Operating Manual

# MSA HUB

**SCBA Telemetry Version**

Order No.: 10204590/04

The Declaration of Conformity can be found under the following link: https://MSAsafety.com/DoC.

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This product incorporates Bluetooth® wireless technology. The Bluetooth word mark and logos are registered trademarks owned by Bluetooth SIG, Inc., and any use of such marks by MSA is under license. Other trademarks and trade names are those of their respective owners.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

You are cautioned that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.



**MSA**

*The Safety Company*

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For your local MSA contacts, please go to our website www.MSAsafety.com

# Contents

# 1 Safety Regulations

## 1.1 Correct Use

The MSA HUB – hereafter referred to as device – is an industrial router that wirelessly connects MSA devices to the Internet or intranet. It is a stand-alone device with Long Range Radio (LRR) connectivity and a gateway connection that connects local MSA networks with MSA Cloud Services.

It is imperative that this operating manual be read and observed when using the device. In particular, the safety instructions, as well as the information for the use and operation of the device, must be carefully read and observed. Furthermore, the national regulations applicable in the user's country must be taken into account for a safe use.

> ⚠ **WARNING!**

Read this manual carefully before using the device. The device will perform as designed only if it is used and maintained in accordance with the manufacturer's instructions. Otherwise, it could fail to perform as designed and persons who rely on this device could sustain serious personal injury or death.

Before use the product operability must be verified. The product must not be used if the function test is unsuccessful, it is damaged, a competent servicing/maintenance has not been made, genuine MSA spare parts have not been used.

**Failure to follow this warning can result in serious personal injury or death.**

Alternative use, or use outside this specification will be considered as non-compliance. This also applies especially to unauthorized alterations to the product and to commissioning work that has not been carried out by MSA or authorized persons.

## 1.2 Liability Information

MSA accepts no liability in cases where the device has been used inappropriately or not as intended. The selection and use of the device are the exclusive responsibility of the individual operator.

Product liability claims, warranties and guarantees made by MSA with respect to the device are voided, if it is not used, serviced or maintained in accordance with the instructions in this manual.

## 1.3 Warranty

Local rules apply.

For any additional information relative to use or repair, call 1-877-MSA-FIRE (1-877-672-3473) during regular working hours or write an e-mail to fire.cs@msasafety.com.

For additional contact information refer to the MSA website at www.MSAsafety.com.

# 2 Description

## 2.1 Scope of Delivery

This package includes:

MSA HUB Fireservice

- MSA HUB Fireservice device
- Wall power supply
- Power cable for truck installation (25 m / 82 ft)
- Multi antenna with cable for truck installation (3 m / 9.8 ft)
- LRR antenna for truck installation
- Antenna cable for LRR antenna (3 m / 9.8 ft)
- Ethernet cable for M12 receptable to RJ45 (5 m / 16.4 ft)
- Quick Start Guide: Truck Version

The A2 Software can be downloaded via the MSA Software Product website at www.MSAsafety.com.

