

# Installation and operation instruction V1.0

ADL100-EY

ADL300-EY



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## 1 General

ADL100-EY single phase pre-paid meters with intro-control, ADL300-EY three phase pre-paid meters with intro-control are used for calculating the single and three phase active energy respectively on the frequency of 50 Hz. The meter has functions of pre-paid, load controlling and RS485 communication etc. meet the related technical requirements of electronic power meter in the IEC62053-21, IEC62053-22 standards.

## 2 Model description

Moel	Model Description
ADL100-EY/RF	Single phase,RF card charging,external control
ADL100-EY/NK	Single phase, remote recharge, with intro-control
ADL100-EY/Z	Single phase, RF card charging, with intro-control
ADL300-EY/RF	Three phase,RF card charging, external control
ADL300-EY/NK	Three phase, remote recharge, with intro-control
ADL300-EY/Z	Three phase, RF card charging, with intro-control

## 3 Product specification

Type	Accuracy class	Reference voltage	Current (A)	Pulse constant (imp/kWh)
ADL300-EY	0.5s	3×220/380V	3×1 (6) A	6400
			3×10 (80) A	400
ADL100-EY	1	220V	10 (60) A	1600

## 4 Main function

Function name	Function description		Function provide
	ADL300-EY	ADL100-EY	

Measurement of kWh	Total active kWh (positive and negative in total)	■
Measurement of electrical parameters	U、I、P、Q、S、PF、F	■
Pre-paid mode	Through RS485 communication prepaid recharge, data encryption	■
Control	Built-in high-capacity sub-holding relay to achieve load on-off control	■
LCD display	8 bits section LCD display	■
Communication	Communication interface: RS485, Communication protocol: MODBUS-RTU	■
Multi-tariff	4 tariff rates, 14 time interval by day	□F

( ■ : means standard; □ : means optional )

**Note: Pre-paid mode function can only be achieved with the pre-paid system which designed by Acrel Co.,Ltd.**

## 5 Technical parameter

### 5.1 Electric performance

Technical parameter		ADL300-EY	ADL100-EY
Voltage	Reference voltage	3×220/380V	220V
	Reference frequency	50Hz	
	Consumption	<4VA(Each phase)	
Current	Input current	1(6)A ,10(80)A	10(60)A
	Starting current	Connect directly: 0.004 Ib, connect via CT: 0.002In	
	Consumption	<4VA (Maximum current)	
Measurement performance	Accuracy of measuring	0.5s Class	1 Class
Clock accuracy		Error ≤0.5s/d	
Active pulse	Pulse width	80ms±20ms	
	Pulse constant	6400imp/kWh,400 imp/kWh	1600imp/kWh
Communication	Interface	RS485(A+、 B-)	
	Connection mode	Shielded twisted pair conductors	
	Protocol	MODBUS-RTU	

### 5.2 Mechanical performance

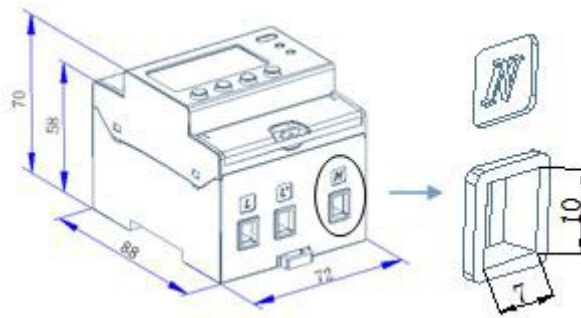
Mechanical performance	ADL300-EY	ADL100-EY
Outline (Length × Width × Height)	144mm×88mm×70mm	72mm×88mm×70mm
Maximum wiring ability (flexible cable)	25mm <sup>2</sup>	

