ADL-400
3 Phase 80A direct connect low voltage meter

Functions

Table 1 Function description list

Function	Function description	Function provide
Measurement of kWh	Active kWh (positive and negative)	■
	Reactive kWh (positive and negative)	■
	A. B, C split phase positive active energy	■
Measurement of electrical parameters	U、I	■
	P、Q、S、PF、F	■
Measurement of harmonics	2~31ST Voltage and current harmonic	■
LCD Display	12 bits section LCD display, background light	■
Key programming	3 keys to communication and set parameters	■
Pulse output	Active pulse output	■
Multi-tariff and functions	Adapt 4 time zones, 2 time interval lists, 14 time interval by day and 4 tariff rates	□
	Max demand and occurrence time	□
	Frozen data on last 48 months, last 90days	□
	Date, time	□
Communication	Communication interface: RS485, Communication protocol: MODBUS-RTU	■

General

ADL400 three phase electric meter is designed for three phase measurement on low voltage system. The meter meet the related technical requirements of electronic meter in the IEC62053-21 IEC62053-22 standards.

Parameters

Table 2 technical parameter descriptions

project			performance parameter	
Specification			3 phase 3 wires	3 phase 4 wires
Measurement	Voltage	Reference voltage	3×100V、 3×380V	3×57.7/100V、 3×220/380V
		Voltage range	3×100V - 3×450V	3×57.7/100V - 3×260/450V
		Consumption	<10VA(Single phase)	
		Impedance	>2MΩ	
		Accuracy class	Error±0.2%	
	Current	Input current	3×1(6)A、 3×10(80)A	
		Consumption	<1VA Single phase rated current	
		Accuracy class	Error±0.2%	
	Power		Active, reactive, apparent power, error±0.5%	
	Frequency		45~65Hz，Error±0.2%	
Metering	Energy		Active energy(Accuracy class: 0.5); reactive energy(Accuracy class 2)	
	Clock		≤0.5s/d	
Digit signal pulse	Energy pulse output		1 active photocoupler output	
	Width of pulse		80±20ms	
	Pulse constant		400imp/kWh,10000imp/kWh(Correspond with the basic current)	
communication	Interface and communication protocol		RS485：Modbus RTU	
	Range of communication address		Modbus RTU:1~254；	
	Baud rate		1200bps~38400bps	
environment	working temperature		-25℃~+55℃	
	Relative humidity		≤95%(No condensation)	

Dimension drawings (Unit: mm)
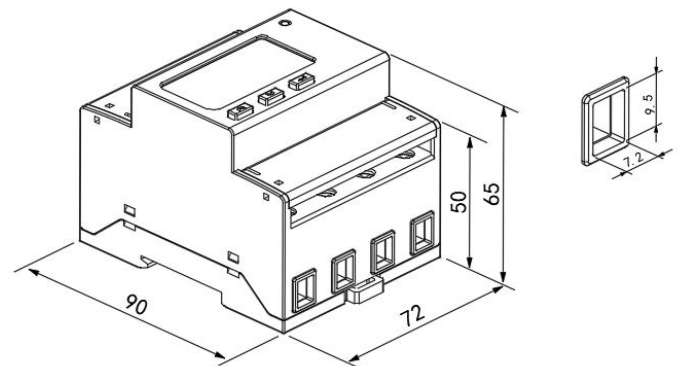
Fig 1 direct connect
The torque of direct connect should not be greater than 4.0N·m

Wiring

LOAD

L1 L2 L3 N

21 22   17 18

Acrel

EP
1184 kW h
30.00

ADL400

MAINS

L1 L2 L3 N

L1 L2 L3 N
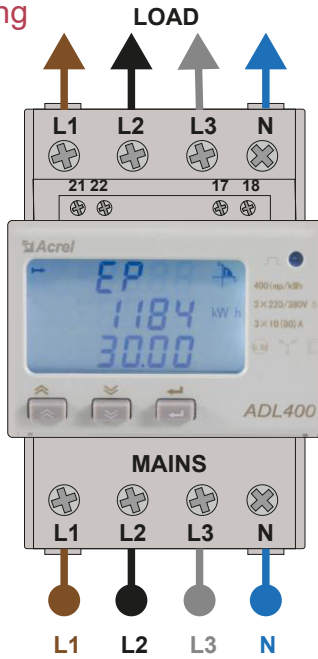
COMMUNICATION TERMINALS

21	22	17	18
A	B	+	-
RS485		Active Pulse	
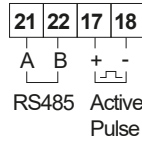
Function description

Measurement

It can measure the electrical parameter,include U、I、P、Q、S、PF、F、1~31th harmonic。

If：U = 220.1V，f = 49.98Hz，I = 1.99A，P = 0.439kW

Such as:U = 220.1V，f = 49.98Hz，I = 1.99A，P = 0.439kW

Calculating

Can measure the active energy、forward active energy、reversing active energy、forward reactive energy、reversing reactive energy。

Timing

Two timing table，four time zone，one table have fourteen timing，four rate。

Demand

The description about demand:

Table 3 Demand description list

Demand	The average power in the demand cycle.
Maximum demand	The maximum value of demand in a period of time.
Slip time	A recurrence method to measure the demand from any time point during a period shorter than the demand period. The demand measured by this means is called sliding demand. The recurrence time is sliding window time.
Demand cycle	The time period between two same average value of demand.

The default demand cycle is 15 minutes, slip time is 1 minute.

The meter can measure 4 kinds of maximum demand: forward active, reversing active, inductive reactive, capacitive reactive maximum demand and the occur time.

History data statistics

The meter can record last 48 months or last 90 days history energy in each tariff.

Operation and display

Key function description

Table 4 Key's function description

icon	Name	Function
⌃	Voltage and current, up	Check the voltage and current Leftward and change flash in programming menu
⌄	Power, down	Check the power Rightward and change the value on flash
↵	Energy, enter	Check the energy In/out programming menu Save changes

Display menu

The meter will show the forward active energy after powering. The customers can change the information showing by pressing the keys. The menu description is listed as below:

Table 5 display descriptions

Start-up screen shows all characters

EP 1184 kW h 30.00 — KWh reading 118430.00

U 1 220.0 / 2 220.0 V / 3 220.0 — Three-phase voltage

U 1-2 380.0 / 2-3 380.0 V / 3-1 380.0 — Three phase line voltage

I 1 0 / 2 0 A / 3 0 — Three-phase Current

F 39.00 Hz — Frequency

U 1 5.00 / THD 2 5.00 % / 3 5.00 — Harmonic content of three phase Voltage

I 1 5.00 / THD 2 5.00 % / 3 5.00 — Harmonic content of three phase Current

IU 1 60.0° / 2 60.0° / 3 60.0° — Phase angle

P 1 550 / 2 550 W / 3 550 — Three phase active power

P Σ 1.650 kW — Total active power

q 1 952 / 2 952 var / 3 952 — Three phase reactive power

q Σ 2.856 kvar — Total reactive power

S 1 1.100 / 2 1.100 k VA / 3 1.100 — Three phase apparent power

S Σ 3.300 k VA — Total apparent power

PF 1 0.500 / 2 0.500 / 3 0.500 — Three phase power factor

PF Σ 0.500 — Total power factor