Safety Laser Scanner
OS32C

Compact (104.5 mm), lightweight (1.3 kg) and easy-to-install Safety Laser Scanner

TÜV Rheinland CE c(UL)us LISTED

- Provides a safety circuit of PLd/Safety Category 3 (ISO13849-1) without a dedicated controller.
- Type 3 Safety Laser Scanner complies with IEC61496-1/-3.
- 70 sets of safety zone and warning zone combinations are available, supporting complicated changes in working environments.
- A safety radius up to 4 m and warning zone(s) radius up to 15 m can be set.
- The minimum object resolution can be changed to 30, 40, 50 or 70 mm.
- The response time is configurable from 80 ms to a maximum of 680 ms.
- Reference Boundary Monitoring function prevents unauthorized changes in the scanner position.
- Minimal down time, sensor block can be replaced without the need to reprogram.

⚠ Refer to "*Safety Precautions*" on page 20.

For the most recent information on models that have been certified for safety standards, refer to your OMRON website.

Ordering Information

OS32C (Power cable is sold separately.)

Appearance	Description	Max. Operating Range (Safety Zone)	Model	Remarks
	OS32C with back location cable entry	3m	**OS32C-BP VER2**	CD-ROM (Configuration tool) OS supported: Windows XP (32-bit version, Service Pack 3 or later) Windows 7 (32-bit version/64-bit version), Windows 8.1 (32-bit version/64-bit version), Windows 10 (32-bit version/64-bit version) For configuration tool version, refer to page 23.
		4m	**OS32C-BP-4M** *NEW*	
	OS32C with side location cable entry ✱	3m	**OS32C-SP1 VER2**	
		4m	**OS32C-SP1-4M** *NEW*	
	OS32C with EtherNet/IP and back location cable entry	3m	**OS32C-BP-DM**	
		4m	**OS32C-BP-DM-4M** *NEW*	
	OS32C with EtherNet/IP and side location cable entry ✱	3m	**OS32C-SP1-DM**	
		4m	**OS32C-SP1-DM-4M** *NEW*	

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

Rating/Performance

Sensor Type	Type 3 Safety Laser Scanner
Performance Level (PL)/ Safety Category	PLd/Safety Category 3 (ISO 13849-1)
Functional Safety of Electrical/ Electronic/Programmable Electronic Safety-related Systems	SIL 2, PFH$_D$ = 8.3 × 10^{-8} (IEC61508)
Detection Capability	Configurable; Non-transparent with a diameter of 30, 40, 50, 70mm (1.8% reflectivity or greater) (default: 70 mm)
Monitoring Zone	Monitoring Zone Set Count: (Safety Zone + 2 Warning Zones) x 70 sets
Operating Range	OS32C-□□□	Safety Zone: 1.75 m (min. obj. resolution of 30 mm) 2.5 m (min. obj. resolution of 40 mm) 3.0 m (min. obj. resolution of 50 mm or 70 mm) Warning Zone: 10.0 m
	OS32C-□□□-4M	Safety Zone: 1.75 m (min. object resolution of 30mm) 2.5 m (min. object resolution of 40 mm) 3.0 m (min. object resolution of 50 mm) 4.0 m (min. object resolution of 70 mm) Warning Zone: 15.0 m
Maximum Measurement Error	100 mm (at range of 3 m or less) *1 110 mm (at distance greater than 3 m and up to 4m) *1
Detection Angle	270°
Angular Resolution	0.4°
Laser Beam Diameter	6 mm at optics cover, 14 mm (typical) at 3 m.
Laser Scan Plane Height	67mm from the bottom of the scanner (see *"External Dimensional Drawings"* on page 15 for more detail.)
Response Time	Response time from ON to OFF: From 80 ms (2 scans) to 680 ms (up to 17 scans) *8 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 Class 1: JIS C 6802 Class I: CFR21 1040.10, 1040.11
Safety Output (OSSD)	PNP transistor x 2, load current of 250 mA 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
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 max.), OFF: Open
Connection Type	Power Cable: 18-pin mini-connector (pigtail) Communication Cable: M12, 4-pin connector
Connection with PC	Communication: Ethernet *6 OS Supported: Windows XP (32-bit version, Service Pack 3 or later), Windows 7 (32-bit version/64-bit version), Windows 8.1 (32-bit version/64-bit version), Windows 10 (32-bit version/64-bit version)
Indicators	RUN indicator: Green, STOP indicator: Red, Interlock Indicator: Yellow, Warning Output Indicator: Orange Status/Diagnostic Display: 2 x 7-segment LEDs, Individual Sector 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)
Insulation Resistance	20 MΩ or higher (500 VDC)
Dielectric Withstand Voltage	350VDC, 1 minute
Enclosure Rating	IP65 (IEC60529)
Enclosure	Sensor head: Die-cast aluminum, optical cover: Polycarbonate, I/O block: Die-cast aluminum
Dimensions (WxHxD)	133.0 x 104.5 x 142.7 mm (except cable)

