For full product information, visit www.sti.com. Use the SpeedSpec Code or scan the QR Code for quick access to the specific web page.

B

Compact Safety Laser Scanner

New Industry First!
EtherNet/IP Capable for Status and Measurement Data Reporting

- Compact size (104.5 mm height), power efficient (5 W) and light weight (1.3 kg) for longer AGV battery life
- 70 sets of safety zone and warning zone combinations, for complex changes in zone guarding parameters
- Configuration memory block, no need to reprogram after sensor replacement, minimal down time
- Configurable minimum object resolution of 30, 40, 50 or 70 mm, for hand and arm detection applications
- 8 Individual Sector Indicators and LED indicators, determine scanner status at a glance
- Easy-to-use Software Tool simplifies creation of complex zone combinations
- Reference Boundary Monitoring function, prevents unauthorized changes in the scanner position
- Type 3 Safety Laser Scanner complies with IEC61496-1/-3
- Performance Level d and category 3 (ISO13849-1)
- A Rapid Delivery Product: Select models are available for shipment today or within 3 to 5 days

EtherNet/IP™
conformance tested

CE c(UL)us

EtherNet/IP for Status and Measurement Data NEW!

The OS32C with EtherNet/IP can be monitored by ODVA EtherNet/IP compliant products such as PLCs and HMIs. System status, zone status, and measurement data can all be monitored over EtherNet/IP.

EtherNet/IP

Scanner Safety Outputs

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Specifications

Sensor Type	Type 3 Safety Laser Scanner
Safety Category	Category 3, Performance Level d (ISO13849-1: 2008)
Detection Capability	Configurable; Non-transparent with a diameter of 30, 40, 50 or 70 mm (1.8% reflectivity or greater)
Monitoring Zone	Monitoring Zone Set Count: (Safety Zone + 2 Warning Zones) x 70 sets
Operating Range	Safety zone: 1.75 m (min. object resolution of 30 mm), 2.5 m (min. object resolution of 40 mm), 3.0 m (min. object resolution of 50 mm or 70 mm); Warning Zone: 10 m
Maximum Measurement Error	100 mm *1
Detection Angle	270°
Angular Resolution	0.4°
Laser Beam Diameter	6 mm at optics cover, 14 mm at 3 m.
Laser Scan Plane Height	67 mm from the bottom of the scanner (see dimensional drawings for more detail)
Response Time	Response time from ON to OFF: From 80 ms (2 scans) to 680 ms (up to 17 scans) Response time from OFF to ON: Response time from ON to OFF + 100 ms to 60 s (configurable)
Zone Switching Time	20 to 320 ms
Line Voltage	24 VDC +25%/-30% (ripple p-p 2.5 V max.) *2
Power Consumption	Normal operation: 5 W max., 4 W typical (without output load) *3 Standby mode: 3.75 W (without output load)
Emission Source (Wavelength)	Infrared Laser Diode (905 nm)
Laser Protection Class	Class 1: IEC/EN60825-1 (2007); Class 1: JIS6802 (2005); Class I: CFR21 1040.10, 1040.11
Safety Output (OSSD)	PNP transistor x 2, load current of 250mA max., residual voltage of 2 V max., load capacity of 2.2 µf max., leak current of 1 mA max. *3, *4, *5
Auxiliary Output (Non-Safety)	NPN/PNP transistor x 1, load current of 100 mA max., residual voltage of 2 V max., leak current of 1 mA max. *4, *5, *7
Warning Output (Non-Safety)	NPN/PNP transistor x 1, load current of 100 mA max., residual voltage of 2 V max., leak current of 1 mA max. *4, *5, *7
Output Operation Mode	Auto Start, Start Interlock, Start/Restart Interlock
Input	External Device Monitoring (EDM)	ON: 0 V short (input current of 50 mA), OFF: Open
	Start	ON: 0 V short (input current of 20 mA), OFF: Open
	Zone Select	ON: 24 V short (input current of 5 mA), OFF: Open
	Stand-by	ON: 24 V short (input current of 5 mA), OFF: Open
Connection Type	Power Cable: 18-pin mini-connector (pigtail); Communication Cable: M12, 4-pin connector
Connection with PC *6	Communication: Ethernet OS Supported: Windows 2000, Windows XP, Windows Vista, or Windows 7
Indicators	RUN indicator: Green, STOP indicator: Red, Interlock Indicator: Yellow, Warning Output Indicator: Orange, Status/Diagnostic Display: 2 x 7-segment LEDs, Intrusion Indicators: Red LED x 8
Protective Circuit	Protection against output load short and reverse power connection
Ambient Temperature	Operation: -10 to 50°C, Storage: -25 to 70°C
Ambient Humidity	Operation & Storage: 95% RH max., non-condensing
Ambient Operation Illumination	Incandescent lamp: Illumination on receiving surface 1500 lx max. (an angle of laser scanning plane and disturbance light must be ±5 degrees or more)
Enclosure Rating	IP65 (IEC60529)
Enclosure	Sensor head: Die-cast aluminum, optical cover: Polycarbonate, I/O block: Die-cast aluminum
Dimensions (W x H x D)	133.0 x 104.5 x 142.7 mm (except cable)
Dielectric Withstand Voltage	350 VAC, 50/60 Hz, 1 minute
Insulation Resistance	20 mega-ohm or higher (500 VDC)
Impact Resistance	98 m/s² 1,000 times for each of X, Y, and Z directions (IEC 60068-2-29)
Vibration	10 to 55 Hz double-amplitude of 0.7 mm, 20 sweepings for X, Y, and Z directions (IEC60068-2-6)
Weight (Main Unit only)	1.3 kg
Power Cable	Up to 30 m
Communication Cable	Up to 100 m for 100 BASE-T Cat 5 cable
Accessories	CD-ROM (User's Manual and Configuration Tool)
Approvals	EN61496-1 (Type 3 ESPE), EN61496-3 (Type 3 AOPDDR), EN61508 (SIL2), IEC61496-1 (Type 3 ESPE), IEC61496-3 (Type 3 AOPDDR), IEC61508 (SIL2), UL508, UL1998, CAN/CSA-C22.2 No. 14, -CAN/CSA-C22.2 No. 0.8

