




OS32C

Safety Laser Scanner

Quick Reference Guide

Original Instructions

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Safety Precautions

The Alert symbols and their meanings ensure safe use of the products. In order to use the OS32C safely, the precautions listed in this manual are indicated by alert symbols. The descriptions must be followed, failure to follow all precautions and alerts may result in an unsafe installation or operation. The following indications and symbols are used.

⚠ WARNING Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or may result in serious injury or death. Additionally there may be significant property damage.

⚠ CAUTION Indicates a potentially hazardous situation which, if not avoided, will result in minor or moderate injury, or there may be property damage.

Meaning of alert Symbols	
	Indicates prohibited actions.
	Indicates mandatory actions.

 If more information is needed, refer to the OS32C user's manual (Z296-E1).

Alert Statements in this Manual

⚠ WARNING An OS32C is an electro-sensitive protective equipment designed to guard personnel working around hazardous machinery.

Whether a specific machine application and the OS32C system installation complies with safety regulations depends on the proper application, installation, maintenance and operation of the OS32C system. These items are the responsibility of the purchaser, installer and user.

⚠ WARNING The administrator is responsible for the selection and training of personnel to properly install, operate, and maintain the machine and its safeguarding systems.

An OS32C system should only be installed, verified and maintained by a qualified person. A qualified person is defined as "an individual who understands, is trained on, and demonstrates competence with the construction, operation or maintenance of the machinery and the hazards involved." (ANSI/PMMA B155.1-2006)

The machine requirements

⚠ WARNING The guarded machine must be able to stop anywhere in its cycle. Do not use an OS32C on a press with a full-revolution clutch.

The guarded machine must have a consistent stopping time and adequate control mechanisms.

All safety-related machine control elements must be designed so that an alarm in the control logic or failure of the control circuit does not lead to a failure to danger.

Do not use the auxiliary output or warning output for safety applications. A human body may not be detected even if a failure of OS32C occurs, resulting in serious injuries.

Installation

⚠ WARNING The main unit must be securely mounted and its cable connectors must be tightly attached.

The OS32C must not be mounted behind glass or within a secondary enclosure. Failure to do so will cause a reduction in detection capability, which can cause serious injury or death.

A start switch to release interlock must be installed where an operator can observe the monitored/guarded zone as a whole and cannot operate the switch within the hazardous zone.

Per the 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 reference boundary monitoring (RBM) of the detection zone.

Make sure to remove any retro-reflector from the field of view of the OS32C when in RBM mode.

A protective mechanism must be installed to prevent a hazardous condition in the event of a subsequent machine component failure. The OS32C does not protect against ejected flying material.

Severe smoke and particulate matter may degrade the efficiency of an OS32C, causing it to unexpectedly enter a Machine Stop state.

Use of mirrors or mirror-like objects in the protection plane must be avoided, as they can hide part of the area to be monitored/guarded.

Additional guarding may be required to prohibit access to dangerous areas not covered by the OS32C system.

Perform the test procedure described in the OS32C user's manual at installation, after maintenance, adjustment, repair or modification to the machine controls, tooling or safety system.

Perform only the test and repair procedures outlined in the OS32C user's manual.

Additional measurement error resulting from reflective backgrounds may need to be added to the measurement error of the OS32C.

To use the protective function of the OS32C, a safety zone must be properly defined and configured.

If the response time is changed, re-calculation of the safety distance is required. This may require re-configuration of the safety zones or re-installation of the OS32C. If the safety distance is not appropriate for the application, the machine may not stop before contact with the hazardous part, resulting in serious injuries or death.

The activation of RBM Only mode will increase the response time. This additional time must be taken into consideration when calculating the safety guarding distance.

When using more than one OS32C, mutual interference should be prevented. This may require different scanner positions or physical shields to be installed.

To ensure a protection degree of IP65, DO NOT use this product without proper sealing of the cable connector, I/O block, and scan window.

If the external zone switching device momentarily exceeds the configured number of active zone set select inputs during the zone switch, an additional Zone Delay may be incurred in the event that wiring of a zone set select input fails. The external zone switching device must properly sequence so the configured number of active inputs is not exceeded in order to guarantee that failed zone set select input wiring will be detected within the normal Zone Switching Time.

If an insufficient Zone Delay is used for the actual worst case switching time of the installation, the scanner might start monitoring the wrong zone during the switching period. Also, if an insufficient Zone Delay is used for the actual worst case switching time of the installation, there might be a fault condition during the zone switching period.

