Acrel

ARD2 Smart Motor Protector

Technical parameter

Technical parameter	Value	
Auxiliary power supply	AC85~265V/DC100~350V,power comsumption 15VA	
Rated voltage	AC380V/AC660V,50Hz/60Hz	
Rated current	1A(0.1A-999.9A)	Small special current transformers
	5A(0.IA-999.9A)	
	1.6A(0.4A-1.6A)	
	6.3A(1.6A-6.3A)	
	25A (6.3A-25A)	
	100A (25A-100A)	
	250A (63A-250A)	
	800A (250A-800A)	Special current transformers
Relay output contactor, rated negative capacity	4 channels,AC 250V,3A	
Switching input	2 channels,opto-coupler isolation	
Communication	RS485(Modbus-RTU)	
Environment	Operation temperature	-10℃~55℃
	Storage temperature	-20℃~60℃
	Relative humidity	5%~95% (No condensation)
	Altitude	≤2000m
Class of pollution	Level 2	
Protection level	Main module IP 20	
Installation category	Class III	

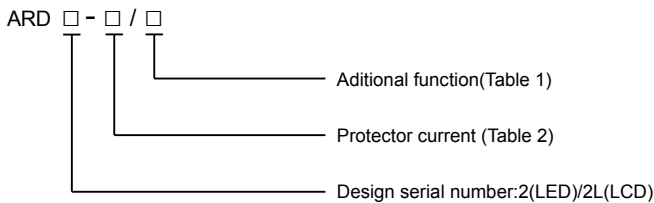## Overview

ARD2 smart motor protector can protect the motor during the running and provide the SOE fault event recorder. It is equipped with the RS485 remote communication interface and the DC4-20mA analog output, which is convenient to form a network system together with control machines like PLC and PC.

Model Description

ARD □ - □ / □

Aditional function(Table 1)

Protector current (Table 2)

Design serial number:2(LED)/2L(LCD)

Table 1 Additional function

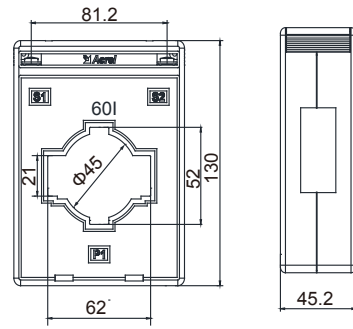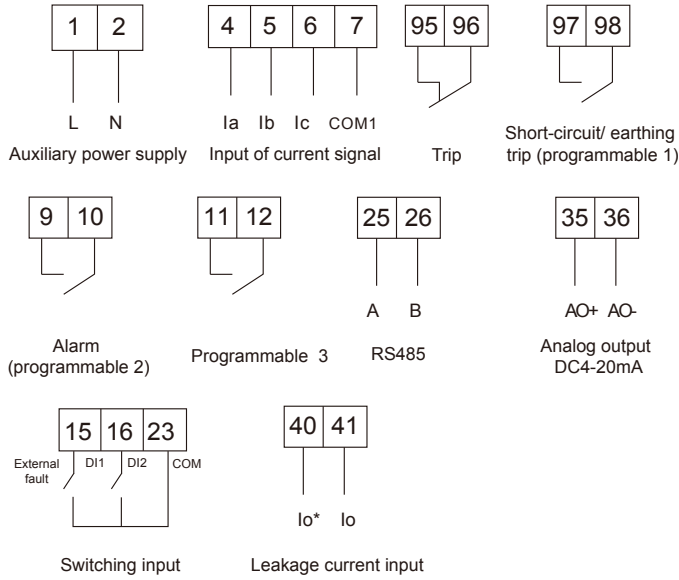| Additional features	Code
RS485(Modbus-RTU)	C
Leakage protection	L
4～20mA analog output	M
2 switch input; 1 relay output (programmable 3)	K
SOE record	SR
Alarm (programmable 2)	J

Table 3 Leakage current protection(L) list

Rated current(A)	CT type	CT aperture
≤100A	KB1:5A/5mA	Φ 46mm
100A-250A	KB2:5A/5mA	Φ 81mm
250A-800A	KB3:5A/5mA	Φ 150mm

