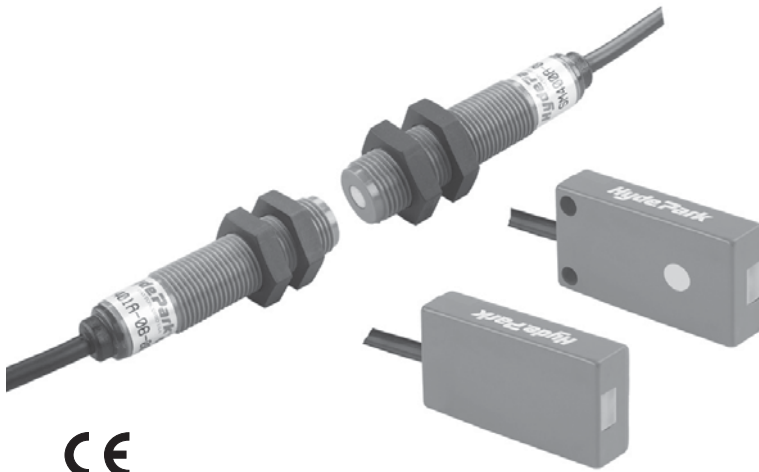## MICROSONIC® Miniature Thru-beam Sensors

CE

Extremely reliable thru-beam sensing in an extremely small package with a range up to 205 mm (8")

The miniature SM400 series is powerful in sensing capability and employs the same reliable, world-leading ultrasonic technology built in to the original MICROSONIC® SM100 series. The SM400 series of thru-beam sensors is available in FDA-rated ULTEM® plastic flat-profile and 12 mm threaded barrel housings designed for small object applications where installation space is limited. An extremely reliable "across-the-line" sensing capability of up to 205 mm (8") is possible with this miniature thru-beam sensor series.

The MICROSONIC® SM400 thru-beam sensors are ideal for detecting small objects of any color or material, transparent or opaque, regular or irregular shaped, as well as those with either poor reflective or fully sound-absorbing surfaces. An output response time of 4 ms allows for the detection of objects moving at speeds of over 2000 units per minute. "Smart" sensor enhancements include solid-state sink and source outputs in normally open or closed configurations.

With protection ratings of NEMA 4X (indoor use only) and IP67, these CE certified sensors are resistant to dust, 100% humidity, most acids and bases, and high-pressure wash-downs that often times leave water buildup on the sensing face. Unlike photoelectrics, these miniature thru-beam sensors are virtually unaffected by splashing food, caustic cleaning solutions, and changing light conditions or colors. Shielding and filtering make the fully encapsulated sensors highly immune to radiated or conducted energy. The sensors are also tolerant of high noise levels and vibration with an operating temperature range of -20° to 70°C. The 12 to 24 VDC circuitry with sinking (NPN) and sourcing (PNP) outputs make these sensors directly compatible with most programmable logic controllers, computers, and other logic control systems. Available in both a cable and two connector styles (micro or pico), the receiver units have a dual color LED status indicator. An amber illumination indicates when sonic energy is being received from the transmitter. A green illumination indicates when the sonic energy is not being received from the transmitter due to either a blocking object or a misalignment between the two sensors.

Rugged, robust, and easy to set up, these sensors need no maintenance and require no sensitivity adjustments to compensate for inconsistent product materials.

- **Ideal for small object detection**
- **Sensing ranges up to 203 mm (8")**
- **Available in 12mm barrel or flat-profile housings**
- **Ideal for limited space installations**
- **CE certified**

The SM400 series is a cost-effective solution for a wide variety of leading-edge, trailing-edge and gap sensing applications no matter the color of the object, material, whether clear or opaque, where repeatable and reliable performance is a day in and day out requirement. Some applications include; small clear plastic or glass container detection; web registration hole or notch detection; web edge guide detection of plastic film, cellophane, photographic film, metallic foils, paper, textile fabrics; and many more.

MICROSONIC® THRU-BEAM SENSORS

Operation

The MICROSONIC® SM400 series sensors are continuous-wave devices that consist of a high frequency transmitter and receiver positioned opposite each other, illustrated at right, at a distance of up to 205 mm (8"). During operation, the transmitter sends a continuous ultrasonic beam which is picked up by the receiver. When an object of any material or shape passes between the transmitter and receiver and breaks the beam, object presence is detected and the output of the receiver switches. Or, when a hole allows the beam to pass through to the receiver, the output of the receiver also switches.

The thru-beam sensing mode is set up by mounting the sensors on the same axis opposite each other as shown in Figure 1.

Positioning of the transmitter and receiver is extremely important for the reliable detection of objects, particularly small ones. As the figure also shows, the width of the transmitted sound beam initially expands at a rate of 10 degrees (5 degrees each side of the common axis) for the 500 kHz models as the distance between the transmitter and receiver increases. If the object is too small, it is possible for the beam to "wrap around" the object enough to prevent the output from switching, as shown in Figure 2.

Reliable detection of 13 mm wide (0.5") or smaller objects is achieved when the objects pass near the face of either the transmitter or receiver. An alternative approach is to position the transmitter and receiver on parallel axes, as shown in Figure 3, so as to reduce the amount of beam reaching the receiver. Even in harsh, messy environments, MICROSONIC® thru-beam sensors maintian thier full range where other sensor types fail.

TRANSMITTER   RECEIVER

OBJECT

TRANSMITTER   RECEIVER

10°

up to
203 mm (8")
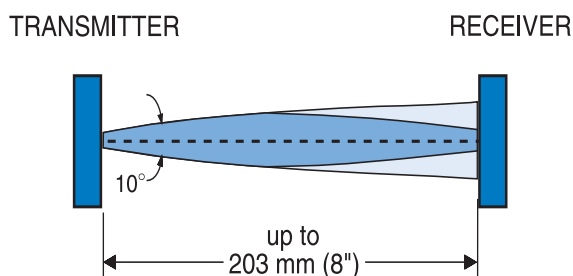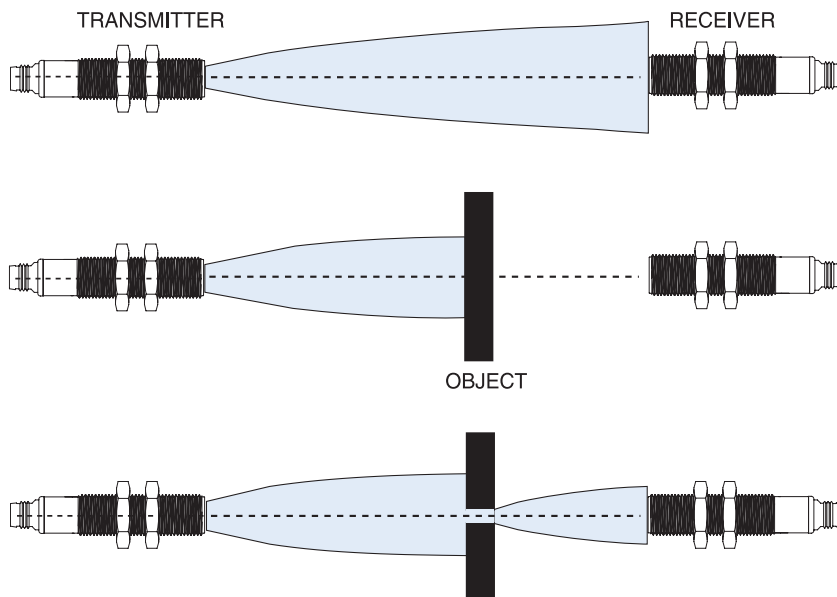
TRANSMITTED BEAM   EFFECTIVE RECEIVED BEAM

