Safety and Compliance Information

Warning Levels

WARNING
Instruction that must be followed to avoid a risk of death or serious injury.

CAUTION
Instruction that must be followed to avoid a risk of personal injury.

General Safety

CAUTION
Ensure that the power supply is turned off before connecting it to the equipment.

CAUTION
To ensure proper functioning and electrical safety, connect the Bolt 5G Functional Earth (FE) connection to earth.

CAUTION
The supply circuit must be limited to PS2 or fulfill the requirements in IEC 62368-1:2023 standard Annex Q, equivalent to Limited Power Source (LPS).

The supply circuit transient voltages must not exceed 1500 V.

CAUTION
When powering the Bolt 5G, do not use PoE and DC power at the same time. Ensure to use only one source of power.

IMPORTANT
To prevent wires from overheating, use a power supply wire rated to carry the rated current of the Bolt 5G.

Intended Use

The intended use of this equipment is as a communication interface and router.

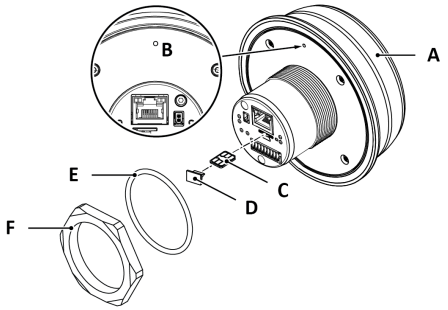
The equipment receives and transmits data over wired and cellular standard networks.

If this equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired.

Model Identification

Hardware description	
Interface Configuration	**Model ID**
Ethernet, Single Pair Ethernet (SPE), Interface 18-pin socket (IO-Link, CAN, Digital Output, Digital Input, RS-485, power)	NV200

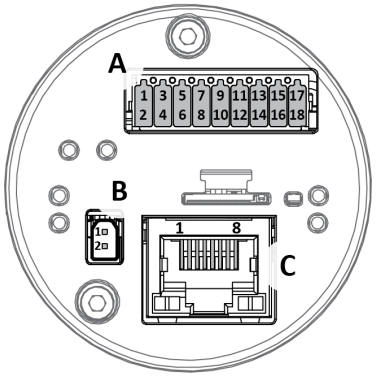
Installation



Mounting Considerations

- Install a SIM (C) and attach the SIM card holder plug (D).
  Supported SIM card type: Nano SIM (4FF)
- Mount the Bolt 5G (A) on a machine or cabinet.
  Mounting hole diameter: M50 (50,5 mm)
- The top mounting surface, in contact with the sealing, must be:
  - Flat with a finish equivalent to Ra 3.2 or finer.
  - Cleaned and free from oils and greases.
- Ensure to use the included housing sealing ring (E) and lock nut (F).
- Bolt 5G lock nut (F) tightening torque: 5 Nm ±10 %
- To fix the Bolt 5G position: Use a screw and the Bolt 5G steering hole.
  - Locking screw dimension: M2.5 (2,5 mm)
  - Bolt 5G steering hole (B) diameter: 3 mm
- To connect the Bolt 5G to Functional Earth (FE):
  - Option 1: Connect the 18-Pin Signal and Power Connector (A) Functional Earth (FE) pin.
  - Option 2: Attach one of the functional earth connection cable wire screws to the Bolt 5G steering hole (B).

Connectors



For Signal and power connector cable wiring, use wires with thickness: 0.14-0.5 mm² (26-20 AWG).

18-Pin Signal and Power Connector (A)					
Pin	Function	Color	Pin	Function	Color
1	IO-Link L-	Blue	10	RS-485 Ground (GND) Common Signal Reference Ground (SC)	White
2	IO-Link L+	Brown	11	CAN Low (L)	Green
3	IO-Link Digital Input (DI)	White	12	CAN Ground (GND)	White
4	IO-Link Communication/ Switching Signal (C/Q)	Black	13	CAN High (H)	Yellow
5	Digital Output (DO) High	Orange	14	Digital Input (DI) High	Grey
6	Digital Output (DO) Low	Yellow	15	Power V+	Red
7	RS-485 A	Green	16	Digital Input (DI) Low	White
8	RS-485 5 V	Brown	17	Power Ground (GND)	Black
9	RS-485 B	Yellow	18	Functional Earth (FE)	Green/Yellow

Single Pair Ethernet (SPE) Connector (B)	
Pin	Data
1	RX/TX-
2	RX/TX+

RJ45 Ethernet PoE Connector pinning (C)			
Pin	Data	PoE	
1	TP0_P	A+	Positive power from alt. A PSE
2	TP0_N		
3	TP1_P	A-	Negative power from alt. A PSE (with pin 6)
4	TP2_P	B+	Positive power from alt. B PSE
5	TP2_N		
6	TP1_N	A-	Negative power from alt. A PSE (with pin 3)
7	TP3_P	B-	Negative power from alt. B PSE
8	TP3_N		
Housing	Shield	Functional Earth (FE), via 1 nF capacitor and 1 MΩ bleeder resistor	

Technical Specifications

Additional technical data and information related to the installation and use of this product can be found at www.hms-networks.com/.

