

NTC-220 SERIES

QUICK START GUIDE



4G LTE Cat 1
Industrial IoT Router

LANTRONIX

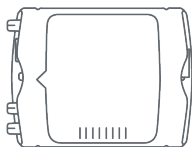
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Welcome

This quick start guide is designed to get you up and running quickly with your new Lantronix NTC-220 Series router. More advanced set up instructions can be found in the NTC-220 Series User Guide available at <https://www.lantronix.com/products/ntc-220-series/>.

What's in the box



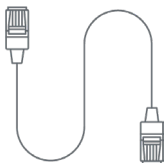
1 x Lantronix
NTC-220 Series router



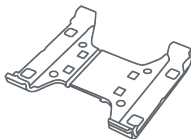
1 x Box insert



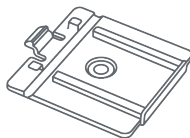
2 x Cellular antennas



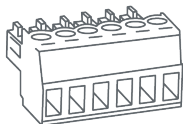
1 x 1.5m Ethernet
cable 8P8C



1 x DIN rail mounting bracket



1 x Horizontal DIN rail
mounting adapter

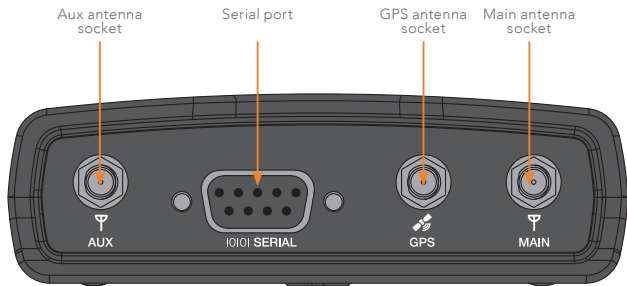
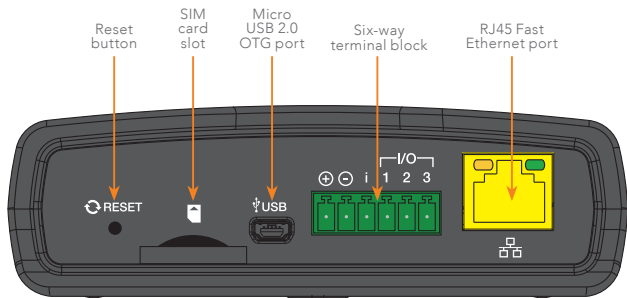


1 x Six-way terminal block
connector

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Device overview



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ITEM	DESCRIPTION
Aux antenna socket	SMA female connector for auxiliary antenna (receive diversity).
Serial port	Female DE-9 port supporting 9-wire RS-232, RS-485 or RS-422 (software selectable).
GPS antenna socket	SMA female connector for GPS antenna.
Main antenna socket	SMA female connector for main antenna.
Reset button	<p>Press and hold for less than 5 seconds to reboot to normal mode. The LEDs are green and extinguish in sequence to indicate that the router will reboot normally if the button is released during this period.</p> <p>Press and hold for 5 to 15 seconds to reboot to recovery mode. The LEDs are amber and extinguish in sequence to indicate that the router will reboot to recovery mode if the button is released during this period.</p> <p>Press and hold for 15 to 20 seconds to reset the router to factory default settings. The LEDs are red and extinguish in sequence to indicate that the router will reset to factory default settings if the button is released during this period.</p>
SIM card tray slot	The removeable tray houses the SIM card.
Micro USB 2.0 OTG port	Provides connectivity for optional external storage or a USB Ethernet dongle. Supplies up to 0.5A to connected device.
Six-way terminal block	Connect power source, ignition and I/O wires here. Power from a DC power supply, ignition and I/O wires may be terminated on the supplied terminal block connector and the connector is then inserted into the terminal block socket on the router. Refer to the diagram and table under Step 5 of the Installing your device section for correct wiring of the terminal block. Operates in the 8-40 V DC range.
RJ45 Fast Ethernet port	Connect one or several devices via a network switch here.

Getting started

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-220 Series router (not included).
- A flathead screwdriver for terminating power input wires.
- A laptop or PC for advanced configuration.
- Additional fasteners and screwdrivers for specific wall or rail mounting.