*1. An additional measurement error may need to be added due to reflective backgrounds.
*2. For power source specification, contact OMRON Automation and Safety.
*3. Rated current of OS32C is 1.025 A max. (OS32C 210 mA + OSSD A load + OSSD B load + Auxiliary output load + Warning output load + Functional Inputs).
    Where functional inputs are: EDM input ... 50 mA Start input ... 20 mA Standby input ... 5 mA Zone X input ... 5 mA x 8 (eight zone set select inputs)
*4. Output voltage is Input voltage - 2.0 VDC.
*5. Total consumption current of 2 OSSDs, auxiliary output, and warning output must not exceed 700 mA.
*6. An ethernet cable with an M12, 4-pin connector is required.
*7. Output polarity (NPN/PNP) is configurable via the configuration tool.

System Components and Functions

B
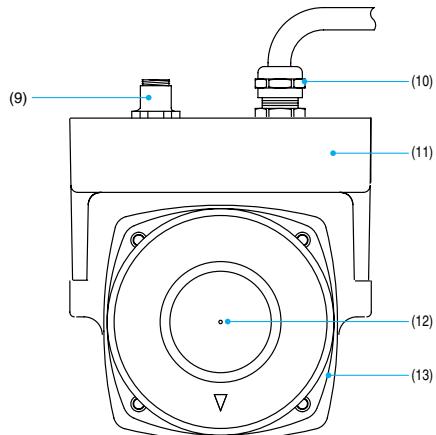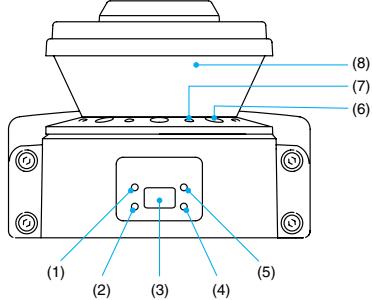
| Number	Component	Function
(1)	RUN indicator (green)	Will turn ON when safety zone is clear and OSSDs are ON.
(2)	Interlock Indicator (yellow)	Will turn ON when in interlock state, blink under lockout, and blink in case of a failure.
(3)	Status/Diagnostic Display	The scanner status, configuration/operation, or failure is displayed.
(4)	Warning Output Indicator (orange)	Will turn ON when the warning output is ON.
(5)	STOP indicator (red)	Will turn ON when safety zone is blocked, OSSDs are OFF or under interlock state.
(6)	Dust Ring	Dust detection cover with reflective surface, for dust accumulation detection
(7)	Individual Sector Indicators	Will turn ON when an intrusion is detected in the safety zone, 8 sectors total. Each sector = 33.75°.
(8)	Scan window	The window where the laser light is emitted and received.
(9)	Ethernet Cable	Used for Ethernet cable connection. *
(10)	Power Connector	18-pin connector (pigtail). *
(11)	I/O Block	Connector module
(12)	Center of rotation	Indicates the location of the axis around which the laser emits.
(13)	Sensor block	Sensor head; field replaceable.

*For OS32C-SP1, each connector is located on the left as viewed from the back of the I/O block.

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Wiring

Basic Connection with Single OS32C Unit
Category 3, Performance Level d (ISO13849-1)

S1 : Start Input
S2 : Zone Select Switch
S3 : Standby Switch
ED1, ED2: Forced guided relay
M1 : 3-Phase Motor
E1 : 24 VDC Power

*1. External devices (ED1, ED2) are forced guide relays. (G7Z, G7SA, G7S, etc)
*2. If the External Device Monitoring is not used, connect brown/white wires to 0 V, and then turn OFF the External Device Monitoring with the configuration software.
*3. Use NC-contact for a start input.
*4. For zone select switch setting, refer to OS32C Series User's Manual. When using only one zone, no connection is needed for the zone select inputs.
Note: This wiring example is for category 3.

OS32C Configuration
- External Device Monitoring Enabled
- Start/Restart Interlock

Connection to AGV Controls
## Category 3, Performance Level d (ISO13849-1)

Note: This wiring example is for category 3.
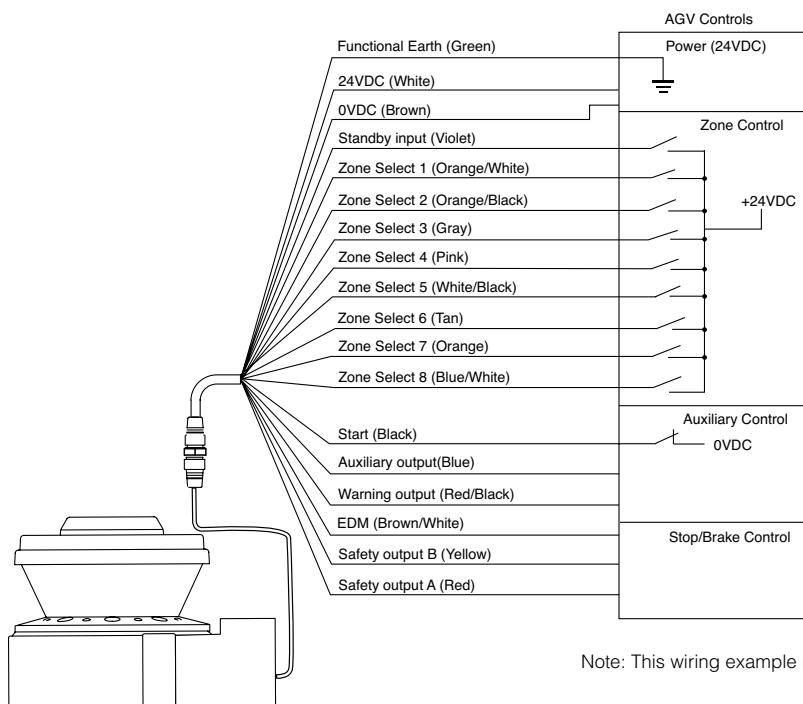
OS32C Configuration
- External Device Monitoring Disabled
- Automatic Start

