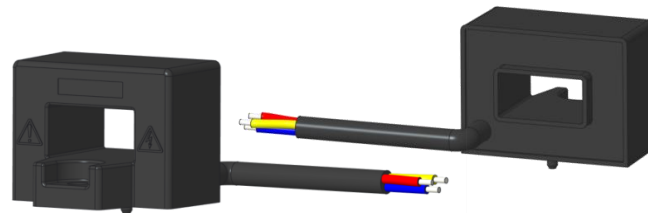


Current Sensor

Model Number:

AS1V 30 H05
AS1V 40 H05



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

Features

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

Applications

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

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 manufacturer'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	+ 6V
Primary conductor temperature	T_B	°C	100
ESD rating, Human Body Model (HBM)	V_{ESD}	kV	4

※ Stress above these ratings may cause permanent damage.

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		105	
Mass	m	g		60		
Standards	IEC 60664-1, IEC 61800-5-1, IEC 62109-1					

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

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test @ 50Hz, 1min	V_d	kV	2.4	According to IEC 60664-1
Impulse withstand voltage 1.2/50μs	V_w	kV	4.4	
Clearance (pri.- sec.)	d_{Cl}	mm	4.7	
Creepage distance (pri.- sec.)	d_{Cp}	mm	7.7	
Comparative tracking index	CTI	PLC	Group IIIa	
Application example	-	-	300V	Reinforced insulation, according to IEC 61800-5-1, IEC 62109-1 CAT III PD2
Application example	-	-	600V	Basic insulation, according to IEC 61800-5-1, IEC 62109-1 CAT III PD2

Electrical data

※ With $T_A = 25^\circ\text{C}$, $V_C = +5\text{V}$, $R_L = 10\text{k}\Omega$, unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A		± 30 ± 40		AS1V 30 H05 AS1V 40 H05
Supply voltage	V_C	V	4.75	5.00	5.25	@ 5%
Current consumption	I_C	mA		12		
Output voltage (Analog) @ I_{PN}	V_{OUT}	V	$V_{OUT} = 2.5 + G_{th} \times I_P$			@ V_C
Offset voltage	V_{OUT}	V	2.485	2.5	2.515	@ $I_P = 0\text{A}$
Load resistance	R_L	k Ω	10			
Electrical offset voltage	V_{OE}	mV	-10		10	
Temperature coefficient of V_{OE}	TCV_{OE}	mV	-10	± 6	10	@ $-40^\circ\text{C} \sim 105^\circ\text{C}$
Hysteresis offset voltage @ $I_P = 0$ after $1 \times I_{PN}$	V_{OM}	mV	-10		10	
Theoretical sensitivity	G_{th}	mV/A		33.33 25		AS1V 30 H05 AS1V 40 H05
Sensitivity error	$\mathcal{E}_G$	%	-0.5		0.5	Exclusive of V_{OE}
Temperature of G	TCG	%	-0.05		0.05	@ $-40^\circ\text{C} \sim 105^\circ\text{C}$
Linearity error 0... I_{PN}	$\mathcal{E}_L$	% of I_{PN}	-0.5		0.5	Exclusive of V_{OE}
Accuracy @ I_{PN}	X	% of I_{PN}	-1		1	Exclusive of V_{OE}
Response time @ 90% of I_{PN}	t_r	μs		3	5	
Frequency bandwidth (-3dB)	BW	kHz	50			

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Remarks

- ✧ When I_p flows in the direction of arrow, the voltage output is positive.
- ✧ 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.