

## Hall Current Sensor CYHCS013-B

### Electrical Data/Input

Primary Nominal RMS Current $I_r$ (A)	Primary Current Measuring Range $I_p$ (A) at $V_{cc}=12V$	Primary Conductor $\Phi$ (mm)	Part Number
3	$\pm 6$	0.6	CYHCS-M0030-B
5	$\pm 10$	0.8	CYHCS-M0050-B
10	$\pm 20$	1.0	CYHCS-M0100-B
15	$\pm 30$	1.6	CYHCS-M0150-B
20	$\pm 40$	1.6	CYHCS-M0200-B
25	$\pm 50$	1.6	CYHCS-M0250-B
30	$\pm 60$	1.6	CYHCS-M0300-B
35	$\pm 70$	1.6x2	CYHCS-M0350-B
40	$\pm 80$	1.6x2	CYHCS-M0400-B
45	$\pm 90$	1.6x2	CYHCS-M0450-B
50	$\pm 100$	1.6x2	CYHCS-M0500-B

Supply Voltage  
Current Consumption  
RMS Voltage for 2.5kV AC isolation test, 50/60Hz, 1min,  
Isolation Resistance at 500V DC

$V_{cc} = 12V \pm 5\%$ ,  
 $I_c < 20mA$   
 $V_{is} < 10mA$   
 $R_{is} > 500 M\Omega$

### Electrical Data/Output

Output Voltage at  $I_r$ ,  $T_A=25^\circ C$ :  
Output Impedance:  
Load Resistor:

$V_{out} = V_{EO} \pm 2V$   
 $R_{out} < 150\Omega$   
 $R_L > 10k\Omega$

### Accuracy

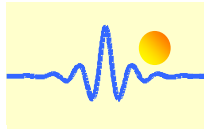
Accuracy at  $I_r$ ,  $T_A=25^\circ C$  (without offset),  
Linearity from 0 to  $I_r$ ,  $T_A=25^\circ C$ ,  
Electric Offset Voltage,  $T_A=25^\circ C$ ,  
Hysteresis Offset Voltage ( $I_r \rightarrow 0$ )  
Thermal Drift of Offset Voltage,  
Thermal Drift ( $-B0^\circ C$  to  $50^\circ C$ ),  
Response Time at 90% of  $I_p$  ( $f=1kHz$ )  
Frequency Bandwidth (-3dB),

$X < 1.0\%$   
 $E_L < 1.0\%$   
 $V_{EO} = 5.0V \pm 50mV$   
 $V_{om} < 20mV$   
 $V_{ot} < 2mV/^\circ C$   
T.C.  $< \pm 0.1\% / ^\circ C$   
 $t_r < 3\mu s$   
 $f_b = 50 kHz$