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Wiring (continued)

Connecting to the Controller G9SA-301
Category 3, Performance Level d (ISO13849-1)
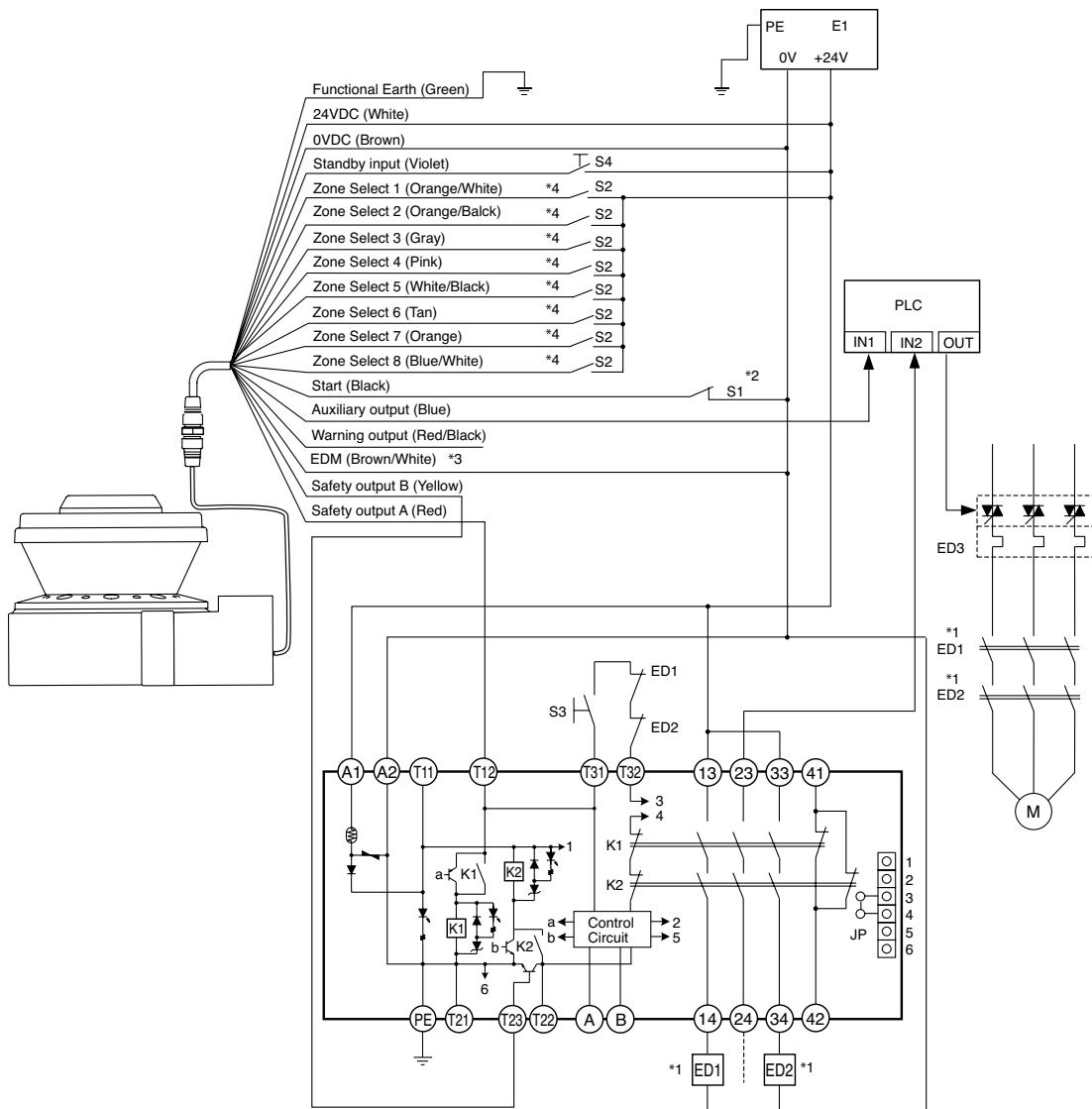
ED1, ED2: Forced guided relay
ED3 : Solid state contactor (G3J)
M   : 3-Phase Motor
S1   : Start Input
         (use for releasing lockout)
S2   : Zone Select Switch
S4   : Standby Switch
S3   : Reset Switch
E1   : 24 VDC Power
PLC : Programmable Controller
         (This is for monitoring only and
          unrelated to a safety system)

*1. External devices (ED1, ED2) are forced guide relays. (G7Z, G7SA, G7S, etc)
*2. Use NC-contact for a start input.
*3. If the External Device Monitoring is not used, connect brown/white wires to 0V, and then
    turn OFF the External Device Monitoring with the configuration software.
*4. For zone select switch setting, refer to OS32C Series User's Manual. When using only one
    zone, no connection is needed for the zone select inputs.
Note: This wiring example is for category 3.

