

5G INDUSTRIAL IOT ROUTER

NTC-500

Quick Start Guide



LANTRONIX

GETTING STARTED

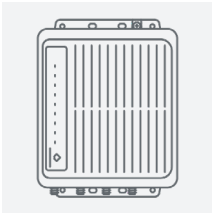
This quick start guide will help to get you up and running with your new NTC-500 router. Further advanced configuration can be found in the NTC-500 Series User Guide available at <https://www.lantronix.com/products/ntc-500-series/>.

WHAT YOU WILL NEED

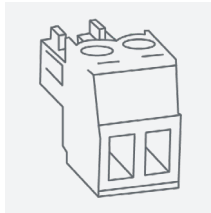
Depending on your chosen setup you may need certain components to configure your device correctly, such as:

- › An external power supply unit for the NTC-500 router.
- › External antennas with an SMA male connection.
- › A flathead screwdriver for terminating power input wires.
- › A laptop or PC for setup and advanced configuration.
- › Additional fasteners and screwdrivers for specific wall or rail mounting.

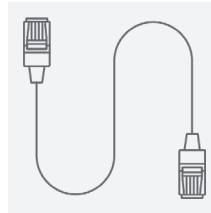
WHAT'S IN THE BOX



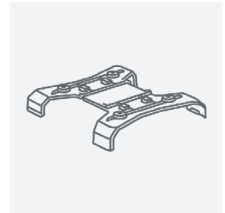
1 x NTC-501/
NTC-502 Router



1 x Two-way
Terminal Block



1 x 1m
Ethernet cable

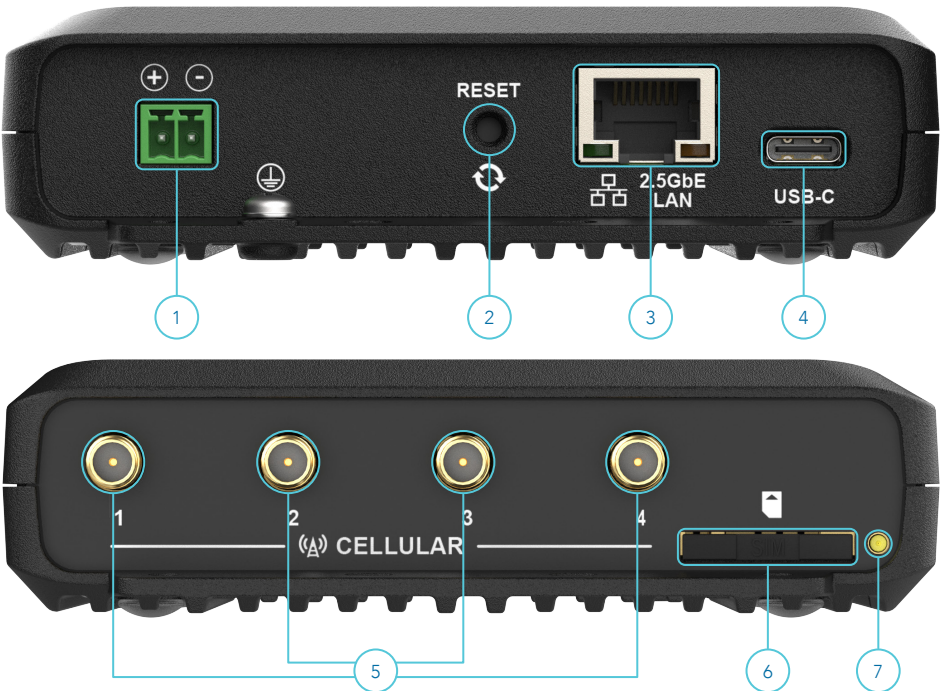


1 x DIN Rail
Mounting Bracket



1 x Welcome card

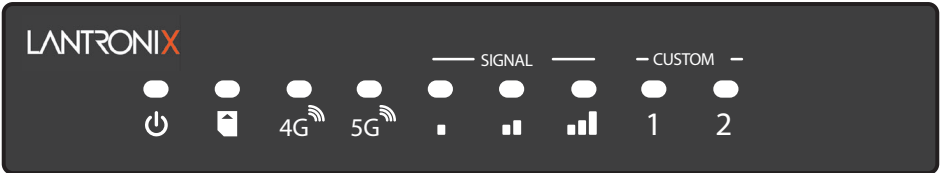
DEVICE OVERVIEW



NO.	INTERFACE	DESCRIPTION
1	Two-way terminal block connector	Connect power supply here. Power from a DC power supply may be terminated on the terminal block connector and then insert the the connector into the terminal block socket on the router. Refer to the Installing your router section for further information.
2	Factory Reset Button	Press and hold for less than 5 seconds to reboot the device. Press and hold for 5 to 10 seconds to reboot to another partition for recovery purpose. Press and hold for 10 to 15 seconds to reset the router to factory default settings
3	2.5Gbps RJ45 Ethernet port	Connect one device or several devices via a network switch here.
4	USB-C port	Provides USB connectivity for debugging.
5	Antenna sockets	SMA female connector for cellular antennas.
6	SIM card tray	Insert SIM card here.
7	SIM eject button	Press with a SIM removal tool to eject the SIM card tray.

LED INDICATORS

