

## Hall Effect DC Current Sensor CYHCT-K210V

This Hall Effect current sensor is based on open loop principle and designed with 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>• 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>• Photovoltaic equipment</li> <li>• Frequency conversion timing equipments</li> <li>• Various power supply</li> <li>• Uninterruptible power supplies (UPS)</li> <li>• Electric welding machines</li> <li>• Numerical controlled machine tools</li> <li>• Electrolyzing and electroplating equipments</li> <li>• Electric powered locomotive</li> <li>• Microcomputer monitoring</li> <li>• Electric power network monitoring</li> </ul>

### Electrical Data

Primary Nominal DC Current $I_r$ (A)	Primary Current Measuring Range $I_p$ (A)	Output Voltage (V)	Part number (see application notes on page 3)
3000A	0 ~ ± 3000A	x=0: 0-4V ±1.0%	CYHCT-K210V-U/B3000A-xn
4000A	0 ~ ± 4000A	x=3: 0-5V ±1.0%	CYHCT-K210V-U/B4000A-xn
5000A	0 ~ ± 5000A	x=8: 0-10V ±1.0%	CYHCT-K210V-U/B5000A-xn
6000A	0 ~ ± 6000A	(For 0-10V output	CYHCT-K210V-U/B6000A-xn
8000A	0 ~ ± 8000A	the power supply	CYHCT-K210V-U/B8000A-xn
10000A	0 ~ ± 10000A	must be 15VDC	CYHCT-K210V-U/B10000A-xn
15000A	0 ~ ± 15000A	or 24VDC)	CYHCT-K210V-U/B15000A-xn
20000A	0 ~ ± 20000A	x=S: Special output	CYHCT-K210V-U/B20000A-xn

(n=2,  $V_{cc}$ = +12VDC; n=3,  $V_{cc}$  =+15VDC; n=4,  $V_{cc}$  =+24VDC; n=5,  $V_{cc}$  =±12VDC; n=6,  $V_{cc}$  =±15VDC; n=7,  $V_{cc}$  =±24VDC; n=8,  $V_{cc}$  =+125VDC. U: unidirectional, B: bidirectional, please give U or B in the part number)

Supply Voltage:

Current Consumption

Isolation Voltage

$V_{cc}$ =+12V, +15V, +24V± 5%

$I_c$  < 50mA

6kV, 50/60Hz, 1min

Output Voltage at  $I_r$ ,  $T_A$ =25°C:

Output Impedance:

Load Resistor:

Accuracy at  $I_r$ ,  $T_A$ =25°C (without offset),

Linearity from 0 to  $I_r$ ,  $T_A$ =25°C,

Linear Measuring range,

Overload capability,

Electric Offset Voltage,  $T_A$ =25°C,

Magnetic Offset Voltage ( $I_r \rightarrow 0$ )

Thermal Drift of Offset Voltage,

Thermal Drift (-10°C to 50°C),

Response Time at 90% of  $I_p$  ( $f$ =1k Hz)

