Globehopper Crossmodal 3
Data sheet

1   Nexxiot Crossmodal 3

Nexxiot Crossmodal 3 is a zero-maintenance hardware unit for enabling real-time monitoring of non-powered rail cars. Device installation can be done in under 2 minutes ensuring quick and effortless onboarding. Once set up, the Crossmodal device provides real-time updates of location, utilization and sensor readings as often as every 5 minutes. Intelligent energy harvesting, and energy management techniques ensures a hassle-free operation for a guaranteed time of 6 years.

Nexxiot Crossmodal 3 is a successor of a highly acclaimed previous generation device, now with a revised design to ensure compliance with the strictest ATEX and IECEx safety class allowing devices to now also operate in Hydrogen handling environments. New custom engineered composite material has been developed to provide additional resistance to damage even when temperatures reach -40 °C.

2   Use Cases & Return on Investment

Improved customer support & self-service – customers can see exactly where the assets have been and where they are now. A simple, user-friendly User Interface can enable better self-service as well as empower the Customer Support Organization to be more efficient, transparent and reduce the impact of data silos.

Ensure consistent quality of the transported goods – with the shock sensing ability it is possible to know exactly where and when a potential damage has occurred giving the opportunity to create damage claims or to adjust billing according to how the logistics partners use or misuse the assets.

From Reactive to Predictive Maintenance – reducing the reliance on guesswork or approximations enables users to maximize the intervals between scheduled maintenance. Knowing the exact asset and part utilization and mileage enables a more precise optimization of the asset, workshop & repair schedules, effectively creating significant savings. Accurate mileage information can also be used to improve customer billing or subscribe to government subsidies.

Quick Setup – installation is assisted by Nexxiot Pairing App and can be done in under 2 minutes. To simplify the training, the In-app guide offers a possibility to get a per asset-type mounting and pairing instructions along with a video guide and direct support contact.

Zero Maintenance – Nexxiot Crossmodal devices are 'install & forget' - there is no regular servicing or battery changes required. Using an innovative energy harvesting and management process Nexxiot devices have a 6-year guaranteed lifespan.

ATEX Certified – an intrinsically safe hardware design is a must-have to guarantee a safe operation of Hardware in Hazardous and Explosive environments such as Hydrogen Transport, Petrochemical

Environments, Grain, Flour or Sugar plants. Nexxiot Crossmodal 3 has been designed ground-up with most restrictive industrial requirements in-mind and has passed rigorous testing to achieve IECEx and ATEX certification in the process.

Rugged & IP67 Certified – a custom-engineered plastic ensures that devices can withstand a great amount of damage without sacrificing their integrity. Devices are also entirely weather sealed for operation in the harshest of weather conditions – be it Scandinavian Winters or Middle Eastern summers.

Digital Documents – In combination with the Nexxiot Pairing App it is possible to share, distribute and access rail car documents such as maintenance records, waybills, customs forms or damage reports. Documents are stored in the cloud and can be accessed from both a phone and a compatible online interface such as Nexxiot Connect.

Unrestricted Future Potential – Crossmodal devices use standardized low-power wireless protocol to support up to 8 additional sensors per rail car offering you unlimited future extensibility options such as: temperature, pressure or brake monitoring capabilities.

Product		Globehopper Crossmodal 3 Ex
ID		AX.3A
Physical	Size	360 mm x 111 mm x 53 mm
	Weight	2.55 kg
	Mounting hole spacing	330 mm; Ø 7 mm, suitable for ¼" screws or rivets. Material thickness 2.5 mm
Environmental	Operating temperature (EN 50155, Class TX)	-35 °C … +50 °C; Electronics operational up to +85 °C
	ATEX ambient temperature (EN 60079-0)	-40 °C … +60 °C
	Altitude	2000 m / 6562 feet
	Ingress Protection	IP66/IP67, IPx9k
Energy	Battery type	NiMH
	Nominal battery voltage	2.4 V
	Battery capacity	38.4 Wh
	Energy harvesting source	Solar panel
	Primary Battery	None

Shock detection		± 16 g

GNSS	Supported networks	GPS/QZSS, GLONASS, Galileo, BeiDou
	No. of channels	72

Cellular	Frequency bands	4G (NB-IoT, Cat-M1)	Bands; 2, 3, 4, 5, 8, 12, 13, 20, 26, 28
		2G (GSM)	850/900/1800/1900 MHz

IEEE 802.15.4	Frequency range	2405 MHz … 2480 MHz

Bluetooth Low Energy 5.1		ISM Band (2.402 GHz … 2.480 GHz)

NFC	ISO 15693, 13.56 MHz	Passive, connected to microcontroller

ITSS Interface 2	ready

Lifetime	Maintenance free	6 to 10 years depending on environmental conditions and use of device

Environment:

RoHS

WEEE

IEC 61373 Category 1, Class A

(Vibrations and shocks for rail)

IEC 60529 (IP66/IP67)

ISO 20653 (IPx9k)

EN 50155

EN 50125-1

Product Safety:

IEC 62368-1

EN 45545-2

IEC 62133-1

NOM: NOM-001-SCFI-2018

Radio Equipment and EMC:

Directive 2014/53/EU

EN 301 489

EN 50121-3-2

EN 301 908-1

EN 301 511

EN 300 328

EN 300 330

EN 303 413

EN 62311

FCC ID: 2AXRX-AX3A

IC: 26682-AX3A

IFT: RTIMOM717-0893

EESS: CBA231151.01

ATEX and IECEx:

ATEX Certificate Number EPT 20 ATEX 4088

IECEx Certificate Number EUT 20.0026

Directive 2014/34/EU

EN 60079-0 and IEC 60079-0

EN 60079-11 and IEC 60079-11

II 2 GD

Ex ib IIC T4 Gb

Ex ib IIIC T135°C Db

Normal Location:

UL 62328-1

CSA C22.2 No. 62368-1

HazLoc:

MET Laboratories, Inc. Listing Number: E114777

ANSI/UL 60079-0

ANSI/UL 60079-11

Class I, Zone 1, AEx ib IIC T4 Gb

Class II, Zone 21, AEx ib IIIC T135°C Db

Class I, II, III, Division 2, Groups A, B, C, D, F, G, T4

CAN/CSA C22.2 No. 60079-0

CAN/CSA C22.2 No. 60079-11

Ex ib IIC T4 Gb

Ex ib IIIC T135°C Db

Revision History

Version	Author	Publishing date	Reason of the change
2.0	Nexxiot AG	2025-03-27	Overall update
1.9	Nexxiot AG	2024-03-05	Material thickness for the rivets added. Australian certification added EESS
1.8	Nexxiot AG	2021-07-23	4G frequencies updated with bands
1.7	Nexxiot AG	2021-06-03	NOM and IFT added
1.6	Nexxiot AG	2021-02-19	FCC, IC and IFT removed from overview sketches of device
1.5	Nexxiot AG	2021-01-29	Certification section updated
1.4	Nexxiot AG	2021-01-19	Device weight updated
1.3	Nexxiot AG	2020-12-18	CE logo added
1.2	Nexxiot AG	2020-12-08	Certificates added
1.1	Nexxiot AG	2020-11-16	Device weight updated. Editorial changes
1.0	Nexxiot AG	2020-05-01	Initial Preliminary version. All data not guaranteed! Data may change without notice and version control