

## DC Current Sensor CYCT02-xnS2

The **CYCT02-xnS2** DC current sensor/transducer works according to electromagnetic isolation and is designed for applications to measurement and monitoring of DC current. The output signal (DC voltage or current) of this transducer is proportional to the DC current input. They are suitable for measurements and long-time monitoring of DC currents and can be applied to power supply management, DC motor drivers, battery chargers and systems etc.

### Specifications

|                                |                                                   |
|--------------------------------|---------------------------------------------------|
| Rated input current range      | 500mA, 1A, 2A, 5A                                 |
| Output signal                  | 0-5VDC, 0-20 mA, 4-20 mA, 0-10V DC, frequency OC  |
| Power supply                   | +12V, +15V, +24V DC                               |
| Measuring accuracy             | ±0.2%FS or ±0.5%FS                                |
| Isolation                      | between input, output and power supply            |
| Load resistance                | ≥2kΩ for voltage output, ≤250Ω for current output |
| Isolation withstanding voltage | 2.5 kV DC, 1min, leakage current 1mA              |
| Operating temperature          | -10°C ~ +60°C                                     |
| Storage temperature            | -25°C ~ + 70°C                                    |
| Relative humidity              | 10% ~ 90%                                         |
| Response time                  | ≤15ms                                             |
| Overload capacity              | 2 times                                           |
| Quiescent power consumption    | 200mW – 300mW                                     |
| Mounting                       | Din rail                                          |
| Case style                     | S2 without aperture                               |

### Definition of Part number:

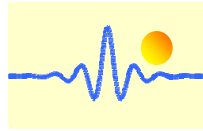
|        |   |     |     |     |   |     |   |     |
|--------|---|-----|-----|-----|---|-----|---|-----|
| CYCT02 | - | x   | n   | S2  | - | 0.5 | - | M   |
| (1)    |   | (2) | (3) | (4) |   | (5) |   | (6) |

| (1)         | (2)                                                                                                                         | (3)                                                               | (4)        | (5)            | (6)                           |
|-------------|-----------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|------------|----------------|-------------------------------|
| Series name | Output signal                                                                                                               | Power supply                                                      | Case style | Accuracy class | Input current range (M=U/B+m) |
| CYCT02      | <b>x=3:</b> 0-5V DC<br><b>x=4:</b> 0-20mA DC<br><b>x=5:</b> 4-20mA DC<br><b>x=8:</b> 0-10V DC<br><b>x=F:</b> Frequency OC** | <b>n=2:</b> +12V DC<br><b>n=3:</b> +15V DC<br><b>n=4:</b> +24V DC | S2         | ±0.2%<br>±0.5% | m=<br>500mA, 1A,<br>2A, 5A    |

\*\* Frequency range: 10kHz, accuracy: 0.5%, response time is longer than those given in the table above  
**U:** uni-directional input current; **B:** bi-directional input current

### Output Signal of Custom-Made Sensors:

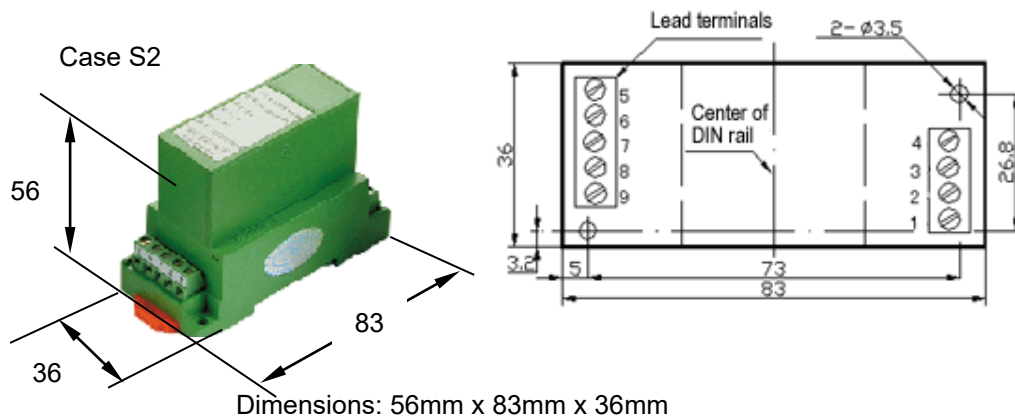
**x=1:** tracing voltage 5V, **x=2:** tracing current 20mA



