



Quick Reference Guide

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

Approvals	EN IEC 61496-1 (Type 3 ESPE), EN IEC 61496-3 (Type 3 AOPDDR), EN 61508 (SIL2), IEC 61496-1 (Type 3 ESPE), IEC 61496-3 (Type 3 AOPDDR), IEC 61508 (SIL2), UL 508, UL 1998, CAN/CSA-C22.2 No. 14, CAN/CSA-C22.2 No. 0.8
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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 ... 50mA
 - Standby input ... 5mA
 - Zone X input ... 5mA x 8 (eight zone set select inputs)
4. Output voltage is Input voltage - 0.0VDC.
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.

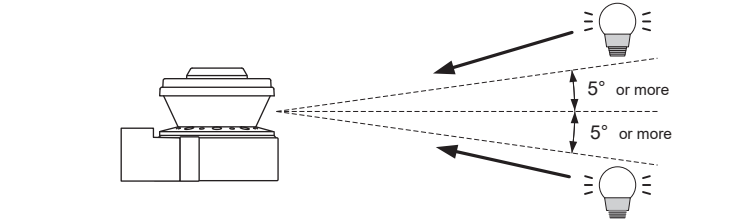
■ Mounting Considerations

⚠ 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.

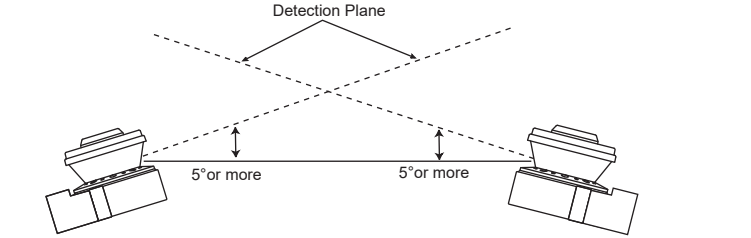
The following considerations should be taken into account when determining the mounting location for the OS32C. It is possible for ambient light to interfere with normal operation of the OS32C. Ambient light interference DOES NOT lead to a loss of safety, it may, however, cause false nuisance stops of 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°.



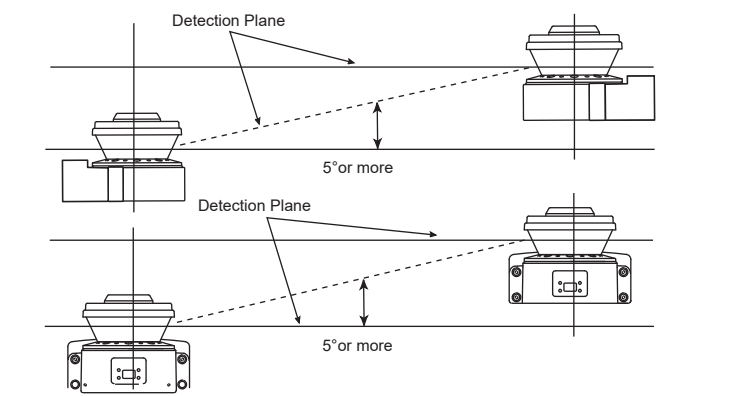
■ Configuring Multiple OS32C Scanners

- 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.

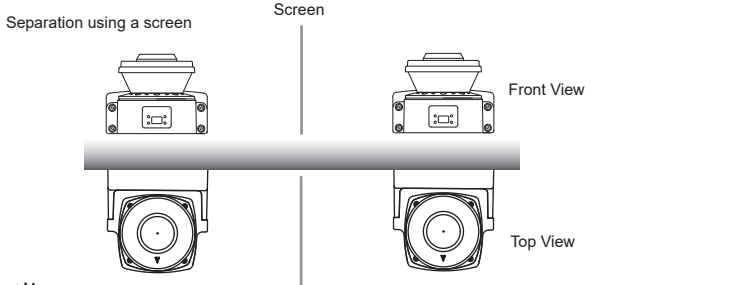
Offset Scanning Level by Tilting



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).



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 UL 508.
- 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.

