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ADL100

安装使用说明书 V2.2

Installation and operation instruction V2.2

安科瑞电气股份有限公司

ACREL Co,.Ltd

目录

1 概述 Overview

ADL100 单相电子式电能表主要用于计量低压网络的单相有功电能，同时可测量电压、电流、功率等电量，具有红外通讯功能，并可选配 RS485 通讯功能，方便用户进行用电监测、集抄和管理。产品具有精度高、体积小、安装方便等优点。可灵活安装于配电箱内，实现对不同区域和不同负荷的分项电能计量，统计和分析。性能指标符合国标 IEC62053-21、IEC62053-22 对电能表的各项技术要求。

ADL100 single phase electric meter is designed for single phase active energy measurement on low voltage system, in the same time it can measure the electrical parameters like voltage, current, power and so on. There is also RS485 can be chosen. This power meter has advantages of smaller volume, high precision, good EMC, easily installing etc, All meters meet the related technical requirements of electronic power meter in the IEC62053-21、IEC62053-22 standards.

2 主要功能 Function

功能 Function	功能说明 Function description	功能配置 Function provide
电能计量 Measurement of kWh	单相有功电能计量(正、反向计量) Single-phase active kWh (positive and negative)	■
电量测量 Measurement of electrical parameters	U、I 、P、Q、S、PF、F 测量 Voltage, Current, Active power, Reactive power, Apparent power, Power factor and Frequency	■
LCD 显示 LCD Display	8 位段式 LCD 显示 8 bits section LCD display	■
按键编程 Key programming	3 按键可编程设置密码、通讯地址、波特率、复费率和通讯协议。 3 keys to set parameters like code, address, baud rate, multi-tariff and communication protocol	■
脉冲输出 Pulse output	有功电能脉冲输出 Active energy pulse output	■
复费率 Multi-tariff	支持 4 个时区、2 个时段表、14 个日时段、4 个费率 Adapt 4 time zones, 2 time interval lists, 14 time interval by day and 4 tariff rates	□F
通讯 Communication	RS485 接口，支持 Modbus Communication interface: RS485, Communication protocol: MODBUS-RTU	□C
	红外通讯 Infrared communication	■

(■：标配；□：可选 ■： means standard; □： means optional)

3 技术参数 Technical parameter

3.1 电气特性 Electric performance

电压输入 Input voltage	参比电压 Reference voltage	AC 220V
	参比频率 Reference frequency	50Hz
	功耗 Power consumption	<10VA
电流输入 Input current	基本电流 Basic current	10A
	最大电流 Maximum current	60A
	起动电流 Starting current	4‰Ib
	功耗 Consumption	<4VA (最大电流)
测量性能 Measurement performance	测量精度 Accuracy of measuring	1 级
	测量范围 Range of measuring	000000.00~99999999kWh
时钟精度 Clock accuracy		误差 Error≤0.5s/d
有功脉冲 Active pulse	脉冲宽度 Pulse width	80±20ms
	脉冲常数 Pulse constant	1600imp/kWh，LED
通信 Communication	接口 Interface	RS485(A+、B-)
	介质 Connection mode	屏蔽双绞线 Shielded twisted pair conductors
	协议 Protocol	MODBUS-RTU、DL/T645-07

