





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

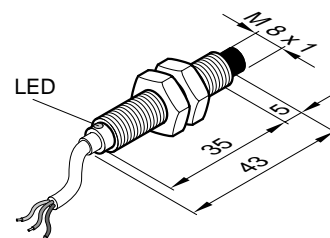
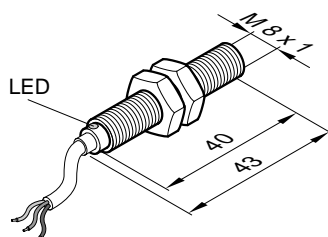
- **Most complete range of Fixed Cable and Quick Disconnect Styles**
- **Available in normally open (N.O.) and normally closed (N.C.) output configuration**
- **Industry standard 10-30V DC operating voltage and 200mA output current**
- **Carries $\text{C}\epsilon$ mark**

- 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	

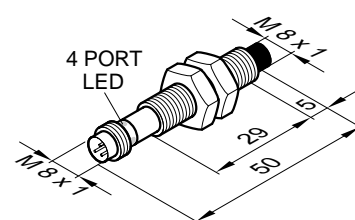
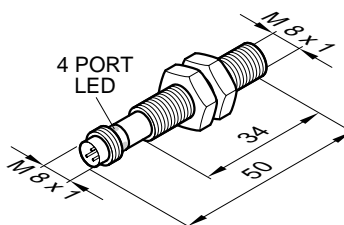
Fixed Cable

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.



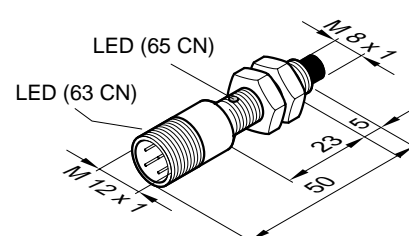
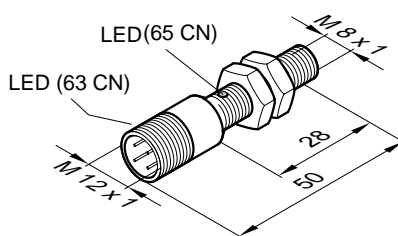
64 Style Connector

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.)

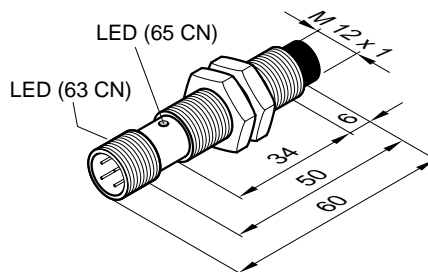
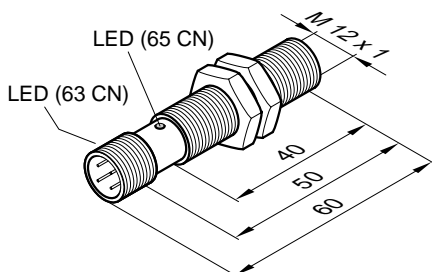
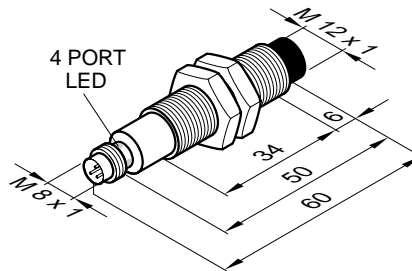
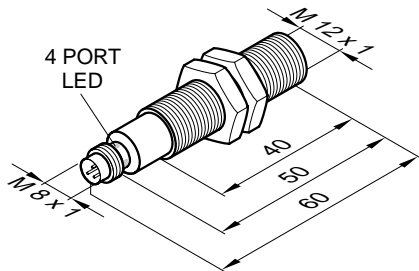
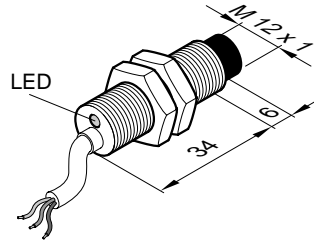
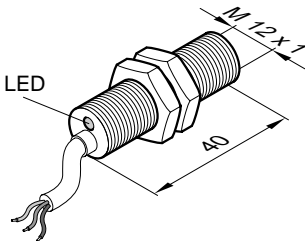
Cable	63	64	65
9962-4000	9962-4063	9962-4064	9962-4065
9962-4400		9962-4464	9962-4465
9962-4100	9962-4163	9962-4164	9962-4165
9962-4500		9962-4564	9962-4565
≤10%	≤10%	≤10%	≤10%
10V - 30V	10V - 30V	10V - 30V	10V - 30V
≤10 mA	≤10 mA	≤10 mA	≤10 mA
200 mA	200 mA	200 mA	200 mA
≤2.4V	≤2.4V	≤2.4V	≤2.4V
≤10 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

