598

ADL200-NK Pre-paid energy meters

Installation and operation manual V1.2

Acrel Electric Co., Ltd

Declare

Acrel reserves the right to modify the product specifications herein without notification. Please consult the local agent about the latest specifications before placing a purchase order.

Manual revision record:

Date	older version	New version	modify content
2022.07.19		V1.0	First version
2023.7.15	V1.0	V1.1	1. change the input current from 10(60)A to 0.4-1(60)A;
2024.2.21	V1.1	V1.2	1. Delete Time control、Load control; 2. Delete Reactive electrical; 3. Modify mark in The key-press programmable menu.

Content

1 General

The ADL200-NK single-phase pre-paid watt-hour meter is used to measure single-phase AC active power with rated frequency of 50Hz. It has functions such as pre-paid control, load control, time control and RS485 communication. Its performance specifications meet GB/T17215.321-2008 standards. It is an ideal meter for reforming the traditional power consumption system and improving the power consumption management level. The product meets the requirements of enterprise standard Q31/0114000129C035-2017. “Enterprise Standard for Guide Rail Installation of Electricity meters”.

2 Main Function

Features	Function description
Energy Metering	Active power (positive and negative)
	Reactive power (positive and negative)
Electricity measurement	U、I
	P、Q、S、PF、F
LCD Display	8-digit segment LCD display, backlight display
Button Programming	3 Key programmable communication and other parameters
Pulse output	Active pulse output
Multi-tariff	Support 4 time zones, 4 time slots, 14 daily time slots, 4 rates
	Historical frozen data, power purchase records
	Date, time, day of the week
Communication	One RS485 interface, Modbus
Control	Prepaid control
	Coercive control

Note: 1. The time-related functions (including recharging rate and time control) should be selected as -F;

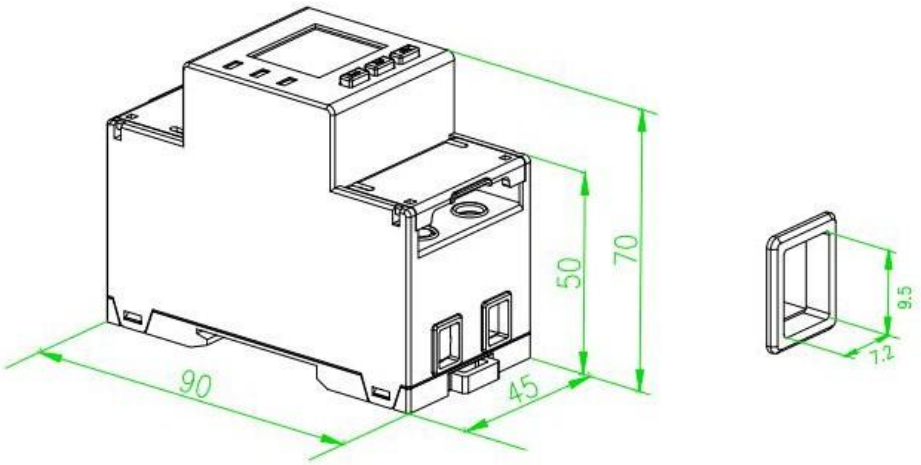
2. The functions of prepaid control shall be used in conjunction with the company's prepaid electricity sales management system.

3 Technical Parameter

Project			**ADL200-NK**
Technical parameter			
Measurement	Voltage	Reference voltage	220V
		Consumption	<10VA(single-phase)
		impedance	>2MΩ
		Accuracy	±0.2%
	Current	Input current	0.4-1(60)A
		Consumption	<4VA(Single channel rated current)
		Accuracy	±0.2%
	power		Active power, reactive power, apparent power, error ±0.5%
	frequency		45～65Hz，error±0.2%
Metering	electric energy		active electrical energy class B
	Clock accuracy		≤0.5s/d
Digital signal	Power pulse output		1 active power optocoupler output
Pulse	Pulse Width		80±20ms

	Pulse constant	1600imp/kWh
Communication	Interface and communication protocol	RS485 Interface：Modbus RTU communication
	Communication address range	Modbus RTU:1~ 247
	Baud rate	1200bps~19200bps
Work environments	Work temperature	-25℃~+55℃
	Storage Temperature	-40℃~+70℃
	Relative humidity	≤95% (No condensation)
	Altitude	<2000m

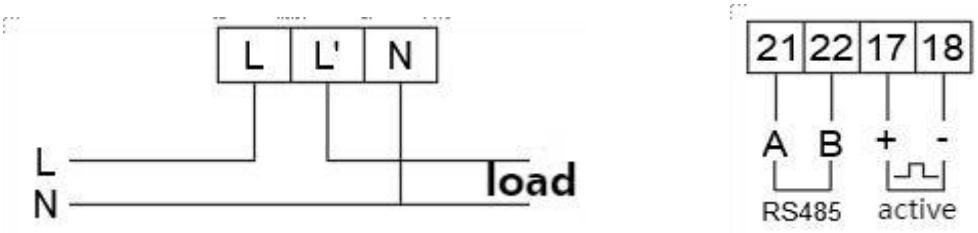
4 Outline and installation dimensions (unit: mm)



ADL200-NK Module size

Note：The torque of direct connect should not be greater than 2.0N·m.

