

Slobehopper Crossmodal 3.0 User Manual

Technical Data Installation Guide Certifications







 Doc. Nr.:
 20200511001

 Version:
 1.0

 Status:
 APPROVED

 Classification:
 PUBLIC

 © 2020
 Version:

Hardstrasse 201 8005 Zürich, Switzerland Telephone: +41 44 275 51 51 Email: info@nexxiot.com www.nexxiot.com

Table of Contents

1	Revis	ion History	2	
2	Techr	Fechnical Data		
4	Produ	uct Information	4	
	4.1	Safety Notice	4	
	4.2	Device Identification	4	
	4.3	Functional Description	5	
	4.4	Installation Instructions	6	
	4.5	Maintenance Instructions	6	
	4.6	Cleaning	6	
	4.7	Device replacement Instructions	6	
	4.8	Decommissioning an Old Device	6	
5	Instal	lation and Mounting Guide	7	
	5.1	Device Outline and Mounting	7	
	5.2	Safety Notice	8	
	5.3	Mounting Guidelines	8	
	5.4	General Recommendations about Globehopper Crossmodal Performance	. 11	
6	Devic	e Overview Drawing	.12	

1 Revision History

Version	Author	Publishing date	Reason of the change
1.0	Kuno Bärtschi	2020-10-23	Initial release
0.1	Kuno Bärtschi	2020-08-13	Chapter 5.1 updated with mounting onto flat surface
0.0	Kuno Bärtschi	2020-05-11	Initial PRELIMINARY draft

2 Technical Data

ıp to +85 °C
1700/1900 MHz
1800/1900 MHz
lized)
controller
s and use of

4 Product Information

4.1 Safety Notice

- 1. Do not drop the device.
- 2. Do not open the device.
- 3. Do not expose device to conditions other than those in chapter "Technical Data".
- 4. **Warning**: Device contains a NiMH. Danger of fire if punctured, crushed or otherwise forcefully damaged, exposed to heat above the values given in the chapter "Technical Data".

4.2 Device Identification



Explanation of the label elements:

- 1. Nexxiot Logo and address
- 2. Device identification Crossmodal Version 3.0, certified for use in hazardous locations
- 3. Certificate number issued by the notified body involved in the verification of the annex III of the directive 2014/34/EU
- 4. Group and Category of the equipment
 - a. II: group of equipment. Group II refers to equipment not used in mining.
 - b. 2 GD: In presence of potentially explosive atmospheres of gas (G) and/or dust (D) the category 2 is suitable to be installed in zone 1 and/or zone 21; the process connection of the equipment is suitable to be installed in zone 1

Globehopper Crossmodal 3.0 - User Manual

- 5. ATEX Classification of the device within specific areas
 - a. Ex ib: this type of protection is applicable to electrical equipment in which the electrical circuits themselves are incapable of causing an explosion in the surrounding explosive atmospheres
 - b. IIC: Group of gas for which the equipment is suitable
 - c. IIIC: group of dust for which the equipment is suitable
 - d. T4: temperature class for gas
 - e. T135°C temperature class for dust
 - f. Gb: equipment protection level, equipment for explosive gas atmospheres, having a "high" level of protection
 - g. Db: equipment protection level, equipment for explosive dust atmospheres, having a "high" level of protection
- 6. Temperature range
 - a. $-35^{\circ}C \le Ta \le +60^{\circ}C$: Ambient temperature for safe operation of the device according to ATEX
- 7 HazLoc classification of the device within specific areas
 - a. AEx ib: this type of protection is applicable to electrical equipment in which the electrical circuits themselves are incapable of causing an explosion in the surrounding explosive atmospheres
 - b. IIC: Group of gas for which the equipment is suitable within Class I, Zone ${\tt 1}$
 - c. IIIC: group of dust for which the equipment is suitable within Class II, Zone 21
 - d. T4: temperature class for gas
 - e. T135°C temperature class for dust
 - f. Gb: equipment protection level, equipment for explosive gas atmospheres, having a "high" level of protection
 - g. Db: equipment protection level, equipment for explosive dust atmospheres, having a "high" level of protection
 - h. Electrical and Hazardous Location Safety together with MET Laboratories, Inc. certification number
- 8. French warning for specific risks when using the device
- 9. English warning for specific risks when using the device
- 10. MET Laboratories, Inc. logo for Canada (C) and United States (US)
- 11. CE marking together with the registered number of the Notified Body involved in the verification of the product
- 12. Specific symbol of ATEX directive 2014/34/EU, given in the annex II of the directive
- 13. Serial number of the device as human readable text and coded into data matrix, consisting of the manufacturing year and the serial number of the device

4.3 Functional Description

The Globehopper Crossmodal 3.0 Ex / AX.3A is a smart device for industrial asset monitoring and tracking. It is power independent with a rechargeable battery and a solar panel and it remains active for the lifetime of the asset it is attached to (6-10 years depending on conditions). It is intended to monitor railway wagons, containers, trucks, trailers, crates or other similar objects. Do not use this device for any other purposes. Nexxiot AG is not liable for any damage to property or personal injury that result from unintended use.