OS32C

|	
Impact Resistance	98 m/s^2 1,000 times for each of X, Y, and Z directions (IEC60068-2-29)
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 100BASE-TX cable *9

Approvals	Certificated by: TÜV Rheinland, UL
	Standards: 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, refer to "*Safety Precautions*" on page 20.
*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.
*8. Pollution Tolerance mode will add 6 ms to each scan time.
*9. Omron only supplies up to a 15 m Ethernet cable. For longer lengths a connection to a network switch/router is needed.
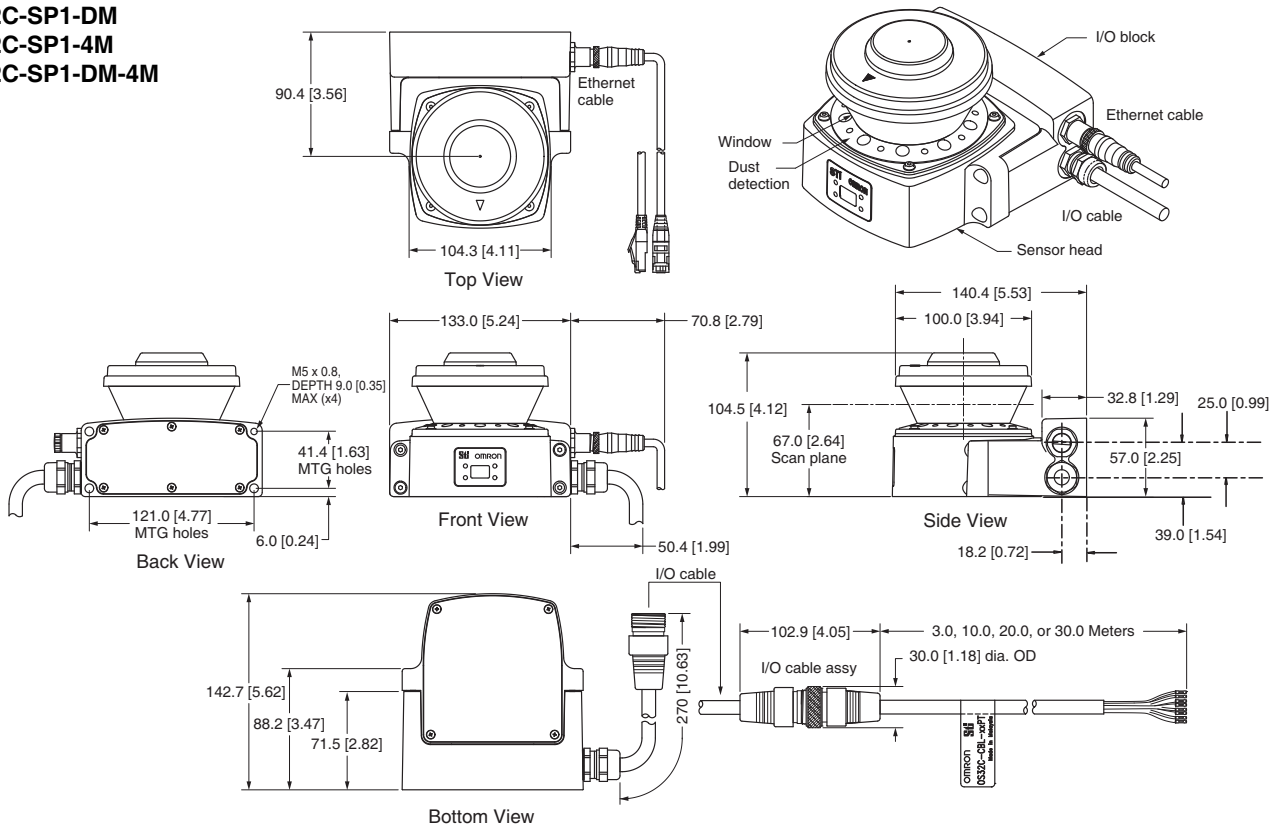
External Dimensional Drawings