5 Wiring and installing



0.4-1 (60) A Wiring diagram

6 Display and operation

6.1 Key function description

Key icon	name	function
	Voltage-current-power class Up key	View the voltage and current power in the interface Upturn and flicker shift in the programming interface
	Electric energy class Down key	View the electric energy in the interface Turn down and modify the flashing bit in the programming interface
	The amount class Programming determines the key	View the amount to view the electricity price in the interface Long press 3S to enter / exit the menu The programming interface is determined to save the settings

6.2 Display description

Show the remaining amount after the power-on. It can be displayed through three types of view keys. The order of various display pages is described as follows：

	Voltage, current, active power, reactive power, apparent power, power factor, frequency, MODBUS protocol address, wave rate, check bit；
	Total active power electric energy, total active power tip electric energy, total active power peak electric energy, total active power flat electric energy, total active power valley electric energy, date, time, software version number, full display detection；
	Remaining amount, remaining basic amount, alarm amount 1, Alarm amount 2, current electricity price, credit amount

6.3 Key programming

Under any display item in the Measurement Display menu， long press  to enter the PASS " interface， Enter the password and then press  ， If the password is wrong, return to "0000" to re-enter； If the password is entered correctly, the parameters can be set. After setting up  enter the SAVE interface， Select YES and then pressing  to save and exit， Select "no" and then press  then do not save directly exit.

The key-press programmable menu:

order	menu		
	mark	implication	range
1	Addr	Address Settings	1-247
2	bAUd	Baud rate selection	9600、4800、2400、1200
3	PARI	parity bits election	None、Odd、Even
4	CODE	Code settings	0-9999
5	LED	Backlit time	min
6	Ctrl	Strong control switch	

7 Communication description

ADL200-NK instrument communication interface supports MODBUS-RTU protocol, communication port port rate can be set between 1200bps, 2400 bps, 4800 bps, 9600bps and 19200 bps, check bit can be set to no check or even check.

MODBUS Communication address table：

Address	Data name	Data type	R/W	Notes
0000H	Current total active energy	UINT32	R	unit：0.01 kWh
0002H	Current spike active energy	UINT32	R	
0004H	Current peak active energy	UINT32	R	
0006H	Current flat active energy	UINT32	R	
0008H	Current valley active energy	UINT32	R	
000AH	Code	UINT16	R/W	effective range（0~9999）
000BH	U Voltage	UINT16	R	unit：0.1 V
000CH	I Current	UINT16	R	unit：0.01 A
000DH	P Active power	INT16	R	unit：0.001 kW
000EH	Q Reactive power	INT16	R	unit：0.001 kvar
000FH	S Apparent power	UINT16	R	unit：0.001 kVA
0010H	PF Power factor	INT16	R	Calculation factor：0.001 effective range（-1000~1000）
0011H	Frequency	UINT16	R	unit：0.01Hz
0012H	Year, month	UINT8×2	R/W	
0013H	Day, hour	UINT8×2	R/W	
0014H	Minute, second	UINT8×2	R/W	
0015H-003BH	Reserved			
003CH	Current forward total active energy	UINT32	R	unit：0.01 kWh
003EH	Current reversing total active energy	UINT32	R	
0046H	Alarm amount 1	INT32	R/W	unit：0.01 yuan
0048H	Alarm amount 2	INT32	R/W	
004AH	amount owed on credit	UINT32	R/W	
004CH	New purchase amount	INT32	R	
004EH	Number of electricity purchases	UINT16	R	range（0~1000）
004FH	Residual amount	INT32	R	unit：0.01 yuan
0051H	Total amount of electricity purchased	INT32	R	
0053H-0056H	Reserved			
0057H	Mandatory control word	UINT16	R/W	0001：Strong-control opening 0000：Strong-control closure
0058H	Split and close control word	UINT16	R/W	0000：Forced closing 0001：Forced trip
0059H-0060H	Peak flat valley electricity price	UINT32×4	R/W	Unit:0.0001 yuan

0061H	Current threshold	UINT16	R/W	Unit:W
0062H	Running status word	UINT16	R/W	
0063H	Output mode	UINT16	R/W	0000：Level output 0001：Pulse output
0064H-035FH	Reserved			
0360H	Main communication ：Communication address and baud rate	UINT8×2	R/W	Address：1~247 Baud rate 0:1200 1:2400 2:4800 3:9600 4:19200 5:38400
0361H	Check bit/ stop bit	UINT8×2	R/W	Check bit： 0：None 1：Odd 2：Even stop bit： 0:1 1:1.5 2:2
0362H-0364H	645 Table No. []	UINT8×6	R/W	BCD Code
0365H	Communication address and baud rate	UINT8×2	R/W	Communicate with the main parameter
0366H	Check bit/ stop bit	UINT8×2	R/W	
0367H-0369H	645 Table No. []	UINT8×6	R/W	
036AH-1FFFH	Reserved			
2000H	Time table number in time zone 1 Time zone 1 Start time: Day Time zone 1 Start time: month ... Time zone 4 Indicates the time table number Time Zone 4 Start time: Day Time Zone 4 Start time: Month	UINT8×12	R/W	Time table number: 01 corresponds to the first set 02 corresponds to the second set
2006H	First set of time tables: Period 1 rate number Start time of period 1: min Start time of Period 1: hour ... Period 14 rate number The start time of the 14th session: minutes Period 14 Start time: hour	UINT8×42	R/W	Rate number: 01 corresponding tip 02 corresponding peak 03 corresponding square 04 corresponding valley
201BH	The second set of time tables:	UINT8×42	R/W	Rate number:

	Period 1 rate number Start time of period 1: min Start time of Period 1: hour ... Period 14 rate number The start time of the 14th session: minutes Period 14 Start time: hour			01 corresponding tip 02 corresponding peak 03 corresponding square 04 corresponding valley

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