Figure 1

TRANSMITTER   RECEIVER
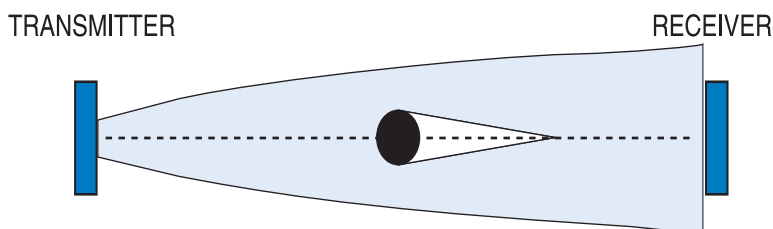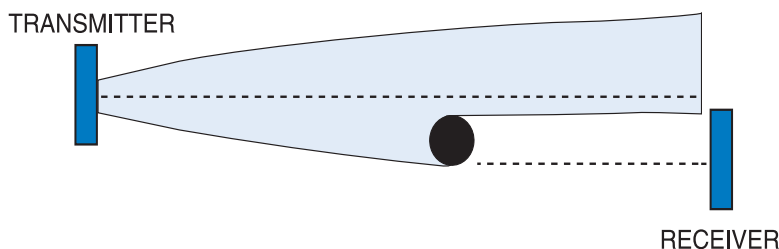
Figure 2

TRANSMITTER

RECEIVER

Figure 3

Mounting

The Model SM400 series sensors should be mounted in brackets that allow them to be adjusted for proper alignment on the same axis. Hyde Park offers the following mounting accessories:

Flat-profile:

Model AC246 small right-angle stainless mounting bracket;

Model AC247 stainless and polyamide conveyor-rail clamp/bracket (illustrated with dimensions on Page 5-20).

12mm barrel:

Model AC235 small right-angle stainless mounting bracket;

Model AC236 stainless and polyamide conveyor-rail clamp/bracket;

Model AC237 straight stainless mounting bracket (illustrated with dimensions on Page 5-20).

Model Reference Guide - SM400 Series

Use the guide below to ensure the correct model number is specified for the application. Please note that not all sensor model combinations are available.

EXAMPLE MODEL: SM4 0 1 A - 08 - 00 FP

MICROSONIC® Product Series

Power/Connection Type
0...12 to 24 VDC / Cable style
3...12 to 24 VDC / 3-pin "PICO" connector w/PNP output
4...12 to 24 VDC / 3-pin "PICO" connector w/NPN output
5...12 to 24 VDC / 4-pin "PICO" connector
6...12 to 24 VDC / 4-pin "PICO" connector – output pins reversed
8...12 to 24 VDC / 4-pin "MICRO" connector
9...12 to 24 VDC / 4-pin "MICRO" connector – output pins reversed

Flat-Profile sensors with either connector and Threaded Barrel sensors with a "Micro" connector have a 152 mm (6") pigtail

Sensing Function
0...Transmitter
1...Receiver

Design Level
A...Applies to all models

Sensing Range
04...Low-power: 102 mm (4")*
08...Standard: 203 mm (8")

Sensing Variations - Transmitter
00...Standard

Sensing Variations - Receiver***
00...N.O. Output, 4 ms on & off
01...N.O. Fast response, 0.4 ms on & off
10...N.C. Output, 4 ms on & off
11...N.C. Output, fast response, 0.4 ms on & off

Housing Types
     ...No letter indicates standard ULTEM®** plastic - 12 mm barrel housing
FP...ULTEM®** flat-profile housing

Power Cable Length
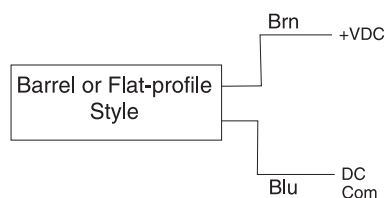/nn...Cable lengths other than 10 feet, cable style only

* Used to detect narrow objects

** ULTEM® is a registered trademark of the General Electric Company.

*** N.O. – "Normally Open" when object breaks the beam
    N.C. – "Normally Closed" when object breaks the beam

Transmitters

Barrel or Flat-profile Style

Brn +VDC
Blu DC Com

Receivers

Barrel or Flat-profile Style

Brn +VDC
Blk NPN Sinking Output
Wht PNP Sourcing Output
Blu DC Com
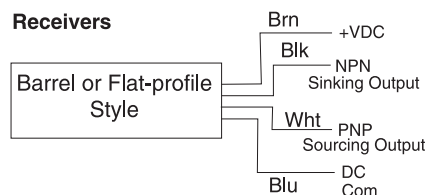
Receiver Outputs

NPN Sinking and PNP Sourcing

INTERNAL   EXTERNAL

BROWN
LOAD   DC (+)
Current Limit   NPN   BLACK
PNP   Current Limit
WHITE
LOAD   DC Com
BLUE

MICROSONIC® THRU-BEAM SENSORS
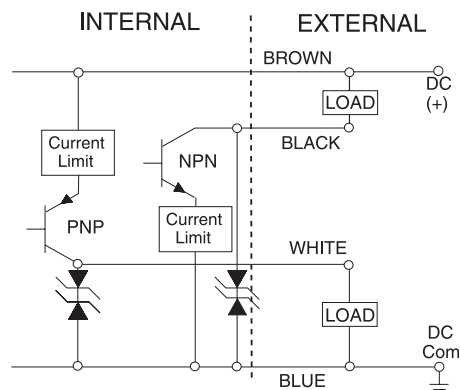
Receiver Outputs

