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All specifications subject to change without notice or obligation



Cylindrical Sensors

CYLINDRICAL INDUCTIVE PROXIMITY SENSORS

Altech Cylindrical sensors are available in diameters ranging from 4mm (.16 in.) to 30mm (1.18 in.) with sensing distances up to 40mm (1.57 in.). Most models feature nickel plated brass (BN) housing, but stainless steel (SS) and non-metallic versions are available. Both flush mount and non-flush mount sensors are available. Flush mount versions are often called shielded or embeddable. Non-flush mount sensors are also called non-shielded or non-embeddable. Non-flush sensors have larger sensing distances than their flush mount counterparts. All Inductive sensors meet IP67 (NEMA1, 3, 4, 6, 12, 13) protection levels. Please refer to pages 132-133 of this catalog for more information.

FLUSH MOUNT CYLINDRICAL SENSORS

Flush Mounted, sometimes called embedded or shielded sensors, have electromagnetic fields concentrated directly in front of the sensing heads and may be mounted directly into metal mounting brackets or embedded directly into metal without causing a false output. **Figure 8** also illustrates that on Cylindrical Flush Mount sensors there should be at least 1 diameter of distance between adjacent sensors, and no non-target metal surfaces should be less than 3 times the sensing distance S_n directly across from the sensing head. Also, two directly opposite sensors mounted in metal should be greater than 6 times the sensing distance apart.

Sensing Distances – AC, DC, Cylindrical Style Sensors

| Type | Voltage | Flush* | Non-Flush* |
|----------------------------|---------|-----------|------------|
| L Series - Short Body | DC | 1.5 - 10 | 2 - 15 |
| GL Series - 2 LED | DC | 2 - 10 | 4 - 15 |
| Standard Series | AC, DC | 1.5 - 10 | 2 - 15 |
| Extended Sensing Range | DC | 2 - 15 | 3 |
| High Speed | DC | 2 | |
| Plastic & Metal Housing | AC, DC | 2 - 10 | 4 - 15 |
| Mini Housing | DC | 0.8 - 1.5 | |
| Complementary Output | DC | 2 - 10 | 4 - 15 |
| Extended Temperature Range | DC | 2 - 10 | 4 - 15 |
| Weld Immune | AC, DC | 2 - 10 | 4 - 15 |
| Analog Output | DC | 0.5 - 4 | 7 - 14 |
| Extended Range Plus | DC | 3 - 22 | 6 - 40 |
| 2-Wire | DC | 2 - 10 | 4 - 15 |
| Namur | DC | 2 - 10 | 4 - 15 |

*All Sensing Distances in mm.

Operating Voltages – AC, DC Cylindrical Style

| | | | |
|----|-------------|-------------|------------|
| AC | 90 - 250VAC | 20 - 250VAC | |
| DC | 18 - 30VDC | 10 - 30VDC | 10 - 60VDC |

Operating Current– AC, DC Cylindrical Style

| | | | | |
|----|--------|--------|-------|--------|
| AC | 180 mA | 500 mA | | |
| DC | 5 mA | 120 mA | 200mA | 400 mA |

Sensor Wiring Systems – AC, DC Cylindrical Style

| | | | |
|----|--------|--------|--------|
| AC | 2-Wire | | |
| DC | 2-Wire | 3-Wire | 4-Wire |

NON-FLUSH CYLINDRICAL SENSORS

Sometimes called non-embedded or non-shielded, non-flush sensors have electromagnetic fields with a wide sensing angle and are unshielded (no metal surrounding the sensing head). Care must be taken to insure that no non-target metal comes in near proximity to the sensing head. Distances are demonstrated in **Figure 8**. Adjacent sensors should be separated by at least 2 times the diameter. Non-target metal should be at least 3 times the sensing distance directly across from the sensing head. Two directly opposite sensors should be at least 6 times the sensing distance apart.

OUTPUT CONNECTIONS

AC,DC – Normally Open (NO),
and Normally Closed (NC).
DC Namur – Special interface
Circuits required.
DC Analog – Analog Output 1 to 9V.

OUTPUT CABLES

Cylindrical Sensors are provided with 2 meter PVC fixed cables. 5 meter PVC, 2 and 5 meter PUR cables are optional and specified by selection of the last two digits of the part number. See chart below.

| Cable Length & Material | Part No. Last Digits |
|----------------------------|-------------------------|
| 2m PVC | 00 |
| 5m PVC | 02 |
| 2m PUR | 10 |
| 5m PUR | 12 |

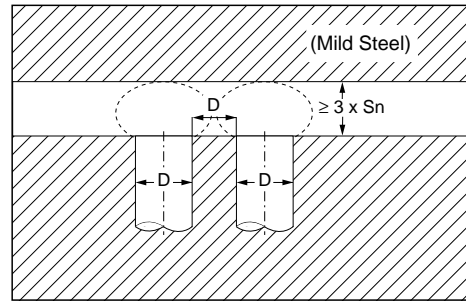
QUICK DISCONNECT CONNECTORS

Pulsostronic sensors are available in a wide selection of Quick Disconnect styles for DC and AC circuits. While virtually any sensor can be custom manufactured with a Quick Disconnect connector, Altech offers one of the largest selection of standard Quick Disconnect models.

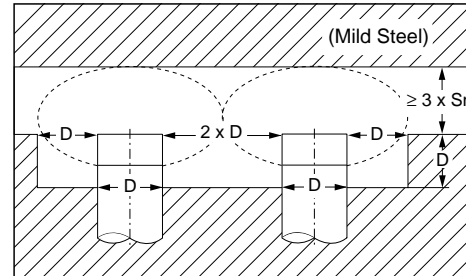
Fig. 8

CYLINDRICAL SENSOR INSTALLATION

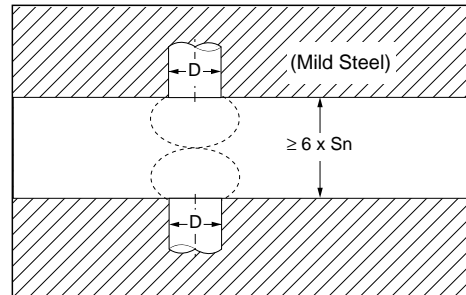
Flush Mount Installation



Non-Flush Mount Installation



Opposing Installation



Quick Disconnect models are designed to be user-friendly and to simplify installations.

Please see the product specification for sensors with quick disconnect connectors and matching cable assemblies on pages 116 to 121 in the accessory section.

HOUSING MATERIALS

AC – Nickel Plated Brass
Trogamid T
Teflon Plated Brass
DC – Nickel Plated Brass
Trogamid T
Teflon Plated Brass
Stainless Steel



DC CYLINDRICAL SENSORS – SELECTION GUIDE

| Series | Size (mm) | Sensing Distance mm (in.) | | | | | | | | | | | | | |
|---|------------|---------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|--|
| | | 0.8mm (.03 in.) | 1.0mm (.04 in.) | 1.5mm (.06 in.) | 2.0mm (.08 in.) | 2.5mm (.10 in.) | 3.0mm (.12 in.) | 4.0mm (.16 in.) | 5.0mm (.20 in.) | 6.0mm (.23 in.) | 7.0mm (.28 in.) | 8.0mm (.32 in.) | 10.0mm (.40 in.) | 12.0mm (.47 in.) | |
| L Series 18-30V DC, 120mA • Short Body • Economically priced | M8 | | | • | • | | | | | | | | | | |
| | M12 | | | | • | | | • | | | | | | | |
| | M18 | | | | | | | | • | | | • | | | |
| | M30 | | | | | | | | | | | | • | | |
| GL Series 10-60V DC, 400mA • 2 LED's • NO & NC models | M12 | | | | • | | | • | | | | | | | |
| | M18 | | | | | | | | • | | | • | | | |
| | M30 | | | | | | | | | | | | • | | |
| Standard Series 10-30V DC, 200mA • Most quick disconnects • Industry standard • NO & NC models | M8 | | | • | • | | | | | | | | | | |
| | M12 | | | | • | | | • | | | | | | | |
| | M18 | | | | | | | | • | | | • | | | |
| | M30 | | | | | | | | | | | | • | | |
| Extended Sensing 10-30V DC, 200mA • Up to 2x improvement over Standard | M8 | | | | • | | • | | | | | | | | |
| | M12 | | | | | | | • | | | | | | | |
| | M18 | | | | | | | | | | | • | | | |
| | M30 | | | | | | | | | | | | • | | |
| Metal & Plastic 10-30V DC, 400mA • Extended Length • Higher Current Output | M12 | | | | • | | | • | | | | | | | |
| | M18 | | | | | | | | • | | | • | | | |
| | M30 | | | | | | | | | | | | • | | |
| Mini Housing 10-30V DC, 200mA • 4, 5, 6.5mm diameter • Includes LED | 4mm Dia. | • | | | | | | | | | | | | | |
| | M5 | • | | | | | | | | | | | | | |
| | 6.5mm Dia. | | | • | | | • | | | | | | | | |
| Complementary Switching Output 10-30V DC, 200mA • NO & NC Outputs | M12 | | | | • | | | • | | | | | | | |
| | M18 | | | | | | | | • | | | • | | | |
| | M30 | | | | | | | | | | | | • | | |
| High Speed 10-30V DC, 200mA • 4,000 Hz Switching Frequency | M12 | | | | • | | | | | | | | | | |
| | | | | | | | | | | | | | | | |
| Extended Temperature 10-30V DC, 200mA • -40°C to 100°C | M12 | | | | • | | | • | | | | | | | |
| | M18 | | | | | | | | | | • | • | | | |

| | | | | | | Mounting | | Output Configuration | | | | Connection | | | | No. of Wires | Housing Material | | No. of LED'S | Page | |
|------------------|------------------|------------------|------------------|------------------|-------|-----------|-----|----------------------|----|----|---------------------|------------------|----|----|----|--------------|--------------------------------|--------------|--------------|------|-------|
| 14.0mm (.55 in.) | 15.0mm (.59 in.) | 20.0mm (.78 in.) | 22.0mm (.86 in.) | 40.0mm (1.5 in.) | Flush | Non-Flush | NPN | PNP | NO | NC | Cable 2m (6ft.6in.) | Quick Disconnect | | | | | Metal (BN) Brass Nickel Plated | Non-Metallic | | | |
| | | | | | | | | | | | | 62 | 63 | 64 | 65 | | | | | | |
| | | | | | | • | • | • | • | • | | • | | | • | • | 3 | • | | 1 | 16 |
| | | | | | | • | • | • | • | • | | • | | | • | • | 3 | • | | 1 | 17 |
| | | | | | | • | • | • | • | • | | • | | | • | • | 3 | • | | 1 | 18 |
| | | • | | | | • | • | • | • | • | | • | | | • | • | 3 | • | | 1 | 19 |
| | | | | | | • | • | • | • | • | • | • | | | • | • | 3 | • | | 2 | 20 |
| | | | | | | • | • | • | • | • | • | • | | | • | • | 3 | • | | 2 | 21 |
| | | • | | | | • | • | • | • | • | • | • | | | • | • | 3 | • | | 2 | 22 |
| | | | | | | • | • | • | • | • | • | • | | • | • | • | 3 | • | | 1 | 24 |
| | | | | | | • | • | • | • | • | • | • | | • | • | • | 3 | • | | 1 | 25 |
| | | | | | | • | • | • | • | • | • | • | | • | • | • | 3 | • | | 1 | 26 |
| | | • | | | | • | • | • | • | • | • | • | | • | • | • | 3 | • | | 1 | 27 |
| | | | | | | • | • | | • | • | | • | | | • | • | 3 | • | | 1 | 28 |
| | | | | | | • | | | • | • | | • | | | • | • | 3 | • | | 1 | 29 |
| | | | | | | • | | | • | • | | • | | | • | • | 3 | • | | 1 | 29 |
| | | • | | | | • | | | • | • | | • | | | • | • | 3 | • | | 1 | 30 |
| | | | | | | • | • | • | • | • | | • | | | | | 3 | • | • | 1 | 32 |
| | | | | | | • | • | • | • | • | | • | | | | | 3 | • | • | 1 | 32/33 |
| | | • | | | | • | • | • | • | • | | • | | | | | 3 | • | • | 1 | 33 |
| | | | | | | • | | • | • | • | | • | | | • | | 3 | • | | 1 | 34 |
| | | | | | | • | | • | • | • | | • | | | • | | 3 | • | | 1 | 34 |
| | | | | | | • | • | | • | • | | • | | | • | | 3 | • (ss) | | 1 | 35 |
| | | | | | | | | | • | • | • | • | | | • | | 4 | • | | 1 | 36 |
| | | | | | | | | | • | • | • | • | | | • | | 4 | • | | 1 | 37 |
| | | • | | | | | | | • | • | • | • | | | • | | 4 | • | | 1 | |
| | | | | | | • | | | • | • | | • | | | • | | 3 | • | | 1 | 31 |
| | | | | | | • | • | | • | • | | • | | | • | | 3 | • | | 1 | 38 |
| | | | | | | • | • | | • | • | | • | | | • | | 3 | • | | 1 | 39 |

Continued on Page 14/15

DC CYLINDRICAL SENSORS – SELECTION GUIDE (Cont.)

| Series | Size (mm) | Sensing Distance mm (in.) | | | | | | | | | | | | | | |
|---|-----------|---------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|------------------|------------------|---|--|
| | | 0.8mm (.03 in.) | 1.0mm (.04 in.) | 1.5mm (.06 in.) | 2.0mm (.08 in.) | 2.5mm (.10 in.) | 3.0mm (.12 in.) | 4.0mm (.16 in.) | 5.0mm (.20 in.) | 6.0mm (.23 in.) | 7.0mm (.28 in.) | 8.0mm (.32 in.) | 10.0mm (.40 in.) | 12.0mm (.47 in.) | | |
| Weld-Immune 10-30V DC, 200mA • Resistant to Electro-magnetic Interference • Teflon Plated | M12 | | | | • | | | • | | | | | | | | |
| | M18 | | | | | | | | • | | | • | | | | |
| | M30 | | | | | | | | | | | | • | | | |
| 2-Wire 5-30V DC, 100mA 10-55V DC, 200mA • Reduce Wiring • Lower Cost | M12 | | | | • | | | • | | | | | | | | |
| | M18 | | | | | | | | • | | | • | | | | |
| | M30 | | | | | | | | | | | | • | | | |
| Extended Range Plus 10-30V DC, 200mA • Up to 3 times improvement over Standard | M8 | | | | | | | • | | | • | | | | | |
| | M12 | | | | | | | | | | • | | • | | | |
| | M18 | | | | | | | | | | | | | | • | |
| | M30 | | | | | | | | | | | | | | | |
| Namur Requires External Amplifier • Low Energy Device • Operates in Hazardous Areas | M8 | | • | | • | | | | | | | | | | | |
| | M12 | | | | • | | | | • | | | | | | | |
| | M18 | | | | | | | | | • | | | • | | | |
| | M30 | | | | | | | | | | | | | • | | |
| Analog 18-30V DC, 5mA • 1-9V Linear Output • Detects Target Distance | M12 | | | | | • | | | | | | | | | | |
| | M18 | | | | | | | | • | | | | | | | |
| | M30 | | | | | | | | | | | | | | | |

AC CYLINDRICAL SENSORS – SELECTION GUIDE

| Series | Size | Sensing Distance (mm/in.) | | | | | | | | | | | Mounting | | Output Configuration | |
|---|------|---------------------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|----------------|------------------|------------------|----------|-----------|----------------------|----|
| | | 0.8mm (.03 in.) | 1.5mm (.06 in.) | 2.0mm (.08 in.) | 2.5mm (.10 in.) | 4.0mm (.16 in.) | 5.0mm (.20 in.) | 7.0mm (.28 in.) | 8.0mm (.32 in.) | 10mm (.40 in.) | 14.0mm (.55 in.) | 15.0mm (.59 in.) | Flush | Non-Flush | NO | NC |
| Standard Series 90-250V AC, 180 mA • Large Selection of Quick Disconnects • NO or NC Outputs | M12 | | | • | | • | | | | | | | • | • | • | • |
| | M18 | | | | | | | • | | • | | | • | • | • | • |
| | M30 | | | | | | | | | • | | • | • | • | • | • |
| Extended Voltage, Metal 20-250V AC, 500 mA • High Current Output • NO or NC Outputs | M12 | | | • | | • | | | | | | | • | • | • | • |
| | M18 | | | | | | | • | | • | | | • | • | • | • |
| | M30 | | | | | | | | | • | | • | • | • | • | • |
| Extended Voltage, Plastic 20-250V AC, 500 mA • High Current Output • NO or NC Outputs | M12 | | | • | | • | | | | | | | • | • | • | • |
| | M18 | | | | | | | • | | • | | | • | • | • | • |
| | M30 | | | | | | | | | • | | • | • | • | • | • |
| Weld Immune 20-250V AC, 300/ 500 mA • Resistance to Electro - magnetic interference • Teflon Plated | M12 | | | • | | • | | | | | | | • | • | • | • |
| | M18 | | | | | | | • | | • | | | • | • | • | • |
| | M30 | | | | | | | | | • | | • | • | • | • | • |

| | | | | | | Mounting | | Output Configuration | | | | Connection | | | | | No. of Wires | Housing Material | | No. of LED'S | Page |
|------------------|------------------|------------------|------------------|------------------|-------|-----------|-----|----------------------|----|----|---------------------|------------------|----|----|----|--------------------------------|--------------|------------------|---|--------------|------|
| 14.0mm (.55 in.) | 15.0mm (.59 in.) | 20.0mm (.78 in.) | 22.0mm (.86 in.) | 40.0mm (1.5 in.) | Flush | Non-Flush | NPN | PNP | NO | NC | Cable 2m (6ft.6in.) | Quick Disconnect | | | | Metal (BN) Brass Nickel Plated | | Non-Metallic | | | |
| | | | | | | | | | | | | 62 | 63 | 64 | 65 | | | | | | |
| | | | | | • | • | | • | • | | • | | | | • | 3 | • | | 1 | 40 | |
| | | | | | • | • | | • | • | | • | | | | • | 3 | • | | 1 | 41 | |
| | | • | | | • | • | | • | • | | • | | | | • | 3 | • | | 1 | 42 | |
| | | | | | • | • | | | • | | • | | | | • | 2 | • | | 1 | 54 | |
| | | | | | • | • | | | • | | • | | | | • | 2 | • | | 1 | 54 | |
| | | • | | | • | • | | | • | | • | | | | • | 2 | • | | 1 | 55 | |
| | | | | | • | • | | • | • | | • | | | • | • | 3 | • | | 1 | 46 | |
| | | | | | • | • | | • | • | | • | | | | • | 3 | • | | 1 | 47 | |
| | | | • | | • | • | | • | • | | • | | | | • | 3 | • | | 1 | 48 | |
| | | | | • | • | • | | • | • | | • | | | | • | 3 | • | | 1 | 49 | |
| | | | | | • | • | | | | | • | | | | • | 2 | • | | 0 | 50 | |
| | | | | | • | • | | | | | • | | | | • | 2 | • | | 0 | 51 | |
| | | | | | • | • | | | | | • | | | | • | 2 | • | | 0 | 52 | |
| | | • | | | • | • | | | | | • | | | | • | 2 | • | | 0 | 53 | |
| | | | | | • | | | | | | • | | | | • | 3 | • | | 0 | 44 | |
| | | | | | • | | | | | | • | | | | • | 3 | • | | 0 | 44 | |
| | • | | | | | • | | | | | • | | | | • | 3 | • | | 0 | 45 | |





| | Connection | | | | | No. of Wires ⁽¹⁾ | Housing Material | | No. of LED'S | Page |
|--|------------|----|----|----|----|-----------------------------|------------------|---------|--------------|-------|
| | Cable | 62 | 66 | 67 | 68 | | Metal (BN) | Plastic | | |
| | • | • | • | • | • | 2 | • | | 1 | 56 |
| | • | • | • | • | • | 2 | • | | 1 | 57 |
| | • | • | • | • | • | 2 | • | | 1 | 58/59 |
| | • | | | | • | 2 | • | | 1 | 60 |
| | • | | | | • | 2 | • | | 1 | 61 |
| | • | | | | • | 2 | • | | 1 | 62/63 |
| | • | | | | | 2 | | • | 1 | 60 |
| | • | | | | | 2 | | • | 1 | 61 |
| | • | | | | | 2 | | • | 1 | 62/63 |
| | • | | | | • | 2 | • | | 1 | 64 |
| | • | | | | • | 2 | • | | 1 | 65 |
| | • | | | | • | 2 | • | | 1 | 66 |

(1) All metal sensors have a 3rd wire for optional system ground.

DC - 3 WIRE – L SERIES
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
M8 – 10-30V DC, 200mA
M12-M30 – 18-30V DC, 120mA
1 LED for Output Energized

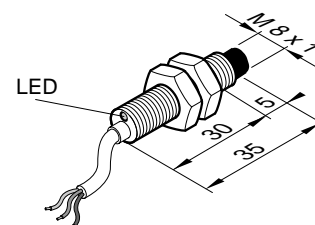
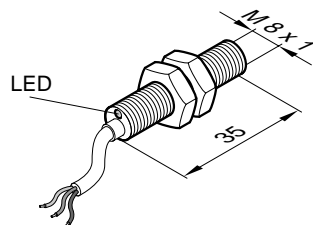
- **Short Body Sensors**
- **Economically priced**
- **Connector options**
- **Carries CE mark**

- IEC (529)IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| Sensing Distance | M8 Flush Mount 1.5mm (.06 in.) | | | M8 Non-Flush Mount 2mm (.08 in.) | | | |
|----------------------------|---|------------------|------------------|-------------------------------------|------------------|------------------|------------------|
| | Cable or Connector Style Cat. No. | Cable | 64 | 65 | Cable | 64 | 65 |
| PNP | Normally Open  | 9981-2000 | 9981-2064 | 9981-2065 | 9981-2200 | 9981-2264 | 9981-2265 |
| | Normally Closed  | | | | | | |
| NPN | Normally Open  | 9981-2100 | 9981-2164 | 9981-2165 | 9981-2300 | 9981-2364 | 9981-2365 |
| | Normally Closed  | | | | | | |
| Ripple Voltage | | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Voltage Range | | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V |
| Supply Current | | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA |
| Max. Load Current | | 200 mA | 200 mA | 200 mA | 200 mA | 200 mA | 200 mA |
| Voltage Drop Across Sensor | | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| Max. Leakage Current | | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| Switching Frequency | | 2000Hz | 2000Hz | 2000Hz | 2000Hz | 2000Hz | 2000Hz |
| Hysteresis | | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | | .15mm (.006 in.) | .15mm (.006 in.) | .15mm (.006 in.) | .20mm (.008 in.) | .20mm (.008 in.) | .20mm (.008 in.) |
| Front Cap Material | | PBTP | PBTP | PBTP | PBTP | PBTP | PBTP |

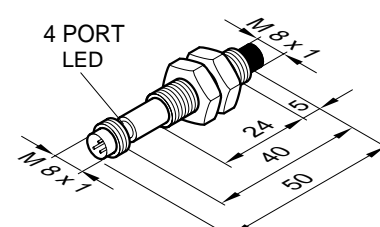
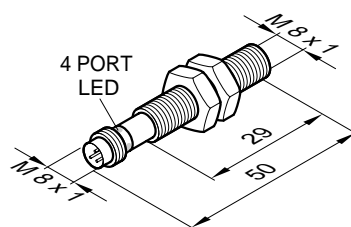
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Non-metallic locknuts for M8 and Brass, Nickel Plated (BN) locknuts for M12 through M30.



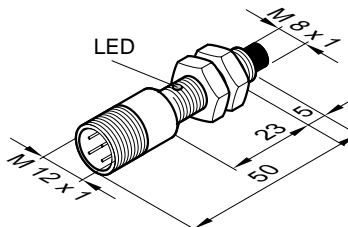
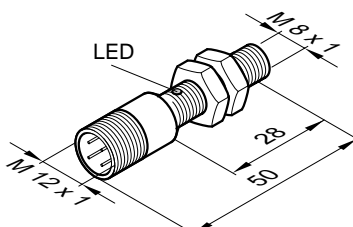
64 Style Connector

3-pin, Pico style, 8mm (.31 in.) supplied with non-metallic locknuts for M8 and Brass, Nickel Plated (BN) locknuts for M12 through M30.



65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with non-metallic locknuts for M8 and Brass, Nickel Plated (BN) locknuts for M12 through M30.



Metric/in. Conversion Table

| | |
|--------------------|--------------------|
| 1.0 mm = .04 in. | 30.0 mm = 1.18 in. |
| 5.0 mm = .20 in. | 34.0 mm = 1.34 in. |
| 6.0 mm = .23 in. | 35.0 mm = 1.37 in. |
| 8.0 mm = .31 in. | 39.0 mm = 1.53 in. |
| 12.0 mm = .47 in. | 40.0 mm = 1.57 in. |
| 23.0 mm = .91 in. | 50.0 mm = 1.96 in. |
| 24.0 mm = .94 in. | |
| 28.0 mm = 1.10 in. | |
| 29.0 mm = 1.14 in. | |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

| | | |
|--------------|-----------|-----------------------------|
| 64 Connector | 8000-5220 | PVC, Straight |
| 64 Connector | 8000-5230 | PVC, Right Angle, 2LED, PNP |
| 64 Connector | 8000-5240 | PVC, Right Angle, 2LED, NPN |
| 65 Connector | 8000-5110 | PVC, Straight |
| 65 Connector | 8000-5120 | PVC, Right Angle |
| 65 Connector | 8000-5150 | PVC, Right Angle, 2LED, NPN |
| 65 Connector | 8000-5160 | PVC, Right Angle, 2LED, PNP |

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

Mounting Brackets – see Page 114-115

M12 Flush Mount

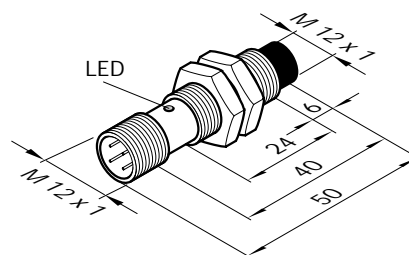
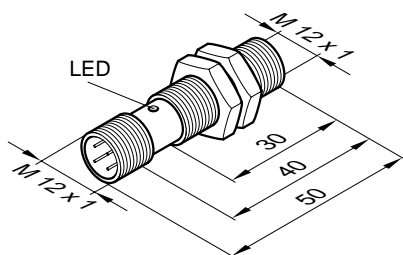
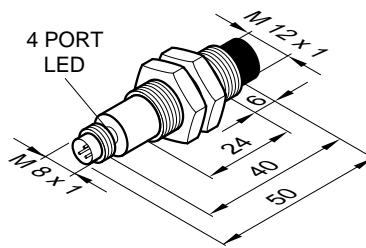
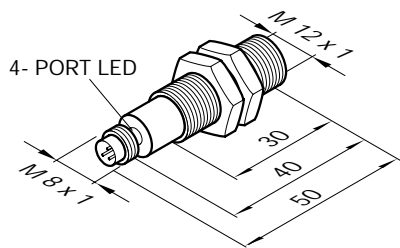
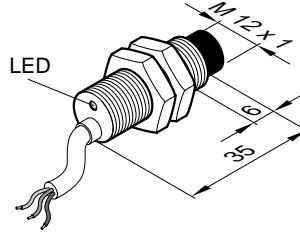
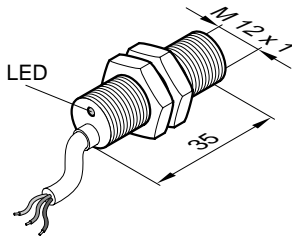
2mm (.08 in.)

