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Quick start guide
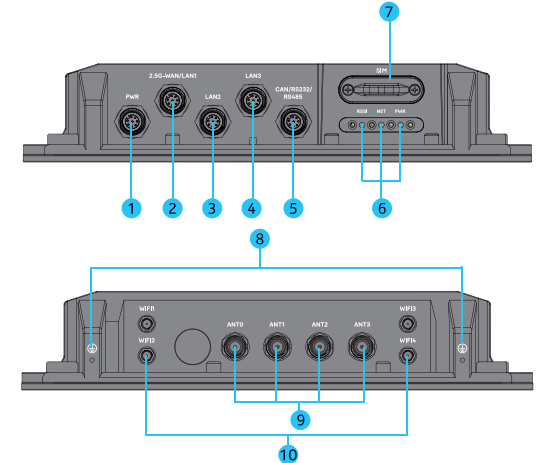
Nokia Industrial 5G fieldrouter FRRO503c

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Nokia Industrial 5G feldrouter FRRO503c is a ruggedized router that enables the most advanced 5G experience, ensuring efficient traffic for demanding applications and use cases. Supporting a wide range of spectrum bands in both 4G and 5G, the feldrouter FRRO503c integrates to your private wireless network, allowing you to get the most out of your existing systems, machines and infrastructure.

With an IP 67 protection level rating, and anti-vibration design, this highly ruggedized router is ideal to ensure the quality of wireless communication for video and other bandwidthintensive applications in harsh outdoor conditions.

As with all Nokia Industrial devices, it is seamlessly onboarded to the network and managed via Nokia DAC device management.

Device architecture

Note 1: The reset button is beside SIM interface, if press 1s, router will restart; if press on for 10s, the router will reset to factory defaults.

Note 2: There are two white ground screws also at behind of device.

CAN/RS232/RS485 cable definition

CAN/RS232/RS485 cable definition		
Number	Colors	CAN/RS232/RS485
1	Orange & White	RS485_A
2	Orange	RS485_B
3	Green & White	RS232_RX
4	Blue	RS232_TX
5	Blue & White	RS_GND
6	Green	RS_GND
7	Brown & White	CAN_H
8	Brown	CAN_L

① Power port
② LAN3 port (support PSE)
③ SIM interface
④ Wi-Fi antenna interface (*WIFI1 & WIFI4 reserved for future implementation)
⑤ 2.5G-WAN/LAN1 port
⑥ CAN/RS232/RS485 port
⑦ Ground screws
⑧ LAN2 port (support PSE)
⑨ LED interface
⑩ Cellular antenna interface

LAN/WAN cable definition

LAN/WAN cable definition		
Number	Colors	LAN/WAN
1	Orange & White	MDI0+/RJ45+1
2	Orange	MDI0-/RJ45+2
3	Green & White	MDI1+/RJ45+3
4	Blue	MDI2+/RJ45+4
5	Blue & White	MDI2-/RJ45+5
6	Green	MDI1-/RJ45+6
7	Brown & White	MDI3+/RJ45+7
8	Brown	MDI3-/RJ45+8

Power cable definition

Power cable definition		
Number	Colors	PWR
1/4	Red	PWR_Positive
2/3	Black	PWR_GND

Working environment

Operating temperature	+40°C ~ 70°C
Storage temperature	+40°C ~ 85°C
Humidity	5% ~ 95%
Power Supply	12 ~ 36VDC
Power Consumption	<60W
Water and Dustproof	IP67

Packing list

Items	Accessories	Quantity
1	FRRO503c router	1
2	A-Code cable to RJ45 jack ADC2 (Ethernet cable)	1
3	A-Code 8-Pin cable ADB1 (Data cable)	1
4	A-Code 4-Pin cable M12A (Power cable)	1
5	Mounting bolt	4
6	Grounding cable	1
7	Protective cap (TNC)	4
8	Protective cap (SMA)	4
9	Protective cap (M12)	5
10	AC/DC power adapter (comes in separate packing)	1
11	Full-band rubber antenna for cellular (TNC)	4
12	Full-band rubber antenna for Wi-Fi (SMA)	2
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## Hardware configuration

Install SIM cards

1. Use a cross screwdriver to remove the SIM card cover.
2. Slide the SIM cards into the SIM slots until they click into place. By default, the SIM card in slot 1 (the upper slot) is the Primary SIM card. When the router is powered on or rebooted, it automatically connects to the network associated with the Primary SIM card.
3. Re-attach the cover.