Transmitter Connector Pins
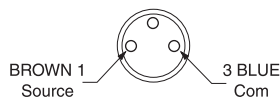
SM430, SM440

BROWN 1
Source

3 BLUE
Com

Note: Sensor view-pico connector
(pigtail for flat-profile)

SM450

1 BROWN
+ 12 to 24 VDC

BLUE 3
DC Com

Note: Sensor view-pico connector
(pigtail for flat-profile)

SM480

1 Brown
+ 12 to 24 VDC

Blue 3
DC Com
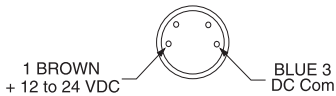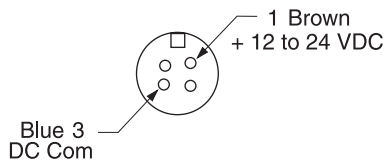
Note: Sensor view-micro connector
(pigtail for flat-profile)

Receiver Connector Pins
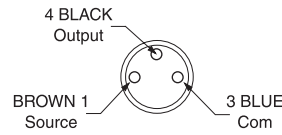
SM430, SM440

4 BLACK
Output

BROWN 1
Source

3 BLUE
Com

Note: Sensor view-pico connector
(pigtail for flat-profile)

SM450

2 WHITE
PNP / Sourcing

BLACK 4
NPN / Sinking

1 BROWN
+ 12 to 24 VDC

BLUE 3
DC Com

Note: Sensor view-pico connector
(pigtail for flat-profile)

SM480

White 2
PNP / Sourcing

1 Brown
+ 12 to 24 VDC

Blue 3
DC Com

4 Black
NPN / Sinking
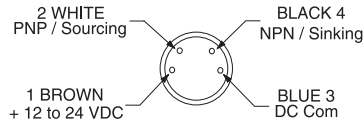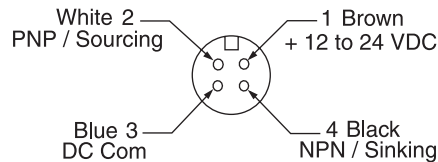
Note: Sensor view-micro connector
(pigtail for flat-profile)

Dimensions

Barrel Cable Style
(ULTEM® plastic)

GREEN LED

Sensing
face

52.65 mm
(2.073)

37.74 mm
(1.486)

AMBER LED

12 mm
(0.472) Dia.

12 mm x 1 mm
Thread
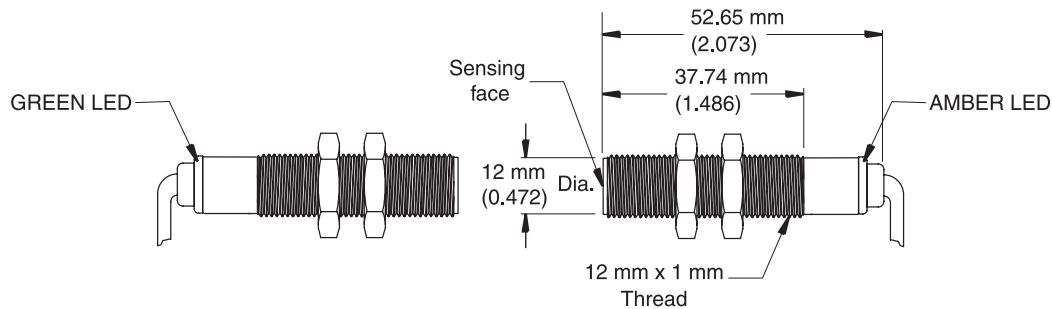
Transmitter Models:
SM400A-XXX-XX

Receiver Models:
SM401A-XXX-XX

Dimensions

Barrel Connector Style
(ULTEM® plastic)

GREEN LED

Sensing face

49.48 mm (1.948)

37.74 mm (1.486)

12mm (0.472) Dia.

12 mm x 1 mm Thread

AMBER LED

8 mm x 1 mm Thread
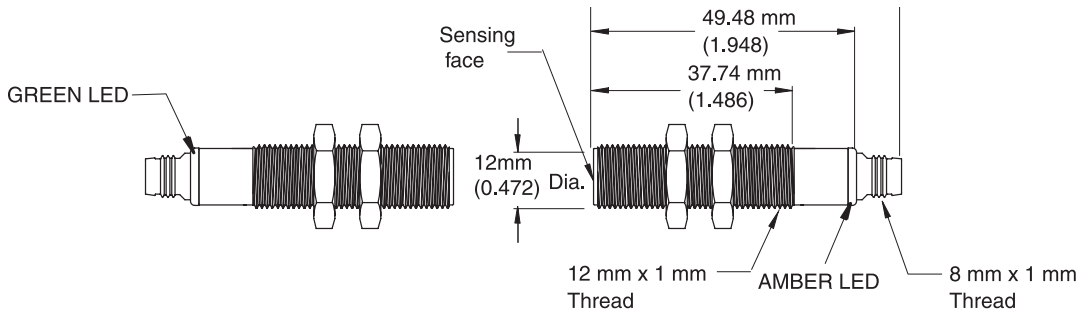
Transmitter Models:
SM430-, SM440-, SM450A-XXX-XX

Receiver Models:
SM431-, SM441-, SM451A-XXX-XX

GREEN LED

Sensing face

70.10 mm (2.76)

12 mm (0.472) Dia.

12 mm x 1 mm Thread

AMBER LED

AC134 Ref.

GREEN LED

Sensing face

81.28 mm (3.20)

12 mm (0.472) Dia.

12 mm x 1 mm Thread

AMBER LED

AC135 Ref.

Sensing face

12 mm (0.472) Dia.

1.57 in

0.67 in

Pigtail 152 mm(6")

