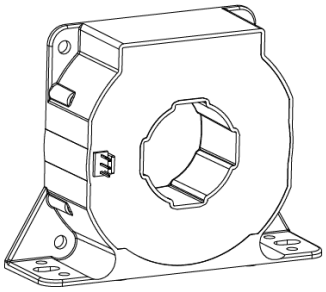
CM3A H01 SERIES

Current Sensor

Model Number:

CM3A 500 H01



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

Features

- Closed loop（compensated）current sensor using the Hall Effect.
- Galvanic separation 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

- 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 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.

CHIPSENSE reserves the right to carry out modifications on all sensor, in order to improve them, without prior notice.

Absolute maximum ratings(not operating)

Parameter	Symbol	Unit	Value
Supply voltage	V_C	V	± 25.2
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		90	
Mass	m	g		285		

Insulation coordination

Parameter	Symbol	Unit	Value	Comment
Rms voltage for AC insulation test @ 50Hz,1min	V_d	kV	3.8	According to IEC 60664-1
Impulse withstand voltage 1.2/50μs	V_W	kV	12.5	According to IEC 60664-1
Clearance (pri.- sec.)	d_{Cl}	mm	14.5	
Creepage distance (pri.- sec.)	d_{Cp}	mm	15.3	
Plastic case	-	-	UL94-V0	
Comparative traking index	*CTI*	PLC	3	
Application example	-	-	690V	Reinforced insulation,according to IEC 61800-5-1, IEC 62109-1CATⅢ, PD2
Application example	-	-	1250V	Basic insulation,according to IEC 61800-5-1, IEC 62109-1CATⅢ, PD2

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Electrical data

※ With T_A = 25℃, V_C = ±24V, R_M = 20Ω,unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A	-500		500	
Primary current, measuring range	I_{PM}	A	-800		800	
Measuring resistance	R_M	Ω	0		80	@±15V, 25℃, ±500A
			0		64	@±15V, 85℃, ±500A
			0		28	@±15V, 25℃, ±800A
			0		12	@±15V, 85℃, ±800A
			0		165	@±24V, 25℃, ±500A
			0		149	@±24V, 85℃, ±500A
			0		82	@±24V, 25℃, ±800A
			0		65	@±24V, 85℃, ±800A
Secondary nominal rms current	I_{SN}	mA	-100		100	
Secondary coil resistance	R_S	Ω			54	@ 25℃
					70	@ 85℃
Secondary current,measuring range	I_S	mA	-160		160	
Number of secondary turns	N_S	-		5000		
Theoretical sensitivity	G_{th}	mA/A		0.2		
Supply voltage	V_C	V	±15		±24	@ ±5%
Current consumption	I_C	mA		24 + I_S		
Zero offset current	I_O	mA	-0.4		0.4	
Thermal drift of offset current	I_{OT}	mA	-0.4		0.4	@ -40℃~85℃
Residual current@I_P=0 after 3 × I_{PN}	I_{OM}	mA	-0.2		0.2	
Sensitivity error	ε_G	%	-0.4		0.4	Exclusive of I_{OE}
Linearity error 0…I_{PN}	ε_L	% of I_{PN}	-0.1		0.1	Exclusive of I_{OE}
Accuracy@ I_{PN}	X	% of I_{PN}	-0.5		0.5	Exclusive of I_{OE}
Response time@ 90% of I_{PN}	t_r	μs			1	
Frequency bandwidth(-1dB)	BW	kHz	100			

