

SAFETY LASER SCANNER OS32C

World's most compact safety laser scanner



» Power saving up to 50%

» Simple and versatile

» Easy handling and installation

Low profile for easy installation

Omron OS32C Safety Laser Scanner – the World's most compact and versatile safety laser scanner for easy handling and installation with low power consumption.

The compact body allows installation in small spaces, e.g. automated guided vehicles and the detection angle up to 270° provides coverage of two sides with just one scanner.

Versatile solutions

- For collision avoidance of AGVs (Automated Guided Vehicles)
- For intrusion detection through an entrance
- For presence detection within a machine's hazardous area

Features

- Easy configuration of complex zones
- Simplified wiring
- Replacable sensor, no reprogramming needed
- Response time can be set from 80 ms to 680 ms
- Cable access options
- Reference Boundary Monitoring function





**104.5 mm
Lowest profile**

Compact and versatile safety laser scanner



**1.3 kg
Lightweight body**

for easy handling and installation



**5W
Low power consumption**

reduces battery load on the AGV (3.75 W in standby mode)

Detection Angle
270° Max.

Safety Zone
3 m Max.

Warning Zones 1 & 2
10 m Max.



Flexible zone configurations

For complex AGV applications, up to 70 combinations – each with one safety zone and two warning zones – can be set. The two warning zones can be set to support various purposes such as warning sound and speed control.



Safety zone

Warning zone 1

Warning zone 2

Versatile scanner solving many applications

Intrusion detection

Reference Boundary Monitoring function supports intrusion detection without physically blocking the entrance. Supports various operation patterns by switching zone sets.



Safety zone can be selected



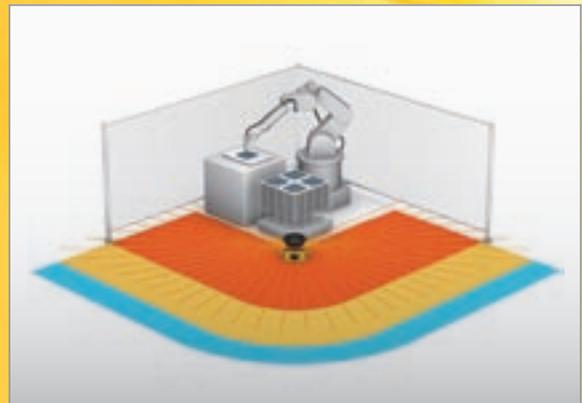
Intrusion detection with vertical installation

Presence detection

Compact body allows for use inside the machine. Detection angle of 270° provides coverage of two sides with one scanner.



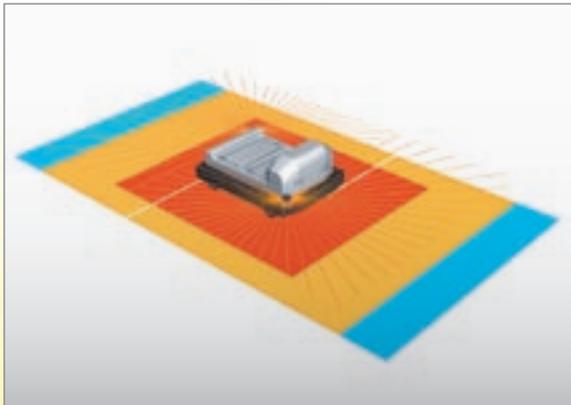
Guarding inside the machine



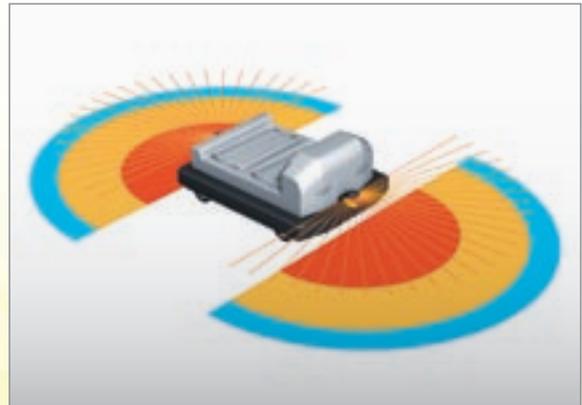
Presence detection of 270°

Collision avoidance

Small, light and compact body provides easy installation on an AGV. Low power consumption (5W) reduces battery load on the AGV. (3.75 W in standby mode) Up to 70 zone set combinations support complex AGV tracks.