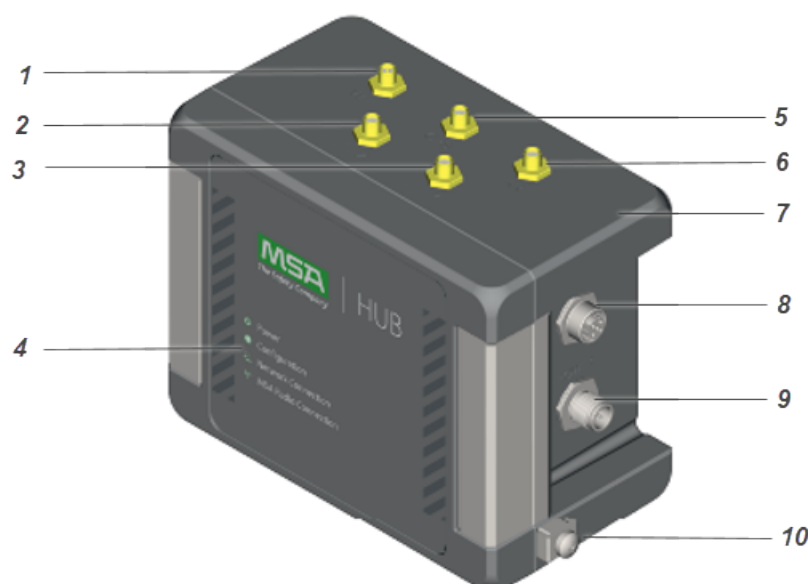## 2.2 Overview

### 2.2.1 MSA HUB Fireservice for Truck Installation



*Figure 1 Fireservice for Truck Installation*

| | | | |
|---|---|---|---|
| 1 | WiFi connector | 6 | LRR connector |
| 2 | LTE 2 connector | 7 | Housing |
| 3 | LTE 1 connector | 8 | Ethernet connector |
| 4 | Status LEDs | 9 | Power connector |
| 5 | GPS connector (for future use) | 10 | Grounding terminal |

The device consists of a compact housing with five antenna connectors (Wi-Fi, GPS, LRR, LTE 1, LTE 2), one Ethernet connector and one power connector. A SIM card holder is included inside the housing lid.

When the device is installed and configured, it can connect MSA devices to the Internet or intranet and transfer data. The status LEDs show the respective connection status.

The device is intended to be used in a vehicle with roof-mounted antennas.

# 3 Assembly and Installation

### ⚠ WARNING!

Do not assemble or operate damaged components.

**Failure to follow this warning can result in serious personal injury or death.**

### ⚠ CAUTION!

Maintain at least 20 cm (8 in) between the user's body and the device when powered on due to emissions.

**Failure to follow this caution can result in minor or moderate injury.**

### *NOTICE*

- Do not open the device when it is operated or connected to an external power supply. Otherwise, the device may be damaged.

- Do not open the device while powered. Otherwise, the device may be damaged.

- Do not connect or disconnect the device when energized. Otherwise, the device may be damaged. Always plug in power cable and then connect to the local power supply afterwards.

- Do not use the device without antenna(s). Otherwise, the device may be damaged.

- The device contains electrostatically sensitive components. Adopt precautionary measures against electrostatic discharge during assembly. Otherwise, the device may be damaged.

The device must only be used with approved antennas.

The device must be disconnected from the power supply prior to assembly. The power supply may be activated only after the device is fully assembled and connected.

To ensure the IP degree of protection:

- all seals must be undamaged and correctly fitted
- all housing/housing cover screws must be tightened with the appropriate torque
- only cables of the appropriate size must be used in the connectors
- all connectors must be tightened with the appropriate torque
- all empty panel connectors must be sealed with sealing plugs

## 3.1 Assembly

### 3.1.1 MSA HUB Fireservice for Truck Installation (Optional: with Wall Brackets)
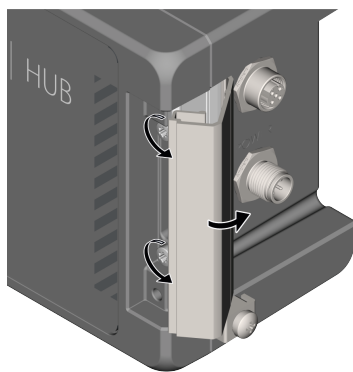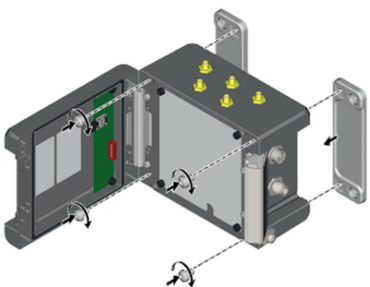


1. Open housing by opening the right joints and unscrew the lid screws using a Torx T20.
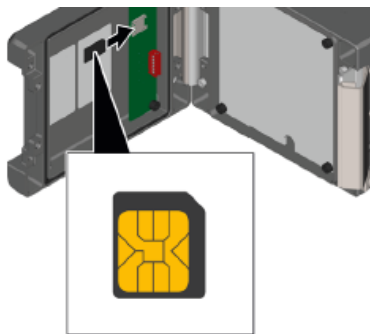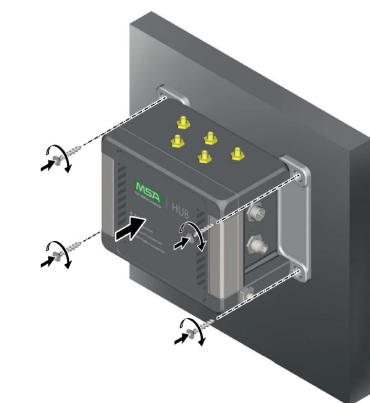
2. Optional: Insert SIM card.

