
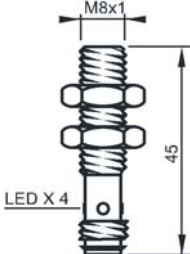
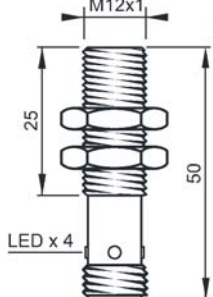
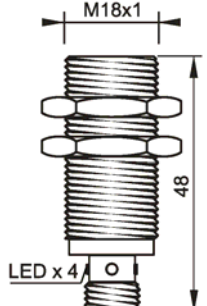


# EXtreme Operating Distance Series

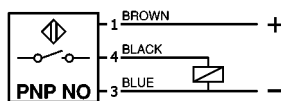
## FEATURES:

- Up to **4 times** greater operating distance than standard sensors
- Short circuit & reverse polarity protection
- Protection degree IP67: dust tight and protection from the effects of immersion
- LED function indicator

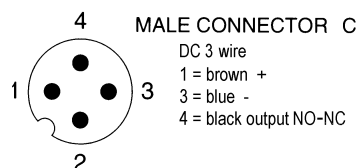
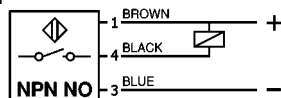
|   |          | MODEL   |  |   |
|---|----------|---|--|---|
| Output Function   | NPN, NO* | X0010   | X0030  | X0050   |
|   | PNP, NO* | X0012   | X0032  | X0052   |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937"<br>(not to scale)<br><br> |          |  |  |  |
| Operating Distance (Sn)   |          | 4 mm  | 8 mm   | 15 mm   |
| External Diameter   |          | M8 x 1  | M12 x 1  | M18x1   |
| Power Supply  |          | 10 - 30 Vdc   |  |   |
| Max Switching Current   |          | 200 mA max  |  |   |
| Power Drain (24Vdc)   |          | < 8 mA  |  |   |
| Voltage Drop  |          | < 1.5 V @ 200 mA  |  |   |
| Short Circuit Protection  |          | Yes self-resetting  |  |   |
| Operating Frequency   |          | 500 Hz  |  | 300Hz   |
| Repeatability (%Sn)   |          | ≤ 1%  |  |   |
| Hysteresis (%Sn)  |          | 3-15 %  |  |   |
| Case  |          | Nickel plated brass   |  |   |
| Flush Mounting  |          | Semi-Flush  |  |   |
| Protection Degree   |          | IP 67   |  |   |
| Operating Temperature   |          | - 20 to +70 °C  |  |   |
| Output Connection   |          | Connector C1  | Connector C  |   |
| Mounting Clearance X  |          | 1 mm  | 2 mm   | 4 mm  |

\* Additional output functions available upon request

## WIRING:



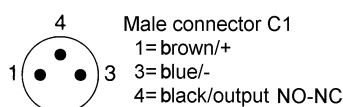
optional



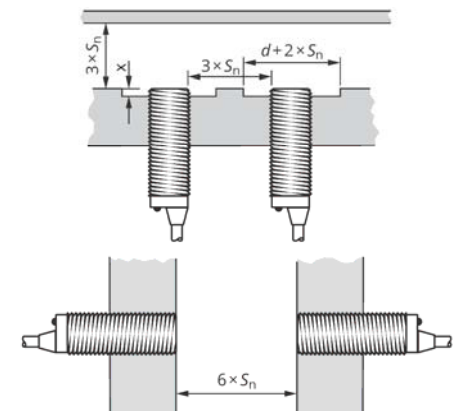
Mating Connectors:

| ID#     | Type | Description                  |
|---------|------|------------------------------|
| S3480   | C1   | right angle w/ 5 meter cable |
| S3481   | C1   | straight w/ 5 meter cable    |
| S3496/2 | C    | right angle w/ 2 meter cable |
| S3496   | C    | right angle w/ 5 meter cable |
| S3499/2 | C    | straight w/ 2 meter cable    |
| S3499   | C    | straight w/ 5 meter cable    |

## CONNECTOR:



## MOUNTING:


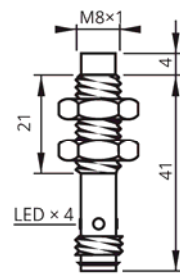
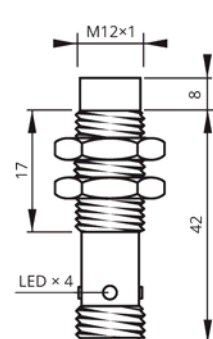
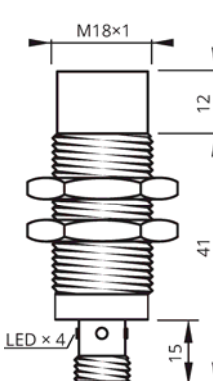
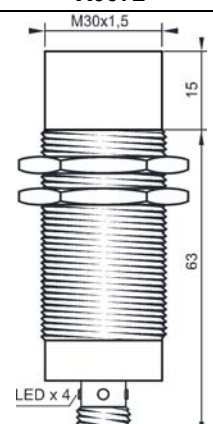


## Inductive

# EXtreme Operating Distance Series

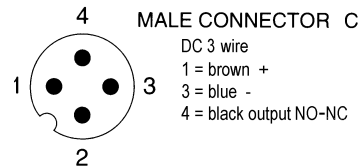
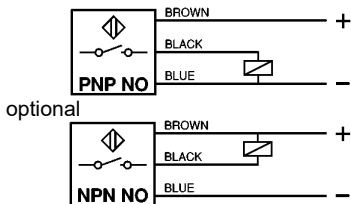
### FEATURES:

- Larger operating distance then standard sensors
- Short circuit & reverse polarity protection
- Protection degree IP67: dust tight and protection from the effects of immersion
- LED function indicator

|   |          | MODEL   |   |   |  |
|---|----------|---|---|---|--|
| Output Function   | NPN, NO* |   |   |   | X0070  |
|   | PNP, NO* | X0016   | X0036   | X0056   | X0072  |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937"<br>(not to scale)<br><br> |          |  |  |  |  |
| Operating Distance (Sn)   |          | 6 mm  | 12 mm   | 20 mm   | 50mm adjustable  |
| External Diameter   |          | M8 x 1  | M12 x 1   | M18x1   | M30 x 1.5  |
| Power Supply  |          | 10 - 30 Vdc   |   |   |  |
| Max Switching Current   |          | 200 mA max  |   |   |  |
| Power Drain (24Vdc)   |          | < 8 mA  |   |   |  |
| Voltage Drop  |          | < 1.5 V @ 200 mA  |   |   |  |
| Short Circuit Protection  |          | Yes self-resetting  |   |   |  |
| Operating Frequency   |          | 500 Hz  | 400 Hz  | 100 Hz  |  |
| Repeatability (%Sn)   |          | ≤ 1%  |   |   |  |
| Hysteresis (%Sn)  |          | 3-15 %  |   |   |  |
| Case  |          | Nickel plated brass   |   |   |  |
| Flush Mounting  |          | No  |   |   |  |
| Protection Degree   |          | IP 67   |   |   |  |
| Operating Temperature   |          | - 20 to +70 °C  |   |   |  |
| Output Connection   |          | Connector C1  | Connector C   |   |  |
| Mounting Clearances mm  |          | X=8, Z=8  | X=14, Z=14  | X=24, Z=20  | X=35, Z=38   |

\* Additional output functions available upon request

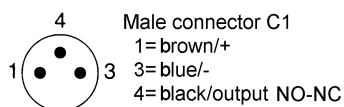
### WIRING:



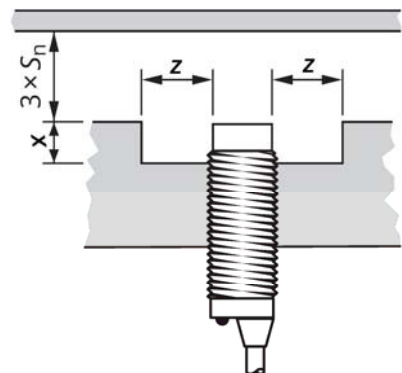
### MATING CONNECTORS:

| ID#     | Type | Description                  |
|---------|------|------------------------------|
| S3480   | C1   | right angle w/ 5 meter cable |
| S3481   | C1   | straight w/ 5 meter cable    |
| S3496/2 | C    | right angle w/ 2 meter cable |
| S3496   | C    | right angle w/ 5 meter cable |
| S3499/2 | C    | straight w/ 2 meter cable    |
| S3499   | C    | straight w/ 5 meter cable    |

### CONNECTOR:



### MOUNTING:


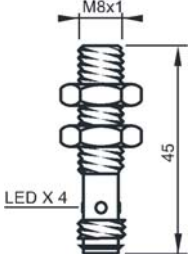
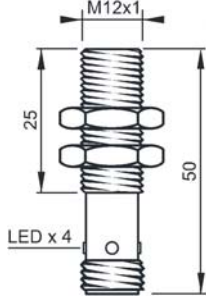
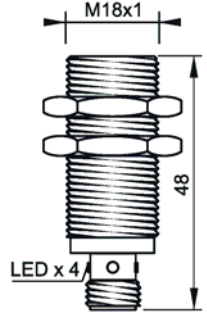


## Inductive

### Metal Face Inductive Sensors w/ Extended Range

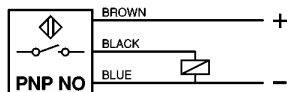
#### FEATURES:

- Stainless steel face and body
- Extended range
- Short circuit & reverse polarity protection
- LED function indicator

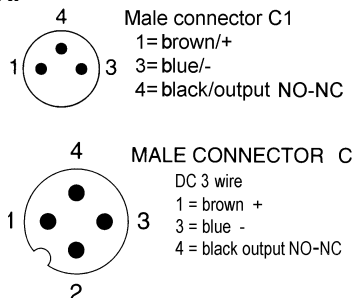
|   |          | MODEL   |  |   |
|---|----------|---|--|---|
| Output Function   | PNP, NO* | S6006   | S6026  | S6046   |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937"<br>(not to scale)<br><br> |          |  |  |  |
| Operating Distance (Sn)   |          | 2 mm  | 4 mm   | 8mm   |
| External Diameter   |          | M8 x 1  | M12 x 1  | M18 x 1   |
| Power Supply  |          | 10 - 30 Vdc   |  |   |
| Max Switching Current   |          | 200 mA max  |  |   |
| Power Drain (24Vdc)   |          | < 8 mA  |  |   |
| Voltage Drop  |          | < 1.5 V @ 200 mA  |  |   |
| Short Circuit Protection  |          | Yes self-resetting  |  |   |
| Operating Frequency   |          | 1000 Hz   |  | 500 Hz  |
| Repeatability (%Sn)   |          | ≤ 1%  |  |   |
| Hysteresis (%Sn)  |          | 3-15 %  |  |   |
| Case  |          | Stainless steel   |  |   |
| Flush Mounting  |          | Yes   |  |   |
| Protection Degree   |          | IP 67   |  |   |
| Operating Temperature   |          | - 20 to +70 °C  |  |   |
| Output Connection   |          | Connector C1  | Connector C  |   |

\* Other outputs available upon request

#### WIRING:



#### CONNECTOR:




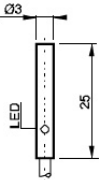
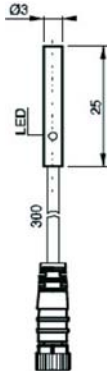
#### MATING CONNECTORS:

| ID#      | Type | Description                  |
|----------|------|------------------------------|
| S3480    | C1   | right angle w/ 5 meter cable |
| S3481    | C1   | straight w/ 5 meter cable    |
| M8A2M3W  | C1   | right angle w/ 2 meter cable |
| M8A5M3W  | C1   | right angle w/ 5 meter cable |
| M8S2M3W  | C1   | straight w/ 2 meter cable    |
| M8S5M3W  | C1   | straight w/ 5 meter cable    |
| S3496/2  | C    | right angle w/ 2 meter cable |
| S3496    | C    | right angle w/ 5 meter cable |
| S3499/2  | C    | straight w/ 2 meter cable    |
| S3499    | C    | straight w/ 5 meter cable    |
| M12A2M4W | C    | right angle w/ 2 meter cable |
| M12A5M4W | C    | right angle w/ 5 meter cable |
| M12S2M4W | C    | straight w/ 2 meter cable    |
| M12S5M4W | C    | straight w/ 5 meter cable    |

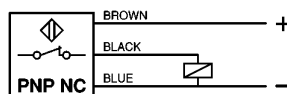
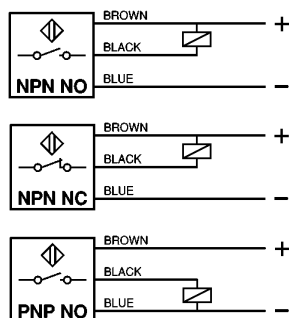
## 3 mm Diameter DC 3 Wire

### FEATURES:

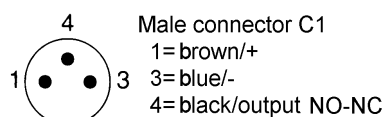
- Stainless steel non-threaded case
- Short circuit & reverse polarity protection
- Protection degree IP67: dust tight and protection from the effects of immersion
- LED function indicator
- 5 and 10 meter cable lengths available upon request

|   |         | MODEL   |  |
|---|---------|---|--|
| Output Function   | NPN, NO | S3870   | S3874  |
|   | NPN, NC | S3871   | S3875  |
|   | PNP, NO | S3872   | S3876  |
|   | PNP, NC | S3873   | S3877  |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937"<br>(not to scale)<br><br> |         |  |  |
| Operating Distance (Sn)   |         | 1 mm  |  |
| External Diameter   |         | Ø 3mm   |  |
| Power Supply  |         | 10- 30 Vdc  |  |
| Max Switching Current   |         | 100 mA max  |  |
| Power Drain   |         | < 8 mA  |  |
| Voltage Drop (sensor on)  |         | < 1.5 V   |  |
| Short Circuit Protection  |         | Yes   |  |
| Operating Frequency   |         | 2 kHz   |  |
| Repeatability (%Sn)   |         | ≤ 1%  |  |
| Hysteresis (%Sn)  |         | < 15%   |  |
| Case  |         | Stainless Steel   |  |
| Flush Mounting  |         | Yes   |  |
| Protection Degree   |         | IP 67   |  |
| Operating Temperature   |         | - 20 to +70 °C  |  |
| Output Connection   |         | Cable, L = 2 m  | Pigtail Connector C1   |

### WIRING:



### CONNECTOR:



### MATING CONNECTORS:


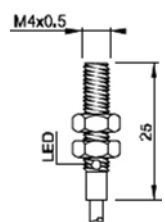
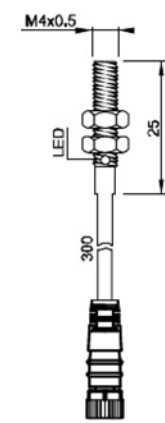
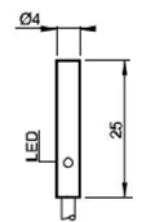
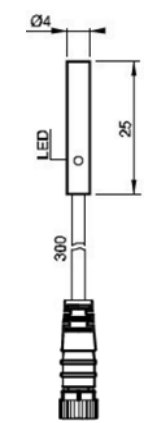
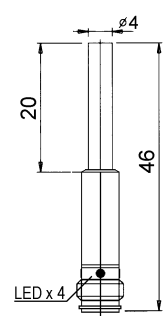
| ID#     | Type | Description                  |
|---------|------|------------------------------|
| S3480   | C1   | right angle w/ 5 meter cable |
| S3481   | C1   | straight w/ 5 meter cable    |
| M8A2M3W | C1   | right angle w/ 2 meter cable |
| M8A5M3W | C1   | right angle w/ 5 meter cable |
| M8S2M3W | C1   | straight w/ 2 meter cable    |
| M8S5M3W | C1   | straight w/ 5 meter cable    |

