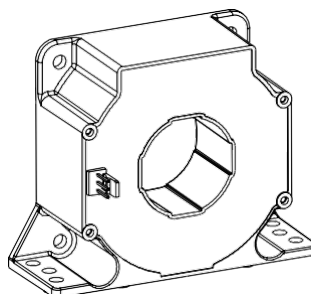


# CM3A H00 SERIES

## Current Sensor

Model Number:

CM3A 500 H00



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.

# CM3A H00 SERIES

## Absolute maximum ratings(not operating)

Parameter	Symbol	Unit	Value
Supply voltage	$V_C$	V	$\pm 25.2$
Primary conductor temperature	$T_B$	$^{\circ}\text{C}$	100
ESD rating, Human Body Model (HBM)	$V_{\text{ESD}}$	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	$T_A$	$^{\circ}\text{C}$	-40		85	
Ambient storage temperature	$T_S$	$^{\circ}\text{C}$	-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 1.2/50 $\mu\text{s}$	$V_W$	kV	12.5	According to IEC 60664-1
Clearance (pri.- sec.)	$d_{\text{Cl}}$	mm	14.5	
Creepage distance (pri.- sec.)	$d_{\text{Cp}}$	mm	15.3	
Plastic case	-	-	UL94-V0	
Comparative tracking index	$CTI$	PLC	3	
Application example	-	-	690V	Reinforced insulation,according to IEC61800-5-1, IEC 62109-1CATIII, PD2
Application example	-	-	1250V	Basic insulation,according to IEC 61800-5-1, IEC 62109-1CATIII, PD2

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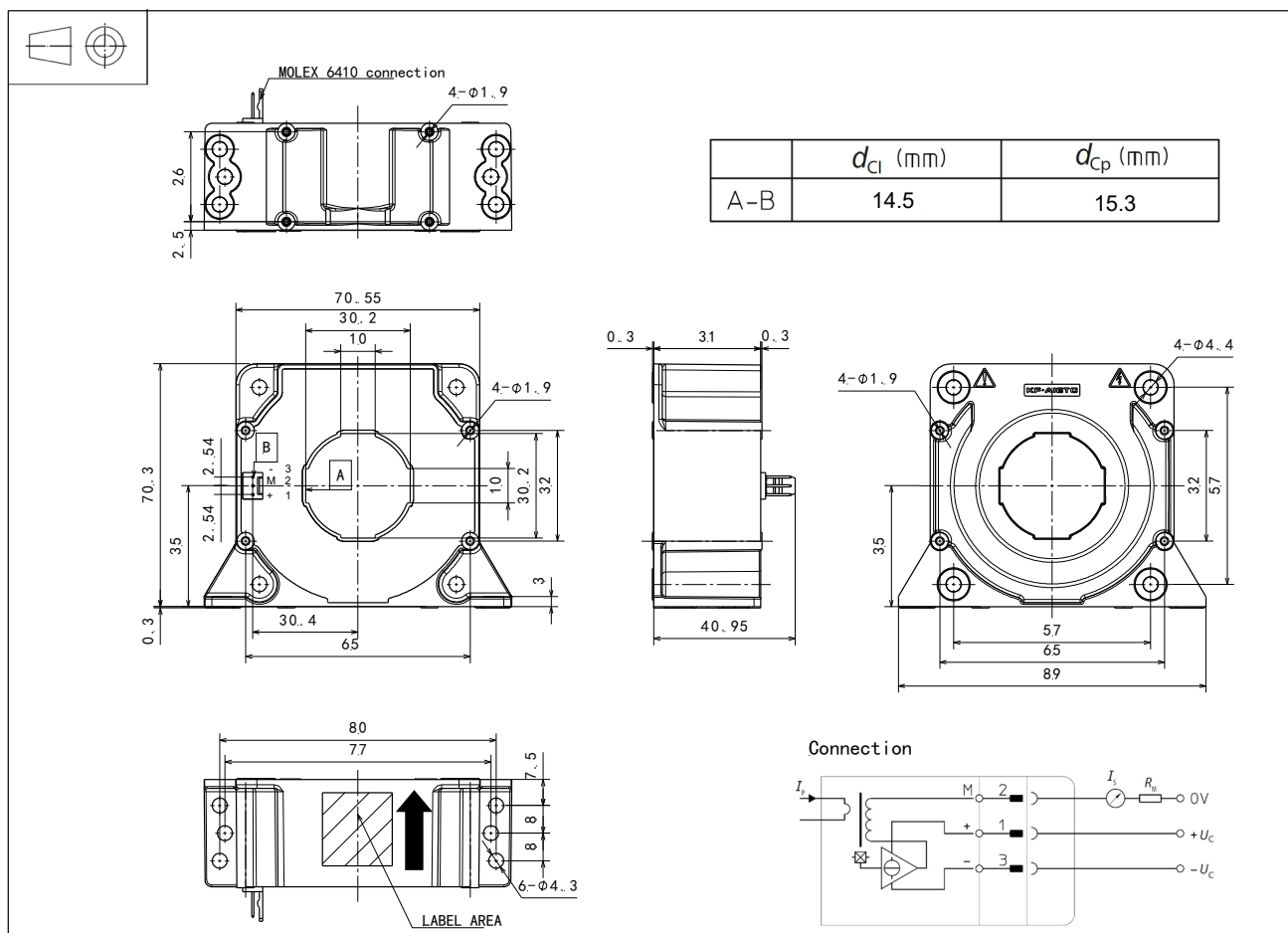
## Electrical data

※ With  $T_A = 25^\circ\text{C}$ ,  $V_C = \pm 24\text{V}$ ,  $R_M = 20\Omega$ , 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	$R_M$	$\Omega$	0		80	@±15V, 25°C, ±500A
			0		64	@±15V, 85°C, ±500A
			0		28	@±15V, 25°C, ±800A
			0		12	@±15V, 85°C, ±800A
			0		165	@±24V, 25°C, ±500A
			0		149	@±24V, 85°C, ±500A
			0		82	@±24V, 25°C, ±800A
			0		65	@±24V, 85°C, ±800A
Secondary nominal rms current	$I_{SN}$	mA	-100		100	
Secondary coil resistance	$R_S$	$\Omega$			54	@ 25°C
					70	@ 85°C
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°C~85°C
Residual current@ $I_P=0$ after $3 \times I_{PN}$	$I_{OM}$	mA	-0.2		0.2	
Sensitivity error	$\mathcal{E}_G$	%	-0.4		0.4	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 $I_{PN}$	-0.5		0.5	Exclusive of $I_{OE}$
Response time@ 90% of $I_{PN}$	$t_r$	$\mu\text{s}$			1	
Frequency bandwidth(-1dB)	$BW$	kHz	100			

# CM3A H00 SERIES

Dimensions (in mm. 1 mm = 0.0394 inch)



## Mechanical characteristics

- ◇ General tolerance  $\pm 0.5$  mm
- ◇ Primary hole  $\Phi 30$ mm  
30mm $\times$ 10mm
- ◇ Transduce vertical fastening 4 or 6pc  $\Phi 4.3$ mm through-hole  
4 or 6pc M4 metal screws

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

- ◇ Connection of secondary Molex 6410

- ◇ Transduce horizontal fastening 4pc  $\Phi 4.3$ mm through-hole  
4pc M4 metal screws

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

## 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°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.