The NTC-500 uses nine LEDs to display the current system and connection status.



LED	NAME	COLOUR	STATE	DESCRIPTION
	Power		Off	Power off
			Blinking	Router starting up
			On	Power on
	SIM		Off	No SIM detected
			Blinking	SIM error
			On	SIM installed and working
	4G Network		Off	No 4G connection
			Blinking	Connecting to 4G network
			On	4G connected
	5G Network		Off	No 5G connection
			Blinking	Connecting to 5G network
			On	5G connected
SIGNAL	Signal Strength		Off	No signal
			One Lit	Poor signal
			Two Lit	Fair signal
			Three Lit	Good signal
CUSTOM	Custom 1 (NTC-502)		Off	No 3G connection
			Blinking	Connecting to 3G network
			On	3G connected
CUSTOM	Custom 1 (NTC-501)	Customizable		Programmable LED for custom use
CUSTOM	Custom 2	Customizable		Programmable LED for custom use

INSTALLING YOUR ROUTER

1. INSERT THE SIM CARD

Before inserting the SIM card, examine the SIM for signs of damage or deformation that could prevent it being safely inserted or cause it to become stuck in the router. Examine the gold contact points of the SIM for signs of wear or damage that may prevent it from working correctly.

Use a thin pointed implement such as a paper clip, pen, or SIM eject tool to press the SIM eject button which ejects the SIM card tray. Place the SIM card in the tray and then insert the loaded tray into the SIM card slot with the gold side facing up. The SIM tray should slide easily into the slot, do not force the loaded SIM tray into the slot.



2. ATTACH ANTENNAS

The router is fitted with four SMA female antenna connectors. Attach antennas fitted with a SMA male connector by turning them in a clockwise direction.

Refer to the Device Overview section for the antenna socket layout.



For best performance, align the antennas as shown below.



3. MOUNT THE ROUTER

Choosing a location

Try to mount your router in a location that is both aesthetically pleasing and will provide the best possible signal strength with your chosen antennas. If you find the signal strength is weak, try adjusting your antennas (if adjustable), mounting them differently or changing their orientation.

