



## Hall Effect DC Current Sensor CYHCT-S3

The sensor CYHCT-S3 is a Hall Effect sensor for the measurement of DC current. The sensor has a galvanic isolation between the high power primary and the secondary electronic circuits with current output and voltage output.

Features and Advantages	Applications
<ul style="list-style-type: none"><li>• DC current measurement</li><li>• Output (0-20mA, 4-20mA, 0-5V, 0-10V DC, frequency OC 5kHz/10kHz)</li><li>• DIN Rail mounting, easy to mount</li><li>• High isolation between primary and secondary circuits</li><li>• No insertion losses</li></ul>	<ul style="list-style-type: none"><li>• Battery banks, such as, monitoring load current and charge current, verifying operation</li><li>• Transportation, measuring traction power or auxiliary loads</li><li>• Phase fired controlled heaters</li><li>• Directly connect to PLC</li><li>• Sense motor stalls and short circuits</li><li>• Industrial instrumentation</li></ul>

### Specifications

Rated input current	30A,50A,80A,100A,150A,200A,300A
Output signal	0-5V, 0-10V, 0-20mA, 4-20mA , frequency 5kHz/10kHz
Power supply	+12V DC, +15V DC, +24V DC
Measuring accuracy	1.0%
Linearity	$\leq \pm 0.75\%FS$
Zero offset voltage	$\pm 20mV$
Hysteresis error	$\pm 10mV$
Thermal drift of offset current	$\leq 500 ppm/^{\circ}C$
Galvanic isolation	2.5 kV DC, 1min
Response time	$\leq 100ms$
Overload capacity	20 times
Quiescent power consumption	350mW ~ 550mW
Mounting	Din rail/screw
Case style and Window size	S3 with aperture $\varnothing 20mm$
Operating temperature	$-10^{\circ}C \sim +60^{\circ}C$
Storage temperature	$-25^{\circ}C \sim +70^{\circ}C$
Relative humidity	10% ~ 90%
Mean Time Between Failures (MTBF)	$\geq 100k$ hours

### Definition of Part number:

CYHCT	-	S3	-	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	S3	m = 30A, 50A, 80A, 100A, 150A, 200A, 250A, 300A	<b>x=3:</b> 0-5V DC <b>x=4:</b> 0-20mA DC <b>x=5:</b> 4-20mA DC <b>x=8:</b> 0-10V DC <b>x=F:</b> Frequency OC, 5kHz or 10kHz	<b>n=2:</b> +12V DC <b>n=3:</b> +15V DC <b>n=4:</b> +24V DC

**U:** unipolar input current;      **B:** bipolar input current

### Output Signal of Custom Made Sensors:

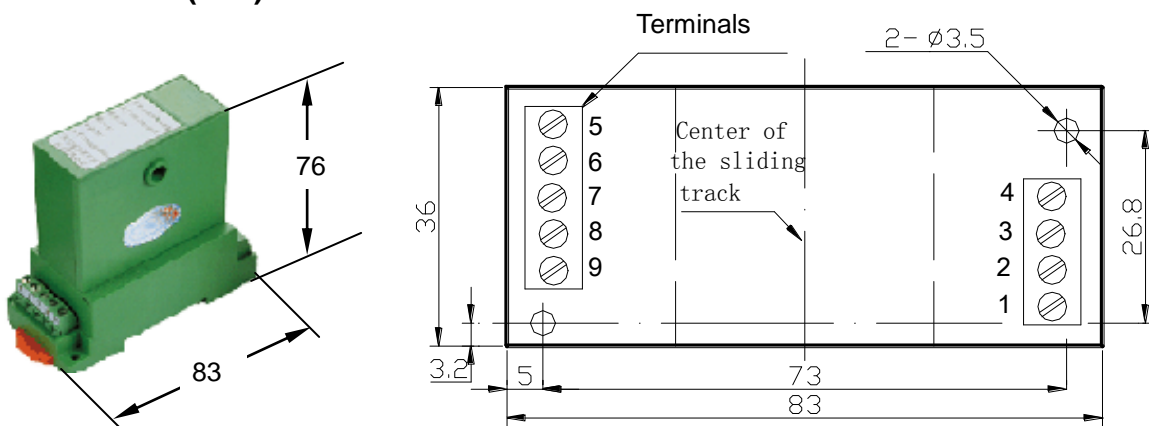
**x=1:** tracing voltage 5V, **x=2:** tracing current 20mA, **x=9:** DC current -20mA ~ +20mA DC, **x=A:** DC voltage -5V ~ +5VDC

**Example 1:**                    CYHCT-S3-U100A -34, Hall Effect DC Current sensor with  
 Output signal: 0-5V DC  
 Power supply: +24V DC  
 Rated input current: 0-100A DC (unipolar)

**Example 2:**                    CYHCT-S3-U100A -54, Hall Effect DC Current sensor with  
 Output signal: 4-20mA DC  
 Power supply: +24V DC  
 Rated input current: 0-100A DC (unipolar)