OS32C with Back Location Cable Entry/with EtherNet/IP and Back Location Cable Entry

OS32C-BP
OS32C-BP-DM
OS32C-BP-4M
OS32C-BP-DM-4M
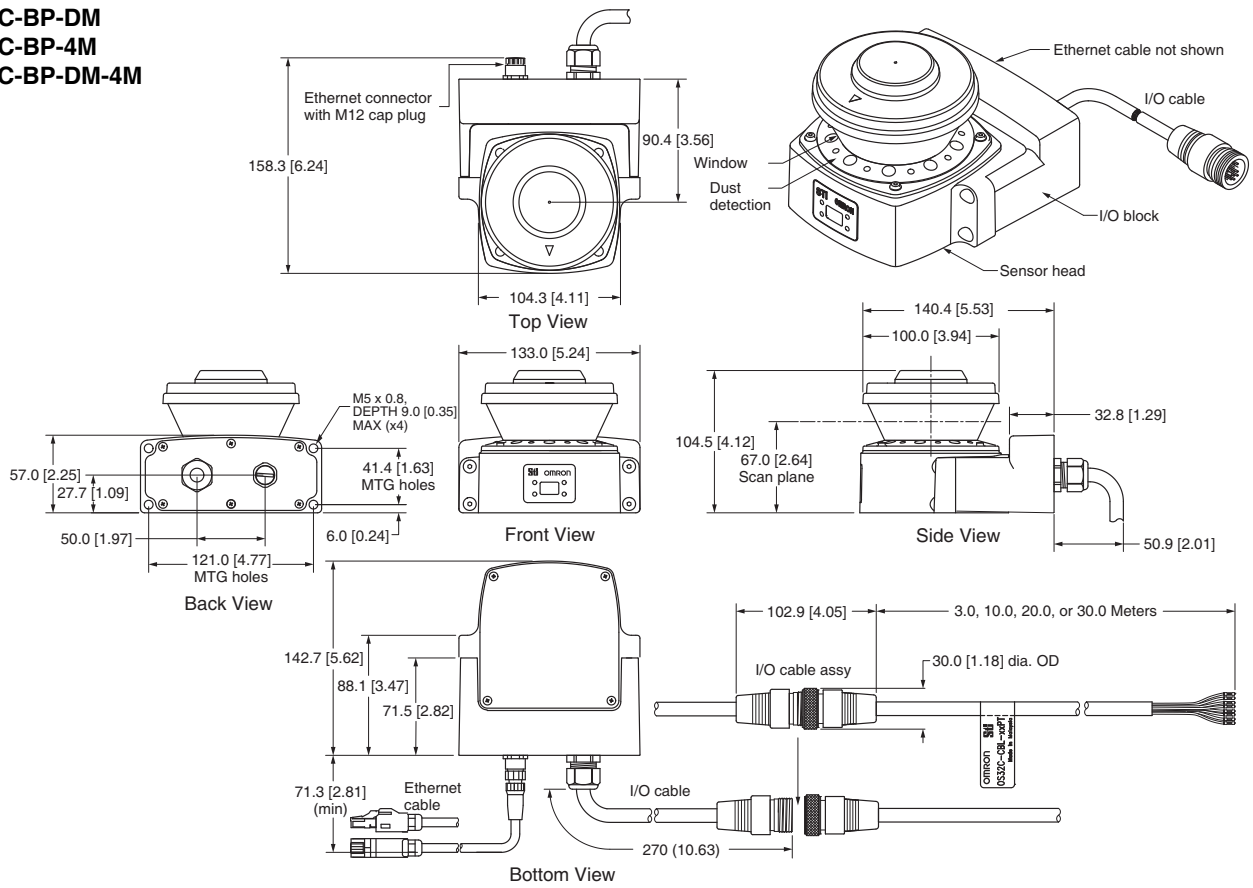
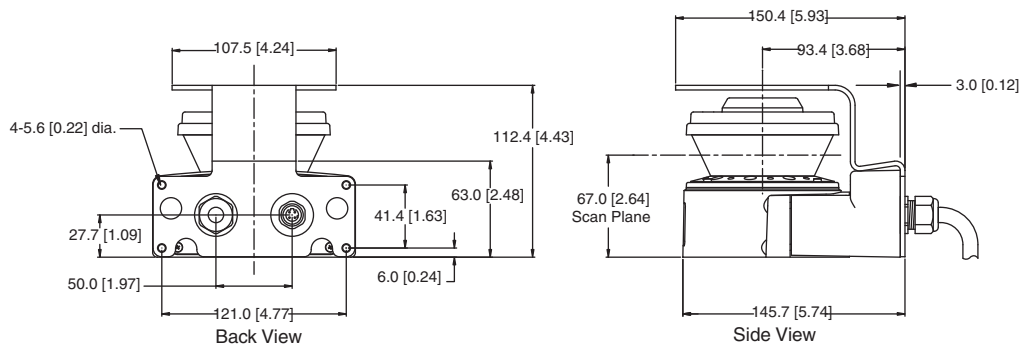## OS32C with Side Location Cable Entry/with EtherNet/IP and Side Location Cable Entry

