



Quick Start Guide REX 200/250 3G|LTE

Version

3^{en}
from FW 6.0.5

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1. Introduction

The REX 200/250 is an industrial router suitable for nearly worldwide remote access to IPv4-enabled devices (PLCs, HMIs, IP cameras, etc.). This Quick Start Guide explains the basic settings in the myREX24 portal and shows how to transfer the configuration made there to the REX 200/250.

Important advance information: Please use the most current version (as of v3.7R1.0) of the dial-up software shDIALUP for commissioning. You can acquire it as a download at www.helmholz.de.

The current firmware must be installed on all REX 200/250 routers for successful connection with the myREX24 V2 portal.

2. Preparation of the REX 200/250

2.1 Safety instructions

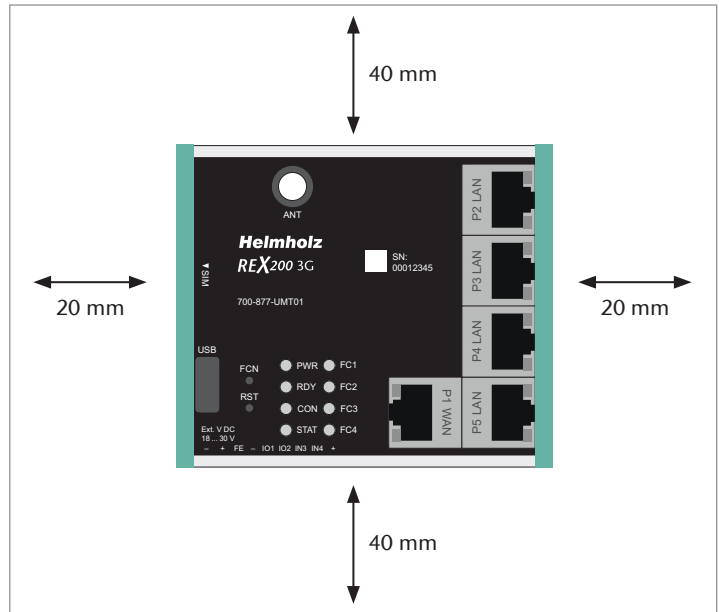
Assembly, installation, and commissioning of the router may only be carried out by qualified personnel. The respective national safety and accident prevention regulations are to be observed. The router is built in accordance with the state of the art and the recognized technical rules relating to safety (see Declaration of conformity). The router is exclusively designed for operation in the control cabinet and with safety extra-low voltage (SELV) in accordance with IEC 60950/EN 60950/VDE 0805, and may only be connected to devices that fulfill the requirements of EN 60950. The router is only designed for use within buildings and not outdoors.

Electrostatic discharge! Note the necessary precautionary measures for the handling of electrostatically endangered building elements (EN 61340-5-1 and IEC 61340-5-1).

2.2 Installation position/minimum distances

The router is conceived of for assembly on DIN rails (pursuant to DIN EN 50 022) and is designed for vertical cabinet installation. Installation and assembly must take place pursuant to VDE 0100 / IEC 364. The router may only be installed in a vertical installation position.

Minimum distances from neighboring modules:



2.3 Terminals and interfaces

Rigid copper wires with a max. diameter of 1.5 mm² can be clamped onto the provided connector plug. Network cables corresponding to at least category 5/5e (CAT-5) should be connected to the RJ-45 sockets. The connection with the higher level network/router to the Internet is created via the P1 WAN interface. The LAN ports P2 to P5 are available for connection to the machinery network and for commissioning via PC.

The internal switch functionality is also active when the REX 200/250 has no connection with the Internet.

The PWR LED lights up when the 24 V supply voltage is switched on. The boot process starts following the internal system check (duration of approx. 25 sec.), which is indicated by the blinking RDY LED (for approx. 90 sec.). The REX 200/250 is ready for operation as soon as the RDY LED lights solid.

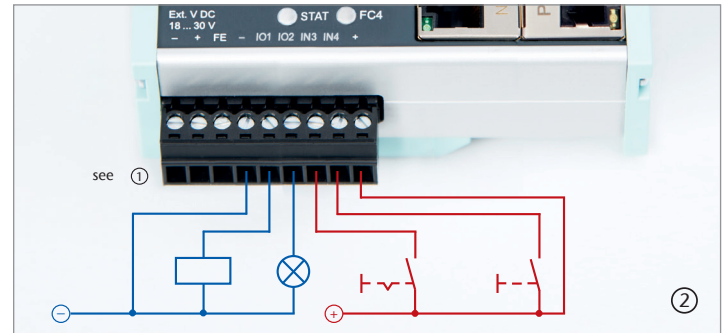
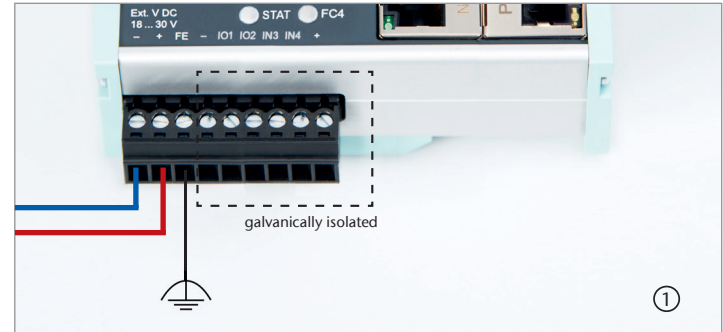
The terminal (FE) is for the functional earth. Connect this correctly with the reference potential.

2.3.1 2x digital inputs/outputs IO1 + IO2, as well as 2x inputs IN3 + IN4

Due to the electrical isolation of these activation options, an additional 24 volt DC power supply must be applied. The alarm inputs can be activated with potential-free switches, buttons or relay contacts. Depending upon the configuration in the myREX24-V2 portal, 1 - 4 (up to 99 for multiplex wiring) different e-mail/SMS recipients can be notified with individual notification texts. For each input, configuration can also take place for the establishing of a connection with the myREX24-V2 portal or for a system restart of the REX.

The configurable output wiring provides signals for the status of an active Internet, VPN, user connection of device malfunction of the REX 200/250.

Note: When using the outputs O1 or O2, the corresponding input signals I1 or I2 adopt the respective output status and can themselves then no longer be used for other external alarm input signals.



application example

2.3.2 Internet access options

In the case of these device variants, a GSM mobile connection can also be configured as an alternative to the P1 WAN interface, which establishes the Internet connection via a higher level network/router. In order to be able to log into the GSM network, at least one mini SIM card of a provider of your choice must be inserted into the SIM 1 slot. The SIM card holders are found on the left side of the housing. To remove, press the unlocking button next to the insert

2.3.3 Antennas

The required GSM antennas with SMA plugs are available in Helmholtz accessories. The installation location must be selected such that adequate GSM reception is possible. Due to the shielding effect, antennas should not be installed in metal housings (e.g. In the control cabinet). When using antenna extensions, the instructions from the technical data sheets of the manufacturers are to be observed.