12 mm x 1 mm Thread
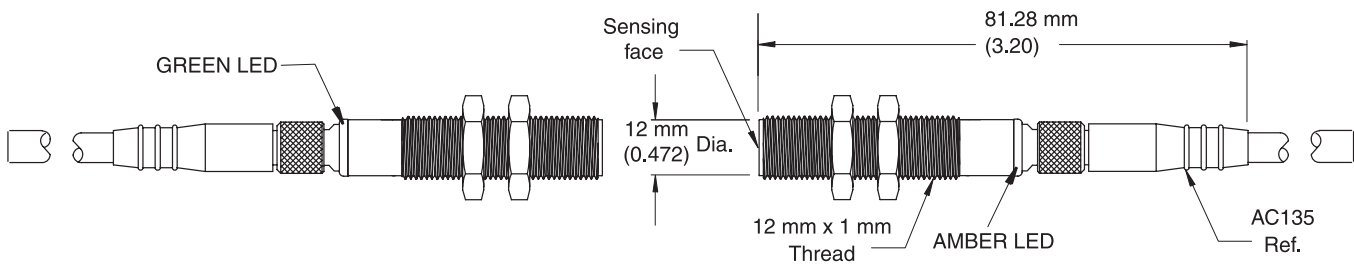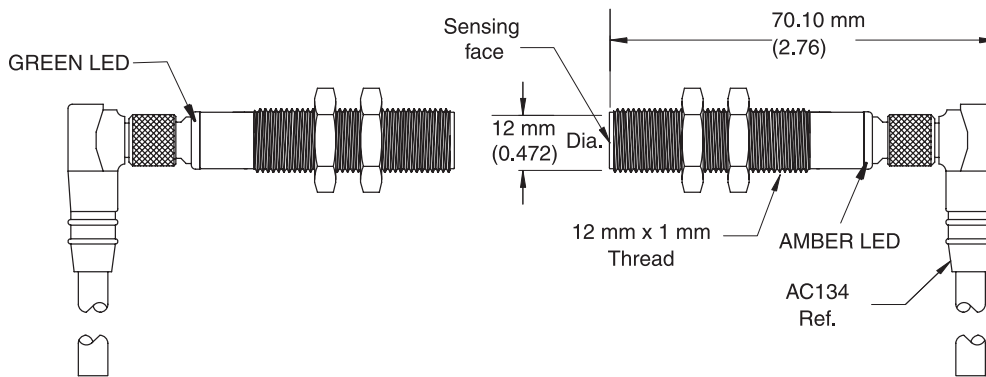
Transmitter Models:
SM480A-XXX-XX

Receiver Models:
SM481A-XXX-XX

MICROSONIC® THRU-BEAM SENSORS
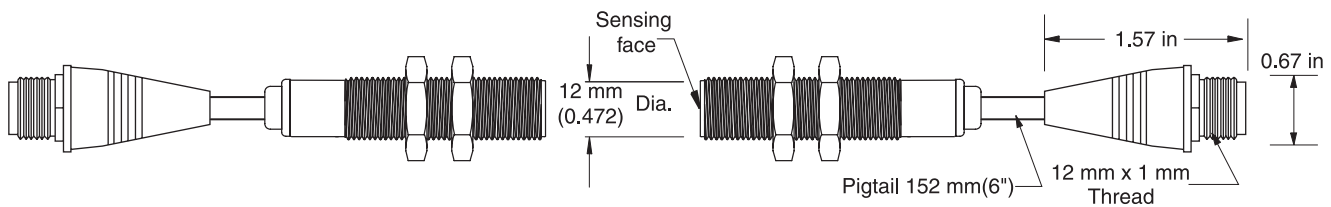
Dimensions

Flat-Profile Cable/Connector Style
(ULTEM® plastic)

Transmitter Models
7.62 mm (0.300)

Receiver Models

33.02 mm (1.300)
3.05 mm (.120)
20.07 mm (.790)
19.05 mm (.750)
13.00 mm (.512)

Transmitter Models

3.51 mm (0.138) dia. Mounting Holes
4.67 mm (0.184) dia.

7.62 mm (0.300)
LED

Receiver Models

Transmitter Models:
SM400A-XXX-XXFP

Receiver Models:
SM401A-XXX-XXFP

33.02 mm (1.300)
3.05 mm (.120)
20.07 mm (.790)
19.05 mm (.750)
13.00 mm (.512)

Transmitter Models

3.51 mm (0.138) dia. Mounting Holes
4.67 mm (0.184) dia.

LED

Receiver Models

39.88 mm (1.57)
9.9 mm (0.39)
Pigtail 152 mm(6")
8 mm x 1 mm Thread

Transmitter Models:
SM430-, SM440-, SM450A-XX-XXXFP

Receiver Models:
SM431-, SM441-, SM451A-XX-XXXFP

33.02 mm (1.300)
3.05 mm (.120)
20.07 mm (.790)
19.05 mm (.750)
13.00 mm (.512)

Transmitter Models

3.51 mm (0.138) dia. Mounting Holes
4.67 mm (0.184) dia.

LED

Receiver Models

39.88 mm (1.57)
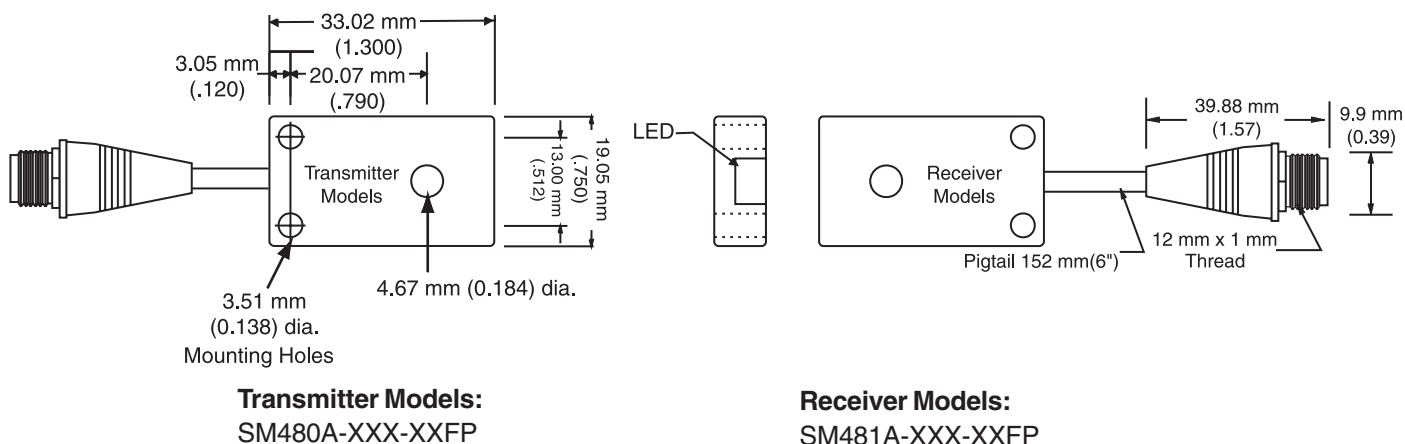9.9 mm (0.39)
Pigtail 152 mm(6")
12 mm x 1 mm Thread

Transmitter Models:
SM480A-XXX-XXFP

Receiver Models:
SM481A-XXX-XXFP

Accessories

AC130 Straight, M12 micro, 4-conductor, connector/cable assembly, 5 m (16') (for barrel and flat-profile micro sensors)

4-POLE FEMALE CONNECTOR

12mm DIE-CAST ZINC, EPOXY COATING (E COAT)

STRAIGHT CONNECTOR HEAD: WOODHEAD SERIES 8032X

BLACK REF.

