

REMOTE MONITORING OPTIONS FOR ABB DRIVES, CONVERTERS AND INVERTERS

# NETA-21 remote monitoring tool

## Installation and start-up guide





# NETA-21 remote monitoring tool

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## About this guide

This guide contains the very basic information about the mechanical and electrical installation and start-up of the NETA-21 remote monitoring tool.

## Safety instructions

If you need to connect the remote monitoring tool to a control board inside the drive/converter/inverter, follow the Safety instructions below.



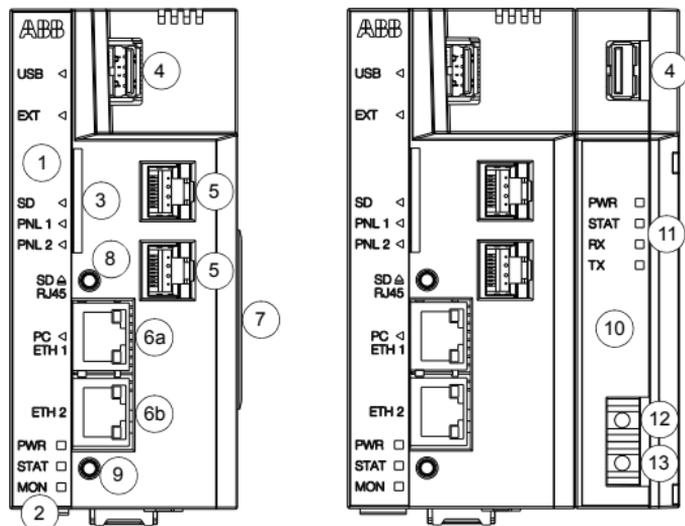
**WARNING!** Ignoring the following instructions can cause physical injury or death, or damage to the equipment.

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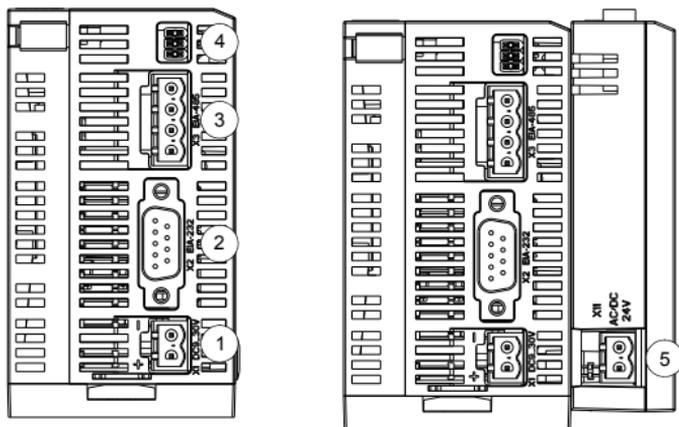
- Only qualified electricians are allowed to install and maintain the drive, converter and/or inverter!
  - Disconnect the drive, converter or inverter to which the option module will be installed or connected from all possible power sources. After disconnecting, always wait for 5 minutes to let the intermediate circuit capacitors discharge before you proceed.
  - Switch off all dangerous voltages connected to any control signal connectors in reach. For example, 230 V AC may be connected from outside to a relay output of the drive, inverter or converter.
  - Always ensure by measuring with a multimeter (impedance at least 1 Mohm) that there are no parts under voltage in reach.
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## Layout

The following figures describe the front and bottom layout of the NETA-21 remote monitoring tool and the NEXA-21 extension module.



1	Front panel labeled with a black sticker and equipped with indicator LEDs
2	PWR, STAT, MON – power, status and monitoring indicators, see <a href="#">Diagnostic LEDs</a>
3	SD – SD/SDHC memory card slot
4	USB – USB host port for third party extensions
5	PNL 1/PNL 2 – RJ45 type connector providing an EIA-485 level interface for a panel bus
6a	PC ETH 1 – RJ45 type connector providing a 10BASE-T / 100BASE-TX Ethernet connection for a PC in the public network
6b	ETH 2 – RJ45 type connector providing a 10BASE-T / 100BASE-TX Ethernet connection for a drive, converter or inverter
7	36-pin connector for the NEXA-21
8	SD RJ45 – SD button is used for removing the SD/SDHC card safely and activating a DHCP server for the first access to the user interface
9	Reset button is used for rebooting the remote monitoring tool
10	NEXA-21 provides a DDCS fiber optics connection, secondary power input and one extra USB port
11	PWR, STAT, RX, TX – power, status and RX/TX indicators, see <a href="#">Diagnostic LEDs</a>
12	Fiber optic transmitter DDCS
13	Fiber optic receiver DDCS