   Place the SIM card into the SIM card holder.

   **NOTE:** Do not touch the circuit board assembly. Observe electrostatic procedures.
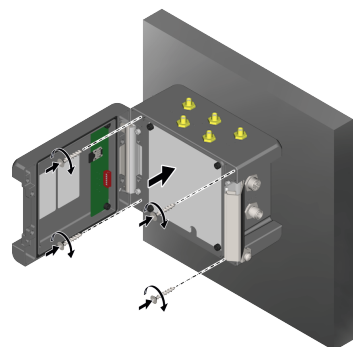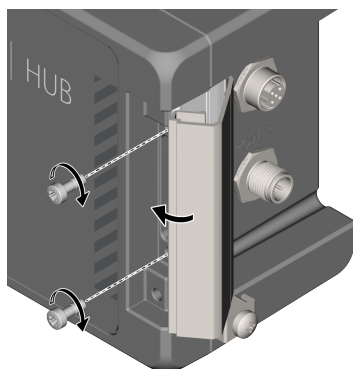
Optional:

3. Use four M6 screws with a torque of 1.8 Nm (1.3 ft-lbf) to fasten the wall brackets (Part Number 10203364) at the back of the housing.
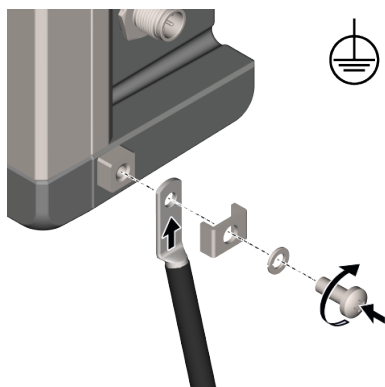
4. Install device at the desired space.

   When installing the device on a solid plain surface, use four appropriate screws and apply a torque of 5 Nm (3 ft-lbf).
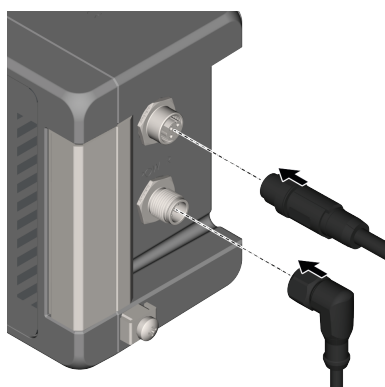
5. Close housing lid by tightening the lid screws with a torque of 1.5 Nm (1 ft-lbf).

6. Close right joints.

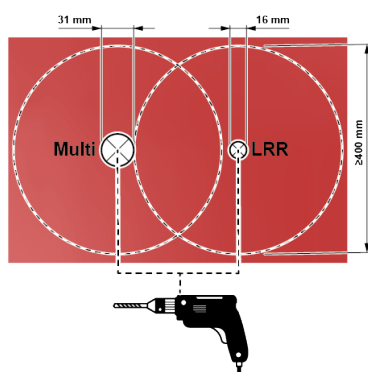7. Optional:

   Loosen grounding clamp.

   a. Insert grounding cable and re-tighten grounding clamp with a torque of 2 Nm (1.5 ft-lbf).

8. If needed, plug in and screw Ethernet plug with a torque of 0.4 Nm (0.3 ft-lbf).

9. Plug in power plug and screw union nut with a torque of 1.2 - 1.5 Nm (0.9 - 1 ft-lbf) using a wrench SW14.
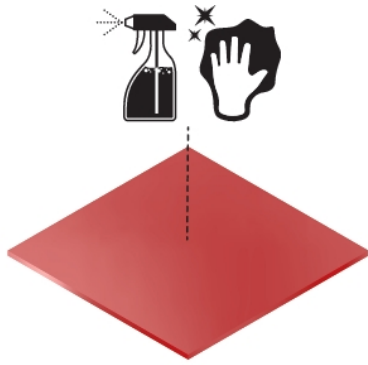
*The device is assembled.*

## 3.2    Antenna Installation (for Truck Installation only)

1. Drill holes for antennas into the rooftop.

   a. For the Multi antenna, drill a hole with 31 mm (1 1/4 in) diameter.

   b. For the LRR antenna, drill a hole with 16 mm (5/8 in) diameter.