## Inductive

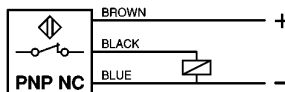
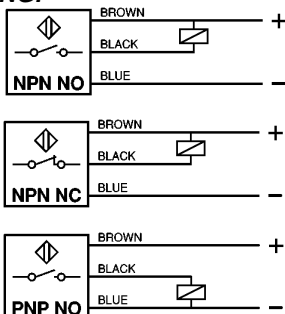
### 4 mm Diameter DC 3 Wire

#### FEATURES:

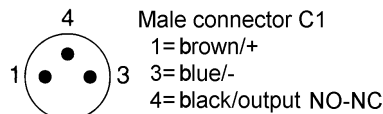
- Extended operating distances
- Stainless steel case
- Short circuit & reverse polarity protection
- Protection degree IP67: dust tight and protection from the effects of immersion
- LED function indicator

|   |         | MODEL   |  |  |  |   |                |
|---|---------|---|--|--|--|---|----------------|
| Output Function   | NPN, NO | S3880   | S3884  | S3890  | S3894  | S3514   |                |
|   | NPN, NC | S3881   | S3885  | S3891  | S3895  | S3515   |                |
|   | PNP, NO | S3882   | S3886  | S3892  | S3896  | S3516   |                |
|   | PNP, NC | S3883   | S3887  | S3893  | S3897  | S3517   |                |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937"<br>(not to scale)<br><br> |         |  |  |  |  |  |                |
| Operating Distance (Sn)   |         | 1mm   |  | 1.5mm  |  | 0.8 mm  |                |
| External Diameter   |         | M4 x 0.5  |  | Ø 4mm  |  | M4 x 0.5  |                |
| Power Supply  |         | 10- 30 Vdc  |  |  |  |   | 6 - 30 Vdc     |
| Max Switching Current   |         | 100 mA max  |  | 100 mA max   |  | 150 mA max  |                |
| Power Drain (24Vdc)   |         | < 8 mA  |  |  |  |   | < 10 mA        |
| Voltage Drop (sensor ON)  |         | < 1.5 V   |  |  |  |   | < 1.4 V        |
| Short Circuit Protection  |         | Yes   |  |  |  |   |                |
| Operating Frequency   |         | 2 kHz   |  |  |  |   |                |
| Repeatability (%Sn)   |         | ≤ 1%  |  |  |  |   | ≤ 3%           |
| Hysteresis (%Sn)  |         | < 15%   |  |  |  |   | < 10%          |
| Case  |         | Stainless Steel   |  |  |  |   |                |
| Flush Mounting  |         | Yes   |  |  |  |   |                |
| Protection Degree   |         | IP 67   |  |  |  |   |                |
| Operating Temperature   |         | - 20 to +70 °C  |  |  |  |   | - 25 to +70 °C |
| Output Connection   |         | Cable PVC: L=2m   | Pigtail C1   | Cable PVC: L=2m  | Pigtail C1   | Connector C1  |                |

#### WIRING:



#### CONNECTOR:




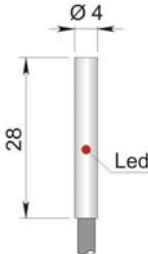
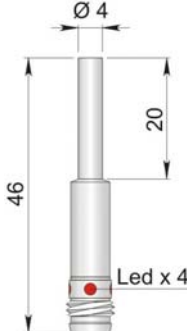
#### MATING CONNECTORS:

| ID#     | Type | Description                  |
|---------|------|------------------------------|
| S3480   | C1   | right angle w/ 5 meter cable |
| S3481   | C1   | straight w/ 5 meter cable    |
| M8A2M3W | C1   | right angle w/ 2 meter cable |
| M8A5M3W | C1   | right angle w/ 5 meter cable |
| M8S2M3W | C1   | straight w/ 2 meter cable    |
| M8S5M3W | C1   | straight w/ 5 meter cable    |

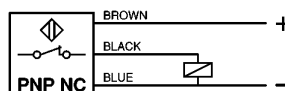
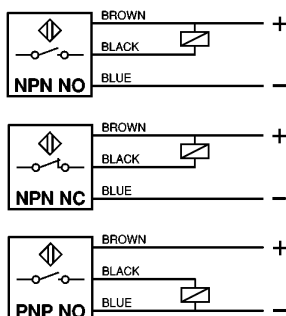
## 4 mm Diameter DC 3 Wire

### FEATURES:

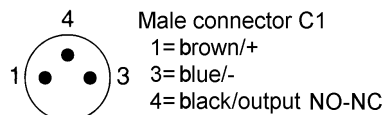
- Stainless steel non-threaded case
- Short circuit & reverse polarity protection
- Protection degree IP67: dust tight and protection from the effects of immersion
- LED function indicator
- 5 and 10 meter cable lengths available upon request

|   |         | MODEL   |  |
|---|---------|---|--|
| Output Function   | NPN, NO | S3510   | S3514  |
|   | NPN, NC | S3511   | S3515  |
|   | PNP, NO | S3512   | S3516  |
|   | PNP, NC | S3513   | S3517  |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937"<br>(not to scale)<br><br> |         |  |  |
| Operating Distance (Sn)   |         | 0.8 mm  |  |
| External Diameter   |         | Ø 4mm   |  |
| Power Supply  |         | 6 - 30 Vdc  |  |
| Max Switching Current   |         | 150 mA max  |  |
| Power Drain (@ 24Vdc)   |         | < 10 mA   |  |
| Voltage Drop (sensor on)  |         | < 1.4 V   |  |
| Short Circuit Protection  |         | Yes   |  |
| Operating Frequency   |         | 2 kHz   |  |
| Repeatability (%Sn)   |         | ≤ 3%  |  |
| Hysteresis (%Sn)  |         | < 10%   |  |
| Case  |         | Stainless Steel   |  |
| Flush Mounting  |         | Yes   |  |
| Protection Degree   |         | IP 67   |  |
| Operating Temperature   |         | - 20 to +70 °C  |  |
| Output Connection   |         | Cable, L = 2 m  | Connector C1   |

### WIRING:



### CONNECTOR:



### MATING CONNECTORS:


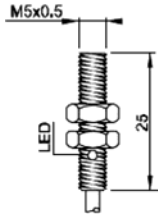
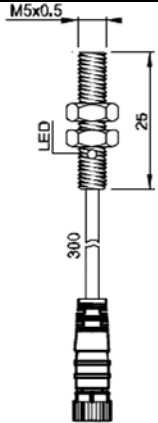
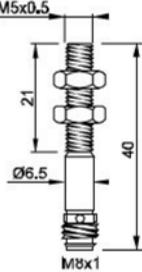
| ID#   | Type | Description                  |
|-------|------|------------------------------|
| S3480 | C1   | right angle w/ 5 meter cable |
| S3481 | C1   | straight w/ 5 meter cable    |

## Inductive

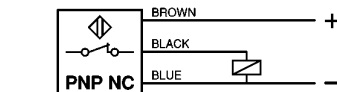
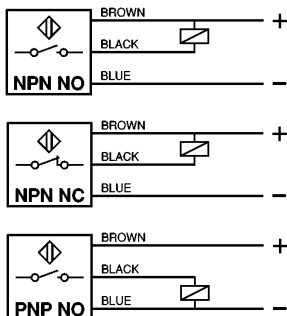
### 5 mm Diameter Extended Range DC 3 Wire

#### FEATURES:

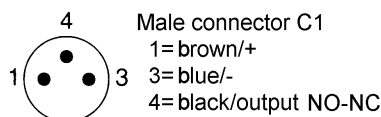
- Extended operating distances
- Stainless steel case
- Short circuit & reverse polarity protection
- Protection degree IP67: dust tight and protection from the effects of immersion
- LED function indicator

|   |         | MODEL   |   |   |
|---|---------|---|---|---|
| Output Function   | NPN, NO | S3900   | S3904   | S3908   |
|   | NPN, NC | S3901   | S3905   | S3909   |
|   | PNP, NO | S3902   | S3906   | S3910   |
|   | PNP, NC | S3903   | S3907   | S3911   |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937"<br>(not to scale)<br><br> |         |  |  |  |
| Operating Distance (Sn)   |         | 1.5 mm  |   |   |
| External Diameter   |         | M5 x 0.5  |   |   |
| Power Supply  |         | 10- 30 Vdc  |   |   |
| Max Switching Current   |         | 200 mA max  |   |   |
| Power Drain (@ 24Vdc)   |         | < 8 mA  |   |   |
| Voltage Drop (sensor on)  |         | < 1.5 V   |   |   |
| Short Circuit Protection  |         | Yes   |   |   |
| Operating Frequency   |         | 2 kHz   |   |   |
| Repeatability (%Sn)   |         | ≤ 1%  |   |   |
| Hysteresis (%Sn)  |         | < 15%   |   |   |
| Case  |         | Stainless Steel   |   |   |
| Flush Mounting  |         | Yes   |   |   |
| Protection Degree   |         | IP 67   |   |   |
| Operating Temperature   |         | - 20 to +70 °C  |   |   |
| Output Connection   |         | Cable, L = 2 m  | Pigtail Connector C1  | Connector C1  |

#### WIRING:



#### CONNECTOR:




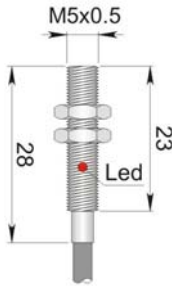
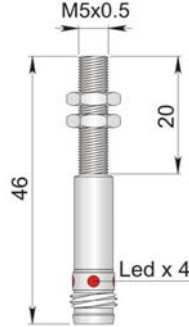
#### MATING CONNECTORS:

| ID#     | Type | Description                  |
|---------|------|------------------------------|
| S3480   | C1   | right angle w/ 5 meter cable |
| S3481   | C1   | straight w/ 5 meter cable    |
| M8A2M3W | C1   | right angle w/ 2 meter cable |
| M8A5M3W | C1   | right angle w/ 5 meter cable |
| M8S2M3W | C1   | straight w/ 2 meter cable    |
| M8S5M3W | C1   | straight w/ 5 meter cable    |

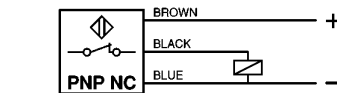
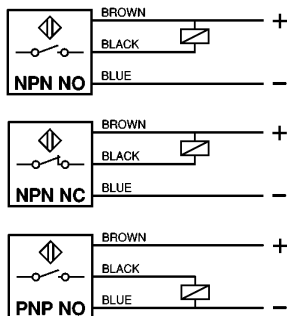
## 5 mm Diameter DC 3 Wire

### FEATURES:

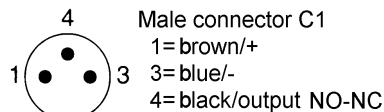
- Stainless steel case
- Short circuit & reverse polarity protection
- Protection degree IP67: dust tight and protection from the effects of immersion
- LED function indicator
- 5 and 10 meter cable lengths available upon request

|   |         | MODEL  |  |
|---|---------|--|--|
| Output Function   | NPN, NO | S3520  | S3524  |
|   | NPN, NC | S3521  | S3525  |
|   | PNP, NO | S3522  | S3526  |
|   | PNP, NC | S3523  | S3527  |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937"<br>(not to scale)<br><br> |         |  |  |
| Operating Distance (Sn)   |         | 0.8 mm   |  |
| External Diameter   |         | M5 x 0.5   |  |
| Power Supply  |         | 6 - 30 Vdc   |  |
| Max Switching Current   |         | 150 mA max   |  |
| Power Drain (@ 24Vdc)   |         | < 10 mA  |  |
| Voltage Drop (sensor on)  |         | < 1.4 V  |  |
| Short Circuit Protection  |         | Yes  |  |
| Operating Frequency   |         | 2 kHz  |  |
| Repeatability (%Sn)   |         | ≤ 3%   |  |
| Hysteresis (%Sn)  |         | < 10%  |  |
| Case  |         | Stainless Steel  |  |
| Flush Mounting  |         | Yes  |  |
| Protection Degree   |         | IP 67  |  |
| Operating Temperature   |         | - 25 to +70 °C   |  |
| Output Connection   |         | Cable, L = 2 m   | Connector C1   |

### WIRING:



### CONNECTOR:



### MATING CONNECTORS:

| ID#   | Type | Description                  |
|-------|------|------------------------------|
| S3480 | C1   | right angle w/ 5 meter cable |
| S3481 | C1   | straight w/ 5 meter cable    |



## NAMUR Inductive Proximity Sensors

### WORKING PRINCIPLE

These sensors act as a variable resistor. With the active surface free, they have a low output resistance. In the presence of a metal target the output resistance is high. The resulting variation in the current is used to control a signal amplifier.

### TECHNICAL CHARACTERISTICS

Nominal voltage: 8 Vdc (7,7 - 9V) - Load resistance 1K ohms

Output current: In the presence of metals < 1 mA


Output current: In the absence of metals > 3 mA

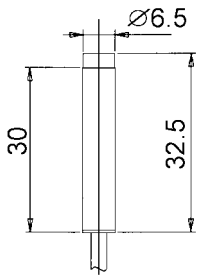
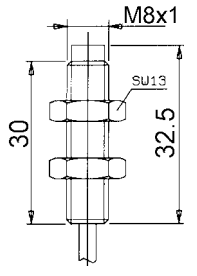
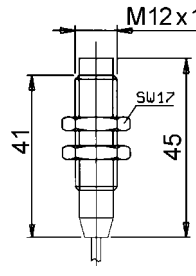
These sensors can be used in a variable voltage field from 5 to 30 Vdc.

### AMPLIFIERS

All the NAMUR sensors can operate in connection with the following amplifiers: ALNC type for 1 sensor; ALTP delayed type for 1 sensor or ALN2 type for 2 sensors. Furthermore, they can be connected to the electronic rotation controls CRTP.

