Installation Instructions

Original Instructions

8020211

Allen-Bradley by ROCKWELL AUTOMATION

Guardmaster®

SafeZone 3 Safety Laser Scanner Mounting

Catalog Numbers 442L-SZNMZCP, 442L-SZNCPMOD

About This Document

This document applies to the SafeZone™ 3 safety laser scanner and the associated system plug with catalog numbers 442L-SZNMZCP and 442L-SZNCPMOD.

Safety Information

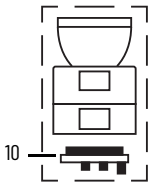
ATTENTION: Hazard due to lack of effectiveness of the SafeZone 3 safety laser scanner. If noncompliant, it is possible that the dangerous state of the machine may not be stopped or not stopped in a timely manner.
Observe the safety information provided.

The safety laser scanner is not suitable for the following applications, among others:

- Outdoors
- Underwater
- Explosive environments

For detailed information on the application and configuration of the SafeZone 3 safety laser scanner, refer to publication 442L-UM008.

Device Overview



Item	Description
1	Optics cover
2	Display
3	Keypad
4	USB port (disabled)
5	Status indicators

Item	Description
6	Additional indicators
7	Network indicators
8	Four M5 mounting inserts
9	System plug (mounted in back)
10	System plug (mounted on bottom)

IMPORTANT All changes/modifications to the SafeZone 3 safety laser scanner and/or system plug that are described in this document, must be performed only after the removal of power to the devices.

Install the System Plug

The SafeZone 3 safety laser scanner and the system plug are sold separately requiring the system plug to be installed on the SafeZone 3 safety laser scanner.

The SafeZone 3 safety laser scanner is delivered with a protective cover over both the back and bottom mounting slots. When installing a system plug on the safety laser scanner, the environment should be clean and free of fog, moisture, and dust. Follow these steps to install the system plug:

1. Determine how the SafeZone 3 safety laser scanner is to be mounted in the application.
2. Determine the best location for mounting the system plug, either in the back or bottom of the scanner.
3. Remove the protective cover from the chosen mounting slot with a T20 torx driver.
4. Carefully insert the system plug into the opening and secure the module by tightening the two screws with a T20 torx driver. Tightening torque is 2.25...2.75 N•m (19.9...24.3 lb•in).

See Change Location of the System Plug if the installed system plug must be relocated from one mounting slot to the other.

Change Location of the System Plug

A TX20 torx driver is required.

1. Loosen the screws of the system plug.
2. Remove the system plug from the safety laser scanner slot.
3. Loosen the cover plate screws.
4. Remove the cover plate from the new mounting slot of the safety laser scanner.
5. Carefully insert the system plug into the opening and secure the module by tightening the two screws with a T20 torx driver. Tightening torque is 2.25...2.75 N•m (19.9...24.3 lb•in).
6. Attach the cover plate to the open slot of the safety laser scanner and tighten the screws. Tightening torque is 2.25...2.75 N•m (19.9...24.3 lb•in).

See Table 2 on page 2 for XD1 pin assignment and Table 3 on page 2 for XF1 and XF2 connections.

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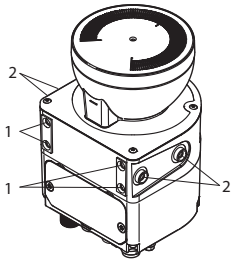
Direct Mounting

The safety laser scanner has four M5 threaded inserts on the back. If you are able to drill through the mounting surface from the rear, you can mount the safety laser scanner directly, with these threaded holes.

- Use either the M5 threaded holes at the back (1) or the M5 threaded holes at the side (2) for direct mounting.



- Use all four M5 threaded holes at the back or all four M5 threaded holes at the side for direct mounting, so that the values given in the data sheet for vibration and shock resistance are achieved.
- Maximum depth of thread engagement is 7.5 mm (0.29 in.).
- Tightening torque is 4.5...5.0 N•m (39.8...44.2 lb•in).

