ADL400 CT Operated Meter
Installation and operation instruction V1.0

1 General

ADL400 is a smart meter designed for power supply system, industrial and mining enterprises and utilities to calculate the electricity consumption and manage the electric demand. It features the high precision, small size and simple installation. It integrates the measurement of all electrical parameters with the comprehensive electricity metering and management provides various data on previous 48 months, checks the 31st harmonic content and the total harmonic content, realizes the remote communication and the remote control with switching input and relay output and boasts the alarm output. It is fitted with RS485 communication port and adapted to MODBUS-RTU .ADL400 can be used in all kinds of control systems, SCADA systems and energy management systems. The meter meet the related technical requirements of electronic meter in the IEC62053-21standards.
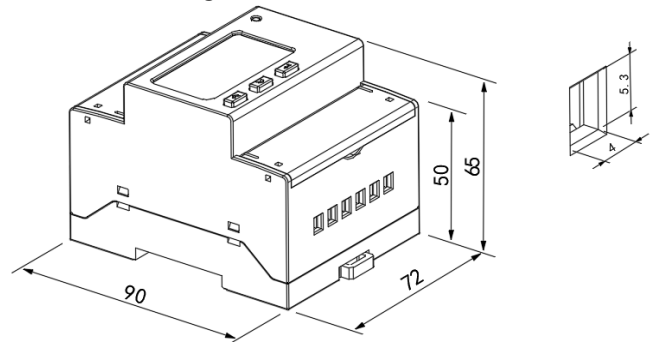
2 Function

Function	Function description	Function provide
Measurement of kWh	Active kWh (positive and negative)	■
	Reactive kWh (positive and negative)	■
Measurement of electrical parameters	U、I	■
	P、Q、S、PF、F	■
Measurement of harmonics	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 demanded kWh and time happened	□
	Frozen data on las t 48 months, last 90days	
	Date, time	□
Communication	Communication interface: RS485, Communication protocol: MODBUS-RTU	■

3 Technical parameter

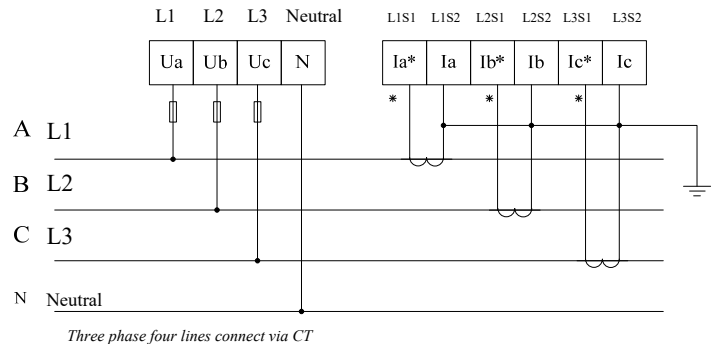| Specification			3 phase 3 wires, 3 phase 4 wires
Measure ment	Volt age	Reference Voltage	3x100V, 3x380V, 3x57.7V, 3x220/380V
		Consumption	<10VA(Single phase)
		Impedance	>2M Ω
		Accuracy class	Error ± 0.2%
	Curr ent	Input current	3 × 1(6)A ， 3 × 10(80)A
		Consumption	<1VA(Single phase rated current)
		Accuracy class	Error ± 0.2%
	Power		Active, reactive, apparent power, error ± 0.5%
	Frequency		45 ～ 65Hz ， Error ± 0.2%
Measure ment	Energy		Active energy (Accuracy class: 0.5, 1) reactive energy (Accuracy class 2)
	Clock		≤ 0.5s/d
Digital signal	Energy pulse output		1 active photocoupler output
Pulse	Width of pulse		80±20ms
	Pulse constant		1000imp/kWh,10000imp/kWh (Correspond with the basic current
Commun ication	Interface and communication		RS485 : Modbus RTU
	Range of communication address		Modbus RTU:1～ 247
	Baud rate		1200bps~19200bps
Environ ment	Relative temperature		-25℃ ～+55℃
	Relative humidity		≤ 95% (No condensation)

4 Dimension drawing
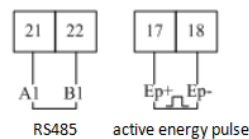

Note：The torque of connect via CT should not be greater than 2.0N·m。

5 Wiring and installing
5.1 Wiring sample of voltage and current

Three phase four lines connect via CT

5.2 Switching input, output, NTC temperature measurement

Communication, pulse connection

6 Function description
6.1 Measurement
It can measure the electrical parameter,include U、I、P、Q、S、PF、F、1~31th harmonic。Such as:U = 220.1V， f = 49.98Hz， I = 1.99A， P = 0.439kW

6.2 Calculating
Can measure the active energy, reversing active energy, forward reactive energy, reversing reactive energy

6.3 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, inductance performance reactive, capacitance performance reactive maximum demand and the occur time.

Demand	The average power in the demand cycle.
Maximum demand Slip time	The maximum value of demand in a period of time.
Demand cycle	The time period between two same average value of demand

7 Operation and display

7.1 Key function description

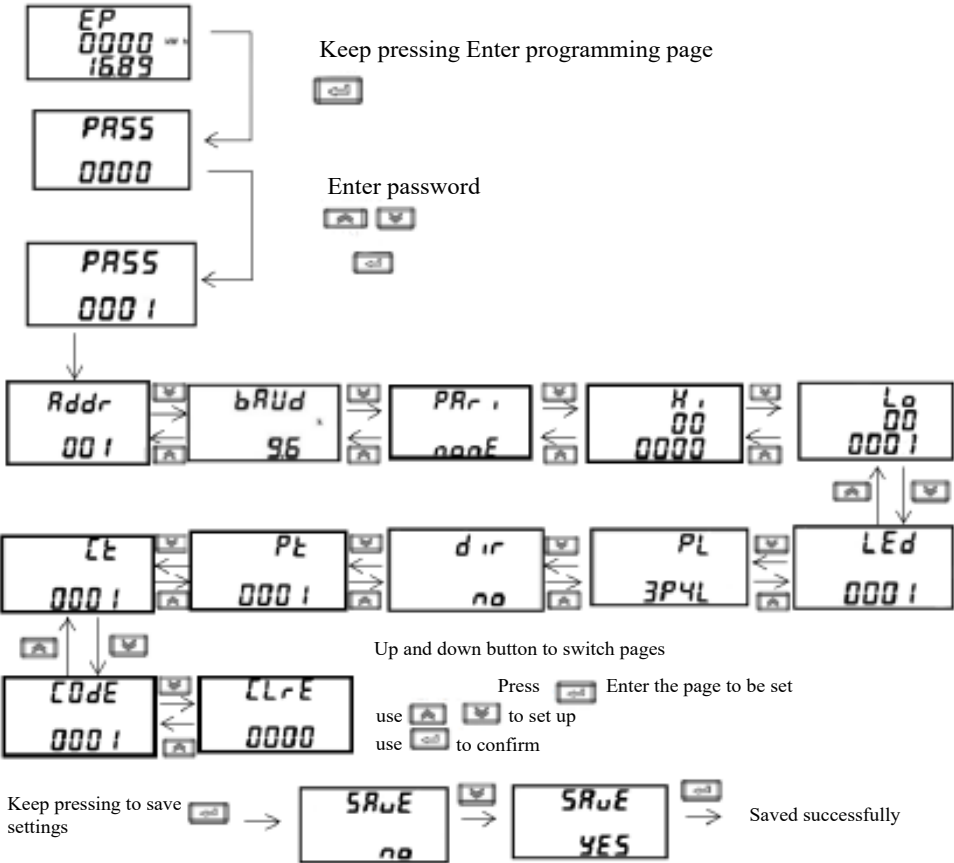| Icon	Name	Function
⏫	Voltage and current, up	Check the voltage and current Leftward and change flash in programming menu
⏬	Power, down	Rightward and change the value on flash
↵	Energy, enter	Check the energy In/out programming menu Save changes

7.2 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:

Icon	Description
⏫	U I F THDU THDI time MODBUS baud and address DL 645 Address version all display
⏬	A B C active power active power A B C reactive power reactive power A B C apparent power apparent power A B C power factory power factory
↵	Energy active flat energy active valley energy forward Active energy forward reactive energy forward reactive spike energy forward reactive peak energy forward reactive flat energy forward reactive valley energy forward reactive energy reserve reactive energy forward active energy of A phase forward active energy of B phase forward active energy of C phase

7.3 Key Menu

Keep press ↵ at any main menu and get in "PASS" interface, and then press ↵

show "0000", and enter the code. If you enter a wrong code, it will show "fail" and back to main menu; and if you enter a right code, you can set the parameter. After setting the parameter and keep press ↵ , it will show "save" and save the change by pressing ↵ in "yes" interface and quit without save by pressing ↵ in "no" interface.

EP
0000
16.89

Keep pressing Enter programming page
↵

PASS
0000

Enter password
⏫ ⏬
↵

PASS
0001

Addr 001	bAUd 9.6	PAr. nonE	H. 00 0000	Lo 00 0001

CE 0001	Pt 0001	dir no	PL 3P4L	LEd 0001

Up and down button to switch pages

COdE 0001	CLrE 0000

Press ↵ Enter the page to be set
use ⏫ ⏬ to set up
use ↵ to confirm

Keep pressing to save settings ↵ → SAvE no ⏬→ SAvE YES ↵→ Saved successfully

7.4 Data settings

Num	Second menu		
	Symbol	Mean	Range
1	ADDR	Communicate's ADDR settings	1-254
2	Baud	Baud choose	1200 2400 4800 9600 192 00
3	Pari	Parity choose	None Odd Even
4	HI	DL/T645	000000-999999
5	LO	DL/T645	000000-999999
6	LED	Backlight time	
7	PL	Wiring sample	3P4L
8	DIR	Direction of current	no or yes
9	Pt	Voltage transformer settings	1-9999
10	Ct	Current transformer settings	1-9999
11	CoDE	Code settings	1-9999
12	CLrE	Clear	0-9999

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