536

DJSF1352-RN-2 导轨式直流电能表

DJSF1352-RN-2 Din Rail DC energy meter

安装使用说明书 V1.1

Installation and operation instruction V1.1

安科瑞电气股份有限公司

ACREL CO., Ltd.

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

申　　明

版权所有，未经本公司之书面许可，此手册中任何段落、章节内容均不得被摘抄、拷贝或以任何形式复制、传播，否则一切后果由违者自负。

本公司保留一切法律权利。

本公司保留对本手册所描述之产品规格进行修改的权利，恕不另行通知。订货前，请垂询当地代理商以获悉本产品的最新规格。

Declaration

All rights reserved. Without the written permission of the company, no paragraphs or chapters in this manual can be excerpted, copied, reproduced, or disseminated in any form. Otherwise, all consequences shall be borne by the violator.

The company reserves all legal rights.

The company reserves the right to modify the product specifications described in this manual without prior notice. Please consult your local agent for the latest specifications of this product before placing an order.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

目录
CONTENTS

1 概述 Overview 1
2 产品规格 Product Specification 1
3 技术参数 Technical Parameter 1
4 安装指南 Installation Guide 3
4.1 外形及安装尺寸 Shape and installation dimensions 3
4.1.1 产品安装 Product Installation 3
4.2 端子及接线 Terminals and wiring 3
4.3 注意事项 Precautions 4
4.3.1 电压信号输入 Voltage signal input 4
4.3.2 电流信号输入 Current signal input 4
4.3.3 通讯接口接线 Communication interface wiring 5
4.3.4 端子螺丝扭力 Terminal screw torque 5
5 使用指南 Usage Guidelines 5
5.1 按键 Key 5
5.2 测量参数 Measurement parameters 6
5.2.1 电力参数 Power parameters 6
5.2.2 费率电度 Electricity rate 6
5.2.3 菜单编程界面 Menu programming interface 7
6 菜单符号及意义 Menu symbols and their meanings 10
6.1 菜单编程流程 Menu Programming Process 12
6.2 功能设置与使用 Function settings and usage 13
6.2.1 倍率更改设置 Magnification change setting 13
7 通讯指南 Communication Guide 13
7.1 概述 General 13
7.2 DLT 规约 DLT Protocol 13
7.2.1 DLT645 规约 DLT645 Protocol 13
7.2.2 DLT645 规约报文解析 DLT645 protocol message analysis 16
7.2.3 DLT698 规约 DLT698 protocol 19
7.3 Modbus 协议 Modbus Protocol 19
7.3.1 数据帧 Data Frame 20
7.3.2 地址（Address）域 Address field 20
7.3.3 功能（Function）域 Function field 20
7.3.4 数据（Data）域 Data field 20
7.3.5 错误校验（Check）域 Error Check Field 20
7.3.6 错误校验的方法 Error checking method 21
7.4 Modbus 通讯说明 Modbus Communication Description 21
7.4.1 通信地址表（Word）Communication Address Form (Word) 21
7.5 通讯应用 Communication application 24

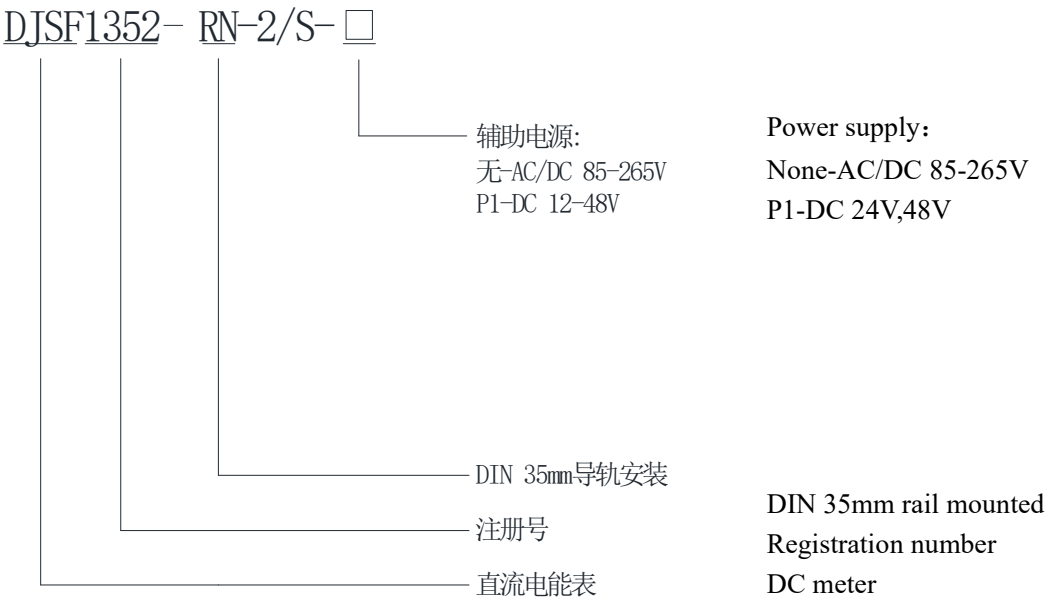
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

1 概述 Overview

DJSF1352-RN-2导轨式直流电能表主要针对直流充电桩、电信基站、太阳能光伏等应用场合而设计，该系列仪表可测量直流系统中的电压、电流、功率以及正反向电能等。检测的结果既可用于本地显示，又能与工控设备、计算机连接，组成测控系统。

DJSF1352-RN-2 rail-mounted DC electric energy meter is designed mainly for DC charging piles, telecommunication base stations, solar photovoltaic and other application occasions. This series of instruments can measure voltage, current, power and positive and negative energy in the DC system. The test results can be used for local display and can also be connected with industrial control equipment and computers to form a measurement and control system.

2 产品规格 Product Specification



3 技术参数 Technical Parameter

技术参数 Technical Parameters		指标 Index	
输入 Input	标称值 Nominal value	电压输入范围 Voltage input range	电流输入 Current input
		DC 0-100V、DC 0-1000V 参见实物接线图 See the physical wiring diagram	分流器：0-75mV 霍尔传感器： 0-5V，0-200mA Shunt：0-75mV Hall sensor： 0-5V，0-200mA
	过载 Overload	1.2 倍可持续正常工作，2 倍持续 1 秒 1.2 times can sustain normal operation, 2 times can sustain 1 second	

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

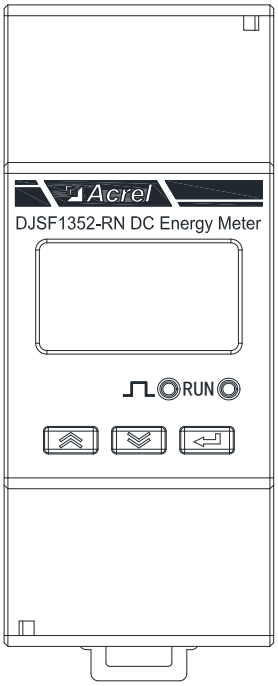
	功耗 Power consumption	电压：≤0.2VA，电流≤0.1VA Voltage：≤0.2VA，Current≤0.1VA
精度等级 Accuracy level		0.5 级 0.5 class
功能 Function	显示 Display	点阵式液晶屏（LCD） Dot matrix LCD
	通讯接口 Communication interface	RS485
	通讯协议 Communication Protocol	Modbus-RTU，DL/T 645-2007，DLT698
	脉冲输出 Pulse output	一路电能脉冲输出 One channel power pulse output
		见仪表菜单设置中 SYS->PLUS 中显示，例：显示 100，即为 100imp/kWH See the display in SYS->PLUS in the instrument menu setting, for example: display 100, which means 100imp/kWH
工作电源 Working power supply	电压范围 Voltage range	AC/DC 85-265V 或 DC12V-48V（辅助电源代号 P1） AC/DC 85-265V or DC12V-48V（Auxiliary power supply code P1）
	功耗 Power consumption	≤ 6W
工频耐压 Power frequency withstand voltage		电源//信号输入//RS485 通讯 4kV/1min ； Power supply//signal input//RS485 communication 4kV/1min; 除电源、信号输入和 RS485 通讯外其他互不相连回路 2kV/1min Except for power supply, signal input and RS485 communication, other unconnected circuits 2kV/1min
绝缘电阻 Insulation resistance		≥ 40M Ω
平均无障碍工作时间 Average barrier-free working time		≥50000h
环境 Environment	温度 Temperature	正常工作温度：-25℃～+65℃ Normal operating temperature：-25℃～+65℃ 贮存温度：-40℃～+80℃ Storage temperature：-40℃～+80℃

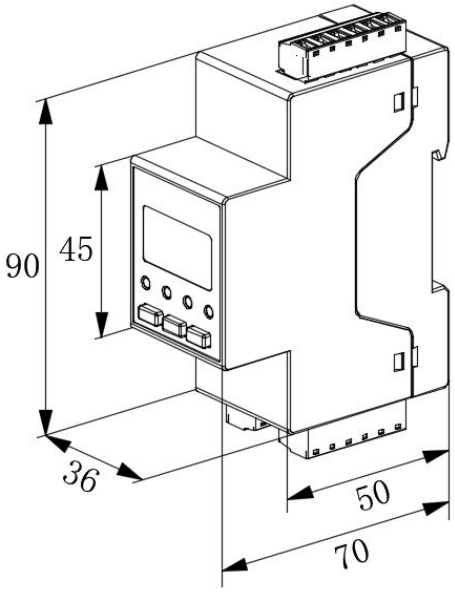
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

	湿度 Humidity	≤95%RH，不结露，不含腐蚀性气体 ≤95%RH, No condensation, no corrosive gas
	海拔 Altitude	≤3000m

