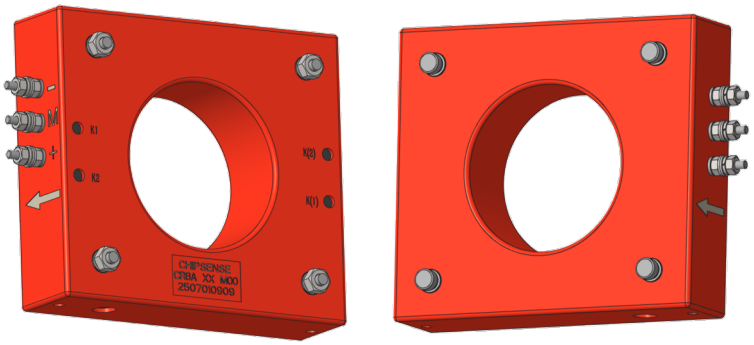
CR8A M00 SERIES

Current Sensor

Model Number:

CR8A 500 M00
CR8A 1000 M00
CR8A 2000 M00
CR8A 4000 M00
CR8A 5000 M00



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

Features

- High accuracy
- Very good linearity
- High Frequency bandwidth
- No insertion loss
- Strong anti-interference ability
- Standards:
  - IEC 60664-1:2020
  - IEC 61800-5-1:2022
  - IEC 62109-1:2010

Applications

- AC variable speed driver
- DC motor driven static converter
- Communication power supply
- Uninterruptible Power Supplies (UPS)
- Photovoltaic and wind power generation
- Switch Mode Power Supplies (SMPS)
- Power supplies for welding applications
- Smart Grid
- Frequency conversion drive
- New energy electric vehicle
- Industrial monitoring automation

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.

Absolute maximum ratings(not operating)

Parameter	Symbol	Unit	Value
Supply voltage	V_C	V	± 15~±24
Primary conductor temperature	T_B	℃	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	℃	-45		85	
Ambient storge temperature	T_S	℃	-45		105	
Mass	m	kg		4.3		

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 voltage1.2/50μs	V_W	kV	23	According to IEC 60664-1
Clearance (pri.- sec.)	d_{Cl}	mm	78.39	
Creepage distance (pri.- sec.)	d_{Cp}	mm	80.17	
Comparative traking index	CTI	PLC	3	
Application example	-	-	3500V	Reinforced insulation,according to IEC 61800-5-1, IEC 62109-1 CATⅢ, PD2
Application example	-	-	7000V	Basic insulation,according to IEC 61800-5-1, IEC 62109-1 CATⅢ, PD2