1	X1 10...30 V DC – power supply input
2	X2 EIA-232 port <ul style="list-style-type: none"> <li>• 9-pin D-sub male type connector X2</li> <li>• EIA-232 level interface for a modem</li> </ul>
3	X3 EIA-485 port <ul style="list-style-type: none"> <li>• 4-pin detachable screw type connector X3</li> <li>• EIA-485 level interface for a Modbus network</li> </ul>
4	Termination jumpers for the link connected to X3
5	X11 AC/DC 24V – secondary power supply input

## Mechanical installation

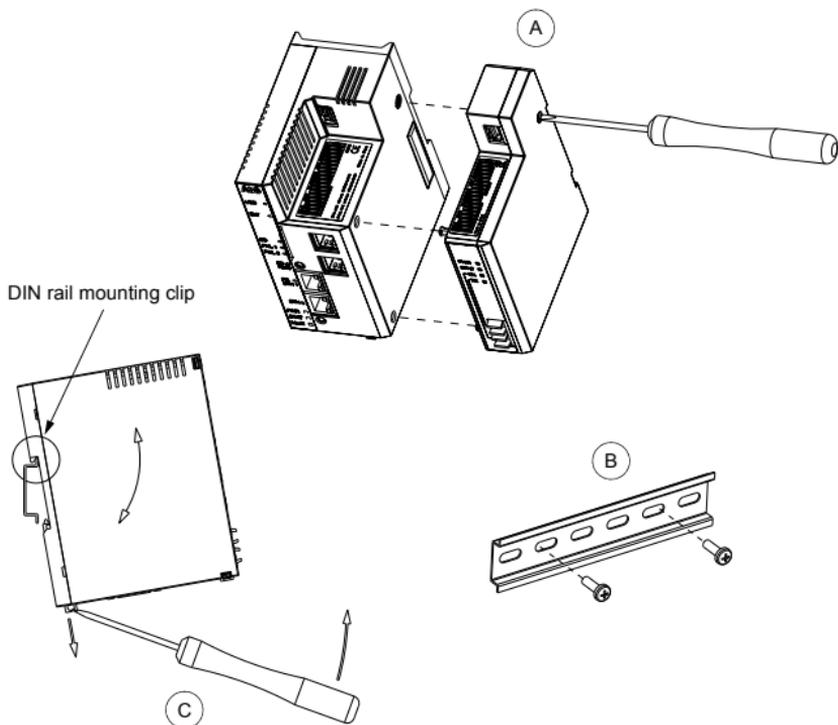
### ■ Installing NEXA-21 to NETA-21

1. Press the NEXA-21 against the NETA-21.
2. Tighten the grounding screw (A).

Do not use excessive force.

### ■ Mounting instructions

1. Protect the devices from the drilling dust.
2. Drill the holes for the fastening screws of the mounting rail.
3. Fasten the mounting rail (B).
4. Snap the remote monitoring tool onto the rail (C).



## Electrical installation

### ■ Grounding

The ground of the remote monitoring tool is connected to the mounting rail by means of an grounding clip. The mounting rail onto which the remote monitoring tool is to be mounted must be grounded to a noiseless ground. If the rail is not mounted on a properly grounded base, a separate grounding conductor must be used. The conductor must be as short as possible and its cross-sectional area must be 6 mm<sup>2</sup> at least.

**Note:** No solid copper conductor may be used (stranded wire allowed only).

### ■ Power connections

Connect the power supply to connector X1 of the NETA-21 module. The NETA-21 supplies also the NEXA-21. For information on the connector type, voltage and power specification, see [Connectors](#).

**Note:** In the NEXA-21, there is an alternative power supply input (X11), which you can use for supplying power to the NEXA-21 and the NETA-21.