Table 2 Rated current

Rated current（A）	Ratio setting	Transformer primary side turns	Setting current range（A）	Motor Power（kW）
1	Need	5	0.1～999.9	0.12～440
5		1	0.1～999.9	0.12～440
1.6	No need	1	0.4～1.6	0.12～0.55
6.3		1	1.6～6.3	0.75～2.2
25		1	6.3～25	3～11
100		1	25～100	15～45
250		1	63～250	55～132
800		1	250～800	160～440

Note:When the additional function is equipped with leakage protection'L', it is necessary to purchase leakage current transformer with different apertures according to the actual current.
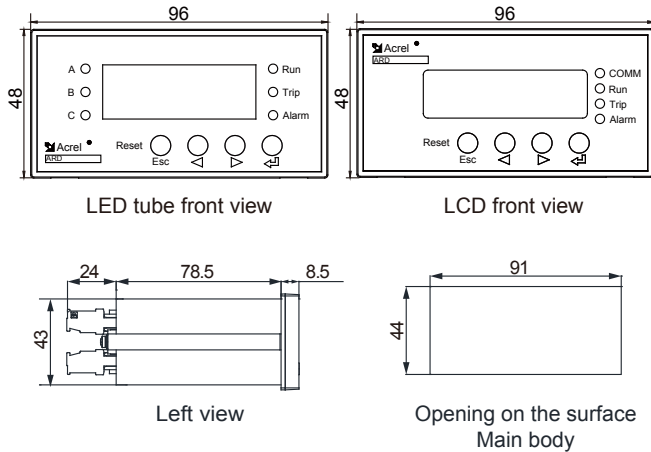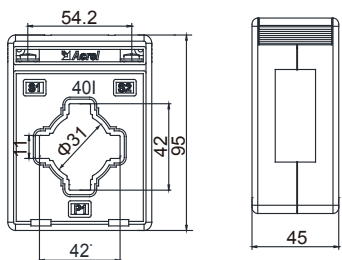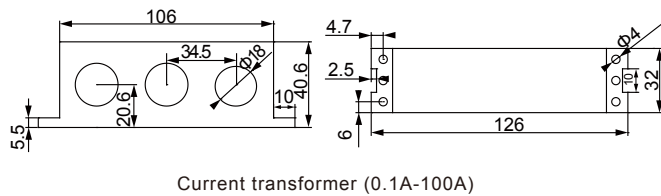
Installation and operation instruction

Wiring

1	2
L   N
Auxiliary power supply

4	5	6	7
Ia Ib Ic COM1
Input of current signal

95	96
Trip

97	98
Short-circuit/ earthing trip (programmable 1)

9	10
Alarm (programmable 2)

11	12
Programmable 3

25	26
A   B
RS485

35	36
AO+ AO-
Analog output DC4-20mA

15	16	23
External fault DI1 DI2 COM
Switching input

40	41
Io* Io
Leakage current input

Dimensions and Installation

■ Installation dimensions of protector(Unit: mm)

LED tube front view

LCD front view

Left view

Opening on the surface
Main body

■ Installation dimensions of transformer

Current transformer (0.1A-100A)

Current transformer (63A-250A)

Current transformer (250A-800A)

Leakage current transformer

Size / Standard	Current Specification (A)	Outline Dimension (mm)			Perforation Size(mm)	Installation Size (mm)			Tolerance (mm)	Weight (g)
		W	H	D	Φ	M	N	Φ2		
L-45	16-100	75	75	22	46	65	65	4	±1	200±10
L-80	100-250	120	120	23	81	105	105	4		380±20
L-150	400-800	196	205	24	150	175	180	6		850±50

■ Installation method
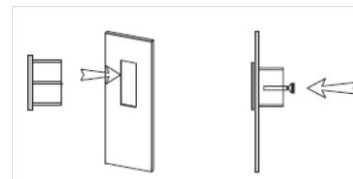
Installation of main body
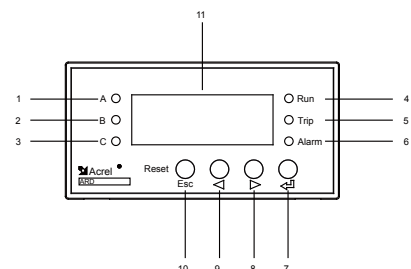
Operating and Display

