AIT3000-10V High-Precision Current Transducer

AIT3000-10V has a high gain and measurement accuracy in the full bandwidth range, due to the application of the multi-point zero-flux technology system and high-frequency ripple sensing channel on top of currently existing DC sensor technology.

The multi-point zero-flux technology system secures the high accuracy by utilizing the technology combination of exciting magnetic flux closed-loop control, self-excited magnetic flux gate and multi-closed-loop control that realizes the closed-loop control between excitation magnetic flux and AC/DC magnetic flux generated by primary current, while the high-frequency ripple sensing channel allows the sensor to have the high performance over the full bandwidth range.

Product photo

Key Technologies

- ◇ Excitation closed-loop control technology
- ◇ Self-excitation demagnetization technology
- ◇ Multi-point zero-flux technology
- ◇ Temperature control compensation technology
- ◇ Multi-range automatic switching technology

Features

- ◇ Insulated measurement between primary and secondary side
- ◇ Excellent linearity and accuracy
- ◇ Extremely low temperature drift
- ◇ Extremely low zero drift
- ◇ Broad band and low response time
- ◇ Strong anti-electromagnetic interference

Application Domain

- ◇ Medical Equipment: Scanner, MRI
- ◇ Power industry: Converter, Inverter
- ◇ Renewable Energy: Photovoltaic, Wind energy
- ◇ Testing Instrument: Power analyzer, High-precision power supply
- ◇ Rail Transit: EMU, Metro, Trolly car
- ◇ Ship: Electric driven ship
- ◇ Car: Electric car

SHENZHEN HANGZHI PRECISION ELECTRONICS CO.,LTD
Add: Rm 531, Building B, Huayuan Hi-Tech Innovation Park,
Baoyuan Rd, Bao'an District, Shenzhen, China P.R.
Email: sales@hangzhiprecision.com Technical Support: support@hangzhiprecision.com
Tel: +86 (0)755 8259 3440 Website: www.hangzhiprecision.com

◇ Smart Power Grid: Power generation and battery monitoring, Medium low voltage substation
◇ Industry Control: Industrial motor drive, UPS, Welding, Robot, Hoist, Elevator, Ski lift

Electrical Performance

Parameter	Symbol	Measuring Conditions	Min	Typ	Max	Unit
Primary nominal direct current	I_{PN_DC}	—	—	±3000	—	Adc
Primary nominal alternating current*	I_{PN}	—	—	2121	—	Aac
Primary overload current	I_{PM}	1 Minute	—	—	±3300	Adc
Operating Voltage	V_C	—	—	220	—	Vac
Rated output voltage	U_{PN_DC}	Rated primary voltage (DC)	—	±10	—	V
Conversion ratio	K_N		—	3.3	—	mV/A
Output load current			—	—	5	mA
Output impedance	R_M		—	—	10	mΩ

* refers to AC effective value

Accuracy Measurement

Parameter	Symbol	Measuring Conditions	Min	Typ	Max	Unit
Accuracy	X_G	Input direct current，25±10ºC	—	—	50	ppm
Linearity	ε_L	—	—	—	30	ppm
Temperature stability	T_C	—	—	—	0.5	ppm/K
Time stability	T_T	—	—	—	0.5	ppm/month
Power supply interference	T_V	—	—	—	1	ppm/V

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Dynamic response time	t_r	di/dt=1.5/us, rised to 90%I_{PN}	—	—	7	us
Voltage change rate	dv/dt	—	1.5	—	—	V/us
Frequency bandwidth (-3dB)	F	—	0	—	300	kHz
Zero offset voltage	V_{OT}	Full temperature range	—	—	±5	μV

Safety Characteristics

Parameter	Symbol	Measuring Conditions	Value	Unit
Insulation voltage / Between primary and secondary sides	Vd	50Hz,1min	5	KV
Transient isolation withstand voltage / Between primary and secondary sides	Vw	50us	10	KV
Creepage distance / Between the primary and the outer shell	dCp	—	11	mm
Clearance distance / Between the primary and the outer shell	dCi	—	11	mm
Comparative tracking index	CTI	IEC-60112	600	V

General Characteristics

Parameter	Symbol	Measuring Conditions	Min	Typ	Max	Unit
Ambient operating temperature	T_A	—	-40	—	+85	ºC
Mass	M	—		17500±500		g

Indicator light description of transducer

◇ Normal status:

The green indicator light is on when the device is running normally:

After the device is powered on, the green indicator light will be on when the device is working normally.