### ■ Connections with drives, converters and inverters

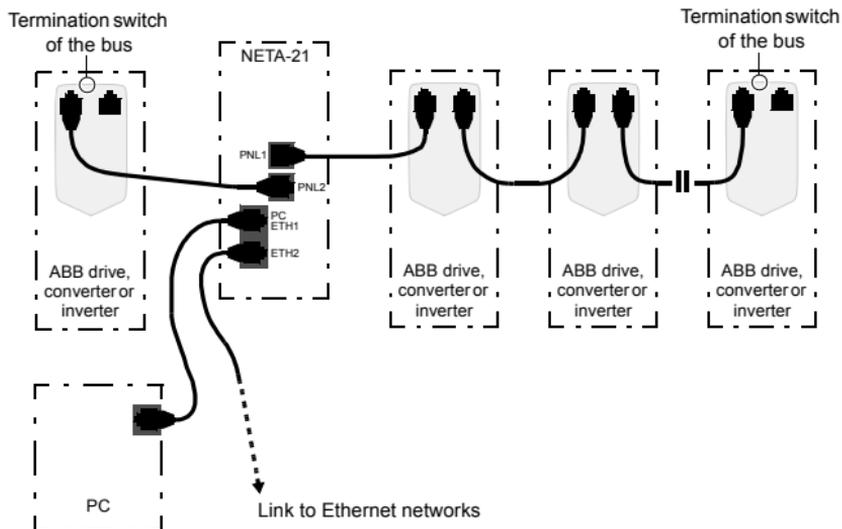
The remote monitoring tool is compatible with various ABB drives, converters and inverters.

As shown on page 8, the NETA-21 can be connected directly to a panel bus if the drive (/inverter/converter) has an Assistant control (ACS-AP-x) panel.

If the unit to be monitored does not have the ACS-AP-x panel but it is equipped with an RDCU control unit, you can connect the unit to the NETA-21 through the fiber optic channel of the NEXA-21. See the connections diagrams in section [Data link connections – Drive \(/converter/inverter\) with the RDCU control unit](#).

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### Data link connections – Drive (/converter/inverter) with the ACS-AP-x panel



**Note:** The RJ45 connectors of the control panel are located in the “ceiling” of the control panel housing. Beside the left-hand side RJ45 connector in the control panel housing there is a switch that must be pushed upwards in the last drive of the chain to terminate the bus.

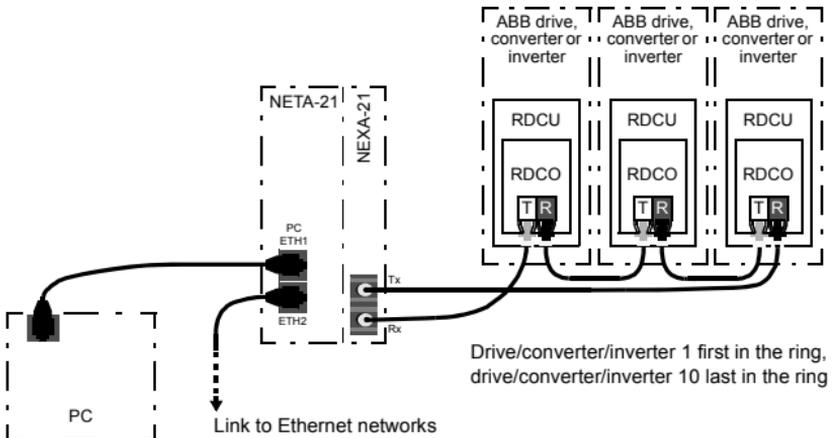
The maximum number of devices per panel port bus is 10.

Set a unique ID to each node on the panel bus. See the appropriate drive/converter/inverter manual.

## Data link connections –

### Drive (/converter/inverter) with the RDCU control unit

The figure below shows the data connections in a ring topology when a fiber optic link is used.

