

Safety Laser Scanner

OS32C

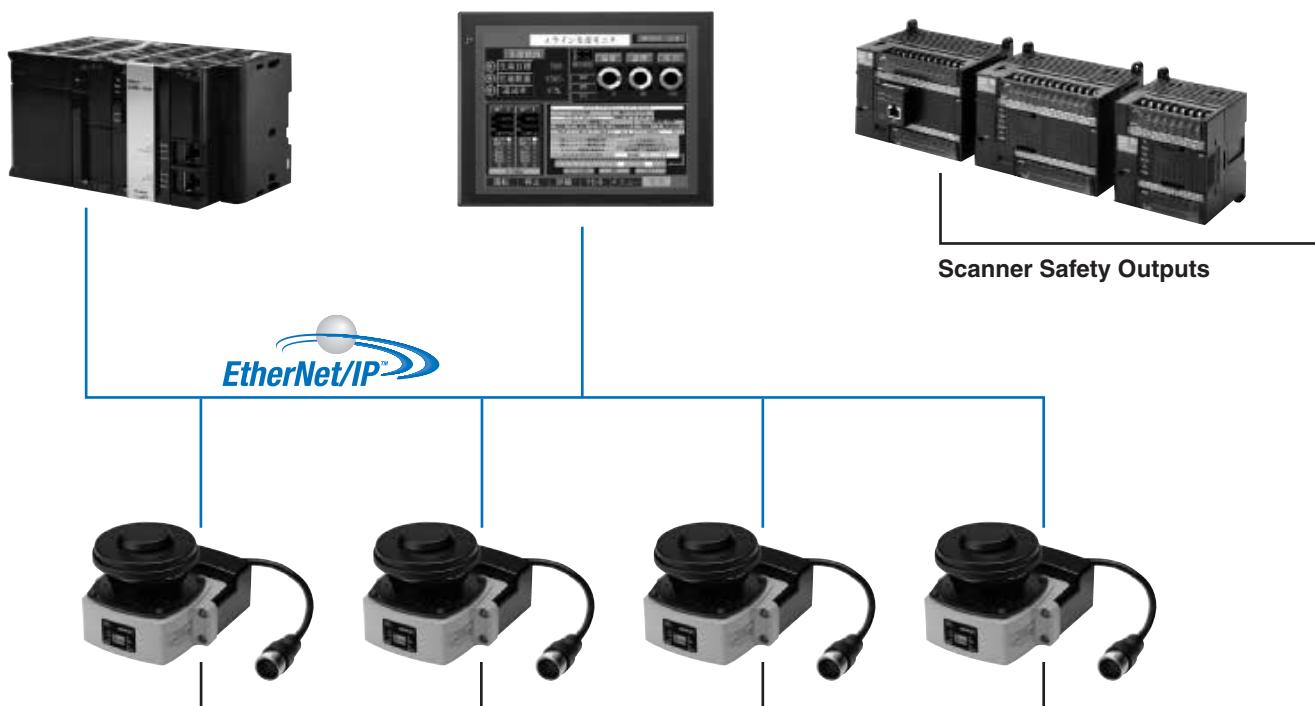
OS32C Safety Laser Scanner

- 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 4 m and warning zone(s) radius up to 15 m can be set.
- Configurable minimum object resolution of 30, 40, 50 or 70 mm, for hand and arm detection applications
- 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.



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.



Accessories

Appearance	Description		Model	Remarks
	Scan window		OS32C-WIN-KT	Spare for replacement
	Sensor block without I/O block Max. Operating Range: 3 m		OS32C-SN	Spare for replacement
	Sensor block without I/O block Max. Operating Range: 4 m		OS32C-SN-4M	
	Sensor block without I/O block for EtherNet/IP Max. Operating Range: 3 m		OS32C-SN-DM	Spare replacement for EtherNet/IP
	Sensor block without I/O block for EtherNet/IP Max. Operating Range: 4 m		OS32C-SN-DM-4M	
	I/O block	With cable access from the back	OS32C-CBBP	Spare for replacement
		With cable access from the left side	OS32C-CBSP1	Spare for replacement
	Window cleaning kit, anti-static cleaner		WIN-CLN-KT	Accessory