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Dimensions

mm (in.)

OS32C-BP

OS32C with Back Location Cable Entry
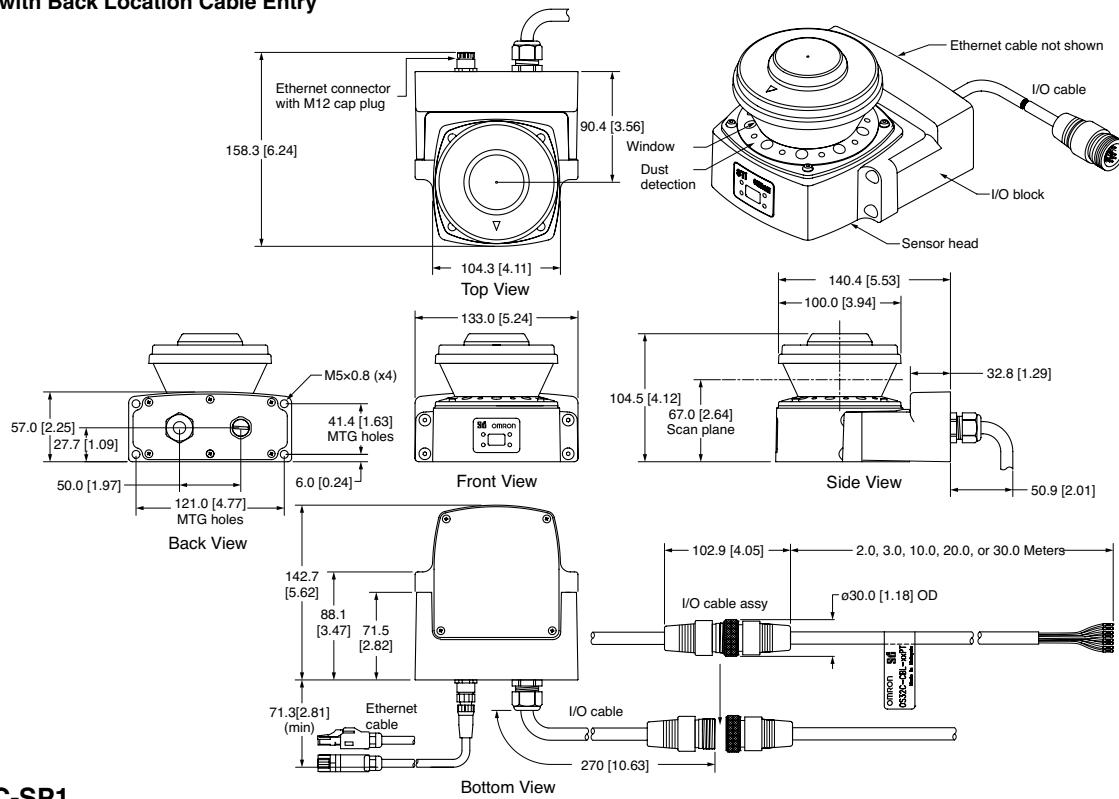
OS32C-SP1

OS32C with Side Location Cable Entry
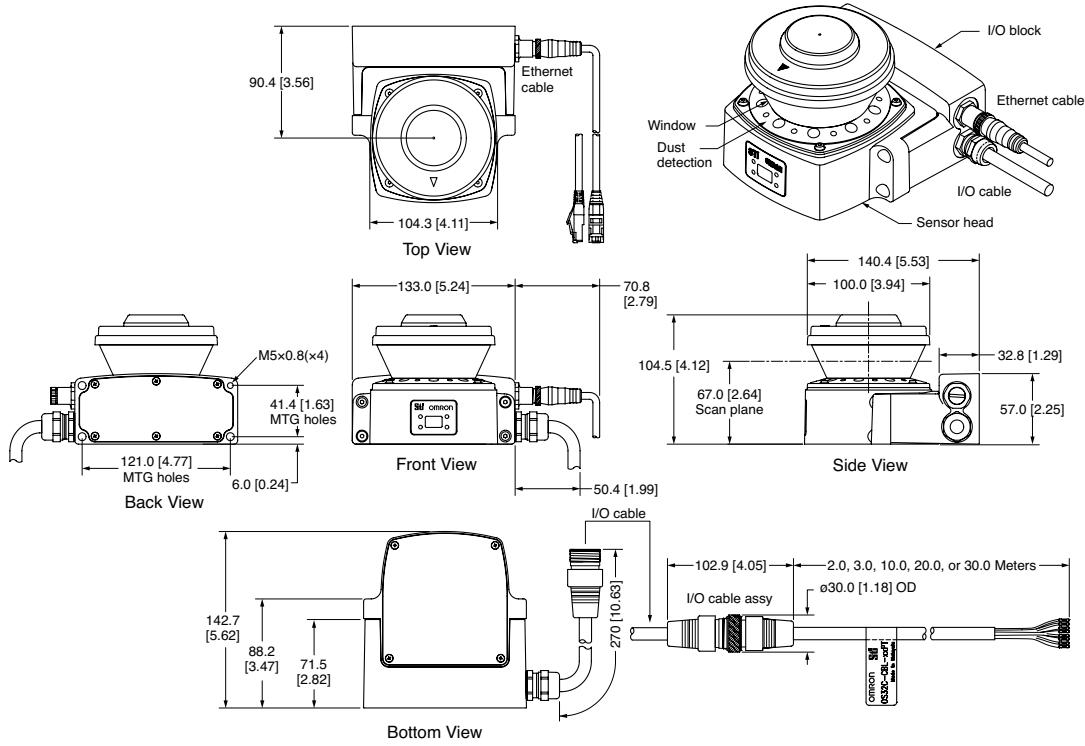
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Dimensions (continued)

mm (in.)