Overview of LED indicators

LED ICON	NAME	COLOUR	STATE	DESCRIPTION
	Power		Off	Power off
			Double flash	Powering up
			On	Power on
			On	Power on in recovery mode
			Slow flashing	Hardware error
	Network		On	Connected via WWAN
			Blinking ¹	Traffic via WWAN
			Slow flashing	Connecting PDP
			On	Registered network
			Slow flashing	Registered network
			Slow flashing	SIM PIN locked
			Fast flashing	SIM PUK locked
			On	Can't connect / Device in "Configuration mode"
	GPS / Customizable LED Indicator		Off	GPS function disabled
			On	GPS function is enabled but no satellite is detected.
			Flashing	Satellite detected, acquiring location.
			On	Satellite detected, location acquired.
	Signal strength		On	LTE signal
			On	WCDMA signal
			On	GSM signal

¹ The term "blinking" means that the LED may pulse, with the intervals that the LED is on and off not being equal. The term "flashing" means that the LED turns on and off at equal intervals.

Installing your device

Step 1: Insert the SIM card

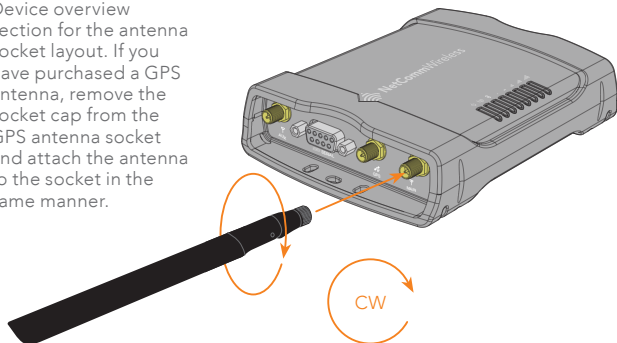
Before inserting the SIM card, examine it for signs of damage or deformation that could prevent it being safely inserted or allowing it to become stuck in the unit. Examine the gold contact point of the SIM for signs of wear or damage that may prevent it from working correctly.

Press the SIM Eject button to eject 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.

Step 2: Attach the antennas

The router is shipped with caps on the Main, Auxiliary and GPS antenna sockets. To attach the supplied antennas, first remove the antenna socket caps from the Main and Auxiliary antenna sockets by turning them in an anti-clockwise direction, then screw the antennas onto the sockets by turning them in a clockwise direction.

Please refer to the Device overview section for the antenna socket layout. If you have purchased a GPS antenna, remove the socket cap from the GPS antenna socket and attach the antenna to the socket in the same manner.



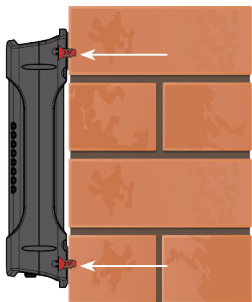
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Step 3: Mount the router

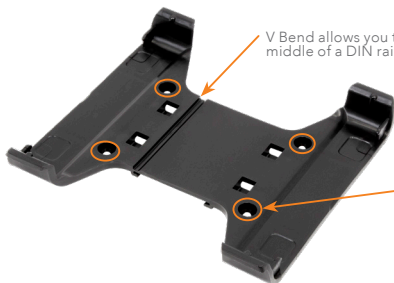
Mount your router in a suitable location using the options listed below.

1. WALL MOUNT



Use a minimum of 2 screws (5mm diameter) through the holes on either side of the device.

DIN RAIL MOUNTING BRACKET



V Bend allows you to snap the DIN bracket onto the middle of a DIN rail rather than sliding it onto the end.

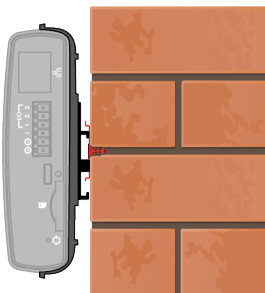
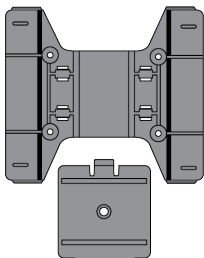
4 x mounting holes allow you to secure the DIN bracket to a wall, using a minimum of 2 screws (3.5mm diameter).

