Tecnología en Electrónica y Control SRL

Ficha Técnica

Scanner Laser de Seguridad

OMRON

TEC
TECNOLOGÍA EN ELECTRÓNICA Y CONTROL S.R.L

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OS32C

SpeedSPEC
OS32C
sti.com

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

B

Compact Safety Laser Scanner

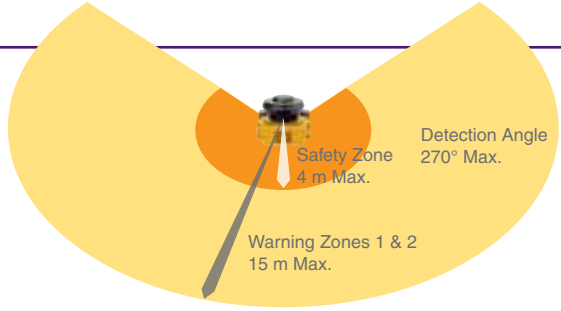
Industry First!
EtherNet/IP Capable for Status and Measurement Data Reporting

- **New!** 4 m safety range models
- **New!** Pollution tolerance modes provide improved performance in dusty environments
- 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 and I/O 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
- A Rapid Delivery Product: Select models are available for shipment today or within 3 to 5 days

EtherNet/IP™ conformance tested

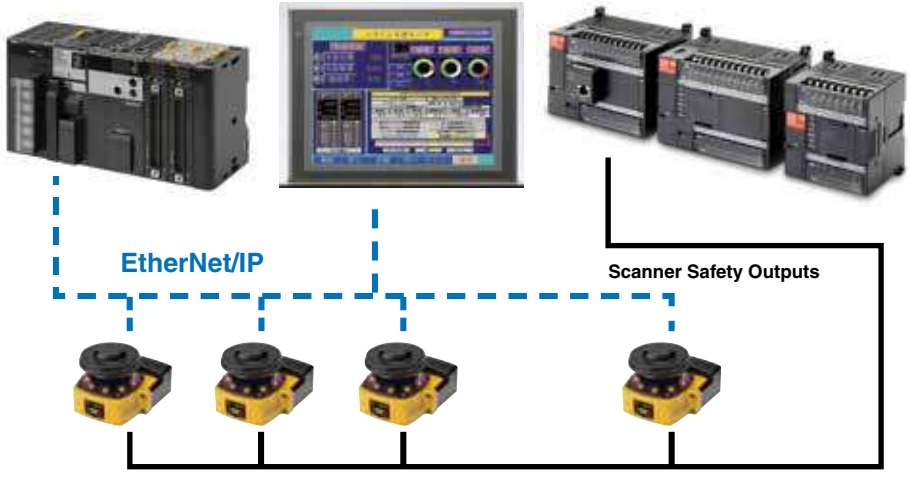
4 m Safety Range Models NEW

4 m Safety Zone
15 m Warning Zone



EtherNet/IP for Status and Measurement Data

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.



Select models are available for Rapid Delivery.

Visit this product on www.sti.com for details..

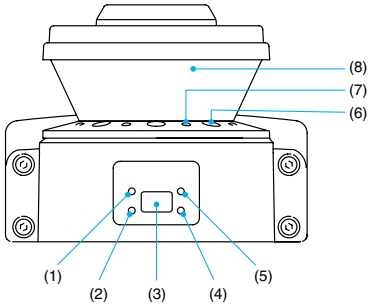
Specifications

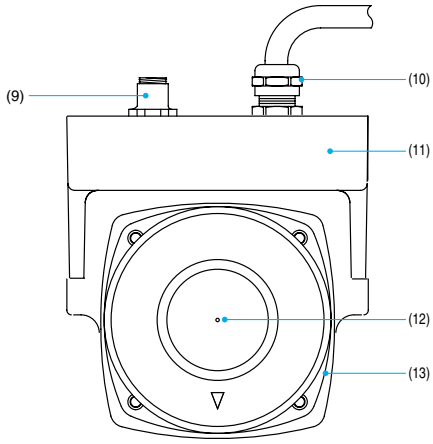
Sensor Type		Type 3 Safety Laser Scanner
Safety Category		Category 3, Performance Level d (ISO13849-1: 2008)
Detection Capability		Configurable; Non-transparent with a diameter of 30, 40, 50 or 70 mm (1.8% reflectivity or greater)
Monitoring Zone		Monitoring Zone Set Count: (Safety Zone + 2 Warning Zones) x 70 sets
Operating Range	OS32C-XX	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
	OS32C-XX-4M	Safety zone: 1.75 m (min. object resolution of 30 mm), 3.0 m (min. object resolution of 50 mm or 70 mm), 4.0 m (min. object resolution 70 mm); Warning Zone: 15 m
Maximum Measurement Error		100 mm (at less than 3 m distance); 110 mm (at greater than 3 m distance) *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) *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 (2007); Class 1: JIS6802 (2005); 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
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/s^2 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 (8 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 model will add 6 m/sec. to each scan time.