4 安装指南 Installation Guide

4.1 外形及安装尺寸 Shape and installation dimensions

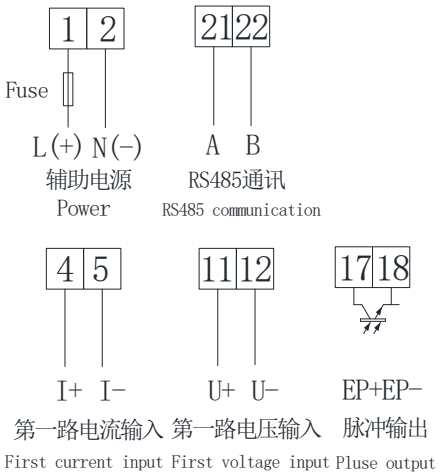


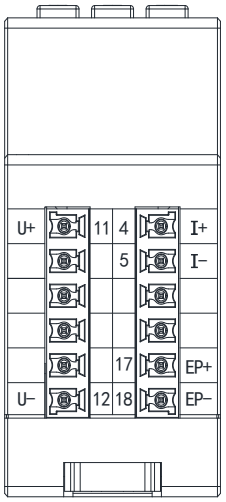


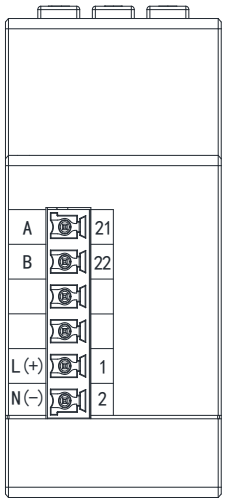
4.1.1 产品安装 Product installation

采用标准的 DIN35mm 导轨式安装 Adopt standard DIN35mm rail installation

4.2 端子及接线 Terminals and wiring



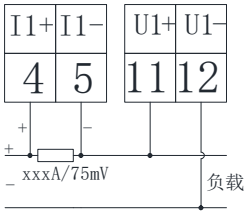




LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

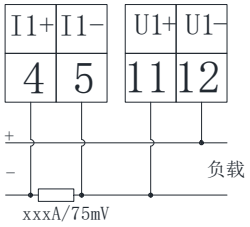
电流为分流器输入时：

正极电流分流器输入



第一路

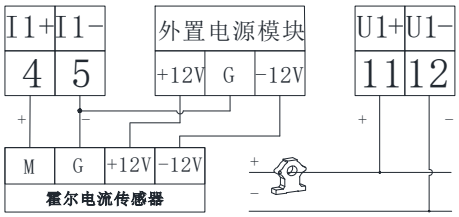
负极电流分流器输入



第一路

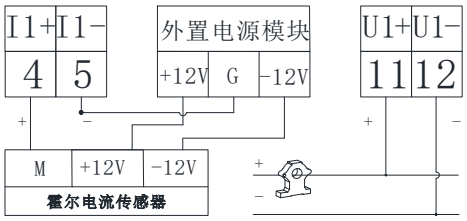
电流为霍尔传感器输入时：

(1)0-5V输出：



第一路

(2)0-200mA输出：



第一路

注：1. 负极电流分流器输入时，需在仪表菜单将nE9L选项设置为on，详见第6节菜单编程界面，若未设置会导致电压数值为负值。

2. 电压、电流输入的二次弱信号线推荐使用0.75㎜²或1㎜²屏蔽双绞线，且屏蔽层需要接大地。

Note: 1. When the negative current shunt is input, the option nE9L needs to be set to on in the instrument menu. See Section 6 Menu Programming Interface for details. If it is not set, the voltage value will be negative.

3. It is recommended to use 0.75mm^2 or 1mm^2 shielded twisted pair for the secondary weak signal line of voltage and current input, and the shielding layer needs to be connected to the ground.

4.3 注意事项 Precautions

4.3.1 电压信号输入 Voltage signal input

输入电压不得高于产品的额定输入电压的 120%，在电压输入端须安装 1A 保险丝；

The input voltage must not exceed 120% of the rated input voltage of the product, and a 1A fuse must be installed at the voltage input terminal;

4.3.2 电流信号输入 Current signal input

电流输入应使用外部分流器或霍尔电流传感器；

The current input should use an external shunt or Hall current sensor;

4.3.3 通讯接口接线 Communication interface wiring

该仪表提供异步半双工 RS485 通讯接口，采用 MODBUS-RTU 协议，各种数据信息均可在通讯线路上传送。理论上在一条线路上可以同时连接多达 128 个仪表，每个仪表均可设定其通讯地址（Addr）、通讯速率（baud）也可通过设置选择。

The instrument provides an asynchronous half-duplex RS485 communication interface and adopts the MODBUS-RTU protocol. All kinds of data information can be transmitted on the communication line. Theoretically, up to 128 instruments can be connected to one line at the same time. Each instrument can set its communication address (Addr) and communication rate (baud) and can also be selected through settings.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

通讯连接建议使用三芯屏蔽线，每芯截面不小于 0.5mm2，分别接 A、B，屏蔽层接大地，布线时应使通讯线远离强电电缆或其他强电场环境。

It is recommended to use three-core shielded wire for communication connection. The cross-section of each core should not be less than 0.5mm^2. Connect A and B respectively, and the shielding layer should be connected to the ground. When wiring, keep the communication line away from strong electric cables or other strong electric field environments.

建议起始端和最末端仪表的 A、B 之间均加匹配电阻，阻值范围为 120Ω～10kΩ。

It is recommended to add matching resistors between A and B of the starting and last instruments, with a resistance range of 120Ω～10kΩ.

4.3.4 端子螺丝扭力 Terminal screw torque

端子螺丝紧固的扭力不得超过 0.5Nm（3.5Lb-In）。

The tightening torque of the terminal screws should not exceed0.5Nm（3.5Lb-In）.

5 使用指南 Usage Guidelines

5.1 按键 Key

≪键 ≪button	测量模式下，用于切换显示项目，查看各项电量，具体见显示菜单； In measurement mode, it is used to switch display items and view various power items. For details, see the display menu; 编程模式下，用于切换同级菜单或数据位数左右移动可选。 In programming mode, it is used to switch menus of the same level or move the number of data bits left and right.
≫键 ≫button	测量模式下，用于切换显示项目，查看各项电量，具体见显示菜单； In measurement mode, it is used to switch display items and view various power levels. For details, see the display menu; 编程模式下，用于切换同级菜单或个位数的增加减少。 In programming mode, it is used to switch menus of the same level or increase or decrease single digits.
↵键 ↵ button	测量模式下，短按该键可查看相关参数，查看各项电参量极值等相关参数，具体见显示菜单；长按该键进入设置界面； In the measurement mode, short press this key to view related parameters, view the extreme values of various electrical parameters and other related parameters, see the display menu for details; long press this key to enter the setting interface; 编程模式下，短按该键用于菜单项目的选择确认和参数的修改确认；长按该键用于返回测量模式。 In the programming mode, short press this key to confirm the selection of menu items and the modification of parameters; long press this key to return to the measurement mode.

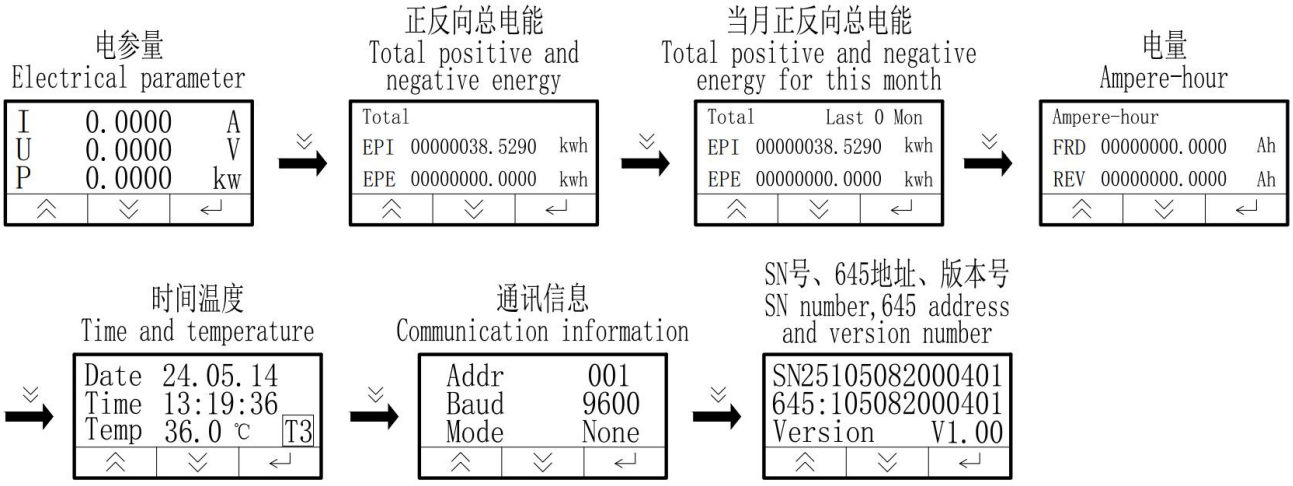
LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.2 测量参数 Measurement parameters

5.2.1 电力参数 Power parameters

≪键、≫键循环切换显示 如下图所示：按≪键、≫键可如下图切换显示其它界面。

Press the ≪ key and ≫ key to cycle through the display as shown below: Press the ≪ key and ≫ key to switch to other interfaces as shown below.

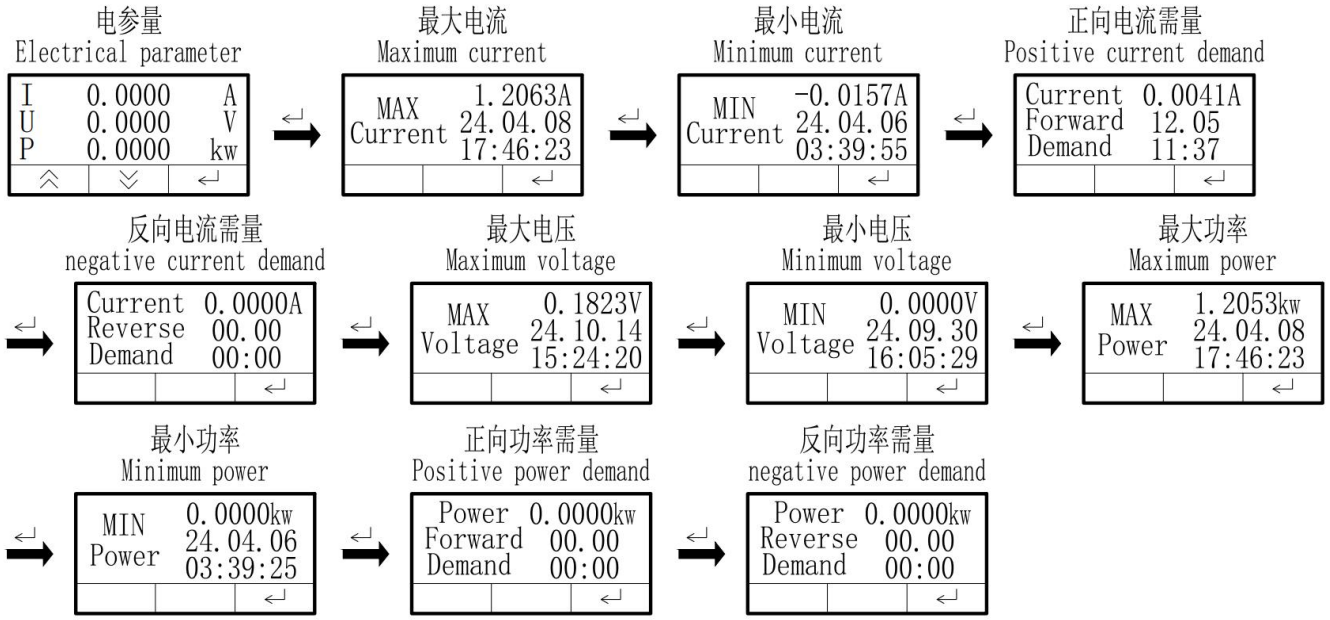


注：时间温度界面中T3为当前实时费率，当前实时费率和费率电度只有在仪表带此功能时显示。

Note: The current real-time tariff T3 is displayed in the time and temperature interface. And both the current real-time tariff and the tariff electricity consumption will be shown only when the meter has this function.

