

## DC Current Sensor with Split Core CYHCT-C5

This Hall Effect current sensor is based on open loop principle and designed with a solid core and a high galvanic isolation between primary conductor and secondary circuit. It can be used for measurement of DC current etc. The output of the transducer reflects the real wave of the current carrying conductor.

| Product Characteristics   | Applications  |
|---|---|
| <ul style="list-style-type: none"> <li>• Excellent accuracy</li> <li>• Very good linearity</li> <li>• Small size</li> <li>• Light in weight</li> <li>• Less power consumption</li> <li>• Window structure</li> <li>• Electrically isolating the output of the transducer from the current carrying conductor</li> <li>• No insertion loss</li> <li>• Current overload capability</li> </ul> | <ul style="list-style-type: none"> <li>• <b>Photovoltaic equipment</b></li> <li>• Frequency conversion timing equipment</li> <li>• Various power supply</li> <li>• Uninterruptible power supplies (UPS)</li> <li>• Electric welding machines</li> <li>• Transformer substation</li> <li>• Numerical controlled machine tools</li> <li>• Electrolyzing and electroplating equipment</li> <li>• Electric powered locomotive</li> <li>• Microcomputer monitoring</li> <li>• Electric power network monitoring</li> </ul> |

### Electrical Data

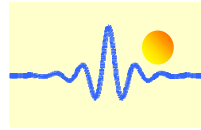
|                        |  |
|------------------------|--|
| Measuring range M      | 300A ~ 6000A DC  |
| Linearity range        | 1.5 x M (for 300A ~ 4000A), 6500A (for >4000A)                 |
| Overload capacity      | 5 x M <sub>max</sub> (maximum measuring range)                 |
| Nominal output signals | 0-4V, 0-5V, 0-10V, -5V~+5V, 0-20mA, 4-20mA, -20mA~+20mA , .... |
| Supply voltage         | +12VDC, +15VDC, +24VDC, ±12VDC, ±15VDC                         |
| Current consumption    | 18mA ~ 50mA + output current                                   |
| Galvanic isolation     | 3KV RMS/50Hz/min   |

### Accuracy and Dynamic Performances

|                             |  |        |
|-----------------------------|--|--------|
| Zero offset voltage/Current | ±20mV for 0-5V output, ±0.2mA for current output |        |
| Hysteresis error            | ±10mV for 0-5V output, ±0.1mA for current output |        |
| Thermal drift of offset     | ≤500   | ppm/°C |
| Response time               | ≤1 (di/dt=50A/μs)                                | ms     |
| Accuracy                    | ±1.0   | %      |
| Linearity                   | ≤1.0   | %FS    |

### General Data

|                       |           |    |
|-----------------------|-----------|----|
| Operating temperature | -10 ~ +80 | °C |
| Storage temperature   | -25 ~ +85 | °C |
| Unit Weight           | 940 ~ 980 | g  |



**Definition of Part number:**

|       |   |     |   |     |   |     |     |
|-------|---|-----|---|-----|---|-----|-----|
| CYHCT | - | C5  | - | M   | - | x   | n   |
| (1)   |   | (2) |   | (3) |   | (4) | (5) |

| (1)         | (2)        | (3)  | (4)  | (5)  |
|-------------|------------|--|--|--|
| Series name | Case style | Rated Input current (M=U/B + m)  | Output signal  | Power supply   |
| CYHCT       | C5         | m =<br>300A, 400A, 500A, 600A,<br>700A, 800A, 1000A,<br>2000A,3000A, 4000A,<br>5000A,6000A | <b>x=0:</b> 0-4V DC<br><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 | n=2: +12V DC<br>n=3: +15V DC<br>n=4: +24V DC<br>n=5: ±12V DC<br>n=6: ±15V DC |