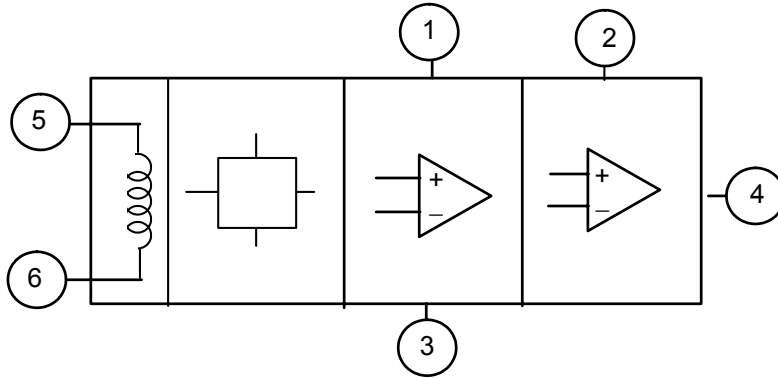
### General Data

Ambient Operating Temperature,  
Ambient Storage Temperature,

$T_A = -10^\circ C \sim +80^\circ C$   
 $T_S = -25^\circ C \sim +85^\circ C$

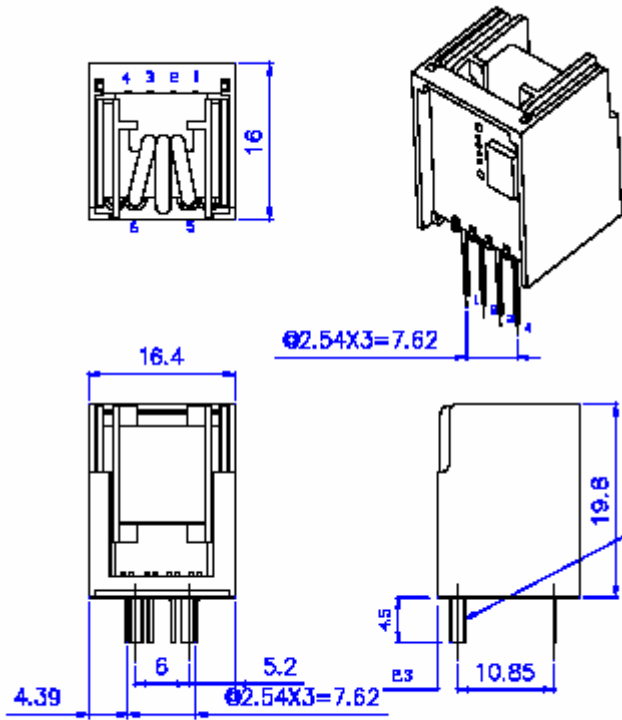


### Functional Block Diagram



1. Ground or floating
2. Ground
3. V+
4. V<sub>output</sub>
5. Coil Input +
6. Coil Input -

### PIN Definition

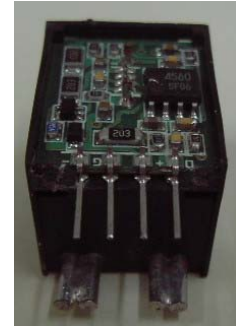
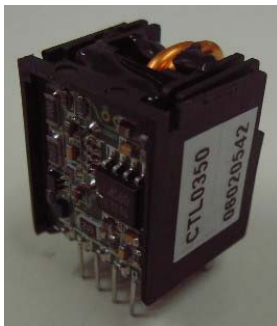


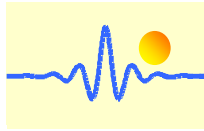
#### Terminal PIN Definition

1. Ground/floating
2. Ground
3. V+
4. Output
5. Coil Input +
6. Coil Input -

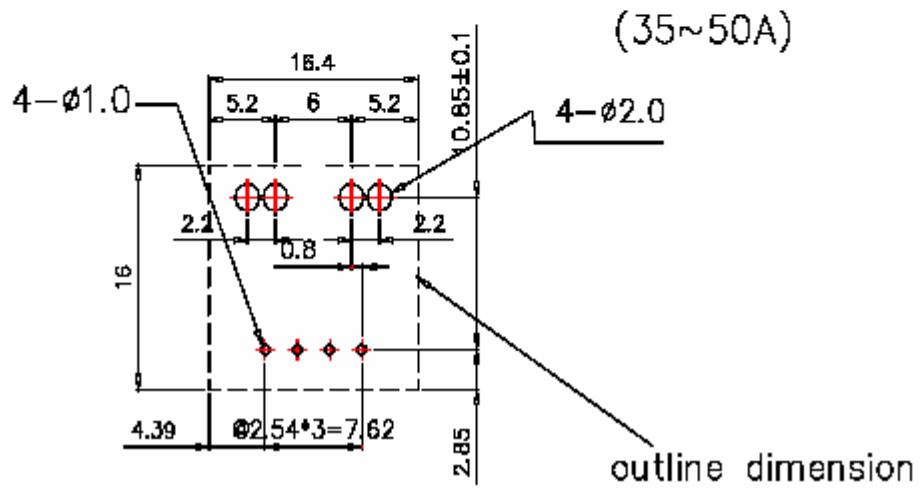
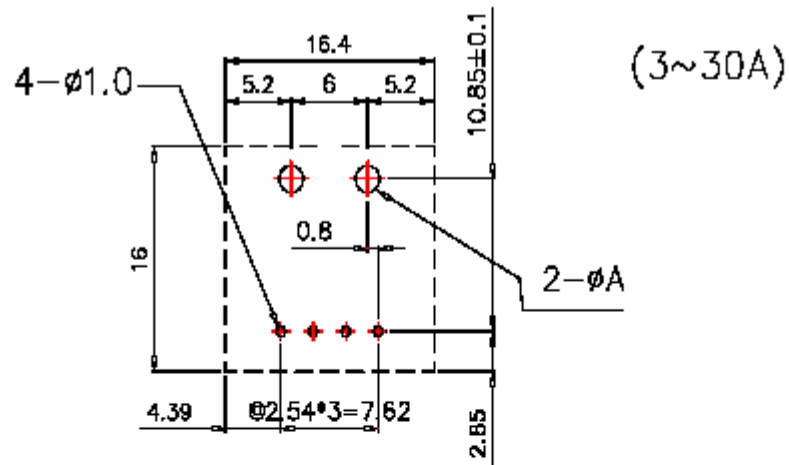
#### Primary Conductor Terminal

- CYHCS-M0030-B  $\Phi$  0.6
- CYHCS-M0050-B  $\Phi$  0.8
- CYHCS-M0100-B  $\Phi$  1.0
- CYHCS-M0150-B  $\Phi$  1.6
- CYHCS-M0200-B  $\Phi$  1.6
- CYHCS-M0250-B  $\Phi$  1.6
- CYHCS-M0300-B  $\Phi$  1.6
- CYHCS-M0350-B  $\Phi$  1.6x2
- CYHCS-M0400-B  $\Phi$  1.6x2
- CYHCS-M0450-B  $\Phi$  1.6x2
- CYHCS-M0500-B  $\Phi$  1.6x2

