

Sensors or Transducer

1 General

BA、BM、BD Series transducer is a kind of device which can isolate and transmit electric parameters such as current、 voltage、 frequency、 power、 power factor or temperature、 resistance and so on non-electrical parameters, into linear DC analog signal or digital signal. They can directly connect with the pointer table, digital meters, also can connected with automatic control devices (eg PLC), a variety of A / D converter, and the computer system.

2 Technical features

BA

Model		BA05	BA10	BA20	BA50
Technical parameters					
Accuracy		0.5class、 0.2class			
Input	Nominal value	AC0 ~ (0.5 ~ 10) A	AC 0 ~ (8 ~ 50) A	AC 0 ~ (40 ~ 200) A	AC 0 ~ (60 ~ 600) A
	Overload	Continual1.2 times, Instantaneous current 10 times/1s:			
	Absorbed power	≤1VA			
	Frequency response	25Hz ~ 800Hz(average), 25 ~ 5kHz(true RMS),specially suitable for power frequency application			
Output	Nominal value	DC4 ~ 20mA, or 0 ~ 20mA, 0 ~ 5V, 0 ~ 10V(And so on)			
	Load resistance	Current output ≤500Ω , Voltage output ≥1KΩ			
Response time		Average ≤350ms, true RMS ≤100ms			
Power supply	Voltage	DC12V or 24V			
	Consumption	≤1W			
Insulation resistance		> 100MΩ			
Isolation voltage		(Among input//output//power supply)2.0kV/1min,50Hz			
Temperature modulus		-10℃ ~ +55℃ , ≤100ppm/℃			
Environment	Temperature	Work: -10℃ ~ +55℃ Storage: -25℃ ~ +70℃			
	Humidity	≤93%RH, (In the place without dew and corrosive gas)			
	Altitude	≤2000m			
Installation		(TS35 rail mounting, or attached with screws in of the cabinet)			

BM

Technical parameters		Value
Input	The range of values	Current: 4 ~ 20mA, 0 ~ 1mA, 0 ~ 20mA, Voltage:0 ~ 1V, 0 ~ 5V,0 ~ 10V, 0 ~ 75mV and so on
	Impedance	Current: 0(4) ~ 20mA, 100Ω; 0 ~ 1mA, 1kΩ; Voltage≥100Ω
	Overload	Current:100mA Or 1W; Voltage≥ 0 ~ 10V, 50V
Output	The range of values	DC4 ~ 20mA
	Load	≤500Ω
	Zero point adjustment	5%
	Span adjustment	5%
	Protection function	Short circuit protection
Power supply	The range of values	DC voltage 8.5 ~ 40V DC, generally 24V DC / 2W
	Maximum current	24mA
Others	Accuracy / Linear	Maximum full-scale 0.5%
	Temperature Coefficient	≤200ppm/°C
	Response time	≤400ms
	Isolation Voltage	2kV, input to Output
	Operating / storage temperature	-10°C ~ +55°C/-25 ~ +70°C
	Fix mode	TS35 rail mounting

BD

Technical parameters		Value
Accuracy		0.5class、0.2class
Input	Nominal value	Current :AC、DC 1A、5A; Voltage: AC、DC 100V、300V、500Vand so on
	Overload	Continual 1.2 times, Instantaneous current 10 times/5s;Instantaneous voltage 2 times /30s
	Absorbed power	≤0.3VA(Current input); Voltage input≤0.3VA(100V), ≤0.6VA(300V), ≤1VA(500V)
	Frequency	50±5Hz, 60±5Hz
Output	Nominal value	DC:4-20mA、0-20mA, 0-5V, 0-10Vand so on
	Load Resistance	Current output ≤600Ω Voltage output ≥1000Ω
	Ripple content	<0.5% peak value
Response time		≤400ms
Power supply	Voltage	AC85-265V、DC100-350V
	Power	AC current, Voltage class ≤3VA, Power Class ≤4VA
Insulation Resistance		≥100MΩ
Isolation voltage		(Among input//output//power supply)2.0kV/1min,50Hz
Temperature coefficient		0.5class≤200ppm/°C; 0.2class≤100ppm/°C
Environment	Temperature	Working: -10°C ~ +55°C Storage: -25°C ~ +70°C
	Humidity	≤90%RH, (In the place without dew and corrosive gas)
	Altitude	≤2000m
Installation		(TS35 rail mounting, or attached with screws in of the cabinet)