M12 Non-Flush Mount

4mm (.16 in.)

| Cable | 64 | 65 | Cable | 64 | 65 |
|------------------|------------------|------------------|------------------|------------------|------------------|
| 9982-2000 | 9982-2064 | 9982-2065 | 9982-2200 | 9982-2264 | 9982-2265 |
| 9982-2100 | 9982-2164 | 9982-2165 | 9982-2300 | 9982-2364 | 9982-2365 |
| ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| 18V - 30V | 18V - 30V | 18V - 30V | 18V - 30V | 18V - 30V | 18V - 30V |
| ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA |
| 120 mA | 120 mA | 120 mA | 120 mA | 120 mA | 120 mA |
| ≤1.5V | ≤1.5V | ≤1.5V | ≤1.5V | ≤1.5V | ≤1.5V |
| ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| 2000Hz | 2000Hz | 2000Hz | 1000Hz | 1000Hz | 1000Hz |
| ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| .20mm (.008 in.) | .20mm (.008 in.) | .20mm (.008 in.) | .40mm (.016 in.) | .40mm (.016 in.) | .40mm (.016 in.) |
| PBTP | PBTP | PBTP | PBTP | PBTP | PBTP |

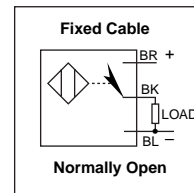
Note: Sensor dimensions in mm.



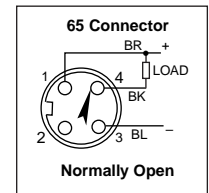
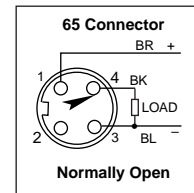
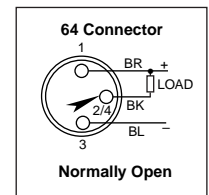
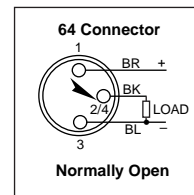
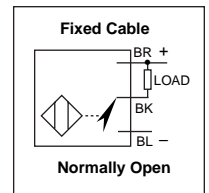
Wiring Diagrams

Note: Wire colors are applicable on cables purchased from Altech.

PNP





NPN



DC - 3 WIRE – L SERIES
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
18-30V DC, 120mA
1 LED for Output Energized

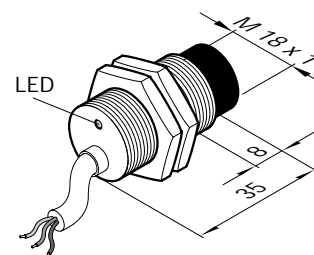
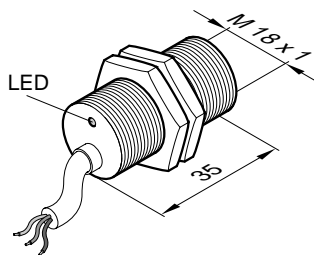
- **Short Body Sensors**
- **Economically priced**
- **Connector options**
- **Carries C mark**

- IEC (529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| Sensing Distance | M18 Flush Mount 5mm (.20 in.) | | M18 Non-Flush Mount 8mm (.31in.) | |
|--|----------------------------------|-----------------|-------------------------------------|------------------|
| | Cable | 65 | Cable | 65 |
| Cable or Connector Style Cat. No. | | | | |
| PNP Normally Open  | 9984-2000 | 9984-2065 | 9984-2200 | 9984-2265 |
| | 9984-2100 | 9984-2165 | 9984-2300 | 9984-2365 |
| NPN Normally Open  | | | | |
| | | | | |
| Ripple Voltage | ≤10% | ≤10% | ≤10% | ≤10% |
| Voltage Range | 18V - 30V | 18V - 30V | 18V - 30V | 18V - 30V |
| Supply Current | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA |
| Max. Load Current | 120 mA | 120 mA | 120 mA | 120 mA |
| Voltage Drop Across Sensor | ≤1.5V | ≤1.5V | ≤1.5V | ≤1.5V |
| Max. Leakage Current | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| Switching Frequency | 1000Hz | 1000Hz | 500Hz | 500Hz |
| Hysteresis | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | .50mm (.02 in.) | .50mm (.02 in.) | .80mm (.031 in.) | .80mm (.031 in.) |
| Front Cap Material | PBTP | PBTP | PBTP | PBTP |

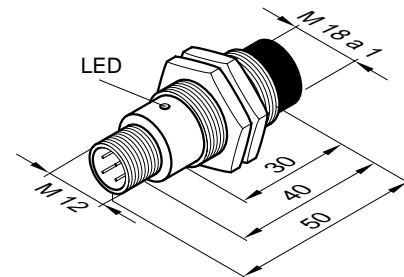
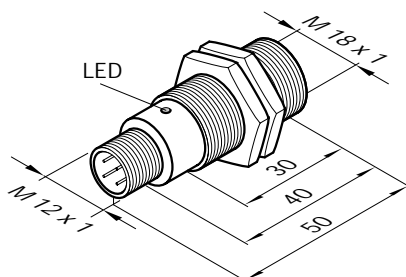
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | |
|-------------------|--------------------|
| 1.5 mm = .06 in. | 23.0 mm = .91 in. |
| 2.0 mm = .08 in. | 28.0 mm = 1.10 in. |
| 4.0 mm = .16 in. | 30.0 mm = 1.18 in. |
| 5.0 mm = .20 in. | 32.0 mm = 1.26 in. |
| 6.0 mm = .23 in. | 34.0 mm = 1.38 in. |
| 8.0 mm = .31 in. | 40.0 mm = 1.57 in. |
| 10.0 mm = .39 in. | 50.0 mm = 1.97 in. |
| 12.0 mm = .47 in. | 51.0 mm = 2.01 in. |
| 15.0 mm = .59 in. | 60.0 mm = 2.36 in. |
| 18.0 mm = .70 in. | 80.0 mm = 3.12 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

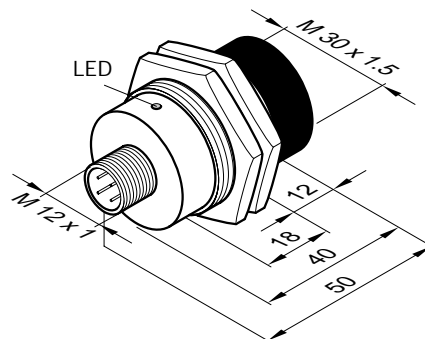
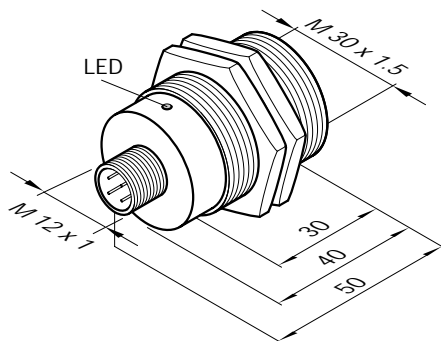
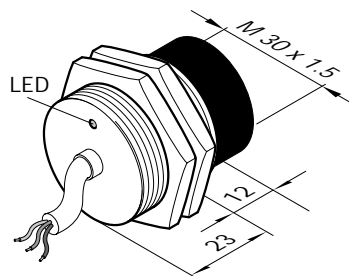
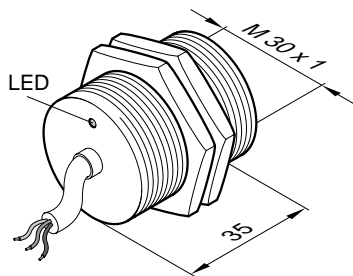
M30 Flush Mount 10mm (.39 in.)

| Cable | 65 |
|------------------|------------------|
| 9986-2000 | 9986-2065 |
| 9986-2100 | 9986-2165 |
| ≤10% | ≤10% |
| 18V - 30V | 18V - 30V |
| ≤10 mA | ≤10 mA |
| 120 mA | 120 mA |
| ≤1.5V | ≤1.5V |
| ≤10 μA | ≤10 μA |
| 500Hz | 500Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| 1.0mm (.039 in.) | 1.0mm (.039 in.) |
| PBTP | PBTP |

M30 Non-Flush Mount 15mm (.59 in.)

| Cable | 65 |
|------------------|------------------|
| 9986-2200 | 9986-2265 |
| 9986-2300 | 9986-2365 |
| ≤10% | ≤10% |
| 18V - 30V | 18V - 30V |
| ≤10 mA | ≤10 mA |
| 120 mA | 120 mA |
| ≤1.5V | ≤1.5V |
| ≤10 μA | ≤10 μA |
| 300Hz | 300Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| 1.5mm (.059 in.) | 1.5mm (.059 in.) |
| PBTP | PBTP |

Note: Sensor dimensions in mm.



Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

| | | |
|--------------|-----------|-----------------------------|
| 65 Connector | 8000-5110 | PVC, Straight |
| 65 Connector | 8000-5120 | PVC, Right Angle |
| 65 Connector | 8000-5150 | PVC, Right Angle, 2LED, NPN |
| 65 Connector | 8000-5160 | PVC, Right Angle, 2LED, PNP |

Change last digit of connector number to 5 for 5 meter cable

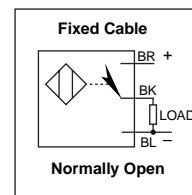
Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

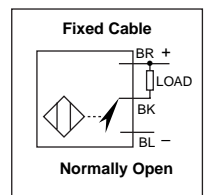
Wiring Diagrams

Note: Wire colors are applicable on cables purchased from Altech

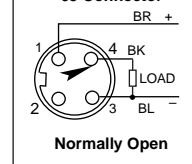
PNP



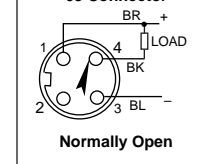
NPN



65 Connector







65 Connector



DC - 3 WIRE – GL SERIES
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
10-60V DC, 400mA,
2 LED's for Operating Voltage
and Output Energized

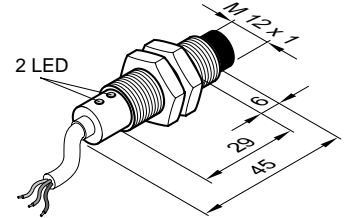
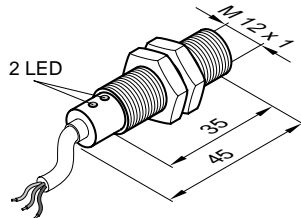
- **Higher Current Output**
- **Higher Voltage Range**
- **Carries $\text{C}\epsilon$ mark**

- IEC (529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| M12 Flush Mount 2mm (.08 in.) | | | | M12 Non-Flush Mount 4mm (.16 in.) | | | |
|-----------------------------------|---|------------------|------------------|--------------------------------------|------------------|------------------|------------------|
| Sensing Distance | | | | | | | |
| Cable or Connector Style Cat. No. | | Cable | 64 | 65 | Cable | 64 | 65 |
| PNP | Normally Open  | 9982-4000 | 9982-4064 | 9982-4065 | 9982-4200 | 9984-4264 | 9982-4265 |
| | Normally Closed  | 9982-4400 | 9982-4464 | 9982-4465 | 9982-4600 | 9982-4664 | 9982-4665 |
| NPN | Normally Open  | 9982-4100 | 9982-4164 | 9982-4165 | 9982-4300 | 9982-4364 | 9982-4365 |
| | Normally Closed  | 9982-4500 | 9982-4564 | 9982-4565 | 9982-4700 | 9982-4764 | 9982-4765 |
| Ripple Voltage | | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Voltage Range | | 10V - 60V | 10V - 60V | 10V - 60V | 10V - 60V | 10V - 60V | 10V - 60V |
| Supply Current | | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA |
| Max. Load Current | | 400 mA | 400 mA | 400 mA | 400 mA | 400 mA | 400 mA |
| Voltage Drop Across Sensor | | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| Max. Leakage Current | | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| Switching Frequency | | 2000Hz | 2000Hz | 2000Hz | 1000Hz | 1000Hz | 1000Hz |
| Hysteresis | | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | | .20mm (.008 in.) | .20mm (.008 in.) | .20mm (.008 in.) | .40mm (.016 in.) | .40mm (.016 in.) | .40mm (.016 in.) |
| Front Cap Material | | PBTP | PBTP | PBTP | PBTP | PBTP | PBTP |

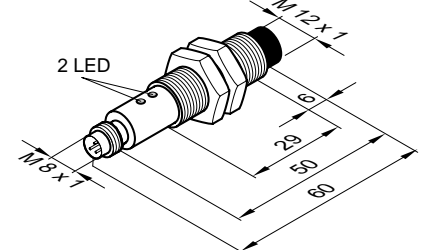
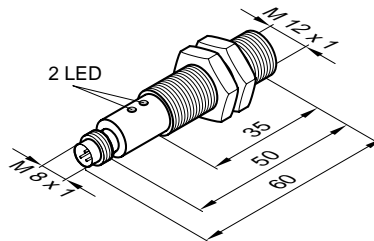
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



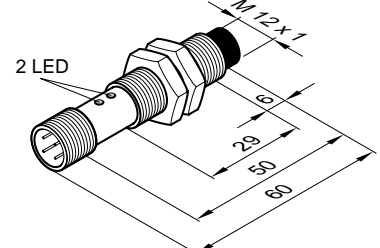
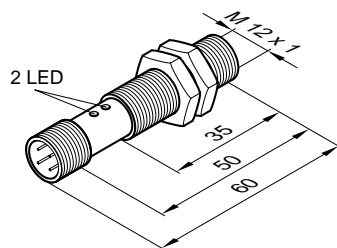
64 Style Connector

3-pin, Pico style, 8mm (.31 in.) supplied with Brass, Nickel Plated (BN) locknuts.



65 Style Connectors

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | | |
|---------------------|--------------------|---|
| 1.0 mm = .04 in. | 29.0 mm = 1.14 in. | This table converts millimeters to inches in reference to the illustrations included on these pages |
| 6.0 mm = .23 in. | 35.0 mm = 1.37 in. | |
| 8.0 mm = .31 in. | 45.0 mm = 1.77 in. | |
| 12.0 mm = .47 in. | 50.0 mm = 1.97 in. | |
| 18.0 mm = .70 in. | 60.0 mm = 2.36 in. | |
| .27.0 mm = 1.06 in. | 80.0 mm = 3.15 in. | |

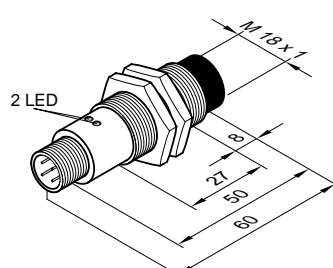
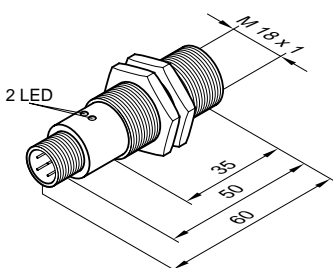
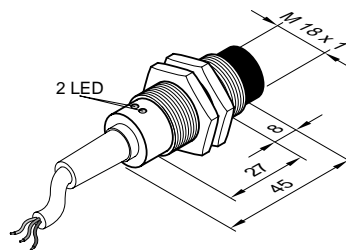
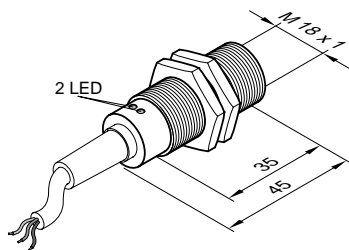
M18 Flush Mount 5mm (.20 in.)

| Cable | 65 |
|-----------------|-----------------|
| 9984-4000 | 9984-4065 |
| 9984-4400 | 9984-4465 |
| 9984-4100 | 9984-4165 |
| 9984-4500 | 9984-4565 |
| ≤10% | ≤10% |
| 10V - 60V | 10V - 60V |
| ≤10 mA | ≤10 mA |
| 400 mA | 400 mA |
| ≤2.4V | ≤2.4V |
| ≤10 μA | ≤10 μA |
| 1000Hz | 1000Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| .25mm (.01 in.) | .25mm (.01 in.) |
| PBTP | PBTP |

M18 Non-Flush Mount 8mm (.31 in.)

| Cable | 65 |
|------------------|------------------|
| 9984-4200 | 9984-4265 |
| 9984-4600 | 9984-4665 |
| 9984-4300 | 9984-4365 |
| 9984-4700 | 9984-4765 |
| ≤10% | ≤10% |
| 10V - 60V | 10V - 60V |
| ≤10 mA | ≤10 mA |
| 400 mA | 400 mA |
| ≤2.4V | ≤2.4V |
| ≤10 μA | ≤10 μA |
| 500Hz | 500Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| .40mm (.016 in.) | .40mm (.016 in.) |
| PBTP | PBTP |

Note: Sensor dimensions in mm.



Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

- 64 Connector 8000-5220 PVC, Straight
- 64 Connector 8000-5230 PVC, Right Angle, 2LED, NPN
- 64 Connector 8000-5240 PVC, Right Angle, 2LED, NPN

65 Connectors, 4 PIN - 3 Wire cable (PIN 1, 3, 4) :

- 65 Connector 8000-5110 PVC, Straight
- 65 Connector 8000-5120 PVC, Right Angle
- 65 Connector 8000-5150 PVC, Right Angle, 2LED, NPN
- 65 Connector 8000-5160 PVC, Right Angle, 2LED, NPN

65 Connectors, 4 PIN - 4 Wire cable (PIN 1, 2, 3, 4) :

- 65 Connector 8000-5280 PVC Right Angle

Change last digit of connector number to 5 for 5 meter cable

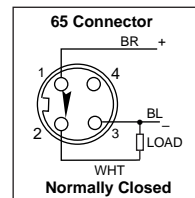
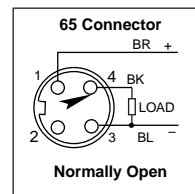
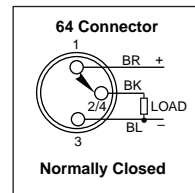
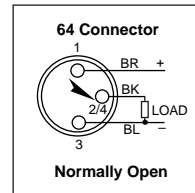
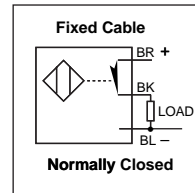
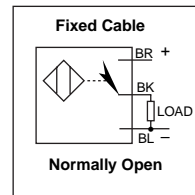
Refer to pages 116-121 for more cable information

Mounting Brackets - see Pages 114-115

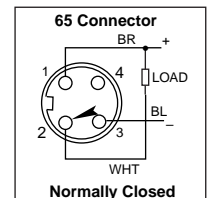
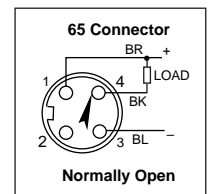
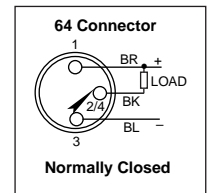
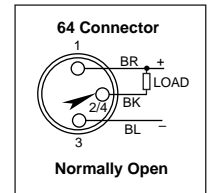
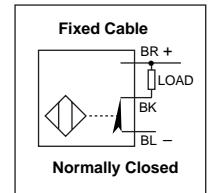
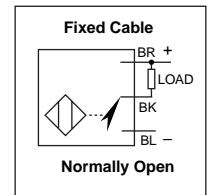
Wiring Diagrams

Note: Wire colors are applicable on cables purchased from Altech

NPN







NPN



DC - 3 WIRE – GL SERIES
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
10-60V DC, 400mA
2 LED's for Operating Voltage
and Output Energized

- **Higher Current Output**
- **Higher Voltage Range**
- **Carries CE mark**

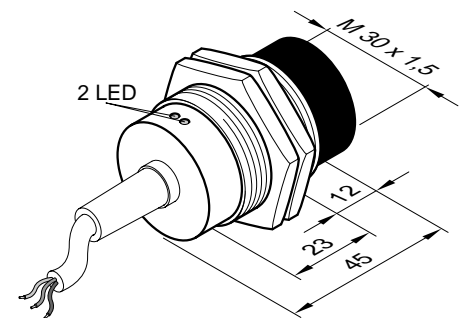
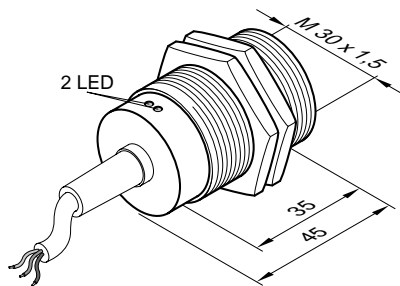
- IEC (529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| M30 Flush Mount | | | M30 Non-Flush Mount | | | | | |
|--|-----------------|---|----------------------------|------------------|------------------|-----------------------|------------------|------------------|
| Sensing Distance | | | 10mm (.39 in.) | | | 15mm (.59 in.) | | |
| Cable or Connector Style Cat. No. | | | Cable | 65 | Cable | 65 | Cable | 65 |
| PNP | Normally Open |  | 9986-4000 | 9986-4065 | 9986-4200 | 9986-4265 | 9986-4600 | 9986-4665 |
| | Normally Closed |  | 9986-4400 | 9986-4465 | 9986-4300 | 9986-4365 | 9986-4700 | 9986-4765 |
| NPN | Normally Open |  | 9986-4100 | 9986-4165 | 9986-4300 | 9986-4365 | 9986-4700 | 9986-4765 |
| | Normally Closed |  | 9986-4500 | 9986-4565 | 9986-4700 | 9986-4765 | | |
| Ripple Voltage | | | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Voltage Range | | | 10V-60V | 10V - 60V | 10V - 60V | 10V - 60V | 10V - 60V | 10V - 60V |
| Supply Current | | | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA |
| Max. Load Current | | | 400 mA | 400 mA | 400 mA | 400 mA | 400 mA | 400 mA |
| Voltage Drop Across Sensor | | | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| Max. Leakage Current | | | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| Switching Frequency | | | 500 Hz | 500 Hz | 300 Hz | 300 Hz | 300 Hz | 300 Hz |
| Hysteresis | | | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | | | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | | | .50mm (.020 in.) | .50mm (.020 in.) | .75mm (.030 in.) | .75mm (.030 in.) | .75mm (.030 in.) | .75mm (.030 in.) |
| Front Cap Material | | | PBTP | PBTP | PBTB | PBTB | PBTB | PBTB |

Note: Sensor dimensions in mm.

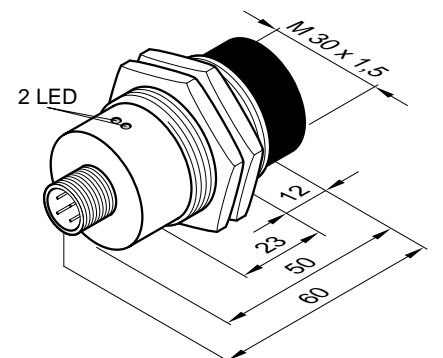
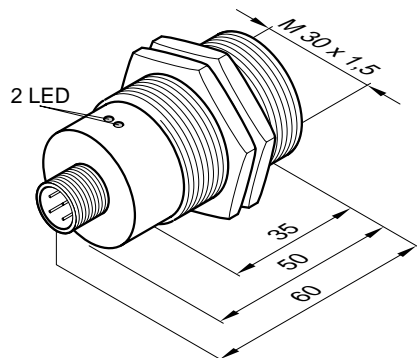
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

65 Connectors, 4 PIN – 3 Wire cable (PIN 1, 3, 4) :

- 65 Connector 8000-5110 PVC, Straight
- 65 Connector 8000-5120 PVC, Right Angle
- 65 Connector 8000-5150 PVC, Right Angle, 2LED, NPN
- 65 Connector 8000-5160 PVC, Right Angle, 2LED, PNP

65 Connectors, 4PIN – 4 Wire cable (PIN 1, 2, 3, 4) :

- 65 Connectors 8000-5280 PVC, Right Angle

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

Metric/in. Conversion Table

| | |
|--------------------|--------------------|
| 1.5 mm = .06 in. | 45.0 mm = 1.77 in. |
| 12.0 mm = .47 in. | 50.0 mm = 1.96 in. |
| 23.0 mm = .90 in. | 60.0 mm = 2.36 in. |
| 35.0 mm = 1.37 in. | |

This table converts millimeters to inches in reference to the illustrations included on these pages

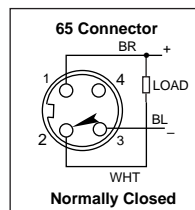
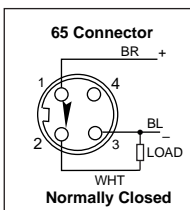
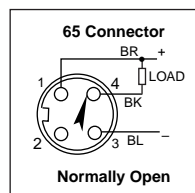
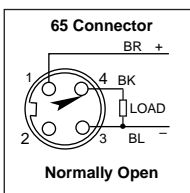
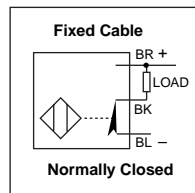
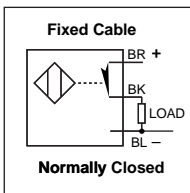
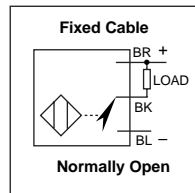
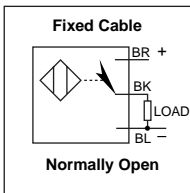
Mounting Brackets – see Pages 114-115

Wiring Diagrams

Note: Wire colors are applicable on cable purchased from Altech

PNP





NPN



**DC - 3 WIRE STANDARD
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
10-30V DC, 200 mA,
1 LED for Output Energized**

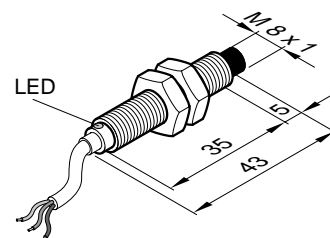
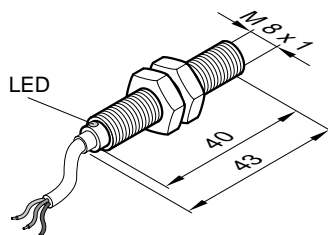
- **Most complete range of Fixed Cable and Quick Disconnect Styles**
- **Available in normally open (N.O.) and normally closed (N.C.) output configuration**
- **Industry standard 10-30V DC operating voltage and 200mA output current**
- **Carries $\text{C}\epsilon$ mark**

- IEC (529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range:
-25 to 70°C (-13 to 158°F)

| M8 Flush Mount | | | | | M8 Non-Flush Mount | | | | |
|-----------------------------------|---|------------------|------------------|------------------|--------------------|------------------|------------------|------------------|-----------|
| Sensing Distance | | | | | Sensing Distance | | | | |
| 1.5mm (.06 in.) | | | | | 2mm (.08 in.) | | | | |
| Cable or Connector Style Cat. No. | Cable | 63 | 64 | 65 | Cable | 63 | 64 | 65 | |
| PNP | Normally Open  | 9961-0200 | 9961-0263 | 9961-0264 | 9961-0265 | 9961-0400 | 9961-0463 | 9961-0464 | 9961-0465 |
| | Normally Closed  | 9961-4400 | | 9961-4464 | 9961-4465 | 9961-4600 | | 9961-4664 | 9961-4665 |
| NPN | Normally Open  | 9961-0300 | 9961-0363 | 9961-0364 | 9961-0365 | 9961-0500 | 9961-0563 | 9961-0564 | 9961-0565 |
| | Normally Closed  | 9961-4500 | | 9961-4564 | 9961-4565 | 9961-4700 | | 9961-4764 | 9961-4765 |
| Ripple Voltage | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | |
| Voltage Range | 10V-30V | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V | |
| Supply Current | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | |
| Max. Load Current | 200 mA | 200 mA | 200 mA | 200 mA | 200 mA | 200 mA | 200 mA | 200 mA | |
| Voltage Drop Across Sensor | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | |
| Max. Leakage Current | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | |
| Switching Frequency | 2000 Hz | 2000 Hz | 2000 Hz | 2000 Hz | 2000 Hz | 2000 Hz | 2000 Hz | 2000 Hz | |
| Hysteresis | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | |
| Temperature Drift | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | |
| Repeatability | .15mm (.006 in.) | .15mm (.006 in.) | .15mm (.006 in.) | .15mm (.006 in.) | .20mm (.008 in.) | .20mm (.008 in.) | .20mm (.008 in.) | .20mm (.008 in.) | |
| Front Cap Material | PBTP | PBTP | PBTP | PBTP | PBTP | PBTP | PBTP | PBTP | |

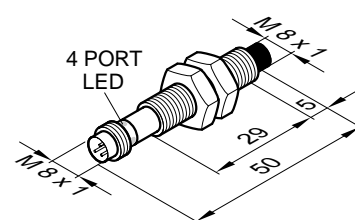
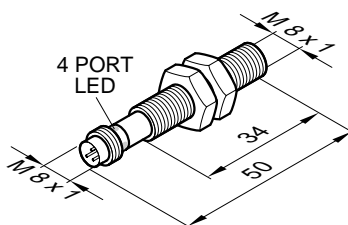
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Non-metallic locknuts for M8 and Brass, Nickel Plated (BN) locknuts for M12 through M30.