If Istart (switching start time) is configured without consideration of TmaxReaction (total maximum reaction time), object detection within the new safety zone after switching and turning OFF of the safety outputs may be delayed.

Monitoring zone parameters are subject to a number of constraints that include projective consistency, maximum radius, and angle limits. As a result, an imported zone may not correspond exactly to the zone defined in the file. The user must visually verify the imported zone when the zone coordinate import process is complete. Refer to Checkout and Test Procedure Log in the OS32C user's manual.

The installer is responsible for assessing the risk and to ensure that the zone of limited detection does not create a safety hazard. If a hazard exists additional countermeasure must be taken, this may require additional guarding measures.

Others

⚠ WARNING Do not modify the main unit of the OS32C. Do not replace or fix any component of the OS32C other than the ones specified in the user's manual. Doing so may result in a failure of this device to function correctly.

If there is any damage to the window, replace it as soon as possible. Otherwise it may result in a failure of the OS32C. Take preventive measures when performing replacement work so that dust does not enter the OS32C.

Always detach all cables from the OS32C before replacing the scan window. Otherwise the motor may start rotating, resulting in injuries.

The window replacement procedure must only be performed by qualified personnel in a clean environment at ambient temperature (5 to 35°C) to prevent the internal optical surface from contamination. Make sure the inside and the outside of the replacement window is clean and free from scratch, dust, and finger print.

The calibration procedure must only be performed by qualified personnel. Before performing window calibration of the new scan window, make sure the window is clean and free from scratch, dust, and finger print. The window calibration procedure must be performed at ambient temperature 5 to 35°C. Failure to inspect the window or set the proper environmental condition during window calibration procedure may cause a reduction in the detection capability of the scanner.

The tests outlined in the Test Procedure (See "Checkout and Test Procedure Log" in the OS32C user's manual) must be performed at time of installation, according to the employer's regular inspection program and after any maintenance, tooling change, set up, adjustment, or modification to the OS32C system or the guarded machine. Where a guarded machine is used by multiple operators or shifts, it is suggested that the test procedure be performed at each shift or operation change and also if there is a change in the OS32C operating mode or defined zone sets. Testing ensures that the safety laser scanner and the machine control system are working properly to stop the machine. Failure to test properly could result in serious injury to personnel.

If the safety system or the machine fails any of these tests, do not run the machine. Immediately tag or lock out the machine to prevent its use and notify the appropriate supervisor.

System and zone status parameters monitored over EtherNet/IP are to be used for diagnostic purposes only, and must not be used in safety-critical functions.

Measurement data monitored over EtherNet/IP are to be used for diagnostic purposes only, and must not be used in safety-critical functions.

Security Measures

Anti-virus protection
Install the latest commercial-quality antivirus software on the computer connected to the control system and maintain to keep the software up-to-date.

Security measures to prevent unauthorized access
Take the following measures to prevent unauthorized access to our products.

- Install physical controls so that only authorized personnel can access control systems and equipment.
- Reduce connections to control systems and equipment via networks to prevent access from untrusted devices.
- Install firewalls to shut down unused communications ports and limit communications hosts and isolate control systems and equipment from the IT network.
- Use a virtual private network (VPN) for remote access to control systems and equipment.
- Adopt multifactor authentication to devices with remote access to control systems and equipment.
- Set strong passwords and change them frequently.
- Scan virus to ensure safety of USB drives or other external storages before connecting them to control systems and equipment.

Data input and output protection
Validate backups and ranges to cope with unintentional modification of input/output data to control systems and equipment.

- Checking the scope of data
- Checking validity of backups and preparing data for restore in case of falsification and abnormalities
- Safety design, such as emergency shutdown and fail-soft operation in case of data tampering and abnormalities

Data recovery
Backup data and keep the data up-to-date periodically to prepare for data loss.

When using an intranet environment through a global address, connecting to an unauthorized terminal such as a SCADA, HMI or to an unauthorized server may result in network security issues such as spoofing and tampering. You must take sufficient measures such as restricting access to the terminal, using a terminal equipped with a secure function, and locking the installation area by yourself.

When constructing an intranet, communication failure may occur due to cable disconnection or the influence of unauthorized network equipment.

Take adequate measures, such as restricting physical access to network devices, by means such as locking the installation area.

⚠ CAUTION

When transferring data from the PC to the OS32C and more than one OS32C is connected to the network, it is necessary to visually check the diagnostic code on the status/diagnostic display. It is recommended that the OS32C be installed in a position where the status/diagnostic display will be visible.

