

# Model CMR-25

# Magneto-Resistive

## Description

The CMR-25 current sensor builds on patented company technology to offer superior sensor performance and accuracy in current measuring applications. The current sensor utilizes an ASIC (Application Specific Integrated Circuit) and a magnetoresistive (MR) magnetic sensor to provide extremely low offset drift with temperature, resulting in stable, repeatable, accurate measurements. It operates from a +5V unipolar power and has an accessible internal 2.5V voltage reference. It can operate from either the internal or external voltage reference, enabling several sensors to be used without offset imbalance. Three primary pins enable the sensor to be configured for different measuring ranges and the current output signal allows different load resistors to be used depending on the application.

## Features

- Ultra low offset drift with temperature
- Unipolar Voltage Supply
- Superior global accuracy over temperature range
- Customer adjustable gain
- Customer accessible voltage reference
- Self calibrating
- Designed for auto assembly
- Current output

## Applications

- Servo drives
- Variable speed drives
- Frequency converters
- Power supply systems
- Over current protection
- Power metering
- Uninterruptible power supplies (UPS)



## Electrical Specifications

Nominal current (I<sub>N</sub>) .....  
Measuring range .....  
Measuring resistance (R<sub>m</sub>) .....  
    with + 5V at ± 25 Amp rms .....  
    at ± 40 Amp rms .....  
Nominal analog output current .....  
Turns ratio .....  
Overall accuracy at 25°C (3) .....  
Overall accuracy at -40°C to +85°C (3) .....  
Supply voltage (V<sub>dc</sub>) .....  
Internal reference voltage .....  
Galvanic Isolation .....

### CMR-25

_____	_____	_____	25 Amp rms	_____
_____	_____	_____	0 to ± 56 Amp <sup>(1)</sup>	_____
	<u>R. min.</u>		<u>R. max.</u>	
_____	_____	_____	0 ohms	_____
_____	_____	_____	0 ohms	_____
_____	_____	_____	12.5 mA rms	_____
_____	_____	_____	1-2-3:2000	_____
_____	_____	_____	± 0.24 % of I <sub>N</sub> max.	_____
_____	_____	_____	± 0.32 % of I <sub>N</sub> max.	_____
_____	_____	_____	+ 5 Vdc (± 5 %)	_____
_____	_____	_____	+ 2.5 Vdc (± 10 mV)	_____
_____	_____	_____	5.0 kV rms / 50 Hz / 1 minute)	_____

## Accuracy-Dynamic Performance

Zero current offset at 25°C .....  
Offset current temperature drift .....  
    between +10°C and +50°C .....  
    between -40°C and +85°C .....  
Linearity .....  
Response time @ 90% .....  
di/dt accurately followed .....  
Bandwidth (-1 dB) .....

_____	_____	_____	< ± 30 uA (= 0.24 % of 25A)	_____
_____	_____	_____	< ± 5 uA (= 0.04 % of 25A)	_____
_____	_____	_____	< ± 10 uA (= 0.08 % of 25A)	_____
_____	_____	_____	< ± 0.1 %	_____
_____	_____	_____	better than 200 ns	_____
_____	_____	_____	greater than 100 A/us	_____
_____	_____	_____	DC to 200 kHz	_____

## General Information

Operating temperature .....  
Storage temperature .....  
Current drain (plus output current) .....  
Secondary internal resistance .....  
Package .....  
Approvals .....  
Rated insulation voltage /insulation classification .....  
Environment .....  
Weight .....  
Mounting .....  
Output reference .....

_____	_____	_____	-40°C to + 85°C	_____
_____	_____	_____	-40°C to + 90°C	_____
_____	_____	_____	12 mA (+5V)	_____
_____	_____	_____	50 ohms (at 70°C)	_____
_____	_____	_____	Glass - filled Polyamide (UL94-V0)	_____
_____	_____	_____	EN 50082-2, EN 50081-2, UL, CE	_____
_____	_____	_____	400V / Reinforced	_____
_____	_____	_____	Polution degree 2, category III	_____
_____	_____	_____	20 grams	_____
_____	_____	_____	Designed to mount directly on PCB via thru hole connect pins	_____
_____	_____	_____	To obtain a positive output on the terminal marked "O/P", current must flow in the direction of the arrow (conventional flow)	_____

