

Model SM600 Series



Now there's a reliable ultrasonic solution for those tough proximity sensing applications.

When short-range sensing applications demand repeatable and reliable on/off control performance, the high-frequency, fixed-window SUPERPROX® Model SM600 series ultrasonic proximity sensors is the ideal solution. These noncontact, self-contained sensors are unmatched for the reliable detection of objects of all kinds, transparent or opaque, liquid or solid, and as small as 1.6 mm (0.06") rod diameter, regardless of color or shape. Offering a variety of sensing ranges, up to 254 mm (10"), and fixed sensing windows, this series provides for the convenient placement of SM600 sensors throughout the plant.

Given the capability to "back off" from formerly "nearly-touching" mounting positions, these sensors are the solution for such applications as: metal parts as close as 25 mm (1"), moving back-to-back at speeds in excess of 2000 per minute. Others include: cap presence and/or tilt detection, fill-level checking, fill-tube-presence monitoring, downed container detection, case inspection, detection of container edges, web

monitoring, CD case inspection where opacity, color, and height vary, and wherever there's a need to upgrade a metal prox function.

With protection ratings of NEMA 4X (indoor use only) and IP67, these sensors are impervious to changing light conditions, colors, noise, dust, 100% humidity, caustic chemicals, and other hostile environments. They are resistant to most acids and bases, including most food products. The sensing transducer is made of silicone rubber and the sensors are CE certified. Easy to install, the sensors are available in two different housing styles: the 18mm barrel housing sensor available in either ULTEM® plastic (standard) or SS303 stainless steel and the flat-profile housing available only in ULTEM® plastic. As with all SUPERPROX® sensors, cable and connector styles are available.

For sensing applications requiring connection to a DeviceNet network, the flat-profile models in this series are available with this capability as an optional selection.

Operating on 12 to 24 VDC, these 500 kHz sensors are equipped with sinking type (NPN) and sourcing type (PNP) outputs, a green LED to indicate power "on" and an amber LED to indicate when the object is detected within the fixed window.

SUPERPROX® Ultrasonic Proximity Sensors

Long-range Proximity Sensing

- **High resolution 500 kHz ultrasonic frequency**
- **Fast response - as fast as 0.5 ms sampling rate**
- **Self-contained, 18 mm barrel or flat-profile housing styles**
- **Field programmable capability in 18 mm and flat-profile models**
- **DeviceNet capability available in flat-profile models**
- **CE certified**

Built from the world's finest and most reliable ultrasonic technology, the SUPERPROX® Model SM600 barrel and flat-profile-style proximity sensors are the answer for improved productivity throughout the plant.

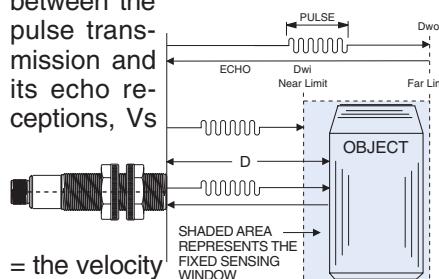
Operation

The Model SM600 series is a self-contained, pulse-echo device that both transmits and receives sonic energy over a sensing range of up to 254 mm (10"). These sensors use the latest ultrasonic technology with a discriminating microprocessor that allows the sensor to ignore all surrounding sonic

interference and detect only the designated object. An object is detected when it is at or within the fixed sensing window.

How does it work?

During setup and operation, these SM600 series sensors continually and accurately measure the elapsed time of every pulse echo reception between each pulse transmission. The transmitted pulse begins a time clock to register the elapsed times for the received pulse echoes. Given the elapsed time, the sensor software calculates the distance traveled out to the object and back to the sensor, using the formula, $D = TVs/2$, where: D = distance from the sensor to the object; T = elapsed time between the pulse transmission and its echo receptions, V_s



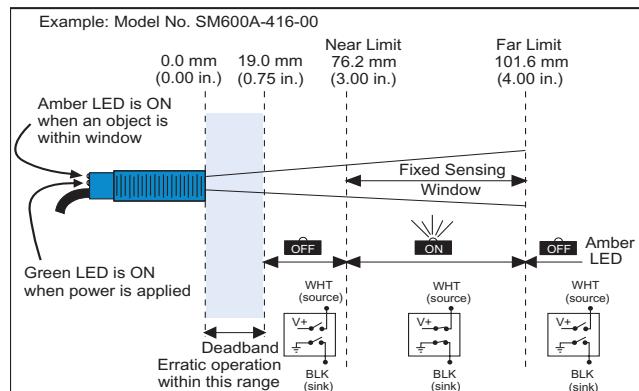
= the velocity of sound, approximately 1100 feet per second.

During operation, the calculated distance (D) between the sensor and the object is compared to the distances between the sensor and the fixed window limits. These limits are shown in the illustration as D_{wi} and D_{wo} . If D is at or within the fixed window limits, an output change takes place and remains unchanged until the echo either does not return or it returns from outside the fixed window limits.

As shown below, Hyde Park offers normally open (N.O.) or normally closed (N.C.) (sinking and sourcing) output models available for discrete on/off sensing applications.

Normally Open Output

The sensor output is "On" with the object in the fixed sensing window.



Model Reference Guide - SM600 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:

SM600A-216-00S

Ultrasonic Miniature Proximity Series

Power/Connection Type

- 0...12 to 24 VDC / cable style
- 5...12 to 24 VDC / "micro" connector style
- 6...12 to 24 VDC / "micro" connector style (output pins reversed)

Sensing Function

- 0...Proximity Style - no on/off delay

Design Level

- A...Applies to all models

Sensing Range (Far Limit)

2...51 mm (2")	6...152 mm (6")
3...77 mm (3")	7...178 mm (7")
4...102 mm (4")	B...254 mm (10")
5...127 mm (5")	

Sensing Window (Distance from Far Limit to Near Limit)*

02...3.2 mm (1/8")	32...51 mm (2")
04...6.4 mm (1/4")	48...77 mm (3")
08...13 mm (1/2")	80...127 mm (5")
12...19 mm (3/4")	96...152 mm (6")
16...25 mm (1")	OB...203 mm (8")

Functionality

- 00...Standard on/off, N.O. output

- 10...N.C. output

[Contact the factory for additional functionality options]

Housing Types

...No letter indicates standard ULTEM® plastic -18 mm barrel housing

FP...ULTEM® flat-profile housing

S...SS303 stainless steel - 18 mm barrel housing

ULTEM® is a registered trademark of The General Electric Company.

*Not allowed inside the deadband. Deadband is 0.75" for ranges <7", and 1.25" for ranges >7"

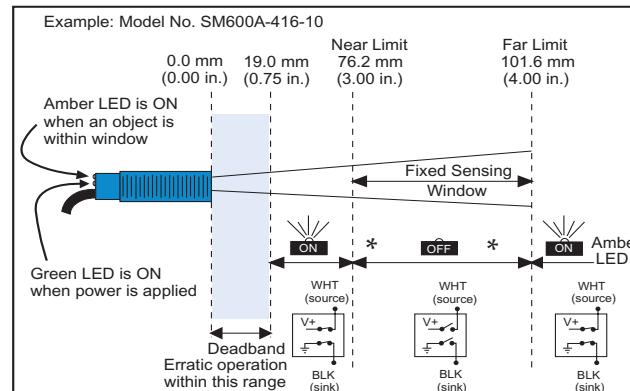
Field configurable and DeviceNet Model Reference Guides start on page 4-145.