   **NOTE:** Keep at least 20 cm (8 in) distance between the antennas and from other metal parts.
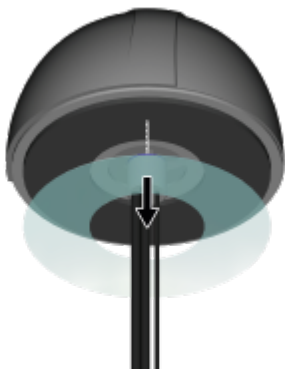
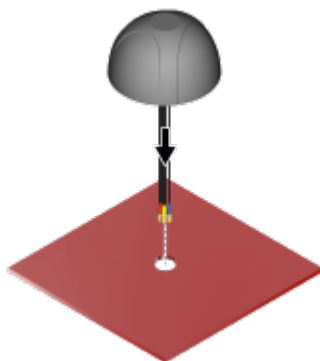2. Clean the relevant surface on the roof from any dirt and dust.

### 3.2.1 Multi Antenna

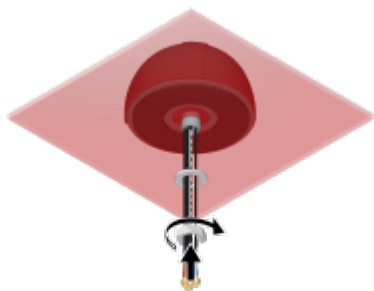1. Remove lock nut, spring lock washer and flat washer.
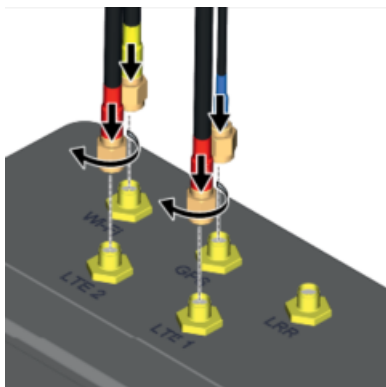
2. Remove protective foil from adhesive area.

3. Pass the antenna cables through the hole.
4. Put the antenna on the surface.

*The adhesive area completely sticks to the surface.*

5. Re-attach flat washer, spring lock washer and lock nut.
6. Screw lock nut with a torque of 50 Nm (36 ft-lbf).

7. Attach antenna cables to the relevant MSA HUB antenna connections.

> **NOTE:** GPS connection is for future use.

| Label | Connector |
|---|---|
| 2G/3G/4G MIMO1 | LTE 1 |
| 2G/3G/4G MIMO2 | LTE 2 |
| GPS-Glonass | GPS |
| 2.4/5.8 GHz | Wi-Fi |

*The Multi antenna is installed.*

### 3.2.2 LRR Antenna

1. Remove any burrs, particularly on the roof under the side of the hole.
2. Remove any paint in a narrow ring around the hole.

3. Remove the lock nut, tooth lock washer and flat washer.

> **NOTE:** The antenna illustration may differ from the original product.

4. Pass the antenna cables through the hole.

> **NOTE:** Metal-to-metal contact between the mounting surface and the mount is essential for best performance of the antenna.
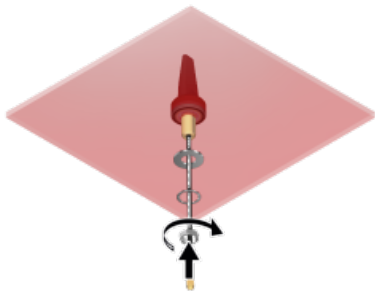
5. Re-attach flat washer, tooth lock washer and lock nut.

