ADF400L Series multi user electric energy meter

General

The ADF400L series multi-user electric energy meter can achieve up to 12 three-phase or 36 single-phase direct access measurement or 12 three-phase mutual inductor access measurement, a hybrid of direct access and mutual inductor access through module combination measurement method. This series of electric energy meters are popular among communities, schools, enterprises, etc. due to their high accuracy, centralized installation, centralized management, high installation flexibility, and non-interference.

Product Specifications

■ Model Description

ADF400L - □ H □ S □ D □ - □

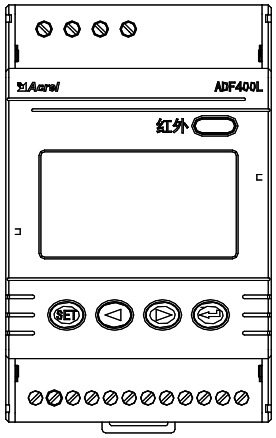
- Optional function: none、CE、IC、K、*C(Up to 3 channels)
- Control type: none: metering type; Y: prepaid type
- Single-phase circuit: up to 36 (multiple of 3) circuits
- Three-phase circuit: up to 12 circuits
- Three mutual inductor access loop: up to 12 (multiple of 2) channels

Note：1、The product consists of main module, direct access module and transformer access module；

2、The product leaves the factory according to the module combination method；

3、The maximum combination of products can achieve 12 three-phase measurements (3 single-phase can be converted into 1 three-phase loop)；

■ Product Module Description



Main module

1、Three-phase 3*220/380V power supply to provide working power for the back-end measurement module；

2、Man-machine interface: LCD and button programming;

3、Infrared communication；

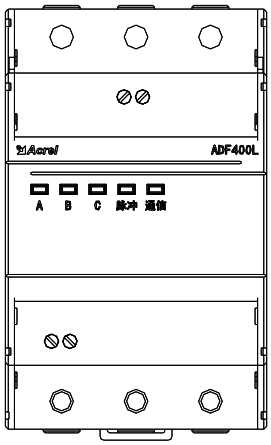
4、RF card swiping (IC function)；

5、2 RS485 network communication (*C function)；

6、RS485 communication for No. 3 extended wireless module (RJ45 connection mode)；

7、Up to 2DI/2DO (K function)；

8、Up to 1 Ethernet communication (CE function)；

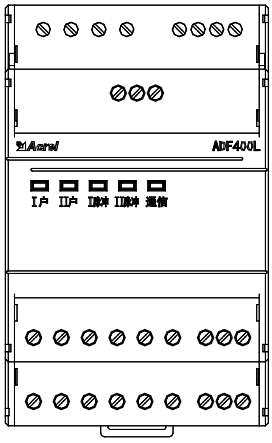


Direct access to the measurement module

1、It can realize one-way three-phase 3*10 (80) measurement or three-way single-phase 10 (80) A measurement;

2、1 active energy pulse output;

3、Three-phase working status, pulse and communication status LED indication;



Transformer access measurement module

1、Two-way three-phase 3*1 (6) A measurement can be realized;

2、2 active energy pulse output;

3、2 three-phase working status, pulse and communication status LED indication;

4、Up to 4DI/4DO function (K function);

Product Functions

■ Prepaid

Function	Function description
Energy metering	Total active energy, forward and reverse active energy, multi-rate active energy measurement
Electricity measurement	U、I
	P、Q、S、PF、F
LCD display	8-digit segment LCD display, backlight display
Button programming	Key programmable communication, number of loops, single three-phase mode, external control mode and other parameters
Pulse output	Active pulse output
Multiple rate	Support 4 time zones, 2 time slots, 14 daily time slots, 4 rates
	Date, time, day of the week
Main module	Infrared communication
Communication	Up to 3 channels of communication: RS485 interface，Also support Modbus
Prepaid agreement (remote, radio frequency card)	Cost control (including forward active power and reverse active power)
	Time control
	Negative control (malignant load identification)
	Strong control
Recharge record	20 Article

