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ADL10-E
单相电子式电能表
Installation and operation instruction V2.3

ACREL Co,.Ltd

申 明Declare

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Content

1 概述 Overview

ADL10-E 单相电子式电能表是安科瑞电气集多年的电表设计经验，所推出的一代微型电能表。集测量、计量、LCD 显示、通信于一体，其可靠性高具有高稳定性、低功耗、掉电数据保存等优点。性能指标符合国标 IEC62053-21、IEC62053-22 对电能表的各项技术要求。

ADL10-E single phase electric energy meter is a new generation energy meter designed by Acrel Co,.Ltd with many years' experience in designing electricity meters. Measurement, statistic, communication and LCD display functions are installed in the power meter. This power meter has advantages of high stability, low power consumption and data saving after blackout etc. All meters meet the related technical requirements of electronic power meter in the IEC62053-21、IEC62053-22 standards.

2 Functions

功能 Function	功能说明 Function description	功能配置 Function provide
电能计量 Measurement of kWh	有功、无功电能计量 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	■
通讯 Communication	RS485 接口，MODBUS-RTU 和 DL/T645 协议 Communication interface: RS485, Communication protocol: MODBUS-RTU	□C

(■：标配 means standard; □：可选 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	AC220V
	参比频率 Reference frequency	50Hz
	功耗 Power consumption	<10VA
Input current	基本电流 Basic current	10A
	最大电流 Maximum current	60A
	起动电流 Starting current	0.004Ib
	功耗 Consumption	<4VA (最大电流 Maximum current)
测量性能 Measurement performance	测量精度 Accuracy of measuring	1 级 Class
	测量范围 Range of measuring	000000.00~999999.99kWh
通信 Communication	接口 Interface	RS485(A+、B-)
	介质	屏蔽双绞线

	Connection mode	Shielded twisted pair conductors
	协议 Protocol	MODBUS-RTU

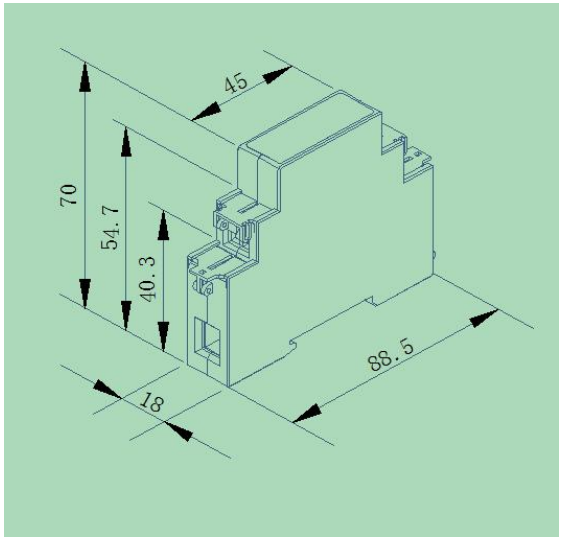
3.2 机械特性 Mechanical performance

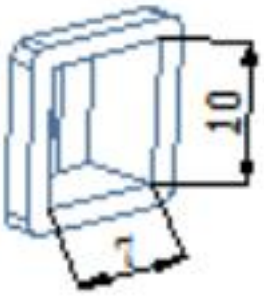
外形尺寸（长×宽×高） Outline (Length × Width × Height)	18mm×96 mm×70mm

3.3 环境条件 Work environment

温度范围 Range of temperature	工作温度 Working temperature	-25℃~55℃
	存储温度 Storing temperature	-40℃~70℃
相对湿度 Relative humidity		≤95%(无凝露 No condensation)
海拔 Altitude		<2000m

4 外形尺寸 Overall dimensions

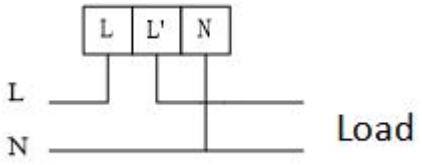


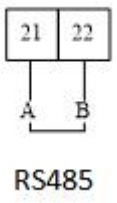


注：接线力矩不应大于 4.0N·m。
Note：The torque should not be greater than 4.0N·m

5 接线与安装 Wiring and installing

5.1 接线图 Wiring diagram





5.2 安装注意事项 Installing notices

电能表应安装在室内通风干燥的地方，采用 35mm 标准导轨方式安装。安装接线时应按照电能表侧面的接线图进行接线，最好用铜接线头接入。

ADL10 single phase electric meter used the direct connecting method. Please pay attention to the direction of input

and output while wiring and screw tightly (torque less than 12Nm) prevent the meter from the abnormal work.

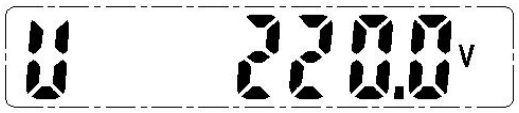
6 显示说明 Display instructions

上电后显示总电能，轮流显示电压电流功率等信息。以下为显示示例：

The meter shows total energy first while turning on and then shows voltage, current and power, etc. in turn. The example shows as following:

当前总电能 12.34kWh

Current total energy 12.34kWh



当前电压 220.0V

Current voltage 220.0V

当前电流 10.00A

Current current10.00A

当前功率 2.20kW

Current power 2.20kW

功率因数 1.00

Power factor 1.00

当前偶校验、波特率 9600

Current even test, baud rate 9600

当前表地址为 001

Current address 001

当前表的版本号为 V1.00

Current version V1.00

7 通信说明 Communication instructions

7.1 通信协议 Communication protocol

本电能表采用 MODBUS-RTU 协议和 DL/T645-2007 规约。具体协议格式请参照相关协议标准，此处不再赘述。

The meters adapt Modbus . Please refer to the relevant standards for more information.

7.2 MODBUS 通信地址表

MODBUS Communication address table

地址 Address	数据项名称 Variable	长度（字节）Length	R/W	备注 Notes
0000H 0001H	组合有功总电能 Current total energy	4	R	unit: 0.01kWh
0002H … 000AH	保留 Reserved			
000BH	电压Voltage	2	R	unit：0.1V
000CH	电流Current	2	R	unit：0.01A
000DH	有功功率Active power	2	R	unit：0.001kw
000EH	无功功率Reactive power	2	R	unit：0.001kvar
000FH	视在功率Apparent power	2	R	unit：0.001kVA

0010H	功率因数Power factor	2	R	unit：0.001
0011H	频率Frequency	2	R	unit：0.01Hz
0012H … 0014H	保留 Reserved			
0015H（high bit）	地址Address	1	R/W	1～247
0015H（low bit）	波特率Communication baud rate	1	R/W	00：9600 01：4800 02：2400 03：1200
0016H … 0047H	保留 Reserved			
0048H	校验方式Method of testing	2	R/W	02: even 00: none
0049H … 004BH	保留 Reserved			
004CH 004DH	正向无功电能Forward reactive energy	4	R	unit：0.01kWh
004EH 004FH	反向无功电能Reversing reactive energy	4	R	unit：0.01kWh
0050H … 0067H	保留 Reserved			
0068H 0069H	正向有功电能Forward active energy	4	R	Unit：0.01kWh
006AH … 0071H	保留 Reserved			
0072H 0073H	反向有功电能Reversing active energy	4	R	Unit：0.01kWh