3 Product Specifications

BA

Model	Product function	Perforation (mm)	Enter the nominal value range
BA05-AI/I (V)	0-10A AC current signal acquisition, output 4-20mA or 0-5V DC signal	Φ5	AC0 ~ (0.5 ~ 10)A
BA05-AI/I (V) -T			
BA10-AI/I (V)	0-50A AC current signal acquisition, output 4-20mA or 0-5V DC signal	Φ10	AC0 ~ (8 ~ 50)A
BA10-AI/I (V) -T			
BA20-AI/I (V)	AC 0-200A current signal acquisition, output 4-20mA or 0-5V DC signal	Φ20	AC0 ~ (40 ~ 200)A
BA20-AI/I (V) -T			
BA50-AI/I (V)	AC 0-600A current signal acquisition, output 4-20mA or 0-5V DC signal	Φ50	AC0 ~ (60 ~ 600)A
BA50-AI/I (V) -T			

- Note: 1. The model with "T" represents true RMS measurement;
 2. The power supplies have 12Vdc, 24Vdc two kinds to chose;
 3. The outputs are 0-5V, 4-20mA, 0-20mA selectable;

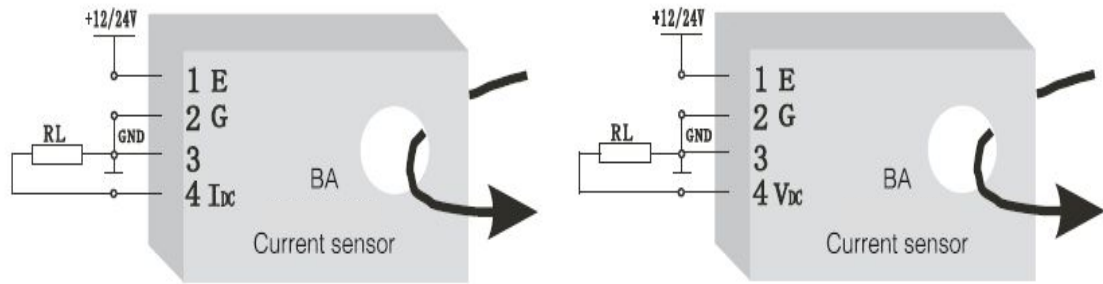
BM

Model	Input form	Input Range	Output Range	Power	Isolation Voltage	Output Settings	Other Features
BM-DI/IS	DC current	0-1mA 0-20 mA 4-20 mA 0-5 A	4-20mA	/	2kV	2-wire 8.5-40VDC	Output Loop Powered
BM-AI/IS	AC current	0-1A 0-5 A	4-20mA	/	2kV	2-wire 8.5-40VDC	Output Loop Powered
BM-DIS/I		4-20mA	4-20mA	/	2kV	Input loop self-powered	
BM-DI/II BM-DI/IV BM-DV/IV	DC current	4-20mA 0-5V	4-20mA	24 V DC	2kV	Two independence	

BM-DI/I			4-20mA 0-20mA	24V DC	2kV	4-wire	
BM-DI/V			0-10V;0-5V				
BM-DI/J			0-20mA	2 with setpoint control relays	110/220 V AC, DC	2kV	2 group of normally open contacts
BM-DV/IS	DC voltage	0-1V;0-5 V;0-10V; 1-5V;0-1 0 mV; 1-50 mV;0-75 mV; 1-100 mV;0-50 0 mV	4-20mA	/	2kV	2wire 8.5-40VDC	Output Loop Powered
BM-DV/I		0-10V; 0-5V	4-20mA 0-20mA	24V DC	2kV	4-wire	
BM-DV/V			0-10V;0-5V				
BM-DV/J		0-10V	2 with setpoint control relays	110/220 V AC, DC	2kV	2 group of normally open contacts	
BM-AV/IS	AC Voltage	0-125V AC 0-250V AC 0-450V AC	4-20 mA	/	2kV	2wire 8.5-40VDC	Output Loop Powered
BM-TC/I BM-TC/V	Thermoco- uple Thermal resistors	K, J分度 0- 250℃;0- 500℃ 1- 0-1000℃ ; 0-1200℃	4-20mA	24VDC	2kV	4-wire	RS485 communicati on output
BM-TR/IS	Thermal resistors	Pt100 0-50℃; 0-100℃ 0-150℃; 0-200℃ 0-250℃; 0-300℃	4-20mA	/	2kV	2wire 8.5-40VDC	Output Loop Powered
BM-R/IS	Resistors	0-100Ω; 0-1kΩ 0-5kΩ; 0-10kΩ	4-20mA	/	2kV	2wire 8.5-40VDC	Output Loop Powered
BM-VR/IS	A potentiom- eter	0 ~ 350Ω (~ 10kΩ)	4-20mA	/	2kV	2wire 8.5-40VDC	Output Loop Powered