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◇ Fault status:

The green light will not be off when the transducer is in fault mode.

Trouble-shooting:

a) When the green light is off, the power supply should be checked as the first step;

b) If the power supply is normal, then the primary current is over the specified measurement range and the transducers will be in overload mode.

In this mode, the transducers will be working in non-zeroflux mode, that the secondary current remains at specified maximum output, the secondary voltage and primary currents are not in proportion.

Usage

The using steps are as follows:

Step 1: Connect the transducer to the control box by a special connection wire.

Step 2: Insert the AC 220V power plug into the control box and turn on the power supply switch.

Step 3: Pass the current cable through the transducer aperture, and pay attention to the current direction.

Step 4: The voltage output interface is connected to a voltage measuring instrument or a voltage sampling circuit, and attention that the voltage output interface should not be short-circuited.

Application connections and instructions

1. Control box power supply wiring:
   The power interface of the control box is directly connected to the 220V power supply;
   Red terminal: secondary voltage output positive end;
   Black terminal: secondary voltage output negative end;
2. Connection between control box and winding coil
   Insert the D-Sub9 male head on the winding coil directly into the D-Sub9 female head of the control box and fix it with screws.
3. Test specification:
   By measuring the voltage value U_M of the output port, the primary current I_P can be calculated:

$$I_P = K_N * U_M$$

Dimensions

Unit: mm

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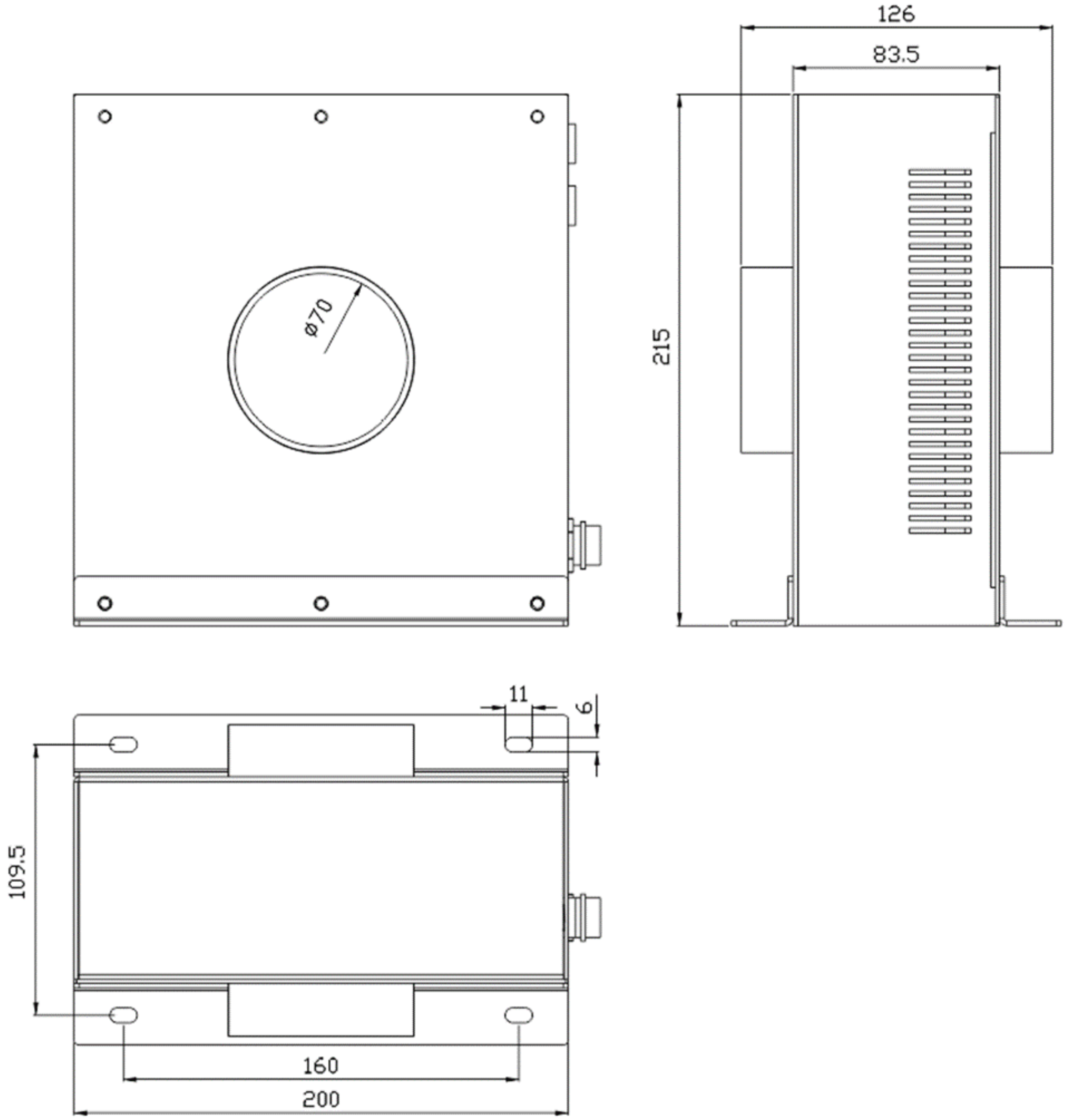

