SSET 圣斯尔

Catalog 2012

HALL EFFECT
CURRENT ANALOG TRANSDUCER

CE-H Series

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Introduction

Shenzhen Sensor Electronic Technology Co., Ltd specializes in research, development, and manufacturing of electrical transducers. Our advanced test instrumentation and engineering capabilities provide a most favorable environment for transducer manufacturing. Our quality and inspection departments are among the most advanced in China. The output of our production facility is over one hundred thousand units annually.

The most important aspect of our production is "Quality". Our products are manufactured and certified to the 2000 quality standards of ISO 9001. The transducers have been approved for safety by numerous agencies such as UL, CUL, CME and CE. The US Council of International Quality Authentication has recommended us for our high quality standards. Shenzhen Sensors, Ltd. is the only manufacture of electrical transducers in China to have obtained all of these certifications.

Our corporate psychology of Research & Development and efficient manufacturing has made us predominant worldwide in the electrical transducer market. Our diverse lines of products are used for signal isolation and modulation, analog and digital communication in standard and smart instrumentation networks. The complete line consists of nearly one hundred sub-categories with numerous standard and custom versions available in each of these sub-categories.

The CE Series of products is used for monitoring electrical parameters of current, voltage, power and frequency. Technologies such as electrical induction, Hall Effect and magnetic modulation are used in our product line for monitoring alternating and direct current systems.

The CE Series of products consists of three main categories.

- CE-T series for providing analog output signal such as 0-5 Vdc and 4-20 mA
- CE-A series for "Intelligent" network communication.
- CE-H series for Hall Effect transducer.

The principal characteristics of our products are:

- Micro miniaturization, utilizing surface mount technology.
- Modularization, each function provided by a unique PCB.
- High reliability, all components are high-rel, precision grade.
- Low power consumption, high efficiency regulators and dc-dc power supplies.
- High dielectrics withstand voltage, designed into each product.
- Single side input power requirement, for easy installation.

High quality, reliability and low price have made our transducers most efficient for application in the areas of communication, electric power, automotive energy production, and industrial control. We have received high praise from thousands of customers. We currently provide our products to 7 countries in areas of America, Europe and Asia.

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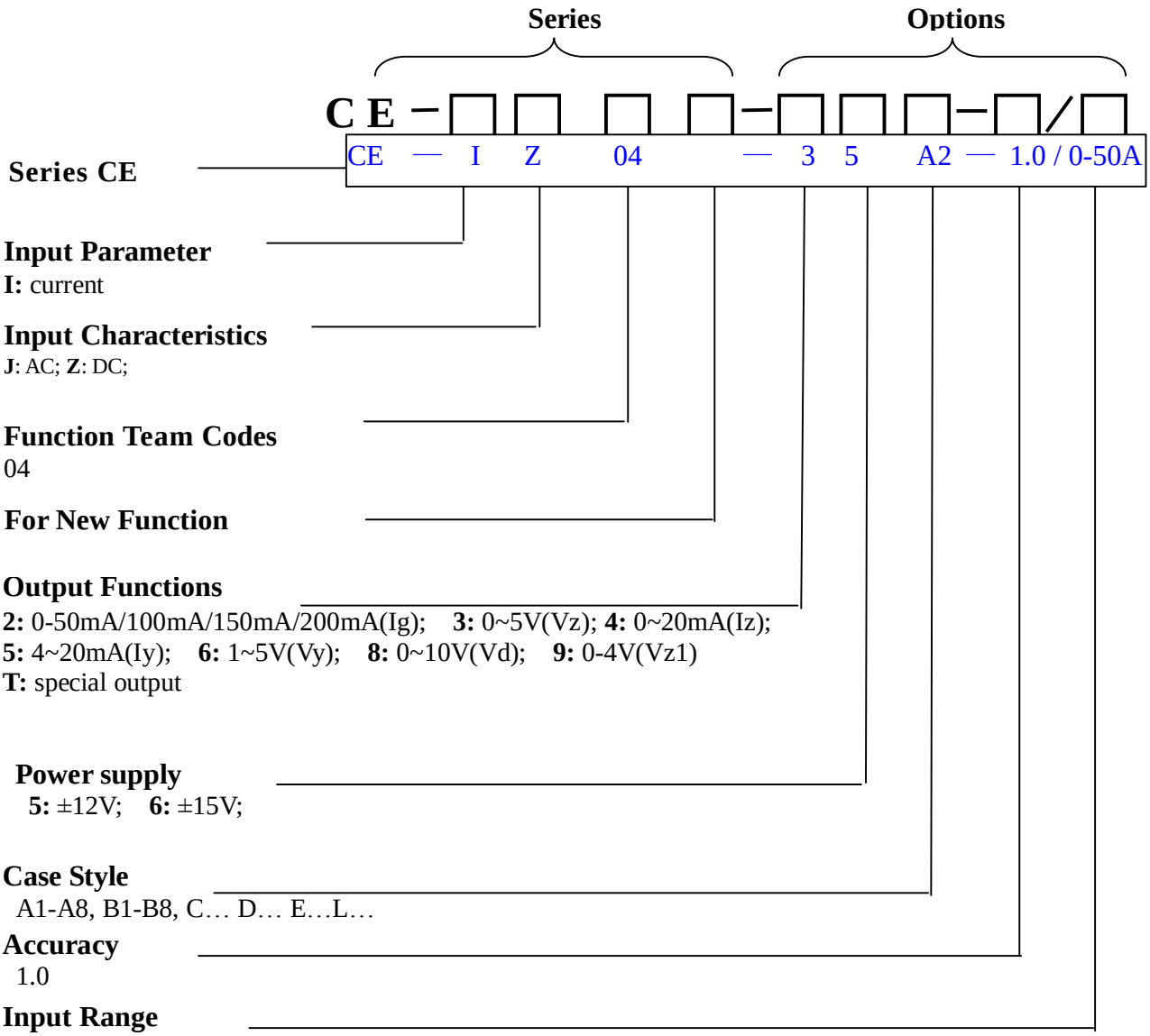
Chapter 1. Part Number Selection Guide



Typical Example

CE-IZ04-35A2-1.0/0~50A: DC current transducer, case: A2, input current: DC 0~50A, output: 0~5V, power supply: ±12V, accuracy: 1.0%.

Chapter 2. Product Overview

2.1 Characteristic of the product

Hall Effect current transducer series CE-H provides strong electrical isolation between the output of the transducer (secondary circuit) and the current carrying conductor (primary circuit with high current). The output of the transducer reflects the real wave of DC, AC and pulsant currents of the primary circuit. This series combines many advantages of fast response, strong overload capability, good temperature independence, consecutive adjustable output, good stability, etc.

2.2 Output codes

LIST OF DEFINITION OF OUTPUT CODES OF SERIES CE-H PRODUCT

CODE	SYMBOL	DEFINITION OF CODE	DESCRIPTION
1	Vg	OUTPUT TRACING VOLTAGE	0~5V (AC, RMS). Suitable for AC or peak value sampling system with high accuracy and fast response
2	Ig	OUTPUT TRACING CURRENT	Output tracing AC current. Suitable for AC or peak value sampling system with fast response.
3	Vz	OUTPUT OF DC VOLTAGE	0~5V (DC). Available for connecting directly to A/D converter, digital panel and display instruments.
4	Iz	OUTPUT OF DC CURRENT	0~20mA (DC). Suitable for transmission of remote signal with strong capability of anti-jamming.
5	Iy	OUTPUT OF DC CURRENT	4~20mA (DC). Suitable for transmission of remote signal with strong capability of anti-jamming.
6	Vy	OUTPUT OF DC VOLTAGE	1~5V (DC). Available for connecting directly to A/D converter, digital panel and indicator.
8	Vd	OUTPUT OF DC VOLTAGE	0~10V (DC). Available for connecting directly to digital panel and indicator.(power supply≥15V)
9	Vz1	OUTPUT OF DC VOLTAGE	0~4V (DC). Available for connecting directly to A/D converter, digital panel and indicator.
T	T	SPECIAL OUTPUT CODE	Reserved for other output.

Chapter 3. Product Tree

3.1 Hall Effect DC current analog transducer series CE-IZ04 Case Style A

3.1.1 List of options

SERIES	RANGE OF OUTPUT	POWER SUPPLY	WINDOW (mm)	CASE STYLE	INPUT RANGE
CE-IZ04-□□A	0-4V 0-5V	±12V or ±15V	20x10	A1	0-50~600A
			Φ23	A2	0-30~500A
			21x10	A3	0-50~600A
	0-4V, 0-5V 0-20mA, 4-20mA		33x16	A4	0-100~800A
			33x11	A5	0-100~500A
	0-4V 0-5V		Φ16	A6	0-50~400A
			Φ20.2	A7	0-100~500A
			Φ20.4	A8	0-100~400A

3.1.2 General specifications

LINEARITY RANGE	1.5 times of the maximum value of measuring range	RESPONSE TIME	10μS
OVERLOAD CAPABILITY	20 times of the maximum value of measuring range	CURRENT CONSUMPTION	≤25mA
ACCURACY	1%	ISOLATION	3KVRMS/50Hz/30s
OFFSET VOLTAGE	±25mV	OPERATING TEMPERATURE RANGE	-10℃~+80℃
HYSTERESIS ERROR	±10mV	STORAGE TEMPERATURE RANGE	-25℃~85℃
TEMPERATURE DRIFT	≤250ppm/℃	FIRE RETARDANCY	UL94-V0

3.1.3 Cases of series A

Application Characteristic: Can be used for measuring DC, AC, pulsant currents, etc. The output of the transducer reflects the real wave of the measured current.

Characteristic of Products: Small size, light in weight, less power consumption, window structure, electrically isolating the output of the transducer from the primary current carrying conductor, no insertion loss.

Application: Frequency conversion speed adjusting equipment, various power supply, UPS, electric welding machine, transformer substation, digital control machine tool, electrolyzing equipment, electroplating equipment, electric powered locomotive, microcomputer monitoring, electric power grid monitoring.

Connection: The current carrying cable must pass through the window. The phase of output is the same as that of the current passing the window in the direction of the arrow indicated on the case.

Wiring of Terminals for case style A1, A2, A3, A4, A5, A6, A7, A8:

1. +15V/+12V Power Supply
2. -15V/-12V Power Supply
3. Output
4. Ground
5. NC(only A6)

Notes:

1. Connect the terminals of power supply, outputs respectively and correctly, never make wrong connection.

2. Two potentiometers can be adjusted, only if necessary, by turning slowly to the required accuracy with a small screwdriver.
3. The best accuracy can be achieved when the window is fully filled with bus-bar (current carrying conductor).
4. The in-phase output can be obtained when the direction of current of current carrying conductor is the same as the direction of arrow marked on the transducer case.

3.2 Hall Effect DC current analog transducer series CE-IZ04 case style B

3.2.1 List of options

PART NUMBER	RANGE OF OUTPUT	POWER SUPPLY	WINDOW (mm)	CASE STYLE	INPUT RANGE
CE-IZ04-□□B	0-4V 0-5V	±12V or ±15V	51x12	B1	0-300~1500A
			64x16	B2	0-300~1500A
			104x22	B3	0-600~2500A
			52x22	B4	0-300~1500A
			86x26	B5	0-600~1500A
			103x36	B6	0-800~2500A
			41x11	B7	0-100~800A
			85x27	B8	0-600~2500A

3.2.2 General specifications

LINEARITY RANGE	1.5 times of the maximum value of measuring range	RESPONSE TIME	10μS
OVERLOAD CAPABILITY	20 times of the maximum value of measuring range	CURRENT CONSUMPTION	≤25mA
ACCURACY	1%	ISOLATION	3KVRMS/50Hz/30s
OFFSET VOLTAGE	±20mV	OPERATING TEMPERATURE RANGE	-10℃~+80℃
HYSTERESIS ERROR	±10mV	STORAGE TEMPERATURE RANGE	-25℃~85℃
TEMPERATURE DRIFT	≤500ppm/℃	FIRE RETARDANCY	UL94-V0

3.2.3 Cases of series B

Application Characteristic: Can be used for measuring DC, AC, pulsant currents etc. The output of the transducer reflects the real wave of the measured current.

Characteristic of Products: Small size, light in weight, less power consumption, window structure, electrically isolating the output of the transducer from the primary current carrying conductor, no insertion loss.

Application: Frequency conversion speed adjusting equipment, various power supply, UPS, electric welding machine, transformer substation, digital control machine tool, electrolyzing equipment, electroplating equipment, electric powered locomotive, microcomputer monitoring, electric power grid monitoring.

Connection: The current carrying cable must pass through the window. The phase of output is the

same as that of the current passing the window in the direction of the arrow indicated on the transducer case.

Wiring of Terminals for case style B1, B2, B3, B4, B5, B6, B7:

1. +15V/+12V Power Supply
2. 15V/-12V Power Supply
3. Output
4. Ground

Wiring of Terminals for case style B8:

1. +15V/+12V Power Supply
2. Ground
3. 15V/-12V Power Supply
4. Output
5. Inverted Output

Notes:

1. Connect the terminals of power supply, outputs respectively and correctly, never make wrong connection.
2. Two potentiometers can be adjusted, only if necessary, by turning slowly to the required accuracy with a small screwdriver.
3. The best accuracy can be achieved when the window is fully filled with bus-bar (current carrying conductor).
4. The in-phase output can be obtained when the direction of current of current carrying conductor is the same as the direction of arrow marked on the transducer case.

3.3 Hall Effect DC current analog transducer series CE-IZ04 case style C

3.3.1 List of options

SERIES	RANGE OF OUTPUT	POWER SUPPLY	WINDOW (mm)	CASE STYLE	INPUT RANGE
CE-IZ04-□□C	0-4V, 0-5V	±12V or ±15V	Φ42	C1	0-200~2000A
	0-4V 0-5V 0-20mA 4-20mA		62x15	C2	0-300~1000A
			85x15	C3	0-300~2500A
			125x26	C4	0-800~6000A
			150x40	C5	0-800~6000A
	0-4V 0-5V		Φ22	C8	50~500A
			Φ35	C9	0-100~800A
	±75mV		104x20	C10	0-±1000~±3000A
	0-4V 0-5V		182x70	C11	0-4000~10000A
			41x11	C12	0-200~800A
	0-4V 0-5V 0-20mA 4-20mA		85x27	C13	0-600~2500A

3.3.2 General specifications

LINEARITY RANGE	1.5 times of the maximum value of measuring range	RESPONSE TIME	10μS
OVERLOAD CAPABILITY	20 times of the maximum value of measuring range	CURRENT CONSUMPTION	≤25mA
ACCURACY	1%	ISOLATION	3KVRMS/50Hz/30s
OFFSET VOLTAGE	±20mV	OPERATING TEMPERATURE RANGE	-10℃~+80℃
HYSTERESIS ERROR	±10mV	STORAGE TEMPERATURE RANGE	-25℃~85℃
TEMPERATURE DRIFT	≤500ppm/℃	FIRE RETARDANCY	UL94-V0

3.3.3 Cases of series C

Application Characteristic: Can be used for measuring DC, AC, pulsant currents, etc. The output of the transducer reflects the real wave of the measured current.

Characteristic of Products: Small size, light in weight, less power consumption, window structure, electrically isolating the output of the transducer from the primary current carrying conductor, no insertion loss.

Application: Frequency conversion speed adjusting equipment, various power supply, UPS, electric welding machine, transformer substation, digital control machine tool, electrolyzing equipment, electroplating equipment, electric powered locomotive, microcomputer monitoring, electric power grid monitoring.

Connection: The current carrying cable must pass through the window. The phase of output is the same as that of the current passing the window in the direction of the arrow indicated on the case.

Wiring of Terminals for case style C1, C2, C3, C4, C5, C8, C9, C12，C13:

1. +15V/+12V Power Supply
2. -15V/-12V Power Supply
3. Output
4. Ground

Wiring of Terminals for case style C10:

1. +12V Power Supply
2. Ground
3. +Output
4. -Output

Wiring of Terminals for case style C11:

1. +15V/+12V Power Supply
2. Output
3. Ground
4. -15V/-12V Power Supply

Wiring of Terminals for case style C13:

1. +15V/+12V Power Supply
2. Ground
3. -15V/-12V Power Supply

4. Ground
5. Output

Notes:

1. Connect the terminals of power supply, outputs respectively and correctly, never make wrong connection.
2. Two potentiometers can be adjusted, only if necessary, by turning slowly to the required accuracy with a small screwdriver.
3. The best accuracy can be achieved when the window is fully filled with bus-bar (current carrying conductor).
4. The in-phase output can be obtained when the direction of current of current carrying conductor is the same as the direction of arrow marked on the transducer case

3.4 Hall Effect DC current analog transducer series CE-IZ04 case style D

3.4.1 List of options

SERIES	RANGE OF OUTPUT	POWER SUPPLY	WINDOW (mm)	CASE STYLE	INPUT RANGE
CE-IZ04-□□D	0-200mA	±12V or ±15V	Φ20	D2	0-400A
	0-150mA		Φ20.5	D6	0-300A
	0-100mA		Φ36	D7	0-500A

3.4.2 General specifications

LINEARITY RANGE	1.5 times of the maximum value of measuring range	RESPONSE TIME	1μS
OVERLOAD CAPABILITY	2 times of the maximum value of measuring range	CURRENT CONSUMPTION	≤25mA + output current
ACCURACY	0.5%	ISOLATION	3KVRMS/50Hz/min
OFFSET CURRENT	±0.2mA	OPERATING TEMPERATURE RANGE	-10℃~+80℃
HYSTERESIS ERROR	±0.2mA	STORAGE TEMPERATURE RANGE	-25℃~85℃
TEMPERATURE DRIFT	≤200ppm/℃	FIRE RETARDANCY	UL94-V0

Gauge Resistor:

D2:

±12V	±400A	0～50Ω
	±500A	0～40Ω
±15V	±400A	0～60Ω
	±500A	0～50Ω

D7:

±15V	±500A	0～60Ω
	±800A	0～ 9Ω
±18V	±500A	0～90Ω
	±800A	0～28Ω

D6

±12V	±100A	0～136Ω	±200A	0～50Ω	±300A	0～30Ω
	±150A	0～ 74Ω	±300A	0～26Ω	±500A	0～ 7Ω
±15V	±100A	0～175Ω	±200A	0～73Ω	±300A	0～43Ω
	±150A	0～106Ω	±300A	0～40Ω	±500A	0～17Ω

3.4.3 Cases of series D

Application Characteristic: Can be used for measuring DC, AC, pulsant currents, etc. The output of the transducer reflects the real wave of the measured current.

Characteristic of Products: Small size, light in weight, less power consumption, window structure, electrically isolating the output of the transducer from the primary current carrying conductor, no insertion loss.

Application: Frequency conversion speed adjusting equipment, various power supply, UPS, electric welding machine, transformer substation, digital control machine tool, electrolyzing equipment, electroplating equipment, electric powered locomotive, microcomputer monitoring, electric power grid monitoring.

Connection: The current carrying cable must pass through the window. The phase of output is the same as that of the current passing the window in the direction of the arrow indicated on the case.

Wiring of Terminals for case style D2:

+: +15V/+12V Power Supply
M: Output
-: -15V/-12V Power Supply

Wiring of Terminals for case style D6, D7:

1. +15V/+12V Power Supply
2. -15V/-12V Power Supply
3. +Output
4. NC

Notes:

1. Connect the terminals of power supply, outputs respectively and correctly, never make wrong connection.
2. Two potentiometers can be adjusted, only if necessary, by turning slowly to the required accuracy with a small screwdriver.
3. The best accuracy can be achieved when the window is fully filled with bus-bar (current carrying conductor).
4. The in-phase output can be obtained when the direction of current of current carrying conductor is the same as the direction of arrow marked on the transducer case.

3.5 Hall Effect DC current analog transducer series CE-IZ04 case style E

3.5.1 List of options

SERIES	RANGE OF OUTPUT	POWER SUPPLY	WINDOW (mm)	CASE STYLE	INPUT RANGE
CE-IZ04-□□E	0-4V, 0-5V	±12V or ±15V	20.5x10.5	E1	0-50~600A
	0-50mA		12.7x7	E3	0-50A
			12.7x7	E3	0-100A
	0-4V, 0-5V 0-20mA, 4-20mA		Φ21	E4	0-10mA~10A
			Φ21	E4	0-50~400A
			Φ43	E5	0-10mA~10A
			Φ60	E6	0-300~1200A
	0-4V, 0-5V		Φ35.5	E7	0-0.01~10A

3.5.2 General specifications

SPECIFICATIONS \ CASE STYLE	E1, 4, 5, 6	E3	E7
LINEARITY RANGE	1.5 TIMES OF NOMINAL CURRENT		
OVERLOAD CAPABILITY	20 times of the maximum value of measuring range	2 times of the maximum value of measuring range	
ACCURACY	1%	0.5%	1%
OFFSET VOLTAGE	±20mV		±40mV
OFFSET CURRENT		±0.2mA	
HYSTERESIS ERROR	±10mV	±0.2mA	±20mV
TEMPERATURE DRIFT	≤250ppm/℃		
RESPONSE TIME	≤10μS	≤1μS	≤3μS
CURRENT CONSUMPTION	≤25mA	≤10mA+ output current	≤25mA
ISOLATION	3KVRMS/50Hz/min		
OPERATING TEMPERATURE RANGE	-10℃~+80℃		
STORAGE TEMPERATURE RANGE	-25℃~85℃		
FIRE RETARDANCY	UL94-V0		

3.5.3 Cases of series E

NOTE: Case style E4, 5 (10mA-10A) are mainly used to measure or monitor system for current leakage.

Application Characteristic: Can be used for measuring DC, AC, pulsant currents, etc. The output of the transducer reflects the real wave of the measured current passing through the carrying conductor.

Characteristic of Products: Small size, light in weight, less power consumption, window structure, electrically isolating the output of the transducer from the primary current carrying conductor, no insertion loss.

Application: Frequency conversion speed adjusting equipment, various power supply, UPS, electric welding machine, transformer substation, numerical control machine tool, electrolyzing equipment, electroplating equipment, electric powered locomotive, microcomputer monitoring, electric power grid monitoring.

Connection: The current carrying cable must pass through the window. The phase of output is the same as that of the current passing the window in the direction of the arrow indicated on the case.

Wiring of Terminals for case style E1, E4, E5, E6, E7:

1. +15V/+12V Power Supply
2. -15V/-12V Power Supply
3. +Output
4. Ground

Wiring of Terminals for case style E3:

+: +15V/+12V Power Supply
M: Output
-: -15V/-12V Power Supply

Notes:

1. Connect the terminals of power supply, outputs respectively and correctly, never make wrong connection.
2. Two potentiometers can be adjusted, only if necessary, by turning slowly to the required accuracy with a small screwdriver.
3. The best accuracy can be achieved when the window is fully filled with bus-bar (current carrying conductor).
4. The in-phase output can be obtained when the direction of current of current carrying conductor is the same as the direction of arrow marked on the transducer case.

3.6 Hall Effect DC current analog transducer series CE-IZ04 case style L

3.6.1 List of options

SERIES	OUTPUT	POWER SUPPLY	CASE STYLE	MOUNTING	INPUT RANGE
CE-IZ04-□□L	±4V	±12V or ±15V	L1	PCB	0-5A
			L2		0-10A
			L3		0-15A
			L4		0-20A
			L5		0-25A
			L6		0-50A

3.6.2 General specifications

SPECIFICATIONS \ CASE STYLE	L1	L2	L3	L4	L5	L6
INPUT RANGE	5A	10A	15A	20A	25A	50A
LINEARITY RANGE	0~±13A	0~±25A	0~±38A	0~±50A	0~±63A	0~±125A
OVERLOAD CAPABILITY	2 times of the maximum value of measuring range					
ACCURACY	1%					
OFFSET VOLTAGE	< ±0.04V					
HYSTERESIS ERROR	< ±0.02V					
TEMPERATURE DRIFT	≤ ±.0.1% / ℃					
RESPONSE TIME	≤3Ms di / dt = 50A/μS					
CURRENT CONSUMPTION	18mA					
ISOLATION	2.5KV AC / 1 min					
OPERATING TEMPERATURE RANGE	-10℃~+75℃					
STORAGE TEMPERATURE RANGE	-15℃~+85℃					
FIRE RETARDANCY	UL94-V0					

3.6.3 Cases of series L

Application Characteristic: Can be used for measuring DC, AC, pulsant currents.

Characteristic of Products: Small size, light in weight, less power consumption, electrically isolating the output of the transducer from the primary input, PCB mount.

Application: Frequency converter, various power supply, UPS, electric welding machine, numerical control machine tool, electrolyzing equipment, electroplating equipment, electric powered locomotive, microcomputer monitoring system.

Connection:

Wiring of Terminals for case style L:

1. +15V/+12V Power Supply
2. -15V/-12V Power Supply
3. Voltage Output
4. Ground

Chapter 4. Power supply & Dimensions

4.1 Power supply & dimensions

CE-WYS-1

Model	CE-WYS-1/1A/1B
Input Voltage	220V±10%, 50Hz
Rated Current Output	500mA
Output Voltage	DC ±12V, ±15V, +24V
Output Ripple	≤10mV

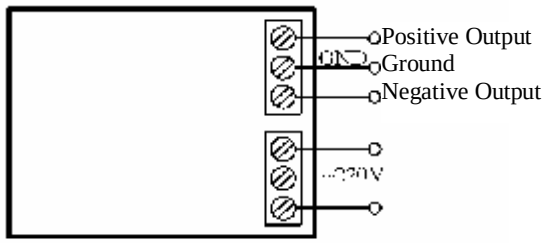
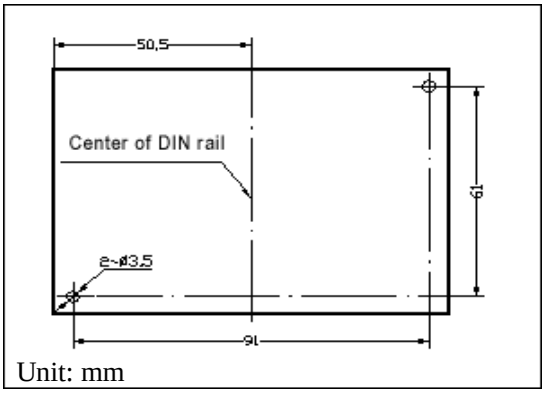


Fig.4.1.1 Connections for CE-WYS-1



CE-WYS-2

Model	CE-WYS-2
Input Voltage	220V±10%, 50Hz
Rated Current Output	200mA
Output Voltage	DC +12V, +15V, +24V
Output Ripple	≤10mV

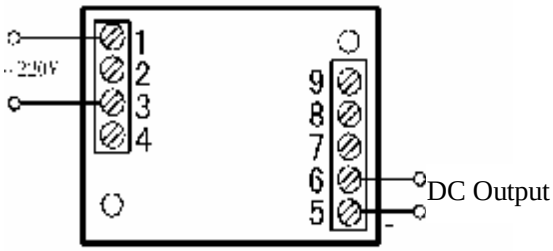
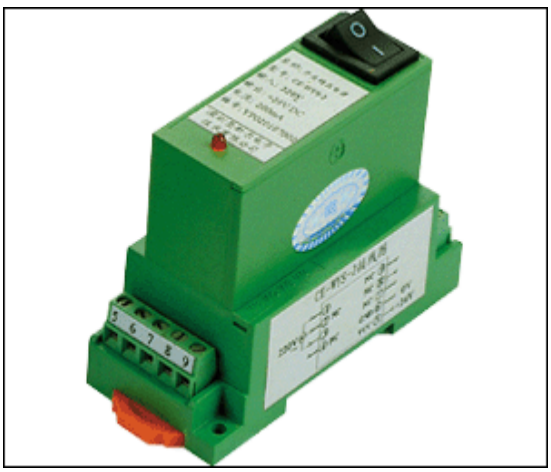
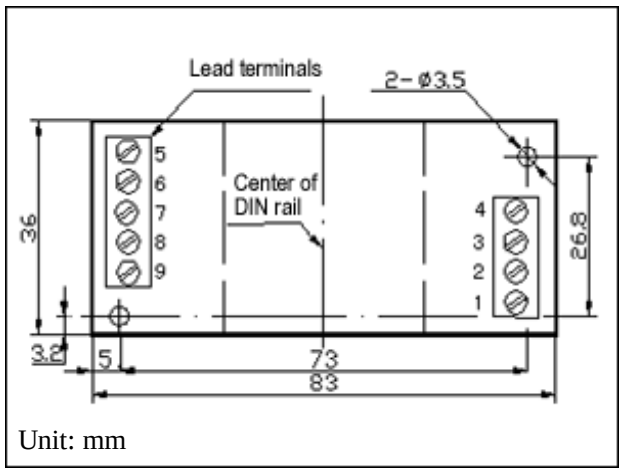


Fig. 4.1.2 Connections of CE-WYS-2

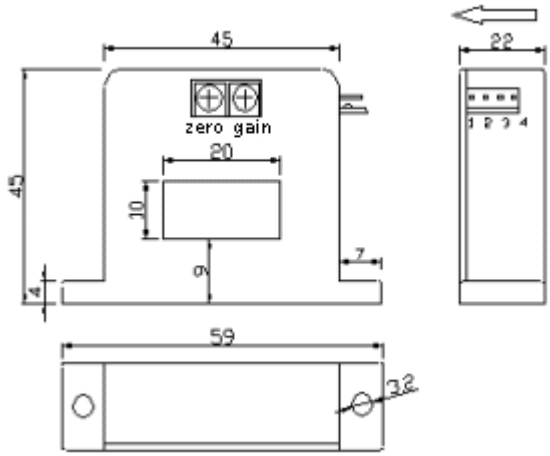




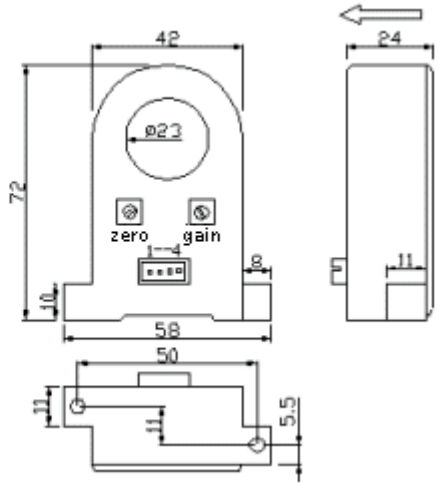
Note: CE-WYS1 and CE-WYS-2 are switching mode regulated power supply with positive voltage output. The voltage output of CE-WYS-1A is not adjustable. The voltage output of CE-WYS-1B linear regulated power supply is adjustable. CE-WYS-2 is of S3 case style.