■ Metering type

Function	Function description
Display method	LCD（Field）
Energy metering	Active energy metering（Forward and reverse），Reactive power measurement（Forward and reverse）
Electricity measurement	Voltage, current (zero sequence current), power factor, frequency, active power, reactive power, apparent power
Harmonic function	Total harmonic content, sub-harmonic content (2～31 times)
Three-phase unbalance	Voltage and current unbalance
DI/DO	Main module 2DI2DO
	Transformer access to the slave module 2DI4DO (direct access to the slave module without)
LED Instructions	Pulse light indication
Communication	Infrared communication
	RS485 interface (main module) supports MODBUS
Historical power	Historical Electricity in Last December

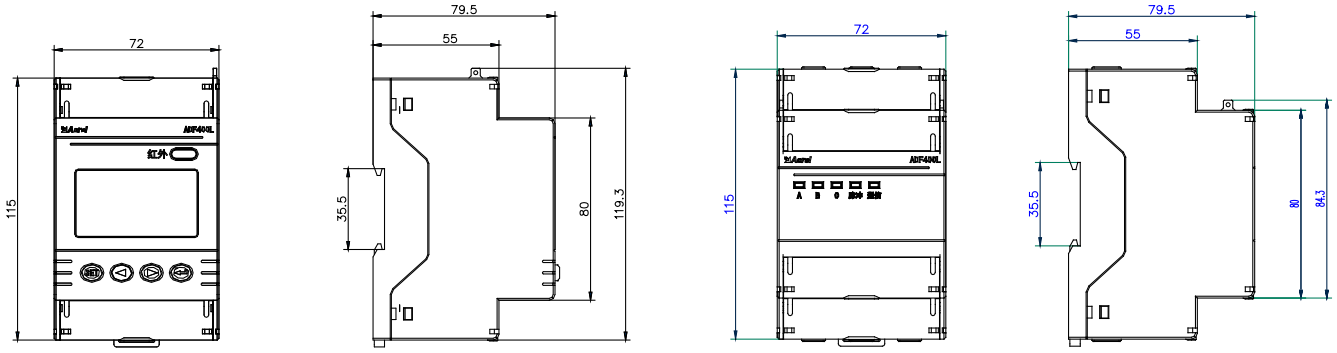
Technical Parameter

Technical Parameter / Model		ADF400L-□H□S□D(Y)- □
Auxiliary power	Voltage	Three-phase 3*220V/380V power supply (for single-phase power supply, short-circuit terminals 1, 2, and 3 on the instrument)
	Power consumption	≤10W
Voltage input	Rated voltage	3×220/380V、3×57.7/100V、
	Reference frequency	50Hz
Current input	Input Current	3×1(6)A(Instrument transformer access), 3*10 (80) (direct access)
	Starting current	1‰Ib
Measuring performance	Measurement accuracy	0.5s level
	Clock accuracy	≤0.5s/d
Pulse	Pulse output	Each three-phase metering module has 1 active energy pulse
	Pulse Width	80ms±20ms
	Pulse constant	3×1(6)A specification 6400 imp/kWh
		3×10(80)A specification 400 imp/kWh
Switch	Main module	Main module 2DI+2DO，Among them, DI is dry contact input
	Slave module	Transformer access slave module 4DI+4DO，Among them, DI is 220V wet contact input
Communication	Infrared interface	Infrared communication
	RS485 interface	MODBUS-RTU
	Ethernet interface	Modbus-TCP、TCP/IP
Surroundings	Temperature	Operating temperature：-20℃~+60℃， storage temperature：-30℃~+70℃
	Humidity	≤95%RH，No condensation, no corrosive gas place
	Altitude	≤2000m

Outline and installation dimensions (unit: mm)

The electric energy meter should be installed in a ventilated and dry place indoors, using 35mm standard guide rail installation.