### FEATURES:

- Conforming to NAMUR standards (DIN 19234)
- Pre-wired cable or connector models
-  Compliant to the EMC directive

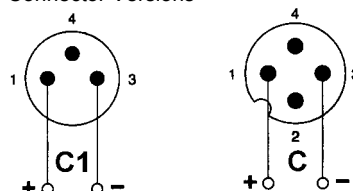
|   | MODEL   |       |  |       |   |       |
|---|---|-------|--|-------|---|-------|
| 2 Meters Cable, PVC   | S3240   | S3241 | S3242  | S3243 | S3244   | S3245 |
| Connector C1  | S3260   | S3261 | S3262  | S3263 |   |       |
| Connector C   |   |       |  |       | S3264   | S3265 |
| Dimensions*: mm<br>1 mm = .03937"   |  |       |  |       |  |       |
| * Flush mounting units have the shorter length, while non-flush mounting units have the longer length | Add 9mm to length for connector version   |       | Add 20mm to length for connector version   |       | Add 4mm to length for connector version   |       |
| Operating Distance  | 1 mm  | 2 mm  | 1 mm   | 2 mm  | 2 mm  | 4 mm  |
| External Diameter   | Ø 6.5 mm  |       | M8 x 1   |       | M12 x 1   |       |
| Power Supply  | 8.2, 5 - 30 Vdc   |       |  |       |   |       |
| Operating Frequency   | 2000 Hz max   |       |  |       |   |       |
| Repeatability   | ≤ 3% mm   |       |  |       |   |       |
| Case  | Nickel Plated Brass   |       |  |       |   |       |
| Flush Mounting  | Yes   | No    | Yes  | No    | Yes   | No    |
| Protection Degree   | IP 67   |       |  |       |   |       |
| Operating Temp.   | - 25 to +70 °C  |       |  |       |   |       |

### WIRING:

Cable Version



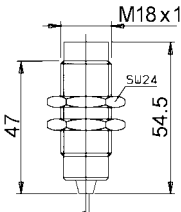
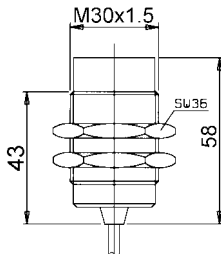
Connector Versions

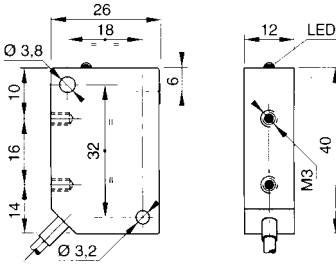
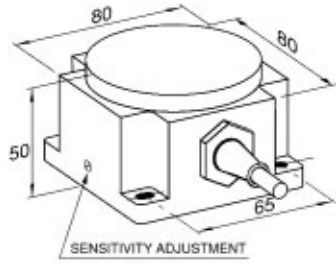


### MATING CONNECTORS:

| ID#   | Type | Description                  |
|-------|------|------------------------------|
| S3494 | C    | right angle w/ 2 meter cable |
| S3495 | C    | right angle w/ 5 meter cable |
| S3497 | C    | straight w/ 2 meter cable    |
| S3498 | C    | straight w/ 5 meter cable    |
| S3480 | C1   | right angle w/ 5 meter cable |
| S3481 | C1   | straight w/ 5 meter cable    |

## Inductive

|                                   | MODEL  |       |  |       |
|-----------------------------------|--|-------|--|-------|
| 2 Meters Cable, PVC               | S3246  | S3247 | S3248  | S3249 |
| Connector C                       | S3266  | S3267 | S3268  | S3269 |
| Dimensions*: mm<br>1 mm = .03937" |  <p>Add 4mm to length for connector version</p> |       |  <p>Add 8mm to length for connector version</p> |       |
| Operating Distance                | 5 mm   | 8 mm  | 10 mm  | 15 mm |
| External Diameter                 | M 18 x 1   |       | M 30 x 1.5   |       |
| Power Supply                      | 8.2, 5 - 30 Vdc  |       |  |       |
| Operating Frequency               | 1000 Hz max  |       | 500 Hz max   |       |
| Repeatability                     | ≤ 3%   |       |  |       |
| Case                              | Nickel-plated brass  |       | Nickel-plated brass  |       |
| Flush Mounting                    | Yes  | No    | Yes  | No    |
| Protection Degree                 | IP 67  |       |  |       |
| Operating Temperature             | - 25 to +70 °C   |       |  |       |

|                                   | MODEL   |             |  |
|-----------------------------------|---|-------------|--|
| 2 Meters Cable, PVC               | S3251   | S3252       | S3250  |
| Connector C1                      | S3271   | S3272       |  |
| Connector C2 (included)           |   |             | S3270  |
| Dimensions*: mm<br>1 mm = .03937" |  |             |  <p>SENSITIVITY ADJUSTMENT</p> |
| <b>Operating Distance</b>         | <b>2 mm</b>   | <b>4 mm</b> | <b>10-60 adjustable</b>  |
| Power Supply                      | 8.2, 5 - 30 Vdc   |             |  |
| Operating Frequency               | 2000 Hz   |             | 100 HZ   |
| Repeatability                     | ≤ 3%  |             |  |
| Case                              | Plastic   |             |  |
| Flush Mounting                    | Yes   | No          | No   |
| Protection Degree                 | IP 67   |             |  |
| Operating Temperature             | - 25 to +70 °C  |             |  |

Many other shapes and sizes available

## High Temperature Capacitive

### FEATURES:

- Sensor temperature range -200 to +250° C (-382 to +482° F)
- Operating distance of 5 or 15mm
- Sensitivity adjustment
- Stainless steel sensor housing
- 18 and 30mm diameters
- Sensor protection degree IP68: dust tight and protection against submersion

### APPLICATIONS:

Typical applications include the level control of hot materials such as liquids, oils, powder and plastic granules. These sensors can also be used to sense solid metallic and non-metallic bodies positioned in areas of high temperature.

### DESCRIPTION:

These high temperature sensors have an amplifier completely separate from the sensor. This allows the sensor to withstand temperatures from -200 to +250°C (-382 to +482°F). The sensors are available in 18mm and 30mm diameters, made of stainless steel and PTFE. Each sensor's operating distance is adjustable. This sensitivity regulation is useful in applications such as detection of full containers and non-detection of empty containers.

### OPERATING PRINCIPLE:

Capacitive proximity sensors use an oscillating field that can sense conductive and non-conductive materials (metals, liquids, glass, plastic, wood, paper and rubber). When an object enters this field, an electronic circuit begins to oscillate. The rise or fall of the oscillation is identified by a threshold circuit that drives an amplifier for the operation of an external load. The operating distance of the sensor depends on the target's shape and size and is strictly linked to the nature of the material (Table 1).

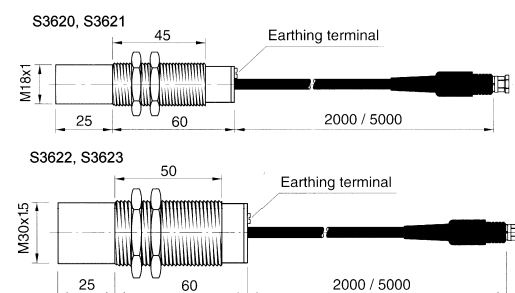
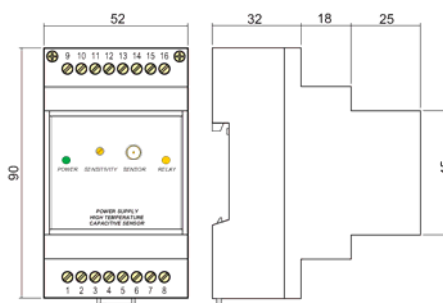
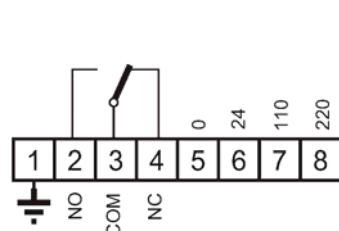
### SPECIFICATIONS:

| Sensor Model         | S3620<br>M18 x 1  | S3621<br>M18 x 1, 5m cable | S3622<br>M30 x 1.5     | S3623<br>M30 x 1.5, 5m cable |
|----------------------|---|----------------------------|------------------------|------------------------------|
| Operating distance   | 5mm   |                            | 15mm                   |                              |
| Temperature range    | -200 to +250 °C (-382 to +482° F)                               |                            |                        |                              |
| Degree of protection | IP68  |                            |                        |                              |
| Housing              | Housing and nuts Stainless steel AISI 303, Sensing part in PTFE |                            |                        |                              |
| Flush mounting       | No  |                            |                        |                              |
| Output connection    | L=2m w/ plug connector  | L=5m w/ plug connector     | L=2m w/ plug connector | L=5m w/ plug connector       |

| Amplifier Model        | S3624D  | S3625D               |
|------------------------|---|----------------------|
| Number of sensors      | 1   |                      |
| Power supply           | 24 Vac 50-60 Hz                               | 110/220 Vac 50-60 Hz |
| Absorption             | 3 VA  |                      |
| Indicators             | 1 Yellow LED - Operation, 1 Green LED - Power |                      |
| Temperature range      | -20 to +60 °C (-4 to +140 °F)                 |                      |
| Output relay           | 1 relay - changeover, 5A @ 220Vac             |                      |
| Housing                | Plastic                                       |                      |
| Degree of protection   | IP20  |                      |
| Sensitivity adjustment | Incorporated                                  |                      |

### WIRING

### DIMENSIONS (mm) 1mm = .03937"

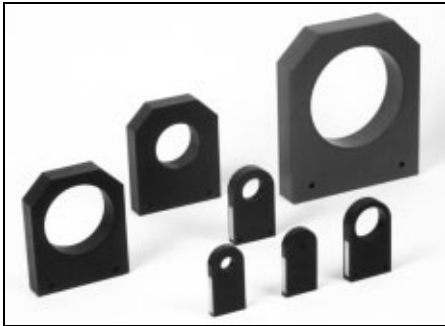


**INSTALLATION INSTRUCTIONS:** If the material to be controlled is in a metallic container, the container and terminal 1 of the amplifier must be grounded. If the container is non-metallic, connect terminal 1 of the amplifier and the earthing terminal on sensor body to ground. The connection wire between the sensor and the amplifier must be separated from the power supply.

**SENSITIVITY ADJUSTMENT:** Trimmer. A clockwise rotation increases sensitivity while counter-clockwise rotation decreases sensitivity. It is advisable to adjust sensitivity with the sensor placed in its working position and with sensing side covered by the material to be detected by approx. 70% of its surface. Connect the sensor and adjust:

- If the LED is relay is NO turn the trimmer counter-clockwise until the LED goes OFF. Then turn the trimmer clockwise until the LED relay goes ON.
  - If the LED is OFF turn the trimmer clockwise until the LED goes ON.
- Small adjustments may be need in order to obtain the desired performance

## Ring DC 4 Wire



### FEATURES:

- Internal diameters of 5, 12, 15, 22, 25, 30, 44, 63, 100 mm
- Adjustable sensitivity
- Delay ON/OFF switch
- LED function indicator
- Short circuit & reverse polarity protection
- Pre-wired cable or connector models
- 3.5, 5, 7.5 and 10 meter cable lengths upon request
- CE Marked
- Protection degree IP65: dust tight and protection against water jets.

### DESCRIPTION:

In inductive ring sensors, the sensing area is located inside the ring. These sensors are designed to detect metallic masses entering or passing through the ring. They are ideal for sensing, counting and checking of small metal parts such as: screws, washers, nuts etc. and the control, detection, position, inspection and automation of machine tools & manufacturing systems.

They operate on a 10-30 Vdc supply and offer NPN or PNP, NO+NC outputs. They are sealed in a rugged, plastic housing with

a protection degree of IP 65. All versions have short circuit and reverse polarity protection and are available in either prewired cable or connector output connection. Each unit is supplied with a sensitivity adjustment and a delay ON/OFF switch that fixes the output pulse for 100mS. This makes them ideal for detection of fast moving small metal objects. Special version NAMUR output is available.

The operating distance of the sensor depends on the actuator shape and size and is strictly linked to the nature of the metal. For minimum target size, see Table 1.

|                                  |            | MODEL                       |               |               |               |              |
|----------------------------------|------------|-----------------------------|---------------|---------------|---------------|--------------|
| Output Connection                |            | Cable (L=2 meter)           |               |               |               |              |
| Output                           | NPN, NO+NC | S3200R                      | S3202R        | S3236R        | S3204R        | S3208R       |
| Function                         | PNP, NO+NC | S3201R                      | S3203R        | S3237R        | S3205R        | S3209R       |
| Output Connection                |            | Connector (Type C)          |               |               |               |              |
| Output                           | NPN, NO+NC | S3216R                      | S3218R        | S3238R        | S3220R        | S3224R       |
| Function                         | PNP, NO+NC | S3217R                      | S3219R        | S3239R        | S3221R        | S3225R       |
| Dimensions: mm<br>1 mm = .03937" |            |                             |               |               |               |              |
| Hole diameter                    |            | Ø 5                         | Ø 12          | Ø 15          | Ø 22          | Ø 30         |
| Power Supply                     |            | 10-30 Vdc                   |               |               |               |              |
| Power Drain                      |            | <18 mA                      |               |               |               |              |
| Voltage Drop (on state)          |            | <1.8 Vdc                    |               |               |               |              |
| Switching Current                |            | 200 mA                      |               |               |               |              |
| Short Circuit Protection         |            | Yes                         |               |               |               |              |
| Operating Frequency              |            | 600 - 1500 Hz               | 600 - 1000 Hz | 600 - 1000 Hz | 600 - 1000 Hz | 600 - 800 Hz |
| Repeatability                    |            | < 0.3 mm                    |               |               |               |              |
| Case                             |            | Plastic                     |               |               |               |              |
| Flush Mounting                   |            | No                          |               |               |               |              |
| Protection Degree                |            | IP 65                       |               |               |               |              |
| Operating Temperature            |            | -25 to +70°C (-13 to 158°F) |               |               |               |              |

Table 1

| Min. dimensions of target Iron (Fe37). |      |       |       |       |       |       |       |        |
|--|------|-------|-------|-------|-------|-------|-------|--------|
| Hole Diameter                          | 5 mm | 12 mm | 15 mm | 22 mm | 30 mm | 44 mm | 63 mm | 100 mm |
| Length mm                              | 1    | 2     | 2     | 6     | 7     | 9     | 12    | 20     |
| Diameter mm                            | 0.7  | 1.2   | 1.2   | 3     | 4     | 5     | 6     | 12     |

## Inductive

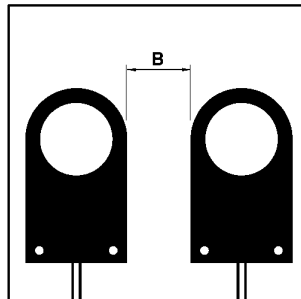
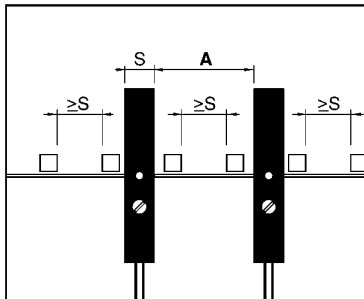
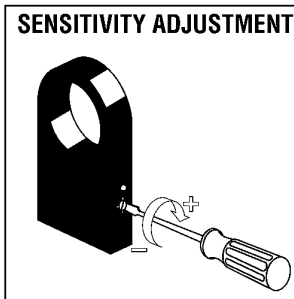
|                                  |            | MODEL                       |              |        |
|----------------------------------|------------|-----------------------------|--------------|--------|
| Output Connection                |            | Cable (L=2 meter)           |              |        |
| Output Function                  | NPN, NO+NC | S3210R                      | S3212R       | S3214R |
|                                  | PNP, NO+NC | S3211R                      | S3213R       | S3215R |
| Output Connection                |            | Connector (Type C)          |              |        |
| Output Function                  | NPN, NO+NC | S3226R                      | S3228R       | S3230R |
|                                  | PNP, NO+NC | S3227R                      | S3229R       | S3231R |
| Dimensions: mm<br>1 mm = .03937" |            |                             |              |        |
| Hole diameter                    |            | Ø 44                        | Ø 63         | Ø 100  |
| Power Supply                     |            | 10-30 Vdc                   |              |        |
| Power Drain                      |            | <18 mA                      |              |        |
| Voltage Drop (on state)          |            | <1.8 Vdc                    |              |        |
| Switching Current                |            | 200 mA                      |              |        |
| Short Circuit Protection         |            | Yes                         |              |        |
| Operating Frequency              |            | 250 - 600 Hz                | 100 - 200 Hz | 100 Hz |
| Repeatability                    |            | < 0.3 mm                    |              |        |
| Case                             |            | Plastic                     |              |        |
| Flush Mounting                   |            | No                          |              |        |
| Protection Degree                |            | IP 65                       |              |        |
| Operating Temperature            |            | -25 to +70°C (-13 to 158°F) |              |        |

**SELECTION OF RING SENSOR:** Select the minimum ring diameter required. This enables the sensitivity adjustment to be made within normal parameters ensuring proper functioning of the unit.