Connection Overview

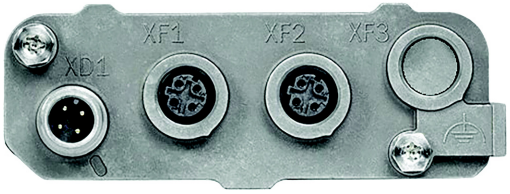


Table 1 - Connection Cables

Description	Cat. No.
Power Connection Cable	
4-pin, straight M12 QD female with flying leads, yellow PVC jacket, 22 AWG, 250V, 4 A	889D-F4AC-x (1)
4-pin, right M12 QD female with flying leads, yellow PVC jacket, 22 AWG, 250V, 4 A	889D-R4AC-x (1)
Ethernet Cabling	
M12 to Flying Leads 1585 Ethernet cables, 4 conductors, M12, straight male, standard, flying leads, teal PUR, shielded, 100BASE-TX, 100 Mbit/s, high flex, PUR, halogen-free, 10 million cycles	1585D-M4UB-x (2)
M12 to M12 1585 Ethernet cables, 4 conductors, M12, straight male, standard, M12, teal PUR, shielded, 100BASE-TX, 100 Mbit/s, high flex, PUR, halogen-free, 10 million cycles	1585D-M4UBDM-x (2)
M12 to M12 1585 Ethernet cables, 4 conductors, M12, straight male, standard, M12, right-angle male, teal PUR, shielded, 100BASE-TX, 100 Mbit/s, high flex, PUR, halogen-free, 10 million cycles	1585D-M4UBDW-x (2)
M12 to RJ45 1585 Ethernet cables, 4 conductors, M12, straight male, standard, RJ45, straight male, teal PUR, shielded, 100BASE-TX, 100 Mbit/s, high flex, PUR, halogen-free, 10 million cycles	1585D-M4UBJM-x (2)

(1) Replace the x with a 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths. See rockwellautomation.com/en-us/products/hardware/allen-bradley/connection-devices/cables-and-cordsets/dc-micro--m12-/dc-micro-cordsets-and-patchcords.html for additional information.

(2) Replace the x with a 2 (2 m), 5 (5 m), or 10 (10 m) for standard cable lengths. See rockwellautomation.com/en-us/products/hardware/allen-bradley/connection-devices/network-media/ethernet/1585-m12-and-variant-1.html for additional information.

Pin Assignment

Voltage Supply (Pwr) – XD1

Figure 1 - M12 male connector, 4-pin, A-coded

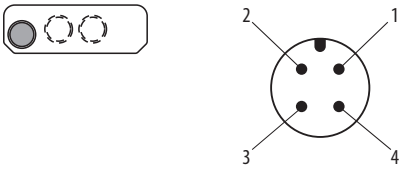


Table 2 - Voltage Supply Pin Assignment

Pin	Designation	Function	Wire Color (1)
1	+24V DC	Supply voltage +24V DC	Brown
2	NC	Not connected	White
3	0V DC	Supply voltage 0V DC	Blue
4	FE	Functional earth/shield	Black

(1) Applies to the recommended connection cables (see Table 1).

EtherNet/IP Connection (E/IP) – XF1 and XF2

Figure 2 - M12 Female Connector, 4-pin, D-coded

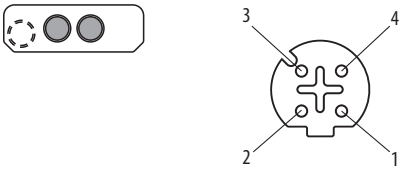
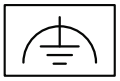


Table 3 - EtherNet/IP™ Pin Assignment

Pin	Designation	Function	Wire Color (1)
1	TX+	Send data +	White/orange
2	RX+	Receive data +	White/green
3	TX-	Send data -	Green
4	RX-	Receive data -	Orange

(1) Applies to the recommended connection cables (see Table 1).

Alternative FE Connection



Screw connection of the alternate FE connection

- Screw: M5 x 12
- Tightening torque: 3.5...5 N•m

Suitable cable lugs

- Forked cable lug or ring cable lug
- Width: ≤10 mm (0.4 in.)
- Hole diameter for screw: typically 5.2 mm (0.2 in.)

The functional earth must be connected via one, and only one, of the available FE connections:

- Pin on the M12 plug connector
- Thread on the M12 plug connector
- Alternative FE connection

The functional earth must be connected in a low-inductance manner and with an adequate cross-section while keeping the cable length as short as possible. Functional earth and protection earth must be isolated.