All-around monitoring



Front/Rear monitoring



* US patent No.: US 6,753,776 B2

Operating state can be determined at a glance

Eight sector indicators show the direction of intrusion. Front display shows operating state and error codes.

Integrated management via Ethernet

Industry's first Ethernet-compliant Safety Laser Scanner allows the user to check operating status and analyse the cause of an emergency stop via LAN even in large-scale applications using multiple scanners.

New convenient and easy-to-use functions

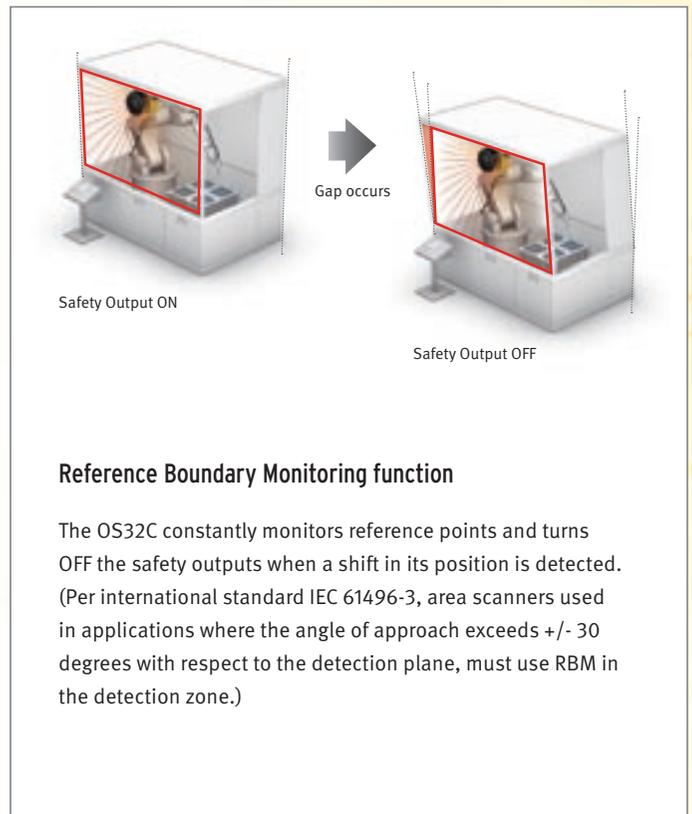
The OS32C uses time-of-flight (TOF) measurement to determine distance. The scanner emits a laser pulse, when the pulse hits an object the signal is reflected to the scanner. The OS32C then compares the distance/position of the object against the defined safety zone.

Easy configuration of complex zones

The configuration of the safety zone and warning zones can be done in real time using a PC. Configurations can also be created or modified offline.

Response time can be set from 80 ms to 680 ms

Response time adjustment can filter out erroneous detections (machine stoppage) caused by pollutants in the environment.



Reference Boundary Monitoring function

The OS32C constantly monitors reference points and turns OFF the safety outputs when a shift in its position is detected. (Per international standard IEC 61496-3, area scanners used in applications where the angle of approach exceeds ± 30 degrees with respect to the detection plane, must use RBM in the detection zone.)





Replaceable sensor, no reprogramming needed

No reprogramming needed, the configuration is stored in the I/O block. Replacing a damaged sensor is fast and easy.

Simplified wiring

Omron STI's innovative I/O method requires fewer inputs when configuring multiple zones. Only 4 inputs are required to select from 6 zone sets. If all 8 inputs are used, up to 70 zone sets are available.

Cable access options

To tailor the OS32C to your installation, two options are available for the location of the power and ethernet connections:

- OS32C-BP (Cable access from the back)
- OS32C-SP1 (Cable access from the left side)

These can be selected according to the needs of AGV or facilities design.

Provides Safety Category 3 safety circuit
without a dedicated controller

Compliant to global safety standards

ISO 13849-1 PLd

SIL2





OS32C Safety Laser Scanner

- 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 3 m and warning zone(s) radius up to 10 m can be set.
- 8 Individual Sector Indicators and various LED indications allow the user to determine scanner status at a glance.
- Reference Boundary Monitoring function prevents unauthorized changes in the scanner position.

Ordering information

OS32C (Power cable is sold separately.)