Primary SIM1

SIM2
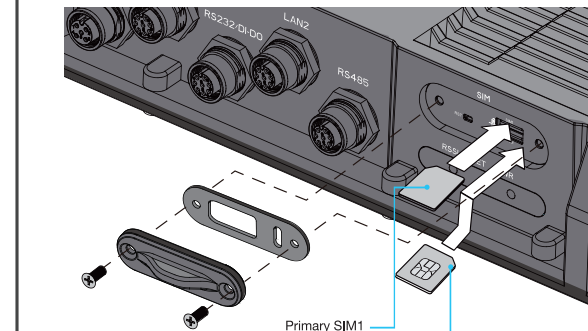
Connect and turn on the router

Note: Please connect the protecting ground cable as first step, connect 12~36 VDC power cable as the last step.

① Connect the protecting ground cable.

② Connect the ANT0, ANT1, ANT2 and ANT3 cellular antennas. (It is recommended to have all connected cellular antennas.)

③ Connect the Wi-Fi antennas if applicable.

④ Connect a computer to the router with an Ethernet cable. (LAN2/LAN3 support PSE)

⑤ Connect 12~36 VDC power cable.

⑥ Connect devices to the CAN/RS232/RS485/DIDO ports.
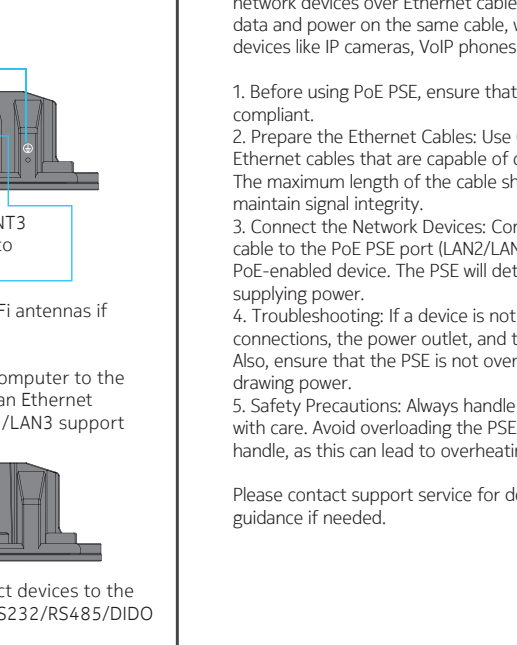
Power over Ethernet (PoE) Powered Supply Equipment (PSE) usage instructions:

FRRO503c supports PoE IEEE 802.3af standard. It provides power to network devices over Ethernet cables. It allows you to transmit both data and power on the same cable, which is particularly useful for devices like IP cameras, VoIP phones, and wireless access points.

1. Before using PoE PSE, ensure that your network devices are PoE compliant.
2. Prepare the Ethernet Cables: Use Cat 5e, Cat 6, or higher category Ethernet cables that are capable of carrying both data and power. The maximum length of the cable should not exceed 100 meters to maintain signal integrity.
3. Connect the Network Devices: Connect one end of the Ethernet cable to the PoE PSE port (LAN2/LAN3) and the other end to the PoE-enabled device. The PSE will detect the device and begin supplying power.
4. Troubleshooting: If a device is not receiving power, check the cable connections, the power outlet, and the device's PoE compatibility. Also, ensure that the PSE is not overloaded with too many devices drawing power.
5. Safety Precautions: Always handle the PoE PSE and Ethernet cables with care. Avoid overloading the PSE with more power than it can handle, as this can lead to overheating or damage.

Please contact support service for detailed and model-specific guidance if needed.

