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.

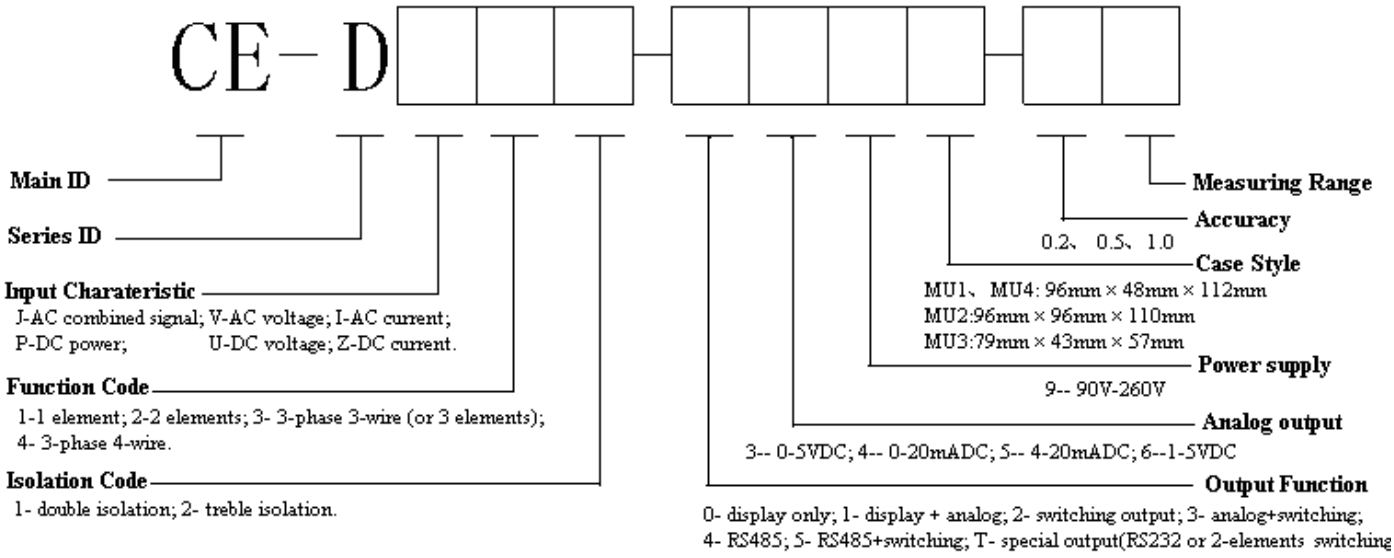

Fig. 1.1 Part Number Code Rules

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)

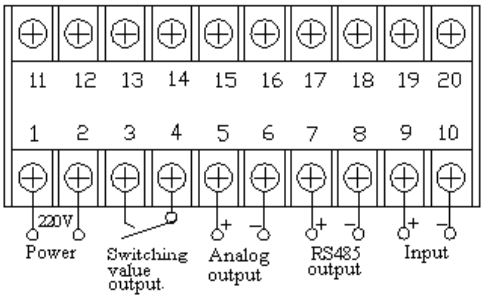

Fig.3.3 MU1 case style connection

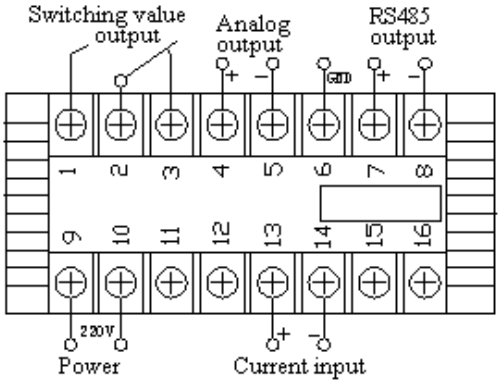

Fig.3.4 MU4 case style connection

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)