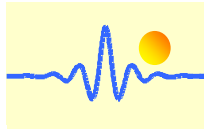




### Hole Recommend



Part Name	ΦA(mm)
CYHCS-M0030-B	1.0
CYHCS-M0050-B	1.2
CYHCS-M0100-B	1.4
CYHCS-M0150-B	2.0
CYHCS-M0200-B	2.0
CYHCS-M0250-B	2.0
CYHCS-M0300-B	2.0

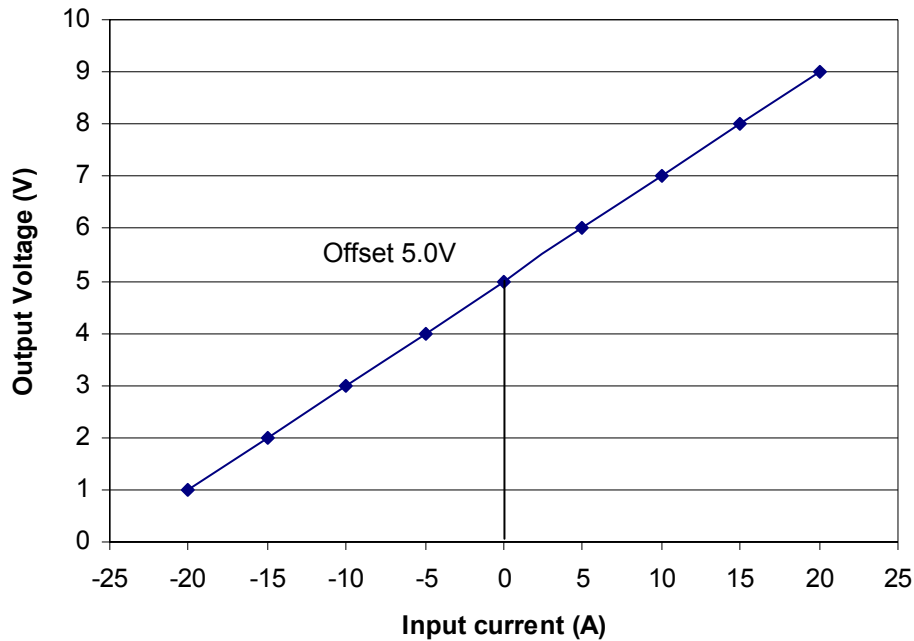


## Relation between Input Current and Output Voltage

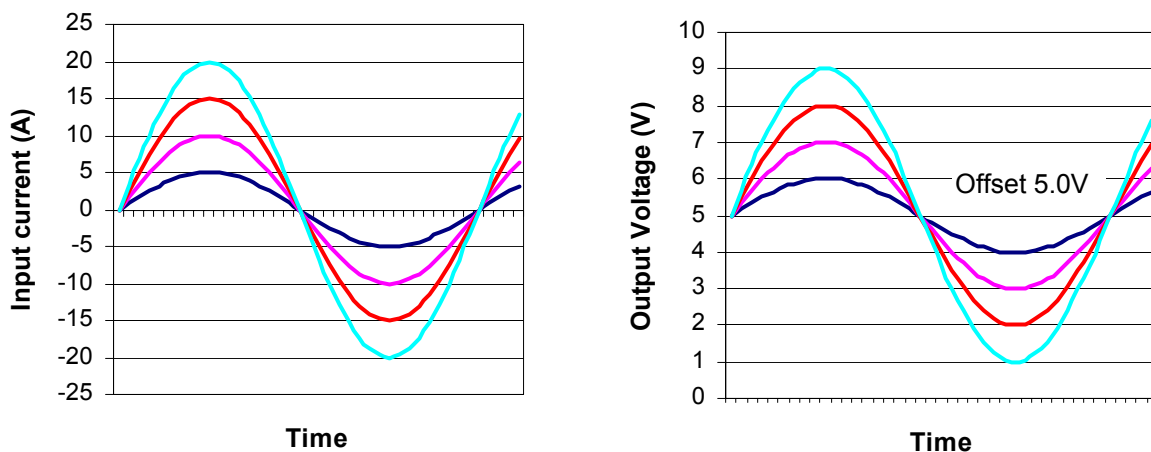
Take the sensor CYHCS-M0100-B as sample, the relation between the input current and output voltage is shown in the table 1, Fig.1 and Fig. 2

**Table 1.** Relation between the input current and output voltage

Input current (A)	-20	-15	-10	-5	0	5	10	15	20
Output voltage (V)	1.0	2.0	3.0	4.0	5.0	6.0	7.0	8.0	9.0



**Fig. 1** Relation between the input current (DC) and output voltage (DC)



**Fig. 2** Relation between the input current (AC) and output voltage (AC)