2.3.4 REX 200/250 3G (UMTS)

The antenna required for radio reception is screwed onto the SMA socket “ANT”.

2.3.5 REX 200/250 LTE (4G)

For radio reception, a suitable antenna must at least be screwed onto the SMA socket “MAIN”.

In order to improve the data throughput, a second antenna terminal is available on the REX 200/250 LTE router with the SMA socket “Rx” that can be used as an option. This functionality is called antenna diversity in the “WCDMA mode” and Downlink-MIMO in the “LTE mode”.

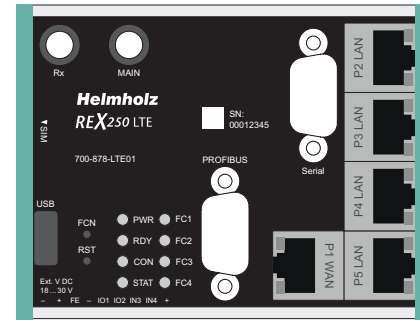
The second receiver antenna should not be located in the immediate vicinity of the main antenna. In order to improve the diversity gain and reduce other reciprocal interactions (interference effects), the two antennas should be (taking the space available in the application into account) installed with the greatest possible distance between them.

For the same reason, the second antenna should be mounted cross-polarized (rotated by 90° in relation to the main antenna).



2.4 Front interfaces

Name	Description
P1 WAN	WAN connection of the router (customer network, DSL router, etc.)
P2 - P5 LAN	Connection of the local network (e.g. machine network)
USB	Connection for USB stick
ANT	Antenna with SMA connector (only REX 200/250 3G)
MAIN	Main antenna with SMA connector (only REX 200/250 LTE)
Rx	Additional antenna with SMA connector (only REX 200/250 LTE)
PROFIBUS	MPI/PROFIBUS up to 12 mbps (only REX 250)
Serial	serial RS232 VCOM port (only REX 250)



3. Access to the myREX24-V2 portal

REX 200/250 routers can be fully configured in the shDIALUP dial-up software using the myREX24 V2 portal. You can download this software, as well as additional documents with supplementary example applications at any time in the download area under www.helmholtz.de and install it on a Windows¹ operating system.

Alternatively, you can also carry out the administration of your projects and the configuration of your REX router via an HTTPS-secured direct call-up from your browser. To this purpose please use the following URL: <https://v2.myREX24.net>.

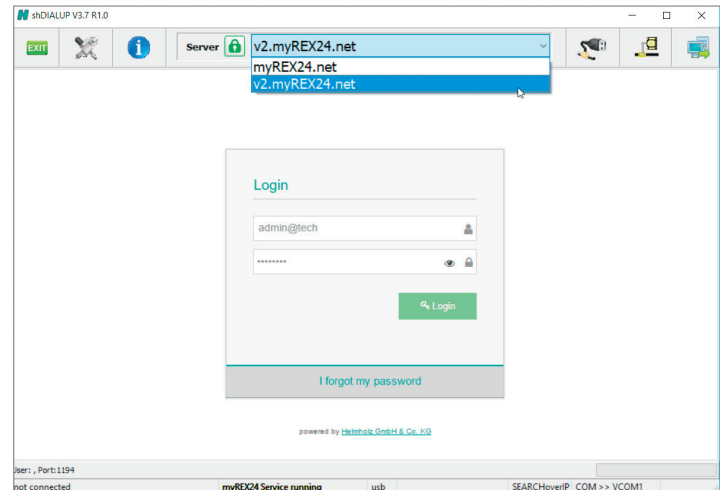
To log in, use the myREX24 V2 portal access data available to you. The various ways to transfer a configuration you have created to the REX 200/250 are described as follows. The secured VPN setup to a REX router can then always only be realized via the remote client software shDIALUP. You can find further information in the manual for the myREX24-V2 portal.

Instructions for alternative configuration methods can be found in chapter 14.

3.1 Login at the myREX24-V2 portal server

Install the shDIALUP software with administrative rights on a Windows¹ operating system. After opening the program, select the “V2.myREX24.net” server in the top menu bar and then log in to the myREX24-V2 portal with your access data.

You only need to register under www.myREX24.net when you don't yet have a myREX24-V2 portal account or haven't been granted user access by a myREX24 account administrator. Fill out the required fields there. After your data is checked by our service team (Mon.-Fri. 8 a.m. to 5 p.m. CET), you will receive two separate e-mails



with the access data. One e-mail contains the user name, the second the password.

Notes:

- Alternatively, the login page can also be reached under: <https://v2.myrex24.net>. Any up-to-date browser can be used for this purpose.
- Your login name consists of, for example, your user and company name separated by the @ character. Example: `admin@helmholz`
- Following the initial login, you will be prompted to register a new, individual password for your account.
- If necessary, you can also create and administer additional users after logging into the myREX24-V2 portal as account administrator

3.2 Navigation in the portal

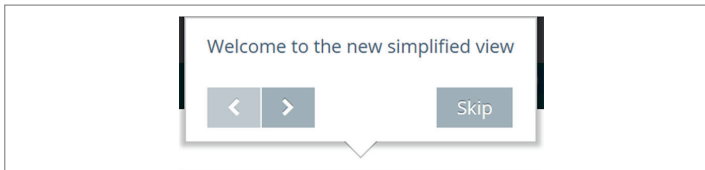
Once a user has logged in for the first time, it will be guided through a tutorial. The navigation, basic settings, and the change from the simplified to the extended view are shown.

3.3 Simplified and extended view

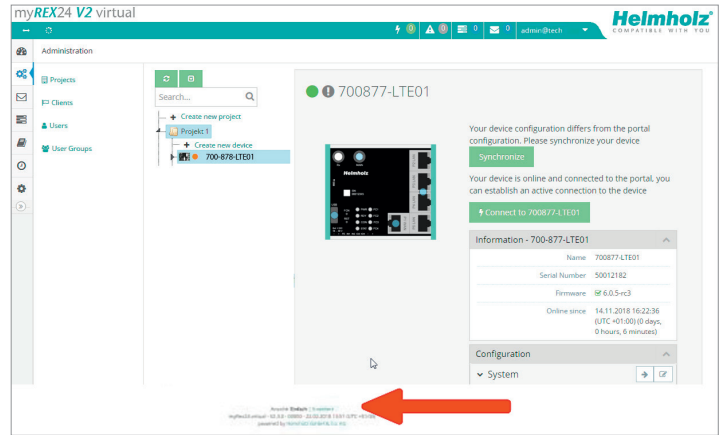
In the case of the menu interface of the myREX24 V2 portal, a choice can be made between two views.

The 'simplified view' is active for the first login. The 'expanded view' can be switched to at any time without changes being lost or losing their validity.