### Notes:

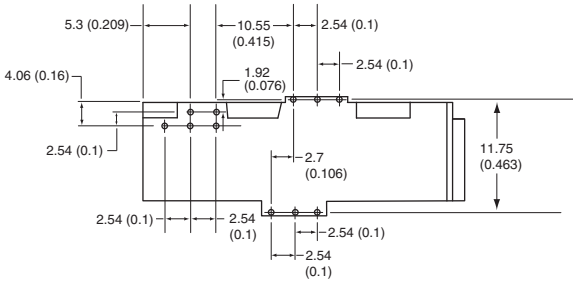
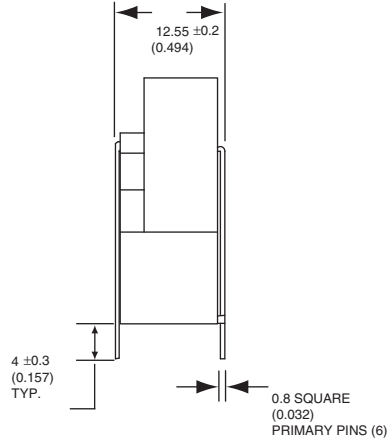
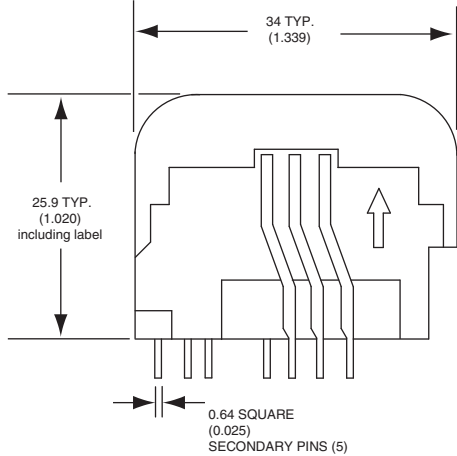
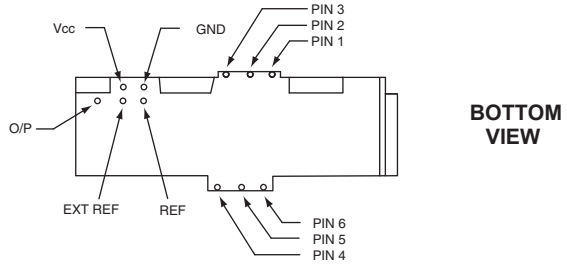
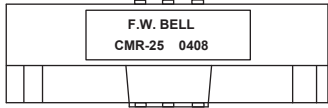
1. ac peak. Maximum dc or ac rms range is 40 amps.
2. Higher resistance (R<sub>m</sub>) values can be used with reduced measuring range.  
    Specified values conditional on 70°C ambient and no power supply tolerance.
3. Excludes the effects of tolerances of reference voltage and external load resistance.
4. Due to continuous process improvements, specifications are subject to change without notice.



## Mechanical Dimensions

All dimensions are in millimeters (inches)

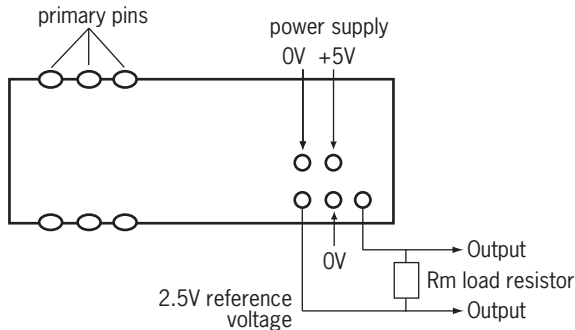
### Model CMR-25



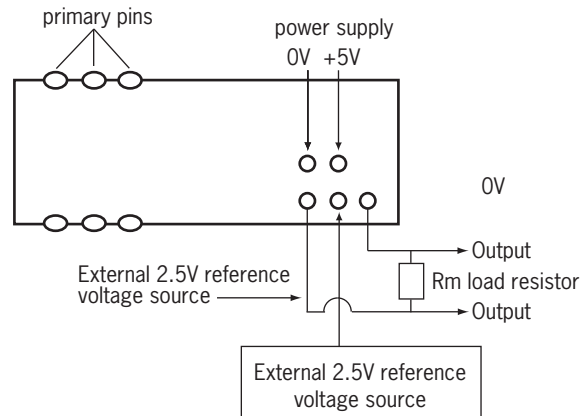
Primary Turns	Primary Current		Nominal Output (mA)	Primary Pin Connection
	Nom $I_{pn}$ (A)	Max $I_p$ (A)		
1	25	56	12.5	
2	12	27	12	
3	8	18	12	

## Electrical wiring diagram

### Internal voltage reference mode



### External voltage reference mode



### Notes:

1. For internal 2.5V reference mode 'Ext Ref' pin must be connected to ground.
2. For external 2.5V reference voltage mode, apply voltage in the range +1.0V to 3.0V to the 'Ext Ref' pin,
3. Housing material: Glass filled polyamide, fully encapsulated construction.
4. Due to continuous process improvement, specifications are subject to change without notice.