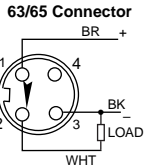
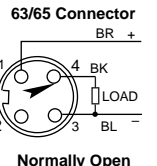
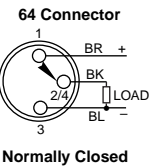
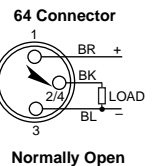
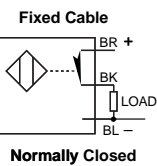
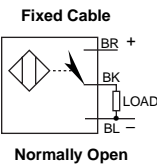
Refer to pages 116-121 for more cable information

Mounting Brackets - see Pages 114-115

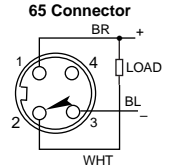
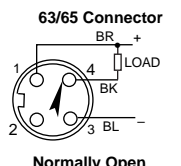
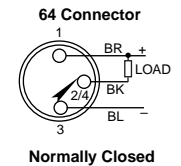
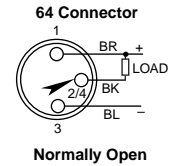
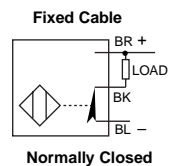
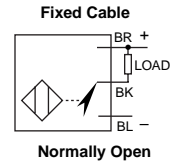
Wiring Diagrams

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**

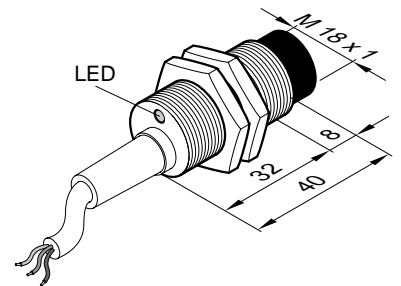
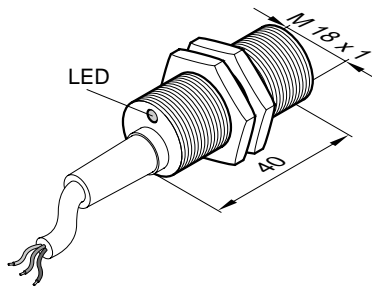
- **Most complete range of Fixed Cable and Quick Disconnect Styles**
- **Available in normally open (N.O.) and normally closed (N.C.) output configuration**
- **Industry standard 10-30V DC operating voltage and 200mA output current**
- **Carries C€ mark**

- 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

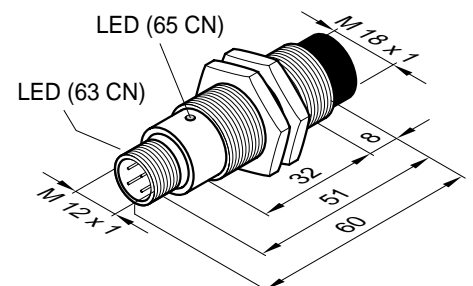
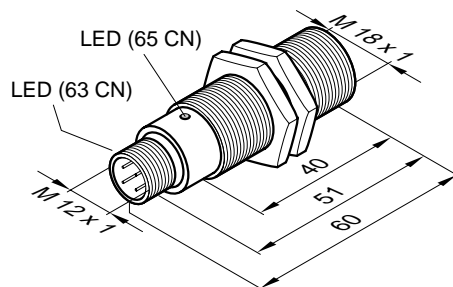
Fixed Cable

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

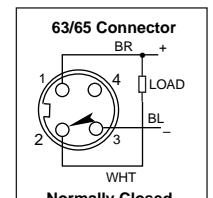
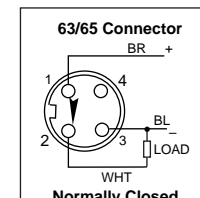
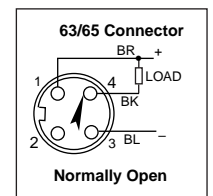
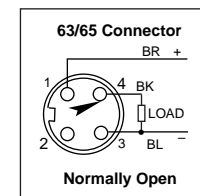
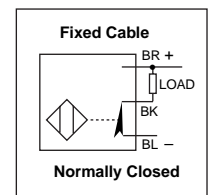
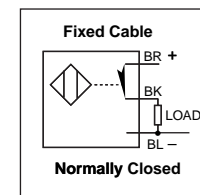
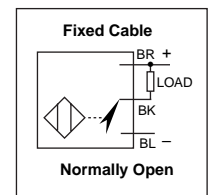
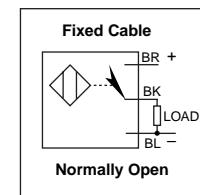
Mounting Brackets – see Pages 114-115

Wiring Diagrams

Note: Wire colors are applicable to cable purchased from Altech

PNP

NPN



M30 Flush Mount

10mm (.39 in.)