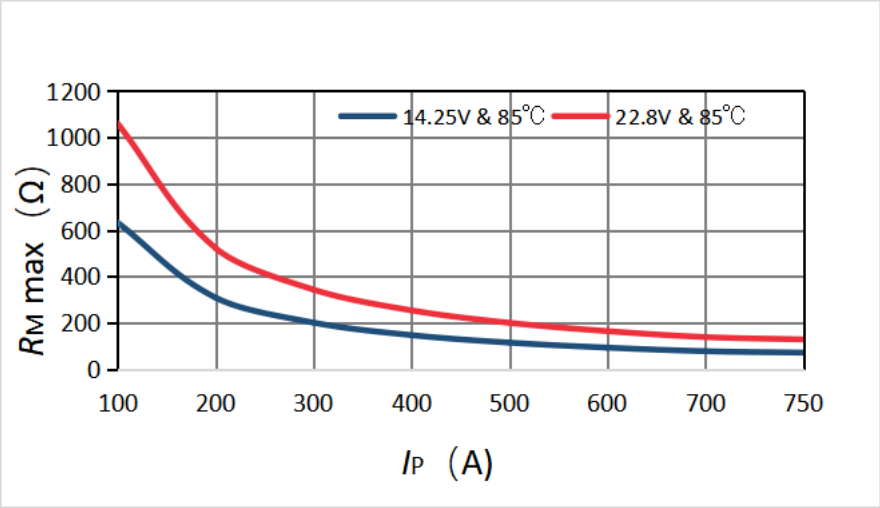
Electrical data

CR8A 500 M00

※ With T_A = 25℃, V_C = ± 15~±24V, R_M = 70Ω.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	-750		750	@±14.25V;85℃;RM=70 Ω 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	-100		100	
Secondary coil resistance	R_S	Ω		12		@ 25℃
Number of secondary turns	N_S	-		5000		
Supply voltage	V_C	V	±15		±24	@ ±5%
Current consumption	I_C	mA		45+I_S		
Zero offset current	I_O	mA	-0.2		0.2	
Thermal drift of offset current	I_{OT}	mA	-0.5		0.5	@ -45℃~85℃
Residual current@I_P=0 after I_{PN}	I_{OM}	mA	-0.2		0.2	
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}	-0.3		0.3	Exclusive of I_{OE}
Response time@ 90% of I_{PN}	t_r	μs			1	
Frequency bandwidth (-3dB)	BW	kHz		100		

Figure 1 Maximum measured resistance：



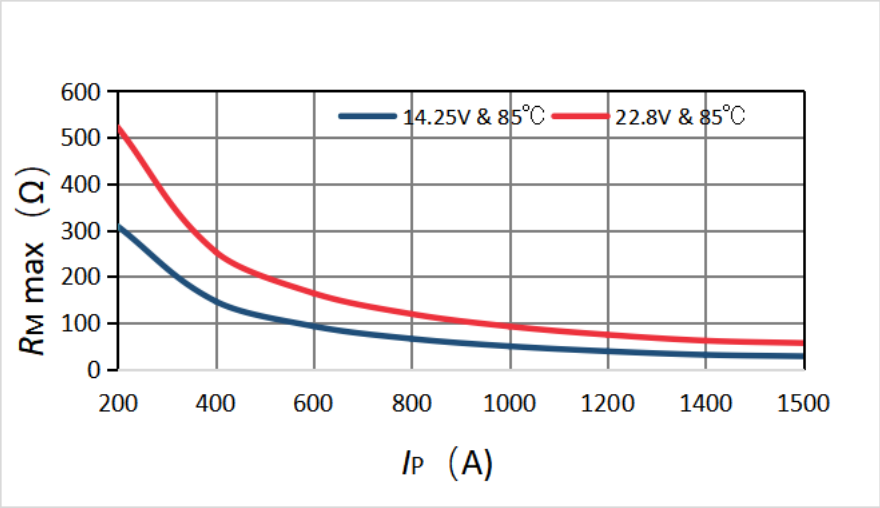
Electrical data

CR8A 1000 M00

※ With T_A = 25℃, V_C = ± 15~±24V, R_M = 25Ω.unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A	-1000		1000	
Primary current, measuring range	I_{PM}	A	-1500		1500	@±14.25V;85℃;RM=27 Ω Other conditions, please refer to Figure 2
Measuring resistance	R_M	Ω	0			Maximum measured resistance parameters(Reference Figure 2)
Secondary nominal rms current	I_{SN}	mA	-200		200	
Secondary coil resistance	R_S	Ω		12		@ 25℃
Number of secondary turns	N_S	-		5000		
Supply voltage	V_C	V	±15		±24	@ ±5%
Current consumption	I_C	mA		45+I_S		
Zero offset current	I_O	mA	-0.2		0.2	
Thermal drift of offset current	I_{OT}	mA	-0.5		0.5	@ -45℃~85℃
Residual current@I_P=0 after I_{PN}	I_{OM}	mA	-0.2		0.2	
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}	-0.3		0.3	Exclusive of I_{OE}
Response time@ 90% of I_{PN}	t_r	μs			1	
Frequency bandwidth (-3dB)	BW	kHz		100		