4.2 Collection of cases and dimensions

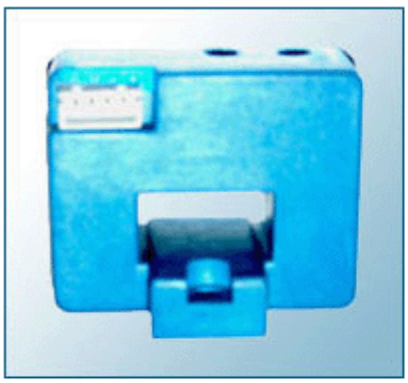
4.2.1 The cases and dimensions of serial A

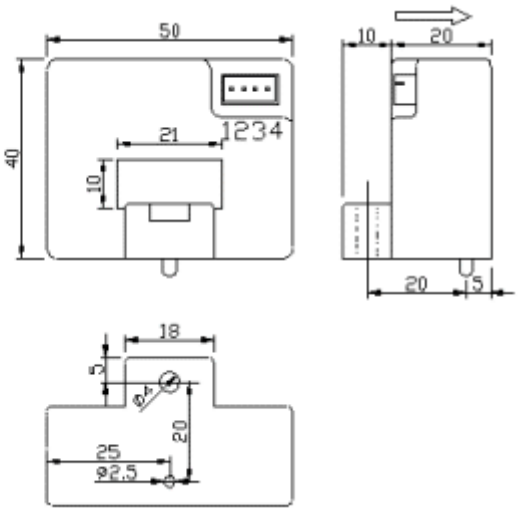


Case style A1

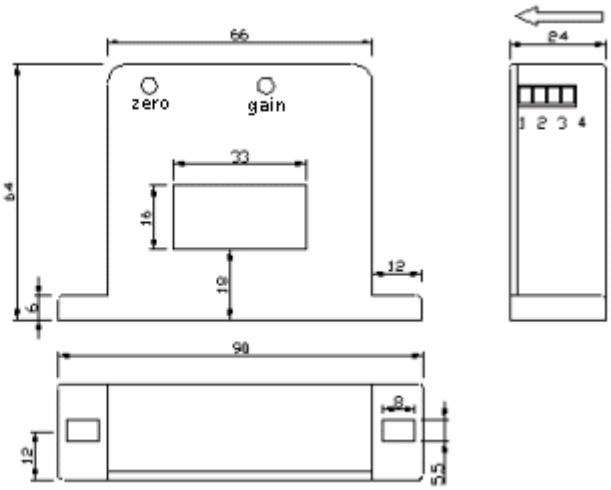


Case style A2

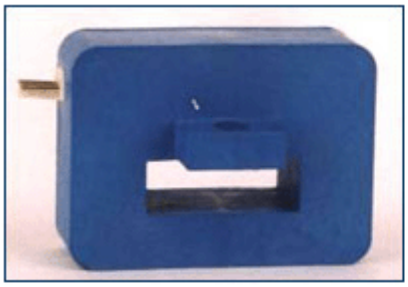


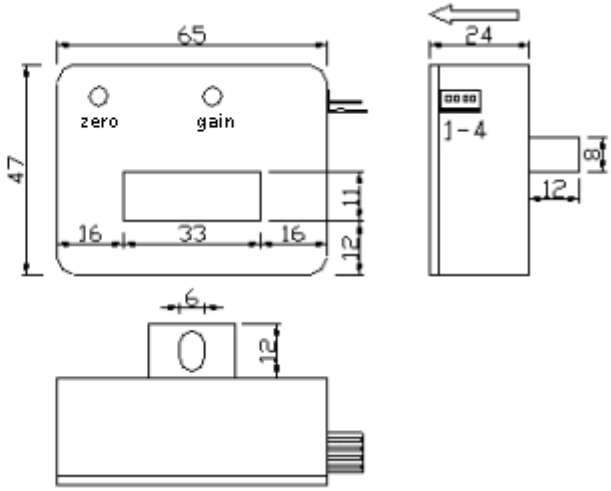


Case style A3

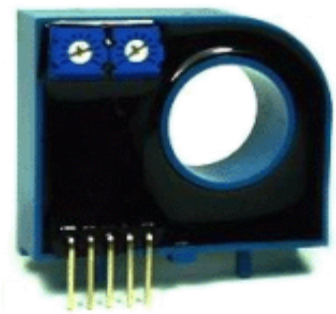


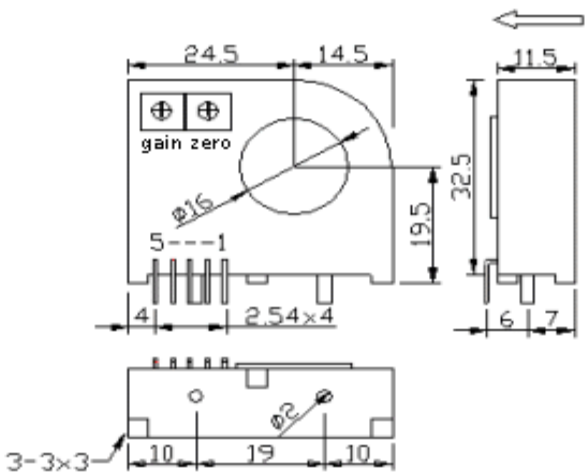
Case style A4



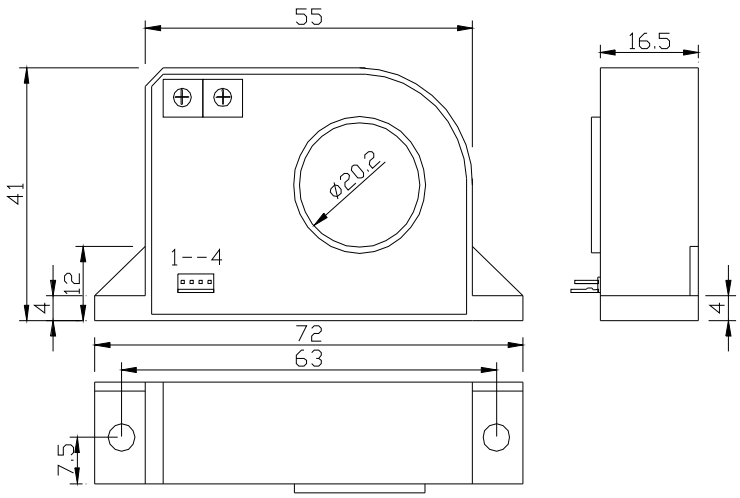


Case style A5

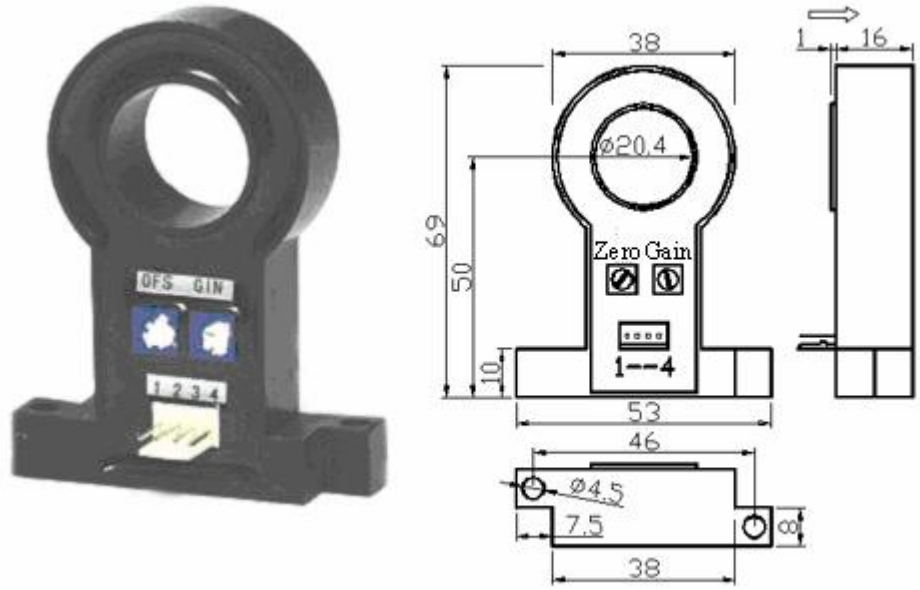




Case style A6

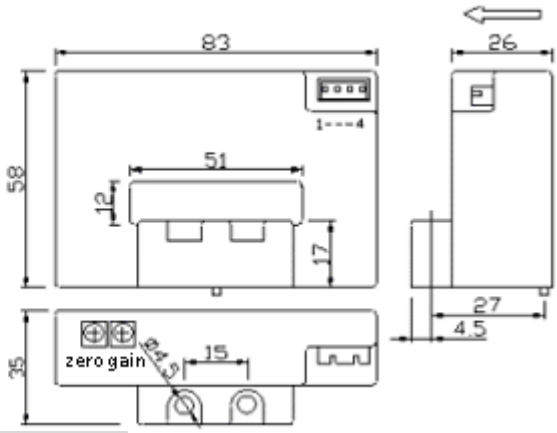


Case style A7

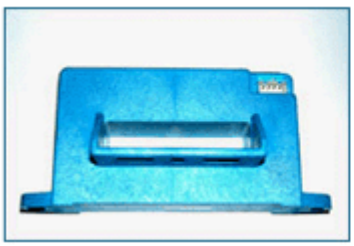


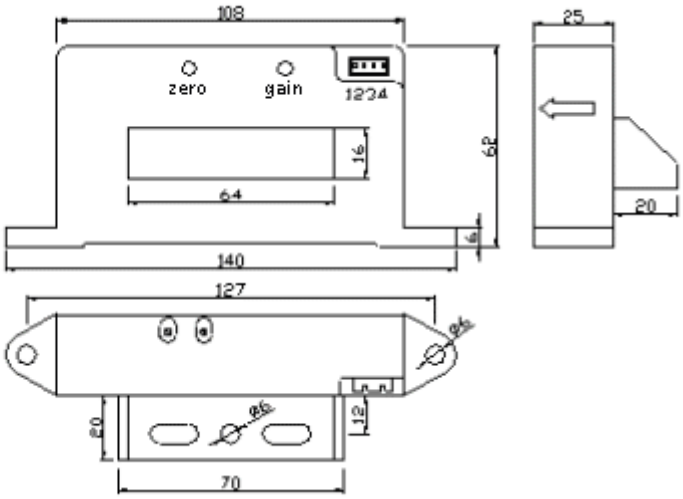
Case style A8

4.2.2 The cases and dimensions of serial B

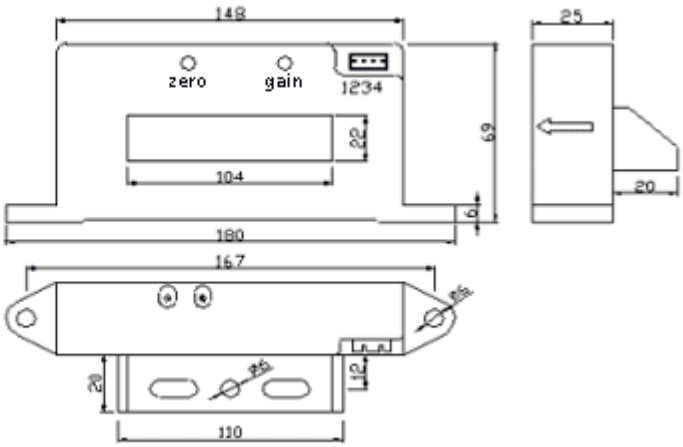


Case style B1

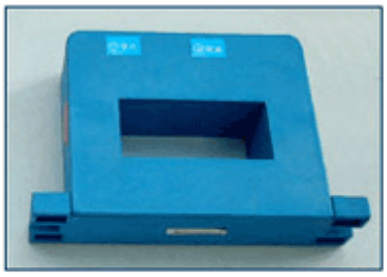


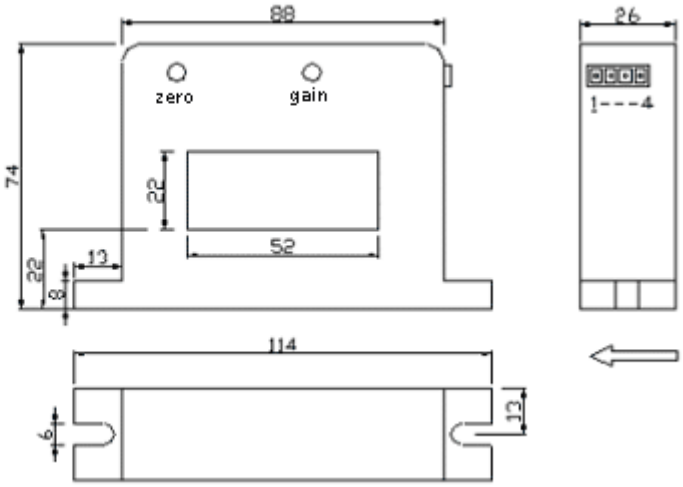


Case style B2

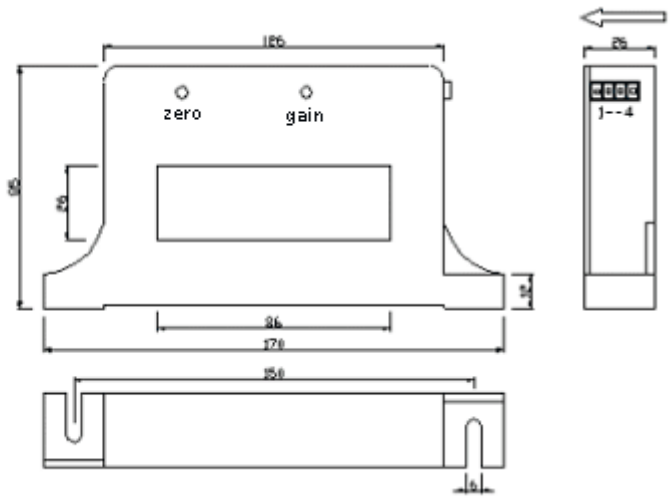


Case style B3

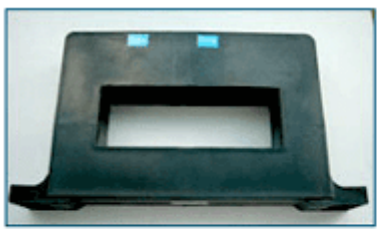


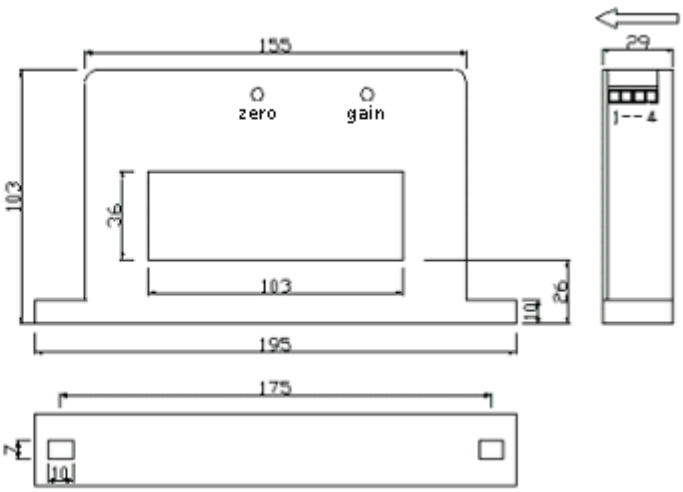


Case style B4

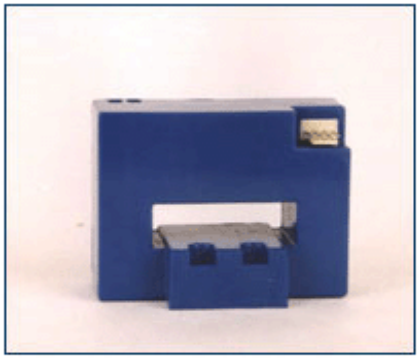


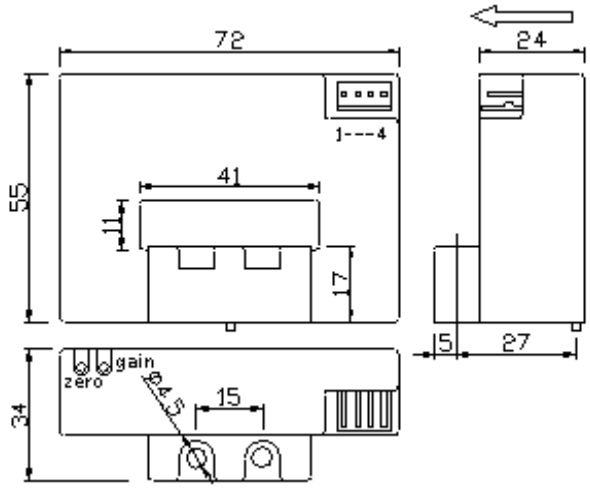
Case style B5



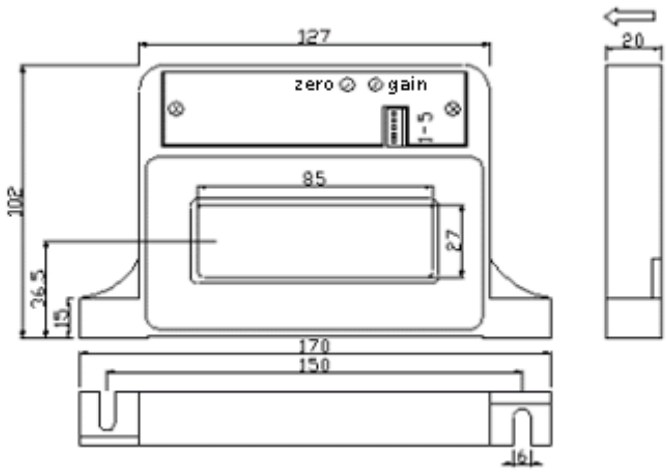


Case style B6



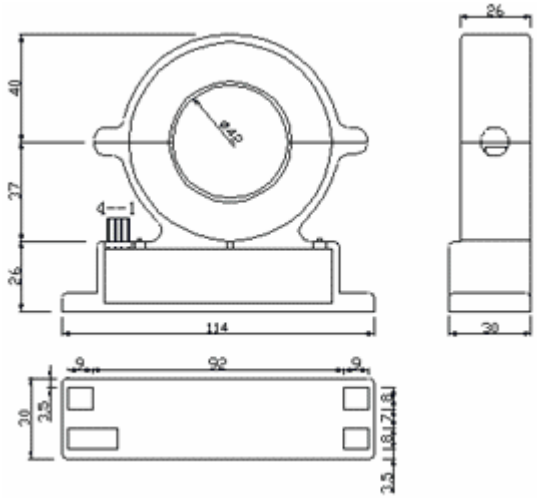


Case style B7

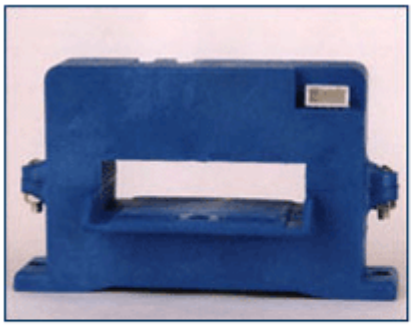


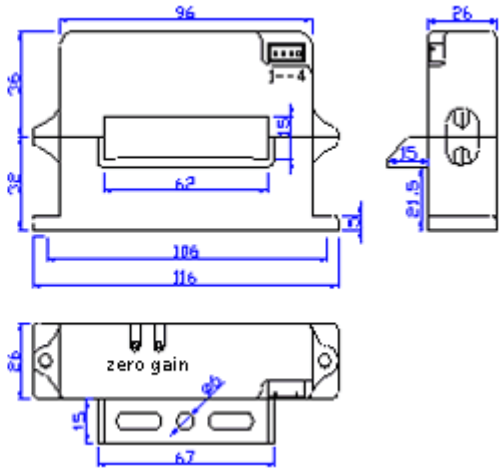
Case style B8

4.2.3 The cases and dimensions of serial C

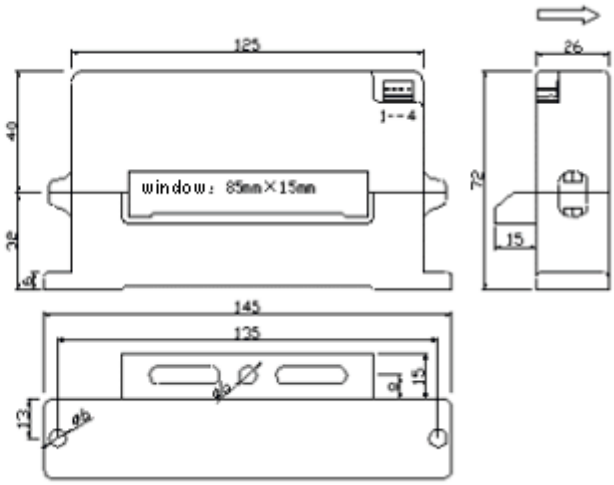


Case style C1

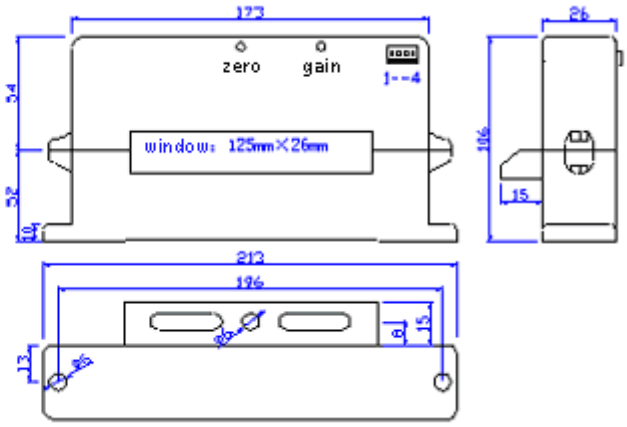




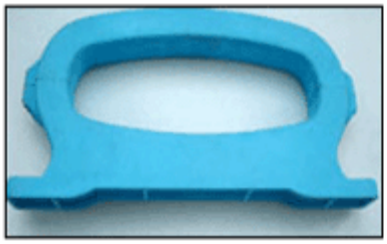
Case style C2

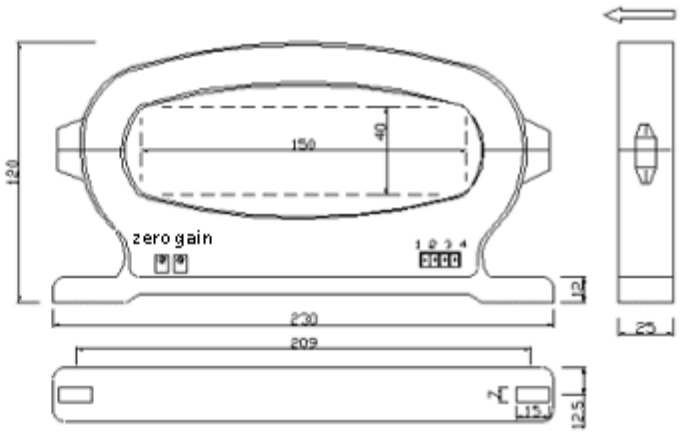


Case style C3

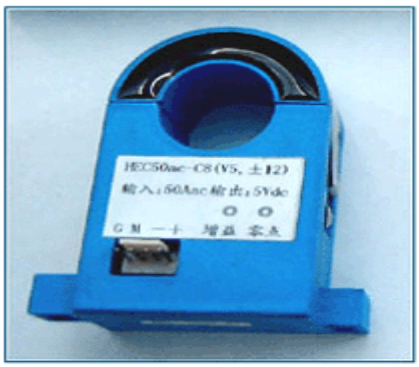


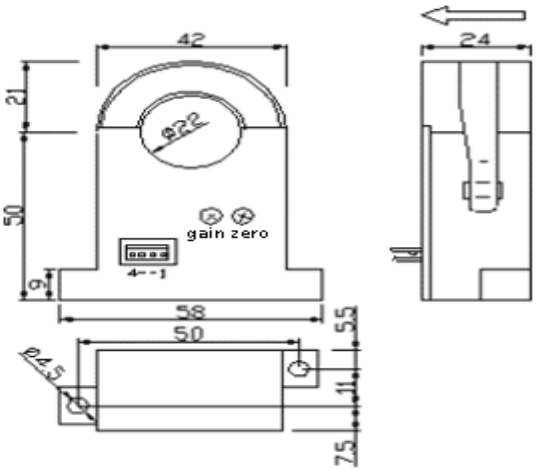
Case style C4



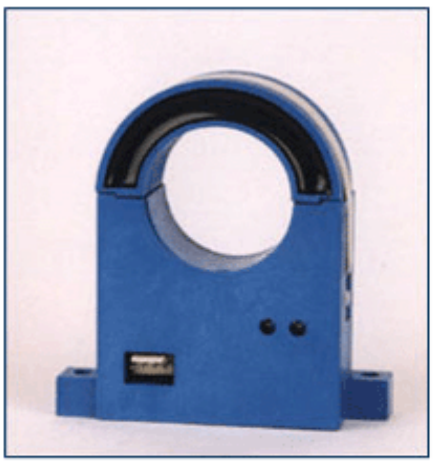


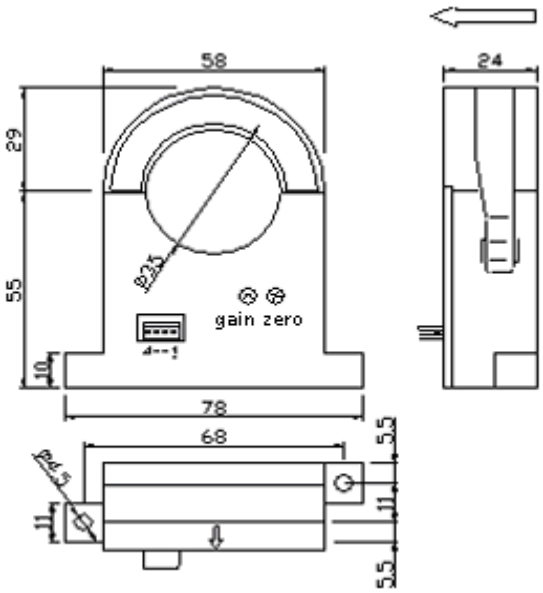
Case style C5



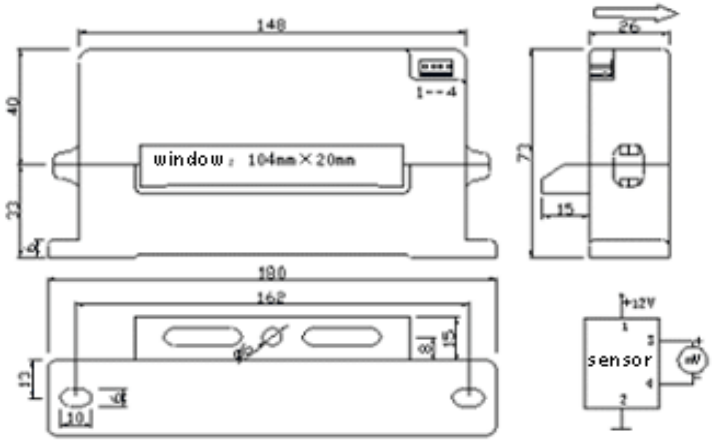


Case style C8

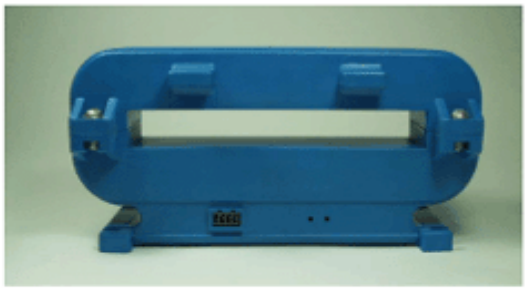


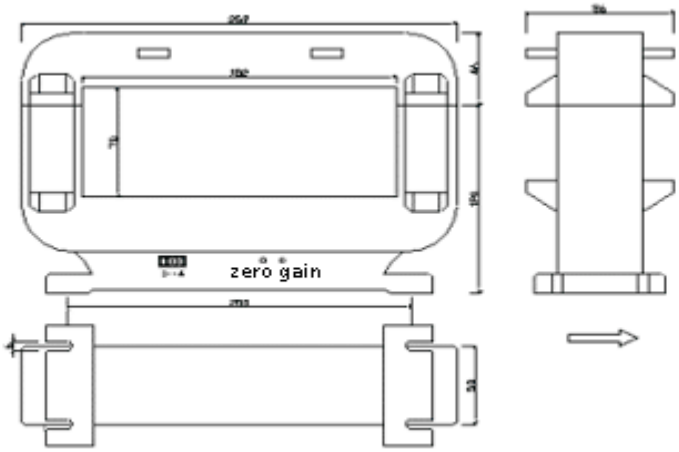


Case style C9

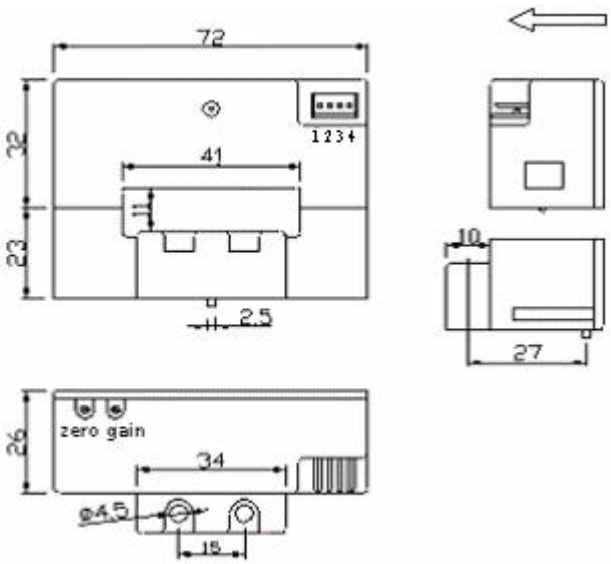


Case style C10

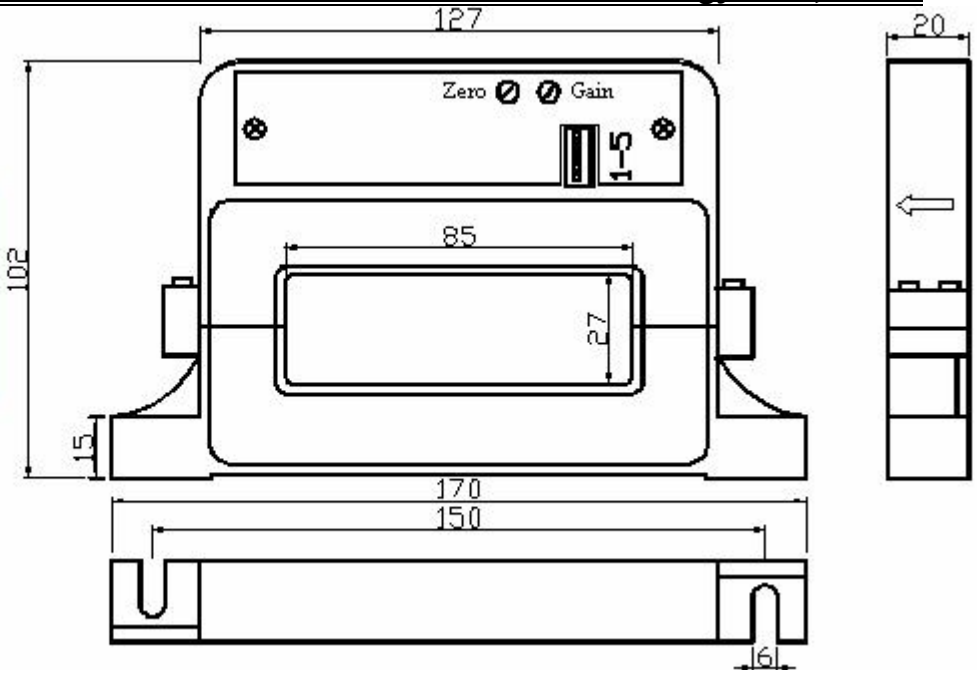




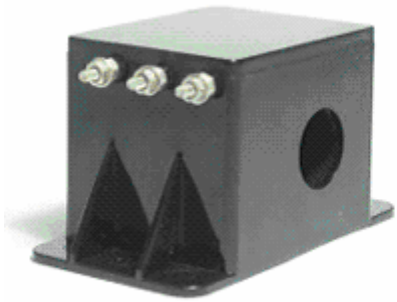
Case style C11

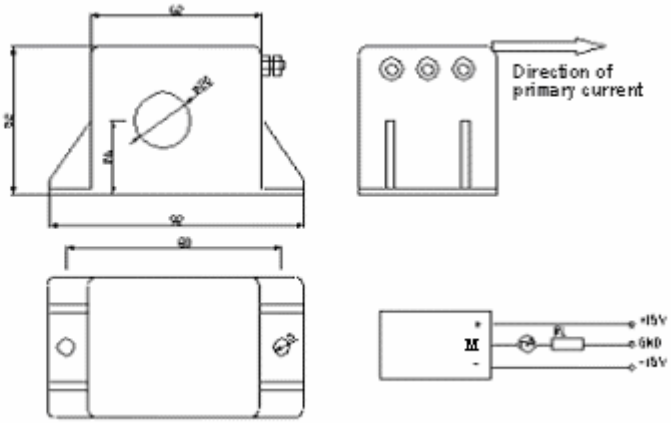


Case style C12

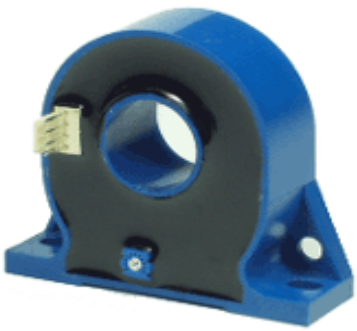


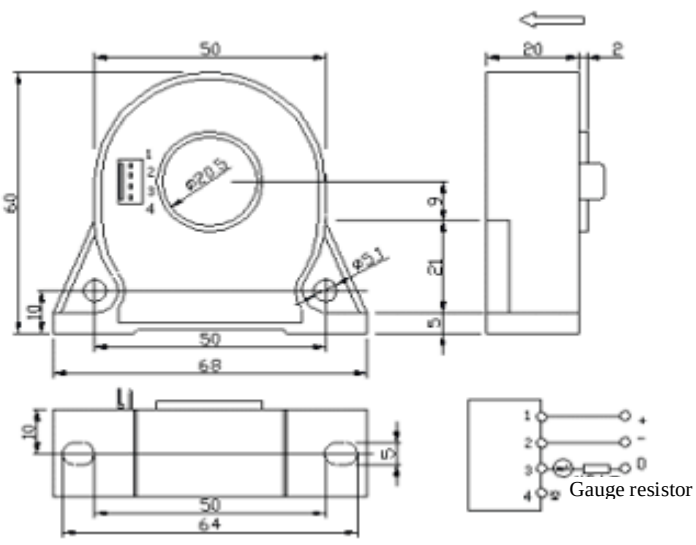
Case style C13



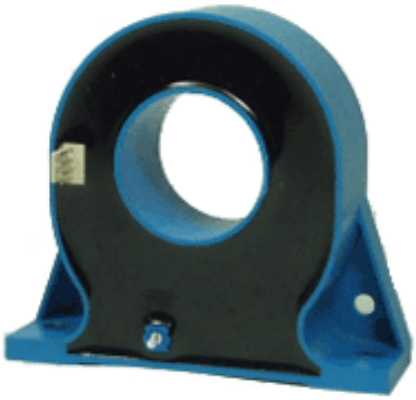


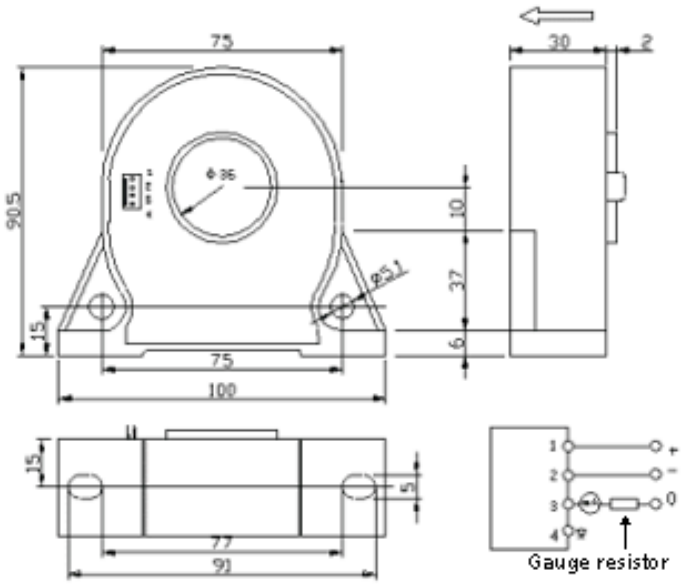
Case style D2





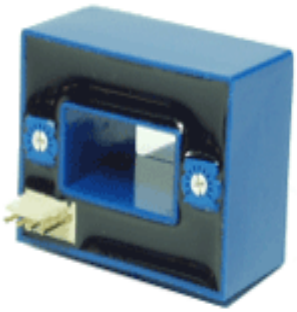
Case Type D6

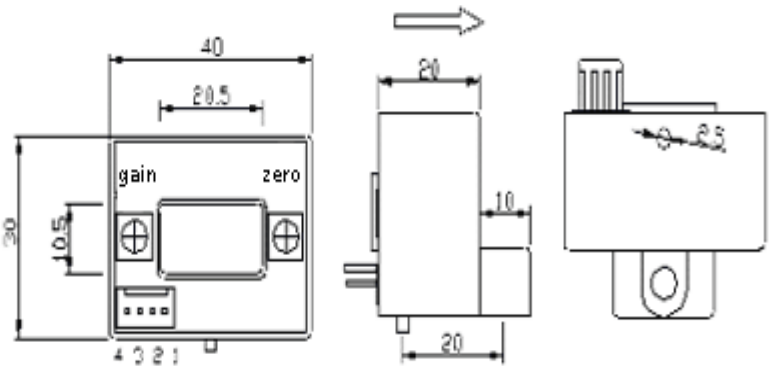




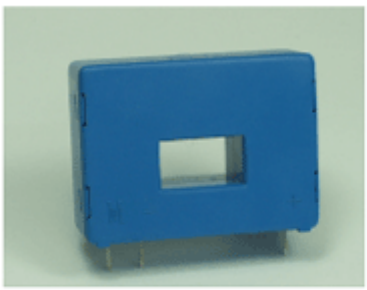
Case style D7

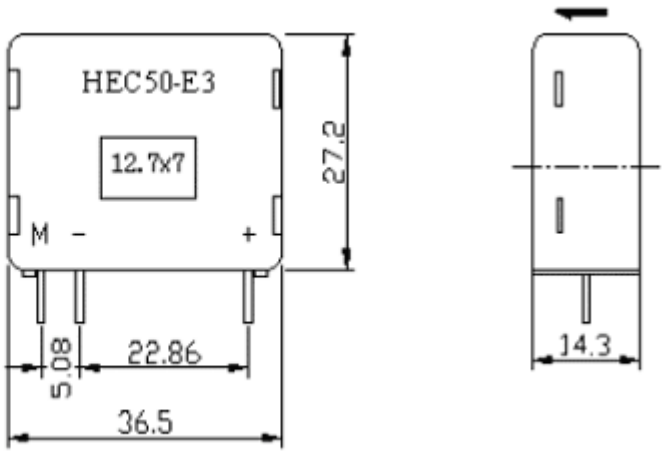
4.2.5 The cases and dimensions of serial E