**SENSITIVITY ADJUSTMENT:** After selection of the ring diameter, it is recommended that the sensitivity adjustment be made while the sensor is installed in its final position, enabling any surrounding metal to be taken into account. Sensitivity increases by turning the trimmer clockwise and decreases by turning it counter-clockwise.

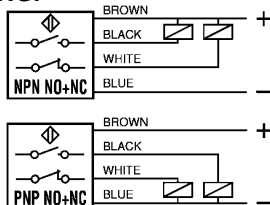
**EFFECTS OF METAL IN THE CLOSE VICINITY:** Moving metal parts close to the sensing area can affect the performance of the sensor. In order to ensure proper functioning, mount the sensor away from metallic objects.

**USE OF SENSOR:** A distance equal to the width of the sensor should be left between each object that passes through the sensor. If more than one sensor is to be installed in close vicinity, the minimum distance indicated between sensors should be observed.

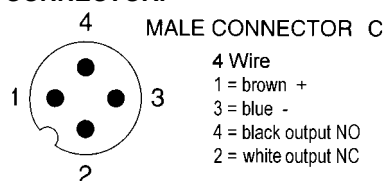


| Hole Dia.  | A (mm) | B (mm) |
|------------|--------|--------|
| 5 mm       | 25     | 10     |
| 12 & 15 mm | 30     | 10     |
| 22 mm      | 60     | 20     |
| 30 mm      | 60     | 20     |
| 44 mm      | 300    | 250    |
| 63 mm      | 300    | 250    |
| 100 mm     | 600    | 650    |

### WIRING:



### CONNECTOR:




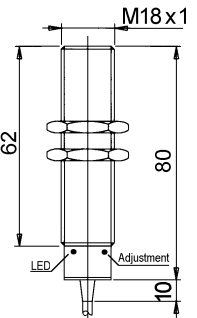
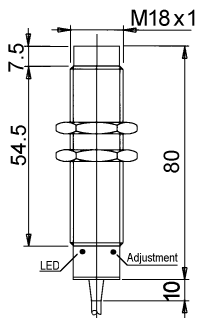
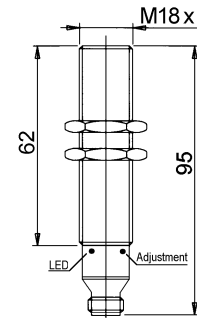
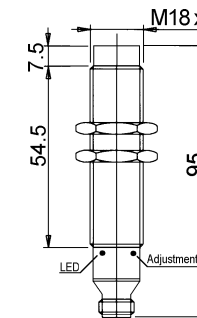
### MATING CONNECTORS:

| ID#     | Type | Description                  |
|---------|------|------------------------------|
| 4 wire  |      |                              |
| S3496/2 | C    | right angle w/ 2 meter cable |
| S3496   | C    | right angle w/ 5 meter cable |
| S3499/2 | C    | straight w/ 2 meter cable    |
| S3499   | C    | straight w/ 5 meter cable    |

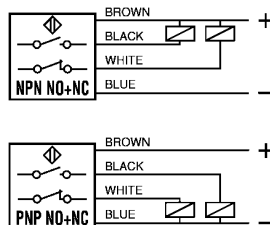
# 18 mm Diameter DC 4 Wire

## FEATURES:

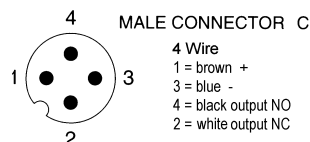
- Short circuit & reverse polarity protection
- Improved EMC and ESD Shielding
- Protection degree IP65
- LED function indicator
- 5 and 10 meter cable lengths available upon request

|   |            | MODEL   |   |  |   |
|---|------------|---|---|--|---|
| Output Function   | NPN, NO+NC | S5000   | S5022   | S5010  | S5032   |
|   | PNP, NO+NC | S5001   | S5023   | S5011  | S5033   |
| Dimensions: mm<br>1 mm = .03937"<br>1" = 25.4 mm<br><br> |            |  |  |  |  |
| <b>Operating Distance (Sn)</b>  |            | <b>0-5 mm (Adjustable)</b>  | <b>0-10 mm (Adjustable)</b>   | <b>0-5 mm (Adjustable)</b>   | <b>0-10 mm (Adjustable)</b>   |
| External Diameter   |            | M18 x 1   |   |  |   |
| Power Supply  |            | 10 - 40 Vdc   |   |  |   |
| Max Switching Current   |            | 200 mA  |   |  |   |
| Power Drain (24Vdc)   |            | ≤ 10 mA   |   |  |   |
| Voltage Drop (sensor ON)  |            | < 1.8 V   |   |  |   |
| Short Circuit Protection  |            | Yes   |   |  |   |
| Operating Frequency   |            | 10 Hz   |   |  |   |
| Repeatability (%Sn)   |            | <10%  |   |  |   |
| Hysteresis (%Sn)  |            | Depends on (Sn), ≤ 20%  |   |  |   |
| Case  |            | Nickel-plated brass   | Plastic   | Nickel-plated brass  | Plastic   |
| Flush Mounting  |            | Yes   | No  | Yes  | No  |
| Protection Degree   |            | IP 67   |   |  |   |
| Operating Temperature   |            | - 20 to +70 °C  |   |  |   |
| Output Connection   |            | Cable PVC: L = 3 m  |   | Connector C  |   |
| Protective Housing Model  |            |   | S5910   |  | S5910   |

## WIRING:



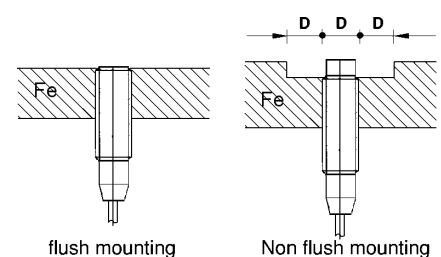
## CONNECTOR:



## MATING CONNECTORS:

| ID#       | Type                         | Description     |
|-----------|------------------------------|-----------------|
| 4 wire    |                              |                 |
| S3496/2 C | right angle w/ 2 meter cable |                 |
| S3496 C   | right angle w/ 5 meter cable |                 |
| S3499/2 C | straight w/ 2 meter cable    |                 |
| S3499 C   | straight w/ 5 meter cable    |                 |
| 030502C   | right angle, terminal screws | field wire-able |
| 030503C   | straight, terminal screws    | field wire-able |

## MOUNTING:



## Capacitive

# 18 mm Diameter AC NO/NC Select

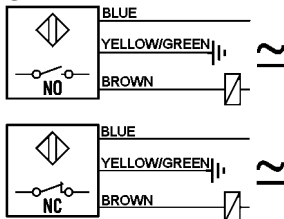
### FEATURES:

- Protection degree IP65
- LED function indicator
- Sensitivity adjustment
- 5 and 10 meter cable lengths available upon request

|  |              | MODEL                  |                      |                     |                      |
|--|--------------|------------------------|----------------------|---------------------|----------------------|
| Output Function                                  | NO/NC Select | S5044                  | S5055                | S5046               | S5057                |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937" |              |                        |                      |                     |                      |
| Operating Distance (Sn)                          |              | 0-5 mm (Adjustable)    | 0-10 mm (Adjustable) | 0-5 mm (Adjustable) | 0-10 mm (Adjustable) |
| External Diameter                                |              | M18 x 1                |                      |                     |                      |
| Power Supply                                     |              | 20 - 250 Vac           |                      |                     |                      |
| Max Switching Current                            |              | 300 mA                 |                      |                     |                      |
| Min Switching Current                            |              | 10 mA                  |                      |                     |                      |
| Max Peak Current for 20ms                        |              | 1.5 A                  |                      |                     |                      |
| Residual Current                                 |              | ≤ 1 mA                 |                      |                     |                      |
| Voltage Drop                                     |              | ≤ 6 V                  |                      |                     |                      |
| Operating Frequency                              |              | 10 Hz                  |                      |                     |                      |
| Repeatability (%Sn)                              |              | <10%                   |                      |                     |                      |
| Hysteresis (%Sn)                                 |              | Depends on (Sn), ≤ 20% |                      |                     |                      |
| Case   |              | Nickel-plated brass    | Grey Plastic         | Nickel-plated brass | Grey Plastic         |
| Flush Mounting                                   |              | Yes                    | No                   | Yes                 | No                   |
| Protection Degree                                |              | IP 67                  |                      |                     |                      |
| Operating Temperature                            |              | - 20 to +70 °C         |                      |                     |                      |
| Output Connection                                |              | Cable PVC: L = 3 m     |                      | Connector C         |                      |
| Protective Housing Model                         |              | S5910                  |                      | S5910               |                      |

Attention must be paid to the minimum switching current, residual current and voltage drop when selecting low consumption relays or high impedance electronic controls to be used with these sensors. They are adapted for inputs of programmable controllers.

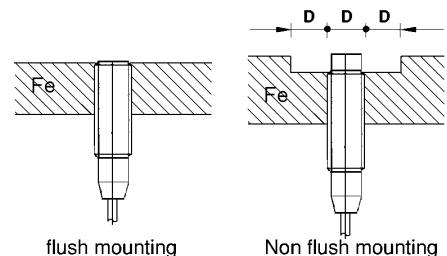
### WIRING:



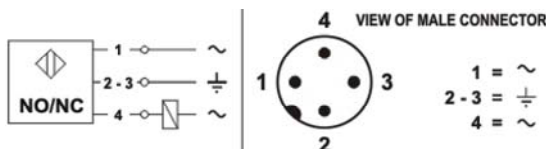
### MATING CONNECTORS:

| ID#     | Type | Description                  |
|---------|------|------------------------------|
| 4 wire  |      |                              |
| S3496/2 | C    | right angle w/ 2 meter cable |
| S3496   | C    | right angle w/ 5 meter cable |
| S3499/2 | C    | straight w/ 2 meter cable    |
| S3499   | C    | straight w/ 5 meter cable    |
| 030502  | C    | right angle, terminal screws |
|         |      | field wire-able              |
| 030503  | C    | straight, terminal screws    |
|         |      | field wire-able              |

### MOUNTING:



### CONNECTOR:



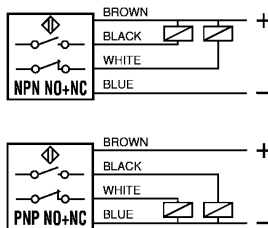
## 30 mm Diameter DC 4 Wire

### FEATURES:

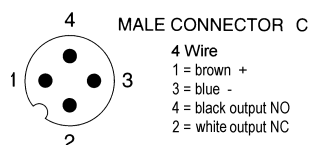
- Short circuit & reverse polarity protection
- Protection degree IP67: dust tight and protection from the effects of immersion
- LED function indicator
- 5 and 10 meter cable lengths available upon request

|  |            | MODEL                  |                      |                      |                      |
|--|------------|------------------------|----------------------|----------------------|----------------------|
| Output Function                                  | NPN, NO+NC | S5100                  | S5122                | S5110                | S5132                |
|  | PNP, NO+NC | S5101                  | S5123                | S5111                | S5133                |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937" |            |                        |                      |                      |                      |
|  |            |                        |                      |                      |                      |
| Operating Distance (Sn)                          |            | 0-20 mm (Adjustable)   | 0-25 mm (Adjustable) | 0-20 mm (Adjustable) | 0-25 mm (Adjustable) |
| External Diameter                                |            | M30 x 1.5              |                      |                      |                      |
| Power Supply                                     |            | 10 – 60Vdc             |                      |                      |                      |
| Max Switching Current                            |            | 200 mA                 |                      |                      |                      |
| Power Drain (24Vdc)                              |            | ≤ 10 mA                |                      |                      |                      |
| Voltage Drop (sensor ON)                         |            | < 1.8 V                |                      |                      |                      |
| Short Circuit Protection                         |            | Yes                    |                      |                      |                      |
| Operating Frequency                              |            | 10 Hz                  |                      |                      |                      |
| Repeatability (%Sn)                              |            | <10%                   |                      |                      |                      |
| Hysteresis (%Sn)                                 |            | Depends on (Sn), ≤ 20% |                      |                      |                      |
| Case   |            | Nickel-plated brass    | Plastic              | Nickel-plated brass  | Plastic              |
| Flush Mounting                                   |            | Yes                    | No                   | Yes                  | No                   |
| Protection Degree                                |            | IP 67                  |                      |                      |                      |
| Operating Temperature                            |            | - 20 to +70 °C         |                      |                      |                      |
| Output Connection                                |            | Cable PVC: L = 3 m     |                      | Connector C          |                      |
| Protective Housing Model                         |            |                        | S5913                |                      | S5913                |

### WIRING:



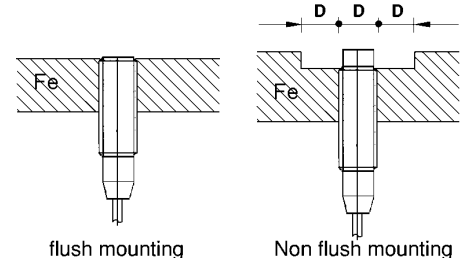
### CONNECTOR:



### MATING CONNECTORS:

| ID#       | Type                         | Description     |
|-----------|------------------------------|-----------------|
| 4 wire    |                              |                 |
| S3496/2 C | right angle w/ 2 meter cable |                 |
| S3496 C   | right angle w/ 5 meter cable |                 |
| S3499/2 C | straight w/ 2 meter cable    |                 |
| S3499 C   | straight w/ 5 meter cable    |                 |
| 030502C   | right angle, terminal screws | field wire-able |
| 030503C   | straight, terminal screws    | field wire-able |