**U:** unidirectional input current; **B:** bidirectional input current

**Output Signal of Custom Made Sensors:**

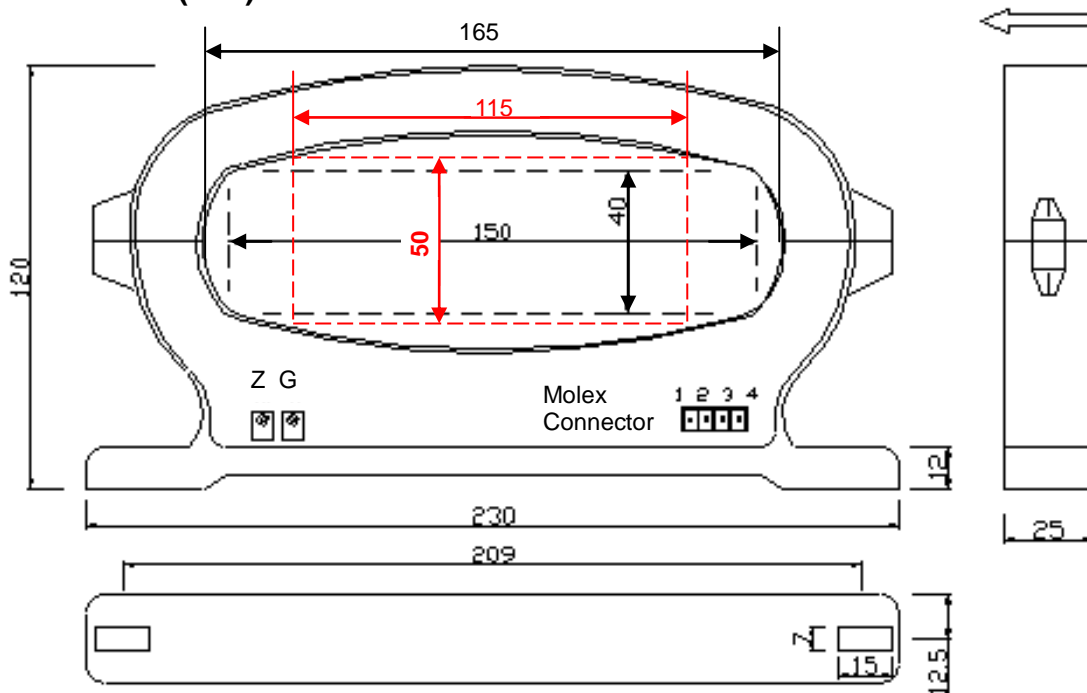
**x=1:** tracing voltage 5V DC, **x=2:** tracing current 20mA DC

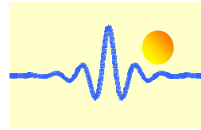
**Example 1:** CYHCT-C5-U1000A -34, Hall Effect DC Current sensor with  
Output signal: 0-5V DC  
Power supply: +24V DC  
Rated input current: 0-1000A DC

**Example 2:** CYHCT-C5-B1000A -34, Hall Effect  
DC Current sensor with  
Output signal: 0-5V DC  
Power supply: +24V DC  
Rated input current: -1000A ~ +1000ADC



**DIMENSIONS (mm)**





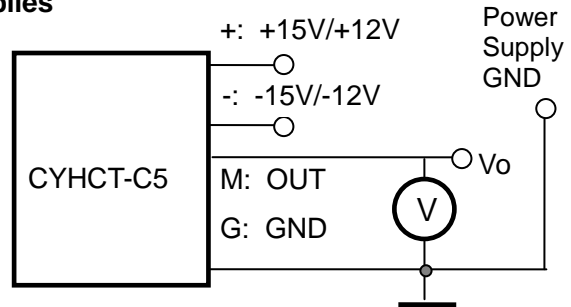
## CONNECTION

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.

### a) Wiring of Sensors Using Double Power Supplies

#### Voltage Output

- 1(+): +15V/+12V Power Supply
- 2(-): -15V/-12V Power Supply
- 3(M): Output
- 4(G): Ground

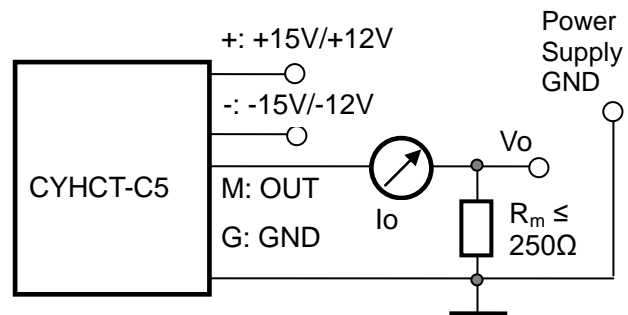


Relation between Input and Output:

| Sensor CYHCT-C5-U1000A -35 |                    | Sensor CYHCT-C5-B1000A -35 |                    |
|----------------------------|--------------------|----------------------------|--------------------|
| Input current (A)          | Output voltage (V) | Input current (A)          | Output voltage (V) |
| 0                          | 0                  | -1000                      | 0                  |
| 250                        | 1.25               | -500                       | 1.25               |
| 500                        | 2.5                | 0                          | 2.5                |
| 750                        | 3.75               | 500                        | 3.75               |
| 1000                       | 5                  | 1000                       | 5                  |