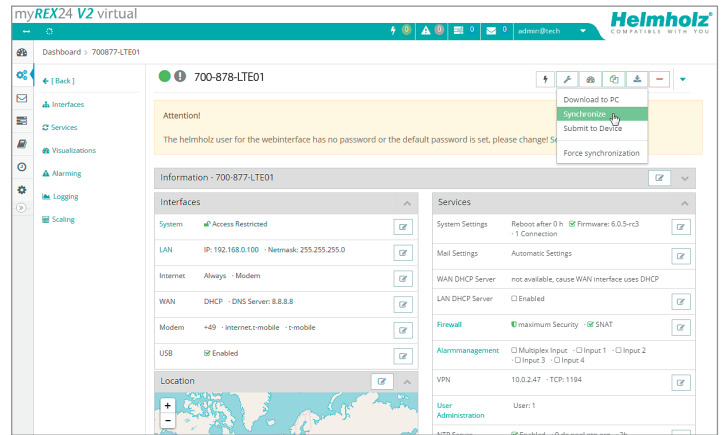
The simplified view is used for the most part in the subsequent course of the Quick Start Guide. The extended view is also presented in some places for purposes of illustration.




Simplified view:



Expanded view:




4. Initial router configuration via the myREX24-V2 portal

The following describes the basic configuration steps required to set up a REX router for a VPN connection. A description of the extended functions can be found with the online help or in the manuals/white papers. You can go to the online help in the myREX24 V2 portal via the question mark symbol in the lower left area of the screen . When you have logged in for the first time, the myREX24 portal guides you through a brief tutorial. Please change the password for your myREX24 account following the tutorial.

4.1 Create new project

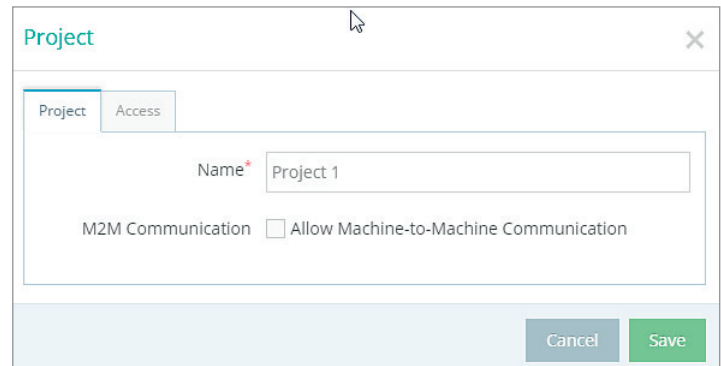
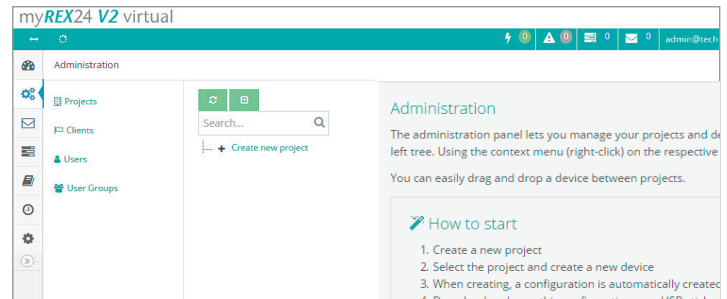
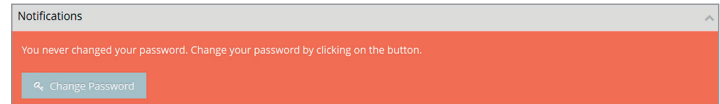
A project is the highest level for carrying out the following tasks:

- Device administration
- Remote maintenance
- Monitoring and alarms
- Data protocolling
- Visualizations

First, at least one new project needs to be created, in which a router is then assigned. Navigate to the administration with the following symbol  (the tutorial also leads to this point).

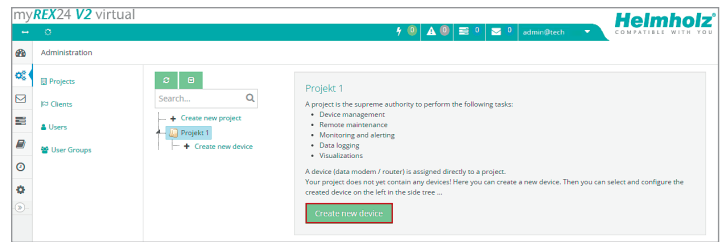
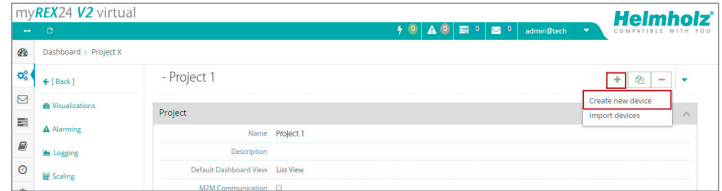
An unambiguous project name is then assigned in this menu.

Additional account users, when created, can also be assigned to this project via the “Access” tab



4.2 Create new device

A router can be added in the tree structure using the plus symbol **+** or with a right-click of the mouse. If a project does not yet have a router, the same function is made available in the main view by way of the green button “Create new device”. Clicking on the respective button starts the configuration assistant, which guides the user through the settings.



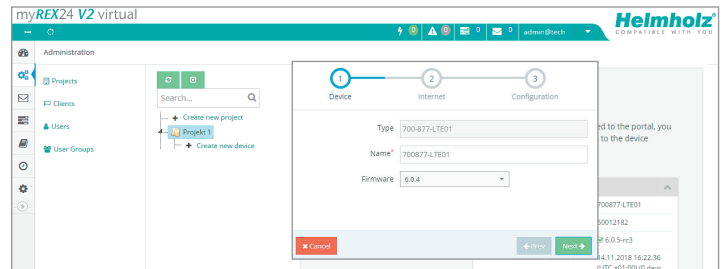
4.3 Configure REX 200/250 (connection data)

Three simple steps are adequate for the minimal configuration of the router.

- Selection of the device type
- Network settings / modem settings
- Transfer of the configuration to the REX router

4.3.1 Step 1 “Device” – Selection of the type and name

In the first step, the correct device type must be selected in agreement with the device order number. A freely selectable name should be assigned to this router. Permitted are only numbers and letters (0 to 9, A to Z, a to z, no spaces or special characters).



4.3.2 Step 2 “Internet” – Network settings

In step 2, the network configuration for the LAN and WAN side of the device is defined.

- **LAN** Each REX 200/250 comes with the LAN-side IP address 192.168.0.100/24 as a default. Modify the IP address and the subnet mask in keeping with the specifications from the machinery network to be maintained remotely.
- **WAN** The responsible network administrator provides you with the information necessary for the setting DHCP or static IP. DHCP is preset upon delivery.
- **Modem** The parameters for the APN access point (Access Point Name) of the card provider and the correct SIM PIN must be available to you and be stored here. Most providers are already available for selection (sorted by country). In the event that the correct provider is not present, the APN data can also be entered manually.

Note: If you enable DHCP, make sure that the DHCP server does not assign the IP address to a WAN port that is already active on the LAN side. IP addresses from two different subnets must be assigned to every router's LAN and WAN ports.

