

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 vehicle 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)

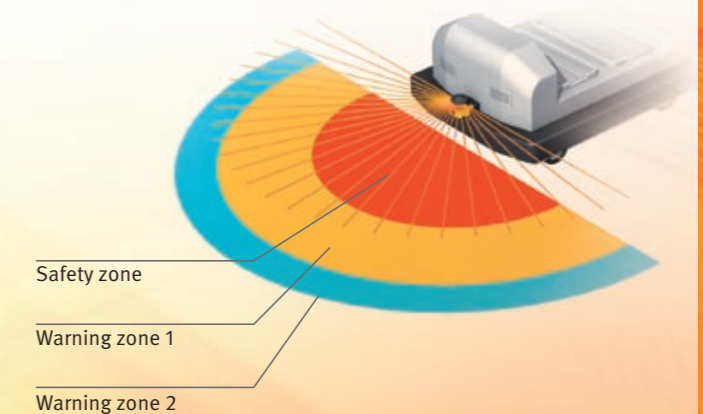
Detection Angle
270° Max.

Safety Zone
3 m Max.

Warning Zones 1 & 2
10 m Max.

Flexible zone configurations

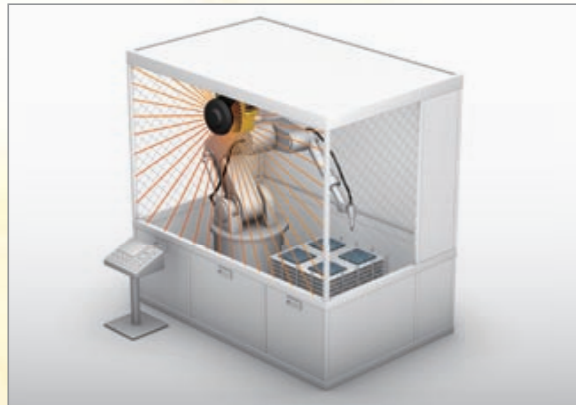
For complex AGV applications, up to 70 combinations – each with one safety zone and two warning zones – can be set. The two warning zones can be set to support various purposes such as warning sound and speed control.



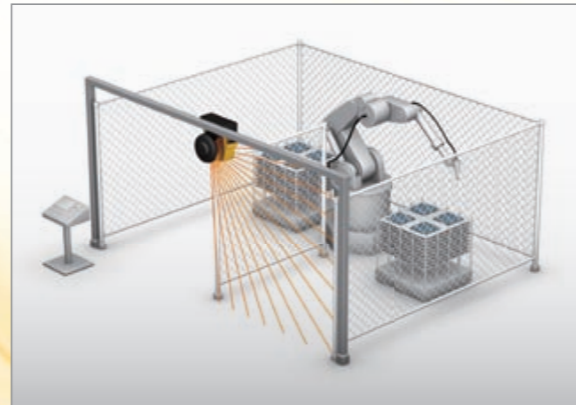
Versatile scanner solving many applications

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



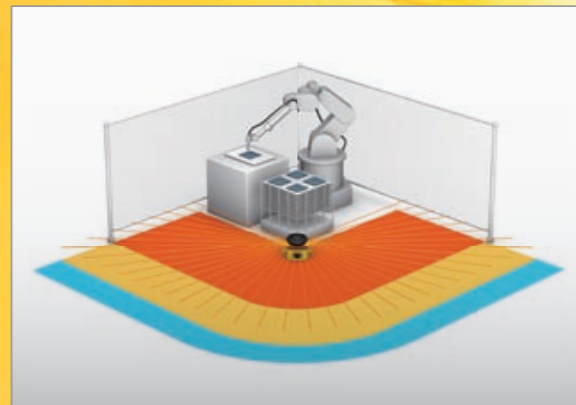
Intrusion detection with vertical installation