Description	Remarks	Order code
Back location cable entry	CD-ROM (Configuration software)	OS32C-BP
Side location cable entry ^{*1}	OS supported: Windows 2000, Windows XP, Windows Vista	OS32C-SP1

^{*1} For OS32C-SP1, each connector is located on the left as viewed from the back of the I/O block.

Mounting brackets

Type	Remarks	Order code
Bottom/side mounting bracket	Bottom/side mounting bracket x 1, unit mounting screws x 4 sets	OS32C-BKT1
XY axis rotation mounting bracket	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)	OS32C-BKT2

Note: For a full line-up of accessories and spare parts, please refer to the Z298-E1... datasheet.

Specifications

Sensors	
Sensor Type	Type 3 Safety Laser Scanner
Safety Category	Category 3, Performance Level d (ISO13849-1: 2006)
Detection Capability	Non-transparent with a diameter of 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 radius up to 3 m, Warning Zone radius up to 10 m.
Detection Angle	270°
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)
Line Voltage	24 VDC +25%/-30% (ripple p-p 2.5 V max.) ^{*1}
Power Consumption	Normal operation: 5 W max., 4 W typical (without output load) ^{*2} Standby mode: 3.75 W (without output load)
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. ^{*2,*3,*4}
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. ^{*3,*4,*5}
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. ^{*3,*4,*5}
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	Communication: Ethernet
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
Enclosure Rating	IP65 (IEC60529)
Dimensions (WxHxD)	133.0 x 104.5 x 142.7 mm (except cable)
Weight (Main Unit only)	1.3 kg
Approvals	EN61496-1 (Type 3 ESPE), EN61496-3 (Type 3 AOPDDR), EN61508 (SIL2), ISO13849-1 (Category 3, Performance Level d), UL508, UL1998, CAN/CSA-C22.2 No. 14, CAN/CSA-C22.2 No. 0.8

^{*1} For power source specification, refer to "Safety Precautions" on page 16.

^{*2} 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)

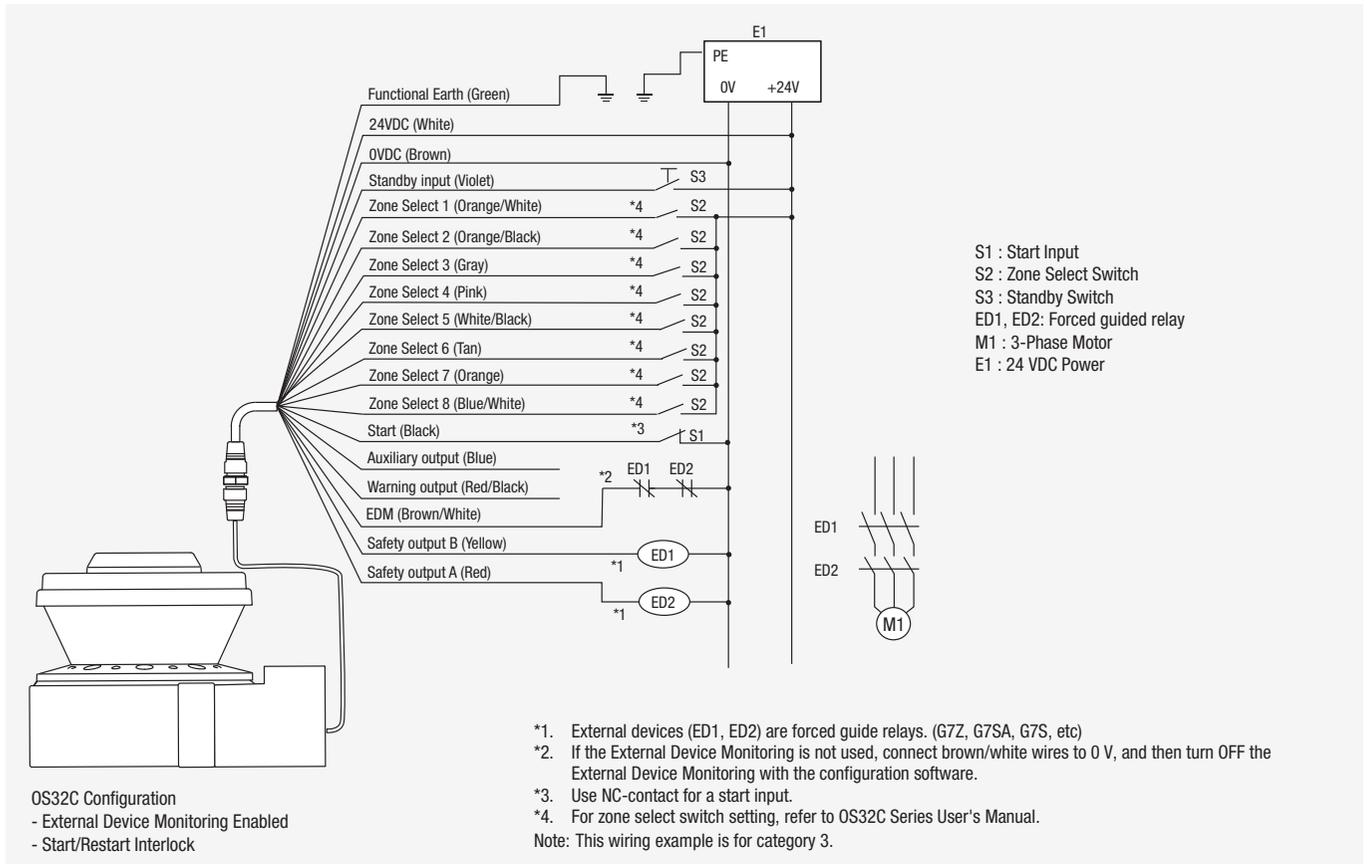
^{*3} Output voltage is Input voltage - 2.0 VDC.

