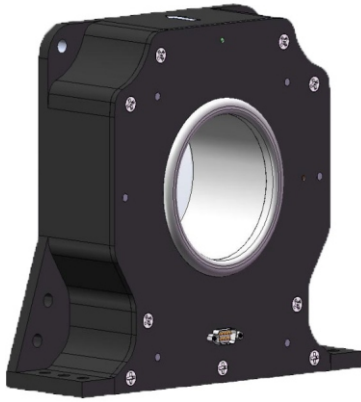


FT-SCA series

High precision current sensor



Summary

FT-SCA series high-precision current sensor is a current sensor that can measure DC, AC, pulse and various irregular waveforms under the condition that the primary side and secondary side are completely isolated. FT-SCA series adopts multi-point zero flux technology to control the excitation flux, DC flux and AC flux in a zero flux closed loop, and realizes the detection of high-frequency ripple by constructing a high-frequency ripple induction channel, so that the sensor has relatively high gain and measurement accuracy in the full bandwidth range.

The FT-SCA series is mainly used in the fields of metrological verification and calibration that require high accuracy, as well as power quality analysis, power analyzer, medical treatment, aerospace, rail transit and other fields that require high sensitivity, stability and reliability.

Features

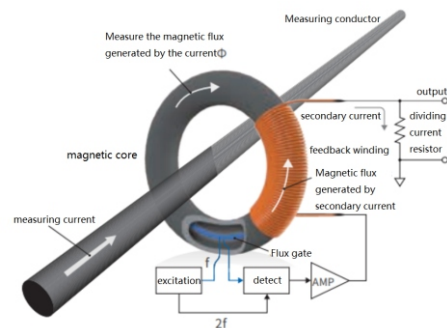
- Adopt multi-point zero flux technology, with high precision, small zero offset and high linearity;
- Current range: $\pm 100\text{A}$ / $\pm 200\text{A}$ / $\pm 300\text{A}$ / $\pm 600\text{A}$ / $\pm 1000\text{A}$ / $\pm 1500\text{A}$ / $\pm 2000\text{A}$ / $\pm 3000\text{A}$ / $\pm 5000\text{A}$;
- High precision, current precision 10ppm;
- With temperature compensation technology, the temperature stability is 0.2ppm/K;
- AC/DC universal, which can measure AC, DC and pulse current;
- Primary and secondary side isolation measurement;
- No warm-up time;
- Wide band measurement, with the maximum measurement bandwidth of 500kHz;
- Low response time, minimum dynamic response time 1 μs .

Application fields

- Medical equipment: scanner, MRI;
- Electric Power: converter, inverter;
- New energy: photovoltaic, wind energy;
- Automobiles: electric vehicles;
- Ship: electric driven ship;
- Measurement: verification and calibration;
- Industrial control: industrial motor drive, robot;
- Rail transit: high-speed trains, subways, trams and trolleybus;
- DC excitation system measurement.

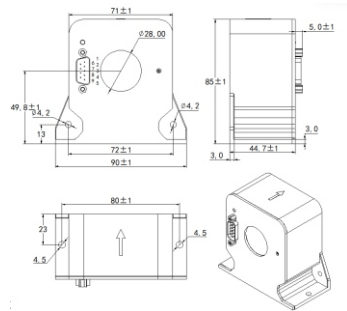
Multipoint zero magnetic flux technology

The magnetic core reaches the magnetic balance state by excitation. When the measuring current flows through the wire, breaking the magnetic balance, the flux gate will generate the excitation current, and the signal will drive the compensation coil after amplification, so that the magnetic flux in the magnetic core and the magnetic flux generated by the measuring current will cancel each other and remain in the "zero" state, that is, the so-called "zero flux" state.