B

System Components and Functions





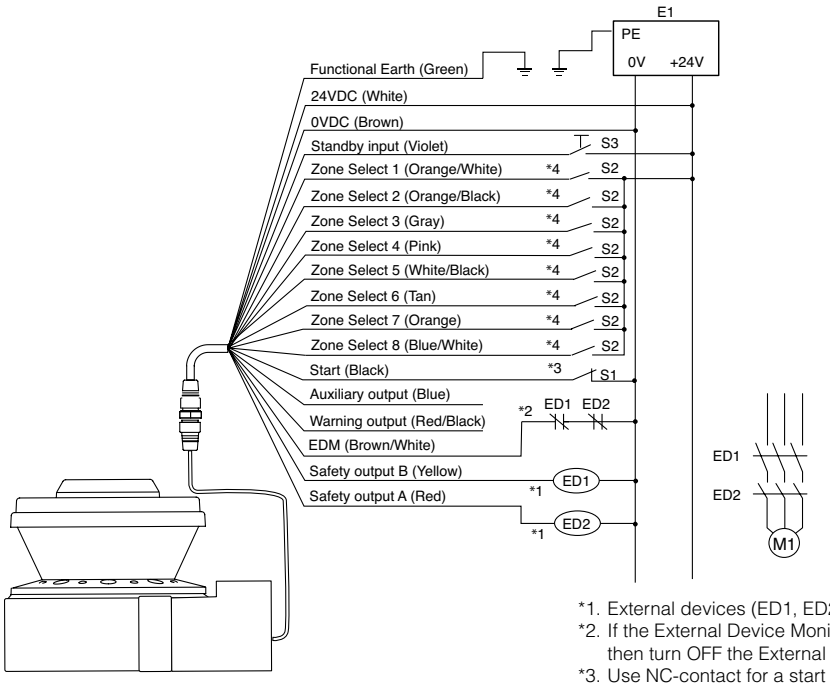
Number	Component	Function
(1)	RUN indicator (green)	Will turn ON when safety zone is clear and OSSDs are ON.
(2)	Interlock Indicator (yellow)	Will turn ON when in interlock state, blink under lockout, and blink in case of a failure.
(3)	Status/Diagnostic Display	The scanner status, configuration/operation, 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.

B

Wiring

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

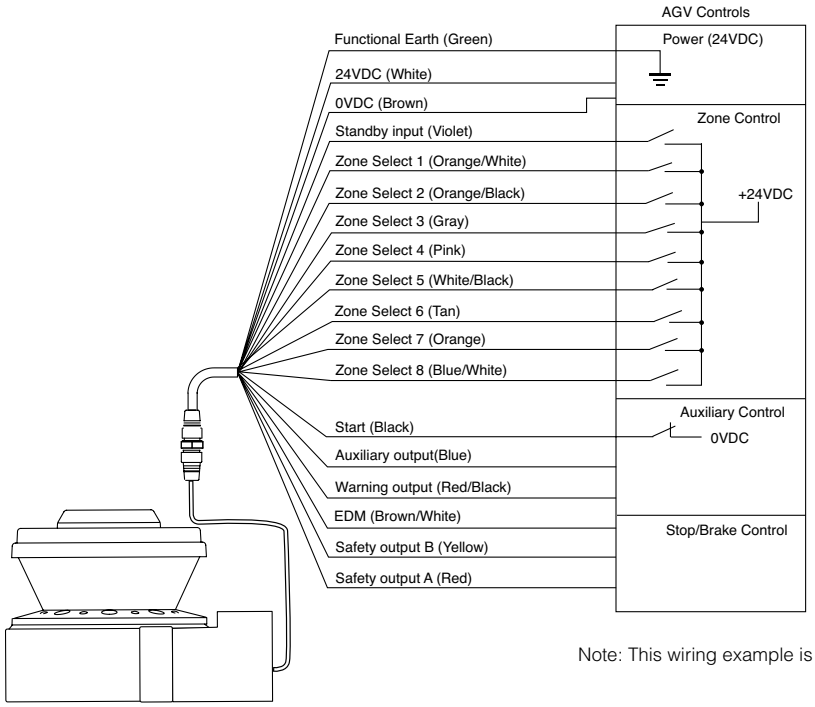


S1 : Start Input
S2 : Zone Select Switch
S3 : Standby Switch
ED1, ED2: Forced guided relay
M1 : 3-Phase Motor
E1 : 24 VDC Power

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

*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.