Before sending the changes to the sensor, verify that the safety parameters are configured as intended for the application.

Take precautions to prevent dirt, dust or debris from entering the sensor and I/O block connectors. It is recommended that this be done on a clean workstation as contaminants may degrade the performance of the OS32C.

Adhesion of dust to the scan window may cause a false operation. The OS32C will require periodic cleaning of the scan window and dust detection surface.

Ensure the measurement report configuration of the OS32C-xxx-DM matches the expected measurement data format.

Precautions for Safe Use

- Make sure to follow all the safety precautions that are necessary to ensure safe use of the product.
- Thoroughly read this installation manual and understand the installation, operation checks, and maintenance procedures before using the product.
 - Loads must satisfy both of the following conditions:
 - Not short-circuited
 - Not used with a current that is higher than the OSSD rating (250 mA sourcing)
 - The main unit must be properly mounted with the proper mounting hardware.
 - Do not drop the product, serious damage will occur.
 - Comply with all the laws, regulations, and standards of the country/region where the product is used.
 - Dispose of the product in accordance with the relevant rules and regulations of the country/region where the product is used.

Precautions for Correct Use

Observe the precautions described below to prevent operation failure, malfunctions, or undesirable effects on product performance.

- Installation environment
Do not install the OS32C in the following types of environments:
 - Areas where OS32C may be exposed to intense interference light, such as direct sunlight
 - Areas with high humidity where condensation is likely to occur
 - Areas subject to condensation resulting from severe changes in temperature
 - Areas where corrosive gases are present
 - Areas exposed to vibration or shock levels higher than in the specification provisions
 - Areas where the product may come into contact with water
 - Areas where the product may get wet with oil
 - Areas where smoke and/or water vapor exists on the laser scanning plane
 - Keep the OS32C far enough from devices that generate high frequency noise or eliminate the noise.
 - Be sure to route the OS32C cable separate from high-potential power lines or route through an exclusive conduit.

This is a class A product. In residential areas it may cause radio interference, in which case the Responsible Person may be required to take adequate measures to reduce interference.

- Wiring and installation
 - Make sure to perform wiring while the power supply is OFF. Otherwise, the OS32C may fail to operate due to the diagnostics function.
 - Properly perform the wiring after confirming the signal names of all the terminals.
 - Do not operate the control system until 14 seconds or more after turning ON the power of the OS32C.
 - Be sure to route the OS32C cable separate from high-potential power lines or through an exclusive conduit.
 - When using a commercially available switching regulator power supply, make sure to ground the FG terminal (frame ground terminal).
 - Sharing the power supply with other devices may cause the OS32C to be affected by noise or voltage drop. It is recommended that the safety-related devices use a dedicated power supply, not shared with other devices.

- Cleaning
Do not use thinner, benzene, or acetone for cleaning. They will adversely affect the product's resin parts and paint on the case.

- Object detection
The OS32C has a configurable minimum object resolution of 30mm, 40mm, 50mm, or 70mm. It cannot detect transparent or translucent objects, or objects with reflective surfaces, of less than 1.8% reflectivity.

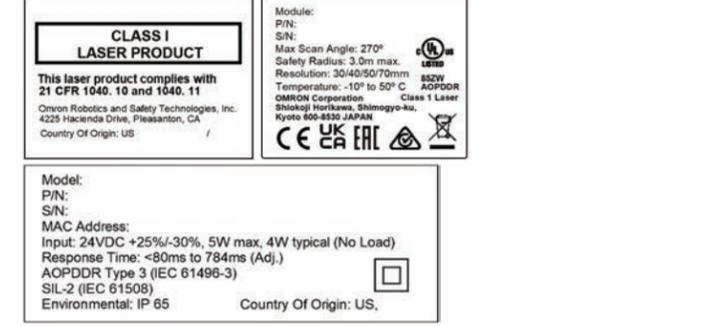
LASER SAFETY

- Precautions on Handling
- OS32C radiates light laser. Do not directly look into beam.
- In the case of releasing beam, avoid the optical path to be at eye level.
- Laser safety regulations vary according to the country where LED devices are used.

- (1) Use in Japan
JIS C 6802 regulates safety protection measures to the user according to classes of laser products. OS32C is classified as Class 1.
- (2) Use in the United States
This product is subjected to the U.S. FDA (Food and Drug Administration) laser regulations. This product is classified into Class I by the regulations of 21CFR 1040.10, 1040.11 of the FDA standard.