### 5.3 Work environment

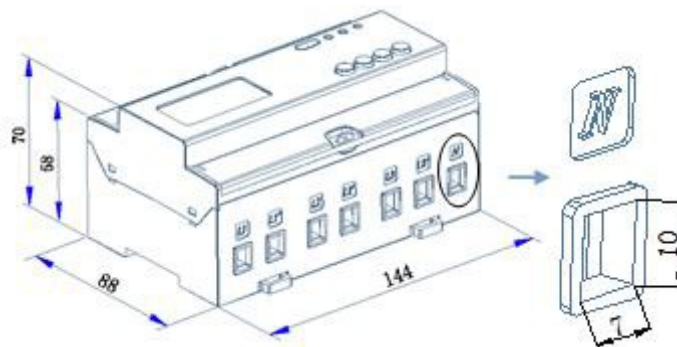
Temperature range	Work temperature	-25°C~55°C
	Storage Temperature	-40°C~70°C
Relative humidity		≤95% (No condensation)
Altitude		<2000m

### 6 Dimension drawings (Unit: mm)

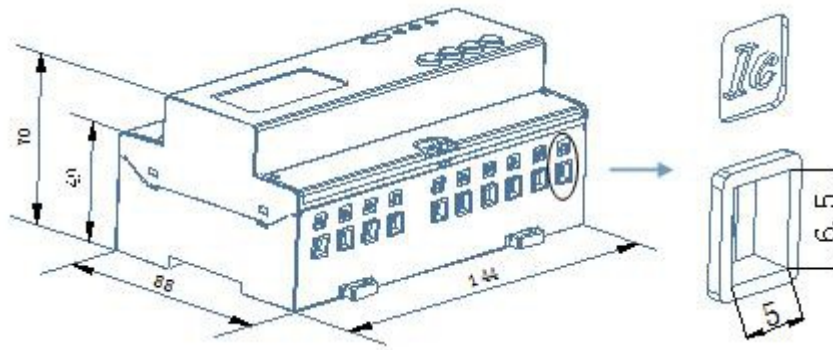
#### ADL100-EY



#### ADL300-EY



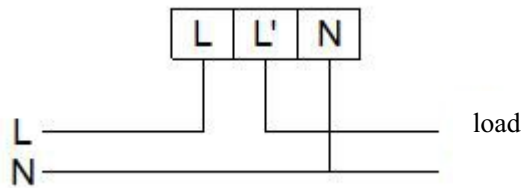
direct connect



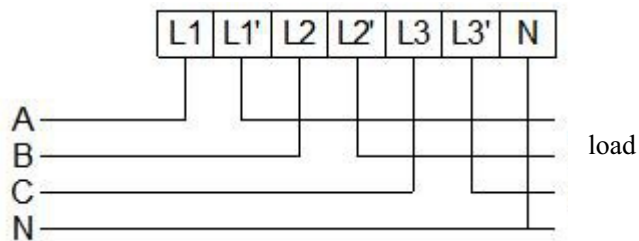
connect via CT

Note: The torque of direct connect should not be greater than  $4.0N \cdot m$ , and the torque of connect via CT should not be greater than  $2.0N \cdot m$ .

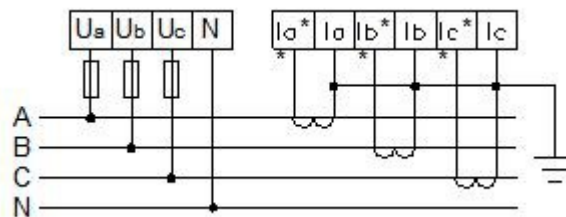
### 7 Wiring and installing



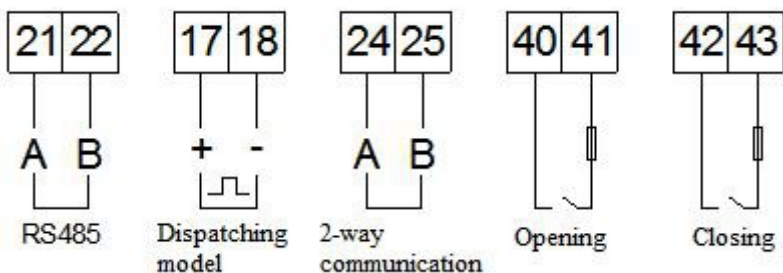
ADL100-EY



ADL300-EY Three phase four lines direct connect



ADL300-EY Three phase four lines connect via CT



Auxiliary function

## 8 Display and operation

### 8.1 Display examples



dump energy



Total Power



Voltage display



Current Display



Table number (High six bit)



Table number (Low six bit)

## 9 Communication description

### 9.1 Communication protocol

The meters adapt Modbus and DL/T645 protocol. Please refer to the relevant standards for more information. The multi-tariff data mean nothing when multi-tariff function (F) is not applied.