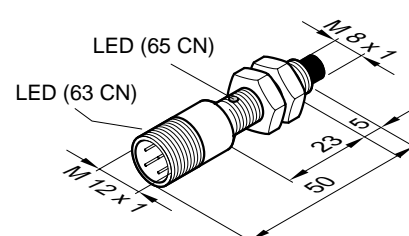
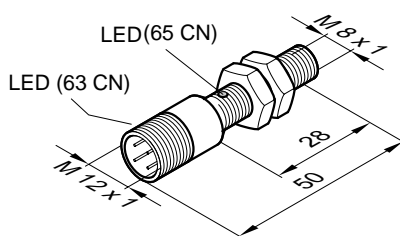
64 Style Connector

3-pin, Pico style, 8mm (.31 in.) supplied with non-metallic locknuts for M8 and Brass, Nickel Plated (BN) locknuts for M12 through M30.



63 and 65 Style Connectors

4-pin, Micro style, 12mm (.47 in.) supplied with Non-metallic locknuts for M8 and Brass, Nickel Plated (BN) locknuts for M12 through M30. The 63 Connector is clear, offering 360° LED viewing.



Metric/in. Conversion Table

| | |
|--------------------|--------------------|
| 1.0 mm = .04 in. | 29.0 mm = 1.14 in. |
| 5.0 mm = .20 in. | 34.0 mm = 1.34 in. |
| 6.0 mm = .23 in. | 35.0 mm = 1.37 in. |
| 8.0 mm = .31 in. | 40.0 mm = 1.57 in. |
| 12.0 mm = .47 in. | 43.0 mm = 1.69 in. |
| 23.0 mm = .90 in. | 50.0 mm = 1.47 in. |
| 28.0 mm = 1.10 in. | 60.0 mm = 2.36 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

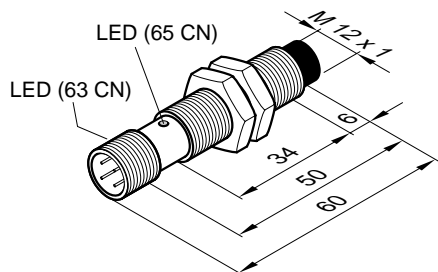
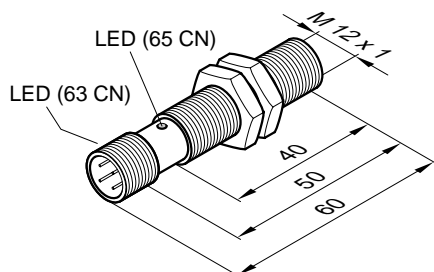
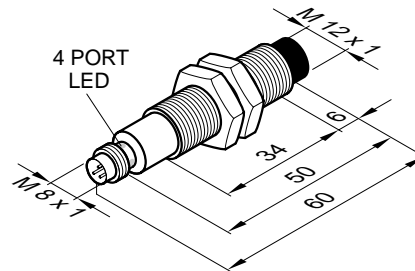
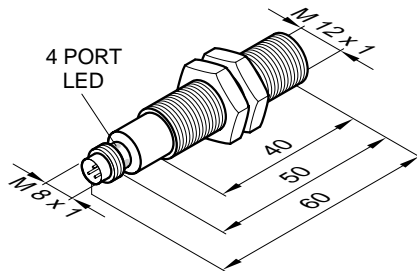
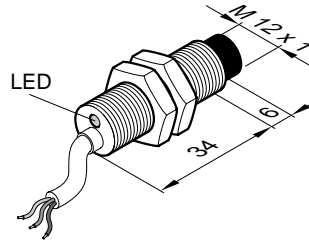
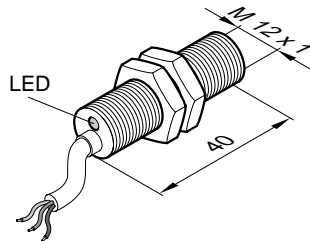
M12 Flush Mount 2mm (.08 in.)

| Cable | 63 | 64 | 65 |
|-----------------|-----------------|-----------------|-----------------|
| 9962-4000 | 9962-4063 | 9962-4064 | 9962-4065 |
| 9962-4400 | | 9962-4464 | 9962-4465 |
| 9962-4100 | 9962-4163 | 9962-4164 | 9962-4165 |
| 9962-4500 | | 9962-4564 | 9962-4565 |
| ≤10% | ≤10% | ≤10% | ≤10% |
| 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V |
| ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA |
| 200 mA | 200 mA | 200 mA | 200 mA |
| ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| 2000 Hz | 2000 Hz | 2000 Hz | 2000 Hz |
| ≤15% | ≤15% | ≤15% | ≤15% |
| ≤10% | ≤10% | ≤10% | ≤10% |
| .20mm (.008in.) | .20mm (.008in.) | .20mm (.008in.) | .20mm (.008in.) |
| PBTB | PBTB | PBTB | PBTB |

M12 Non-Flush Mount 4mm (.16 in.)

| Cable | 63 | 64 | 65 |
|-----------------|-----------------|-----------------------------|-----------------|
| 9962-4200 | 9962-4263 | 9962-4264 | 9962-4265 |
| 9962-4600 | | 9962-4664 | 9962-4665 |
| 9962-4300 | 9961-4363 | 9962-4364 | 9962-4365 |
| 9962-4700 | | 9962-4764 | 9962-4765 |
| ≤10% | ≤10% | ≤10% | ≤10% |
| 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V |
| ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA |
| 200 mA | 200 mA | 200 mA </td <td>200 mA</td> | 200 mA |
| ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| 1000 Hz | 1000 Hz | 1000 Hz | 1000 Hz |
| ≤15% | ≤15% | ≤15% | ≤15% |
| ≤10% | ≤10% | ≤10% | ≤10% |
| .40mm (.016in.) | .40mm (.016in.) | .40mm (.016in.) | .40mm (.016in.) |
| PBTB | PBTB | PBTB | PBTB |

Note: Sensor dimensions in mm.



Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

- 64 Connector 8000-5220 PVC, Straight
- 64 Connector 8000-5230 PVC, Right Angle, 2LED, PNP
- 64 Connector 8000-5240 PVC, Right Angle, 2LED, NPN

63/65 Connectors, 4 PIN - 3 Wire cable (PIN 1, 3, 4) :

- 63/65 Connector 8000-5110 PVC, Straight
- 63/65 Connector 8000-5120 PVC, Right Angle
- 63/65 Connector 8000-5150 PVC, Right Angle, 2LED, NPN
- 63/65 Connector 8000-5160 PVC, Right Angle, 2LED, PNP

63/65 Connectors, 4PIN - 4 Wire cable (PIN 1, 2, 3, 4) :

- 63/65 Connectors 8000-5280 PVC, Right Angle

Change last digit of connector number to 5 for 5 meter cable

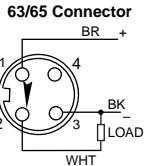
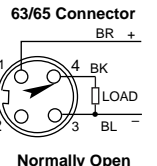
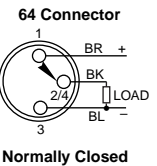
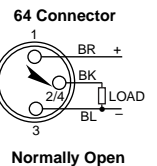
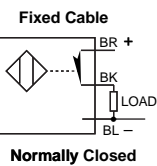
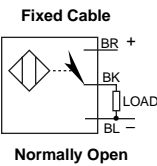
Refer to pages 116-121 for more cable information

Mounting Brackets - see Pages 114-115

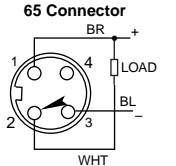
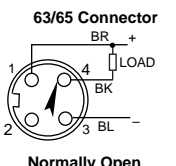
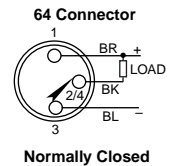
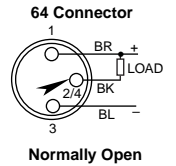
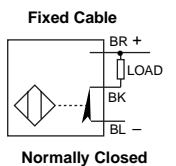
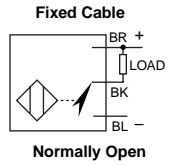
Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech

PNP







NPN



**DC - 3 WIRE – STANDARD
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
10-30V DC, 200mA,
1 LED for Output Energized**

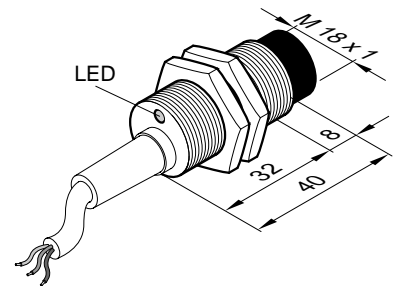
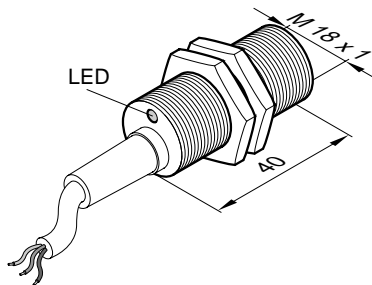
- **Most complete range of Fixed Cable and Quick Disconnect Styles**
- **Available in normally open (N.O.) and normally closed (N.C.) output configuration**
- **Industry standard 10-30V DC operating voltage and 200mA output current**
- **Carries C€ mark**

- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| M18 Flush Mount | | | | M18 Non-Flush Mount | | | |
|----------------------------|---|-----------------|-----------------|---------------------|------------------|------------------|------------------|
| Sensing Distance | | 5mm (.20 in.) | | | 8mm (.31 in.) | | |
| Cable or Connector Style | Cat. No. | Cable | 63 | 65 | Cable | 63 | 65 |
| PNP | Normally Open  | 9964-4000 | 9964-4063 | 9964-4065 | 9964-4200 | 9964-4263 | 9964-4265 |
| | Normally Closed  | 9964-4400 | | 9964-4465 | 9964-4600 | | 9964-4665 |
| NPN | Normally Open  | 9964-4100 | 9964-4163 | 9964-4165 | 9964-4300 | 9964-4363 | 9964-4365 |
| | Normally Closed  | 9964-4500 | | 9964-4565 | 9964-4700 | | 9964-4765 |
| Ripple Voltage | | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Voltage Range | | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V |
| Supply Current | | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA |
| Max. Load Current | | 200 mA | 200 mA | 200 mA | 200 mA | 200 mA | 200 mA |
| Voltage Drop Across Sensor | | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| Max. Leakage Current | | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| Switching Frequency | | 1000 Hz | 1000 Hz | 1000 Hz | 500 Hz | 500 Hz | 500 Hz |
| Hysteresis | | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | | .25mm (.01 in.) | .25mm (.01 in.) | .25mm (.01 in.) | .40mm (.016 in.) | .40mm (.016 in.) | .40mm (.016 in.) |
| Front Cap Material | | PBTP | PBTP | PBTP | PBTB | PBTB | PBTB |

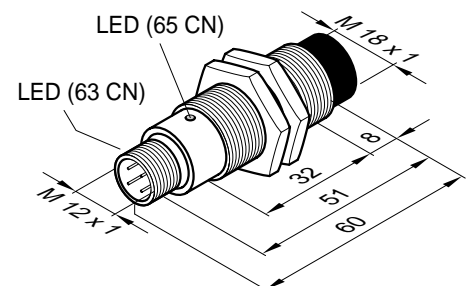
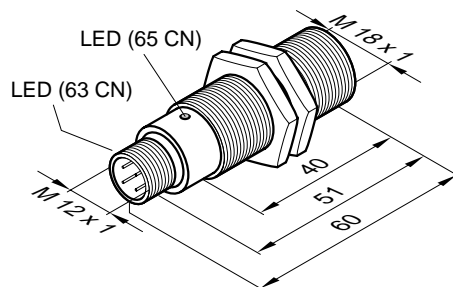
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



63 and 65 Style Connectors

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts. The 63 Connector is clear, offering 360° LED viewing.



Metric/in. Conversion Table

| | |
|-------------------|--------------------|
| 1.5 mm = .06 in. | 23.0 mm = .91 in. |
| 2.0 mm = .08 in. | 28.0 mm = 1.10 in. |
| 4.0 mm = .16 in. | 30.0 mm = 1.18 in. |
| 5.0 mm = .20 in. | 32.0 mm = 1.26 in. |
| 6.0 mm = .23 in. | 34.0 mm = 1.34 in. |
| 8.0 mm = .31 in. | 40.0 mm = 1.57 in. |
| 10.0 mm = .39 in. | 50.0 mm = 1.97 in. |
| 12.0 mm = .47 in. | 51.0 mm = 2.01 in. |
| 15.0 mm = .59 in. | 60.0 mm = 2.36 in. |
| 18.0 mm = .70 in. | 80.0 mm = 3.12 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

63/65 Connectors, 4 PIN – 3 Wire cable (PIN 1, 3, 4) :

63/65 Connector 8000-5110 PVC, Straight

63/65 Connector 8000-5120 PVC, Right Angle

63/65 Connector 8000-5150 PVC, Right Angle, 2LED, NPN

63/65 Connector 8000-5160 PVC, Right Angle, 2LED, PNP

63/65 Connectors, 4PIN – 4 Wire cable (PIN 1, 2, 3, 4) :

63/65 Connectors 8000-5280 PVC, Right Angle

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

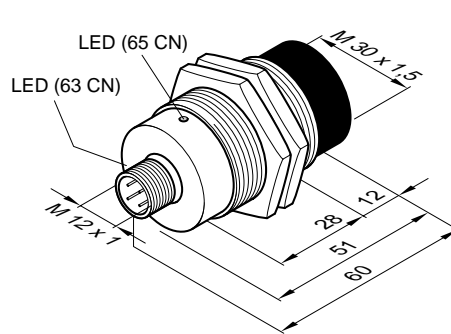
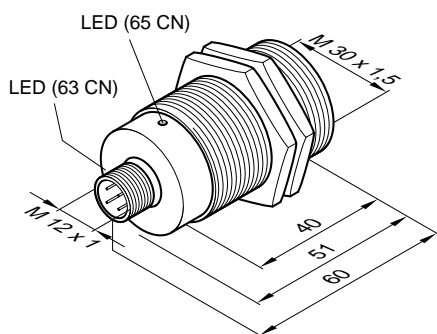
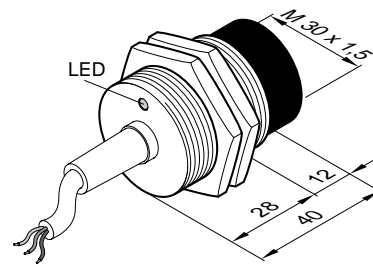
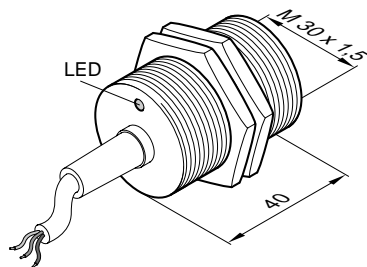
Mounting Brackets – see Pages 114-115

Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech

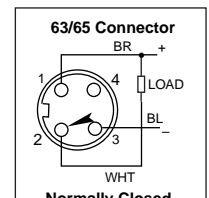
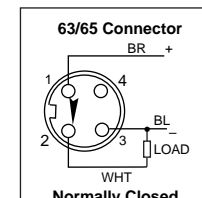
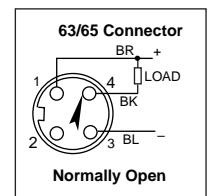
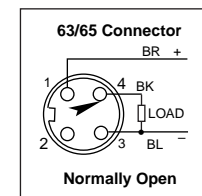
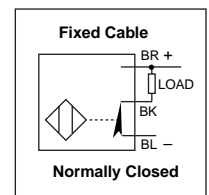
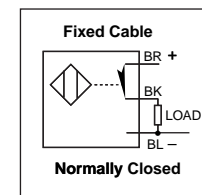
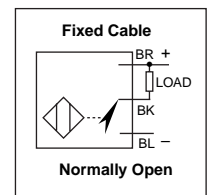
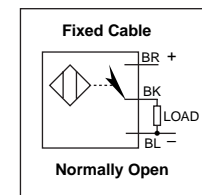
| M30 Flush Mount 10mm (.39 in.) | | | M30 Non-Flush Mount 15mm (.59 in.) | | |
|-----------------------------------|-----------------|-----------------|---------------------------------------|-----------------|-----------------|
| Cable | 63 | 65 | Cable | 63 | 65 |
| 9966-4000 | 9966-4063 | 9966-4065 | 9966-4200 | 9966-4263 | 9966-4265 |
| 9966-4400 | | 9966-4465 | 9966-4600 | | 9966-4665 |
| 9966-4100 | 9966-4163 | 9966-4165 | 9966-4300 | | 9966-4365 |
| 9966-4500 | | 9966-4565 | 9966-4700 | | 9966-4765 |
| ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V |
| ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA |
| 200 mA | 200 mA | 200 mA | 200 mA | 200 mA | 200 mA |
| ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| ≥10 μA | ≥10 μA | ≥10 μA | ≥10 μA | ≥10 μA | ≥10 μA |
| 500 Hz | 500 Hz | 500 Hz | 300 Hz | 300 Hz | 300 Hz |
| ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| .50mm (.02 in.) | .50mm (.02 in.) | .50mm (.02 in.) | .75mm (.03 in.) | .75mm (.03 in.) | .75mm (.03 in.) |
| PBTB | PBTB | PBTB | PBTB | PBTB | PBTB |

Note: Sensor dimensions in mm.



PNP

NPN



DC - 3 WIRE – EXTENDED SENSING DISTANCE
Brass, Nickel Plated (BN), Cylindrical, Threaded, 10-30V DC, 200mA
1 LED for Output Energized

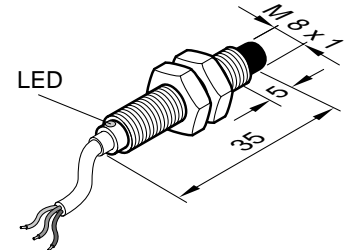
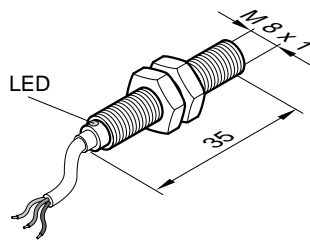
- **Up to 2 times sensing distance over standard sensors**
- **Reduces accidental collisions**
- **Ideal for applications where larger sensing distance is required but mounting space is tight**
- **Carries $\text{C}\epsilon$ mark**

- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| M8 Flush Mount | | | | M8 Non-Flush Mount | | | |
|--------------------------------|-----------------|-----------------|-----------------|--------------------------------|-----------------|-----------------|-----------------|
| Sensing Distance 2mm (.08 in.) | | | | Sensing Distance 3mm (.12 in.) | | | |
| Cable or Connector Style | Cat. No. | Cable | 64 | 65 | Cable | 64 | 65 |
| PNP | Normally Open | 9981-4000 | 9981-4064 | 9981-4065 | 9981-4200 | 9981-4264 | 9981-4265 |
| | Normally Closed | | | | | | |
| NPN | Normally Open | 9981-4100 | 9981-4164 | 9981-4165 | 9981-4300 | 9981-4364 | 9981-4365 |
| | Normally Closed | | | | | | |
| Ripple Voltage | | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Voltage Range | | 10V-30V | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V |
| Supply Current | | ≤12 mA | ≤12 mA | ≤12 mA | ≤12 mA | ≤12 mA | ≤12 mA |
| Max. Load Current | | 200 mA | 200 mA | 200 mA | 200 mA | 200 mA | 200 mA |
| Voltage Drop Across Sensor | | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| Max. Leakage Current | | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| Switching Frequency | | 2000 Hz | 2000 Hz | 2000 Hz | 2000 Hz | 2000 Hz | 2000 Hz |
| Hysteresis | | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | | .2mm (.008 in.) | .2mm (.008 in.) | .2mm (.008 in.) | .3mm (.012 in.) | .3mm (.012 in.) | .3mm (.012 in.) |
| Front Cap Material | | PBTP | PBTP | PBTP | PBTB | PBTB | PBTB |

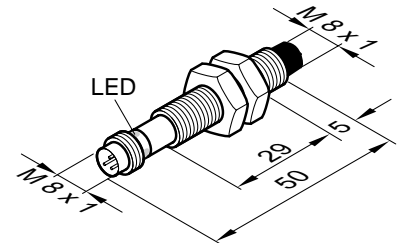
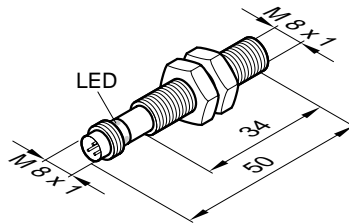
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Non-metallic locknuts for M8 and Brass, Nickel Plated (BN) locknuts for M12 through M30.



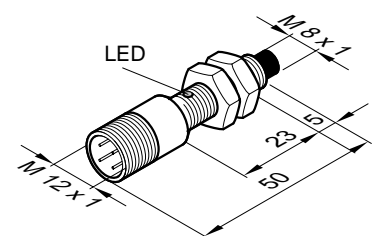
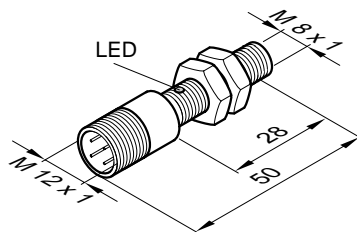
64 Style Connector

3-pin, Pico style, 8mm (.31 in.) supplied with non-metallic locknuts for M8 and Brass, Nickel Plated (BN) locknuts for M12 through M30.



50/65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Non-Metallic locknuts for M8 and Brass, Nickel Plated (BN) locknuts for M12 through M30.



Metric/in. Conversion Table

| | |
|--------------------|--------------------|
| 1.0 mm = .04 in. | 29.0 mm = 1.14 in. |
| 5.0 mm = .20 in. | 30.0 mm = 1.18 in. |
| 8.0 mm = .31 in. | 34.0 mm = 1.33 in. |
| 12.0 mm = .47 in. | 35.0 mm = 1.37 in. |
| 23.0 mm = .90 in. | 40.0 mm = 1.57 in. |
| 27.0 mm = 1.06 in. | 50.0 mm = 1.96 in. |
| 28.0 mm = 1.10 in. | |

This table converts millimeters to inches in reference to the illustrations included on these pages

M12 Flush Mount

4mm (.16 in.)

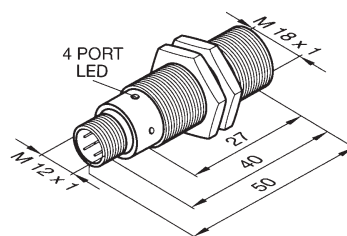
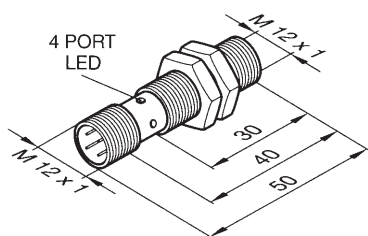
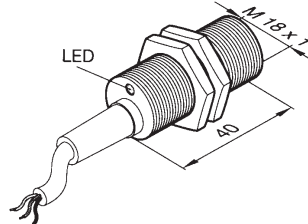
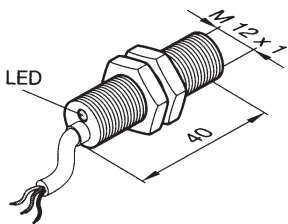
| Cable | 65 |
|------------------|------------------|
| 9982-4900 | 9982-4950 |
| ≤10% | ≤10% |
| 10V - 30V | 10V - 30V |
| ≤12mA | ≤12 mA |
| 200 mA | 200 mA |
| ≤2.4V | ≤2.4V |
| 10 μA | 10 μA |
| 1500 Hz | 1500 Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| .40mm (.016 in.) | .40mm (.016 in.) |
| PBTB | PBTB |

M18 Flush Mount

8mm (.31 in.)

| Cable | 65 |
|-----------------|-----------------|
| 9984-4900 | 9984-4950 |
| ≤10% | ≤10% |
| 10V - 30V | 10V - 30V |
| ≤12mA | ≤12 mA |
| 200 mA | 200 mA |
| ≤2.4V | ≤2.4V |
| 10 μA | 10 μA |
| 500 Hz | 500 Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| .80mm (.03 in.) | .80mm (.03 in.) |
| PBTB | PBTB |

Note: Sensor dimensions in mm.



Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

| | | |
|-----------------|-----------|-----------------------------|
| 64 Connector | 8000-5220 | PVC, Straight |
| 64 Connector | 8000-5230 | PVC, Right Angle, 2LED, PNP |
| 64 Connector | 8000-5240 | PVC, Right Angle, 2LED, NPN |
| 50/65 Connector | 8000-5110 | PVC, Straight |
| 50/65 Connector | 8000-5120 | PVC, Right Angle |
| 50/65 Connector | 8000-5150 | PVC, Right Angle, 2LED, NPN |
| 50/65 Connector | 8000-5160 | PVC, Right Angle, 2LED, PNP |

Change last digit of connector number to 5 for 5 meter cable

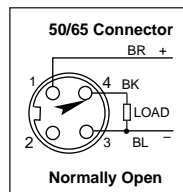
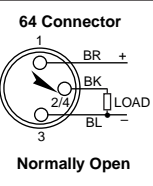
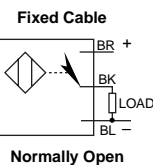
Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

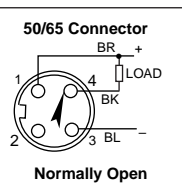
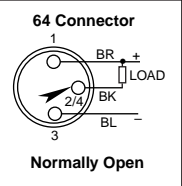
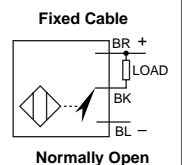
Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech

PNP



NPN







DC - 3 WIRE – EXTENDED SENSING DISTANCE

Brass, Nickel Plated (BN),
Cylindrical, Threaded,
10-30V DC, 200mA
1 LED for Output Energized

- Up to 2 times sensing distance over standard sensors
- Reduces accidental collisions
- Ideal for applications where larger sensing distance is required but mounting space is tight
- Carries CE mark

- IEC (529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

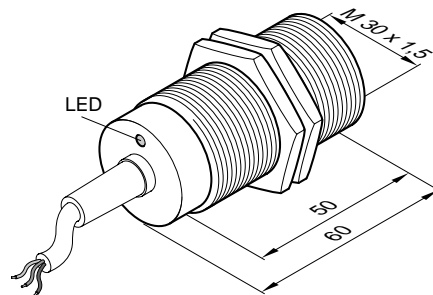
M30 Flush Mount

| Sensing Distance | | 15mm (.59 in.) | |
|-----------------------------------|---|-----------------|-----------------|
| Cable or Connector Style Cat. No. | | Cable | 65 |
| PNP | Normally Open  | 9966-3900 | 9966-3965 |
| | Normally Closed  | | |
| NPN | Normally Open  | | |
| | Normally Closed  | | |
| Ripple Voltage | | ≤10% | ≤10% |
| Voltage Range | | 10V-30V | 10V - 30V |
| Supply Current | | ≤12 mA | ≤12 mA |
| Max. Load Current | | 200 mA | 200 mA |
| Voltage Drop Across Sensor | | ≤2.4V | ≤2.4V |
| Max. Leakage Current | | ≤10 µA | ≤10 µA |
| Switching Frequency | | 200 Hz | 200 Hz |
| Hysteresis | | ≤15% | ≤15% |
| Temperature Drift | | ≤10% | ≤10% |
| Repeatability | | 1.5mm (.06 in.) | 1.5mm (.06 in.) |
| Front Cap Material | | PBTP | PBTP |

Note: Sensor dimensions in mm.

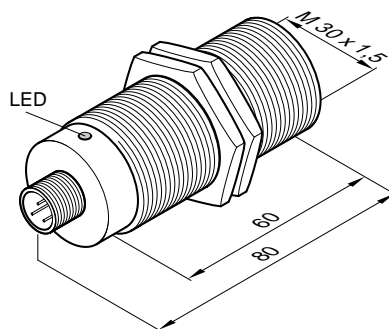
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | | |
|---------|---|----------|
| 1.5 mm | = | .06 in. |
| 30.0 mm | = | 1.20 in. |
| 50.0 mm | = | 1.47 in. |
| 60.0 mm | = | 2.36 in. |
| 80.0 mm | = | 3.12 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

| | | |
|--------------|-----------|-----------------------------|
| 65 Connector | 8000-5110 | PVC, Straight |
| 65 Connector | 8000-5120 | PVC, Right Angle |
| 65 Connector | 8000-5150 | PVC, Right Angle, 2LED, NPN |
| 65 Connector | 8000-5160 | PVC, Right Angle, 2LED, PNP |

Change last digit of connector number to 5 for 5 meter cable

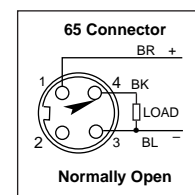
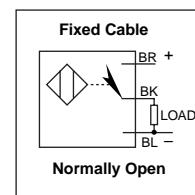
Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech

PNP






**DC - 3 WIRE
HIGH SPEED
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
10-30V DC, 200mA
1 LED for Output Energized**

- **Switching frequency of 4000 Hz**
- **Standard body length**
- **Carries ζ mark**

- IEC (529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

M12 Flush Mount

| Sensing Distance | | 2mm (.08 in.) | |
|----------------------------|---|-----------------------|-----------------------|
| Cable or Connector Style | Cat.No. | Cable | 65 |
| PNP | Normally Open  | 9962-2300 | 9962-2365 |
| |  | | |
| |  | | |
| Ripple Voltage | | ≤10% | ≤10% |
| Voltage Range | | 10V-30V | 10V - 30V |
| Supply Current | | ≤10 mA | ≤10 mA |
| Max. Load Current | | 200 mA | 200 mA |
| Voltage Drop Across Sensor | | ≤2.4V | ≤2.4V |
| Max. Leakage Current | | ≤10 μA | ≤10 μA |
| Switching Frequency | | 4000 Hz to DIN 500 10 | 4000 Hz to DIN 500 10 |
| Hysteresis | | ≤15% | ≤15% |
| Temperature Drift | | ≤10% | ≤10% |
| Repeatability | | .20mm (.008 in.) | .20mm (.008 in.) |
| Front Cap Material | | PBTP | PBTP |

Metric/in. Conversion Table

| | | |
|---------|---|----------|
| 1.0 mm | = | .04 in. |
| 12 mm | = | .47 in. |
| 40.0 mm | = | 1.57 in. |
| 45.0 mm | = | 1.77 in. |
| 50.0 mm | = | 1.96 in. |
| 65.0 mm | = | 2.55 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

| | | |
|--------------|-----------|-----------------------------|
| 65 Connector | 8000-5110 | PVC, Straight |
| 65 Connector | 8000-5120 | PVC, Right Angle |
| 65 Connector | 8000-5150 | PVC, Right Angle, 2LED, NPN |
| 65 Connector | 8000-5160 | PVC, Right Angle, 2LED, PNP |

Change last digit of connector number to 5 for 5 meter cable

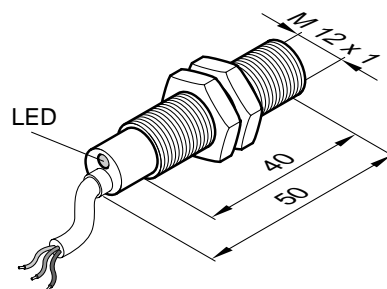
Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

Note: Sensor dimensions in mm.

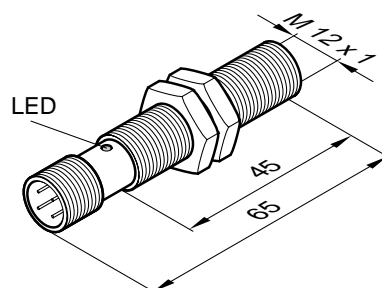
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



65 Style Connector

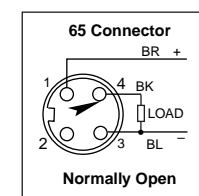
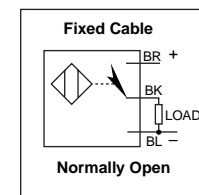
4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech





PNP



DC - 3 WIRE – PLASTIC & METAL HOUSING – Brass, Nickel Plated (BN), and Plastic (TROGAMID T) Cylindrical, Threaded, 10-30V DC, 400mA 1 LED for Output Energized

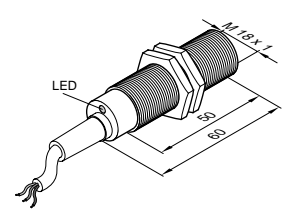
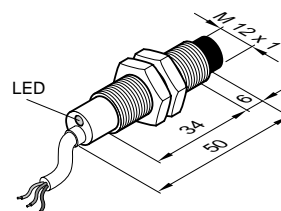
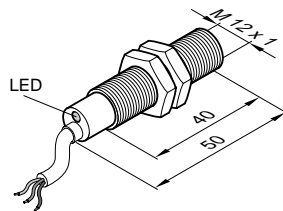
- **Metal and plastic housings**
- **Higher output currents, 400mA**
- **Long body length**
- **Carries (€ mark)**

- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| | M12 Flush Mount | | M12 Non-Flush Mount | | M18 Flush Mount | | |
|------------------------------------|---|---------------------|----------------------------|---------------------|------------------------|---------------------|-----------|
| Sensing Distance | 2mm (.08 in.) | | 4mm (.16 in.) | | 5mm (.20 in.) | | |
| Cable or Connector Cat. No. | Cable | | Cable | | Cable | | |
| PNP | Normally Open  | 9962-3100 | 9962-1400 | 9962-3300 | 9962-1600 | 9964-3100 | 9964-1500 |
| | Normally Closed  | | | | | | |
| NPN | Normally Open  | 9962-3200 | 9962-1500 | 9962-3400 | 9962-1700 | 9964-3200 | 9964-1600 |
| | Normally Closed  | | | | | | |
| Ripple Voltage | ≥10% | ≥10% | ≥10% | ≥10% | ≥10% | ≥10% | |
| Voltage Range | 10-30V | 10-30V | 10-30V | 10-30V | 10-30V | 10-30V | |
| Supply Current | ≥10 mA | ≥10 mA | ≥10 mA | ≥10 mA | ≥10 mA | ≥10 mA | |
| Max. Load Current | 400 mA | 400 mA | 400 mA | 400 mA | 400 mA | 400 mA | |
| Voltage Drop Across Sensor | ≥2.4V | ≥2.4V | ≥2.4V | ≥2.4V | ≥2.4V | ≥2.4V | |
| Max. Leakage Current | ≥10 µA | ≥10 µA | ≥10 µA | ≥10 µA | ≥10 µA | ≥10 µA | |
| Switching Frequency | 2000Hz | 2000Hz | 1000Hz | 1000Hz | 1000Hz | 1000Hz | |
| Hysteresis | ≥15% | ≥15% | ≥15% | ≥15% | ≥15% | ≥15% | |
| Temperature Drift | ≥10% | ≥10% | ≥10% | ≥10% | ≥10% | ≥10% | |
| Repeatability | .20mm (.008 in.) | .20mm (.008 in.) | .40mm (.016 in.) | .40mm (.016 in.) | .5mm (.02 in.) | .5mm (.02 in.) | |
| Front Cap Material | PBTB | PBTB | PBTB | PBTB | PBTB | PBTB | |
| Housing Material | Trogamid T | Nickel Plated Brass | Trogamid T | Nickel Plated Brass | Trogamid T | Nickel Plated Brass | |

Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with non-metallic locknuts for Trogamid T housings, and Brass, Nickel Plated (BN) locknuts for Nickel Plated Brass housings.



Metric/in. Conversion Table

| | |
|--------------------|--------------------|
| 1 mm = .04 in. | 34.0 mm = 1.31 in. |
| 1.5 mm = .06 in. | 38.0 mm = 1.50 in. |
| 6.0 mm = .23 in. | 40.0 mm = 1.57 in. |
| 8.0 mm = .31 in. | 42.0 mm = 1.65 in. |
| 12.0 mm = .47 in. | 50.0 mm = 1.97 in. |
| 18.0 mm = .70 in. | 60.0 mm = 2.36 in. |
| 30.0 mm = 1.20 in. | |

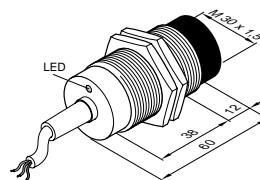
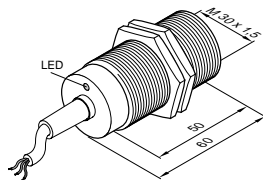
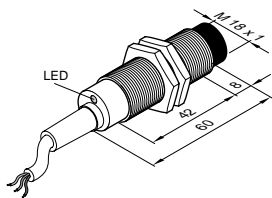
This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

Mounting Brackets – see Pages 114-115

| M18 Non-Flush Mount 8mm (.31 in.) | | M30 Flush Mount 10mm (.39 in.) | | M30 Non-Flush Mount 15mm (.59 in.) | |
|--------------------------------------|---------------------|-----------------------------------|---------------------|---------------------------------------|---------------------|
| Cable | | Cable | | Cable | |
| 9964-3300 | 9964-1700 | 9966-3100 | 9966-1100 | 9966-3300 | 9966-1300 |
| 9964-3400 | 9964-1800 | 9966-3200 | 9966-1200 | 9966-3400 | 9966-1400 |
| ≥10% | ≥10% | ≥10% | ≥10% | ≥10% | ≥10% |
| 10-30V | 10-30V | 10-30V | 10-30V | 10-30V | 10-30V |
| ≥10 mA | ≥10 mA | ≥10 mA | ≥10 mA | ≥10 mA | ≥10 mA |
| 400 mA | 400 mA | 400 mA | 400 mA | 400 mA | 400 mA |
| ≥2.4V | ≥2.4V | ≥2.4V | ≥2.4V | ≥2.4V | ≥2.4V |
| ≥10mA | ≥10mA | ≥10mA | ≥10mA | ≥10mA | ≥10mA |
| 500Hz | 500Hz | 500Hz | 500Hz | 300Hz | 300Hz |
| ≥15% | ≥15% | ≥15% | ≥15% | ≥15% | ≥15% |
| ≥10% | ≥10% | ≥10% | ≥10% | ≥10% | ≥10% |
| .8mm (.03 in.) | .8mm (.03 in.) | 1.0mm (.04 in) | 1.0mm (.04 in) | 1.5mm (.06 in) | 1.5mm (.06 in) |
| PBTB | PBTB | PBTB | PBTB | PBTB | PBTB |
| Trogamid T | Nickel Plated Brass | Trogamid T | Nickel Plated Brass | Trogamid T | Nickel Plated Brass |

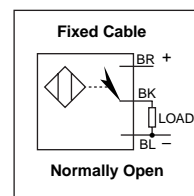
Note: Sensor dimensions in mm.



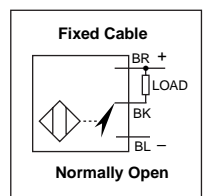
Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech

PNP







NPN



**DC - 3 WIRE
MINI METAL HOUSING
Cylindrical, 10-30V DC, 200mA
LED for Output Energized**

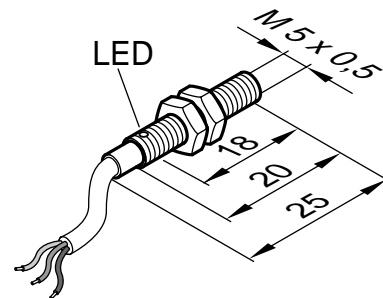
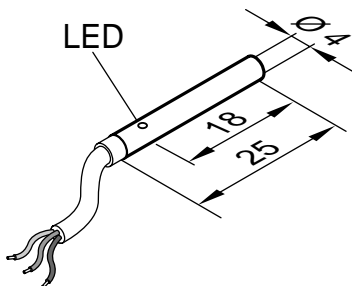
- 4mm, 5mm, and 6.5mm diameter
- Economically Priced
- Non-connector models feature polyurethane (PUR) cables
- Carries CE mark

- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| Sensing Distance | Ø 4 Flush Mount | | M5 Flush Mount | | |
|-----------------------------------|---|---------------------|---------------------|---------------------|-----------|
| | 0.8mm (0.03 in.) | | 0.8mm (0.03 in.) | | |
| Cable or Connector Style Cat. No. | Cable | 64 | Cable | 64 | |
| PNP | Normally Open  | 9980-1010 | 9980-1064 | 9980-2010 | 9980-2064 |
| | Normally Closed  | | | | |
| NPN | Normally Open  | 9980-1110 | 9980-1164 | 9980-2110 | 9980-2164 |
| | Normally Closed  | | | | |
| Ripple Voltage | ≤10% | ≤10% | ≤10% | ≤10% | |
| Voltage Range | 10V-30V | 10V - 30V | 10V - 30V | 10V - 30V | |
| Supply Current | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA | |
| Max. Load Current | 200 mA | 200 mA | 200 mA | 200 mA | |
| Voltage Drop Across Sensor | ≤2V | ≤2V | ≤2V | ≤2V | |
| Max. Leakage Current | ≤100 µA | ≤100 µA | ≤100 µA | ≤100 µA | |
| Switching Frequency | 5000 Hz | 5000 Hz | 5000 Hz | 5000 Hz | |
| Hysteresis | Typ. 5% | Typ. 5% | Typ. 5% | Typ. 5% | |
| Temperature Drift | ≤10% | ≤10% | ≤10% | ≤10% | |
| Repeatability | .04mm (.003 in.) | .04mm (.003 in.) | .04mm (.003 in.) | .04mm (.003 in.) | |
| Front Cap Material | PBTP | PBTP | PBTP | PBTP | |
| Housing Material | Nickel Plated Brass | Nickel Plated Brass | Nickel Plated Brass | Nickel Plated Brass | |

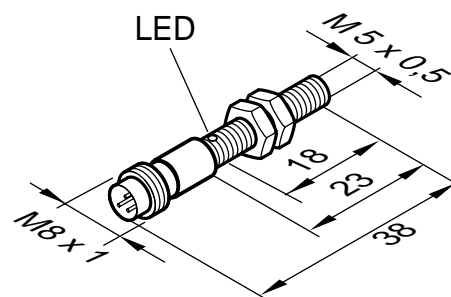
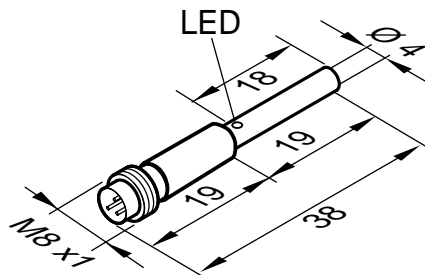
Fixed Cable

PUR 2m (6 ft. 6 in.). Supplied with Brass, Nickel Plated (BN) locknuts for M5 model.



64 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts for M5 model.



Metric/In. Conversion Table

| | |
|------------------|--------------------|
| .5 mm = .019 in. | 19.0 mm = .74 in. |
| 1.0 mm = .04 in. | 20.0 mm = .78 in. |
| 3.5 mm = .13 in. | 23.0 mm = .90 in. |
| 4.0 mm = .15 in. | 25.0 mm = .94 in. |
| 5.0 mm = .19 in. | 35.0 mm = 1.37 in. |
| 6.5 mm = .25 in. | 40.0 mm = 1.57 in. |
| 8.0 mm = .31 in. | 43.0 mm = 1.69 in. |

This table converts millimeters to inches in reference to the illustrations included in this catalog

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

| | | |
|--------------|-----------|-----------------------------|
| 64 Connector | 8000-5220 | PVC, Straight |
| 64 Connector | 8000-5230 | PVC, Right Angle, 2LED, PNP |
| 64 Connector | 8000-5240 | PVC, Right Angle, 2LED, NPN |

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

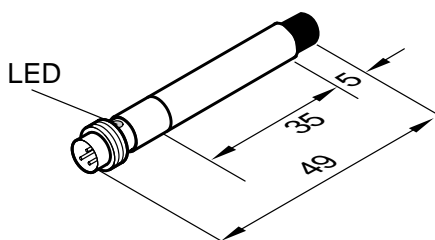
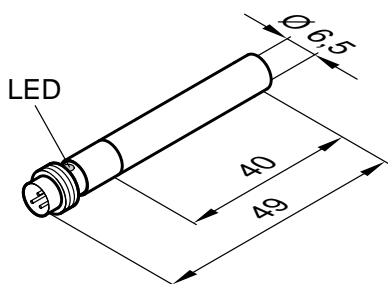
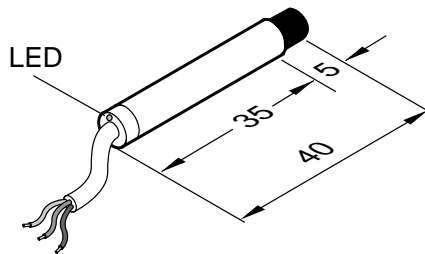
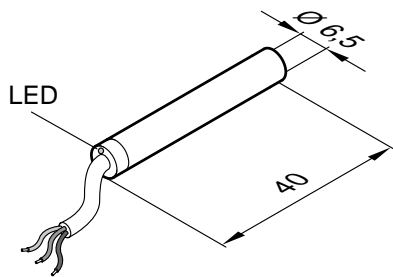
Ø 6.5 Flush Mount 1.5mm (0.06 in.)

| Cable | 65 |
|-----------------|-----------------|
| 9961-1200 | 9961-1264 |
| ≤10% | ≤10% |
| 10V - 30V | 10V - 30V |
| ≤8 mA | ≤8 mA |
| 200 mA | 200 mA |
| ≤2.4V | ≤2.4V |
| ≤10 µA | ≤10 µA |
| 2000 Hz | 2000 Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| .15mm (.006in.) | .15mm (.006in.) |
| PBTB | PBTB |
| Stainless Steel | Stainless Steel |

Ø 6.5 Non-Flush Mount 3.0mm (0.11 in.)

| Cable | 65 |
|-----------------|-----------------|
| 9961-1300 | 9961-1364 |
| ≤10% | ≤10% |
| 10V - 30V | 10V - 30V |
| ≤8 mA | ≤8 mA |
| 200 mA | 200 mA |
| ≤2.4V | ≤2.4V |
| ≤10 µA | ≤10 µA |
| 2000 Hz | 2000 Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| .15mm (.006in.) | .15mm (.006in.) |
| PBTB | PBTB |
| Stainless Steel | Stainless Steel |

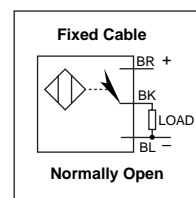
Note: Sensor dimensions in mm.



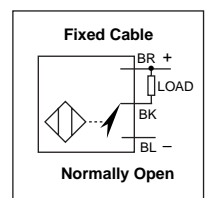
Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech

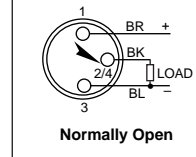
PNP



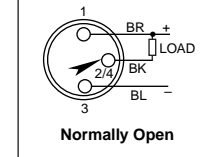
NPN



64 Connector



64 Connector



**DC - 4 WIRE – COMPLEMENTARY
OUTPUTS (N.O. & N.C.)
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
10-30V DC, 200mA
1 LED for Output Energized**

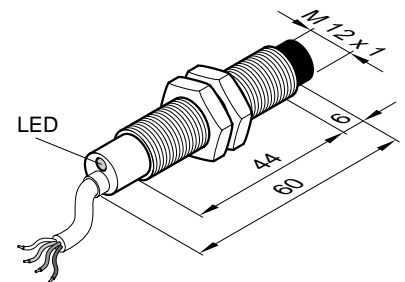
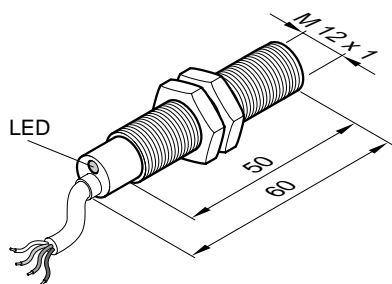
• Carries ϵ mark

- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| | M12 Flush Mount | | M12 Non-Flush Mount | |
|--|------------------------|------------------|----------------------------|------------------|
| Sensing Distance | 2mm (.08 in.) | | 4mm (.16 in.) | |
| Cable or Connector Style Cat. No. | Cable | 65 | Cable | 65 |
| PNP (Complementary NO/NC) | 9962-6200 | 9962-6265 | 9962-6300 | 9962-6365 |
| NPN (Complementary NO/NC) | | | | |
| Ripple Voltage | ≤10% | ≤10% | ≤10% | ≤10% |
| Voltage Range | 10V-30V | 10V - 30V | 10V - 30V | 10V - 30V |
| Supply Current | ≤15 mA | ≤15 mA | ≤15 mA | ≤15 mA |
| Max. Load Current | 200 mA | 200 mA | 200 mA | 200 mA |
| Voltage Drop Across Sensor | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| Max. Leakage Current | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| Switching Frequency | 2000 Hz | 2000 Hz | 1000 Hz | 1000 Hz |
| Hysteresis | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | .20mm (.008 in.) | .20mm (.008 in.) | .40mm (.016 in.) | .40mm (.016 in.) |
| Front Cap Material | PBTP | PBTP | PBTB | PBTB |

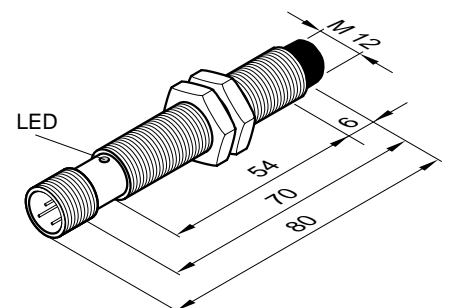
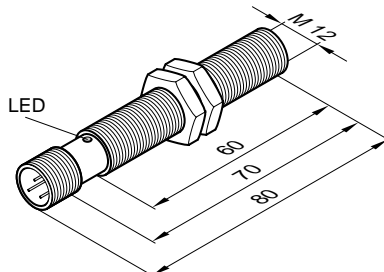
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | |
|--------------------|--------------------|
| 1.0 mm = .04 in. | 44.0 mm = 1.73 in. |
| 6.0 mm = .23 in. | 50.0 mm = 1.96 in. |
| 8.0 mm = .31 in. | 51.0 mm = 2.0 in. |
| 10.0 mm = .39 in. | 54.0 mm = 2.12 in. |
| 12.0 mm = .47 in. | 60.0 mm = 2.36 in. |
| 18.0 mm = .70 in. | 70.0 mm = 2.75 in. |
| 32.0 mm = 1.26 in. | 80.0 mm = 3.12 in. |
| 42.0 mm = 1.65 in. | |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

65 Connectors, 4PIN – 4 Wire cable (PIN 1, 2, 3, 4) :
65 Connectors 8000-5280 PVC, Right Angle

Change last digit of connector number for 5 meter cable

Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

M18 Flush Mount

5mm (.2 in.)

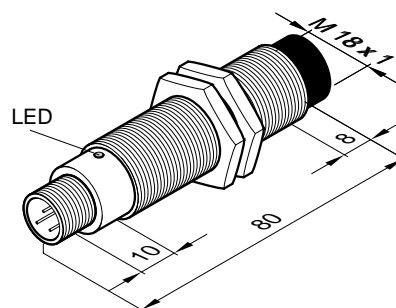
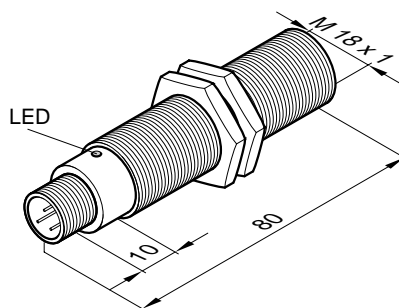
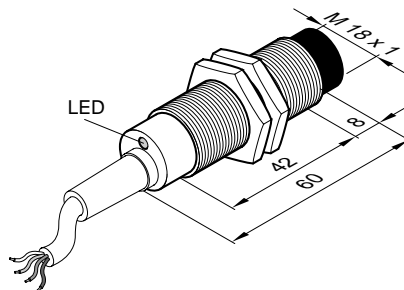
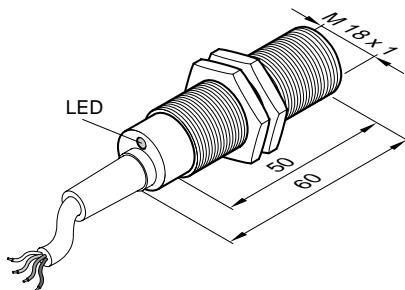
| Cable | 65 |
|----------------|----------------|
| 9964-6200 | 9964-6265 |
| ≤10% | ≤10% |
| 10V - 30V | 10V - 30V |
| ≤15 mA | ≤15 mA |
| 200 mA | 200 mA |
| ≤2.4V | ≤2.4V |
| 10 μA | 10 μA |
| 1000 Hz | 1000 Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| .5mm (.02 in.) | .5mm (.02 in.) |
| PBTB | PBTB |

M18 Non-Flush Mount

8mm (.31 in.)

| Cable | 65 |
|-----------------|-----------------|
| 9964-6300 | 9964-6365 |
| ≤10% | ≤10% |
| 10V - 30V | 10V - 30V |
| ≤15 mA | ≤15 mA |
| 200 mA | 200 mA |
| ≤2.4V | ≤2.4 V |
| 10μA | 10μA |
| 500 Hz | 500 Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| .8mm (.031 in.) | .8mm (.031 in.) |
| PBTB | PBTB |

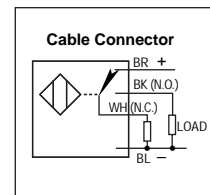
Note: Sensor dimensions in mm.