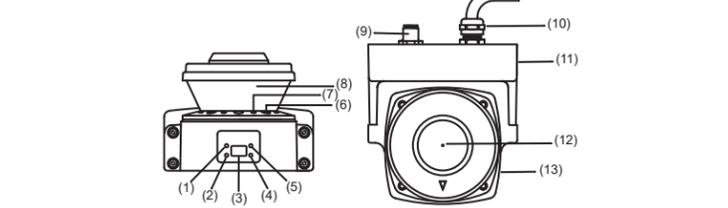
Labels related to lasers
Products are labeled in accordance with FDA technical standards.

Certification label



- (3) Usage in countries other than U.S. and Japan
This product is classified into Class 1 by the IEC 60825-1:2014, EN60825-1:2014+A11:2021 standard.

■ System Components



No.	Component	Function
(1)	RUN output 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 (@ 1Hz), and blink under configuration (@ 4Hz).
(3)	Status/Diagnostic Display	The scanner's status, configuration/operation, or failure is displayed.
(4)	Warning Output Indicator (orange)	Will turn ON when the warning output is ON.
(5)	STOP output indicator (red)	Will turn ON when safety zone is blocked, OSSD are OFF or under interlock state.
(6)	Dust Ring	Dust detection cover with reflective surface, for dust accumulation detection.
(7)	Individual Sector Indicators (ISI)	Will turn ON when an intrusion is detected in the safety zone (default), 8 sectors total. Each sector = 33.75°. Will flash when dust or contamination is detected on the scan window.
(8)	Scan Window	The window where the laser light is emitted and received.
(9)	Communication Connector	Provides for Ethernet interface.*1
(10)	Power Connector	For power connections, 18-pin connector (pigtail). *1
(11)	I/O Block	Connector module
(12)	Center of Rotation	Indicates the location of the axis around which the laser irradiates from.
(13)	Sensor	Sensor Head; field replaceable.

*1: The communication and power connections can also be mounted on the left side of the I/O block.

■ Rating/Performance

Sensor Type	Type 3 Safety Laser Scanner	
Performance Level (PL)/ Safety Category	PL d, Safety Category 3 (ISO13849-1)	
Functional Safety of Electrical/Electronic/ Programmable Electronic Safety-related Systems	SIL 2, PFH _D = 8.3 x 10 ⁻⁸ (IEC61508)	
Detection Capability	Configurable via the configuration tool; Non-transparent with a diameter of 30, 40, 50, 70mm (1.8% reflectivity or greater)	
Monitoring Zone	Monitoring Zone Set Count (Safety Zone + 2 Warning Zones) : 70 sets max.	
Operating Range OS32C-xxx	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	
Operating Range OS32C-xxx-4M	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) 4.0 m (min. obj. 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 range greater than 3 m and up to 4 m) *1	
Detection Angle	270°	
Angular Resolution	0.4 degree	
Laser Beam Diameter	6mm at optics cover, 14mm (typical) at 3m.	
Laser Scan Plane Height	67mm from the bottom of the scanner (see "OS32C Dimensions" above for more detail)	
Response Time	Response time from ON -> OFF: From 80 ms (2 scans) to 680ms (up to 17 scans) *8 Response time from OFF -> ON: Configurable.	
Zone Switching Time	From 20 to 320ms	
Line voltage	24VDC +25%/-30% (ripple p-p 2.5V max.) *2	
Power Consumption	Normal operation: 5Wmax.*3 Standby mode: 3.75W (without output load)	
Emission Source (Wavelength)	Infrared Laser Diode (905nm)	
Laser Class	Class 1 Laser Product: IEC 60825-1:2014, EN60825-1:2014+A11:2021 Class 1 Laser Product: JIS C 6802: 2014 Class I: 21 CFR 1040.10, 1040.11 1类激光产品: GB7247.1:2012	
Safety Output (OSSD)	PNP transistor x 2, load current of 250mA max., residual voltage of 2V max., load capacitance of 2.2 µF max., leak current of 1mA max *3, *4, *5.	
Auxiliary Output (Non-Safety)	NPN/PNP transistor x 1, load current of 100mA max., residual voltage of 2V max., leak current of 1mA max *4, *5, *7	
Warning Output (Non-Safety)	NPN/PNP transistor x 1, load current of 100mA max., residual voltage of 2V max., leak current of 1mA max *4, *5, *7	
Operation Mode	Auto Start, Start Interlock, Start/Restart Interlock	
Input	External Device Monitoring	ON: 0V short (input current of 50mA), OFF: Open
	Start	ON: 0V short (input current of 20mA), OFF: Open
	Zone Select	ON: 24V short (input current of 5mA), OFF: Open Standby ON: 24V short (input current of 5mA 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, Windows 7, Windows 8.1, Windows 10	
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 1500lx max. (an angle of laser scanning plane and disturbance light must be +/-5 degrees or more)	
Insulation resistance	20 MΩ or higher (500VDC)	
Dielectric withstand voltage	350 VAC, 1minute	
Enclosure Rating	IP65(IEC60529)	
Enclosure	Sensor Head: Die-cast aluminum Optics Cover: Polycarbonate I/O Block: Die-cast aluminum	
Dimensions (WxHxD)	133.0 x 104.5 x 142.7mm (except cable)	
Impact Resistance	98m/s ² 1000 times for each of X, Y, and Z directions (IEC60068-2-29)	
Vibration	10 to 55 Hz double-amplitude of 0.7mm, 20 sweepings for X, Y, and Z directions (IEC60068-2-6)	
Weight (Main Unit only)	1.3kg	
Power Cable	Up to 30m	
Communication Cable	Up to 100m for 100 BASE-TX cable *9 Certificated by: TÜV Rheinland, UL	
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 (See user's manual for details).
*2. For power source specification, see Power Supply Unit in the OS32C user's manual.
*3. Rated current of OS32C is 1.025A max. (OS32C 210mA + OSSD A load + OSSD B load + Auxiliary output load + Warning output load + Functional Inputs).
Where functional inputs are:
EDM input ... 50mA
Start input ... 20mA
Standby input ... 5mA
Zone X input ... 5mA x 8 (eight zone set select inputs)
*4. Output voltage is input voltage - 2.0VDC.
*5. Total consumption current of 2 OSSDs, auxiliary output, and warning output must not exceed 700mA.
*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 in RBM mode will increase the scan period, resulting in an increase of the response time.
*9. Omron only supplies up to a 15 m Ethernet cable. For longer lengths a connection to a network switch/router is needed.