### MOUNTING:





## Capacitive

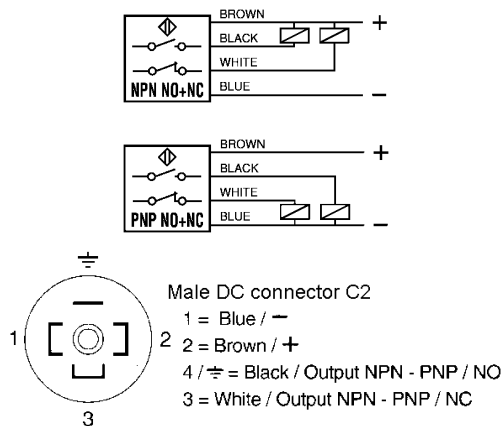
### 30 mm Diameter DC 4 Wire

#### FEATURES:

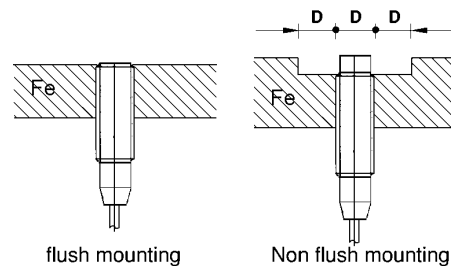
- Short circuit & reverse polarity protection
- Protection degree IP67: dust tight and protection from the effects of immersion
- LED function indicator
- Field wire-able connector included

|  |            | MODEL                  |                      |                      |
|--|------------|------------------------|----------------------|----------------------|
| Output Function                                  | NPN, NO+NC | S5114                  | S5116                | S5134                |
|  | PNP, NO+NC | S5115                  | S5117                | S5135                |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937" |            |                        |                      |                      |
|  |            |                        |                      |                      |
| Operating Distance (Sn)                          |            | 0-20 mm (Adjustable)   | 0-25 mm (Adjustable) | 0-25 mm (Adjustable) |
| External Diameter                                |            | M30 x 1.5              |                      |                      |
| Power Supply                                     |            | 10 - 55Vdc             |                      |                      |
| Max Switching Current                            |            | 300 mA                 |                      |                      |
| Power Drain (24Vdc)                              |            | ≤ 10 mA                |                      |                      |
| Voltage Drop (sensor ON)                         |            | < 1.8 V                |                      |                      |
| Short Circuit Protection                         |            | Yes                    |                      |                      |
| Operating Frequency                              |            | 10 Hz                  |                      |                      |
| Repeatability (%Sn)                              |            | <10%                   |                      |                      |
| Hysteresis (%Sn)                                 |            | Depends on (Sn), ≤ 20% |                      |                      |
| Case   |            | Nickel-plated brass    |                      | Plastic              |
| Flush Mounting                                   |            | Yes                    | No                   | No                   |
| Protection Degree                                |            | IP 65                  |                      |                      |
| Operating Temperature                            |            | - 20 to +70 °C         |                      |                      |
| Output Connection                                |            | Connector included     |                      |                      |
| Protective Housing Model                         |            |                        |                      | S5912                |

#### WIRING:



#### MOUNTING:



## 30 mm Diameter AC/DC NO/NC Select

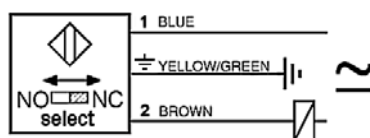
### FEATURES:

- Short circuit protection up to 50V in DC
- Protection degree IP67: dust tight and protection from the effects of immersion
- LED function indicator
- 5 and 10 meter cable lengths available upon request

|  |              | MODEL                       |                             |
|--|--------------|-----------------------------|-----------------------------|
| Output Function                                  | NO/NC Select | S5141                       | S5171                       |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937" |              |                             |                             |
|  |              |                             |                             |
| <b>Operating Distance (Sn)</b>                   |              | <b>0-20 mm (Adjustable)</b> | <b>0-25 mm (Adjustable)</b> |
| External Diameter                                |              | M30 x 1.5                   |                             |
| Power Supply                                     |              | 20 - 250 Vac/dc             |                             |
| Max Switching Current                            |              | 500 mA                      |                             |
| Min Switching Current                            |              | 10 mA                       |                             |
| Max Peak Current for 20ms                        |              | 1.5 A                       |                             |
| Residual Current                                 |              | ≤ 2 mA                      |                             |
| Voltage Drop                                     |              | < 6 V                       |                             |
| Short Circuit Protection                         |              | Yes up to 50V in DC         |                             |
| Operating Frequency                              |              | 10 Hz                       |                             |
| Repeatability (%Sn)                              |              | <10%                        |                             |
| Hysteresis (%Sn)                                 |              | Depends on (Sn), ≤ 20%      |                             |
| Case   |              | Nickel-plated brass         | Plastic                     |
| Flush Mounting                                   |              | Yes                         | No                          |
| Protection Degree                                |              | IP 65                       |                             |
| Operating Temperature                            |              | - 20 to +70 °C              |                             |
| Output Connection                                |              | Connector included          |                             |
| Protective Housing Model                         |              | S5912                       |                             |

Attention must be paid to the minimum switching current, residual current and voltage drop when selecting low consumption relays or high impedance electronic controls to be used with these sensors. They are adapted for inputs of programmable controllers.

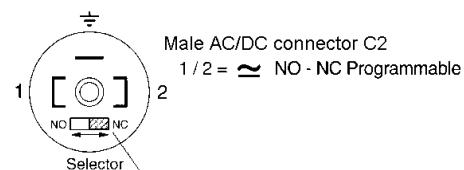
### WIRING:



### SELECTOR (NO/NC)

Before giving power to the sensor, program the sensor using the selector switch to the required function of NO (normally open) or NC (normally closed)

### Sensor with connector removed



## Capacitive

### 30 mm Diameter AC NO/NC Select

#### FEATURES:

- NO/NC Selector
- Protection degree IP67: dust tight and protection from the effects of immersion
- LED function indicator
- 5 and 10 meter cable lengths available upon request

|  |              | MODEL                       |                             |                             |                             |
|--|--------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Output Function                                  | NO/NC Select | S5210                       | S5215                       | S5212                       | S5217                       |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937" |              |                             |                             |                             |                             |
|  |              |                             |                             |                             |                             |
| <b>Operating Distance (Sn)</b>                   |              | <b>0-20 mm (Adjustable)</b> | <b>0-25 mm (Adjustable)</b> | <b>0-20 mm (Adjustable)</b> | <b>0-25 mm (Adjustable)</b> |
| External Diameter                                |              | M30 x 1.5                   |                             |                             |                             |
| Power Supply                                     |              | 20 - 250 Vac                |                             |                             |                             |
| Max Switching Current                            |              | 500 mA                      |                             |                             |                             |
| Min Switching Current                            |              | 10 mA                       |                             |                             |                             |
| Max Peak Current for 20ms                        |              | 1.5 A                       |                             |                             |                             |
| Residual Current                                 |              | ≤ 1 mA                      |                             |                             |                             |
| Voltage Drop                                     |              | ≤ 6 V                       |                             |                             |                             |
| Short Circuit Protection                         |              | Yes                         |                             |                             |                             |
| Operating Frequency                              |              | 10 Hz                       |                             |                             |                             |
| Repeatability (%Sn)                              |              | <10%                        |                             |                             |                             |
| Hysteresis (%Sn)                                 |              | Depends on (Sn), ≤ 20%      |                             |                             |                             |
| Case   |              | Nickel-plated brass         | Grey Plastic                | Nickel-plated brass         | Grey Plastic                |
| Flush Mounting                                   |              | Yes                         | No                          | Yes                         | No                          |
| Protection Degree                                |              | IP 67                       |                             |                             |                             |
| Operating Temperature                            |              | - 20 to +70 °C              |                             |                             |                             |
| Output Connection                                |              | Cable PVC: L = 3 m          |                             | Connector C                 |                             |
| Protective Housing Model                         |              | S5913                       |                             | S5913                       |                             |

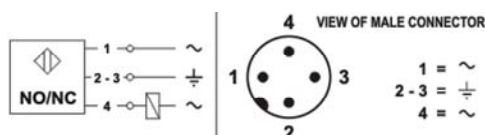
Attention must be paid to the minimum switching current, residual current and voltage drop when selecting low consumption relays or high impedance electronic controls to be used with these sensors. They are adapted for inputs of programmable controllers.

#### CABLE VERSION WIRING:



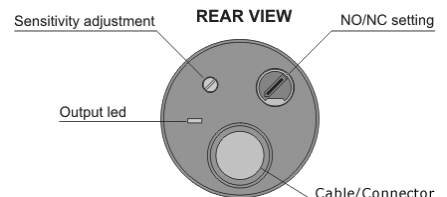
| ID#     | Type | Description                                  |
|---------|------|--|
| 4 wire  |      |  |
| S3496/2 | C    | right angle w/ 2 meter cable                 |
| S3496   | C    | right angle w/ 5 meter cable                 |
| S3499/2 | C    | straight w/ 2 meter cable                    |
| S3499   | C    | straight w/ 5 meter cable                    |
| 030502  | C    | right angle, terminal screws field wire-able |
| 030503  | C    | straight, terminal screws field wire-able    |

#### CONNECTOR VERSION WIRING:



#### SELECTOR (NO/NC)

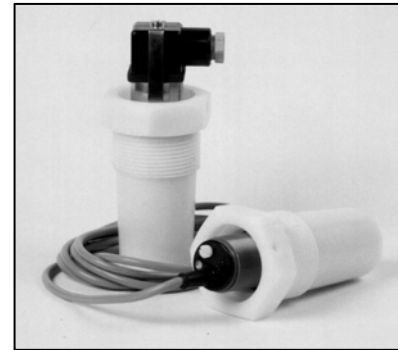
The programming of NO or NC output must be made through the trimmer.



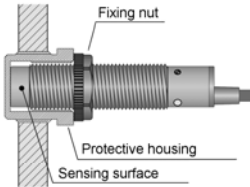
#### MATING CONNECTORS:

## Protective Housing for Capacitive Sensors

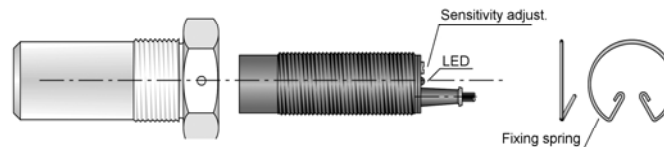
This housing is a waterproof protective cover for select capacitive sensors. The housing is made of a non-toxic material (POM). This type of installation permits a sensor to be rapidly removed for testing without the loss of material from the container and protects the sensor from abrasion. Furthermore, the use of the housing eliminates, to a large degree, variation in the sensitivity of the sensor due to deposits of material. See sensor datasheet for the model that works with a particular sensor.



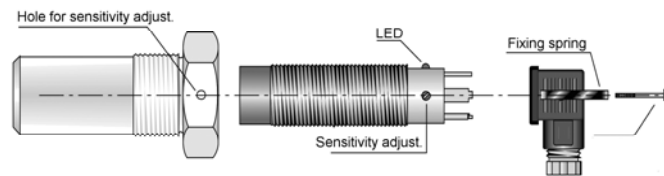
**Model: S5910 (18mm)**



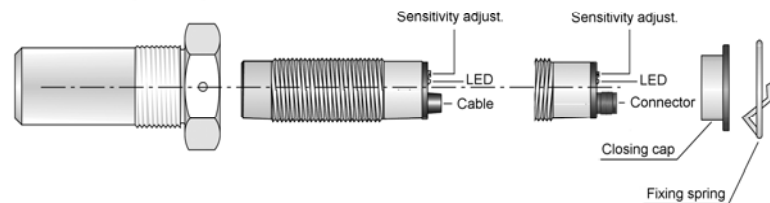
**Model: S5911 (30mm)**



**Model: S5912 (30mm)**

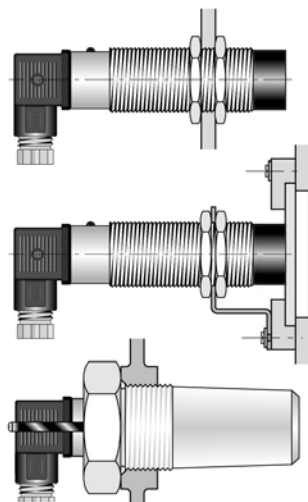


**Model: S5913 (30mm)**



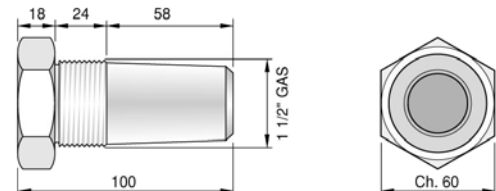
### EXAMPLE

- 1**  
TRADITIONAL  
INSTALLATION  
IN THE CONTAINER  
WALL
- 2**  
INSTALLATION WITH  
A PLASTIC WINDOW
- 3**  
INSTALLATION WITH  
PROTECTIVE HOUSING

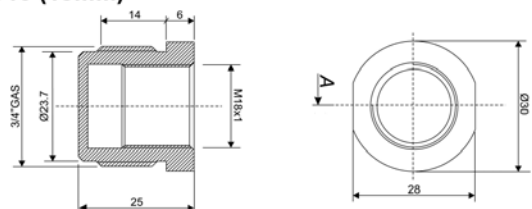


### DIMENSIONS (mm)

**S5911, S5912 and S5913 (30mm)**



**S5910 (18mm)**



## Capacitive

# High Temperature Capacitive

### FEATURES:

- Sensor temperature range  $-200$  to  $+250^{\circ}\text{C}$  ( $-382$  to  $+482^{\circ}\text{F}$ )
- Operating distance of 5 or 15mm
- Sensitivity adjustment
- Stainless steel sensor housing
- 18 and 30mm diameters
- Sensor protection degree IP68: dust tight and protection against submersion

### APPLICATIONS:

Typical applications include the level control of hot materials such as liquids, oils, powder and plastic granules. These sensors can also be used to sense solid metallic and non-metallic bodies positioned in areas of high temperature.

### DESCRIPTION:

These high temperature sensors have an amplifier completely separate from the sensor. This allows the sensor to withstand temperatures from  $-200$  to  $+250^{\circ}\text{C}$  ( $-382$  to  $+482^{\circ}\text{F}$ ). The sensors are available in 18mm and 30mm diameters, made of stainless steel and PTFE. Each sensor's operating distance is adjustable. This sensitivity regulation is useful in applications such as detection of full containers and non-detection of empty containers.

### OPERATING PRINCIPLE:

Capacitive proximity sensors use an oscillating field that can sense conductive and non-conductive materials (metals, liquids, glass, plastic, wood, paper and rubber). When an object enters this field, an electronic circuit begins to oscillate. The rise or fall of the oscillation is identified by a threshold circuit that drives an amplifier for the operation of an external load. The operating distance of the sensor depends on the target's shape and size and is strictly linked to the nature of the material (Table 1).

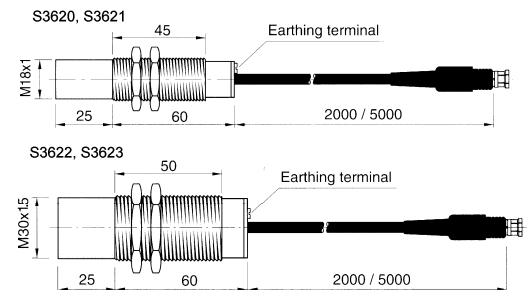
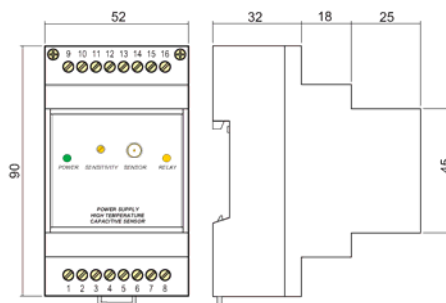
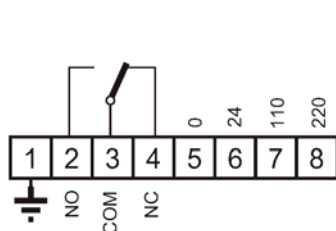
### SPECIFICATIONS:

| Sensor Model         | S3620<br>M18 x 1  | S3621<br>M18 x 1, 5m cable | S3622<br>M30 x 1.5     | S3623<br>M30 x 1.5, 5m cable |
|----------------------|---|----------------------------|------------------------|------------------------------|
| Operating distance   | 5mm   |                            | 15mm                   |                              |
| Temperature range    | -200 to +250 °C (-382 to +482° F)                               |                            |                        |                              |
| Degree of protection | IP68  |                            |                        |                              |
| Housing              | Housing and nuts Stainless steel AISI 303, Sensing part in PTFE |                            |                        |                              |
| Flush mounting       | No  |                            |                        |                              |
| Output connection    | L=2m w/ plug connector  | L=5m w/ plug connector     | L=2m w/ plug connector | L=5m w/ plug connector       |

| Amplifier Model        | S3624D  | S3625D               |
|------------------------|---|----------------------|
| Number of sensors      | 1   |                      |
| Power supply           | 24 Vac 50-60 Hz   | 110/220 Vac 50-60 Hz |
| Absorption             | 3 VA  |                      |
| Indicators             | 1 Yellow LED - Operation, 1 Green LED - Power                     |                      |
| Temperature range      | $-20$ to $+60^{\circ}\text{C}$ ( $-4$ to $+140^{\circ}\text{F}$ ) |                      |
| Output relay           | 1 relay - changeover, 5A @ 220Vac                                 |                      |
| Housing                | Plastic   |                      |
| Degree of protection   | IP20  |                      |
| Sensitivity adjustment | Incorporated  |                      |

### WIRING

### DIMENSIONS (mm) 1mm = .03937"



**INSTALLATION INSTRUCTIONS:** If the material to be controlled is in a metallic container, the container and terminal 1 of the amplifier must be grounded. If the container is non-metallic, connect terminal 1 of the amplifier and the earthing terminal on sensor body to ground. The connection wire between the sensor and the amplifier must be separated from the power supply.