OS32C-BP + OS32C-BKT4

OS32C with Top Guard Kit

ø107.5 [4.24]
112.4 [4.43]
41.4 [1.63]
63.0 [2.48]
27.7 [1.09]
50.0 [1.97]
6.0 [0.24]
121.0 [4.77]
Back View

150.4 [5.93]
93.4 [3.68]
67.0 [2.64] Scan Plane
145.7 [5.74]
Side View
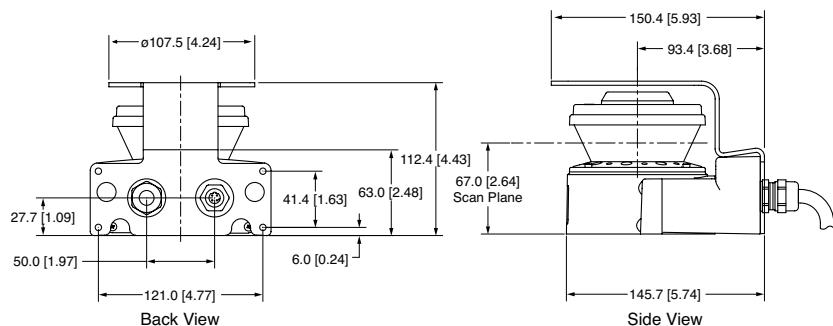
OS32C-BP + OS32C-BKT1

OS32C with Bottom/Side Mounting Brackets

116.7 [4.60]
69.2 [2.73]
39.9 [1.57]
50.0 [1.97]
Back View

103.7 [4.08]
97.7 [3.85]
79.2 [3.12] Scan plane
4.9 [0.19]
24.5 [0.97]
37. 9 [1.49]
12.2 [0.48]
23.3 [0.92]
41.0 [1.62]
93.7 [3.69]
Side View

155.9 [6.14]
106.0 [4.17]
102.4 [4.03]
144.4 [5.69]
66.4 [2.62]
54.5 [2.15]
23.3 [0.92]
Bottom View
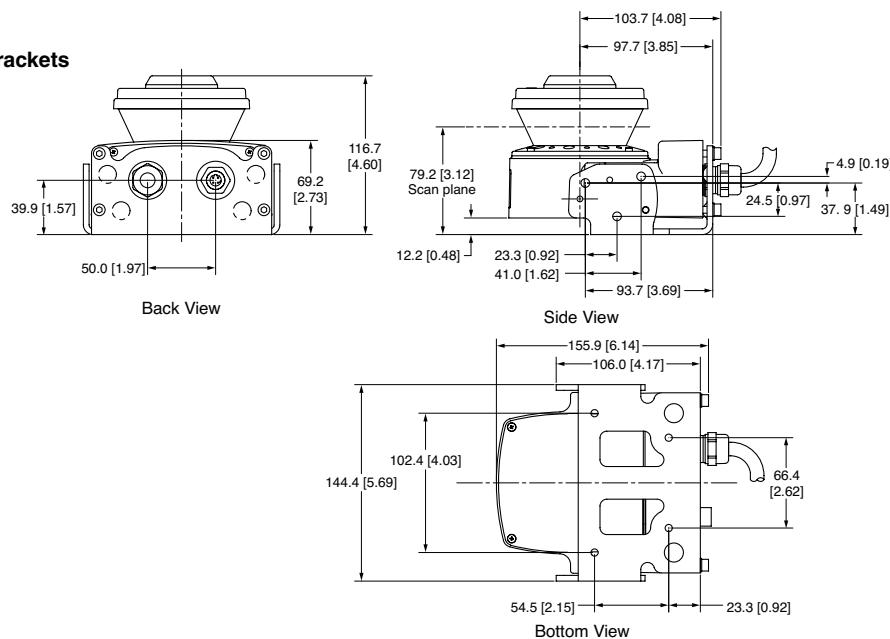
OS32C-BP + OS32C-BKT3

OS32C with Simple Mounting Brackets
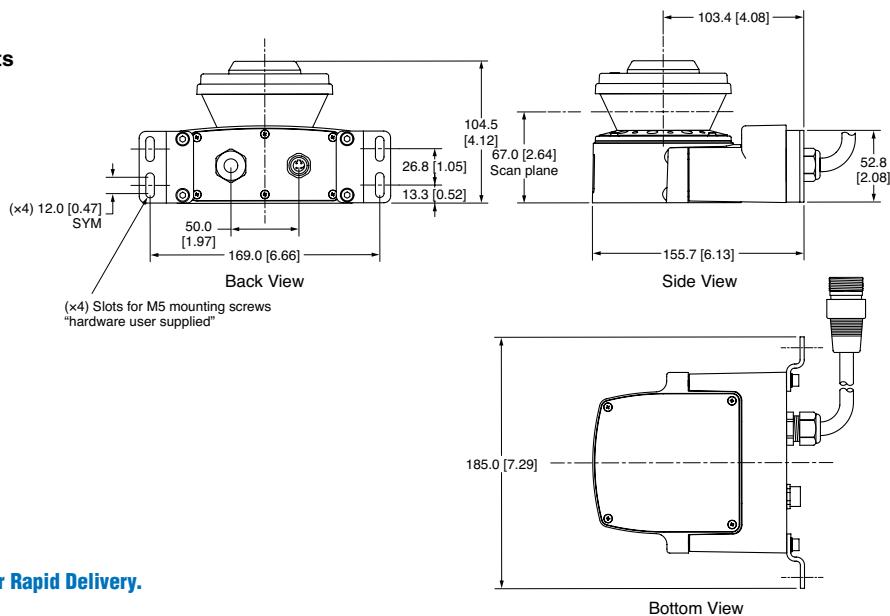
104.5 [4.12]
67.0 [2.64] Scan plane
26.8 [1.05]
13.3 [0.52]
(×4) 12.0 [0.47] SYM
50.0 [1.97]
169.0 [6.66]
Back View
(×4) Slots for M5 mounting screws "hardware user supplied"

103.4 [4.08]
52.8 [2.08]
155.7 [6.13]
Side View

185.0 [7.29]
Bottom View

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Dimensions (continued)

mm (in.)