**Example 3:**                    CYHCT-S3-B100A -54, Hall Effect DC Current sensor with  
 Output signal: 4-20mA DC  
 Power supply: +24V DC  
 Rated input current: -100A DC ~ +100A DC (bipolar)

### DIMENSIONS (mm)



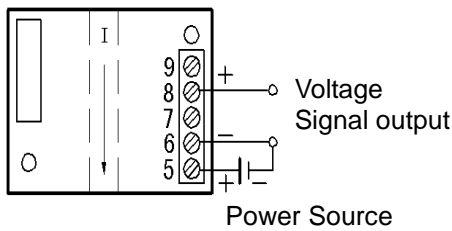
Dimensions: 76mm x 83mm x 36mm, Aperture: Ø20 mm or Ø13 mm

### CONNECTIONS

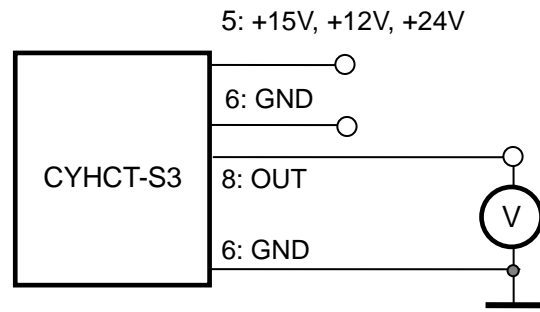
The current carrying cable must pass through the window. The phase of output is the same as that of the current passing the window in the direction of the arrow indicated on the case.



**Wiring of Terminals for voltage output:**



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



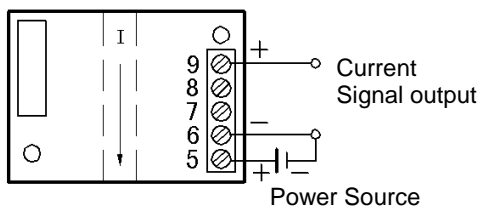
6: GND

8: Voltage output

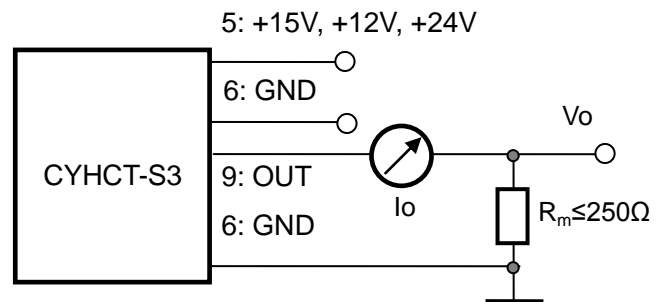
**Relation between Input and Output:**

Sensor CYHCT-S3-U100A -34		Sensor CYHCT-S3-B100A -34	
Input current (A)	Output voltage (V)	Input current (A)	Output voltage (V)
0	0	-100	0
25	1.25	-50	1.25
50	2.5	0	2.5
75	3.75	50	3.75
100	5	100	5

**Wiring of Terminals for Current Output:**



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



6: GND

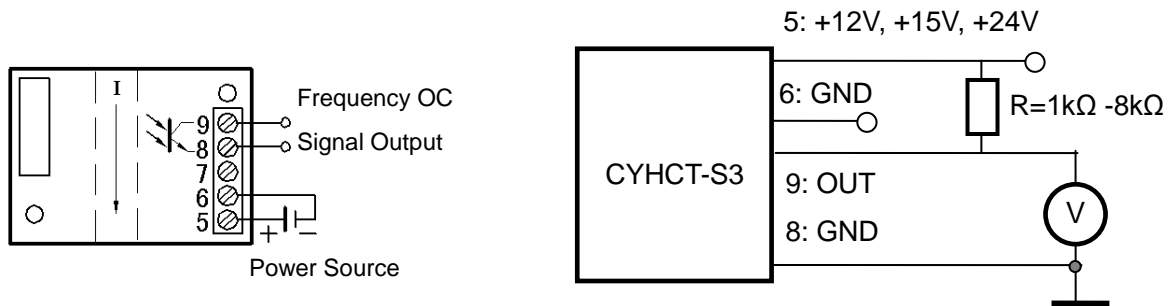
9: Current output

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

Sensor CYHCT-S3-U100A -54			Sensor CYHCT-S3-B100A -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	-100	4	1
25	8	2	-50	8	2
50	12	3	0	12	3
75	16	4	50	16	4
100	20	5	100	20	5



### Wiring of Terminals for OC Frequency Output:



The value of the pull-up resistor R should be selected in order 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 $\Omega$

### Notice:

1. The conductor carrying the input current should pass through the center of the aperture as perpendicularly as possible.
2. Make sure that the polarities are in right connection. The output and the power supply must be common grounded at terminal 6.
3. If a meter is used to calibrate the output of the transducer, please make sure that the accuracy of the meter is higher than the transducer.