Electrical Wiring

Regardless of model style, the wiring and conductor colors for the Model SM600 series sensors are the same.

Normally Closed Output

The sensor output is "Off" with the object in the fixed sensing window.



Mounting

The Model SM600 series sensors should be mounted in brackets that allow them to be adjusted for proper alignment. Hyde Park offers the:

Model AC226 stainless and polyamide conveyor-rail clamp/bracket set

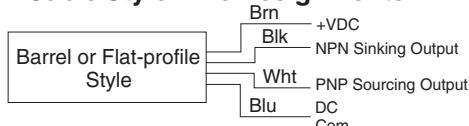
Model AC227 large, right-angle, stainless mounting bracket

Model AC228 small, right-angle, stainless, mounting bracket

Model AC231 straight, stainless, mounting bracket

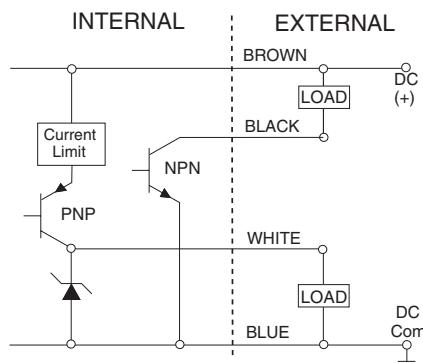
Model AC232 s-shaped, stainless, mounting bracket which are illustrated, with dimensions, on Pages 4-74 and 4-75.

Cable Style Wire Assignments

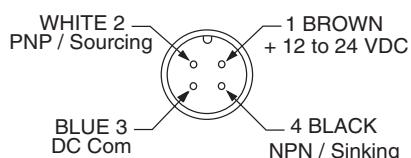


Outputs

NPN Sinking and PNP Sourcing



Connector Style Pin Assignments

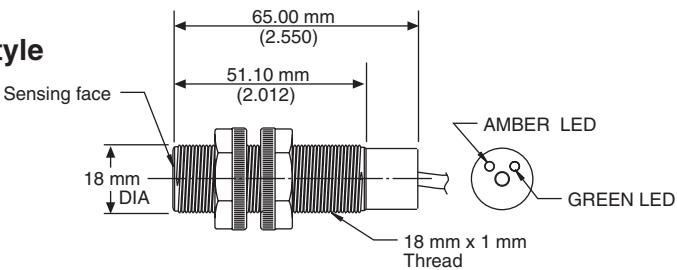


Dimensions

Barrel Cable Style

(ULTEM® plastic and stainless steel)

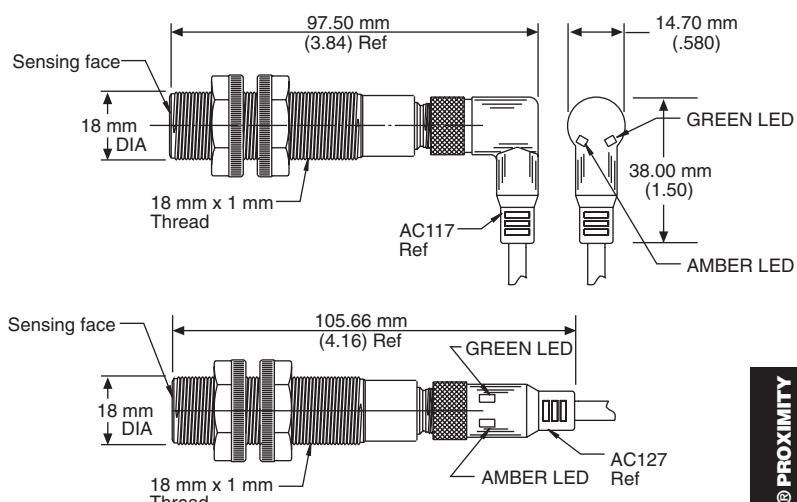
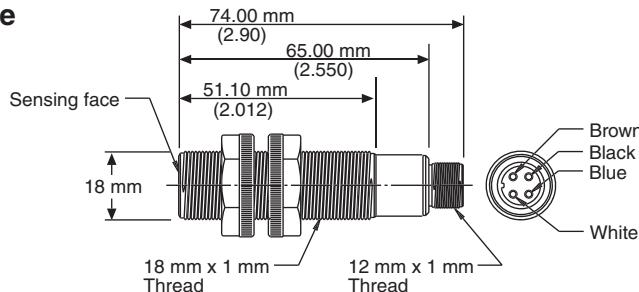
SM600A-XXX-XX, SM600A-XXX-XXS



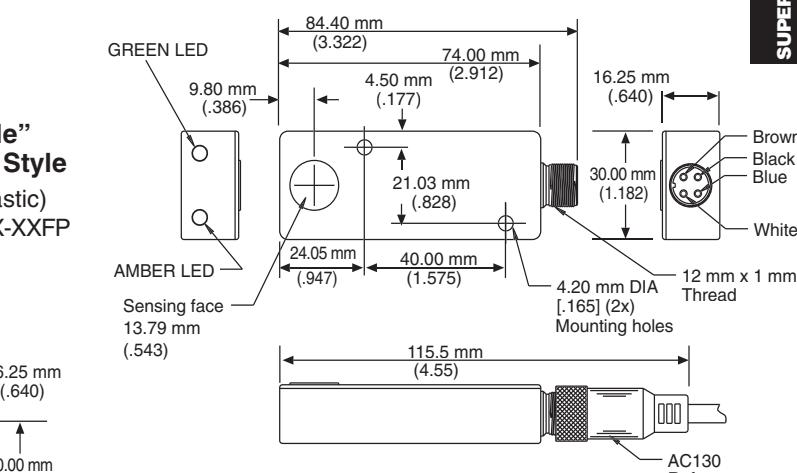
Barrel Connector Style

(ULTEM® plastic and stainless steel)

SM650A-XXX-XX, SM650A-XXX-XXS

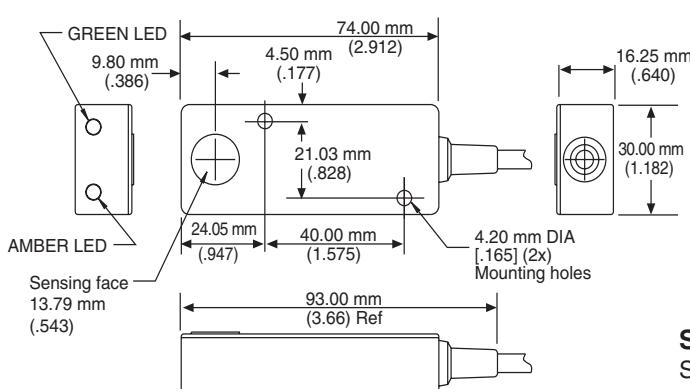


SUPERPROX® PROXIMITY
SENSORS



“Flat-profile” Connector Style

(ULTEM® plastic)
SM650A-XXX-XXFP

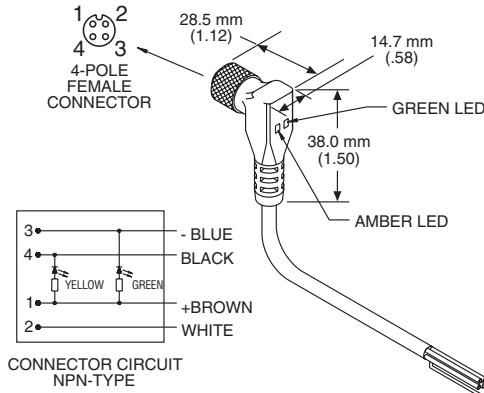


“Flat-profile” Cable Style (ULTEM® plastic)