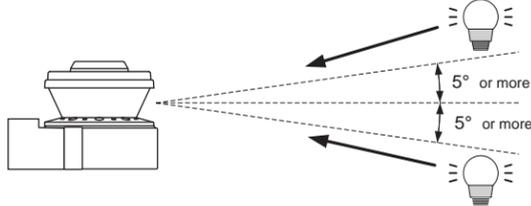
Mounting Considerations

CAUTION

Operation of the OS32C may be affected by light in the environment, such as incandescent light, strobe light and light from a photosensor using infrared light.

Operation of the OS32C may be affected by substances in the environment, such as fog, smoke, steam and other small particles.

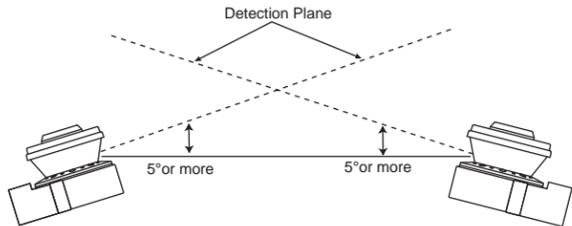
The following considerations should be taken into account when determining the mounting location for the OS32C. It is possible for ambient light to interfere with normal operation of the OS32C. Ambient light interference DOES NOT lead to a loss of safety, it may, however, cause false nuisance stops of the guarded equipment. Some installations may require that the OS32C be mounted in direct exposure to ambient light. In these situations you must assure that the separation between the scan plane of the OS32C and the light source be greater than +/-5°.



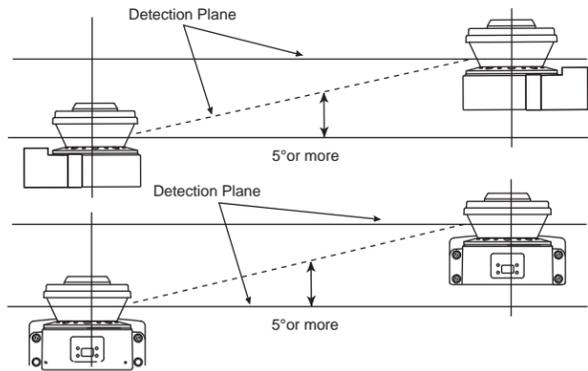
Configuring Multiple OS32C Scanners

- The possibility exists that two OS32C may interfere with each other. To avoid this when using multiple OS32C in the same location, please review the following mounting recommendations.
- Adjust the scanners to offset the scanning plane by tilting the OS32Cs.
- Adjust the scanners to offset the scanning plane by mounting the OS32Cs at different heights.
- Adjust the scanners to different scanning planes and additional sampling scans (response time) on the OS32Cs.
- Install a barrier to block the direct path of possible signal crossing.