3.2 机械特性 Mechanical performance

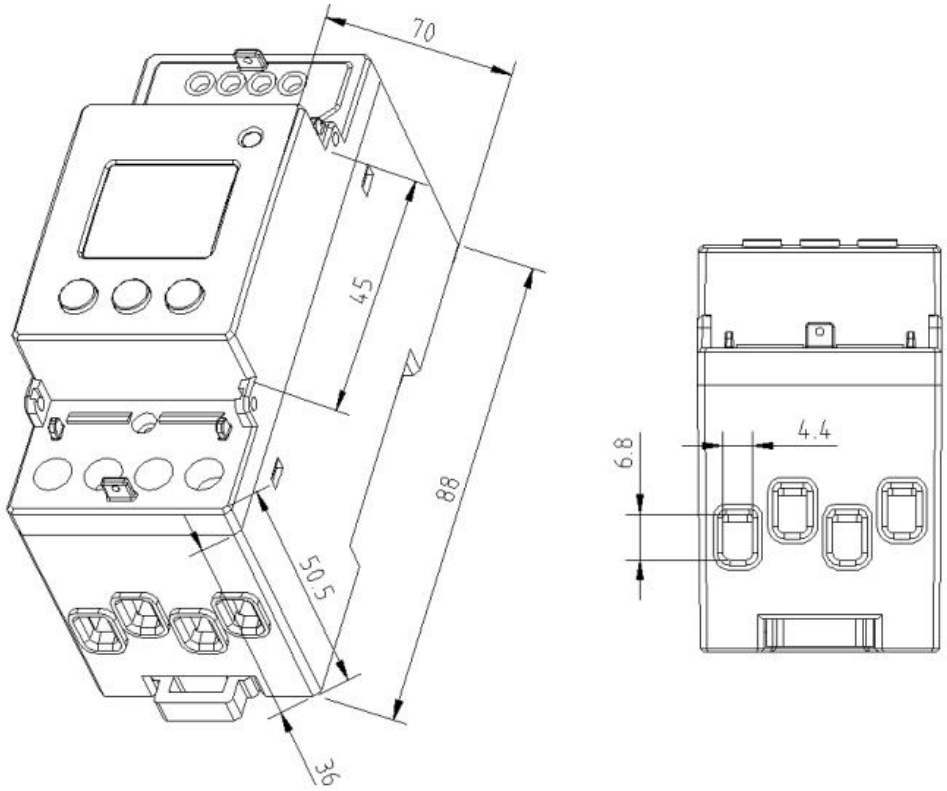
外形尺寸（长×宽×高） Outline (Length × Width × Height)	88mm×36mm×70mm (2 模数)

3. 3 环境条件 Work environment

温度范围 Temperature range	工作温度 Work temperature	-25℃~55℃
	存储温度 Storage Temperature	-40℃~70℃

湿度 Relative humidity	≤95%（无凝露）(No condensation)
海拔 Altitude	<2000m

4 外形尺寸（单位：mm） Outline (unit: mm)