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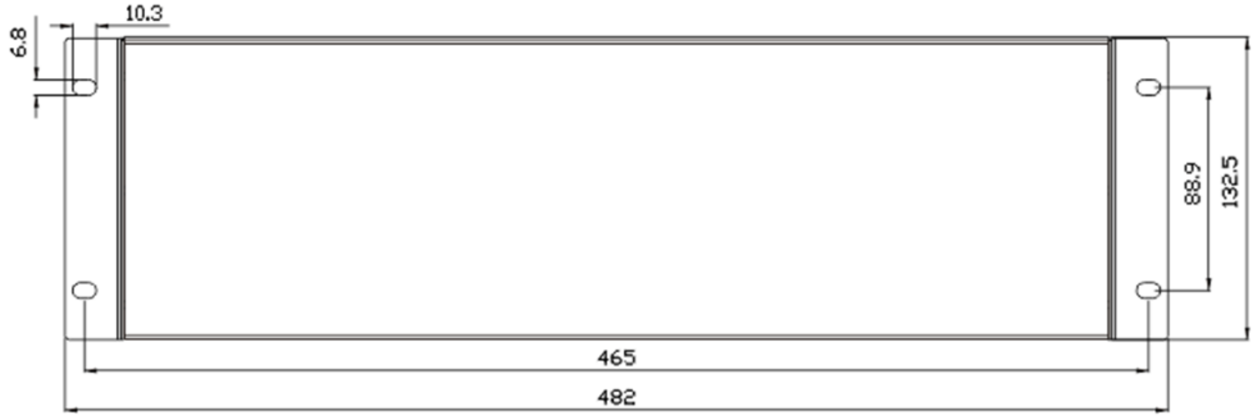

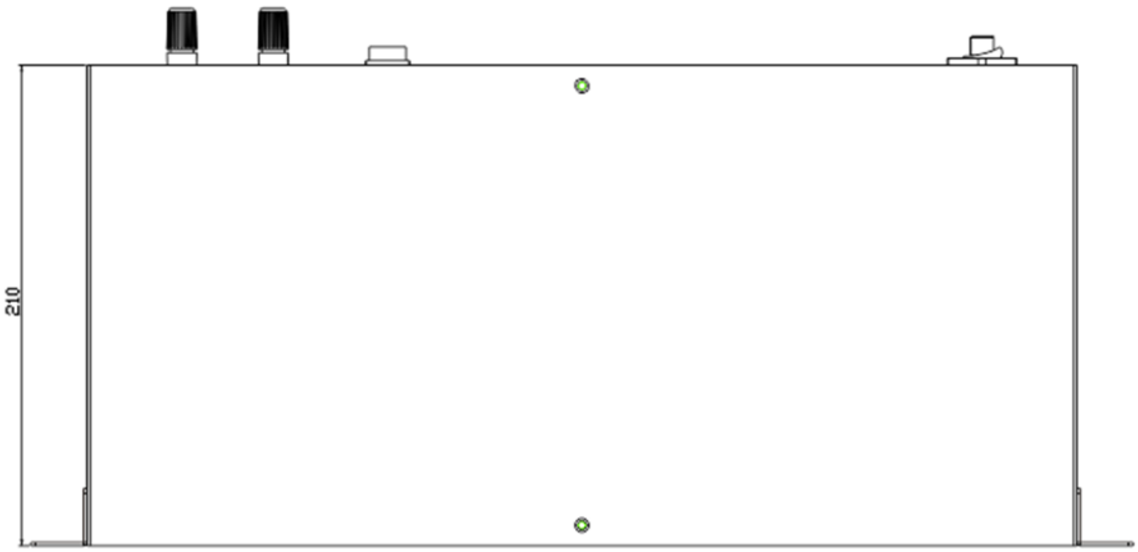

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