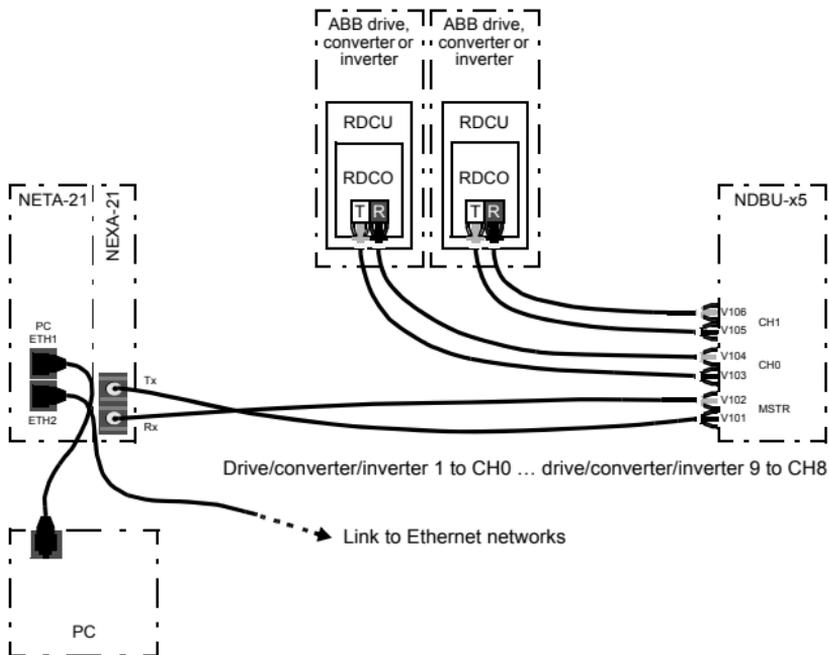


Connect the NETA-21 primarily to fiber optic channel ch3 on the RDCO connector unit. You can connect the NETA-21 also to ch0 if the maximum speed of the DDCS communication does not increase above 1 Mbit/s.

The default the NETA-21 settings for a DDCS network are ring topology and 1 Mbit/s communication speed. With these settings, the NETA-21 can normally auto-detect drives (/converters/inverters) connected to an NDBU branching unit. The NETA-21 auto-detects connected devices when the fiber is connected for the first time. If reconfiguration is needed afterwards, it can be done in the web user interface.

If the DDCS communication speed is higher than 1 Mbit/s, the NETA-21 settings and device interfaces must have the same speed settings as the NDBU unit.

The figure below shows the data connections in a star topology when a fiber optic link is used.



## First access to the user interface

This guide describes how to access the user interface by using the NETA-21 as a DHCP server.

The NETA-21 uses dynamic IP addressing by default. After powering up, the NETA-21 tries to get a dynamic IP address from the local network if there is a DHCP server available. If there is no DHCP server in the local network, the NETA-21 defaults to zero configuration networking. In the zero configuration network mode, the NETA-21 chooses an IP address in the range of 169.254.1.0...169.254.254.255.

When a PC is connected locally to the PC ETH 1 port, the NETA-21 can be activated to function as a DHCP server.

### ■ Connecting a local PC to the NETA-21 functioning as a DHCP server

#### Notes:

- DHCP cannot be used in a networked environment where other DHCP servers exist.
- Make sure that DHCP is enabled on PC Ethernet. If the PC Ethernet is on static mode, NETA-21 cannot provide dynamic IP to the PC.

1. Switch on the power to boot the remote monitoring tool.
2. Wait until the set-up has finished and the STAT LED is green.
3. Press the SD RJ45 button for 5 seconds or until the PC ETH1 LED starts to blink. The NETA-21 starts functioning as a DHCP server via the PC ETH 1 port.
4. Connect the PC to the PC ETH 1 port.  
The NETA-21 provides a dynamic IP to the PC.  
The PC ETH 1 LED indicates a connection (green blink = waiting, green = connected).

**Notes:** If the PC is not successfully connected to the NETA-21 within 1 minute, the DHCP server mode is switched off.

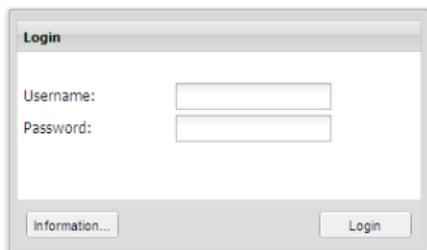
5. With the web browser of your PC, navigate to <https://192.168.230.1>.

**Note:** If an Ethernet wire is connected to the NETA-21 before the SD RJ45 button has been pressed, the PC does not automatically request for an IP address.

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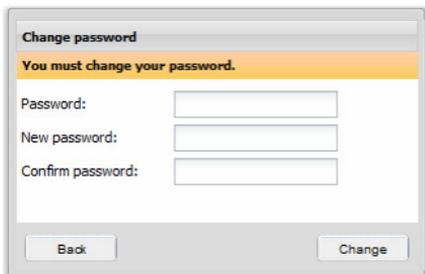
## ■ Logging on to the NETA-21

When you log on to the NETA-21 for the first time, use the default user name/password: admin/admin.