Figure 2. Maximum measurement resistance



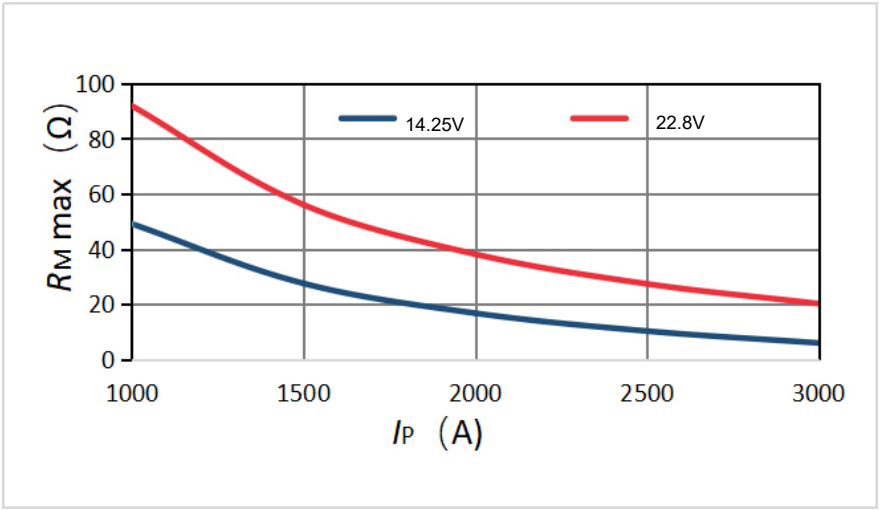
Electrical data

CR8A 2000 M00

※ With T_A = 25℃, V_C = ± 15~±24V, R_M = 2Ω.unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A	-2000		2000	
Primary current, measuring range	I_{PM}	A	-3000		3000	@±14.25V;85℃;RM=2 Ω Other conditions, please refer to Figure 3
Measuring resistance	R_M	Ω	0			Maximum measured resistance parameters(Reference Figure 3)
Secondary nominal rms current	I_{SN}	mA	-400		400	
Secondary coil resistance	R_S	Ω		12		@ 25℃
Number of secondary turns	N_S	-		5000		
Supply voltage	V_C	V	±15		±24	@ ±5%
Current consumption	I_C	mA		45+I_S		
Zero offset current	I_O	mA	-0.2		0.2	
Thermal drift of offset current	I_{OT}	mA	-0.5		0.5	@ -45℃~85℃
Residual current@I_P=0 after I_{PN}	I_{OM}	mA	-0.2		0.2	
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}	-0.3		0.3	Exclusive of I_{OE}
Response time@ 90% of I_{PN}	t_r	μs			1	
Frequency bandwidth (-3dB)	BW	kHz		100		

Figure 3. Maximum measurement resistance



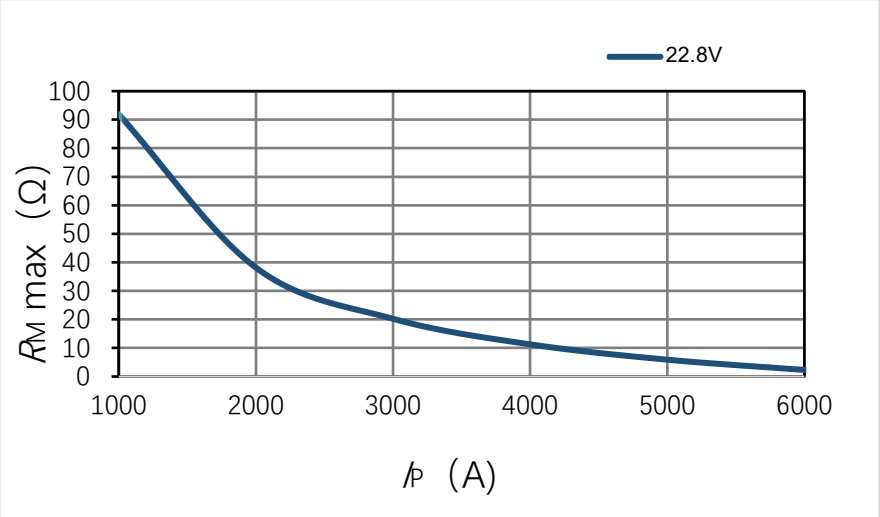
Electrical data

CR8A 4000 M00

※ With T_A = 25℃, V_C = 24V, R_M = 2Ω.unless otherwise noted.