BD

Name	Model	Function	Optional Function
Current Transmitter	BD-AI	Measurement of single-phase AC current, isolation transmission output 4-20mA or 0-5V DC signal	RS485-MO DBUS (C)
	BD-3I3	Measurement of three-phase alternating currents transmission output isolation 4-20mA or 0-5V DC signal	/
Voltage transmitter	BD-AV	Measuring AC voltage isolation transmission output 4-20mA or 0-5V DC signal	RS485-MO DBUS (C)
	BD-3V3	Three-phase three-wire voltage transmitter, measuring three-phase AC voltage isolation transmission output 4-20mA or 0-5V DC signal	/
	BD-4V3	Phase four-wire voltage transmitter, measuring three-phase AC voltage isolation transmission output 4-20mA or 0-5V DC signal	
Power transmitter	BD-4EA	Three-Phase four-wire multi-power transmitter, measuring and displaying exports three-phase current, voltage ,active power, reactive power ,frequency ,power factor, active energy; reactive energy and so on, 1~4 channel analog optional, two channel electric energy pulse output,RS485-MO DBUS	M- Analog output, selectable 1 channel, 2-channel, 3-channel, 4-channel
Frequency transmitter	BD-F	Measure frequency, transmit frequency into linear DC signal output	/
Active power transmitter	BD-3P	Three-Phase 3-wire, Measurement of active power, isolation analog signal transmission output	/
	BD-4P	Three-Phase 4-wire, Measurement of active power, isolation analog signal transmission output	/
Reactive power transducer	BD-3Q	Three-Phase 3-wire, Measurement of reactive power, isolation analog signal transmission output	/
	BD-4Q	Three-Phase 4-wire, Measurement of reactive power, isolation analog signal transmission output	/



P / Q combination transmitter	BD-3P/Q/ I	Three-Phase 3-wire, Measuring current, active power, reactive power, isolate analog signal transmission output	/
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




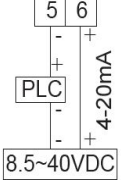

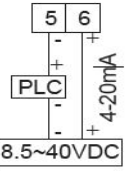


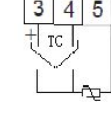

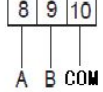
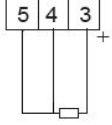
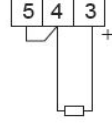
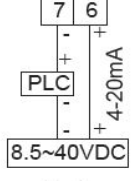
4 Connection

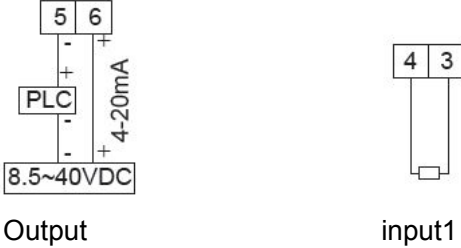

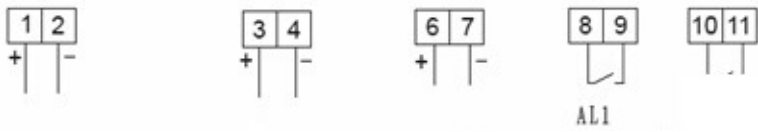
BA

- 1 — E Power supply positive (inverse connection with earth is forbidden)
- 2 — G power earthing
- 3 — Output ground (can be used with power supply of land suitable for remote analog output)
- 4 — IDC(Current output positive electrode), VDC (voltage output positive electrode)