**Example 1:** CYCT02-32S2-0.2-U2A, DC Current sensor with accuracy  $\pm 0.2\%$  and Output signal: 0-5V DC  
Power supply: +12V DC  
Rated input current: 0-2A DC (unidirectional)

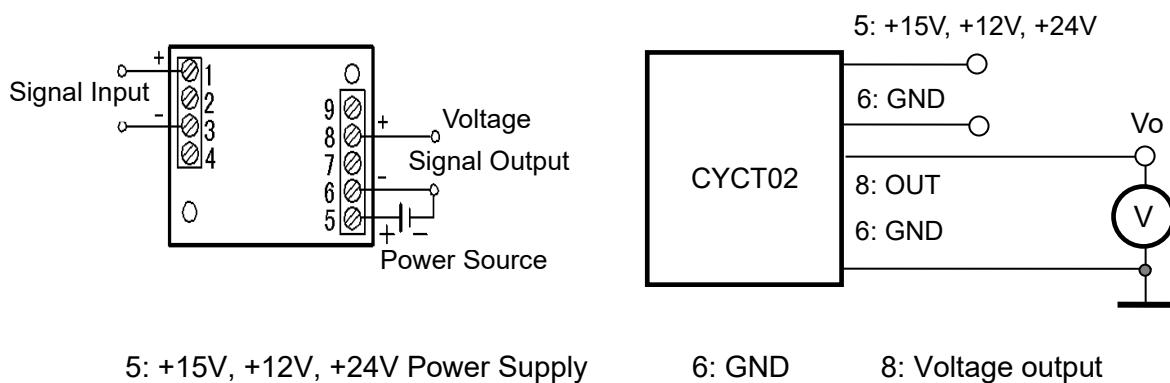
**Example 2:** CYCT02-54S2-0.5-B2A, DC Current sensor with accuracy  $\pm 0.5\%$  and Output signal: 4-20mA DC  
Power supply: +12V DC  
Rated input current: -2A ~ +2A DC (bi-directional)

