>Record 2<br>-<br>Closing<br>Record 8 | 3308-3<br>363 | Same as above                                     | R |                                                                                                                        | word |
|                                                 | 3364-3<br>399 | Reserve                                           |   |                                                                                                                        |      |
| Opening<br>Record 1                             | 3400          | Action 1<br>time-year,<br>month                   | R | high byte is year, low byte is month                                                                                   | word |
|                                                 | 3401          | Action 1<br>Time-Day Hour                         | R | High byte is hour, day, low byte is hour                                                                               | word |
|                                                 | 3402          | Action 1<br>time-minute and<br>second             | R | High byte is minute, the low byte is second                                                                            | word |
|                                                 | 3403          | Opening<br>position                               | R | 0-external 1-communication 2-local 3-panel<br>4-remote 5-trip                                                          | word |
|                                                 | 3404          | Opening<br>maximum<br>current                     | R | Unit 1%                                                                                                                | word |
|                                                 | 3405          | Opening<br>minimum                                | R | Unit 1%                                                                                                                | word |

|                                     |           |                                          |   |                                                                                                                |      |
|-------------------------------------|-----------|------------------------------------------|---|----------------------------------------------------------------------------------------------------------------|------|
|                                     |           | voltage                                  |   |                                                                                                                |      |
|                                     | 3406      | Whether the opening is successful or not | R | 1-opening failed, currently in the closing state<br>2-entering the opening state 3-entering the trip condition | word |
|                                     | 3407-3408 | Reserve                                  |   |                                                                                                                |      |
| Opening record 2 - opening record 8 | 3409-3464 | Same as above                            | R |                                                                                                                | word |
|                                     | 3465-3699 | Reserve                                  |   |                                                                                                                |      |
| Parameter modification record       | 3700      | Modification time-year, month            | R | High byte is year, low byte is month                                                                           | word |
|                                     | 3701      | Modification time-date and time          | R | high byte is hour and day, and the low byte is hour                                                            | word |
|                                     | 3702      | Modification time-minute and second      | R | High byte is minute, the low byte is second                                                                    | word |
|                                     | 3703      | Initial mailing address                  | R |                                                                                                                | word |
|                                     | 3704      | Communication address length             | R |                                                                                                                | word |
|                                     | 3705      | setting method                           | R | 0=lcd,1=rs485-1,2=rs485-2,3=commModule                                                                         | word |
| Parameter Modification record 2-8   | 3706-3747 | Same as above                            | R |                                                                                                                | word |
|                                     | 3748-4099 | Reserve                                  |   |                                                                                                                |      |
| Device                              | 4100      | Device                                   | R | High byte is year, low byte is month                                                                           | word |

|                                   |               |                                                  |   |                                                                |      |
|-----------------------------------|---------------|--------------------------------------------------|---|----------------------------------------------------------------|------|
| power-on<br>record 1              |               | power-on<br>time-year,<br>month                  |   |                                                                |      |
|                                   | 4101          | Device<br>power-on<br>time-day hour              | R | High byte is hour day, low byte is hour                        | word |
|                                   | 4102          | Device<br>power-on<br>time-minute<br>second      | R | High byte is minute, low byte is second                        | word |
|                                   | 4103          | The power-on<br>index                            | R | this article records the number of power-on times<br>this time | word |
| Device<br>power-on<br>record 2-8  | 4104-4<br>131 | Same as above                                    | R |                                                                | word |
| Device<br>power-off<br>record 1   | 4132          | Device<br>power-off<br>time-year month           | R | High byte is the year, and the low byte is the<br>month        | word |
|                                   | 4133          | Device<br>power-off<br>time-day hour             | R | High byte is the hour day, and the low byte is the<br>hour     | word |
|                                   | 4134          | Device<br>power-off<br>time-minute and<br>second | R | High byte is the minute, and the low byte is the<br>second     | word |
|                                   | 4135          | The power-off<br>index                           | R | this article records the number of power-offs this<br>time     | word |
| Device<br>power-off<br>record 2-8 | 4136-4<br>163 | Same as above                                    | R |                                                                | word |
|                                   | 4164-4<br>599 | Reserve                                          |   |                                                                |      |
| Debugging<br>record               | 4600          | Debugging<br>time-year,<br>month                 | R | High byte is the year,<br>and the low byte is the month        | word |
|                                   | 4601          | Debug time-day                                   | R | High byte is the hour day,                                     | word |