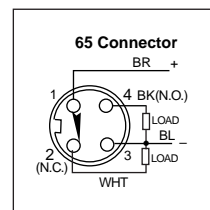
Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech

PNP







PNP



**DC - 3 WIRE – EXTENDED
TEMPERATURE RANGE
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
10-30V DC, 200mA
1 LED for Output Energized**

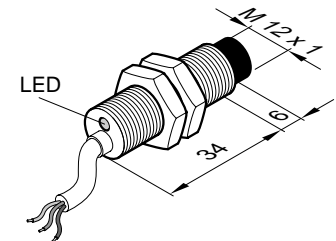
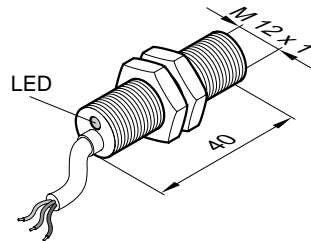
- **Temperature Range:**
-40 to 100°C
(104 to 212°F)
- **Carries (€ mark)**

- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance

| Sensing Distance | M12 Flush Mount 2mm (.08 in.) | | M12 Non-Flush Mount 4mm (.16 in.) | | |
|--|-----------------------------------|------------------|--------------------------------------|------------------|------------------|
| | Cable or Connector Style Cat. No. | Cable | 65 | Cable | 65 |
| PNP Normally Open  | | 9962-6010 | 9962-6065 | 9962-6110 | 9962-6165 |
| Normally Closed  | | | | | |
| NPN Normally Open  | | | | | |
| Normally Closed  | | | | | |
| Ripple Voltage | | ≤10% | ≤10% | ≤10% | ≤10% |
| Voltage Range | | 10V-30V | 10V - 30V | 10V - 30V | 10V - 30V |
| Supply Current | | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA |
| Max. Load Current | | 200 mA | 200 mA | 200 mA | 200 mA |
| Voltage Drop Across Sensor | | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| Max. Leakage Current | | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| Switching Frequency | | 2000 Hz | 2000 Hz | 1000 Hz | 1000 Hz |
| Hysteresis | | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | | .20mm (.008 in.) | .20mm (.008 in.) | .40mm (.016 in.) | .40mm (.016 in.) |
| Front Cap Material | | PBTP | PBTP | PBTB | PBTB |

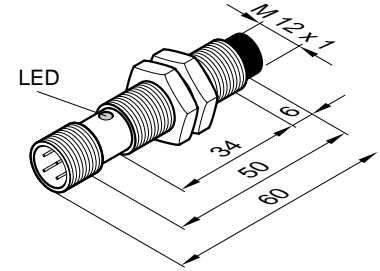
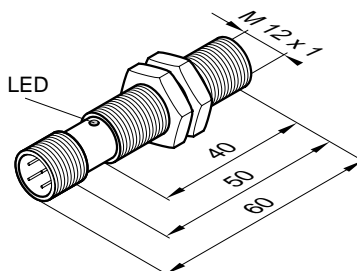
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | |
|-------------------|--------------------|
| 1.0 mm = .04 in. | 32.0 mm = 1.23 in. |
| 6.0 mm = .23 in. | 34.0 mm = 1.31 in. |
| 8.0 mm = .31 in. | 40.0 mm = 1.39 in. |
| 12.0 mm = .47 in. | 50.0 mm = 1.47 in. |
| 18.0 mm = .70 in. | 51.0 mm = 1.59 in. |
| | 60.0 mm = 2.36 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

| | | |
|--------------|-----------|-----------------------------|
| 65 Connector | 8000-5110 | PVC, Straight |
| 65 Connector | 8000-5120 | PVC, Right Angle |
| 65 Connector | 8000-5150 | PVC, Right Angle, 2LED, NPN |
| 65 Connector | 8000-5160 | PVC, Right Angle, 2LED, PNP |

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

M18 Flush Mount

5mm (.20 in.)

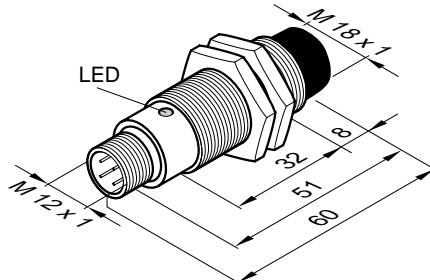
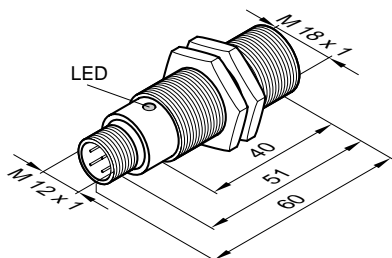
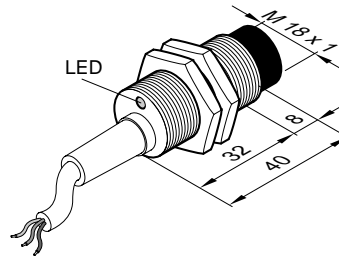
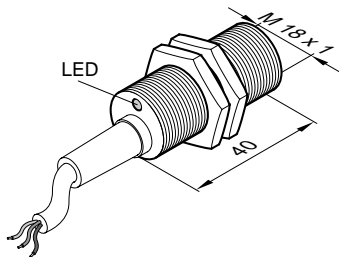
| Cable | 65 |
|-----------------|-----------------|
| 9964-6010 | 9964-6065 |
| ≤10% | ≤10% |
| 10V - 30V | 10V - 30V |
| ≤10 mA | ≤10 mA |
| 200 mA | 200 mA |
| ≤2.4V | ≤2.4V |
| 10 μA | 10 μA |
| 1000 Hz | 1000 Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| .50mm (.02 in.) | .50mm (.02 in.) |
| PBTB | PBTB |

M18 Non-Flush Mount

8mm (.31 in.)

| Cable | 65 |
|-----------------|-----------------|
| 9964-6110 | 9964-6165 |
| ≤10% | ≤10% |
| 10V - 30V | 10V - 30V |
| ≤25 mA | ≤25 mA |
| 200 mA | 200 mA |
| ≤2.4V | ≤2.4V |
| 10 μA | 10 μA |
| 500 Hz | 500 Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| .80mm (.03 in.) | .80mm (.03 in.) |
| PBTB | PBTB |

Note: Sensor dimensions in mm.

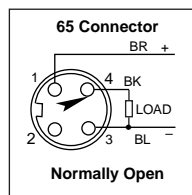
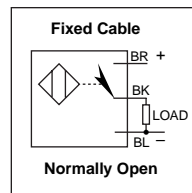


Mounting Brackets – see Pages 114-115

Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech





PNP



DC - 3 WIRE – WELD IMMUNE
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
10-30V DC, 200mA
1 LED for Output Energized

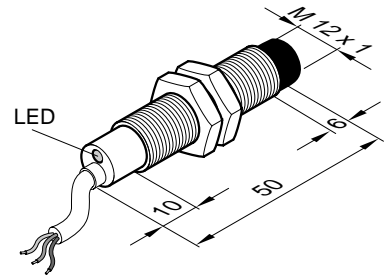
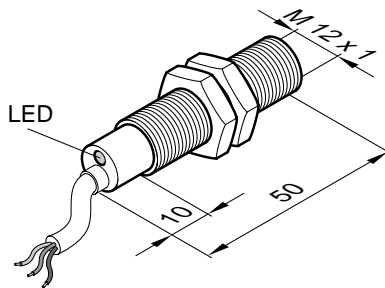
- *Circuitry that protects for electro-magnetic interference*
- *Flush models have teflon ceramic coatings to protect for weld slag*
- *Carries C ϵ mark*

- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| | | | M12 Flush Mount | | M12 Non-Flush Mount | |
|--|-----------------|---|------------------------|---------------------|----------------------------|---------------------|
| Sensing Distance | | | 2mm (.08 in.) | | 4mm (.16 in.) | |
| Cable or Connector Style Cat. No. | | | Cable | 45 | Cable | 65 |
| PNP | Normally Open |  | 9962-5840 | 9962-5845 | 9962-5900 | 9962-5965 |
| | Normally Closed |  | | | | |
| NPN | Normally Open |  | | | | |
| | Normally Closed |  | | | | |
| Ripple Voltage | | | ≤10% | ≤10% | ≤10% | ≤10% |
| Voltage Range | | | 10V-30V | 10V - 30V | 10V - 30V | 10V - 30V |
| Supply Current | | | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA |
| Max. Load Current | | | 200 mA | 200 mA | 200 mA | 200 mA |
| Voltage Drop Across Sensor | | | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| Max. Leakage Current | | | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| Switching Frequency | | | 15 Hz | 15 Hz | 15Hz | 15 Hz |
| Hysteresis | | | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | | | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | | | .20mm (.008 in.) | .20mm (.008 in.) | .40mm (.016 in.) | .40mm (.016 in.) |
| Front Cap Material | | | Teflon | Teflon | PBTB | PBTB |
| Housing Material | | | Teflon Plated Brass | Teflon Plated Brass | Nickel Plated Brass | Nickel Plated Brass |

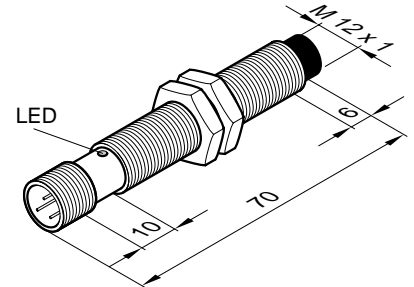
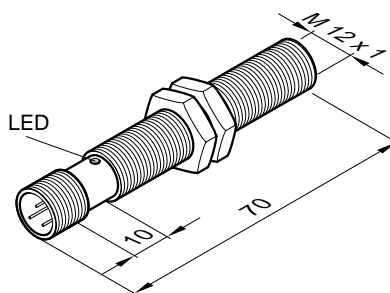
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



45/65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | |
|-------------------|--------------------|
| 1.0 mm = .04 in. | 50.0 mm = 1.47 in. |
| 6.0 mm = .23 in. | 52.0 mm = 2.04 in. |
| 8.0 mm = .31 in. | 60.0 mm = 2.36 in. |
| 10.0 mm = .39 in. | 70.0 mm = 2.75 in. |
| 12.0 mm = .47 in. | 80.0 mm = 3.12 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

- 45/65 Connector 8000-5110 PVC, Straight
- 45/65 Connector 8000-5120 PVC, Right Angle
- 45/65 Connector 8000-5150 PVC, Right Angle, 2LED, NPN
- 45/65 Connector 8000-5160 PVC, Right Angle, 2LED, PNP

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

M18 Flush Mount

5mm (.20 in.)

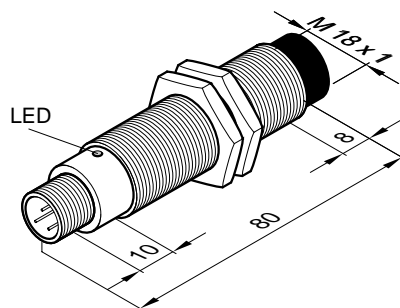
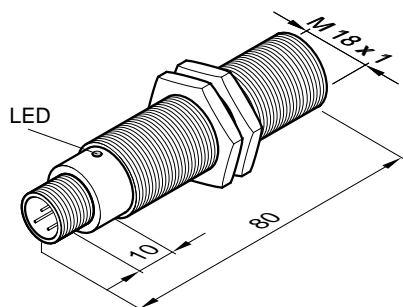
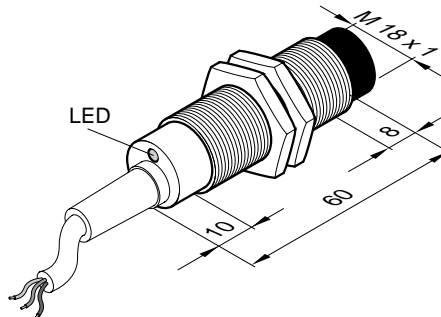
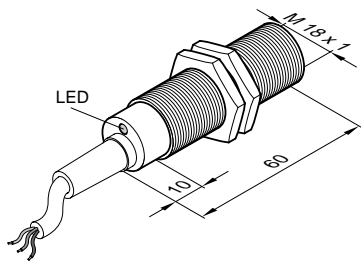
| Cable | 45 |
|---------------------|---------------------|
| 9964-5840 | 9964-5845 |
| ≤10% | ≤10% |
| 10V - 30V | 10V - 30V |
| ≤10 mA | ≤10 mA |
| 200 mA | 200 mA |
| ≤2.4V | ≤2.4V |
| 10 μA | 10 μA |
| 15 Hz | 15 Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| .50mm (.02 in.) | .50mm (.02 in.) |
| Teflon | Teflon |
| Teflon Plated Brass | Teflon Plated Brass |

M18 Non-Flush Mount

8mm (.31 in.)

| Cable | 65 |
|---------------------|---------------------|
| 9964-5900 | 9964-5965 |
| ≤10% | ≤10% |
| 10V - 30V | 10V - 30V |
| ≤10 mA | ≤10 mA |
| 200 mA | 200 mA |
| ≤2.4V | ≤2.4V |
| 10 μA | 10 μA |
| 15 Hz | 15 Hz |
| ≤15% | ≤15% |
| ≤10% | ≤10% |
| .80mm (.03 in.) | .80mm (.03 in.) |
| PBTB | PBTB |
| Nickel Plated Brass | Nickel Plated Brass |

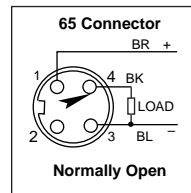
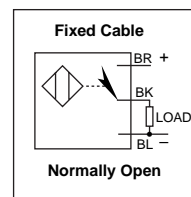
Note: Sensor dimensions in mm.



Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech





PNP



DC - 3 WIRE – WELD IMMUNE
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
10-30V DC, 200mA
1 LED for Output Energized

- **Circuitry that protects for electro-magnetic interference**
- **Flush models have teflon ceramic coatings to protect for weld slag**
- **Carries CE mark**

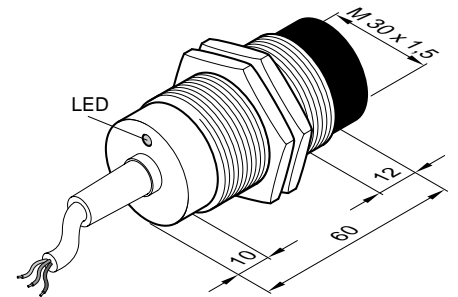
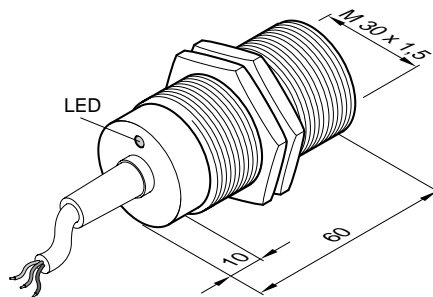
- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| M30 Flush Mount | | | M30 Non-Flush Mount | |
|----------------------------|-----------------------------------|---|---------------------|---------------------|
| 10mm (.39 in.) | | | 15mm (.59 in.) | |
| Sensing Distance | Cable or Connector Style Cat. No. | | Cable | 65 |
| PNP | Normally Open |  | 9966-5840 | 9966-5845 |
| | Normally Closed |  | | |
| NPN | Normally Open |  | | |
| | Normally Closed |  | | |
| Ripple Voltage | ≤10% | ≤10% | ≤10% | ≤10% |
| Voltage Range | 10V-30V | 10V - 30V | 10V - 30V | 10V - 30V |
| Supply Current | ≤10 mA | ≤10 mA | ≤10 mA | ≤10 mA |
| Max. Load Current | 200 mA | 200 mA | 200 mA | 200 mA |
| Voltage Drop Across Sensor | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| Max. Leakage Current | ≤10 μA | ≤10 μA | ≤10 μA | ≤10 μA |
| Switching Frequency | 15 Hz | 15 Hz | 15 Hz | 15Hz |
| Hysteresis | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | 1.0mm (.039 in.) | 1.0mm (.039 in.) | 1.5mm (.059 in.) | 1.5mm (.059 in.) |
| Front Cap Material | Teflon | Teflon | PBTB | PBTB |
| Housing Material | Teflon Plated Brass | Teflon Plated Brass | Nickel Plated Brass | Nickel Plated Brass |

Note: Sensor dimensions in mm.

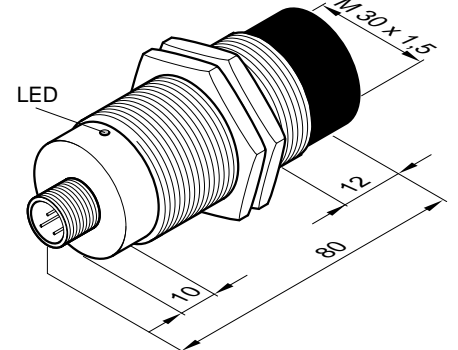
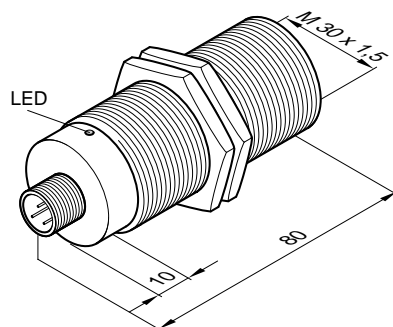
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



45/65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| |
|--------------------|
| 1.5 mm = .06 in. |
| 10.0 mm = .39 in. |
| 12.0 mm = .47 in. |
| 30.0 mm = 1.20 in. |
| 60.0 mm = 2.36 in. |
| 80.0 mm = 3.15 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

45/65 Connector 8000-5110 PVC, Straight
 45/65 Connector 8000-5120 PVC, Right Angle
 45/65 Connector 8000-5150 PVC, Right Angle, 2LED, NPN
 45/65 Connector 8000-5160 PVC, Right Angle, 2LED, PNP

Change last digit of connector number to 5 for 5 meter cable

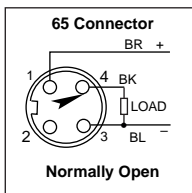
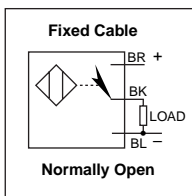
Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech

PNP



DC ANALOG SENSORS

Cylindrical, Threaded

Brass, Nickel Plated (BN),

18-30V DC

Analog Output 1V - 9V M12, M18, M30

M30 4 Bit Digital & Analog Output

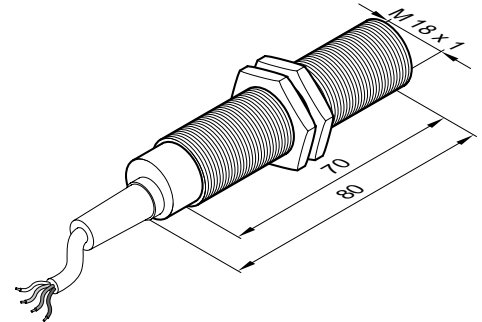
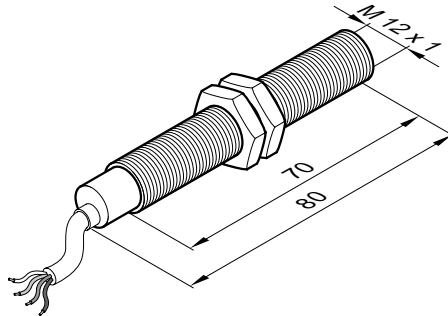
- Output voltage proportional to target distance
- Ideal for determining position information
- Excellent linearity $\pm 3\%$
- Shielded cable outputs on cable models
- Carries $\text{C}\epsilon$ mark

- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Short Circuit Protection
- Overload Protection
- Temperature Range: -25 to 70°C (-13 to 158°F)

| | M12 Flush Mount | | M18 Flush Mount | |
|-----------------------------------|------------------------------------|--------------|--------------------------------|--------------|
| Sensing Distance | 0.5mm (.02 in.) to 2.5mm (0.1 in.) | | 1mm (.04 in.) to 4mm (.16 in.) | |
| Cable or Connector Style Cat. No. | Cable | 65 | Cable | 65 |
| | 9914-0800 | 9914-0865 | 9914-0900 | 9914-0965 |
| Voltage Range | 18V-30V | 18V - 30V | 18V - 30V | 18V - 30V |
| Supply Current | ≤ 10 mA | ≤ 10 mA | ≤ 10 mA | ≤ 10 mA |
| Max. Load Current | 5 mA | 5 mA | 5 mA | 5 mA |
| Max. Switching Frequency | 100 Hz | 100 Hz | 100 Hz | 100 Hz |
| Temperature Drift | ± 0.3 V | ± 0.3 V | ± 0.3 V | ± 0.3 V |
| Repeatability | 1% | 1% | 1% | 1% |
| Front Cap Material | PBTP | PBTP | PBTB | PBTB |
| Output Voltage Range | 1-9V DC | 1-9V DC | 1-9V DC | 1-9V DC |

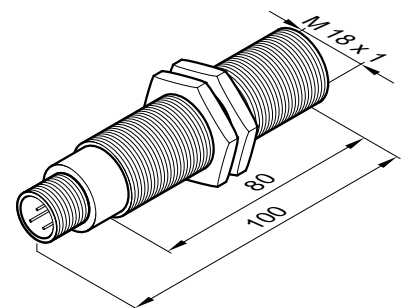
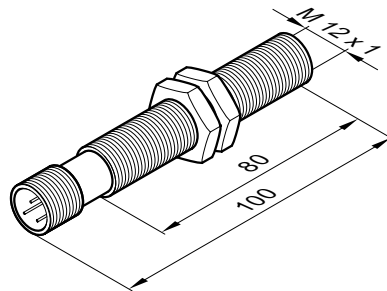
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | |
|--------------------|--------------------|
| 1.0 mm = .04 in. | 58.0 mm = 2.28 in. |
| 1.5 mm = .06 in. | 70.0 mm = 2.75 in. |
| 10.0 mm = .40 in. | 80.0 mm = 3.12 in. |
| 12.0 mm = .47 in. | 100.0mm = 3.94 in. |
| 18.0 mm = .70 in. | |
| 30.0 mm = 1.20 in. | |

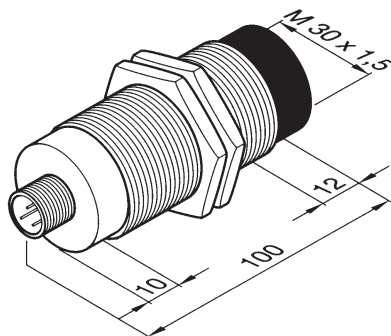
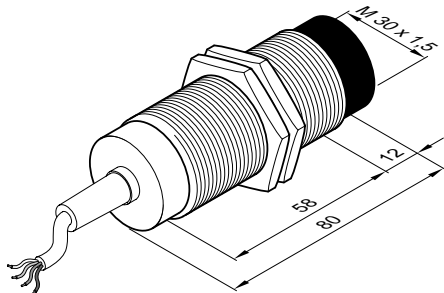
This table converts millimeters to inches in reference to the illustrations included on these pages

M30 Non-Flush Mount

7mm (.28 in.) to 14mm (.55 in.)

| Cable | Cable | 65 |
|-------------------------|-----------|-----------|
| 9914-1000 | 9914-0500 | 9914-0565 |
| 18V - 30V | 18V - 30V | 18V - 30V |
| ≤10 mA | ≤10 mA | ≤10 mA |
| 5 mA | 5 mA | 5 mA |
| 30 Hz | 30 Hz | 30 Hz |
| ±0.3V | ±0.3V | ±0.3V |
| 1% | 1% | 1% |
| PBTB | PBTB | PBTB |
| 1-9V DC & 4 Bit Digital | 1-9V DC | 1-9V DC |

Note: Sensor dimensions in mm.



Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

65 Connectors, 4PIN - 4 Wire cable (PIN 1, 2, 3, 4) :
65 Connectors 8000-5280 PVC, Right Angle

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

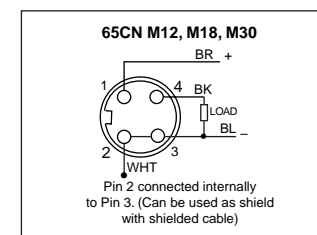
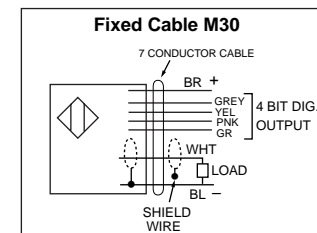
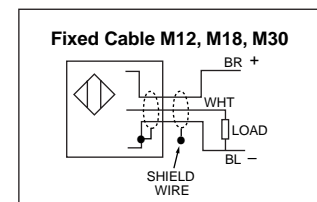
The analog output voltage can be digitized by the 8100-2100 switching unit and 8100-2400/2500 modules.

(Separate Accessory items - refer to pages 125 & 126 for more information.)