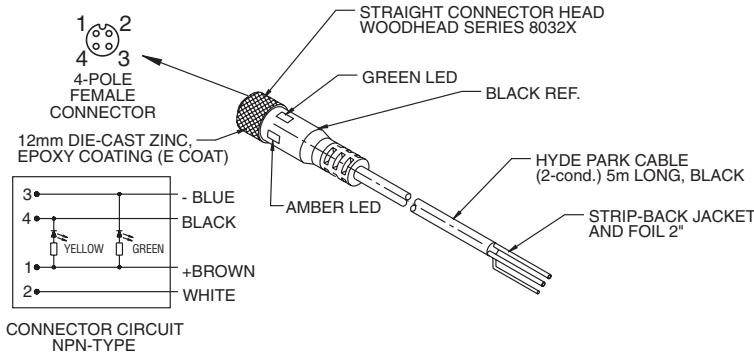
SM600A-XXX-XXFP

Mounting Accessories

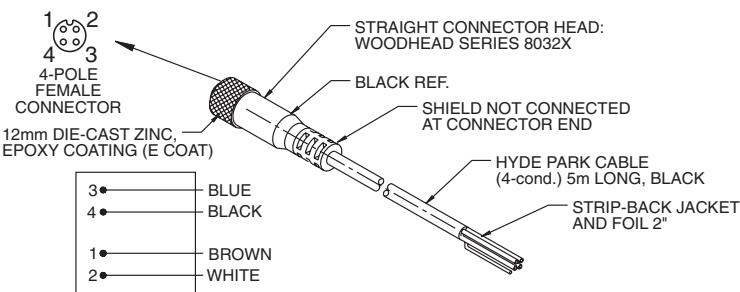
AC117 Right-angle, M12 micro, 4-conductor, connector/cable assembly, 5 m (16'), with built-in LEDs (for barrel connector-style sensors)



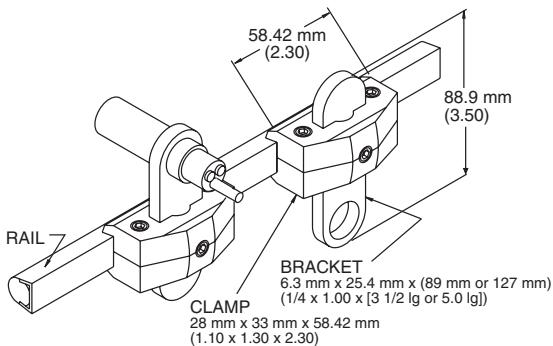
AC127 Straight, M12 micro, 4-conductor, connector/cable assembly, 5 m (16'), with built-in LEDs (for barrel connector-style sensors)



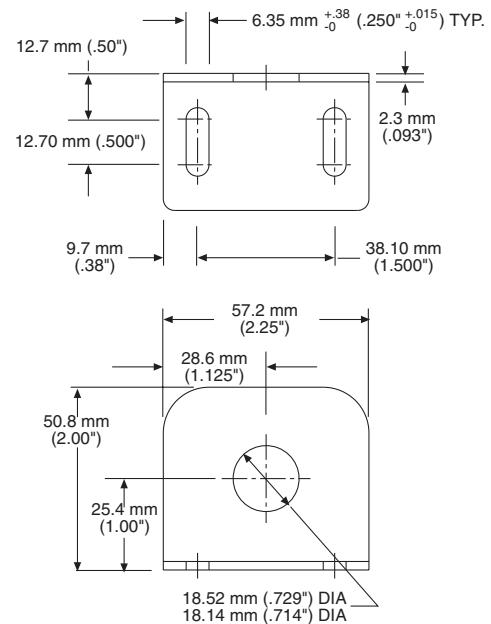
AC130 Straight, M12 micro, 4-conductor, connector/cable assembly, 5 m (16') (for flat-profile connector-style sensors)



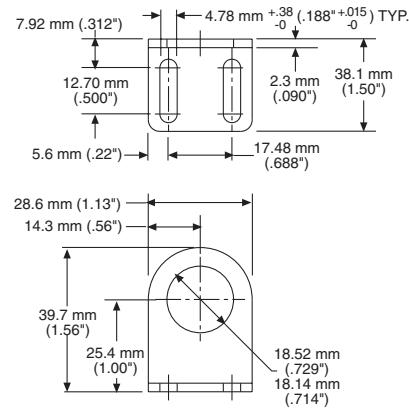
AC226 Stainless and polyamide conveyor-rail clamp/bracket set (for 18 mm barrel sensors)



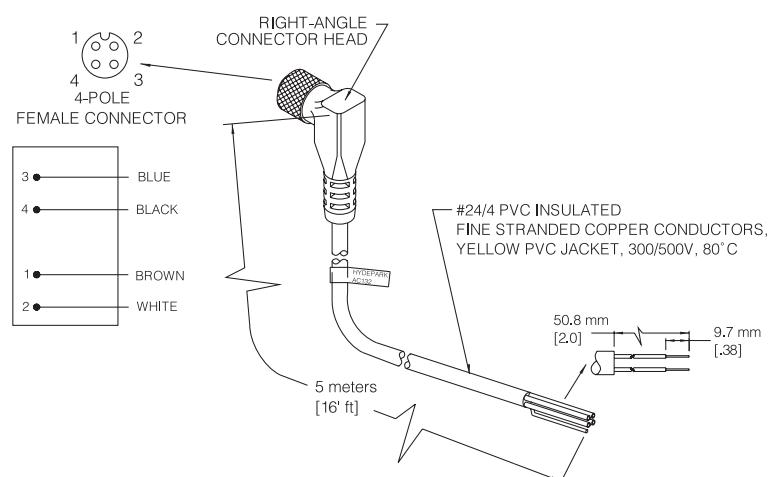
AC227 Large, right-angle, stainless, mounting bracket (for 18 mm barrel sensors)



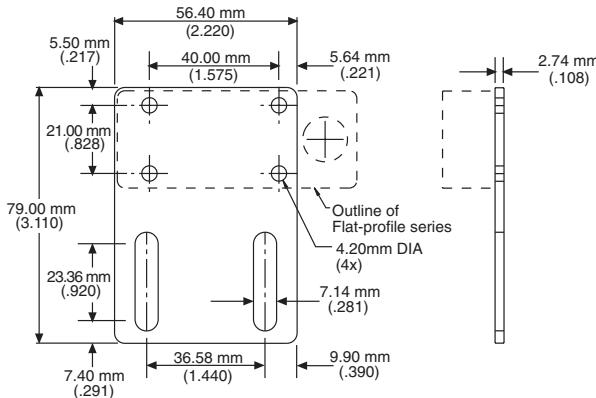
AC228 Small, right-angle, stainless, mounting bracket (for 18 mm barrel sensors)



