

## Hall Effect DC Current Sensor CYHCT-K210C

This Hall Effect current sensor is based on open loop principle and designed with 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>• 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 equipment</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 equipment</li> <li>• Electric powered locomotive</li> <li>• Microcomputer monitoring</li> <li>• Electric power network monitoring</li> </ul>

### Electrical Data/Input

Primary Nominal DC Current $I_r$ (A)	Primary Current Measuring Range $I_p$ (A)	Output current (mA)	Part number (see application notes on page 4)
5000A	0 ~ ± 5000A	4-20mA	CYHCT-K210C-U/B5000A-n
6000A	0 ~ ± 6000A		CYHCT-K210C-U/B6000A-n
8000A	0 ~ ± 8000A		CYHCT-K210C-U/B8000A-n
10000A	0 ~ ± 10000A		CYHCT-K210C-U/B10000A-n
15000A	0 ~ ± 15000A		CYHCT-K210C-U/B15000A-n
20000A	0 ~ ± 20000A		CYHCT-K210C-U/B20000A-n
30000A	0 ~ ± 33000A		CYHCT-K210C-U/B30000A-n

This sensor can be customized for rated input current range from 3000A to 100000A (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)

Supply Voltage:

Current Consumption

Isolation Voltage

$V_{cc} \pm 5\%$

$I_c < 50\text{mA} + \text{Output current}$

6kV, 50/60Hz, 1min

### Electrical Properties

Accuracy at  $I_r$ ,  $T_A=25^\circ\text{C}$  (without offset),

Linearity from 0 to  $I_r$ ,  $T_A=25^\circ\text{C}$ ,

Linear Measuring range,

Overload capability,

Electric Offset Current,  $T_A=25^\circ\text{C}$ ,

Thermal Drift of Offset Current,

Load resistance:

Response Time at 90% of  $I_p$  ( $f=1\text{k Hz}$ )