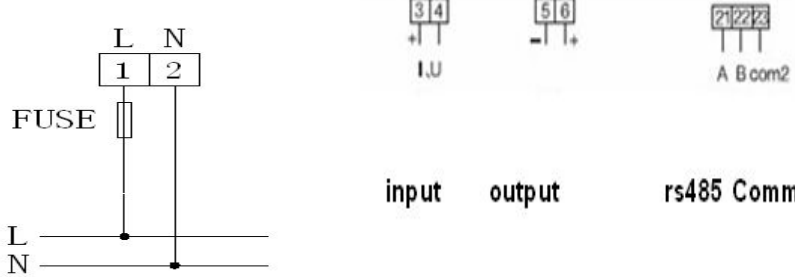
BM

Model	Wiring
BM—DI/IS	
BM-DI/II BM-DI/VI BM-DV/VI	

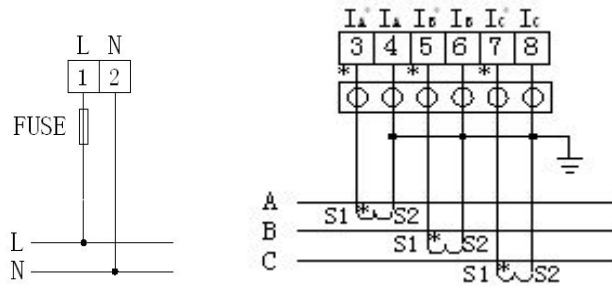
<p>BM-DI/I BM-DI/V BM-DV/IBM-DV/V</p>	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  DC 24V Auxiliary </div> <div style="text-align: center;">  input1 </div> <div style="text-align: center;">  Output </div> </div> <p style="text-align: center; margin-top: 10px;">power supply</p>
<p>BM-DIS/I</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  4-20mA input1 </div> <div style="text-align: center;">  4-20mA Output </div> </div>
<p>BM-AI/IS</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  Output </div> <div style="text-align: center;">  input1 </div> </div>
<p>BM-AV/IS</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  Output </div> <div style="text-align: center;">  input1 </div> </div>
<p>BM-TC/IBM-TC/V</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  Auxiliary </div> <div style="text-align: center;">  input1 </div> <div style="text-align: center;">  Output </div> <div style="text-align: center;">  Communication </div> </div> <p style="text-align: center; margin-top: 10px;">power supply</p>
<p>BM-TR/IS</p>	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">  Three wire RTD input1 </div> <div style="text-align: center;">  Two wire RTD input </div> <div style="text-align: center;">  Output </div> </div>

<p>BM-R/IS</p>	 <p>Output</p> <p>input1</p>
<p>BM-VR/IS</p>	 <p>Output</p> <p>input</p>
<p>BM—DI/J BM—DV/J</p>	 <p>Auxiliary power supply input1 DC24VOutput Relay output</p>

BD

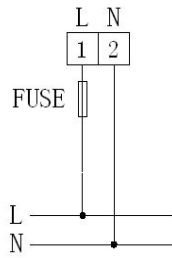
Model	Wiring
<p>BD-AI(V)</p>	 <p>input output rs485 Communication</p> <p>power supply: AC85 ~ 265V DC100 ~ 350V</p>