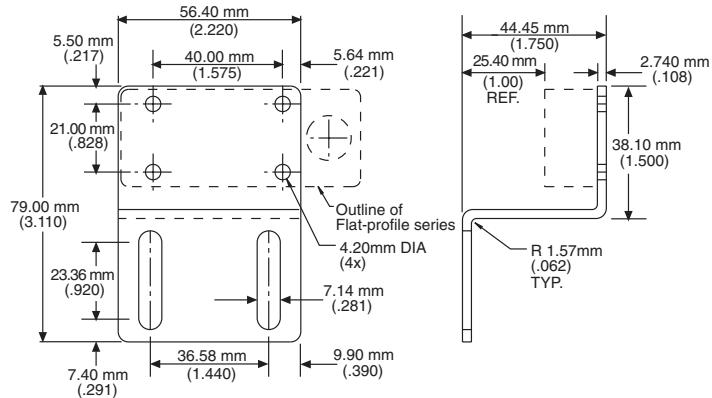
AC132 Right-angle, M12 micro, 4-conductor, connector/cable assembly, 5 m (16'), for flat-profile connector-style sensors



AC231 Straight, stainless mounting bracket (for flat-profile sensors)



AC232 S-shaped, stainless mounting bracket (for flat-profile sensors)



General Specifications

Sensing

Ranges:
Up to 254 mm (10")

Spans:
From 3.18 mm (1/8") to 228.6 mm (9")

Window Position, Initial Accuracy:
± 1.59 mm (0.062") max.

Window Position Repeatability:
± 0.69 mm (0.027") max.

Detection benchmarks:

Models with ranges to 177.8 mm (7"):
1.59 mm (1/6") diameter rod at a distance of 63.5 mm (2.5")
Max. ± 10° tilt of large flat object at a distance of 127 mm (5")

Models with ranges from over 177.8 mm (7") to 254 mm (10"):
1.59 mm (1/6") diameter rod at a distance of 76.2 mm (3")
Max. ± 10° tilt of large flat object at a distance of 203.2 mm (8")

Sonic Frequency: 500 kHz
Sonic Cone Angle: 7° (see beam plots, page 4-64)

Power Requirements

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

Current Consumption:
Cable Model: 50 mA max. (excluding load)
Connector Model: 60 mA max. (excluding load)

Power Consumption:
1 W max. (excluding load)

Output

NPN Sinking: 0 to 30 V
Maximum on-state voltage 0.2 volts @ 100 mA

PNP Sourcing: 100 mA @ 24 VDC, max.

Response Time

"On" 5 ms, "Off" 5 ms (standard)
"On" 2.0 ms, "Off" 2.0 ms (optional)

Indicators

Green LED: power "On"
Amber LED: "On" if object is detected within the window, regardless of output polarity (N.O./N.C.) style. Connector model using cable with built-in LEDs: "On" if NPN output is low.

Connections

Cable Style Models:
24 AWG, foil shield, lead-free, PVC jacket
4-conductor, 3 meters (10') long

Connector Style Models:
24 AWG, foil shield, lead-free, PVC jacket,
4-conductor, right-angle "Micro" style

Protection

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

Outputs: current-limited over-voltage, ESD, over-current

Environmental

Operating Temperature Range:
0° to 60°C @ 12 VDC supply
0° to 50°C @ 24 VDC supply

Storage Temperature Range: -40° to 100°C
(-40° to 212°F)

Operating Humidity: 100%

Protection Ratings: NEMA 4X (indoor use only), IP67

Chemical Resistance: Resists most acids and bases, including most food products.

Agency Approvals

CE Mark: CE conformity is declared to:
EN61326:1997 (annex A, industrial) including amendment A1:1998. EN55011 Group1 Class A.

Declaration of Conformity available upon request

Construction

Dimensions:
Barrel
Cable Model: 65.18 mm (2.58") long threaded
Connector Model: 18 mm dia. x 1 mm threaded housing x 102 mm (4") long, including connector/cable assembly

Flat-profile
Cable Model: 30 mm (1.182") H

x 16.25 mm (0.640") W

x 93 mm (3.66") L

Connector Model: 30 mm (1.182") H

x 16.25 mm (0.640") W

x 84.40 mm (3.32") L

Housing:

Shock and vibration resistant

Case: ULTEM® plastic - (FDA Approved)
(SS303 stainless steel available only in 18 mm barrel-style)

Transducer Face: Silicone rubber - gray
Sensor Cables: Lead-free PVC jacket, black (Model AC117)
LED: Polycarbonate

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

Accessories

18 mm Barrel Mounting Hardware and Cables

Model AC117, Right-angle, M12 micro, 4-conductor, connector/cable assembly, 5 m (16') with built-in LEDs for barrel connector-style prox sensors

Model AC127, Straight, M12 micro, 4-conductor, connector/cable assembly, 5 m (16') with built-in LEDs for barrel connector-style prox sensors

Model AC226, Stainless and polyamide conveyor- rail clamp/bracket set

Model AC227, Large, right-angle, stainless, mounting bracket

Model AC228, Small, right-angle, stainless, mounting bracket

Flat-profile Mounting Hardware and Cables

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

Model AC132, Right-angle, M12 micro, 4-conductor, connector/cable assembly, 5 m (16'), for flat-profile, connector-style prox sensors

Model AC231, Straight, stainless, mounting bracket

Model AC232, S-shaped, stainless, mounting bracket

See page 7-1 for accessory photos.