The image shows a 'Login' dialog box with a title bar. It contains two input fields: 'Username:' and 'Password:'. Below the input fields are two buttons: 'Information...' on the left and 'Login' on the right.

You are forced to change the password.



The image shows a 'Change password' dialog box with a title bar. A yellow banner at the top contains the text 'You must change your password.'. Below the banner are three input fields: 'Password:', 'New password:', and 'Confirm password:'. At the bottom are two buttons: 'Back' on the left and 'Change' on the right.

The following figure shows the front page of the user interface.



The main window consists of the following parts:

1. application specific tool bar
2. navigation bar
3. content panel.

### Changing the password

To change to your password, go to **Settings → My details → Change password**.

### Adding users

To add a user, go to **Settings → Users → Add user**.

It is possible to create user accounts with different roles (**Settings → Users → Add user → User properties → User role**).

### Setting date and time

To set date and time, go to **Settings → Locale → Date and time**.

### Setting the network interface

To change the network interface settings, go to **Settings → Network interface**.

### Setting the device interfaces

To change the DDCS settings, go to **Settings → Device interfaces → DDCS**.

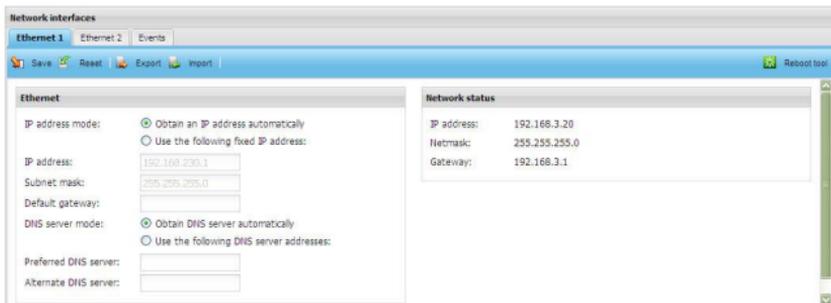
## ■ Defining the Ethernet network settings

1. Go to **Settings** → **Network interface** and enable the **Obtain DNS server automatically** function.

The NETA-21 adjusts the communication settings automatically. Individual attributes can be set separately.

2. Check the LAN settings of your PC.

Activate the following functions: **Obtain an IP address automatically** and **Obtain DNS server address automatically**.



## ■ Initializing the communication between the NETA-21 and only one drive (/converter/inverter) online

Connect the drive (/converter/inverter) to the NETA-21.

The NETA-21 initializes the communication to the drive (/converter/inverter) automatically.

## ■ Initializing the communication between the NETA-21 and two or more drives (/converters/inverters) online

1. Disconnect the drives (/converters/inverters) from the NETA-21.
2. Set a unique ID number to each drive (/converter/inverter) with a locally attached control panel.

See the appropriate drive (/converter/inverter) manuals.

3. Reconnect the drives (/converters/inverters) to the NETA-21.

The NETA-21 initializes the communication to each drive (converter/inverter) automatically.

## Diagnostic LEDs

### ■ LED indications of the NETA-21

Name	Color	Function
USB	Off	No USB mass storage devices attached
	Green	USB mass storage device attached and mounted.
	Blinking green	Device attached, initialization in progress
	Yellow	Device can be removed.
	Red	Unidentified error when settings are imported from an USB memory device.
	Blinking red	Initialization failed. Unsupported file system on a USB stick. Only FAT file systems with 8.3 character filenames are supported. Basically, NTFS-formatted USB sticks and external hard disks are not supported.
EXT	Off	No NEXA-21 connected
	Green	NEXA-21 found and initialized
	Blinking green	NEXA-21 support is being initialized (when the remote monitoring tool boots up)
	Red	NEXA-21 malfunctions
	Blinking red	NEXA-21 not supported
SD	Off	No SD/SDHC card
	Green	Card attached and taken into use
	Blinking green	Card attached and initialization in progress
	Yellow	Card can be safely removed
	Blinking yellow	Card attached, removal in progress
	Blinking yellow	<b>Together with the blinking red STAT LED:</b> System waits for confirmation of reboot operation or network override
	Red	Card error, for example write protection prevents from writing data to the card
	Blinking red	Card initialization failed. Unsupported card type, for example, SDXC (extra capacity) cards and MMC cards are not supported.

