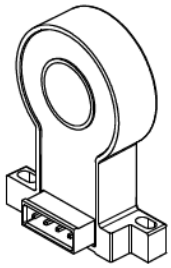
FR2V H00 SERIES

Current Sensor

Model Number:

FR2V 0.01 H00
FR2V 0.02 H00
FR2V 0.05 H00
FR2V 0.10 H00
FR2V 0.20 H00
FR2V 0.30 H00



RoHS compliant

CE

For the electronic measurement of DC leakage current,with galvanic separation between the primary and the secondary circuit.

Features

- Current sensor based on fluxgate technology
- Output Voltage
- Insulating plastic case recognized according to UL 94-V0.（Black）
- High linearity
- Very low zero temperature drift
- Standards:
  - IEC 60664-1:2020
  - IEC 61800-5-1:2022
  - IEC 62109-1:2010

Applications

- Residual current measurement
- Photovoltaic inverter (no transformer type) leakage current measurement
- Leakage protection of photovoltaic arrays
- Detects leakage of stacked DC power supplies
- Wide range of single or three phase current detection (DC or AC, up to ±100A)
- Failure mode detection of current sources
- Symmetrical fault detection (e.g. at inverter output)

Safety

The sensor must be used according to IEC 61010-1.
The sensor must be used in electric/electronic equipment with respect to applicable standards and safety requirements in accordance with the following manufacture's operating instructions.

Caution,risk of electrical shock !

When operating the sensor, certain parts of the module can carry hazardous voltage (e.g., Primary busbar,power supply). Ignore this warning can lead to injury and/or cause serious damage.
This sensor is a built-in device, whose conducting parts must be inaccessible after installation. A protective housing or additional shield could be used.
Main supply must be able to be disconnected.

Absolute maximum ratings(not operating)

Parameter	Symbol	Unit	Value
Supply voltage	V_C	V	±18
Primary conductor temperature	T_B	℃	100

※ Stresses above these ratings may cause permanent damage.

※ Exposure to absolute maximum ratings for extended periods may degrade reliability.

Environmental and mechanical characteristics

Paramter	Symbol	Unit	Min	Typ	Max	Comment
Ambient operating temperature	T_A	℃	-10		70	
Ambient storage temperature	T_S	℃	-40		85	
Mass	m	g		60		

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test @50Hz,1min	V_d	kV	3	According to IEC 60664-1
Clearance(Pri.-sec.)	d_{Cl}	mm	7.2	
Creepage distance(Pri.-sec.)	d_{Cp}	mm	7.2	
Plastic case	-	-	UL94-V0	
Comparative traking index	*CTI*	PLC	3	
Application example	-	-	300V	Reinforced insulation,according to IEC 61800-5-1, IEC 62109-1CATⅢ，PD2
Application example	-	-	600V	Basic insulation,according to IEC 61800-5-1, IEC 62109-1CATⅢ，PD2

Electrical data

FR2V 0.01 H00

※ With T_A = 25℃, V_C = ±15V,unless otherwise noted. Output voltage reference R_L=10kΩ.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal residual current effective value	I_{PN}	mA		±10		
Primary residual current measuring range	I_{PM}	mA	-15		15	
Supply voltage	V_C	V	±12		±15	@5%
Current consumption	I_C	mA			20	@ I_{PN}=0A
Nominal output voltage	V_{OUT}	V		±5		
Measuring resistance	R_L	kΩ	2			
Theoretical sensitivity	G_{th}	V/A		500		@-10℃~ 70℃
Temperature of G	*TCG*	mV/k		±1.5		
Electrical offset voltage	V_{OE}	mV	-50	±20	50	
Temperature coefficient of V_{OE}@I_P= 0	TCV_{OE}	mV/k		±1.5		@-10℃~70℃
Linearity error 0…I_{PN}	ε_L	%	-1	±0.5	1	
Accuracy@ I_{PN}	*X*	%	-1	±0.5	1	
Response time@ 90% of I_{PN}	t_r	ms		500		
Frequency bandwidth	*BW*	kHz		DC		

