

August 2007

**ChipMaster  
Inductive Proximity Sensors**

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The new ChipMaster sensor from Eaton’s electrical business is an application-specific sensing solution designed to better tolerate metal chips near the sensor face. Where typical inductive proximity sensors immediately false trigger in such an environment, the ChipMaster has the ability to ignore chip build-up to a greater extent.

ChipMaster utilizes an embedded microprocessor-based sensing technology, which allows for greater “field loading” than standard inductive proximity sensors. This gives ChipMaster the unique ability to discriminate between metal chips and true targets within the sensing field.

The ChipMaster represents the best inductive sensing solution for metal cutting, stamping and forming machine applications and will perform more reliably than a typical inductive sensor in challenging applications where metal chips can cause false triggering.

Eliminate unreliable sensor operation and costly downtime with the ChipMaster, available in AC and DC, 18 mm and 30 mm diameters with high noise immunity.

**Approvals**

- C-UL Listed



Unless otherwise noted, the products contained in this document are not designed or intended for use in human safety applications.

**ChipMaster Tolerates Metal Chips Better**



**Product Features**

- Tolerates metal chips within sensing field better than standard inductive proximity sensors
- Auto-configure output allows for automatic NPN or PNP on DC sensors
- Rugged stainless steel housing with shock absorbent potting compound
- Resistant to extreme temperatures (-40°C) and high pressure washdown
- High electrical noise immunity of 20 V/m

**Typical Applications**

- Automotive
- Metal Machining

For Customer Service in the U.S. call **1-877-ETN CARE (386-2273)**,  
 in Canada call **1-800-268-3578**.  
 For Application Assistance in the U.S. and Canada  
 call **1-800-426-9184**.

## Model Selection — ChipMaster




	Operating Voltage	Sensing Range	Shielding	Connection Type	Catalog Number
<b>2-Wire Sensors</b>					
18 mm Diameter  Standard Range  Extended Range	20 – 132V AC	6 – 8 mm ①	Unshielded	3-pin Micro AC Connector	<b>E59-M18C118A01-A1C</b> ☺
				2-meter Cable	<b>E59-M18A118C02-A1C</b>
30 mm Diameter  Standard Range  Extended Range		6 – 8 mm ①	Shielded	3-pin Micro AC Connector	<b>E59-M30A115A01-A1C</b> ☺
				2-meter Cable	<b>E59-M30A115C02-A1C</b>
		12 – 15 mm ①	Unshielded	3-pin Micro AC Connector	<b>E59-M30C129A01-A1C</b> ☺
				2-meter Cable	<b>E59-M30C129C02-A1C</b>
<b>3-Wire Sensors</b>					
18 mm Diameter  Standard Range  Extended Range	6 – 48V DC (PNP and NPN)	6 – 8 mm ①	Unshielded	4-pin Micro DC Connector	<b>E59-M18C116D01-D1C</b> ☺
				2-meter Cable	<b>E59-M18C116C02-D1C</b>
30 mm Diameter  Standard Range  Extended Range		6 – 8 mm ①	Shielded	4-pin Micro DC Connector	<b>E59-M30A115D01-D1C</b> ☺
				2-meter Cable	<b>E59-M30A115C02-D1C</b>
		12 – 15 mm ①	Unshielded	4-pin Micro DC Connector	<b>E59-M30C129D01-D1C</b> ☺
				2-meter Cable	<b>E59-M30C129C02-D1C</b>

① Sensing range varies based upon degree of chip build-up on sensor face. Additional chips within the sensing field extend the sensing range outward. Ranges are based upon ferrous chips in the sensing field.


☺☺ See listing of compatible connector cables on **Page 3**.

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**Model Selection — Compatible Connector Cables** <sup>①</sup>

	Voltage Style	Number of Pins	Gauge	Length	Catalog Number			Pin Configuration/Wire Colors (Face View Female Shown)
					PVC Jacket	PUR Jacket	IRR PUR Jacket	
<b>Standard Cables — Micro Style</b>								
	AC	3-pin 3-wire	22 AWG	6.0 feet (2m)	CSAS3F3CY2202	CSAS3F3RY2202	—	 1-Green 2-Red/Black 3-Red/White
	DC	4-pin 4-wire	22 AWG	6.0 feet (2m)	CSDS4A4CY2202	CSDS4A4RY2202	CSDS4A4I02202	 1-Brown 2-White 3-Blue 4-Black

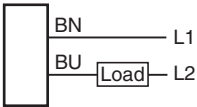
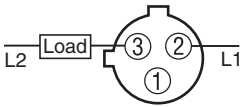
<sup>①</sup> For a full selection of connector cables, see **PG.05.05.T.E.**

 Stocked product, typical order quantities guaranteed in stock.