**SENSITIVITY ADJUSTMENT:** Trimmer. A clockwise rotation increases sensitivity while counter-clockwise rotation decreases sensitivity. It is advisable to adjust sensitivity with the sensor placed in its working position and with sensing side covered by the material to be detected by approx. 70% of its surface. Connect the sensor and adjust:

- If the LED is relay is NO turn the trimmer counter-clockwise until the LED goes OFF. Then turn the trimmer clockwise until the LED relay goes ON.
  - If the LED is OFF turn the trimmer clockwise until the LED goes ON.
- Small adjustments may be need in order to obtain the desired performance

## OPERATING PRINCIPLES FOR PHOTOELECTRIC SENSORS

These sensors use light sensitive elements to detect objects and are made up of an emitter (light source) and a receiver. Four types of photoelectric sensors are available.

**Direct Reflection** - emitter and receiver are housed together and use the light reflected directly off the object for detection. In the use of these photocells, it is important to bear in mind the color and the type of surface of the object. With opaque surfaces, the sensing distance is affected by the color of the object. Light colors correspond to the maximum distances and vice versa. In the case of shiny objects, the effect of the surface is more important than the color. The sensing distance in the technical data is related to matte white paper.

**Reflection with Reflector** - emitter and receiver are housed together and requires a reflector. An object is detected when it interrupts the light beam between the sensor and reflector. These photocells allow longer sensing distances, as the rays emitted are almost totally reflected towards the receiver.

**Polarized Reflection with Reflector** - similar to Reflection with Reflector, these photocells use an anti-reflex device. The use of such a device, which bases its functioning on a polarized band of light, offers considerable advantages and secure readings even when the object to be sensed has a very shiny surface. They are not in the technical data affected by random reflections.

**Thru Beam** - emitter and receiver are housed separately and detect an object when it interrupts the light beam between the emitter and receiver. These photocells allow for the longest distances.

**Light On / Dark On Types Of Output:** For the photocell, the same terminology as inductive and capacitive sensors is used: NO = normally open, NC = normally closed. This refers to the state of the unit in the absence of the product to be sensed. In the case of photocells, light on / dark on is used. In the case of the direct reflection types, NO is light on and NC is dark on. For the other types, NO is dark on and NC is light on.

**Sensing Distance (Sn):** The space in which it is possible to sense an object. In the case of direct reflection types, it is the maximum distance between the photocell and the object. In the case of reflector or barrier types, it is the distance between the unit and the reflector or between units.

**Power Supply:** The supply voltage range that sensor will operate at.

**Power On Delay:** This is the time lapse between providing power and the operation of the output. This is to avoid unwanted switching when the unit is powered.

**Power Drain:** The amount of current required to operate a sensor.

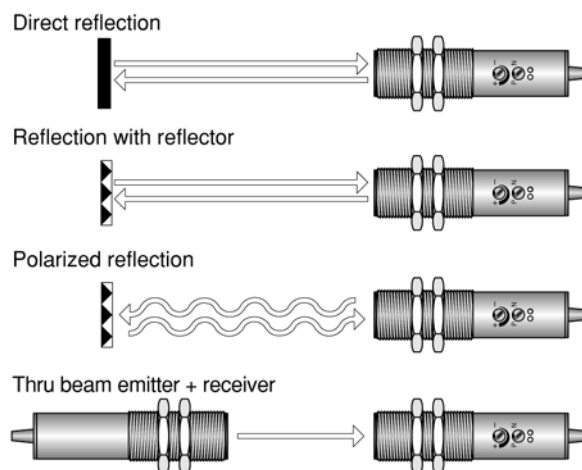
**Voltage Drop:** The voltage drop across a sensor when driving the maximum load.

**Switching Current (Max):** The amount of continuous current allowed to flow through the sensor without causing damage to the sensor. It is given as a maximum value.

**Short Circuit Protection:** Protection against damage to a sensor if the load becomes shorted.

**Operating Frequency:** The maximum number of on/off cycles that the device is capable of in one second. According to EN 50010.

**Light Immunity:** The maximum limit of an incandescent light or sunlight. Beyond this limit, the photocell may not work correctly due to interference on the receiver.

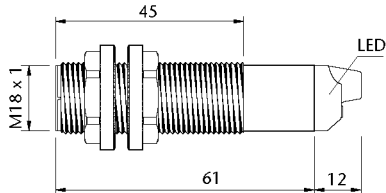
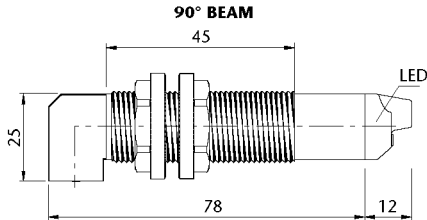
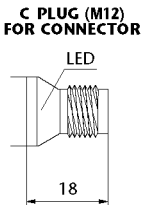


**Photoelectric**

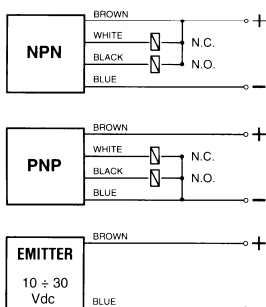
# 18 mm Plastic Housing, DC

**FEATURES:**

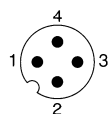
- Low cost
- LED function indicators
- Short circuit & reverse polarity protection
- Pre-wired cable or connector models
- **CE** Compliant to the EMC directive
- Protection degree IP67: dust tight and protection from the effects of immersion

|                                  |     | MODEL   |                           |                                     |            |         |
|----------------------------------|-----|---|---------------------------|-------------------------------------|------------|---------|
| Type                             |     | Direct Reflection   | Reflection with reflector | Polarized Reflection with reflector | Thru Beam  |         |
|                                  |     |   |                           |                                     | Receiver   | Emitter |
| Cable, PVC, L= 2m                | NPN | S4301   | S4320                     | S4340                               | S4368      | S4360   |
|                                  | PNP | S4308   | S4328                     | S4348                               | S4376      |         |
| Connector C                      | NPN | S4306   | S4326                     | S4346                               | S4374      | S4366   |
|                                  | PNP | S4314   | S4334                     | S4354                               | S4382      |         |
| Dimensions: mm<br>1 mm = .03937" |     | <div><div></div><div></div><div></div><div>Optional 90° beam available upon request</div></div> |                           |                                     |            |         |
| Operating Distance               |     | 10 cm*  | 250 cm**                  | 100 cm**                            | 1500 cm    |         |
| External Diameter                |     | M18 x 1   |                           |                                     |            |         |
| Light Source                     |     | Infrared  |                           | Red                                 | Infrared   |         |
| Power Supply                     |     | 10 – 30 Vdc   |                           |                                     |            |         |
| Power on Delay                   |     | ≤ 50 mSec   |                           |                                     | ≤ 180 mSec |         |
| Power Drain                      |     | ≤ 20 mA   | ≤ 30 mA                   |                                     |            | ≤ 35 mA |
| Voltage Drop (on state)          |     | ≤ 1.5 V   |                           |                                     |            |         |
| Switching Current (max)          |     | 200 mA  |                           |                                     |            |         |
| Short Circuit Protection         |     | Yes   |                           |                                     |            |         |
| Operating Frequency              |     | 200 Hz max  |                           |                                     |            |         |
| Light Immunity                   |     | > 10,000 Lux  |                           |                                     |            |         |
| Case                             |     | Plastic (black makrolon)  |                           |                                     |            |         |
| Protection Degree                |     | IP 67   |                           |                                     |            |         |
| Operating Temperature            |     | Storage - 20 to +90 °C • Working - 20 to +50 °C   |                           |                                     |            |         |

\* The operating distance is related to matte white paper dim. 10 x 10 cm. \*\* The operating distance is related to S4225 reflector.

**WIRING DIAGRAMS**

**CONNECTION WITH C PLUG**

VIEW OF MALE CONNECTOR C



**2 WIRINGS (EMITTER) 4 WIRINGS**  
 1 = Brown / +  
 3 = Blue / -  
 2 = White / output NO  
 4 = Black / output NC

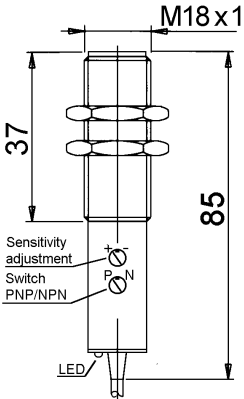
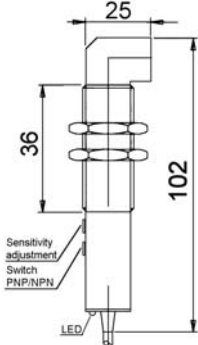
**MATING CONNECTORS:**

| ID#       | Type   | Description |
|-----------|--|-------------|
| S3496/2 C | right angle w/ 2 meter cable                 |             |
| S3496 C   | right angle w/ 5 meter cable                 |             |
| S3499/2 C | straight w/ 2 meter cable                    |             |
| S3499 C   | straight w/ 5 meter cable                    |             |
| 030502 C  | right angle, terminal screws field wire-able |             |
| 030503 C  | straight, terminal screws field wire-able    |             |

## 18 mm Metal Housing, DC

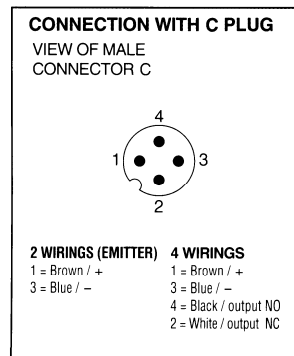
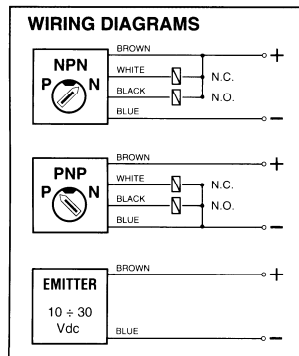
### FEATURES:

- Durable metal housing
- Programmable output NPN/PNP
- Sensitivity adjustment standard
- LED function indicators
- Short circuit & reverse polarity protection
- Pre-wired cable or connector models
- **CE** Compliant to the EMC directive
- Protection degree IP67: dust tight and protection from the effects of immersion

|                                  | MODEL  |            |                           |                                     |  |       |
|----------------------------------|--|------------|---------------------------|-------------------------------------|--|-------|
| Type                             | Direct Reflection  |            | Reflection with reflector | Polarized Reflection with reflector | Thru Beam<br>Receiver                      Emitter |       |
| Cable, PVC, L= 2m                | S4450  | S4454      | S4460                     | S4470                               | S4482  | S4480 |
| Connector C                      | S4451  | S4455      | S4461                     | S4471                               | S4483  | S4481 |
| Dimensions: mm<br>1 mm = .03937" | <div><div><div>Optional 90° beam available upon request</div></div><div></div></div> |            |                           |                                     |  |       |
| Operating Distance               | 20 cm*   | 50 cm**    | 500 cm***                 | 400 cm***                           | 1500 cm  |       |
| External Diameter                | M18 x 1  |            |                           |                                     |  |       |
| Light Source                     | Infrared   |            |                           | Red                                 | Infrared   |       |
| Programmable Output              | NPN/PNP NO + NC  |            |                           |                                     |  |       |
| Power Supply                     | 10 – 30 Vdc  |            |                           |                                     |  |       |
| Power on Delay                   | ≤ 100 mSec   |            |                           |                                     |  |       |
| Power Drain                      | ≤ 50 mA  |            | ≤ 20 mA                   |                                     | ≤ 50 mA  |       |
| Voltage Drop (on state)          | ≤ 1.8 V  |            |                           |                                     |  | —     |
| Switching Current (max)          | 200 mA   |            |                           |                                     |  | —     |
| Short Circuit Protection         | Yes  |            |                           |                                     |  | —     |
| Operating Frequency              | 400Hz max  | 200 Hz Max | 400 Hz Max                |                                     | 200 Hz Max   |       |
| Light Immunity                   | > 10,000 Lux   |            |                           |                                     |  |       |
| Case                             | Nickel-plated brass  |            |                           |                                     |  |       |
| Protection Degree                | IP 67  |            |                           |                                     |  |       |
| Operating Temperature            | Storage - 20 to +90 °C • Working - 20 to +50 °C  |            |                           |                                     |  |       |

\* The operating distance is related to matte white paper dim. 10 x 10 cm, \*\* matte white paper 20 x 20 cm. \*\*\*The operating distance is related to S4225 reflector.

### WIRING:



### INSTRUCTIONS FOR THE PROGRAMMING AND ADJUSTMENT

**TRIMMER FOR THE SENSING RANGE ADJUSTMENT:** The photocell is supplied with max sensing range with the trimmer totally rotated in the clockwise direction. The sensitivity reduces by rotating the trimmer in the counterclockwise direction.  
**SWITCH NPN/PNP:** The photocell is supplied with the switch in P (PNP output). To change to NPN turn the switch to N in the counterclockwise direction.  
**WARNING!** Do not carry out the switching when the photocell is powered.  
**LED - OPERATION INDICATOR:** This LED is on when the object to be detected enters the sensing range of the photocell giving output signals.