Presence detection

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



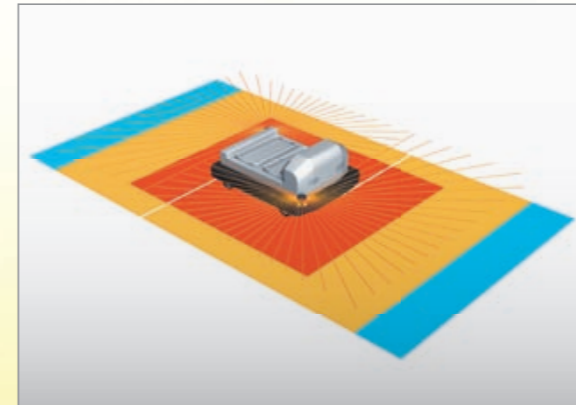
Guarding inside the machine



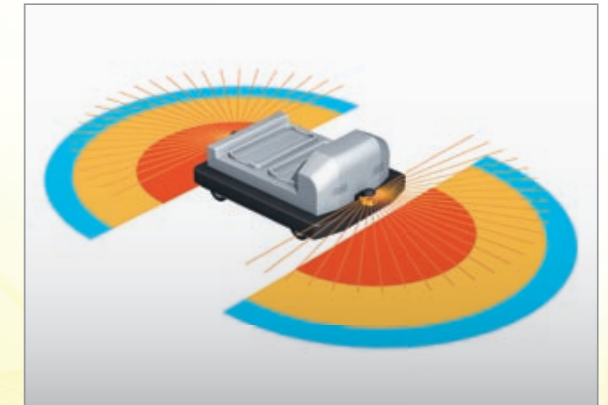
Presence detection of 270°

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

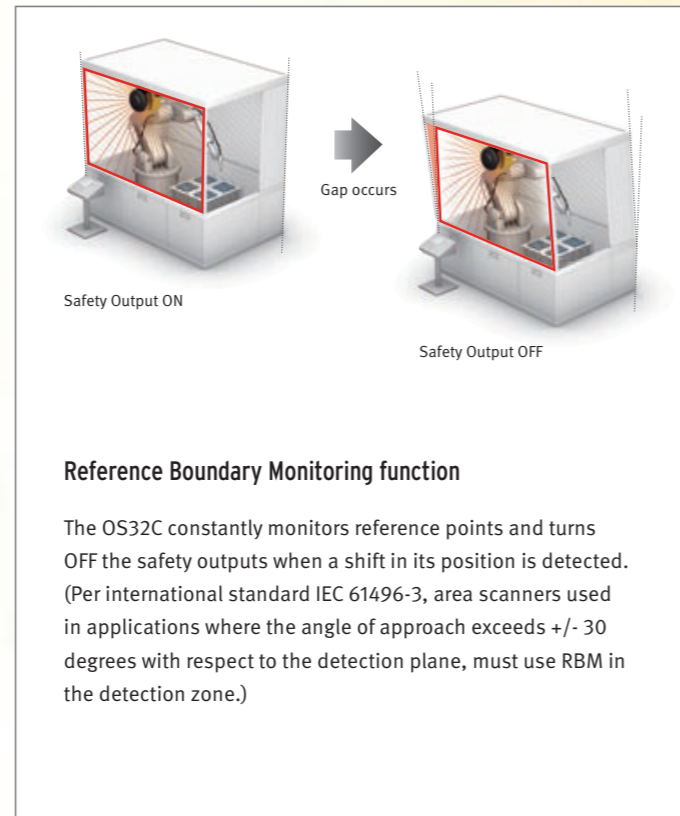
Eight sector indicators show the direction of intrusion. Front display shows operating state and error codes.

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.



Replacable 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

ISO13849-1 PLd

SIL2



Safety Laser Scanner OS32C



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.)


Appearance	Description	Model	Remarks
	OS32C with back location cable entry	OS32C-BP	CD-ROM (Configuration software) OS supported: - Windows 2000, - Windows XP, - Windows Vista
	OS32C with side location cable entry*1	OS32C-SP1	

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

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 ^{*1}
	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.