■ Dimensions



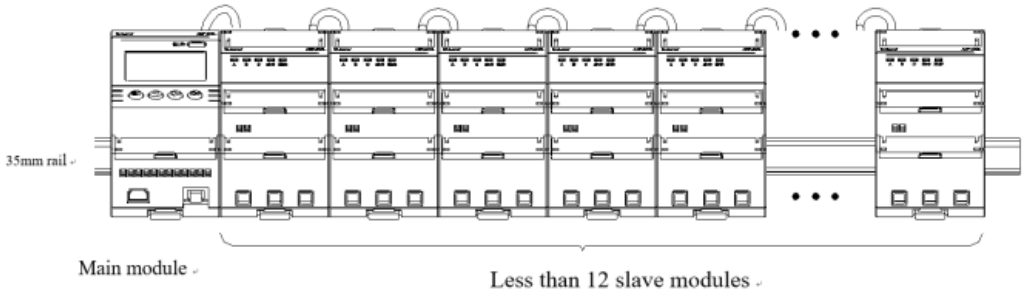
Main module size

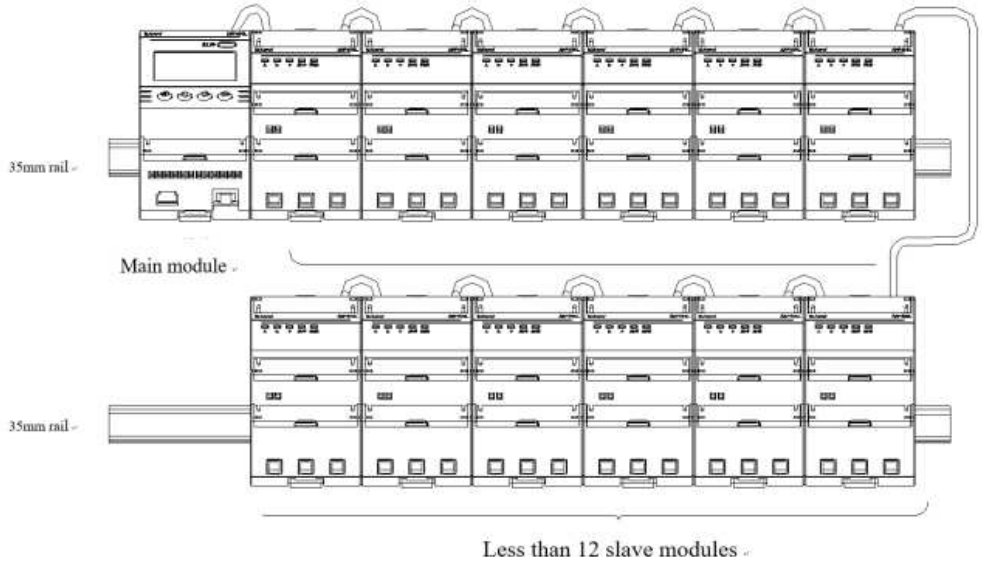
Slave module (direct access or transformer access module) size

■ Module combination installation method

The connection method between the master module and the slave module is connected by a network cable, and the connection network cable needs to use the meter's own network cable;

◆ The slave modules are directly connected to the module:



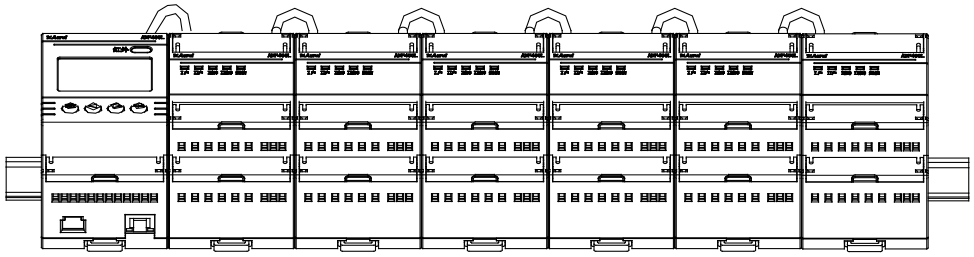


Note:

1、When the module is installed in multiple rows, refer to the connection method of double row installation in 5.2.1;

2、When there are three-phase and single-phase applications in the module at the same time, the order of arrangement is, main module three-phase direct access module single-phase direct access module;