6. Screw lock nut with a torque of 10 Nm (7 ft-lbf).
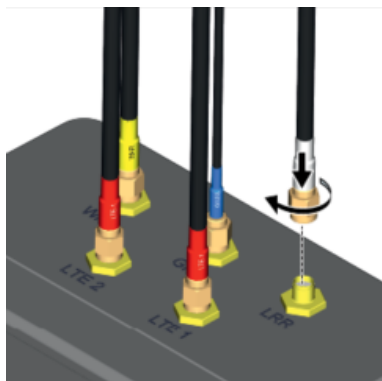


7. Attach the antenna cable to the LRR connection on the MSA HUB.

*The LRR antenna is installed.*

# 4 Connectivity

Provide a power supply via mains supply.

**NOTE:** When installing the HUB in a truck, secure with a 2A fuse (slow).
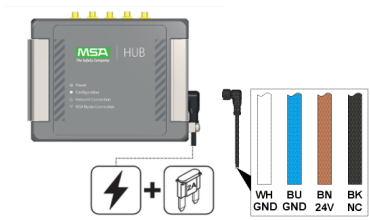
| Color | Connection |
|-------|------------|
| White | Ground |
| Blue | Ground |
| Brown | Power supply behind a 2A fuse (slow) |
| Black | No connection |
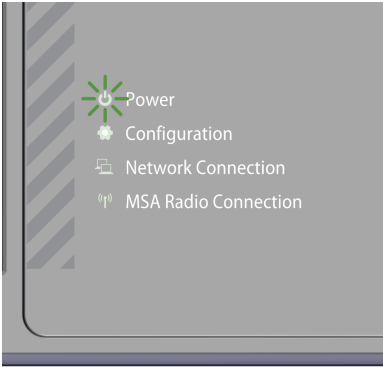
The Power LED flashes.

The device searches for a network connection.

Connectivity functionality (including monitoring, configuration, and registration) is provided through A2 Software. Refer to the A2 Software Manual on the Software Product website at www.MSAsafety.com.

Upon the initial setup, connect the HUB provided network that is active by default. The default connection settings are found on the HUB type label.

*Figure 2 : Labels on the inside of the lid of the MSA HUB*
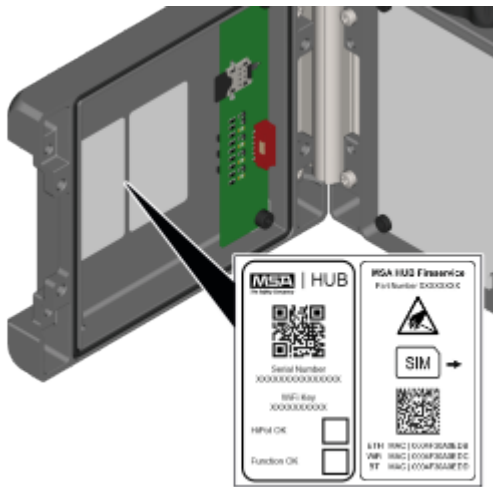
Factory reset the device to reset the password. See 5.4 Factory Reset.

## 4 Connectivity

For additional information regarding connectivity functionality (including monitoring, configuration, and registration), refer to the A2 Software Manual on the Software Product website at [www.MSAsafety.com](www.MSAsafety.com).

# 5 Operation

## 5.1 LED Status Description

*Figure 3 : LEDs*



*Table 1 : LED Behaviour*

| No. | Name | Status | Description |
|---|---|---|---|
| 1 | "Power" | On / Off | On - device is on |
| | | | Off - device is off |
| 2 | "Configuration" | N/A | For future use |
| 3 | "Network Connection" | On / Off | Default: off |
| | | | Off - No Internet connection |
| | | | Blinking - Internet connection established |
| | | | On - Connection to SafetyIO FireGrid established |
| 4 | "MSA Radio Connection" | On / Off | Off - no user connected |
| | | | On - at least one user connected |
| 1+2+3+4 | Error Case | Blinking | Any module is in error state (see 5.3 Error Cases) |
| 1+2+3+4 | Update process | Flashing in repeat | The device is loading and installing a software update. |

## 5.2 Firmware Update

Regularly check for new updates by using the A2 Software. Refer to the A2 Software Operating Manual on the MSA Software Product website at www.MSAsafety.com.