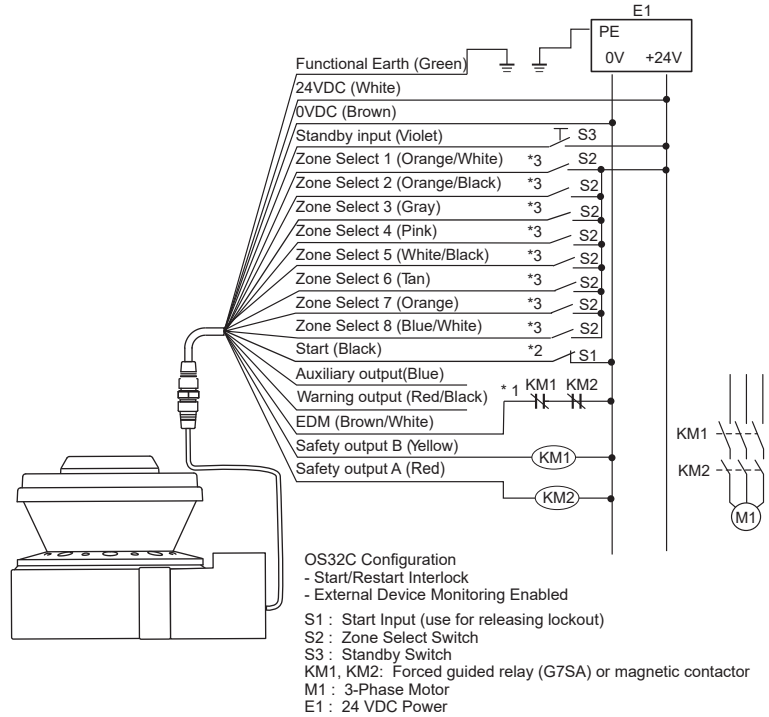
Functional Earth:
The OS32C system requires a functional earth connection. Do not connect Functional Earth to a positive ground system. If it is connected to positive ground, the guarded machine to be controlled may NOT stop, resulting in severe operator injury.

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(ISO 13849-1)



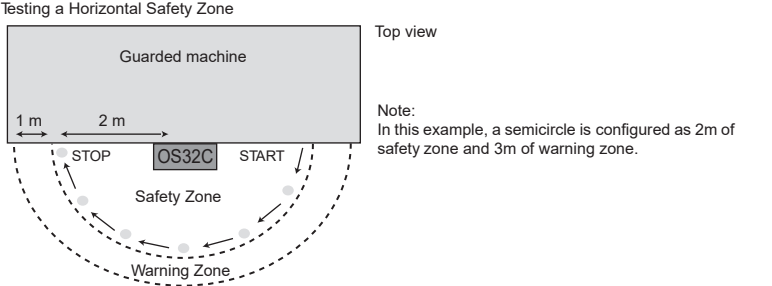
- OS32C Configuration
- Start/Restart Interlock
 - External Device Monitoring Enabled
- S1 : Start Input (use for releasing lockout)
S2 : Zone Select Switch
S3 : Standby Switch
KM1, KM2: Forced guided relay (G7SA) or magnetic contactor
M1 : 3-Phase Motor
E1 : 24 VDC Power
- *1. If the External Device 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.

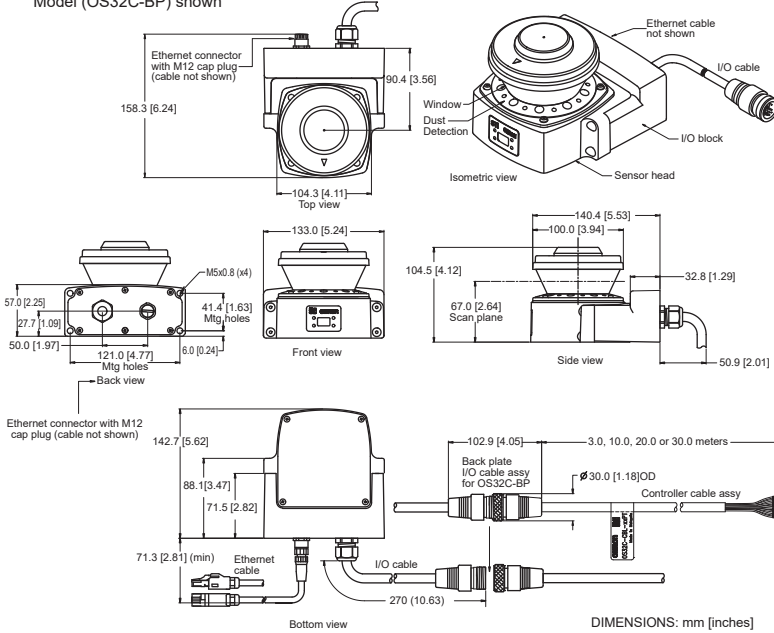
Status	Diagnostic Code	Description	Corrective Action
Normal Operation	88	Power up indication	-
	--	Normal operation (guarded machine stop)	-
	-- blinking at 0.5 Hz	Standby mode (guarded machine stop)	-
	01	Interlock state (waiting for start input)	-
	02	Configuration mode (guarded machine stop)	-
	80	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 is dirty or scratched • 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
	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.
Safety output fault	□□	Refer to Status/Diagnostic Display Indication of the OS32C user's manual	-
	30	Safety output fault	Check output connection and wiring.
	32	Safety output A is short-circuited to 24V	
	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	
External device monitoring fault	40	EDM (external device monitoring) fault	Check output external device monitoring connection and wiring.
	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.
Other fault	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.
	54	Internal fault	Check for strong interfering light sources or replace as necessary.
	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

Model (OS32C-BP) shown



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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