|                                     |               |                                                                                                                             |     |                                                            |      |
|-------------------------------------|---------------|-----------------------------------------------------------------------------------------------------------------------------|-----|------------------------------------------------------------|------|
|                                     |               | hour                                                                                                                        |     | and the low byte is the hour                               |      |
|                                     | 4602          | Debugging time<br>- minute and<br>second                                                                                    | R   | High byte is the minute,<br>and the low byte is the second | word |
|                                     | 4603          | Bar code 1                                                                                                                  | R   |                                                            | word |
|                                     | 4604          | Bar code 2                                                                                                                  | R   |                                                            | word |
|                                     | 4605          | Bar code 3                                                                                                                  | R   |                                                            | word |
| Custom<br>communica<br>tion address | 5000          | Corresponding<br>value of custom<br>address 1                                                                               | R   | Same as<br>the corresponding communication address         | word |
|                                     | 5001-<br>5199 | Corresponding<br>value of custom<br>address 2-<br>Custom address<br>199                                                     | R   |                                                            | word |
|                                     | 5300-<br>5499 | Address setting<br>corresponding<br>to custom<br>address 1-<br>Address setting<br>corresponding<br>to custom<br>address 199 | R/W |                                                            | word |
| 故障记录 1                              | 5700          | Action1 time-<br>year month                                                                                                 | R   | High byte is the year,<br>and the low byte is the month    | word |
|                                     | 5701          | Action1 time-<br>Hour day                                                                                                   | R   | High byte is the hour day, and the low byte is the<br>hour | word |
|                                     | 5702          | Action1 time-<br>Minute second                                                                                              | R   | High byte is the minute,<br>and the low byte is the second | word |
|                                     | 5703          | Error Trip<br>condition1                                                                                                    | R   |                                                            | word |
|                                     | 5704          | Error Trip<br>condition2                                                                                                    | R   |                                                            | word |
|                                     | 5705          | Error Trip<br>condition3                                                                                                    | R   |                                                            | word |
|                                     | 5706          | Error Alarm                                                                                                                 | R   |                                                            | word |

|  |      |                                              |   |                                                              |      |
|--|------|----------------------------------------------|---|--------------------------------------------------------------|------|
|  |      | condition1                                   |   |                                                              |      |
|  | 5707 | Error Alarm<br>condition2                    | R |                                                              | word |
|  | 5708 | Error Alarm<br>condition3                    | R |                                                              | word |
|  | 5709 | Fundamental<br>wave switch,<br>wiring mode   | R | low byte: fundamental wave switch;<br>high byte: wiring mode | word |
|  | 5710 | A phase current                              | R | 0.001A                                                       | word |
|  | 5711 |                                              |   |                                                              |      |
|  | 5712 | B phase current                              | R | 0.001A                                                       | word |
|  | 5713 |                                              |   |                                                              |      |
|  | 5714 | C phase current                              | R | 0.001A                                                       | word |
|  | 5715 |                                              |   |                                                              |      |
|  | 5716 | Neutral<br>current                           | R | 0.001A                                                       | word |
|  | 5717 |                                              |   |                                                              |      |
|  | 5718 | A phase voltage                              | R | 0~999.9V                                                     | word |
|  | 5719 | B phase voltage                              | R | 0~999.9V                                                     | word |
|  | 5720 | C phase voltage                              | R | 0~999.9V                                                     | word |
|  | 5721 | A phase current<br>total harmonic<br>content | R | 0-1000                                                       | word |
|  | 5722 | B phase current<br>total harmonic<br>content | R | 0-1000                                                       | word |
|  | 5723 | C phase current<br>total harmonic<br>content | R | 0-1000                                                       | word |
|  | 5724 | AB line voltage<br>total harmonic<br>content | R | 0-1000                                                       | word |
|  | 5725 | BC line voltage<br>total harmonic<br>content | R | 0-1000                                                       | word |
|  | 5726 | CA line voltage<br>total harmonic            | R | 0-1000                                                       | word |