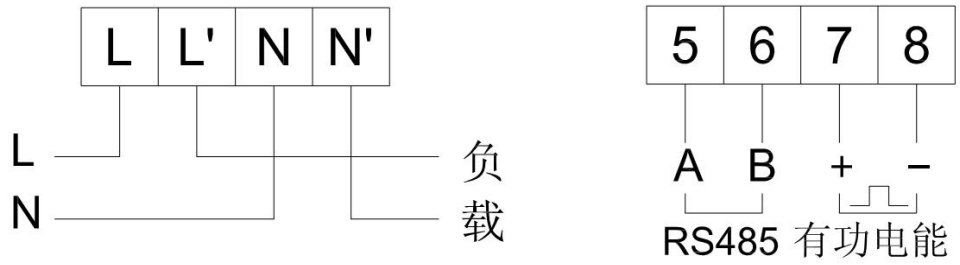


仪表外形尺寸

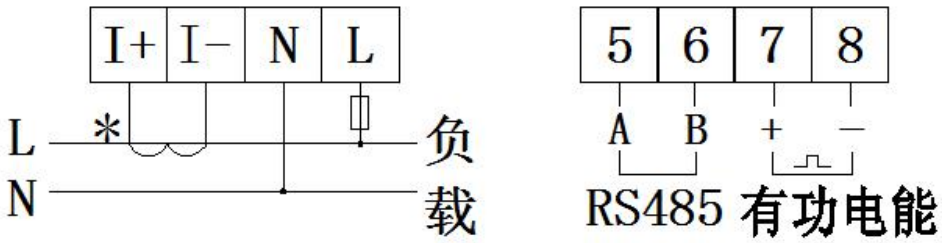
注：接线力矩不应大于 2.0N·m。

Note：The torque should not be greater than 4.0N·m

5 接线与安装 Wiring and installing



10（60）A 规格接线图



20（100）A 规格接线图

ADL100 单相电子式电能表采用直接接入方式，接线时应注意进线和出线方向，并请务必拧紧，避免因接触不良而引起电能表工作不正常。

ADL100 single phase electric meter used the direct connecting method. Please pay attention to the direction of input and output while wiring and screw tightly， prevent the meter from the abnormal work.

6 操作与显示 Operation and display

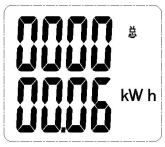
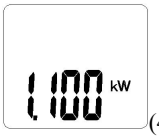
6.1 按键功能说明 Key description

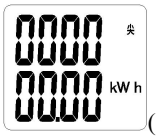
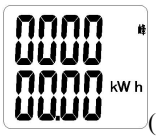
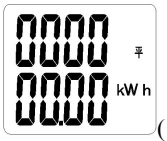
按键图标	按键名称	按键功能
	菜单键 Menu	进入/退出菜单,确认保存 Enter/quit, save
	向上键 Up	闪烁数位修改 Flash bit change
	向下键 Down	闪烁数位右移/页面下翻 Flash bit right-ward/next page

6.2 测量显示菜单 Display of measurement menu

上电后显示总有功电能。可通过向下键实现翻屏显示。各显示项说明如下：

Show total energy when connected. Change information while pressing down key. Display information as following:

 (1)总有功电能 Total active energy	 (2)电压 Voltage
 (3)电流 Current	 (4)有功功率 Active power
 (5)无功功率 Reactive power	 (6)视在功率 Apparent

 (7)功率因数 Power factor	 (8)频率 Frequency
 (9)软件版本号 Version of software	 (10)日期 Date
 (11)时间 Time	 (12)尖电能 Spike energy
 (13)峰电能 Peak energy	 (14)平电能 Flat energy
 (15)谷电能 Valley energy	

注：当复费率功能 F 未选用时，无(10)(11)(12)(13)(14)(15)显示项

Note: There are not (10)(11)(12)(13)(14)(15)when multi-tariff function (F) is not applied.

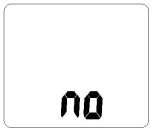
6.3 编程显示菜单 Programming display menu

在测量显示菜单中的任一显示项下，按↵可进入“  ”界面，再按↵显示“  ”，提示输入密码，若密码输入错误，则出现错误提示“  ”，并返回测量显示菜单；若密码输入正确，则可进行参数设置。设置完成后进入“  ”界面，“  ”下按↵则保存后退出，“  ”下按↵则不保存直接退出。

Press ↵ at any main menu and get in  interface, and then press ↵ show  , and enter the code. If you enter a wrong code, it will show  and back to main menu; and if you enter a right code, you can set the parameter. After setting the parameter, it will show  and save the change by pressing  and quit without save by pressing  .