4.4 Installation Instructions

It is not permitted to perform an installation of the Globehopper Crossmodal device inside a hazardous area. If the installation of the Nexxiot device is performed outside of a Hazardous area, then there are no special safety considerations or precautions required.

Before the device is mounted at the desired location, make sure the following conditions are met:

- Make sure, drilling holes in the chosen mounting location does not weaken the mechanical structure of the wagon. In case of uncertainties, get in touch with the manufacturer of the wagon to define appropriate mounting locations
- Make sure, drilling holes in the chosen mounting location does not puncture the wagons cargo holding area in an unwanted area. Special care must be taken for any kind of tank wagons and bulk goods wagons
- Make sure, drilling does not puncture any electrical, hydraulic or air tubes or lines or functionally vital installations on the wagon. Such installations can be installed intentionally on the rear side of structural beams to protect them against damage

Wear the necessary personal safety gear during the whole installation to avoid any injuries.

4.5 Maintenance Instructions

While the operation of this device is maintenance free, it is the responsibility of the customer to ensure maintenance operations according to IEC 60079-17. It is not possible to replace the battery.

4.6 Cleaning

For best performance, please clean the solar panel on every service interval of your asset. The cleaning of Globehopper Crossmodal device can be performed both inside and outside of a hazardous area.

To avoid scratching the solar panel and degrading its performance, it is recommended to wash the device with a sponge or cloth, using water and soap, suitable for Polycarbonate surfaces.

4.7 Device replacement Instructions

Remove the old device from your asset by counterboring the rivets and using the App to initiate the unpairing process. Then, install the new device to your asset and use the Smartphone App to connect the new device to your asset.

4.8 Decommissioning an Old Device

Devices taken out of service must be sent back to Nexxiot AG. Please consult our website for the shipping address. Nexxiot AG will take care of proper recycling.

5 Installation and Mounting Guide

Recommended Installation Equipment (The equipment is not provided together with the Globehopper Crossmodal when delivered):

- Drill with 6.5 mm drill bit
- Riveting machine Rivdom Two2
- 2 pcs. 6.4 mm (1/4 inch) rivets Monobolt 02711-00824; 316 grade/A4

Installation of the device must only be done by appropriately qualified personnel and must be carried out according to IEC 60079-14.

5.1 Device Outline and Mounting

The following sketches depicts the device outline dimension when choosing an appropriate mounting location. For detailed dimensions of the device, please refer to chapter 6 Device Overview Drawing on page 12.



The device must be mounted onto a flat surface. The back of the device must be fully covered by the structure, to make sure the back of the device is protected against jet water washing. See top view of the installed device as shown below.



Installation steps:

- 1. Take the equipment and the Globehopper Crossmodal to the place of installation.
- 2. To avoid mistakes, the Globehopper Crossmodal needs to be fixed to the wagons in a sequential order, which means it might be necessary for the assembly operator to get to the other side of the wagon.
- 3. Determine the installation position for the Globehopper Crossmodal based on the mounting guidelines (see below)
- 4. Hold the Globehopper Crossmodal to the asset and drill two holes (6.5 mm diameter). Use the mounting holes of the Globehopper Crossmodal as stencil to mark the drill positions. Do NOT use the Globehopper Crossmodal as a drill guide as this damages the enclosure
- 5. Fix the Globehopper Crossmodal onto the asset with two 6.4 mm blind rivets using a riveting machine. The Globehopper Crossmodal always needs to be mounted so that the solar panel is on the left-hand side of the device when viewed from the front.
- 6. Carry out the pairing of the Globehopper Crossmodal, using the mobile app as described in the Mobile App User Manual.



5.2 Safety Notice

The total thickness of the Globehopper Crossmodal mounting holes and the material thickness of the mounting location must not exceed the maximum allowed material thickness for a reliable riveting according to the datasheet of the manufacturer of the rivet.

5.3 Mounting Guidelines

See the following reference images for recommendations for mounting the Globehopper Crossmodal in different configurations.

Please check with the manufacturer of the specific wagon type onto which the Globehopper Crossmodal 2.0 is to be mounted to get approval for the chosen mounting location.









© 2020 nexxiot.com Doc. Nr.: 20200511001 Version: 1.0 Status: APPROVED C









5.4 General Recommendations about Globehopper Crossmodal Performance

The installation location of the Globehopper Crossmodal is very important for achieving the best performance. The GNSS signal is very sensitive with regards to steel obstructions; therefore, the mounting position should be chosen so that the Globehopper Crossmodal is not affected by such obstructions. GNSS satellites are circling the earth in an orbit of about 20'000 km and their signal needs to be able to reach the Globehopper Crossmodal. Every obstacle will make it harder for the signal to reach the device.

Therefore, these rules should be applied to find the optimal mounting location:

- The device must be mounted on a vertical flat surface
- Avoid overhanging steel structures above or below the Globehopper Crossmodal. The top of the Globehopper Crossmodal should have an unobstructed view of the sky
- · Avoid overhanging structures in general
- Choose a place with as much sunlight as possible and with as little exposure to brake dust as possible

Examples of unfavorable installation locations:

- Shady, almost impossible to receive direct sunlight
- Very low on the wagon, therefore exposed to a lot of brake dust
- Surrounded by steel, metal or other obstructions

6 Device Overview Drawing