OS32C-SP1
OS32C-SP1-DM
OS32C-SP1-4M
OS32C-SP1-DM-4M

OS32C

OS32C with Top Guard Kit
OS32C-BP/OS32C-BP-DM/OS32C-BP-4M/OS32C-BP-DM-4M
+ OS32C-BKT4

107.5 [4.24]

4-5.6 [0.22] dia.

112.4 [4.43]

63.0 [2.48]

41.4 [1.63]

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]

3.0 [0.12]

67.0 [2.64]
Scan Plane

145.7 [5.74]

Side View

OS32C with Bottom/Side Mounting Brackets
OS32C-BP/OS32C-BP-DM/OS32C-BP-4M/OS32C-BP-DM-4M
+ OS32C-BKT1

116.7 [4.60]

69.2 [2.73]

39.9 [1.57]

50.0 [1.97]

4.2 [0.17]

Back View

103.7 [4.08]

97.7 [3.85]

3-6.4 [0.25] dia.

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]

4-5.3 [0.21] dia.

102.4 [4.03]

144.4 [5.69]

66.4 [2.62]

54.5 [2.15]

23.3 [0.92]

Bottom View
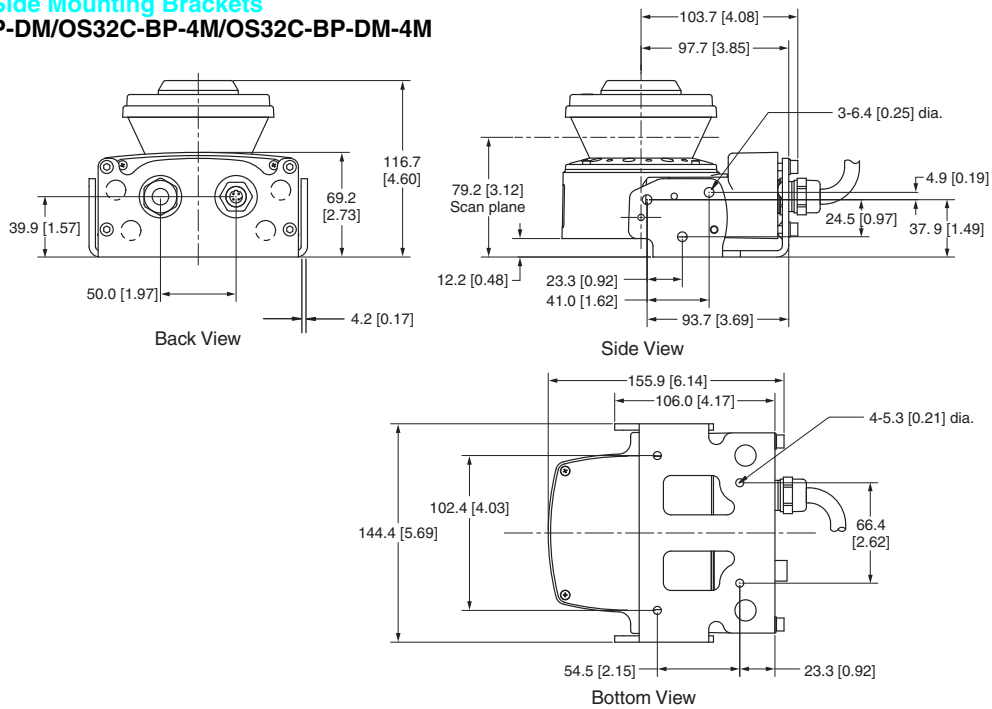
OS32C with Simple Mounting Bracket
OS32C-BP/OS32C-BP-DM/OS32C-BP-4M/OS32C-BP-DM-4M
+ OS32C-BKT3
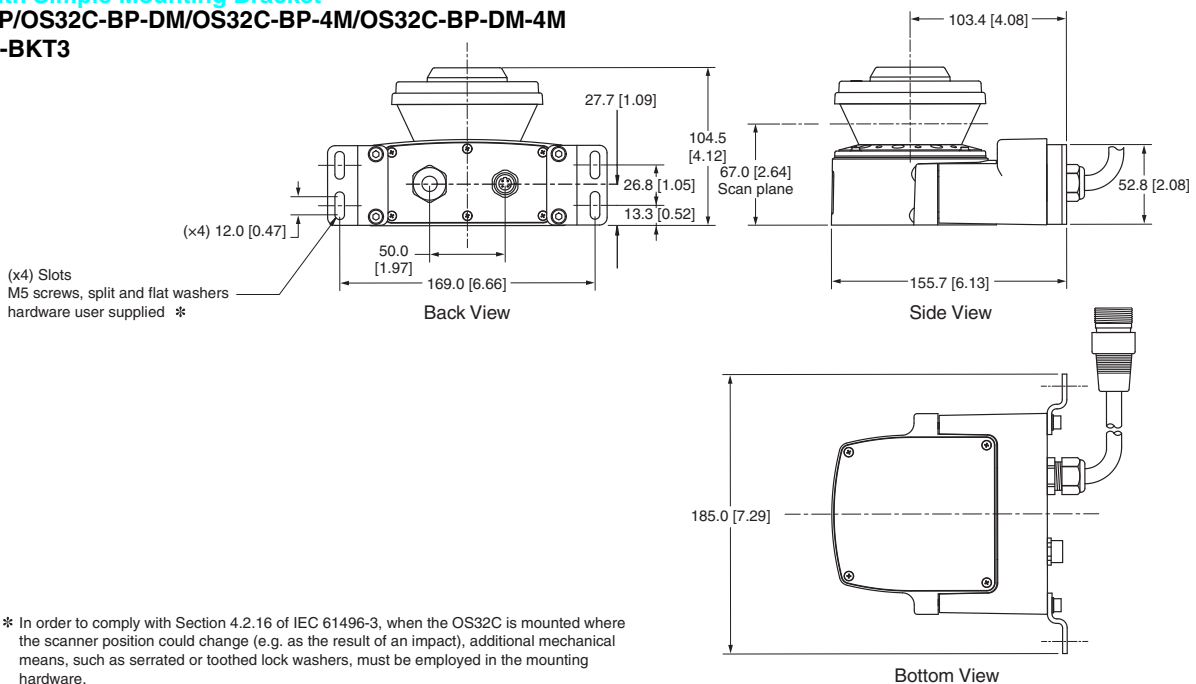
27.7 [1.09]

104.5 [4.12]

67.0 [2.64]
Scan plane

26.8 [1.05]

13.3 [0.52]

(x4) 12.0 [0.47]

50.0 [1.97]

169.0 [6.66]

(x4) Slots
M5 screws, split and flat washers
hardware user supplied ✳

Back View

103.4 [4.08]

52.8 [2.08]

155.7 [6.13]

Side View

185.0 [7.29]

Bottom View

✳ In order to comply with Section 4.2.16 of IEC 61496-3, when the OS32C is mounted where the scanner position could change (e.g. as the result of an impact), additional mechanical means, such as serrated or toothed lock washers, must be employed in the mounting hardware.