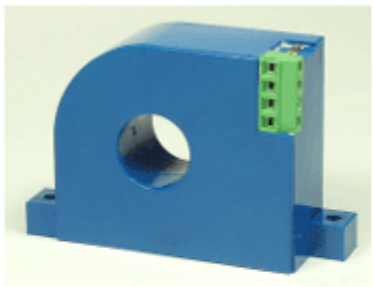


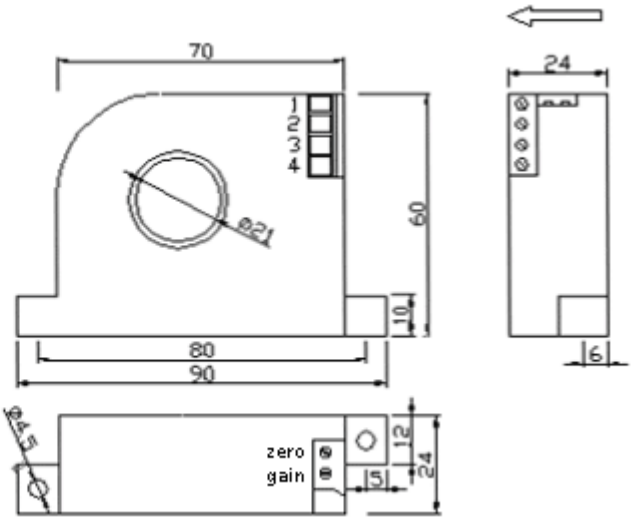
Case style E1



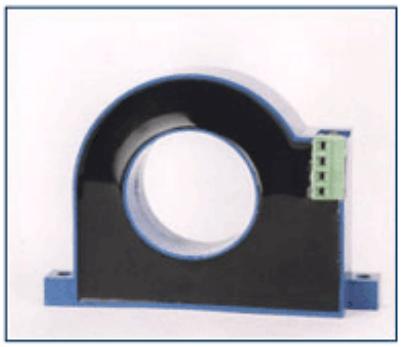


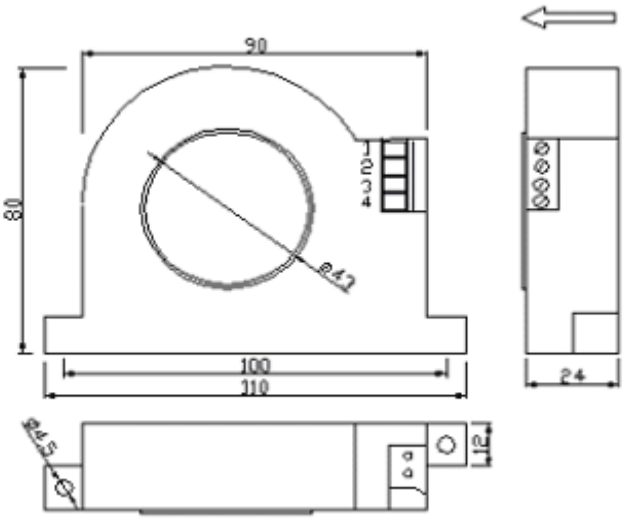
Case style E3



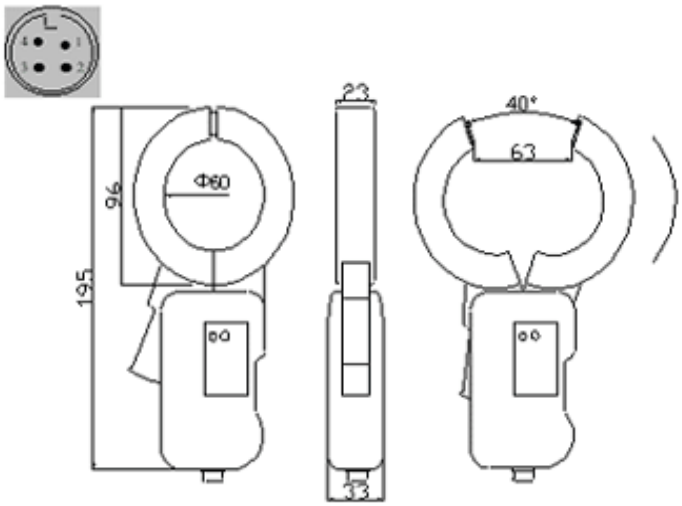


Case style E4

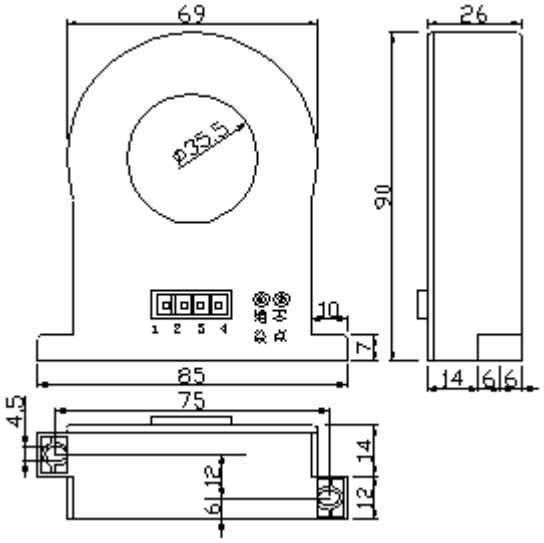




Case style E5

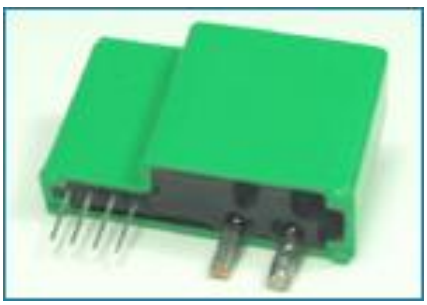


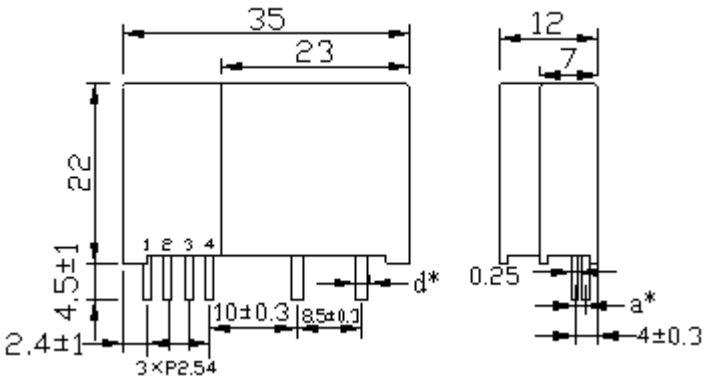
Case style E6



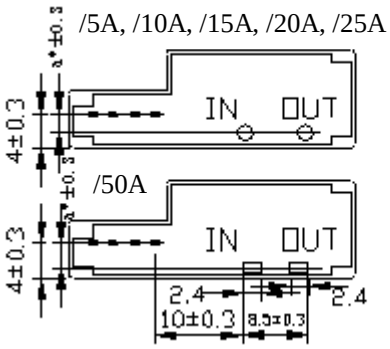
Case style E7

4.2.6 The cases and dimensions of serial





Part Numbers	a*(mm)	d*(mm)
CE-IZ04-□□L …/5A	1.3	Φ0.7
CE-IZ04-□□L …/10A	1.4	Φ1.0
CE-IZ04-□□L …/15A	1.6	Φ1.4
CE-IZ04-□□L …/20A	1.6	Φ1.4
CE-IZ04-□□L …/25A	1.7	Φ1.6
CE-IZ04-□□L …/50A	1.7	1.6×2.4



Chapter 5. Ordering Introduction, Application & Warranty Service

5.1 Introduction of ordering

Ensure a complete correct part number and product descriptions are used according to instructions in Chapters above. The ordering information must include the complete description including input and output parameters such as output function, power supply, case type, accuracy and INPUT range etc.

1. Quantity, delivery and shipping requirements must be included in your order. Please show your complete company name, address, fax number, and email address. Be sure to provide the name of the contact person that we can contact for any questions.

2. The complete order must be signed by both the seller and the buyer.

3. Payment is by irrevocable L/C at sight for large quantities or 50% in advance and the rest to be paid before shipment for small quantity.

5.2 Notice to user

5.2.1 Please check the number, part number and specifications of the products with packing list and label before use.

5.2.2 Please connect input, output and power supply correctly according to corresponding connection diagram and check carefully before powered**.**

5.2.3 Requirement of power supply:

Accuracy: 2% (min.) Ripple: Vpp≤0.4%

5.2.4 It is not allowed that the part numbers with current output operate when their outputs is open or with load resistance more than 250Ω. For the part numbers with voltage output they are not allowed to operate when their outputs is closed or with load resistance less than 2kΩ.

5.2.5 Conductive dust and gases corroding metal may damage the isolation. They are hazardous to the product. Don't operate in that environment.

5.2.6 You should screw the terminals tightly before you measure the output signal on the output terminals with the probes of instrument,

5.2.7 If you need test the accuracy of the product, you have to use an instrument with higher accuracy than that of the product at least 15 minutes later after powering on the product.

5.2.8 If the product operates in environment with strong electrical noise, please shield the input wires and sensing window, meanwhile let the output wire as shorter as possible. When many products are mounted together, please mount the products on a rail with width of 35mm and keep the interval at least 10mm between products. Use M3 screw to mount the product on plane.

5.2.9 The zero adjusting and accuracy of all delivered products were adjusted and calibrated. Don't readjust. Please contact us In case you need adjusting.

5.2.10 Never damage or remove any labels on product.

5.3 Warranty service

5.3.1 SHENZHEN TRANSDUCER ELECTRONIC TECHNOLOGY CO., LTD. warrants its products against all defects in workmanship and material. If you experience a problem with the product, our technicians are available to help you.

5.3.2 In case the product does not operate properly, please contact our Marketing Department or Technical Department by fax or by e-mail and explain the phenomenon of the problem, your operation environment and appoint a technician to contact.

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Version No.： 0502

ELECTRICAL PARAMETER
DIGITAL TRANSDUCER

Series CE—A

“Green is the symbol of life,
CE is pledge of reliability”

Shenzhen Sensor Electronic Technology Co., Ltd.

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CONTENTS

Overview

Series CE-A digital electrical parameter Transducer is intelligent AC/DC parameters measuring device. There are many single or multi-parameter part numbers. For DC part numbers, they can measure voltage and current. For AC part numbers, they can be used in 3-phase 3-wire or 3-phase 4-wire systems to measure up to 15 parameters simultaneously including true RMS of voltage Ua, Ub and Uc, true RMS of current Ia, Ib and Ic, frequency F, active power P, reactive power Q, power factor Cosφ, total active energy Kwh, total reactive energy Kvarh and Pa, Pb and Pc indicating the active power of each of 3 phases. Of course, there are also part numbers for single phase AC circuit.

Their measuring range (input) covers most of common used industrial power system and laboratory applications. Digital output communication interface is RS-485 or RS-232C optionally. The communication is ASCII format or MODBUS protocol. Some of the transducers are of double isolation. It means that the output of the transducer is electrically isolated from its input. Some of transducers are of treble isolation. It means that the input, output and power source of the transducer are isolated each from others. The isolation voltage is up to 2500V/1 min. The transducers provide reliable and stable performance with its MTBF more than 30000 hours. Also it combines many attractive features including high accuracy, easy to program, small size, easy to install, less power consumption, and wide operation temperature etc.

The series CE-A digital electrical parameter Transducer can be applied in many industrial automatic control systems and equipments to measure, monitor and control their operation.

1. Part Numbers

The rule for Part Number of CE-A transducer is in conformity with national standard GB7666-87 of the People's Republic of China.

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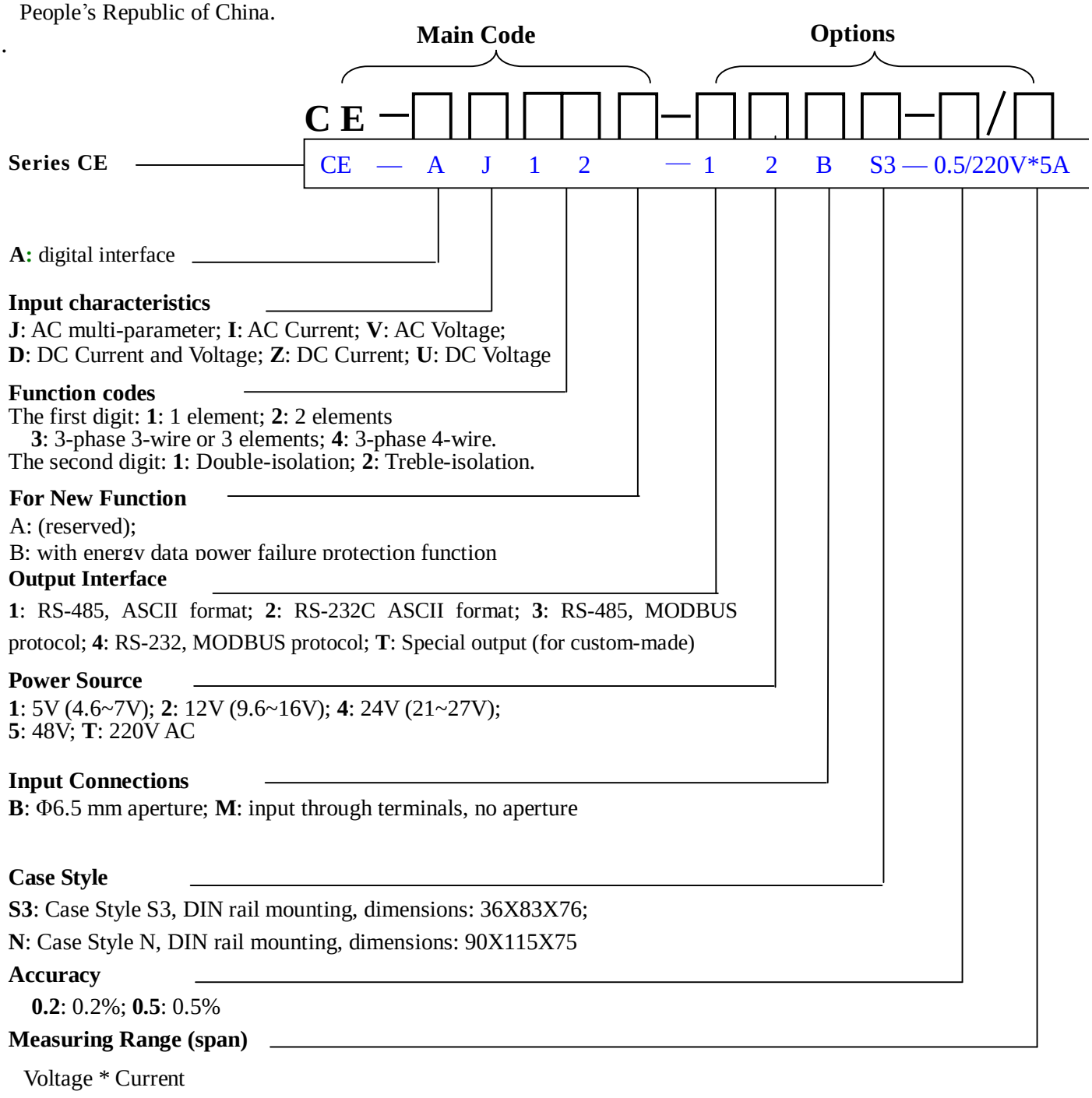


Fig. 1.1 The rule for part numbers of CE-A transducer

When you select a part number according to above mentioned rule, please specify the measuring range (span) you require.

Typical Example 1:

CE-AJ11-12BS3-0.5/110V*5A: 1 element AC multi-parameter Digital Electrical Transducer; double isolation; output: ASCII format, RS-485 interface; power source: +12V; aperture: Φ6.5mm; Case style:

S3; accuracy: 0.5%; measuring range: voltage: 0～110V, current: 0～5A.

Typical Example 2:

CE-AJ42-34MN-0.5/380V*5A: 3-phase 4-wire AC multi-parameter digital electrical transducer; treble isolation; output: MODBUS protocol, RS-485 interface; power source: +24V; no aperture (input connection through terminals); Case style: N; accuracy: 0.5%; measuring range: voltage: AC 0～380V, current: AC 0～5A.

2. List of main functional part numbers and specifications

2.1 List of main functional part numbers

No.	Functions					Part Number	Page
1	Multi-parameter	Single phase	S3 case style	Double isolation	ASCII format RS485	CE-AJ11-1XBS3-0.5/XXXV*XXA	6
					MODBUS RS485	CE-AJ11-3XBS3-0.5/XXXV*XXA	
				Treble isolation	ASCII format RS485	CE-AJ12-1XBS3-0.5/XXXV*XXA	
					MODBUS RS485	CE-AJ12-3XBS3-0.5/XXXV*XXA	
			N case style	Treble isolation	ASCII format RS485	CE-AJ12-1XMN-0.5/XXXV*XXA	
					MODBUS RS485	CE-AJ12-3XMN-0.5/XXXV*XXA	
		3-phase 3-wire	S3 case style	Double isolation	ASCII format RS485	CE-AJ31-1XBS3-0.5/XXXV*XXA	7
					MODBUS RS485	CE-AJ31-3XBS3-0.5/XXXV*XXA	
				Treble isolation	ASCII format RS485	CE-AJ32-1XBS3-0.5/XXXV*XXA	
					MODBUS RS485	CE-AJ32-3XBS3-0.5/XXXV*XXA	
			N case style	Treble isolation	ASCII format RS485	CE-AJ32-1XMN-0.5/XXXV*XXA	
					MODBUS RS485	CE-AJ32-3XMN-0.5/XXXV*XXA	
		3-phase 4-wire	S3 case style	Double isolation	ASCII format RS485	CE-AJ41-1XBS3-0.5/XXXV*XXA	8
					MODBUS RS485	CE-AJ41-3XBS3-0.5/XXXV*XXA	
				Treble isolation	ASCII format RS485	CE-AJ42-1XBS3-0.5/XXXV*XXA	
					MODBUS RS485	CE-AJ42-3XBS3-0.5/XXXV*XXA	
			N case style	Treble isolation	ASCII format RS485	CE-AJ42-1XMN-0.5/XXXV*XXA	
					MODBUS RS485	CE-AJ42-3XMN-0.5/XXXV*XXA	
2	AC Current	1 element	S3 or N case style	Treble isolation	ASCII format RS485	CE-AI12-1XXX-0.5/XXA	10
					MODBUS RS485	CE-AI12-3XXX-0.5/XXA	
		2 elements		Treble isolation	ASCII format RS485	CE-AI22-1XXX-0.5/XXA	
					MODBUS RS485	CE-AI22-3XXX-0.5/XXA	
		3 elements		Treble isolation	ASCII format RS485	CE-AI32-1XXX-0.5/XXA	
					MODBUS RS485	CE-AI32-3XXX-0.5/XXA	
3	AC Voltage	1 element		Treble isolation	ASCII format RS485	CE-AV12-1XMX-0.5/XXXV	11
					MODBUS RS485	CE-AV12-3XMX-0.5/XXXV	
		3-phase 3-wire		Treble isolation	ASCII format RS485	CE-AV32-1XMX-0.5/XXXV	
					MODBUS RS485	CE-AV32-3XMX-0.5/XXXV	
		3-phase 4-wire		Treble isolation	ASCII format RS485	CE-AV42-1XMX-0.5/XXXV	
					MODBUS RS485	CE-AV42-3XMX-0.5/XXXV	
4	DC Current	1 element	S3 case style	Double isolation	ASCII format RS485	CE-AZ11-1XMS3-0.5/XXA	13
					MODBUS RS485	CE-AZ11-3XMS3-0.5/XXA	
5	DC Voltage	1 element		Double isolation	ASCII format RS485	CE-AU11-1XMS3-0.5/XXXV	13
					MODBUS RS485	CE-AU11-3XMS3-0.5/XXXV	

Note: All listed part numbers are of RS485 output interface. All part numbers with N case style have RS232C output interface options. But all part numbers with S3 case style have only RS485 output interface. For users requiring RS232C output interface, we can provide a RS485 to RS232C converter to meet your requirement.

2.2 General specifications

No.	Item	Data	Unit	Remarks
1	Accuracy	0.2, 0.5	%	0.2% for voltage & current measuring
2	Baudrate	19.2K, 9600(default), 4800, 2400, 1200	bps	
	Communication	RS-485 twisted pair line		half duplex operation
	Communication distance	1200	m	Repeater can be used to extend communication distance
	Max. number of nodes	64	node	
	Bus protection	400W transient voltage		ESD protection and thermosnap
3	A/D speed	100	mS	
4	Working temperature	-10℃ – +55℃		
5	Isolation	2500V DC for 1 min. between input and output. 2500V DC for 1 min. between input and power supply. 2500V DC for 1 min. between output and power supply.	V	For double isolation part numbers, their output and power supply are grounded together. Only 2500V DC for 1 min. between input and output applicable.
6	Overload	2 x Voltage span for 1 sec. 10 times with interval of 10 sec. 10 x Current span for 1 sec. 5 times with a interval of 300 sec.		The input outside the linear range will result in poor accuracy.
7	MTBF	>30000	Hour	
8	Auxiliary power supply	+5V/+12V/+24V/+48V/ AC220V	V	
9	Power consumption	+12V≤250mW, +24V≤500mW	mW	Power consumption depends on power supply to be used.
10	Temperature drift	≤300	ppm	0 – 50℃

3. Product tree

3.1 1 element AC Electrical Multi-parameter Digital Transducer

3.1.1 Part numbers

CE-AJ11——1 element, double isolation, S3 case style.
CE-AJ12——1 element, treble isolation, S3 or N or S5 case style.

3.1.2 Features

- Accuracy—— Frequency: 0.05Hz. Voltage, current, power factor, active power, reactive power, active energy, reactive energy: 0.5%. (Accuracy, linearity and quotation error are ignored when the input voltage is below 5% of span.)
- Data output——True RMS of voltage Ua, RMS of current Ia, frequency F, active power P (positive or negative), reactive power Q (positive or negative), power factor Cosφ (positive or negative), active energy Kwh (positive or negative) and reactive energy Kvarh (positive or negative).

  Output data of F and Cosφ indicate the real value of the frequency and power factor measured.

  Output data of other parameters are shown in the form of a percentage as the ratio of the real value to the maximum value of its measuring range.

  CE-AJ11B and CE-AJ12B provides accumulative energy data power failure protection function. They can save the accumulated active and reactive energy data into ferroelectric RAM inside the transducer when power is removed, and when power is reconnected to the transducer the transducer begins accumulating energy from where it left off when power was removed.

- Input (measuring range) —— AC 45-65Hz (response frequency can reach 1KHZ), voltage: 0~500V. (Custom made available), current: 0~100A(50A is the max input for S3 case style, Φ 6.5mm; 100A is the max input for S5 case style, Φ 11mm)

3.1.3 Case Style

See 7.2 on page 27 for case styles.

3.1.4 Connections

3.1.4.1 See Fig. 3.1.4.1 for connections of 1 element AC Electrical Multi-parameter Digital Transducer, double isolation, S3 case style.

The terminal No. 7 can supply +5V power for RS485/RS-232C converter. Its max output current is 20mA

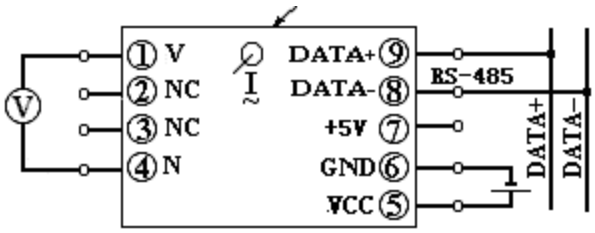


Fig. 3.1.4.1 Connections of 1 element, double isolation, S3 case style.

3.1.4.2 See Fig. 3.1.4.2 for connections of 1 element AC Electrical Multi-parameter Digital Transducer, treble isolation, S

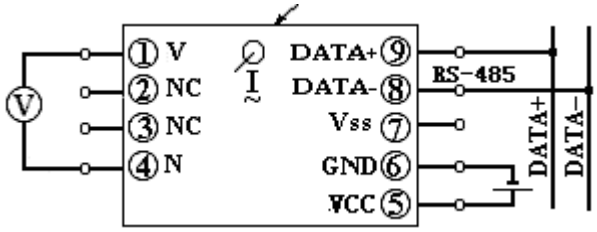
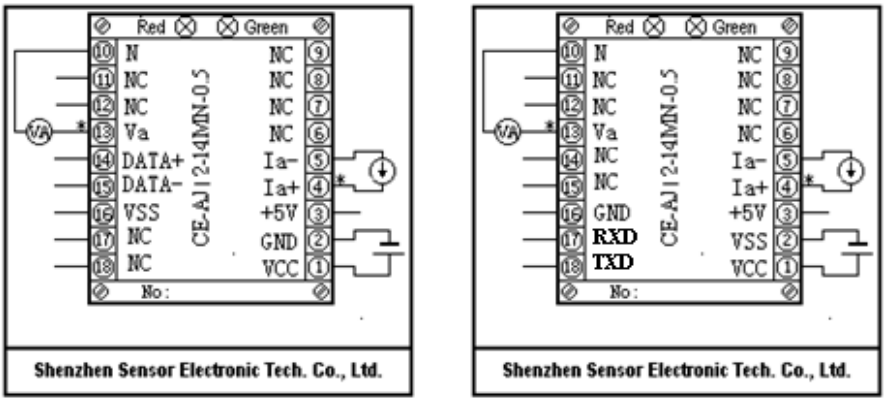


Fig.3.1.4.2 Connections of 1 element, treble isolation, S3 case style.
(Terminal 7 Vss is the Ground of RS-485 bus.)

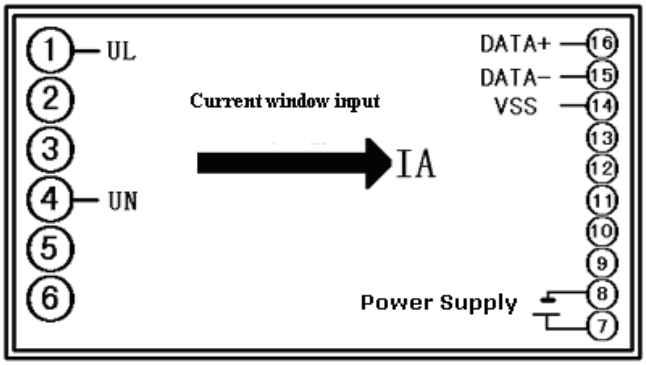
3.1.4.3 See Fig. 3.1.4.3 for Connections of 1 element AC Electrical Multi-parameter Digital Transducer, treble isolation, N case style.



RS-485 interface RS-232C interface

Fig.3.1.4.3 Connections of 1 element, treble isolation, N case style.

3.1.4.4 See Fig. 3.1.4.4 for Connections of 1 element AC Electrical Multi-parameter Digital Transducer, treble isolation, S5 case style.



3.2 3-phase 3-wire (Two-wattmeter method) Electrical Multi-parameter Digital Transducer

3.2.1 Part numbers

CE-AJ31——3-phase 3-wire (two-wattmeter method), double isolation, S3 case style.
CE-AJ32——3-phase 3-wire (two-wattmeter method), treble isolation, N, S3 and S5 case style.

3.2.2 Features

- Accuracy—— Frequency: 0.05Hz. Voltage, current, power factor, active power, reactive power, active energy, reactive energy: 0.5 %. (Accuracy, linearity and quotation error are ignored when the voltage is below 5% of span.)

- Data output——True RMS of voltage Uab and Ucb, true RMS of current Iab and Icb, frequency F, active power P (positive or negative), reactive power Q (positive or negative), power factor Cosφ (positive or negative), active energy Kwh (positive or negative) and reactive energy Kvarh (positive or negative).

  Output data of F and Cosφ indicate the real value of the frequency and power factor measured.

  Output data of other parameters are shown in the form of a percentage as the ratio of the real value to the maximum value of its measuring range.

  CE-AJ31B and CE-AJ32B provides accumulative energy data power failure protection function. They

can save the accumulated active and reactive energy data into ferroelectric RAM inside the transducer when power is removed, and when power is reconnected to the transducer the transducer begins accumulating energy from where it left off when power was removed.

- Input (measuring range) ——AC 45-65Hz (response frequency can reach 1KHZ); voltage: 0~500V. (Custom made available); current: 0~100A(50A is the max input for S3 case style, Φ 6.5mm; 100A is the max input for S5 case style, Φ 11mm)

3.2.3 Case Style

See 7.2 on page 27 for case styles.

3.2.4 Connections

3.2.4.1 See Fig. 3.2.4.1 for connections of 3-phase 3-wire (two-wattmeter method) Electrical Multi-parameter Digital Transducer, double isolation, S3 case style.

The terminal No. 7 can supply +5V power for RS485/RS-232C converter. Its max output current is 20mA.

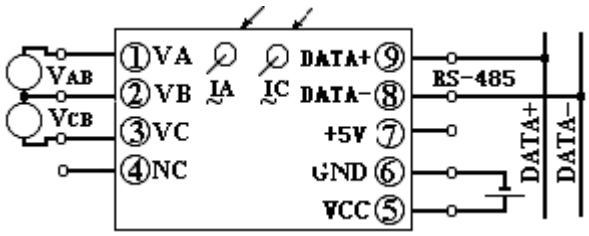


Fig. 3.2.4.1 Connections of 3-phase 3-wire, double isolation, S3 case style.

3.2.4.2 See Fig. 3.2.4.2 for connections of 3-phase 3-wire (two-wattmeter method) Electrical Multi-parameter Digital Transducer, treble isolation, S3 case style.

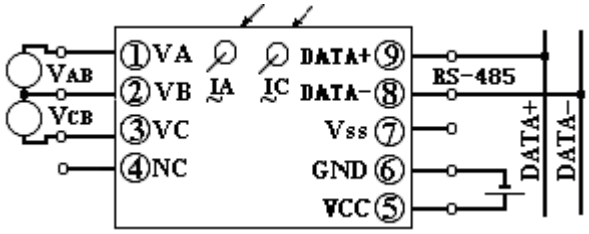


Fig. 3.2.4.2. Connections of 3-phase 3-wire, treble isolation, S3 case style
(Terminal 7 Vss is the Ground of RS-485 bus.)

3.2.4.3 See fig. 3.2.4.3 and 3.2.4.4 for connections of 3-phase 3-wire Electrical Multi-parameter Digital Transducer treble isolation N case style.

The terminal No. 3 can supply +5V power for RS485/RS-232C converter; its max current output is 20mA.

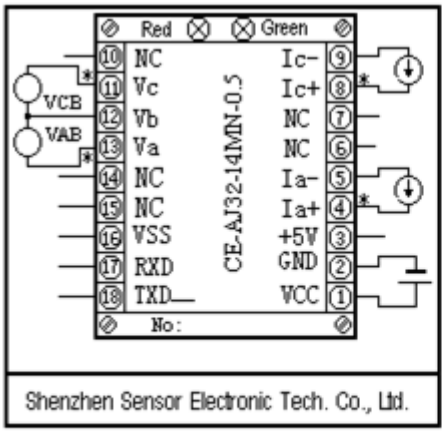


Fig. 3.2.4.3 RS-232C interface

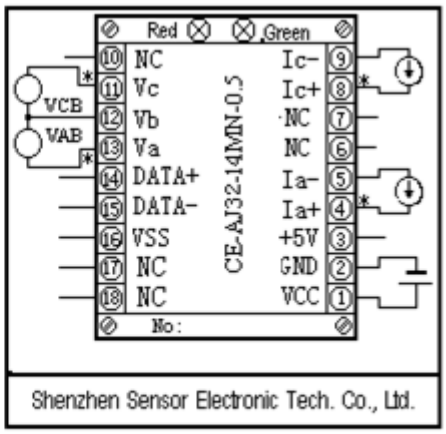
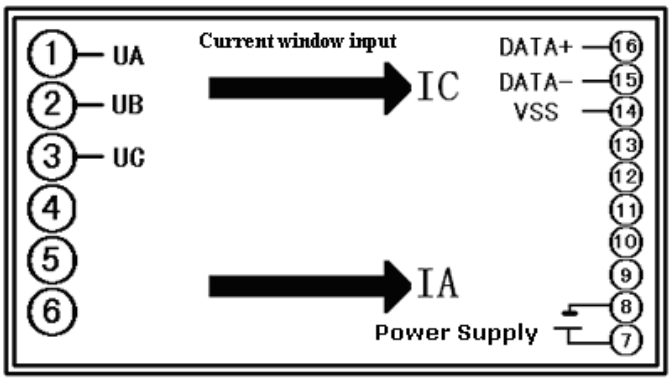


Fig. 3.2.4.4 RS-485 interface

Connections of 3-phase 3-wire treble isolation N case style

3.2.4.5 See fig. 3.2.4.5 for connections of 3-phase 3-wire Electrical Multi-parameter Digital Transducer treble isolation S5 case style.



3.3 3-phase 4-wire Electrical Multi-parameter Digital Transducer (12 or 15 parameter outputs optional)

3.3.1 Part numbers

CE-AJ41——3-phase 4-wire, double isolation, 12 parameter outputs, S3 case style
CE-AJ42——3-phase 4-wire, treble isolation, 15 parameter outputs, S3 case style.

CE-AJ51——3-phase 4-wire, double isolation, 12 parameter outputs, S3, N or S5 case style
CE-AJ52——3-phase 4-wire, treble isolation, 15 parameter outputs, S3, N or S5 case style

CE-AJ41B/AJ42B/AJ51B/AJ52B are with energy data power failure protection function

3.3.2 Features

- Accuracy—— Frequency: 0.05 Hz. Voltage, current, power factor, active power, reactive power, active energy, reactive energy: 0.5%. (Accuracy, linearity and quotation error are ignored when the voltage is below 5% of span.)