Frequency Bandwidth (-3dB),

<1.0% FS

$E_L < 1.0\%$  FS

1.2 times of measuring range

3 times of measuring range

4mA DC for unidirectional current

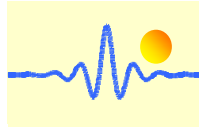
12mA DC for bidirectional current

<±0.005mA/°C

80-300Ω

$t_r < 1\text{ms}$

$f_b = \text{DC-3 kHz}$

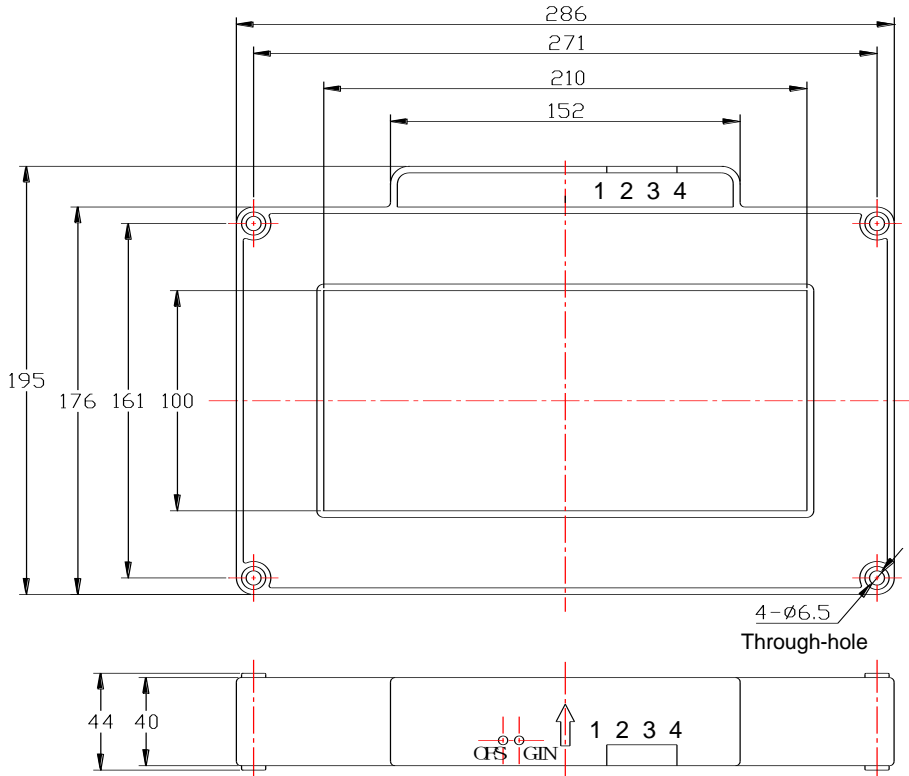


## General Data

Ambient Operating Temperature,  
Ambient Storage Temperature,  
Unit weight,  
Standard,

$T_A = -25^{\circ}\text{C} \sim +85^{\circ}\text{C}$   
 $T_S = -25^{\circ}\text{C} \sim +100^{\circ}\text{C}$   
6200g  
Q/320115QHKJ01-2016

## PIN Definition and Dimensions with power supply $\leq 24\text{VDC}$

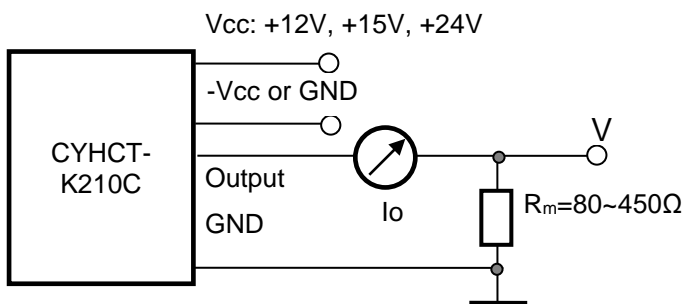


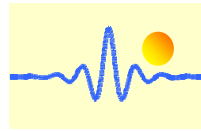
### Pin arrangement:

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

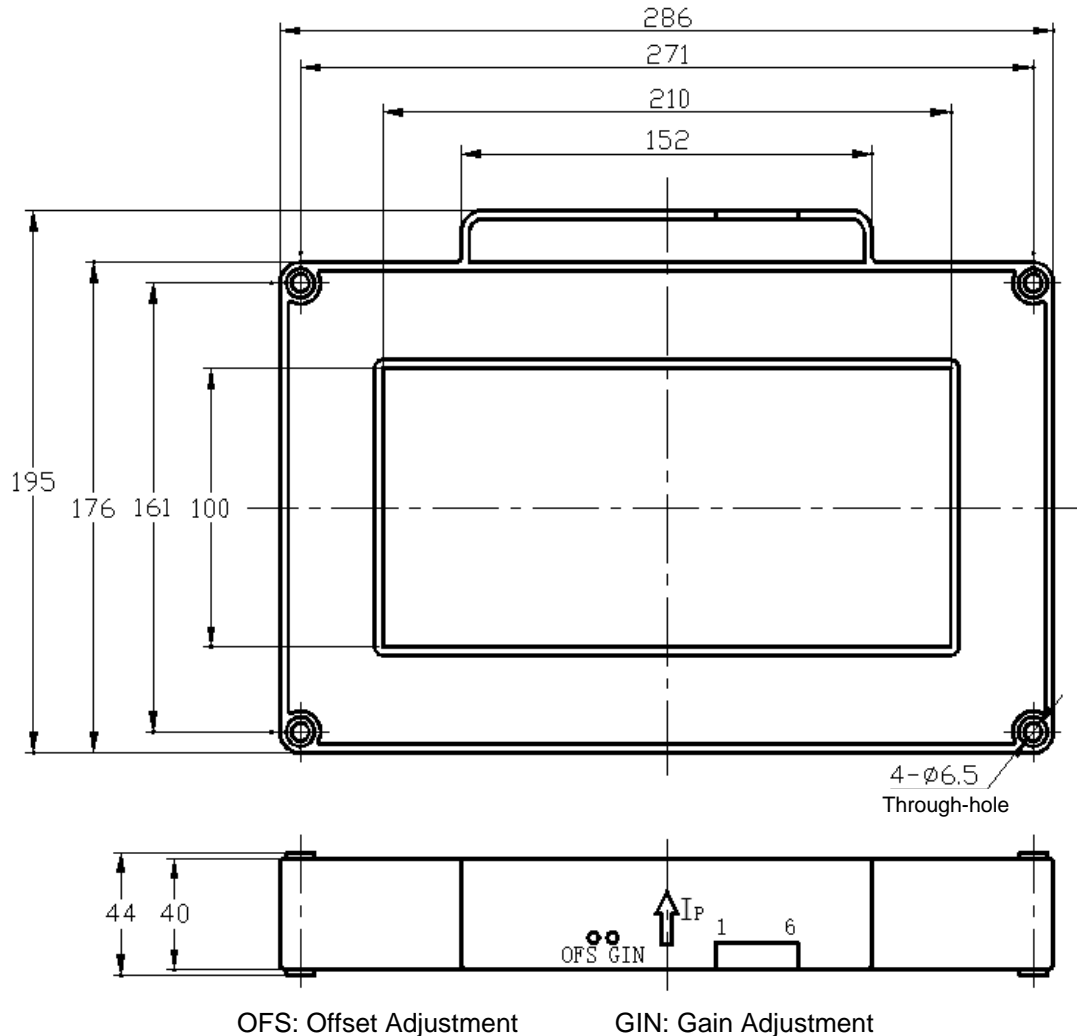
OFS: Offset Adjustment

GIN: Gain Adjustment





## PIN Definition and Dimensions with power supply +120V~+320VDC



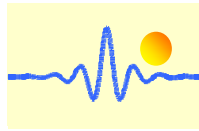
### Pin arrangement:

Output terminal:	1: GND 1,	2: Output I <sub>OUT</sub> ,	3: NC ,	4: NC
Power supply:	5: GND 2,	6: +125VDC		

**Note:** The sensor output is isolated from the power supply and cannot share a common ground.

### 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 a busbar (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-K210C-U/BxxxxxA-n

**U:** unidirectional input current; **B:** bidirectional input current; **xxxxx:** current value; **n:** power supply (n=2,  $V_{cc} = +12VDC$ ; n=3,  $V_{cc} = +15VDC$ ; n=4,  $V_{cc} = +24VDC$ ; n=5,  $V_{cc} = \pm 12VDC$ ; n=6,  $V_{cc} = \pm 15VDC$ ; n=7,  $V_{cc} = \pm 24VDC$ ; n=8,  $V_{cc} = +125VDC$ )

**Example 1:** CYHCT-K210C-U10000A-5 Hall Effect DC Current sensor with  
Output signal: 4mA - 20mA DC  
Power supply: +24V DC  
Rated input current: 0 - 10000A DC (unidirectional)

**Example 2:** CYHCT-K210C-B1000A-3 Hall Effect DC Current sensor with  
Output signal: 4mA – 12mA - 20mA DC  
Power supply: +12V DC  
Rated input current: -10000A - 0 - +10000A DC (bidirectional)

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

Current Sensor CYHCT-K210C-U10000A-5		
Input current (A)	Output current $I_o$ (mA)	Output voltage $V_o$ (V) (Measuring resistance $R_m=250\Omega$ )
0	4	1
2500	8	2
5000	12	3
7500	16	4
10000	20	5

Current Sensor CYHCT-K210C-B10000A-3		
Input current (A)	Output current $I_o$ (mA)	Output voltage $V_o$ (V) (Measuring resistance $R_m=250\Omega$ )
-10000	4	1
-7500	6	1.5
-5000	8	2
-2500	10	1.5
0	12	3
2500	14	3.5
5000	16	4
7500	18	4.5
10000	20	5