仪表上电后显示电参量显示界面后，按↵键切换显示其它界面。

After the instrument is powered on, the electrical parameter display interface is displayed, and the ↵ key is pressed to switch to other interfaces.

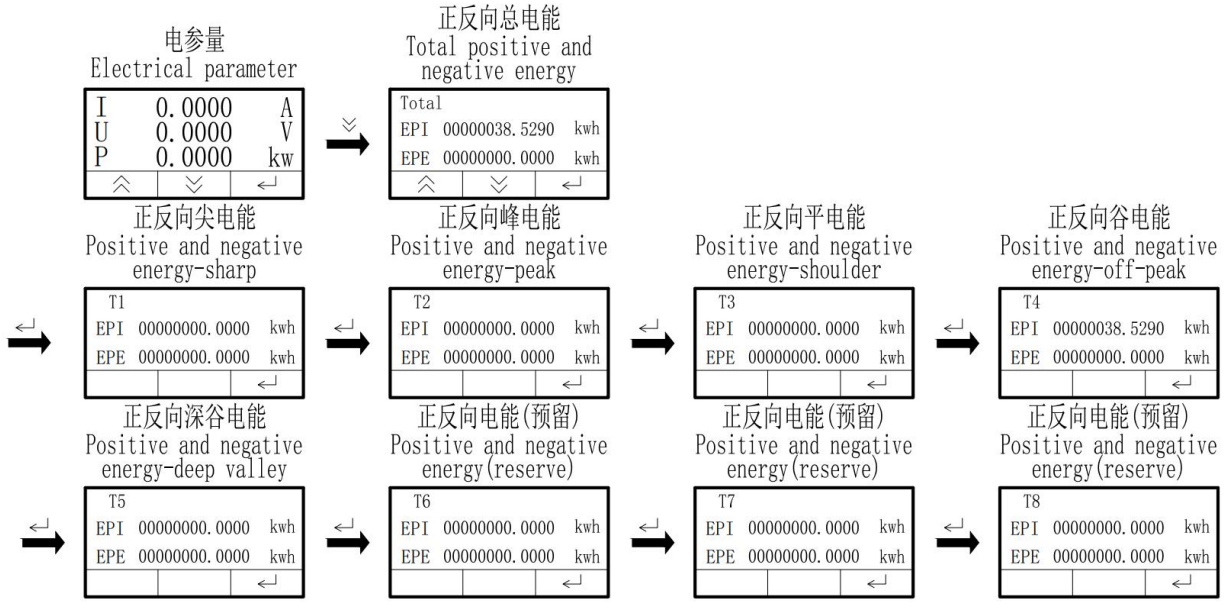


LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.2.2 费率电度 Tariff electricity rate

仪表开机后显示电参量显示界面时，按⩔键切换到总电能显示界面后，按↵键切换显示其它界面。

When the meter is turned on and the electrical parameter display interface is displayed, press the ⩔key to switch to the total electric energy display interface, and press the ↵key to switch to other interfaces.

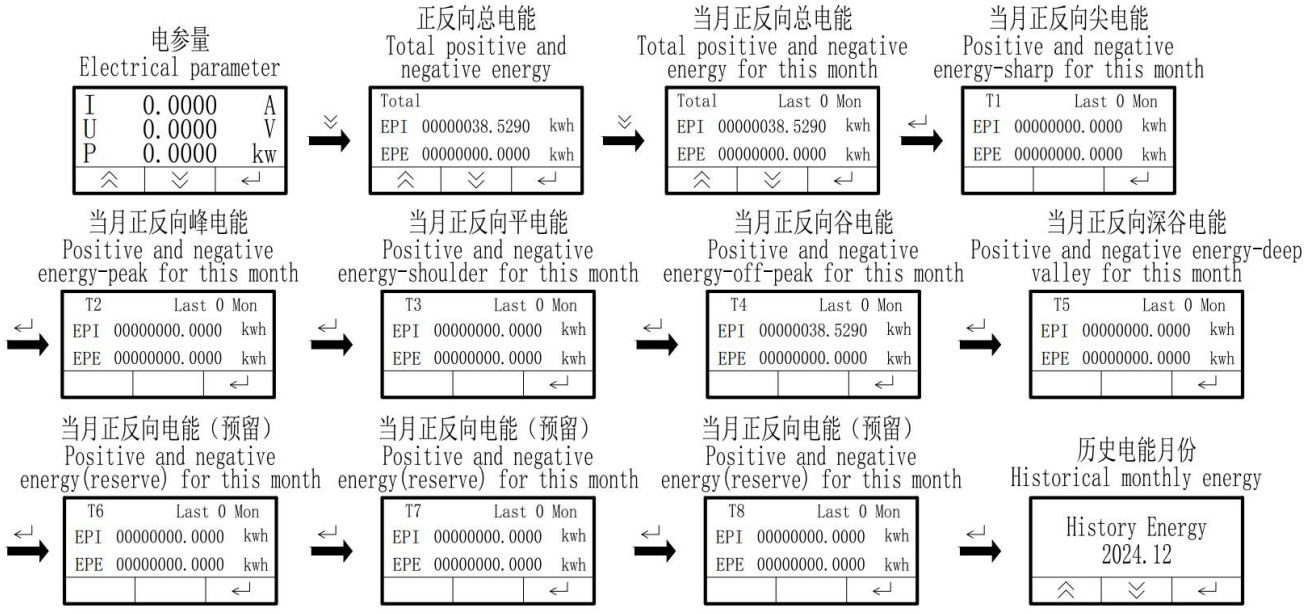


注：T1-T5 分别对应尖、峰、平、谷、深谷，T6-T8 为预留费率号，对应费率电能为 0kwh。

Note: T1-T5 correspond to sharp, peak,shoulder,off-peak, and deep valley; T6-T8 are reserved rate numbers, and the corresponding rate electricity is 0kwh.

仪表开机后显示电参量显示界面，按⩔键切换到历史月电能查询显示界面后，按↵键切换显示其它界面。

When the meter is turned on and the electric parameter display interface is displayed, press the ⩔key to switch to the historical monthly electric energy query display interface, and press the ↵key to switch to other interfaces.



注：①在“历史月份设定”界面按⩔键可设置所要查询的历史月份

②T1-T5 分别对应尖、峰、平、谷、深谷，T6-T8 为预留费率号，对应费率电能为 0kwh。

Note: ①In the "Historical Month Setting" interface, you can set the historical month to be queried by pressing the button.

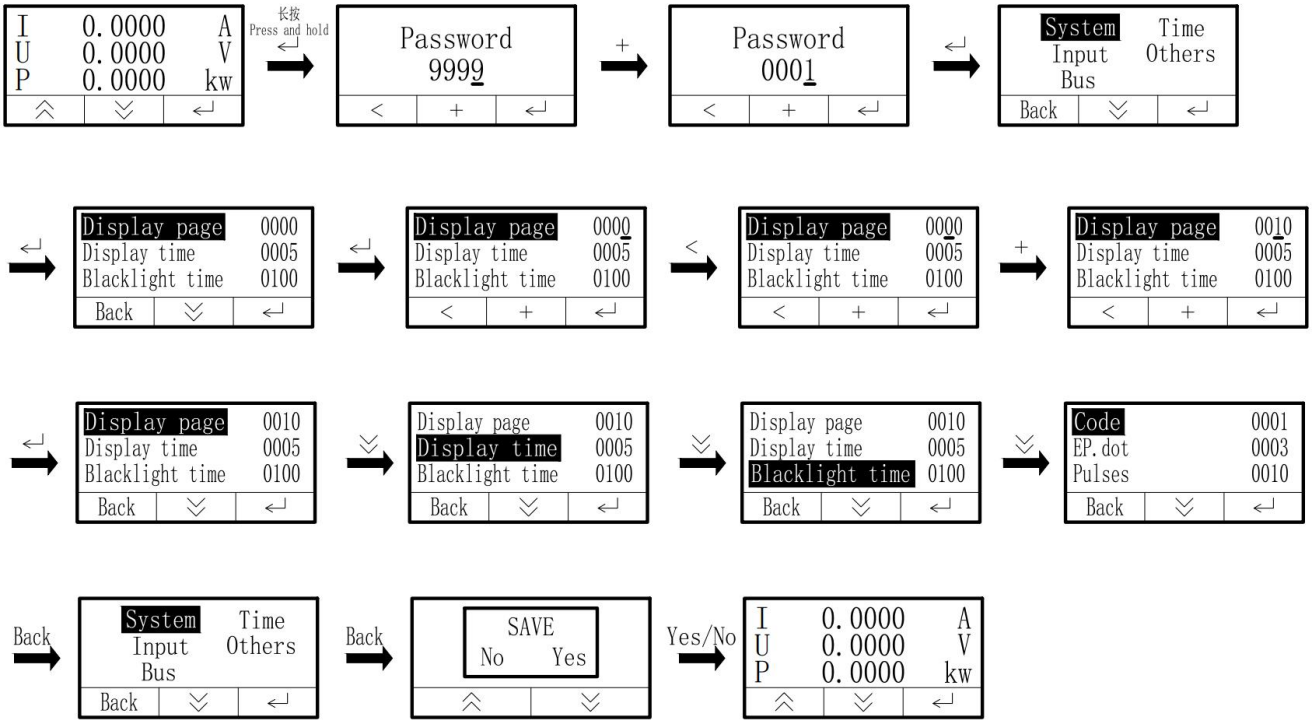
②T1-T5 correspond to sharp, peak,shoulder,off-peak, and deep valley, T6-T8 are reserved rate numbers, and the corresponding rate electricity is 0kwh.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