- Data output—— True RMS of voltage Ua, Ub and Uc, true RMS of current Ia, Ib and Ic, frequency F, active power P (positive or negative), reactive power Q (positive or negative), power factor Cosφ (positive or negative), active energy Kwh (positive or negative) and reactive energy Kvarh (positive or negative). The total outputs are 12 parameters. If it is requested, the 3-phase 4-wire transducers can provide Pa, Pb and Pc output indicating the active power of each of 3 phases besides total active power. Then total outputs are15 parameters.

  Output data of F and Cosφ indicate the real value of the frequency and power factor measured.

  Output data of other parameters are shown in the form of a percentage as the ratio of the real value to the maximum value of its measurable range

  CE-AJ41B and CE-AJ42B provide accumulative energy data power failure protection function. They can save the accumulated active and reactive energy data into ferroelectric RAM inside the transducer when power is removed, and when power is reconnected to the transducer the transducer begins accumulating energy from where it left off when power was removed

- Input (measuring range) ——AC 45-65Hz (response frequency can reach 1KHZ), voltage: 0~500V. (Custom made available), current: 0~100A(50A is the max input for S3 case style, Φ 6.5mm; 100A is the max input for S5 case style, Φ 11mm)

- **3.3.3 Case style**

See 7.2 on page 27 for case styles.

3.3.4 Connections

3.3.4.1 See Fig. 3.3.4.1 for connections of 3-phase 4-wire Electrical Multi-parameter Digital Transducer, double isolation S3 case style.

The terminal No. 7 can supply +5V power for RS485/RS-232C converter. Its max output current is 20mA.

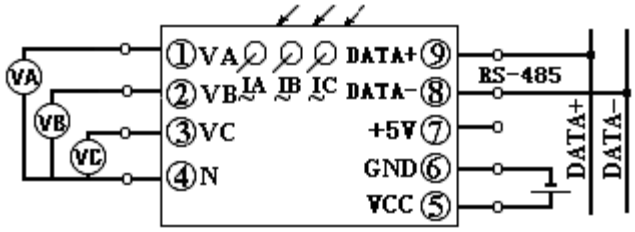


Fig. 3.3.4.1 Connections of 3-phase 4-wire double isolation S3 case style.

3.3.4.2 See Fig. 3.3.4.2 for connections of 3-phase 4-wire Electrical Multi-parameter Digital Transducer, treble isolation, S3 case style.

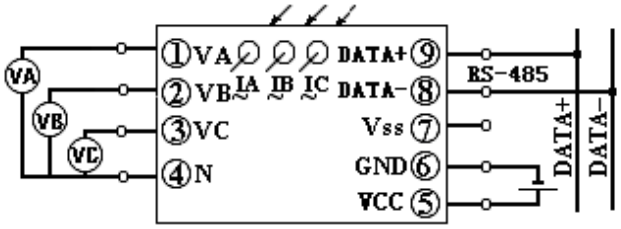
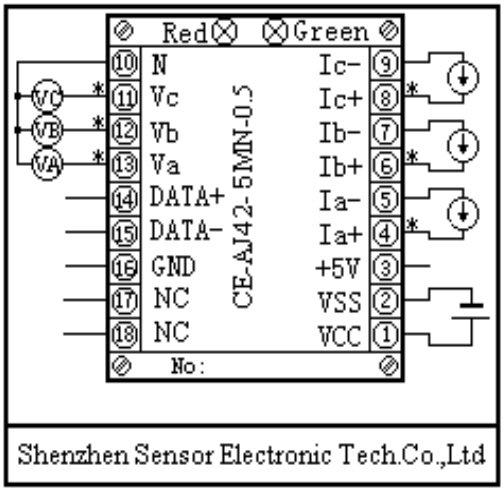


Fig. 3.3.4.2 Connections of 3-phase 4-wire treble isolation S3 case style.
(Terminal 7 Vss is the Ground of RS-485 bus.)

3.3.4.3 See fig. 3.3.4.3 and 3.3.4.4 for connections of 3-phase 4-wire Electrical Multi-parameter Digital Transducer, treble isolation, N case style product

The terminal No. 3 can supply +5V power for RS485/RS-232C converter; its max output current is 20mA.



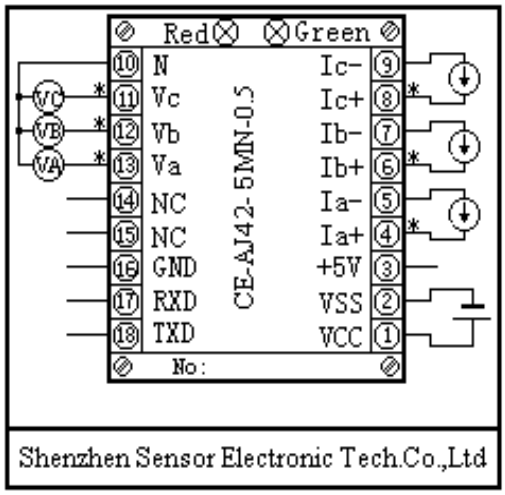
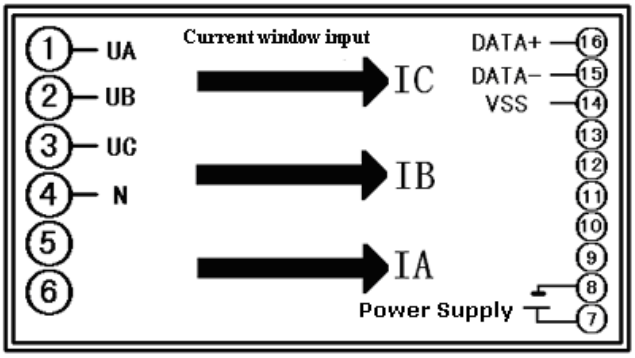


Fig.3.3.4.3 RS-485 interface Fig. 3.3.4.4 RS-232C interface
Connections of 3-phase 4-wire N case style transducer

3.3.4.5 See fig. 3.3.4.5 for connections of 3-phase 4-wire Electrical Multi-parameter Digital Transducer, treble isolation, S5 case style product



3.4 AC Current Single Parameter Digital Transducer

3.4.1 Part numbers

CE-AI12——1 element treble isolation AC current digital transducer. S3 and N case style.
CE-AI22——2 elements treble isolation AC current digital transducer. S3 and N case style.
CE-AI32——3 elements treble isolation AC current digital transducer. S3 and N case style.

3.4.2 Features

- Accuracy —— 0.2%
- Output Data——True RMS of Current I. CE-AI12 outputs Ia. CE-AI22 can measure two independent currents. Its outputs are Ia and Ic. CE-AI32 can measure three independent currents. Its outputs are Ia, Ib, Ic. All the output data are shown in the form of a percentage as the ratio of the real value to the maximum value of its measurable range
- Input (measuring range) —— AC current: 0~100A(50A is the max input for S3 case style, Φ 6.5mm; 100A is the max input for S5 case style, Φ 11mm)

3.4.3 Case style

See 7.2 on page 27 for case styles.

3.4.4 Connections

3.4.4.1 See Fig. 3.4.4.1 for connections of CE-AI12 —— 1 element treble isolation AC current digital transducer. S3 case style.

See Fig. 3.4.4.2 for connections of CE-AI22 —— 2 elements treble isolation AC current digital transducer. S3 case style.

See Fig. 3.4.4.3 for connections of CE-AI32 —— 3 elements treble isolation AC current digital transducer. S3 case style.

The terminal No. 7 can supply +5V power for RS485/RS-232C converter. Its max output current is 20mA.

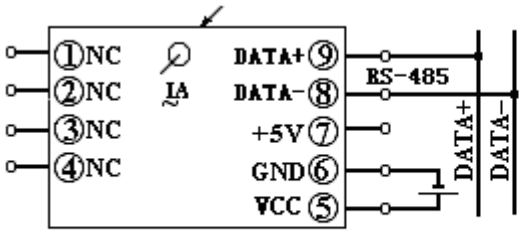


Fig. 3.4.4.1 Connections of CE-AI12
S3 case style.

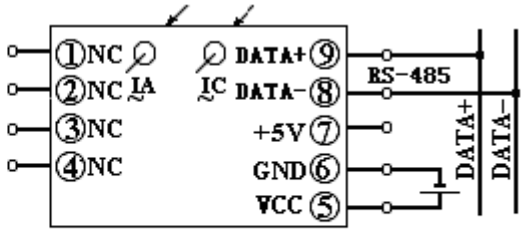


Fig. 3.4.4.2 Connections of CE-AI22
S3 case style.

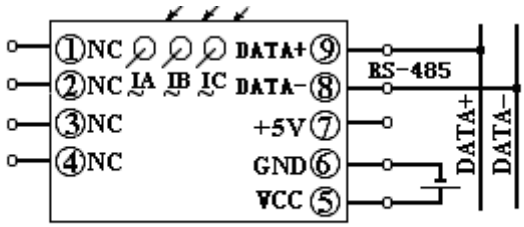


Fig. 3.4.4.3 Connections of CE-AI32, S3 case style.

3.4.4.2 See Fig. 3.4.4.4 for connections of CE-AI12 —— 1 element treble isolation AC current digital transducer. N case style.

See Fig. 3.4.4.5 for connections of CE-AI32 —— 3 elements treble isolation AC current digital transducer. N case style.

Output of CE-AI22 —— 2 elements treble isolation AC current digital transducer, N case style are Ia and Ic.

All current inputs are through terminals.

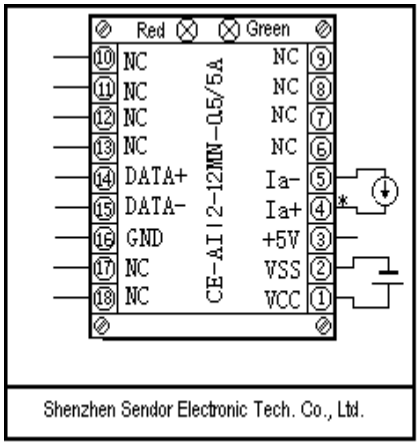


Fig. 3.4.4.4 Connections of CE-AI12 N case style.

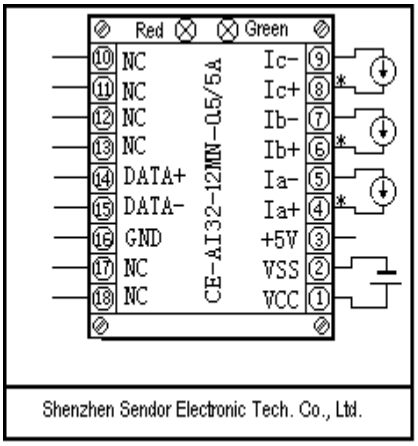


Fig. 3.4.4.5 Connections of CE-AI32 N case style.

3.4.4.3 Omit the wire diagram.of case style S5, hole-tru current input, the connection of output terminals can refer to Fig. 3.1.4.4, 3.2.4.5, 3.3.4.5. And there is no voltage input.

3.5 AC Voltage Single Parameter Digital Transducer

3.5.1 Part numbers

CE-AV12——1 element, treble isolation, AC voltage digital transducer. S3 ,S5 or N case style.

CE-AV32——3-phase 3-wire (two-wattmeter method), treble isolation, AC voltage digital transducer. S3 and N case style.

CE-AV42——3-phase 4-wire, treble isolation, AC voltage digital transducer. S3 and N case style.

3.5.2 Features

- Accuracy —— 0.2%
- Output Data—— True RMS of Voltage, CE-AV12 outputs Ua, CE-AV32 outputs Ua and Uc, CE-AV42 outputs Ua, Ub and Uc. All output data are shown in the form of a percentage as the ratio of the real value to the maximum value of its measurable rang.
- Input (measuring range) —— Voltage: 110V, 220V, 380V and 500V. (Custom made available)

3.5.3 Case style

See 7.2 on page 27 for case styles.

3.5.4 Connections

3.5.4.1 See Fig. 3.5.4.1 for connections of CE-AV12, S3 case style.
See Fig. 3.5.4.2 for connections of CE-AV32, S3 case style.
See Fig. 3.5.4.3 for connections of CE-AV42, S3 case style.

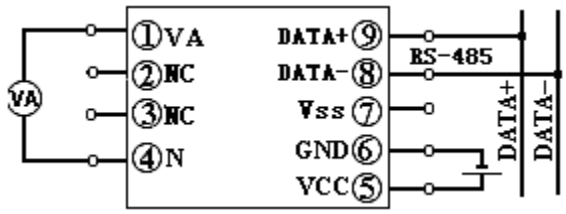


Fig. 3.5.4.1 Connections of CE-AV12, S3 case style.

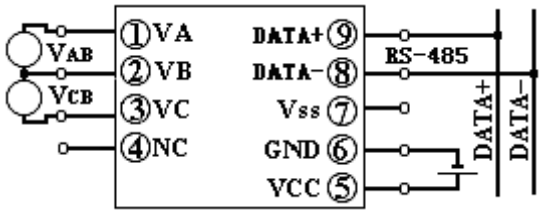


Fig. 3.5.4.2 Connections of CE-AV32, S3 case style

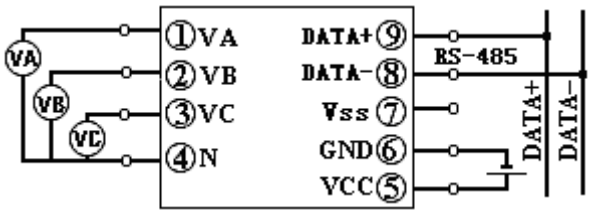


Fig. 3.5.4.3 for connections of CE-AV42, S3 case style

3.5.4.2 See Fig. 3.5.4.4 for connections of CE-AV32, N case style.
See Fig. 3.5.4.5 for connections of CE-AV42, N case style.
See Fig. 3.5.4.5 for connections of CE-AV12, N case style. Its input is Va only.

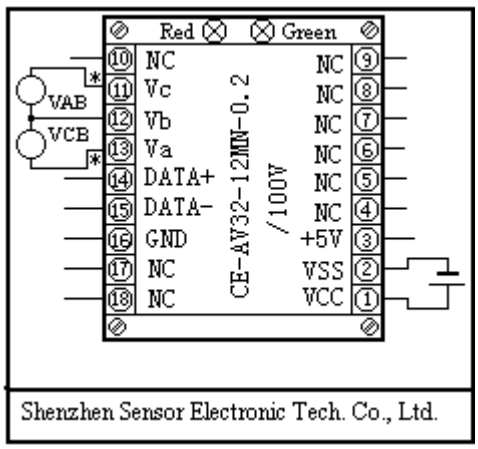


Fig. 3.5.4.4 Connections of CE-AV32, N case style.

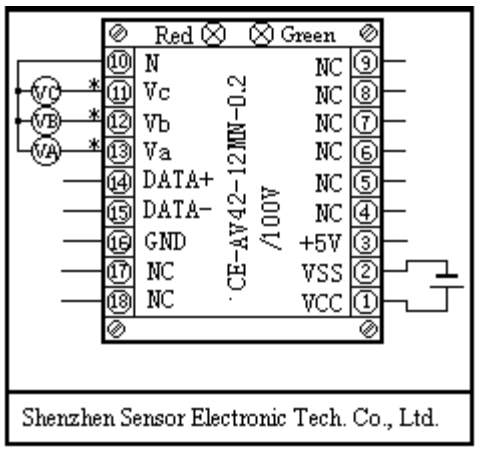


Fig. 3.5.4.5 Connections of CE-AV42, N case style

3.5.4.3 Omit the wire diagram.of case style S5, hole-tru current input, the connection of output terminals can refer to Fig. 3.1.4.4, 3.2.4.5, 3.3.4.5. And there is no current input.

3.6 DC Current / Voltage Single Parameter Digital Transducer

3.6.1 Part numbers

CE-AZ11——1 element (double isolation) DC current digital transducer. S3 case style only. Terminal input.

CE-AZ12——1 element (treble isolation) DC current digital transducer.S3 case style only. Hole-tru input. And it can simultaneously output analog

CE-AU11 —— 1 elements (double isolation) AC voltage digital transducer. S3 case style only.

CE-AD11—— 1 element DC voltage and current input (double isolation), S3 case style.

3.6.2 Features

- Accuracy —— 0.2%.
- Output Data—— CE-AZ11: 1 element DC current. CE-AU11: 1 element DC voltage. All output data are shown in the form of a percentage as the ratio of the real value to the maximum value of its measurable rang.
- Input (measuring range)—— Current: 0-100A (The max input is 6A for terminal input; 5-100A for hole-tru input); Voltage: 0-500V

3.6.3 Case style

See 7.2 on page 27 for case styles.

3.6.4 Connections

3.6.4.1 See Fig. 3.6.4.1 for connections of CE-AU11.

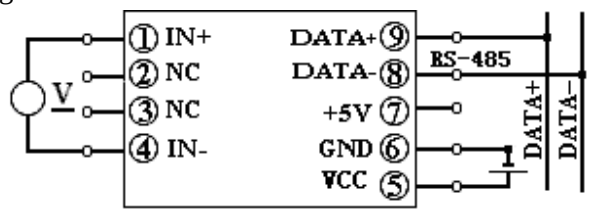


Fig. 3.6.4.1 Connections of CE-AU11. S case style.

3.6.4.2 See Fig. 3.6.4.2 for connections of CE-AZ11 with a current divider.

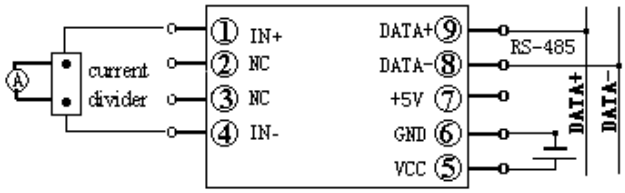


Fig. 3.6.4.2 Connections of CE-AZ11 with current divider. S3 case style.

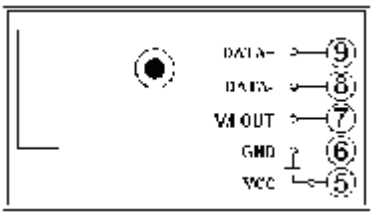


Fig.3.6.4.3 Connection of CE-AZ12, S3 case style

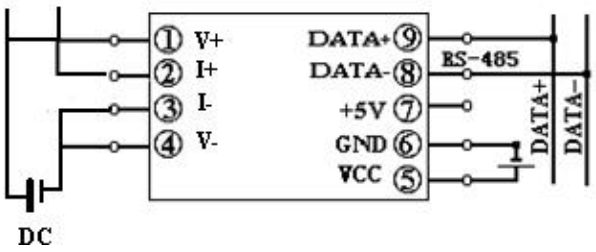


Fig. 3.6.4.4 Connection of AD11

3.7 Switch Values Data Logger

3.7.1 Part numbers

CE-AK10 —— 8 switch value inputs, RS-485 output interface, MODBUS, no isolation, S case style.

CE-AK22 —— 16 switch value inputs, RS-485 output interface, MODBUS, treble isolation, N case style.

3.7.2 Features

Series	Input(measuring range)*	Output**	Power Supply
CE-AK10	Switch value input (8-channel)	1 byte	+24VDC
CE-AK22	Switch value input (16-channel)	2 bytes	

* Input with passive contacts (dry contacts). And the withstand voltage of the passive contacts can be over 24VDC

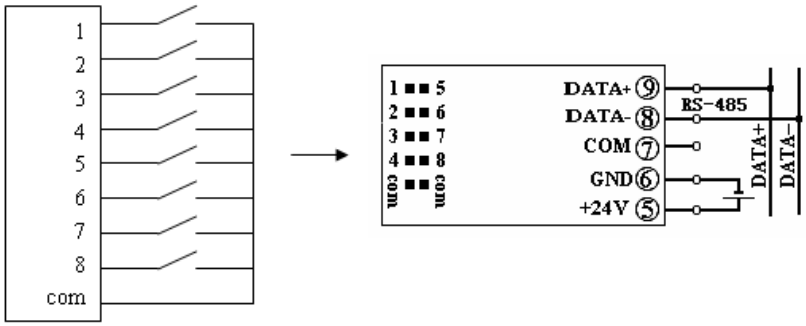
**One bit one "on-off state", "1" means "on", "0" means "off"

3.7.3 Case Style

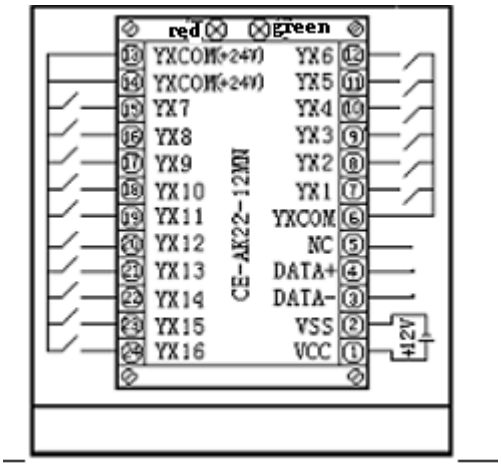
See 7.2 on page 23 for case style

3.7.4 Connections

3.7.4.1 Connections of CE-AK10. Pin 1~8: eight inputs. Com: the common input.



3.7.4.2 Connections of CE-AK22



3.8 Ethernet Converter

3.8.1 Part numbers

CE-485B----------RS-485 to TCP/IP converter, double isolation, S3 case style

CE-232B----------RS-232 to TCP/IP converter, double isolation, S3 case style

3.8.2 Features

Series	Buffer	Protocol	Internet Interface	Baud Rate	Flux control Information	Power supply	Consumption
CE-485B CE-232B	16K	ARP,IP,ICMP, UDP,DHCP, TCP,HTTP, SOCK5	10M Ethernet	1200BPS to 115200BPS	CTS/RTS, XON/XOFF	9-30VDC	<15mA(+24V power source)

3.8.3 Case Style

See 7.2 on page 23 for case style

3.8.4 Connections

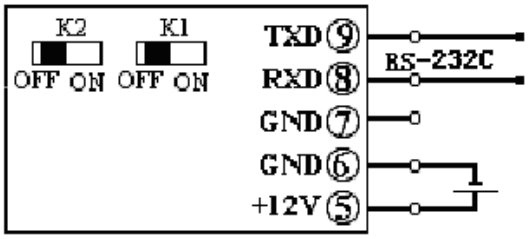


Fig.3.8.4.1 CE-232B, S3 case style

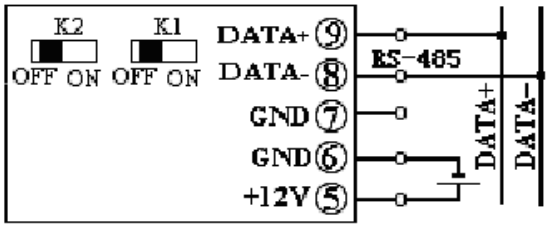


Fig.3.8.4.2 CE-485B, S3 case style

4. ASCII format communication protocol

4.1 The command set of ASCII format for CE-A digital transducers

There are six ASCII format commands for communications between master equipment and CE-A transducers.

- To read the transducer's name: $(Addr)M<CR>
- To read the configuration: $(Addr)2<CR>
- To set the configuration:
  %(OldAddr)(NewAddr)(InputRange)(BaudRate) (DataFormat) <CR>
- To read all data: #(Addr) A<CR>
- To read the data of total accumulative energy: #(Addr) W<CR>
- To clear the data of energy: &(Addr) (Order) <CR>

  Address (Addr): 00~FF (hex indicated by two bit ASCII code)

  Data format: 1 bit for start bit "0", 8 bits for data, 1 bit for stop bit "1"

  (It is supposed that the all following ID address is 01.)

4.2 To read the transducer's name (All undermentioned commands are illustrated with CE-AJ41)

To read the transducer's name from a specified address

Command format: **$(Addr)M<CR>**

$:	Command symbol	1 byte	(24H)
(Addr):	Address of the transducer	2 bytes	(30H31H)
M:	To read the transducer's name	1 byte	(4DH)
<CR>:	Enter, end mark.	1 byte	(0DH)

Response: **!(Addr)(TransducerName)<CR>**

!:	Delimiter
(Addr):	Address of the transducer
(TransducerName):	name code of transducer
<CR>:	Enter, end mark.

Example: Command: $01M<CR> (24H 30H 31H 4DH 0DH)

Response: ! 01J411<CR> (21H 30H 31H 4AH 34H 31H 31H 0DH)

!:	Delimiter
01:	Address
J411:	The name code of transducer CE-AJ41-12
	(Different name code for different transducer)

4.3 To read the configuration

To read the configuration of a transducer by a specified address

Command format: **$(Addr)2<CR>**

$:	Command symbol	1 byte	(24H)
(Addr):	Address of the transducer	2 bytes	(30H 31H)
2:	To read the configuration	1 byte	(32H)
<CR>:	Enter, end mark	1 byte	(0DH)

Response: **!(Addr)(InputRange)(BaudRate)(DataFormat) <CR>**

Example: Command: $012<CR> (24H 30H 31H 32H 0DH)

Response: !01000601<CR>

!	Delimiter	(21H)
01	address of the transducer	(30H 31H)
00	input range (reserved codes)	(30H 30H)
06	communication Baudrate 9600bps	(30H 36H)
01	no checksum	(30H 31H)
<CR>	end mark	(0DH)

4.4 To set configuration

To set the configurations of the transducer including address and baudrate

Command: **%(OldAddr)(NewAddr)(Input Range)(BaudRate)(DataFormat)<CR>**

%:	Command Symbol	1 byte	(25H)
(OldAddr):	Old address (00~FFH)	2 bytes	(30H 31H)
(NewAddr):	New address (00~FFH)	2 bytes	(30H 32H)
(InputRange):	Must be 00	2 bytes	(30H 30H)
(BaudRate):	The communication baudrate (03~07)	2 bytes	(30H 33H——30H 37H)

No.	Baudrate code	Baudrate
03	30H 33H	1200bps
04	30H 34H	2400bps
05	30H 35H	4800bps
06	30H 36H	9600bps
07	30H 37H	19200bps

(Data Format)	Must be 01	2 bytes	(30H 31H)
<CR>	Enter, end mark	1 byte	(0DH)

Response: **!(Addr)<CR>**
Or: **?(Addr)<CR>** (Response to a wrong command received)

Example: command: %0102000701<CR> (25H 30H 31H 30H 32H 30H 30H 30H 37H 30H 31H 0DH)
Response: !02<CR> (21H 30H 32H 0DH)

This command successfully changed the address of the transducer from 01to 02; its new baudrate is 19200bps.

4.5 To read all data

To read all real-time data from a specified transducer. The sequence of data:
Ua, Ia, Ub, Ib, Uc, Ic, P, Q, Cosφ, F and Pa, Pb, Pc. Only15 parameters transducer has the last three parameters.

Command: **#(Addr)A<CR>** (23H 30H 31H 41H 0DH)
Response: **>(Data Ua)(Data Ia)(Data Ub)(Data Ib)(Data Uc)(Data Ic)(Data P)(Data Q) (Data Cosφ) (Data F) <CR>** (12 parameters CE-AJ41 transducer output)

Or: **>(Data Ua)(Data Ia)(Data Ub)(Data Ib)(Data Uc)(Data Ic)(Data P)(Data Q) (Data Cosφ) (Data F)(Data Pa)(Data Pb)(Data Pc)<CR>** (15 parameters CE-AJ41 transducer output)

Response of CE-AJ11: >(Data Ua)(Data Ia)(Data P)(Data Q)(Data Cosφ)(Data F)<CR>
Response of CE-AJ31: >(Data Uab)(Data Iab)(Data Ucb)(Data Icb)(Data P)(Data Q)(Data Cosφ)(Data F) <CR>
Response of CE-AI32: >(Data Ia)(Data Ib)(Data Ic)<CR>
Response of CE-AV42: >(Data Ua)(Data Ub)(Data Uc)<CR>

Data F: The data F consist of 5 digits of decimal value and a decimal point. This value is a real value of the frequency measured.

Data Cosφ: The data consist of a sign "+" or "–" and 5 digits of decimal value of data and a decimal point. This value is a real value of the power factor measured.

Other Data XX: The data consist of a sign "+" or "–" and 5 digits of decimal value of data and a decimal point. The data are shown in the form of a percentage as the ratio of the real value to the maximum value of its measurable range. Suppose the maximum value of its measurable range of current is 5A. If the output data is +0.6000, then the real current value is: I= 60%×5A=3.0000A

Example: Suppose: address is 01, the maximum value of its measurable range: Current Io=5A, Voltage Uo=100V, Frequency F=50Hz.

Command: #01A<CR> (23H 30H 31H 41H 0DH)

Response: >+1.0000+0.6000+1.0000+0.6000+1.0000+0.6000+0.6000+0.0000+1.000050.000<CR>

Then: Ua = +1.0000×Uo = +100%×100V = 100.00V
Ia = +0.6000×Io = +60%×5A = 3.0000A
Ub = +1.0000×Uo = +100%×100V = 100.00V
Ib = +0.6000×Io = +60%×5A = 3.0000A
Uc = +1.0000×Uo = +100%×100V = 100.00V
Ic = +0.6000×Io = +60%×5A = 3.0000A
P = +0.6000×Uo×Io×3 = +60%×100V×5A×3 = +900.00W (For 1 element and 3-phase 3wire AC Electrical Multi-parameter Digital Transducer, the calculation of P need not multiply by 3.)
Q = +0.0000×Uo×Io×3 = +0%×100×5×3 = 0Var (For 1 element and 3-phase 3wire AC Electrical Multi-parameter Digital Transducer, the calculation of Q need not multiply by 3.)
Cosφ = +1.0000
F = 50.000Hz

4.6 To read the data of total accumulative energy

[For CE-AJ11(2), CE-AJ31(2) and CE-AJ41(2) only]

Command: **#(Addr)W<CR>**
Response: **>(Order)(+)(Data Kwh)(+)(Data Kvarh)(CHK)<CR>**
Or: **?(Addr)<CR>** (response to a wrong command received)

#:	Command symbol	1 byte	(23H)
W:	To read the data of energy	1 byte	(57H)
(Order):	Frame number	2 bytes	(00~FF) (see note 1)
(+):	Sign "+" or "–"	1 byte	(2BH or 2DH)
(Data Kwh):	Data of active power	6 bytes	
(+):	Sign "+" or "–"	1 byte	(2BH or 2DH)
(Data Kvarh):	Data of reactive power	6 bytes	
(CHK):	Checksum (hex)	2 bytes	

The intelligent transducer can output the total accumulative active energy and reactive energy. It starts to accumulate immediately after power on. The data of total accumulative energy are stored in the ferroelectric RAM of the transducer. The transducer will respond the data of energy immediately after it received the command to read that data of total accumulative energy.

The format of response is as follows:
>(Order)(+)(Data Kwh)(+)(data Kvarh)(CHK)<CR>

>:	Response symbol (3EH)	1 byte	
(Order):	Frame number (from 00 to FFH)	2 bytes	hex ASCII (see note 1)
(+):	Sign "+" or "–" (2BH or 2DH)	1 byte	hex ASCII
(Data Kwh):	Data of active energy	6 bytes	hex data

(+):	Sign "+" or "–" (2BH or 2DH)	1 byte	hex ASCII
(Data Kvarh):	Data of reactive energy	6 bytes	hex data
(CHK):	Checksum	2 bytes	accumulating 17 bytes given before (CHK), then the sum is ANDed with 0FFH to get the 2 bytes of hex data.

Note 1: Each response of the accumulative total active and reactive energy data has a frame number. When the transducer is powered on, its frame number starts with zero. When the transducer receives a correct command to clear the data of energy from master equipment, the transducer clears the energy data in its ferroelectric RAM and adds 1 to the frame number (circulating 00 through FF). The output data of energy are the sum of last output plus the new accumulated energy since the last output. If the transducer did not receive the correct command to clear energy data, the frame number will not change, and the data of energy will not be cleared and the transducer will continue to accumulate.

Generally, the data of energy starts to accumulate from zero immediately after the transducer is turned on. The longest period to accumulate is 1553.4 hours when U and I of input reach the maximum value of measuring range. The data will overflow when this value is exceeded. For the part numbers with accumulative energy data power failure protection function, they can save the accumulated active and reactive energy data when power is removed, and when power is reconnected to the transducer, the transducer begins accumulating energy from where it left off when power was removed.

Calculation of energy (The Uo and Io is the maximum value of measurable range of the transducer.):

$$\text{Energy} = \pm \text{DATA N} \times \frac{Uo \times Io}{1000 \times 3600} \text{ kwh}$$

Example: Command: #01W<CR>
Response: >01-0003E8+00003A68<CR> (hex)

The frame number is: 01
Active energy: -3E8H (hex) or -1000(decimal)
Reactive energy: 3AH (hex) or 58 (decimal)
Checksum:
68=(0x3E+0x30+0x31+0x2D+0x30+0x30+0x30+0x33+0x45+0x38+0x2B+0x30+0x30+0x30+0x30+0x30+0x33+0x41) MOD 0x100

4.7 To clear the data of energy [For CE-AJ11(2), CE-AJ31(2) and CE-AJ41(2)only]

Command: **&(Addr)(Order)<CR>**
Response: **!(Addr)<CR>** (21H 30H 31H 0DH)
Or: **?(Addr)<CR>** (Response to a wrong command received)

Example: Command: &0101<CR>
Response: !01<CR> (Response to command with a correct frame number)
Or: ?01<CR> (Response to command with a wrong frame number)

4.8 Internal commands

A group of internal calibrating commands was set for calibration of the CE-AJ product: (Note: The second byte and the third byte of following four commands are address codes of transducer, the default address codes of all transducers were set to "01" before they were delivered.)

Command format: $(Addr)(Order)<CR>

- Calibrating command of zero adjusting for DC current: $010<CR> (24H 30H 31H 30H 0DH)
- Calibrating command of zero adjusting for DC voltage: $011<CR> (24H 30H 31H 31H 0DH)
- Calibrating command of zero adjusting for AC current: $013<CR> (24H 30H 31H 33H 0DH)
- Calibrating command of zero adjusting for AC voltage: $014<CR> (24H 30H 31H 34H 0DH)

For above 4 commands, 7 bytes of data will be responded from 1 element transducers, 13 bytes of data will be responded from 3-phase 4-wire transducers.

- Reset command: @CEAFW <CR> (40H 43H 45H 41H 46H 57H 0DH)

  The address codes of transducers will be reset to "01" and the Baud rate will be reset to 9600 bps by the reset command whatever the previous address codes and Baud rate of the transducer are. Four bytes of data will be responded from the transducer after receiving the reset command. This command can not be used in the network; otherwise it will cause bus conflict.

Please contact your supplier when user needs recalibrate the product. Our technicians will help you to recalibrate by using other internal commands.

5. MODBUS Protocol

The MODBUS protocol for series CE-A is completely compatible with MODBUS developed by Gould Modicon for use in Modicon PLC systems.