6.3.1 可设置数据项 Item can be set

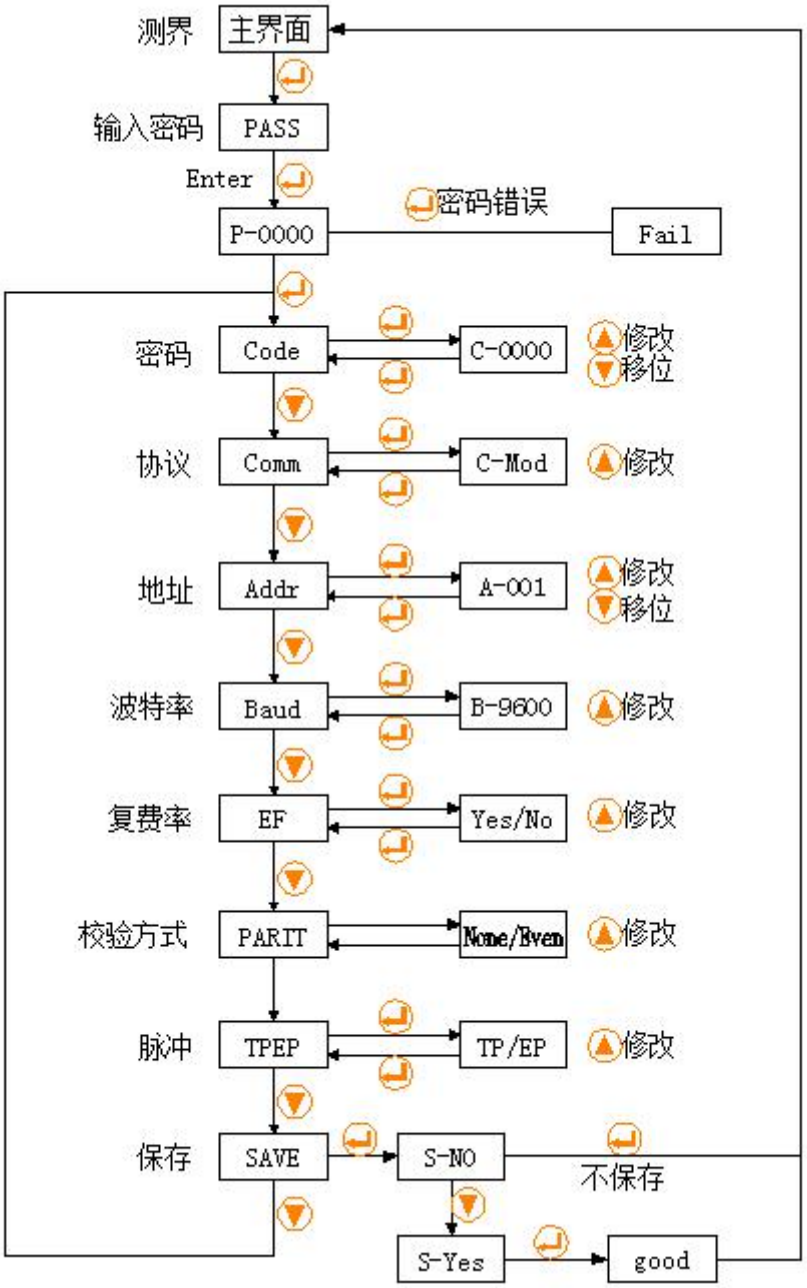
序号	一级菜单 Firstly Menu		二级菜单 Secondly menu		
Num	符号 Symbol	含义 Meaning	符号 Symbol	含义 Meaning	范围 Range

1		密码 Code		密码设置 Set code	0000-9999
2		通信规约 communication protocol		通信规约设置 Set communication protocol	Mod-Modbus 645-DLT645
3		地址 (modbus)		地址设置(modbus) Set address (modbus)	1-247
4		波特率 Baud rate		波特率设置 Set baud rate	9600 、 4800 、 2400、 1200
5		校验方式 Parity method		校验方式设置 Set parity method	None/Even
6		复费率 Multi-tariff		复费率设置 Set multi-tariff	No/Yes
7		保存 Save		保存选择 Save page	No/Yes

注：  为 MODBUS-RTU 协议

Note：  is Modbus，

6.3.2 按键设置流程 Key setting process



7 通信说明 Communication description

7.1 通信协议 Communication protocol

本电能表采用 MODBUS-RTU 协议或 DL/T645 规约。具体协议格式请参照相关协议标准，此处不再赘述。当复费率功能 F 未选用时，对应的复费率数据项无意义。

The meters adapt Modbus and DL/T645 protocol. Please refer to the relevant standards for more information. The multi-tariff data mean nothing when multi-tariff function (F) is not applied.