Mounting Brackets - see Pages 114-115

Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech



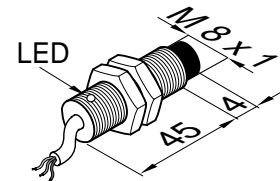
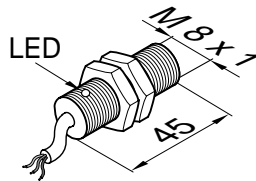
DC - 3WIRE
EXTENDED RANGE PLUS
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
10-30V DC, 200mA
1 LED for Output Energized

- Up to 3 times the sensing distance
- Ideal for applications where large sensors will not fit
- Carries $\text{C}\epsilon$ mark
- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Sensing ranges from 3mm (.12 in.) to 40mm (1.57 in.)
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| M8 Flush Mount | | | | M8 Non-Flush Mount | | | |
|--------------------------------|-----------------|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Sensing distance 3mm (0.1 in.) | | | | 6mm (0.2 in.) | | | |
| Cable or Connector Style | Cat. No. | Cable | 64 | 65 | Cable | 64 | 65 |
| PNP | Normally Open | 9981-5000 | 9981-5064 | 9981-5065 | 9981-5200 | 9981-5264 | 9981-5265 |
| | Normally Closed | | | | | | |
| NPN | Normally Open | | | | | | |
| | Normally Closed | | | | | | |
| Ripple Voltage | | ≤20% | ≤20% | ≤20 | ≤20% | ≤20% | ≤20% |
| Voltage Range | | 10-30V | 10-30V | 10-30V | 10-30V | 10-30V | 10-30V |
| Supply Current | | ≤20mA | ≤20mA | ≤20mA | ≤20mA | ≤20mA | ≤20mA |
| Max. Load Current | | 200mA | 200mA | 200mA | 200mA | 200mA | 200mA |
| Voltage Drop Across Sensor | | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| Max. Leakage Current | | ≤100μA | ≤100μA | ≤100μA | ≤100μA | ≤100μA | ≤100μA |
| Switching Frequency | | 1000Hz | 1000Hz | 1000Hz | 500Hz | 500Hz | 500Hz |
| Hysteresis | | 10% | 10% | 10% | 10% | 10% | 10% |
| Temperature Drift | | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Housing Material | | Nickel Plated Brass | Nickel Plated Brass | Nickel Plated Brass | Nickel Plated Brass | Nickel Plated Brass | Nickel Plated Brass |
| Repeatability | | .15mm (.005 in.) | .15mm (.005 in.) | .15mm (.005 in.) | .3mm (.01 in.) | .3mm (.01 in.) | .3mm (.01 in.) |

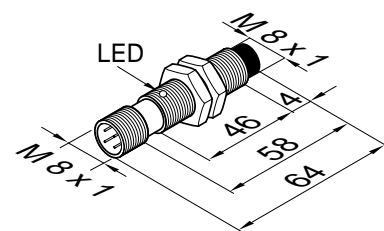
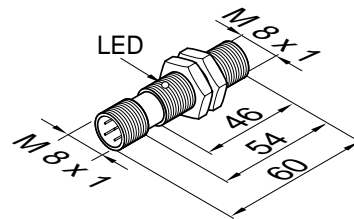
Fixed Cable

PVC 2m (6 ft. 6 in.). Supplied with Brass, Nickel Plated (BN) locknuts.



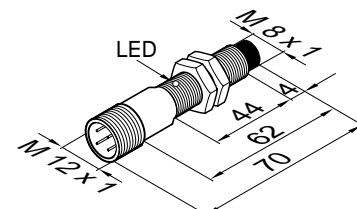
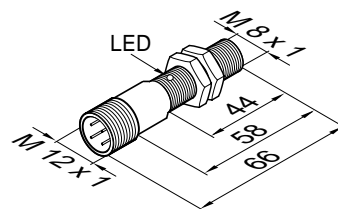
64 Connector

3-pin, Pico style, 8mm (.31 in.) supplied with Brass, Nickel Plated (BN) locknuts.



65 Style Connectors

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | |
|--------------------|--------------------|
| 1.0 mm = .04 in. | 52.0 mm = 2.04 in. |
| 4.0 mm = .16 in. | 54.0 mm = 2.12 in. |
| 6.0 mm = .23 in. | 56.0 mm = 2.20 in. |
| 8.0 mm = .31 in. | 58.0 mm = 2.28 in. |
| 12.0 mm = .47 in. | 60.0 mm = 2.36 in. |
| 40.0 mm = 1.39 in. | 62.0 mm = 2.44 in. |
| 44.0 mm = 1.73 in. | 66.0 mm = 2.60 in. |
| 45.0 mm = 1.77 in. | 70.0 mm = 2.75 in. |
| 50.0 mm = 1.97 in. | |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

| | | |
|--------------|-----------|------------------------------|
| 64 Connector | 8000-5220 | PVC, Straight |
| 64 Connector | 8000-5230 | PVC, Right Angle, 2LED, PNP |
| 64 Connector | 8000-5240 | PVC, Right Angle, 2 LED, NPN |
| 65 Connector | 8000-5110 | PVC, Straight |
| 65 Connector | 8000-5120 | PVC, Right Angle |
| 65 Connector | 8000-5150 | PVC, Right Angle, 2LED NPN |
| 65 Connector | 8000-5160 | PVC, Right Angle, 2LED PNP |

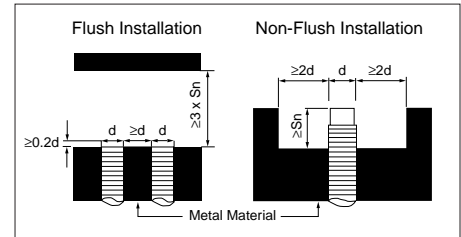
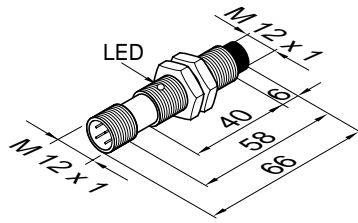
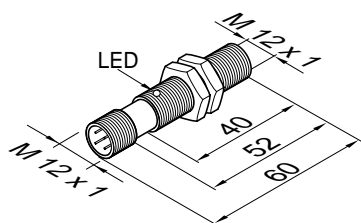
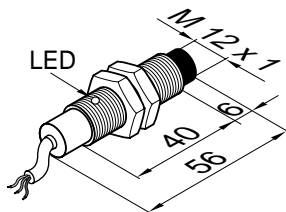
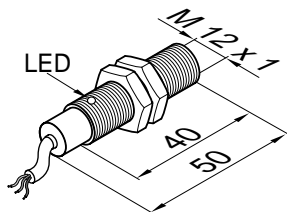
Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

| M12 Flush Mount 6mm (0.2 in.) | | M12 Non-Flush Mount 10mm (0.4 in.) | |
|----------------------------------|---------------------|---------------------------------------|---------------------|
| Cable | 65 | Cable | 65 |
| 9982-5000 | 9982-5065 | 9982-5200 | 9982-5265 |
| ≤20% | ≤20% | ≤20% | ≤20% |
| 10-30V | 10-30V | 10-30V | 10-30V |
| ≤20mA | ≤20mA | ≤20mA | ≤20mA |
| 200mA | 200mA | 200mA | 200mA |
| ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| ≤100μA | ≤100μA | ≤100μA | ≤100μA |
| 800Hz | 800Hz | 400Hz | 400Hz |
| 10% | 10% | 10% | 10% |
| ≤10% | ≤10% | ≤10% | ≤10% |
| Nickel Plated Brass | Nickel Plated Brass | Nickel Plated Brass | Nickel Plated Brass |
| .3mm (.01 in.) | .3mm (.01 in.) | .5mm (.02 in.) | .5mm (.02 in.) |

Note: Sensor dimensions in mm.

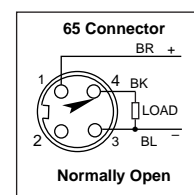
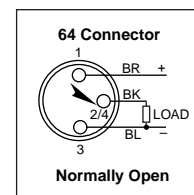
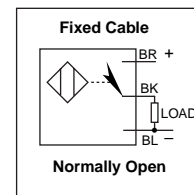


General Mounting – You must maintain minimum distance between adjacent and opposite sensors in addition to non-target metals as specified in the drawings above. Flush mount sensors must extend at least 0.2 times the sensor diameter above the adjacent metal housing. Non-flush mount sensors must extend a distance greater than the sensing distance (Sn). Please contact Altech for any installation assistance

Wiring Diagrams





Note: Wire colors are applicable to cable purchased from Altech

PNP



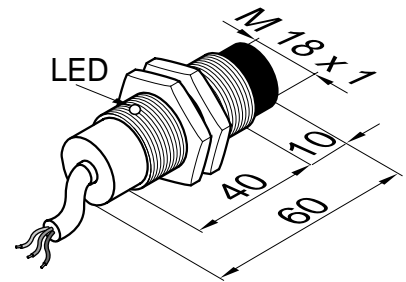
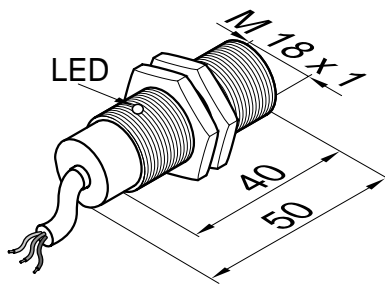
**DC - 3WIRE
EXTENDED RANGE PLUS
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
10-30V DC, 200mA
1 LED for Output Energized**

- **Up to 3 times the sensing distance**
- **Ideal for applications where large sensors will not fit**
- **Carries ζ mark**
- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Sensing ranges from 3mm (.12 in.) to 40mm (1.57 in.)
- Short Circuit Protection
- Overload Protection
- Reverse Polarity Protection
- Wire Break Resistance
- Temperature Range: -25 to 70°C (-13 to 158°F)

| | | | M18 Flush Mount | | M18 Non-Flush Mount | |
|-----------------------------------|-----------------|---|---------------------|---------------------|---------------------|---------------------|
| Sensing Distance | | | 12mm (0.4 in.) | | 20mm (0.8 in.) | |
| Cable or Connector Style Cat. No. | | | Cable | 65 | Cable | 65 |
| PNP | Normally Open |  | 9984-5000 | 9984-5065 | 9984-5200 | 9984-5265 |
| | Normally Closed |  | | | | |
| NPN | Normally Open |  | | | | |
| | Normally Closed |  | | | | |
| Ripple Voltage | | | ≤20% | ≤20% | ≤20% | ≤20% |
| Voltage Range | | | 10V-30V | 10V - 30V | 10V - 30V | 10V - 30V |
| Supply Current | | | ≤20 mA | ≤20 mA | ≤20 mA | ≤20 mA |
| Max. Load Current | | | 200 mA | 200 mA | 200 mA | 200 mA |
| Voltage Drop Across Sensor | | | ≤2.4V | ≤2.4V | ≤2.4V | ≤2.4V |
| Max. Leakage Current | | | ≤100 μA | ≤100 μA | ≤100 μA | ≤100 μA |
| Switching Frequency | | | 500 Hz | 500 Hz | 200 Hz | 200 Hz |
| Hysteresis | | | ≤10% | ≤10% | ≤10% | ≤10% |
| Temperature Drift | | | ≤10% | ≤10% | ≤10% | ≤10% |
| Housing Material | | | Nickel Plated Brass | Nickel Plated Brass | Nickel Plated Brass | Nickel Plated Brass |
| Repeatability | | | 0.6mm (.02 in.) | 0.6mm (.02 in.) | 1mm (.04 in.) | 1mm (.04 in.) |

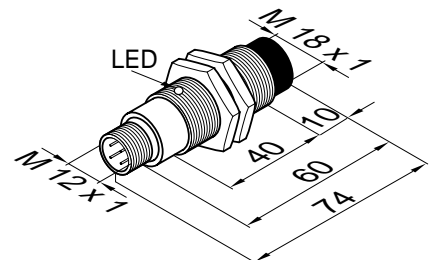
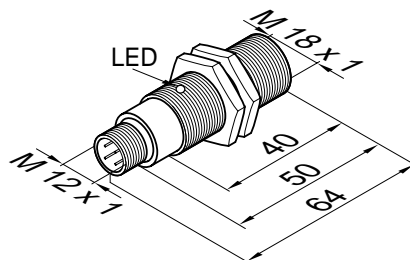
Fixed Cable

PVC 2m (6 ft. 6 in.). Supplied with Brass, Nickel Plated (BN) locknuts.



65 Style Connectors

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | |
|--------------------|--------------------|
| 1.0 mm = .04 in. | 52.0 mm = 2.04 in. |
| 4.0 mm = .16 in. | 54.0 mm = 2.12 in. |
| 6.0 mm = .23 in. | 56.0 mm = 2.20 in. |
| 8.0 mm = .31 in. | 58.0 mm = 2.28 in. |
| 12.0 mm = .47 in. | 60.0 mm = 2.36 in. |
| 40.0 mm = 1.57 in. | 62.0 mm = 2.44 in. |
| 44.0 mm = 1.73 in. | 66.0 mm = 2.60 in. |
| 45.0 mm = 1.77 in. | 70.0 mm = 2.75 in. |
| 50.0 mm = 1.97 in. | |

This table converts millimeters to inches in reference to the illustrations included on these pages

M30 Flush Mount

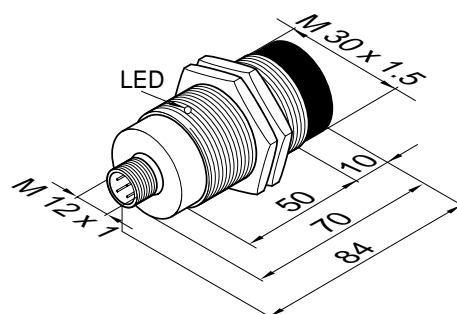
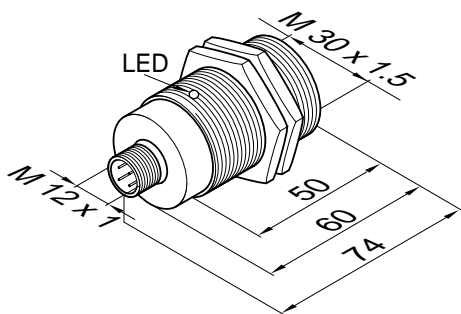
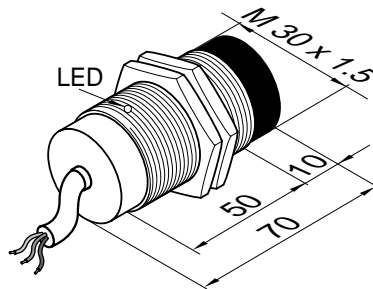
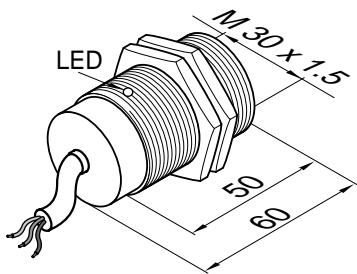
22mm (0.9 in.)

M30 Non-Flush Mount

40mm (1.57 in.)

| M30 Flush Mount 22mm (0.9 in.) | | M30 Non-Flush Mount 40mm (1.57 in.) | |
|-----------------------------------|---------------------|--|---------------------|
| Cable | 65 | Cable | 65 |
| 9986-5000 | 9986-5065 | 9986-5200 | 9986-5265 |
| ≤20% | ≤20% | ≤20% | ≤20% |
| 10V - 30V | 10V - 30V | 10V - 30V | 10V - 30V |
| ≤20 mA | ≤20 mA | ≤20 mA | ≤20 mA |
| 200 mA | 200 mA | 200 mA | 200 mA |
| ≤2.4V | ≤2.4V | ≤2.4V | ≤2.04V |
| 100 μA | 100 μA | 100 μA | 100 μA |
| 300 Hz | 300 Hz | 100 Hz | 100 Hz |
| ≤10% | ≤10% | ≤10% | ≤15% |
| ≤10% | ≤10% | ≤10% | ≤10% |
| Nickel Plated Brass | Nickel Plated Brass | Nickel Plated Brass | Nickel Plated Brass |
| 1.1mm (.045 in.) | 1.1mm (.045 in.) | 2mm (.078 in.) | 2mm (.078 in.) |

Note: Sensor dimensions in mm.



Accessories

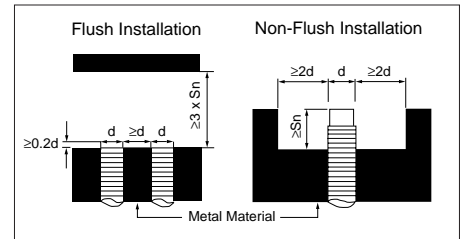
2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

| | | |
|--------------|-----------|----------------------------|
| 65 Connector | 8000-5110 | PVC, Straight |
| 65 Connector | 8000-5120 | PVC, Right Angle |
| 65 Connector | 8000-5150 | PVC, Right Angle, 2LED NPN |
| 65 Connector | 8000-5160 | PVC, Right Angle, 2LED PNP |

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

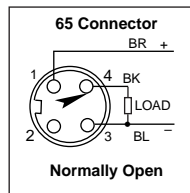
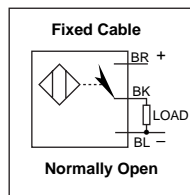


General Mounting – You must maintain minimum distance between adjacent and opposite sensors in addition to non-target metals as specified in the drawings above. Flush mount sensors must extend at least 0.2 times the sensor diameter above the adjacent metal housing. Non-flush mount sensors must extend a distance greater than the sensing distance (Sn). Please contact Altech for any installation assistance

Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech

PNP



DC - 2 WIRE NAMUR
Brass, Nickel Plated (BN),
and Plastic (TROGAMID-T)
Cylindrical, Threaded

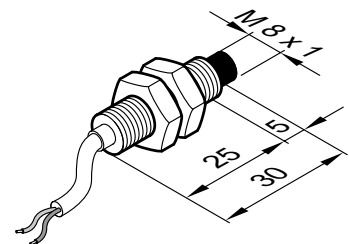
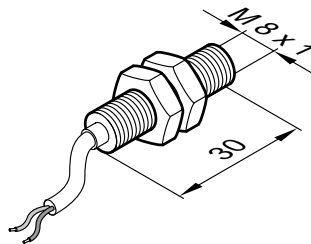
- **Low energy device**
- **Operates in hazardous areas with external amplifier**
- **Meets NAMUR regulations and DIN 19234 specifications**
- **Carries (C) mark**

- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Reverse Polarity Protection
- Plastic and Metal Housing according to NAMUR Regulations and DIN 19234
- Temperature Range: -25 to 70°C (-13 to 158°F)
 (For extended temperature models of -40°C to +125°C, consult Altech.)

| Sensing Distance | M8 Flush Mount 1mm (.04 in.) | | M8 Non-Flush Mount 2mm (.08 in.) | | |
|--|-----------------------------------|----------------------|-------------------------------------|----------------------|----------------------|
| | Cable or Connector Style Cat. No. | Cable | 65 | Cable | 65 |
| Nickel Plated Brass (BN) | | 9932-0100 | 9932-0165 | 9932-0200 | 9932-0265 |
| Plastic (TROGAMID T) | | | | 9932-1600 | |
| Ripple Voltage | | ≤5% | ≤5% | ≤15% | ≤5% |
| Voltage Range (supplied by Pulsotronic 8100-2200 Unit) | | 8.2V DC at 1KΩ | 8.2V DC at 1KΩ | 8.2V DC at 1KΩ | 8.2V DC at 1KΩ |
| Output Current (with target detection) | | 0.5 mA | 0.5 mA | 0.5 mA | 0.5 mA |
| Output Current (no target detection) | | 3.5 mA | 3.5 mA | 3.5 mA | 3.5 mA |
| Switching Frequency | | 2000 0Hz | 2000 Hz | 1000 Hz | 1000 Hz |
| Hysteresis | | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | | .1mm (.004 in.) | .1mm (.004 in.) | .2mm (.008 in.) | .2mm (.008 in.) |
| Front Cap Material | | PBTP (Metal Housing) | PBTP (Metal Housing) | PBTP (Metal Housing) | PBTP (Metal Housing) |

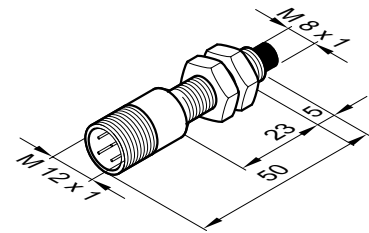
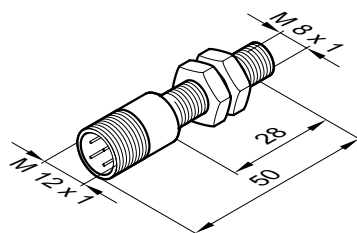
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Non-metallic locknuts for M8 and Brass, Nickel Plated (BN) locknuts for M12 through M30.



65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with non-metallic locknuts for M8 and Brass, Nickel Plated (BN) locknuts for M12 through M30.



Metric/in. Conversion Table

| | |
|-------------------|--------------------|
| 1.0 mm = .04 in. | 24.0 mm = .94 in. |
| 5.0 mm = .20 in. | 25.0 mm = 1.0 in. |
| 6.0 mm = .23 in. | 28.0 mm = 1.16 in. |
| 8.0 mm = .31 in. | 30.0 mm = 1.20 in. |
| 12.0 mm = .47 in. | 40.0 mm = 1.57 in. |
| 23.0 mm = .91 in. | 50.0 mm = 1.97 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

65 Connectors, 4 PIN – 4 Wire cable (PIN 1, 2, 3, 4) :
65 Connector 8000-5280 PVC Right Angle

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

Remote Amplifier –
Use 8100-2200, see page 123

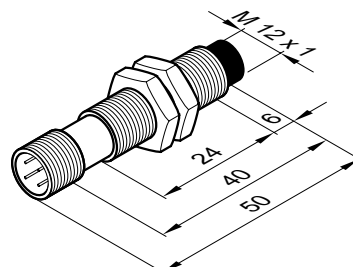
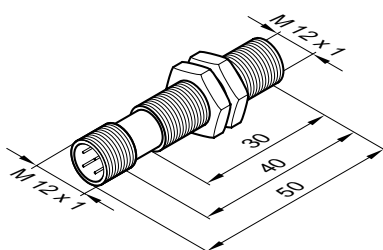
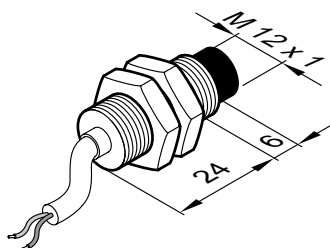
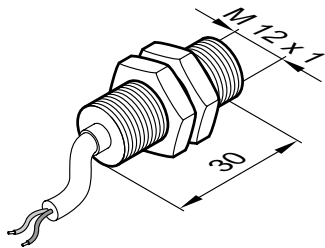
Mounting Brackets – see Pages 114-115

M12 Flush Mount 2mm (.08 in.)

M12 Non-Flush Mount 4mm (.16 in.)

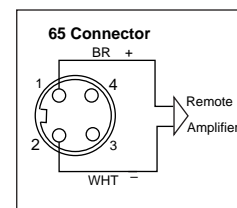
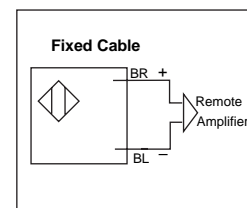
| Cable | 65 | Cable | 65 |
|----------------------|----------------------|----------------------|----------------------|
| 9932-0300 | 9932-0365 | 9932-0400 | 9932-0465 |
| 9932-1100 | | 9932-1000 | |
| ≤15% | ≤5% | ≤5% | ≤5% |
| 8.2V DC at 1KΩ | 8.2V DC at 1KΩ | 8.2V DC at 1KΩ | 8.2V DC at 1KΩ |
| 0.5 mA | 0.5 mA | 0.5 mA | 0.5 mA |
| 3.5 mA | 3.5 mA | 3.5 mA | 3.5 mA |
| 2000 Hz | 2000 Hz | 1000 Hz | 1000 Hz |
| ≤15% | ≤15% | ≤15% | ≤15% |
| ≤10% | ≤10% | ≤10% | ≤10% |
| .2mm (.008 in.) | .2mm (.008 in.) | .4mm (.016 in.) | .4mm (.016 in.) |
| PBTP (Metal Housing) | PBTP (Metal Housing) | PBTP (Metal Housing) | PBTP (Metal Housing) |

Note: Sensor dimensions in mm.



Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech



DC - 2 WIRE NAMUR
Brass, Nickel Plated (BN),
and Plastic (TROGAMID-T)
Cylindrical, Threaded

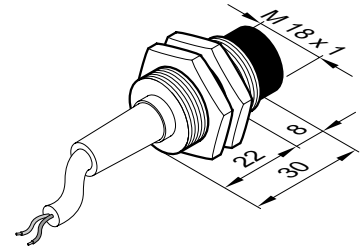
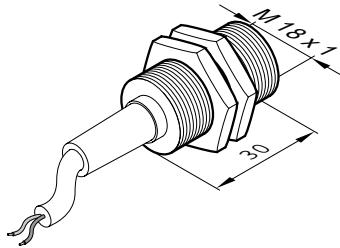
- **Low energy device**
- **Operates in hazardous areas with external amplifier**
- **Meets NAMUR regulations and DIN 19234 specifications**
- **Carries C€ mark**

- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Reverse Polarity Protection
- Plastic and Metal Housing according to NAMUR Regulations and DIN 19234
- Temperature Range: -25 to 70°C (-13 to 158°F)

| Sensing Distance | M18 Flush Mount | | M18 Non-Flush Mount | |
|--|----------------------|----------------------|----------------------|----------------------|
| | 5mm (.20 in.) | | 8mm (.31 in.) | |
| Cable or Connector Style Cat. No. | Cable | 65 | Cable | 65 |
| Nickel Plated Brass (BN) | 9932-0500 | 9932-0565 | 9932-0600 | 9932-0665 |
| Plastic (TROGAMID T) | 9932-1300 | | 9932-1200 | |
| Ripple Voltage | ≤5% | ≤5% | ≤5% | ≤5% |
| Voltage Range (supplied by Pulsotronic 8100-2200 Unit) | 8.2V DC at 1KΩ | 8.2V DC at 1KΩ | 8.2V DC at 1KΩ | 8.2V DC at 1KΩ |
| Output Current (with target detection) | 0.5 mA | 0.5 mA | 0.5 mA | 0.5 mA |
| Output Current (no target detection) | 3.5 mA | 3.5 mA | 3.5 mA | 3.5 mA |
| Switching Frequency | 1000 0Hz | 1000 Hz | 500 Hz | 500 Hz |
| Hysteresis | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | .5mm (.02 in.) | .5mm (.02 in.) | .8mm (.03 in.) | .8mm (.03 in.) |
| Front Cap Material | PBTP (Metal Housing) | PBTP (Metal Housing) | PBTP (Metal Housing) | PBTP (Metal Housing) |

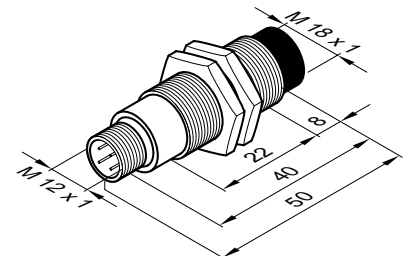
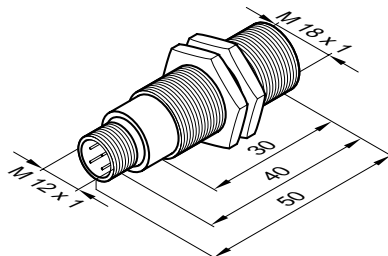
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | |
|-------------------|--------------------|
| 1.0 mm = .04 in. | 28.0 mm = 1.16 in. |
| 1.5 mm = .06 in. | 30.0 mm = 1.20 in. |
| 8.0 mm = .31 in. | 40.0 mm = 1.57 in. |
| 12.0 mm = .47 in. | 50.0 mm = 1.96 in. |
| 18.0 mm = .70 in. | 51.0 mm = 2.00 in. |
| 22.0 mm = .86 in. | 60.0 mm = 2.36 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

65 Connectors, 4 PIN – 4 Wire cable (PIN 1, 2, 3, 4) :
65 Connector 8000-5280 PVC Right Angle

Change last digit of connector number to 5 for 5 meter cable

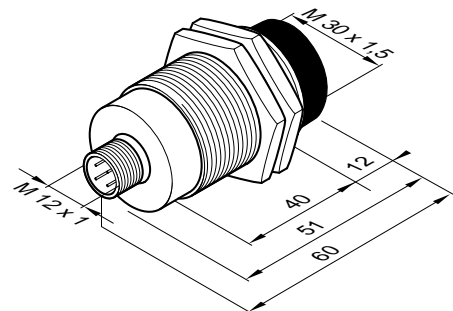
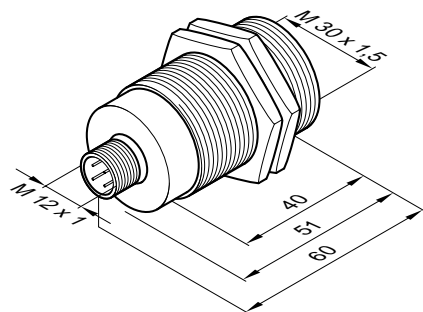
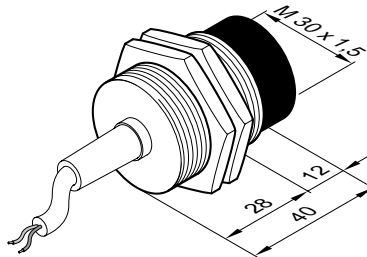
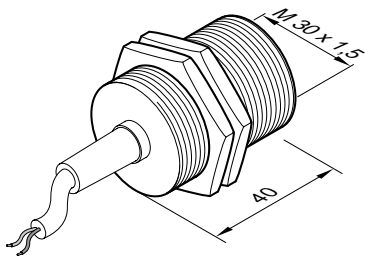
Refer to pages 116-121 for more cable information

Remote Amplifier – Use 8100-2200, see page 123

Mounting Brackets – see Pages 114-115

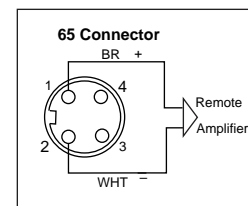
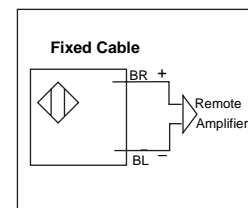
| M30 Flush Mount 10mm (.39 in.) | | M30 Non-Flush Mount 15mm (.59 in.) | |
|-----------------------------------|----------------------|---------------------------------------|----------------------|
| Cable | 65 | Cable | 65 |
| 9932-0700 | 9932-0765 | 9932-0800 | 9932-0865 |
| 9932-1500 | | 9932-1400 | |
| ≤5% | ≤5% | ≤5% | ≤5% |
| 8.2V DC at 1KΩ | 8.2V DC at 1KΩ | 8.2V DC at 1KΩ | 8.2V DC at 1KΩ |
| 0.5 mA | 0.5 mA | 0.5 mA | 0.5 mA |
| 3.5 mA | 3.5 mA | 3.5 mA | 3.5 mA |
| 500 Hz | 500 Hz | 300 Hz | 300 Hz |
| ≤15% | ≤15% | ≤15% | ≤15% |
| ≤10% | ≤10% | ≤10% | ≤10% |
| .1mm (.039 in.) | .1mm (.039 in.) | 1.5mm (.059 in.) | 1.5mm (.059 in.) |
| PBTP (Metal Housing) | PBTP (Metal Housing) | PBTP (Metal Housing) | PBTP (Metal Housing) |

Note: Sensor dimensions in mm.