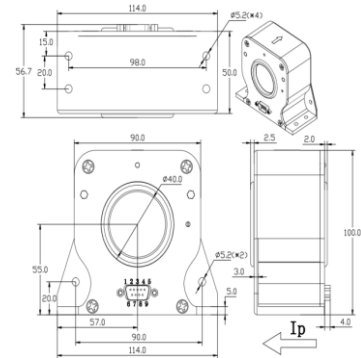


Dimension drawing

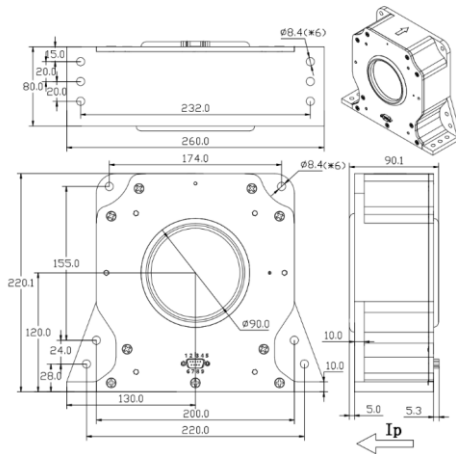
Dimensional drawing of FT-SCA 10A~300A current sensor:



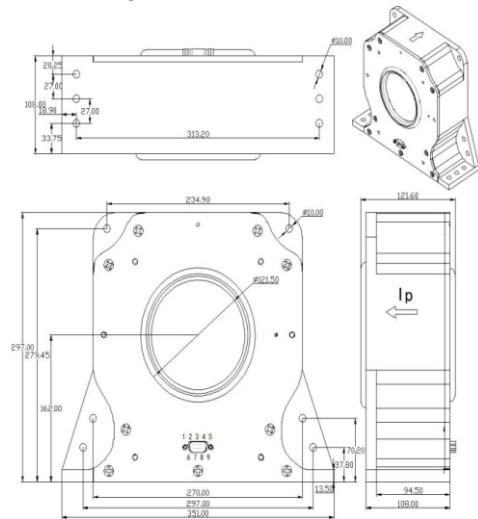
Dimensional drawing of FT-SCA 600A~1500A current sensor:



Dimensional drawing of FT-SCA 2000A~3000A current sensor:



Dimensional drawing of FT-SCA 5000A current sensor:



Ordering information

Model	Rated input (A)	Primary overload current(A)	Transformation ratio	Rated output of secondary side (A)	Bandwidth (kHz)	Accuracy (ppm)	Linearity (ppm)	Working power supply(V)	Diameter of hole(mm)
FT-SCA100	±100A	±150A	1000:1	±100mA	200	10	5	±15Vdc	φ 28
FT-SCA200	±200A	±300A	1500:1	±133.333mA	200	10	5	±15Vdc	φ 28
FT-SCA300	±300A	±360A	1500:1	±200mA	200	10	5	±15Vdc	φ 28
FT-SCA600	±600A	±720A	2000:1	±300mA	100	10	5	±15Vdc	φ 40
FT-SCA1000	±1000A	±1200A	2000:1	±500mA	100	10	5	±15Vdc	φ 40
FT-SCA1500	±1500A	±1600A	2500:1	±600mA	100	10	5	±24Vdc	φ 40
FT-SCA2000	±2000A	±2400A	2500:1	±800mA	100	10	5	±24Vdc	φ 90
FT-SCA3000	±3000A	±3300A	3000:1	±1000mA	100	10	5	±24Vdc	φ 90
FT-SCA5000	±5000A	±6000A	4000:1	±1250mA	100	10	5	±24Vdc	φ 121.5

Optional information

Name	Model or specification	Note
Sensor power supply box	FT-SC01	Single channel ±15V power supply
Sensor power supply box	FT-SC04	Four-channel ±15V power supply
Sensor power supply box	FT-SC11	Single channel ±24V power supply
Sensor power supply box	FT-SC14	Four-channel ±24V power supply