4.3.3 Step 3 “Configuration” – Coupling/pairing of the router with the portal

The fundamental parameters of the minimal configuration of the REX 200/250 are now filed in the Account portal and must now be transferred to the device (See chapter 5).

Note: We recommend the “Download configuration to the PC” variant for the initial configuration.

The screenshot shows a configuration interface with a progress bar at the top indicating three steps: 1. Device (completed), 2. Internet (current step), and 3. Configuration. The interface is divided into three main sections:

- LAN:** IP address: 192.168.0.100, Netmask: 255.255.255.0
- Internet:** Internetconnection: Modem (dropdown menu)
- Modem:** Mobile APN (Provider): Global-SIM easyM2M (dropdown menu), APN: public4.m2minternet.com, User: dummy, Password: **** (with eye icon), SIM Pin: (empty field)

At the bottom, there are three buttons: a red "Cancel" button, a grey "Prev" button, and a green "Next" button.

5. Router configuration transfer options

Newly created or retroactively changed device configurations can be transferred to the REX 200/250 in a variety of ways.

- 1. Download configuration to the PC (via USB stick)

The configuration file is saved on the PC and can subsequently be transferred to the REX 200/250 using a USB stick (subsequent procedure described in chapter 5.1).

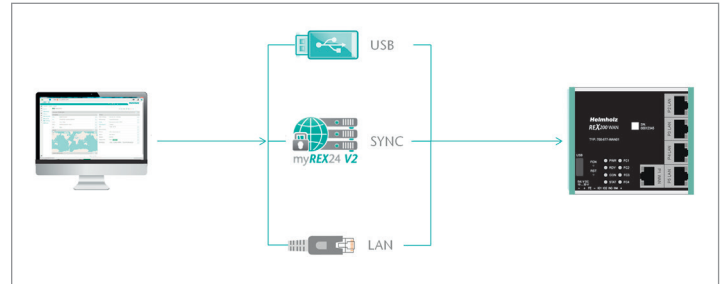
- 2. Synchronize (recommended for retroactive changes)

When the router has already been configured and a connection with the portal has been established, any retroactive change to the configuration can be carried out via the existing VPN connection (subsequent procedure described in chapter 5.2).

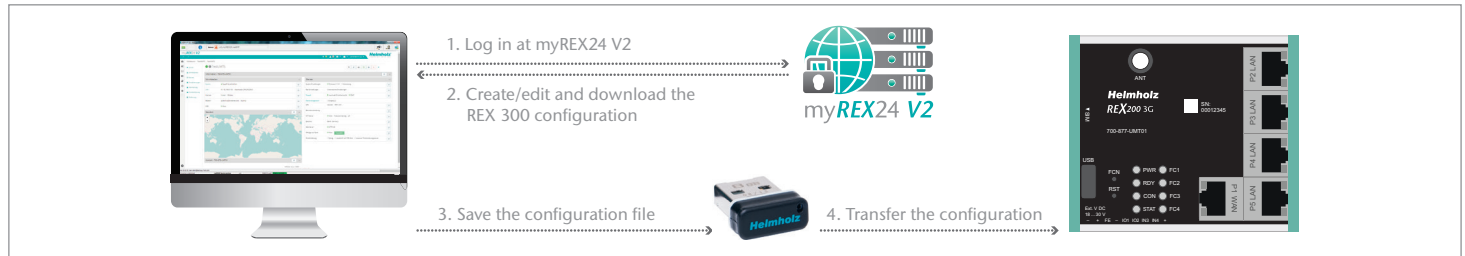
- 3. Submit to device (with LAN connection only possible via shDIALUP)

For this configuration option, the REX 200/250 must be directly accessible in the LAN of the PC. The PC must at the same time be logged in via the dial-up client shDIALUP through your myREX24 account in the Internet.

The transfer via USB stick (point 1) is explained in this Quick Start Guide, and how retroactive changes can be transferred via the function “Synchronization” (Point 2).

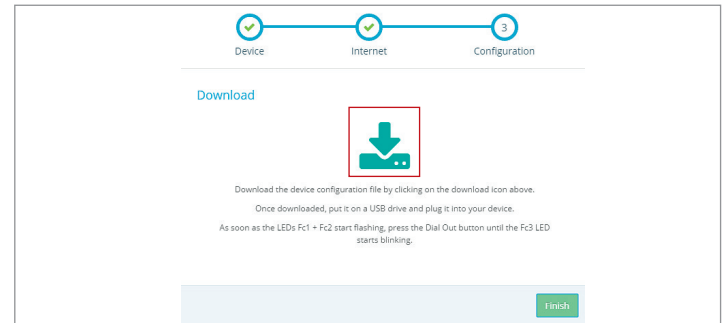


5.1 Transferring the configuration using a USB flash drive

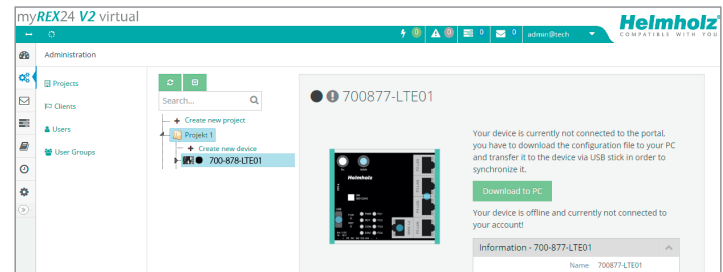


Ensure the power supply of the REX 200/250. Download the configuration file made available by the myREX24 portal via the download symbol onto your FAT-formatted USB stick connected to the PC.

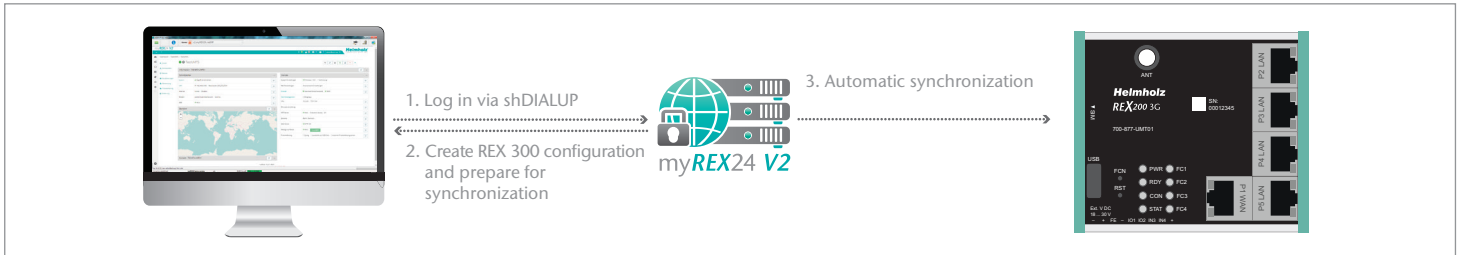
Note: The configuration file *myrex24.mbn(x)* must be filed in the root directory of your USB stick and may not be renamed.



Now carry out the steps described on page 24 in chapter 13.1 “Loading the myREX24 portal configuration”.