### 9.2 MODBUS mailing address list

ADL100-EY mailing address list

Address	Variable	Length	R/W	Notes
0000H	Current total electricity	4	R	unit: 0.01kWh

0002H	Current spike electric energy	4	R	
0004H	Current peak electric energy	4	R	
0006H	Current flat electric energy	4	R	
0008H	Current valley electric energy	4	R	
000AH	Code	2	R/W	
000BH	Voltage U	2	R	
000CH	Current I	2	R	
000DH	Active power P	2	R	unit: 0.001Kw
000EH	Reactive power Q	2	R	unit: 0.001Kvar
000FH	Apparent power S	2	R	unit: 0.001Kva
0010H	power factor PF	2	R	Calculation factor: 0.001 effective range (-1000~1000)
0011H	Frequency	2	R	unit: 0.01Hz
0012H	Year, month	2	R/W	
0013H	Day, hour	2	R/W	
0014H	Minute, second	2	R/W	
0015H ... 003BH	Reserved			
003CH	Current forward active total electric energy	4	R	
003EH	Current reversing active total electric energy	4	R	
0040H-03 5FH	Reserved			
0360H	Main communication : Communication address and baud rate	2	R/W	Address: 1~247 Baud rate: 0:1200 1:2400 2:4800 3:9600 4:19200 5:38400
0361H	Main communication: Check bit stop bit	2	R/W	Check bit: 0: No check 1: Odd 2: Parity check Stop bit: 0:1 1:1.5 2:2



0362H-03 64H	645Address[]	6	R/W	BCD
0365H	The second communicate: Communication address and baud rate	2	R/W	The same as the ADL100-EY
0366H	The second communicate: Check bit stop bit	2	R/W	
0367H-03 69H	The second communicate: 645Address[]	6	R/W	
036AH ... 1FFFH	Reserved			
2000H ... 2005H	4 time zones	3×4	R/W	Time zone table
2006H ... 201AH	14-period of time Parameters setting information	3×14	R/W	The first time list
201BH ... 2029H	14-period of time Parameters setting information	3×14	R/W	The second time list

#### ADL300-EY mailing address list

Address	Variable	Length	R/W	Notes
0000H	Current total electricity	4	R	unit:0.01kWh
0002H	Current spike electric energy	4	R	
0004H	Current peak electric energy	4	R	
0006H	Current flat electric energy	4	R	
0008H	Current valley electric energy	4	R	
000AH-000CH	Date, time	6	R/W	second、minute、hour、day、month、year
000DH-0027H	Reserved			
0028H	4 time zones	12	R/W	Time zone table
002EH	Voltage of A phase	2	R	unit: 0.1V
002FH	Voltage of B phase	2	R	

0030H	Voltage of C phase	2	R	
0031H	Electricity of A phase	2	R	unit: 0.01A
0032H	Electricity of B phase	2	R	
0033H	Electricity of C phase	2	R	
0034H	Voltage between A-B	2	R	unit: 0.1V
0035H	Voltage between C-B	2	R	
0036H	Voltage between A-C	2	R	
0037H	Voltage transfer	2	R/W	Value range (0~9999)
0038H	Current transfer	2	R/W	Value range (0~9999)
0039H-003BH	Reserved			
003CH	Level 1 password	2	R/W	Value range (0~9999)
003DH	Level 2 password	2	R/W	Value range (0~9999)
003EH-0043H	Reserved			
0046H	The alarm value 1	4	R/W	unit: 0.01 Yuan
0048H	The alarm value 2	4	R/W	
004AH	Credit amount	4	R/W	
004CH-0063H	Reserved			
0064H	demand	2	R	unit: 0.001kW
0065H	PA	4	R	unit: 0.001kW
0067H	PB	4	R	
0069H	PC	4	R	
006BH	PT	4	R	
006DH	QA	4	R	unit: 0.001kvar
006FH	QB	4	R	
0071H	QC	4	R	
0073H	QT	4	R	
0075H	SA	4	R	unit: 0.001kVA
0077H	SB	4	R	
0079H	SC	4	R	
007BH	ST	4	R	