Selection Chart

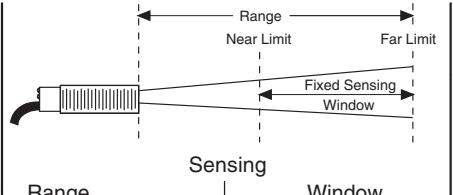
SM600 Series Proximity

Model No.	12-24 VDC	Power	Cable	Connection	Style	Range	Window	Transducer	Materials			Standard On/Off	Special	Features	
									Silicone*	18mm ULTEM®	Housing	Flat-profile ULTEM®			
				Connector	Output Pins	Rev									
SM600A-201-00	■	■				51mm (2")	1.6mm (1/16")	■	■			■			
SM600A-201-00FP	■	■				51mm (2")	1.6mm (1/16")	■			■	■			
SM600A-201-00S	■	■				51mm (2")	1.6mm (1/16")	■		■		■			
SM600A-201-10	■	■				51mm (2")	1.6mm (1/16")	■	■			■			
SM600A-201-10FP	■	■				51mm (2")	1.6mm (1/16")	■			■	■			
SM600A-201-10S	■	■				51mm (2")	1.6mm (1/16")	■		■		■			
SM600A-208-00	■	■				51mm (2")	13mm (1/2")	■	■			■			
SM600A-208-00FP	■	■				51mm (2")	13mm (1/2")	■			■	■			
SM600A-208-00S	■	■				51mm (2")	13mm (1/2")	■		■		■			
SM600A-208-10	■	■				51mm (2")	13mm (1/2")	■	■			■			
SM600A-208-10FP	■	■				51mm (2")	13mm (1/2")	■			■	■			
SM600A-208-10S	■	■				51mm (2")	13mm (1/2")	■		■		■			
SM600A-212-00	■	■				51mm (2")	19mm (3/4")	■	■			■			
SM600A-212-00FP	■	■				51mm (2")	19mm (3/4")	■			■	■			
SM600A-212-00S	■	■				51mm (2")	19mm (3/4")	■		■		■			
SM600A-212-10	■	■				51mm (2")	19mm (3/4")	■	■			■			
SM600A-212-10FP	■	■				51mm (2")	19mm (3/4")	■			■	■			
SM600A-212-10S	■	■				51mm (2")	19mm (3/4")	■		■		■			
SM600A-216-00	■	■				51mm (2")	25mm (1")	■	■			■			
SM600A-216-00FP	■	■				51mm (2")	25mm (1")	■			■	■			
SM600A-216-00S	■	■				51mm (2")	25mm (1")	■		■		■			
SM600A-216-10	■	■				51mm (2")	25mm (1")	■			■	■			
SM600A-216-10FP	■	■				51mm (2")	25mm (1")	■			■	■			
SM600A-216-10S	■	■				51mm (2")	25mm (1")	■		■		■			
SM600A-301-00	■	■				77mm (3")	1.6mm (1/16")	■	■			■			
SM600A-301-00FP	■	■				77mm (3")	1.6mm (1/16")	■			■	■			
SM600A-301-00S	■	■				77mm (3")	1.6mm (1/16")	■			■	■			
SM600A-301-10	■	■				77mm (3")	1.6mm (1/16")	■	■			■			
SM600A-301-10FP	■	■				77mm (3")	1.6mm (1/16")	■			■	■			
SM600A-301-10S	■	■				77mm (3")	1.6mm (1/16")	■			■	■			
SM600A-308-00	■	■				77mm (3")	13mm (1/2")	■	■			■			
SM600A-308-00FP	■	■				77mm (3")	13mm (1/2")	■			■	■			
SM600A-308-00S	■	■				77mm (3")	13mm (1/2")	■		■		■			
SM600A-308-10	■	■				77mm (3")	13mm (1/2")	■	■			■			
SM600A-308-10FP	■	■				77mm (3")	13mm (1/2")	■			■	■			
SM600A-308-10S	■	■				77mm (3")	13mm (1/2")	■			■	■			
SM600A-312-00	■	■				77mm (3")	19mm (3/4")	■	■			■			
SM600A-312-00FP	■	■				77mm (3")	19mm (3/4")	■			■	■			
SM600A-312-00S	■	■				77mm (3")	19mm (3/4")	■			■	■			
SM600A-312-10	■	■				77mm (3")	19mm (3/4")	■	■			■			
SM600A-312-10FP	■	■				77mm (3")	19mm (3/4")	■			■	■			
SM600A-312-10S	■	■				77mm (3")	19mm (3/4")	■			■	■			
SM600A-316-00	■	■				77mm (3")	25mm (1")	■	■			■			
SM600A-316-00FP	■	■				77mm (3")	25mm (1")	■			■	■			
SM600A-316-00S	■	■				77mm (3")	25mm (1")	■			■	■			
SM600A-316-10	■	■				77mm (3")	25mm (1")	■	■			■			
SM600A-316-10FP	■	■				77mm (3")	25mm (1")	■			■	■			
SM600A-316-10S	■	■				77mm (3")	25mm (1")	■			■	■			
SM600A-332-00	■	■				77mm (3")	51mm (2")	■	■			■			
SM600A-332-00FP	■	■				77mm (3")	51mm (2")	■			■	■			
SM600A-332-00S	■	■				77mm (3")	51mm (2")	■			■	■			
SM600A-332-10	■	■				77mm (3")	51mm (2")	■	■			■			
SM600A-332-10FP	■	■				77mm (3")	51mm (2")	■			■	■			
SM600A-332-10S	■	■				77mm (3")	51mm (2")	■			■	■			
SM600A-401-00	■	■				102mm (4")	1.6mm (1/16")	■	■			■			
SM600A-401-00FP	■	■				102mm (4")	1.6mm (1/16")	■			■	■			
SM600A-401-00S	■	■				102mm (4")	1.6mm (1/16")	■			■	■			
SM600A-401-10	■	■				102mm (4")	1.6mm (1/16")	■	■			■			
SM600A-401-10FP	■	■				102mm (4")	1.6mm (1/16")	■			■	■			
SM600A-401-10S	■	■				102mm (4")	1.6mm (1/16")	■			■	■			
SM600A-408-00	■	■				102mm (4")	13mm (1/2")	■	■		■				
SM600A-408-00FP	■	■				102mm (4")	13mm (1/2")	■			■	■			
SM600A-408-00S	■	■				102mm (4")	13mm (1/2")	■			■	■			

Selection Chart

SM600 Series (cont.)