BD-3I3

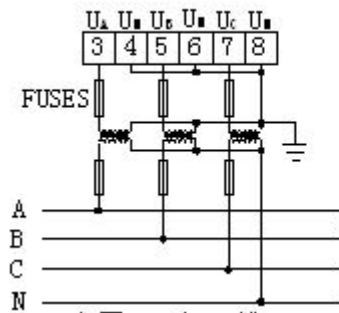


Power supply: AC85 ~ 265V DC100 ~ 350V

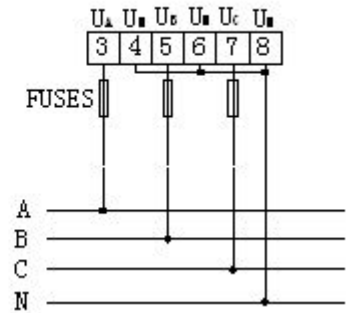
BD-3(4)V3



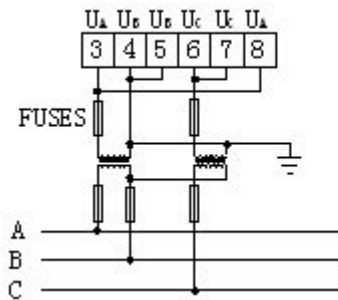
power supply: AC85 ~ 265V DC100 ~ 350V



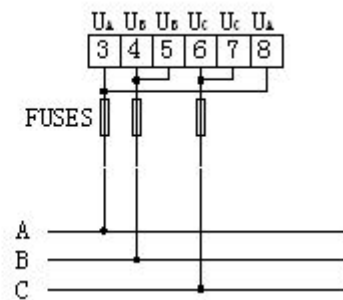
3P4W(3 PT)



3P4W(without PT)



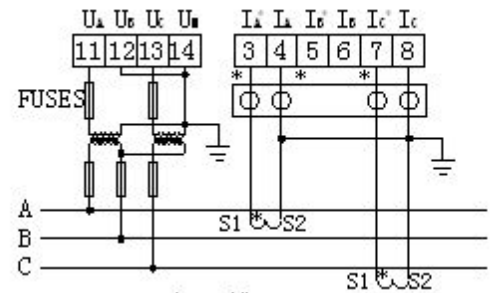
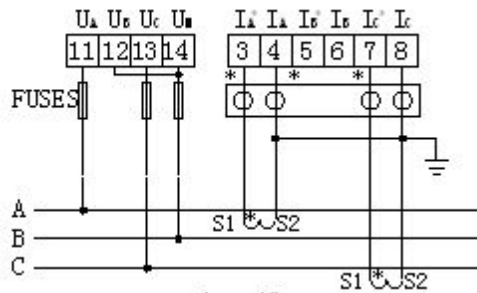
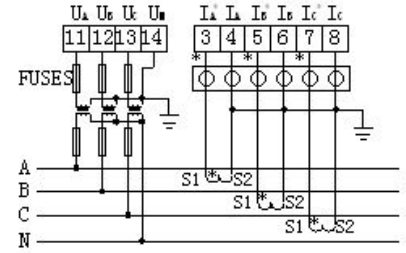
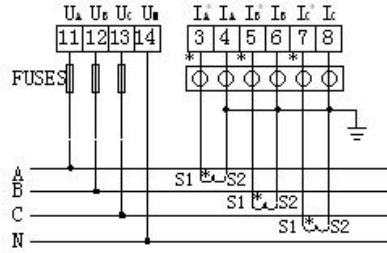
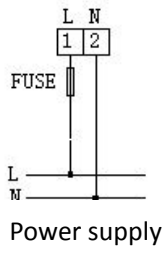
3P3W (3PT)



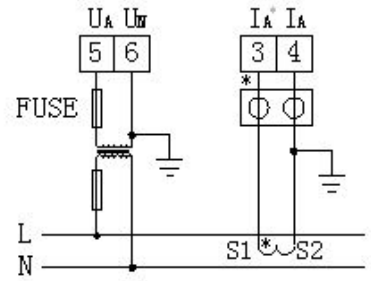
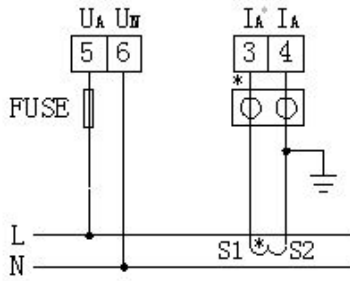
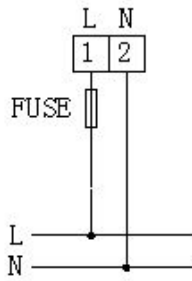
3P3W(without PT)

BD-3(4)P(Q)

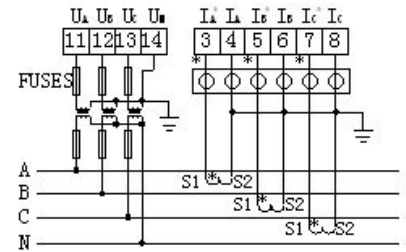
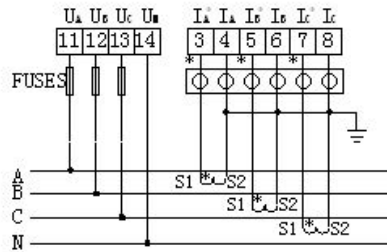
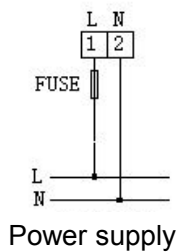
、BD-3P/Q/I