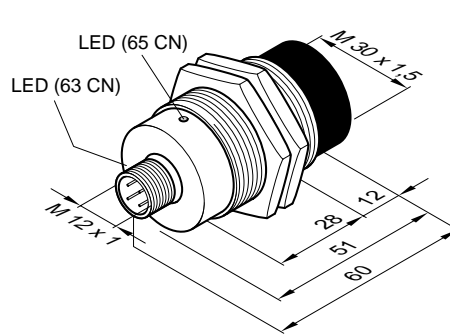
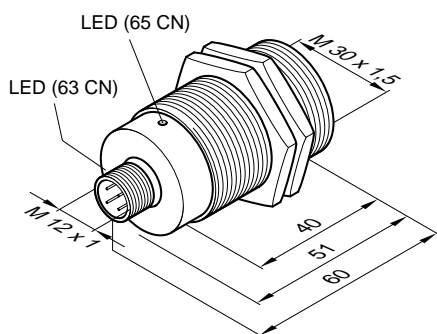
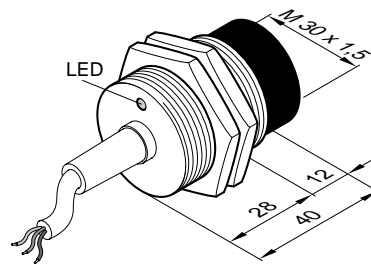
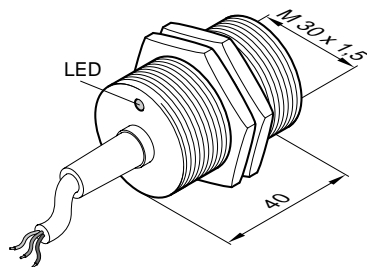
Cable	63	65
9966-4000	9966-4063	9966-4065
9966-4400		9966-4465
9966-4100	9966-4163	9966-4165
9966-4500		9966-4565
≤10%	≤10%	≤10%
10V - 30V	10V - 30V	10V - 30V
≤10 mA	≤10 mA	≤10 mA
200 mA	200 mA	200 mA
≤2.4V	≤2.4V	≤2.4V
≥10 μA	≥10 μA	≥10 μA
500 Hz	500 Hz	500 Hz
≤15%	≤15%	≤15%
≤10%	≤10%	≤10%
.50mm (.02 in.)	.50mm (.02 in.)	.50mm (.02 in.)
PBTB	PBTB	PBTB

M30 Non-Flush Mount

15mm (.59 in.)

Cable	63	65
9966-4200	9966-4263	9966-4265
9966-4600		9966-4665
9966-4300		9966-4365
9966-4700		9966-4765
≤10%	≤10%	≤10%
10V - 30V	10V - 30V	10V - 30V
≤10 mA	≤10 mA	≤10 mA
200 mA	200 mA	200 mA
≤2.4V	≤2.4V	≤2.4V
≥10 μA	≥10 μA	≥10 μA
300 Hz	300 Hz	300 Hz
≤15%	≤15%	≤15%
≤10%	≤10%	≤10%
.75mm (.03 in.)	.75mm (.03 in.)	.75mm (.03 in.)
PBTB	PBTB	PBTB

Note: Sensor dimensions in mm.



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

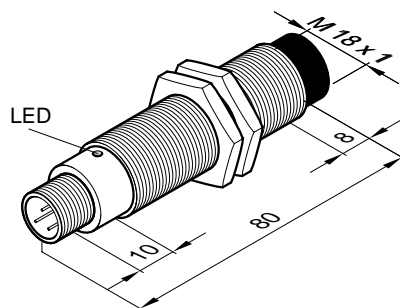
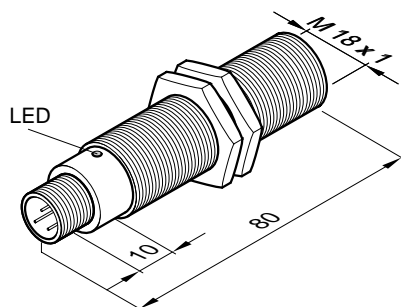
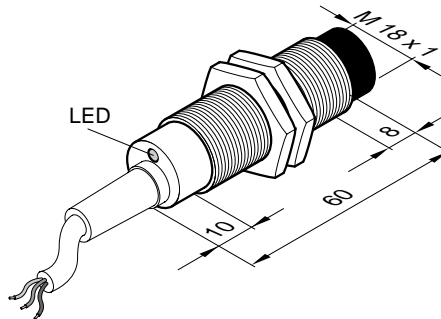
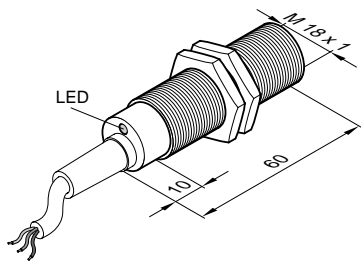
M18 Flush Mount 5mm (.20 in.)

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