Rating/Performance

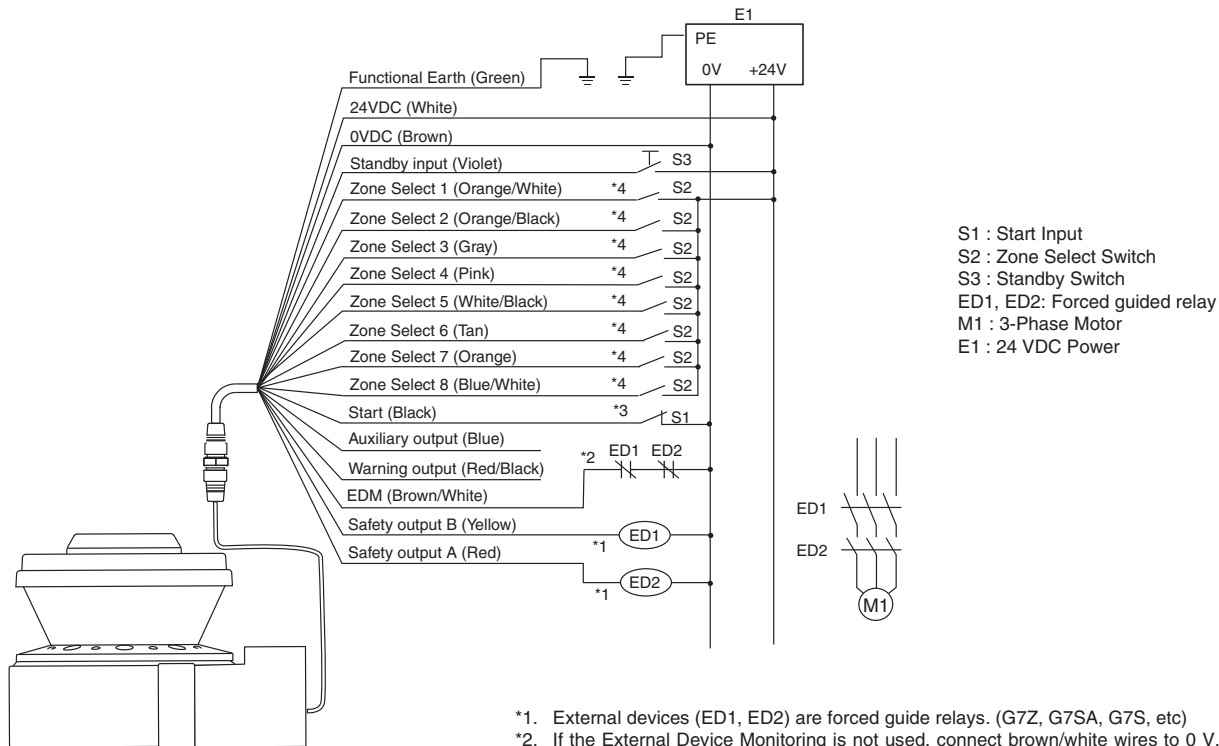
Sensor Type	Type 3 Safety Laser Scanner	
Safety Category	PLd/Safety Category 3 (ISO 13849-1)	
Detection Capability	Configurable; Non-transparent with a diameter of 30, 40, 50, 70 mm (1.8% reflectivity or greater) (default: 70 mm)	
Monitoring Zone	Monitoring Zone Set Count: (Safety Zone + 2 Warning Zones) x 70 sets	
Operating Range	OS32C-□□□	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
	OS32C-□□□-4M	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) 4.0 m (min. object 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 distance greater than 3 m and up to 4 m) ^{*1}	
Detection Angle	270°	
Angular Resolution	0.4°	
Laser Beam Diameter	6 mm at optics cover, 14 mm (typical) at 3 m.	
Laser Scan Plane Height	67 mm from the bottom of the scanner (see "Dimensions" on page 8 for more detail.)	
Response Time	Response time from ON to OFF: From 80 ms (2 scans) to 680 ms (up to 17 scans) ^{*2} 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.)	
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: JIS C 6802 (2005) Class I: CFR21 1040.10, 1040.11	
Safety Output (OSSD)	PNP transistor × 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 × 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 × 1, load current of 100 mA max., residual voltage of 2 V max., leak current of 1 mA max. ^{*4,*5,*6}	
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 max.), OFF: Open
Connection Type	Power Cable: 18-pin mini-connector (pigtail) Communication Cable: M12, 4-pin connector	
Connection with PC	Communication: Ethernet ^{*7} OS Supported: Windows 2000, Windows XP (32-bit version, Service Pack 3 or later), Windows Vista (32-bit version), Windows 7 (32-bit version/64-bit version)	
Indicators	RUN indicator: Green, STOP indicator: Red, Interlock Indicator: Yellow, Warning/Auxiliary Output Indicator: Orange Status/Diagnostic Display: 2 × 7-segment LEDs, Individual Sector Indicators: Red LED × 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)	
Insulation Resistance	20 MΩ or higher (500 VDC)	
Dielectric Withstand Voltage	500 VDC, 1 minute	
Enclosure Rating	IP65 (IEC60529)	
Enclosure	Sensor head: Die-cast aluminum, optical cover: Polycarbonate, I/O block: Die-cast aluminum	
Dimensions (WxHxD)	133.0 × 104.5 × 142.7 mm (except cable)	