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



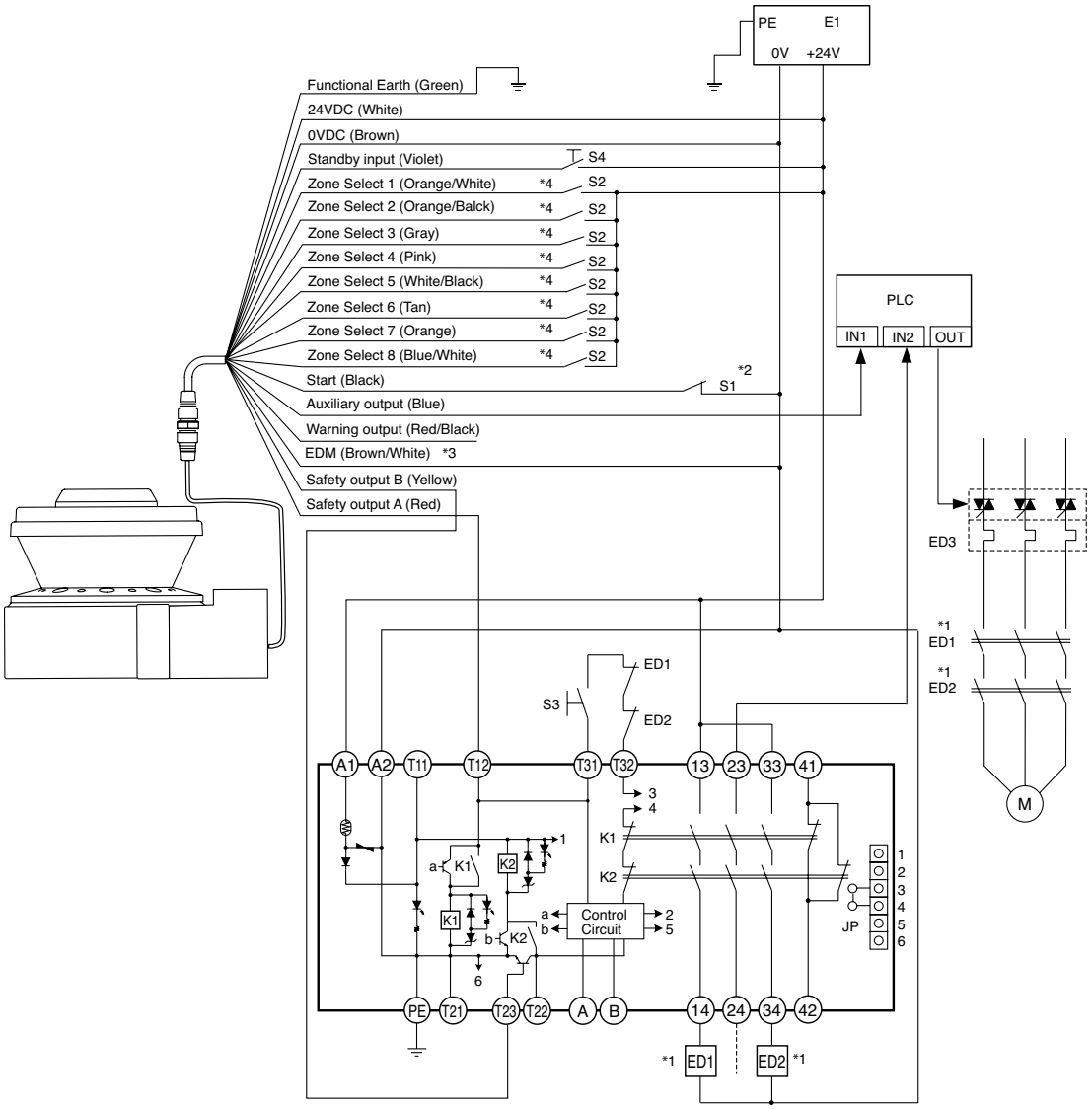
Note: This wiring example is for category 3.

OS32C Configuration
- External Device Monitoring Disabled
- Automatic Start

Wiring (continued)

Connecting to the Controller G9SA-301
Category 3, Performance Level d (ISO13849-1)

B



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.