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

Accessories

Appearance	Description	Model	Remarks
	Scan window	OS32C-WIN-KT	Spare for replacement
	Sensor block without I/O block	OS32C-SN	Spare for replacement
	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

Rating/Performance

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.	
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.	
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,*6}	
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,*6}	
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 ^{*7}	Communication: Ethernet OS Supported: Windows 2000, Windows XP, Windows Vista	
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	
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)	
Weight (Main Unit only)	1.3 kg	
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), ISO13849-1 (Category 3, Performance Level d), 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 16.

^{*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.

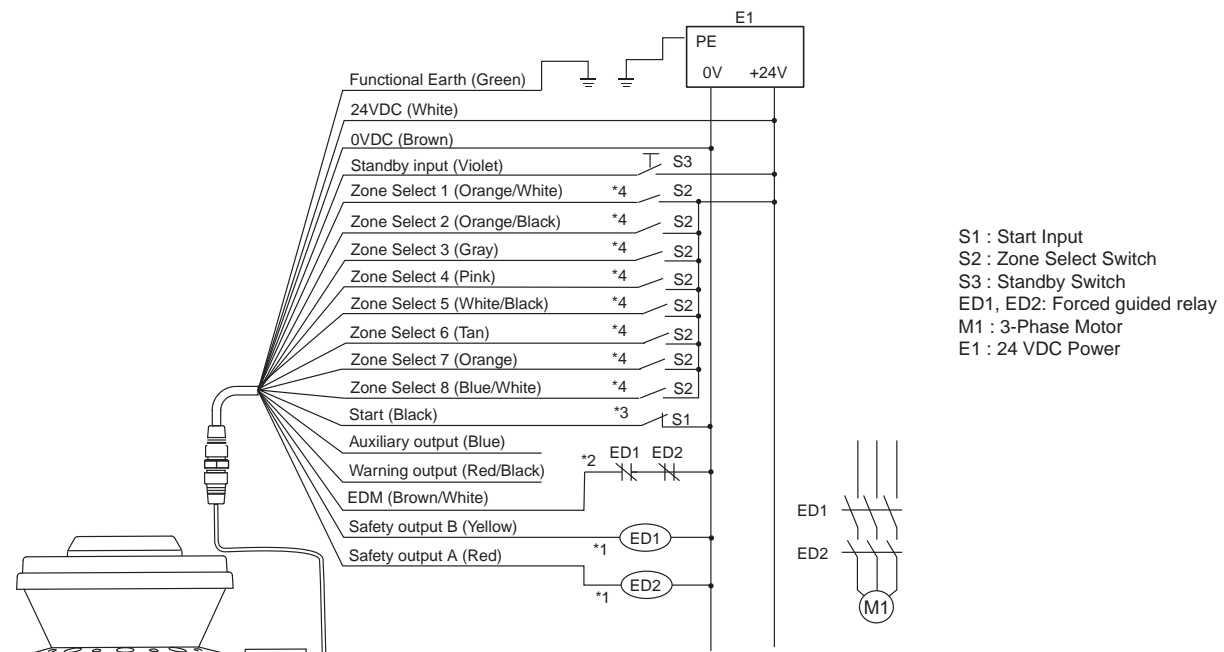
^{*5.} Total consumption current of 2 OSSDs, auxiliary output, and warning output must not exceed 700 mA.

^{*6.} Output polarity (NPN/PNP) is configurable via the configuration tool.

^{*7.} An ethernet cable with an M12, 4-pin connector is required.