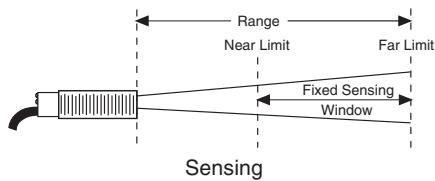
Proximity

Model No.	12-24 VDC Power	Cable Connector	Connection Style	Output Pins Rev			Transducer	Materials	Housing	Flat-profile ULTEM® Standard On/Off	Special Features
					Range	Window					
SM600A-408-10	■ ■				102mm (4")	13mm (1/2")	■	■			■
SM600A-408-10FP	■ ■				102mm (4")	13mm (1/2")	■		■		■
SM600A-408-10S	■ ■				102mm (4")	13mm (1/2")	■		■		■
SM600A-412-00	■ ■				102mm (4")	19mm (3/4")	■	■		■	
SM600A-412-00FP	■ ■				102mm (4")	19mm (3/4")	■		■	■	
SM600A-412-00S	■ ■				102mm (4")	19mm (3/4")	■		■	■	
SM600A-412-10	■ ■				102mm (4")	19mm (3/4")	■	■			■
SM600A-412-10FP	■ ■				102mm (4")	19mm (3/4")	■		■		■
SM600A-412-10S	■ ■				102mm (4")	19mm (3/4")	■		■		■
SM600A-416-00	■ ■				102mm (4")	25mm (1")	■	■		■	
SM600A-416-00FP	■ ■				102mm (4")	25mm (1")	■		■	■	
SM600A-416-00S	■ ■				102mm (4")	25mm (1")	■		■	■	
SM600A-416-10	■ ■				102mm (4")	25mm (1")	■	■			■
SM600A-416-10FP	■ ■				102mm (4")	25mm (1")	■		■		■
SM600A-416-10S	■ ■				102mm (4")	25mm (1")	■		■		■
SM600A-432-00	■ ■				102mm (4")	51mm (2")	■	■			
SM600A-432-00FP	■ ■				102mm (4")	51mm (2")	■		■	■	
SM600A-432-00S	■ ■				102mm (4")	51mm (2")	■		■		
SM600A-432-10	■ ■				102mm (4")	51mm (2")	■	■			■
SM600A-432-10FP	■ ■				102mm (4")	51mm (2")	■		■		■
SM600A-432-10S	■ ■				102mm (4")	51mm (2")	■		■		■
SM600A-448-00*	■ ■				102mm (4")	77mm (3")	■	■		■	
SM600A-448-00FP*	■ ■				102mm (4")	77mm (3")	■		■	■	
SM600A-448-00S*	■ ■				102mm (4")	77mm (3")	■		■	■	
SM600A-448-10	■ ■				102mm (4")	77mm (3")	■	■			■
SM600A-448-10FP	■ ■				102mm (4")	77mm (3")	■		■		■
SM600A-448-10S	■ ■				102mm (4")	77mm (3")	■		■		■
SM600A-501-00	■ ■				127mm (5")	1.6mm (1/16")	■	■			■
SM600A-501-00FP	■ ■				127mm (5")	1.6mm (1/16")	■		■	■	
SM600A-501-00S	■ ■				127mm (5")	1.6mm (1/16")	■		■		
SM600A-501-10	■ ■				127mm (5")	1.6mm (1/16")	■	■			■
SM600A-501-10FP	■ ■				127mm (5")	1.6mm (1/16")	■		■		■
SM600A-501-10S	■ ■				127mm (5")	1.6mm (1/16")	■		■		■
SM600A-508-00	■ ■				127mm (5")	13mm (1/2")	■	■		■	
SM600A-508-00FP	■ ■				127mm (5")	13mm (1/2")	■		■	■	
SM600A-508-00S	■ ■				127mm (5")	13mm (1/2")	■		■	■	
SM600A-508-10	■ ■				127mm (5")	13mm (1/2")	■	■			■
SM600A-508-10FP	■ ■				127mm (5")	13mm (1/2")	■		■		■
SM600A-508-10S	■ ■				127mm (5")	13mm (1/2")	■		■		■
SM600A-512-00	■ ■				127mm (5")	19mm (3/4")	■	■			■
SM600A-512-00FP	■ ■				127mm (5")	19mm (3/4")	■		■	■	
SM600A-512-00S	■ ■				127mm (5")	19mm (3/4")	■		■		
SM600A-512-10	■ ■				127mm (5")	19mm (3/4")	■	■			■
SM600A-512-10FP	■ ■				127mm (5")	19mm (3/4")	■		■		■
SM600A-512-10S	■ ■				127mm (5")	19mm (3/4")	■		■		■
SM600A-516-00	■ ■				127mm (5")	25mm (1")	■	■			■
SM600A-516-00FP	■ ■				127mm (5")	25mm (1")	■		■	■	
SM600A-516-00S	■ ■				127mm (5")	25mm (1")	■		■		
SM600A-516-10	■ ■				127mm (5")	25mm (1")	■	■			■
SM600A-516-10FP	■ ■				127mm (5")	25mm (1")	■		■		■
SM600A-516-10S	■ ■				127mm (5")	25mm (1")	■		■		■
SM600A-532-00	■ ■				127mm (5")	51mm (2")	■	■			■
SM600A-532-00FP	■ ■				127mm (5")	51mm (2")	■		■	■	
SM600A-532-00S	■ ■				127mm (5")	51mm (2")	■		■		
SM600A-532-10	■ ■				127mm (5")	51mm (2")	■	■			■
SM600A-532-10FP	■ ■				127mm (5")	51mm (2")	■		■		■
SM600A-532-10S	■ ■				127mm (5")	51mm (2")	■		■		■
SM600A-548-00	■ ■				127mm (5")	77mm (3")	■	■			■
SM600A-548-00FP	■ ■				127mm (5")	77mm (3")	■		■	■	
SM600A-548-00S	■ ■				127mm (5")	77mm (3")	■		■	■	
SM600A-548-10	■ ■				127mm (5")	77mm (3")	■	■			■
SM600A-548-10FP	■ ■				127mm (5")	77mm (3")	■		■		■
SM600A-548-10S	■ ■				127mm (5")	77mm (3")	■		■		■

Selection Chart

SM600 Series (cont.)

Proximity



Selection Chart

SM600 Series (cont.)