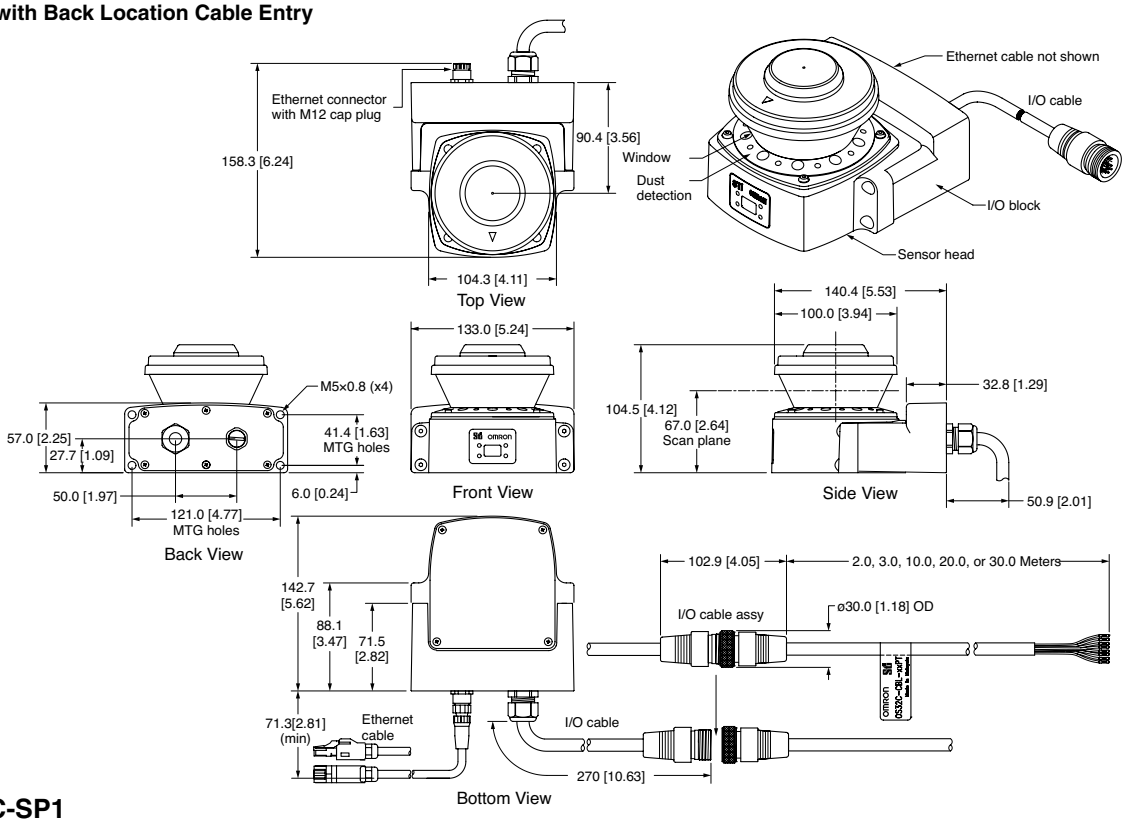
B

Dimensions

mm (in.)