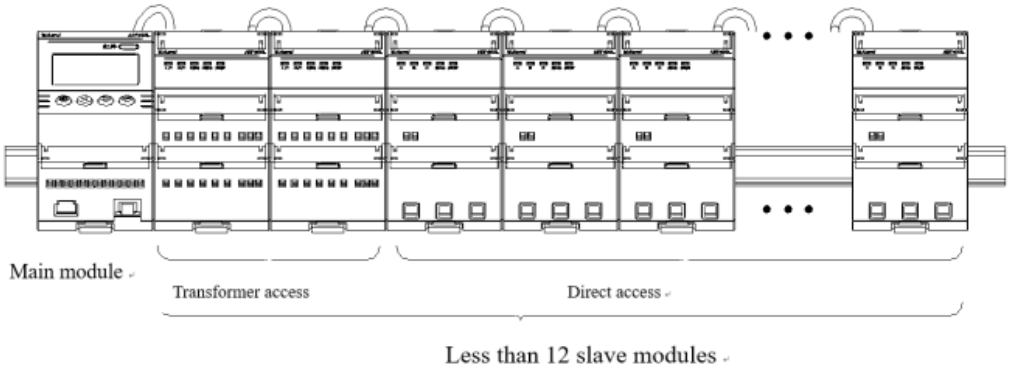
◆ The slave modules are all transformer access modules:



Note:

Refer to the connection method of double-row installation in 5.2.1 when the module is installed in multiple rows;

◆ The slave module is a mixed connection of the secondary access measurement module and the direct access measurement module:



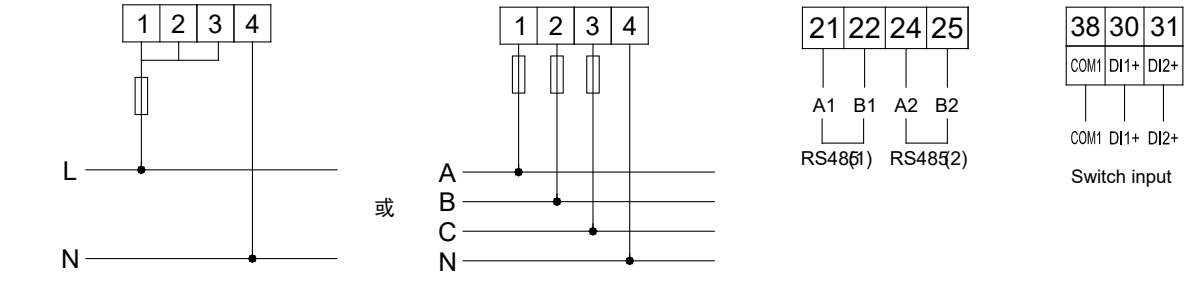
Note:

1、When the module is installed in multiple rows, please refer to 5.2.1 for the connection method of double row installation.;

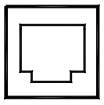
2、When there are three-phase and single-phase applications in the direct module at the same time, the order of arrangement is: main module mutual inductor access module three-phase direct access module single-phase direct access module