Specification table-1

Model	FT-SCA100	FT-SCA200	FT-SCA300	FT-SCA600	FT-SCA1000
Electrical performance					
Rated DC current of primary side (I _{PN_DC})	±100A dc	±200A dc	±300A dc	±600A dc	±1000A dc
Rated AC current of primary side ¹ (I _{PN})	70.5A ac	141A ac	211.5A ac	423A ac	705A ac
Primary side overload current ² (I _{PM})(≤1min)	±150A dc	±300A dc	±360A dc	±720A dc	±1200A dc
Working voltage(V _c)	±14V~±16V				
Power consumption current (I _{PWR})	±50mA~±200mA	±50mA~±250mA	±50mA~±290mA	±30mA~±390mA	±60mA~±660mA
Current ratio (K _N) (input: output)	1000:1	1500:1	1500:1	2000:1	2000:1
Rated output current(I _{SN})	±100mA	±133.333mA	±200mA	±300mA	±500mA
Measuring resistance(R _M)	0Ω~30Ω, nominal value 20	0Ω~20Ω, nominal value 15	0Ω~20Ω, nominal value 15	0Ω~10Ω, nominal value 7	0Ω~8Ω, nominal value 6
Precision measurement					
Accuracy ³ (X _G)	10ppm				
Linearity(ε _L)	5ppm				
Temperature stability(T _c)	0.2ppm/K				
Time-stability(T _T)	0.5ppm/month				
Power supply anti-interference (T _V)	1ppm/V				
Zero offset current(I _O)	1ppm@25°C				
Ripple current(I _N)	1ppm(DC-10Hz)				
Dynamic response time(t _i)	1us(di/dt=100A/μs, increase to 90%I _{PN})				
Current change rate(di/dt)(MIN)	100A/us				
Frequency bandwidth(-3dB)	DC-200kHz	DC-200kHz	DC-200kHz	DC-100kHz	DC-100kHz
Zero offset current(I _{OT})	±2uA	±3uA	±5uA	±5uA	±5uA
Security features					
Isolation voltage/between primary side and secondary side(V _O)	2.5kV(50Hz, 1min)				
Transient isolation withstand voltage/between primary side and secondary side(V _w)	5kV(50us)				
General characteristic					
Operating temperature range(T _A)	-40℃~85℃				
Storage temperature range(T _s)	-45℃~85℃				
Relative humidity	20%~80%RH				
Threading hole diameter(mm)	φ28	φ28	φ28	Φ40	Φ40
Weight	400g±40g	400g±40g	400g±40g	1000g±200g	1000g±200g

Specification table-2

Model	FT-SCA1500	FT-SCA2000	FT-SCA3000	FT-SCA5000
Electrical performance				
Rated DC current of primary side(I_{PN_DC})	±1500A dc	±2000A dc	±3000A dc	±5000A dc
Rated AC current of primary side ^{*1} (I_{PN})	1057A ac	1410A ac	2115A ac	3525A ac
Primary side overload current ^{*2} (I_{PM})(≤1min)	±1600A dc	±2400A dc	±3300A dc	±6000A dc
Working voltage(V_c)	±22V～±26V			
Power consumption current(I_{PWR})	±60mA～±700mA	±60mA～±1020mA	±60mA～±1160mA	±60mA～±1560mA
Current ratio (K_N) (input: output)	2500:1	25000:1	3000:1	4000:1
Rated output current(I_{SN})	±600mA,	±800mA	±1000mA	±1250mA
Measuring resistance(R_M)	0Ω～5Ω, nominal value 3Ω	0Ω～3Ω, nominal value 2Ω	0Ω～3Ω, nominal value 2Ω	0Ω～2Ω, nominal value1Ω
Precision measurement				
Accuracy ^{*3} (X_G)	10ppm			
Linearity(ϵ_L)	5ppm			
Temperature stability(T_c)	0.2ppm/K			
Time-stability(T_T)	0.5ppm/month			
Power supply anti-interference(T_V)	1ppm/V			
Zero offset current(I_o)	1ppm@25°C			
Ripple current(I_N)	1ppm(DC-10Hz)			
Dynamic response time(t_r)	1us(di/dt=100A/μs, increase to90% I_{PN})			
Current change rate(di/dt)(MIN)	100A/us			
Frequency bandwidth(-3dB)	DC-100kHz			
Zero offset current(I_{OT})	±4μA	±5μA	±5μA	±4μA
Security features				
Isolation voltage / between primary side and secondary side(V_D)	2.5kV(50Hz, 1min)			5kV (50Hz,1min)
Transient isolation withstand voltage / between primary side and secondary side(V_w)	5kV(50us)			8kV (50us)
General characteristic				
Operating temperature range(T_A)	-40℃～85℃			
Storage temperature range(T_s)	-40℃～85℃			
Relative humidity	20%～80%RH			
Threading hole diameter(mm)	Φ40	Φ90	Φ90	Φ121.5
Weight	700g±100g	4000g±1000g	5000g±1000g	12000g±1500g