

MICROSONIC® Thru-beam Sensors



Industry proven, these MICROSONIC® sensors increase “uptime” with reliable, thru-beam sensing in harsh, high-speed environments

In response to problems directly attributed to the harsh environments in which sensors operate today, Hyde Park offers broad application solutions with this industry-proven line of ultrasonic thru-beam sensors. First produced in 1974, the MICROSONIC® SM100 series sensors are a “workhorse” in the Hyde Park product line with tens of thousands of units continuing to perform a variety of thru-beam sensing functions throughout the world.

Using the world’s leading ultrasonic sensing technology, the MICROSONIC® SM100 series sensors perform precise object detection. Of objects from transparent containers to metal parts as small as 6.4 mm (1/4”) diameter at speeds in excess of 2,000 units per minute.

Unlike photoelectrics, these stainless steel sensors are virtually unaffected by splashing food, caustic cleaning solutions, frequent high-pressure wash-

downs, humidity, changing light conditions or colors, dust, and ambient noise. The rugged sensors need no maintenance and require no sensitivity adjustments to compensate for inconsistent product materials.

Response times range from 4 ms down to 0.6 ms. The 12 to 24 VDC circuitry and output signal make these sensors directly compatible with many programmable logic controllers, computers, and other logic control systems.

Operation

The MICROSONIC® sensors are continuous-wave devices that consist of an ultra-high-frequency transmitter and receiver positioned opposite each other, illustrated below, at a distance of up to 1,829 mm (72”). 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 as small as 3 mm (1/8 inch) diameter allows the beam to pass through to the receiver, the out-

- **Self contained**
- **Meets NEMA 4X (in-door use only) & IP67 standards**
- **Survives harsh environments**
- **No sensitivity adjustments**
- **Sensing ranges up to 1,829 mm (72”)**

put of the receiver switches.

With all circuitry compactly sealed in the stainless steel transmitter and receiver probes, the MICROSONIC® sensors boast a narrow, constant high-frequency sonic beam for high sensing resolution.

The thru-beam sensing mode is set up by mounting the sensors on the same axis opposite each other as shown in Figure 1. The distance (range) between the transmitter face and receiver face can be up to 1,829 mm (72”), depending on the model and range selected.

Positioning of the transmitter and receiver for operation 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) as the distance between the transmitter and receiver increases. This means that if the distance between the transmitter and receiver is too

great and the object is too small, it is possible for the beam to “wrap around” the object enough to not cause the receiver output to switch, as shown in Figure 2.

Therefore, reliable detection of 13 mm (0.5") inch wide or smaller objects is achieved when the objects are allowed to 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.

Where sensing distances are adversely affected as the environment becomes more contaminated, the MICROSONIC® sensors remain constant under adverse conditions where other sensor types fail.

Transmitter/Receiver Combinations and Sensing Ranges

Because specific sensing needs vary from one type of application to another, the MICROSONIC® SM100 series of-

fers a variety of sensing ranges, connections, and signal strengths to maximize efficiency and productivity. See the Sensor Selection Chart in this section for the best transmitter and receiver combination.

Mounting

The MICROSONIC® thru-beam sensors should be mounted in brackets that allow them to be adjusted for proper alignment on the same axis. Hyde Park offers the Model AC201 stainless, right angle, single-thru-beam, mounting bracket, which is illustrated, with dimensions, on Page 5-6.