### 5.3 Error Cases

| Error | Description | Action |
|---|---|---|
| all LEDs blinking<br><br>(1 + 2 + 3 + 4) | Error,<br><br>Device stops working | Unpower the device for 30 seconds and power it again.<br><br>If the error persists, please contact MSA Customer Support. |
| Network Connection LED off | Connection interrupted<br><br>(Important for users with SafetyIO FireGrid support only.) | Check internet connection.<br><br>If the error persists, restart the device. |
| all LEDs off<br><br>(1 + 2 + 3 + 4) | Device does not start | Check the device's power supply.<br><br>Reset the device. See the error cases in this table.<br><br>If the error persists, please contact MSA Customer Support. |

### 5.4 Factory Reset

If the device access password has been lost and no further access is possible, a factory reset can be performed to reset all values to their defaults. For default parameters, see Table 2 : Factory Reset Parameters.
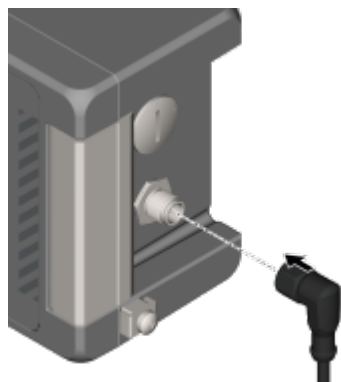
**NOTICE**

The device contains electrostatically sensitive components. Adopt precautionary measures against electrostatic discharge during assembly. Otherwise, the device may be damaged.
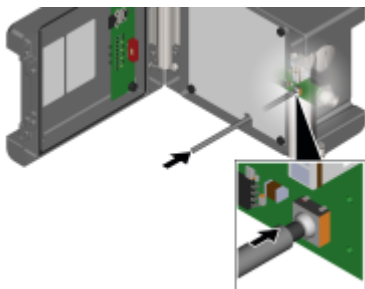
1. Remove the device from incident scene.
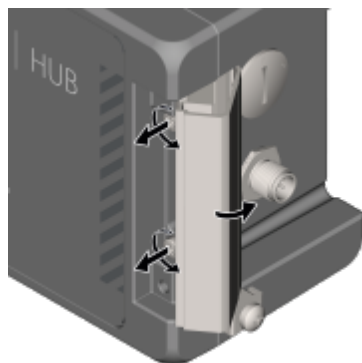


2. Open housing by opening the right joints and unscrew the lid screws using a Torx T20.
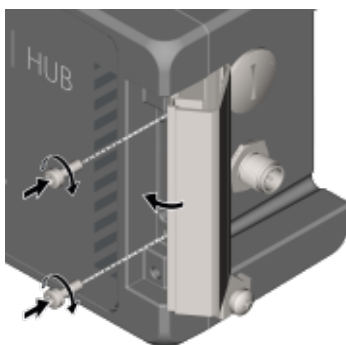


3. Power the device.

4. Use a thin non-conductive object (e.g. a pencil) to push the reset button for ≥ 10 seconds until all LEDs switch on and off.

After the factory reset, the device will restart.

5. Close housing lid by tightening the lid screws with a torque of 1.5 Nm (1 ft-lbf).
6. Close right joints.

The device is reset.

*Table 2 : Factory Reset Parameters*

| Parameters | Value | Default |
|---|---|---|
| Ethernet | dhcp | true |
| | disabled | false |
| Hostname | | ccimx6sbc |
| WLAN configuration | Client | Hotspot |
| | Hotspot | |
| | disabled | |
| WiFi client configuration | previous connections to WLAN networks are deleted | |
| WiFi hotspot configuration | ssid | MSA HUB <serial number> |
| | key | <random on name plate> |

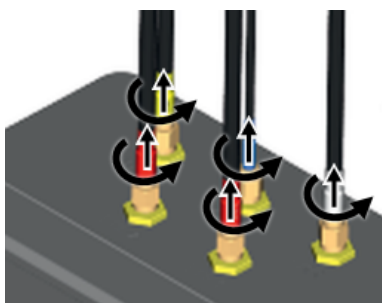# 6 Decommission and Disposal

## 6.1 Decommission

**NOTICE**

Do not carry the device by holding the antennas or cables. Otherwise, device parts can be damaged.

