

Hall Effect DC Current Sensor CYHCT-C1TC

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"> • Excellent accuracy • Very good linearity • Using split cores and easy mounting • Less power consumption • Window structure • Electrically isolating the output of the transducer from the current carrying conductor • No insertion loss • Current overload capability 	<ul style="list-style-type: none"> • Photovoltaic equipment • Frequency conversion timing equipment • Various power supply • Uninterruptible power supplies (UPS) • Electric welding machines • Transformer substation • Numerical controlled machine tools • Electric powered locomotive • Microcomputer monitoring • Electric power network monitoring

Electrical Data

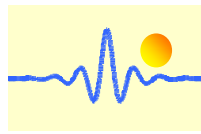
Primary Nominal DC Current I_r (A)	Measuring Range (A)	DC Output Current (mA)	Part number (see application notes on page 3)
25	0 ~ ±25A	4-20 ±1.0%	CYHCT-C1TC-U/B025A-nC
30	0 ~ ±30A		CYHCT-C1TC-U/B030A-nC
40	0 ~ ±40A		CYHCT-C1TC-U/B040A-nC
50	0 ~ ±50A		CYHCT-C1TC-U/B050A-nC
100	0 ~ ±100A		CYHCT-C1TC-U/B100A-nC
200	0 ~ ±200A		CYHCT-C1TC-U/B200A-nC
300	0 ~ ±300A		CYHCT-C1TC-U/B300A-nC
400	0 ~ ±400A		CYHCT-C1TC-U/B400A-nC
500	0 ~ ±500A		CYHCT-C1TC-U/B500A-nC
600	0 ~ ±600A		CYHCT-C1TC-U/B600A-nC

(U: unidirectional input current; B: bidirectional input current, please give U or B in Part number)
(n=3, $V_{cc}=+12VDC \pm 5\%$; n=4, $V_{cc}=+15VDC \pm 5\%$; n=5, $V_{cc}=+24VDC \pm 5\%$)
(Connector: Molex connector C=M; Phoenix Connector: C=P)

Supply Voltage	$V_{cc}=+12V, +15V, +24V \pm 5\%$
Current Consumption	$I_c < 25mA + \text{Output current}$
Galvanic isolation, 50/60Hz, 1min:	2.5kV
Isolation resistance @ 500 VDC	> 500 MΩ

Accuracy and Dynamic performance data

Accuracy at $I_r, T_A=25^\circ C$	<1.0% FS
Linearity from 0 to $I_r, T_A=25^\circ C$,	$E_L < 1.0\% \text{ FS}$
Electric Offset Current, $T_A=25^\circ C$,	4mA DC or 12mA DC
Thermal Drift of Offset Current,	<±0.005mA/°C
Response Time at 90% of I_p	$t_r < 1ms$
Load resistance:	80-450Ω
Frequency Bandwidth (-3dB),	$f_b = \text{DC} - 20 \text{ kHz}$
Case Material:	PBT, heat resistant 125°C flame retardant

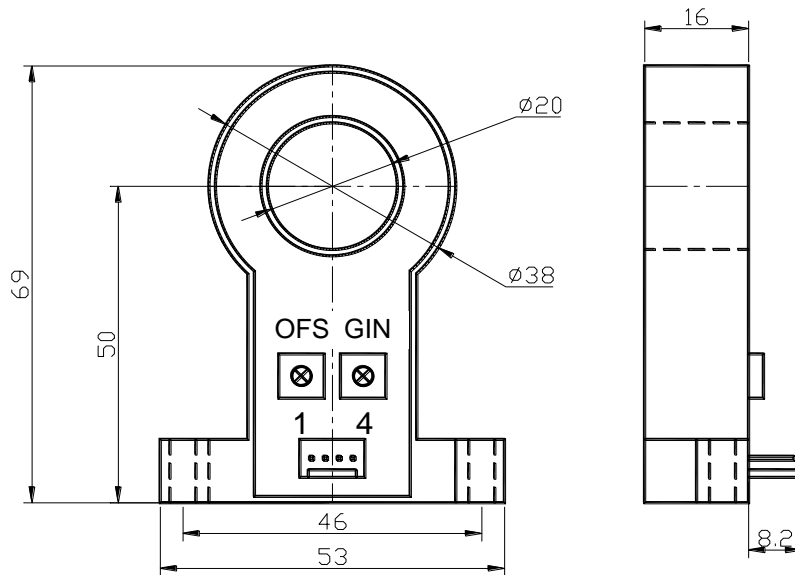


General Data

Ambient Operating Temperature,
Ambient Storage Temperature,

$T_A = -25^{\circ}\text{C} \sim +85^{\circ}\text{C}$
 $T_S = -40^{\circ}\text{C} \sim +100^{\circ}\text{C}$

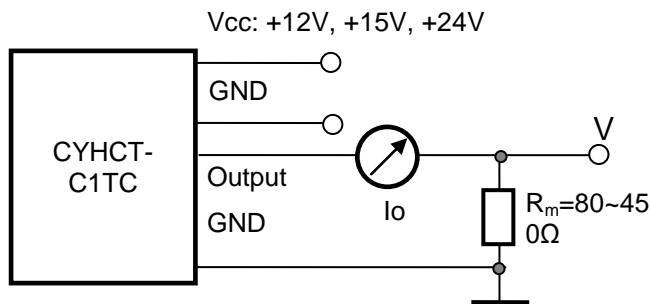
PIN Definition and Dimensions



1(+): Vcc
2(G): GND
3(O): Output
4(G): GND

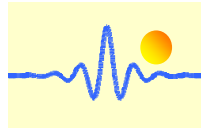
OFS: Offset Adjustment GIN: Gain Adjustment

Connection



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



Application Notes

1) Part number CYHCT-C1TC-U/BxxxA-nC

U: unidirectional input current; **B:** bidirectional input current; **xxx:** current value; **n:** power supply (**n=3**, $V_{cc} = +12VDC \pm 5\%$; **n=4**, $V_{cc} = +15VDC \pm 5\%$; **n=5**, $V_{cc} = +24VDC \pm 5\%$); **C:** Connector (Molex connector C=M; Phoenix Connector: C=P)

Example 1: CYHCT-C1TC-U100A-5M Hall Effect DC Current sensor with
Output signal: 4mA - 20mA DC
Power supply: +24V DC
Rated input current: 0 - 100A DC (unidirectional)
Connector: Molex connector

Example 2: CYHCT-C1TC-B100A-3P Hall Effect DC Current sensor with
Output signal: 4mA – 12mA - 20mA DC
Power supply: +12V DC
Rated input current: -100A - 0 - +100A DC (bidirectional)
Connector: Phoenix connector

2) Relation between Input current and output signal

Current Sensor CYHCT-C1TC-U100A-5M		
Input current (A)	Output current I_o (mA)	Output voltage V_o (V) (Measuring resistance $R_m=250\Omega$)
0	4	1
25	8	2
50	12	3
75	16	4
100	20	5

Current Sensor CYHCT-C1TC-B100A-3P		
Input current (A)	Output current I_o (mA)	Output voltage V_o (V) (Measuring resistance $R_m=250\Omega$)
-100	4	1
-75	6	1.5
-50	8	2
-25	10	1.5
0	12	3
25	14	3.5
50	16	4
75	18	4.5
100	20	5