## DIMENSIONS (mm)



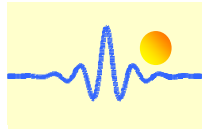
## CONNECTIONS

### Wiring of Terminals for voltage output:

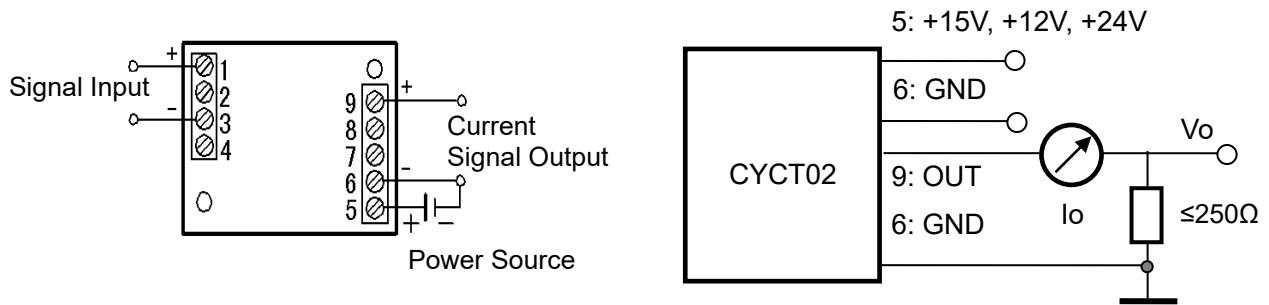


### Relation between Input and Output:

| Sensor CYCT02-32S2-0.2-U2A |                    | Sensor CYCT02-32S2-0.2-B2A |                    |
|----------------------------|--------------------|----------------------------|--------------------|
| Input current (A)          | Output voltage (V) | Input current (A)          | Output voltage (V) |
| 0                          | 0                  | -2                         | 0                  |
| 0.5                        | 1.25               | -1                         | 1.25               |
| 1                          | 2.5                | 0                          | 2.5                |
| 1.5                        | 3.75               | 1                          | 3.75               |
| 2                          | 5                  | 2                          | 5                  |



## Wiring of Terminals for Current Output:



5: +15V, +12V, +24V Power Supply

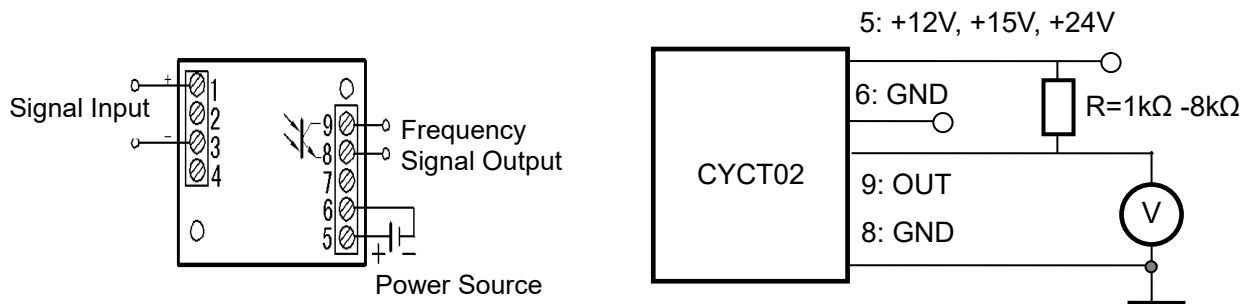
6: GND

9: Current output

Relation between Input and Output ( $R_m=250\ \Omega$ ):

| Sensor CYCT02-54S2-0.5-U2A |                           |                          | Sensor CYCT02-54S2-0.5-B2A |                           |                          |
|----------------------------|---------------------------|--------------------------|----------------------------|---------------------------|--------------------------|
| Input current (A)          | Output current $I_o$ (mA) | Output voltage $V_o$ (V) | Input current (A)          | Output current $I_o$ (mA) | Output voltage $V_o$ (V) |
| 0                          | 4                         | 1                        | -2                         | 4                         | 1                        |
| 0.5                        | 8                         | 2                        | -1                         | 8                         | 2                        |
| 1                          | 12                        | 3                        | 0                          | 12                        | 3                        |
| 1.5                        | 16                        | 4                        | 1                          | 16                        | 4                        |
| 2                          | 20                        | 5                        | 2                          | 20                        | 5                        |

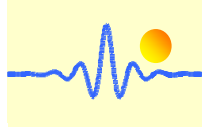
## Wiring of Terminals for OC Frequency Output:



The value of the pull-up resistor R should be selected to get a current of 4-5mA flowing through the pull-up resistor. For instance, the pull-up resistor is  $24V/4.5mA=5.3k\Omega$  if you use a power supply +24VDC.

Recommended value of the pull-up resistor R

| Power supply       | +12V          | +15V          | +24V          |
|--------------------|---------------|---------------|---------------|
| Pull-up resistor R | 2.6k $\Omega$ | 3.3k $\Omega$ | 5.3k $\Omega$ |



### **Applications:**

- Power supply management
- DC motor drives
- Battery chargers and systems
- Mobile applications.

### **Notice:**

- If the input signal is bi-directional DC or pulse DC, please give a remark in your order.
- The output and the power supply must be common grounded at terminal 6.
- If the input current is higher than 1A, it is necessary to connect terminals 1&2 and terminals 3&4 in parallel to reduce the input resistance at the input terminals.