BD-F

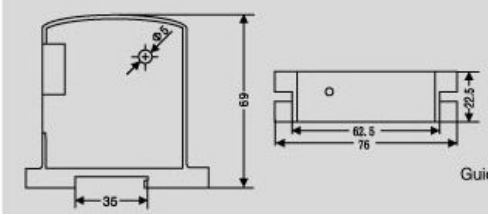
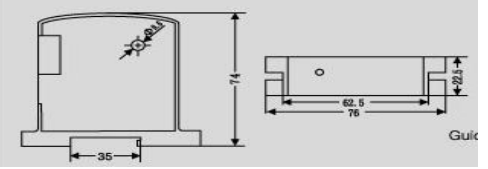
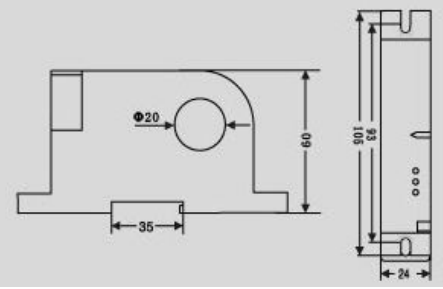
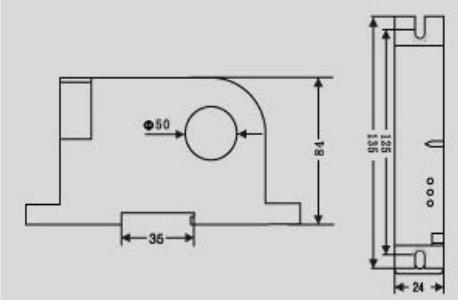


BD-4EA



5 Overall dimensions

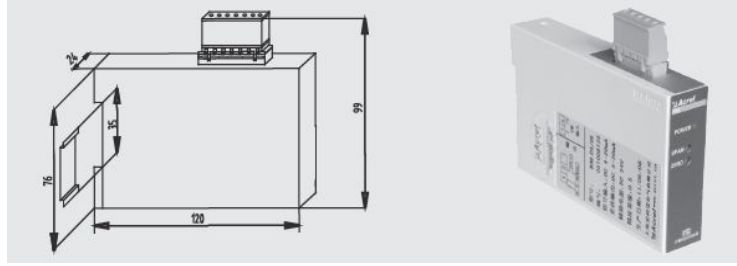
BA

Model	Outline dimension
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BA10	
BA20	
BA50	

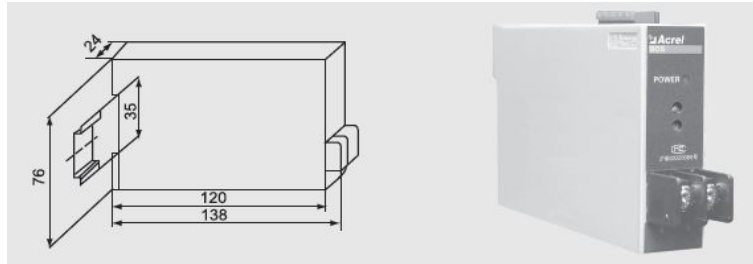
BM

Model	Outline dimension
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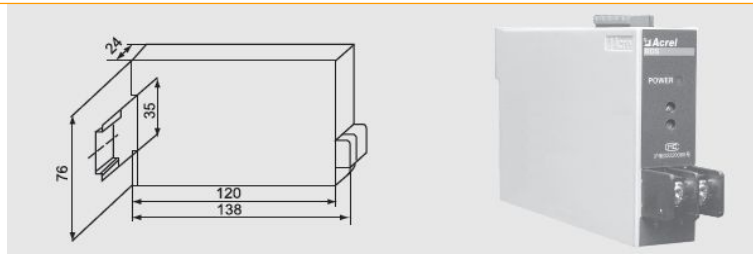
BM—DI/IS