007DH	PFA	2	R	Calculate the factor: 0.001 effective range (-1000~1000)
007EH	PFB	2	R	
007FH	PFC	2	R	
0080H	PFT	2	R	
0081H	Freq	2	R	Calculate the factor: 0.01
0082H-035FH	Reserved			
0360H	Main communication: Communication address and baud rate	2	R/W	The same as the ADL100-EY
0361H	The main communication: Check bit/ stop bit	2	R/W	
0362H-1FFFH	Reserved			
2000H	14-period of time Parameters setting information	42	R/W	The first time list
2015H	14-period of time Parameters setting information	42	R/W	The first time list

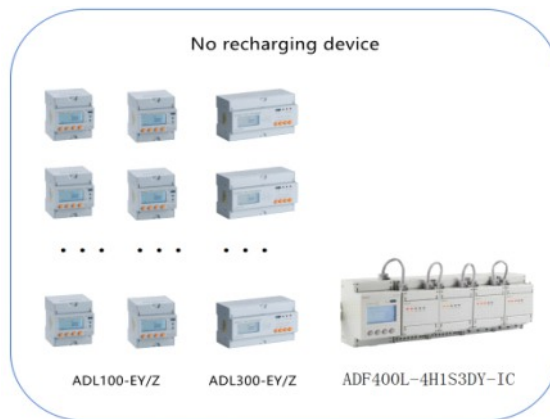
There will not be control command because of the page limited, if there are any demand of these command, contact us with no hesitate.