SHIELD NOT CONNECTED AT CONNECTOR END

HYDE PARK CABLE (4-cond.) 5m LONG, BLACK

STRIP-BACK JACKET AND FOIL 2"

3 — BLUE
4 — BLACK
1 — BROWN
2 — WHITE

AC134
Right-angle, M8 pico, 4-conductor cable/connector assembly, 5m (16').

Right-angle connector head
Woodhead p/n 404000A1M050

5 m (16') long
4 conductor cable

8 mm Die Cast Zinc
Epoxy coating (E COAT)

Connector Pin Assignments
4 (BLK) — (WHT) 2
3 (BLU) — (BRN) 1
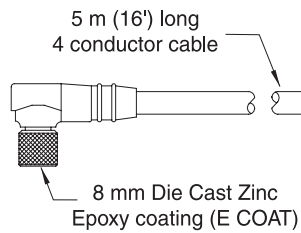
AC135
Straight, M8 pico, 4-conductor cable/connector assembly, 5m (16').

Straight connector head
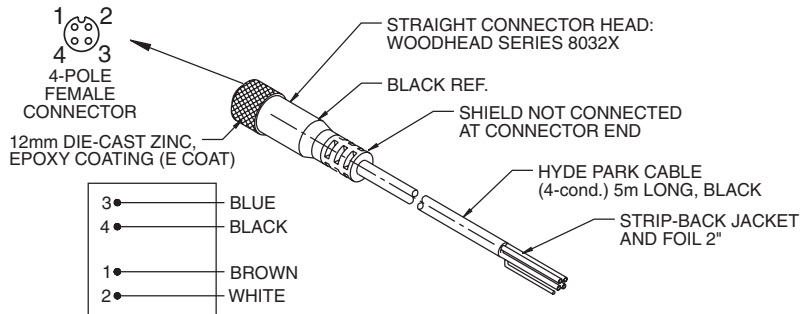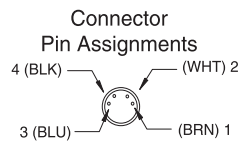Woodhead p/n 404001A1M050
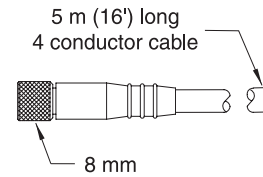
5 m (16') long
4 conductor cable

8 mm

AC141
Right-angle, M8 pico, 3-conductor cable/connector assembly, 5m (16') - (for barrel connector-style sensors)

Right-angle connector head
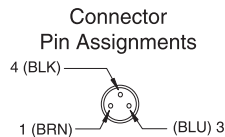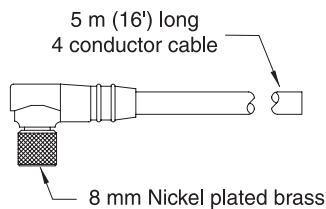
5 m (16') long
4 conductor cable

8 mm Nickel plated brass

Connector Pin Assignments
4 (BLK)
1 (BRN) — (BLU) 3

AC142
Straight, M8 pico, 3-conductor cable/connector assembly, 5m (16') - (for barrel connector-style sensors)

Straight connector head

5 m (16') long
4 conductor cable

8 mm Nickel plated brass

MICROSONIC® THRU-BEAM SENSORS
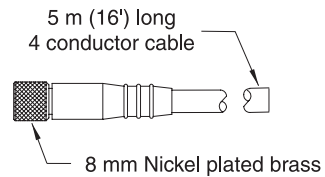
AC235

Right-angle, stainless, mounting bracket
(for 12 mm barrel sensors)
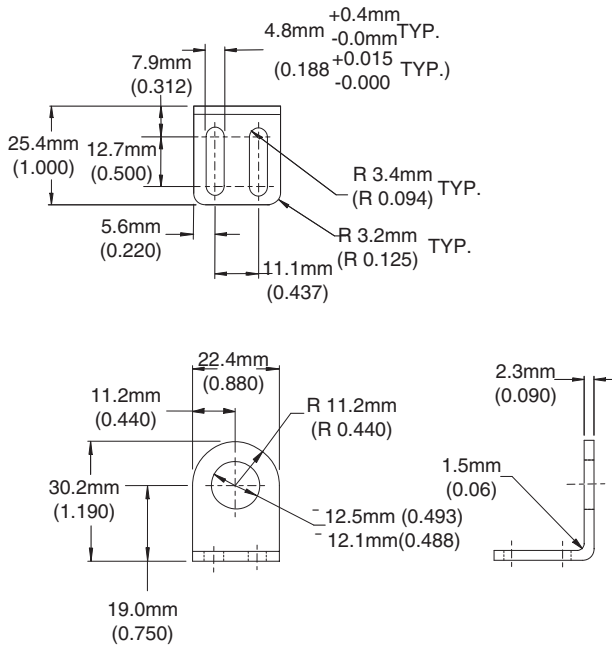
AC236

Stainless and polyamide conveyor-rail clamp/
bracket set (for 12mm barrel sensor)
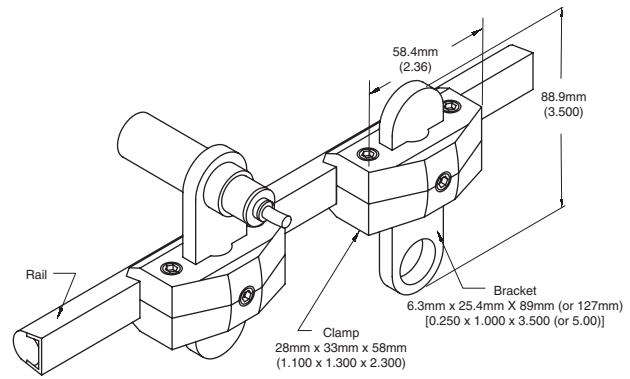
AC237

Straight, stainless, mounting bracket
(for 12 mm barrel sensors)
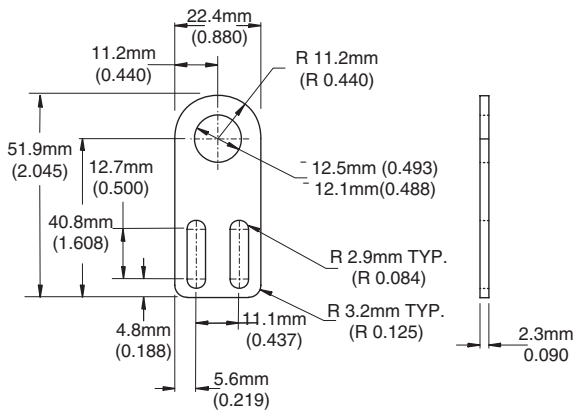
AC246