Wiring Diagrams



Note: Wire colors are applicable to cable purchased from Altech



DC - 2 WIRE SENSORS
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
M12 – 5-30V DC, 100mA
M18, M30 – 10-55V DC, 200 mA
1 LED for Output Energized

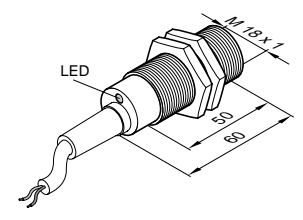
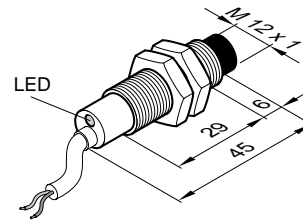
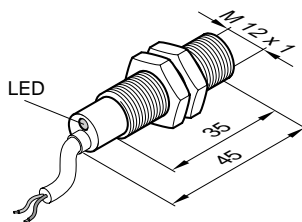
- **2 Wire devices reduce wiring requirements**
- **Economically Priced**
- **Carries C mark**

- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Reverse Polarity Protection
- Temperature Range: -25 to 70°C (-13 to 158°F)

| Sensing distance | M12 Flush Mount 2mm (.08 in.) | | M12 Non-Flush Mount 4mm (.16 in.) | | M18 Flush Mount 5mm (0.2 in.) |
|---|----------------------------------|------------------|--------------------------------------|------------------|----------------------------------|
| | Cable | 65 | Cable | 65 | Cable |
| Cable or Connector Style Cat. No. | | | | | |
| Normally Open  | 9962-5600 | 9962-5665 | 9962-5700 | 9962-5765 | 9964-5400 |
| Normally Closed  | | | | | |
| Ripple Voltage | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Voltage Range | 5V-30V | 5V-30V | 5V-30V | 5V-30V | 10V-55V |
| Supply Current | ≤3mA | ≤3mA | ≤3mA | ≤3mA | ≤5mA |
| Max. Load Current | 100mA | 100mA | 100mA | 100mA | 200mA |
| Voltage Drop Across Sensor | ≤5V | ≤5V | ≤5V | ≤5V | ≤6.5V |
| Max. Leakage Current | ≤0.5mA | ≤0.5mA | ≤0.5mA | ≤0.5mA | ≤1.5mA |
| Switching Frequency | 500Hz | 500Hz | 500Hz | 500Hz | 1000Hz |
| Hysteresis | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | .20mm (.008 in.) | .20mm (.008 in.) | .40mm (.016 in.) | .40mm (.016 in.) | .40mm (.016 in.) |
| Front Cap Material | PBTP | PBTP | PBTP | PBTP | PBTP |

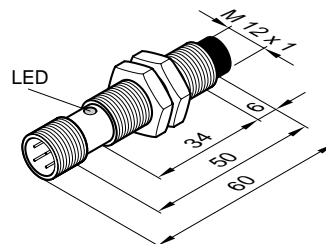
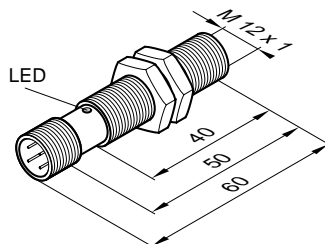
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



65 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



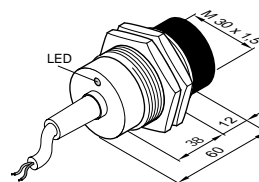
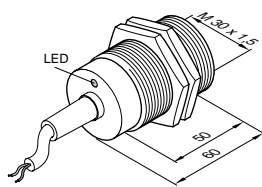
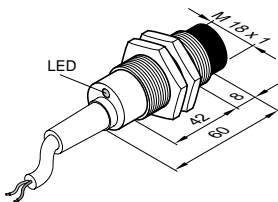
Metric/in. Conversion Table

| | |
|-------------------|--------------------|
| 1.5 mm = .06 in. | 23.0 mm = .08 in. |
| 2.0 mm = .08 in. | 28.0 mm = 1.10 in. |
| 4.0 mm = .16 in. | 30.0 mm = 1.18 in. |
| 5.0 mm = .20 in. | 32.0 mm = 1.26 in. |
| 6.0 mm = .23 in. | 34.0 mm = 1.34 in. |
| 8.0 mm = .31 in. | 40.0 mm = 1.57 in. |
| 10.0 mm = .39 in. | 50.0 mm = 1.97 in. |
| 12.0 mm = .47 in. | 51.0 mm = 2.01 in. |
| 15.0 mm = .59 in. | 60.0 mm = 2.36 in. |
| 18.0 mm = .70 in. | 80.0 mm = 3.12 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

| M18 Non-Flush Mount 8mm (.31 in.) | M30 Flush Mount 10mm (.39 in.) | M30 Non-Flush Mount 15mm (.59 in.) |
|--------------------------------------|-----------------------------------|---------------------------------------|
| Cable | Cable | Cable |
| 9964-5500 | 9966-5400 | 9966-5500 |
| ≤10% | ≤10% | ≤10% |
| 10V-55V | 10V-55V | 10V-55V |
| ≤5mA | ≤5mA | ≤5mA |
| 200mA | 200mA | 200mA |
| ≤6.5V | ≤6.5V | ≤6.5V |
| ≤1.5mA | ≤1.5mA | ≤1.5mA |
| 500Hz | 500Hz | 300Hz |
| ≤15% | ≤15% | ≤15% |
| ≤10% | ≤10% | ≤10% |
| .80mm (.03 in.) | 1mm (.039 in.) | 1.5mm (.059 in.) |
| PBTP | PBTP | PBTP |

Note: Sensor dimensions in mm.



Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

65 Connector 8000-5110 PVC, Straight
65 Connector 8000-5120 PVC, Right Angle

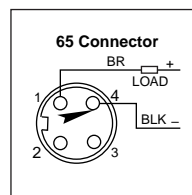
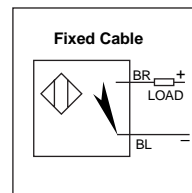
Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

Wiring Diagrams



Note: Wire colors are applicable to cable purchased from Altech



**AC - 2 WIRE
STANDARD SERIES
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
90-250V AC, 180 mA,
1 LED for Output Energized**

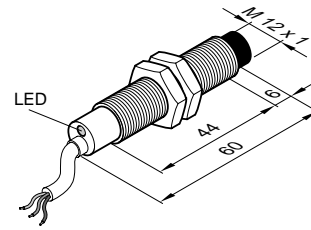
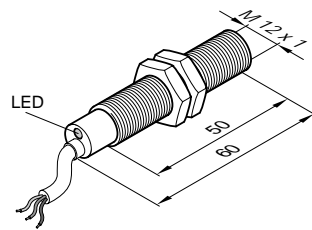
- **Most complete range of Fixed Cable and Quick Disconnect Styles**
- **Available in normally open (N.O.) and normally closed (N.C.) output configuration**
- **This series features the 360° LED viewing connector type "67"**
- **Carries Ⓢ mark**

- IEC (529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Temperature Range: -25 to 70°C (-13 to 158°F)

| Sensing Distance | M12 Flush Mount 2mm (.08 in.) | | | | M12 Non-Flush Mount 4mm (.16 in.) | | | | |
|---|-----------------------------------|--------------------------|--------------------------|--------------------------|--------------------------------------|--------------------------|--------------------------|--------------------------|--------------------------|
| | Cable or Connector Style Cat. No. | Cable | 62 | 66/67 | 68 | Cable | 62 | 66/67 | 68 |
| Normally Open  | | 9952-0500 | 9952-0562 | 9952-0566 9952-0567 | 9952-0568 | 9952-0400 | 9952-0462 | 9952-0466 9952-0467 | 9952-0468 |
| Normally Closed  | | 9952-0900 | | 9952-0966 9952-0967 | 9952-0968 | 9952-0800 | | 9952-0866 9952-0867 | 9952-0868 |
| Voltage Range | | 90V-250V | 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V |
| Operating Frequency | | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz |
| Supply Current | | 5 mA | 5 mA | 5 mA | 5 mA | 5 mA | 5 mA | 5 mA | 5 mA |
| Max. Load Current | | 180 mA | 100 mA | 180 mA | 180 mA | 180 mA | 180 mA | 180 mA | 180 mA |
| Voltage Drop Across Sensor | | ≤8V | ≤8V | ≤8V | ≤8V | ≤8V | ≤8V | ≤8V | ≤8V |
| Max. Leakage Current | | ≤3mA/220V ≤1.5mA/110V | ≤3mA/220V ≤1.5mA/110V | ≤3mA/220V ≤1.5mA/110V | ≤3mA/220V ≤1.5mA/110V | ≤3mA/220V ≤1.5mA/110V | ≤3mA/220V ≤1.5mA/110V | ≤3mA/220V ≤1.5mA/110V | ≤3mA/220V ≤1.5mA/110V |
| Short Term Current (20ms 1Hz) | | 1A | 1A | 1A | 1A | 1A | 1A | 1A | 1A |
| Switching Frequency | | 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V |
| Hysteresis | | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | | 2mm (.008in.) | .2mm (.008in.) | .2mm (.008in.) | .2mm (.008in.) | .4mm (.016in.) | .4mm (.016in.) | .4mm (.016in.) | .4mm (.016in.) |
| Front Cap Material | | PBTP | PBTP | PBTP | PBTP | PBTB | PBTB | PBTB | PBTB |

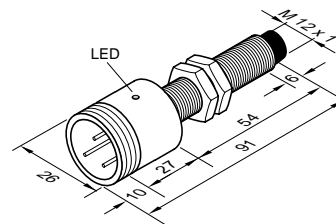
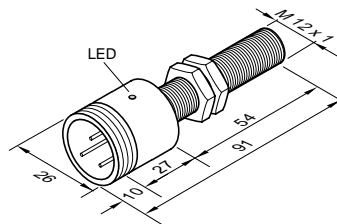
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



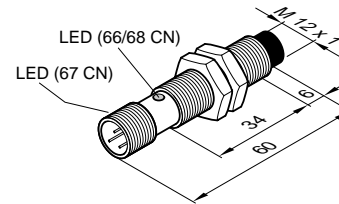
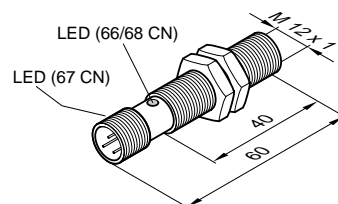
62 Style Connector

3-pin, Mini style, 25mm (1.0 in.) supplied with Brass, Nickel Plated (BN) locknuts.



66/67/68 Style Connectors

The 66/67 connectors are 4-pin, (68 connector, 3-pin), Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts. The 67 Connector is clear, offering 360° LED viewing.



Metric/in. Conversion Table

| | |
|--------------------|--------------------|
| 1.0 mm = .04 in. | 29.0 mm = 1.14 in. |
| 5.0 mm = .20 in. | 34.0 mm = 1.34 in. |
| 6.0 mm = .23 in. | 35.0 mm = 1.37 in. |
| 8.0 mm = .31 in. | 40.0 mm = 1.57 in. |
| 12.0 mm = .47 in. | 43.0 mm = 1.69 in. |
| 23.0 mm = .90 in. | 50.0 mm = 1.47 in. |
| 28.0 mm = 1.10 in. | 60.0 mm = 2.36 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) AC Cable Assemblies for Quick Disconnect Sensors

| | | |
|-----------------|-----------|------------------|
| 62 Connector | 8000-5030 | PVC, Straight |
| 66/67 Connector | 8000-5060 | PVC, Right Angle |
| 66/67 Connector | 8000-5070 | PVC, Straight |
| 68 Connector | 8000-5130 | PVC Straight |
| 68 Connector | 8000-5140 | Right Angle |

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

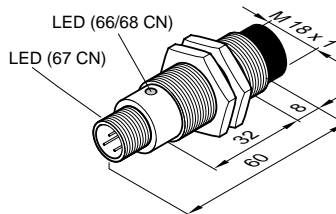
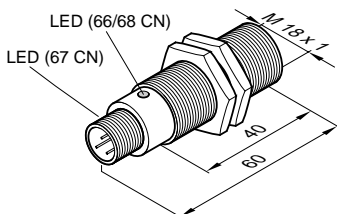
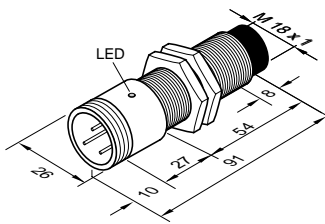
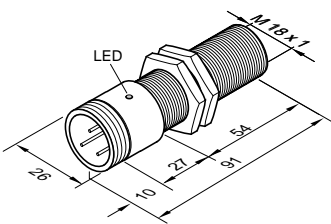
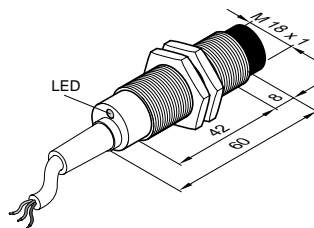
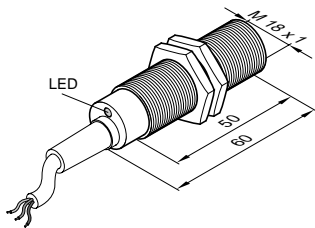
Mounting Brackets – see Pages 114-115

M18 Flush Mount 5mm (.02 in.)

M18 Non-Flush Mount 8mm (.031 in.)

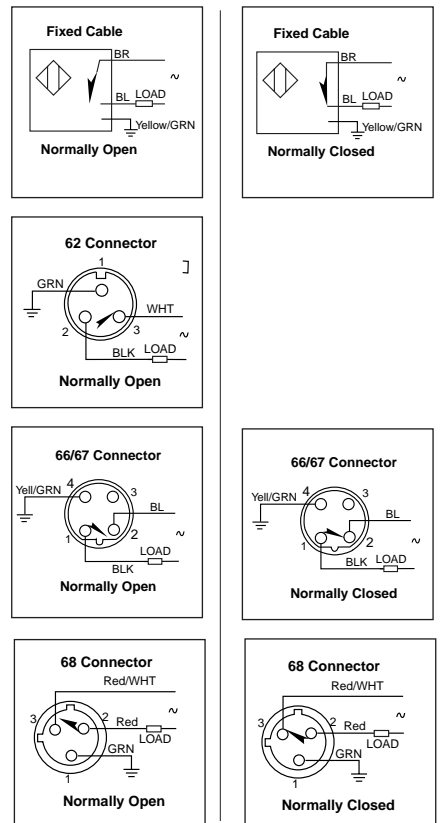
| Cable | 62 | 66/67 | 68 | Cable | 62 | 66/67 | 68 |
|---------------|---------------|------------------------|---------------|----------------|----------------|------------------------|----------------|
| 9954-2200 | 9954-2262 | 9954-2266 9954-2267 | 9954-2268 | 9954-1900 | 9954-1962 | 9954-1966 9954-1967 | 9954-1968 |
| 9954-2600 | | 9954-2666 9954-2667 | 9954-2668 | 9954-2500 | | | 9954-2568 |
| 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V |
| 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz |
| 5 mA | 5 mA | 5 mA | 5 mA | 5 mA | 5 mA | 5 mA | 5 mA |
| 180 mA | 180 mA | 180 mA | 180 mA | 180 mA | 180 mA | 180 mA | 180 mA |
| ≤8V | ≤8V | ≤8V | ≤8V | ≤8V | ≤8V | ≤8V | ≤8V |
| ≤3mA/220V | ≤3mA/220V | ≤3mA/220V | ≤3mA/220V | ≤3mA/220V | ≤3mA/220V | ≤3mA/220V | ≤3mA/220V |
| ≤1.5mA/110V | ≤1.5mA/110V | ≤1.5mA/110V | ≤1.5mA/110V | ≤1.5mA/110V | ≤1.5mA/110V | ≤1.5mA/110V | ≤1.5mA/110V |
| 1A | 1A | 1A | 1A | 1A | 1A | 1A | 1A |
| 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V |
| ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| .5mm (.02in.) | .5mm (.02in.) | .5mm (.02in.) | .5mm (.02in.) | .8mm (.031in.) | .8mm (.031in.) | .8mm (.031in.) | .8mm (.031in.) |
| PBTB | PBTB | PBTB | PBTB | PBTB | PBTB | PBTB | PBTB |

Note: Sensor dimensions in mm.



Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech



**AC - 2 WIRE
STANDARD SERIES
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
90-250V AC, 180 mA,
1 LED for Output Energized**

- **Most complete range of Fixed Cable and Quick Disconnect Styles**
- **Available in normally open (N.O.) and normally closed (N.C.) output configuration**
- **This series features the 360° LED viewing connector type "67"**
- **Carries C mark**

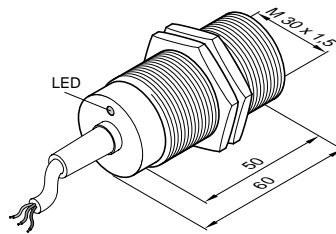
- IEC (529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Temperature Range: -25 to 70°C (-13 to 158°F)

**M30 Flush Mount
10mm (.39 in.)**

| Sensing Distance | | 10mm (.39 in.) | | | | |
|---|-------------------------|-------------------------|-------------------------|-------------------------|-------------------------|--|
| Cable or Connector Style Cat. No. | Cable | 62 | 66 | 67 | 68 | |
| Normally Open  | 9956-1500 | 9956-1562 | 9956-1566 | 9956-1567 | 9956-1568 | |
| Normally Closed  | 9956-1900 | | | | 9956-1968 | |
| Voltage Range | 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V | |
| Operating Frequency | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | |
| Supply Current | 5 mA | 5 mA | 5 mA | 5 mA | 5 mA | |
| Max. Load Current | 180 mA | 100 mA | 180 mA | 180 mA | 180 mA | |
| Voltage Drop Across Sensor | ≤8V | ≤8V | ≤8V | ≤8V | ≤8V | |
| Max. Leakage Current | ≤3A/220V ≤1.5mA/110V | ≤3A/220V ≤1.5mA/110V | ≤3A/220V ≤1.5mA/110V | ≤3A/220V ≤1.5mA/110V | ≤3A/220V ≤1.5mA/110V | |
| Short Term Current (20ms 1Hz) | 1A | 1A | 1A | 1A | 1A | |
| Switching Frequency | 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V | |
| Hysteresis | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | |
| Temperature Drift | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | |
| Repeatability | 1mm (.039 in.) | 1mm (.039 in.) | 1mm (.039 in.) | 1mm (.039 in.) | 1mm (.039 in.) | |
| Front Cap Material | PBTP | PBTP | PBTP | PBTP | PBTP | |

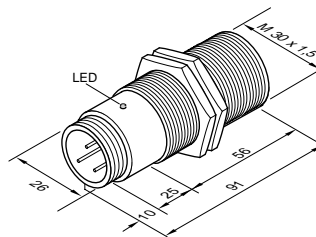
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



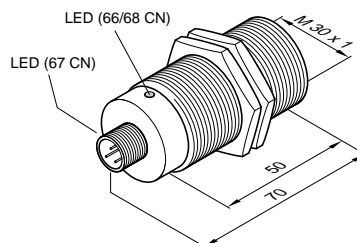
62 Style Connector

3-pin, Mini style, 25mm (1.0 in.) supplied with Brass, Nickel Plated (BN) locknuts.



66/67/68 Style Connectors

The 66/67 connectors are 4-pin, (68 connector, 3-pin), Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts. The 67 Connector is clear, offering 360° LED viewing.



Metric/in. Conversion Table

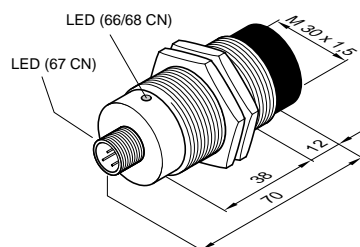
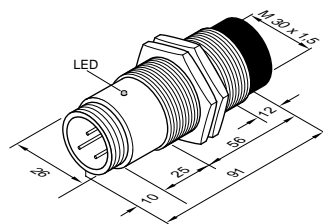
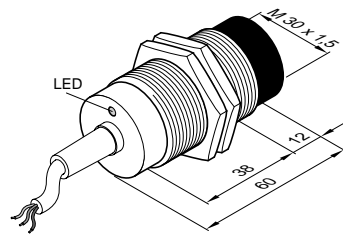
| | |
|--------------------|--------------------|
| 1.0 mm = .04 in. | 29.0 mm = 1.14 in. |
| 5.0 mm = .20 in. | 34.0 mm = 1.34 in. |
| 6.0 mm = .23 in. | 35.0 mm = 1.37 in. |
| 8.0 mm = .31 in. | 40.0 mm = 1.57 in. |
| 12.0 mm = .47 in. | 43.0 mm = 1.69 in. |
| 23.0 mm = .90 in. | 50.0 mm = 1.97 in. |
| 28.0 mm = 1.10 in. | 60.0 mm = 2.36 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

M30 Non-Flush Mount 15mm (0.59 in.)

| Cable | 62 | 66 | 67 | 68 |
|-----------------|------------------|----------------|----------------|---------------|
| 9956-1400 | 9956-1462 | 9956-1466 | 9956-1467 | 9956-1468 |
| 9956-1800 | | | | 9956-1868 |
| 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V | 90V - 250V |
| 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz |
| 5 mA | 5 mA | 5 mA | 5 mA | 5 mA |
| 180 mA | 180 mA | 180 mA | 180 mA | 180 mA |
| ≤8V | ≤8V | ≤8V | ≤8V | ≤8V |
| ≤3A/220V | ≤3A/220V | ≤3A/220V | ≤3A/220V | ≤3A/220V |
| ≤1.5mA/110V | ≤1.5mA/110V | ≤1.5mA/110V | ≤1.5mA/110V | ≤1.5mA/110V |
| 1A | 1A | 1A | 1A | 1A |
| 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V | 15Hz/220V |
| ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| 1.5mm (.059in.) | 1.5mm (.059 in.) | .4mm (.016in.) | .4mm (.016in.) | .5mm (.02in.) |
| PBTB | PBTB | PBTB | PBTB | PBTB |

Note: Sensor dimensions in mm.