Wiring and installation

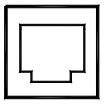
■ Main module



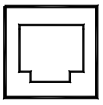
RS485

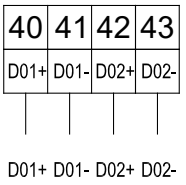


LAN

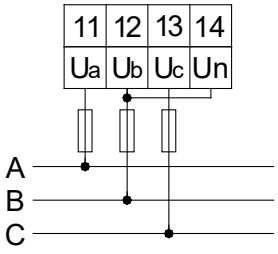


BUS-M

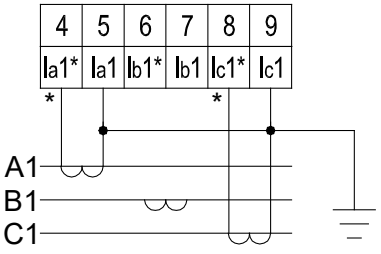




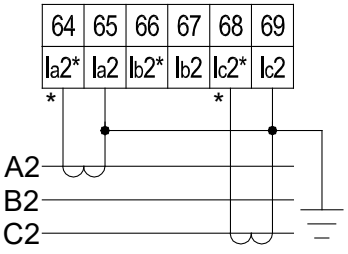
■ Transformer access module



Voltage signal input

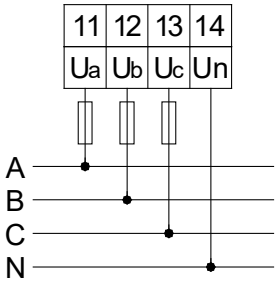


The first current input

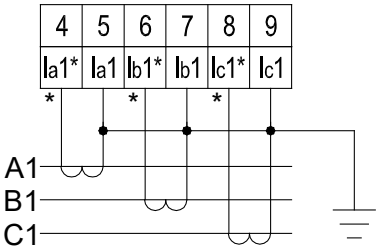


The second current signal input

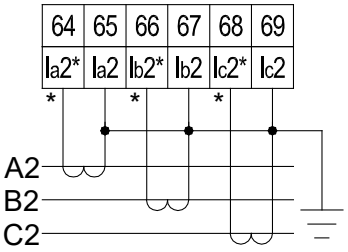
Three-phase three-wire



Voltage signal input

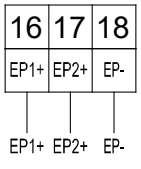


The first current input

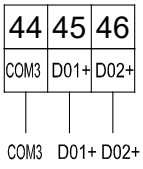


The second current signal input

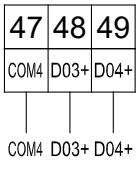
Three-phase four-wire



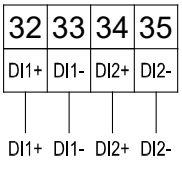
Energy pulse output



The first relay output

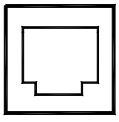


The second relay output

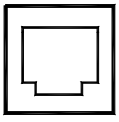


The third relay output

BUS-S1

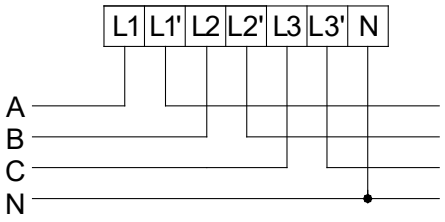


BUS-S2

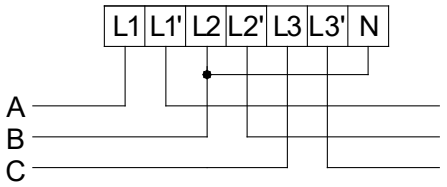


Modbus Communication port (with power supply)