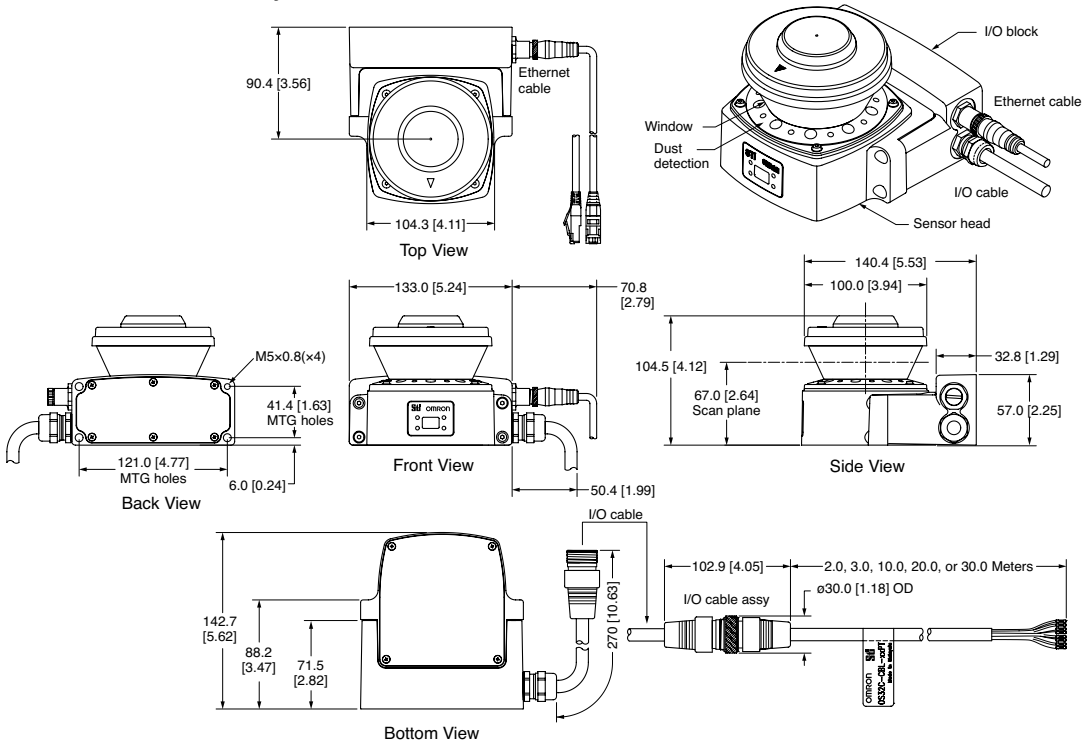
OS32C-BP

OS32C with Back Location Cable Entry



OS32C-SP1

OS32C with Side Location Cable Entry



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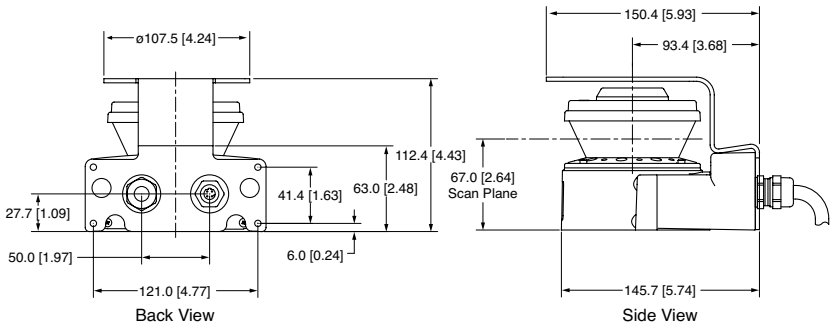
Dimensions (continued)

mm (in.)