Antenna interface frequency definition

Antenna ports	Definition	Remark
ANT0	**5G NR:** LB TX0 /PRX & MHB TX0 /PRX & UHB TX1/DRX /n41 TX0/PRX n77/n78/n79 TX1/DRX **LTE:** LB TX0/PRX & MHB TX0/PRX & UHB TX1/DRX **WCDMA:** LMB TRX	
ANT1	**5G NR:** MHB TRX MIMO & UHB PRX MIMO / n41 PRX MIMO n77/n78/n79 PRX MIMO **LTE:** MHB PRX MIMO & UHB PRX MIMO & LAA PRX **GNSS:** L5	LB 617-960 MHz MHB: 1452-2690 MHz UHB: 3400-3800 MHz n77/n78: 3300-4200 MHz n79: 4400-5000 MHz LAA: 5150-5925 MHz
ANT2	**5G NR:** LB TX1 DRX MIMO & UHB TX0/PRX /n41 TX1/DRX MIMO n77/n78/n79 TX0/PRX **LTE:** MHB TX1/DRX MIMO & UHB TX0/PRX	LMB 1559-1605 MHz LAA: 5150-5925 MHz GNSS L5: 1166-1187 MHz
ANT3	**5G NR:** LB TX1 DRX & MHB DRX & UHB DRX MIMO /n41 DRX n77/n78/n79 DRX MIMO **LTE:** LB TX1 25/DRX & MHB DRX & UHB DRX MIMO & LAA DRX **WCDMA:** LMB DRX **GNSS:** L1	
*WIFI2 WIFI3	Wi-Fi 2.4GHz & 5GHz	Wi-Fi 2.4G: 2400-2483.5 MHz Wi-Fi 5G: 5150-5875 MHz
*WIFI1 WIFI4	Reserved for future implementation	

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Connect to the network

When the router is powered on, a green PWR LED may occur. This indicates that the power input is good.

Once the router' s radio module is configured for the SIM card, it begins the activation/provisioning process and attempts to connect to the mobile network. This process typically takes several minutes. A successful connection is indicated by a solid green NET LED. And the strength of the RF signal can be indicated by the Signal LEDs in different quantity.

Indicator	Status	Description
PWR	Green	Power on
	Off	No power supply
NET	Green	Registered to network
	Off	Not register to network
	Blinking	Searching network
RSSI	Green	Signal strong
	Blue	Signal good
	Red	Signal weak
	Off	No signal
	Red blinking	No SIM or SIM error

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Software configuration

Log in to the Web management page

1. Launch the web browser, enter https://192.168.1.1 in the address bar, and press Enter.

2. Enter the username and password, and click Login.
3. After the password is verified, you can login to the web management page.

The default username and password are both admin. If you want to view or configure the router, you should use the super account to login to the web management page. The default super username is superadmin, and the password is admin.

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Radio Settings

1. Choose Network > Radio Settings.
2. On Radio Settings page, you can set the configuration of 4G/5G network.
3. In the Status list, you can view the 4G/5G status, such as Frequency, RSSI, RSRP, RSRQ, CINR, SINR, Cell ID and etc.

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Device management settings

1. Choose Settings > Device Information.
2. On the Device Information page, you can view Device Serial Number, IMEI, IMSI and Software Version.
3. Choose Settings > System > TR069.
4. On the TR069 page, you can view/set Device management/ TR069 parameters.

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WLAN Settings

1. Choose Settings > Wi-Fi > WLAN Settings.
2. In the General Settings list, set Wi-Fi Enable or not Enable.
3. In the SSID Profile list, change the SSID, such as: "default-SSID".
4. To ensure data security, it is recommended that you change the Wi-Fi password.
5. Click Submit to save the settings.

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FAQs

The POWER indicator does not turn on.
1. Make sure that the power cable is connected properly and the router is powered on.
2. Make sure that the power supply is compatible with the router

Fails to Login the web management page.
1. Make sure that the router is powered on.
2. Verify that the router is correctly connected to the computer through Wi-Fi or a network cable.
3. If the problem persists, please contact the authorized local service suppliers.

The router fails to search for the wireless network.
1. Check if the power supply is connected properly.
2. Check if the router is placed in an open area that is far away from obstructions, such as concrete or wooden walls.
3. If the problem persists, please contact the authorized local service suppliers.

The parameters are restored to default values.
1. If the router is powered off unexpectedly while being configured, the parameters may be restored to the default settings.
2. After configure the parameters, download the configuration file and restore the desired settings quickly.

The router does not support SIM card hot-plug, please confirm that the device is powered off when the SIM card is inserted or removed.

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