5.2 Synchronization



As soon as the REX 200/250 has logged into your account in the portal, you can transfer retroactive changes at any time with “Synchronize”. Where there is an existing myREX24-V2 portal connection, the REX 200/250 checks cyclically whether there is a new configuration available for its serial number and then loads it automatically. As soon as you have made a change to one or more parameters and saved it, the symbol “Device configuration is not current” appears next to the online LED. Click this symbol (or the “Synchronize” button) to start the process.

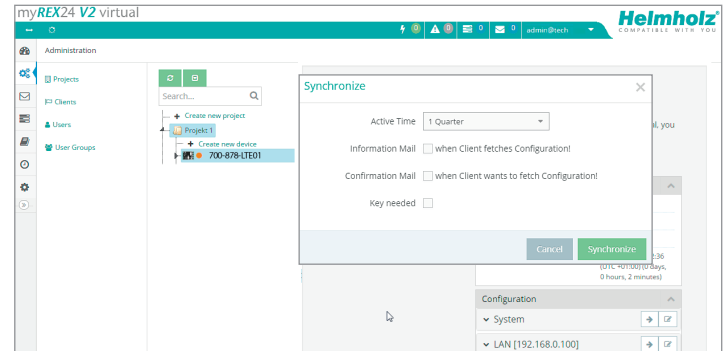
Synchronization in the simplified view:

Synchronization in the extended view:

The synchronization function is confirmed through the following dialog.

In this menu you can select optional user-defined settings, such as the sending of information/confirmation mails.

The REX router now adopts the new settings and restarts independently. As soon as the boot process has concluded, the REX router logs into the portal again.

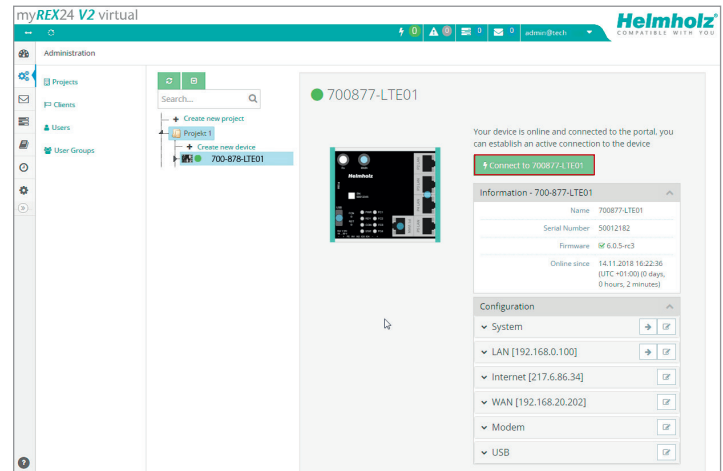


6. Connection with the machine network

Note: The following steps presume that the REX 200/250 has already been configured and that you have successfully logged into your account with shDIALUP. A secured VPN connection with the end device can not be realized through the browser view (<https://v2.myREX24.net>).

Logged in REX 200/250 routers are identified with a green circle in the dashboard. The secured VPN connection between PC and REX router is first established by clicking the connection button.

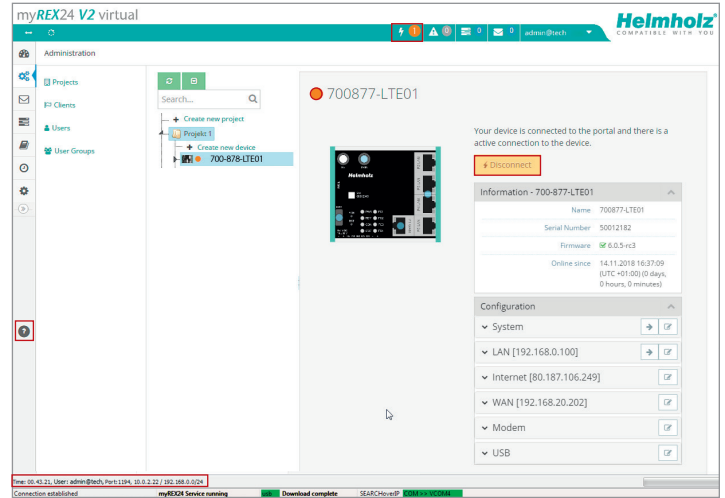
The active connection status with the REX 200/250 is represented with an orange animated connection button. The number of active connections activated via this account is shown in the menu bar.



Once a VPN connection to the REX 200/250 has been established, all the IPv4 packets that are valid for the applicable LAN network on the system side will be forwarded. The parameters (port, VPN-IP, LAN-IP, etc.) used for this connection are also informatively displayed in the bottom status bar.

In order to end the connection of a remote access, please click the the animated orange connection button and then confirm the disconnection of the remote connection.

Note: Other functions, such as the creation of dashboards or data point servers are described in the online help.



Effective immediately, you can very easily view the setup of your Rex router and the function overview of the myREX24 V2 portal online.



<https://youtu.be/8a1Xnu9lJ4g>
Video Tutorial (3:22 min.)

7. Tips and tricks

7.1 Establishing of connection isn't working

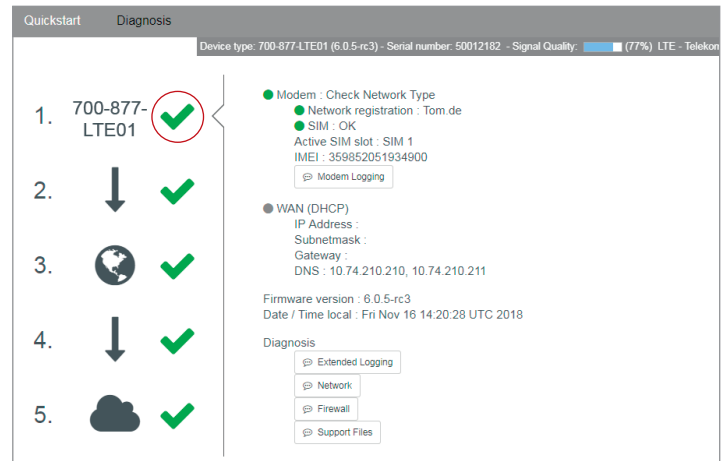
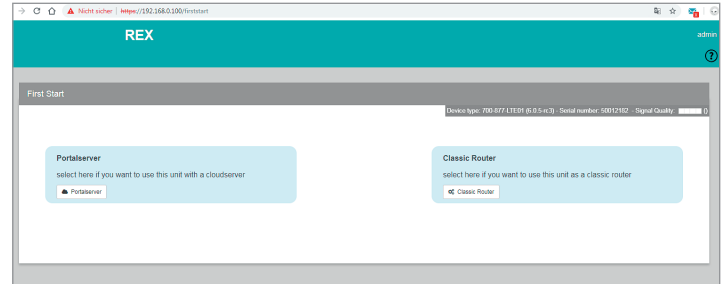
7.1.1 Check device status

The status page of the REX 200/250's web interface shows the router's connection status and active configuration data. To this purpose, enter the LAN IP address of the REX 200/250 into the address bar of a browser. The REX 200/250 must be accessible in LAN to this purpose, meaning that the TCP/IP address of a PC must be set for the same IP subnet. The authentication information is printed on the back of the device.