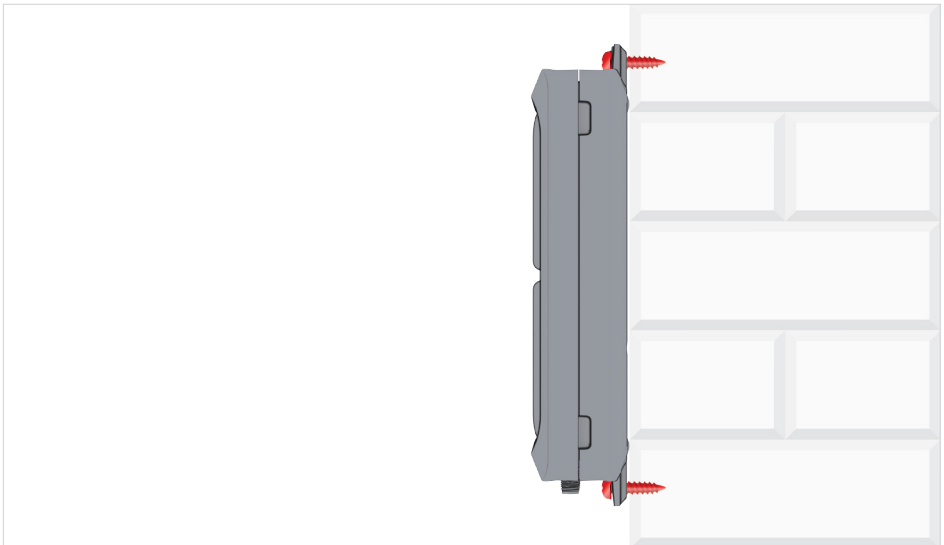
The signal strength LEDs update within a few seconds of a rolling average signal strength reading. When selecting a location for the router, please allow up to 20 seconds for the signal strength LEDs to update before repositioning.

Mount your router in a suitable location using the options below:

Wall mount

Your router can be mounted without using the DIN Rail mounting bracket.

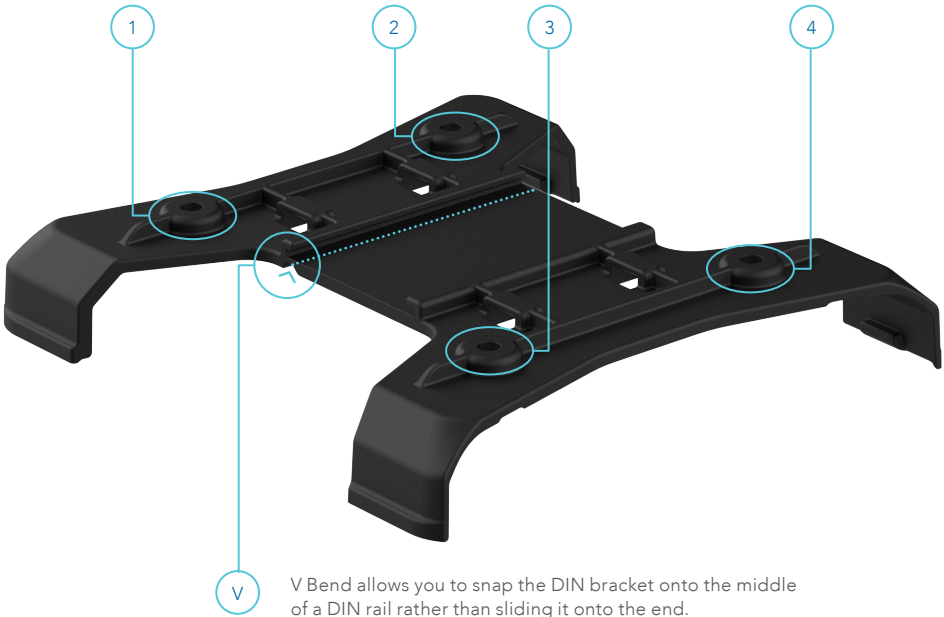
Use a minimum of two screws (5mm diameter) through the holes on either side of the device.



DIN Rail mounting bracket

The DIN rail mounting bracket offers multiple options to mount your router.

4 x mounting holes allow you to secure the DIN bracket to a wall, using a minimum of two screws (3.5mm diameter).