Connection

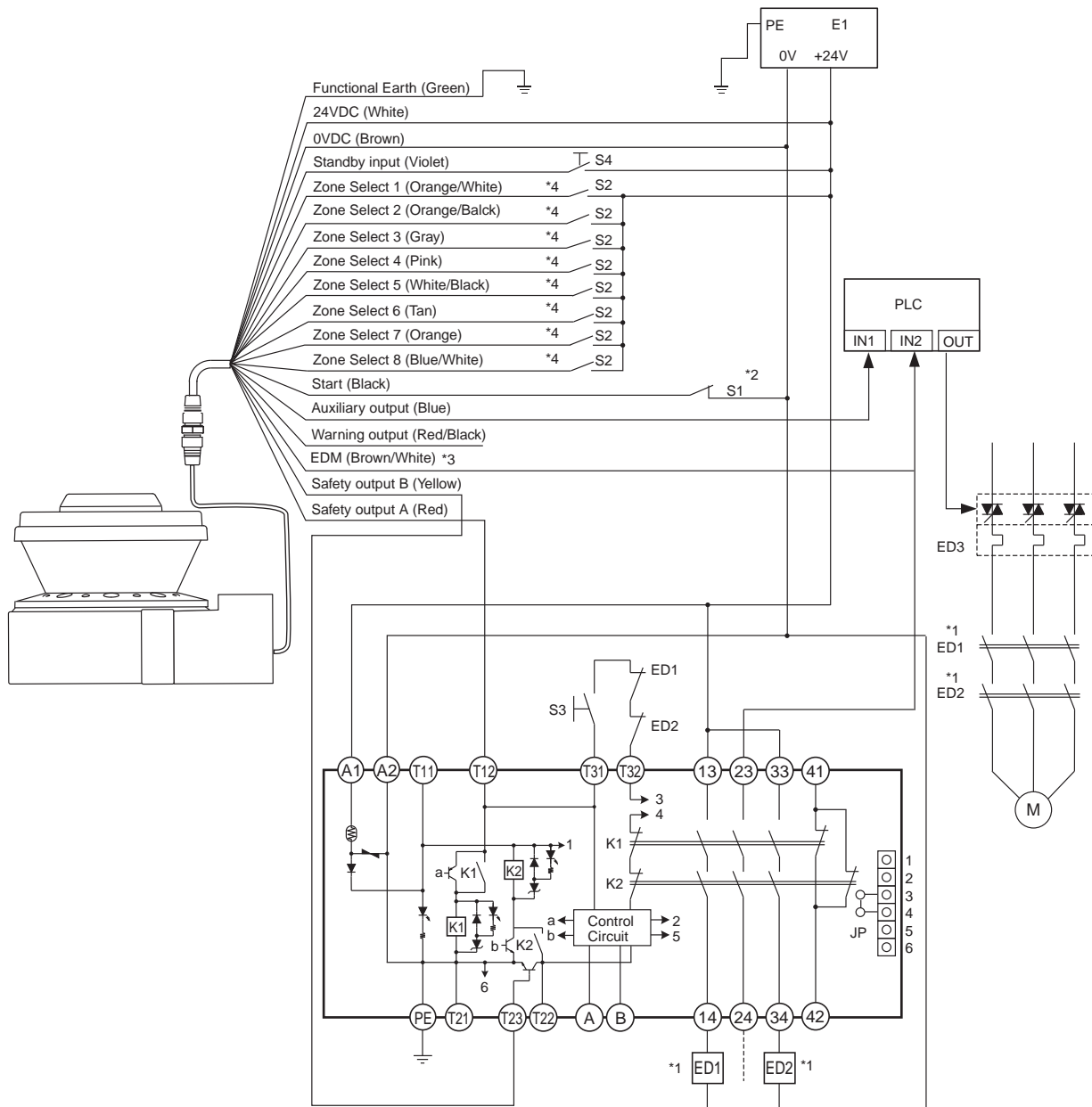
Basic connection with single OS32C unit
 Category 3, Performance Level d (ISO13849-1)



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.
- Note: This wiring example is for category 3.