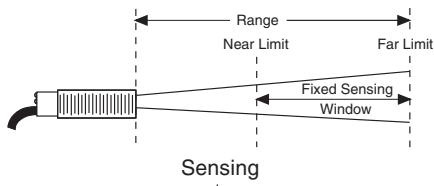
Proximity

Model No.	12-24 VDC Power	Cable	Connector Style	Connection Output Pins Rev	Range	Sensing Window	Transducer	Materials	Housing	Special Features	
										Silicone*	18mm ULTEM®
SM600A-716-10	■	■			178mm (7")	25mm (1")	■	■			
SM600A-716-10FP	■	■			178mm (7")	25mm (1")	■		■		
SM600A-716-10S	■	■			178mm (7")	25mm (1")	■	■	■		
SM600A-732-00	■	■			178mm (7")	51mm (2")	■	■		■	
SM600A-732-00FP	■	■			178mm (7")	51mm (2")	■		■	■	
SM600A-732-00S	■	■			178mm (7")	51mm (2")	■		■		
SM600A-732-10	■	■			178mm (7")	51mm (2")	■	■			
SM600A-732-10FP	■	■			178mm (7")	51mm (2")	■		■		
SM600A-732-10S	■	■			178mm (7")	51mm (2")	■	■	■		
SM600A-748-00	■	■			178mm (7")	77mm (3")	■	■		■	
SM600A-748-00FP	■	■			178mm (7")	77mm (3")	■		■	■	
SM600A-748-00S	■	■			178mm (7")	77mm (3")	■		■		
SM600A-748-10	■	■			178mm (7")	77mm (3")	■	■			
SM600A-748-10FP	■	■			178mm (7")	77mm (3")	■		■		
SM600A-748-10S	■	■			178mm (7")	77mm (3")	■		■		
SM600A-780-00	■	■			178mm (7")	127mm (5")	■	■		■	
SM600A-780-00FP	■	■			178mm (7")	127mm (5")	■		■	■	
SM600A-780-00S	■	■			178mm (7")	127mm (5")	■		■		
SM600A-780-10	■	■			178mm (7")	127mm (5")	■	■			
SM600A-780-10FP	■	■			178mm (7")	127mm (5")	■		■		
SM600A-780-10S	■	■			178mm (7")	127mm (5")	■		■		
SM650A-201-00	■	■			51mm (2")	1.6mm (1/16")	■	■			
SM650A-201-00FP	■	■			51mm (2")	1.6mm (1/16")	■		■		
SM650A-201-00S	■	■			51mm (2")	1.6mm (1/16")	■		■		
SM650A-201-10	■	■			51mm (2")	1.6mm (1/16")	■	■			
SM650A-201-10FP	■	■			51mm (2")	1.6mm (1/16")	■		■		
SM650A-201-10S	■	■			51mm (2")	1.6mm (1/16")	■		■		
SM650A-208-00	■	■			51mm (2")	13mm (1/2")	■	■			
SM650A-208-00FP	■	■			51mm (2")	13mm (1/2")	■		■		
SM650A-208-00S	■	■			51mm (2")	13mm (1/2")	■		■		
SM650A-208-10	■	■			51mm (2")	13mm (1/2")	■		■		
SM650A-208-10FP	■	■			51mm (2")	13mm (1/2")	■		■		
SM650A-208-10S	■	■			51mm (2")	13mm (1/2")	■		■		
SM650A-212-00	■	■			51mm (2")	19mm (3/4")	■	■			
SM650A-212-00FP	■	■			51mm (2")	19mm (3/4")	■		■		
SM650A-212-00S	■	■			51mm (2")	19mm (3/4")	■		■		
SM650A-212-10	■	■			51mm (2")	19mm (3/4")	■	■			
SM650A-212-10FP	■	■			51mm (2")	19mm (3/4")	■		■		
SM650A-212-10S	■	■			51mm (2")	19mm (3/4")	■		■		
SM650A-216-00	■	■			51mm (2")	25mm (1")	■	■			
SM650A-216-00FP	■	■			51mm (2")	25mm (1")	■		■		
SM650A-216-00S	■	■			51mm (2")	25mm (1")	■		■		
SM650A-216-10	■	■			51mm (2")	25mm (1")	■		■		
SM650A-216-10FP	■	■			51mm (2")	25mm (1")	■		■		
SM650A-216-10S	■	■			51mm (2")	25mm (1")	■		■		
SM650A-301-00	■	■			77mm (3")	1.6mm (1/16")	■	■			
SM650A-301-00FP	■	■			77mm (3")	1.6mm (1/16")	■		■		
SM650A-301-00S	■	■			77mm (3")	1.6mm (1/16")	■		■		
SM650A-301-10	■	■			77mm (3")	1.6mm (1/16")	■		■		
SM650A-301-10FP	■	■			77mm (3")	1.6mm (1/16")	■		■		
SM650A-301-10S	■	■			77mm (3")	1.6mm (1/16")	■		■		
SM650A-308-00	■	■			77mm (3")	13mm (1/2")	■	■			
SM650A-308-00FP	■	■			77mm (3")	13mm (1/2")	■		■		
SM650A-308-00S	■	■			77mm (3")	13mm (1/2")	■		■		
SM650A-308-10	■	■			77mm (3")	13mm (1/2")	■	■			
SM650A-308-10FP	■	■			77mm (3")	13mm (1/2")	■		■		
SM650A-308-10S	■	■			77mm (3")	13mm (1/2")	■		■		
SM650A-312-00	■	■			77mm (3")	19mm (3/4")	■	■			
SM650A-312-00FP	■	■			77mm (3")	19mm (3/4")	■		■		
SM650A-312-00S	■	■			77mm (3")	19mm (3/4")	■		■		
SM650A-312-10	■	■			77mm (3")	19mm (3/4")	■	■			
SM650A-312-10FP	■	■			77mm (3")	19mm (3/4")	■		■		
SM650A-312-10S	■	■			77mm (3")	19mm (3/4")	■		■		

Selection Chart

SM600 Series (cont.)

Proximity



Selection Chart

SM600 Series (cont.)

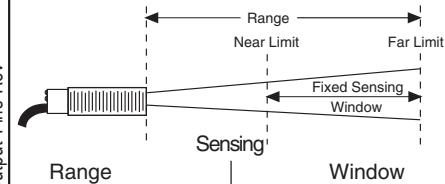
Proximity

Model No.	12-24 VDC	Power	Cable	Connector	Connection Style	Output Pins	Rev	Sensing		Transducer	Materials	Housing	Flat-profile ULTEM®	Standard On/Off	N.O. Output	Special Features	N.C. Output	Features
								Range	Window									
SM650A-512-10	■	■	127mm (5")	19mm (3/4")						■	■						■	
SM650A-512-10FP	■	■	127mm (5")	19mm (3/4")						■			■			■		■
SM650A-512-10S	■	■	127mm (5")	19mm (3/4")						■		■				■		■
SM650A-516-00	■	■	127mm (5")	25mm (1")						■	■				■			
SM650A-516-00FP	■	■	127mm (5")	25mm (1")						■		■			■		■	
SM650A-516-00S	■	■	127mm (5")	25mm (1")						■		■			■		■	
SM650A-516-10	■	■	127mm (5")	25mm (1")						■	■				■		■	
SM650A-516-10FP	■	■	127mm (5")	25mm (1")						■		■			■		■	
SM650A-516-10S	■	■	127mm (5")	25mm (1")						■		■			■		■	
SM650A-532-00	■	■	127mm (5")	51mm (2")						■	■				■			
SM650A-532-00FP	■	■	127mm (5")	51mm (2")						■		■			■		■	
SM650A-532-00S	■	■	127mm (5")	51mm (2")						■		■			■		■	
SM650A-532-10	■	■	127mm (5")	51mm (2")						■							■	
SM650A-532-10FP	■	■	127mm (5")	51mm (2")						■		■			■		■	
SM650A-532-10S	■	■	127mm (5")	51mm (2")						■		■			■		■	
SM650A-548-00	■	■	127mm (5")	77mm (3")						■							■	
SM650A-548-00FP	■	■	127mm (5")	77mm (3")						■		■			■		■	
SM650A-548-00S	■	■	127mm (5")	77mm (3")						■		■			■		■	
SM650A-548-10	■	■	127mm (5")	77mm (3")						■		■			■		■	
SM650A-548-10FP	■	■	127mm (5")	77mm (3")						■		■			■		■	
SM650A-548-10S	■	■	127mm (5")	77mm (3")						■		■			■		■	
SM650A-601-00	■	■	152mm (6")	1.6mm (1/16")						■	■				■			
SM650A-601-00FP	■	■	152mm (6")	1.6mm (1/16")						■		■			■			
SM650A-601-00S	■	■	152mm (6")	1.6mm (1/16")						■		■			■			
SM650A-601-10	■	■	152mm (6")	1.6mm (1/16")						■	■						■	
SM650A-601-10FP	■	■	152mm (6")	1.6mm (1/16")						■		■			■			
SM650A-601-10S	■	■	152mm (6")	1.6mm (1/16")						■		■			■			
SM650A-608-00	■	■	152mm (6")	13mm (1/2")						■	■				■			
SM650A-608-00FP	■	■	152mm (6")	13mm (1/2")						■		■			■			
SM650A-608-00S	■	■	152mm (6")	13mm (1/2")						■		■			■			
SM650A-608-10	■	■	152mm (6")	13mm (1/2")						■		■			■			
SM650A-608-10FP	■	■	152mm (6")	13mm (1/2")						■		■			■			
SM650A-608-10S	■	■	152mm (6")	13mm (1/2")						■		■			■			
SM650A-612-00	■	■	152mm (6")	19mm (3/4")						■	■						■	
SM650A-612-00FP	■	■	152mm (6")	19mm (3/4")						■		■			■			
SM650A-612-00S	■	■	152mm (6")	19mm (3/4")						■		■			■			
SM650A-612-10	■	■	152mm (6")	19mm (3/4")						■		■					■	
SM650A-612-10FP	■	■	152mm (6")	19mm (3/4")						■		■			■			
SM650A-612-10S	■	■	152mm (6")	19mm (3/4")						■		■			■			
SM650A-616-00	■	■	152mm (6")	25mm (1")						■		■					■	
SM650A-616-00FP	■	■	152mm (6")	25mm (1")						■		■			■			
SM650A-616-00S	■	■	152mm (6")	25mm (1")						■		■			■			
SM650A-616-10	■	■	152mm (6")	25mm (1")						■		■					■	
SM650A-616-10FP	■	■	152mm (6")	25mm (1")						■		■			■			
SM650A-616-10S	■	■	152mm (6")	25mm (1")						■		■			■			
SM650A-632-00	■	■	152mm (6")	51mm (2")						■		■					■	
SM650A-632-00FP	■	■	152mm (6")	51mm (2")						■		■			■			
SM650A-632-00S	■	■	152mm (6")	51mm (2")						■		■			■			
SM650A-632-10	■	■	152mm (6")	51mm (2")						■		■					■	
SM650A-632-10FP	■	■	152mm (6")	51mm (2")						■		■			■			
SM650A-632-10S	■	■	152mm (6")	51mm (2")						■		■			■			
SM650A-648-00	■	■	152mm (6")	77mm (3")						■		■					■	
SM650A-648-00FP	■	■	152mm (6")	77mm (3")						■		■			■			
SM650A-648-00S	■	■	152mm (6")	77mm (3")						■		■			■			
SM650A-648-10	■	■	152mm (6")	77mm (3")						■		■					■	
SM650A-648-10FP	■	■	152mm (6")	77mm (3")						■		■			■			
SM650A-648-10S	■	■	152mm (6")	77mm (3")						■		■			■			
SM650A-680-00	■	■	152mm (6")	127mm (5")						■		■					■	
SM650A-680-00FP	■	■	152mm (6")	127mm (5")						■		■			■			
SM650A-680-00S	■	■	152mm (6")	127mm (5")						■		■			■			
SM650A-680-10	■	■	152mm (6")	127mm (5")						■		■					■	
SM650A-680-10FP	■	■	152mm (6")	127mm (5")						■		■			■			
SM650A-680-10S	■	■	152mm (6")	127mm (5")						■		■			■			