Offset Scanning Level by Tilting

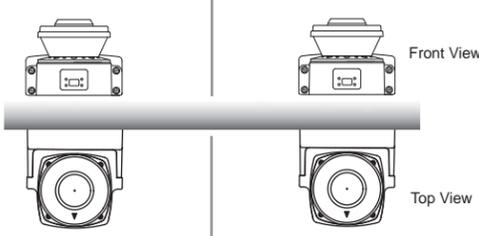


Offset Parallel Scanning Levels by Different Installation Height



When installing the OS32Cs side by side, it is more effective to set their mounting heights differently. When adjusting the OS32C tilted, it may be more effective to adjust the OS32C downward depending on the condition of the outside light source (natural light or halogen light).

Separation using a screen



Use of a screen may increase the effect of reflection depending on its material. Select one with matte black finish that is resistant to reflection.

Wiring Connections

WARNING

Do not connect the OS32C to a power supply with more than 24VDC + 25% / -30%. Do not supply AC power to the OS32C, this may result in electrical shock.

For the OS32C to meet IEC 61496-1 and UL 508, its DC power supply unit must satisfy all of the following conditions:

- Within rated line voltage (24 VDC +25% / -30%)
- Complying with EMC directives (industrial environments)
- Double-insulation or reinforced insulation between primary and secondary circuits
- Automatic return for overcurrent protection
- Output retention time of 20 ms or longer
- Satisfying output characteristics requirements of Class 2 circuit or limited voltage/current circuit defined in UL508.
- Power supply complying with regulations and standards of EMC and safety of electrical equipment in a country or a region where OS32C is used. (Example: In EU, a power supply must comply with EMC and Low Voltage Directives.)

To prevent electrical shock, use double-insulation or reinforced insulation from hazardous voltage (such as 230 VAC).

Cable extensions must be within the specified lengths, otherwise it may result in a failure of the safety functions.

To use this product for a category 3 safety system, both safety outputs must be connected to the safety system. Configuring a safety system with only one safety output may result in serious injuries due to output circuit fault and a failure of the machine to stop.

Protection of Cable at Installation:
Care should be taken when installing the OS32C cable. The cable must be properly routed and secured to ensure that damage does not occur.

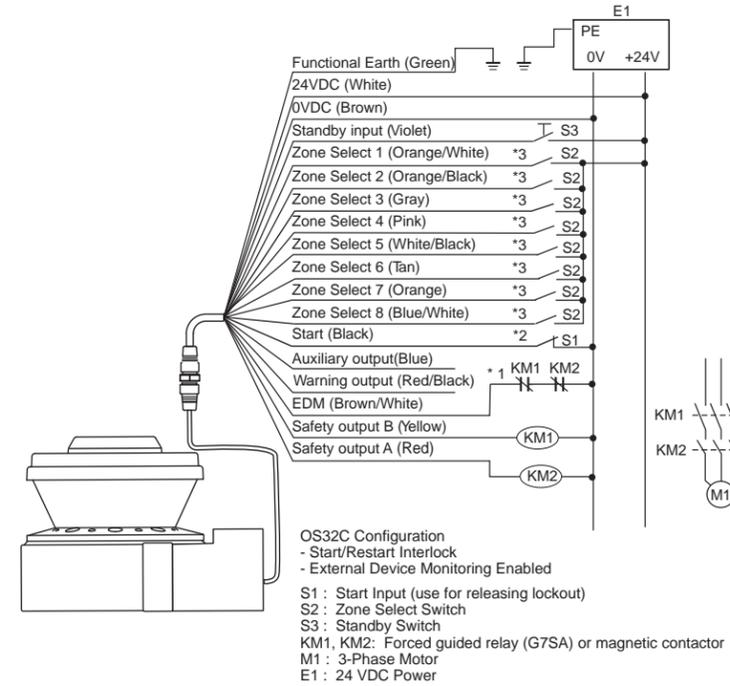
Functional Earth:
The OS32C system requires a functional earth connection. Do not connect Functional Earth to a positive ground system. If it is connected to positive ground, the guarded machine to be controlled may NOT stop, resulting in severe operator injury.

Signal Connector Isolation:
The connectors used during installation must provide sufficient signal separation in order to prevent a short circuit condition of the input power and system signals.