Name	Color	Function
PNL 1/ PNL 2	Off	No devices (no wire) connected to the PNL port
	Green	All devices connected, identified and commissioned
	Blinking green	Manual or automatic discovery of devices in progress
	Yellow	Communication OK, but device connectivity limited. All devices are ready to be unplugged/disconnected.
	Red	Communication error caused the panel port network initialization to fail. Unknown device in the network, or something is interfering the network and preventing proper detection of monitored devices.
	Blinking red	Unsupported device is found in the network, or there are too many devices in the network to be monitored
PC ETH 1	Off	PC not connected. If an Ethernet cable is connected to the PC ETH 1 port but no one uses the tool, the LED remains blank.
	Green	Connection set up and in operation, for example, DHCP is active and at least one PC has got an IP-address
	1/2-second blinking green	DHCP server is active. NETA-21 provides IP addresses for local devices.
	1-second blinking green	At least one user has been logged on to the user interface
	Blinking yellow	Factory-level access/operation. Firmware update in progress. <b>Note:</b> System status (STAT LED) blinks during the firmware update.
PWR	Off	Power off
	Green	Power on
	Yellow	Timed power off or standby. NETA-21 can go to the standby mode as a protective measure (eg, if the environmental temperature is too high). To wake up the NETA-21, press the SD RJ45 button.

Name	Color	Function
STAT	Green	System in operation, OK
	Yellow	System starts up, services not yet fully operational
	1/4-second blinking yellow	System waits for a confirmation of the reboot operation or network override.
	1-second blinking yellow	Firmware update in progress
	Blinking red	Error occurred during the start-up of the NETA-21. If the start-up fails, the NETA-21 restarts itself automatically after a few seconds. During the reboot operation, all LEDs excluding the PWR LED flash before the STAT LED turns yellow again. <b>Note:</b> If the yellow STAT LED and blinking red STAT LED alternate and the STAT LED does not turn green, the start-up of the NETA-21 fails continuously. Try resetting the NETA-21 to factory settings.
MON	Blinking green	NETA-21 sends data (eg, email) to an external destination.
	Blinking red	NETA-21 fails to send data (eg, email) to an external destination. Log on to the web user interface and go to <b>Reports</b> -> <b>Events</b> for error details.

### ■ LED indications of the NEXA-21

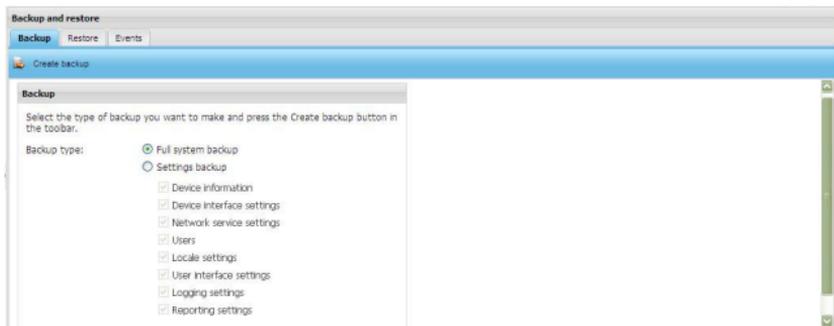
Name	Color	Function
PWR	Off	NEXA-21 not controlled by the NETA-21 or the NETA-21 boots up
	Green	NEXA-21 detected by the NETA-21 and the NEXA-21 turned on
STAT	Green	System in operation, OK. DDCS drives (/converters/inverters) commissioned. Communication with drives (/converters/inverters) OK.
	Yellow	System reboots, the NEXA-21 temporarily out-of-order
	Blinking yellow	Limited connectivity. Devices not found.
	Red	Internal error. DDCS network not physically OK, or no devices detected.
	Blinking red	Incompatible device in DDCS. NEXA-21 has lost connection to a configured device. <b>Note:</b> DDCS is running.
RX	Off	Not receiving data
	Yellow	Receiving data
TX	Off	Not transmitting data
	Yellow	Transmitting data

## Backup/restore function of the remote monitoring tool

The backup and restore function enables the replication of the tool settings to another similar type of remote monitoring tool. There are two main backup types: full system backup and backup of the selected settings only.

### ■ Backing up the remote monitoring tool

Go to **Settings → Backup and restore** and select the backup type.