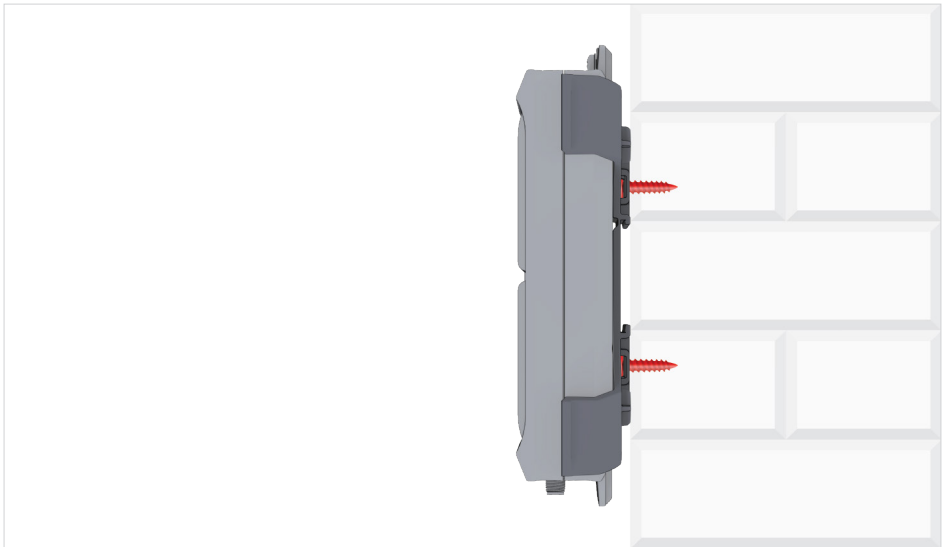
NTC-500
5G INDUSTRIAL IOT ROUTER

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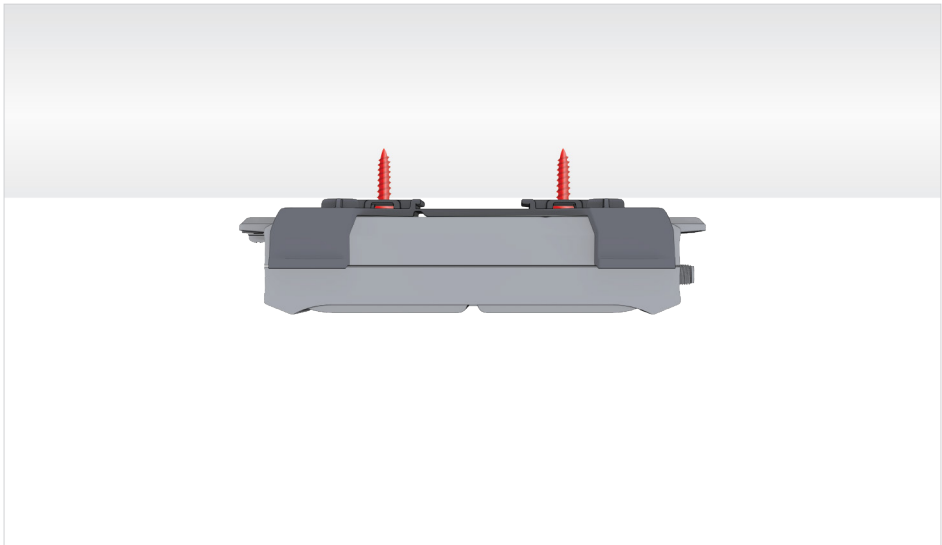
Clip the router into the bracket as follows:



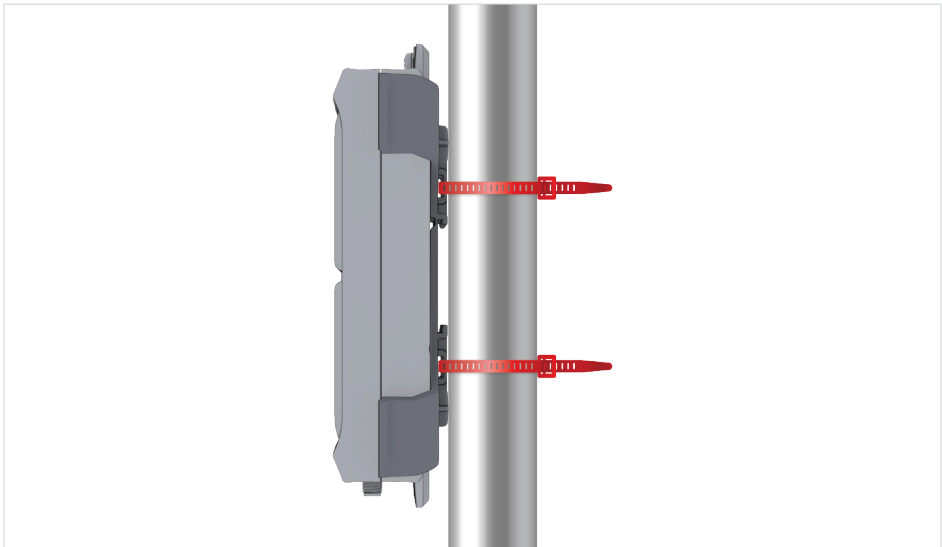
Wall mounted via DIN bracket



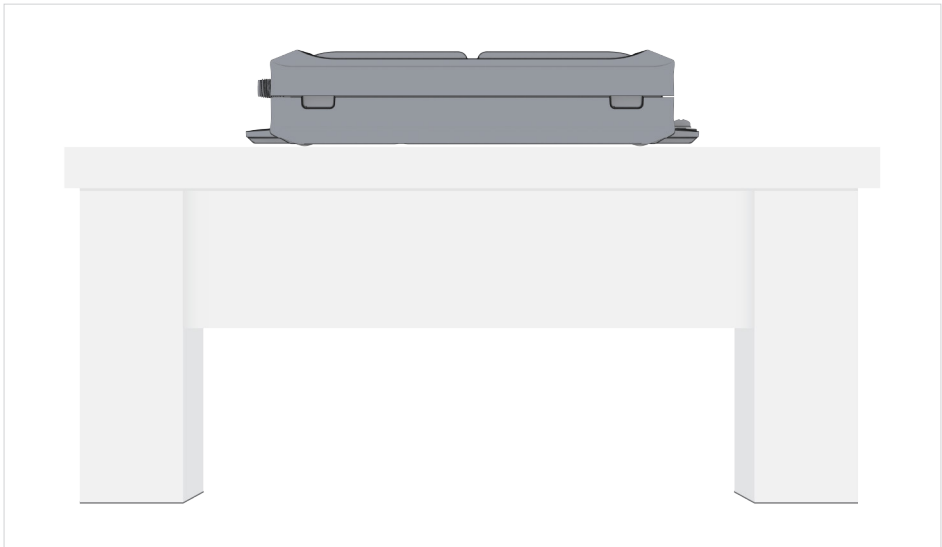
Ceiling mounted via DIN bracket



Pole mounted via DIN bracket



Desk Mount

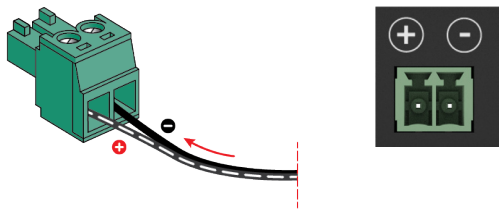


4. CONNECT THE POWER

Connect power to your router using one of the following options:

DC power via separately purchased power supply

If you have purchased an optional power supply, first remove the terminal block connector from the socket. The terminal block connector uses rising cage clamps to secure the wires and ships with cages lowered. Inspect the cage clamps and use a flathead screwdriver to lower the cage clamps if they have moved during transportation. Insert the wires into the terminal block connector as shown below noting the polarity of the wires and then use a flathead screwdriver to raise the cage clamps to secure the wires. Insert the wired terminal block connector into the terminal block socket of the router and then connect the adapter to a wall socket.