Electrical data

FR2V 0.02 H00

※ With T_A = 25℃, V_C = ±15V,unless otherwise noted. Output voltage reference R_L=10kΩ.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal residual current effective value	I_{PN}	mA		±20		
Primary residual current measuring range	I_{PM}	mA	-30		30	
Supply voltage	V_C	V	±12		±15	@5%
Current consumption	I_C	mA			20	@ I_{PN}=0A
Nominal output voltage	V_{OUT}	V		±5		
Measuring resistance	R_L	kΩ	2			
Theoretical sensitivity	G_{th}	V/A		250		@-10℃~ 70℃
Temperature of G	*TCG*	mV/k		±1.5		
Electrical offset voltage	V_{OE}	mV	-50	±20	50	
Temperature coefficient of V_{OE}@I_P= 0	TCV_{OE}	mV/k		±1.5		@-10℃~70℃
Linearity error 0…I_{PN}	ε_L	%	-1	±0.5	1	
Accuracy@ I_{PN}	*X*	%	-1	±0.5	1	
Response time@ 90% of I_{PN}	t_r	ms		500		
Frequency bandwidth	*BW*	kHz		DC		

Electrical data

FR2V 0.05 H00

※ With T_A = 25℃, V_C = ±15V,unless otherwise noted. Output voltage reference R_L=10kΩ.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal residual current effective value	I_{PN}	mA		±50		
Primary residual current measuring range	I_{PM}	mA	-75		75	
Supply voltage	V_C	V	±12		±15	@5%
Current consumption	I_C	mA			20	@ I_{PN}=0A
Nominal output voltage	V_{OUT}	V		±5		
Measuring resistance	R_L	kΩ	2	2		
Theoretical sensitivity	G_{th}	V/A		100		@-10℃~70℃
Temperature of G	*TCG*	mV/k		±1.5		
Electrical offset voltage	V_{OE}	mV	-50	±20	50	
Temperature coefficient of V_{OE}@I_P= 0	TCV_{OE}	mV/k		±1.5		@-10℃~70℃
Linearity error 0…I_{PN}	ε_L	%	-1	±0.5	1	
Accuracy@ I_{PN}	*X*	%	-1	±0.5	1	
Response time@ 90% of I_{PN}	t_r	ms		500		
Frequency bandwidth	*BW*	kHz		DC		

Electrical data

FR2V 0.1 H00

※ With T_A = 25℃, V_C = ±15V,unless otherwise noted. Output voltage reference R_L=10kΩ.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal residual current effective value	I_{PN}	mA		±100		
Primary residual current measuring range	I_{PM}	mA	-150		150	
Supply voltage	V_C	V	±12		±15	@5%
Current consumption	I_C	mA			20	@ I_{PN}=0A
Nominal output voltage	V_{OUT}	V		±5		
Measuring resistance	R_L	kΩ	2			
Theoretical sensitivity	G_{th}	V/A		50		@-10℃~70℃
Temperature of G	*TCG*	mV/k		±1.5		
Electrical offset voltage	V_{OE}	mV	-50	±20	50	
Temperature coefficient of VOE@I_P= 0	TCV_{OE}	mV/k		±1.5		@-10℃~70℃
Linearity error 0…I_{PN}	ε_L	%	-1	±0.5	1	
Accuracy@ I_{PN}	*X*	%	-1	±0.5	1	
Response time@ 90% of I_{PN}	t_r	ms		500		
Frequency bandwidth	*BW*	kHz		DC		