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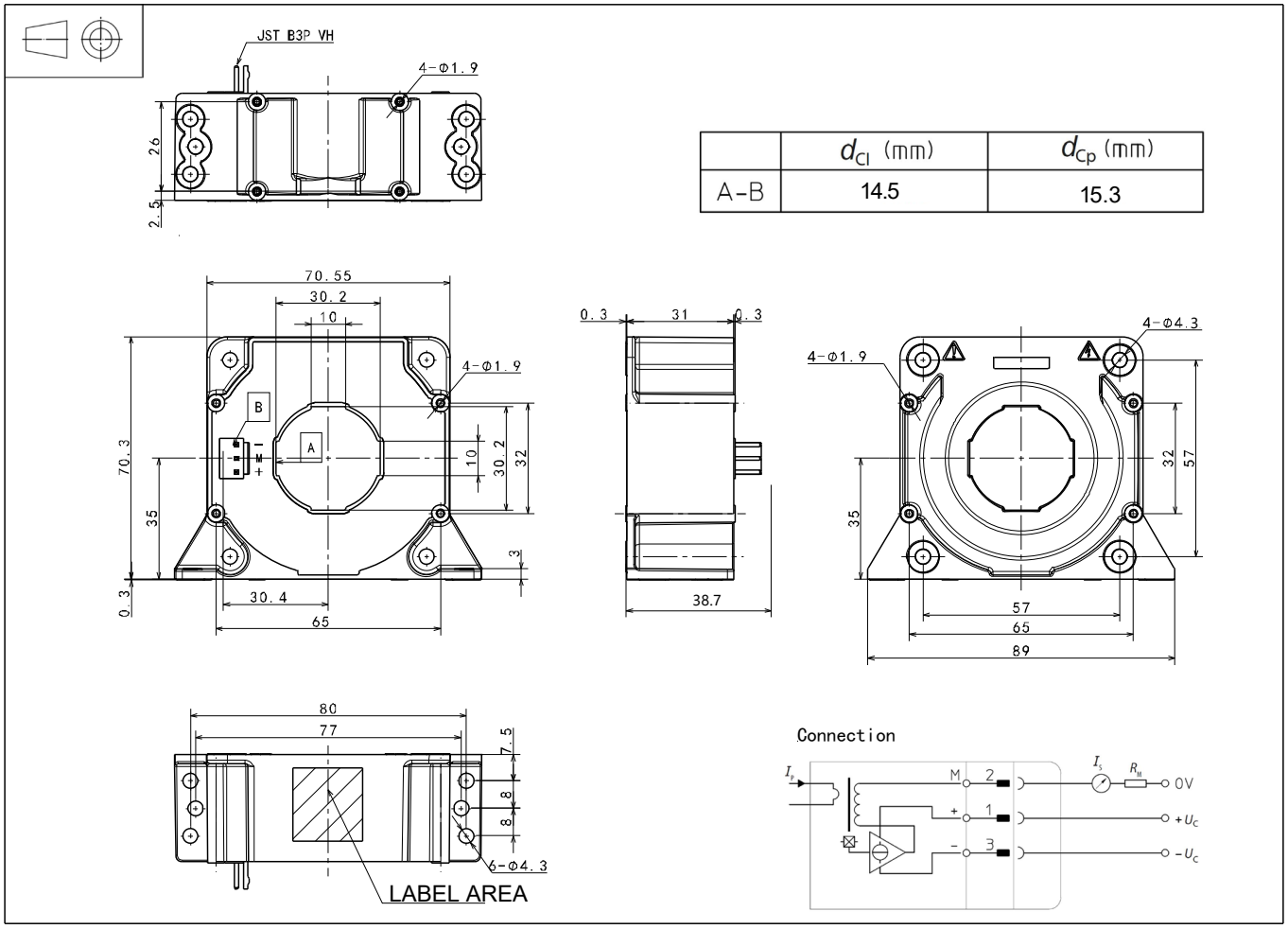
Dimensions（in mm. 1 mm = 0.0394 inch）



	d_{Cl} (mm)	d_{Cp} (mm)
A-B	14.5	15.3

Mechanical characteristics

✧ General tolerance	±0.5 mm
✧ Primary hole	Φ30mm
✧ or	
✧ Transduce vertical fastening	30mm×10mm 4or 6pc Φ4.3 mm through hole 4 or 6pc M4 metal screws
Recommended fastening torque	0.9 N•m (±10%)
✧ Connection of secondary	JST B3P VH
✧ Transduce horizontal fastening	4pc Φ4.3 mm through hole 4pc M4 metal screws
Recommended fastening torque	0.9 N•m (±10%)

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℃.
- ✧ Dynamic performances (di/dt and response time)are best with asingle bar completely filling the primary hole.

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

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