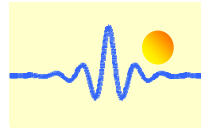
#### Current Output

- 1(+): +15V/+12V Power Supply
- 2(-): -15V/-12V Power Supply
- 3(M): Output
- 4(G): Ground



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

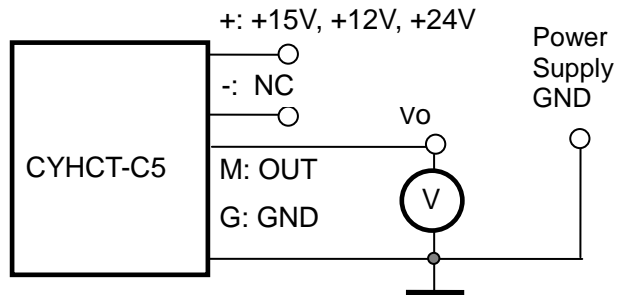
| Sensor CYHCT-C5-U1000A -45 |                           |                          | Sensor CYHCT-C5-B1000A -45 |                           |                          |
|----------------------------|---------------------------|--------------------------|----------------------------|---------------------------|--------------------------|
| 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                          | 0                         | 0                        | -1000                      | 0                         | 0                        |
| 250                        | 5                         | 1.25                     | -500                       | 5                         | 1.25                     |
| 500                        | 10                        | 2.5                      | 0                          | 10                        | 2.5                      |
| 750                        | 15                        | 3.75                     | 500                        | 15                        | 3.75                     |
| 1000                       | 20                        | 5                        | 1000                       | 20                        | 5                        |



## B) Wiring of Sensors Using Single Power Supply

### Voltage Output

1(+): +15V, +12V, +24V  
2(-): NC  
3(M): Output  
4(G): Ground

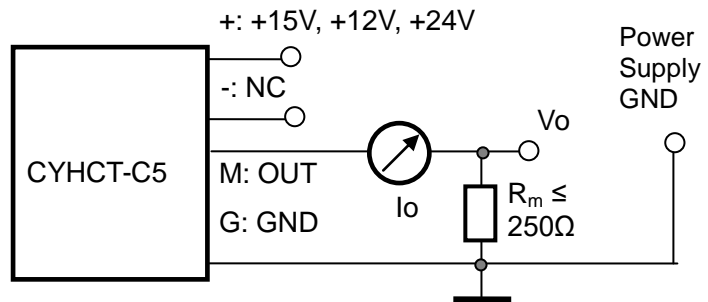


Relation between Input and Output:

| Sensor CYHCT-C5-U1000A -34 |                    | Sensor CYHCT-C5-B1000A -34 |                    |
|----------------------------|--------------------|----------------------------|--------------------|
| Input current (A)          | Output voltage (V) | Input current (A)          | Output voltage (V) |
| 0                          | 0                  | -1000                      | 0                  |
| 250                        | 1.25               | -500                       | 1.25               |
| 500                        | 2.5                | 0                          | 2.5                |
| 750                        | 3.75               | 500                        | 3.75               |
| 1000                       | 5                  | 1000                       | 5                  |

### Current Output

1(+): +15V, +12V, +24V  
2(-): NC  
3(M): Output  
4(G): Ground



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

| Sensor CYHCT-C5-U1000A -54 |                           |                          | Sensor CYHCT-C5-B1000A -54 |                           |                          |
|----------------------------|---------------------------|--------------------------|----------------------------|---------------------------|--------------------------|
| 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                        | -1000                      | 4                         | 1                        |
| 250                        | 8                         | 2                        | -500                       | 8                         | 2                        |
| 500                        | 12                        | 3                        | 0                          | 12                        | 3                        |
| 750                        | 16                        | 4                        | 500                        | 16                        | 4                        |
| 1000                       | 20                        | 5                        | 1000                       | 20                        | 5                        |

### Notes:

1. Connect the terminals of power source, output 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.