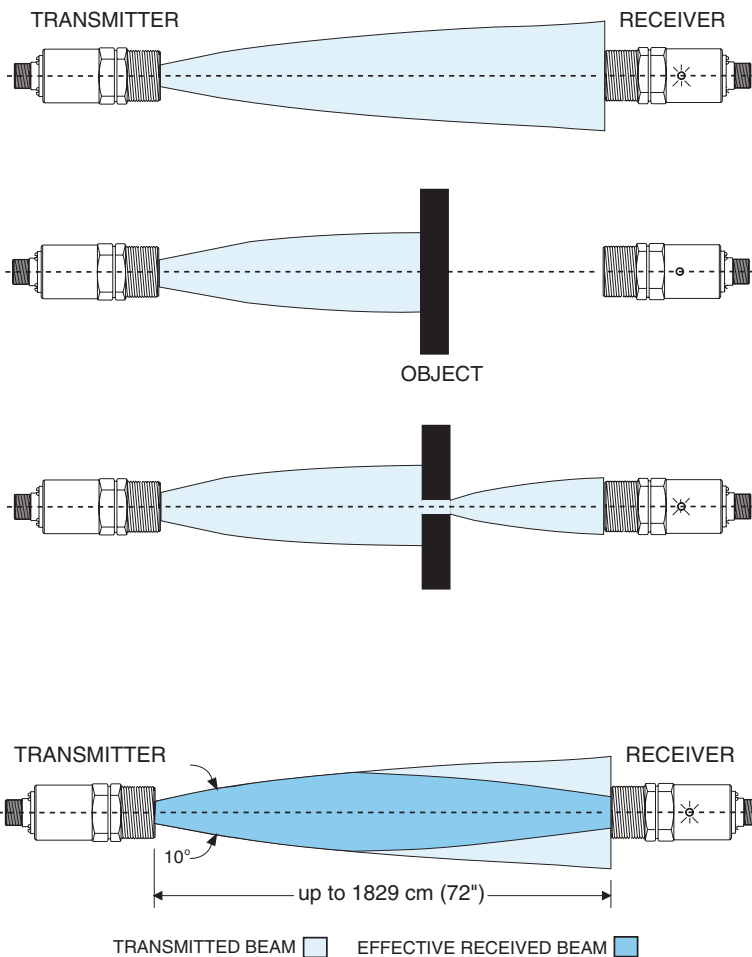


Figure 1, Thru-beam Pattern and Range

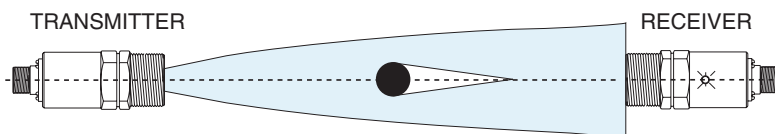


Figure 2

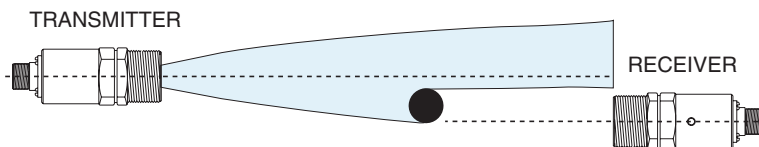
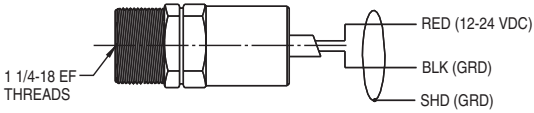


Figure 3

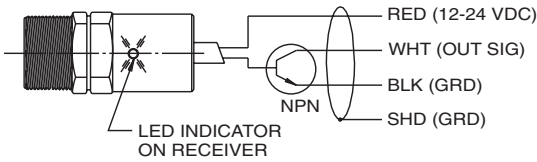
Electrical Wiring

Cable Style**

Transmitter Models, Standard Cable Length 3 m (10') SM121, 126, 139, 141, 145, 147 Receiver



Models, Standard Cable Length 3 m (10') SM171*, 176, 187, 189, 191, 193, 195, 198, 199, 251, 258, CS101

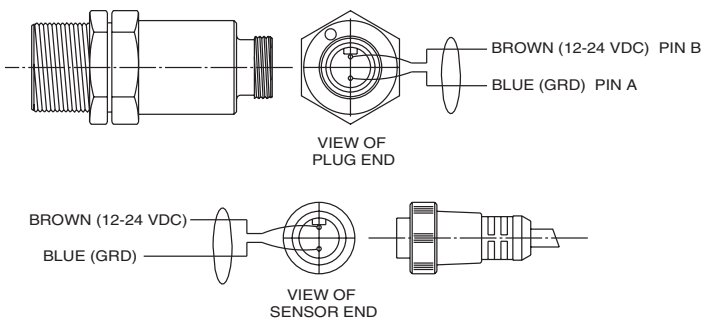


* Operates only on 15 VDC power

** Use Belden Cable No. 8423 and No. 9154 to extend receiver and transmitter cable length, respectively. Maximum recommended cable length is 152 m (500').

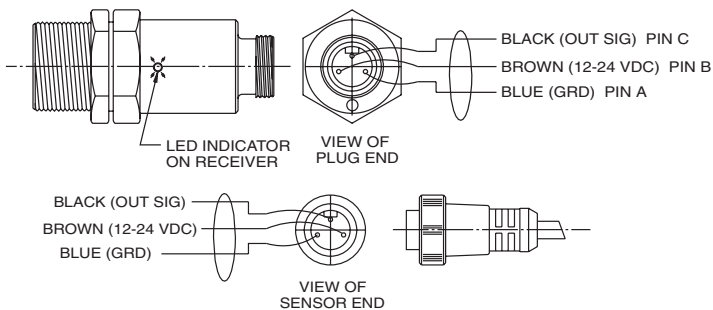
Quick-disconnect (watertight) Style

Transmitter Models with Model AC107 "Mini" 2-conductor, 7/8-16 mini, 4 m (12') Mating Connector Cable SM138WTC, 140WTC, 146WTC