5.1 Format of data

5.1.1 Format of message

5.1.1.1 Function code 0x03 —— To read the contents of registers from the slave equipment.

The Message from the master equipment:

Address of the slave equipment	0x01-0xFF	1 byte
Function code	0x03	1 byte
Address of the first register	0x01-0xFF	2 bytes
Quantity of Registers		2 bytes
CRC code		2 bytes

The correct responded message from the slave equipment:

Address of the slave equipment	0x01-0xFF	1 byte
Function code	0x03	1 byte
Byte count	2 x **N***	1 byte
Data section (contents of registers)		**N*** x 2 Bytes
CRC code		2 bytes

***N** = Quantity of Registers

5.1.1.2 Function code 0x10 —— To set (write) data of registers of the slave equipment

The Message from the master equipment

Address of the slave equipment	0x01-0xFF	1 byte
Function code	0x10	1 byte
Address of the first register		2 bytes
Quantity of Registers		2 bytes
Byte count	2 x **N***	1 byte
The data written to the registers		2 x **N***
CRC code		2 bytes

***N** = Quantity of Registers

The correct responded message from the slave equipment:

Address of the slave equipment	0x01-0xFF	1 byte
Function code	0x10	1 byte
Address of the first register		2 bytes
Quantity of Registers		2 bytes
CRC code		2 bytes

Note: 1. For all Address of register, Quantity of registers and Contents of register (Data), their high order byte is before their low order byte. But the low order byte of CRC code is before its high order byte.

2. The length of the register is 16 bits (2 bytes).

5.1.2 Format of commands and explanation of the registers

(All undermentioned commands are illustrated with CE-AJ41)

5.1.2.1 List of definitions of registers for electrical parameters data

Address of register (Hex)	Contents of register	Quantity of registers	Attribute of register	Range of data
0x0010	Voltage of phase A	1	Read only	0~+12000
0x0011	Current of phase A	1	Read only	0~+12000
0x0012	Voltage of phase B	1	Read only	0~+12000
0x0013	Current of phase B	1	Read only	0~+12000
0x0014	Voltage of phase C	1	Read only	0~+12000
0x0015	Current of phase C	1	Read only	0~+12000
0x0016	P: active power	1	Read only	-12000~+12000
0x0017	Q: reactive power	1	Read only	-12000~+12000
0x0018	Cosφ: power factor	1	Read only	-12000~+12000
0x0019	F: frequency	1	Read only	45000~65000
0x001A	Active energy	2	Read only	0x80000000~0x7FFFFFFF
0x001C	Reactive energy	2	Read only	0x80000000~0x7FFFFFFF

5.1.2.2 List of definitions of registers for transducer's name, address and baudrate:

Address of register (Hex)	Contents of register	Quantity of registers	Attribute of register	Range of data
0x0020	Address and baudrate	1	Read/write	Address (0-256) Baudrate (03-07)
0x0021	Transducer's name	2	Read only	Depend on part number (4 bytes)

5.1.2.3 The explanation of register "To clear the data of energy"

Address of register (Hex)	Contents of register	Quantity of registers	Attribute of register	Range of data
0x00A7	Clear the data of energy	1	Write	0x0000

5.1.2.4 Examples:

For all Address of register, Quantity of registers and Contents of register (Data), their high order byte is before their low order byte. But the low order byte of CRC code is before its high order byte.

A: Example for the command "To read the all data":

Address of slave equipment	Function code	Address of the first register		Quantity of registers		CRC-L	CRC-H
0x01	0x03	0x00	0x10	0x00	0x0E	0xC5	0xCB

Note: 1. 0x00 is the high order byte of the register, and 0x10 is the lower order byte of the register.
2. Please see above 5.1.2.1 list of definitions of register of electrical parameters data for the sequence of the output data.

B: Example for the command "To modify the address and baudrate":
(Change the address from 01 to 02; set new baudrate to 9600 bps <code 06>)

Address of slave equipment	Function code	Address of the first register		Quantity of registers		Data bytes count	Data written to register		CRC-L	CRC-H
0x01	0x10	0x00	0x20	0x00	0x01	0x02	0x02	0x06	0x20	0x52

Note: Codes for baudrate setting: 03-1200bps, 04-2400bps, 05-4800bps, 06-9600bps, 07--19200bps.

C: Example for the command "To read the transducer's name and configuration":

Address of slave equipment	Function code	Address of the first register		Quantity of registers		CRC-L	CRC-H
0x01	0x03	0x00	0x20	0x00	0x03	0x04	0x01

D: Example for the command "To clear the data of energy":

Address of slave equipment	Function code	Address of the first register		Quantity of registers		Data bytes count	Data written to register		CRC-L	CRC-H
0x01	0x10	0x00	0xA7	0x00	0x01	0x02	0x00	0x00	0xBF	0x47

5.2 Data

List of the format of data responded after the read command (suppose the rated value of voltage is 380V, the rated value of current is 5A):

No.	Parameter name	Input value	Hex. Data (100%)		Decimal Data (100%)	Note
			High byte	Low byte		
1	VA	380V	27	10	10000	True RMS
2	IA	5A	27	10	10000	True RMS
3	VB	380V	27	10	10000	True RMS
4	IB	5A	27	10	10000	True RMS
5	VC	380V	27	10	10000	True RMS
6	IC	5A	27	10	10000	True RMS
7	P	5700W	27	10	10000	Pa+Pb+Pc
8	Q	5700Var	27	10	10000	Qa+Qb+Qc
9	COSφ	1.0000	27	10	10000	Average of 3 phases

10	F	50Hz	C3	50	50000	Value of phase A
11	Kwh	5.7Kw/h	4 bytes (high order ahead)		Maximum accumulative value is 0x7FFFFFFF	Active energy
12	Kvarh	5.7Kvar/h	4 bytes (high order ahead)		Maximum accumulative value is 0x7FFFFFFF	Reactive energy

5.2.1 Format of the data of current, voltage and power

2 bytes Sign + Data (No Sign for AC voltage and AC current)

Range of the data: -12000~+12000

Meaning of the data: 10000 correspond to the rated input value. For example, when the maximum value of input current is 5.000A, the expected output value is 10000D or 2710H and 2.500A correspond to 5000D or 1388H of the expected output value.

8-bit Low order byte (responded data)

7	6	5	4	3	2	1	LSB

8-bit High order byte

Sign 1=negative 0=positive	MSB	13	12	11	10	9	8

5.2.2 Calculation of power:

(For 3-phase 3 wire or 1 element transducers, their calculations need not multiply by 3.)

P=3*(Xp*(5*380))/10000 (W)

Q=3*(Xq*(5*380))/10000 (Var)

Thereinto:

Xp——The data of active power received by the master equipment. (2 bytes, high order byte ahead, the MSB is sign bit.)

Xq——The data of reactive power received by the master equipment. (2 bytes, high order byte ahead, the MSB is sign bit.)

5.2.3 Calculation of active energy:

N=n*(5*380)/(10000*3600) (kWh)

Thereinto:

n—— The data of active energy received by the master equipment. (4 bytes, high order byte ahead, the MSB is sign bit.)

5.2.4 Calculation of frequency:

f=F/1000 (Hz)

Thereinto:

F—— The data of frequency received by the master equipment. (2 bytes, high order ahead, no sign bit.)

5.2.5 Calculation of current and voltage:

u = U/10000 (V)

Thereinto:

U—— The data of voltage received by the master equipment. (2 bytes, high order byte ahead, the MSB is sign bit.)

i = I/10000 (A)

Thereinto:

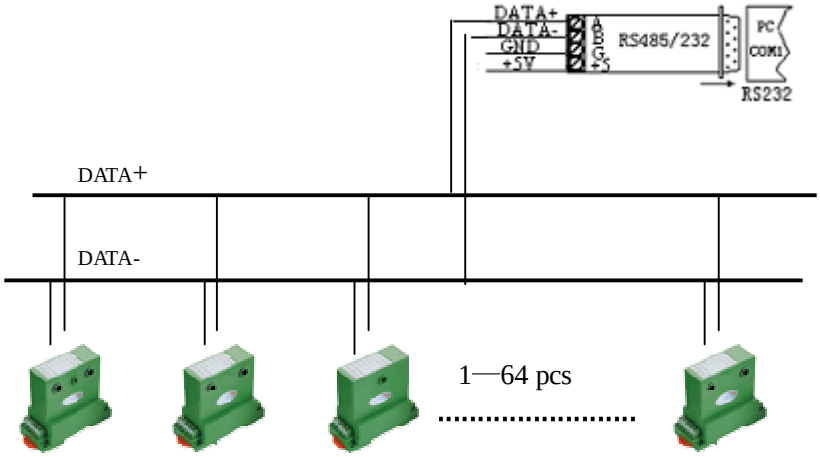
I—— The data of current received by the master equipment. (2 bytes, high order byte ahead, the MSB is sign.)

5.2.6 Please contact us if you need some internal calibrating commands for zero point calibration

6. System Connecting and Programming

6.1 System Connecting

When series CE-A digital electrical parameter transducers are applied in measuring and controlling system, the RS-485 system connections are as follows:



Connections of RS-485 network

Series CE-A digital electrical parameter transducer is able to communicate with all kinds of master equipments (computers) by appropriate connecting. The connecting method: connect pin "DATA+" of D485(RS-232/RS-485) converter of the master equipment together with the pins "DATA+" of all transducers, connect the pin "DATA–" of that of master equipment together with pins "DATA–" of all transducers, and put resistance terminators (120Ω) at two ends of the bus (it is not necessary when the distance is ≤1200m). Then connect to the power source. The measurements can work with running application software of the sensor/transducer in the master equipment.

6.2 Application and Programming

Series CE-A digital electrical isolation transducer can easily measure many kinds of useful electrical parameters of 3-phase 4-wire, 3-phase 3-wire and single phase power circuits. It can be widely used in various industrial control and measuring systems. One multi-parameter digital sensor/transducer can supersede many kinds of single parameter transducers, i.e. current, voltage, frequency, power, power factor and energy transducers etc. It can reduce the cost of system and is easy to wiring at work site; especially its advanced isolation technology greatly improved the performance of system and helps to provide higher reliability and stability of the system. CE-A is able to connect to any industrial digital control system with the RS-485 bus communication technology, ASCII and MODBUS command set. So it is convenient to program and to extend the system and let you build up your own control system easily.

The default configuration of each CE-A transducer before delivery: transducer address is set to "01" (hex), and baud rate is 9600bps.

Note: 1. Transducer address is programmable. It can be set from 0 through 255(00-FFH) optionally.

2. Five programmable baud rates can be used: 1200bps, 2400bps, 4800bps, 9600bps and 19200 bps.

3. The configuration data will be stored in EEPROM after the transducer address and baudrate were revised.

6.2.1 Select the Measuring Range:

You may select Series CE-A products with their measuring range of voltage (0~500V), current (1~25A).

Usually 1.2 times of the maximum value of measuring range can be measured correctly. If it is necessary, you can use an external current transformer to transform heavy current into a standard input for the transducer.

The transducer could not be damaged when the inputs are less than 2 times of the maximum value of measuring range of voltage or 10 times of the maximum value of measuring range of current. Pay attention to connect the polarity of power correctly with right rated voltage.

6.2.2 Configuration:

Each CE-A sensor/transducer must be configured before it is connected to a network. The baudrate of transducer must conform to that of the network; and no address collision (no overlapping the address of any other device in the network) could be allowed. To configure a transducer you need RS-485/RS-232C converter, master equipment with RS-232 interface and application software of intelligence transducer. The configuration can be completed easily by CE-A sensor/transducer application software. Also you could configure it by programming according to the command set of the transducer.

6.2.3 Data acquisition:

After you connected the transducer correctly and properly, when the master equipment sends one of read data commands, the transducer will return (respond) the measured data to the master equipment. The data inside the EEPROM of the CE-A sensor/transducer will be refreshed every 100ms. Data of energy is accumulated since powered-on and is cleared after received a clear command.

7. Power supply and case style of transducer

7.1 Power supply

CE-WYS-1

Model	CE-WYS-1/1A/1B
Input Voltage	220V±10%, 50Hz
Rated Current Output	500mA
Output Voltage	DC ±12V, ±15V, +24V
Output Ripple	≤10mV

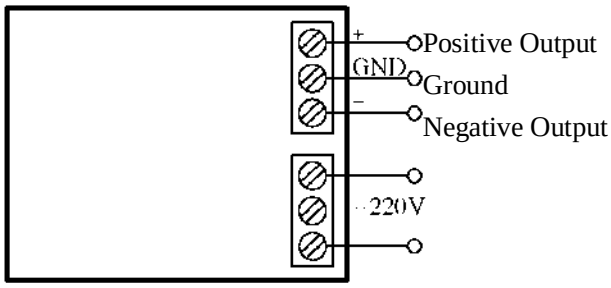
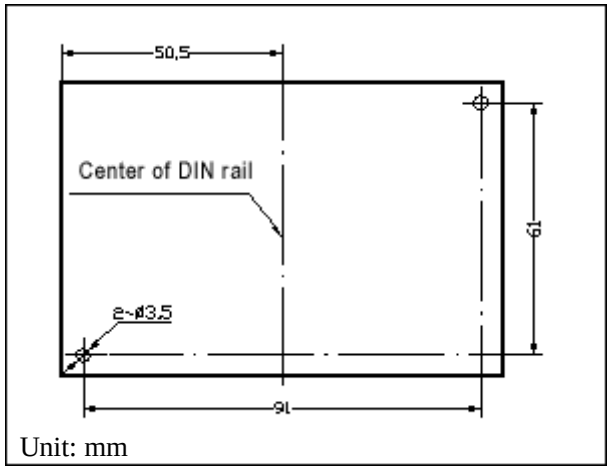


Fig.7.1 Connections for CE-WYS-1



CE-WYS-2:

Model	CE-WYS-2
Input Voltage	220V±10%, 50Hz
Rated Current Output	200mA
Output Voltage	DC +12V, +15V, +24V
Output Ripple	≤10mV

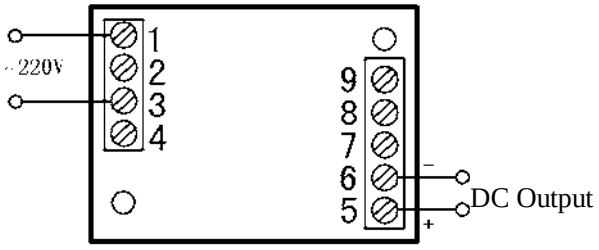
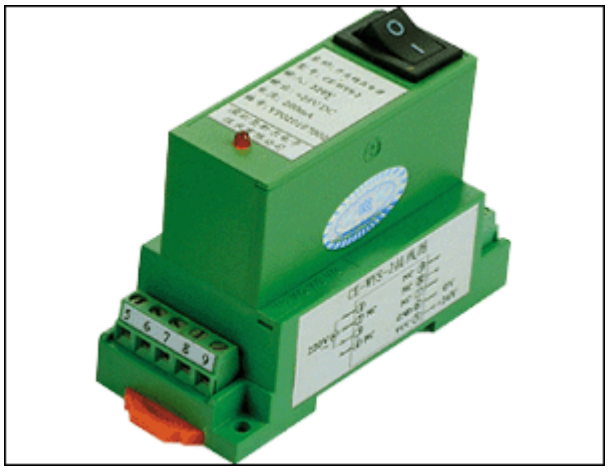
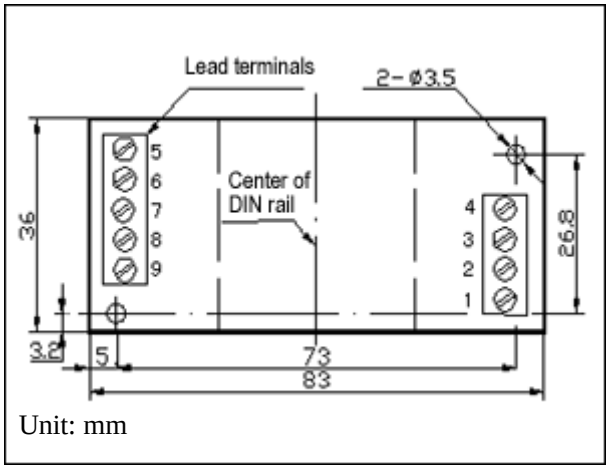


Fig. 7.2 Connections of CE-WYS-2





Note: CE-WYS1 and CE-WYS-2 are switching mode regulated power supply with positive voltage output. The voltage output of CE-WYS-1A is not adjustable. The voltage output of CE-WYS-1B linear regulated power supply is adjustable. CE-WYS-2 is of S3 case style.

7.2 Case style and dimensions

Fig .7.2.1, 7.2.2, 7.2.3 and 7.2.4 show S3 case style. 35mm DIN rail or PCB surface screw mounting. Their dimensions: 36(W) × 83(L) × 76(H) mm.

Fig. 7.2.1: S3
1 element

Fig. 7.2.2: S3
3-phase 3-wire

Fig. 7.2.3: S3
3-phase 4-wire

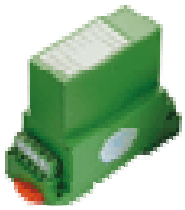


Fig. 7.2.4: S3, No aperture for Voltage input

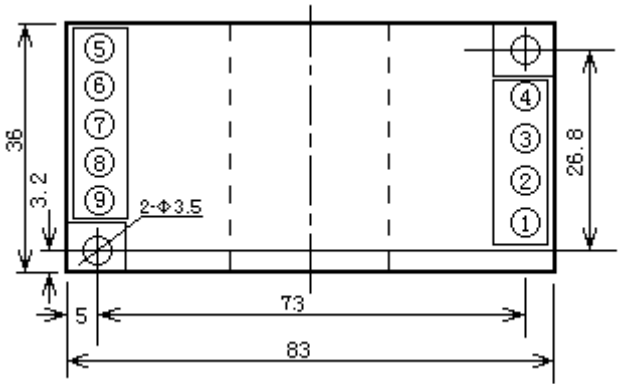


Fig. 7.2.5 Mount size of S3 case style (top view)

Fig .7.2.6 shows N case style. DIN rail or PCB surface screw mounting.

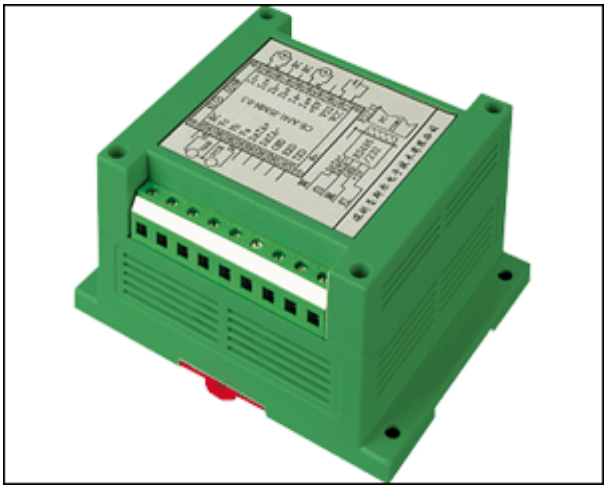


Fig.7.2.6: N case style
Dimension: 90×115×75 mm
Mounting size: 70×105 mm

8. Ordering Instructions and Notice to User

8.1 Ordering Instructions

8.1.1 Preparing your order

Please make sure that complete and correct part numbers and product descriptions are used according to abovementioned instructions. The order information must include the complete description of input and output parameters such as AC or DC, 1 element or 3-phase 3-wire or 3-phase 4-wire, measuring range, interface, power supply, case style and interface converter etc.

Part number(s), quantity, delivery and shipping requirements must be included in your order. Provide complete company name, address, fax number or email and contact person.

8.1.2 Confirmation of order

All orders must be confirmed by us through FAX or e-mail.

8.1.3 Payment

For bigger order, payment is effected by irrevocable L/C at sight. For smaller order, 50% in advance and the remaining 50% to be paid before shipment date.

8.2 Notice to User

8.2.1 Please check the part number of the products carefully in accordance with packing list and product labels before apply them in your system.

8.2.2 Make sure to connect the inputs, outputs and power supply correctly and properly before power on.

8.2.3 Requirement of power supply: accuracy 5% or better, ripple Vpp ≤0.4%.

8.2.4 For transducers with current output, open circuit output or more than 250Ω load resistance are not allowed. For transducers with voltage output, short circuit output or less than 2KΩ load resistance are not allowed.

8.2.5 Conductive dust and corroding gases may damage the circuit and connections. They are hazardous to the product. Don't operate in that environment.

8.2.6 Please ensure that the terminal screws are tightened securely and reliably before measuring with probes of meters directly on the terminals.

8.2.7 For more precise measurement, it is suggested that it can start after all circuits and the transducers had been powered on for 15 minutes.

8.2.8 When the transducers are used in an environments with strong electromagnetic interference. Standard protection should be taken. Such as input and apertures should be shielded, output wires should be as shorter as possible. If transducers are mounted together, please keep a space more than 10mm between adjacent units. 35mm (width) DIN rail mounting or M3 screws for surface mounting is available optionally.

8.2.9 The zero point and the accuracy calibration for the products have been made before delivery. Please don't readjust it. Contact the company if field readjustment is required.

8.2.10 Never remove or damage the labels on the product.

8.3 Warranty Service

8.3.1 SHENZHEN SENSOR ELECTRONIC TECHNOLOGY CO., LTD. warrants its products against all defects in workmanship and material. If you experience a problem with the product, our technicians are available to help you.

8.3.2 In case the product does not operate properly, please contact our Marketing Department or Technical Department by fax or by e-mail and explain the phenomenon of the problem, your operation environment and

appoint a technician to contact.

Version: 2005.2

F A X :(+86-755) 8376 3161
E-mail: sales@mail.ceiinet.com tech@mail.ceiinet.com

Address:
East Block, 9/F., Building No. 2, SEG Science & Technology Park, Shenzhen, P.R. China
Post Code: 518028
http://www.ce-transducer.com
http://www.sset-transducer.com

ELECTRICAL TRANSDUCER

CE-D Series

Shenzhen Sensor Electronic Technology Co., Ltd.

Introduction

Shenzhen Sensor Electronic Technology Co., Ltd specializes in researching, developing and manufacturing of electrical transducers. Our advanced test instrumentation and engineering capabilities provide a most favorable environment for transducer manufacturing. Our quality and inspection departments are among the most advanced in China. The output of our production facility is over one hundred thousand units annually.

The most important aspect of our production is "Quality". Our products are manufactured and certified to the 2000 quality standards of ISO 9001. The transducers have been approved UL, CUL, CMC, CE and RoHS. The US Council of International Quality Authentication has recommended us for our high quality standards. Shenzhen Sensor Electronic Technology Co., Ltd. is the only manufacturer of electrical transducers in China to have obtained all of these certifications.

Our corporate psychology of Research & Development and efficient manufacturing has made us predominant worldwide in the electrical transducer market. Our diverse lines of products are used for signal isolation and modulation, analog and digital communication in standard and smart instrumentation networks. The complete line consists of nearly one hundred sub-categories with numerous standard and custom versions available in each of these sub-categories.

The CE Series of products is used for monitoring electrical parameters of current, voltage, power and frequency. Technologies such as electrical induction, Hall Effect and magnetic modulation are used in our product line for monitoring alternating and direct current systems.

The CE Series of products consists of four main categories.

CE-T series for providing analog output signal such as 0-5 Vdc and 4-20mA

CE-A series for providing digital output signal such as RS485/232

CE-D series with LED display

CE-H series for Hall Effect transducer.

The principal characteristics of our products are:

Micro miniaturization, utilizing surface Mounting technology.

Modularization, each function provided by a unique PCB.

High reliability, all components are high-reliable, precision grade.

Low power consumption, high efficiency regulators and dc-dc power supplies.

High dielectrics withstand voltage, designed into each product.

Single sided input power requirement, for easy installation.

High quality, reliability and low price have made our transducers most efficient for application in the areas of communication, electric power, automotive energy production, and industrial control. We have received high praise from thousands of customers. We currently provide our products to numerous countries.

OUR MANAGEMENT CONCEPT: Green is the symbol of life;
CE is a pledge of reliability.

OUR MISSION STATEMENT: Research, develop and manufacture a complete line of electrical monitoring products. Quality, Reliability and Customer satisfaction are our utmost concern.

CONTENTS

Chapter 1 Part Number Selection Guide

CE-D series digital display are named according to standard of the People's Republic GB7666-87 , shown in Fig. 1.1.

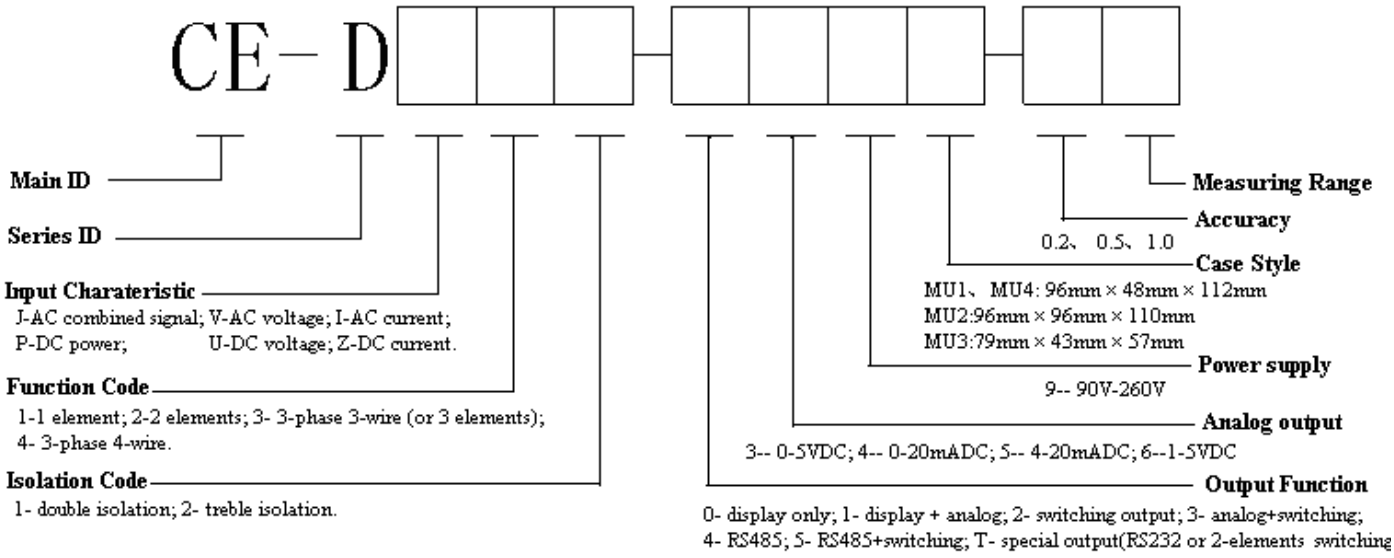


Fig. 1.1 Part Number Code Rules

Ordering Introduction:
According to the standard part number, the basic parameters shall be determined by the users : the maximum ratings or range of the input parameters, shorted "specification" ,and write directly in the back of the type that you choose, format for: Part number/Specification.

Example 1: CE-DJ12-359MU1-0.5/500V*5A
1-element Multi-parameter Intelligent Treble Isolation Transducer with Digital Display, Output: switching value +4～20mADC, Supply power: 90V～260V, Case style: MU1, Accuracy: 0.5, Rated input: 500V*5A.

Example 2: CE-DJ42-49MU2-0.5/220V*5A
3-phase 4-wire Multi-parameter Intelligent Treble Isolation Transducer with Digital Display, Output: MODBUS protocol RS-485 interface , Supply power: 90V～260V, Case style: MU2, Accuracy: 0.5, Rated input: 220V *5A.

Example 3: CE-DI12-29MU1-0.5/5A
AC 1-element current Intelligent Treble Isolation Transducer with Digital Display, Output: switching value , Supply power: 90V～260V, Case style: MU1, Accuracy: 0.5, Rated input:5A.

Example 4: CE-DU11-09MU3-0.5/100V
Single phase AC/DC meter, Output: display only, Supply power: 220V, Case style: MU3, Accuracy: 0.5, Rated input: 100V

Chapter 2 Product Overview

2.1 Main Series List

No.	Function Type				Part Number
1	Multi-parameter	1-phase	MU1 Type	Treble Isolation	CE-DJ12-XX9MU1-0.5/XXXV×XXA
			MU4 Type	Treble Isolation	CE-DJ12-XX9MU4-0.5/XXXV×XXA
		3-phase 3-wire	MU2 Type	Treble Isolation	CE-DJ32-XX9MU2-0.5/XXXV×XXA
		3-phase 4-wire	MU2 Type	Treble Isolation	CE-DJ42-XX9MU2-0.5/XXXV×XXA
2	AC current	1- phase	MU1 Type	Treble Isolation	CE-DI12-XX9MU1-0.5/XXA
		1- phase	MU4 Type	Treble Isolation	CE-DI12-XX9MU4-0.5/XXA
		1- phase	MU3 Type	Double Isolation	CE-DI11-09MU3-0.5/XXXA(only display)
		3- phase	MU2 Type	Treble Isolation	CE-DI32-XX9MU2-0.5/XXA
3	AC Voltage	1- phase	MU1 Type	Treble Isolation	CE-DV12-XX9MU1-0.5/XXV
		1- phase	MU4 Type	Treble Isolation	CE-DV12-XX9MU4-0.5/XXV
		1- phase	MU3 Type	Double Isolation	CE-DV11-09MU3-0.5/XXXV(only display)
		3-phase 3-wire	MU2 Type	Treble Isolation	CE-DV32-XX9MU2-0.5/XXV
		3-phase 4-wire	MU2 Type	Treble Isolation	CE-DV42-XX9MU2-0.5/XXV
4	DC Current	1- element	MU1 Type	Treble Isolation	CE-DZ12-XX9MU1-0.5/XXA
		1- element	MU4 Type	Treble Isolation	CE-DZ12-XX9MU4-0.5/XXA
		1- element	MU3 Type	Double Isolation	CE-DZ11-09MU3-0.5/XXXA(only display)
5	DC Voltage	1- element	MU1 Type	Treble Isolation	CE-DU12-XX9MU1-0.5/XXV
		1- element	MU4 Type	Treble Isolation	CE-DU12-XX9MU4-0.5/XXV
		1- element	MU3 Type	Double Isolation	CE-DU11-09MU3-0.5/XXXV(only display)
6	DC power/ Combination	1- element	MU4 Type	Treble Isolation	CE-DP12-XX9MU4-0.5/XXXV×XXA

2.2 General specifications

No.	Item	Data	Unit	Remarks
1	Accuracy	0.2、0.5	%	0.2% is for voltage & current measuring
2	Baud Rate	9600	bps	
	Data Format	N,8,1/O,8,1/E,8,1		Odd & Even without check bit
	Communication Interface	RS-485, RS-232C(only for MU2 type)		
	Communication Distance	1200(RS-485) 100(RS-232C)	m	Repeater can be used to extend communication distance for RS-485
	Max. Number of Nodes	64	node	Only for RS-485,could be extended with 485HUB
	Bus Protection	500W transient voltage		ESD protection and thermosnap
	Communication Protocol	MODBUS		
3	A/D Speed	100	mS	
4	Operating Temperature	-20℃～+70℃		
5	Isolation	Input/output： 2500V DC for 1 min Input/power supply: 2500V DC for 1 min Output/power supply： 2500V DC for 1min	V	For double isolation part numbers, the output and power supply are in common. Input is isolated from output. Test leakage current is less than 0.5 mA
6	Overload	2 x Voltage span for 1 sec. 10 times with interval of 10 sec. 10 x Current span for 1 sec. 5 times with a interval of 300 sec (only for hole thru. parts).		The over-range input will result in poor accuracy.
7	MTBF	>30000	Hour	
8	Power Supply	90V～260V AC/DC	V	Available for both DC and AC
9	Power Consumption	1.2W~4.5W	W	Different spec. different consumption
10	Temperature Drift	≤200	ppm/℃	（-20℃～+70℃）
11	Anti-electromagnetic Interference	Class Ⅳ		

2.3 Product function

- Ø True-RMS measuring, LED display, RS485/Analog/Switching value output, these functions are optional.
- Ø The return difference/the offside alarm value are resettable, the high/low point alarm function can be chosen discretionarily through the menu.
- Ø AC Multi-parameter Transducer with Digital Display includes the following functions: four quadrants measuring, LED polar indication.
- Ø Displayed parameters include voltage, current, active power, reactive power, power factor, frequency; electric parameter.3-phase meter can display the parameters of each phase.
- Ø It is programmable for analog output. Users can select any one of the input parameters to get corresponded analog output.
- Ø Variable ratio is adjustable for display.

Chapter 3 Details of the products

3.1 DC 1-element Digital Transducer with LED Display

Case style is shown in figure 3.1& figure 3.2.

Fig. 3.1 DC 1-element MU1 case style

Fig. 3.2 DC 1-element MU4case style

3.1.1 Size introduction

Mounting: cabinet panel, rear terminal wiring plate.
Outline size: 96mm × 48mm × 112mm.
Installation size: 91mm x 45mm.

3.1.2 Connection Diagrams (Please refer to the connection diagram labeled on the product when using)

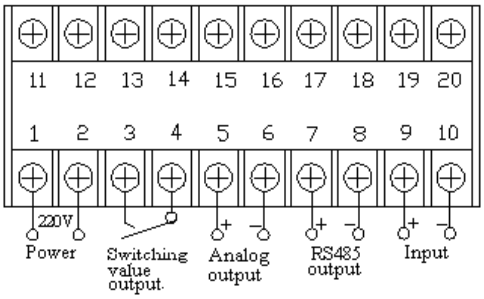


Fig.3.3 MU1 case style connection

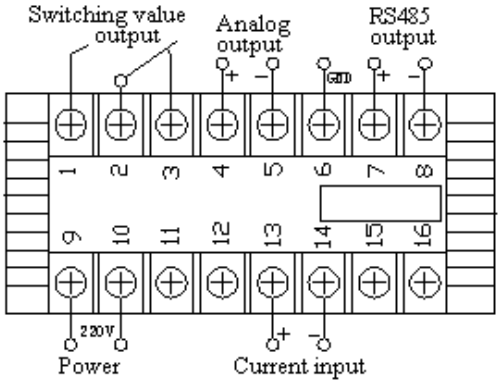


Fig.3.4 MU4 case style connection

3.1.3 Product Function

Function / Case	Power Supply	Measuring Range	Output	Display	Remarks
MU1	90V ～ 260V	0～5ADC 0～500VDC	Switching value、Standard analog	Voltage or Current	Alarm value setting、Display variable ratio setting
MU4	90V ～ 260V	0～5ADC 0～500VDC	Switching value、Standard analog、RS485	Polarity indication, Voltage, Current or switching offside alarm indication	Alarm value setting, Communication address setting, Display variable ratio setting, Analog output setting

Notice: For different requirements, the connections may be different from the one above

3.2 AC 1-phase Digital Transducer with LED Display

Appearance is shown in figure 3.5& figure 3.6.