The First Start Assistant then opens. You must select "Portal server" for the myREX24 portal configuration described here. The expanded view for the "classic router" is only to be used for the configuration of own VPN connections via the device web interface.

Note: For security reasons, it is possible to deactivate the web interface on the routers. If the interface is not accessible, please check the corresponding setting in the myREX24 portal. Make sure that there are no address space conflicts with any other network interfaces (do not assign the same IP address more than once) in order to be able to communicate with the REX 200/250 .

To get more information on each step of the router connection, click on the Info icons in the status fields.



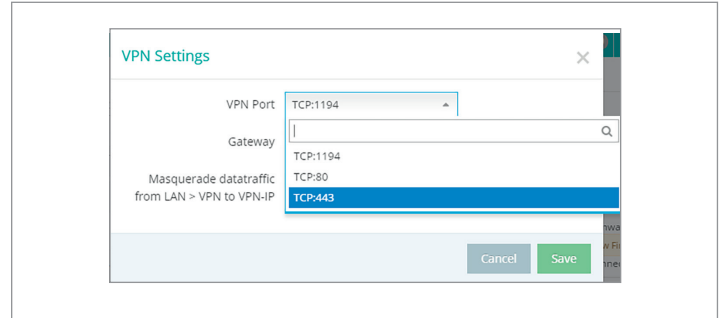
7.1.2 VPN Port

(relevant for Internet access via P1 WAN interface)

The REX 200/250 establishes an outbound TCP connection with the address VPN-V2.myrex24.net (5.39.123.21).

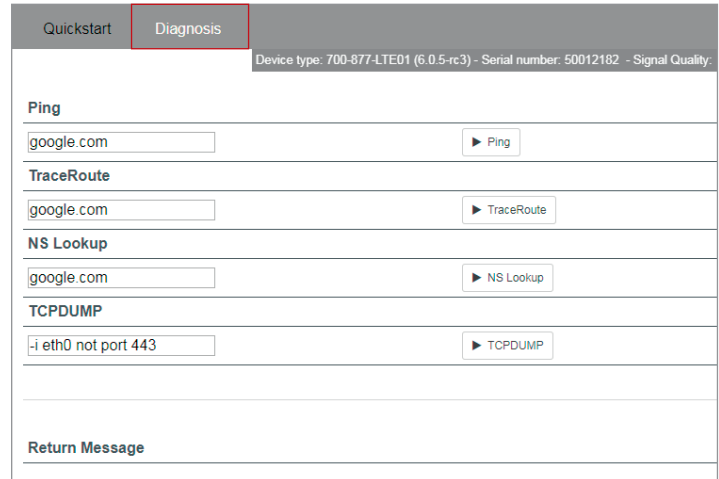
In order to be able to establish a secure connection to the myREX24-V2 server with shDIALUP or the REX 200/250, at least one of the following TCP ports (80, 1194, or 443) for the VPN tunnel must be cleared in the customer firewall. As a standard, this communication takes place via the port 1194, which is also preset.

Please clarify all setting details in advance with the responsible IT department on site. When necessary, the port in the REX 200/250 can be changed in the VPN settings.



7.1.3 Diagnostics page

In the event of irregularities or interruptions when establishing the connection, the diagnostics page supports you with troubleshooting. In the event of an error, the technical support of Helmholtz requires the respective result from the individual and autonomous test functions.

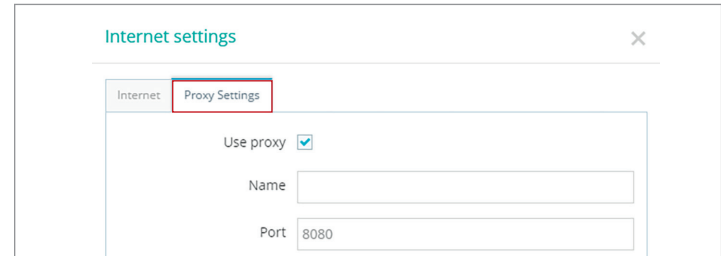


7.1.4 Is a MAC address filter activated in the firewall? (relevant for Internet access via P1 WAN interface)

It may be necessary to approve the MAC address of the REX 200/250 in the higher level DSL modem or the firewall. If it should not be possible to establish a connection, please ask your responsible network administrator whether such a MAC address filter has been activated.

7.1.5 Is the connection being established via a proxy? (relevant for Internet access via P1 WAN interface)

In the event that a connection is not successfully established in the customer network, it might be the case that the necessary proxy settings have not been filed or are incorrect. These can be adjusted on the configuration page of the REX 200/250 in the Internet settings.



7.1.6 no or inadequate mobile communications connection

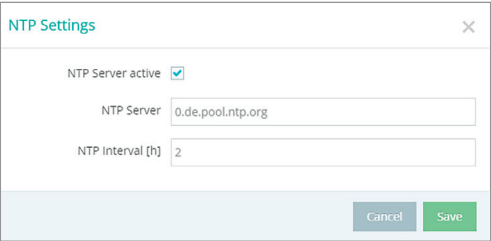
In the event that the connection of your REX 200/250 router with the portal is not established for mobile communications remote maintenance or is interrupted during operation, the following parameters, among others, should be checked:

- incorrect SIM PIN stored in the router
- no credit on prepaid SIM cards
- blocked ports (dependent upon provider)
- impaired GSM reception quality due to unfavorable antenna location
- selection of an antenna with inadequate transmission/receiving performance

7.2 Device configuration: Services – NTP server

For purposes of the internal system time of the REX 200/250, this carries out a comparison via a time server in the Internet at regular intervals. Where necessary, you can individually set the preset NTP server entry and the interval.

Note: Various functions in the myREX24 portal require a current time setting in the REX 200/250.



The screenshot shows a dialog box titled "NTP Settings" with a close button (X) in the top right corner. The dialog contains the following configuration options:

- NTP Server active:** A checkbox that is checked.
- NTP Server:** A text input field containing the value "0.de.pool.ntp.org".
- NTP Interval [h]:** A text input field containing the value "2".

At the bottom right of the dialog, there are two buttons: "Cancel" and "Save".

7.3 Device configuration: Services - Mail settings (relevant for Internet access via P1 WAN interface)

If you would like to use the function of the REX 200/250 for the automatic sending of e-mails, port 25 (SMTP) may not be blocked in the firewall of the customer network. You can also use alternative e-mail servers to send e-mails.