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

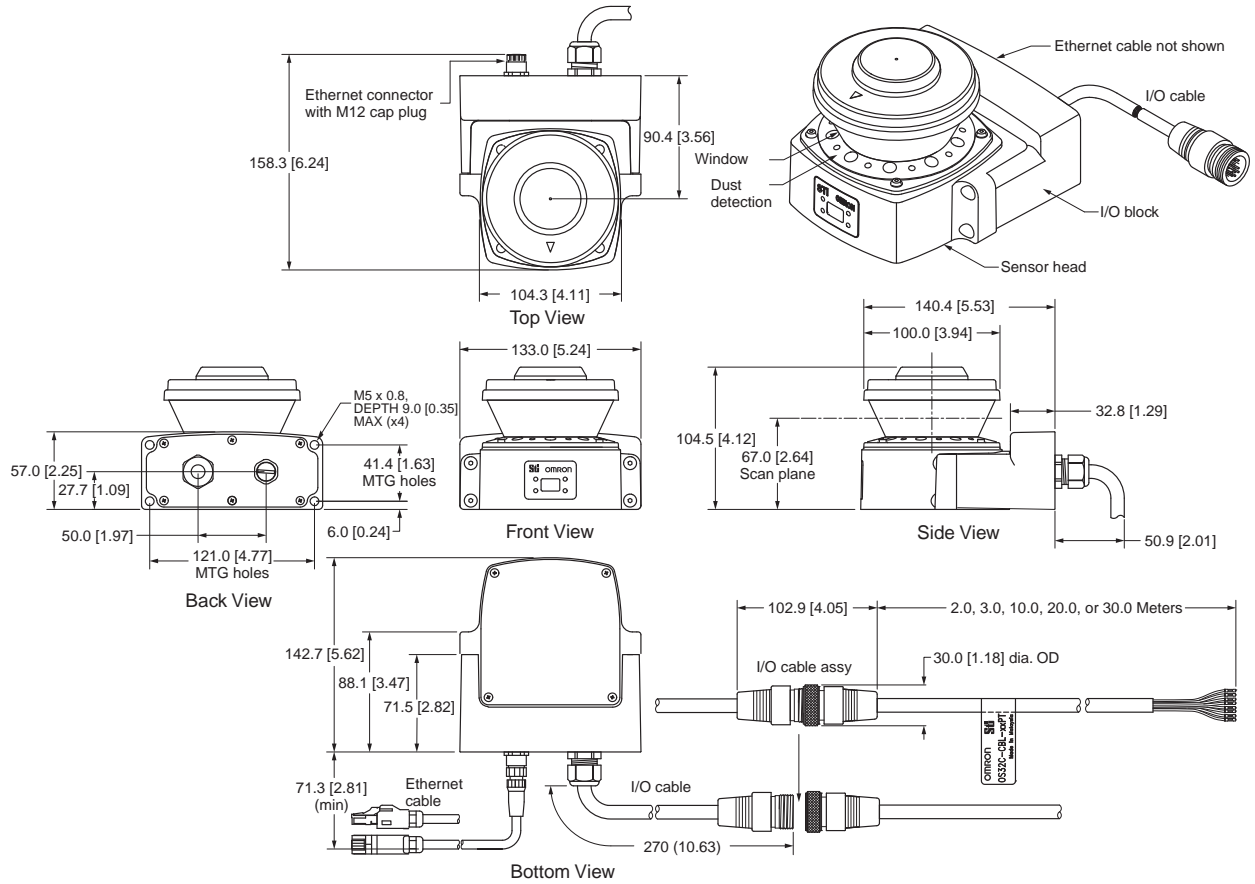


ED1, ED2: Forced guided relay
 ED3: Solid state contactor (G3J)
 M : 3-Phase Motor
 S1 : Start Input
 (use for releasing lockout)
 S2 : Zone Select Switch
 S3 : Reset Switch
 S4 : Standby Switch
 E1 : 24 VDC Power
 PLC : Programmable Controller
 (This is for monitoring only and
 unrelated to a safety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

