

## Frequency Signal Transducer

### Instructions

### CE-F01-\*\*-MS\*-0.5

#### 1 Overview

This product is an arbitrary waveform of the frequency signal detection isolation transducer. Using the principle of photoelectric isolation can convert the input frequency signal into a linear output of 0 ~ 5V, 0 ~ 20mA, 4 ~ 20mA and other standard signals. The input frequency signal can be a sine wave, square wave and zero-crossing wave, and its amplitude can reach 1000Vpp. This product is double-isolation, the input and output are isolated from the power supply. Product installation is simple, can be widely used in communications, power, railway, industrial control and other fields.

#### Features:

- Ø With waveform shaping function, can be arbitrary waveform input measurement;
- Ø Amplitude variation can be as low as 5%;
- Ø Frequency measurement up to 10KHz;
- Ø Good stability and high precision.

#### 2 Case Style



Figure 1, DC power supply (MS2) product appearance

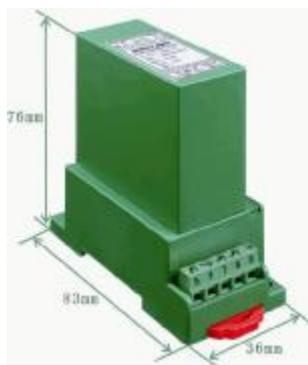


Figure 2, 220V power supply (MS2) product appearance

#### 3 Part Number

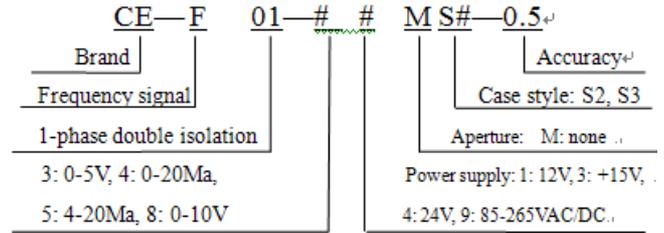


Figure 3 Product Selection Guide

#### 4 Specifications

Test conditions: auxiliary power: +12 V, room temperature: 25°C.  
 Input range: frequency: 0-50Hz~10KHZ, Amplitude: 5-500V;  
 Output: 0-5V, 0-20mA, 1-5V, 4-20mA, 0-10V;  
 Power supply: DC 12V,15V,24V,AC/DC 85V~265V;  
 Accuracy: 0.5;  
 Load capacity: ≥2KΩ (voltage output); ≤250Ω (current output);  
 Temperature drift: <500ppm/°C;  
 Isolation voltage: DC 2500V  
 Response time: ≤200 mS; (Frequency <100Hz response time <800mS)  
 Rated power consumption: <0.5W  
 Output ripple: <10mV  
 Frequency range: 0Hz~10kHz  
 Surge Immunity: Input 4KV (L-N / 2Ω / integrated wave), power supply / output port 2KV (L-N / 40Ω / integrated wave);  
 Impulse immunity: ± 2KV input / power port, analog I / O port ± 1KV;  
 Input overload capacity: continuous overload: 120%; short-term overload: 2 times the rated voltage input value for 1 second;  
 Operating temperature: -10°C~+60°C;  
 Storage conditions: -40°C~+70°C.

#### 5 Connections Diagram

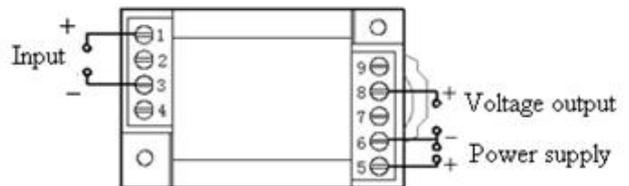


Figure 4, wiring diagram of CE-F01-3 \* MS2 / CE-F01-8 \* MS2

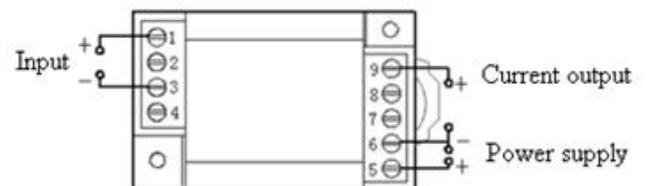


Figure 5, wiring diagram of CE-F01-4 \* MS2 / CE-F01-5 \* MS2

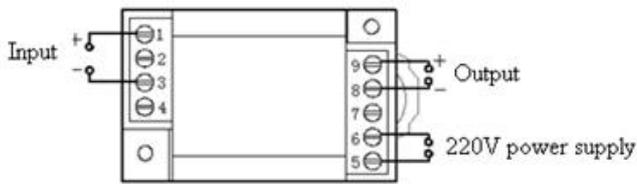


Figure 6, wiring diagram of CE-F01- \* 9MS3

## 6 Installations

Rail mounting dimensions: 35mm; screws installation size:

73X26.8mm; as shown in Figure 7 (in mm).

