

### Description:

Namco's 9-way configurable proximity sensors are 100% solid-state switches featuring Weld Field Immunity and latching Short Circuit Protection. These sensors are totally self-contained and completely epoxy encapsulated.

The mechanical and electrical operating life of these sensors are largely determined by proper application and installation procedures. This publication will provide the necessary information to achieve these objectives. Please consult the factory should any questions remain after reading these instructions.

### Operating Recommendations:

- Always operate the sensor with a resistive load that will limit the current in the circuit to levels that are within the sensor's specifications. Frequent activation of the sensor's short circuit protection could be an indication that a problem exists between the sensor and the load.
- Devices such as motors and incandescent bulbs should not be directly controlled by a proximity sensor, as their high inrush current typically exceeds the maximum load current rating for the sensor.
- Some low voltage control systems may be incompatible with 2-wire AC/DC sensors due to voltage drop or leakage current limitations. Namco recommends careful inspection of the specifications of both the sensor and the system before attempting to install a 2-wire AC/DC sensor in a low-voltage application.
- Never install a sensor such that the target or actuator will make actual contact with the sensing face. Damage to the sensor's face can cause a malfunction or failure.
- Do not attempt to modify the sensor by cutting, grinding, filing, etc.
- All sensors are completely epoxy potted, and as such do not have any serviceable parts inside. Do not remove the cover or tamper with the cable or connector.
- The user should refer to NFPA 70B, RECOMMENDED PRACTICE FOR ELECTRICAL EQUIPMENT MAINTENANCE, published by the National Fire Protection Association, for additional information.
- After the cause of the short has been corrected, cycling power will return a latching SCP - type sensor to normal operation.
- The Short Circuit Protection feature is designed to protect the proximity sensor and not the external circuit.
- Use of a Short Circuit Protected sensor does not eliminate the need for branch circuit fusing.
- Safety first - remove power before correcting short circuit condition.

### WARNING:

A SWITCH IN A PROTECTIVE INTERLOCKING CIRCUIT SHOULD BE USED WITH AT LEAST ONE OTHER DEVICE THAT WILL PROVIDE A REDUNDANT PROTECTIVE FUNCTION, AND THE CIRCUIT SHOULD BE SO ARRANGED THAT EITHER DEVICE WILL INTERRUPT THE INTENDED OPERATION OF THE CONTROLLED EQUIPMENT. (PROPOSED NEMA ICS 2-225.95 St'd.)

SERVICING ENERGIZED INDUSTRIAL CONTROL EQUIPMENT CAN BE HAZARDOUS. SEVERE INJURY OR DEATH CAN RESULT FROM ELECTRICAL SHOCK, BURN OR UNINTENDED ACTUATION OF CONTROLLED EQUIPMENT.

RECOMMENDED PRACTICE IS TO DISCONNECT AND LOCK OUT CONTROL EQUIPMENT FROM POWER SOURCES, AND DISCHARGE STORED ENERGY IN CAPACITORS, IF PRESENT. IF IT IS NECESSARY TO WORK IN THE VICINITY OF ENERGIZED EQUIPMENT, ONLY QUALIFIED PERSONNEL SHOULD BE PERMITTED TO PERFORM SUCH WORK, USING ALL APPLICABLE SAFETY PRACTICES AND PROTECTIVE EQUIPMENT.

### Specifications

	2-Wire	3-Wire
Voltage	20-150 VAC/DC	10-30 VDC
Output Circuit	2-wire	Sourcing
Leakage Current	1.7 mA	<10 $\mu$ A
Current Consumption	n/a	11 mA
Mis-wiring Protected	Yes*	Yes**
Response Time	30 ms	30 ms
Load Current	200 mA	200 mA
Voltage Drop	10 V	2.5 V
Short Circuit Protected	3 to 3.5 A	275 mA (standard)

\* Namco 2-wire AC DC sensors are bipolar by design — they cannot be mis-wired.

\*\* Namco 3-wire DC sensors incorporate reverse polarity protection.

### LED Functions

	2-Wire		3-Wire	
	Red	Green	Green	Yellow
Power Off	Off	Off	Off	Off
Power On Load De-energized	On	Off	On	Off
Power On Load Energized	Off	On	On	On
SCP Mode Activated	Flashing		Flashing	

### Short Circuit Protection (SCP):

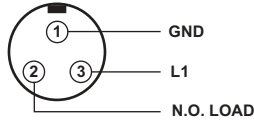
If the sensor is shorted, the sensor's Short Circuit Protection (SCP) will be activated. When this occurs on latching SCP models, both LED's will flash and the sensor will limit current flow to about 2.0mA. This state will be maintained until the short is cleared and power is recycled.

### Sensing Range

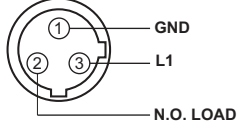
- 2" x 2" x .030" standard target size (1008 C.R.S.)
- $\pm$ 10% nominal stated sensing range to standard target material.

**Wiring Diagrams**

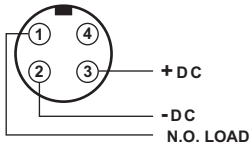
**Mini Connector  
(2-wire AC/DC N.O.)**



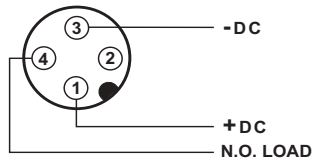
**Micro Connector  
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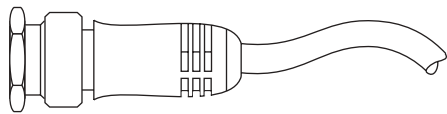


**Euro Connector  
(3-wire DC N.O.)**



**Cable Cautions**

- Cable should never be in tension
- Always dress cable for sufficient slack



**Mounting and Reconfiguration**

**Mounting the HammerHead™ Sensor:**

The HammerHead Sensor's mounting bracket provides two sets of mounting holes for easy retrofit of traditional rectangular sensors using the lower pair of holes (figure 1), or retrofit of limit switch -style sensors using the upper pair (figure 2). The mounting holes are designed to accept standard #10 socket head cap screws.