OMRON

OS32C with Bottom/Side Mounting Brackets and Top Guard Kit
OS32C-BP/OS32C-BP-DM/OS32C-BP-4M/OS32C-BP-DM-4M
+ OS32C-BKT1 + OS32C-BKT4

Back View
107.5 [4.24]
124.9 [4.92]
75.2 [2.96]
39.9 [1.57]
50.0 [1.97]

Side View
154.7 [6.09]
103.7 [4.08]
97.7 [3.85]
3-6.4 [0.25] dia.
4.9 [0.19]
79.2 [3.12] Scan Plane
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]

Bottom View
155.9 [6.14]
106.0 [4.17]
4-5.3 [0.21] dia.
102.4 [4.03]
144.4 [5.69]
66.4 [2.62]
54.5 [2.15]
23.3 [0.92]
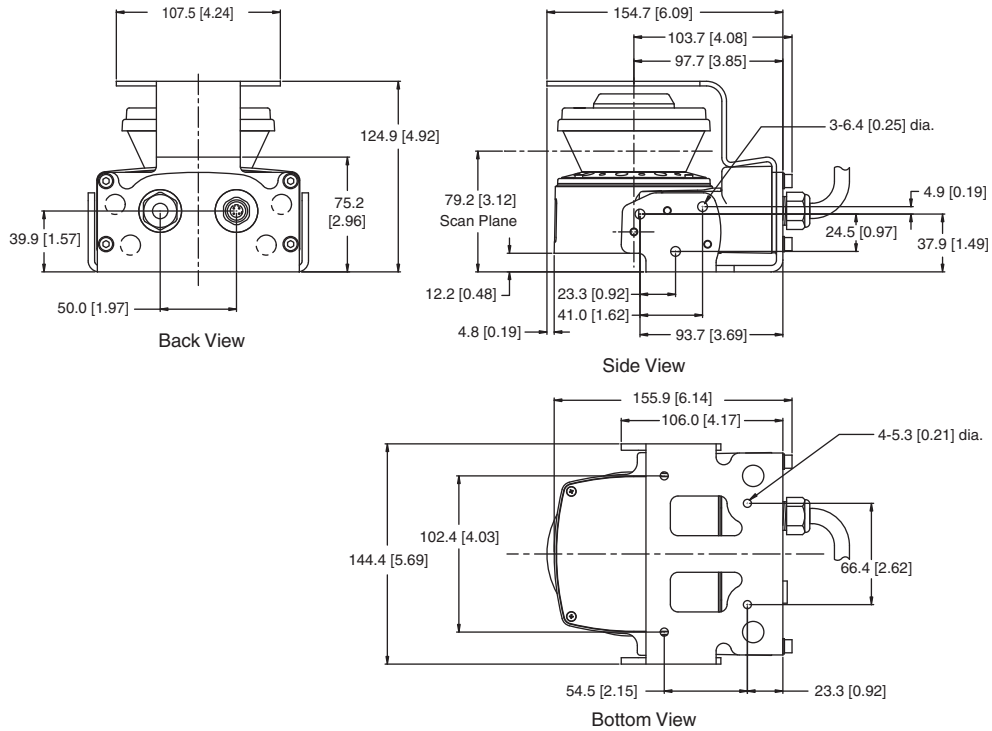
OS32C with Bottom/Side Mounting Brackets and XY Axis Rotation Mounting Kit
OS32C-BP/OS32C-BP-DM/OS32C-BP-4M/OS32C-BP-DM-4M
+ OS32C-BKT1 + OS32C-BKT2

Back View (For back mounting)
4-5.3 [0.21] dia.
132.7 [5.23]
48.0 [1.89]
55.9 [2.20]
50.0 [1.97]
93.5 [3.68]
17.0 [0.67]
150.5 [5.93]

Side View
111. 4 [4.39]
95.2 [3.75] Scan plane
99.2 [3.91]
28.2 [1.11]
15.0°
7.5°
43.0 [1.69]
46.0 [1.81]