8. Remote maintenance of Ethernet CPUs

Notes:

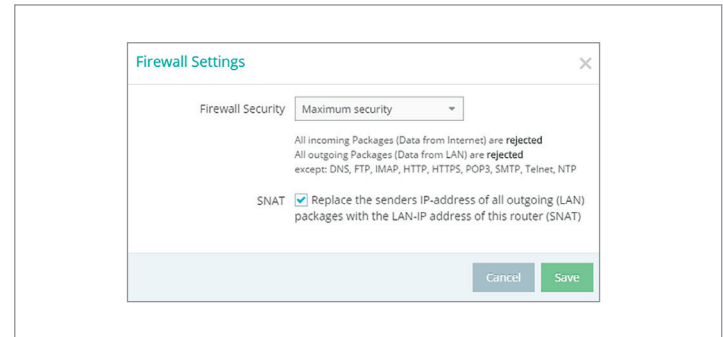
- The LAN ports are suitable for 100 mbps and full duplex operation, and support auto-crossover and auto-negotiation. No special PROFINET functions are supported.
- When connecting additional Ethernet participants (PLC/panel) on the REX 200/250, it must be ensured that the IP addresses of the devices lie within the address range of the LAN interface of the REX 200/250.

Device settings: Services – Firewall Settings – SNAT

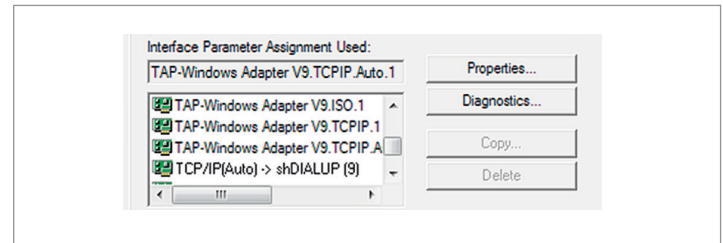
With a REX 200/250, the SNAT function is activated as a default. With this setting, participants for which no gateway*/router has been entered are reached via the VPN tunnel. For the CPUs and panels of some manufacturers, it can be the case that you need to explicitly enter the gateway* and deactivate the SNAT function in order that a remote connection with the end device is possible.

*Gateway: This refers to the LAN IP address of the REX 200/250.

In order to reach a PLC or a panel via the VPN tunnel, the OpenVPN adapter must be selected in the corresponding engineering tool as the interface. The virtual network connection responsible for this is the TAP Windows¹ Adapter V9.



The setting to be selected in the PG/PC interface module from the SIMATIC STEP 7² software is emphasized in the detail to the right.



9. Setting up the MPI/PROFIBUS interface (only REX 250)

The following steps are necessary to be able to carry out remote maintenance for a S7 MPI/PROFIBUS PLC with the REX 250:

9.1 Install driver

Please install the NETLink®-S7-NET driver on your remote maintenance computer. The driver can be found on the enclosed CD or the current version downloaded at www.helmholz.de.

9.2 Create station

Following successful installation, the access paths of the “NETLink® PRO Family” are available in the PG/PC interface.

Note: The general assignments must also first be carried out in the PG/PC interface (accessible via the Windows Control Panel) for the TIA Portal!

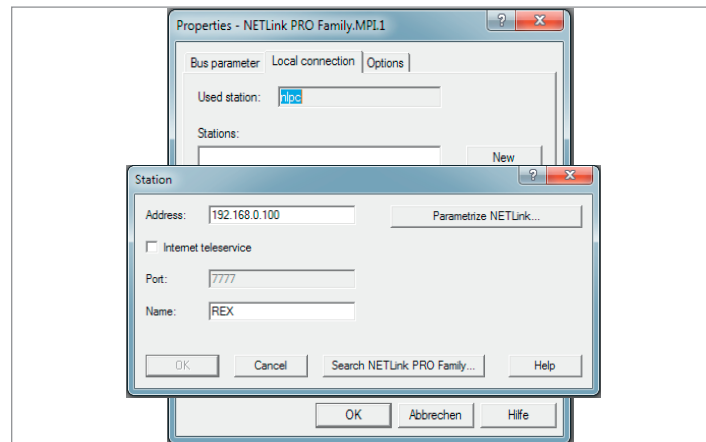
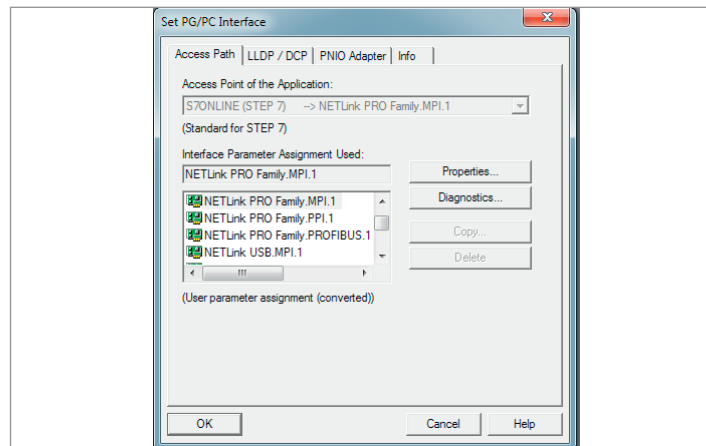
Select a configuration (MPI/PPI or PROFIBUS) and open the “Properties...” page.

9.3 Assign IP address and name

Click the “New” button under the “Local Connection” tab to add the REX 250. Enter the LAN IP address and the name of the router into the corresponding input fields. The internal communications adapter can be reached with these settings both locally via LAN and via VPN. Then click on “OK”.

Note: Please note that the port required by the REX 200/250 in order to communicate using the driver is approved by default. The “Internet teleservice” function may not be activated!

Following the adoption of the settings, it is possible to reach devices at the MPI/PROFIBUS port of the REX 250. Selection takes place via “Set PG/PC interface” in the programming software.



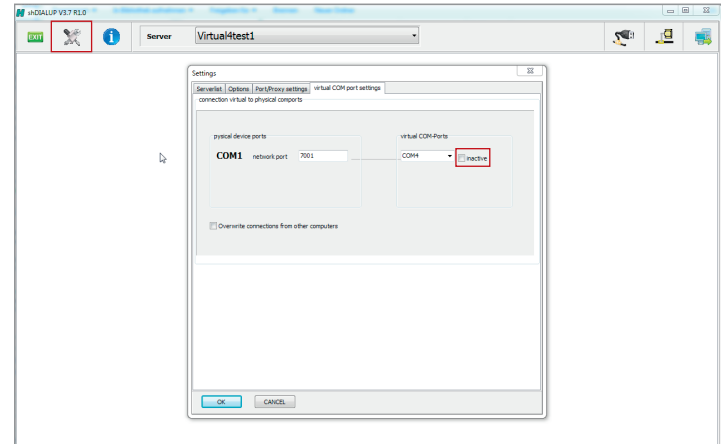
10. Setting up VCOM-LAN for serial communications (only REX 250)

In order to be able to use a remote connection to access serial participants, start shDIALUP and activate the corresponding settings for the virtual COM port on your computer. To do this, please click on the Tools button before logging in.

Deactivate the “inactive” check box in the “virtual COM port settings” tab.

