

Current Sensor

Model Number:

CM9A 5000 H01



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

Features

- ❖ Closed loop (compensated) current sensor using the Hall effect
- ❖ Galvanic Insulation between primary and secondary
- ❖ Insulating plastic case recognized according to UL 94-V0
- ❖ Very good linearity
- ❖ High accuracy
- ❖ Very low offset drift over temperature
- ❖ No insertion loss
- ❖ Standards:
 - IEC 60664-1:2020
 - IEC 61800-5-1:2022
 - IEC 62109-1:2010

Applications

- ❖ Windmill inverter
- ❖ AC variable speed and servo motor 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
- ❖ Test and detection devices

Safety

This sensor must be used according to IEC 61800-5-1.

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	± 25.2
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	Kg		4		

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test @ 50Hz,1min	V_d	kV	6	According to IEC 60664-1
Impulse withstand voltage 1.2/50μs	V_W	kV	23	According to IEC 60664-1
Clearance (pri.- sec.)	d_{Cl}	mm	62.68	
Creepage distance (pri.- sec.)	d_{Cp}	mm	65.55	
Plastic case	-	-	UL94-V0	
Comparative tracking index	CTI	PLC	C λ lc λ a	
Application example	-	-	00V	Reinforced insulation, according to IEC 61800-5-1, IEC 62109-1 CAT λ , PD2
Application example	-	-	000V	Basic insulation, according to IEC 61800-5-1, IEC 62109-1 CAT λ , PD2