**Note:** You must have an SD/SDHC card installed into the SD slot to create a backup. The SD card must have a minimum of 200 MB free space to enable the backup/restore functions. Backup and restore files are stored in the BACKUP folder on the SD card.

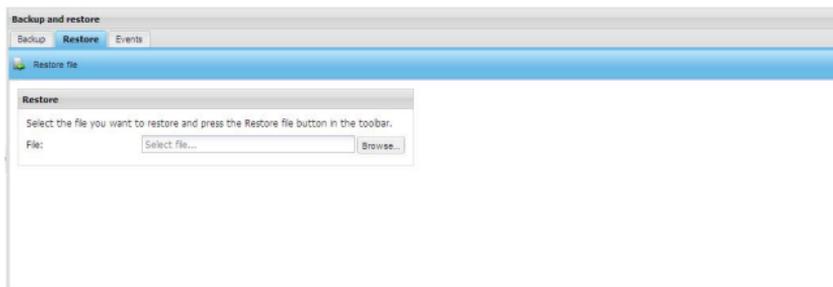
**Create backup** creates a backup according to the selected backup type.

**Full system backup** enables a full system backup of the remote monitoring tool. The remote monitoring tool is rebooted before the backup file can be downloaded. After the tool goes back online, you must log on to the remote monitoring tool. After you have logged on to the remote monitoring tool, the Backup tab is shown and the NETA-21 starts sending the backup file to the PC.

**Settings backup** enables a backup of selected data categories.

## ■ Restoring the remote monitoring tool

Go to **Settings** → **Backup and restore** → **Restore**.



The **Restore file** function restores a selected file. If restoring requires rebooting (full system restore), you are prompted to reboot the system. If you choose to reboot the remote monitoring tool, the reboot view is shown. When the server goes back online, you are redirected to the Login window and eventually back to the Restore tab.

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## Connectors

### Power supply input (X1)

- Signal level: 10 ... 30 V DC, max. 2 A
- Connector type: Shrouded header for the wire plug, 2 pins, pitch 5.00 mm / 0.19 inch
- Power consumption: typical 200 mA at 24 V (500 mA at 10 V)

### Panel bus port 1 (PNL 1) and 2 (PNL 2)

- Signal level: EIA-485
- Communication protocol: Phloem over EIA-485
- Cable type: Ethernet CAT5, straight
- Connector type: Shielded 8P8C modular jack (RJ45)
- Maximum segment length: 100 m / 328 ft

### Ethernet port 1 (ETH 1) and 2 (ETH 2)

- Media: 10Base-T / 100Base-TX (10 Mbit/s or 100 Mbit/s)
- Cable type: Shielded twisted pair (STP), both straight-through and crossover cables are supported (HP Auto-MDIX)
- Connector type: Shielded 8P8C modular jack (RJ45)
- Termination: Internal
- Maximum segment length: 100 m / 328 ft

### EIA-232 port (X2)

- Physical layer: EIA-232, galvanic isolated
- Connector type: D-sub 9-pin male

### EIA-485 port (X3)

- Media: Shielded twisted pair cable, impedance 100...150 ohm
- Serial communication type: Asynchronous, half-duplex RS-485
- Physical layer: EIA-485, galvanic isolated
- Communication protocol: Modbus
- Connector type: Shrouded header for the wire plug, pitch 5.00 mm / 0.19 inch
- Maximum length: 1200 m / 3 937 ft

### SD/SDHC connector

- Supports up to a 32-GB SD/SDHC card
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### **USB host port**

- PHY Interface: USB2.0
- Connector type: Shielded USB Type A

### **Fiber optic transmitter/receiver DDCS**

- Media: Fiber optic cable
  - Protocol: Distributed Drives Communication System (DDCS)
  - Connectors: Dark grey – receiver; grey – transmitter
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## Further information

### **Product and service inquiries**

Address any inquiries about the product to your local ABB representative, quoting the type designation and serial number of the unit in question. A listing of ABB sales, support and service contacts can be found by navigating to [abb.com/searchchannels](http://abb.com/searchchannels).

### **Product training**

For information on ABB product training, navigate to [new.abb.com/service/training](http://new.abb.com/service/training).

### **Providing feedback on ABB Drives manuals**

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### **Document library on the Internet**

You can find manuals and other product documents in PDF format on the Internet at [abb.com/drives/documents](http://abb.com/drives/documents).



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