OS32C-BP + OS32C-BKT1 + OS32C-BKT4

OS32C with Bottom/Side Mounting Brackets and Top Guard Kit

φ107.5 [4.24]

124.9 [4.92]

75.2 [2.96]

39.9 [1.57]

50.0 [1.97]

Back View

154.7 [6.09]

103.7 [4.08]

97.7 [3.85]

79.2 [3.12] Scan plane

4.9 [0.19]

24.5 [0.97]

37.9 [1.49]

12.2 [0.48]

23.3 [0.92]

41.0 [1.62]

4.8 [0.19]

93.7 [3.69]

Side View

155.9 [6.14]

106.0 [4.17]

144.4 [5.69]

102.4 [4.03]

66.4 [2.62]

54.5 [2.15]

23.3 [0.92]

Bottom View
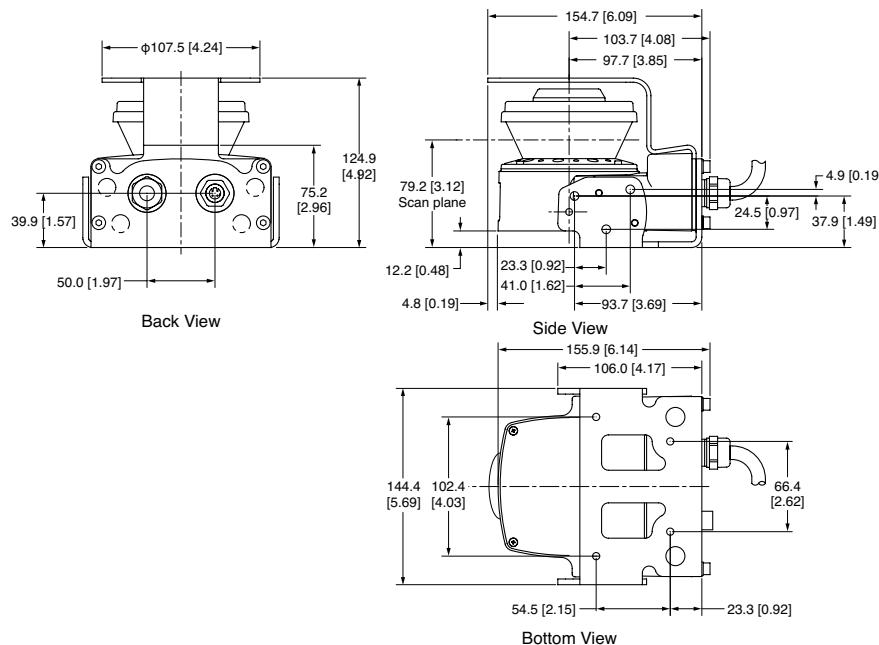
OS32C-BP + OS32C-BKT1 + OS32C-BKT2

OS32C with XY Axis Rotation Mounting Kit
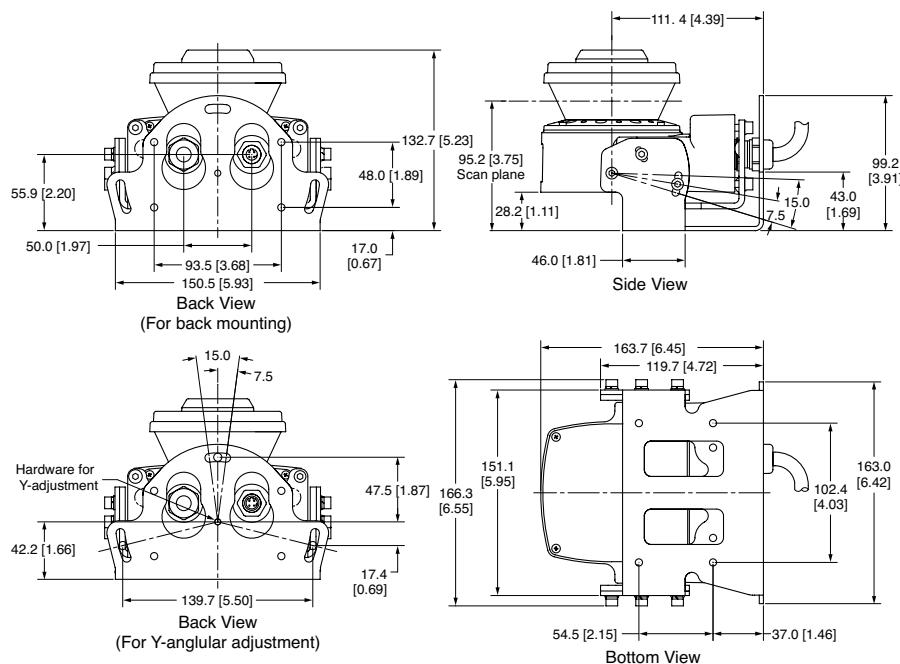
132.7 [5.23]

48.0 [1.89]

55.9 [2.20]

50.0 [1.97]

93.5 [3.68]

150.5 [5.93]

17.0 [0.67]

Back View
(For back mounting)

111. 4 [4.39]

95.2 [3.75] Scan plane

99.2 [3.91]

15.0

43.0 [1.69]

7.5

28.2 [1.11]

46.0 [1.81]

Side View

15.0

7.5

Hardware for Y-adjustment

47.5 [1.87]

42.2 [1.66]

17.4 [0.69]

139.7 [5.50]

Back View
(For Y-anglular adjustment)

163.7 [6.45]

119.7 [4.72]

151.1 [5.95]

166.3 [6.55]

163.0 [6.42]

102.4 [4.03]

54.5 [2.15]

37.0 [1.46]

Bottom View

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Dimensions (continued)

mm (in.)