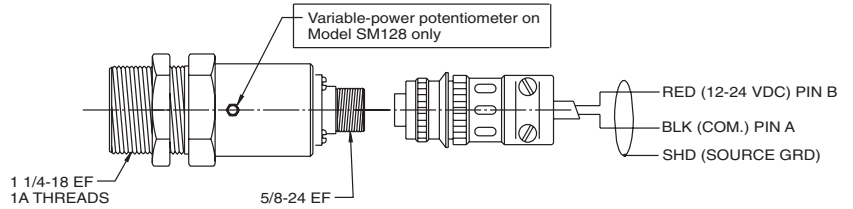
Receiver Models with Model AC108 3-conductor, 7/8-16 mini, 4 m (12') Mating Connector Cable SM186WTC, 190WTC, 250WTC, 252WTC, 256WTC

Receiver Outputs

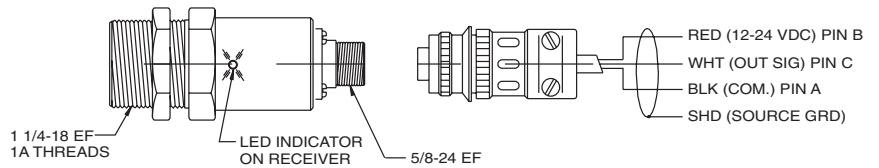


Quick-disconnect (Amphenol) Style**

Transmitter Models with Model AC100 Amphenol, 2-conductor, 3 m (10') Mating Connector Cable: SM120, 125, 128, 138, 140, 146

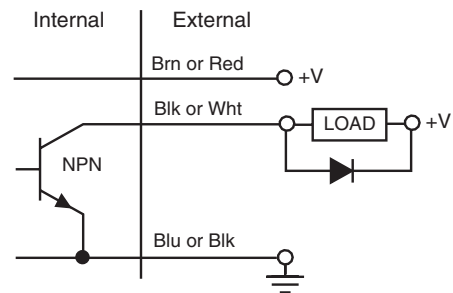


Receiver Models with Model AC150 Amphenol, 3-conductor, 3 m (10') Mating Connector Cable: SM170, 175, 182, 186, 188, 190, 193C, 194, 198C, 199C, 250