|  |      | content                   |   |                                                            |      |
|--|------|---------------------------|---|------------------------------------------------------------|------|
|  | 5727 | Frequency                 | R |                                                            | word |
|  | 5728 | total apparent            | R | 0 ~ 2376000(Unit:VA)                                       | word |
|  | 5729 | power                     |   |                                                            | word |
|  | 5730 | total active              | R | 0 ~ 2376000(Unit:VA)                                       | word |
|  | 5731 | power                     |   |                                                            | word |
|  | 5732 | total reactive            | R | 0 ~ 2376000(Unit:VA)                                       | word |
|  | 5733 | power                     |   |                                                            | word |
|  | 5734 | total power factor        | R | 0.001                                                      | word |
|  | 5735 | positive sequence current | R | 0.001A                                                     | word |
|  | 5736 | negative sequence current | R | 0.001A                                                     | word |
|  | 5737 | Zero sequence current     | R | 0.001A                                                     | word |
|  | 5738 | positive sequence voltage | R | 0~999.9V                                                   | word |
|  | 5739 | negative sequence voltage | R | 0~999.9V                                                   | word |
|  | 5740 | Zero sequence voltage     | R | 0~999.9V                                                   | word |
|  | 5741 | Temperature Fault Channel | R | High byte: 1, wireless; 0, wired; Low byte: channel number | word |
|  | 5742 | Fault temperature value   | R |                                                            | word |
|  | 5743 | leakage current           | R |                                                            | word |
|  | 5744 | DI status                 | R |                                                            | word |
|  | 5745 | DO status                 | R |                                                            | word |

|                                         |             |                            |   |                                                            |      |
|-----------------------------------------|-------------|----------------------------|---|------------------------------------------------------------|------|
|                                         | 5746        | Opening and closing state  | R |                                                            | word |
|                                         | 5747-5749   | Reserve                    |   |                                                            |      |
| Fault record 2<br>-<br>Fault record 100 | 5750-10699  | Same as above              | R |                                                            | word |
| voltage swell 1                         | 11000       | Action1 time-year month    | R | High byte is the year,<br>and the low byte is the month    | word |
|                                         | 11001       | Action1 time-Hour day      | R | High byte is the Hour,day<br>and the low byte is the Hour  | word |
|                                         | 11002       | Action1 time-Minute Second | R | High byte is the minute,<br>and the low byte is the second | word |
|                                         | 11003       | A phase voltage            | R |                                                            | word |
|                                         | 11004       | B phase voltage            | R |                                                            | word |
|                                         | 11005       | C phase voltage            | R |                                                            | word |
|                                         | 11006       | Wiring method              | R |                                                            | word |
|                                         | 11007       | Status                     | R | 1 event record, 0 completed events                         | word |
|                                         | 11008       | Duration (low Byte)        | R |                                                            | word |
|                                         | 11009       | Duration (high Byte)       | R |                                                            | word |
| voltage swell 2<br>-<br>voltage swell 8 | 11010-11079 | Same as above              | R |                                                            | word |
| voltage swell 1                         | 11080       | Action1 time-year month    | R | High byte is the year,<br>and the low byte is the month    | word |
|                                         | 11081       | Action1 time-Hour day      | R | High byte is the Hour,day<br>and the low byte is the Hour  | word |
|                                         | 11082       | Action1 time-Minute Second | R | High byte is the minute,<br>and the low byte is the second | word |