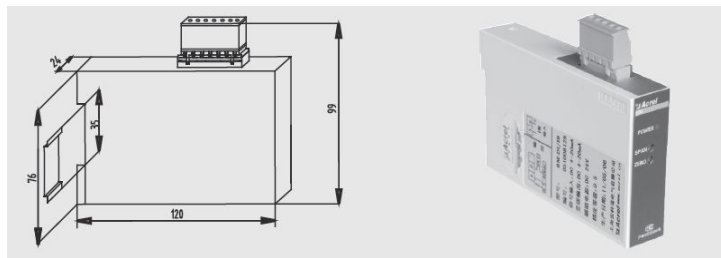
BM-DI/II BM-DI/VI
BM-DV/VI



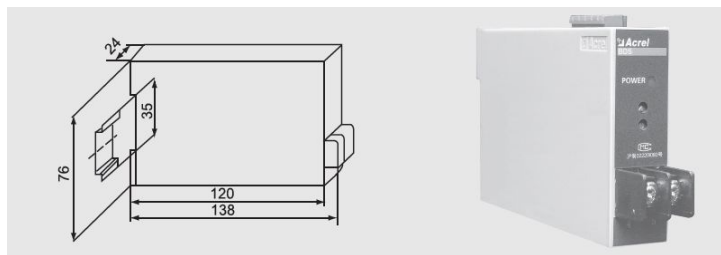
BM-DI/I
BM-DI/V
BM-DV/II BM-DV/V



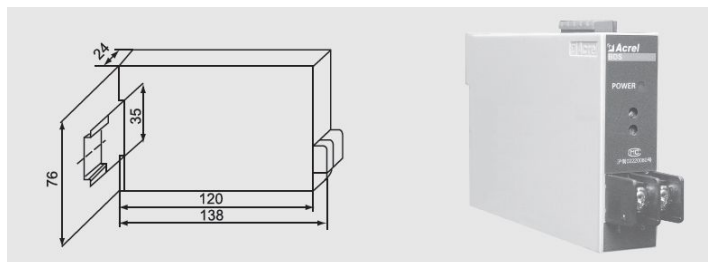
BM-DIS/I



BM-AI/IS



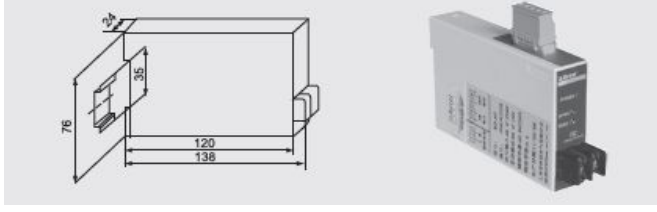
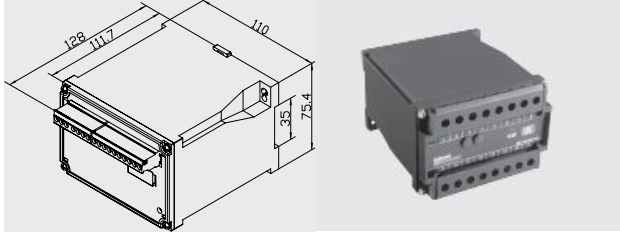
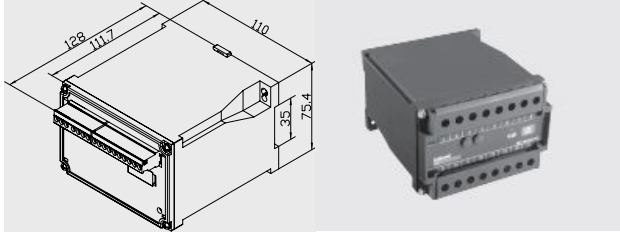
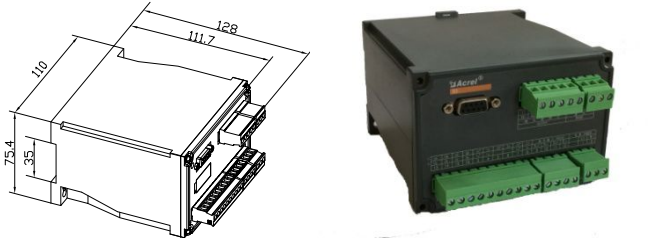
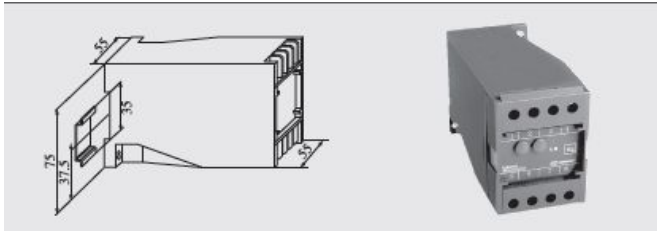
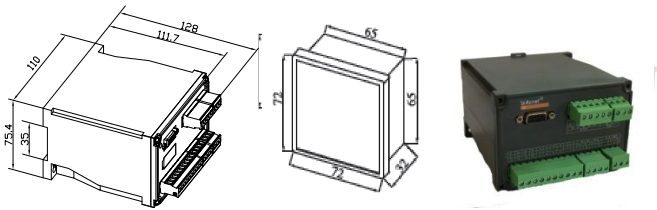
BM-AV/IS