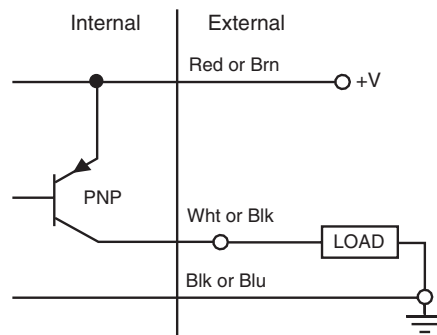


*** Cable conductor colors vary, dependent upon the sensor model number.

NPN SINKING ***



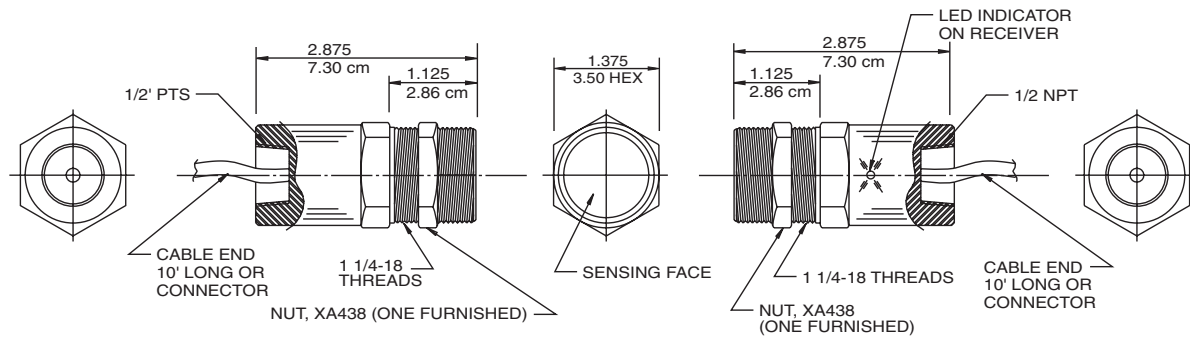
PNP SOURCING ***



Dimensions

Cable Style

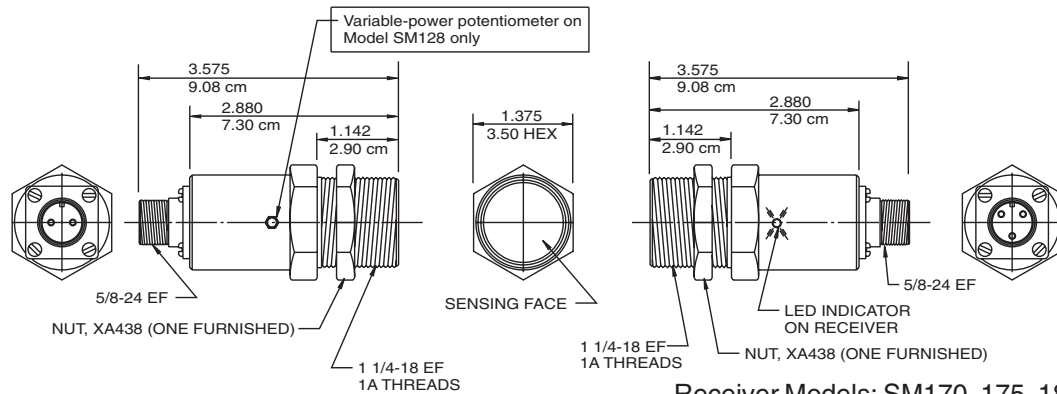
Transmitter Models: SM121, 126, 139, 141, 145, 147



Quick-disconnect (Amphenol) Style

Transmitter Models: SM120, 125, 128, 138, 140, 146

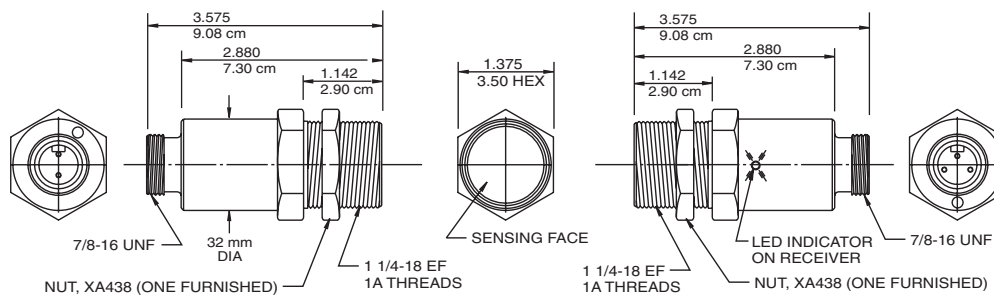
Receiver Models: SM171, 176, 187, 189, 191, 193, 195, 198, 199, 251, CS101



Receiver Models: SM170, 175, 182, 186, 188, 190, 193C, 194, 198C, 199C, 250

Quick-disconnect (Watertight) Style

Transmitter Models: SM138WTC, 140WTC, 146WTC, 260WTC

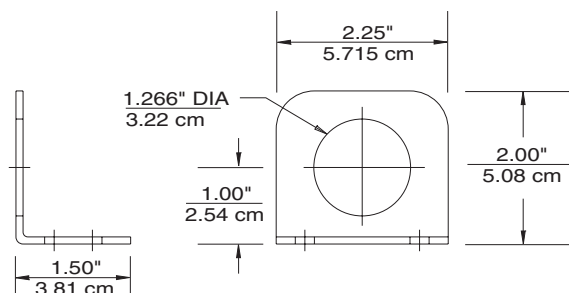


Receiver Models: SM186WTC, 190WTC, 250WTC, 252WTC, 256WTC

Mounting Accessory

For all of the above transmitters and receivers.

Model AC201 Sensor Mounting Bracket



General Specifications

Sensing

Ranges:

381 mm (15"), 508 mm (20"), 635 mm (25"), 1016 mm (40"), 1829 mm (72")

Sonic Frequency: 180 kHz

Minimum-size Detection:

13 mm (0.5") at 381 mm (15") range

13 mm (0.5") at 508 mm (20") range

19 mm (0.75") at 635 mm (25") range

19 mm (0.75") at 1016 mm (40") range

25 mm (1.0") at 1829 mm (72") range

Repeatability: 0.79 mm (0.031") typical

Power Requirements

Supply Voltage: 12 to 24 VDC \pm 10%, regulated supply

Current Consumption: 60 mA max. (excluding load) per set

Power Consumption: 1.2 W max.

(excluding load) @ 15 VDC per set

Output

NPN Sinking: 0 to 50 V, max.

Maximum on state voltage 100 mA @ 0.2 V

PNP Sourcing: 100 mA @ 24 VDC, max.