5.2.3 菜单编程界面 Menu programming interface

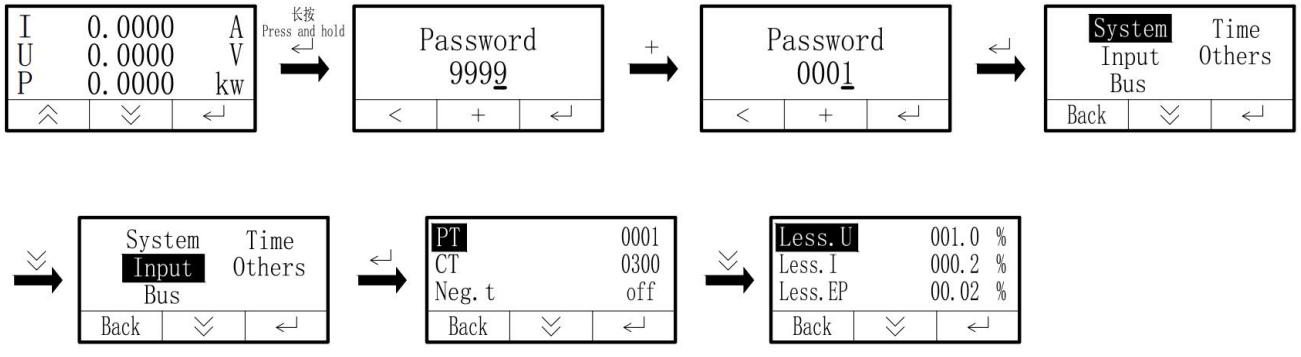
仪表开机后显示电参量显示界面时，长按↵键切换到密码输入界面后，按↵键切换到菜单界面，按↵键进入系统设置界面，按↵键进入数值设置界面，根据界面提示按<键切换数据位置，按+键增加数值，参数设置完成后，长按↵键切换系统设置界面后，按 Back 键切换菜单界面，按 Back 键切换保存界面，选择保存选项 Yes 或者 No 后返回电参量界面。

When the instrument is turned on and the electrical parameter display interface is shown, press and hold the button for a long time to switch to the password input interface. Then, press the button to switch to the menu interface, press the button again to enter the system setting interface, and press the button once more to enter the value setting interface. According to the prompts on the interface, press the "<" key to switch the position of the data, and press the "+" key to increase the value. After the parameter setting is completed, press and hold the button for a long time to switch back to the system setting interface. Then, press the "Back" key to switch to the menu interface, and press the "Back" key again to switch to the save interface. After selecting the save option "Yes" or "No", return to the electrical parameter interface.



仪表开机后显示电参量显示界面时，长按↵键切换到密码输入界面后，按↵键切换到菜单界面，按»键切换到 Input 输入设置后，按↵键进入输入设置界面，设置参数后保存操作同上。

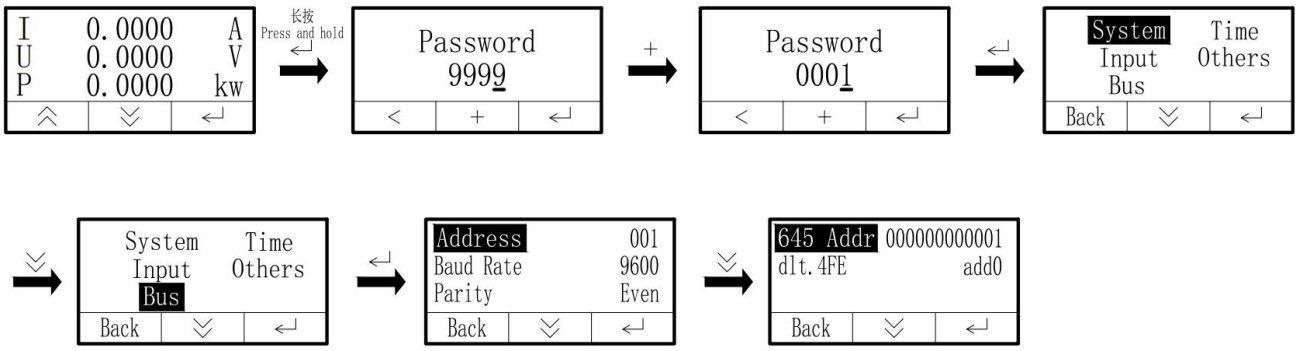
When the electrical parameter display interface is displayed after the instrument is turned on, the ↵ key to switch to the password input interface, press the ↵ key to switch to the menu interface, press the » key to switch to input settings, press the ↵ key to enter the input setting interface, and save the parameters after setting the parameters as above.



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

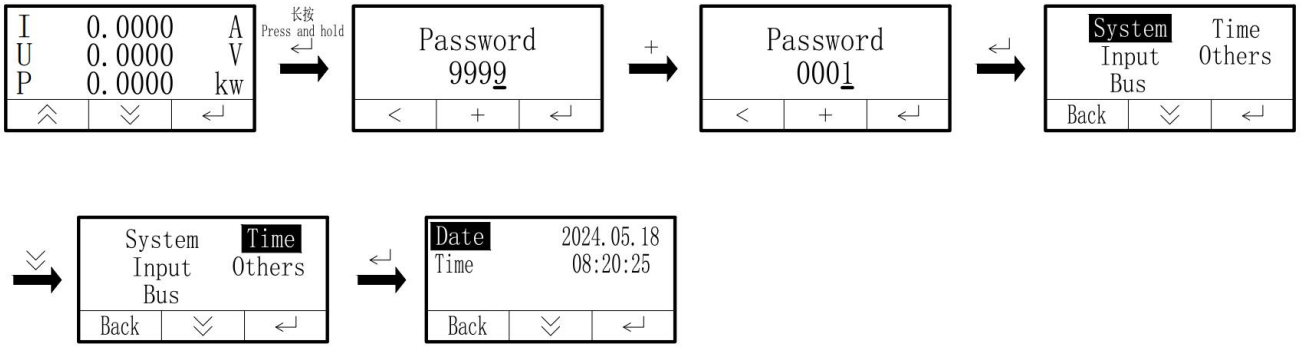
仪表开机后显示电参量显示界面时，长按↵键切换到密码输入界面后，按↵键切换到菜单界面，按»键切换到 Bus 通讯设置后，按↵键进入通讯设置界面，设置参数后保存操作同上。

When the instrument displays the electrical parameter display interface after it is turned on, press and hold the ↵ key to switch to the password input interface, then press the ↵ key to switch to the menu interface. After pressing the » key to switch to the communication setting, press the ↵ key to enter the communication setting interface. After setting the parameters, save the operation as above.



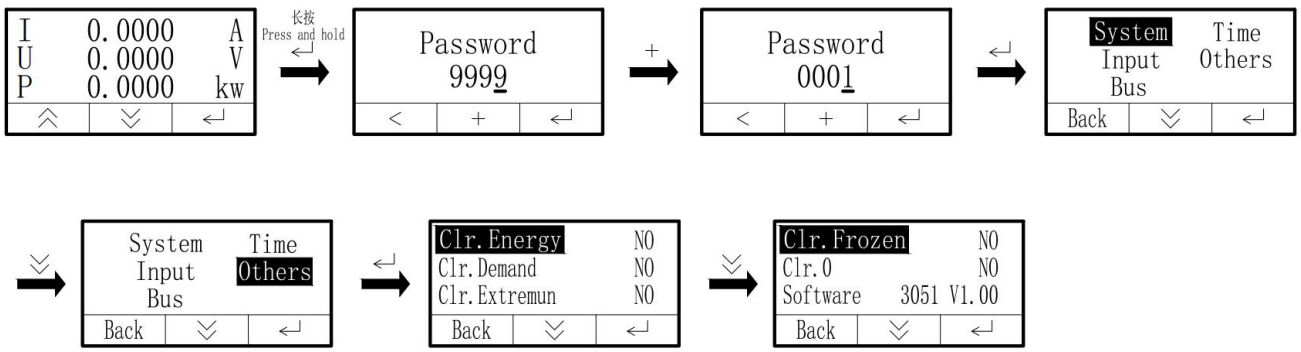
仪表开机后显示电参量显示界面时，长按↵键切换到密码输入界面后，按↵键切换到菜单界面，按»键切换到 Time 时间设置后，按↵键进入时间设置界面，设置参数后保存操作同上。

When the instrument displays the display interface after powering on, long press the ↵ key to switch to the password input interface, press the ↵ key to switch to the menu interface, press the » key to switch to the time setting interface, press the ↵ key to enter the time setting interface, and save the operation after setting the parameters as above.



仪表开机后显示电参量显示界面时，长按↵键切换到密码输入界面后，按↵键切换到菜单界面，按»键切换到 Others 其他设置后，按↵键进入其他设置界面，设置参数后自动回到电参量显示界面。

When the instrument displays the electrical parameter display interface after powering on, long press the ↵ key to switch to the password input interface, press the ↵ key to switch to the menu interface, press the » key to switch to other settings, press the ↵ key to enter other settings interface, and automatically return to the electrical parameter display interface after setting the parameters.