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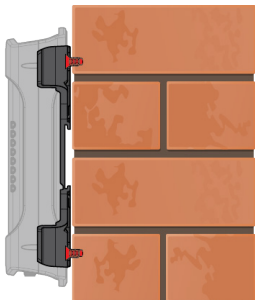
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HORIZONTAL DIN RAIL MOUNTING ADAPTER

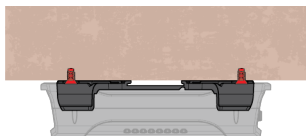
Used in conjunction with the DIN rail mounting bracket, this adapter lets you mount the router in a horizontal orientation. With the DIN rail mounting bracket attached to the router, slide the adapter on to the bracket as shown in the image below. You can then mount the device horizontally on a DIN rail. Optionally, you may place a screw (max. 4.5mm diameter) through the centre hole of the adapter so that it doesn't move along the DIN rail.



2. WALL MOUNTED VIA DIN RAIL BRACKET



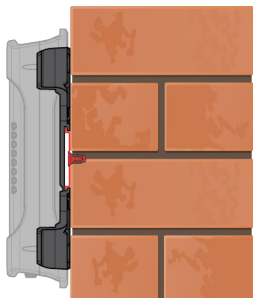
3. CEILING MOUNT VIA DIN RAIL BRACKET



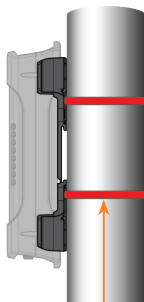
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4. DIN RAIL MOUNT

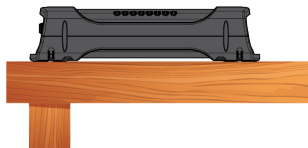


5. POLE MOUNT USING DIN RAIL BRACKET



Use cable ties
(max. 5mm width)
through holes in the
mounting bracket

6. DESK MOUNT



When selecting a location to mount the router, keep in mind that it features two high performance antennas designed to provide optimum signal strength in a wide range of environments. If you find the signal strength is weak, try moving the router to a different place, mounting it differently or changing the orientation of the antennas.

The signal strength LEDs update within a few seconds with 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.

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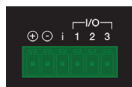
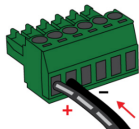
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Step 4: Connect the power and Ethernet cables

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

DC POWER VIA SEPARATELY PURCHASED POWER SUPPLY

If you have purchased an optional DC 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 the cages lowered and ready for wire insertion. 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 polarity of the wires and then use a flathead screwdriver to raise the cage clamp 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.

The green power LED on the router lights up when a power source is connected. Attach the supplied Ethernet cable to the LAN Ethernet port on your router and the other end to your computer.

TERMINAL	DESCRIPTION
+	Positive wire for power.
-	Ground wire.
i	Dedicated terminal for ignition detection.
I/O	Three terminals used for input/output detection. (Please refer to the User Guide and SDK Guide for more information).

Step 5: Access the router is web interface

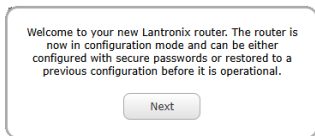
In your web browser's address bar, enter `https://192.168.1.1/`, the web user interface is displayed. There are two system management accounts (root and admin) with different management capabilities.

INITIALISATION

The first time the device is booted (or booted after it is factory reset), the device enters "Configuration mode". In Configuration mode, the router runs a setup wizard which must be completed before it will boot into "Live mode". This is a security feature which enables you to set strong passwords for web root, web user, and Telnet/SSH access or restore a previous configuration from a file.

To complete the setup:

1. Click the Next button on the first dialogue box.
2. Enter the factory default password which is printed on the device label then click the Next button.



3. Select whether to configure the router as a new device or to restore a previous configuration backup.

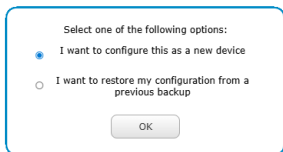


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Configure as a new device

If you want to define a new, more secure password:



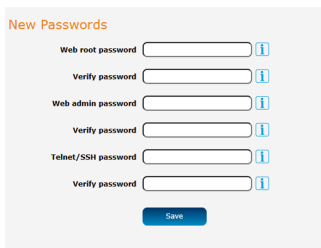
Select one of the following options:

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

OK

- Select "I want to configure this as a new device" then click the OK button.
- In the **New Passwords** section, enter a strong password in each field. You may configure the same password for all three accounts, but it must meet the security criteria set out below:
 - 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, one lower case character and one number.
 - The password must contain at least one special character, such as: ` ~ ! @ # \$ % ^ & * () - _ = + [{] \ | ; : ' " , < > / ?