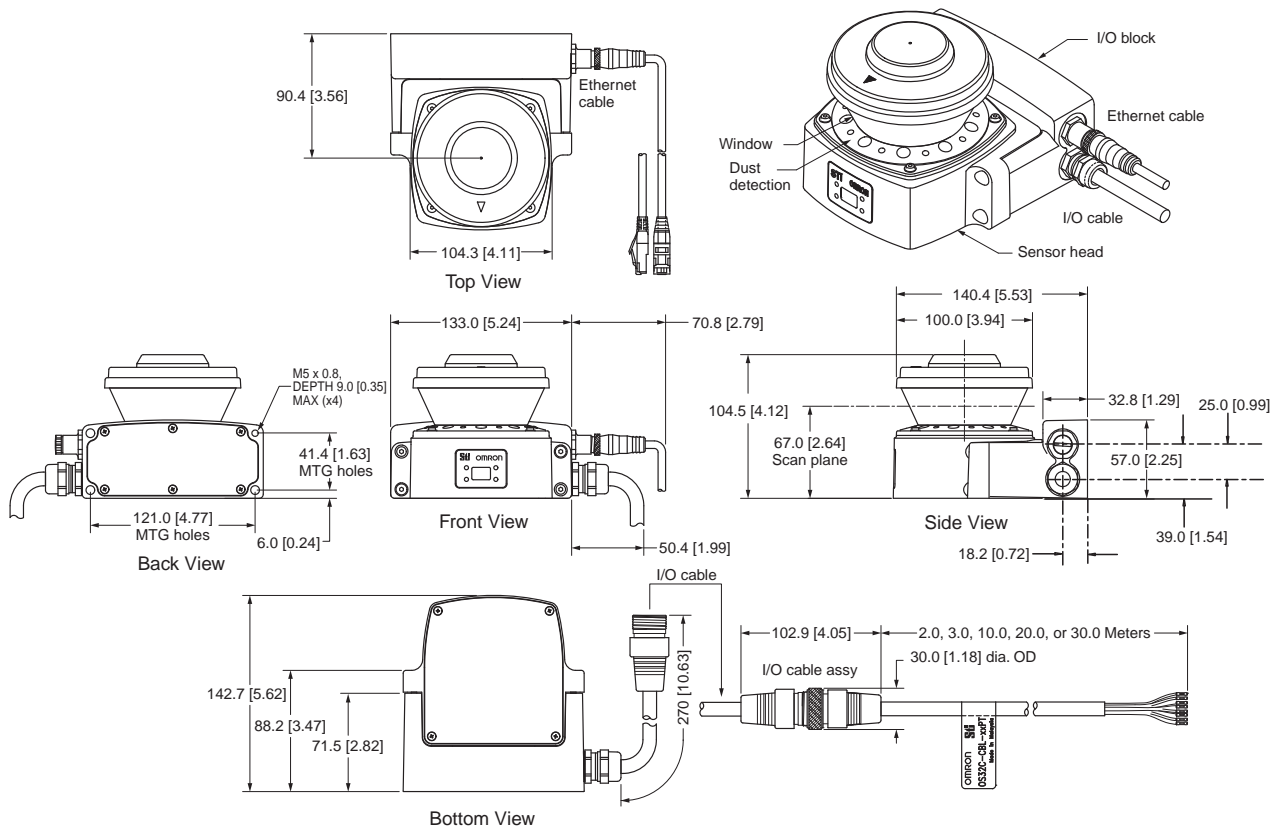
- *1. External devices (ED1, ED2) are forced guide relays. (G7Z, G7SA, G7S, etc)
 - *2. Use NC-contact for a start input.
 - *3. If the External Device Monitoring is not used, connect brown/white wires to 0V, and then turn OFF the External Device Monitoring with the configuration software.
 - *4. For zone select switch setting, refer to OS32C Series User's Manual.
- Note: This wiring example is for category 3.

Dimensions

OS32C with Back Location Cable Entry - OS32C-BP



OS32C with Side Location Cable Entry - OS32C-SP1



Cat. No. Z298-E1-01-X

In the interest of product improvement, specifications are subject to change without notice.

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