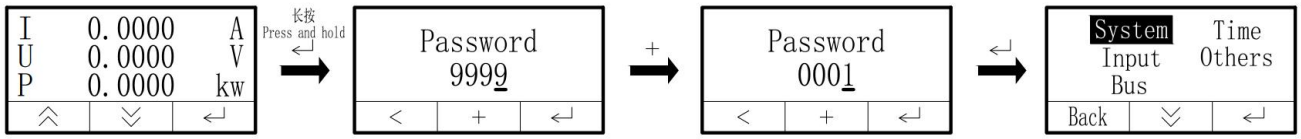


LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

6 菜单符号及意义 Menu symbols and their meanings

仪表开机后显示电流显示界面，长按↵键进入密码界面 Password（按+键更改密码为 0001）进入菜单编程界面，按≪键、≫键依次显示如下：

After the meter is turned on, the current display interface is displayed. Long press the ↵ key to enter the password interface Password (press the ≫ key to change the password to 0001) to enter the menu programming interface. Press the ≪ key and the ≫ key are displayed in sequence as follows:



第一级菜单 First level menu	第二级菜单 Second level menu	数据 Data	说明 Explanation
System	Display page	0001	开机显示画面选择，为零自动翻页 Start-up display screen selection, automatic page turning when zero
	Display time	0-100	开机显示画面自动翻页时间间隔，默认 5，单位：1 秒 The time interval for automatically turning pages when turned on is 5 by default, and the unit is 1 second.
	Blacklight time	0 -255 （Can be set）	设置为 0 时，背光常亮；设置为 1-255 时，背光在 1-255 秒后熄灭，单位：1 秒 When set to 0, the backlight is always on; when set to 1-255, the backlight goes out after 1-255 seconds, unit: 1 second
	Code	0000-9999	密码设置（初始密码 0001，万能密码 0008） Password setting (initial password 0001, universal password 0008)
	EP.dot	2,3,4	电能小数点设置:显示小数点后 2 位, 3 位,4 位 Electric energy decimal point setting: display 2, 3, 4 decimal places
	Pulse	auto 或者 0001-9999	脉冲常数（imp/kWh），auto 为自适应状态，0001-9999 为脉冲可设状态，此状态下数值为 10，即脉冲常数为 10 Pulse constant（imp/kWh），auto is the adaptive state, 0001-9999 is the pulse settable state, in this state the value is 10, the pulse constant is 10
Input	PT	0001-9999	第一路电压变比 The first voltage ratio
	CT	0001-9999	第一路电流变比（一次电流值） The first current ratio (primary current value)
	Neg.t	on,off	on:负极电流分流器输入 off:正极电流分流器输入 on: negative current shunt input off: positive current shunt input
	Less.U	0-5.0	电压零点屏蔽值设定，最大±5% Voltage zero point shielding value setting,

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

			maximum ±5%
	Less.I	0-5.0	电流零点屏蔽值设定，最大±5% Current zero point shielding value setting, maximum ±5%
	Less.EP	0-2.5	启动功率屏蔽值设定，最大±2.5% Start-up power shielding value setting, maximum ±2.5%
Bus	Address	1-247	485 通讯地址，**默认 1** 485 communication address, **default 1**
	Baud Rate	4800,9600,19200	485，645 通讯波特率，**默认 9600** 485, 645 communication baud rate, **default 9600**
	Parity	None,2bit,odd,even	485，645 通讯模式，**默认无校验** （无校验, 2 位停止位, 奇校验, 偶校验） 485, 645 communication mode, **default no checksum** (no checksum, 2 stop bits, odd checksum, even checksum)
	645 Addr	000000000001	645 表号（对应仪表条形码后 12 位） 645 meter number (corresponding to the last 12 digits of the meter barcode)
	Dlt.4FE	add0，add4	回送 645 报文增加前导符 FE：0 个,4 个 Add leading character FE to the returned 645 message: 0, 4
Time	Date	2024.5.18	年月日 Year Month Day
	Time	08：20：25	时分秒 Hours Minutes Seconds
Others	Clr.Energy	No,Yes	清除电能 Clear Electric Energy
	Clr.Demand		清除需量 Clear demand
	Clr.Extremun		清除最值 Clear extremun value
	Clr.Frozen		清除冻结电能 Clear frozen energy
	Clr.0		零点校准（确保此时无电压电流信号） Zero point calibration (make sure there is no voltage or current signal at this time)
	Software	-	仪表信息 Instrument information

注：*仪表脉冲常数默认自适应模式（菜单中显示 Pulse 界面显示 auto），脉冲常数根据仪表最大功率自适应，具体内容如下表所示：

Note: *The instrument pulse constant defaults to adaptive mode (the menu shows Pulse interface shows auto), and the pulse constant is adaptive according to the maximum power of the instrument. The specific contents are shown in the following table:

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

最大功率<= Maximum Power<=	999.9W	10000	imp/kWh
最大功率<= Maximum Power<=	9.999kW	1000	imp/kWh
最大功率<= Maximum Power<=	99.99kW	100	imp/kWh
最大功率<= Maximum Power<=	999.9kW	10	imp/kWh
最大功率<= Maximum Power<=	9999kW	1	imp/kWh

Maximum Power=Rated voltage*voltage ratio*current ratio*1.2

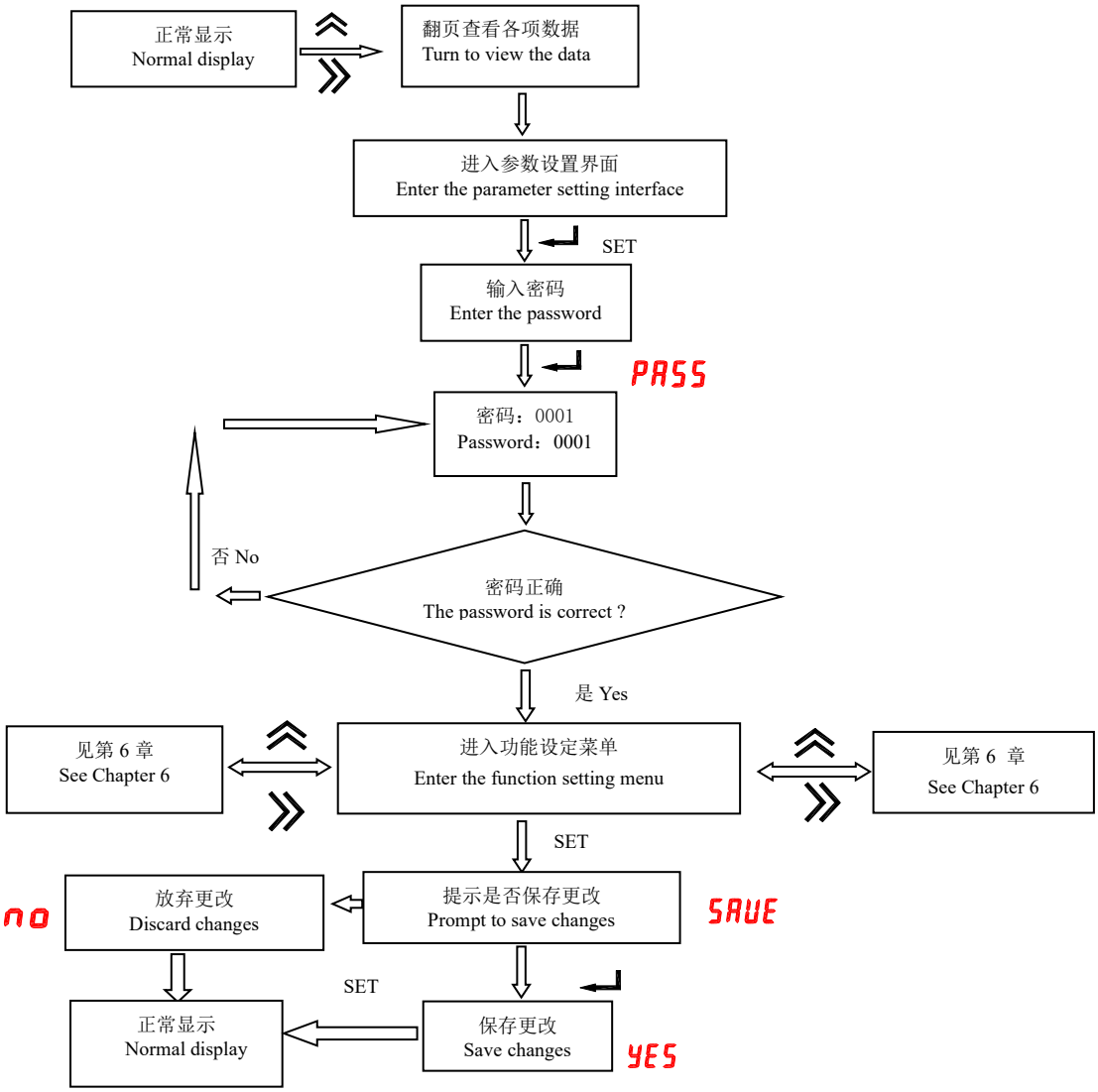
*修改脉冲常数：菜单修改脉冲常数参考第 6 章菜单符号及意义，通讯修改脉冲常数参考第 7 章通讯指南。

*Modify pulse constant: For menu modification of pulse constant, refer to Chapter 6 Menu Symbols and Meanings; for communication modification of pulse constant, refer to Chapter 7 Communication Guide.

6.1 菜单编程流程 Menu Programming Process

仪表菜单结构

Meter menu structure



LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

6.2 功能设置与使用 Function settings and usage

6.2.1 倍率更改设置 Magnification change setting

电压以当前额定电压为基准，电流变比是以 1A 为基准，出厂时根据用户的量程要求，确定合适的仪表量程，在外部输入此量程的信号，若电流变比都为“100”，则仪表显示 100.0A，在设定了对应的变比后，仪表将显示对应的数据。用户不得自行改变信号的输入大小。如用户定了 100A/75mV 仪表，到了工作现场发现电压变送器为 500A/75mV，电流变比由 100 改为 500，但需确定直流变送器的输出信号不得发生改变，此例中为 75mV。

The voltage is based on the current rated voltage, and the current ratio is based on 1A. The appropriate instrument range is determined according to the user's range requirements at the factory. When the signal of this range is input externally, if the current ratio is "100", the instrument will display 100.0A. After setting the corresponding ratio, the instrument will display the corresponding data. Users are not allowed to change the input size of the signal by themselves. For example, if the user orders a 100A/75mV instrument, and finds that the voltage transmitter is 500A/75mV at the work site, the current ratio is changed from 100 to 500, but it is necessary to ensure that the output signal of the DC transmitter does not change, which is 75mV in this case.

7 通讯指南 Communication Guide

7.1 概述 General

DJSF1352-RN-2 仪表支持 Modbus-RTU 协议：“9600，8，n，1”，其中 9600 为默认波特率，可通过菜单修改；8 表示有 8 个数据位；n 表示无奇偶校验位；1 表示有 1 个停止位。

DJSF1352-RN-2 仪表支持 DLT645-07 协议，仪表表号默认为条形码后 12 位，详见菜单设置。规约支持电压、电流、功率、正反向及组合电能的读取，复费率电能读取。

DJSF1352-RN-2 meter supports Modbus-RTU protocol: "9600, 8, n, 1", where 9600 is the default baud rate, which can be modified through the menu; 8 means 8 data bits; n means no parity bit; 1 means 1 stop bit.