7.2 MODBUS 通信地址表 Address list

数据地址 Address	数据名称 Variable	长度 Length	读/写 R/W	备注 Notes
0000H 0001H	当前总有功电能 Current total electricity	4	R	
0002H 0003H	当前总有功尖电能 Current spike electric energy	4	R	
0004H 0005H	当前总有功峰电能 Current peak electric energy	4	R	
0006H 0007H	当前总有功平电能 Current flat electric energy	4	R	
0008H 0009H	当前总有功谷电能 Current valley electric energy	4	R	
000AH	密码 Code	2	R/W	
000BH	电压 U Voltage	2	R	
000CH	电流 I Current	2	R	
000DH	有功功率 P Active power	2	R	
000EH	无功功率 Q Reactive power	2	R	
000FH	视在功率 S Apparent power	2	R	
0010H	功率因数 PF Ppower factor	2	R	
0011H	频率 Frequency	2	R	
0012H	年、月 Year, month	2	R/W	
0013H	日、时 Day, hour	2	R/W	
0014H	分、秒 Minute, second	2	R/W	
0015H 高	地址 Address	1	R/W	1~247
0015H 低	通信波特率 Communication baud rate	1	R/W	波特率：1:9600 Baud 2：4800 Rate： 3:2400 4:1200
0016H …… 0021H	预留 Reserve			
0022H 0023H	上 1 月总电能 Total electric energy of last month	4	R	
0024H 0025H	上 1 月尖电能 Spike electric energy of last month	4	R	
0026H 0027H	上 1 月峰电能 Peak electric energy of last month	4	R	
0028H 0029H	上 1 月平电能 Flat electric energy of last month	4	R	
002AH 002BH	上 1 月谷电能 Valley electric energy of last month	4	R	

002CH 002DH	上 2 月总电能 Total electric energy of last 2 month	4	R	
002EH 002FH	上 2 月尖电能 Spike electric energy of last 2 month	4	R	
0030H 0031H	上 2 月峰电能 Peak electric energy of last 2 month	4	R	
0032H 0033H	上月平电能 Flat electric energy of last 2 month	4	R	
0034H 0035H	上 2 月谷电能 Valley electric energy of last 2 month	4	R	
0036H 0037H	上 3 月总电能 Total electric energy of last 3 month	4	R	
0038H 0039H	上 3 月尖电能 Spike electric energy of last 3 month	4	R	
003AH 003BH	上 3 月峰电能 Peak electric energy of last 3 month	4	R	
003CH 003DH	上 3 月平电能 Flat electric energy of last 3 month	4	R	
003EH 003FH	上 3 月谷电能 Valley electric energy of last 3 month	4	R	
0040H … 0047H				
0048H	校验方式 Test method	2	R	0000 无校验 None 0002 偶校验 Even
0049H … 0067H	保留 Reserved			
0068H	当前正向总有功电能 Current forward active total electric energy	4	R	
006AH	当前正向有功尖电能 Current forward active spike electric energy	4	R	
006CH	当前正向有功峰电能 Current forward active peak electric energy	4	R	
006EH	当前正向有功平电能 Current forward active flat electric	4	R	

	energy			
0070H	当前正向有功谷电能 Current forward active valley electric energy	4	R	
0072H	当前反向有功总电能 Current reversing active total electric energy	4	R	
0074H	当前反向有功尖电能 Current reversing active spike electric energy	4	R	
0076H	当前反向有功峰电能 Current reversing Active peak electric energy	4	R	
0078H	当前反向有功平电能 Current reversing active flat electric energy	4	R	
007AH	当前反向有功谷电能 Current reversing Active valley electric energy	4	R	
007CH … 0081H	4 个时区 4 time zones	3×4	R/W	
0082H … 0096H	14 时段参数设置信息 14-period of time Parameters setting information	3×14	R/W	第一套时段表 The first time list
0097H … 00ABH	14 时段参数设置信息 14-period of time Parameters setting information	3×14	R/W	第二套时段表 The second time list