Accessories

2 meter (6 ft. 6 in.) AC Cable Assemblies for Quick Disconnect Sensors

| | | |
|-----------------|-----------|------------------|
| 62 Connector | 8000-5030 | PVC, Straight |
| 66/67 Connector | 8000-5060 | PVC, Right Angle |
| 66/67 Connector | 8000-5070 | PVC, Straight |
| 68 Connector | 8000-5130 | PVC Straight |
| 68 Connector | 8000-5140 | Right Angle |

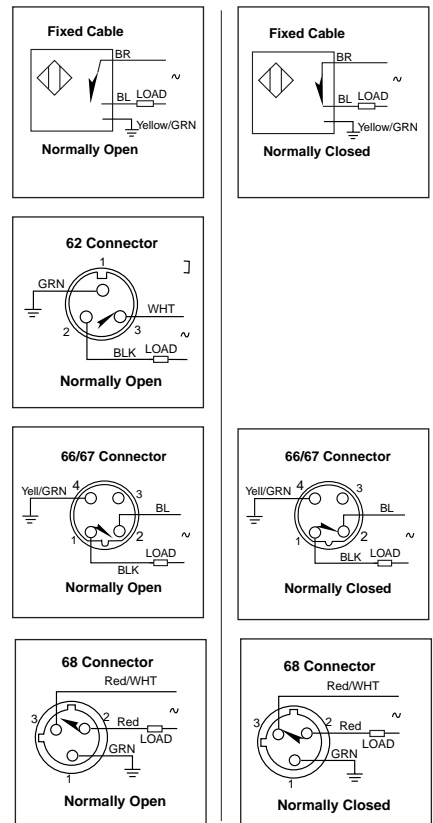
Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

Wiring Diagrams



Note: Wire colors are applicable to cable purchased from Altech



**AC - 2 WIRE - EXTENDED
VOLTAGE RANGE – Brass, Nickel
Plated (BN), and TROGAMID T
Cylindrical, Threaded,
20-250V AC, 500 mA,
1 LED for Output Energized**

- **Higher Current Rating**
- **Wider Voltage Range**
- **Carries $\text{C}\epsilon$ mark**

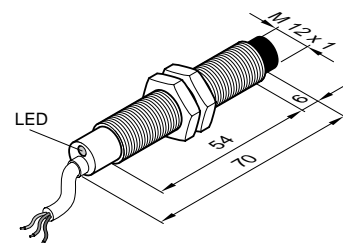
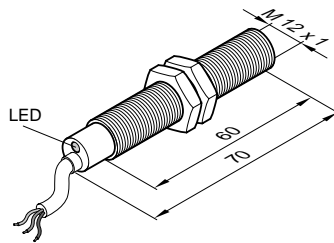
- IEC (529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Temperature Range:
-25 to 70°C (-13 to 158°F)

| Sensing Distance | M12 Flush Mount | | | M12 Non-Flush Mount | | |
|---|---------------------|------------------|---------------------|---------------------|------------------|---------------------|
| | 2mm (.08 in.) | | | 4mm (.16 in.) | | |
| Cable or Connector Style Cat. No. | Cable | Cable | 68 | Cable | Cable | 68 |
| Normally Open  | 9924-0500 | 9924-1100 | 9924-0568 | 9924-0700 | 9924-1000 | 9924-0768 |
| Normally Closed  | 9924-0400 | 9924-1300 | 9924-0468 | 9924-0900 | 9924-1200 | 9924-0968 |
| Voltage Range | 20V-250V | 20V - 250V | 20V - 250V | 20V - 250V | 20V - 250V | 20V - 250V |
| Operating Frequency | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz |
| Supply Current | 2 mA | 2 mA | 2 mA | 2 mA | 2 mA | 2 mA |
| Max. Load Current | 300 mA | 300 mA | 300 mA | 300 mA | 300 mA | 300 mA |
| Voltage Drop Across Sensor | ≤5V | ≤5V | ≤5V | ≤5V | ≤5V | ≤5V |
| Max. Leakage Current | ≤2mA | ≤2mA | ≤2mA | ≤2mA | ≤2mA | ≤2mA |
| Short Term Current (20 ms, 1Hz) | 2A | 2A | 2A | 2A | 2A | 2A |
| Switching Frequency | 15Hz | 15Hz | 15Hz | 15Hz | 15Hz | 15Hz |
| Hysteresis | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | .20mm (.008 in.) | .20mm (.008 in.) | .20mm (.008 in.) | .40mm (.016 in.) | .40mm (.016 in.) | .40mm (.016 in.) |
| Front Cap Material | PBTP | PBTP | PBTP | PBTB | PBTB | PBTB |
| Housing Material | Nickel Plated Brass | Trogamid T | Nickel Plated Brass | Nickel Plated Brass | Trogamid T | Nickel Plated Brass |

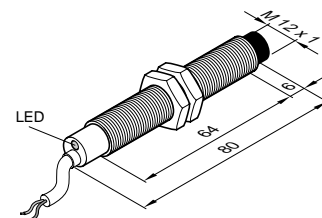
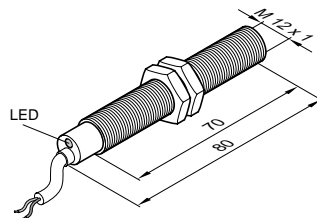
Nickel Plated Brass Housings

Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with non-metallic locknuts for Trogamid T housings and Nickel Plated (BN) locknuts for Nickel Plated Brass housings.

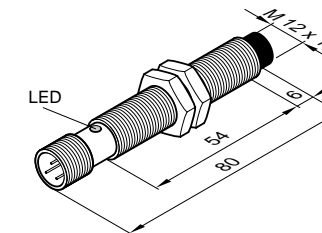
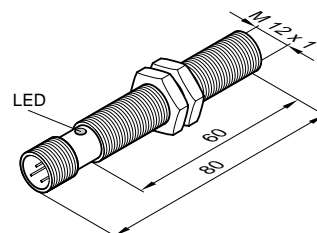


Trogamid T Housings



68 Style Connectors

3-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | |
|--------------------|--------------------|
| 1.0 mm = .04 in. | 60.0 mm = 2.36 in. |
| 6.0 mm = .23 in. | 64.0 mm = 2.52 in. |
| 8.0 mm = .31 in. | 70.0 mm = 2.75 in. |
| 12.0 mm = .47 in. | 80.0 mm = 3.15 in. |
| 54.0 mm = 2.12 in. | |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) AC Cable Assemblies for Quick Disconnect Sensors

- 68 Connector 8000-5130 PVC Straight
- 68 Connector 8000-5140 Right Angle

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

M18 Flush Mount

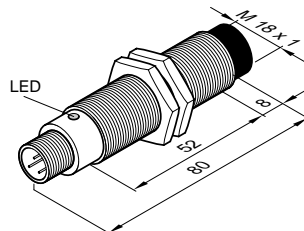
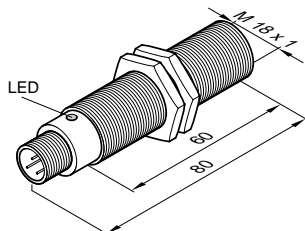
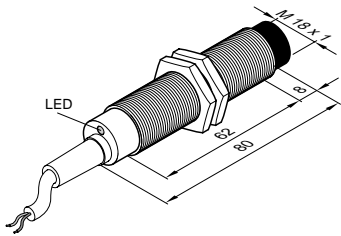
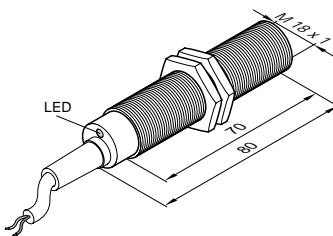
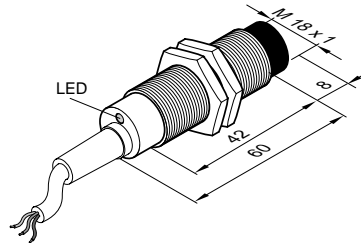
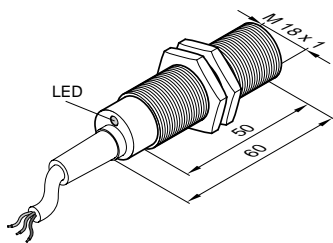
5mm (0.2 in.)

M18 Non-Flush Mount

8mm (0.3 in.)

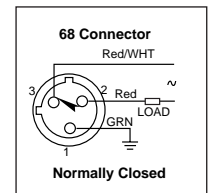
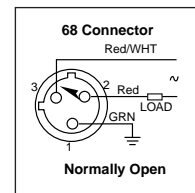
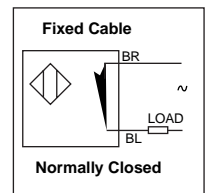
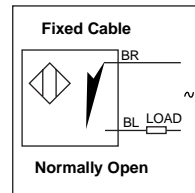
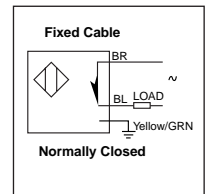
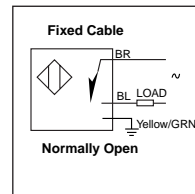
| Cable | Cable | 68 | Cable | Cable | 68 |
|---------------------|-----------------|---------------------|---------------------|-----------------|---------------------|
| 9921-1200 | 9921-2000 | 9921-1268 | 9921-1500 | 9921-2200 | 9921-1568 |
| 9921-1300 | 9921-2100 | 9921-1368 | 9921-1700 | 9921-2300 | 9921-1768 |
| 20V - 250V | 20V - 250V | 20V - 250V | 20V - 250V | 20V - 250V | 20V - 250V |
| 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz |
| 2 mA | 2 mA | 2 mA | 2 mA | 2 mA | 2 mA |
| 500 mA | 500 mA | 500 mA | 500 mA | 500 mA | 500 mA |
| ≤5V | ≤5V | ≤5V | ≤5V | ≤5V | ≤5V |
| ≤2mA | ≤2mA | ≤2mA | ≤2mA | ≤2mA | ≤2mA |
| 8A | 8A | 8A | 8A | 8A | 8A |
| 15Hz | 15Hz | 15Hz | 15Hz | 15Hz | 15Hz |
| ≤15% | ≤15% | ≤15% | ≤15% | ≤15% | ≤15% |
| ≤10% | ≤10% | ≤10% | ≤10% | ≤10% | ≤10% |
| .50mm (.02 in.) | .50mm (.02 in.) | .50mm (.02 in.) | .8mm (.039 in.) | .8mm (.039 in.) | .8mm (.039 in.) |
| PBTB | PBTB | PBTB | PBTB | PBTB | PBTB |
| Nickel Plated Brass | Trogamid T | Nickel Plated Brass | Nickel Plated Brass | Trogamid T | Nickel Plated Brass |

Note: Sensor dimensions in mm.



Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech



**AC - 2 WIRE - EXTENDED
VOLTAGE RANGE – Brass, Nickel
Plated (BN), and TROGAMID T
Cylindrical, Threaded,
20-250V AC, 500 mA,
1 LED for Output Energized**

- **Higher Current Rating**
- **Wider Voltage Range**
- **Carries ζ mark**

- IEC (529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Temperature Range:
-25 to 70°C (-13 to 158°F)

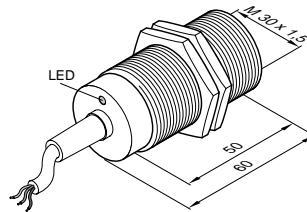
**M30 Flush Mount
10mm (0.39 in.)**

| Sensing Distance | | 10mm (0.39 in.) | | |
|---|---------------------|-----------------|---------------------|--|
| Cable or Connector Style Cat. No. | Cable | Cable | 68 | |
| Normally Open  | 9916-2600 | 9916-2900 | 9916-2668 | |
| Normally Closed  | 9916-2100 | 9916-2400 | 9916-2168 | |
| Voltage Range | 20V-250V | 20V - 250V | 20V - 250V | |
| Operating Frequency | 50/60Hz | 50/60Hz | 50/60Hz | |
| Supply Current | 2 mA | 2 mA | 2 mA | |
| Max. Load Current | 500 mA | 500 mA | 500 mA | |
| Voltage Drop Across Sensor | ≤5V | ≤5V | ≤5V | |
| Max. Leakage Current | ≤2mA | ≤2mA | ≤2mA | |
| Short Term Current (20 ms, 1Hz) | 8A | 8A | 8A | |
| Switching Frequency | 15Hz | 15Hz | 15Hz | |
| Hysteresis | ≤15% | ≤15% | ≤15% | |
| Temperature Drift | ≤10% | ≤10% | ≤10% | |
| Repeatability | 1mm (.039 in.) | 1mm (.039 in.) | 1mm (.039 in.) | |
| Front Cap Material | PBTP | PBTP | PBTP | |
| Housing Material | Nickel Plated Brass | Trogamid T | Nickel Plated Brass | |

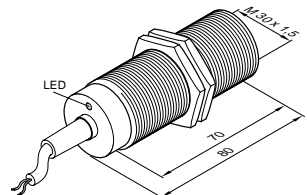
Nickel Plated Brass Housings

Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with non-metallic locknuts for Trogamid T housings and Brass, Nickel Plated (BN) locknuts for Nickel Plated Brass housings.

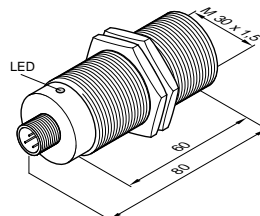


Trogamid T Housings



68 Style Connectors

3-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | |
|--------------------|--------------------|
| 1.5 mm = .06 in. | 50.0 mm = 1.96 in. |
| 12.0 mm = .47 in. | 58.0 mm = 2.28 in. |
| 30.0 mm = 1.18 in. | 60.0 mm = 2.36 in. |
| 38.0 mm = 1.50 in. | 80.0 mm = 3.15 in. |
| 48.0 mm = 1.89 in. | |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) AC Cable Assemblies for Quick Disconnect Sensors

- 68 Connector 8000-5130 PVC Straight
- 68 Connector 8000-5140 Right Angle

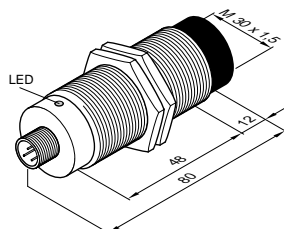
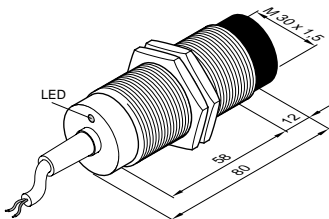
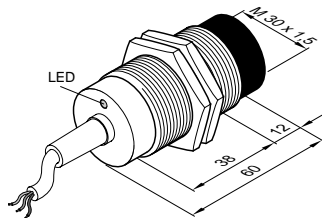
Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

M30 Non-Flush Mount 15mm (0.59 in.)

| Cable | Cable | 68 |
|---------------------|------------------|---------------------|
| 9916-2700 | 9916-3000 | 9916-2768 |
| 9916-2300 | 9916-2500 | 9916-2368 |
| 20V - 250V | 20V - 250V | 20V - 250V |
| 50/60Hz | 50/60Hz | 50/60Hz |
| 2 mA | 2 mA | 2 mA |
| 500 mA | 500 mA | 500 mA |
| ≤5V | ≤5V | ≤5V |
| ≤2mA | ≤2mA | ≤2mA |
| 8A | 8A | 8A |
| 15Hz | 15Hz | 15Hz |
| ≤15% | ≤15% | ≤15% |
| ≤10% | ≤10% | ≤10% |
| 1.5mm (.059 in.) | 1.5mm (.059 in.) | 1.5mm (.059 in.) |
| PBTB | PBTB | PBTB |
| Nickel Plated Brass | Trogamid T | Nickel Plated Brass |

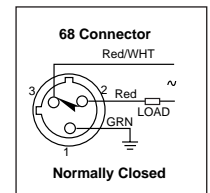
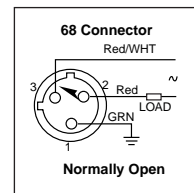
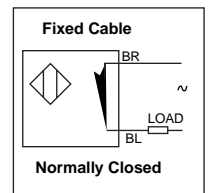
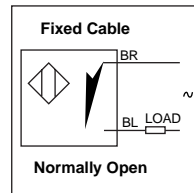
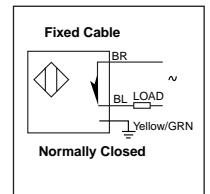
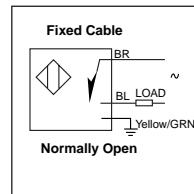
Note: Sensor dimensions in mm.



Mounting Brackets – see Pages 114-115

Wiring Diagrams



Note: Wire colors are applicable to cable purchased from Altech



AC - 2 WIRE – WELD IMMUNE
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
20-250V AC, 300mA/500mA
1 LED for Output Energized

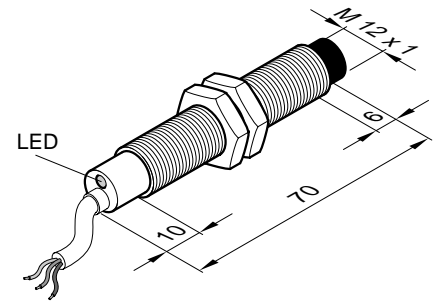
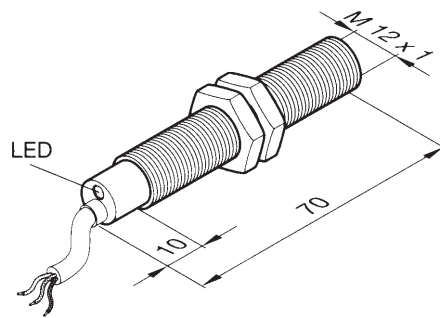
- **Circuitry that protects for electro-magnetic interference**
- **Flush models have teflon ceramic coatings to protect for weld slag**
- **Carries (C) mark**

- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Temperature Range: -25 to 70°C (-13 to 158°F)

| Sensing Distance | M12 Flush Mount 2mm (.08 in.) | | M12 Non-Flush Mount 4mm (.16 in.) | | |
|---|-----------------------------------|---------------------|--------------------------------------|---------------------|---------------------|
| | Cable or Connector Style Cat. No. | Cable | 48 | Cable | 68 |
| Normally Open  | | 9952-5840 | 9952-5848 | 9952-5900 | 9952-5968 |
| Normally Closed  | | 9952-5640 | 9952-5648 | 9952-5700 | 9952-5768 |
| Voltage Range | | 20V-250V | 20V - 250V | 20V - 250V | 20V - 250V |
| Operating Frequency | | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz |
| Supply Current | | 2 mA | 2 mA | 2 mA | 2 mA |
| Max. Load Current | | 300 mA | 300 mA | 300 mA | 300 mA |
| Voltage Drop Across Sensor | | ≤5V | ≤5V | ≤5V | ≤5V |
| Max. Leakage Current | | ≤2 mA | ≤2 mA | ≤2 mA | ≤2 mA |
| Short Term Current (20 ms, 1Hz) | | 2A | 2A | 2A | 2A |
| Switching Frequency (at Resistance Load of 150 mA) | | 15 Hz | 15 Hz | 15Hz | 15 Hz |
| Hysteresis | | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | | .10mm (.004 in.) | .10mm (.004 in.) | .2mm (.008 in.) | .2mm (.008 in.) |
| Front Cap Material | | Teflon | Teflon | PBTB | PBTB |
| Housing Material | | Teflon Plated Brass | Teflon Plated Brass | Nickel Plated Brass | Nickel Plated Brass |

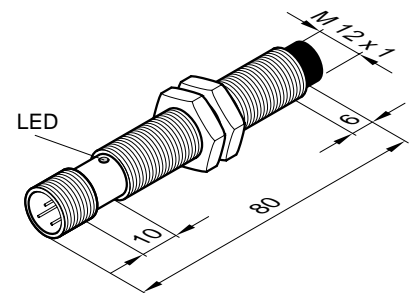
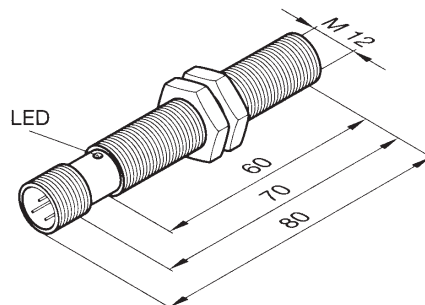
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



48/68 Style Connector

3-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | | |
|---------|---|----------|
| 1.0 mm | = | .04 in. |
| 6.0 mm | = | .23 in. |
| 8.0 mm | = | .31 in. |
| 10.0 mm | = | .39 in. |
| 12.0 mm | = | .47 in. |
| 18.0 mm | = | .70 in. |
| 60.0 mm | = | 2.36 in. |
| 70.0 mm | = | 2.75 in. |
| 80.0 mm | = | 3.15 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) AC Cable Assemblies for Quick Disconnect Sensors

48/68 Connector 8000-5130 PVC, Straight
48/68 Connector 8000-5140 Right Angle

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

M18 Flush Mount

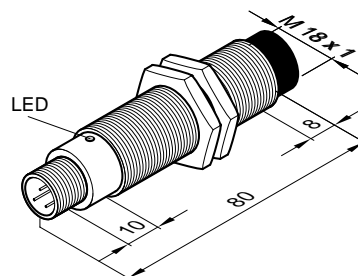
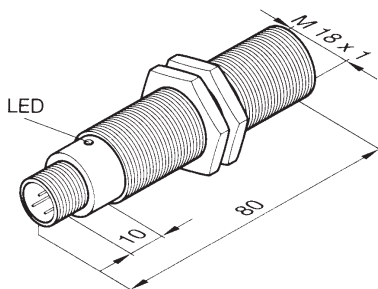
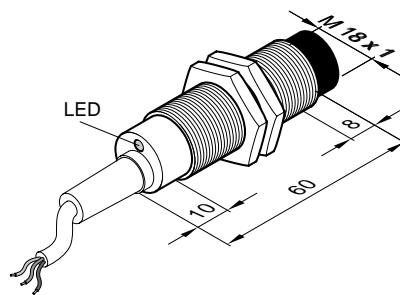
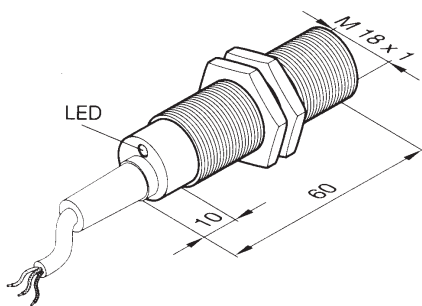
5mm (.20 in.)

M18 Non-Flush Mount

8mm (.31 in.)

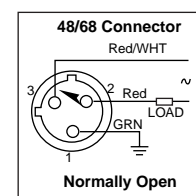
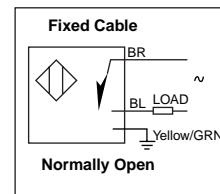
| M18 Flush Mount 5mm (.20 in.) | | M18 Non-Flush Mount 8mm (.31 in.) | |
|----------------------------------|---------------------|--------------------------------------|---------------------|
| Cable | 48 | Cable | 68 |
| 9954-5840 | 9954-5848 | 9954-5900 | 9954-5968 |
| 9954-5640 | 9954-5648 | 9954-5700 | 9954-5768 |
| 20V - 250V | 20V - 250V | 20V - 250V | 20V - 250V |
| 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz |
| 2 mA | 2 mA | 2 mA | 2 mA |
| 500 mA | 500 mA | 500 mA | 500 mA |
| ≤5V | ≤5V | ≤5V | ≤5V |
| ≤2 mA | ≤2 mA | ≤2 mA | ≤2 mA |
| 8A | 8A | 8A | 8A |
| 15 Hz | 15 Hz | 15 Hz | 15 Hz |
| ≤15% | ≤15% | ≤15% | ≤15% |
| ≤10% | ≤10% | ≤10% | ≤10% |
| .25mm (.01 in.) | .25mm (.01 in.) | .4mm (.016 in.) | .4mm (.016 in.) |
| Teflon | Teflon | PBTB | PBTB |
| Teflon Plated Brass | Teflon Plated Brass | Nickel Plated Brass | Nickel Plated Brass |

Note: Sensor dimensions in mm.



Wiring Diagrams



Note: Wire colors are applicable to cable purchased from Altech



AC - 2 WIRE – WELD IMMUNE
Brass, Nickel Plated (BN),
Cylindrical, Threaded,
20-250V AC, 300/500mA
1 LED for Output Energized

- **Circuitry that protects for electro-magnetic interference**
- **Flush models have teflon ceramic coatings to protect for weld slag**
- **Carries CE mark**

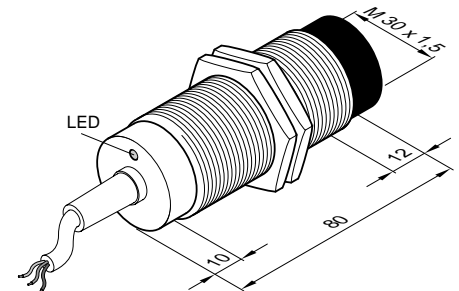
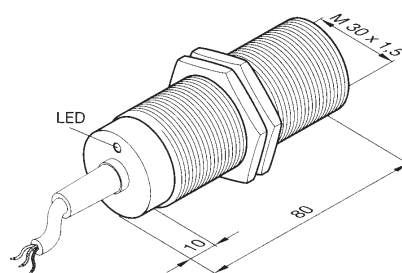
- IEC(529) IP67 (NEMA 1, 3, 4, 6, 12, 13) Protection
- Temperature Range: -25 to 70°C (-13 to 158°F)

| Sensing Distance | M30 Flush Mount | | M30 Non-Flush Mount | |
|---|---------------------|---------------------|---------------------|---------------------|
| | 10mm (.39 in.) | | 15mm (.59 in.) | |
| Cable or Connector Style Cat. No. | Cable | 48 | Cable | 68 |
| Normally Open  | 9956-5840 | 9956-5848 | 9956-5900 | 9956-5968 |
| Normally Closed  | 9956-5640 | 9956-5648 | 9956-5700 | 9956-5768 |
| Voltage Range | 20V-250V | 20V - 250V | 20V - 250V | 20V - 250V |
| Operating Frequency | 50/60Hz | 50/60Hz | 50/60Hz | 50/60Hz |
| Supply Current | 2 mA | 2 mA | 2 mA | 2 mA |
| Max. Load Current | 500 mA | 500 mA | 500 mA | 500 mA |
| Voltage Drop Across Sensor | ≤5V | ≤5V | ≤5V | ≤5V |
| Max. Leakage Current | ≤2 mA | ≤2 mA | ≤2 mA | ≤2 mA |
| Short Term Current (20 ms, 1Hz) | 8A | 8A | 8A | 8A |
| Switching Frequency (at Resistance Load of 150 mA) | 15 Hz | 15 Hz | 15 Hz | 15Hz |
| Hysteresis | ≤15% | ≤15% | ≤15% | ≤15% |
| Temperature Drift | ≤10% | ≤10% | ≤10% | ≤10% |
| Repeatability | .5mm (.02 in.) | .5mm (.02 in.) | .75mm (.03 in.) | .75mm (.03 in.) |
| Front Cap Material | Teflon | Teflon | PBTB | PBTB |
| Housing Material | Teflon Plated Brass | Teflon Plated Brass | Nickel Plated Brass | Nickel Plated Brass |

Note: Sensor dimensions in mm.

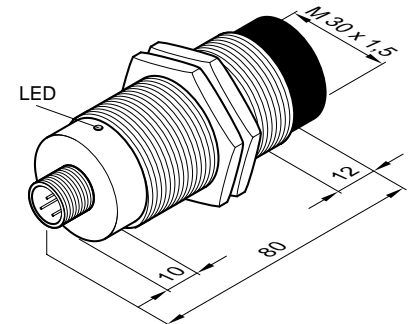
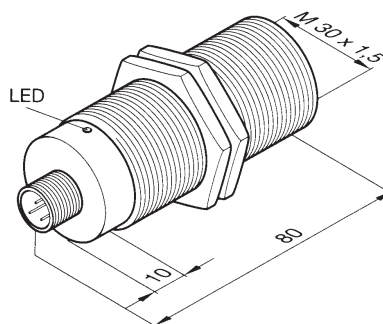
Fixed Cable

PVC 2m (6ft. 6in.). For 5m (16 ft. 5 in.) cable length, change the last two digits of the part number to 02. For other cable lengths and/or PUR cable, please consult Altech. Supplied with Brass, Nickel Plated (BN) locknuts.



48/68 Style Connector

4-pin, Micro style, 12mm (.47 in.) supplied with Brass, Nickel Plated (BN) locknuts.



Metric/in. Conversion Table

| | |
|---------|------------|
| 1.5 mm | = .06 in. |
| 10.0 mm | = .39 in. |
| 12.0 mm | = .47 in. |
| 30.0 mm | = 1.18 in. |
| 80.0 mm | = 3.15 in. |

This table converts millimeters to inches in reference to the illustrations included on these pages

Accessories

2 meter (6 ft. 6 in.) DC Cable Assemblies for Quick Disconnect Sensors

48/68 Connector 8000-5130 PVC, Straight

48/68 Connector 8000-5140 Right Angle

Change last digit of connector number to 5 for 5 meter cable

Refer to pages 116-121 for more cable information

Mounting Brackets – see Pages 114-115

Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech