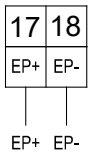
■ Direct access to the module



Three-phase four-wire connection

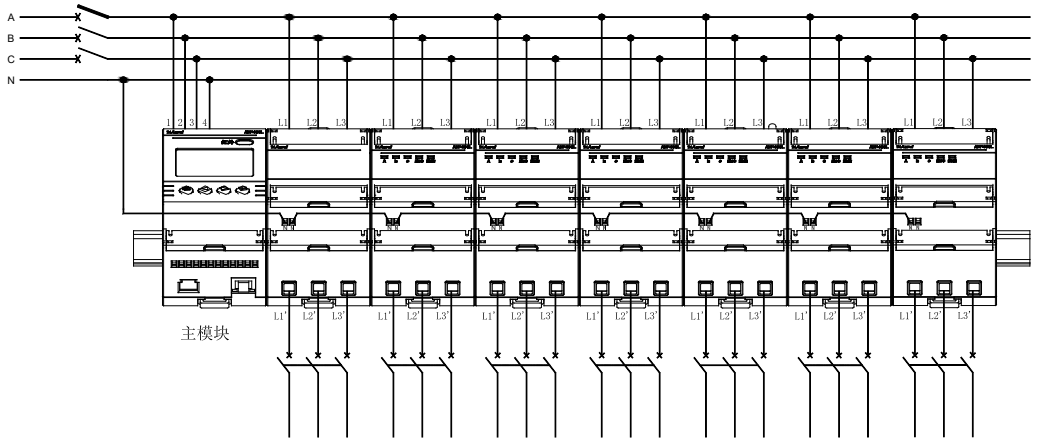


Three-phase three-wire wiring

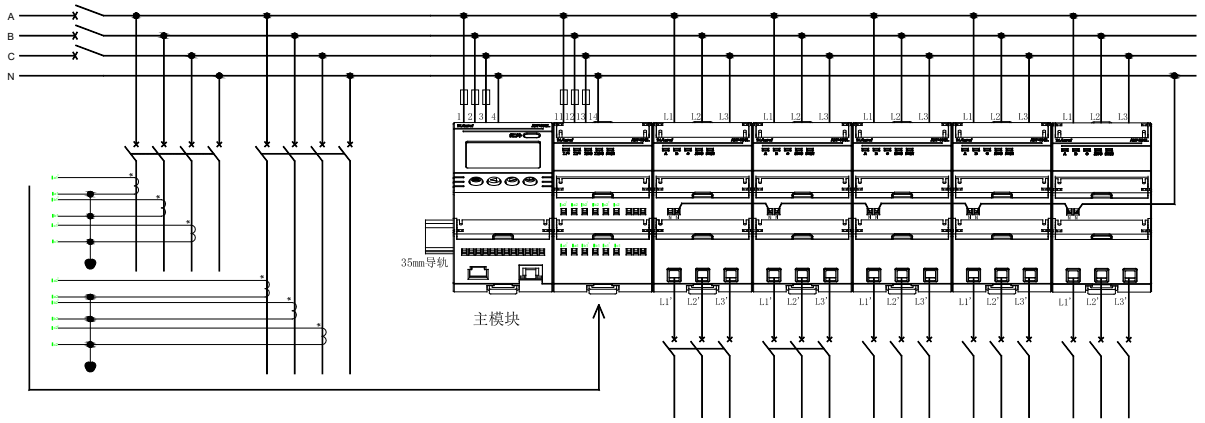


Active energy pulse output

■ Wiring diagram



36-channel single item direct access diagram



2 channels of transformer access + 2 channels of three items direct access + 6 channels of single item direct input

Button programming

Under any display item in the measurement display menu, press (SET) display “0000”, Prompt to enter the password (password default 0001) and then press (↵), If the password is entered incorrectly, it will return to the initial interface; if the password is entered correctly, you can set the parameters. After setting, press (SET) enter “SAvE” interface, Press (↵) appear “YES”、“NO” Options, “YES” Press down (↵) Then save and exit, when “NO” Press (↵) Then exit without saving. The programming menu list is as follows:

First level menu	Second level menu	Meaning	Range
Addr 1	/	Mailing address settings 1	1、37、73、109（Add sequentially 36）.....
bAUd 1	/	Baud rate selection 1	9600、4800、2400、1200
Addr2	/	Mailing address settings 2	1、37、73、109（Add sequentially 36）.....
bAUd2	/	Baud rate selection 2	9600、4800、2400、1200
CodE	/	Password setting	0-9999
bLbrAt	/	Backlight setting	0-999
FCEn	/	Strong control enable	0：Disable；1：Enable；2：invalid
FCStA	/	Strong control state	0：disconnect；1：closure；2：invalid
HPHnUn	/	Number of transformer access circuits	0、2、4、6、8、10、12
SPHnUn	/	Number of three-phase circuits	0-12
dPHnUn	/	Number of single-phase circuits	0-36
do	/	Relay settings	L：Level output；P：Pulse output
Line	/	Line selection	3P4L：Three-phase four-wire；3P3L：Three-phase three-wire
PtCt	Pt	Voltage transformation ratio setting	1-9999
	Ct 1	Current ratio setting 1	1-9999
	Ct2	Current ratio setting 2	1-9999
	Ct3	Current ratio setting 3	1-9999
	Ct4	Current ratio setting 4	1-9999
	Ct5	Current ratio setting 5	1-9999
	Ct6	Current ratio setting 6	1-9999
	Ct7	Current ratio setting 7	1-9999
	Ct8	Current ratio setting 8	1-9999
	Ct9	Current ratio setting 9	1-9999
	Ct 10	Current ratio setting 10	1-9999
	Ct 11	Current ratio setting 11	1-9999
	Ct 12	Current ratio setting 12	1-9999
dbUGPASS	/	Debug function settings	0-9999(6606：Slave address rearrangement)
CESEt	GAtE, P1	Gateway IP address1,2	
	GAtE, P2	Gateway IP address 3, 4	
	nASK1	Subnet mask1,2	
	nASK2	Subnet mask 3, 4	
	, P1	Local IP address1,2	
	, P2	Local IP address 3,4	
	Port	Port	
EnCrYPt	/	Encryption switch settings	on: encryption on, oFF: encryption off
UEr	/	Software number and version number	