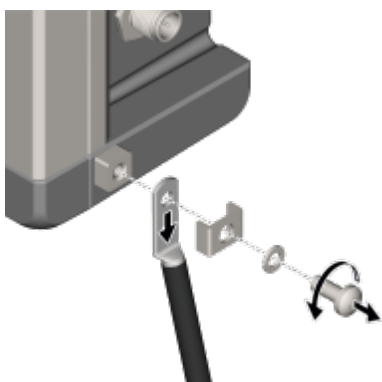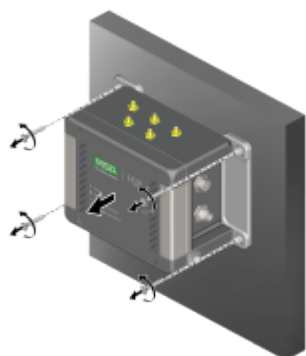### 6.1.1 MSA HUB Fireservice for Truck Installation (Optional: with Wall Brackets)

1. Unplug the power plug and remove Ethernet cable, if present.

2. Remove antenna cables.

3. If a grounding terminal is used, loosen grounding clamp and remove grounding cable.
4. Reattach grounding clamp.

Optional:

5. Remove the wall bracket screws from the surface.
6. Take the device off the installed place.
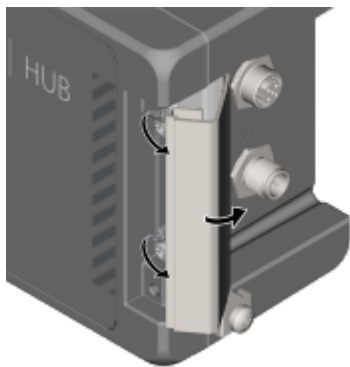
7. Open housing by opening the right joints and unscrew the lid screws using a Torx T20.
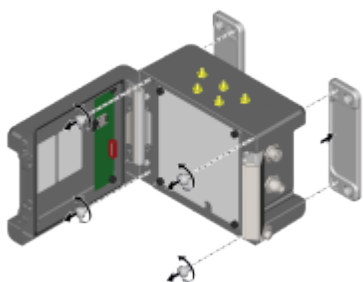
Optional:

8. Remove the four screws and the wall brackets at the back of the housing.
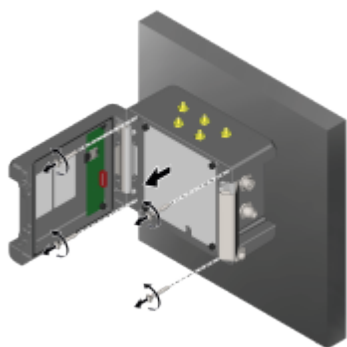
9. Remove the screws from the surface.

*The device is decommissioned.*
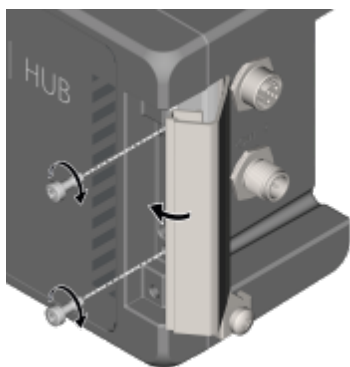
10. Close housing lid.
11. Close right joints.

## 6.2    Disposal

For disposal of the device and batteries, local regulations are to be observed.

Germany only:

Information on taking back waste electrical and electronic equipment can be found at: https://de.msasafety.com/regulatory-information

# 7    Maintenance

### ⚠ WARNING!

Repair or alteration of the device beyond the procedures described in this manual or by anyone other than a person authorized by MSA could cause the unit to fail to perform properly. Use only genuine MSA replacement parts when performing any maintenance procedures described in this manual. Substitution of components can seriously impair performance of the unit or void agency approvals.

**Failure to follow this warning can result in serious personal injury or death.**

The device is largely maintenance-free. It is recommended that the device is subject to regular visual inspections to check whether there are any cracks or damage.

Consider to update the device firmware regularly (see 5.2 Firmware Update).

Be aware of the Procedures for Handling Electrostatically Sensitive Electronic.