Impact Resistance	98 m/s ² 1,000 times for each of X, Y, and Z directions (IEC60068-2-29)
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 100BASE-TX cable
Approvals	Certificated by: TÜV Rheinland, UL Standards: 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. Pollution Tolerance mode will add 6 ms to each scan time.
 *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)

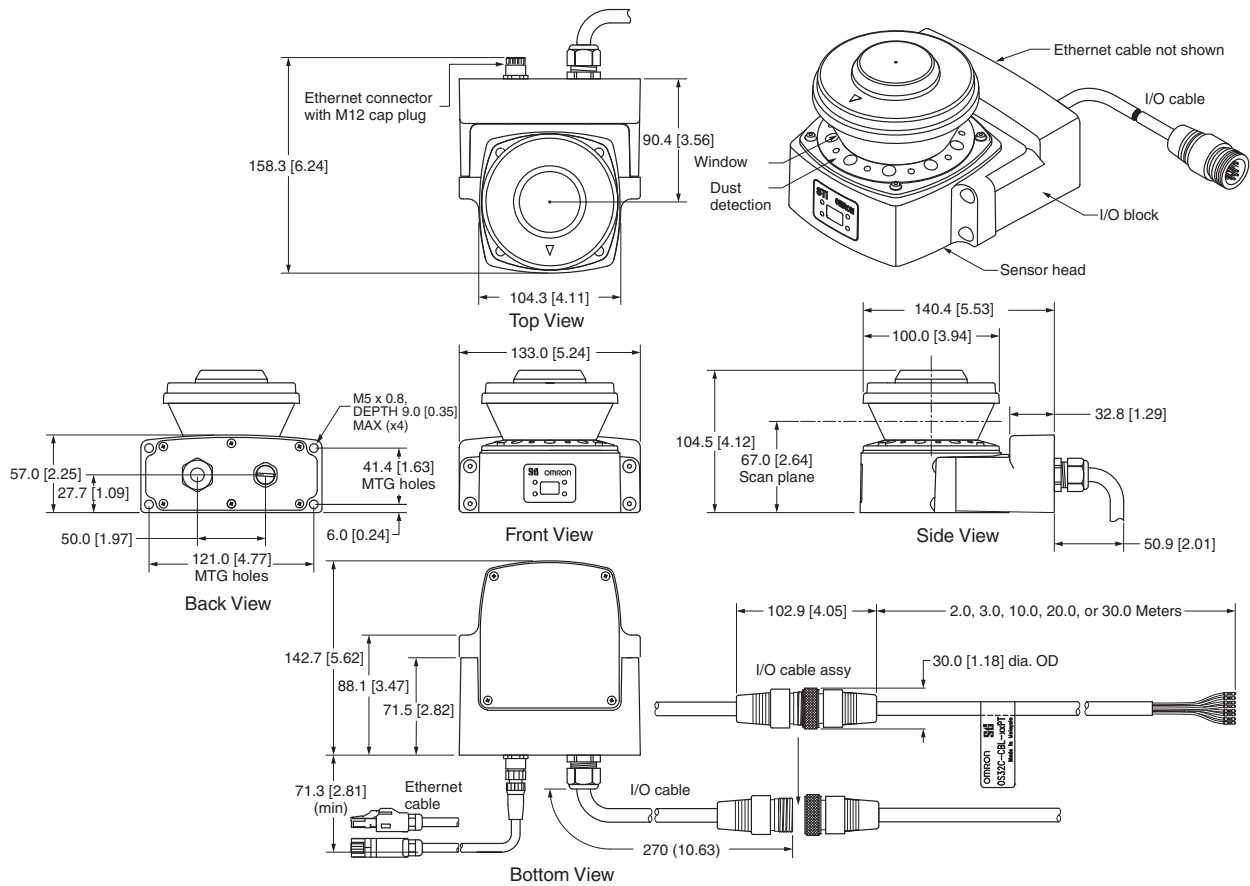


OS32C Configuration
 - External Device Monitoring Enabled
 - Start/Restart Interlock