^{*4} Total consumption current of 2 OSSDs, auxiliary output, and warning output must not exceed 700 mA.

^{*5} Output polarity (NPN/PNP) is configurable via the configuration tool.

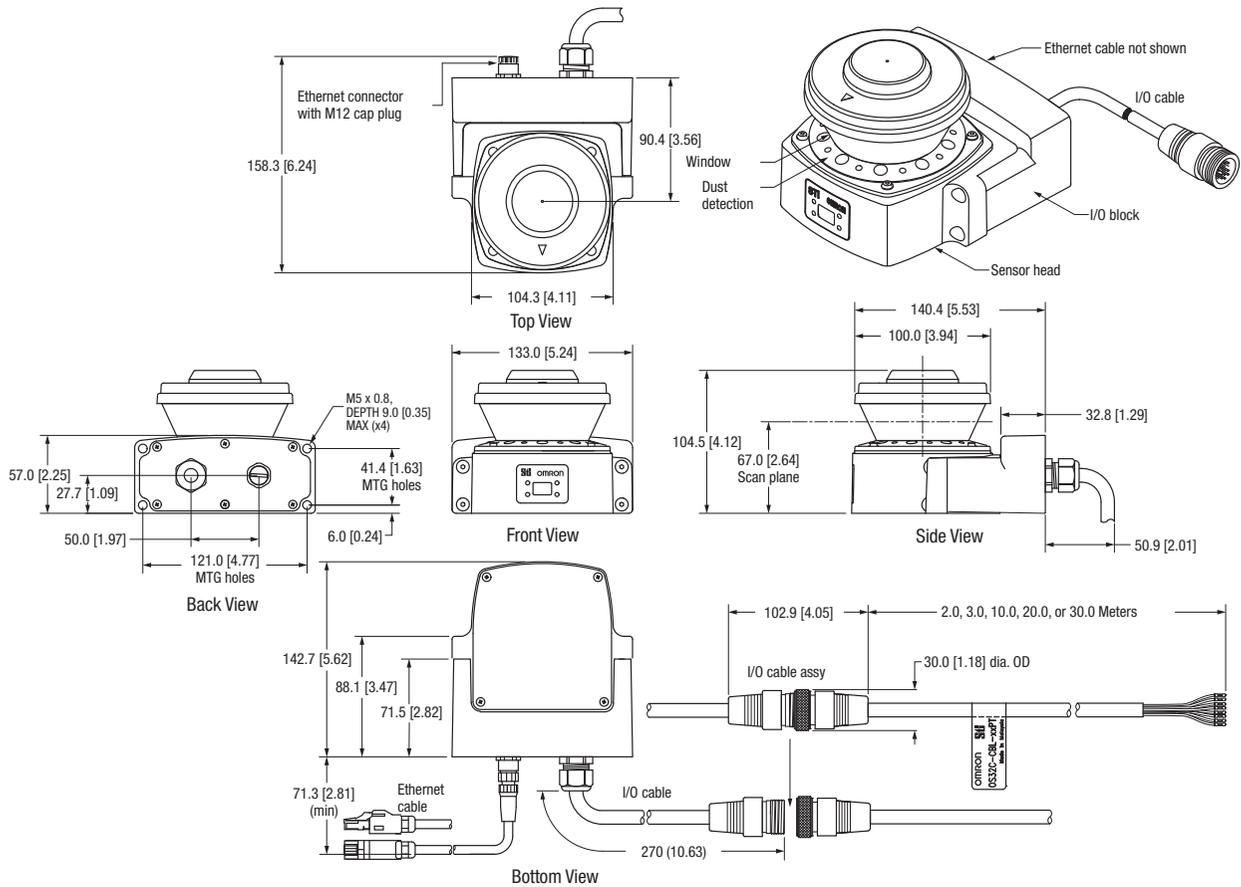
Connection