DJSF1352-RN-2 meter supports DLT645-07 protocol, the meter number defaults to the last 12 digits of the barcode, see menu settings for details. The protocol supports reading of voltage, current, power, forward and reverse and combined electric energy, and reading of multi-rate electric energy.

7.2 DLT 规约 DLT Protocol

7.2.1 DLT645 规约 DLT645Protocol

DJSF1352-RN 仪表采用 DLT645-07 版本，仪表表号默认为条形码后 12 位，详见菜单设置。规约支持电压、电流、功率、正反向及组合电能的读取，复费率电能读取。

DJSF1352-RN meter adopts DLT645-07 version, the meter number defaults to the last 12 digits of the barcode, see menu settings for details. The protocol supports reading of voltage, current, power, forward and reverse and combined energy, and multi-rate energy.

标识符 Identifier	内容 Content	长度 Length	备注 Remark
02010100	电压 Voltage	2	无符号数，若电压超过 1000V 且读取数值 9999， 此为越界状态，使用特殊指令 02000200 读取 Unsigned number, if the voltage exceeds 1000V and the read value is 9999, This is an out-of-bounds state, use the special instruction 02000200 to read
02000200		4	有符号数，最高位为符号位，4 位小数点，单位 V； 例如：读数为 0xB39B3603，电压为-5003.6880V； 数据转换过程 0xB39B3603 – 0x33333333 = 0x806803D0 Signed number, the highest bit is the sign bit, 4 decimal points, unit V; For example: the reading is 0xB39B3603,

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

			the voltage is -5003.6880V; Data conversion process 0xB39B3603 – 0x33333333 =0x806803D0
02020100	电流 Current	3	有符号数，若读取数值 799999，此为越界状态， 使用特殊指令 02000100 读取 Signed number, if the value read is 799999, this is out of bounds, Use special instruction 02000100 to read
02000100		4	有符号数，最高位为符号位，4 位小数点，单位 A； 例如：读数为 0x73453383，电流为 5000.1240A 数据转换过程 0x73453383 – 0x33333333 = 0x40120050 Signed number, the highest bit is the sign bit, 4 decimal points, unit A; For example: the reading is 0x73453383, the current is 5000.1240A Data conversion process 0x73453383 – 0x33333333 = 0x40120050
02030000	功率 Power	3	有符号数，若读取数值 799999，此为越界状态， 使用特殊指令 02000000 读取 Signed number, if the value read is 799999, this is out of bounds, Use special instruction 02000000 to read
02000000		4	有符号数，最高位为符号位，4 位小数点，单位 kw； 例如：读数为 0x69653703，功率为-5004.3236kw 数据转换过程 0x69653703 – 0x33333333 = 0x363204D0 Signed number, the highest bit is the sign bit, 4 decimal points, unit kw; For example: the reading is 0x69653703, the power is -5004.3236kw Data conversion process 0x69653703 – 0x33333333 = 0x363204D0
04000101	日期 Date	4	年月日，例如：读数为 24080100，日期为 2024.08.01 Year, month, and day, for example: the reading is 24080100, and the date is 2024.08.01
04000102	时间 Time	3	时分秒，例如：读数为 102740，时间为 10：27：40 Hours, minutes, and seconds. For example, the reading is 102740 and the time is 10:27:40.
00D00000	当前组合有功总电量 Current combined active power		十六进制数，3 位小数点，单位 kwh； 例如：读数为 00000099，电能为 0.153kwh Hexadecimal number, 3 decimal places, unit kwh; For example: the reading is 00000099, the electric energy is 0.153kwh
00D10000	当前正向总电量 Current total forward power		
00D20000	当前反向总电量 Current total reverse power		
00000000	当前组合有功总电量 Current combined active power	4	十进制数，2 位小数点，单位 kwh 例如：读数为 00000015，电能为 0.15kwh

Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

00010000	当前正向总电量 Current total forward power	4	Decimal number, 2 decimal places, unit kwh For example: the reading is 00000015, the energy is 0.15kwh
00020000	当前反向总电量 Current total reverse power	4	
00E00000	当前组合有功总电量 Current combined active power	4	十进制数，3 位小数点， 例如：读数为 00000153，电能为 0.153kwh Decimal number, 3 decimal places, For example: the reading is 00000153, the electric energy is 0.153kwh
00E10000	当前正向总电量 Current total forward power	4	
00E20000	当前反向总电量 Current total reverse power	4	
004F0000	当前组合有功总电量 Current combined active power	6	十进制数，3 位小数点，单位 kwh 例如：读数为 000000000153，电能为 0.153kwh Decimal number, 3 decimal places, unit kwh For example: the reading is 000000000153, the electric energy is 0.153kwh
00500000	当前正向总电量 Current total forward power	6	
00510000	当前反向总电量 Current total reverse power	6	
005F0000	当前组合有功总电量 Current combined active power	5	十进制数，4 位小数点，单位 kwh 例如：读数为 0000001532，电能为 0.1532kwh Decimal number, 4 decimal places, unit kwh For example: the reading is 0000001532, the electric energy is 0.1532kwh
00600000	当前正向总电量 Current total forward power	5	
00610000	当前反向总电量 Current total reverse power	5	
006F0000	当前组合有功总电量 Current combined active power	6	十进制数，4 位小数点，单位 kwh 例如：读数为 000000001532，电能为 0.1532kwh Decimal number, 4 decimal places, unit kwh For example: the reading is 000000001532, the electric energy is 0.1532kwh
00700000	当前正向总电量 Current total forward power	6	
00710000	当前反向总电量 Current total reverse power	6	
04808080	电压变比 Voltage ratio	2	一般为变送二次接入电压时使用，默认为 0001 Generally used to transmit secondary access voltage, the default value is 0001
04808081	电流变比 Current ratio	2	例如：200A/75mV，读数为 0200 For example: 200A/75mV, the reading is 0200
04800008	温度 Temperature	2	1 位小数，单位℃，例如：读数为 0275，温度为 27.5℃ 1 decimal place, unit: ℃, for example: the reading is 0275, the temperature is 27.5℃

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

0292FF00	电参量数据块 Electrical parameter data block	16	电压（4 位小数点）、电流（4 位小数点） 功率（4 位小数点）、组合有功总电量（3 位小数点） *具体内容参考 7.2.2 DLT645 规约报文解析 Voltage (4 decimal places), current (4 decimal places) Power (4 decimal places), combined active power (3 decimal places) *For details, please refer to 7.2.2 DLT645 protocol message analysis

注：AAAAAAAAAAAA **使用** 15H **功能写设置** 645 **规约地址，要求按键输入密码进入菜单后**;

Note: AAAAAAAAAAAA uses the 15H function to write and set the 645 protocol address, and requires the key to enter the password to enter the menu;

7.2.2 DLT645 规约报文解析　DLT645 protocol message analysis

1. 当前组合有功总电量（4 位小数点）命令解析

1. Current combined active total power (4 decimal places) command analysis

①仪表信息：645 地址 000000000001（12 位）

①Instrument information: 645 address 000000000001 (12 bits)

②发送命令：FE FE FE FE 68 01 00 00 00 00 00 68 11 04 33 33 92 33 11 16

②Send command: FE FE FE FE 68 01 00 00 00 00 00 68 11 04 33 33 92 33 11 16

③发送命令解析：

③Send command analysis:

FE FE FE FE	68 01 00 00 00 00 00 68	11	04
Precursor	Between the two 68s is the address of instrument 645	Function code (read data)	Data identifier length

33 33 92 33	11	16
Data ID + 0x33	CS	

④回送命令：68 01 00 00 00 00 00 68 91 09 33 33 92 33 8B 78 33 33 33 32 16

④Echo command: 68 01 00 00 00 00 00 68 91 09 33 33 92 33 8B 78 33 33 33 32 16

⑤回送命令解析：

⑤Analysis of loopback command:

68 01 00 00 00 00 00 68	91	09	33 33 92 33
Between the two 68s is the address of instrument 645	Function code	Data identifier length	Data ID + 0x33

8B 78 33 33 33	32	16
0.4558kwh	CS	

注：数据转换过程 0x333333788B – 0x3333333333 = 0x0000004558

Note: Data conversion process 0x333333788B－0x3333333333 = 0x0000004558

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

2. 当前组合有功总电量（4 位小数点、12 位）命令解析

2. Current combined active power (4 decimal places, 12 digits) command analysis

①仪表信息：645 地址 101304560001（12 位）

①Instrument information: 645 address 101304560001 (12 bits)

②发送命令：FE FE FE FE 68 01 00 56 04 13 10 68 11 04 33 33 A2 33 9E 16

②Send command: FE FE FE FE 68 01 00 56 04 13 10 68 11 04 33 33 A2 33 9E 16

③发送命令解析：

③Send command analysis:

FE FE FE FE	68 01 00 56 04 13 10 68	11	04
Precursor	Between the two 68s is the address of instrument 645	Function code (read data)	Data identifier length

33 33 A2 33	9E	16
Data ID + 0x33	CS	

④回送命令：68 01 00 56 04 13 10 68 91 0A 33 33 A2 33 C7 6B 33 33 33 43 32 16

④Echo command: 68 01 00 56 04 13 10 68 91 0A 33 33 A2 33 C7 6B 33 33 33 43 32 16

⑤回送命令解析：

⑤Analysis of loopback command:

68 01 00 56 04 13 10 68	91	0A	33 33 A2 33
Between the two 68s is the address of instrument 645	Function code	Data identifier length	Data ID + 0x33

C7 6B 33 33 33 43	32	16
10000000.3894kwh	CS	

注：数据转换过程 0x433333336BC7 – 0x333333333333 = 0x100000003894

Note: Data conversion process 0x433333336BC7 – 0x333333333333 = 0x100000003894

3. 当前正向有功总电量（3 位小数点、12 位）命令解析

3. Current total forward active power (3 decimal places, 12 digits) command analysis

①仪表信息：645 地址 101304560001（12 位）

①Instrument information: 645 address 101304560001 (12 bits)

②发送命令：FE FE FE FE 68 01 00 56 04 13 10 68 11 04 33 33 83 33 7F 16

②Send command: FE FE FE FE 68 01 00 56 04 13 10 68 11 04 33 33 83 33 7F 16

③发送命令解析：

③Send command analysis:

FE FE FE FE	68 01 00 56 04 13 10 68	11	04
Precursor	Between the two 68s is the address of instrument 645	Function code (read data)	Data identifier length