DC power via field terminated power source

If an existing 8-40 V DC power supply is available, you can insert the wires into the supplied terminal block connector to power your router. Use a flathead screwdriver to tighten the terminal block connector screws and secure the power wires, making sure the polarity of the wires is correctly matched as shown above. You should avoid using DC cables greater than 2 meters in length.

The green power LED on the router lights up when the router is powered on.

TERMINAL	DESCRIPTION
+	Positive wire for power
-	Ground wire

5. ACCESSING THE ROUTER WEB INTERFACE

Connect one end of the included Ethernet cable to the Ethernet port on the router and the other end to an Ethernet port on your computer.

Open a web browser and navigate to <https://192.168.1.1/>

The web user interface is displayed.

Note - The HTTP protocol is disabled by default, secure HTTP (HTTPS) is the default protocol.

Initialization

The first time the device starts up (or starts up after it is factory reset), the device enters Configuration Mode. In Configuration Mode, the router runs a setup wizard which must be completed before the router features can be accessed. This is a security feature which enables you to set strong passwords for the web interface accounts, as well as Telnet/SSH access. Configuration Mode also allows you to restore a previous configuration from a file.

To complete the setup:

1. Select the **Next** button on the first dialog box.
2. Enter the factory default password which can be found on the label on the bottom of the device, then select the **Next** button.
3. Select whether to configure the router as a new device or to restore a previous configuration backup.

Select one of the following options:

- ☒ I want to configure this as a new device.
- ☐ I want to restore my configuration from a previous backup.

OK

Configure as a new device

To configure as a new device:

- A. Select **I want to configure this as a new device** then select the **OK** button.
The **New Passwords** page is displayed.
- B. Enter a new password in each field for each account. There are three system management accounts (root, admin and user) as well as the SSH account. Each account may be configured with the same password. Select the **Same as the above** checkbox to use the same password as the root user account.

Any password used must meet the following security criteria:

- › The password must be a minimum of eight characters and no more than 128 characters in length.
 - › The password must contain at least one upper case character, one lower case character and one number.
 - › The password must contain at least one special character such as ` ~ ! @ # \$ % ^ & * () - _ = + [{] } \ | ; : ' " , < > / ?
 - › The password must satisfy an algorithm which analyzes the characters as you type the, searching for commonly used patterns, passwords, names and surnames according to US census data, popular English words from Wikipedia and US television and movies and other common patterns such as dates, repeated characters (aaa), sequences (abcd), keyboard patterns (qwertyuiop) and substitution of numbers for letters.
- C. Select the **Save** button to confirm the passwords. If the router passwords meet the security criteria, they are saved and the router reboots to live mode automatically.
The login page displays.

Restoring configuration from a previous backup file

Your router configuration, including passwords, can be restored by using a backup file.

To use the backup file:

- A. Select **I want to restore my configuration from a previous backup**, then select the **OK** button.
- B. Select **Choose a file** and locate the backup file on your computer. If the backup file is encrypted, enter the **password**, then select the **Submit** button.
- C. The router restores the previous configuration, then reboots. After reboot, log in using the passwords that were configured on the backup configuration.

6. LOG IN TO THE ROUTER

To log in to the router, in the **Username** field enter the login username (root, admin, or user) and in the **Password** field enter the password that you configured during the initialization process.

Login

Username

Password

Log in

If the inserted SIM is PIN locked, a dialog is displayed once you log in informing you that you must unlock the SIM before use.

You must enter your PIN code to unlock and use the SIM.

OK

Select the **OK** button. The SIM Security page is displayed.