Stainless and polyamide conveyor-rail clamp/
bracket set (for Flat-Profile sensor)
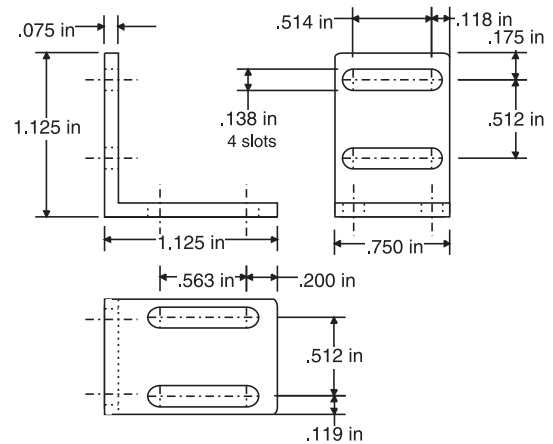
AC247

Stainless and polyamide conveyor-rail clamp/
bracket set (for Flat-Profile sensor)
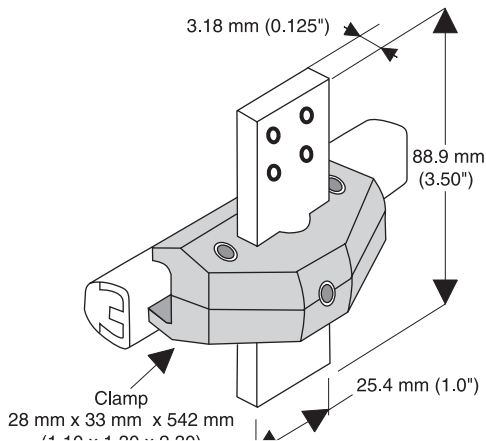
General Specifications

Sensing

Ranges: 102 mm (4.0"), 204 mm (8.0")
Sonic Frequency: 500 kHz
Minimum-size Detection: 12.2 mm (0.50") at 102 mm (4.0") range 25.4 mm (1.0") at 204 mm (8.0") range
Repeatability: 0.79mm (0.031") typical

Power Requirements

Supply Voltage: 12VDC to 24VDC ± 10%, regulated supply
Current Consumption: 50 mA per set max.
Power Consumption: 1.2 W max. @ 24 VDC per set

Output

Sinking Output (NPN):
  Maximum on-state voltage: 0.75 V @ 100 mA
  Maximum load current: 100 mA
  Maximum applied voltage: 30 VDC
Sourcing Output (PNP):
  Maximum on-state voltage drop: 1.10 V @ 100mA
  Maximum load current: 100mA
  Output voltage: V_{Supply} - 1.10 V @ 100mA

Response Time

"On" 0.4 ms or 4 ms
  (Model dependent - see selection chart)
"Off" 0.4 ms or 4 ms
  (Model dependent - see selection chart)

Indicators

Transmitter: Green
Receiver:
  Amber LED: Illuminated when sonic energy is received, reagardless of output state
  Green LED: Indicates sonic beam is blocked

Connections

Transmitter cable style model SM400 series:
  28 AWG, foil shield, lead-free, PVC jacket 2-conductor, 3M (10') long
Transmitter connector style model SM450 series:
  Flat-profile pigtail 150 mm (6.0") long pico-connector
Transmitter connector style model SM480 series:
  Flat-profile pigtail 150 mm (6.0") long pico-connector
Receiver cable style model SM401 series:
  28 AWG, foil shield, lead-free, PVC jacket 4-conductor, 3M (10') long

Receiver connector style model SM451 series:
  Barrel style pico-connector
  Flat-profile pigtail 150 mm (6.0") long pico-connector
Receiver connector style model SM481 series:
  Flat-profile pigtail 150 mm (6.0") long pico-connector

Protection

Power Supply: Current-limited over-voltage, ESD, reverse polarity
Outputs: Current-limited over-voltage, ESD, over-current

Environmental

Operating Temperature Range:
  -20° to 65°C (-4° to 136°F) @ 24V supply
  -20° to 70°C (-4° to 144°F) @ 20V supply
Storage Temperature Range: -40° to 100°C (-40° to 212°F)
Operating Humidity: 100%
Protection Ratings:
  Cable Style: NEMA 4X (indoor use only), IP67
  Watertight "micro" quick-disconnect:
    NEMA 4X (indoor use only), IP67
Chemical Resistance: Resists most acids and bases, including most food products.

Agency Approvals

EMC: EN 61326:1997 (industrial including amendment A1:1998
  Safety: En 61010-1
Declaration of Conformity available upon request

Construction

Case (barrel and flat-profile types): ULTEM®* plastic (FDA Approved)
Transducer Face: Epoxy
Sensor Cables: Lead-free, PVC jacketed, black
LED lens: Polycarbonate

* ULTEM® is a registered trademark of The General Electric Co.

Accessories

Model AC118, Right-angle, M12 micro, 4-pin, 2-conductor, connector/cable assembly, 5 m (16'), for SM480 series micro connector transmitters

Model AC128, Straight, M12 micro, 4-pin, 2-conductor, connector/cable assembly, 5 m (16'), for SM480 seriesmicro connector transmitters

Model AC130, Straight, M12 micro, 4-conductor, connector/cable assembly, 5 m (16'), for SM481 micro connector receivers

Model AC134, Right-angle, M8 pico, 4-conductor, connector/cable assembly, 5m (16') for SM350 and SM451 series sensors

Model AC135, Straight, M8 pico, 4-conductor, connector/ cable assembly, 5m (16') for SM350 and SM451 series sensors

Model AC137, Pico-to-micro pigtail adapter cable for barrel connector-style sensors

Model AC138, Pico-to-micro pigtail adapter cable, output pins reversed for barrel connector-style sensors

Model AC141, Right-angle, M8 pico, 3-conductor pico connector/cable assembly, 5 m (16') for SM431 connector-style receivers

**Model AC142**, Straight, M8 pico, 3-conductor pico connector/cable assembly, 5 m (16') for SM431 connector-style receivers

Model AC143, Right-angle, M8 pico, 3-pin, 2 conductor connector/cable assembly, 5 m (16') for SM430 connector-style transmitters (same housing as AC141)

Model AC144, Straight, M8 pico, 3-pin, 2-conductor connector/cable assembly, 5 m (16') for SM430 connector-style transmitters (same housing as AC142)

Model AC145, Right-angle, M8 pico, 4-pin, 2 conductor connector/cable assembly, 5 m (16') for SM450 connector-style transmitters (same housing as AC134)