Receiver red LED "on" when beam is received

Response Time

"On" 0.6 ms or 4 ms (model dependent - see selection chart)

"Off" 0.6 ms or 4 ms (model dependent - see selection chart)

Indicators

Transmitter: None

Receiver:

Red LED: Illuminated when sonic energy is received, regardless of output state.

Connections

Cable Style Models:

Transmitter: 305 cm (10'), 20 AWG, foil shield, lead-free, PVC jacket, 2-conductor

Receiver: 305 cm (10'), 22 AWG, foil shield, lead-free, PVC jacket, 3-conductor

Connector Style Models:

Amphenol (nonwatertight) quick-disconnect style Models:

Model AC100, Transmitter:

305 cm (10'), 20 AWG, foil shield, lead-free, PVC jacket, 2-conductor

Model AC150, Receiver:

305 cm (10'), 22 AWG, foil shield, lead-free, PVC jacket, 3-conductor

Watertight (WTC) quick-disconnect style models:

Model AC107, Transmitter:

7/8-16 mini, 4 m (12'), 18 AWG, 2-conductor

Model AC108, Receiver:

7/8-16 mini, 4 m (12'), 18 AWG, 3-conductor

Protection

Power Supply: ESD

Outputs: ESD

Environmental

Operating Temperature Range:

0° to 60°C

Storage Temperature Range: -40° to 100°C

(-40° to 212°F)

Operating Humidity: 100%

Protection Ratings:

Cable Style: NEMA 4X (indoor use only), IP67

Amphenol quick-disconnect: NEMA 1

Watertight quick-disconnect: NEMA 4X (indoor use only), IP67

Chemical Resistance: Resists most acids and bases, including most food products. Polypropylene transducer face is available to provide resistance to corrosive chemicals, solvents, and steam.

Construction

Housing:

Shock and vibration resistant

Case: stainless steel

Transducer Face: Buna rubber with sealed fiberglass, standard; Polypropylene transducer face available

Power Cable: Nontoxic PVC jacket

LED: Polycarbonate

Accessories

Model AC100, 2-conductor, transmitter connector cable, 3 m (10'), for all SM100 series Amphenol connector-style transmitters

Model AC107, Straight, 7/8-16 mini, 2-pin, 2 conductor, mating connector cable, 4 m (12'), for all SM100 series, watertight, connector-style transmitters

Model AC108, Straight, 7/8-16 mini, 3-pin, 3 conductor, mating connector cable, 4 m (12'), for all SM100 series, watertight, connector-style receivers

Model AC150, 3-conductor, receiver connector cable, 3 m (10'), for all SM100 series Amphenol connector-style receivers

Model AC160, Cable grip for all cable-style, thru-beam sensors

Model AC201, Stainless, right-angle, single-thru beam-sensor mounting bracket, slotted for adjustment

See page 7-1 for accessory photos.