|                                                   |                 |                            |   |                                                 |      |
|---------------------------------------------------|-----------------|----------------------------|---|-------------------------------------------------|------|
|                                                   | 11083           | A phase voltage            | R |                                                 | word |
|                                                   | 11084           | B phase voltage            | R |                                                 | word |
|                                                   | 11085           | C phase voltage            | R |                                                 | word |
|                                                   | 11086           | Wiring method              | R |                                                 | word |
|                                                   | 11087           | Status                     | R | 1 event record, 0 completed events              | word |
|                                                   | 11088           | Duration<br>(low Byte)     | R | Combined into a long integer, Unit milliseconds | word |
|                                                   | 11089           | Duration (high<br>Byte)    | R |                                                 | word |
| voltage<br>swell 2<br><br>-<br>voltage<br>swell 8 | 11190-<br>11159 | Same as above              | R |                                                 | word |
|                                                   | 11160-<br>11999 | Reserve                    |   |                                                 |      |
| Report of<br>this month                           | 12000           | Total active<br>energy     | R |                                                 | word |
|                                                   | 12001           |                            |   |                                                 | word |
|                                                   | 12002           | Total reactive<br>energy   | R |                                                 | word |
|                                                   | 12003           |                            |   |                                                 | word |
|                                                   | 12004           | Forward active<br>energy   | R |                                                 | word |
|                                                   | 12005           |                            |   |                                                 | word |
|                                                   | 12006           | Reverse active<br>energy   | R |                                                 | word |
|                                                   | 12007           |                            |   |                                                 | word |
|                                                   | 12008           | Forward<br>reactive energy | R |                                                 | word |
|                                                   | 12009           |                            |   |                                                 | word |
|                                                   | 12010           | Reverse reactive<br>energy | R |                                                 | word |
|                                                   | 12011           |                            |   |                                                 | word |
|                                                   | 12012-<br>12019 | Reserve                    |   |                                                 |      |
| Last<br>January-las<br>t December<br>report       | 12020-<br>12039 | Last 1 month<br>report     | R | Same as current month report                    | word |
|                                                   | 12040-<br>12059 | Last 2 months<br>report    | R |                                                 |      |
|                                                   | 12060-<br>12079 | Last 3 months<br>report    | R |                                                 |      |
|                                                   | 12080-<br>12099 | Last 4 months<br>report    | R |                                                 |      |

|  |             |                       |   |  |  |
|--|-------------|-----------------------|---|--|--|
|  | 12100-12119 | Last 5 months report  | R |  |  |
|  | 12120-12139 | Last 6 months report  | R |  |  |
|  | 12140-12159 | Last 7 months report  | R |  |  |
|  | 12160-12179 | Last 8 months report  | R |  |  |
|  | 12180-12199 | Last 9 months report  | R |  |  |
|  | 12200-12219 | Last 10 months report | R |  |  |
|  | 12220-12239 | Last 11 months report | R |  |  |
|  | 12240-12259 | Last 12 months report | R |  |  |

## 9 典型接线图 9 Typical Wiring Diagram

### 9.1 无测量模块，25A、100A 规格接线图 9.1 No measurement module, 25A, 100A specification wiring diagram

当电流规格为 25A、100A，且没有选配测量模块时，测量电压分别接入  $U_a$ 、 $U_b$ 、 $U_c$ （3P4L 零线接入  $U_n$ ），测量电流通过配套的互感器进行测量（按照电流方向从互感器 P1 进，P2 出，出线黄、蓝、红、黑分别对应接入  $I_a$ 、 $I_b$ 、 $I_c$ 、COM），选配漏电测量功能后，将 A、B、C 同时穿入漏电互感器（若有 N 线，一并接入），出线接入 IL、IL\*，详见图 6：

When the current specification is 25A, 100A, and there is no optional measurement module, the measurement voltage is respectively connected to  $U_a$ ,  $U_b$ ,  $U_c$  (the 3P4L neutral line is connected to  $U_n$ ), and the measurement current is measured through the matching transformer (according to the current direction from the mutual inductance P1 enters, P2 exits, and the yellow, blue, red, and black outgoing lines are connected to  $I_a$ ,  $I_b$ ,  $I_c$ , and COM respectively). After the leakage measurement function is selected, A, B, and C are simultaneously inserted into the leakage transformer (if any N line, connected together), the outgoing line is connected to IL, IL\*, see Figure 6 for details:

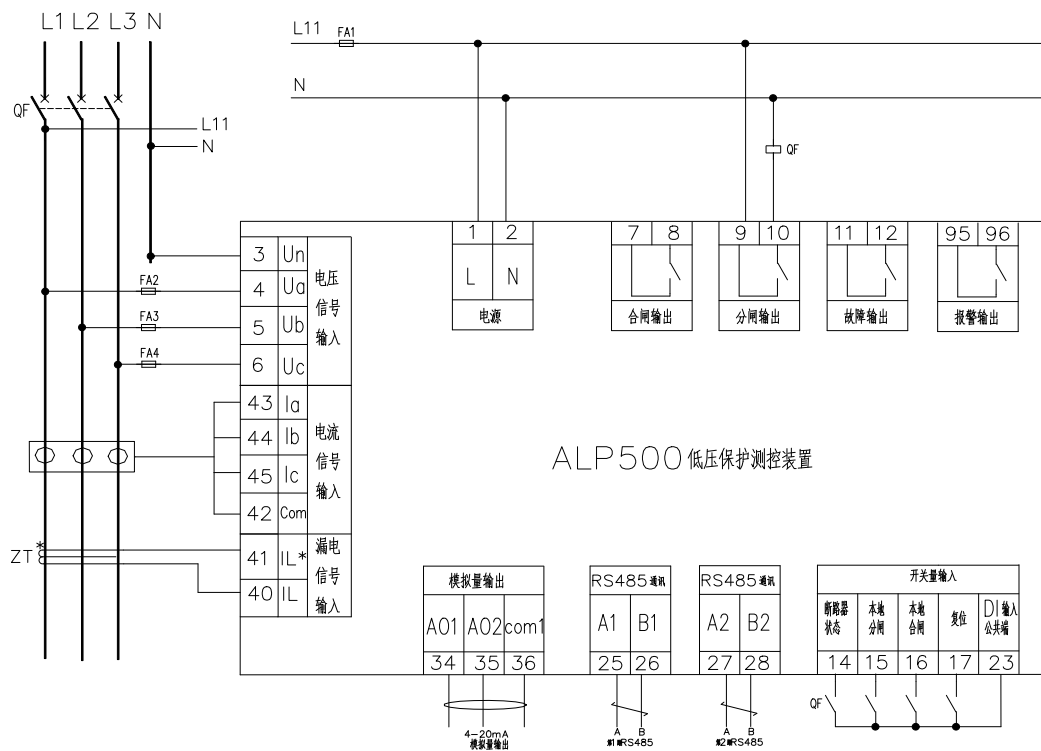


图 6 无测量模块，25A、100A 接线图

Figure 6 No measurement module, 25A, 100A wiring diagram

9.2 无测量模块，1A、5A 规格接线图 9.2 No measurement module, 1A, 5A specification wiring diagram

当电流规格为 1A、5A，且没有选配测量模块时，测量电压分别接入 Ua、Ub、Uc（3P4L 零线接入 Un），测量电流需要先通过 xxx/1A、xxx/5A 的保护型互感器（根据测控装置电流规格选互感器二次电流规格），二次出线穿过配套的互感器再短接进行测量（按照电流方向从互感器 P1 进，P2 出，出线黄、蓝、红、黑分别对应接入 Ia、Ib、Ic、COM），选配漏电测量功能后，将 A、B、C 同时穿入漏电互感器（若有 N 线，一并接入），出线接入 IL、IL\*，详见图 7：

When the current specification is 1A, 5A, and there is no optional measurement module, the measurement voltage is respectively connected to Ua, Ub, Uc (the 3P4L neutral line is connected to Un), and the measurement current needs to pass through the protection type of xxx/1A, xxx/5A Transformer (select the secondary current specification of the transformer according to the current specification of the measurement and control device), the secondary outgoing line passes through the matching transformer and then short-circuits for measurement (according to the current direction, it enters from the transformer P1 and exits from P2, and the outgoing lines are yellow, blue, and red. , black are respectively connected to Ia, Ib, Ic, COM), after selecting the leakage measurement function, put A, B, C into the leakage transformer at the same time (if there is N line, connect them together), and the outgoing line is connected to IL, IL\*, see Figure 7 for details:

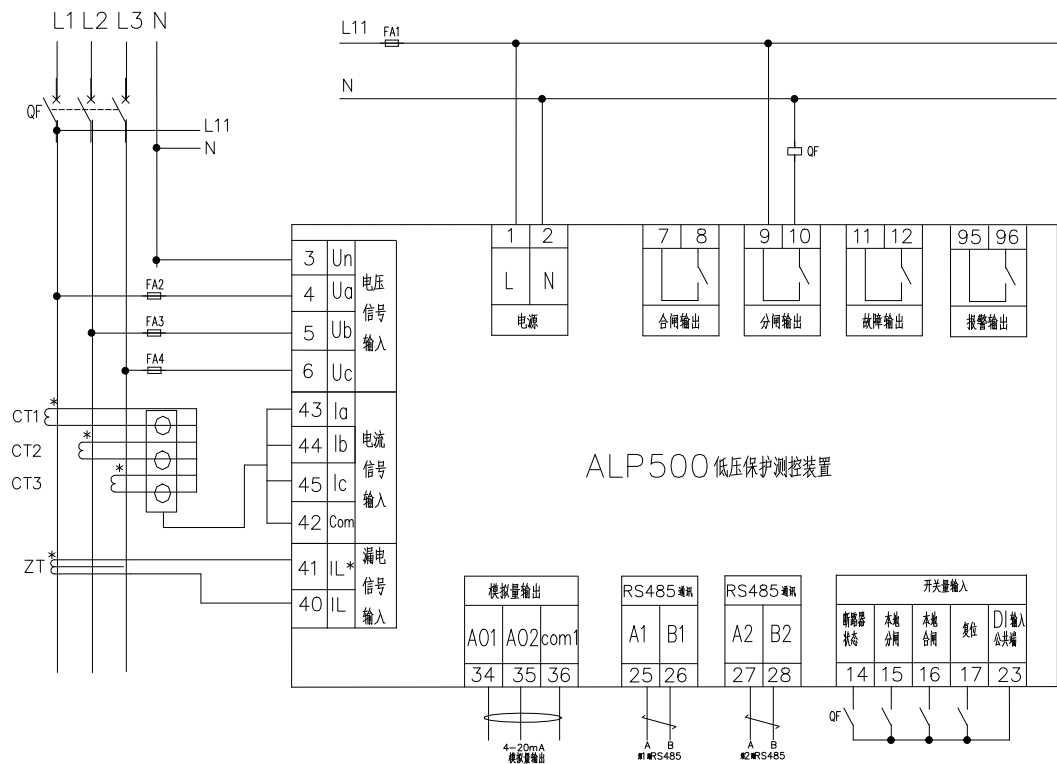


图 7 无测量模块，1A、5A 接线图

Figure 7 No measurement module, 1A, 5A wiring diagram

9.3 有测量模块，25A、100A 规格接线图 9.3 With measurement module, 25A, 100A specification wiring diagram

当电流规格为 25A、100A，且选配测量模块时，测量电压需分别接入测控装置主体和测量模块的  $U_a$ 、 $U_b$ 、 $U_c$ （3P4L 零线接入  $U_n$ ），测量模块测量电流穿过  $xxx/5A$  的测量型互感器，接入测量模块（电流方向 P1 进 P2 出，S1 接  $IA+$ 、 $IB+$ 、 $IC+$ ，S2 接  $IA-$ 、 $IB-$ 、 $IC-$ ），主体电流参数测量通过配套的互感器进行测量（按照电流方向从互感器 P1 进，P2 出，出线黄、蓝、红、黑分别对应接入  $I_a$ 、 $I_b$ 、 $I_c$ 、COM），选配漏电测量功能后，将 A、B、C 同时穿入漏电互感器（若有 N 线，一并接入），出线接入  $IL$ 、 $IL^*$ ，详见图 8：