B

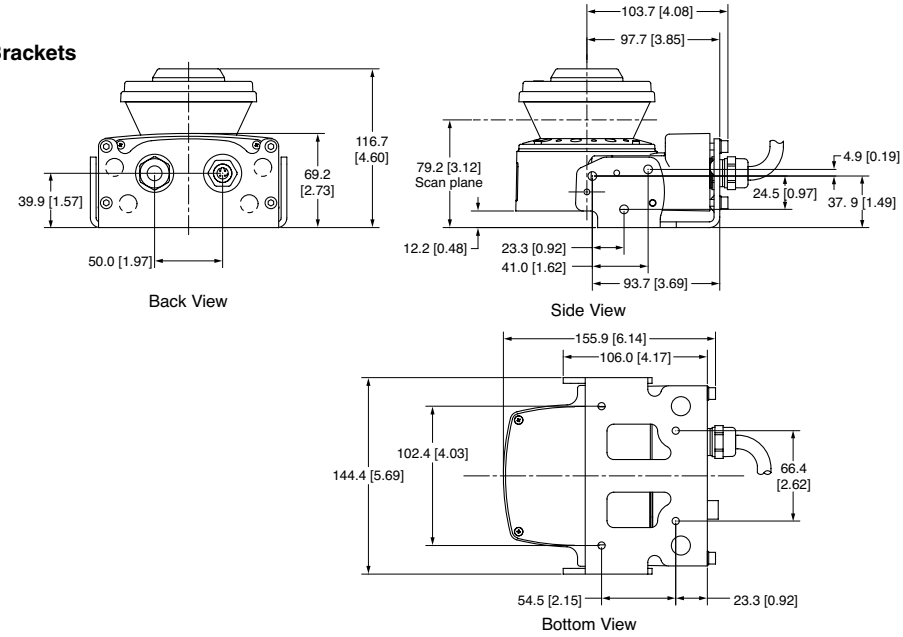
OS32C-BP + OS32C-BKT4

OS32C with Top Guard Kit



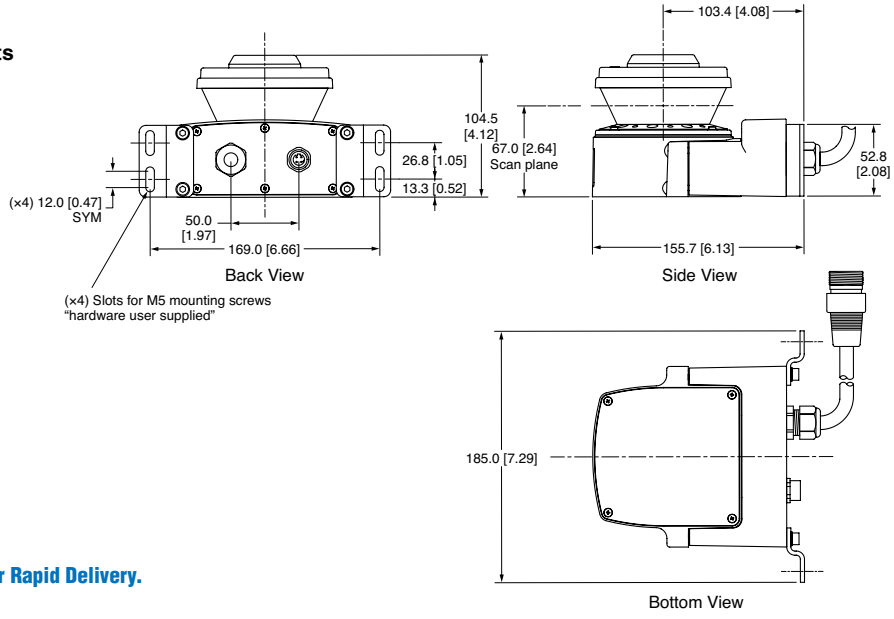
OS32C-BP + OS32C-BKT1

OS32C with Bottom/Side Mounting Brackets



OS32C-BP + OS32C-BKT3

OS32C with Simple Mounting Brackets



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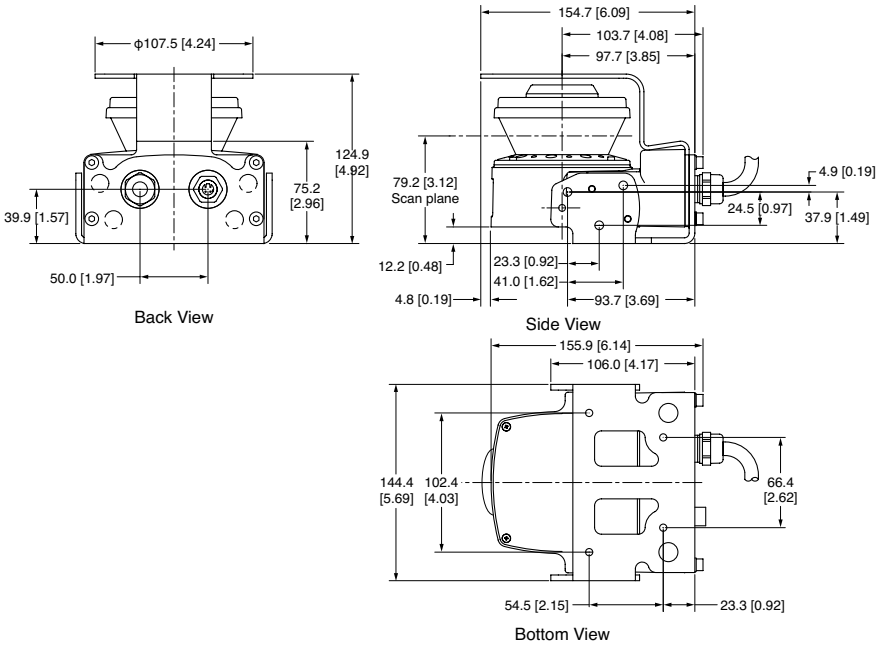
Dimensions (continued)

mm (in.)