# Prepaid Solution

## Application

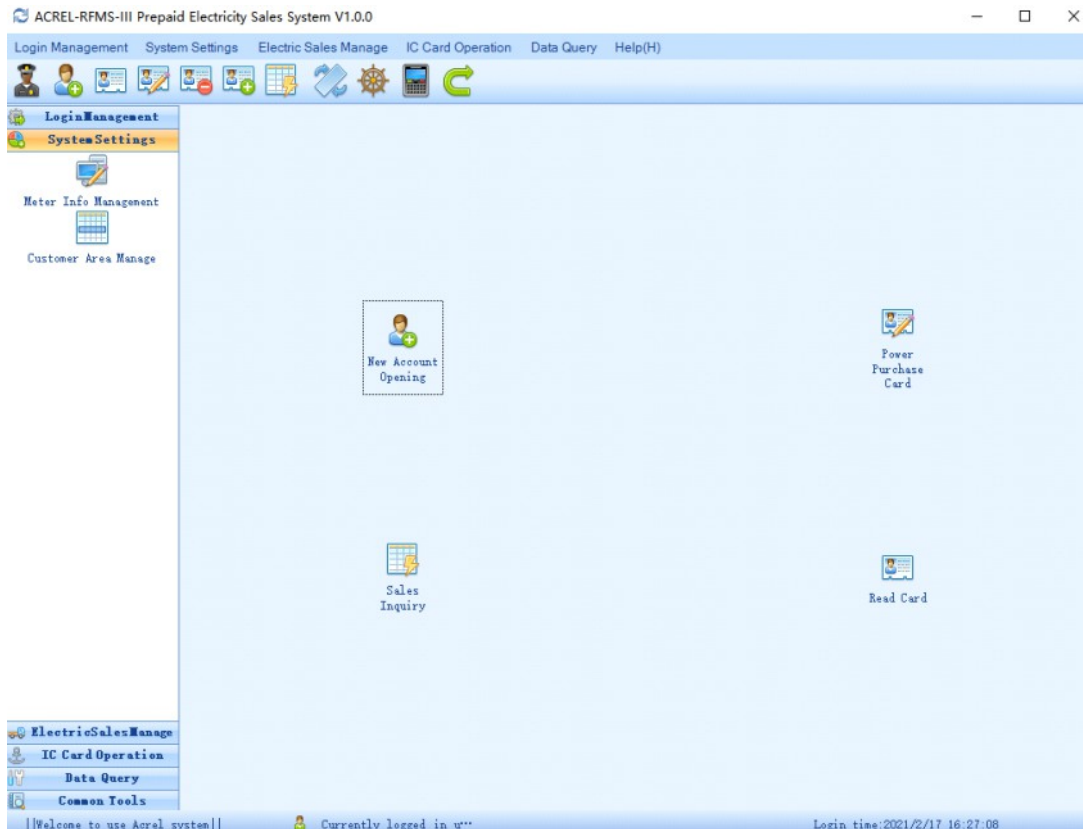


## Structure

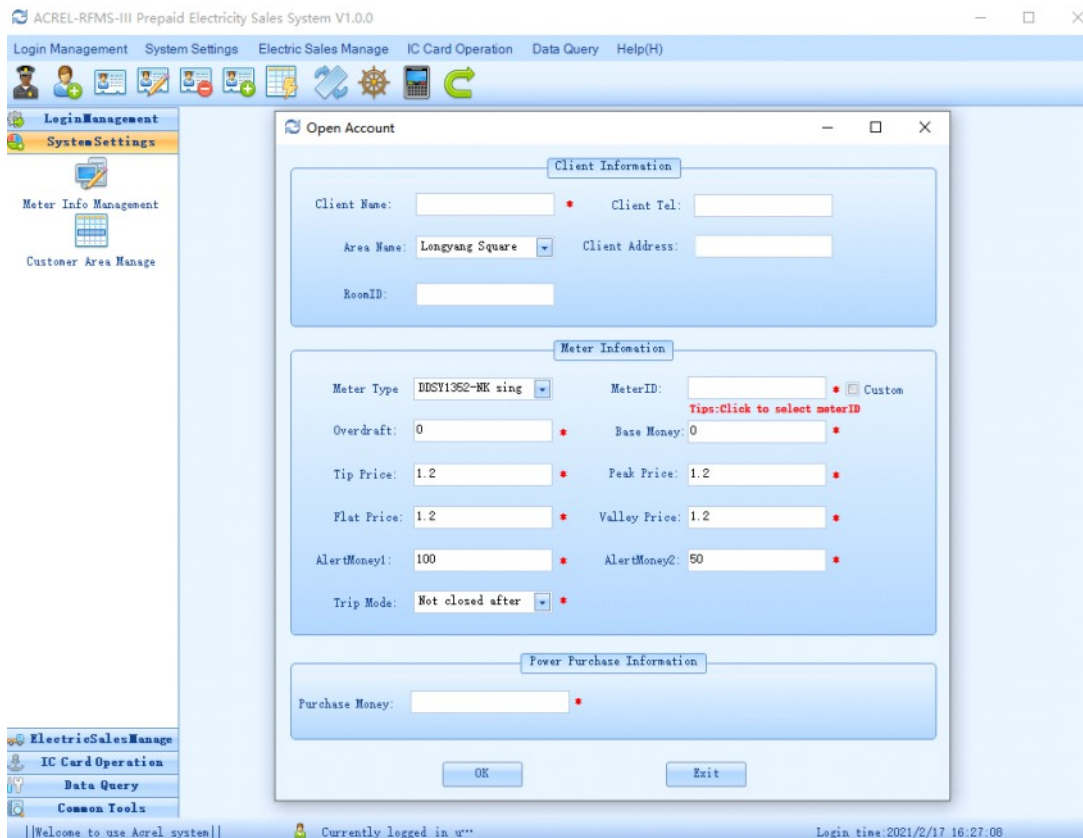


## Main Functions

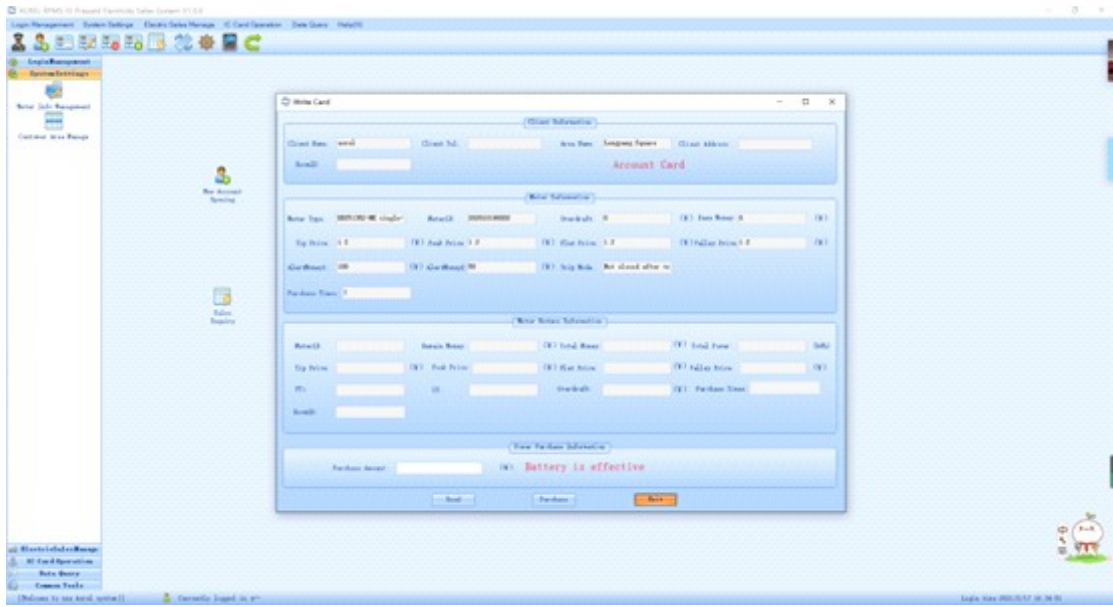