B

OS32C-BP + OS32C-BKT1 + OS32C-BKT2 + OS32C-BKT4

OS32C with Bottom/Side Mounting Brackets and XY Axis Rotation Mounting Kit and Top Guard Kit

φ107.5 [4.24]

141.0 [5.55]
48.0 [1.89]
55.9 [2.20]
50.0 [1.97]
93.5 [3.68]
17.0 [0.67]
150.5 [5.93]

Back View
(For back mounting)

168.4 [6.63]
111.4 [4.39]
95.2 [3.75]
Scan plane
99.2 [3.91]
28.2 [1.11]
15.0 43.0 [1.69]
7.5
4.8 [0.19]
46.0 [1.81]

Side View

15.0
7.5
Hardware for Y-adjustment
47.5 [1.87]
166.3 151.1
[6.55] [5.95]
42.2 [1.66]
17.4 [0.69]
139.7 [5.50]

Back View
(For Y-angular adjustment)

163.7 [6.45]
119.7 [4.72]
102.4 163.0
[4.03] [6.42]
54.5 [2.15]
37.0 [1.46]
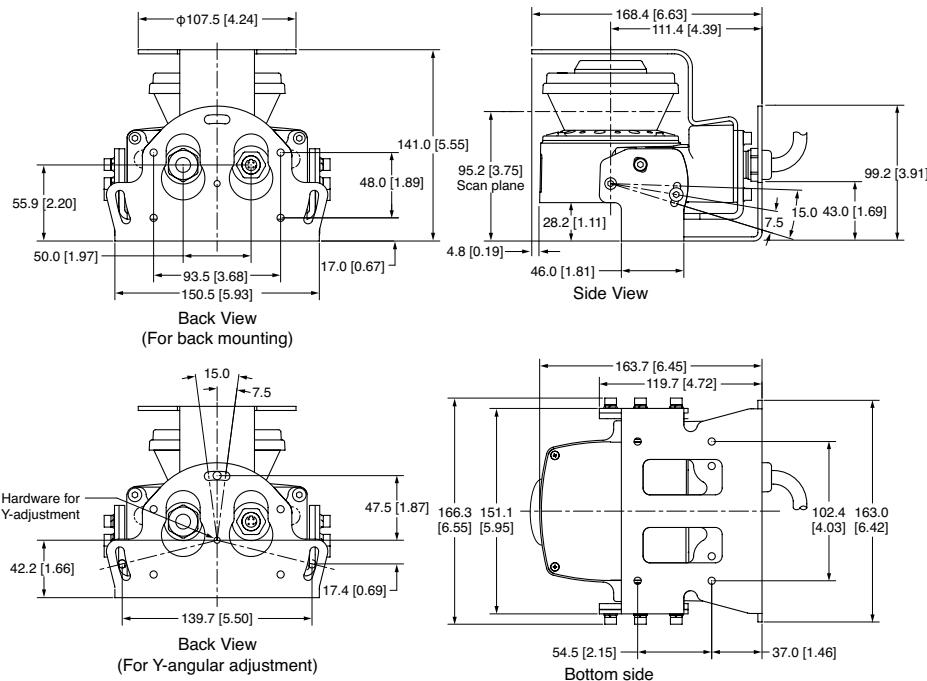
Bottom side

OS32C-SP1 + OS32C-BKT1 + OS32C-BKT2 + OS32C-MT + OS32C-HDT

OS32C with Bottom/Side Mounting Brackets and XY Axis Rotation Mounting Kit and Mounting Stand and Mounting Stand Hardware Kit
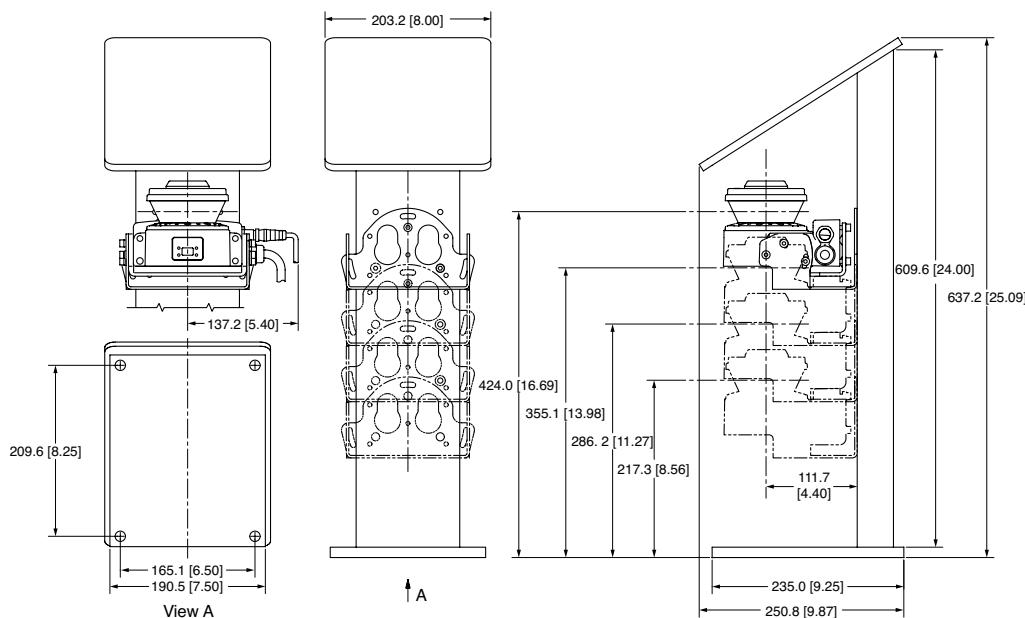
203.2 [8.00]
137.2 [5.40]
209.6 [8.25]
165.1 [6.50]
190.5 [7.50]

