

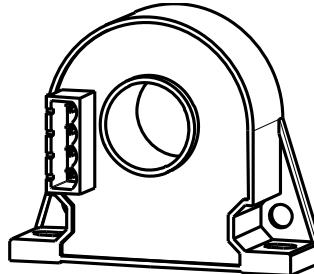
AR1A H01 SERIES

Current Sensor

Model Number:

AR1A 100 H01

AR1A 200 H01



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
- ✧ Nominal output current 100mA
- ✧ Good linearity
- ✧ High accuracy
- ✧ Very low offset drift over temperature.
- ✧ Standards:
 - IEC 60664-1:2020
 - IEC 61800-5-1:2022
 - IEC 62109-1:2010

Applications

- ✧ AC variable speed and servo motor drives
- ✧ Uninterruptible Power Supplies (UPS)
- ✧ Switch Mode Power Supplies (SMPS)
- ✧ Power supplies for welding applications
- ✧ Battery management
- ✧ Power DC panel

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.

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Absolute maximum ratings(not operating)

Parameter	Symbol	Unit	Value
Supply voltage	V_c	V	±18
Primary conductor temperature	T_B	°C	100

- ※ 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	°C	-40		85	
Ambient storage temperature	T_S	°C	-40		90	
Mass	m	g		80		
Standards	IEC 60664-1, IEC 61800-5, IEC 62109-1					

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test @ 50Hz, 1min	V_d	kV	4.2	
Comparative tracking index	CTI	PLC	3	
Application example	-	-	300V	Reinforced insulation, according to IEC 61800-5, IEC 62109-1
Application example	-	-	600V	Basic insulation, according to IEC 61800-5, IEC 62109-1

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Electrical data

AR1A 100 H01

※ With $T_A = 25^\circ\text{C}$, $V_C = \pm 15\text{V}$, $R_L = 40\Omega$, unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	$I_{PN\ DC}$	A	-100		100	
Measuring resistance	R_M	Ω	50	200	230	
Secondary nominal rms current	I_{SN}	mA		100		
Theoretical sensitivity	G_{th}	mA/A		0.1		
Supply voltage	V_C	V	± 12		± 15	@ $\pm 5\%$
Current consumption	I_C	mA		$25 + I_S$		
Zero offset current	I_0	mA	-0.2		0.2	
Thermal drift of offset current	I_{0T}	mA	-0.5	± 0.2	0.5	@ $-40^\circ\text{C} \sim 85^\circ\text{C}$
Residual current@ $I_P=0$ after I_{PN}	I_{0M}	mA	-0.1		0.1	
Sensitivity error	\mathcal{E}_G	%	-0.5		0.5	Exclusive of I_{OE}
Linearity error 0... I_{PN}	\mathcal{E}_L	% of I_{PN}	-1	± 0.5	1	Exclusive of I_{OE}
Accuracy@ I_{PN}	X	% of I_{PN}	-1		1	Exclusive of I_{OE}
Response time@ 90% of I_{PN}	t_r	μs			5	
Frequency bandwidth	BW	kHz		5		

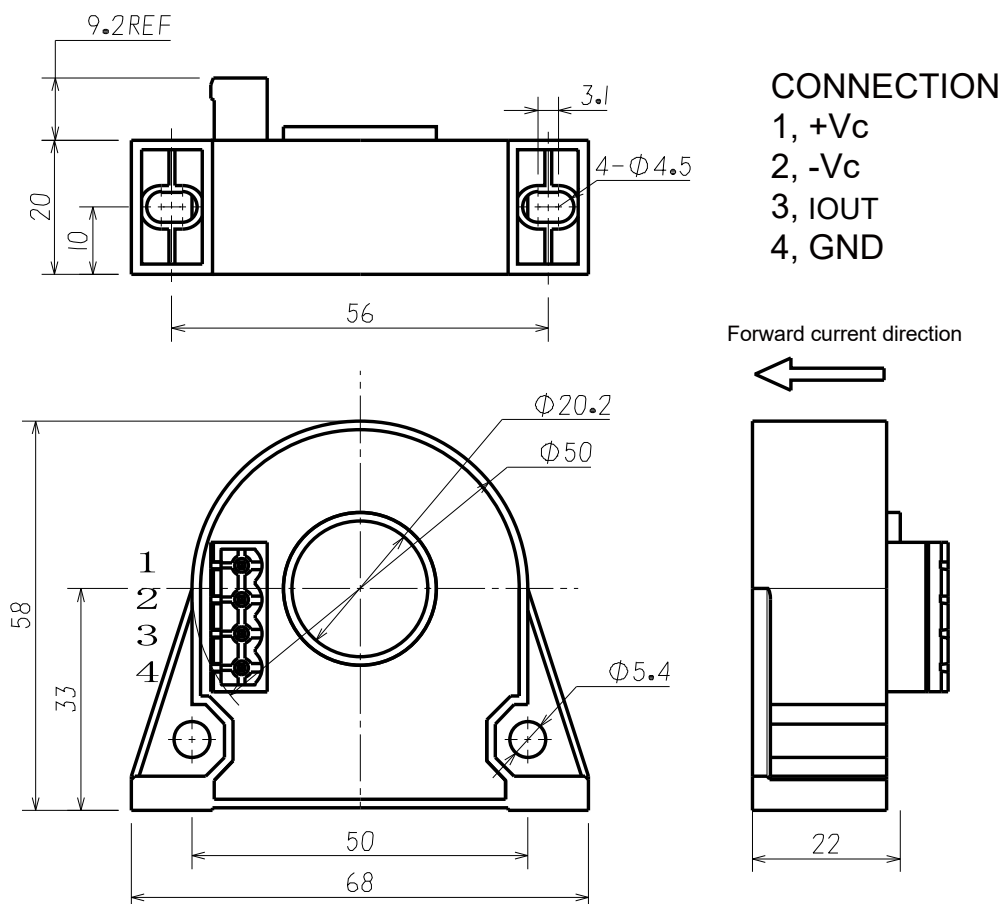
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※ With $T_A = 25^\circ\text{C}$, $V_C = \pm 15\text{V}$, $R_L = 40\Omega$, unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	$I_{PN\ DC}$	A	-200		200	
Measuring resistance	R_M	Ω	50	200	230	
Secondary nominal rms current	I_{SN}	mA		100		
Theoretical sensitivity	G_{th}	mA/A		0.5		
Supply voltage	V_C	V	± 12		± 15	@ $\pm 5\%$
Current consumption	I_C	mA		$25 + I_S$		
Zero offset current	I_0	mA	-0.2		0.2	
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Accuracy@ I_{PN}	X	% of I_{PN}	-1		1	Exclusive of I_{OE}
Response time@ 90% of I_{PN}	t_r	μs			5	
Frequency bandwidth	BW	kHz		5		

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Dimensions (in mm. 1 mm = 0.0394 inch)



Mechanical characteristics

- ✧ General tolerance ± 0.3 mm
- ✧ Primary hole $\Phi 20$ mm
- ✧ Transduce vertical fastening
2pc $\Phi 4.5$ mm through hole
2pc M4 metal screws

Recommended fastening torque 0.9 N•m ($\pm 10\%$)

M4 pad

- ✧ Connection of secondary
JK2EDG-5.08-4P

- ✧ Transduce horizontal fastening
4pc $\Phi 5.4$ mm through hole
4pc M5 metal screws

Recommended fastening torque 2.1 N•m ($\pm 10\%$)

M4 pad

Remarks

- ✧ I_s 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°C .
- ✧ 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.