Additionally, the password must satisfy an algorithm which analyses the characters as you type them, 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.



New Passwords

Web root password ⓘ

Verify password ⓘ

Web admin password ⓘ

Verify password ⓘ


Telnet/SSH password ⓘ

Verify password ⓘ

Save

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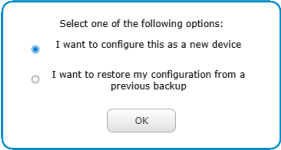
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- c. When you have completed all password fields, **Save** button. If the passwords meet the security criteria, they are saved and the success message displays.
- d. Click the  icon, the login page displays.
- e. To login, in the **Username** field enter the user account you want to use to log in, in the **Password** field enter the password for the user account, and click **Log in**.

Restore configuration from a previous backup file

To use a password that you previously defined and saved in a backup file:

- a. Select “I want to restore my configuration from a previous backup” then click the OK button.



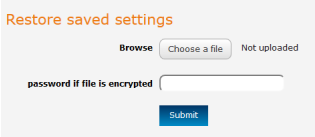
Select one of the following options:

I want to configure this as a new device

I want to restore my configuration from a previous backup

OK

- b. Click the Choose a file button and locate the backup file on your computer. If the backup file is encrypted, enter the password, then click the Submit button.



Restore saved settings

Browse Not uploaded

password if file is encrypted

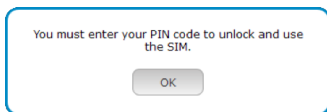
- c. The router restores the previous configuration and then reboots. When it has finished rebooting, log in using the password you previously configured.

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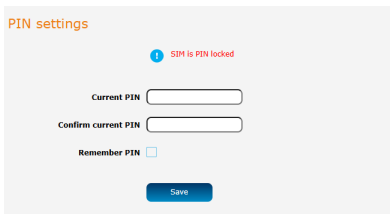
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Step 6: Unlock the SIM card

If the inserted SIM card is PIN locked, a pop-up window is displayed informing you that you must unlock the SIM before use.



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

A screenshot of the "PIN settings" page. At the top left, it says "PIN settings" in orange. Below that is a red warning icon (exclamation mark in a circle) followed by the text "SIM is PIN locked". There are two input fields: "Current PIN" and "Confirm current PIN". Below these is a checkbox labeled "Remember PIN". At the bottom is a blue button labeled "Save".

In the **Current PIN** field, enter the SIM PIN and then enter it again in the **Confirm current PIN** field. If you do not want to enter the PIN code each time the SIM is inserted, select the **Remember PIN** option.

Click the **Save** button. After a moment, the router displays "Success! The SIM unlock was successful".

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Step 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 automatic configuration was unsuccessful, you must manually enter the connection details.

To manually configure the connection profile (except for NTC-225):

1. From the top menu bar, select the **Networking** option.
2. Next to Profile1, click the  button.
The Data connection profile settings screen is displayed.
3. Ensure that the Automatic APN selection toggle key is set to the **OFF** position.

Automatic APN selection ON OFF

4. In the **APN** field, enter the APN name that your carrier requires for mobile broadband connection. If required, enter the Username and Password in the **Username** and **Password** fields.
Click the **Save** button.

The connection profile is now configured.

VERIFYING THE CONNECTION STATUS

Click on the **Status** menu item from the top menu bar. The Status page is displayed. The mobile broadband connection is established successfully if the **Status** field in the **WWAN connection status** section displays **Connected**.

^ **WWAN connection status**

Profile name Profile1 Show data usage

Status Connected	WWAN IP IPv4: 192.168.2.30 IPv6: N/A	APN Blank
Default profile Yes	DNS server 172.22.1.2 8.8.8.8	Connection uptime 00:06:05

Safety & 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. Do not use the device without the clip-on covers attached, and do not remove or change the covers while using the device. 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.

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- Do not paint your device or its accessories.
- Do not attempt to disassemble your device or its accessories, only authorised 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.

DEMAGNETISATION

To avoid the risk of demagnetisation, do not allow electronic devices or magnetic media 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.

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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 authorised service centre

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.

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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 fuelling 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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