Basic connection with single OS32C unit Category 3, Performance Level d (ISO13849-1)

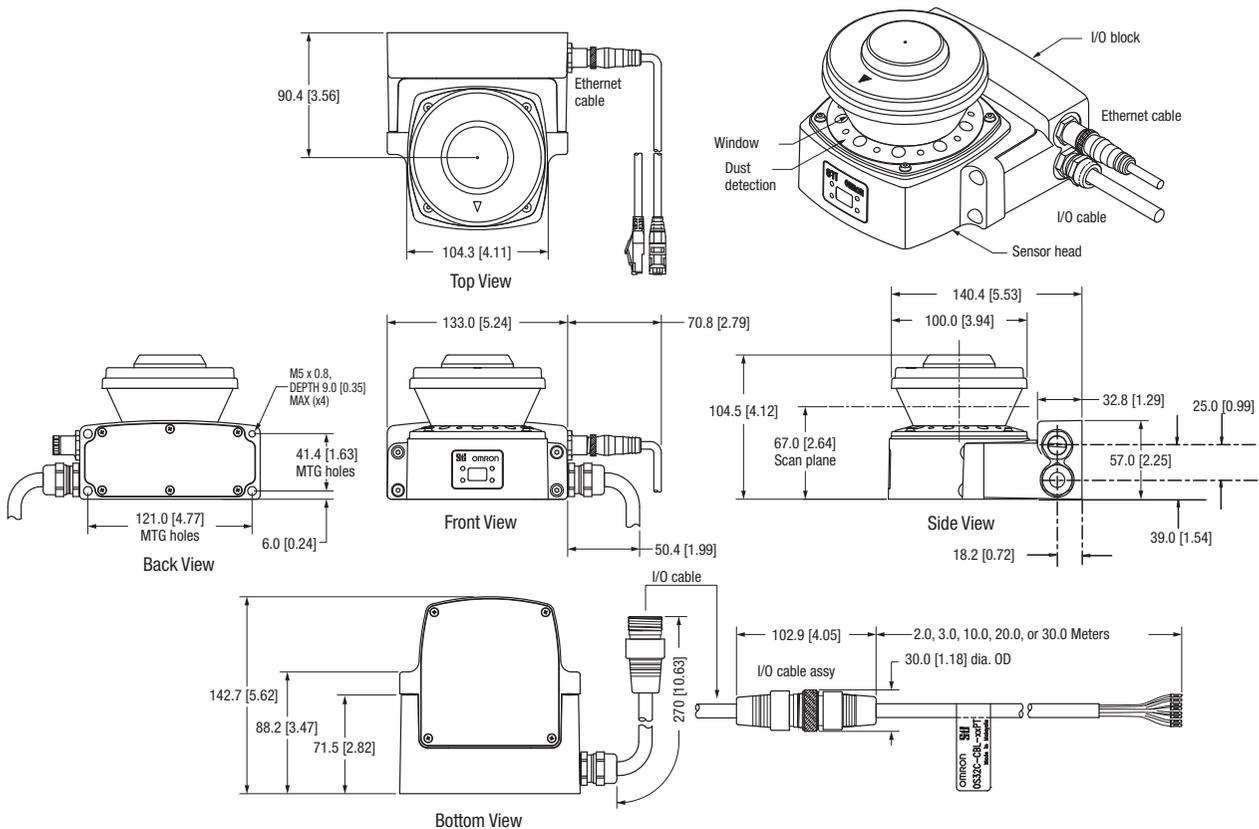


Dimensions

OS32C with Back Location Cable Entry - OS32C-BP



OS32C with Side Location Cable Entry - OS32C-SP1



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