SIM SECURITY

SIM SECURITY MANAGEMENT

Status

SIM OK

PIN retries remaining

3

PIN protection

On

Off

Current PIN

Confirm current PIN

Remember PIN

☐

Save

To unlock the SIM, enter the PIN in **Current PIN** and **Confirm Current PIN** fields and click **Save**. Once the SIM is successfully unlocked, click **OK** at the prompt and the Web UI login page displays as you are required to log in again. Enter the credentials and log in to the router.

7. CONNECT TO THE INTERNET

If the SIM Status is OK, the router automatically attempts to connect to the Internet by detecting the correct APN and connection details

If the automatic configuration fails, you must manually enter the connection details.

Manual configuration

To manually configure the connection profile:

1. From the top menu bar, select **Networking**.
2. Next to **Profile1**, select the  button. The **Wireless WAN Profile Settings** screen is displayed.
3. In the **APN** field, enter the APN name that your carrier requires for a mobile broadband connection. If required, enter the username in the **Username** field, and the password in the **Password** field.
4. Select the **Save** button to apply the profile. The connection profile is now configured.

Verify the connection status

Click the **Status** tab on the top menu bar. The Status page is displays.

A successful connection is established if the **IPv4 status** or **IPv6 status** field in the **WWAN Connection Status** section displays **Up**.

The modem is ready for use. Connect a device or switch using the 2.5Gbps Ethernet port. For further configuration, see the User Manual.

^ WWAN CONNECTION STATUS		
Profile	IPv4 status	IPv6 status
-	Up	Up
APN	IPv4 WWAN	IPv6 WWAN
default	192.168.2.26	2001:468:2000:5:19cc:31f4:a b5a:18c8
Connection uptime	IPv4 DNS server	IPv6 DNS server
00:04:46	8.8.8.8	2001:4860:4860::8888
Default profile	-	-
Yes	IPv4 MTU	IPv6 MTU
	1500	1500

SAFETY AND PRODUCT CARE

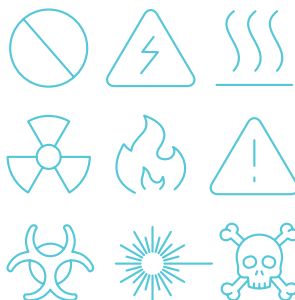
ELECTRICAL SAFETY ACCESSORIES

Only use approved accessories.

Do not connect with incompatible products or accessories.

Connection to a car

Seek professional advice when connecting a device interface to the vehicle electrical system.



DISTRACTION

Operating machinery

Full attention must be given to operating the machinery in order to reduce the risk of an accident.

Driving

Full attention must be given to driving at all times in order to reduce the risk of an accident. Using the device in a vehicle can cause distraction and can lead to an accident. You must comply with local laws and regulations restricting the use of mobile communication devices while driving.

PRODUCT HANDLING

You alone are responsible for how you use your device and any consequences of its use.

- › You must always switch off your device wherever the use of a mobile phone is prohibited.
- › Use of your device is subject to safety measures designed to protect users and their environment.
- › Always treat your device and its accessories with care and keep it in a clean and dust-free place.
- › Do not expose your device or its accessories to open flames or lit tobacco products.
- › Do not expose your device or its accessories to liquid, moisture or high humidity.
- › Do not drop, throw or try to bend your device or its accessories.

- › Do not use harsh chemicals, cleaning solvents, or aerosols to clean the device or its accessories.
- › Do not paint your device or its accessories.
- › Do not attempt to disassemble your device or its accessories, only authorized personnel must do so.
- › Do not expose your device or its accessories to extreme temperatures. Ensure that the device is installed in an area where the temperature is within the supported operating temperature range of -30°C to +70°C.
- › Do not use your device in an enclosed environment or where heat dissipation is poor. Prolonged use in such space may cause excessive heat and raise ambient temperature, which will lead to automatic shutdown of your device or the disconnection of the mobile network connection for your safety. To use your device normally again after such shutdown, cool it in a well-ventilated place before turning it on.
- › Please check local regulations for disposal of electronic products.
- › Do not operate the device where ventilation is restricted.
- › Installation and configuration should be performed by trained personnel only.
- › Do not use or install this product near water to avoid fire or shock hazard. Avoid exposing the equipment to rain or damp areas.
- › Arrange power and Ethernet cables in a manner such that they are not likely to be stepped on or have items placed on them.
- › Ensure that the voltage and rated current of the power source match the requirements of the device. Do not connect the device to an inappropriate power source.