When the current specification is 25A, 100A, and the measurement module is selected, the measurement voltage needs to be connected to  $U_a$ ,  $U_b$ , and  $U_c$  of the main body of the measurement and control device and the measurement module (the 3P4L neutral line is connected to  $U_n$ ), and the measurement current of the measurement module passes through  $xxx/$  The 5A measurement transformer is connected to the measurement module (current direction P1 enters P2 and exits, S1 connects to  $IA+$ ,  $IB+$ ,  $IC+$ , S2 connects to  $IA-$ ,  $IB-$ ,  $IC-$ ), and the main current parameters are measured through the matching transformer. (According to the current direction, it enters from transformer P1 and exits from P2, and the yellow, blue, red, and black outgoing lines are connected to  $I_a$ ,  $I_b$ ,  $I_c$ , and COM respectively). After the leakage measurement function is selected, A, B, and C are simultaneously inserted into Leakage current transformer (if there is an N line, connect it together), and the outgoing line is connected to  $IL$  and  $IL^*$ , see Figure 8 for details:

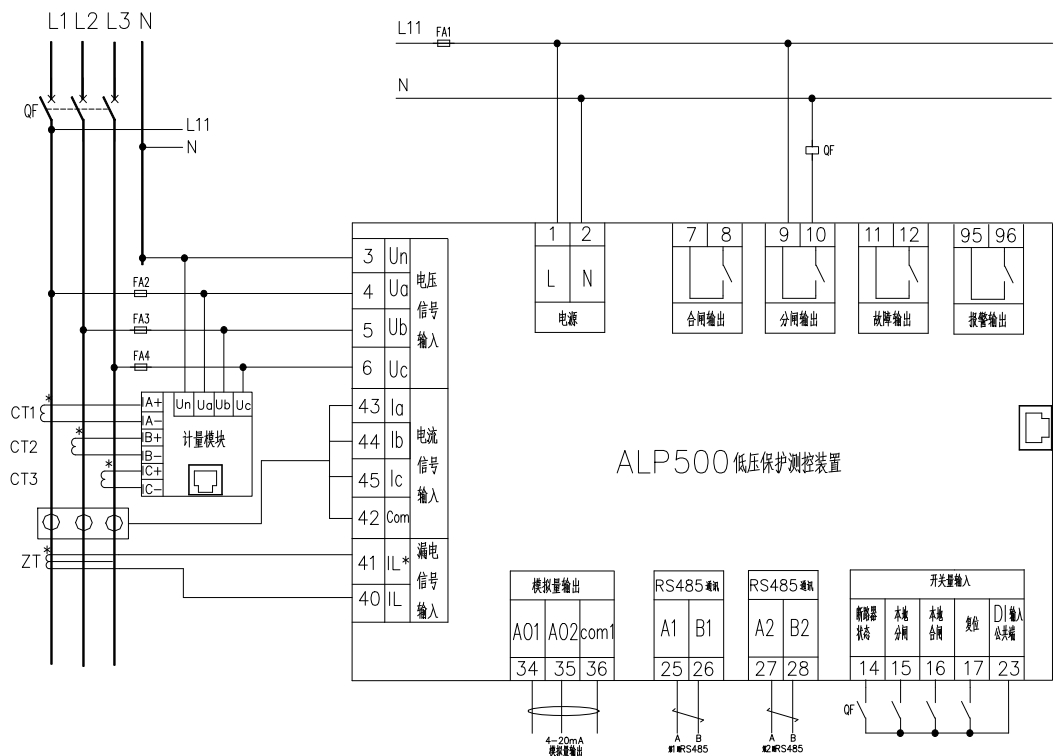


图 8 有测量模块，25A、100A 接线图

Figure 8 With measurement module, 25A, 100A wiring diagram

9.4 有测量模块，1A、5A 规格接线图 9.4 With measurement module, 1A, 5A specification wiring diagram

当电流规格为 1A、5A，且选配测量模块时，测量电压需分别接入测控装置主体和测量模块的 Ua、Ub、UC（3P4L 零线接入 Un），测量模块测量电流穿过 xxx/5A 的测量型互感器，接入测量模块（电流方向 P1 进 P2 出，S1 接 IA+、IB+、IC+，S2 接 IA-、IB-、IC-），主体电流参数测量需要先通过 xxx/1A、xxx/5A 的保护型互感器（根据测控装置电流规格选互感器二次电流规格），二次出线穿过配套的互感器再短接进行测量（按照电流方向从互感器 P1 进，P2 出，出线黄、蓝、红、黑分别对应接入 Ia、Ib、Ic、COM），选配漏电测量功能后，将 A、B、C 同时穿入漏电互感器（若有 N 线，一并接入），出线接入 IL、IL\*，详见图 9：