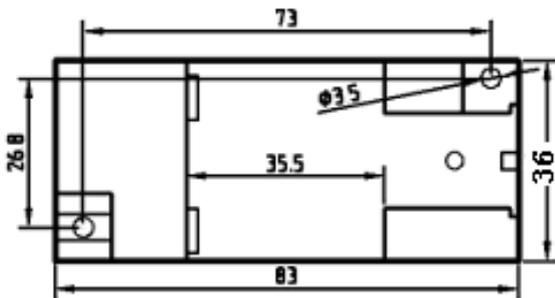


Figure 7: Mounting dimensions

## 7 Product' s Service

### 1 Installation

#### 1.1 DIN rail installation method:

- ① Fix the transducer on the side of the card slot and hook on the mounting rail;
- ② Pull the spring pin down;
- ③ Clip the transducer mount on the mounting rail;
- ④ Release the spring pin and clip the transmitter on the mounting rail.

#### 1.2 Screw mounting method:

- ① 4mm diameter hole in the fixed plate according to the screw hole position shown in Fig. 5;
- ② Use the screw  $\Phi 3$  to insert into hole and secure it.

2 Product has been accurately set according to the "product standard". Apply power after determine the correct wiring.

3 The maximum wire diameter of the terminal block is 2mm (16-26AWG). Remove the 4mm ~ 5mm insulation layer from the end of the mounting wire and insert it into the terminal block, then tighten the screw.

4 Product supply power requires the isolation voltage  $\geq 2000\text{VAC}$ , AC ripple  $< 10\text{mV}$ . Multiple transducers can share a common set of power supplies, but the power circuit can no longer be used to drive relays and other can produce spikes in the load, in order to

avoid interference signal transmission to the transducer.

5 The transducers output 0-20mA (or 4-20mA), the RL standard is  $\leq 250\Omega$ , and 0-5V voltage output RL standard is  $\geq 2\text{K}\Omega$ , can guarantee the output accuracy and linearity over the entire rated input range.

## 8 Example of product accuracy level verification

1 According to the definition of the transducer terminals to connect the test circuit as shown.

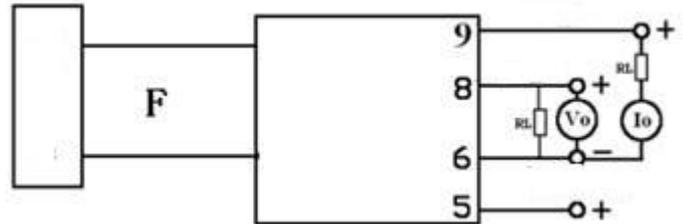


Figure 6, accuracy test wiring diagram of voltage or current output

**Note:** The voltage output is measured with a voltmeter and the current output is measured with an Io meter.

2 The test shall be carried out under the following environmental conditions:

- ◆ Power supply: nominal  $\pm 5\%$ , ripple  $\leq 10\text{mV}$ ;
- ◆ Ambient temperature:  $25\text{ }^\circ\text{C} \pm 5\text{ }^\circ\text{C}$ ;
- ◆ Relative humidity: RH (45 ~ 80)%;
- ◆ The accuracy of the signal source and measurement instrument is 0.05% above.

3 Power preheat 2min;

4 Assuming the transmitter input frequency range is 0-10KHz, he output is 0-5VDC, given any input value F in the transducer range, the theoretical output value ( $V_z$ ) of the transducer is calculated as follows:

$$V_z = (F \div 10\text{KHz}) \times 5\text{V}$$

If the output is 4-20mA, then  $I_z = 4 + F \div 10\text{KHz} \times 16\text{mA}$ ;

If the output is 0-20mA, then  $I_z = F \div 10\text{KHz} \times 20\text{mA}$ ;

5 The monitoring table measures the DC voltage output value  $V_o$  or the current output value  $I_o$ .

$|V_o - V_z| \leq 25\text{mV}$  is normal, or excessive (0-5V output, 0.5);

$|I_o - I_z| \leq 80\mu\text{A}$  is normal, or excessive (4-20mA output, 0.5);

$|I_o - I_z| \leq 100\mu\text{A}$  is normal, or excessive (0-20mA output, 0.5);

6 Repeat the 5 operation, the resulting point value is  $|V_o - V_z| \leq 25\text{mV}$  or  $|I_o - I_z| \leq 80\mu\text{A}$  (100uA), the transducer accuracy level is qualified.

**Note:** please consult with our company for the verification method detailed of other technical indicators.

## 9 Notes

1 Please pay attention to the wiring on product label and the output

contact capacity.

2 Transducer for the integrated structure, not removable, and should avoid collision and fall.

3 The transducers are used in environments with strong electromagnetic interference. Standard precaution such as shielding the input and /or output lines should be observed. All lines should be as short as possible. If a group of transducers are mounted together, keep a space more than 10mm between adjacent units.

4 The input value given on the transducer label refers to the rms value of the ac signal.

5 Only use the effective terminal of the transducer. The other terminals may be connected with the internal circuit of the transducer, and can't be used for other purposes.

6 Transducer has a certain anti-lightning ability, but when the transducer input and output feeders exposed to extreme bad environments, must be taken lightning protection measures.

7 Don't damage or modify the product label and logo. Don't disassemble or modify the transducer, otherwise the company will no longer provide the product "three guarantees" (replacement, returns, repair) services.

8 The transducers use flame-retardant ABS plastic shell package. which limit temperature is +75 °C. The shell will be deformed with high-temperature baking, and will affect product performance. Do not use or save the product near the heat source. Do not bake the product in a high-temperature oven.

9 When measuring the voltage or current with the multi meter pen, please screw the terminal screw in the end, otherwise it may not measure the voltage or current output value.