Fluxgate Current Sensor RIS500

RIS SERIES FLUXGATE CURRENT SENSOR

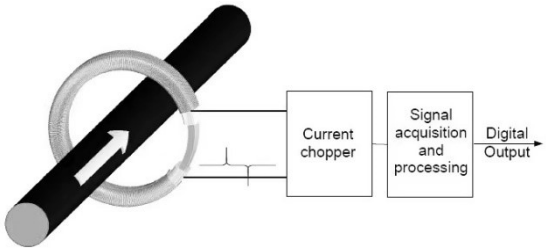
The RIS series of current sensors employs cutting-edge fluxgate technology, ensuring exceptional precision in current detection while maintaining minimal bias. Additionally, these sensors incorporate a robust galvanic isolation that effectively segregates high and low voltage domains. The fluxgate sensor operates on a singular channel power supply configuration and offers a Controller Area Network (CAN) output interface. This design aligns seamlessly with vehicle-level product specifications, rendering it highly compatible with applications such as New Energy Vehicles (NEV), Plug-in Hybrid Electric Vehicles (PHEV), Charging Infrastructure, and Energy Storage Systems, among others.

| Features

- Panel Mounting
- Unipolar 12V battery power supply
- High speed CAN output (up to 500kbps)
- Configurable internal digital low-pass frequency filter
- Configurable CAN speed and CAN ID
- UL508 compatibility
- CE Certification
- IP42 Level Ingress Protection

| Advantages

- High accuracy: total error < 0.5% [-40°C~85°C], normal error [25°C] <0.3%
- Offset below 10mA
- Low Zero Temperature Shift
- High galvanic separation
- Wide operation voltage range
- Stable CAN communication
- Both installation and application to meet market devices and easy to be changeover



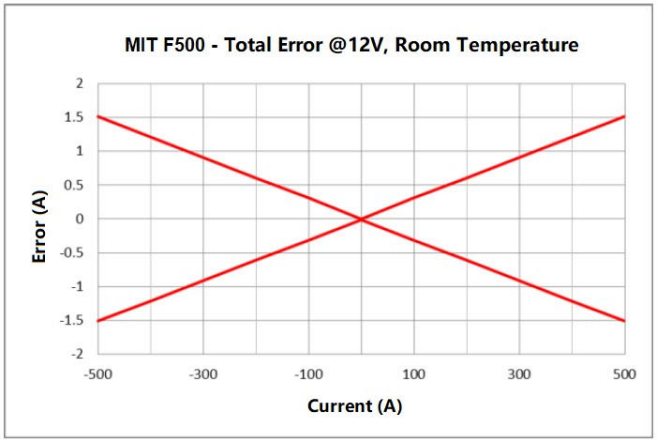
| Specification

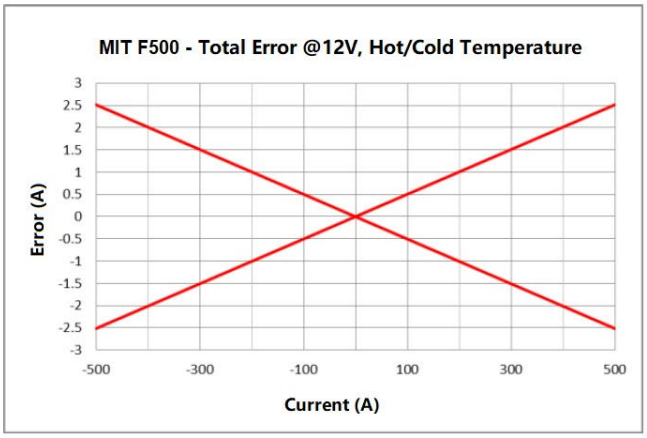
❖ Electrical Parameters

Category	Parameters	Symbol	Unit	Min	Typical	Max
Basic	Supply voltage	Uc	V	8	13.5	16
	Start-up voltage	Uc	V	6		
	Current consumption @Ip=0A	Ic	mA		40	45
	Current consumption @Ip=500A	Ic	mA		140	160
	Ambient operation temperature	TA	℃	-40		85
Performance in operating	Primary nominal DC or RMS current	IPN	A	-500		500
	Current clamping value		A	-530		530
	Voltage clamping value Max@ Uc increases		V		18	
	Voltage clamping value Max@ Uc decreases		V		17.35	
	Voltage clamping value Min@ Uc increases		V		7.72	
	Voltage clamping value Min@ Uc decreases		V		7.27	
	Linearity error	ℰL	%		0.1	
	Output noise		mA		±10	
	Start-up time	Tstart	ms		20	
	Setting time after overload		ms		20	
Absolute max rating (not operating)	Load dump overvoltage	Uc	V		32	
	Over-voltage	Uc	V		24	
	Reverse polarity	Uc	V		-16	
	Minimum supply voltage	Uc min	V		6	
	Maximum supply voltage	Uc max	V		18	
	Creepage distance	dcp	mm		7.2	
	Clearance	dcl	mm		6.95	
	RMS voltage for AC insulation test	Ud	KV		2.5	
	Insulation resistance	Rins	Mohm		500	
	IP level				IP42	

❖ Overall Accuracy

IP (A)	Total error @ 25 °C (A)	Total error @ -40°C~85°C (A)
-500	±1.5	±2.5
0	±0.01	±0.01
500	±1.5	±2.5





❖ CAN Output

- CAN protocol 2.0B
- Bit order: big endian (Motorola)
- CAN oscillator tolerance: 0.27%
- Integrates 120Ω termination resistor inside sensor
- No sleep capability

Message description	Can ID[1]	Data length	Message launch type[1]	Signal description	Signal name	Start bit	End bit
Return current IP (mA)	0x3C2	8 bytes	Cyclic transmitted message 50ms cycle	IP value: 80000000h=0mA 7FFFFFFFh=-1mA 80000001h=1mA	IP_VALUE	0	31
				Error indication (1 bit) 0 = Normal, 1 = Failure	ERROR_INDICATION	32	32
				Error information (7 bits)	Error information	33	39
				not defined[1]	VACANT_DATA_3 BYTE	40	63

[1] Parameters are configurable.

❖ Error Management

Failure Mode	IP Value	Error Indication	Error Information
Overcurrent Detection IP > Approximate 580 A	0x FFFF FFFF	1	0x41
Fluxgate has no oscillation for more than 20 ms	0x FFFF FFFF	1	0x42
Clock deviation	0x FFFF FFFF	1	0x44
Supply voltage is out of range	0x FFFF FFFF	1	0x46

❖ Connector