**NOTE!** Program the photo cell to NPN or PNP function before applying power  
**NOTE!** It is recommended that the proper tool be used to rotate the trimmer and the switch to avoid damage



## Photoelectric

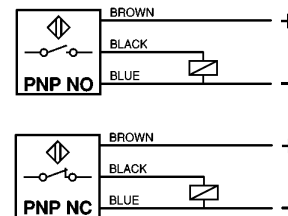
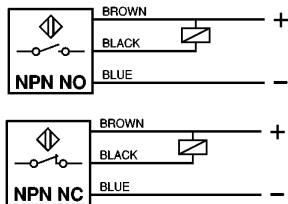
### Fork Shape, DC

#### FEATURES:

- Metal case
- Short circuit & Reverse polarity protection
- Protection degree IP67: dust tight and protection from the effects of immersion
- LED function indicator & sensitivity adjustment
- Detects non-transparent and translucent materials

|                                  |         | MODEL  |
|----------------------------------|---------|--|
| Output Function                  | NPN, NO | S4390  |
|                                  | NPN, NC | S4391  |
|                                  | PNP, NO | S4392  |
|                                  | PNP, NC | S4393  |
| Dimensions: mm<br>1 mm = .03937" |         |  |
| <b>Fork Gap</b>                  |         | <b>13 mm</b>                                       |
| Light Source                     |         | Infrared   |
| Power Supply                     |         | 10-30 Vdc  |
| Power on Delay                   |         | ≤ 75 mSec  |
| Max Switching Current            |         | 200 mA   |
| Power Drain (@ 24Vdc)            |         | < 15 mA  |
| Voltage Drop (sensor on)         |         | < 1.5 V (at 200 mA)                                |
| Short Circuit Protection         |         | Yes  |
| Operating Frequency              |         | 500 Hz   |
| Light Immunity                   |         | Sun light 10,000 Lux – Incandescent lamp 3,000 Lux |
| Case                             |         | Nickel-plated brass                                |
| Protection Degree                |         | IP 67  |
| Operating Temperature            |         | Storage: - 40 to +85 °C • Working - 25 to +50 °C   |
| Output Connection                |         | Cable, L = 2 m                                     |

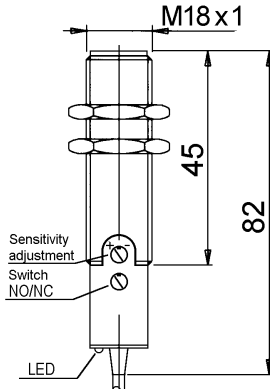
#### WIRING:



## 18 mm Plastic Housing, AC

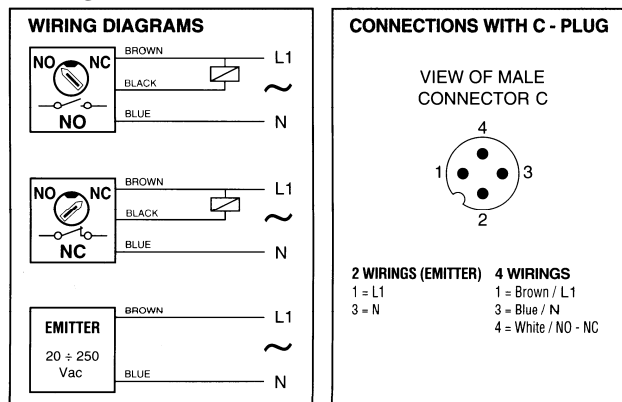
### FEATURES:

- Plastic housing
- Programmable output NO/NC
- Sensitivity adjustment standard
- LED function indicator
- 20-250 VAC operating voltage
- Pre-wired cable or connector models
- **CE** Compliant to the EMC directive
- Protection degree IP67: dust tight and protection from the effects of immersion

|                                  | MODEL   |         |                           |                                     |   |       |
|----------------------------------|---|---------|---------------------------|-------------------------------------|---|-------|
| Type                             | Direct Reflection   |         | Reflection with reflector | Polarized Reflection with reflector | Thru Beam<br>Receiver                      Emitter                      |       |
| Cable, PVC, L= 2m                | S4240   | S4242   | S4250                     | S4260                               | S4272   | S4270 |
| Connector C                      | S4241   | S4243   | S4251                     | S4261                               | S4273   | S4271 |
| Dimensions: mm<br>1 mm = .03937" | <div><p>M18 x 1</p><p>45</p><p>82</p><p>Sensitivity adjustment</p><p>Switch NO/NC</p><p>LED</p><p>Add 3 mm to length for connector models</p></div> |         |                           |                                     | Optional 90° beam available upon request by adding "-90" to part number |       |
| Operating Distance               | 20 cm*  | 40 cm** | 250 cm***                 | 100 cm***                           | 1500 cm   |       |
| External Diameter                | M18 x 1   |         |                           |                                     |   |       |
| Light Source                     | Infrared  |         |                           | Red                                 | Infrared  |       |
| Programmable Output              | NO or NC  |         |                           |                                     |   |       |
| Power Supply                     | 20 - 250 Vac  |         |                           |                                     |   |       |
| Power on Delay                   | ≤ 75 mSec   |         |                           |                                     |   |       |
| Power Drain                      | ≤ 10 mA   |         |                           |                                     |   |       |
| Voltage Drop (on state)          | ≤ 1.5 V   |         |                           |                                     |   | —     |
| Switching Current (max)          | 300 mA  |         |                           |                                     |   | —     |
| Short Circuit Protection         | Yes   |         |                           |                                     |   | —     |
| Operating Frequency              | 15 Hz max   |         |                           |                                     |   |       |
| Light Immunity                   | > 10,000 Lux  |         |                           |                                     |   |       |
| Case                             | Plastic, gray makrolon (upon request stainless steel AISI 303)  |         |                           |                                     |   |       |
| Protection Degree                | IP 67   |         |                           |                                     |   |       |
| Operating Temperature            | Storage - 20 to +90 °C • Working - 20 to +50 °C   |         |                           |                                     |   |       |

\* The operating distance is related to matte white paper dim. 10 x 10 cm, \*\* matte white paper 20 x 20 cm. \*\*\*The operating distance is related to S4225 reflector.

### WIRING:



#### INSTRUCTIONS FOR THE PROGRAMMING AND ADJUSTMENT

**TRIMMER FOR THE SENSING RANGE ADJUSTMENT:** The photocell is supplied with max sensing range with the trimmer totally rotated in the clockwise direction. The sensitivity reduces by rotating the trimmer in the counterclockwise direction.

**SWITCH NO/NC:** The photocell is supplied with switch in NO position (in absence of the object to be detected the output is not activated).

To change to NC (in absence of the object to be sensed the output is activated) turn the switch to NC in the counterclockwise direction.

**LED FOR INDICATION OF OPERATION:** This indicates the output of the photocell, in the absence of the object to be sensed. It is off with output NO and is on with output NC. This changes state when the object to be sensed enters into the sensing area of the photocell.

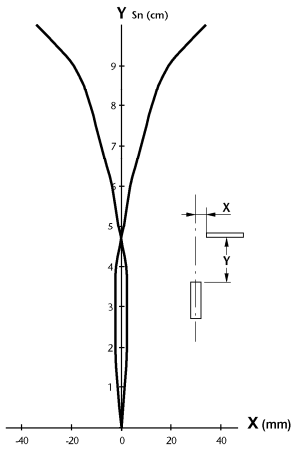
**NOTE!** Program the photo cell to NO or NC output function before applying power.

**NOTE!** It is recommended that the proper tool be used to rotate the trimmer and the switch to avoid damage.

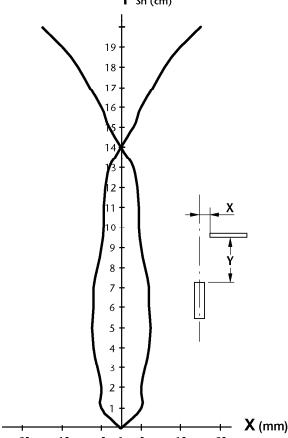
## Photoelectric

### CHARACTERISTIC CURVES

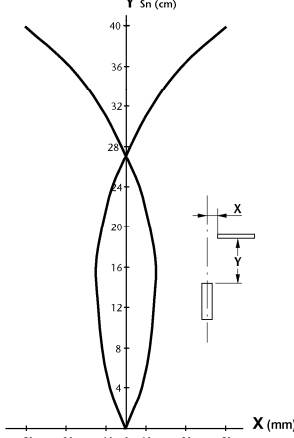
Direct Reflection, Sn 10 cm



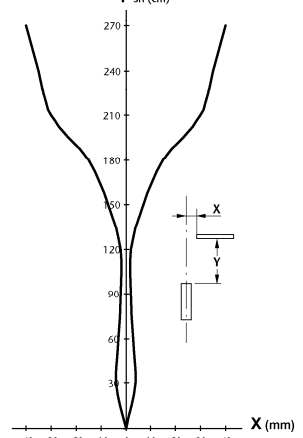
Direct Reflection, Sn 20 cm



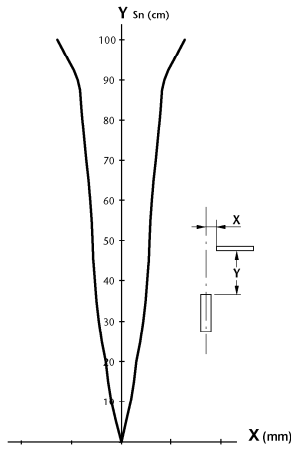
Direct Reflection, Sn 40 cm



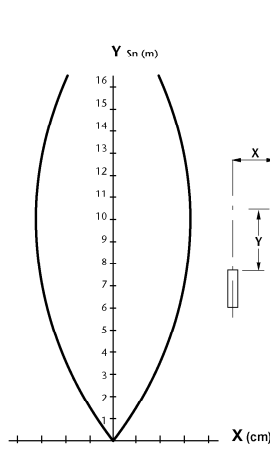
Reflection with reflector



Polarized Reflection with reflector

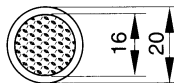


Thru Beam

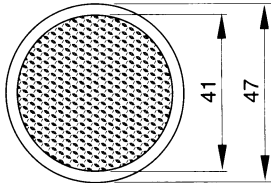


### REFLECTORS

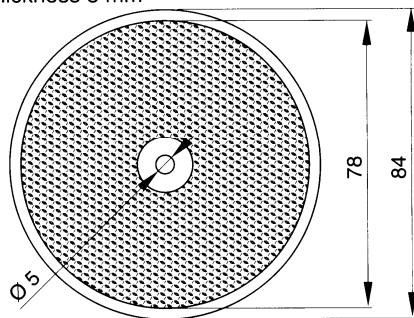
S4220  
Thickness 5 mm



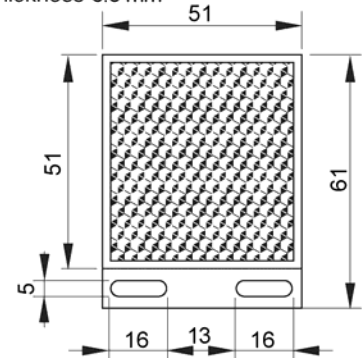
S4224  
Thickness 8 mm



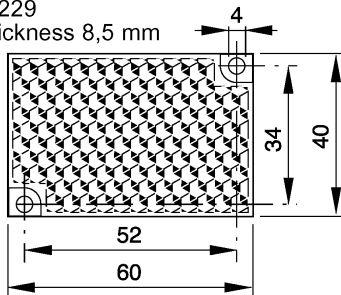
S4225  
Thickness 8 mm



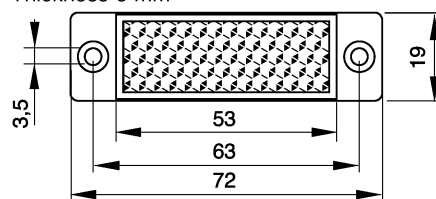
S4238  
Thickness 6.5 mm



S4229  
Thickness 8,5 mm



S4230  
Thickness 8 mm

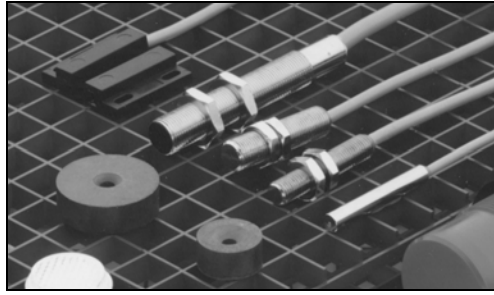


Relationship between reflector and operating distance

| Reflector | Operating distance as a percent of CT80 |
|-----------|---|
| S4220     | 31%                                     |
| S4224     | 63%                                     |
| S4230     | 53%                                     |
| S4238     | 85%                                     |
| S4229     | 85%                                     |
| S4225     | 100%                                    |

## Magnetic

### OPERATING PRINCIPLES FOR MAGNETIC SENSORS



Magnetic sensors are actuated by the presence of a permanent magnet. Their operating principle is based on the use of reed contacts, whose thin plates are hermetically sealed in a glass bulb with inert gas. The presences of a magnetic field makes the thin plates flex and touch each other causing an electrical contact. The plate's surface has been treated with a special material particularly suitable for low current or high inductive circuits. Magnetic sensors compared to traditional mechanical switches have the following advantage:

- Contacts are well protected against dust, oxidization and corrosion due to the hermetic glass bulb and inert gas; contacts are activated by means of a magnetic field rather than mechanical parts
- Special surface treatment of contacts assures long contact life
- Maintenance free
- Easy operation
- Reduced size

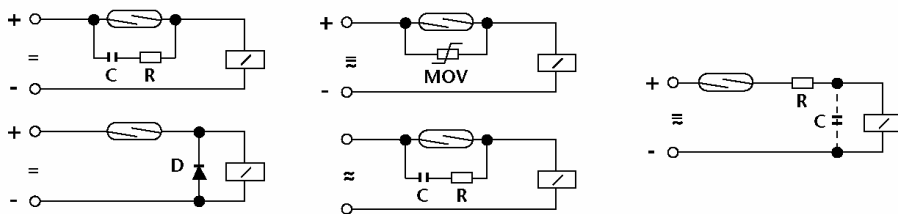
When using the NO (normally open) type the open reed contact closes as the magnet approaches. NO Magnetic sensors are two wires. When using the NO+NC type both NO (normally open) and NC (normally closed) functions are made available by means of a single glass bulb. NO+NC Magnetic sensors are supplied with three wires, one is in common, one is NO and one is NC

In the BISTABLE versions, contact closes only when external activation magnet is in NORTH polarity position. This state is maintained even when Magnet goes out of sensing area. Contact opens back only when SOUTH polarity of magnet is present, maintaining this condition even when magnet goes out of sensing zone, and can close again only when a NORTH polarity magnet is present.

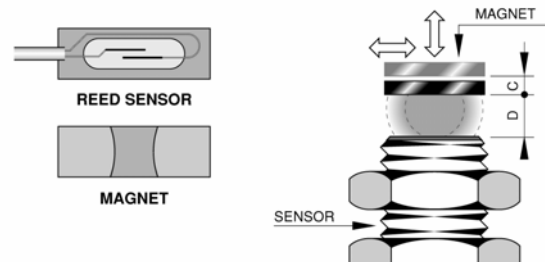
#### TYPICAL REED CONTACT PROTECTIONS

The lifespan of a magnetic sensor at low values of voltage and current depends on the mechanical characteristics of the contact while for higher values the operating life depends on the characteristics of the load. In these cases, it is suggested to apply some form of external protection at the sensor output.

#### TYPICAL REED CONTACT PROTECTIONS



#### EXAMPLE OF FUNCTIONING




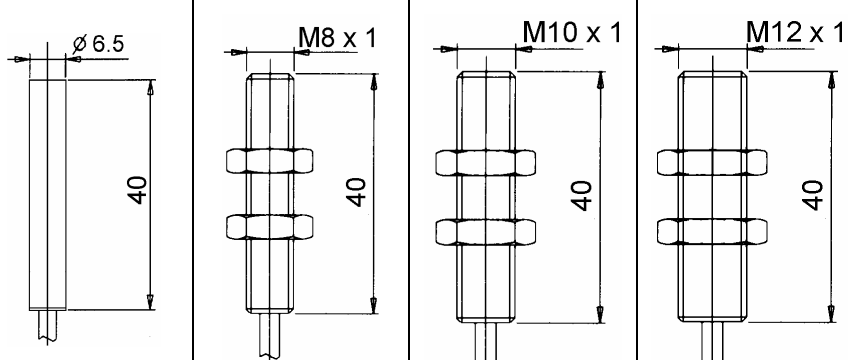
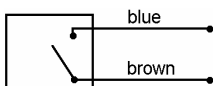
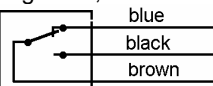
D: Max switching distance in relation to the magnet used.  
C: Differential stroke.  
D + C: Distance of contact re-opening during the removal magnet.