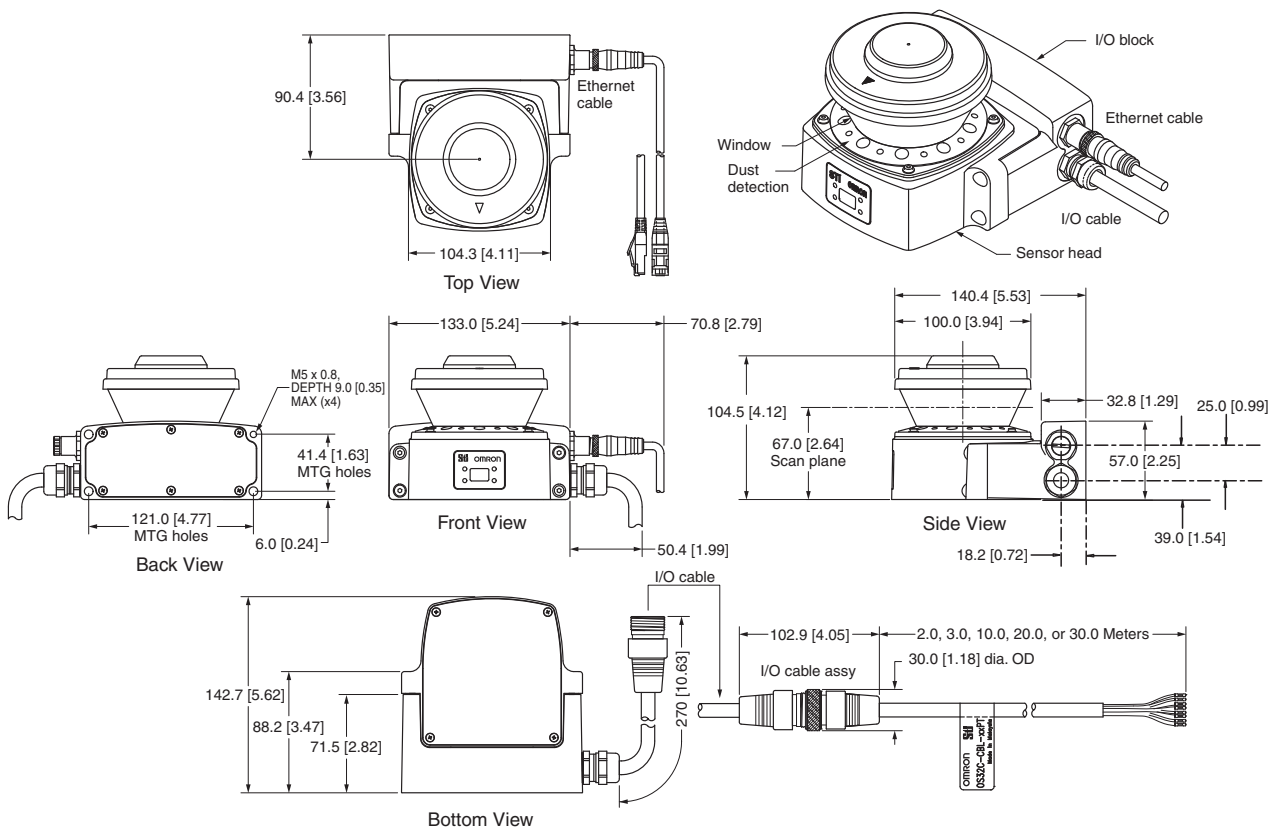
- *1. External devices (ED1, ED2) are forced guide relays. (G7Z, G7SA, G7S, etc)
 *2. If the External Device Monitoring is not used, connect brown/white wires to 0 V, and then turn OFF the External Device Monitoring with the configuration software.
 *3. Use NC-contact for a start input.
 *4. For zone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

Dimensions

OS32C with Back Location Cable Entry - OS32C-BP/OS32C-BP-DM



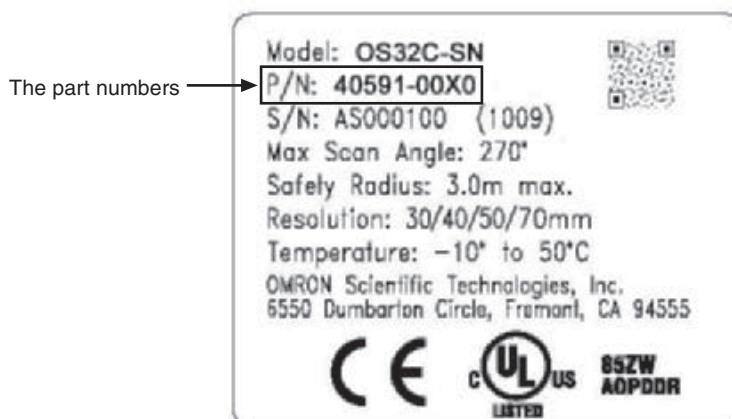
OS32C with Side Location Cable Entry - OS32C-SP1/OS32C-SP1-DM



Firmware and Configuration Tool Features and Compatibility

Refer to the table below for supported features and compatibility with OS32C versions. Refer to the product labels to determine the OS32C version.