■ Description of LED display

Installation and operation instruction

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Table 4

No.	Name	State	Function Description
1	Indicator light	On	When it is on, it indicates that 11 shows the current of phase A.
2	Indicator light	On	When it is on, it indicates that 11 shows the current of phase B.
3	Indicator light	On	When it is on, it indicates that 11 shows the current of phase C.
4	Indicator light	On	When it is on, it indicates that the motor is running.
5	Indicator light	On	When it is on, it indicates that the trip relay is enabled.
6	Indicator light	On	When it is on, it indicates that the protector has sent an alarm.
7	⏎ key	press	Select the operating function or return to the last menu.
8	◀ key (left)	press	Review events, reduce the digital value or shift
9	▶ key (right)	press	Review the data or increase the digital value
10	Esc/Reset key	press	Exit from the menu, cancel the operation, reset the protector or test the relay
11	4-bit LED	0000	Show the measured value
Note	Phase A, B& C indicator light	On	When all light are on, it indicates that 11 shows the average current of three phases.

■ User programming

■ Parameter setting comparison table

Parameter	Type of Setting	Default Value	Setting Range	Unit
P001	Overload/ full-load rated current setting	1	0.1-999	A
		5	0.1-999	
		1.6	0.4-1.6	
		6.3	1.6-6.3	
		25	6.3-25	
		100	25-100	
		250	63-250	
		800	250-800	
P002	Trip level setting	5	1, 2, 3, 5, 10, 15, 20, 25, 30, 35, 40	Level
P003	Starting time	10	0.1-999.9	Second
P004	Overload alarm threshold setting	85	1-99%	%
P005	Phase failure trip delay	1	0.1-600.0	s
P006	Leakage fault current setting	300	30-1000	Milliampere
	Earthing percentage setting	80	1-100%	%
P007	Earthing/leakage fault trip delay setting	0.5	0.1-600.0	Second
P008	Under-load threshold setting	50	10-99%	%
P009	Under-load trip delay setting	5.0	0.1-600.0	Second
P010	Unbalance threshold setting	30	10-80%	%
P011	Unbalance trip delay setting	5.0	0.1-600.0	Second
P012	Unbalance alarm threshold setting	20	10-80%	%
P013	Alarm enabling on/off	OFF	OFF/ON	Overload alarm
P014		OFF	OFF/ON	Unbalance alarm
P015		ON	OFF/ON	Overload trip
P016		OFF	OFF/ON	Earthing/ leakage trip
P017		OFF	OFF/ON	Under-load trip
P018		ON	OFF/ON	Phase failure trip
P019	Trip enabling on/off	ON	OFF/ON	Starting time-out trip
P020		OFF	OFF/ON	Short-circuit trip
P021		OFF	OFF/ON	Blocking trip Unbalance trip
P022		OFF	OFF/ON	External fault trip
P023		OFF	OFF/ON	Second

Installation and operation instruction

Parameter	Type of Setting	Default Value	Setting Range	Unit
P024	External fault trip delay setting	5.0	0.1-600.0	Second
P025	Programmable 1 output setting	11	1. alarm 2. trip 3. overload 4.short circuit 5. earthing/ leakage trip 6. phase failure 7. external fault 8. remote starting 9. leakage alarm 10. short circuit and earthing protection 11. short circuit leakage/ earthing 12. short circuit leakage/earthing (pulse: 1s)	
P026	Overload cooling time	0	0: manual reset; 1-30min: automatic reset	Second
P027	Blocking value setting	250	100~700	%
P028	Delay of blocking trip setting	5.0	0.1~600. 0	Second
P029	Baud rate of MODBUS setting	9600	2400, 4800, 9600, 19200, 38400	bps
P030	MODBUS address setting	1	1~247	
P031	Locked-rotor threshold setting	600	100~700	%
P032	Locked-rotor trip delay setting	5.0	0.1-600. 0	Second
P033	Locked-rotor release On/off	ON	0FF/0N	
P034	Short-circuit threshold setting	400	400-720	%
P035	Short-circuit trip delay	0.1	0.1-600.0	Second
P036	Enabling of Leakage current transformer	OFF	OFF/ON	
P037	Programmable 2 output setting	2	Same as output setting of	
P038	Programmable 3 output setting	2	Same as output setting of programmable 1	
P039	CT transformation ratio	1	1-9999	

Installation and operation instruction