Replace the Safety Laser Scanner

If the safety laser scanner is damaged or does not function properly, you must replace the scanner.

A TX20 torx driver is required.

ATTENTION: Hazard due to lack of effectiveness of the protective device.
Persons and parts of the body to be protected may not be recognized if not observed.
If an unsuitable configuration is saved in the system plug, the dangerous state is not ended or is not ended in time.
After replacement:
- Verify that the same system plug or a system plug with the same configuration is used.
- Confirm that the safety laser scanner is aligned correctly.

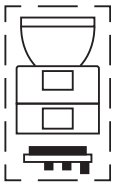
IMPORTANT The IP65 enclosure rating only applies if the safety laser scanner is closed and the system plug is mounted.
- Mount the system plug and cover plate.
- Close each M12 connector on the safety laser scanner with a male cable connector or a protective cap.
  - Tightening torque for connection: 0.4...0.6 N•m (3.54...5.31 lb•in)
  - Tightening torque for protective caps: 0.6...0.7 N•m (5.31...6.19 lb•in)
- Mount the optics cover.

IMPORTANT Carefully plug in the system plug. Do not force it. The contacts may break off or bend if too much force is used.

Replace the Safety Laser Scanner Without System Plug

1. Verify that the environment is clean and clear of fog, moisture, and dust.
2. Unscrew the system plug screws and remove the system plug from the non-functioning safety laser scanner.
3. Unscrew the mounting screws and remove the non-functioning safety laser scanner.
4. Mount the system plug on the new safety laser scanner, see Replace the System Plug.
5. Mount the new safety laser scanner, see Direct Mounting on page 2.
6. Check the effectiveness of the SafeZone 3 safety laser scanner. For more information, see publication 442L-UM008.

Replace the Safety Laser Scanner Completely



1. Disconnect the connecting cables from the system plug.
2. Unscrew the mounting screws and remove the non-functioning safety laser scanner.
3. Mount the new safety laser scanner, see Direct Mounting on page 2.
4. Reconnect the connecting cables to the system plug.
5. Configure the safety laser scanner.
6. Perform commissioning again. Take particular care to conduct all thorough checks described. For more information, see publication 442L-UM008.

Replace the System Plug

A TX20 torx driver is required.

IMPORTANT The IP65 enclosure rating only applies if the safety laser scanner is closed and the system plug is mounted.
- Mount the system plug and cover plate.
- Close each M12 connector on the safety laser scanner with a male cable connector or a protective cap.
  - Tightening torque for connection: 0.4...0.6 N•m (3.54...5.31 lb•in)
  - Tightening torque for protective caps: 0.6...0.7 N•m (5.31...6.19 lb•in)
- Mount the optics cover.

IMPORTANT Carefully plug in the system plug. Do not force it. The contacts may break off or bend if too much force is used.

1. Verify that the environment is clean and clear of fog, moisture, and dust.
2. Disconnect the connecting cables from the system plug.
3. If necessary, move the safety laser scanner to a clean location.
4. Unscrew the system plug screws from the non-functioning and remove the system plug from the safety laser scanner.
5. Carefully insert the new system plug into the appropriate mounting slot of the safety laser scanner.
6. Screw in the system plug with the captive screws. Tightening torque is 2.25...2.75 N•m (19.9...24.3 lb•in).
7. Reconnect the connecting cables to the system plug.
8. Perform commissioning again. Take particular care to conduct all thorough checks described. For more information, see publication 442L-UM008.

Rockwell Automation Support

Use these resources to access support information.

Technical Support Center	Find help with how-to videos, FAQs, chat, user forums, and product notification updates.	rok.auto/support
Knowledgebase	Access Knowledgebase articles.	rok.auto/knowledgebase
Local Technical Support Phone Numbers	Locate the telephone number for your country.	rok.auto/phonesupport
Literature Library	Find installation instructions, manuals, brochures, and technical data publications.	rok.auto/literature
Product Compatibility and Download Center (PCDC)	Download firmware, associated files (such as AOP, EDS, and DTM), and access product release notes.	rok.auto/pcdc

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Waste Electrical and Electronic Equipment (WEEE)

At the end of life, this equipment should be collected separately from any unsorted municipal waste.

Rockwell Automation maintains current product environmental compliance information on its website at rok.auto/pec.

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