Figure 1



Figure 2

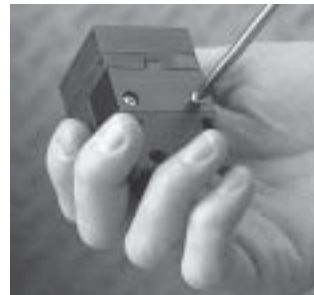


Figure 4

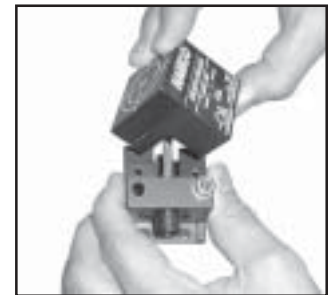


Figure 5

If the lower mounting bolt pattern is used, a ¼ - 20 cap screw is provided to clamp the sensor body into the bracket. If the upper (limit switch) bolt pattern is used to mount the product, the right-hand mounting bolt provides a dual function of clamping and mounting the sensor, and the ¼ - 20 cap screw is not needed.

The connector shell assembly is designed to rotate to allow for convenient cordset routing, particularly when used with 90-degree cordsets. This rotating feature is clamped in place using either the ¼ - 20 cap screw or a mounting bolt in the upper right position.

**Reconfiguring the HammerHead™ Sensor:**

The HammerHead™ Sensor is easily field-configurable to locate its sensing face in any of nine different positions.

While in the top-sense position, the rotating feature of the mounting bracket allows convenient positioning of the LED indicators with respect to the mounting surface.

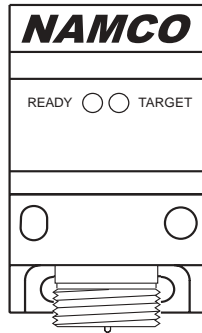
In the side-sense configuration, the sensor can be rotated and locked into the mounting bracket in eight different 45-degree positions (see figure 3.)



Figure 3

Re-configuring the sensor between the top-sense and side-sense positions is accomplished by loosening two captive Phillips-head screws on the back of the sensor body ( figure 4) and separating the upper and lower housings enough to position the sensing face into the desired location (figure 5). The upper and lower housings can be re-joined by tightening the two screws.





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### Specifications

	2-Wire AC/DC	3-Wire DC
Operating Voltage	20-150 VAC/DC	10-30 VDC
Output Circuit	2-Wire	PNP (Sourcing)
Load Current	200mA	200mA
Leakage Current		< 10µA
No Load Current	<1.7 ma @ 110VAC	< 6mA @ 24 VDC
LED Indicators	RED = POWER GREEN = TARGET	GREEN = POWER AMBER = TARGET
Voltage Drop	<10V @ 200ma	<1.5V @ 200mA
Switching Speed	10 Hz	150 Hz
Range Accuracy	±10%	
Temperature Range	-25°C to +70°C	
Temperature Drift	±15% max.	
Hysteresis	3% - 8% typical, 15% max.	
Enclosure Type	IP67	
Mis-Wire Protected	YES	
Short-Circuit Protected	YES	
Weld Field Immune	YES	

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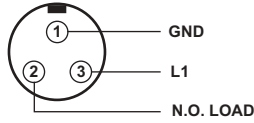
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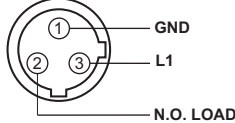
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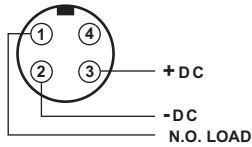
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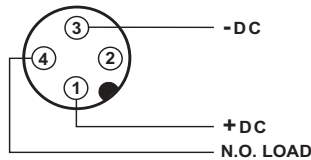
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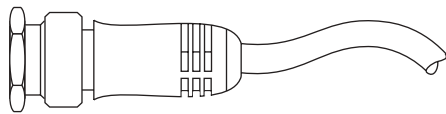


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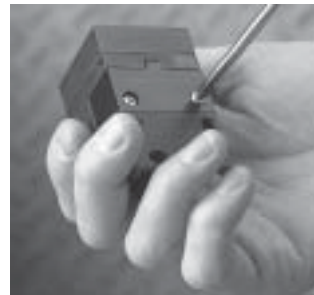


Figure 4

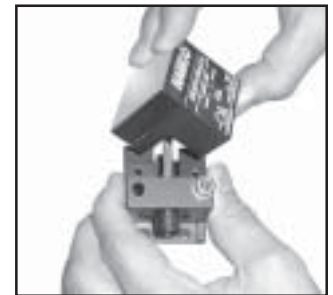


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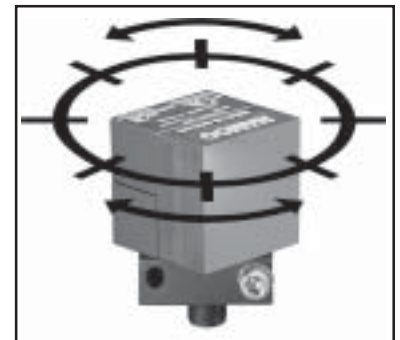


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