B

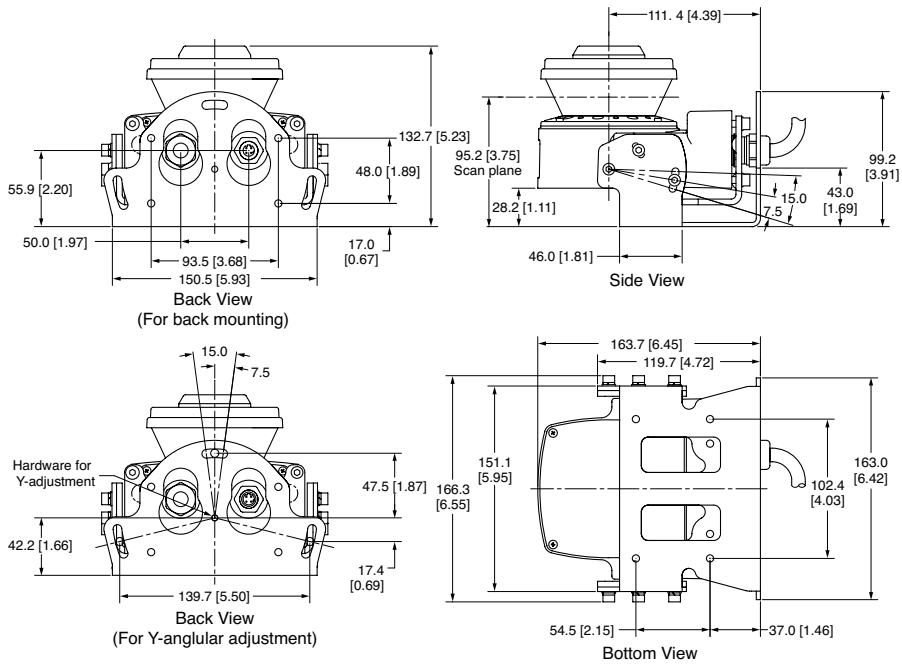
OS32C-BP + OS32C-BKT1 + OS32C-BKT4

OS32C with Bottom/Side Mounting Brackets and Top Guard Kit



OS32C-BP + OS32C-BKT1 + OS32C-BKT2

OS32C with XY Axis Rotation Mounting Kit



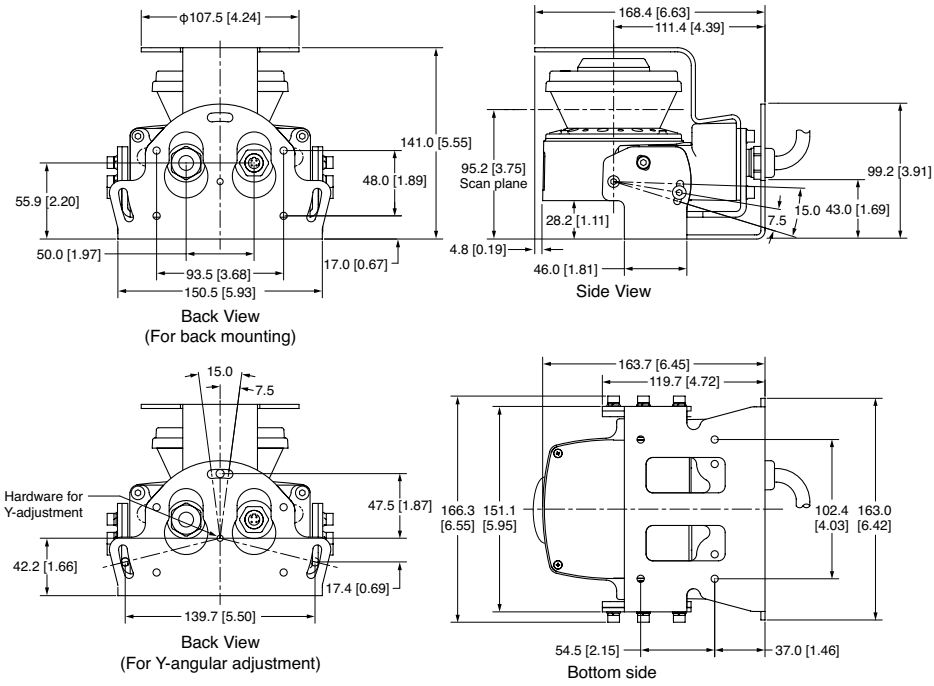
Dimensions (continued)

mm (in.)

