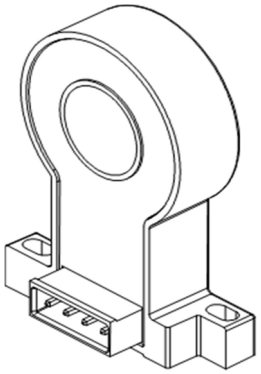
HR1V H01 SERIES

Current sensor

Model Number:

HR1V 50 H01
HR1V 100 H01
HR1V 200 H01
HR1V 300 H01
HR1V 400 H01
HR1V 500 H01



RoHS compliant

CE

For the electronic measurement of current: DC, AC, pulsed…, with galvanic separation between the primary and the secondary circuits.

Features

- Open loop current sensor using the Hall effect
- Galvanic separation between primary and secondary
- Insulating plastic case recognized according to UL 94-V0
- No insertion loss
- Small size
- Standards:
  - IEC 60664-1:2020
  - IEC 61800-5-1:2022
  - IEC 62109-1:2010

Applications

- AC variable speed drives
- Uninterruptible Power Supplies (UPS)
- Static converters for DC motor drives
- Switch Mode Power Supplies (SMPS)
- Power supplies for welding applications
- Battery management
- Wind energy inverter

Safety

This sensor must be used according to IEC61800-5-1.
This 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
ESD rating, Human Body Model (HBM)	V_{ESD}	kV	4

※ Stresses above these ratings may cause permanent damage.

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

Environmental and mechanical characteristics

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Ambient operating temperature	T_A	℃	-40		85	
Ambient storge temperature	T_S	℃	-40		125	
Mass	m	g		44		
Standards	EN 50178, IEC 61010-1, UL 508C					

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test @ 50Hz,1min	V_d	kV	2.5	
Plastic case	-	-	UL94-V0	
Comparative traking index	*CTI*	PLC	3	
Application example	-	-	150V	Reinforced insulation,according to IEC 61800-5-1, IEC 62109-1CAT Ⅲ, PD2
Application example	-	-	300V	Basic insulation,according to IEC 61800-5-1, IEC 62109-1CAT Ⅲ, PD2

Electrical data

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

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A	-50 -100 -200 -300 -400 -500		50 100 200 300 400 500	HR1V 50 H01 HR1V 100 H01 HR1V 200 H01 HR1V 300 H01 HR1V 400 H01 HR1V 500 H01
Primary current, measuring range	I_{PM}	A	-100 -200 -400 -600 -800 -900		100 200 400 600 800 900	HR1V 50 H01 HR1V 100 H01 HR1V 200 H01 HR1V 300 H01 HR1V 400 H01 HR1V 500 H01
Supply voltage	V_C	V	± 12		± 15	@ 5%
Current consumption	I_C	mA		27		
Load resistance	R_L	kΩ	10			
Output voltage（Analog)@ I_{PN}	V_{OUT}	V	± 4.950	± 5.000	± 5.050	
Electrical offset voltage	V_{OE}	mV	-20		20	
Temperature coefficient of V_{OE}	TCV_{OE}	mV/K	-1.5 -1		1.5 1	HR1V 50 H01 HR1V 100-500 H01
Theoretical sensitivity	G_{th}	mV/A		100.0 50.0 25.0 16.67 12.5 10.0		HR1V 50 H01 HR1V 100 H01 HR1V 200 H01 HR1V 300 H01 HR1V 400 H01 HR1V 500 H01
Sensitivity error	ε_G	%	-0.5		0.5	Exclusive of V_{OE}
Temperature of G	TCG	mV/K	-1.5 -1		1.5 1	HR1V 50 H01 HR1V 100-500 H01
Linearity error 0…I_{PN}	ε_L	% of I_{PN}	-1		1	Exclusive of V_{OE}
Hysteresis offset voltage@ I_P=0 after 1 × I_{PN}	V_{OM}	mV	-20		20	
Response time@ 90% of I_{PN}	t_r	μs			5	
Frequency bandwidth(-1dB)	BW	kHz	20			