Model AC146, Straight, M8 pico, 4-pin, 2-conductor connector/cable assembly, 5 m (16') for SM450 connector-style transmitters (same housing as AC135)

Model AC235, Right-angle stainless mounting bracket for barrel connector-style sensors

Model AC236, Stainless and polyamide conveyor-rail clamp/bracket set for barrel connector-style sensors

Model AC237, Straight stainless mounting bracket for barrel connector-style sensors

Model AC246, Right-angle, stainless, mounting bracket for flat-profile style sensors

Model AC247, Stainless and polyamide conveyor-rail clamp/bracket set for flat-profile style sensors

MICROSONIC® THRU-BEAM SENSORS

SENTRONIC AG Produkte, Support und Service

Rugghölzli 2
CH - 5453 Busslingen

Tel. +41 (0)56 222 38 18
Fax +41 (0)56 222 10 12

mailbox@sentronic.com
www.sentronic.com

Selection Chart

SM400 Series
MICROSONIC® Thru-Beam

Transmitter	Receiver	Power Version	Connection Style	Sensing Range	12mm	Flat-profile	Transmitter Standard	Receiver Standard	Fast Response .4ms on & off	N.C. Output	N.C. Output Fast Response	
SM400A-04-00	SM401A-04-00	12-24VDC	10' cable	4"	■		■	■				
SM400A-04-00FP	SM401A-04-00FP	12-24VDC	10' cable	4"		■	■	■				
SM400A-04-00	SM401A-04-01	12-24VDC	10' cable	4"	■		■		■			
SM400A-04-00FP	SM401A-04-01FP	12-24VDC	10' cable	4"		■	■		■			
SM400A-04-00	SM401A-04-10	12-24VDC	10' cable	4"	■		■			■		
SM400A-04-00FP	SM401A-04-10FP	12-24VDC	10' cable	4"		■	■			■		
SM400A-04-00	SM401A-04-11	12-24VDC	10' cable	4"	■		■				■	
SM400A-04-00FP	SM401A-04-11FP	12-24VDC	10' cable	4"		■	■				■	
SM400A-08-00	SM401A-08-00	12-24VDC	10' cable	8"	■		■	■				
SM400A-08-00FP	SM401A-08-00FP	12-24VDC	10' cable	8"		■	■	■				
SM400A-08-00	SM401A-08-01	12-24VDC	10' cable	8"	■		■		■			
SM400A-08-00FP	SM401A-08-01FP	12-24VDC	10' cable	8"		■	■		■			
SM400A-08-00	SM401A-08-10	12-24VDC	10' cable	8"	■		■			■		
SM400A-08-00FP	SM401A-08-10FP	12-24VDC	10' cable	8"		■	■			■		
SM400A-08-00	SM401A-08-11	12-24VDC	10' cable	8"	■		■				■	
SM400A-08-00FP	SM401A-08-11FP	12-24VDC	10' cable	8"		■	■				■	
SM430A-04-00	SM431A-04-00	12-24VDC	10' cable	4"	■		■	■				3-pin pico (8 mm) connector w/PNP output only
SM430A-04-00FP	SM431A-04-00FP	12-24VDC	10' cable	4"		■	■	■				3-pin pico (8 mm) connector w/PNP output only
SM430A-04-00	SM431A-04-01	12-24VDC	10' cable	4"	■		■		■			3-pin pico (8 mm) connector w/PNP output only
SM430A-04-00FP	SM431A-04-01FP	12-24VDC	10' cable	4"		■	■		■			3-pin pico (8 mm) connector w/PNP output only
SM430A-04-00	SM431A-04-10	12-24VDC	10' cable	4"	■		■			■		3-pin pico (8 mm) connector w/PNP output only
SM430A-04-00FP	SM431A-04-10FP	12-24VDC	10' cable	4"		■	■			■		3-pin pico (8 mm) connector w/PNP output only
SM430A-04-00	SM431A-04-11	12-24VDC	10' cable	4"	■		■				■	3-pin pico (8 mm) connector w/PNP output only
SM430A-04-00FP	SM431A-04-11FP	12-24VDC	10' cable	4"		■	■				■	3-pin pico (8 mm) connector w/PNP output only
SM430A-08-00	SM431A-08-00	12-24VDC	10' cable	8"	■		■	■				3-pin pico (8 mm) connector w/PNP output only
SM430A-08-00FP	SM431A-08-00FP	12-24VDC	10' cable	8"		■	■	■				3-pin pico (8 mm) connector w/PNP output only
SM430A-08-00	SM431A-08-01	12-24VDC	10' cable	8"	■		■		■			3-pin pico (8 mm) connector w/PNP output only
SM430A-08-00FP	SM431A-08-01FP	12-24VDC	10' cable	8"		■	■		■			3-pin pico (8 mm) connector w/PNP output only
SM430A-08-00	SM431A-08-10	12-24VDC	10' cable	8"	■		■			■		3-pin pico (8 mm) connector w/PNP output only
SM430A-08-00FP	SM431A-08-10FP	12-24VDC	10' cable	8"		■	■			■		3-pin pico (8 mm) connector w/PNP output only
SM430A-08-00	SM431A-08-11	12-24VDC	10' cable	8"	■		■				■	3-pin pico (8 mm) connector w/PNP output only
SM430A-08-00FP	SM431A-08-11FP	12-24VDC	10' cable	8"		■	■				■	3-pin pico (8 mm) connector w/PNP output only
SM440A-04-00	SM441A-04-00	12-24VDC	Pico	4"	■		■	■				3-pin pico (8 mm) connector w/NPN output only
SM440A-04-00FP	SM441A-04-00FP	12-24VDC	Pico	4"		■	■	■				3-pin pico (8 mm) connector w/NPN output only
SM440A-04-00	SM441A-04-01	12-24VDC	Pico	4"	■		■		■			3-pin pico (8 mm) connector w/NPN output only
SM440A-04-00FP	SM441A-04-01FP	12-24VDC	Pico	4"		■	■		■			3-pin pico (8 mm) connector w/NPN output only
SM440A-04-00	SM441A-04-10	12-24VDC	Pico	4"	■		■			■		3-pin pico (8 mm) connector w/NPN output only
SM440A-04-00FP	SM441A-04-10FP	12-24VDC	Pico	4"		■	■			■		3-pin pico (8 mm) connector w/NPN output only
SM440A-04-00	SM441A-04-11	12-24VDC	Pico	4"	■		■				■	3-pin pico (8 mm) connector w/NPN output only
SM440A-04-00FP	SM441A-04-11FP	12-24VDC	Pico	4"		■	■				■	3-pin pico (8 mm) connector w/NPN output only
SM440A-08-00	SM441A-08-00	12-24VDC	Pico	8"	■		■	■				3-pin pico (8 mm) connector w/NPN output only
SM440A-08-00FP	SM441A-08-00FP	12-24VDC	Pico	8"		■	■	■				3-pin pico (8 mm) connector w/NPN output only
SM440A-08-00	SM441A-08-01	12-24VDC	Pico	8"	■		■		■			3-pin pico (8 mm) connector w/NPN output only
SM440A-08-00FP	SM441A-08-01FP	12-24VDC	Pico	8"		■	■		■			3-pin pico (8 mm) connector w/NPN output only
SM440A-08-00	SM441A-08-10	12-24VDC	Pico	8"	■		■			■		3-pin pico (8 mm) connector w/NPN output only
SM440A-08-00FP	SM441A-08-10FP	12-24VDC	Pico	8"		■	■			■		3-pin pico (8 mm) connector w/NPN output only
SM440A-08-00	SM441A-08-11	12-24VDC	Pico	8"	■		■				■	3-pin pico (8 mm) connector w/NPN output only
SM440A-08-00FP	SM441A-08-11FP	12-24VDC	Pico	8"		■	■				■	3-pin pico (8 mm) connector w/NPN output only
SM450A-04-00	SM451A-04-00	12-24VDC	Pico	4"	■		■	■				4-pin pico (8 mm) connector
SM450A-04-00FP	SM451A-04-00FP	12-24VDC	Pico	4"		■	■	■				4-pin pico (8 mm) connector
SM450A-04-00	SM451A-04-01	12-24VDC	Pico	4"	■		■		■			4-pin pico (8 mm) connector
SM450A-04-00FP	SM451A-04-01FP	12-24VDC	Pico	4"		■	■		■			4-pin pico (8 mm) connector
SM450A-04-00	SM451A-04-10	12-24VDC	Pico	4"	■		■			■		4-pin pico (8 mm) connector
SM450A-04-00FP	SM451A-04-10FP	12-24VDC	Pico	4"		■	■			■		4-pin pico (8 mm) connector
SM450A-04-00	SM451A-04-11	12-24VDC	Pico	4"	■		■				■	4-pin pico (8 mm) connector
SM450A-04-00FP	SM451A-04-11FP	12-24VDC	Pico	4"		■	■				■	4-pin pico (8 mm) connector