When the current specification is 1A, 5A, and the measurement module is selected, the measurement voltage needs to be connected to the main body of the measurement and control device and the Ua, Ub, and UC of the measurement module (the 3P4L neutral wire is connected to Un), and the measurement current of the measurement module passes through xxx/ The 5A measurement transformer is connected to the measurement module (current direction P1 enters P2 and exits, S1 connects to IA+, IB+, IC+, S2 connects to IA-, IB-, IC-), the main current parameter measurement needs to pass xxx/1A, xxx/5A protective transformer (select the secondary current specification of the transformer according to the current specification of the measurement and control device), the secondary outgoing line passes through the matching transformer and then short-circuits for measurement (according to the current direction, it enters from the transformer P1, exits from P2, The yellow, blue, red, and black outgoing lines are connected to Ia, Ib, Ic, and COM respectively). After the leakage measurement function is selected, put A, B, and C into the leakage transformer at the same time (if there is N line, connect it together) , the outgoing line is connected to IL and IL\*, see Figure 9 for details:

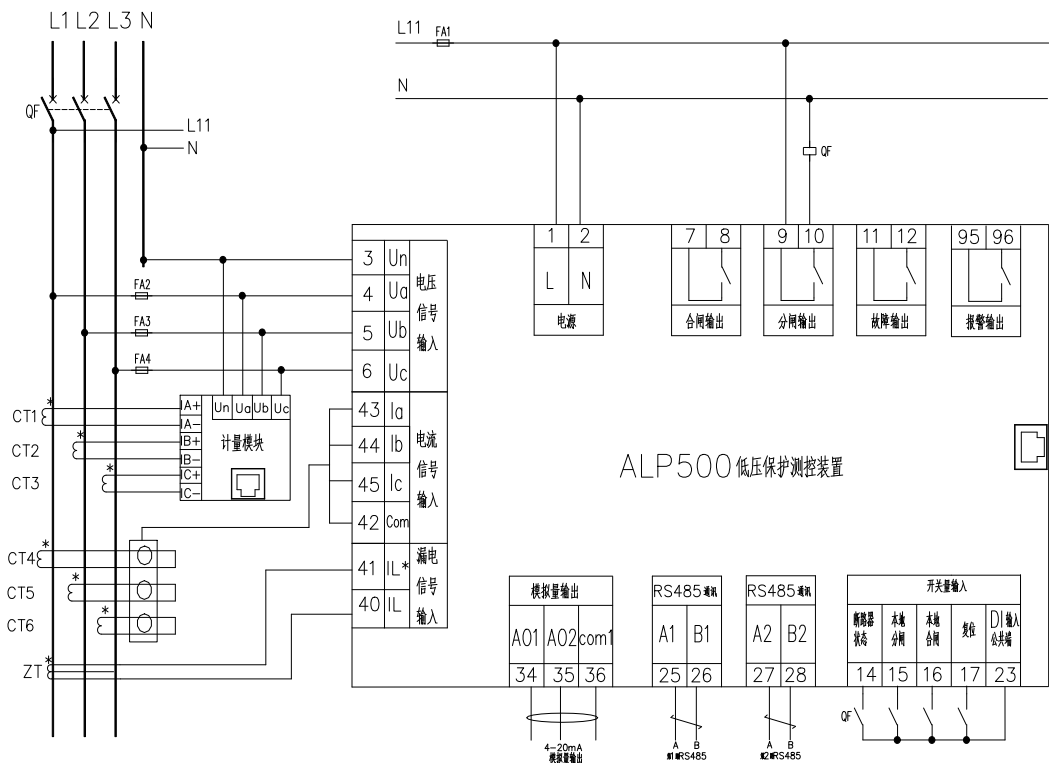


图 9 有测量模块，1A、5A 接线图

Figure 9 With measurement module, 1A, 5A wiring diagram

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