Transmitter Selection Chart

SM100 Series MICROSONIC® Thru-Beam

Transmitter Model No.	Receiver Model No.	Power Version	Connection Style	NEMA Rating	Transmitter/Receiver Housing	Sensing Range	Remarks
SM120	SM170	15VDC	Quick Disconnect		Stainless	381mm(15")	Amphenol connector
	SM188	15VDC	Quick Disconnect		Stainless	508mm(20")	Amphenol connector
SM121	SM171	15VDC	305cm(10') Cable	4X, IP67	Stainless	381mm(15")	
	SM189	15VDC	305cm(10') Cable	4X, IP67	Stainless	508mm(20")	
SM125	SM175	24VDC	Quick Disconnect		Stainless	381mm(15")	Amphenol connector
	SM182	24VDC	Quick Disconnect		Stainless	381mm(15")	Amphenol connector
SM126	SM176	24VDC	305cm(10') Cable	4X, IP67	Stainless	381mm(15")	
SM128	SM186	12-24VDC	Quick Disconnect		Stainless	635mm(25")	Variable power, amphenol connector
	SM190	12-24VDC	Quick Disconnect		Stainless	381mm(15")	Variable power, amphenol connector
	SM250	12-24VDC	Quick Disconnect		Stainless	635mm(25")	Variable power, Amphenol connector
SM138	SM186	12-24VDC	Quick Disconnect		Stainless	1829mm(72")	High power, amphenol connector
	SM190	12-24VDC	Quick Disconnect		Stainless	1016mm(40")	High power, amphenol connector
	SM250	12-24VDC	Quick Disconnect		Stainless	1829mm(72")	High power, amphenol connector
SM138-WTC	SM186-WTC	12-24VDC	Quick Disconnect	4X, IP67	Stainless	1829mm(72")	High power, watertight connector
	SM190-WTC	12-24VDC	Quick Disconnect	4X, IP67	Stainless	1016mm(40")	High power, watertight connector
	SM250-WTC	12-24VDC	Quick Disconnect	4X, IP67	Stainless	1829mm(72")	High power, watertight connector
	SM252-WTC	12-24VDC	Quick Disconnect	4X, IP67	Stainless	1829mm(72")	High power, watertight connector
SM139	SM187	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	1829mm(72")	High power
	SM191	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	1016mm(40")	High power
	SM193	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	1016mm(40")	High power
	SM195	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	1016mm(40")	High power
	SM198	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	1016mm(40")	High power
	SM199	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	1016mm(40")	High power
	SM251	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	1829mm(72")	High power
	SM140•	SM186	12-24VDC	Quick Disconnect		Stainless	635mm(25")
SM140•	SM190	12-24VDC	Quick Disconnect		Stainless	381mm(15")	Amphenol connector
	SM193C	12-24VDC	Quick Disconnect		Stainless	381mm(15")	Amphenol connector
	SM194	12-24VDC	Quick Disconnect		Stainless	381mm(15")	Amphenol connector
	SM198C	12-24VDC	Quick Disconnect		Stainless	381mm(15")	Amphenol connector
	SM199C	12-24VDC	Quick Disconnect		Stainless	381mm(15")	Amphenol connector
	SM250	12-24VDC	Quick Disconnect		Stainless	635mm(25")	Amphenol connector
	SM140-WTC	SM186-WTC	12-24VDC	Quick Disconnect	4X, IP67	Stainless	635mm(25")
SM190-WTC		12-24VDC	Quick Disconnect	4X, IP67	Stainless	381mm(15")	Watertight connector
SM250-WTC		12-24VDC	Quick Disconnect	4X, IP67	Stainless	635mm(25")	Watertight connector
SM252-WTC		12-24VDC	Quick Disconnect	4X, IP67	Stainless	635mm(25")	Watertight connector
SM141•	SM187	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	635mm(25")	
	SM191	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	381mm(15")	
	SM193	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	381mm(15")	
	SM195	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	381mm(15")	
	SM198	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	381mm(15")	
	SM199	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	381mm(15")	
	SM251	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	635mm(25")	
SM145	SM187	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	635mm(25")	
	SM191	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	381mm(15")	
	SM193	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	381mm(15")	
	SM195	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	381mm(15")	
	SM198	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	381mm(15")	
	SM199	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	381mm(15")	
SM146	SM186	12-24VDC	Quick Disconnect		Stainless	1016mm(40")	Amphenol connector
	SM190	12-24VDC	Quick Disconnect		Stainless	635mm(25")	Amphenol connector
	SM193C	12-24VDC	Quick Disconnect		Stainless	635mm(25")	Amphenol connector
	SM194	12-24VDC	Quick Disconnect		Stainless	635mm(25")	Amphenol connector
	SM198C	12-24VDC	Quick Disconnect		Stainless	635mm(25")	Amphenol connector
	SM199C	12-24VDC	Quick Disconnect		Stainless	635mm(25")	Amphenol connector
	SM250	12-24VDC	Quick Disconnect		Stainless	1016mm(40")	Amphenol connector

Transmitter Selection Chart

SM100 Series (cont.) MICROSONIC® Thru-Beam

Transmitter Model No.	Receiver Model No.	Power Version	Connection Style	NEMA Rating	Transmitter/Receiver Housing	Sensing Range	Remarks
SM147	SM187	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	1016mm(40")	
	SM191	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	635mm(25")	
	SM193	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	635mm(25")	
	SM195	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	635mm(25")	
	SM198	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	635mm(25")	
	SM199	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	635mm(25")	
	SM251	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	1016mm(40")	
	CS101	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	1016mm(40")	Receiver has polypropylene coupler

• = Most commonly stocked sensors
 All possible sensor configurations are not listed here.