Small Children

Do not leave your device and its accessories within the reach of small children or allow them to play with it.

They could hurt themselves or others, or could accidentally damage the device.

Your device contains small parts with sharp edges that may cause an injury or which could become detached and create a choking hazard.

Demagnetization

To avoid the risk of demagnetization, do not allow electronic devices or magnetic media to be close to your device for a long time.

Avoid other magnetic sources as these may cause the internal magnetometer or other sensors to malfunction and provide incorrect data.

Electrostatic Discharge (ESD)

Do not touch the SIM card's metal connectors.

Air Bags

Do not place the device in the area near or over an air bag or in the air bag deployment area.

Mount the device safely before driving your vehicle.

Emergency & other situations requiring continuous connectivity

This device, like any wireless device, operates using radio signals, which cannot guarantee connection in all conditions. Therefore, you must never rely solely on any wireless device for emergency communications or otherwise use the device in situations where the interruption of data connectivity could lead to death, personal injury, property damage, data loss, or other loss.

Device heating

Your device may become warm during normal use.

FAULTY AND DAMAGED PRODUCTS

Do not attempt to disassemble the device or its accessory.

Only qualified personnel should service or repair the device or its accessory.

If your device or its accessory has been submerged in water or other liquid, punctured, or subjected to a severe fall, do not use it until you have taken it to be checked at an authorized service center.

INTERFERENCE

Care must be taken when using the device in close proximity to personal medical devices, such as pacemakers and hearing aids.

Pacemakers

Pacemaker manufacturers recommend that a minimum separation of 15cm be maintained between a device and a pacemaker to avoid potential interference with the pacemaker.

Hearing aids

People with hearing aids or other cochlear implants may experience interfering noises when using wireless devices or when one is nearby.

The level of interference will depend on the type of hearing device and the distance from the interference source, increasing the separation between them may reduce the interference. You may also consult your hearing aid manufacturer to discuss alternatives.

Medical devices

Please consult your doctor and the device manufacturer to determine if operation of your device may interfere with the operation of your medical device.

Hospitals

Switch off your wireless device when requested to do so in hospitals, clinics or health care facilities. These requests are designed to prevent possible interference with sensitive medical equipment.

Aircraft

Switch off your wireless device whenever you are instructed to do so by airport or airline staff.

Consult the airline staff about the use of wireless devices on board the aircraft, if your device offers a 'flight mode' this must be enabled prior to boarding an aircraft.

Interference in cars

Please note that because of possible interference to electronic equipment, some vehicle manufacturers forbid the use of devices in their vehicles unless an external antenna is included in the installation.

EXPLOSIVE ENVIRONMENTS

Petrol stations and explosive atmospheres

In locations with potentially explosive atmospheres, obey all posted signs to turn off wireless devices such as your device or other radio equipment.

Areas with potentially explosive atmospheres include fueling areas, below decks on boats, fuel or chemical transfer or storage facilities, areas where the air contains chemicals or particles, such as grain, dust, or metal powders.

Blasting caps and areas

Turn off your device or wireless device when in a blasting area or in areas posted turn off "two-way radios" or "electronic devices" to avoid interfering with blasting operations.

TRADEMARK NOTICE

This product may reference NetComm. On December 26th , 2024, Lantronix, Inc. acquired the Industrial Internet of Things (IIoT) portfolio from NetComm Pty Ltd and is authorized to use the NetComm trademark in association with this product.

US

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