Parameter	Symbol	Unit	Min	Typ	Max	Comment
Primary nominal rms current	I_{PN}	A	-4000		4000	
Primary current, measuring range	I_{PM}	A	-6000		6000	@±22.8V;85℃;RM=2 Ω Other conditions, please refer to Figure 4
Measuring resistance	R_M	Ω	0			Maximum measured resistance parameters(Reference Figure 4)
Secondary nominal rms current	I_{SN}	mA	-800		800	
Secondary coil resistance	R_S	Ω		12		@ 25℃
Number of secondary turns	N_S	-		5000		
Supply voltage	V_C	V		±24		@ ±5%
Current consumption	I_C	mA		45+I_S		
Zero offset current	I_O	mA	-0.2		0.2	
Thermal drift of offset current	I_{OT}	mA	-0.5		0.5	@ -45℃~85℃
Residual current@I_P=0 after I_{PN}	I_{OM}	mA	-0.2		0.2	
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}	-0.3		0.3	Exclusive of I_{OE}
Response time@ 90% of I_{PN}	t_r	μs			1	
Frequency bandwidth (-3dB)	BW	kHz		100		

Figure 4 Maximum measurement resistance



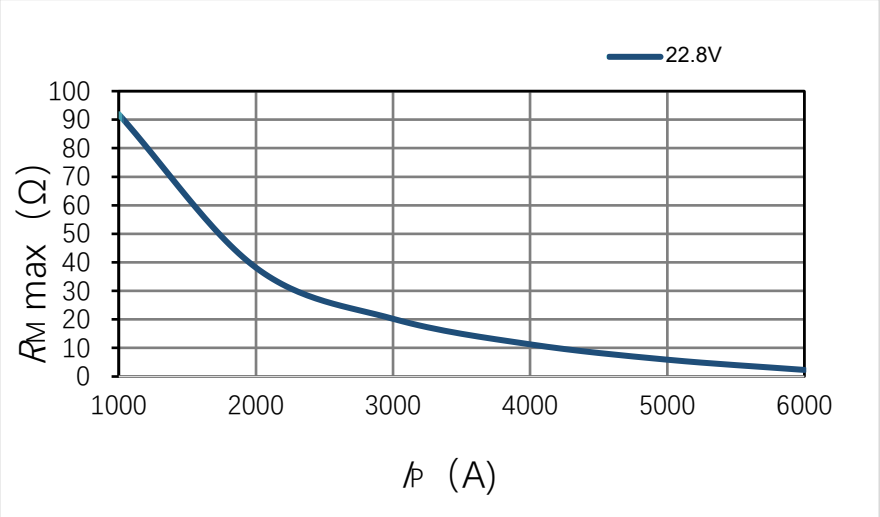
Electrical data

CR8A 5000 M00

※ With T_A = 25℃, V_C = ±24V, R_M = 2Ω.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	-6000		6000	@±22.8V;85℃;RM=2 Ω Other conditions, please refer to Figure 5
Measuring resistance	R_M	Ω	0			Maximum measured resistance parameters(Reference Figure 5)
Secondary nominal rms current	I_{SN}	mA	-1000		1000	
Secondary coil resistance	R_S	Ω		12		@ 25℃
Number of secondary turns	N_S	-		5000		
Supply voltage	V_C	V		±24		@ ±5%
Current consumption	I_C	mA		45+I_S		
Zero offset current	I_O	mA	-0.2		0.2	
Thermal drift of offset current	I_{OT}	mA	-0.5		0.5	@ -45℃~85℃
Residual current@I_P=0 after I_{PN}	I_{OM}	mA	-0.2		0.2	
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}	-0.3		0.3	Exclusive of I_{OE}
Response time@ 90% of I_{PN}	t_r	μs			1	
Frequency bandwidth (-3dB)	BW	kHz		100		