Model identification	NV200
Communication connector	RJ45 Ethernet 10/100/1000 Mbit/s, PoE
Signal and power connector	18-Pin signal and power connector, Phoenix Contact PCB connector DFMC 0,5/ 9-ST-2,54
Power supply, PoE	RJ45 Power over Ethernet (PoE) Input voltage: 37-57 VDC
Power supply, DC power	Input voltage: 24 VDC (9-30 VDC) Reverse voltage protection Input current: Max 625 mA @ 24 VDC Reverse polarity protect: Yes IEEE 802.3at compliant, Type 2, Class 0
Single Pair Ethernet (SPE) connector	2P2C SPE, IEEE802.3bw 100BASE-T1 Ethernet
Power consumption, PoE	Max 12.95 W
Power consumption, DC power	Max 15 W
Power over Ethernet (PoE)	44-57 VDC DTE Type1 according to IEEE 802.3af
Antenna	4 internal antennas
Frequency bands	See Frequency Bands and Power Level [2].
Storage temperature	-40 to +85 °C
Operating temperature	-40 to +70 °C
Humidity	EN 600068-2-78: Damp heat, +40°C, 90% Non-condensing
Housing material	Plastic (see data sheet for details) Aluminum (see data sheet for details)
Protection class	Top (outside of host): IP66 Base (inside of host): IP32
Product weight	300 g
Dimensions	Height: 87 mm Diameter Bottom: 50 mm Top: 114 mm
Mounting	M50 screw and nut. 50.5 mm hole needed. Locking screw M2.5 (2,5 mm)

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Frequency Bands and Power Level

Standard	Mode	Bands	Frequency (MHz)	Transmit Power
UMTS (Universal Mobile Telecommunications System)	Wideband Code Division Multiple Access (WCDMA)	B1	1920 – 1980	25 dBm
		B2	1850 – 1910	
		B4	1710 – 1755	
		B5	824 – 849	
		B8	880 – 915	
		B19	830 – 845	
LTE (Long Term Evolution)	Frequency Division Duplexing (FDD)	B1	1920 – 1980	25 dBm
		B2	1850 – 1910	
		B3	1710 – 1785	
		B4	1710 – 1755	
		B5	824 – 849	
		B7	2500 – 2570	
		B8	880 – 915	
		B12	699 – 716	
		B13	777 – 787	
		B14	788 – 798	
		B17	704 – 716	
		B18	815 – 830	
		B19	830 – 845	
		B20	832 – 862	
		B25	1850 – 1915	
		B26	814 – 849	
		B28	703 – 748	
		B30	2305 – 2315	
		B66	1710 – 1780	
		B71	663 – 698	
	Time Division Duplex (TDD)	B34	2010 – 2025	25 dBm
		B39	1880 – 1920	
		B40	2300 – 2400	
		B46	5150 – 5925	
		B48	3550 – 3700	
		B38	2570 – 2620	28 dBm
		B41	2496 – 2690	
		B42	3400 – 3600	
		B43	3600 – 3800	
5G NR (New Radio)	Non-standalone (NSA) Standalone (SA)	n1	1920 – 1980	25 dBm
		n2	1850 – 1910	
		n3	1710 – 1785	
		n5	824 – 849	
		n7	2500 – 2570	
		n8	880 – 915	
		n12	699 – 716	
		n13	777 – 787	
		n14	788 – 798	
		n18	815 – 830	
		n20	832 – 862	
		n25	1850 – 1915	
		n26	814 – 849	
		n28	703 – 748	
		n30	2305 – 2315	
		n48	3550 – 3700	
		n66	1710 – 1780	
		n70	1695 – 1710	
		n71	663 – 698	
		n75	698 – 716	
		n38	2570 – 2620	28 dBm
		n40	2300 – 2400	
		n41	2496 – 2690	
		n77	3300 – 4200	
		n78	3300 – 3800	
		n79	4400 – 5000	

CE Compliance

This product is in compliance with the 2014/53/EU Radio Equipment Directive (RED) and the RoHS Directive 2011/65/EU with amendment 2015/863 through conformance with applicable standards. The full text of the Declaration of Conformity is available at https://www.hms-networks.com/technologies/5G/5G-solutions.

UKCA Compliance

This product is in compliance with the Electromagnetic Compatibility Regulations 2016. The full text of the Declaration of Conformity is available at https://www.hms-networks.com/technologies/5G/5G-solutions.

Regulatory Compliance Mark (RCM)

FCC Compliance

This product contains FCC ID: **XMR2022RM520NGL**

ISED Canada Statement

This product contains IC ID: **10224A-022RM520NGL**

IC RSS-102 Radiation Exposure Limits

This equipment complies with IC RSS-102 radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm between the radiator and your body.

Operation is subject to the following two conditions:

- this device may not cause harmful interference, and
- this device must accept any interference received, including interference that may cause undesired operation of the device.

Disposal and Recycling

You must dispose of this equipment properly according to local laws and regulations. Because this equipment contains electronic components, it must be disposed of separately from household waste. When this equipment reaches its end of life, contact local authorities to learn about disposal and recycling options, or return the equipment to HMS. For more information, see www.hms-networks.com.

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