B

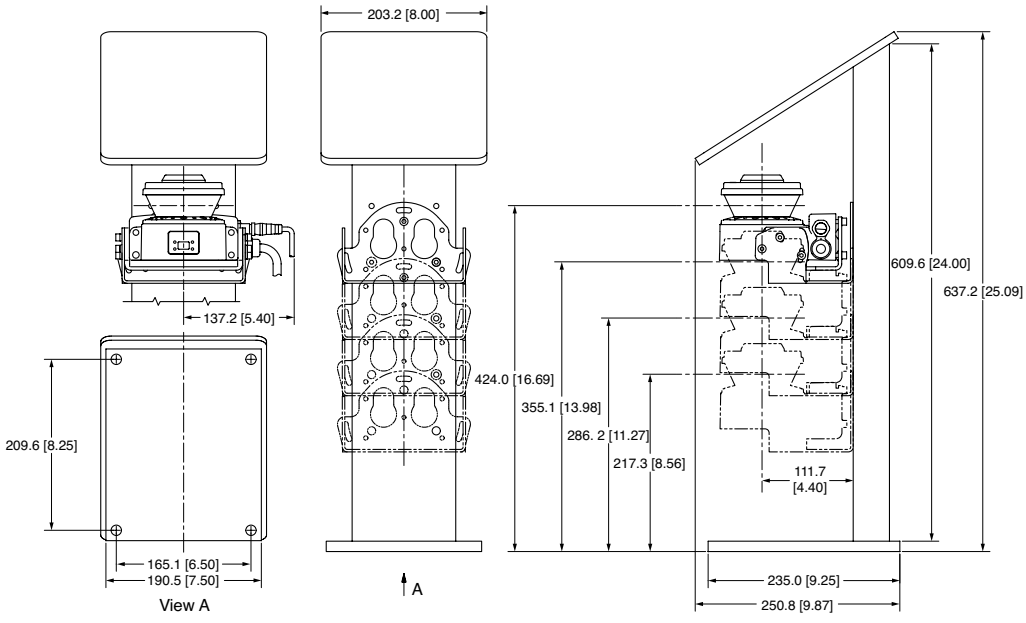
OS32C-BP + OS32C-BKT1 + OS32C-BKT2 + OS32C-BKT4

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



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



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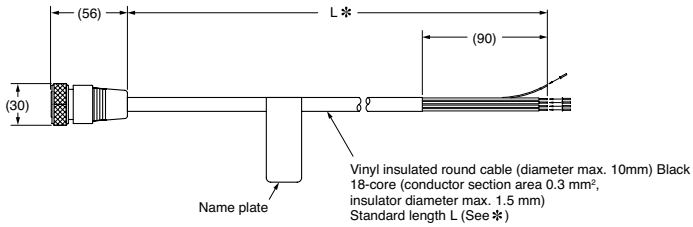
B

Dimensions (continued)

(mm)

OS32C-CBL-□□M

Power Cable

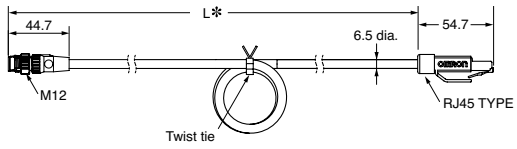


✻ Sizes are as below

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

OS32C-ECBL-□□M

Ethernet Cable



✻ 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 laser scanner with 3 m range and back location cable entry EtherNet capable for configuration and monitoring	OS32C-BP	CD-ROM (Configuration software) OS supported: Windows 2000, Windows XP, Windows Vista Windows 7
	OS32C laser scanner with 4 m range and back location cable entry EtherNet capable for configuration and monitoring	OS32C-BP-4M	
	OS32C laser scanner with 3 m range, back location cable entry EtherNet/IP capable for status measurement data reporting	OS32C-BP-DM	
	OS32C laser scanner with 4 m range, back location cable entry EtherNet/IP capable for status measurement data reporting	OS32C-BP-DM-4M	
	OS32C laser scanner with 3 m range and side location cable entry*, EtherNet capable for configuration and monitoring	OS32C-SP1	
	OS32C laser scanner with 4 m range and side location cable entry*, EtherNet capable for configuration and monitoring	OS32C-SP1-4M	
	OS32C laser scanner with 3 m range, side location cable entry*, EtherNet/IP capable for status measurement data reporting	OS32C-SP1-DM	
	OS32C laser scanner with 4 m range, side location cable entry*, EtherNet/IP capable for status measurement data reporting	OS32C-SP1-DM-4M	

*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.

Ordering (continued)

Accessories

Appearance	Description	Model	Remarks
	Scan window	OS32C-WIN-KT	Spare for replacement
	Spare sensor with 3 m range, without I/O block, EtherNet capable for configuration and monitoring	OS32C-SN	Spare for replacement
	Spare sensor with 4 m range, without I/O block, EtherNet capable for configuration and monitoring	OS32C-SN-4M	Spare for replacement
	Spare sensor with 3 m range, EtherNet/IP, without I/O block, EtherNet/IP capable for status and measurement data reporting	OS32C-SN-DM	Spare replacement for EtherNet/IP
	Spare sensor with 4 m range, EtherNet/IP, without I/O block, EtherNet/IP capable for status and measurement data reporting	OS32C-SN-DM-4M	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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