CAUTION

When wiring the OS32C to external devices, make sure to follow the color and coding schemes per EN 60204-1.

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



- *1. If the External Device Monitoring is not used, connect brown/white wires to 0V, and then disable the External Device Monitoring with the configuration tool.
- *2. The Start Input must be a Normally Closed switch.
- *3. For zone select switch setting, see Zone Set Input Selection. When using only one zone, no connection is needed for the zone select inputs.

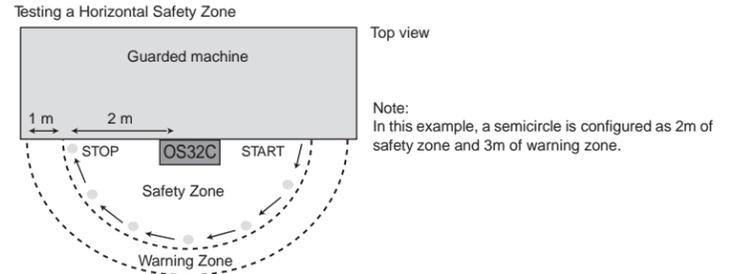
Testing the Safety Area

WARNING

If the OS32C is operated under automatic start, make sure that the machine stops and does not restart as long as an object is detected in a safety zone. Check the operation by placing a test piece into the safety zone. It is recommended to perform the test at least after a shift change or 24 hours of operation.

To test the OS32C's detection capability, guide the test object along the perimeter of the safety detection zone as shown in the figure below. The hazardous motion of the guarded equipment must stop immediately (within the pre-determined accepted stop times). While in Automatic Start Mode, the OS32C MUST remain in the machine stop state throughout the entire test.

To test the OS32C, use a test object with a diameter appropriate for the selected resolution. (A test object does not come with the OS32C).



Verify that all indicators and displays are operating properly and correspond to their defined functions of the OS32C. Inspect the OS32C housing and the exit window for signs of damage or manipulation.

If the OS32C is used in a stationary guarding application, ensure that the safety zone(s) are clearly marked on the floor. For mobile applications, make sure that the vehicle stops moving within the limits set in the initial configuration. If the OS32C fails any of these tests, lock out the guarded equipment and contact the factory supervisor immediately.

OS32C Status Check

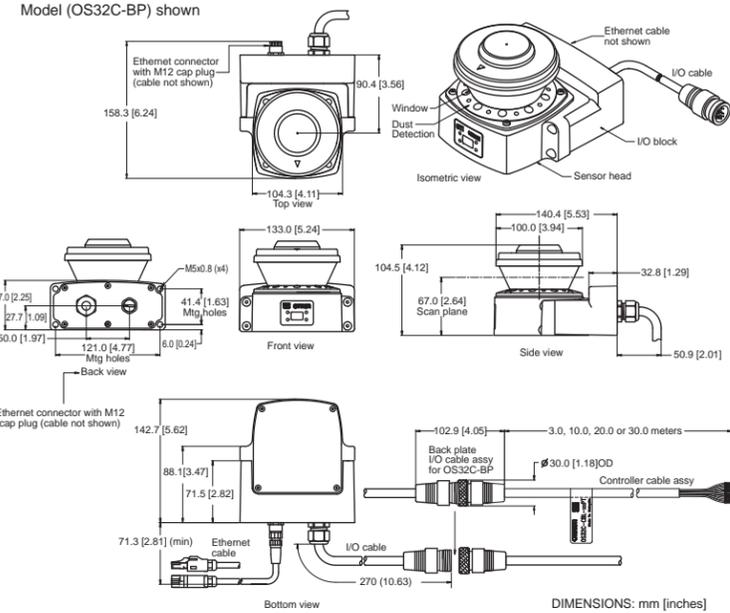
The OS32C has the status/diagnostic display on the front, which indicates configuraion/error status of the OS32C.