Back View (For Y-anglular adjustment)
For Y-angular adjustment (x3) slots
Use M6 hex head screws, split and flat washers hardware user supplied ✴
15.0°
7.5°
R47.5 [1.87]
Hardware for Y-adjustment
42.2 [1.66]
17.4 [0.69]
2-R72 [2.83]
6.4 [0.25]

Bottom View
163.7 [6.45]
119.7 [4.72]
4-5.3 [0.21] dia.
151.1 [5.95]
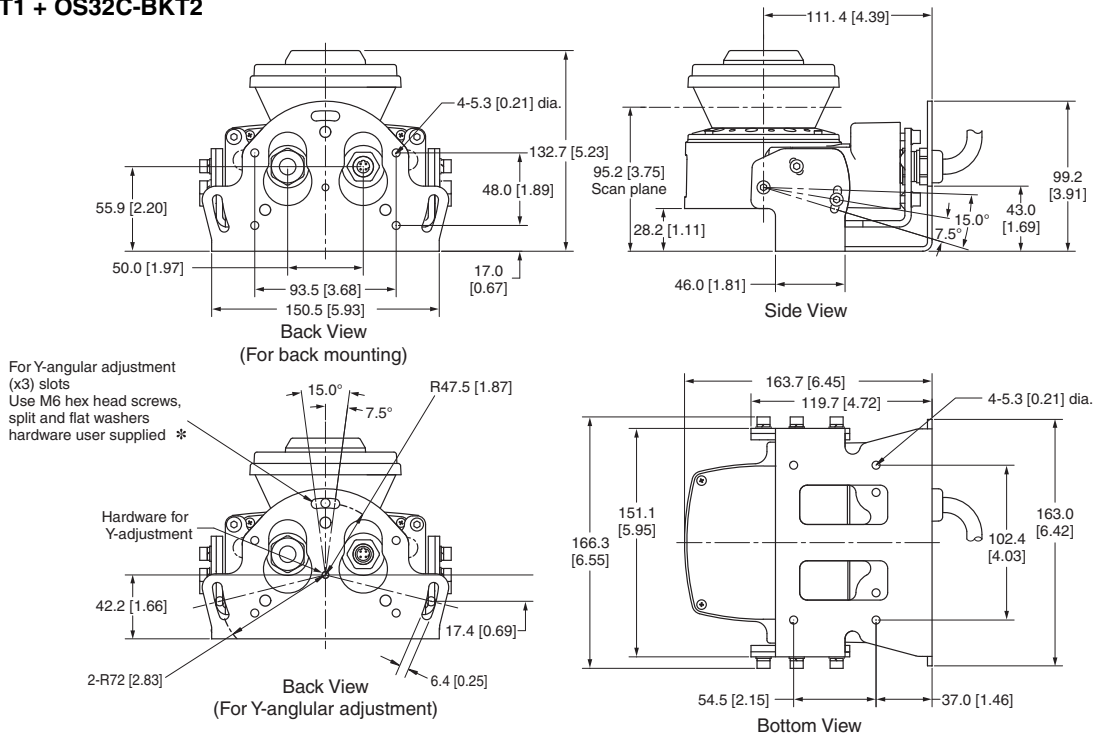166.3 [6.55]
163.0 [6.42]
102.4 [4.03]
54.5 [2.15]
37.0 [1.46]

✴ In order to comply with Section 4.2.16 of IEC 61496-3, when the OS32C is mounted where the scanner position could change (e.g. as the result of an impact), additional mechanical means, such as serrated or toothed lock washers, must be employed in the mounting hardware.