View A

↑ A

424.0 [16.69]
355.1 [13.98]
286. 2 [11.27]
217.3 [8.56]

609.6 [24.00]
637.2 [25.09]
111.7 [4.40]
235.0 [9.25]
250.8 [9.87]

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Dimensions (continued)

(mm)

OS32C-CBL-□□M

Power Cable

(56) L✳ (90)

(30)

Name plate

Vinyl insulated round cable (diameter max. 10mm) Black
18-core (conductor section area 0.3 mm²,
insulator diameter max. 1.5 mm)
Standard length L (See✳)
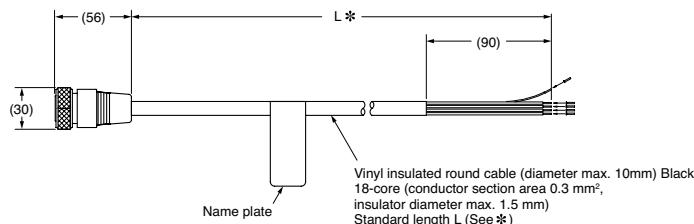
✳ Sizes are as below

Model Number	L
OS32C-CBL-03M	3m
OS32C-CBL-10M	10m
OS32C-CBL-20M	20m
OS32C-CBL-30M	30m

OS32C-ECBL-□□M

Ethernet Cable

44.7 L✳ 6.5 dia. 54.7

M12

Twist tie

RJ45 TYPE
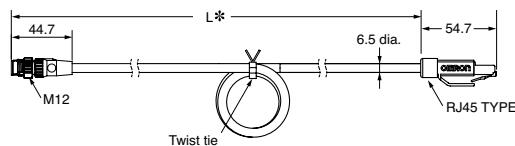
✳ Sizes are as below

Model Number	L
OS32C-ECBL-02M	2m
OS32C-ECBL-05M	5m
OS32C-ECBL-15M	15m

Ordering

OS32C (Power cable is sold separately)

Appearance	Description	Model	Remarks
	OS32C with back location cable entry EtherNet capable for configuration and monitoring	OS32C-BP	
	OS32C with side location cable entry * EtherNet capable for configuration and monitoring	OS32C-SP1	CD-ROM (Configuration software) OS supported: Windows 2000, Windows XP, Windows Vista Windows 7
	OS32C with back location cable entry EtherNet/IP capable for status measurement data reporting	OS32C-BP-DM	
	OS32C with side location cable entry* EtherNet/IP capable for status measurement data reporting	OS32C-SP1-DM	

*For OS32C-SP1, each connector is located on the left as viewed from the back of the I/O block.

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Ordering (continued)

Power Cable

Appearance	Description	Model	Remarks
	Cable length: 3 m	OS32C-CBL-03M	One cable is required per sensor.
	Cable length: 10 m	OS32C-CBL-10M	
	Cable length: 20 m	OS32C-CBL-20M	
	Cable length: 30 m	OS32C-CBL-30M	

Ethernet Cable

Appearance	Description	Model	Remarks
	Cable length: 2 m	OS32C-ECBL-02M	Required for configuration and monitoring.
	Cable length: 5 m	OS32C-ECBL-05M	
	Cable length: 15 m	OS32C-ECBL-15M	

Note: An ethernet cable with an M12, 4-pin connector is required.

Mounting Brackets

Appearance	Description	Model	Remarks
	Bottom/side mounting bracket	OS32C-BKT1	Bottom/side mounting bracket x 1, unit mounting screws x 4 sets
	XY axis rotation mounting bracket	OS32C-BKT2	XY axis rotation mounting bracket x 1, unit mounting screws x 6 sets, bracket mounting screws x 1 set (must be used with OS32C-BKT1)
	Simple mounting bracket	OS32C-BKT3	Simple mounting brackets x 2, unit mounting screws x 4 sets *
	Protective cover for window	OS32C-BKT4	
	Mounting stand	OS32C-MT	When using a mounting stand, use an OS32C with side location cable entry (OS32C-SP1). The OS32C with back location cable entry (OS32C-BP) cannot be mounted. Use with mounting brackets (OS32C-BKT1 and OS32C-BKT2).
	Hardware kit for mounting stand	OS32C-HDT	Mounting screws x 3 sets Use this when mounting a bracket to the mounting stand.

*There are eight OS32C mounting screws for singular use, and four screws for protective cover for window.

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Ordering (continued)

Accessories

Appearance	Description	Model	Remarks
	Scan window	OS32C-WIN-KT	Spare for replacement
	Sensor block without I/O block EtherNet capable for configuration and monitoring	OS32C-SN	Spare for replacement
	Sensor block without I/O block EtherNet/IP capable for status and measurement data reporting	OS32C-SN-DM	Spare replacement for EtherNet/IP
	I/O block with cable access from the back	OS32C-CBBP	Spare for replacement
	I/O block with cable access from the left side	OS32C-CBSP1	Spare for replacement
	Window cleaning kit, anti-static cleaner	WIN-CLN-KT	Accessory

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