33 33 83 33	7F	16
Data ID + 0x33	CS	

④回送命令：68 01 00 56 04 13 10 68 91 0A 33 33 83 33 BC 9A 78 56 34 33 90 16

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

④Echo command: 68 01 00 56 04 13 10 68 91 0A 33 33 83 33 BC 9A 78 56 34 33 90 16

⑤回送命令解析：

⑤Analysis of loopback command:

68	01	00	56	04	13	10	68	91	0A	33	33	83	33
Between the two 68s is the address of instrument 645								Function code	Data identifier length	Data ID + 0x33			

BC	9A	78	56	34	33	90	16
123456.789kwh						CS	

注：数据转换过程 0x333456789ABC – 0x333333333333 = 0x000123456789

Note: Data conversion process 0x333456789ABC – 0x333333333333 = 0x000123456789

4. 电参量数据块命令解析

4. Electrical parameter data block command analysis:

①仪表信息：645 地址 043003040001（12 位）

①Instrument information: 645 address 043003040001 (12 bits)

②发送命令：FE FE FE FE 68 01 00 04 03 30 04 68 11 04 33 32 C5 35 80 16

②Send command: FE FE FE FE 68 01 00 04 03 30 04 68 11 04 33 32 C5 35 80 16

③发送命令解析：

③Send command analysis:

FE	FE	FE	FE	68	01	00	04	03	30	04	68	11	04
Precursor				Between the two 68s is the address of instrument 645								Function code (read data)	Data identifier length

33	32	C5	35	80	16
Data ID + 0x33				CS	

④回送命令：68 01 00 56 04 13 10 68 91 0A 33 33 83 33 BC 9A 78 56 34 33 90 16

④Echo command: 68 01 00 56 04 13 10 68 91 0A 33 33 83 33 BC 9A 78 56 34 33 90 16

⑤回送命令解析：

⑤Analysis of loopback command:

68	01	00	04	03	30	04	68	91	24	33	32	C5	35
Between the two 68s is the address of instrument 645								Function code	Data identifier length	Data ID + 0x33			

4C B3 33 38	8C 9A 33 36	A5 89 83 34	65 66 8B 33	B8 CC 33 38	C9 9B 33 36
500.8019V	300.6759A	150.5672kw	583.332kwh	500.9985V	300.6896A

7B 96 83 34	67 86 8A 33	B5	16
150.6348kw	575.334kwh	CS	

注：第一路电压 500.8019V，**第一路电流** 300.6759A，**第一路功率** 150.5672kw，**第一路组合电能** 583.332kwh，**第二路电压** 500.9985V，**第二路电流** 300.6896A，**第二路功率** 150.6348kw，**第二路组合电能** 575.334kwh。

数据转换过程：0x338A8667 – 0x33333333 = 0x00575334

Note: The first voltage is 500.8019V, the first current is 300.6759A, the first power is 150.5672kw, the first combined power is 583.332kwh, the second voltage is 500.9985V, the second current is 300.6896A, the second power is 150.6348kw, and the second combined power is 575.334kwh.

Data conversion process: 0x338A8667–0x33333333=0x00575334

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

7.2.3 DLT698 规约 DLT698 Protocol

DJSF1352-RN 仪表支持 DLT698 协议,仪表表号默认为条形码后 12 位，详见菜单设置。规约支持电压、电流、功率、正反向及组合电能的读取，复费率电能读取。目前 DJSF1352RN 仅支持 GET-Request 请求服务。

读取请求的数据类型（GET-Request）定义见下表。

DJSF1352-RN meter supports DLT698 protocol, the meter number defaults to the last 12 digits of the barcode, see menu settings for details. The protocol supports reading of voltage, current, power, forward and reverse and combined energy, and multi-rate energy. Currently DJSF1352RN only supports GET-Request service.

The data type of the read request (GET-Request) is defined in the table below.

Data Type Definition	explanation

GET-Request∷=CHOICE
{
读取一个对象属性请求
Read an object attribute request [1] GetRequestNormal，
读取若干个对象属性请求
Read several object attribute requests [2] GetRequestNormalList，
}	

DJSF1352RN 仪表支持以下对象标识。

The DJSF1352RN instrument supports the following object identifiers.

对象识别 Object IdentificationOI	接口类 Interface Class IC	对象名称 Object Name	实例的对象属性及方法定义 Object attributes and method definitions of instances
0000	1	组合有功电能 Combined active energy	电能量∷=double-long；单位：kWh，换算：-2 Electric energy: = double-long; unit: kWh, conversion: -2
0010	1	正向有功电能 Positive active energy	电能量∷=double-long-unsigned；单位：kWh，换算：-2 Electric energy: = double-long; unit: kWh, conversion: -2
0020	1	反向有功电能 Reverse active energy	Electric energy: = double-long; unit: kWh, conversion: -2
2000	3	电压 Voltage	数据类型：long-unsigned，单位：V，换算：-1 Data type: long-unsigned, unit: V, conversion: -1
2001	3	电流 Current	数据类型：double-long，单位：A 换算：-3 Data type: double-long, unit: A Conversion: -3
2004	4	有功功率 Active Power	数据类型：double-long，单位：W，换算：-1 Data type: double-long, unit: W, conversion: -1

7.3 Modbus 协议 Modbus Protocol

当数据帧到达终端设备时，它通过一个简单的“端口”进入被寻址到的设备，该设备去掉数据帧的“信封”（数据头），读取数据，如果没有错误，就执行数据所请求的任务，然后，它将自己生成的数据加入到取得的“信封”中，把数据帧返回给发送者。返回的响应数据中包含了以下内容：终端从机地址（Address）、被执行了的命令（Function）、执行命令生成的被请求数据（Data）和一个 CRC 校验码（Check）。发生任何错误都不会有成功的响应，或者返回一个错误指示帧。

When the data frame arrives at the terminal device, it enters the addressed device through a simple "port". The device removes the "envelope" (data header) of the data frame, reads the data, and executes the task requested by the data if there is no error. Then, it adds the data it generates to the obtained "envelope" and returns the data frame to the sender. The returned response data contains the following: the terminal slave address (Address), the executed command (Function), the requested data (Data) generated by executing the command, and a CRC check code (Check). If any error occurs, there will be no successful response, or an error indication frame will be returned.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

7.3.1 数据帧 Data Frame

Address	Function	Data	Check
8-Bits	8-Bits	N×8-Bits	16-Bits

7.3.2 地址（Address）域 Address Field

地址域在帧首，由一个字节（8-Bits，8 位二进制码）组成，十进制为 0～255，在我们的系统中只使用 1～247，其它地址保留。这些位标明了用户指定的终端设备的地址，该设备将接收来自与之相连的主机数据。同一总线上每个终端设备的地址必须是唯一的，只有被寻址到的终端才会响应包含了该地址的查询。当终端发送回一个响应，响应中的从机地址数据便告诉了主机哪台终端正与之进行通信。

The address field is at the beginning of the frame and consists of a byte (8-bits, 8-bit binary code), with a decimal value of 0 to 255. In our system, only 1 to 247 are used, and other addresses are reserved. These bits indicate the address of the terminal device specified by the user, which will receive data from the host connected to it. The address of each terminal device on the same bus must be unique, and only the addressed terminal will respond to the query containing the address. When the terminal sends back a response, the slave address data in the response tells the host which terminal is communicating with it.

7.3.3 功能（Function）域 Function field

功能域代码告诉了被寻址到的终端执行何种功能。下表列出了该系列仪表用到的功能码，以及它们的意义和功能。

The function field code tells the addressed terminal what function to perform. The following table lists the function codes used in this series of instruments, as well as their meanings and functions.

代码（十六进制） Code (hexadecimal)	意义 meaning	行为 movement
03H	读取保持寄存器 Read Holding Registers	在一个或多个保持寄存器中取得当前的二进制值 Get the current binary value in one or more holding registers
10H	预置多寄存器 Preset multiple registers	把具体的二进制值装入一串连续的保持寄存器 Load specific binary values into a series of consecutive holding registers

7.3.4 数据（Data）域 Data Field

数据域包含了终端执行特定功能所需的数据或终端响应查询时采集到的数据。这些数据可能是数值、参量地址或者设置值。

例如：功能域告诉终端读取一个寄存器，数据域则需要指明从哪个寄存器开始及读取多少个数据，内嵌的地址和数据依照类型和从机之间的不同而内容有所不同。

The data field contains the data required by the terminal to perform a specific function or the data collected when the terminal responds to a query. This data may be a numerical value, a parameter address, or a setting value.

For example: the function field tells the terminal to read a register, and the data field needs to indicate which register to start from and how much data to read. The embedded address and data content varies according to the type and slave.

7.3.5 错误校验（Check）域 Error Check Field

该域采用 CRC16 循环冗余校验，允许主机和终端检查传输过程中的错误。有时由于电噪声和其它干扰，一组数据从一个设备传输到另一个设备时，在线路上可能会发生一些改变，错误校验能够保证主机或从机不去响应那些发生改变的数据，这就提高了系统的安全性、可靠性和效率。

This field uses CRC16 cyclic redundancy check, allowing the host and terminal to check for errors during transmission. Sometimes due to electrical noise and other interference, a set of data may change on the line when it is transmitted from one device to another. Error checking can ensure that the host or slave does not respond to the changed data, which improves the security, reliability and efficiency of the system.

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

7.3.6 错误校验的方法 Error checking method

错误校验（CRC）域占用两个字节，包含了一个 16 位的二进制值。CRC 值由传输设备计算出来，然后附加到数据帧上，接收设备在接受数据时重新计算 CRC 值，然后与接收到的 CRC 域中的值进行比较，如果这两个值不相等，就发生了错误。

CRC 运算时，首先将一个 16 位的寄存器预置为全 1，然后连续把数据帧中的每个字节中的 8 位与该寄存器的当前值进行运算，仅仅每个字节的 8 个数据位参与生成 CRC，起始位和停止位以及可能使用的奇偶位都不影响 CRC。在生成 CRC 时，每个字节的 8 位与寄存器中的内容进行异或，然后将结果向低位移位，高位则用“0”补充，最低位（LSB）移出并检测，如果是 1，该寄存器就与一个预设的固定值（0A001H）进行一次异或运算，如果最低位为 0，不作任何处理。

The error check (CRC) field occupies two bytes and contains a 16-bit binary value. The CRC value is calculated by the transmitting device and then attached to the data frame. The receiving device recalculates the CRC value when receiving the data and then compares it with the value in the received CRC field. If the two values are not equal, an error has occurred.