Card recharge software overview



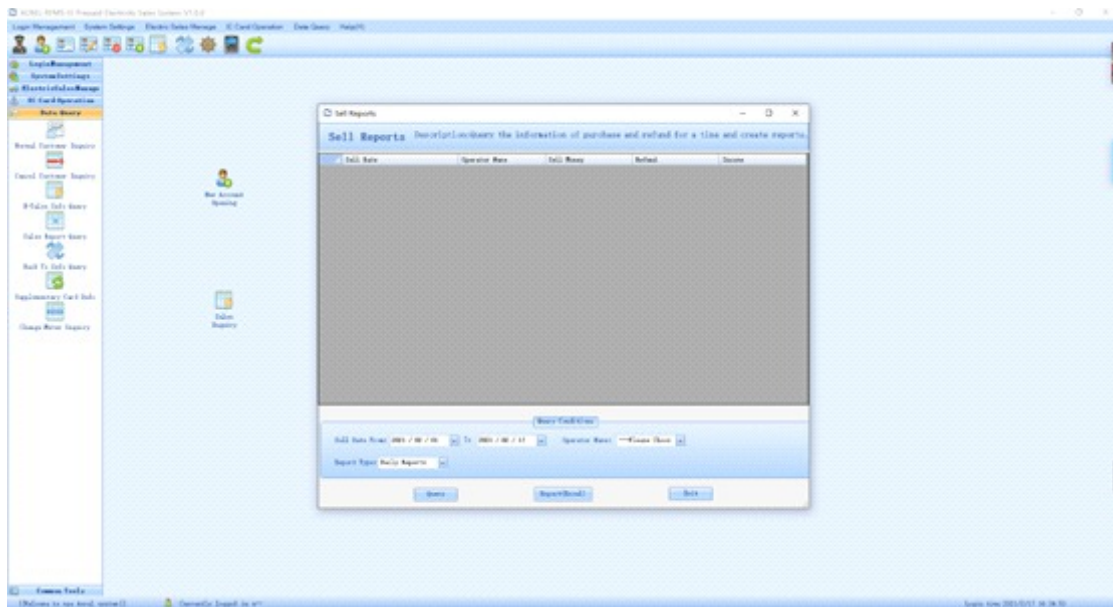
## Open account



## Electricity recharge



Electricity recharge report



	M&W	Card reader
	Acrel -RFMS	Prepaid recharge software