Receiver Selection Chart

SM100 Series (cont.) MICROSONIC® Thru-Beam

Receiver Model No.	Transmitter Model No.	Power Version	Connection Style	NEMA Rating	Transmitter/Receiver Housing	Sensing Range	Response time	Remarks (Outputs N.O. unless noted)
SM170	SM120	15VDC	Quick Disconnect		Stainless	381mm(15")	On 4ms, Off 4ms	NPN/ Pull-up Res./Amphenol connector
SM171	SM121	15VDC	305cm(10') Cable	4X,IP67	Stainless	381mm(15")	On 4ms, Off 4ms	NPN/Pull-up Res.
SM175	SM125	24VDC	Quick Disconnect		Stainless	381mm(15")	On 4ms, Off 4ms	NPN/Pull-up Res./Amphenol connector
SM176	SM126	24VDC	305cm(10')	4 X,IP67	Stainless	381mm(15")	On 4ms, Off 4ms	NPN/Pull-up Res.
SM182	SM125	24VDC	Quick Disconnect		Stainless	381mm(15")	On 1ms, Off 1ms	NPN/Pull-up Res./Amphenol connector
SM186	SM128	12-24VDC	Quick Disconnect		Stainless	635mm(25")	On 4ms, Off 4ms	NPN sinking, amphenol connector
	SM138	12-24VDC	Quick Disconnect		Stainless	1829mm(72")	On 4ms, Off 4ms	NPN sinking, amphenol connector
	SM140	12-24VDC	Quick Disconnect		Stainless	635mm(25")	On 4ms, Off 4ms	NPN sinking, amphenol connector
	SM146	12-24VDC	Quick Disconnect		Stainless	016mm(40")	On 4ms, Off 4ms	NPN sinking, amphenol connector
SM186-WTC	SM138-WTC	12-24VDC	Quick Disconnect	4X,IP67	Stainless	1829mm(72")	On 4ms, Off 4ms	NPN sinking, watertight connector
	SM140-WTC	12-24VDC	Quick Disconnect	4X,IP67	Stainless	635mm(25")	On 4ms, Off 4ms	NPN sinking, watertight connector
	SM146-WTC	12-24VDC	Quick Disconnect	4X,IP67	Stainless	1016mm(40")	On 4ms, Off 4ms	NPN sinking, watertight connector
SM187	SM139	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	829mm(72")	On 4ms, Off 4ms	NPN sinking
	SM141	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	635mm(25")	On 4ms, Off 4ms	NPN sinking
	SM145	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	635mm(25")	On 4ms, Off 4ms	NPN sinking
	SM147	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	1016mm(40")	On 4ms, Off 4ms	NPN sinking
SM188	SM120	15VDC	Quick Disconnect		Stainless	508mm(20")	On 4ms, Off 4ms	NPN/Pull-up Res./ Amphenol connector
SM189	SM121	15VDC	305cm(10') Cable	4X,IP67	Stainless	508mm(20")	On 4ms, Off 4ms	NPN/Pull-up Res.
SM190•	SM128	12-24VDC	Quick Disconnect		Stainless	381mm(15")	On 4ms, Off 4ms	NPN sinking, amphenol connector
	SM138	12-24VDC	Quick Disconnect		Stainless	1016mm(40")	On 4ms, Off 4ms	NPN sinking, amphenol connector
	SM140	12-24VDC	Quick Disconnect		Stainless	381mm(15")	On 4ms, Off 4ms	NPN sinking, amphenol connector
	SM146	12-24VDC	Quick Disconnect		Stainless	635mm(25")	On 4ms, Off 4ms	NPN sinking, amphenol connector
SM190-WTC	SM138-WTC	12-24VDC	Quick Disconnect	4X,IP67	Stainless	1016mm(40")	On 4ms, Off 4ms	NPN sinking, watertight connector
	SM140-WTC	12-24VDC	Quick Disconnect	4X,IP67	Stainless	381mm(15")	On 4ms, Off 4ms	NPN sinking, watertight connector
	SM146-WTC	12-24VDC	Quick Disconnect	4X,IP67	Stainless	635mm(25")	On 4ms, Off 4ms	NPN sinking, watertight connector
SM191•	SM139	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	1016mm(40")	On 4ms, Off 4ms	NPN sinking
	SM141	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	381mm(15")	On 4ms, Off 4ms	NPN sinking
	SM145	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	381mm(15")	On 4ms, Off 4ms	NPN sinking
	SM147	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	635mm(25")	On 4ms, Off 4ms	NPN sinking
SM193	SM139	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	1016mm(40")	On 4ms, Off 4ms	PNP sourcing
	SM141	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	381mm(15")	On 4ms, Off 4ms	PNP sourcing
	SM145	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	381mm(15")	On 4ms, Off 4ms	PNP sourcing
	SM147	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	635mm(25")	On 4ms, Off 4ms	PNP sourcing
SM193C	SM140	12-24VDC	Quick Disconnect		Stainless	381mm(15")	On 4ms, Off 4ms	PNP sourcing, amphenol connector
	SM146	12-24VDC	Quick Disconnect		Stainless	635mm(25")	On 4ms, Off 4ms	PNP sourcing, amphenol connector
SM194	SM140	12-24VDC	Quick Disconnect		Stainless	381mm(15")	On .6ms, Off.6ms	NPN sinking, amphenol connector