Frequency Bandwidth (-3dB),

$V_{out}$  =0- 4V, 0-5V, 0-10VDC

$R_{out}$  < 150Ω

$R_L$  > 10kΩ

$X$  <1.0%

$E_L$  <1.0% FS

1.2 times of measuring range

3 times of measuring range

$V_{oe}$  <30mV

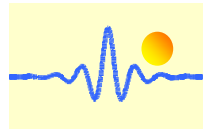
$V_{om}$  <±40mV

$V_{ot}$  <±1.0mV/°C

T.C. < ±0.1% /°C

$t_r$  < 1ms

$f_b$  = DC-3kHz

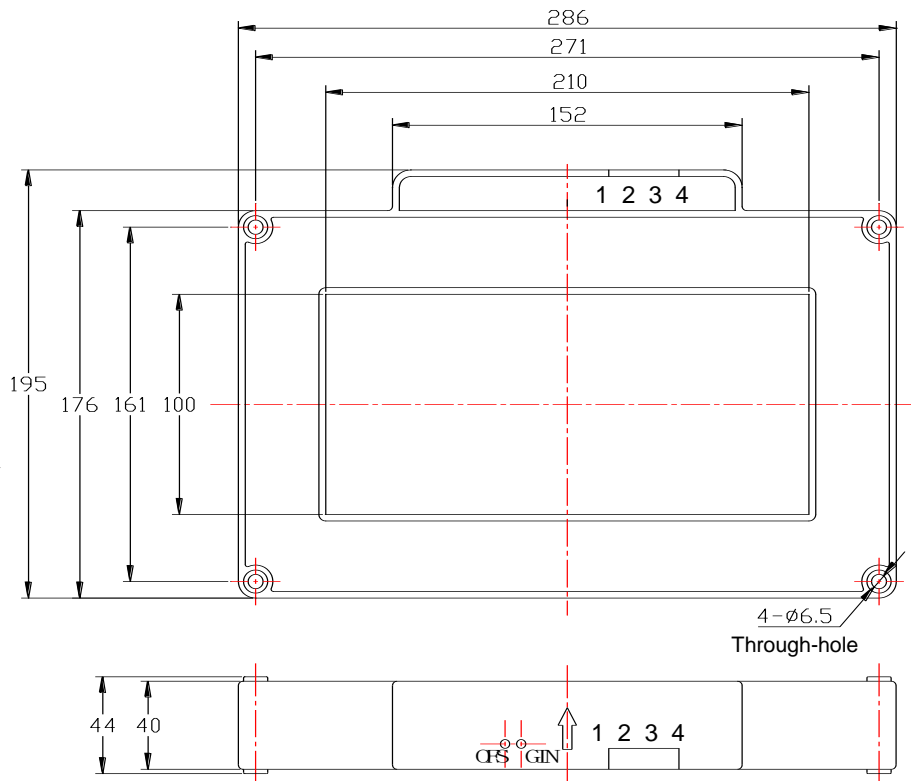


## General Data

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

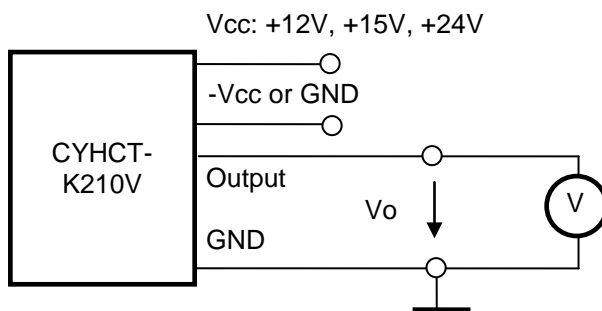


### Pin arrangement:

1(V+):  $V_{cc}$   
2(V-):  $-V_{cc}$  or GND  
3(OUT): OUTPUT  
4(GND): 0V (GND)

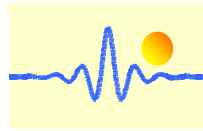
OFS: Offset Adjustment

GIN: Gain Adjustment



## 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 primary current is the same as the direction of arrow marked on the transducer



## Application Notes

### 1) Part number CYHCT-K210V-U/BxxxxxA-xn

**U:** unidirectional input current; **B:** bidirectional input current; **xxxxx:** current value; **x:** output voltage (**x=0:** 0-4V  $\pm 1.0\%$ ; **x=3:** 0-5V  $\pm 1.0\%$ ; **x=8:** 0-10V  $\pm 1.0\%$ ); **n:** power supply (**n=2,**  $V_{cc} = +12\text{VDC}$ ; **n=3,**  $V_{cc} = +15\text{VDC}$ ; **n=4,**  $V_{cc} = +24\text{VDC}$ )

**Example 1:** CYHCT-K210V-U10000A-32 Hall Effect DC Current sensor with  
Output signal: 0 – 5V DC  
Power supply: +12V DC  
Rated input current: 0 - 10000A DC (unidirectional)

**Example 2:** CYHCT-K210V-B10000A-84 Hall Effect DC Current sensor with  
Output signal: 0 – 10V DC  
Power supply: +24V DC  
Rated input current: -10000A - 0 - +10000A DC (bidirectional)

### 2) Relation between Input current and output signal

Current Sensor CYHCT-K210V-U10000A-32	
Input current (A)	Output voltage $V_o$ (V)
0	0
2500	1.25
5000	2.5
7500	3.75
10000	5

Current Sensor CYHCT-K210V-B10000A-84	
Input current (A)	Output voltage $V_o$ (V)
-10000	0
-7500	1.25
-5000	2.5
-2500	3.75
0	5
2500	6.25
5000	7.5
7500	8.75
10000	10