Fig.3.5 AC 1-element MU1 case style

Fig.3.6 AC 1-element MU4 case style

3.2.1 **Size** introduction

Mounting: cabinet panel, rear terminal wiring plate.

Outline size: 96mm × 48mm × 112mm.

Installation size: 91mm x 45mm.

3.2.2 Connection **Diagrams** (Please refer to the connection diagram labeled on the product when using)

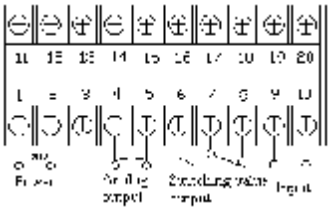


Fig.3.7 MU1 case style connection

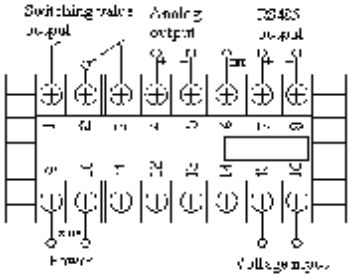


Fig.3.8 AC voltage MU4 case style connection

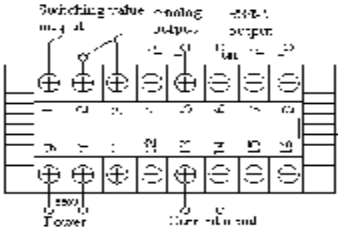


Fig.3.9 AC current MU4 case style connection

3.2.3 Product Function

Function / Case	Power Supply	Measuring Range	Output	Display	Remarks
MU1	90～260V	0～5AAC 0～500VAC	Switching value, Analog output, RS485	Voltage or Current	Alarm value setting, Display variable ratio setting Communication address setting
MU4	90～260V	0～5AAC 0～500VAC	Switching value, Analog output, RS485	Voltage, Current or Switching offside alarm	Alarm value setting, Communication address setting, Display variable ratio setting, Analog output setting

Notice: For different requirements, the connections may be different from the one above

3.3 AC 1-phase Digital Transducer with LED Display

Appearance is shown in figure 3.10& figure 3.11.

Fig.3.10 AC 1-element combination with MU1case type

Fig.3.11 AC 1-element combination with MU4 case type

3.3.1 Size introduction

Mounting: cabinet panel, rear terminal wiring plate.

Outline size: 96mm × 48mm × 112mm.

Installation size: 91mm x 45mm.

3.3.2 Connections Diagram (Please refer to the connection diagram labeled on the product when using)

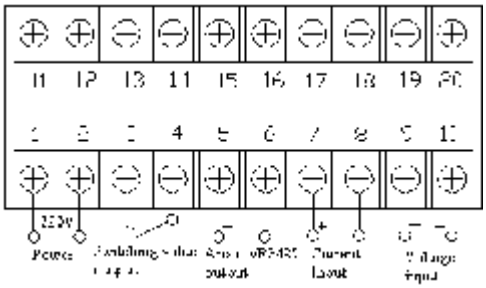


Fig.3.12 MU1 case type connection

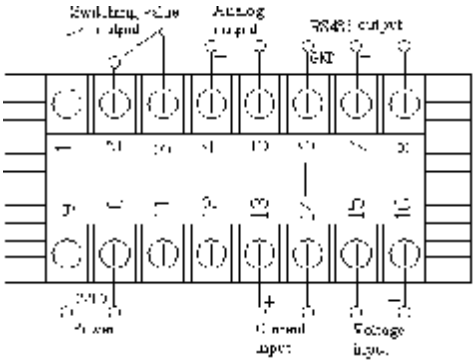


Fig.3.13 MU4 case type connection

3.3.3 Product Function

Function / Case	Power Supply	Measuring Range	Output	Display	Remarks
MU1	90V～260V	0～5AAC 0～500VAC	Switching value, Analog output, RS485	Voltage, Current, Active power, Reactive power, Power factor, Frequency, Energy, Polarity indication of four quadrant measurements	Alarm value setting, Communication address setting, Display variable ratio setting, Analog output setting
MU4	90V～260V	0～5AAC 0～500VAC	Switching value (Single/dual channel), Analog output, RS485	Voltage, Current, Active power, Reactive power, Power factor, Frequency, Energy, Polarity indication in four quadrant measuring, Switching offside alarm indication	Alarm value setting, Communication address setting, Display variable ratio setting, Analog output setting

Notice: For different requirements, the connections may be different from the one above

3.4 AC 3-elements Multi-parameters Intelligent Transducer with Digital Display

Appearance is shown in figure 3.14.

Fig. 3.14 AC 3-elements with MU2 case type

3.4.1 Size introduction

Mounting: cabinet panel, rear terminal wiring plate.

Outline size: 96mm × 96mm × 110mm.

Installation size: 91mm x 91mm.

3.4.2 Connection **Diagrams** (Please refer to the connection diagram labeled on the product when using)

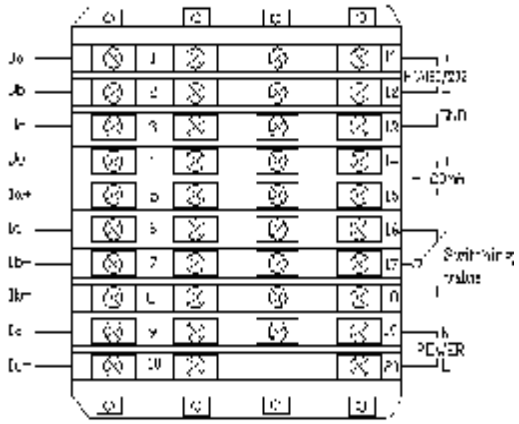


Fig.3.15 MU2 case style connections

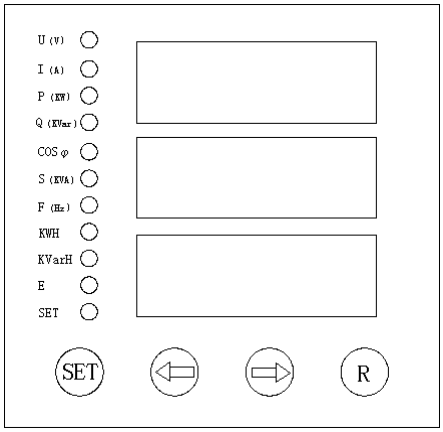


Fig.3.16 Panel for MU2 case style

3.4.3 Product Function

Function / Case	Power Supply	Measuring Range	Output	Display	Remarks
MU2	90V～260V	0～5AAC 0～500VAC	Switching value, Analog output, RS485	Voltage, Current, Active power, Reactive power, Power factor, Frequency, Energy, Polarity indication of four quadrants measuring	Alarm value setting, Communication address setting, Display variable ratio setting, Analog output setting

Notice: 1. For different requirements, the connections may be different from the one above

2. The product can be used to measure the full 3-phase signals, or two/three channel voltage/current signals separately.

3.5 1-phase AC/DC meter

Appearance is shown in figure 3.17.

Fig. 3.17 MU3 case type

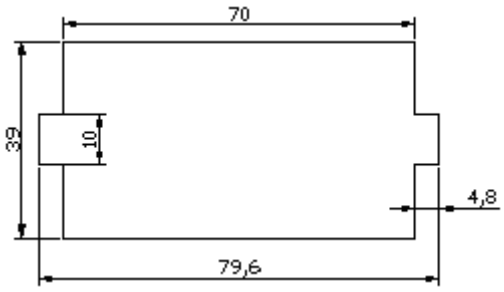


Fig. 3.18 Installation diagram

3.5.1 Size introduction

Mounting: cabinet panel, rear terminal wiring plate.

Outline size: 79mm ×43mm × 57mm.

Installation size: reference Fig.3.18

3.5.2 Connections diagram

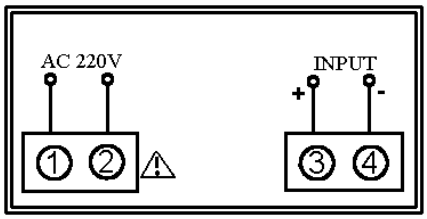


Fig. 3.19 MU3 case type connections

3.5.3 Product Function

Function / Case	Power Supply	Measuring Range	Output	Display	Remarks
MU3	220VAC	0～5A 0～500V	None	Voltage or Current	Display variable ratio setting, Available for both DC&AC

Chapter 4 Notes for Ordering

4.1 Ordering Instructions

1. Ensure a complete correct part number and product descriptions are used according to instructions in Chapter 1. The ordering information must include the complete description including input and output parameters such as rated value, output functions, power supply and case style etc. Included with your order must be quantity, delivery and shipping requirements. Provide complete company name, address, fax number, and email address. Be sure to provide the name of the contact person that we can contact with any questions.
2 The complete order must be signed by both the seller and buyer.

4.2 Installation Notes

1. Verify the part number and description are correct according to the packing list and product labels.
2. Apply power to the transducers only after a through checking of the input signal, Power supply according to connections diagram.
3. Requirement of power supply: accuracy 5% or better, ripple Vpp ≤0.4%.
4. The transducers with current output may only be used with load resistance of less than 250 Ω. The voltage output transducers must be connected to a load of greater that 2K Ω
5. The transducers should only be used in environments having no static electricity, excessive dust, corrosive or explosive gases.
6. Please ensure the terminal screws are tightened securely and reliably before the electrical testing with a multi-meter directly on the terminals
7. Calibration of the units with equipment that has accuracy ratings greater than the rating of the transducers. Ensure that the equipment and transducers have been operating for a minimum of 15 minutes before calibration.
8. The transducers should not be used in environments with strong electromagnetic interference. Standard precautions such as shielding the input and/or output lines should be observed. All lines should be kept as short as possible. If a group of transducers are mounted together, keep a space more than 10 mm between adjacent units. A 35mm (width) track is to be used for DIN rail mounting withΦ3 screw for PCB surface mounting.
9. The transducers have been calibrated before delivery. Please contact the company if readjustments are required.
10. Do not remove or destroy the product labels.

4.3 Warranty service

1. SHENZHEN SENSOR ELECTRONIC TECHNOLOGY CO., LTD. guarantees the original purchaser of our products a 24-month warranty from date of purchase. Repairs or other modifications made by unauthorized persons to the transducer will make all warranties, express or implied, null and void. Warranty does not include any component replacement if damages caused by improper use.

ELECTRICAL TRANSDUCER

CE-T Series

Introduction

Shenzhen Sensor Electronic Technology Co., Ltd specializes in researching, developing and manufacturing of electrical transducers. Our advanced test instrumentation and engineering capabilities provide a most favorable environment for transducer manufacturing. Our quality and inspection departments are among the most advanced in China. The output of our production facility is over one hundred thousand units annually.

The most important aspect of our production is "Quality". Our products are manufactured and certified to the 2000 quality standards of ISO 9001. The transducers have been approved UL, CUL, CMC, CE and RoHS. The US Council of International Quality Authentication has recommended us for our high quality standards. Shenzhen Sensor Electronic Technology Co., Ltd. is the only manufacturer of electrical transducers in China to have obtained all of these certifications.

Our corporate psychology of Research & Development and efficient manufacturing has made us predominant worldwide in the electrical transducer market. Our diverse lines of products are used for signal isolation and modulation, analog and digital communication in standard and smart instrumentation networks. The complete line consists of nearly one hundred sub-categories with numerous standard and custom versions available in each of these sub-categories.

The CE Series of products is used for monitoring electrical parameters of current, voltage, power and frequency. Technologies such as electrical induction, Hall Effect and magnetic modulation are used in our product line for monitoring alternating and direct current systems.

The CE Series of products consists of three main categories.

CE-T series for providing analog output signal such as 0-5 Vdc and 4-20mA

CE-A series for providing digital output signal such as RS485/232

CE-H series for hall effect transducer.

The principal characteristics of our products are:

Micro miniaturization, utilizing surface Mounting technology.

Modularization, each function provided by a unique PCB.

High reliability, all components are high-reliable, precision grade.

Low power consumption, high efficiency regulators and dc-dc power supplies.

High dielectrics withstand voltage, designed into each product.

Single sided input power requirement, for easy installation.

High quality, reliability and low price have made our transducers most efficient for application in the areas of communication, electric power, automotive energy production, and industrial control. We have received high praise from thousands of customers. We currently provide our products to numerous countries.

OUR MANAGEMENT CONCEPT: Green is the symbol of life;
CE is a pledge of reliability.

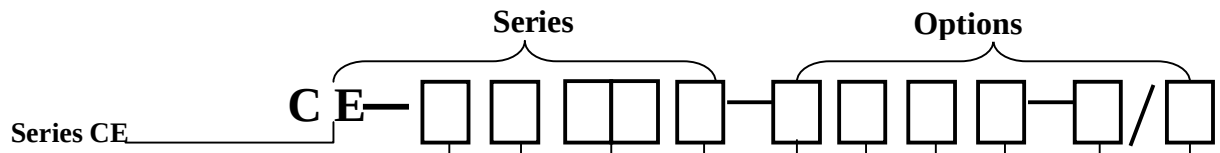
OUR MISSION STATEMENT: Research, develop and manufacture a complete line of electrical monitoring products. Quality, Reliability and Customer satisfaction are our utmost concern.

CONTENTS

Chapter 1 Part Number Selection Guide

1.1 Part Number

Please follow the instruction below to fix the full part number, one square one code, from left to right.



Series CE

Input parameter

I: current **V:** voltage **F:** frequency **P:** active power

Q: inactive power **G:** current & voltage combination

W: location (potentiometer); **R:** resistance

Input characteristics

J: AC; **Z**: DC; **H**: AC/DC; **M**: pulsating DC; **B**: bi-directional DC
(Leave blank for power and frequency)

Function codes

01-09: 1-element **22**: 2-element/2 Way;
31: 3-phase 3-wire or 3-element **41**: 3-phase 4-wire

For New Function

A: True RMS

Output functions

1: tracking voltage output (Vg); **2:** tracking current output(Ig); **3:** 0~5V(Vz);

4: 0~20mA(Iz); **5:** 4~20mA(Iy); **6:** 1~5V(Vy); **7:** 4~20mA loop power(Id); **8:** 0~10V(Vd);

T: special output **J:** relay output; **F**: OC frequency signal output

Power source

0: self powered; **1:** +5V; **2:** +12V; **3:** +15V; **4:** +24V; **5:** ±12V;

6: ±15V; **7:**+48V; **8:** 110V(AC/DC); **9:**220V(AC/DC)

Window / Input Waveform

B: Φ6.5mm **E:** Φ20mm; **G:** Φ31mm(split core); **M:** none; Only for frequency products:
F: square wave **O:** OC frequency signal; **R:** arbitrary zero crossover waveform;
T: TTL level **Z:** sine wave

Case Style and Mounting Styles

S1 / S2 / S3/S4/SL/SK: DIN rail Mounting **H1 / H2:** PCB Mounting

Accuracy

0.2; 0.5; 1.0 ; 2.0

Input Range:

*A ; * V; * Ω ; *Hz

"*" Stands for the input range

Typical Example

CE-IJ 03-32BS2-0.5/0-5A: 1 element AC Current Transducer, Output: 0-5V, Power Supply: +12V, Window: Φ6.5mm, Case Style: S2, Accuracy: 0.5, Input Range: 0 – 5 A

1.2 Main Series List

MAIN SERIES LIST FOR CE-T ANALOG ELECTRICAL PARAMETER TRANSDUCER				
FUNCTION TYPE			SERIES	Page
Current	AC	1 element	CE-IJ03	5
			CE-IJ03A (RMS)	
		3 elements	CE-IJ31	7
			CE-IJ31A (RMS)	
	DC	1 element	CE-IZ01	9
			CE-IZ02	
			CE-IZ04**	
			CE-IZ06	
Voltage	AC	1 phase	CE-VJ03	11
			CE-VJ03A (RMS)	
		3-phase 3-wire	CE-VJ31	13
			CE-VJ31A (RMS)	
		3-phase 4-wire	CE-VJ41	
			CE-VJ41A (RMS)	
	DC	1-phase	CE-VZ01	15
			CE-VZ02	
Power	AC	1 element	CE-P02	19
			CE-Q02	
		3-phase 3-wire	CE-P31	
			CE-Q31	
		3-phase 4-wire	CE-P41	
			CE-Q41	
Frequency	AC	1-element	CE-F01	17
			CE-F03	
Split Core	AC	1-element	CE-IJ03-**GS4	29
	DC		CE-IZ04-**GS4	30
Self Power Current	AC	1-element	CE-IJ03-*0	24
		3 elements	CE-IJ31-*0	26
Self Power Voltage		1-element	CE-VJ03-*0	27
		3-phase 4-wire	CE-VJ41-*0	28
Power supply			CE-WYS	32

Chapter 2 Product Overview

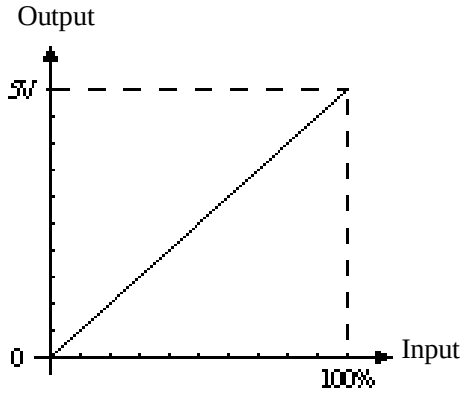
2.1 Output Function Codes

Code	Symbol	Definition	Applications
1	Vg	Tracking Voltage Output	0-5V (RMS), suitable for AC or peak value sampling system, quick response, and high precision.
2	Ig	Tracking Current Output	AC tracking current output, suitable for AC or peak value sampling system, high precision, and quick response.
3	Vz	DC Voltage Output	0-5V DC, can be connected direct to A/D converter, digit panel, indicator, PLC
4	Iz	DC Current Output	0-20mA DC, suitable for long distance signal transmission, resistance to interference.
5	Iy	DC Current Output	4-20mA DC, suitable for long distance signal transmission, resistance to interference.
6	Vy	DC Voltage Output	1-5V DC, can be connected direct to A/D converter, digit panel, indicator,
7	Id	2-wire DC Current	4-20mA DC, 2-wire, loop powered connection, resistance to interference.
8	Vd	DC Voltage Output	0-10V DC, can be connected direct to digit panel, indicator etc. (auxiliary Power supply ≥15V).
J	J	Relay contact	Apply to offside alarm for AC/DC current and voltage
F	F	OC frequency signal output	0~5k, 0~10k Hz frequency signal, photoelectric isolation OC output
T	T	Special Output	Reserved for special output configurations.

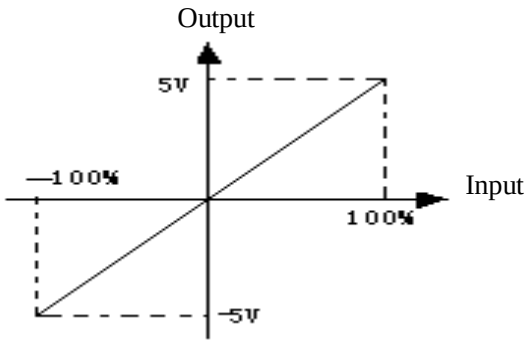
2.2 Typical Operating Specifications

Item	Test Condition	Data	
		Accuracy 0.2	Accuracy 0.5
Thermal Drift	+12V, 25℃	≤200ppm/℃	≤500ppm/℃
Output Ripple	+12V, 25℃	10mV	15mV
Output Load	+12V, 25℃ Vz (3) output	≥2KΩ	
	+12V, 25℃ Iz (4) and Iy (5) output	≤250Ω	
Operating Temperature	+12V	0~50 ℃	
Humidity	+12V	≤95%(no dew)	
Isolation With standing Voltage	0.5mA,1 min.	≤2500 V dc	
Power Consumption（mW）	+24V	See specifications	

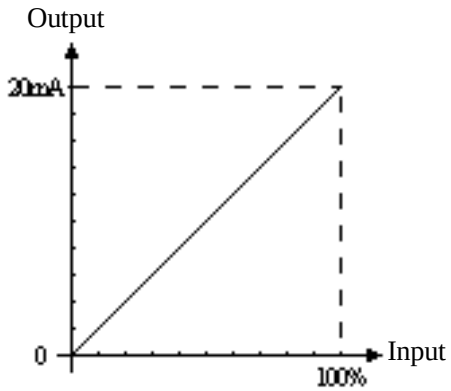
2.3 Input / Output Graphs.



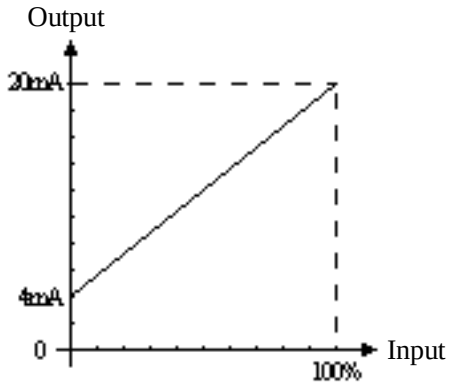
Uni-direction input vs 0-5V output



Bi-direction input vs bi-directional output



Uni-direction input vs 0-20 mA output



Uni-direction input vs 4~20 mA output

Chapter 3 Details of the Electrical Transducer

3.1 Current Transducer

3.1.1 1-element AC Current Transducer

Specifications:

Series	Operating Principle	Isolation Voltage	Response Time	Overload Capacity	Power Consumption（mW）		Mounting
					Vz,Vd,Vg, Iz Output	Iy Output	
CE-IJ03 CE-IJ03A	Electro-Magnetic	2500 VDC	≤250mS	20 times or <5/sec at 500A	360	450	PCB Din Rail Screw

Part Numbers:

Series	Output	Power Supply	Window (mm)	Case Style	Accuracy %	Rated Input
CE-IJ03	**3:**0~5V DC (Vz)	**2:**12V	B: Φ6.5	H1	0.5	0.5A, 1A, 5A, 10A, 15A, 25A
CE-IJ03 CE-IJ03A	**1:**0~5V RMS (Vg)* **3:**0~5V DC (Vz) **4:**0~20mA (Iz)** **5:**4~20mA (Iy)** **6:**1~5Vdc (Vy)* **7:**4~20mA (Id) *** **8:**0~10V DC (Vd)*	**2:**12V **3:**15V **4:**24V **5:**±12V **6:**±15V	**M:** none	S2		0.5A, 1A, 5A
			B: Φ6.5			5A, 10A, 15A, 25A
			E---Φ20	S3		30A, 50A, 75A, 100A 120A, 150A, 200A, 250A, 300A
		8:110V **9:**220V		SK		
				S3		10A, 20A

* Output types Vg,Vy,Vd,Id are not available in series CE-IJ03A.

** Loop resistance from 0 to 250Ω. Contact factory for loop resistance above 250 Ω

*** Select 24V Power supply for output of 4~20mA Id;

Part Number Example: CE-IJ03-54ES3-O.5/0~50A

Description: 1-element AC Current Transducer, average RMS, Output: 4~20mA, Power supply: +24V DC, Aperture: Φ20mm, Case style: S3, Accuracy: 0.5%, Input: 0~50A AC.

Connections Diagrams (See Chapter4 for mounting dimensions)

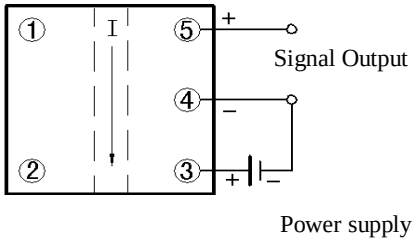


Fig. 3.1.1 for CE-IJ03 Case-H1

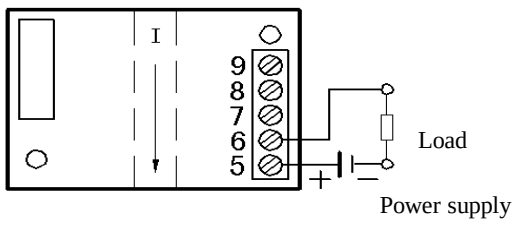


Fig. 3.1.2 for CE-IJ03 with loop power Case-S

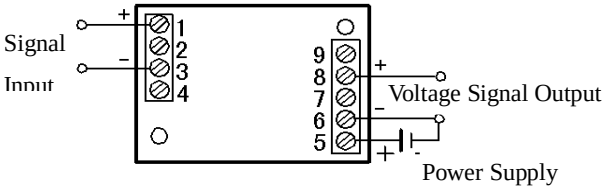


Fig. 3.13 for CE-IJ03, CE-IJ03A
Terminal Input, Voltage Output, Case-S

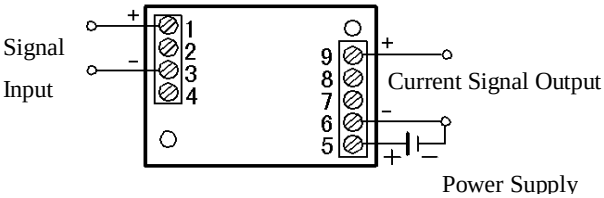


Fig. 3.1.4 for CE-IJ03, CE-IJ03A
Terminal Input, Current Output, Case-S,

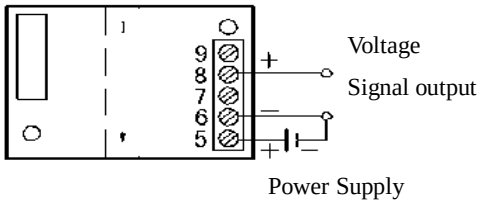


Fig. 3.1.5 for CE-IJ03, CE-IJ03A
Window Input, Voltage Output, Case style S

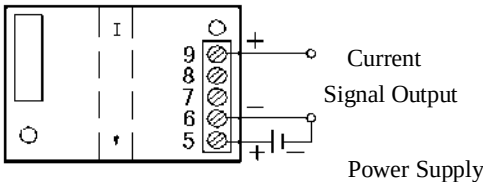


Fig. 3.1.6 for CE-IJ03, CE-IJ03A
Window Input, Current Output, Case style S

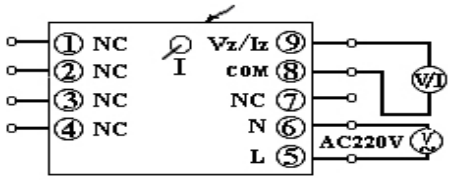


Fig. 3.1.7 for CE-IJ03，Power Supply 220V/110V
Window Input, Case style S

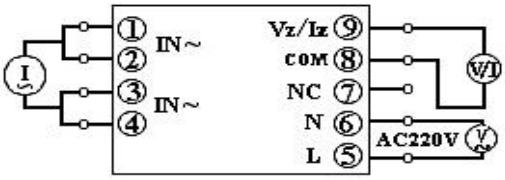


Fig. 3.1.8 for CE-IJ03，Power Supply220V/110V
terminal Input, Current Output, Case style S

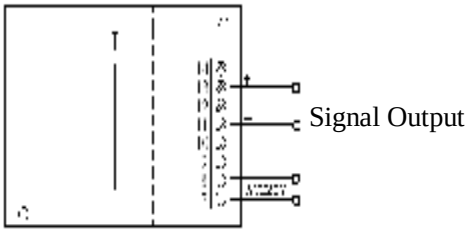


Fig. 3.1.9 for CE-IJ03 **,** Power supply 220/110V
Window Input, Case style SK

Typical Application:

1. Multi-point current sensing and control panels
2. Monitor lighting elements
3. Monitor heating elements
4. Remote current sensing
5. Monitor motor faults

Notice:

1. The size of window must be fit for the conducting wire to pass through. When the rated current ≤ 5A, please use terminal input.
2. All connections of the positive and negative polarities must be correct. The output signal and the power supply must be grounded in common at terminal 6.
3. If other meter is used to read the value of the output, please make sure its accuracy is higher.

3.1.2 3-elements AC Current Transducer

Specifications:

Series	Operating Principle	Isolation Voltage	Response Time	Overload Capacity	Power Consumption （mW）		Mounting
					Vz,Vd,Vg, Iz Output	Iy Output	
CE-IJ31 CE-IJ31A	Electro-magnetic	2500VDC	≤250mS	20 times or ＜5/sec at 500A	400	600	Din Rail/ Screw

Part Numbers:

Series	Output	Power Supply	Window (mm)	Case Style	Accuracy %	Rated Input
CE-IJ31A CE-IJ31	**1:** 0~5V RMS (Vg)* **3:** 0~5V DC (Vz) **4:** 0~20 mA (Iz)* **5:** 4~20 mA (Iy)** **8:** 0~10V DC (Vd)	**2:** 12V **3:** 15V **4:** 24V	B---Φ6.5	S3	0.5	1A，2A，5A，10A，15A，25A
CE-IJ31	**3:** 0~5V DC (Vz) **4:** 0~20 mA (Iz) **5:** 4~20 mA (Iy)** **6:** 1~5V（Vy） **8:** 0~10V DC (Vd)	**8:** 110V **9:** 220V		SK SL		1A，2A，5A，10A，15A，20A

*Tracking output (Vg,Iz,Vd) type not available in series CE-IJ31A

** Loop resistance from 0 to 250Ω. Contact factory for loop resistance above 250 Ω

Part Number Example: CE-IJ31-32BS3-0.5/0~5A

Description: 3 elements AC Current Transducer, average RMS, Output: 0-5Vdc, Power supply: +12Vdc, Aperture: Φ6.5mm, Case style: S3, Accuracy: 0.5 %, Input: 0-5A AC.

Connections Diagram (See Chapter4 for mounting dimensions)

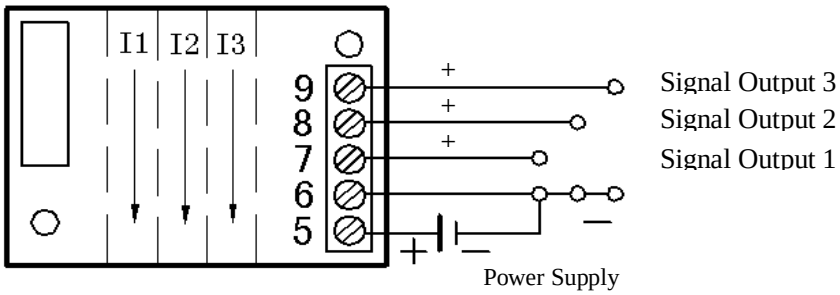


Fig. 3.1.10 CE-IJ31, CE-IJ31A Case style S

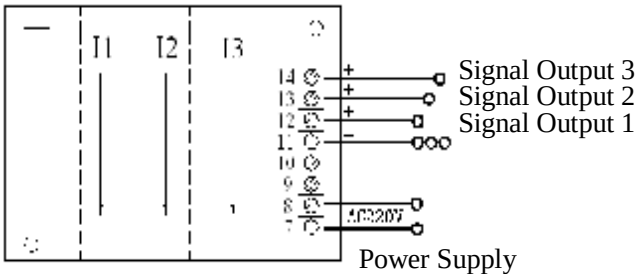


Fig. 3.1.11 CE-IJ31, CE-IJ31A Case style SK

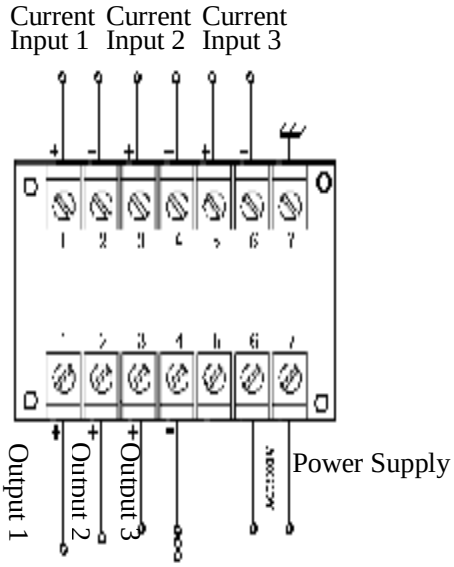


Fig. 3.1.12 CE-IJ31 Case style SL
Don't use the terminal named NC.

Typical Application:

1. Phase fired controlled heaters
2. Quickly varying motor loads
3. Chopped wave form drivers
4. Harmonic currents

Notice:

1. The output signal and the power supply must be grounded in common at terminal 6.
2. For application above 25 Amp, It is suggested to use an external current transformer. Connect the secondary output of the current transformer to the input of the transducers.
3. There is no polarity requirement for the input signal connection.

3.1.3 1-element DC Current Transducer

Specifications:

Series	Operating Principle	Isolation Voltage	Response Time	Overload Capacity	Power Consumption (mW)		Mounting
					Vz,Vd,Vg, Iz Output	Iy Output	
CE-IZ01	Photoelectric Isolation/ Treble isolation*	2500VDC	≤10mS	2 Times 10/sec	180	300	PCB /Din Rail / Screw
CE-IZ02	Modulation Isolation		≤15mS		200	300	
CE-IZ04	Hall Effect Isolation		≤100mS	20 times or ＜5/sec at 500A	350	550	
CE-IZ06	Modulation Isolation		≤100mS		600	700	

- Treble Isolation: the input, output and power supply is isolated from each other.

Part Numbers:

Series	Output	Power Supply	Window (mm)	Case Style	Accuracy %	Rated Input
CE-IZ01	**3:** 0~5VDC(Vz) **4:** 0~20mA(Iz) **5:** 4~20mA(Iy)* **6:** 1~5VDC(Vy) **8:** 0~10VDC(Vd) **F**: Frequency signal	**2:** 12V **3:** 15V **4:** 24V	**M:** none No window	S1	0.2	20mA, 50mA, 100mA, 200mA,
		8: 110V **9:** 220V		S3		500mA, 1A, 2A, 5A
CE-IZ02		**2:** 12V **3:** 15V **4:** 24V **5:**±12V **6:**±15V		H2 S1		20mA, 50mA, 100mA, 200mA,
				S2		500mA, 1A, 2A, 5A
CE-IZ04			**E:** Φ20	S3	1.0	30A, 50A, 80A, 100A, 120A,150A, 200A,300A
CE-IZ06						1A, 2A, 5A,10A, 20A

* Loop resistance from 0 to 250Ω. Contact factory for loop resistance above 250 Ω

Part Number Example: CE-IZ01-32MS2-0.2/0-1A

Description: 1- Element DC Current Transducer, average RMS, Output: 0~5V DC, Power supply: +12V DC, No window (Terminal input), Accuracy: 0.2%, Case style: S2, Input: 0-1A.