Selection Chart

SM600 Series (cont.)

Proximity

Model No.	12-24 VDC Power	Cable	Connector	Connection	Style	Output Pins Rev				Transducer	Materials		
							Range	Sensing	Window		Silicone*	18mm ULTEM®	18mm Stainless
SM650A-701-00	■	■	■	■	■	■	178mm (7")	1.6mm (1/16")		■	■		
SM650A-701-00FP	■	■	■	■	■	■	178mm (7")	1.6mm (1/16")		■	■		
SM650A-701-00S	■	■	■	■	■	■	178mm (7")	1.6mm (1/16")		■	■		
SM650A-701-10	■	■	■	■	■	■	178mm (7")	1.6mm (1/16")		■	■		
SM650A-701-10FP	■	■	■	■	■	■	178mm (7")	1.6mm (1/16")		■	■		
SM650A-701-10S	■	■	■	■	■	■	178mm (7")	1.6mm (1/16")		■	■		
SM650A-708-00	■	■	■	■	■	■	178mm (7")	13mm (1/2")		■	■		
SM650A-708-00FP	■	■	■	■	■	■	178mm (7")	13mm (1/2")		■	■		
SM650A-708-00S	■	■	■	■	■	■	178mm (7")	13mm (1/2")		■	■		
SM650A-708-10	■	■	■	■	■	■	178mm (7")	13mm (1/2")		■	■		
SM650A-708-10FP	■	■	■	■	■	■	178mm (7")	13mm (1/2")		■	■		
SM650A-708-10S	■	■	■	■	■	■	178mm (7")	13mm (1/2")		■	■		
SM650A-712-00	■	■	■	■	■	■	178mm (7")	19mm (3/4")		■	■		
SM650A-712-00FP	■	■	■	■	■	■	178mm (7")	19mm (3/4")		■	■		
SM650A-712-00S	■	■	■	■	■	■	178mm (7")	19mm (3/4")		■	■		
SM650A-712-10	■	■	■	■	■	■	178mm (7")	19mm (3/4")		■	■		
SM650A-712-10FP	■	■	■	■	■	■	178mm (7")	19mm (3/4")		■	■		
SM650A-712-10S	■	■	■	■	■	■	178mm (7")	19mm (3/4")		■	■		
SM650A-716-00	■	■	■	■	■	■	178mm (7")	25mm (1")		■	■		
SM650A-716-00FP	■	■	■	■	■	■	178mm (7")	25mm (1")		■	■		
SM650A-716-00S	■	■	■	■	■	■	178mm (7")	25mm (1")		■	■		
SM650A-716-10	■	■	■	■	■	■	178mm (7")	25mm (1")		■	■		
SM650A-716-10FP	■	■	■	■	■	■	178mm (7")	25mm (1")		■	■		
SM650A-716-10S	■	■	■	■	■	■	178mm (7")	25mm (1")		■	■		
SM650A-732-00	■	■	■	■	■	■	178mm (7")	51mm (2")		■	■		
SM650A-732-00FP	■	■	■	■	■	■	178mm (7")	51mm (2")		■	■		
SM650A-732-00S	■	■	■	■	■	■	178mm (7")	51mm (2")		■	■		
SM650A-732-10	■	■	■	■	■	■	178mm (7")	51mm (2")		■	■		
SM650A-732-10FP	■	■	■	■	■	■	178mm (7")	51mm (2")		■	■		
SM650A-732-10S	■	■	■	■	■	■	178mm (7")	51mm (2")		■	■		
SM650A-748-00	■	■	■	■	■	■	178mm (7")	77mm (3")		■	■		
SM650A-748-00FP	■	■	■	■	■	■	178mm (7")	77mm (3")		■	■		
SM650A-748-00S	■	■	■	■	■	■	178mm (7")	77mm (3")		■	■		
SM650A-748-10	■	■	■	■	■	■	178mm (7")	77mm (3")		■	■		
SM650A-748-10FP	■	■	■	■	■	■	178mm (7")	77mm (3")		■	■		
SM650A-748-10S	■	■	■	■	■	■	178mm (7")	77mm (3")		■	■		
SM650A-780-00	■	■	■	■	■	■	178mm (7")	127mm (5")		■	■		
SM650A-780-00FP	■	■	■	■	■	■	178mm (7")	127mm (5")		■	■		
SM650A-780-00S	■	■	■	■	■	■	178mm (7")	127mm (5")		■	■		
SM650A-780-10	■	■	■	■	■	■	178mm (7")	127mm (5")		■	■		
SM650A-780-10FP	■	■	■	■	■	■	178mm (7")	127mm (5")		■	■		
SM650A-780-10S	■	■	■	■	■	■	178mm (7")	127mm (5")		■	■		

* = Most commonly stocked sensors

* = See definition in *Sensing Terms*.

All possible sensor configurations are not listed here.