When calculating the CRC, first preset a 16-bit register to all 1s, and then continuously calculate the 8 bits in each byte in the data frame with the current value of the register. Only the 8 data bits of each byte participate in the generation of the CRC. The start bit, stop bit, and possible parity bits do not affect the CRC. When generating the CRC, the 8 bits of each byte are XORed with the contents of the register, and then the result is shifted to the lower bit, and the high bit is supplemented with "0". The lowest bit (LSB) is shifted out and detected. If it is 1, the register is XORed with a preset fixed value (0A001H). If the lowest bit is 0, no processing is performed.

7.4 Modbus 通讯说明 Modbus Communication Description

7.4.1 通信地址表（Word） RO：只读 R/W：读写

Communication Address Table (Word) RO: Read-only R/W: Read-write

地址 address	名称 name	类型 type	备注 Remark	word
5	内部温度 Internal temperature	RO	-400~1250, one decimal place, unit: ℃ -400~1250，小数点一位，单位℃	1
12~13	总正向有功电能 Total forward active energy	RO	一次侧电能，单位 0.1wh Primary side power, unit 0.1wh	2
14~15	总反向有功电能 Total reverse active energy	RO	一次侧电能，单位 0.1wh Primary side power, unit 0.1wh	2
16	电压变比 Voltage ratio	R/W	0001---9999	1
17	额定一次电流值 Rated primary current	R/W	0001---9999	1
30~32	日期时间设置 Date and time settings	R/W	每个字节依次为年月日时分秒，十进制 Each byte is year, month, day, hour, minute, and second, in decimal format.	6
33High Byte	当前抄表日 Current meter reading day	RO	1-31	6
33Low Byte	当前费率 Current Rates	RO	0-4 are sharp, peak,shoulder,off-peak, and deep valley 0-4 依次为尖、峰、平、谷、深谷	6
35	软件版本号 Software version number	RO		

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

50-51	电压 Voltage	R0	电压一次值，Float，单位 V Voltage primary value, Float, unit V	2
52-53	电流 Current	R0	电流一次值，Float，单位 A Current primary value, Float, unit A	2
54-55	功率 Power	R0	Power primary value, Float, unit kw	2
60	轮显时间 Rotation time	R/W	Unit: Seconds	1
606	脉冲常数 Pulse constant	R/W	Unit: imp/kWh	1

Address (decimal)	name	type	Remark	word
12288	总正向有功电能 Total forward active energy	R	32 位整型，单位 0.1wh 高字节在前，低字节在后 0-999999999 32-bit integer, unit 0.1wh High byte first, low byte last 0-999999999	2
12290	总正向有功电能费率 1 Total forward active energy rate 1	R		2
12292	总正向有功电能费率 2 Total forward active energy rate 2	R		2
12294	总正向有功电能费率 3 Total forward active energy rate 3	R		2
12296	总正向有功电能费率 4 Total forward active energy rate 4	R		2
12298	总正向有功电能费率 5 Total forward active energy rate 5	R		2
12300	总正向有功电能费率 6 Total forward active energy rate 6	R		2
12302	总正向有功电能费率 7 Total forward active energy rate 7	R		2
12304	总正向有功电能费率 8 Total forward active energy rate 8	R		2
12306	当月总正向有功电能 Total positive active energy for the month	R		2
12308	当月正向有功电能费率 1 Forward active energy rate 1 for the month	R		2
12310	当月正向有功电能费率 2 Forward active energy rate 2 for the month	R		2
12312	当月正向有功电能费率 3 Forward active energy rate 3 for the month	R		2
12314	当月正向有功电能费率 4 Forward active energy rate 4 for the month	R		2
12316	当月正向有功电能费率 5 Forward active energy rate 5 for the month	R		2

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

12318	当月正向有功电能费率 6 Forward active energy rate 6 for the month	R		2
12320	当月正向有功电能费率 7 Forward active energy rate 7 for the month	R		2
12322	当月正向有功电能费率 8 Forward active energy rate 8 for the month	R		2
12324	总反向有功电能 Total reverse active energy	R		2
12326	反向有功电能费率 1 Reverse active energy rate 1	R		2
12328	反向有功电能费率 2 Reverse active energy rate 2	R		2
12330	反向有功电能费率 3 Reverse active energy rate 3	R		2
12332	反向有功电能费率 4 Reverse active energy rate 4	R		2
12334	反向有功电能费率 5 Reverse active energy rate 5	R		2
12336	反向有功电能费率 6 Reverse active energy rate 6	R		2
12338	反向有功电能费率 7 Reverse active energy rate 7	R		2
12340	反向有功电能费率 8 Reverse active energy rate 8	R		2
12342	当月总反向有功电能 Total reverse active energy for the month	R		2
12344	当月反向有功电能费率 1 Reverse active energy rate 1 for the month	R		2
12346	当月反向有功电能费率 2 Reverse active energy rate 2 for the month	R		2
12348	当月反向有功电能费率 3 Reverse active energy rate 3 for the month	R		2
12350	当月反向有功电能费率 4 Reverse active energy rate 4 for the month	R		2
12352	当月反向有功电能费率 5 Reverse active energy rate 5 for the month	R		2
12354	当月反向有功电能费率 6 Reverse active energy rate 6 for the month	R		2
12356	当月反向有功电能费率 7 Reverse active energy rate 7 for the month	R		2
12358	当月反向有功电能费率 8 Reverse active energy rate 8 for the month	R		2

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

7.5 通讯应用 Communication Applications

本节所举实例尽可能采用下表格式（数据为 16 进制）

The examples in this section are in the following format as much as possible (data is in hexadecimal)

	Data Start			Data#of		CRC 16	
Addr	Fun	reg Hi	reg Lo	reg Hi	reg Lo	Lo	Hi
01H	03H	00H	32H	00H	02H	65H	C4H
地址 address	功能码 Function code	数据起始位 Data start bit		数据读取个数 Number of data read		循环冗余校验码 Cyclic Redundancy Check Code	

例 1：读第一路电压一次值数据

Example 1: Read the primary value data of the first voltage

查询数据帧 Querying Data Frames	01 03 00 32 00 02 65 C4
返回数据帧 Returns a data frame	01 03 04 42 C8 1B 84 65 26

说明 Description:

01：从机地址(第 1 路地址) 01: Slave address (1st address)

03：功能码 03: Function code

04：十六进制，十进制为 4，表示后面有 4 个字节的数据

04: Hexadecimal, decimal is 4, indicating that there are 4 bytes of data behind

65 26：循环冗余校验码 65 26: Cyclic redundancy check code

处理如下：42 C8 1B 84(16 进制) = 100.0537415 (float 类型数据) 单位：伏（V）

Processing as follows: 42 C8 1B 84 (hexadecimal) = 100.0537415 (float type data) Unit: Volt (V)



则仪表显示： U = 100.05V

读电流表数据与读电压表类似，但起始地址为 34H，查询帧：01 03 00 34 00 02 85 C5

读其它信息的查询帧与此格式相同，各信息地址见通讯参量地址表。

The meter displays: U = 100.05V

Reading the ammeter data is similar to reading the voltmeter, but the starting address is 34H, query frame: 01 03 00 34 00 02 85 C5

The query frame for reading other information is the same as this format, and the address of each information can be found in the communication parameter address table.

例 2：读第二路电流一次值数据

Example 2: Read the primary value data of the second current

查询数据帧 Querying Data Frames	02 03 00 34 00 02 85 F6
返回数据帧 Returns a data frame	02 03 04 43 7A 15 94 F2 51

说明：

02：从机地址(第 2 路地址)

03：功能码

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

04：十六进制，十进制为 4，表示后面有 4 个字节的数据

F2 51：循环冗余校验码

处理如下：43 7A 15 94 (16 进制) = 250.0842896 (float 类型数据)　单位：安培（A）

Description:

02: Slave address (2nd address)

03: Function code

04: Hexadecimal, decimal is 4, indicating that there are 4 bytes of data behind

F2 51: Cyclic redundancy check code

Processing as follows: 43 7A 15 94 (hexadecimal) = 250.0842896 (float type data) Unit: Ampere (A)



则仪表显示：　I = 250.08V

读电压表数据与读电流表类似，但起始地址为 32H，查询帧：02 03 00 32 00 02 65 F7

读其它信息的查询帧与此格式相同，各信息地址见通讯参量地址表。

The meter displays: I = 250.08V

Reading the voltage meter data is similar to reading the current meter, but the starting address is 32H, query frame: 02 03 00 32 00 02 65 F7

The query frame for reading other information is the same as this format, and the address of each information can be found in the communication parameter address table.

注：电压、电流、功率一次值数据类型为 float 类型，通讯值须转换后与仪表显示数据对应；

Note: The data type of the primary value of voltage, current and power is float type, and the communication value must be converted to correspond to the instrument display data;

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000

更改记录：

更改日期	更改前版本	更改后版本	更改内容
	V1.0		

Change Log：

Change Date	Version before change	Changed version	Changes
	V1.0		

总部：安科瑞电气股份有限公司
Headquarter: Acrel Co., LTD.
地址：上海市嘉定区育绿路 253 号
Address: No.253 Yulv Road Jiading District, Shanghai，China
电话：0086-21-69158338 0086-21-69156052 0086-21-59156392 0086-21-69156971
TEL.: 0086-21-69158338 0086-21-69156052 0086-21-59156392 0086-21-69156971
传真：0086-21-69158303
Fax: 0086-21-69158303
网址：www.acrel-electric.com
Web-site: www.acrel-electric.com
邮箱：ACREL008@vip.163.com
Email：ACREL008@vip.163.com
邮编：201801
Postcode: 201801

生产基地：江苏安科瑞电器制造有限公司
Manufacturer: Jiangsu Acrel Electrical Manufacturing Co., LTD.
地址：江苏省江阴市南闸街道东盟工业园区东盟路 5 号
Address： No.5 Dongmeng Road,Dongmeng industrial Park, Nanzha Street,Jiangyin City,Jiangsu Province,China
电话：0086-510-86179966
TEL：0086-510-86179966
传真：0086-510-86179975
Fax: 0086-510-86179975
网址： www.jsacrel.com
Web-site: www.jsacrel.com
邮箱： sales@email.acrel.cn
Email: sales@email.acrel.cn
邮编：214405
Postcode：214405

LRI Distribuída no Brasil pela LRI | vendas@lri.com.br | 51 2129-3000