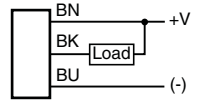
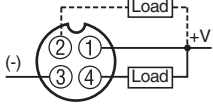
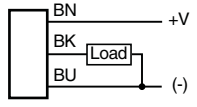
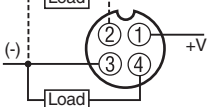
**Wiring Diagrams (Pin numbers are for reference, rely on pin location when wiring)**

Operating Voltage	Output	Cable Models	Connector Models (Face View Male Shown)
			Micro

**2-Wire Sensors**

20 – 132V AC	N.O.		
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**3-Wire Sensors**

6 – 48V DC	N.O. (NPN)		<sup>②</sup> 
	N.O. (PNP)		<sup>②</sup> 

<sup>②</sup> Note: Pin numbers 2 and 4 are internally jumpered together. Either pin may be used.

## Specifications — ChipMaster

Description	2-Wire Sensors	3-Wire Sensors
Input Voltage	20 – 132V AC	6 – 48V DC
Load Current	12 mm: 5 – 300mA, 200mA > 50°C	≤500 mA @ 6 – 30V DC; ≤300 mA @ 32 – 48V DC
Leakage Current	≤1.7 mA @ 0°C, 2.0 mA @ -40°C	≤150 μA
Voltage Drop	<5V AC	≤2.5V DC
Burden Current	—	≤15 mA
Protection	None	Auto Reset
Switching Hysteresis	< 15% Rated Sensing Distance	
Repeat Accuracy	Shielded models: < 1% Sensing Distance; Unshielded models: < 3% Sensing Distance	
Surge Capacity	3A/30 ms	—
Temperature Range	-40° to 158°F (-40° to 70°C)	
Material of Construction	303 Stainless steel; End bells: Polycarbonate; Face caps: Ryton <sup>®</sup> ; Cable: AWM Style 20387 (PVC) <sup>①</sup>	
Vibration and Shock	Vibration: 10 to 55 Hz, 1 mm Amplitude, IEC 60068-2-6; Shock: 30g, 11 mS per IEC 68-2-27	
Indicator LED	360° viewable LED	
Enclosure Ratings	NEMA 4, 4X, 6, 6P, 12 and 13 (IP67) <sup>②</sup>	

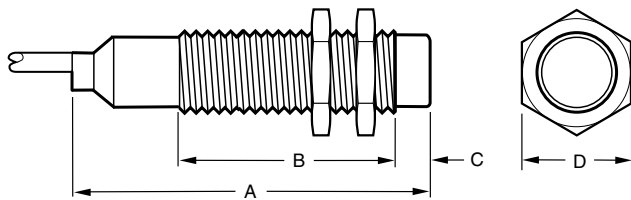
Response Time	2-Wire Sensors	3-Wire Sensors
High Noise Immunity Mode	10 Hz (>20 V/m)	10 Hz (>20 V/m)

<sup>①</sup> Ryton<sup>®</sup> is a registered trademark of Phillips Chemical (division of Phillips Petroleum).

<sup>②</sup> Our products conform to NEMA tests as indicated, however, some severe washdown applications can exceed these NEMA test specifications. For questions about a specific application, contact our applications department at 1-800-426-9184.

## Approximate Dimensions — ChipMaster in Inches (mm)

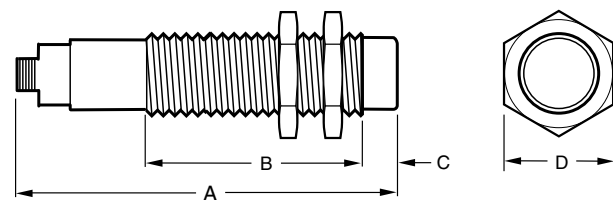
### Cable Models



### Cable Models

Size	Shielding	A	B	C	D
18 mm	Shielded	2.54 (64.5)	2.00 (50.9)	0.02 (0.5)	0.94 (24)
	Unshielded	2.54 (64.5)	1.47 (37.4)	0.55 (14)	0.94 (24)
30 mm	Shielded	2.74 (69.6)	2.13 (54.1)	0.03 (0.75)	1.41 (36)
	Unshielded	2.74 (69.6)	1.41 (35.8)	0.75 (19)	1.41 (36)

### Micro-Connector Models



### Micro-Connector Models

Size	Shielding	A	B	C	D
18 mm	Shielded	2.73 (69.3)	2.00 (50.9)	0.02 (0.5)	0.94 (24)
	Unshielded	2.73 (69.3)	1.47 (37.4)	0.55 (14)	0.94 (24)
30 mm	Shielded	2.92 (74.1)	2.13 (54.1)	0.03 (0.75)	1.41 (36)
	Unshielded	2.92 (74.1)	1.41 (35.8)	0.75 (19)	1.41 (36)