CM9A H01 SERIES

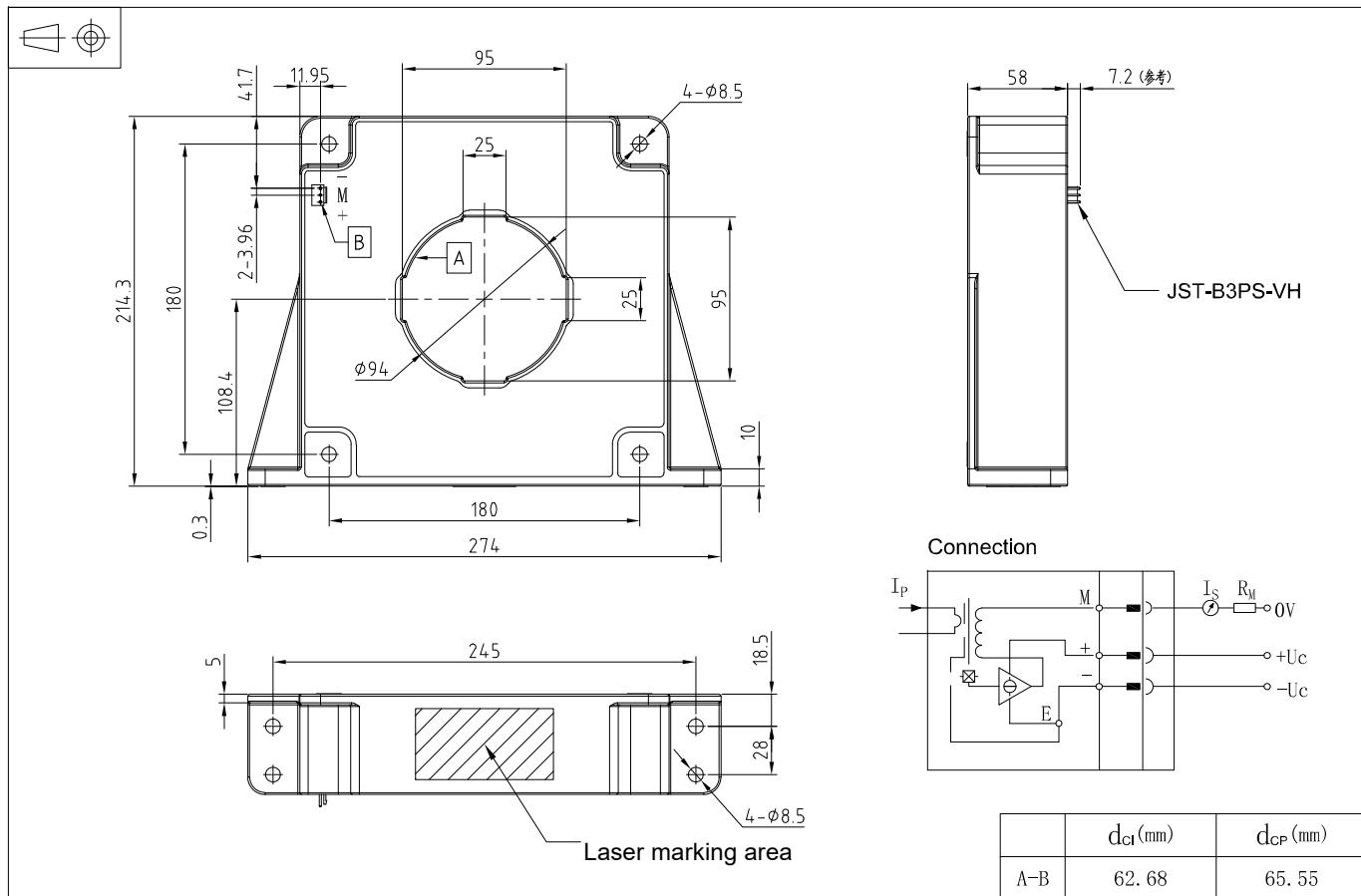
Electrical data

CM9A 5000 H01

※ With $T_A = 25^\circ\text{C}$, $V_C = \pm 24\text{V}$, $R_M = 5\Omega$, unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A	-5000		5000	
Primary current, measuring range	I_{PM}	A	-5500		5500	@ $\pm 22.8\text{V}$; 85°C ; $RM=2.3\Omega$ Other conditions, please refer to Figure 1
Measuring resistance	R_M	Ω	0			Maximum measured resistance parameters(Reference Figure 1)
Secondary nominal rms current	I_{SN}	mA	-1000		1000	
Secondary coil resistance	R_S	Ω		12		@ 25°C
Secondary current, measuring range	I_S	mA	-1200		1200	
Number of secondary turns	N_S	-		5000		
Theoretical sensitivity	G_{th}	mA/A		0.2		
Supply voltage	V_C	V		± 24		@ $\pm 5\%$
Current consumption	I_C	mA		$47 + I_S$		@ $\pm 24\text{V}$
Offset current	I_0	mA	-0.5		0.5	
Offset current temperature drift	I_{OT}	mA	-0.5		0.5	@ $-40^\circ\text{C} \sim 85^\circ\text{C}$
Hysteresis offset current@ $I_P=0$ after I_{PN}	I_{OM}	mA	-0.2		0.2	
Sensitivity error	\mathcal{E}_G	%	-0.2		0.2	Exclusive of I_{OE}
Linearity error 0... I_{PN}	\mathcal{E}_L	% of I_{PN}	-0.1		0.1	Exclusive of I_{OE}
Accuracy@ I_{PN}	X	% of I_{PN}	-0.1		0.1	Exclusive of I_{OE}
Response time@ 90% of I_{PN}	t_r	μs			1	$\text{di}/\text{dt}=75\text{A}/\mu\text{s}$
Frequency bandwidth(-3dB)	BW	kHz		100		

Dimensions (in mm. 1 mm = 0.0394 inch)



Mechanical characteristics

- ❖ General tolerance ± 0.5 mm
- ❖ Primary hole $\phi 94$ mm or $95\text{mm} \times 25\text{mm}$
- ❖ Connection of secondary $4\text{pc } \phi 8.5\text{mm through-hole}$
- ❖ Sensor vertical fastening $4\text{pc M8 metal screws}$
- ❖ Sensor horizontal fastening $4\text{pc } \phi 8.5\text{mm through-hole}$
- ❖ Recommended fastening torque $6 \text{ N}\cdot\text{m} (\pm 10\%)$
- ❖ Terminal model JST-B3PS-VH

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 .
- ❖ For security, do not install a current sensor with primary current or secondary power supply.

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

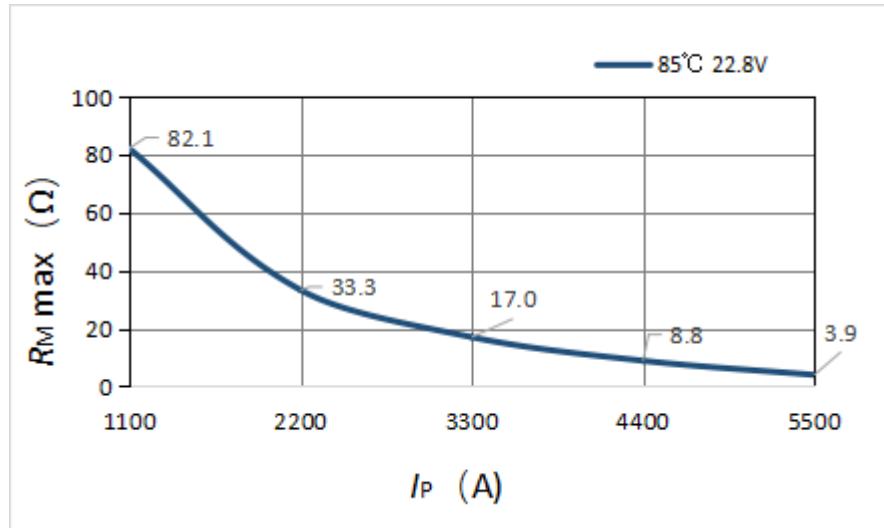


Figure 1. Maximum measurement resistance