Electrical data

FR2V 0.2 H00

※ With T_A = 25℃, V_C = ±15V,unless otherwise noted. Output voltage reference R_L=10kΩ.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal residual current effective value	I_{PN}	mA		±200		
Primary residual current measuring range	I_{PM}	mA	-300		300	
Supply voltage	V_C	V	±12		±15	@5%
Current consumption	I_C	mA			20	@ I_{PN}=0A
Nominal output voltage	V_{OUT}	V		±5		
Measuring resistance	R_L	kΩ	2			
Theoretical sensitivity	G_{th}	V/A		25		@-10℃~70℃
Temperature of G	TCG	mV/k		±1.5		
Electrical offset voltage	V_{OE}	mV	-50	±20	50	
Temperature coefficient of VOE@I_P= 0	TCV_{OE}	mV/k		±1.5		@-10℃~70℃
Linearity error 0…I_{PN}	ε_L	%	-1	±0.5	1	
Accuracy@ I_{PN}	X	%	-1	±0.5	1	
Response time@ 90% of I_{PN}	t_r	ms		500		
Frequency bandwidth	BW	kHz		DC		

Electrical data

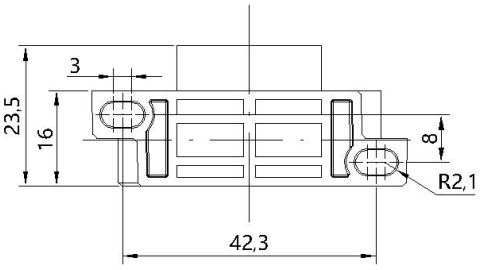
FR2V 0.3 H00

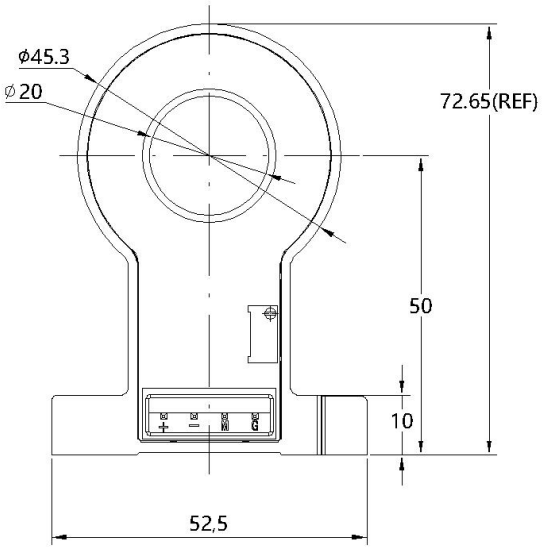
※ With T_A = 25℃, V_C = ±15V,unless otherwise noted. Output voltage reference R_L=10kΩ.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal residual current effective value	I_{PN}	mA		±300		
Primary residual current measuring range	I_{PM}	mA	-360		360	
Supply voltage	V_C	V	±12		±15	@5%
Current consumption	I_C	mA			20	@ I_{PN}=0A
Nominal output voltage	V_{OUT}	V		±5		
Measuring resistance	R_L	kΩ	10			
Theoretical sensitivity	G_{th}	V/A		16.67		
Temperature of G	TCG	mV/k		±1.5		
Electrical offset voltage	V_{OE}	mV	-50	±20	50	
Temperature coefficient of VOE@I_P= 0	TCV_{OE}	mV/k		±1.5		@-10℃~70℃
Linearity error 0…I_{PN}	ε_L	%	-1	±0.5	1	
Accuracy@ I_{PN}	X	%	-1	±0.5	1	
Response time@ 90% of I_{PN}	t_r	ms		500		
Frequency bandwidth	BW	kHz		DC		

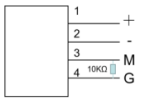
FR2V H00 SERIES

Dimensions（in mm. 1 mm = 0.0394 inch）





Typical application circuit



Mechanical characteristic

✧ General tolerance	±0.3mm
✧ Connection of secondary	JK2EDG-5.08-4P
✧ Primary hole	Φ20mm
✧ Sensor	1pc Φ4.0 mm through hole 1pc M4 metal screws
Recommended fastening torque	0.9 N•m (±10%)

Remarks

✧ When I_P flows in the direction of the arrow, V_{OUT} increase.

This is a standard model. For different applications (measurement, secondary connections…), please contact CHIPSENSE.