> ⓘ The device contains electrostatically sensitive components. Do not open the device without using appropriate electrostatic discharge (ESD) protection. The warranty does not cover damage caused by electrostatic discharges.

## 7.1    Cleaning

### *NOTICE*

Do not rub the device and never clean plastic surfaces with a dry cloth. Otherwise, electrostatic charges can occur and damage the device. Always use a damp cloth instead.

Avoid alcoholic and chemical detergents. Otherwise, the device will be damaged and the labels might be unreadable. Periodically clean the exterior of the device with a damp cloth.

The device components should be cleaned after each operation and, if badly contaminated, with a damp cloth (tepid water) and a little detergent.

# 8    Certification

The Declaration of Conformity can be found under the following link: https://MSAsafety.com/DoC.

# 9    Technical Data

| | | | |
|---|---|---|---|
| Dimensions L x W x H (housing) | : | 174 mm x 92 mm x 135 mm (without radio antenna and wall mount kit) | |
| Weight | : | 1,27 kg | |
| Ambient temperature range | : | -20 °C to +60 °C | |
| Storage temperature range | : | -20 °C to +60 °C | |
| Humidity | : | 10 to 95 % r.H. (non-condensing) | |
| Degree of protection | : | IP67 | |
| Power dissipation | : | continuously: | $P_D < 5\ W$ |
| | | peak: | $P_D < 12\ W$ |
| Power supply | : | Connector type: | Fireservice for Truck Installation: M12, 4-Pin, A-coded |
| | | | Fireservice: Ethernet kit (optional) with cable bushing included |
| | | Minimal input voltage: | 12 V DC |
| | | Nominal input voltage: | 24 V DC |
| | | Maximal input voltage: | 30 V DC |
| Connectivity | : | Connector type: | M12, 4-Pin |
| | | 10 BASE-T/ 100 BASE-TX, galvanic isolated | |
| | | Wi-Fi: IEEE 802.11 b/g | |
| LTE | : | Band: | 1, 2, 3, 4, 5, 8, 12, 13, 20, 25, 26 |
| | | Conducted transmit power: | +23 dBm ± 1 dB |
| | | Band: | 7, 30, 41 |
| | | Conducted transmit power: | +22 dBm ± 1 dB |
| UMTS | : | Band: | 1 (IMT 2100 12.2 kbps) 2 (UMTS 1900 12.2 kbps) 3 (UMTS 1800 12.2 kbps) 4 (AWS 1700/2100 12.2 kbps) 5 (UMTS 850 12.2 kbps) 8 (UMTS 900 12.2 kbps) |
| | | Conducted transmit power: | +23 dBm ± 1 dB Connectorized (Class 3) |
| Bluetooth BR/EDR/LE | : | Operation frequency range: | 2402 MHz...2480 MHz |
| | | Maximal RF power: | +10 dbm (10 mW) |
| Telemetry radio communication | : | Operation frequency range: | 865.7 - 867.5 MHz |
| | | Maximal RF power: | 500 mW |
| Asset Tracking Tag NFC | : | Operation frequency: | 13.56 MHz passive |

# 10 Ordering Information

## 10.1 Spare Parts

Use only genuine MSA replacement parts when performing any maintenance procedures.

Contact your local MSA sales representative:

1-877-MSA-FIRE (1-877-672-3473) or

fire.cs@msasafety.com

For additional contact information refer to the MSA website at www.MSAsafety.com.

**MSA HUB Fireservice for Truck Installation**

| Description | Part Number |
| --- | --- |
| Wall power supply | 10201790-SP |
| Power cable for truck installation (25 m / 82 ft) | 10195720-SP |
| Multi antenna with antenna cable for truck installation (3 m / 9.8 ft) | 10201801-SP |
| LRR antenna for truck installation (EU, US, AUS version) | 10201944-SP |
| Antenna cable for LRR antenna (3 m / 9.8 ft) | 10205446-SP |

## 10.2 Accessories

| Description | Part Number |
| --- | --- |
| Ethernet Cable 20 m / 66 ft (MSA HUB Fireservice for Truck Installation) | 10195743 |
| Ethernet Cable 5 m / 16.4 ft (MSA HUB Fireservice for Truck Installation) | 10195747 |
| Wall brackets | 10203364 |