## Magnetic Proximity Sensors

Extremely small dimensions and high operating distances characterize these magnetic sensors in metallic case. To actuate sensor a **magnetic is required**.

### Features:

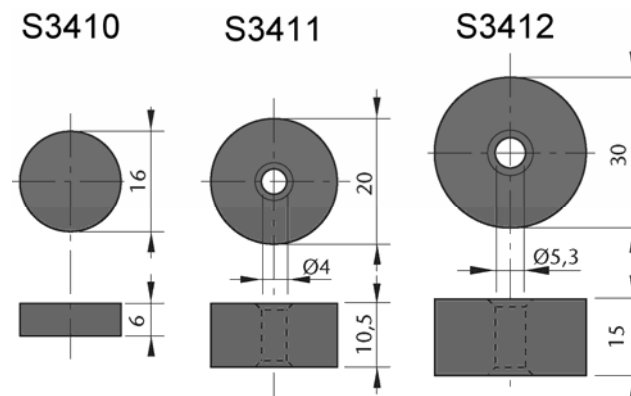
- High operating distance
- Threaded metallic case
- Protection degree of IP 67
- Hermetically sealed
- RoHS &  Compliant to the EMC directive

| Output   | VA | V   | A   | MODEL   |       |         |         |
|--|----|-----|-----|---|-------|---------|---------|
| NO   | 50 | 230 | 0.5 | S3390   | S3391 | S3392   | S3393   |
| NO+NC  | 20 | 150 | 1   | S3398   | S3399 | S3400   | S3401   |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937"   |    |     |     |  |       |         |         |
| Wiring NO<br>          |    |     |     |   |       |         |         |
| Changeover, NO+NC<br> |    |     |     |   |       |         |         |
| External Dimensions  |    |     |     | Ø 6 mm  | M8 x1 | M10 x 1 | M12 x 1 |
| Operating Distance   |    |     |     | See Table 1   |       |         |         |
| Switching Frequency  |    |     |     | NO output = 230 Hz max/ NO+NC output = 250 Hz max                                   |       |         |         |
| Case   |    |     |     | Nickel-Plated Brass   |       |         |         |
| Protection Degree  |    |     |     | IP 67   |       |         |         |
| Operating Temperature  |    |     |     | -25 to +100°C (-13 to +212°F)   |       |         |         |
| Output Connection  |    |     |     | Cable: 2 x 0.14 mm², L=2m   |       |         |         |

| Output       | NO | NO/NC |
|--------------|----|-------|
| Magnet       |    |       |
| <b>S3410</b> | 8  | 6     |
| <b>S3411</b> | 20 | 17    |
| <b>S3412</b> | 40 | 33    |

Table 1. Operating distances as a function of the magnetic unit (mm)

Dimensions: mm, 1" = 25.4 mm, 1 mm = .03937"




not to scale

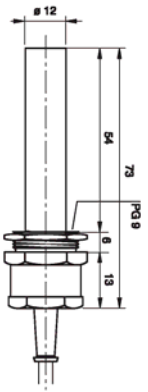
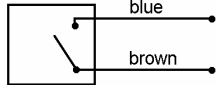
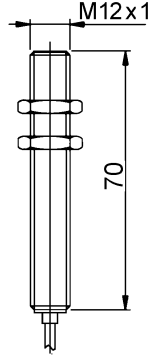
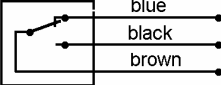
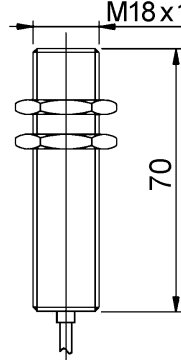
## Magnetic

# Magnetic Proximity Sensors

Increase current ratings and high operating distances make these sensors suitable for many applications.  
 To actuate sensor a **magnetic is required**.

### Features:

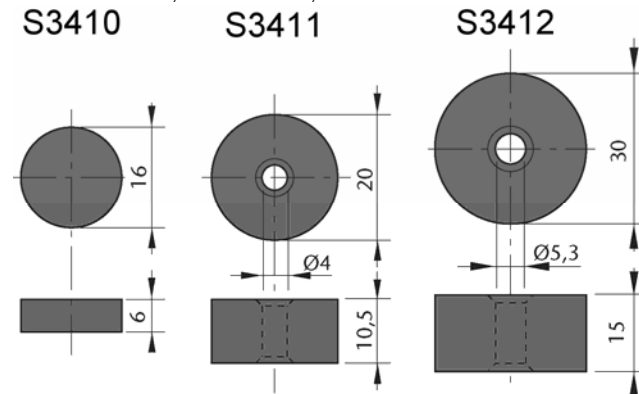
- 
- High operating distance
- Threaded metallic case
- Protection degree of IP 67
- Hermetically sealed
- RoHS &  Compliant to the EMC directive

| Output  | VA  | V   | A   | MODEL  |         |         |
|---|-----|-----|-----|--|---------|---------|
| NO  | 10  | 220 | 0.5 | S3396  |         |         |
| NO  | 120 | 250 | 3   | S3396L   | S3393L  | S3406   |
| NO+NC   | 30  | 500 | 0.5 | S3404  | S3401L  | S3407   |
| BISTABLE  | 60  | 230 | 3   |  | S3393LB |         |
| Dimensions: mm<br>1" = 25.4 mm<br>1 mm = .03937"  |     |     |     |    |         |         |
| Wiring<br>NO        |     |     |     |   |         |         |
| Changeover, NO+NC  |     |     |     |  |         |         |
| External Dimensions   |     |     |     | Ø 12 mm, PG 9  | M12 x1  | M18 x 1 |
| Operating Distance  |     |     |     | See Table 1  |         |         |
| Switching Frequency   |     |     |     | NO(10VA) 230Hz, NO (120VA) 100Hz, NO/NC 150Hz, BISTABLE 230Hz                        |         |         |
| Case  |     |     |     | Nickel-Plated Brass  |         |         |
| Protection Degree   |     |     |     | IP 67  |         |         |
| Operating Temperature   |     |     |     | -25 to +100°C (-13 to +212°F)  |         |         |
| Output Connection   |     |     |     | Cable: 2 x 0.14 mm², L=2m  |         |         |

| Output       | NO<br>(10VA) | NO<br>(120VA) | NO/NC | BISTABLE |
|--------------|--------------|---------------|-------|----------|
| Magnet       |              |               |       |          |
| <b>S3410</b> | 8            | -             | -     | 6        |
| <b>S3411</b> | 20           | 10            | 10    | 20       |
| <b>S3412</b> | 40           | 33            | 33    | 40       |

Table 1. Operating distances as a function of the magnetic unit (mm)

Dimensions: mm, 1" = 25.4 mm, 1 mm = .03937"




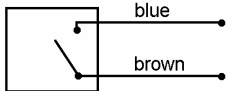
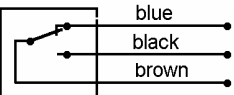
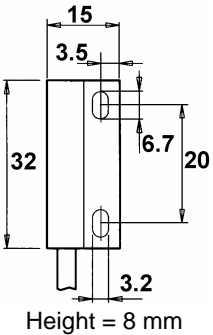
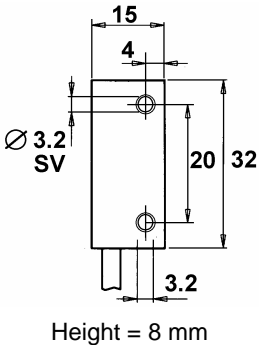
not to scale

## Rectangular Magnetic Proximity Sensors

To actuate sensor a magnetic is required.

### Features:

- High operating distance
- Rectangular case
- Protection degree of IP 67
- Hermetically sealed
- RoHS &  Compliant to the EMC directive

| Output   | VA | V   | A   | MODEL  |  |
|--|----|-----|-----|--|--|
| NO   | 10 | 220 | 0.5 | S3394  | S3395  |
| NO+NC  | 20 | 150 | 1   | S3402  | S3403  |
| Dimensions mm, 1mm = .03937"<br><br>Wiring<br>NO<br><br><br>NO+NC<br> |    |     |     |  |  |
| Operating Distance   |    |     |     | 10 mm  |  |
| Switching Frequency  |    |     |     | NO output = 230 Hz max/ NO+NC output = 250 Hz max                                  |  |
| Case   |    |     |     | Plastic  | Anodized Aluminum  |
| Protection Degree  |    |     |     | IP 67  |  |
| Operating Temperature  |    |     |     | -25 to +100°C (-13 to +212°F)  |  |
| Output Connection  |    |     |     | Cable: 2 x 0.14 mm², L=2m  |  |
| Required Magnet  |    |     |     | <b>S3414</b> M302, Ferrite in Plastic Housing (dimensions same as sensor)          | <b>S3415</b> M304, Ferrite in Aluminum Housing (dimensions same as sensor)           |

## Connectors for Proximity Sensors

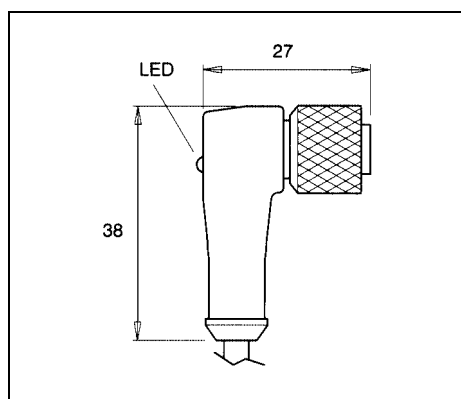
**Female Connector type C**


Figure 1

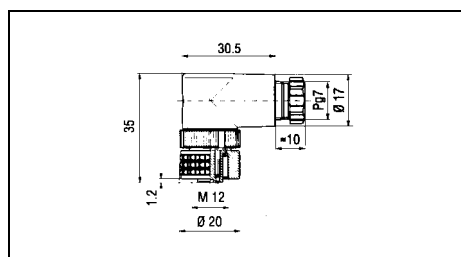


Figure 2

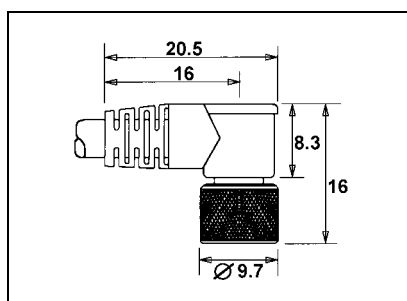
**Female Connector Type C1**


Figure 3

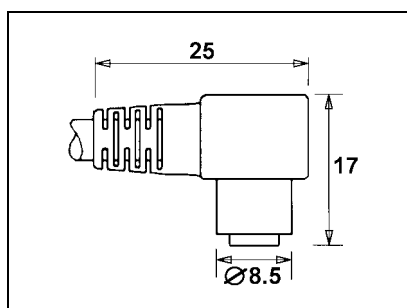
**Female Connector type C3 (snap on)**


Figure 4

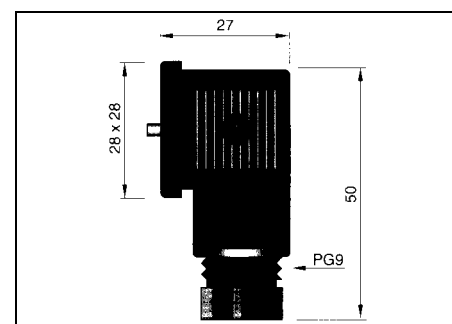
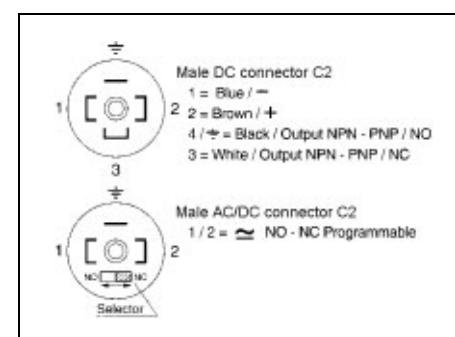
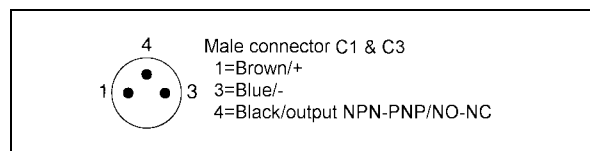
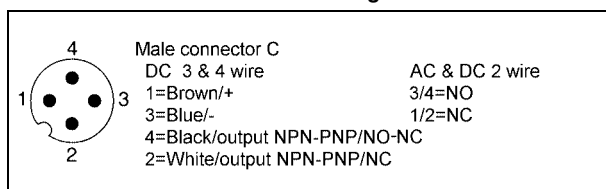
**Female Connector type C2**


Figure 5



### Sensor Wiring



| ID#     | Model       | Type | Cable Length    | LEDs / Polarity | Wires | Cable Direction | Drawing  |
|---------|-------------|------|-----------------|-----------------|-------|-----------------|----------|
| S942    | 8A2M3W      | C3   | 2 m             | -               | 3     | 90 degree       | Figure 4 |
| S3480   | A8A5M3W     | C1   | 5 m             | -               | 3     | 90 degree       | Figure 3 |
| S3481   | A8S5M3W     | C1   | 5 m             | -               | 3     | Straight        | -        |
| 030502  | 12A4T       | C    | Terminal screws | -               | 4     | 90 degree       | Figure 2 |
| 030503  | 12S4T       | C    | Terminal screws | -               | 4     | Straight        | -        |
| S3494   | A12A2M3W    | C    | 2 m             | -               | 3     | 90 degree       | Figure 1 |
| S3495   | A12A5M3W    | C    | 5 m             | -               | 3     | 90 degree       | Figure 1 |
| S3496/2 | A12A2M4W    | C    | 2 m             | -               | 4     | 90 degree       | Figure 1 |
| S3496   | A12A5M4W    | C    | 5 m             | -               | 4     | 90 degree       | Figure 1 |
| S3490   | A12A2MP2L3W | C    | 2 m             | 2 / PNP         | 3     | 90 degree       | Figure 1 |
| S3491   | A12A5MP2L3W | C    | 5 m             | 2 / PNP         | 3     | 90 degree       | Figure 1 |
| S3490N  | A12A2MN2L3W | C    | 2 m             | 2 / NPN         | 3     | 90 degree       | Figure 1 |
| S3491N  | A12A5MN2L3W | C    | 5 m             | 2 / NPN         | 3     | 90 degree       | Figure 1 |
| S3492   | A12A5MN2L4W | C    | 5 m             | 2 / NPN         | 4     | 90 degree       | Figure 1 |
| S3493   | A12A5MP2L4W | C    | 5 m             | 2 / PNP         | 4     | 90 degree       | Figure 1 |
| S3499/2 | A12S2M4W    | C    | 2 m             | -               | 4     | Straight        | -        |
| S3499   | A12S5M4W    | C    | 5 m             | -               | 4     | Straight        | -        |

Female type connector C2 (figure 5) is included with sensor and does not have to be ordered separate.

Should you have any questions about which connector is right for your application please contact an application engineer.