<p>BM-TC/IBM-TC/V</p>	
<p>BM-TR/IS</p>	
<p>BM-R/IS</p>	
<p>BM-VR/IS</p>	
<p>BM—DI/J BM—DV/J</p>	

BD

Model	Outline dimension
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BD-AI(V)	
BD-3I3	
BD-3(4)V3	
BD-3(4)P(Q), BD-3P/Q/I	
BD-F	
BD-4EA	

6 Ordering example

Model: BA10-AI/I

Technical Requirements: input current AC 0-50A; output DC 4-20mA; through-hole size ϕ 10mm; accuracy class 0.5.

Communication protocol: No

Power supply: DC24V

Model: BM-AI/IS

Technical Requirements: input current AC 0-5A; output DC 4-20mA; two wire; accuracy

class 0.5.

Communication protocol: No

Power supply: DC24V

Model: BD-AI

Technical Requirements: input :AC 0-5A;output :DC 4-20mA; 0.5 class.

Communication protocol: No

Power supply: AC/DC220V

7 Communication protocol

Use modbus function codes 03 (03H), 04 (04H) to access all the content address table, use the function codes 06 (06H) can write a single register data, use function code 16 (10H) writable register continuous data table the data address to decimal format, an address on behalf of a Word data.

Use the Modbus function code 03 (03H), 04 (04H) can access the address of all in the table of contents, the use of function code 06 (06H) can be used to write a single register data, function code 16 (10H) can be written for the register data, the data in the table address is the decimal format, 1 generation of Table 1. WORD data.

Data address	Data Content	Data type	Remark	R/W
0	Retain	Unsigned int		R
1	The current display value	Unsigned int	with address 2 to be actual value	R
2	The current display decimal place value	Unsigned int	0-4	R/W

3-4	Show the value of floating point data	float	This data contains a decimal point display, and address with the address of 1 decimal point 2 is composed of the same data.	R
5-6	Frequency	Unsigned long	This data is fixed with 2 decimal numbers, such as 5000 said that the frequency of 50.00Hz.	R
7-12	Retain			R
13	Address	Unsigned int	1-32 by the actual code set	R
14	Baud rate	Unsigned int	0=4800 1=9600 2=19200 3=38400 By the actual code set.	R
15	Transmission type	Unsigned int	0=0-20mA 1=4-20mA 2=0-10V 3=0-5V 4=1-5V	R
16-17	Transmission peak	Unsigned long	With the actual address 2 to send 100% data.	R/W
18-19	Transmitting low	Unsigned long	With the actual address 2 to send 0% data.	R/W
20-250	Retain			R

Note: (1). 1 of the display data and address the 2 decimal point indicating the composition of the actual

data, such as data of 12345, 11 of the content for the 0x0002 address, the actual data is 123.45;
(2) ", " high send transfer "low" and address the actual value of 2 components, such as transmission peak
value was 123456 (16 for the 0xE240 address, 0x0001 address, the address 17) 2 decimal point is set to
3, the actual meaning of 123.456.

ACREL CO.,LTD

Addr: No.253 Yulv Road, Jiading District, Shanghai, China, 201801.

Tel: 0086-21-69158338

Fax: 0086-21-69158338

Email: acrel008@vip.163.com

Web: <http://www.acrel.cn/en/>