Connections Diagram (see Chapter 4 for mounting dimensions)

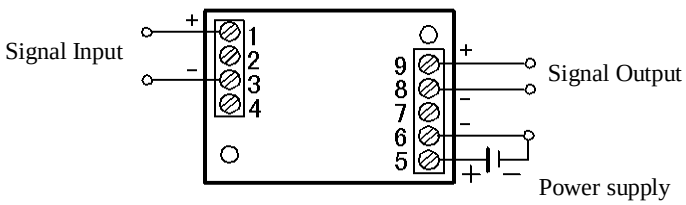


Fig. 3.1.13CE-IZ01 Case style S1

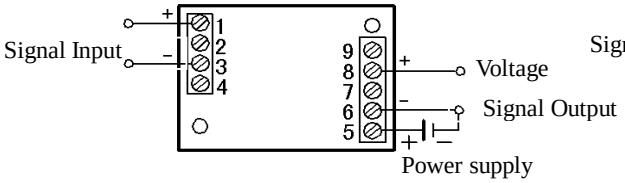


Fig. 3.1.14CE-IZ02
Voltage Output, Case style S2

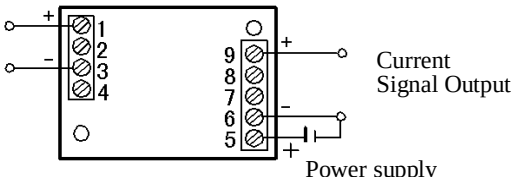


Fig. 3.1.15 CE-IZ02
Current Output, Case style S2

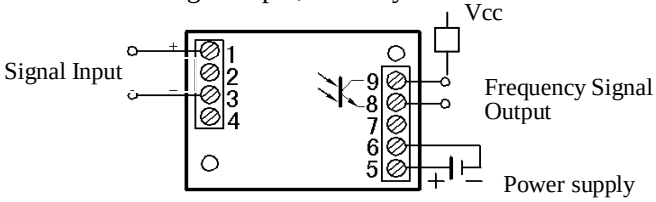


Fig 3.1.16 CE-IZ02
Frequency Output, Case style S2

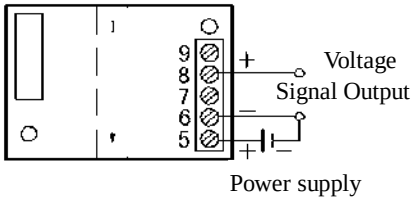


Fig. 3.1.17 CE-IZ04, CE-IZ06
Voltage Output, Case style S2

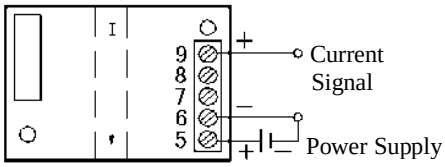


Fig. 3.1.18 CE-IZ04, CE-IZ06
Window Input, Current Output, Case style S3

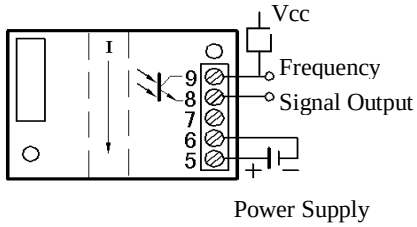


Fig. 3.1.19 CE-IZ04, CE-IZ06
Frequency Output, Case style S

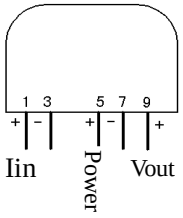


Fig. 3.1.20 CE-IZ02
Voltage Output, Case style H2

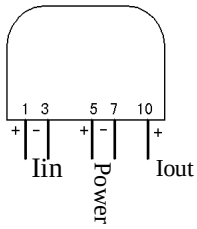


Fig. 3.1.21 CE-IZ02
Current Output, Case style H2

Typical Applications:

1. Power supply management
2. DC motor drives
3. Battery chargers and systems
4. Mobile applications

Notice:

1. If the input signal is bi-directional DC or pulse DC, please indicate in your order.
2. In case a current (>1A) is input through the terminals, it is advisable to connect terminals 1&2 in parallel, and terminals 3&4 in parallel respectively in order to reduce the input resistance at the terminals.
3. CE-IZ01 works on Treble isolation Principle, the output signal and the Power supply may not be grounded in common. (While that of other part numbers must be grounded in common)

3.2 Voltage Transducer

3.2.1 1-phase AC Voltage Transducer

Specifications:

Series	Operating Principle	Isolation Voltage	Response Time	Overload Capacity	Power Consumption（mW）		Mounting
					Vz,Vd, Vg,,Iz Output	Iy Output	
CE-VJ03 CE-VJ03A	Electromagnetic Isolation	2500 VDC	2500mS	2 Times 10/sec	50(H1) 180(S,H4)	250	PCB/ Din rail/Screw

Part Numbers:

Series	Output	Power Supply	Window(mm)	Case Style	Accuracy %	Rated Input
CE-VJ03	**3:**0~5VDC(Vz)	**2:**12V	M: none	H1****	0.5	10V, 50V, 100V, 110V, 220V,250V, 380V,400V, 500V,1000V
CE-VJ03 CE-VJ03A	**1:**0~5VRMS(Vg)* **3:**0~5VDC(Vz) **4:**0~20mA(Iz) **5:**4~20mA(Iy)** **6:1**~5VDC(Vy)* **7:**4~20mA(Id)*** **8:** 0~10V DC (Vd)*	**2:**12V **3:**15V **4:**24V **5:**±12V **6:**±15V		S2 S3	0.2 0.5	
		8:110V **9:** 220V		S3		

* Output types (Vg,Vy,Vd,) and accuracy 0.2 are not available in series CE-IJ03A.
** Loop resistance from 0 to 250Ω. Contact factory for loop resistance above 250 Ω
*** Select 24V Power supply for output of 4~20mA Id;
**** This case style needs an extra voltage divider

Part Number Example: CE-VJ03-52M52-0.2/0~250V
Description: 1-pahse AC Voltage Transducer, Output: 4~20mA, Power supply: +12V, Without Window (terminal input), Accuracy: 0.2, Case style: S2 Input: 0~250V.

Connections Diagram (see Chapter 4 for mounting dimensions)

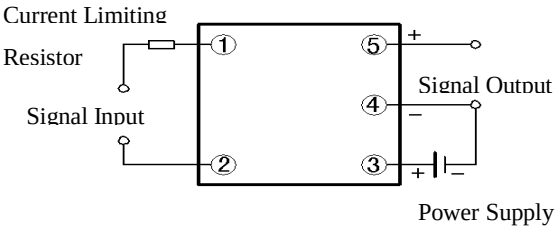


Fig. 3.2.1 CE-VJ03
Case style H1

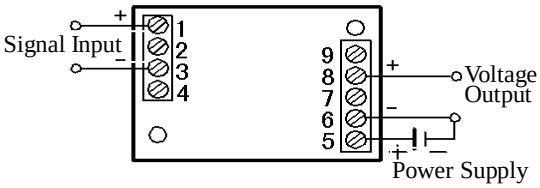


Fig. 3.2.2 CE-VJ03, CE-VJ03A
Voltage Output, Case style S

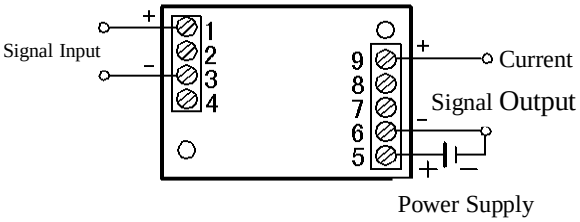


Fig. 3.2.3 CE-VJ03, CE-VJ03A
Current Output, Case style S

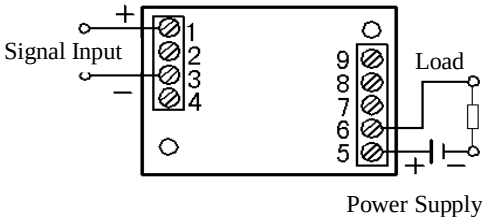


Fig. 3.2.4 CE-VJ03
Loop power, Case style S

Typical Application:

1. Monitor for over/under voltage
2. Power monitoring
3. Multi-point instrumentation needs
4. Sense phase loss

Notice:

1. Selection of output signal: Please select Power supply >15V when you need 0~10V output.
2. The H1 type must be used with corresponding current limiting resistor. The current limiting resistance should not be near the output terminal (to avoid larger voltage drop).
3. The output signal and the Power supply must be grounded in common. Please keep right polarity connection, don't in error set.

3.2.2 3-phase AC Voltage Transducer

Specifications:

Series	Operating Principle	Isolation Voltage	Response Time	Overload Capacity	Power Consumption（mW）		Mounting
					Vz,Vd, Vg,Iz Output	Iy Output	
CE-VJ31 CE-VJ31A	Electromagnetic Isolation	2500 V DC	≤250mS	2 Times 10/sec	400	500	Screw/ Din rail
CE-VJ41 CE-VJ41A							

Part Numbers:

Series	Output	Power Supply	Window (mm)	Case Style	Accuracy %	Rated Input
CE-VJ31 CE-VJ31A CE-VJ41 CE-VJ41A	**1:** 0~5V RMS (Vg)* **3:** 0~5V DC (Vz) **4:** 0~20 mA (Iz) **5:** 4~20 mA (Iy)** **8:** 0~10V DC (Vd)	**2:** 12V **3:** 15V **4:** 24V	**M:** none	S3 SK	0.5	10V, 50V, 100V, 110V, 220V, 250V, 380V, 400V, 500V
CE-VJ31 CE-VJ41	**3:** 0~5V DC (Vz) **4:** 0~20 mA (Iz) **5:** 4~20 mA (Iy)** **6:** 1~5V（Vy） **8:** 0~10V DC (Vd)	**8:** 110V **9:** 220V		SK SL		

* Tracking output (Vg) type not available in CE-VJ31A, CE-VJ41A and now the accuracy only 0.5.
** Loop resistance from 0 to 250Ω. Contact factory for loop resistance above 250Ω.

Part Number Example: CE-VJ41-32MS3-0.5/0~250V
Description: 3-phase 4-wire AC Voltage Transducer, Output: 0-5V, Power supply:+12V, no Window, Case style S3 , Accuracy: 0.5, Input: 0-250V.

Connections Diagram (see Chapter 4 for mounting dimensions)

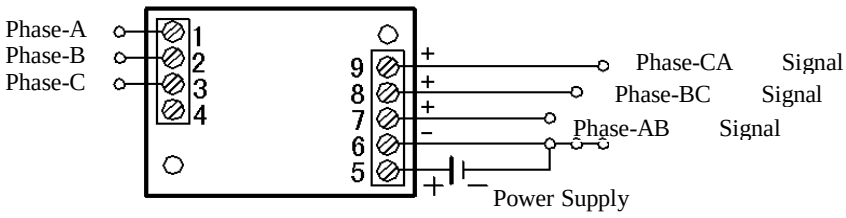


Fig. 3.2.5 CE-VJ31, CE-VJ31A Case style S3

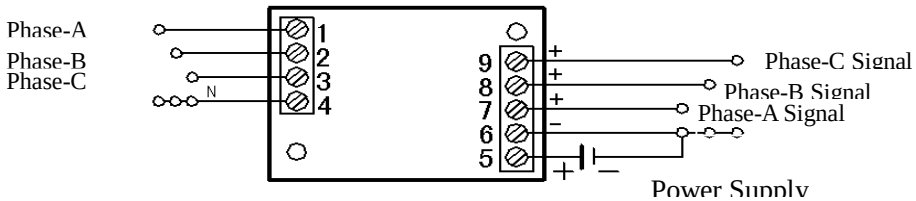


Fig.3.2.6 CE-VJ41, CE-VJ41A Case style S3

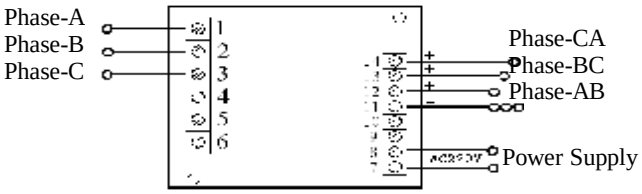


Fig. 3.2.7 CE-VJ31, CE-VJ31A
Case style SK

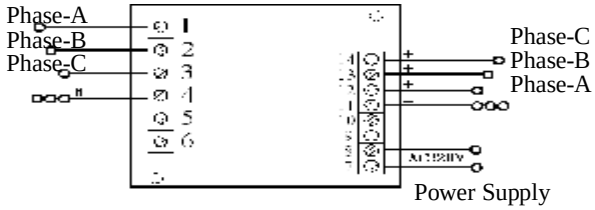


Fig.3.2.8 CE-VJ41, CE-VJ41A
Case style SK

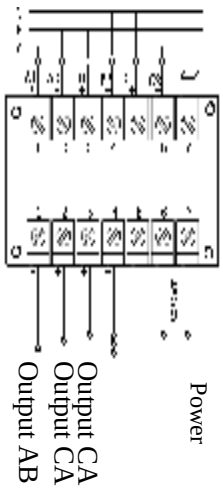


Fig.3.2.9 CE-VJ31, Case style SL

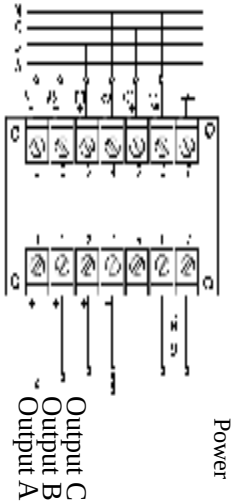


Fig.3.2.10 CE-VJ41, Case style SL

Typical Application:

1. Harmonic voltages
2. Chopped waveform drivers
3. Quickly varying voltage supplies
4. Phase fired controlled devices

Notice:

1. In case the input is 3-phase-3-wire system, the first output corresponds to the line voltage between Vab, the second output corresponds to line voltage between Vbc, and the third output corresponds to line voltage between Vca. In case the input is 3-phase-4-wire, three outputs correspond respectively to phase voltage of A, B and C phases.
2. The output signal and the Power supply must be grounded in common. Please keep right polarity connection, don't in error set.

3.2.3 1-phase DC Voltage Transducer

Specifications:

Series	Operating Principle	Isolation Voltage	Response Time	Overload Capacity	Power Consumption（mW）		Mounting
					Vz,Vd, Vg,Iz Output	Iy Output	
CE-VZ01	Linear Photoelectric Isolation Treble Isolation*	2500 VDC	≤15mS	2 Times 10 /sec	300	380	PCB / Din rail/ Screw
CE-VZ02	Electromagnetic Isolation				200	300	

* Treble Isolation: the input, output and power supply is isolated from each other.

Part Numbers:

Series	Output	Power Supply	Window (mm)	Case Style	Accuracy (%)	Rated Input
CE-VZ01	**3:** 0~5V DC (Vz) **4:** 0~20mA (Iz)* **5:** 4~20mA (Iy)* **6:** 1~5V DC(Vy) **8:**0~10V DC(Vd) **F:**OC frequency l output	**2:** 12V **3:** 15V **4:** 24V	**M:** none	S1 S2	0.2 0.5	10mV, 50mV, 75mV, 1V, 5V, 10V, 50V, 75V, 100V, 200V, 500V, 1000V
		8:110V **9:**220V		S3		
CE-VZ02		**2:** 12V **3:** 15V **4:** 24V		S1 S2		
				H2		≤300V

* Loop resistance from 0 to 250Ω. Contact factory for loop resistance above 250Ω.

Part Number Example: CE-VZ02-52MS1-0.2/0-75mV

Description: 1-phase DC Transducer, Output: 4-20mA, Power supply: +12V, No window, Case Style: S1, Accuracy: 0.2, Input Voltage: 0-75mV.

Connections Diagram (see Chapter 4 for mounting dimensions)

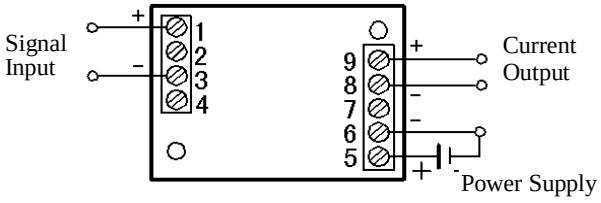


Fig. 3.2.11 CE-VZ01
Current output, Case style S

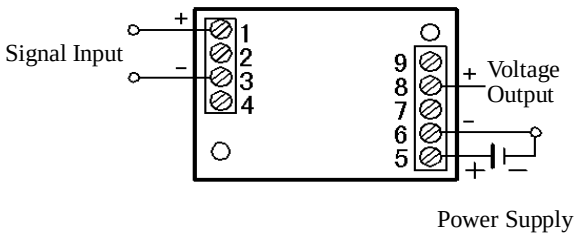


Fig. 3.2.12 CE-VZ02
Voltage Output, Case style S

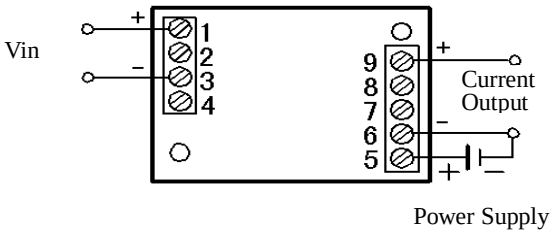


Fig. 3.2.13 CE-VZ02
Current Output, Case style S

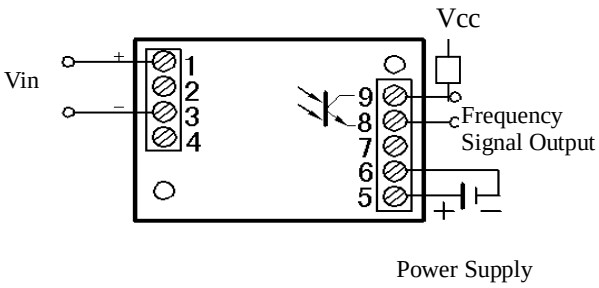


Fig.3.2.14 CE-VZ01, CE-VZ02
Frequency Output

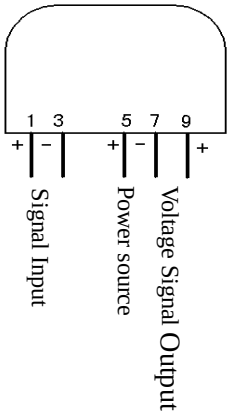


Fig. 3.2.15 CE-VZ02
Voltage Output, Case style H2,

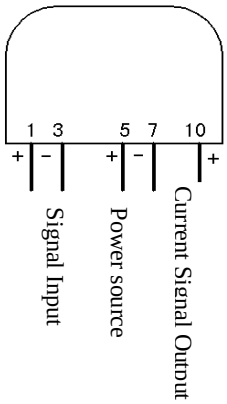


Fig. 3.2.16 CE-VZ02
Current Output, Case style H2,

Typical Application:

1. Mobile applications
2. Power Supply over/under sensing
3. Power sensing
4. Battery chargers and systems

Notice:

1. In case the input signal is bi-directional DC or pulsed DC, please give clear indication in your order.
2. Since CE-VZ01 is provided with treble isolations, the output signal and Power supply may not be grounded in common. (While that of other series must be grounded in common.)

3.3 Frequency Transducer

Specifications:

Series	Operating Principle	Isolation Voltage	Response Time	Overload Capacity	Power Consumption （mW）		Mounting
					Vz, Vd, Vg,Iz Output	Iy Output	
CE-F01 CE-F03	Photoelectric Isolation	2500V DC	200~600mS	2 Times 10/sec	480	600	PCB/ Din rail/ Screw

Part Numbers:

Series	Output	Power Supply	Input Waveform	Case Style	Accuracy (%)	Rated Input	
						Frequency	Voltage
CE-F01	**3:**0~5VDC (Vz) **4:** 0~20mA (Iz)* **5:** 4~20mA (Iy)* **8:**0~10VDC (Vd)	**2:** 12V **3:** 15V **4:** 24V **8:** 110V **9:**220V	**R:** Arbitrary wave pass zero **F:** Square Wave. **Z:** Sine curve wave. **O:**OC frequency signal **T:** TTL electricity level	S2 S3	0.5	55Hz, 100Hz, 1KHz, 2KHz, 5KHz.	50V, 110V, 250V, 400V, 500V.
CE-F03			**Z:** Sine curve wave.	S1 S3		45~65Hz 45~55Hz	50V, 110V, 250V

* Loop resistance from 0 to 250Ω. Contact factory for loop resistance above 250Ω.

Part Number Example: CE-F01-32FS3-0.5/0~55Hz (250V)

Description: Frequency Transducer, Square Wave Signal (250V), Output: 0~5V, Power supply: +12V, Case style: S3, Accuracy: 0.5, Input:0~55Hz.

Connections Diagram (see Chapter 4 for mounting dimensions)

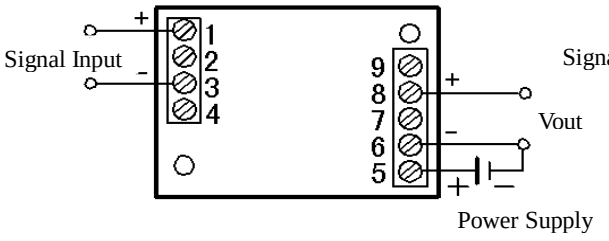


Fig 3.3.1 CE-F01
Voltage Output, Case style S

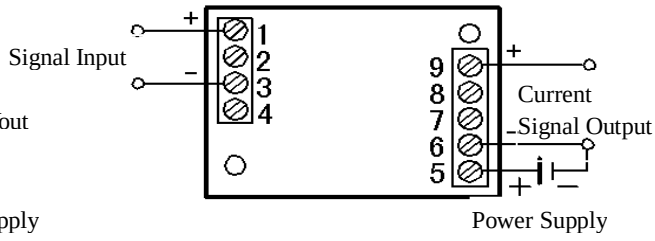


Fig. 3.3.2 CE-F01
Current Output, Case style S,

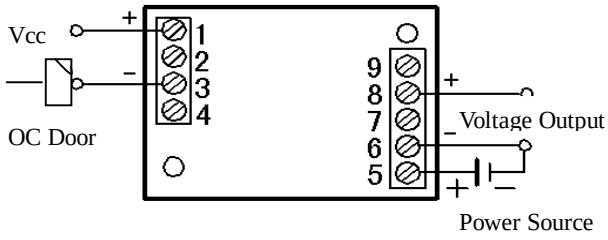


Fig. 3.3.3 CE-F01
OC Frequency Input, Voltage Output

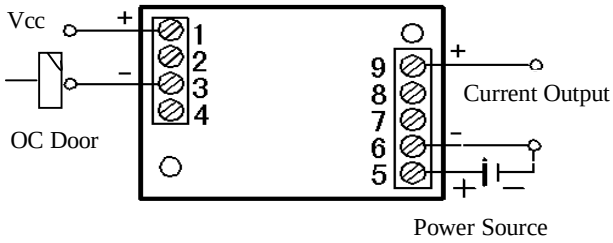


Fig. 3.3.4 CE-F01
OC Frequency Input, Current Output

Typical Application:

1. Power quality monitoring
2. Applications monitor generator sets
3. Multi-frequency control and monitoring
4. Inverter drives and systems

Notice:

1. Response of amplitude of frequency signal must not be lower than 20% of rated voltage.
2. There is no polarity requirement for the input signal connection. The responsive amplitude of frequency signal must not be lower than 20% of rated voltage.
3. The output signal and the Power supply must be grounded in common. Please keep right polarity connection of output.

3.4 Power Transducer:

Specifications

Series	Operating Principle	Isolation Voltage	Response Time	Overload Capacity	Power Consumption（mW）		Mounting
					Vz,Vd,Vg,Iz Output	Iy Output	
CE-P02 CE-Q02	Electro-magnetic Isolation	2500V DC	⩽ 700mS	Current: 20Times 5/sec Voltage: 2 Times 10/sec	600	750	Screw/ Din rail
CE-P31 CE-Q31 CE-P41 CE-Q41					1000	1400	

Part Numbers

Series	Output	Power Supply	Window (mm)	Case Style	Accuracy %	Rated Input	
						Voltage	Current
CE-P02 CE-Q02	**3:** 0~5V DC (Vz) **4:** 0~20mA (Iz)* **5:** 4~20mA (Iy)*	**2:** 12V **3:** 15V **4:** 24V **8:** 110V **9:** 220V	**E:** Φ20	SK	0.5	75V, 110V, 220V, 250V, 380V, 400V, 500V.	5A-300A
CE-P02 CE-Q02 CE-P31 CE-Q31 CE-P41 CE-Q41		**2:** 12V **3:** 15V **4:** 24V	**B:** Φ6.5	S3			5A, 10A, 15A,20A, 25A.
		8: 110V **9:** 220V		SK			

* Loop resistance from 0 to 250Ω. Contact factory for loop resistance above 250Ω.

Part Number Example: CE-P41-52BS3-0.5/0~250V*0~5A

Description: 3-phase 4-wire Active Power Transducer, Output: 4~20mA, Power supply: +12V, Window: Φ6.5, Accuracy: 0.5, Case style: S3, Input Voltage: 0~250V, Current: 0~5A,

Connections Diagram (see Chapter 4 for mounting dimensions)

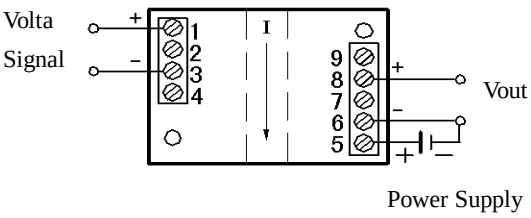


Fig. 3.4.1 CE-P02, CE-Q02
Voltage Output, Case style S

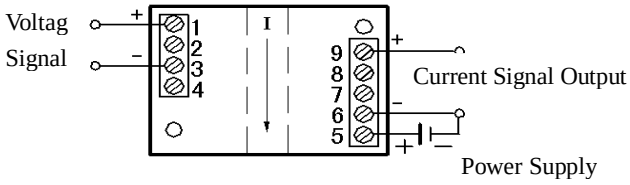


Fig. 3.4.2CE-P02, CE-Q02
Current Output, Case style S

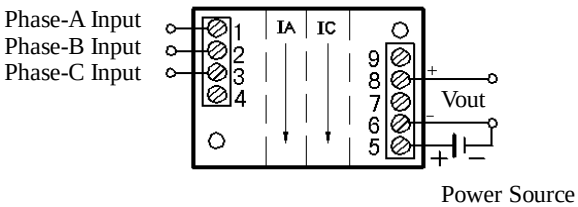


Fig. 3.4.3 CE-P31, CE-Q31
Voltage Output, Case style S

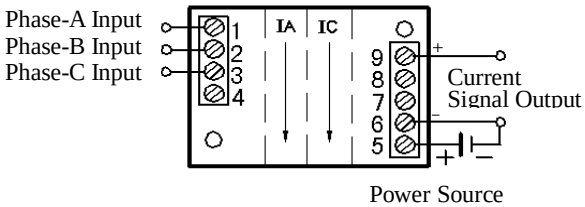


Fig. 3.4.4 CE-P31, CE-Q31
Current Output, Case style S,

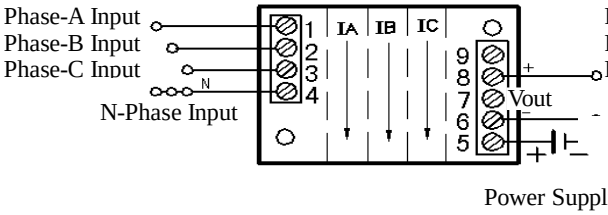


Fig. 3.4.5 CE-P41, CE-Q41
Voltage Output, Case style S

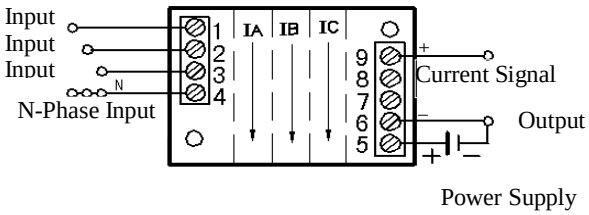


Fig. 3.4.6 CE-P41, CE-Q41
Current Output, Case style S

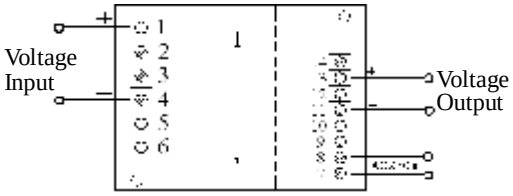


Fig. 3.4.7 CE-P02, CE-Q02
Voltage Output, Case style SK

Fig. 3.4.8 CE-P02, CE-Q02
Current Output, Case style SK

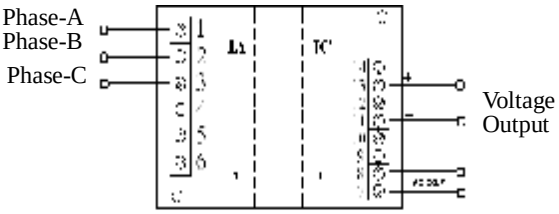


Fig. 3.4.9 CE-P31, CE-Q31
Voltage Output, Case style SK

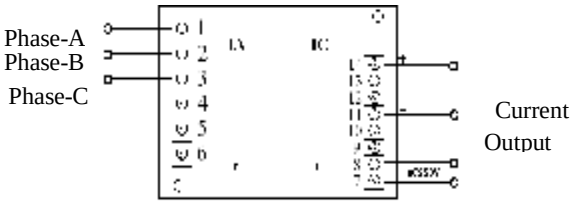


Fig. 3.4.10 CE-P31, CE-Q31
Current Output, Case style SK

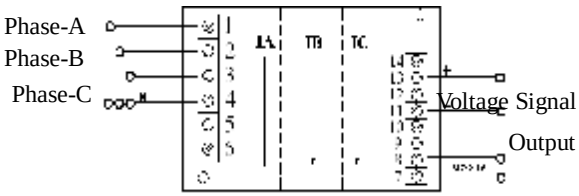


Fig. 3.4.11 CE-P41, CE-Q41
Voltage Output, Case style SK

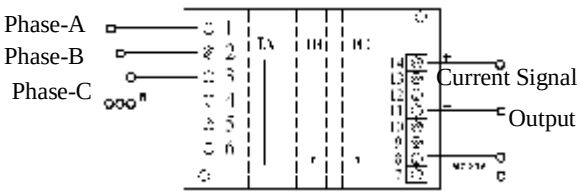


Fig. 3.4.12 CE-P41, CE-Q41
Current Output, Case style SK

Typical Application:

1. Motor Efficiency
2. Multi-point power sensing
3. Energy Management
4. Remote power sensing over long distances

Notice:

1. The input current must pass through the window in the direction shown in Reference Diagram of Connections.
2. The output signal of 3-phase power transducer corresponds to total power of three phases.
3. In case the current to be measured is larger than 25A, it would be advisable to add AC current mutual inductor (CT) to each phase and take the secondary signal as input signal.

3.5 1-element AC/DC Offside Alarm Transducer

Specifications:

Series	Operating Principle	Isolation Voltage	Input Frequency Range	Response Time	Overload Capacity	Power Consumption （mW）**	Mounting
CE-VJ03-J	Electromagnetic Isolation	2500VDC	25~3kHz	<200mS	Current: 20 Times 5/sec at 500A, Voltage: 2Times, 10/sec. Relay Contact Current: ≤2A DC/AC	<600	Screw/ Din Rail
CE-VZ01-J	Treble Isolation*		DC	<50 mS			
CE-IJ03-J	Electromagnetic Isolation		25~3kHz	<200 mS			

* Treble Isolation: the input, output and power supply is isolated from each other.

** Static Power with Power supply 24V

Part Numbers:

Series	Output	Power Supply (DC)	Window	Case Style	Accuracy %	Threshold Value Iinput	Return Difference Input
						Voltage / current	%
CE-VJ03-J	Relay contacts	**4:**24V	M	S3	2.0	10V, 50V, 100V, 250V, 500V, 1000V	-5,-10, -20, -30
CE-VZ01-J						10mV, 75mV, 100mV, 1V, 5V, 10V, 50V, 100V, 250V, 500V, 1000V	
CE-IJ03-J			B: Φ6.5 E: Φ20			1A, 10A, 30A, 50A, 75A, 100A, 150A, 200A, 250A, 300A	

Part Number Example: CE-IJ03-J4ES3-2.0/75A-20

Description: AC Current Offside Alarm Transducer, Relay contacts Output, Power supply: 24V, Aperture: Φ13mm, Case style: S3, Accuracy: 2.0, Threshold Value: 75A, Return Input: -20%

Connections Diagram (see Chapter 4 for mounting dimensions)

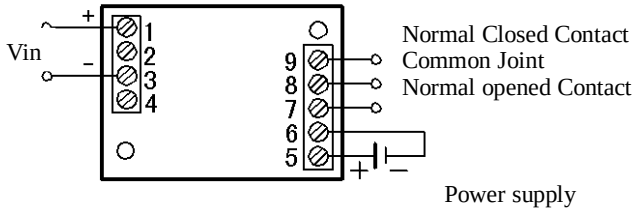


Fig 3.5.1 CE-VJ03-J、CE-VZ02-J Case style S3

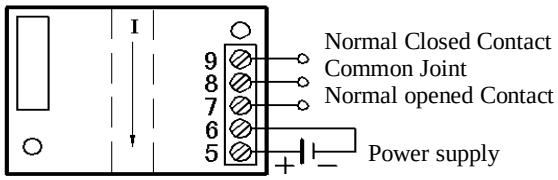


Fig. 3.5.2 CE-IJ03-J Case style S3

Typical Application:

1. Load monitoring of DC power supply system
2. Safety Protect for safety system of various electric control equipments.

Notice:

1. The load current of output should not exceed the maximal current value, which relay contacts allow to pass.
2. 24V Power supply should be stabilized within ±5%.
3. We can set threshold value and return value as per your request if the above value can't meet your demand.