Note: • Only the version of the sensor block and the configuration tool were updated to support the new features. No changes were made to the I/O block.
• The window replacement kit OS32C-WIN-KT can be used on any sensor block.



The part numbers have changed:

OS32C-SN: 40591-0010 (old), 40591-0020 (current)

OS32C-SN-DM: 40591-0040 (current)

OS32C-SN-4M: 40603-0020 (current)

OS32C-SN-DM-4M: 40603-0040 (current)

	OS32C Version		OS32C-DM	OS32C-4M	OS32C-DM-4M
	40591-0010	40591-0020	40591-0040	40603-0020	40603-0040
Configurable minimum object resolution	—	Supported	Supported	Supported	Supported
Standby mode with laser shutoff	—	Supported	Supported	Supported	Supported
Copy & paste zones and zone sets	—	Supported	Supported	Supported	Supported
Record system monitoring	—	Supported	Supported	Supported	Supported
Playback system monitoring	—	Supported	Supported	Supported	Supported
Support for inverting 7-segment display	—	Supported	Supported	Supported	Supported
Display configuration filename in config tool header	—	Supported	Supported	Supported	Supported
Additional zone shapes (180° semi-circle, 180° rectangle, 180° polygon)	—	Supported	Supported	Supported	Supported
Config tool support for switching between default OS32C configuration and the user's current working configuration	—	Supported	Supported	Supported	Supported
Troubleshooting tips displayed in fault log	—	Supported	Supported	Supported	Supported
Configuration checksum, safety checksum	Supported ^{*1}	Supported ^{*1}	Supported ^{*1}	Supported ^{*1}	Supported ^{*1}
Windows 7 support	—	Supported	Supported	Supported	Supported
Non-safety checksum	Supported ^{*2}	Supported ^{*2}	Supported ^{*2}	Supported ^{*2}	Supported ^{*2}
Single Import & Export Zone Coordinate Data	Supported ^{*2}	Supported ^{*2}	Supported ^{*2}	Supported ^{*2}	Supported ^{*2}
Maintenance access level	—	Supported ^{*3}	Supported ^{*2}	Supported ^{*2}	Supported ^{*2}
Rotation of monitor screen view	Supported ^{*4}	Supported ^{*4}	Supported ^{*4}	Supported ^{*4}	Supported ^{*4}
French, German, Italian & Spanish Languages	Supported ^{*4}	Supported ^{*4}	Supported ^{*4}	Supported ^{*4}	Supported ^{*4}
Multiple Import & Export Zone Coordinate Data	Supported ^{*4}	Supported ^{*4}	Supported ^{*4}	Supported ^{*4}	Supported ^{*4}
EtherNet/IP and Measurement Data	—	—	Supported	—	Supported
Pollution Tolerance Mode	—	Supported ^{*5}	Supported ^{*5}	Supported ^{*6}	Supported ^{*6}
Variable response time settings	—	Supported ^{*5}	Supported ^{*5}	Supported ^{*6}	Supported ^{*6}
4 meter safety/ 15 meter warning zone	—	—	—	Supported ^{*6}	Supported ^{*6}
Status information during monitor mode	—	Supported ^{*5}	Supported ^{*5}	Supported ^{*6}	Supported ^{*6}
Global Confirmation of Safety parameters	—	Supported ^{*5}	Supported ^{*5}	Supported ^{*6}	Supported ^{*6}
EtherNet/IP Warning zone change capable	—	—	Supported ^{*5}	—	Supported ^{*6}

^{*1}. Requires Configuration Tool Version 1.4.0 and up

^{*2}. Requires Configuration Tool Version 1.6.0 and up

^{*3}. If serial number of the sensor block is higher than AS08300 and Configuration Tool is version 1.6.0 and up

^{*4}. Requires Configuration Tool is Version 1.8.0 and up

^{*5}. If serial number of the sensor block is higher than AS15500 and Configuration Tool is Version 2.0.0 and up

^{*6}. Requires Configuration Tool is Version 2.0.0 and up