	SM146	12-24VDC	Quick Disconnect		Stainless	635mm(25")	On .6ms, Off.6ms	NPN sinking, amphenol connector
SM195	SM139	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	1016mm(40")	On .6ms, Off.6ms	NPN sinking
	SM141	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	381mm(15")	On .6ms, Off.6ms	NPN sinking
	SM145	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	381mm(15")	On .6ms, Off.6ms	NPN sinking
	SM147	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	635mm(25")	On .6ms, Off.6ms	NPN sinking
SM198	SM139	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	1016mm(40")	On 4ms, Off 4ms	NPN sinking, no LED, with test point
	SM141	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	381mm(15")	On 4ms, Off 4ms	NPN sinking, no LED, with test point
	SM145	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	381mm(15")	On 4ms, Off 4ms	NPN sinking, no LED, with test point
	SM147	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	635mm(25")	On 4ms, Off 4ms	NPN sinking, no LED, with test point
SM198C	SM140	12-24VDC	Quick Disconnect		Stainless	381mm(15")	On 4ms, Off 4ms	NPN sinking, no LED, with test point, amphenol connector
	SM146	12-24VDC	Quick Disconnect		Stainless	635mm(25")	On 4ms, Off 4ms	NPN sinking, no LED, with test point, amphenol connector
SM199	SM139	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	1016mm(40")	On .6ms, Off.6ms	PNP sourcing
	SM141	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	381mm(15")	On .6ms, Off.6ms	PNP sourcing
	SM145	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	381mm(15")	On .6ms, Off.6ms	PNP sourcing
	SM147	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	635mm(25")	On .6ms, Off.6ms	PNP sourcing
SM199C	SM140	12-24VDC	Quick Disconnect		Stainless	381mm(15")	On .6ms, Off.6ms	PNP sourcing, amphenol connector
	SM146	12-24VDC	Quick Disconnect		Stainless	635mm(25")	On .6ms, Off.6ms	PNP sourcing, amphenol connector
SM250	SM128	12-24VDC	Quick Disconnect		Stainless	635mm(25")	On 4ms, Off 4ms	PNP sourcing, amphenol connector
	SM138	12-24VDC	Quick Disconnect		Stainless	1829mm(72")	On 4ms, Off 4ms	PNP sourcing, amphenol connector
	SM140	12-24VDC	Quick Disconnect		Stainless	635mm(25")	On 4ms, Off 4ms	PNP sourcing, amphenol connector
	SM146	12-24VDC	Quick Disconnect		Stainless	1016mm(40")	On 4ms, Off 4ms	PNP sourcing, amphenol connector
SM250-WTC	SM138-WTC	12-24VDC	Quick Disconnect	4X,IP67	Stainless	1829mm(72")	On 4ms, Off 4ms	PNP sourcing, watertight connector
	SM140-WTC	12-24VDC	Quick Disconnect	4X,IP67	Stainless	635mm(25")	On 4ms, Off 4ms	PNP sourcing, watertight connector
	SM146-WTC	12-24VDC	Quick Disconnect	4X,IP67	Stainless	1016mm(40")	On 4ms, Off 4ms	PNP sourcing, watertight connector
SM251	SM139	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	829mm(72")	On 4ms, Off 4ms	PNP sourcing
	SM141	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	635mm(25")	On 4ms, Off 4ms	PNP sourcing
	SM145	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	635mm(25")	On 4ms, Off 4ms	PNP sourcing
	SM147	12-24VDC	305cm(10') Cable	4X,IP67	Stainless	1016mm(40")	On 4ms, Off 4ms	PNP sourcing

Receiver Selection Chart

SM100 Series (cont.) MICROSONIC® Thru-Beam

Receiver Model No.	Transmitter Model No.	Power Version	Connection Style	NEMA Rating*	Transmitter/Receiver Housing	Sensing Range	Response time	Remarks (Outputs N.O. unless noted)
SM252-WTC	SM138-WTC	12-24VDC	Quick Disconnect	4X, IP67	Stainless	1829mm(72")	On 4ms, Off 4ms	NPN sinking, N.C., watertight connector
	SM140-WTC	12-24VDC	Quick Disconnect	4X, IP67	Stainless	635mm(25")	On 4ms, Off 4ms	NPN sinking, N.C., watertight connector
	SM146-WTC	12-24VDC	Quick Disconnect	4X, IP67	Stainless	1016mm(40")	On 4ms, Off 4ms	NPN sinking, N.C., watertight connector
CS101	SM147	12-24VDC	305cm(10') Cable	4X, IP67	Stainless	1016mm(40")	On 4ms, Off 4ms	PNP sourcing, polypropylene coupler

• = Most commonly stocked sensors
 All possible sensor configurations are not listed here.
 *NEMA 4X rated for indoor use only