Status	Diagnostic Code	Description	Corrective Action
Normal Operation	88	Power up indication	-
	- -	Normal operation (guarded machine stop)	-
	- - blinking at 0.5 Hz	Standby mode (guarded machine stop)	-
	01	Interlock state (waiting for start input)	-
	02	Configuration mode (guarded machine stop)	-
	80	Window contamination indication (guarded machine stop) The window or dust ring is dirty or scratched.	Clean the window and the dust ring or replace as necessary.
	83	Window transmittance error indication (guarded machine stop) The window calibration is not performed after window replacement The window calibration was performed with the contaminated window and then the window was cleaned, the window transmittance is higher than that measured in the calibration	Clean the window or check for scratches Clean the window and perform the window calibration
Safety output fault	84	Blinded beams indication (guarded machine stop)	Check for mutual interference with another scanner (see mounting considerations on the user manual), nearby retro-reflectors or strong interfering light sources.
	70	Incorrect number of active zone inputs (guarded machine stop)	Check zone set select input wiring, zone configuration selection, zone set select input switching time and zone delay configuration.
	71	Invalid or undefined zone input combination but correct number of active zone inputs (guarded machine stop)	Check zone set select input wiring, zone configuration selection, zone set select input switching time and zone delay configuration.
	□□	Refer to Status/Diagnostic Display Indication of the OS32C user's manual	-
	30	Safety output fault	Check output connection and wiring.
External device monitoring fault	32	Safety output A is short-circuited to 24V	Check output connection and wiring.
	33	Safety output B is short-circuited to 24V	
	34	Safety output A is short-circuited to 0V	
	35	Safety output B is short-circuited to 0V	
	40	EDM (external device monitoring) fault	
Other fault	41	External device monitoring fault before OSSD turning ON	Check the NC-contact status of the external device is changing state before the OSSDs turning ON.
	42	External device monitoring fault after OSSD turning ON	Check the NC-contact status of the external device is changing state after the OSSDs turning ON.
	43	External device monitoring fault during OS32C power on	Check the OS32Cs output configuration, connections and wiring.
50	General fault - caused by internal problem or extreme environmental condition	Check environment for excessive vibration, shock or electrical noise; check that the window assembly is undamaged and securely attached. Or replace as necessary.	
51	Mutual interference	Check for mutual interference with another scanner (see mounting considerations on the user manual), nearby retro reflectors or strong interfering light sources.	
52	Internal fault	Replace as necessary.	
53	Internal blinded beams	Check for mutual interference with another scanner (see mounting considerations on the user manual), nearby retro-reflectors or strong interfering light sources. Mounting Considerations	
54	Internal fault	Check for strong interfering light sources or replace as necessary. Mounting Considerations	
56	Internal fault caused by electrical noise	Check environment for electrical noise or replace as necessary.	
57	Internal fault	Replace as necessary.	
58	Internal fault	Replace as necessary.	
59	Motor fault	Check environment for excessive vibration or shock.	
60	Invalid configuration in unit	Double check current configuration or reset the scanner back to manufacture default configuration.	

OS32C Status Check (continued)

72	Incorrect number of active zone inputs (hard fault code after diagnostic code 70 above persists for more than 10 minutes)	Check zone set select input wiring and zone configuration selection.
73	Invalid or undefined zone set select input combination, but correct number of active set select inputs (hard fault code after diagnostic code 71 persists for more than 10 minutes)	Check zone set select input wiring and zone configuration selection.
74	Standby input or zone inputs voltage too high	Check zone set select inputs or standby input wired at more than system power (24 VDC).
75	Scanner chassis connected to power (24 VDC)	Scanner chassis should be grounded to 0 VDC.
81	Window condensation (fault code after diagnostic code 83 persists for more than 30 minutes)	Cycle power on unit and allow to run with diagnostic code 83, internal generated heat will reduce condensation. (if possible reduce moisture in the environment)
82	Window not detected or entire dust detection surface is dirty or blocked.	Check that the window is properly mounted and clean the dust detection surface.
90	Internal temperature fault The scanner internal temperature exceeds the operating limit.	Add more ventilation.

OS32C Dimensions



Suitability for Use

Omron Companies shall not be responsible for conformity with any standards, codes or regulations which apply to the combination of the Product in the Buyer's application or use of the Product. At Buyer's request, Omron will provide applicable third party certification documents identifying ratings and limitations of use which apply to the Product. This information by itself is not sufficient for a complete determination of the suitability of the Product in combination with the end product, machine, system, or other application or use. Buyer shall be solely responsible for determining appropriateness of the particular Product with respect to Buyer's application, product or system. Buyer shall take application responsibility in all cases.

NEVER USE THE PRODUCT FOR AN APPLICATION INVOLVING SERIOUS RISK TO LIFE OR PROPERTY OR IN LARGE QUANTITIES WITHOUT ENSURING THAT THE SYSTEM AS A WHOLE HAS BEEN DESIGNED TO ADDRESS THE RISKS, AND THAT THE OMRON PRODUCT(S) IS PROPERLY RATED AND INSTALLED FOR THE INTENDED USE WITHIN THE OVERALL EQUIPMENT OR SYSTEM.

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