519

# ADL100-EY、ADL300-EY

# Installation and operation instruction V1.0

**ACREL Co,.Ltd**

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# Declare

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# Contents

1 General.....1

2 Model description.....1

3 Product specification.....1

4 Main function.....1

5 Technical parameter.....2

6 Dimension drawings (Unit: mm).....3

7 Wiring and installing.....4

8 Display and operation.....5

9 Communication description.....5

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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 | |



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| | | |
|---|---|---|
| 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$^2$ | |



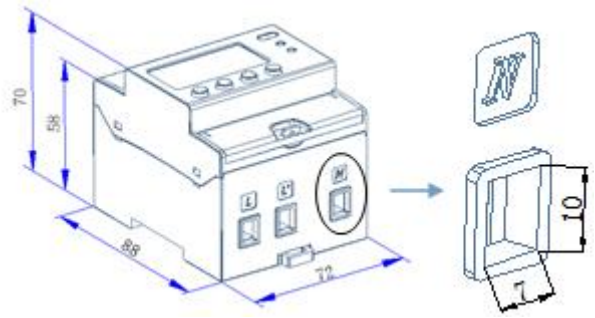
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5. 3 Work environment

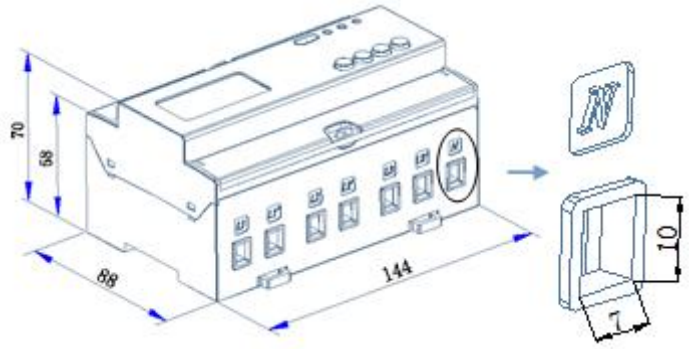
| | | |
|---|---|---|
| Temperature range | Work temperature | -25℃~55℃ |
| | Storage Temperature | -40℃~70℃ |
| Relative humidity | | ≤95%）(No condensation) |
| Altitude | | <2000m |

## 6 Dimension drawings (Unit: mm)

ADL100-EY



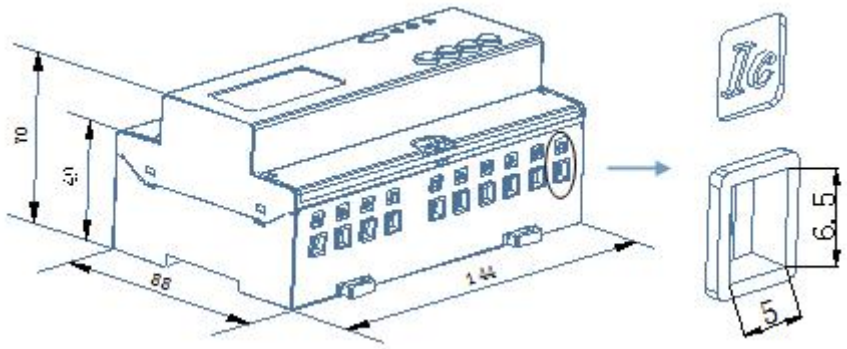

ADL300-EY




derect connect



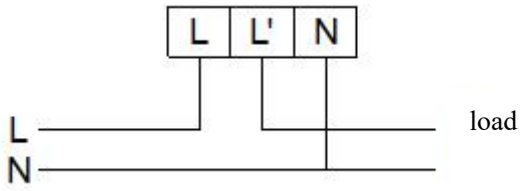
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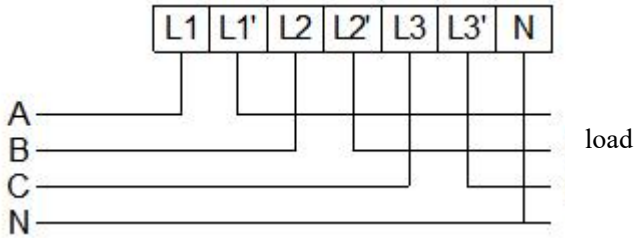

connect via CT

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

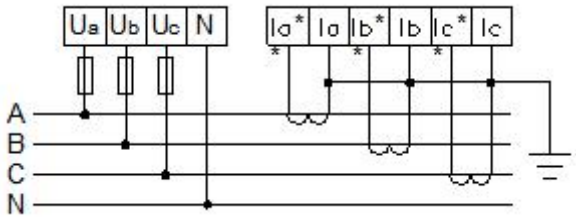
## 7 Wiring and installing




ADL100-EY



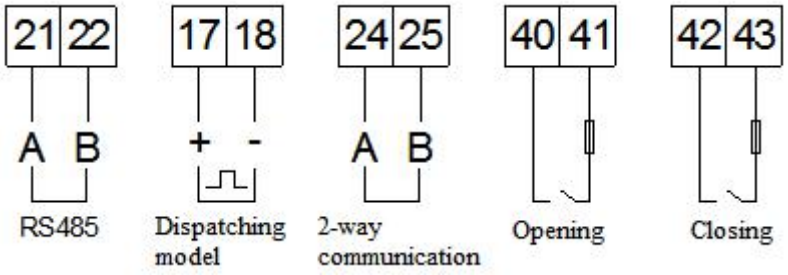

ADL300-EY Three phase four lines direct connect




ADL300-EY Three phase four lines connect via CT



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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 |



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| | | | | |
|---|---|---|---|---|
| 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-035FH | Reserved | | | |
| 0360H | Main communication ： Communication address and baud rate | 2 | R/W | Address：1~247<br>Baud rate:<br>0:1200<br>1:2400<br>2:4800<br>3:9600<br>4:19200<br>5:38400 |
| 0361H | Main communication： Check bit stop bit | 2 | R/W | Check bit：<br>0：No check<br>1：Odd<br>2：Parity check<br>Stop bit：0:1<br>1:1.5<br>2:2 |



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| | | | | |
|---|---|---|---|---|
| 0362H-0364H | 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-0369H | 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 | |



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| | | | | |
|---|---|---|---|---|
| 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 | |



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| | | | | |
|---|---|---|---|---|
| 007DH | PFA | 2 | R | Calculate the factor：0.001<br>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.



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