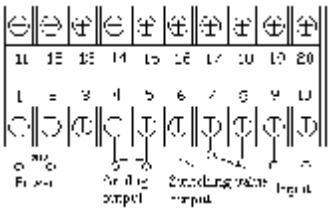

Fig.3.7 MU1 case style connection

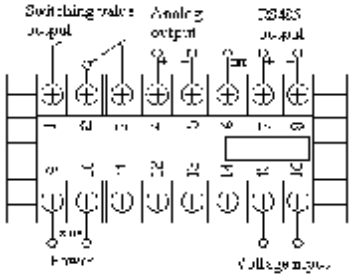

Fig.3.8 AC voltage MU4 case style connection

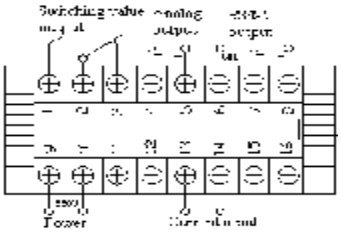

Fig.3.9 AC current MU4 case style connection

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)

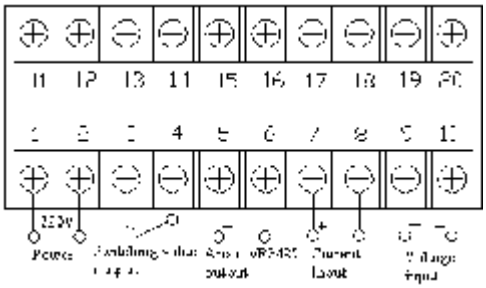

Fig.3.12 MU1 case type connection

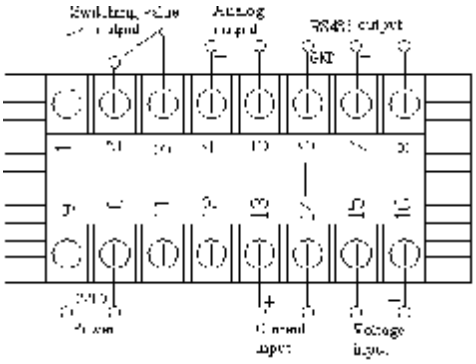

Fig.3.13 MU4 case type connection

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)

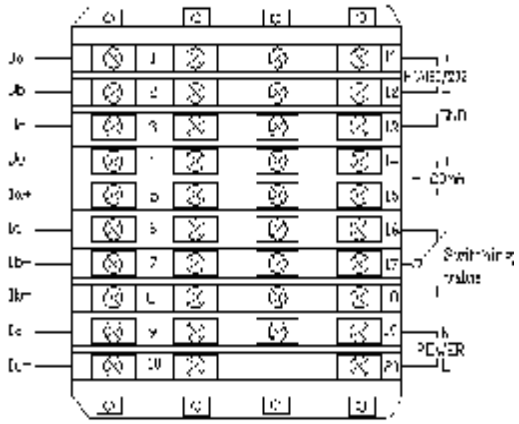

Fig.3.15 MU2 case style connections

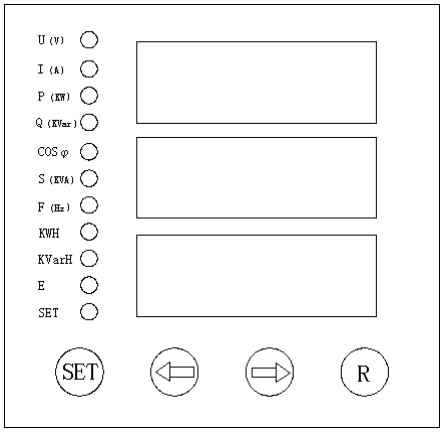

Fig.3.16 Panel for MU2 case style

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

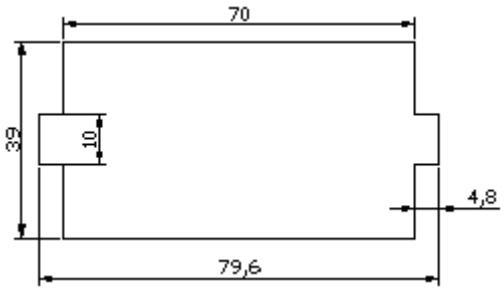

Fig. 3.18 Installation diagram

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

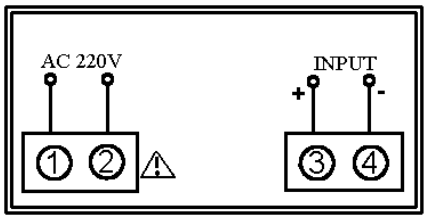

Fig. 3.19 MU3 case type connections

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.