Figure 4 Maximum measurement resistance



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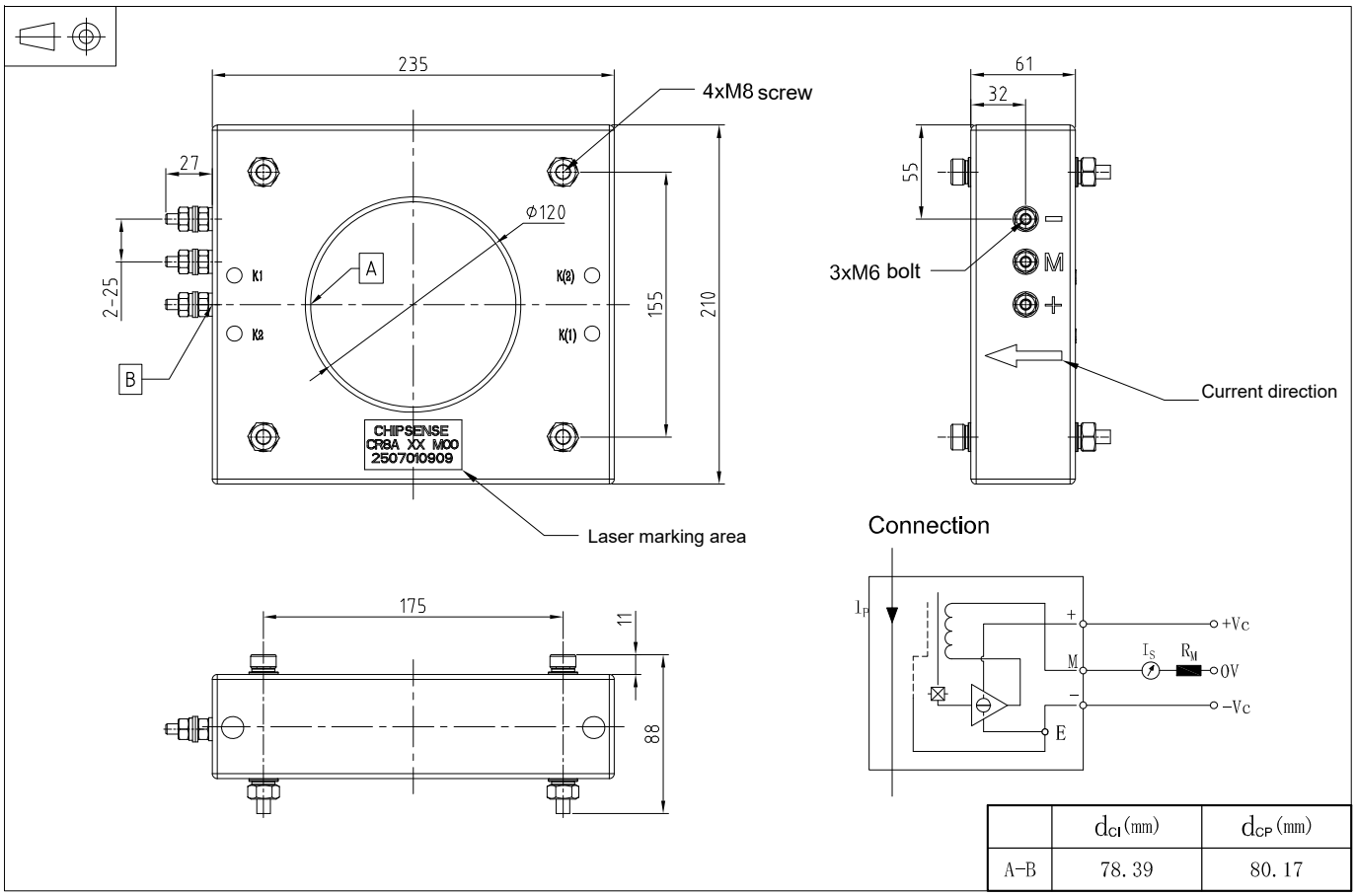
Dimensions（in mm. 1 mm = 0.0394 inch）



	d_{Cl} (mm)	d_{CP} (mm)
A–B	78.39	80.17

Mechanical characteristics

✧ General tolerance	±2 mm
✧ Output terminal socket	M6×27mm （×3）
✧ Fixed hole size	Φ8.2mm （×4）
Fastening bolts	M8 （×4）
Recommended fastening torque	5.5 N•m(±10%)
✧ Connection of secondary Transduce horizontal fastening	M6 （×3）
Fastening bolts	
Recommended fastening torque	0.75N•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 a single bar completely filling the primary hole.

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