All possible sensor configurations are not listed here.
Also available with 4-pin pico connectors, output pins reversed (SM460)
Also available with 4-pin micro connectors, output pins reversed (SM490)

Model No. Transmitter	Model No. Receiver	Power Version	Connection Style	Sensing Range	Materials Housing 12mm	Flat-profile	Transmitter Standard	Sensing Variations Standard	Fast Response 4ms On & Off	Receiver N.C. Output	N.C. Output Fast Response	
SM450A-08-00`	SM451A-08-00	12-24VDC	Pico	8"	■		■	■				4-pin pico (8 mm) connector
SM450A-08-00FP	SM451A-08-00FP	12-24VDC	Pico	8"		■	■	■				4-pin pico (8 mm) connector
SM450A-08-00	SM451A-08-01	12-24VDC	Pico	8"	■		■		■			4-pin pico (8 mm) connector
SM450A-08-00FP	SM451A-08-01FP	12-24VDC	Pico	8"		■	■		■			4-pin pico (8 mm) connector
SM450A-08-00	SM451A-08-10	12-24VDC	Pico	8"	■		■			■		4-pin pico (8 mm) connector
SM450A-08-00FP	SM451A-08-10FP	12-24VDC	Pico	8"		■	■			■		4-pin pico (8 mm) connector
SM450A-08-00	SM451A-08-11	12-24VDC	Pico	8"	■		■				■	4-pin pico (8 mm) connector
SM450A-08-00FP	SM451A-08-11FP	12-24VDC	Pico	8"		■	■				■	4-pin pico (8 mm) connector
SM480A-04-00	SM481A-04-00	12-24VDC	10'cable	4"	■		■	■				4-pin micro (12 mm) connector
SM480A-04-00FP	SM481A-04-00FP	12-24VDC	10'cable	4"		■	■	■				4-pin micro (12 mm) connector
SM480A-04-00	SM481A-04-01	12-24VDC	10'cable	4"	■		■		■			4-pin micro (12 mm) connector
SM480A-04-00FP	SM481A-04-01FP	12-24VDC	10'cable	4"		■	■		■			4-pin micro (12 mm) connector
SM480A-04-00	SM481A-04-10	12-24VDC	10'cable	4"	■		■			■		4-pin micro (12 mm) connector
SM480A-04-00FP	SM481A-04-10FP	12-24VDC	10'cable	4"		■	■			■		4-pin micro (12 mm) connector
SM480A-04-00	SM481A-04-11	12-24VDC	10'cable	4"	■		■				■	4-pin micro (12 mm) connector
SM480A-04-00FP	SM481A-04-11FP	12-24VDC	10'cable	4"		■	■				■	4-pin micro (12 mm) connector
SM480A-08-00	SM481A-08-00	12-24VDC	10'cable	8"	■		■	■				4-pin micro (12 mm) connector
SM480A-08-00FP	SM481A-08-00FP	12-24VDC	10'cable	8"		■	■	■				4-pin micro (12 mm) connector
SM480A-08-00	SM481A-08-01	12-24VDC	10'cable	8"	■		■		■			4-pin micro (12 mm) connector
SM480A-08-00FP	SM481A-08-01FP	12-24VDC	10'cable	8"		■	■		■			4-pin micro (12 mm) connector
SM480A-08-00	SM481A-08-10	12-24VDC	10'cable	8"	■		■			■		4-pin micro (12 mm) connector
SM480A-08-00FP	SM481A-08-10FP	12-24VDC	10'cable	8"		■	■			■		4-pin micro (12 mm) connector
SM480A-08-00	SM481A-08-11	12-24VDC	10'cable	8"	■		■				■	4-pin micro (12 mm) connector
SM480A-08-00FP	SM481A-08-11FP	12-24VDC	10'cable	8"		■	■				■	4-pin micro (12 mm) connector

All possible sensor configurations are not listed here.
Also available with 4-pin pico connectors, output pins reversed (SM460)
Also available with 4-pin micro connectors, output pins reversed (SM490)

SENTRONIC AG Produkte, Support und Service
Rugghölzli 2
CH - 5453 Busslingen
Tel. +41 (0)56 222 38 18
Fax +41 (0)56 222 10 12
mailbox@sentronic.com
www.sentronic.com

MICROSONIC® THRU-BEAM SENSORS