3.6 Standard Signal Isolator

Specifications:

Part Number	Rin	Isolator Voltage	Linearity Error	Rated Output	Power Consumption（mW）	Load	Response Time	Overload Capacity	Mounting
CE-IZ07-34	250 Ω	2500VDC	≤0.5%	0～5V	50	Voltage output: ≤3mA Current output: ≤300 Ω	≤150mS	2 times of rate input, 10times /sec	Din rail/ Screw
CE-IZ07-54				4～20mA	500				
CE-IZ07-64				1～5V	50				
CE-IZ27-34				0～5V（2 channel）	100				
CE-IZ27-54				4-20mA (2 channel)	100				
CE-IZ27-64				1～5V（2 channel）	100				
CE-IZ27-T4				Current& voltage （2 channel）	550				

Part Numbers:

Series	Output	Power Supply	Window	Case Style	Accuracy	Rated Input
CE-IZ07	**3:** 0~5V DC (Vz) **5:** 4~20 mA (Iy)** **6:** 1~5V（Vy）	**4:** +24V	**M:** none	S3	0.2 0.5	4～20mA
CE-IZ27 (2-channel output)	**3:** 0~5V DC (Vz) **5:** 4~20 mA (Iy)** **6:** 1~5V（Vy） **T:** Mixed output				0.5	

Part Number Example: CE-IZ07-54MS3-0.5/4-20mA

Description: 1-element standard signal isolator, Output: 4-20mA, Power supply: +24V, No aperture, Case style: S3, Accuracy: 0.5, Input current: 4-20mA

Connections Diagram (see Chapter 4 for mounting dimensions)

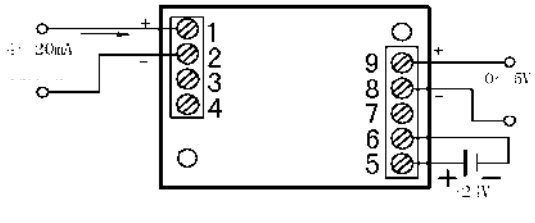


Fig. 3.6.1 CE-IZ07-34 with S case style

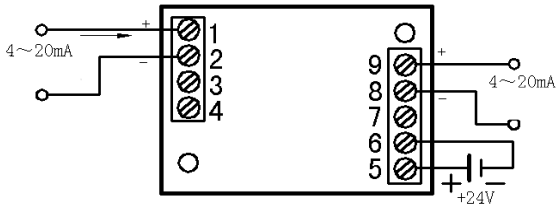


Fig. 3.6.2 CE-IZ07-54 with S case style

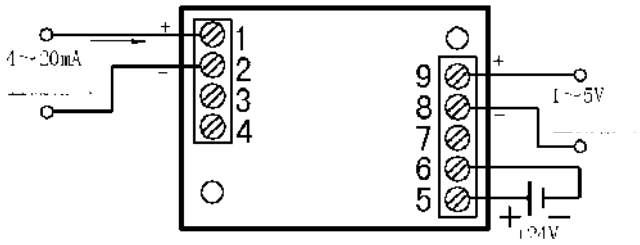


Fig. 3.6.3 CE-IZ07-64 with S case style

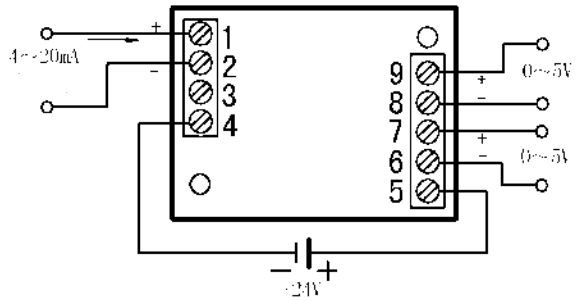


Fig.3.6.4 CE-IZ27-34 with S case style

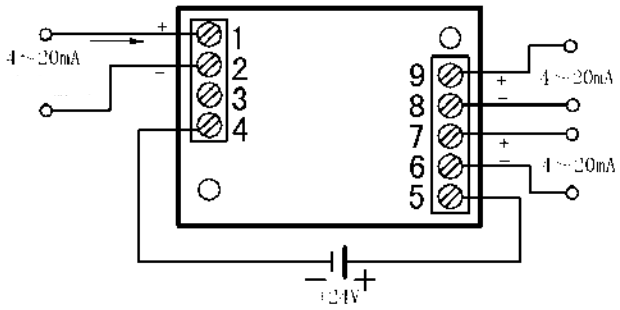


Fig.3.6.5 CE-IZ27-54 with S case style

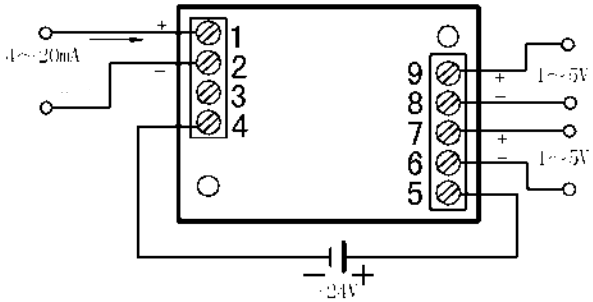


Fig. 3.6.6 CE-IZ27-64 with S case style

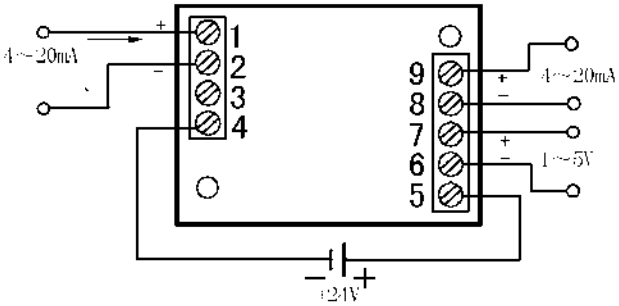


Fig.3.6.7 CE-IZ27-T4 with S case style

Application:

It can be used in the monitor system of oil, chemistry or energy distribution industry. And it will consummate the I/O function of the system.

Notice:

1. Please make sure to connect input, output and power supply correctly in accordance with the connection diagram of your part number before power on.
2. The standard signal isolators should be used only in environments without conductive dust, corrosive or explosive gases.
3. Please take additional and reasonable means for lightning protection, especially when the input and output wires of the standard signal isolator are exposed outdoor.

3.7 Self Power Transducer

3.7.1 self power current transducer

3.7.1.1 self power 1-element current transducer

Specifications:

Part Number	Output	Isolator Voltage	Linearity Error	Phase Deflection	Rated Output	Load	Response Time	Overload Capacity	Mounting
CE-IJ03-10	Vg	2500 VDC	≤0.2%	35′	0～1.5V	>1MΩ	≤15uS	20 times or <5/sec at 500A	Screw/ Din rail /PCB
CE-IJ03-20	Ig				2.5mA (input 5A)	≤1.5V			
					37.5mA (input300A)	≤3.5V			
CE-IJ03-30 CE-IJ03-80	Vz* Vd**		≤1%	none	0～5V 0～10V	>1MΩ	≤1S		
CE-IJ03-J0	J***				On-off	400/5A （DC）			

* There are three input group can be chosen 2A/5A/10A, 20A/50A/75A and 100A/150A/200A. And in each group, the jumper can fix the input range of the three.

** There are two input group can be chosen 20A/50A/75A and 100A/150A/200. And the And in each group, the jumper can fix the input range of the three.

*** It can connect with AC/DC current/voltage load directly.

Part Numbers:

Series	Output	Power Supply	Window （mm）	Case Style	Accuracy	Rated Input
CE-IJ03	**1:** tracking voltage(Vg) **2:** tracking current(Ig)	**0:** none	**M:** none	S2	1.0	1A, 2A, 5A
			B: ϕ6.5			1A, 2A, 5A, 10A, 15A, 25A
	3:0～5VDC（Vz*） **8:**0～10VDC(Vd**) **J:** relay output***		**E:** ϕ20	S3		2A, 5A, 10A, 20A, 50A, 70A, 100A, 150A, 200A

Part Number Example: CE-IJ03-10BS2-1.0/0-10A

Description: 1-element AC current transducer, Output: tracking voltage0-1V, No power supply, Window: Φ6.5mm, Case style: S2, Accuracy: 1.0, Input current: 0-10A

Connections Diagram (see Chapter 4 for mounting dimensions)

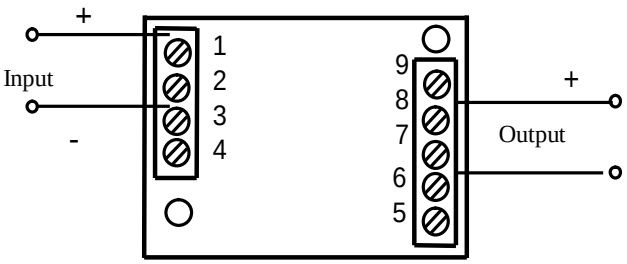


Fig.3.8.1 CE-IJ03 with terminal input

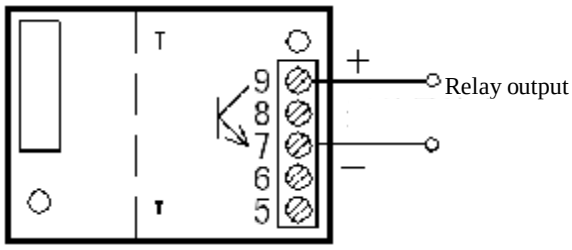


Fig. 3.8.2 CE-IJ03 with relay output

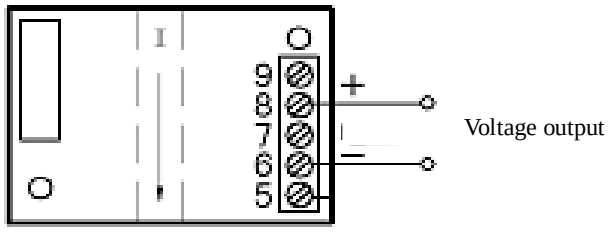


Fig. 3.8.3 CE-IJ03-x0 with voltage output

Application

1. Monitor the AC current of the motor.
2. Measure/monitor the second side of the CT.

Notice:

1. "+" which signed in the picture means the same polarity.
2. The size of window must be fit for the conducting wire to pass through. And the terminal input also could be chosen while the input current≤5A.
3. If there is a meter is used to test the output of the transducer, please make sure the accuracy of the meter is higher than the transducer.

3.7.1.2 self power 3-phase current transducer

Specifications:

Part number	Output	Isolation Voltage	Linearity Error	Phase Deflection	Rated Output	Load	Response Time	Overload Capacity	Mounting
CE-IJ31-10	Vg	2500VDC	≤0.2%	35′	0~1.5V	>1MΩ	≤15uS	20 times or <5/sec at 500A	Din rail/ Screw
CE-IJ31-20	Ig				2.5mA (input 5A)	≤1.5V			

Part Numbers:

Series	Output	Power Supply	Window （mm）	Case Style	Accuracy	Rated Input
CE-IJ31	**1:**tracking voltage (Vg) **2**:tracking current (Ig)	**0:** none	**B**: φ 6.5	S3	0.5 1.0	1A, 2A, 5A, 10A, 15A, 25A

Part Number Example: CE-IJ31-10BS3-1.0/0-5A

Description: 3-elements AC current transducer, Output: tracking voltage 0-1.2V, No power supply, Aperture: Φ6.5mm, Case style: S3, Accuracy: 1.0, Input current: 0-5A

Connections Diagram (see Chapter 4 for mounting dimensions)

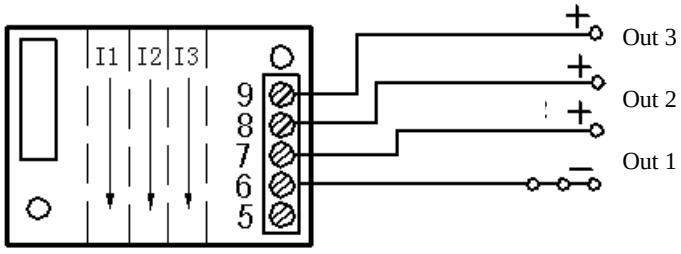


Diagram3.8.4 CE-IJ31 with S case style

Application

1. To monitor 3-phase motor
2. To monitor the secondary side of the CT

Notice:

1. "+" which signed in the picture means the same polarity.
2. The size of window must be fit for the conducting wire to pass through.
3. If there is a meter is used to test the output of the transducer, please make sure the accuracy of the meter is higher than the transducer.

3.7.2 self power voltage transducer

3.7.2.1 self power 1-phase voltage transducer

Specifications:

Part Number	Output	Isolation Voltage	Linearity Error	Phase Deflection	Rated Output	Load	Response Time	Overload Capacity	Mounting
CE-VJ03-10	Vg	2500 VDC	≤0.2%	35′	0～1V	>1MΩ	≤15uS	2 times <5/sec	Din rail / PCB/ Screw
CE-VJ03-20	Ig				0～1mA	≤1V			

Part Numbers:

Series	Output	Power Supply	Window （mm）	Case Style	Accuracy	Rated Input
CE-VJ03	**1:**tracking voltage (Vg) **2:**tracking current (Ig)	**0:** one	**M:** none	S2	0.5 1.0	10V, 50V, 100V, 110V 220V, 250V, 380V 400V, 500V, 600V

Part Number Example: CE-VJ03-20MS2-1.0/0-400V

Description: 1-phase AC voltage transducer, Output: tracking current 0-1mA, No power supply, No aperture, Case style: S2, Accuracy: 1.0, Input current:0- 400V.

Connections Diagram (see Chapter 4 for mounting dimensions)

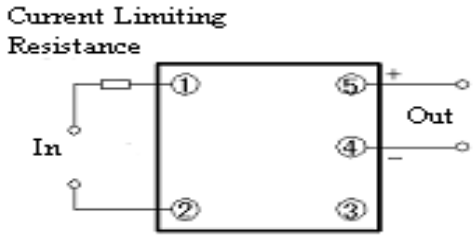


Fig. 3.8.5 CE-VJ03 (H1 case style)

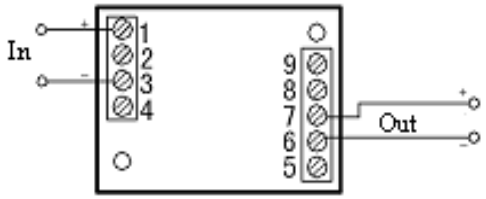


Fig. 3.8.6 CE-VJ03 (S case style)

Application:

1. Monitor the voltage of the motors
2. Monitor the secondary side of the VT

Notice:

1. "+" which signed in the picture means the same polarity.
2. The input voltage should not be over the rated voltage. The H1 must be used with corresponding current limiting resistance.
3. If there is a meter is used to test the output of the transducer, please make sure the accuracy of the meter is higher than the transducer.

3.7.2.2 self power 3-phase voltage transducer

Specifications:

Part number	Output	Isolator Voltage	Linearity Error	Phase Deflection	Rated Output	Load	Response Time	Overload Capacity	Mounting
CE-VJ41-10	Vg	2500 VDC	≤0.2%	35′	0～1V	>1MΩ	≤15uS	2 times <5/sec	Din rail /Screw
CE-VJ41-20	Ig				0～1mA	≤1V			

Part Numbers:

Series	Output	Power Supply	Window （mm）	Case Style	Accuracy	Rated Input
CE-VJ41	**1:**tracking voltage (Vg) **2**:tracking current (Ig)	**0**: none	**M**: none	S3	0.5 1.0	10V, 50V, 100V, 110V, 220V, 250V 380V, 400V, 600V

Part Number Example: CE-VJ41-10MS3-0.5/0-380V

Description: 3-phase 4-wire AC voltage transducer, Output: tracking voltage 0-1.2V, No power supply, No aperture, Case style: S3, Accuracy: 0.5, Input current: 0-380V.

Connections Diagram (see Chapter 4 for mounting dimensions)

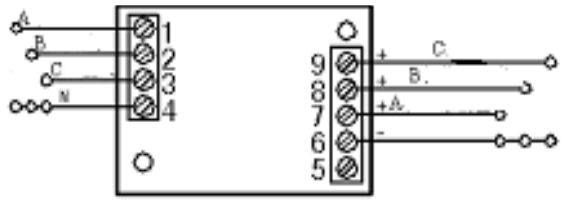


Fig. 3.8.7 CE-VJ41 (S case style)

Application:

1. Monitor the voltage of the motors
2. Monitor the secondary side of the VT

Notice:

1. "+" which signed in the picture means the same polarity.
2. The input voltage should not be over the rated voltage.
3. If there is a meter is used to test the output of the transducer, please make sure the accuracy of the meter is higher than the transducer

3.8 Split Core Self Power AC Current Transducer

Specifications:

Part Number	Output	Isolation Voltage	Linearity Error	Load	Response Time	Overload Capacity	Mounting
CE-IJ03-30 CE-IJ03-80	**3:** 0～5V (Vz) **8:**0～10V(Vd)	2500 VDC	≤1%	>3MΩ	1S	20 times or <5/sec at 500A	Din rail/ Screw

Part Numbers:

Series	Output	Power Supply	Window （mm）	Case Style	Accuracy	Rated Input
CE-IJ03	**3:** 0～5VDC（Vz*） **8**: 0～10VDC(Vd**)	**0**: none	**G:** φ31	S4	1.0	20A, 50A, 75A 100A, 150A, 200A

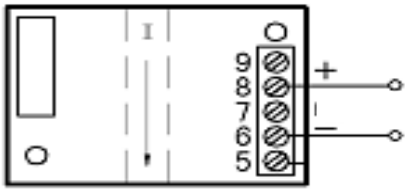
* There are two input group can be chosen 20A/50A/75A and 100A/150A/200A. And in each group, the jumper can fix the input range of the three.

** There are two input group can be chosen 20A/50A/75A and 100A/150A/200A. And in each group, the jumper can fix the input range of the three.

Part Number Example: CE-IJ03-30GS4-1.0/0-50A

Description: Spilt core 1-element AC current transducer, Output:0-5V, No power supply, Aperture: Φ31mm, Case style: S4, Accuracy: 1.0, Input current:0- 50A.

Connections Diagram (see Chapter 4 for mounting dimensions)



Voltage Output

Fig. 3.9.1CE-IJ03-x0GS4 with voltage output

Application:

1. Multi-point current sensing and control panels
2. Monitor motor faults
3. Monitor heating elements
4. Monitor lighting elements

Notice:

1. If you want to open/close the split core, press and move the orange bolt to the open/close direction.
2. The conductor carrying the input current should pass through the center of the aperture as perpendicularly as possible. And lock the bolt.
3. If there is a meter is used to test the output of the transducer, please make sure the accuracy of the meter is higher than the transducer

3.9 Split Core DC Current Transducer

Specifications:

Series	Operating Principle	Isolation Voltage	Response Time	Overload Capacity	Power Consumption（mW）		Mounting
					Vz,Vd,Vg,Iz Output	Iy Output	
CE-IZ04	Hall effect	2500VDC	≤200mS	20 times or <5/secat 500A	550	600	Din rail /Screw

Part Numbers:

Series	Output	Power Supply	Window （mm）	Case Style	Accuracy	Rated Input
CE-IZ04	**3**: 0~5VDC (Vz) **4**:0~20mA (Iz) **5**:4~20mA (Iy) **8**:0~10V DC (Vd)	**4**: 24V	G:Φ31	S4	1.0	30A, 50A, 80A, 100A, 120A, 150A, 200A, 300A

Part Number Example: CE-IZ04-34GS4-1.0/0-50A

Description: Spilt core 1-element DC current transducer, Output:0-5V, Power supply+24V, Aperture: Φ31mm, Case style: S4, Accuracy: 1.0, Input current: 0-50A.

Connections Diagram (see Chapter 4 for mounting dimensions)

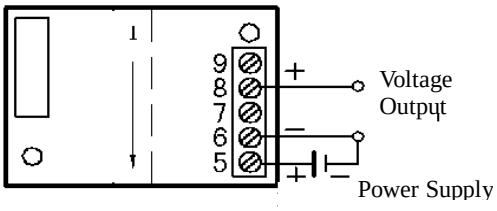


Fig. 3.10.1 IZ04-xxGS4 with voltage output

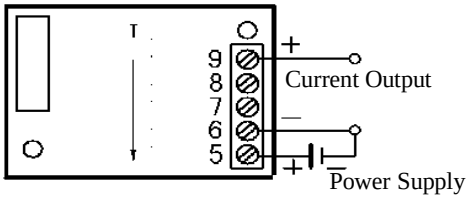


Fig.3.10.2 IZ04-xxGS4 with current output

Application:

1. Directly connect to PLC
2. Sense motor stalls and short circuits
3. Industrial instrumentation
4. Process control loops
5. Phase Fired Controlled Heaters

Notice:

1. If you want to open/close the split core, press and move the orange bolt to the open/close direction.
2. The conductor carrying the input current should pass through the center of the aperture as perpendicularly as possible. And lock the bolt.
3. If the input is bi-directional signal, please mark it in your order.
4. Apply power to the transducers only after check out the input signal, Power supply, and connection diagram.

3.10 Split Core AC Current Transducer

Specifications:

Series	Operating Principle	Isolation Voltage	Response Time	Overload Capacity	Power Consumption（mW）		Mounting
					Vz,Vd,Vg,Iz Output	Iy Output	
CE-IJ03-xxGS4 CE-IJ03A-xxGS4	Electro-magnetic induction	2500VDC	≤250mS	20 times or <5/sec at 500A	360	450	Din rail /Screw

Part Numbers:

Series	Output	Power Supply	Window(mm）	Case Style	Accuracy %	Rated Input
CE-IJ03 CE-IJ03A	**3**: 0~5VDC (Vz) **4**:0~20mA (Iz)* **5**:4~20mA (Iy)* **8**:0~10VDC(Vd)**	**2:** 12V **3:** 15V **4:** 24V	**G**:φ31	S4	1.0	5A，10A，15A，25A，30A,50A ， 75A ，100A，120A，150A，200A，250A，300A

* For output Iz and Iy, load would be less than 250Ω. Contact us for above250Ω＜RL≤500Ω.

** Output Id not available in CE-IJ03A.

Part Number Example: CE-IJ03-32GS4-1.0/50A

Description: Spilt core single-phase AC current transducer, Output:0-5V, Power supply+12V, Aperture: Φ31mm, Case style: S4, Accuracy: 1.0, Input current:0- 50A.

Connections Diagram

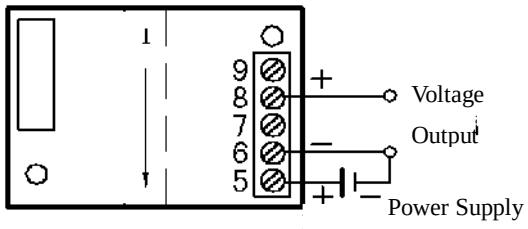


Fig.3.11.1 CE-IJ03-xxGS4 with voltage output

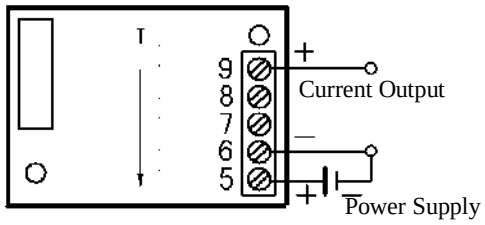


Fig. 3.11.2 CE-IJ03-xxGS4 with current output

Application:

1. Directly connect to PLC
2. Sense motor stalls and short circuits
3. Industrial instrumentation
4. Process control loops

Notice:

1. If you want to open/close the split core, press and move the orange bolt to the open/close direction.
2. The conductor carrying the input current should pass through the center of the aperture as perpendicularly as possible. And lock the bolt.
3. Make sure the polarities are in right connection. The output and the power supply must be common grounded.
4. If there is a meter used to test the output of the transducer, please make sure the accuracy of the meter is higher than the transducer.

3.11 Power Supply

Power supply and dimensions (mm) : CE-WYS-1, CE-WYS-2

CE-WYS-1

Model	CE-WYS-1/1A/1B
Input Voltage	220V±10%, 50Hz
Rated Current Output	500mA
Output Voltage	DC ±12V, ±15V, +24V
Output Ripple	⩽10mV

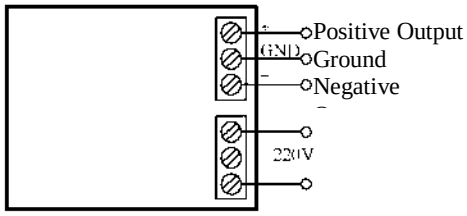
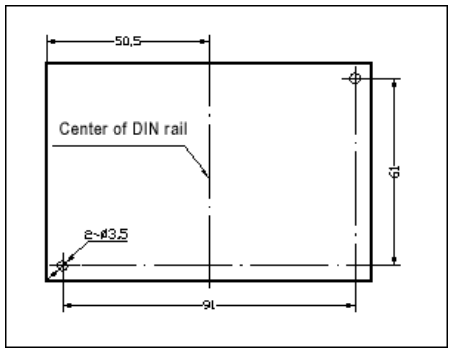


Fig.5.1.1 Connections for



Unit: mm

CE-WYS-2

Model	CE-WYS-2
Input Voltage	220V±10%, 50Hz
Rated Current Output	200mA
Output Voltage	DC +12V, +15V, +24V

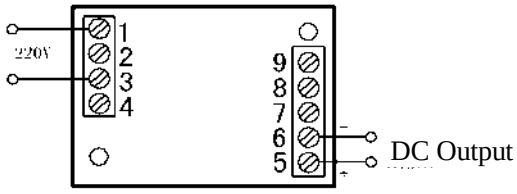
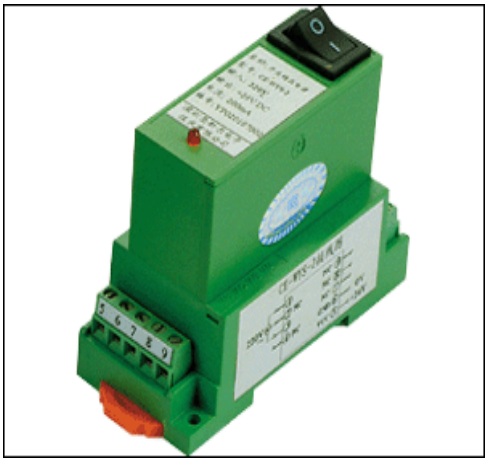
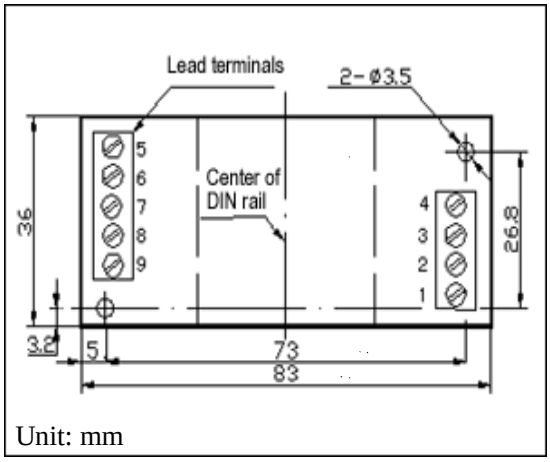


Fig. 5.1.2 Connections of CE-WYS-2





Unit: mm

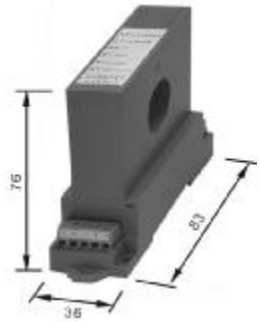
Note: CE-WYS-1 and CE-WYS-2 are switching mode regulated power supply with positive voltage output. The voltage output of CE-WYS-1A is not adjustable. The voltage output of CE-WYS-1B linear regulated power supply is adjustable. CE-WYS-2 is of S3 case style.

Chapter 4 Case style and Mounting Diagram

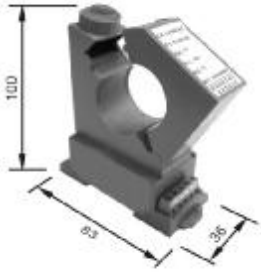
4.1 Case Styles and Outline Dimension

S1

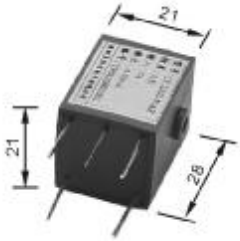
S2



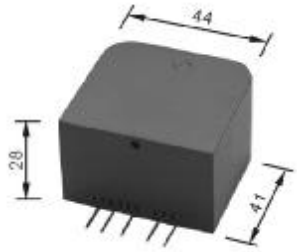
S3



S4

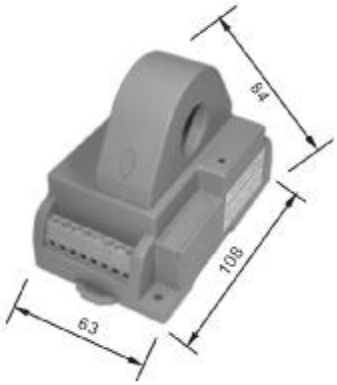


H1



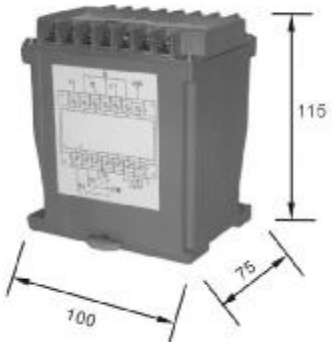
H2

SK1



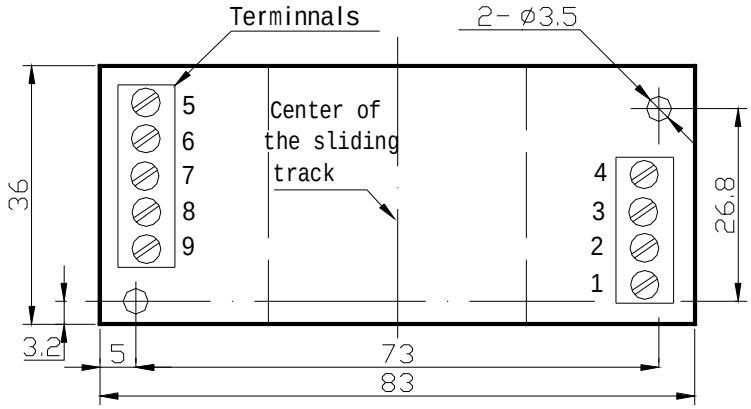
SK2

SK3

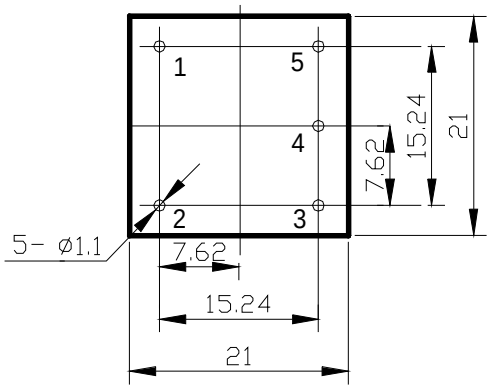


SL

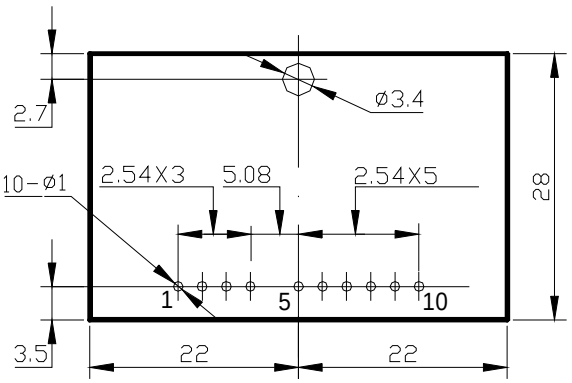
4.2 Mounting Dimensions (mm)



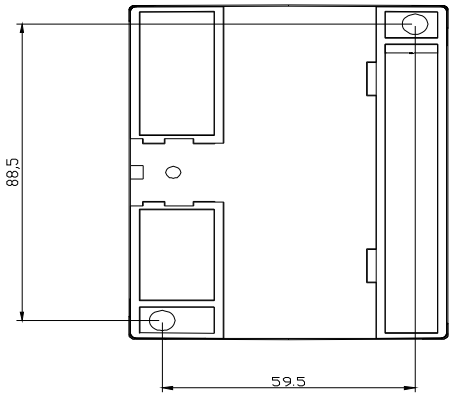
For Case style S1, S2 , S3 and S4



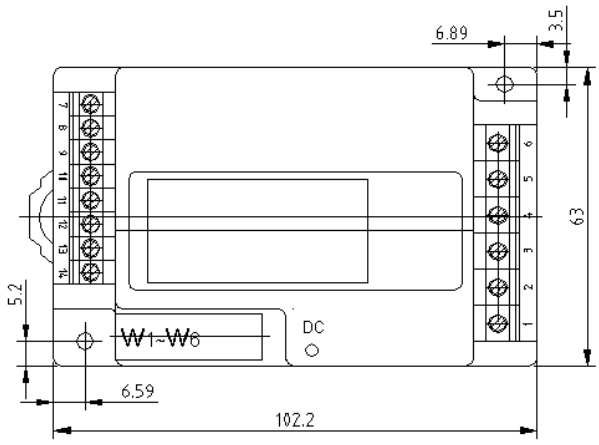
For Case style H1 (Top view)



For Case style H2 (Top view)



For Case style SL(Top view)



For Case style SK(Top view)

Chapter 5 Notes for Ordering

5.1 Ordering Instructions

1. Ensure a complete correct part number and product descriptions are used according to instructions in Chapter 1. The ordering information must include the complete description including input and output parameters such as rated value, output functions, Power supply and case style etc. Included with your order must be quantity, delivery and shipping requirements. Provide complete company name, address, fax number, and email address. Be sure to provide the name of the contact person that we can contact with any questions.
2 The complete order must be signed by both the seller and buyer.
3. Payment is by irrepealably L/C at sight for large quantities or 50% in advance and the remaining to be paid before shipment for small quantity.

5.2 Installation Notes

1. Verify the part number and description are correct according to the packing list and product labels.
2. Apply power to the transducers only after a through checking of the input signal, Power supply according to connections diagram.
3. The Power supply voltage must be within ±2% with noise less than 0.4%. Vpp
4. The transducers with current output may only be used with load resistance of less than 250 Ω. The voltage output transducers must be connected to a load of greater that 2K Ω
5. The transducers should only be used in environments having no static electricity, excessive dust, corrosive or explosive gases.
6. Please ensure the terminal screws are tightened securely and reliably before the electrical testing with a multi-meter directly on the terminals
7. Calibration of the units with equipment that has accuracy ratings greater than the rating of the transducers. Ensure that the equipment and transducers have been operating for a minimum of 15 minutes before calibration.
8. The transducers should not be used in environments with strong electromagnetic interference. Standard precautions such as shielding the input and/or output lines should be observed. All lines should be kept as short as possible. If a group of transducers are mounted together, keep a space more than 10 mm between adjacent units. A 35mm (width) track is to be used for DIN rail mounting withΦ3 screw for PCB surface mounting.
9. The transducers have been calibrated before delivery. Please contact the company if readjustments are required.
10. Do not remove or destroy the product labels.

5.3 Warranty service

1. SHENZHEN SENSOR ELECTRONIC TECHNOLOGY CO., LTD. guarantees the original purchaser of our products a 24-month warranty from date of purchase. Repairs or other modifications made by unauthorized persons to the transducer will make all warranties, express or implied, null and void. Warranty does not include any component replacement if damages caused by improper use.

S1

S2

S3

S4

H1

SL

MSK

ESK

BSK