OS32C

OS32C with Bottom/Side Mounting Brackets, XY Axis Rotation Mounting Kit and Top Guard Kit
OS32C-BP/OS32C-BP-DM/OS32C-BP-4M/OS32C-BP-DM-4M
+ OS32C-BKT1 + OC32C-BKT2 + OS32C-BKT4
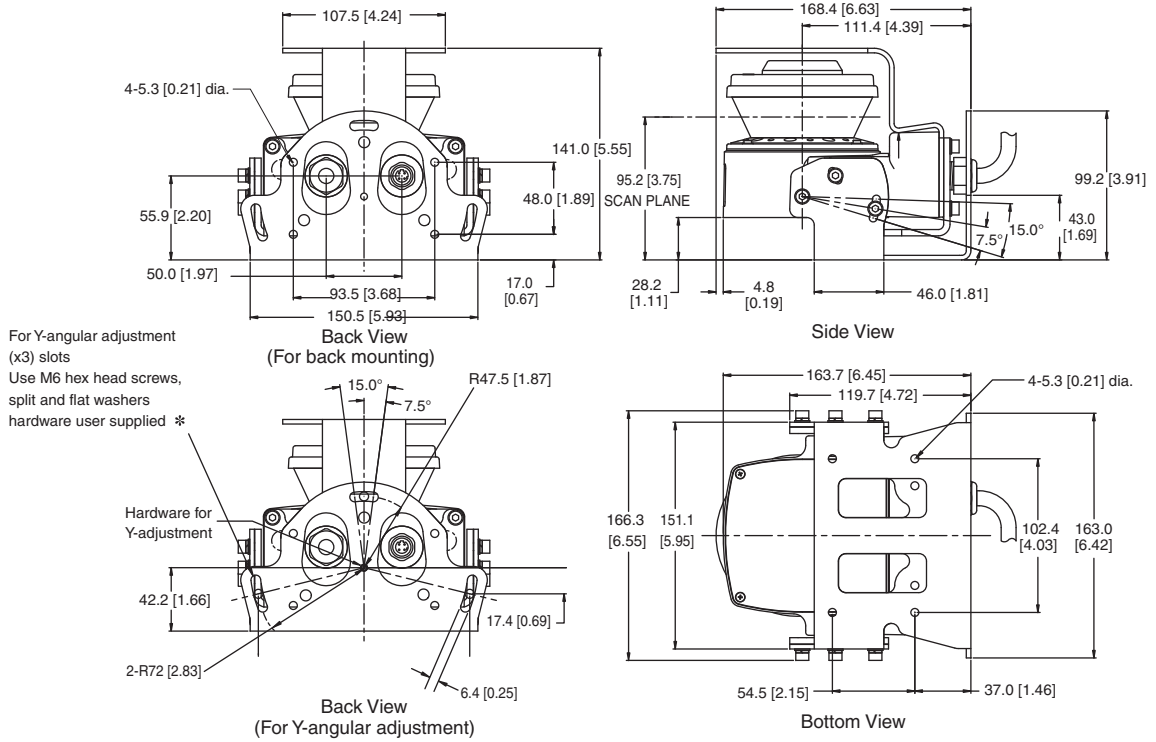
107.5 [4.24]
4-5.3 [0.21] dia.
141.0 [5.55]
48.0 [1.89]
55.9 [2.20]
50.0 [1.97]
93.5 [3.68]
17.0 [0.67]
150.5 [5.93]

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

Back View (For back mounting)
Side View

For Y-angular adjustment (x3) slots
Use M6 hex head screws, split and flat washers hardware user supplied ✻

Hardware for Y-adjustment

15.0°
7.5°
R47.5 [1.87]
42.2 [1.66]
17.4 [0.69]
2-R72 [2.83]
6.4 [0.25]

Back View (For Y-angular adjustment)

163.7 [6.45]
119.7 [4.72]
4-5.3 [0.21] dia.
166.3 [6.55] 151.1 [5.95]
102.4 [4.03] 163.0 [6.42]
54.5 [2.15]
37.0 [1.46]

Bottom View

✻ In order to comply with Section 4.2.16 of IEC 61496-3, when the OS32C is mounted where the scanner position could change (e.g. as the result of an impact), additional mechanical means, such as serrated or toothed lock washers, must be employed in the mounting hardware.

OS32C with Bottom/Side Mounting Brackets, XY Axis Rotation Mounting Kit, Mounting Stand and Mounting Stand Hardware Kit
OS32C-SP1/OS32C-SP1-DM/OS32C-BP-4M/OS32C-BP-DM-4M
+ OS32C-BKT1 + OS32C-BKT2 + OS32C-MT + OS32C-HDT

203.2 [8.00]
137.2 [5.40]
209.6 [8.25]
165.1 [6.50]
190.5 [7.50]

View A

424.0 [16.69]
355.1 [13.98]
286.2 [11.27]
217.3 [8.56]

A

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