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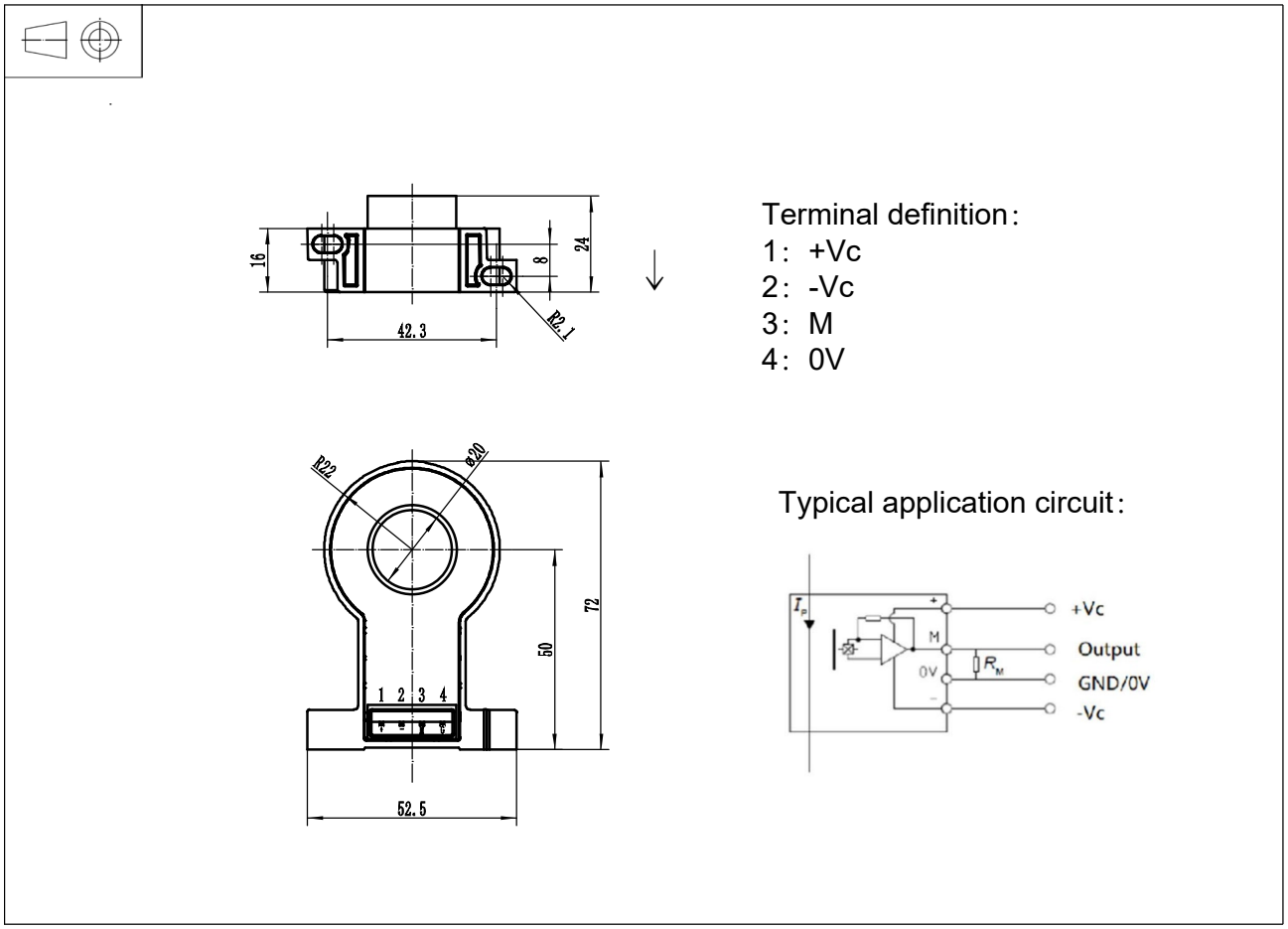
Dimensions（in mm. 1 mm = 0.0394 inch）



Mechanical characteristics

✧ General tolerance	±1mm
✧ Connection of secondary	JK2EDG-5.08-4P
✧	
✧ Primary hole	Φ20mm
✧ Sensor	2pc Φ4.0 mm through hole 2pc M4 metal screws
Recommended fastening torque	2.1 N•m (±10%)

Remarks

- ✧ v_{OUT} and I_P are in the same direction, when I_P flows in the direction of arrow.
- ✧ Temperature of the primary conductor should not exceed 100℃.
- ✧ Dynamic performances (di/dt and response time)are best with a single bar completely filling the primary hole.

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