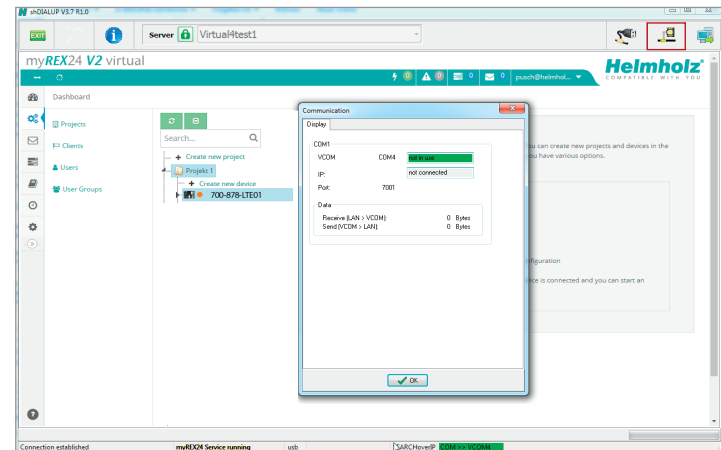
The system will automatically suggest a network port and the COM port to be used, neither of which need to be changed. Close the window by clicking on “OK”.

You can then use your login information to log in to the portal server (see page 6, chapter 3.1) and establish a connection to a REX 250 that has already been configured (see page 14, chapter 6).



You receive further information by activating the VCOM-LAN status button.

In this example, the COM4 connection is now also available in the system in addition to the standard remote maintenance connection. The possibility for serial communication is still indicated in the task bar by a green symbol (an active connection with a yellow symbol).



11. Description of LEDs and buttons

11.1 Function and status LEDs in normal operation

LED	LED color	LED status	Description
Pwr	Green	LED on	The power supply is connected to the terminal bar and switched on.
		LED off	The power supply to the router is interrupted/the router is not connected to the power supply.
Rdy	Orange	LED off	Waiting for boot loader or signature successfully checked
		LED on	Checking signature, loading kernel
	Green	LED off	Waiting for kernel
		LED on	Boot process completed, the device can be used.
Con	Orange	LED off	No VPN connection started
		LED on	Internet connection has been established + VPN connection is started
		LED flashing	Flash frequency 1.5 Hz: VPN connection has been established
	Green	LED off	No Internet connection
		LED on	Internet connection has been established
		LED flashing	Flash frequency 3 Hz: Internet connection is being established
Stat	Red	LED off	No error
		LED flashing	Error in the memory
		LED on	Error found
	Green	LED off	–
		LED on	In connection with the myREX24 V2 portal
Fc1			See chapters 12 and 13
Fc2			See chapters 12 and 13
Fc3			See chapters 12 and 13
Fc4			See chapter 12
WAN & LAN	Orange	LED on	Network connection present
	Green	LED flashing	Network data traffic active

11.2 Buttons

Name	Description
FCN	The FUNCTION button serves the purpose, among others, of establishing an Internet or VPN connection (Hold down the button until the Con LED begins to flash). Additional functions are described in chapters 11 and 12.
RST	The router restarts after the RESET button is pressed.

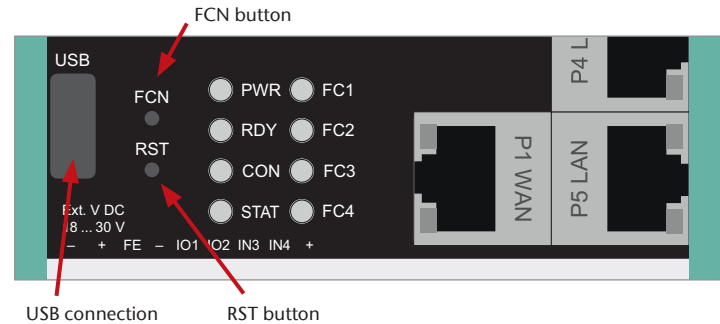
12. Resetting to factory settings

To reset the REX 200/250 to factory settings, the following steps are necessary:

- Start REX -> Apply power or press RST button (Reset)
- Wait until the RDY LED flashes green (about 30 seconds)
- Insert the supplied tool (SIM card ejector) into the opening below FCN. Press and hold the FCN button until the FC4 LED lights orange (about 10 seconds)
- Press FCN again -> FC3 LED turns orange
- Press FCN again -> FC2 LED turns orange
- Press the FCN one last time, whereupon all FC LEDs go out
- FC3 LED flashes orange -> factory settings are being loaded

When the PWR and RDY LEDs turn green again (after about 70 seconds), the REX 200/250 is ready for use again and can be configured.

Important: Already changed login and IP address data of the LAN interface are reset. No USB stick/storage medium may be connected to the REX 200/250.



13. Configuration / factory settings from the USB stick

13.1 Loading of the myREX24 portal configuration

- The REX 200/250 must be ready for use. Apply supply voltage -> After approx. 70 seconds, the PWR and RDY LEDs light up green
- Insert the USB stick with the configuration file into the USB port of the REX 200/250
- As soon as the configuration file is detected, the FC1 and FC2 LEDs flash orange (after approx. 3 seconds)
- Insert the supplied tool (SIM card ejector) into the opening below FCN. Press the FCN button and hold it until the FC3 LED flashes orange (about 2 seconds)
- Release the FCN button
- The configuration is transferred from the USB stick to the router
- As soon as the FC3 LED goes out, the transfer is complete
- Depending on the configuration, the router tries to establish a portal connection, in this case the CON LED flashes.

Important: The configuration file to be transferred must be stored in the top directory (root) of a FAT / FAT32 formatted USB stick. The configuration file "myREX24.mbn (x)" may not be renamed. An interruption of the supply voltage during the data transfer from the USB stick can put the router in an undefined state.

Note: Once the configuration file has been successfully transferred, the file on the USB stick will be renamed "XmyREX24.mbn(x)" by the REX 200/250, making it impossible to accidentally reuse it a second time.

13.2 Loading of a firmware file (Update)

- The REX 200/250 must be ready for operation. Apply supply voltage -> After approx. 70 seconds the PWR and RDY LEDs light up
- Insert the USB stick with the firmware file into the USB port of the REX 200/250
- As soon as the firmware file is detected, the FC1 and FC3 LEDs flash orange (after approx. 5 seconds)
- Insert the supplied tool (SIM card ejector) into the opening below FCN. Press the FCN key and hold it until the FC2 LED flashes orange (about 2 seconds)
- Release the FCN button
- The firmware is transferred from the USB stick to the router (Duration approx. 15 seconds)
- As soon as the FC2 LED goes out, the transfer is complete
- A reboot of the REX 200/250 is performed automatically and the process is complete when the PWR and RDY LEDs are lit solid.

Important: An interruption of the supply voltage during the data transfer Transferring from the USB stick can put the router in an undefined state! The firmware to be transferred must be stored in the top directory (root) of a FAT / FAT32 formatted USB stick. The firmware file "image.swux" must not be renamed.

Note: If both the firmware and a myREX24 portal configuration are found on the USB stick, the firmware is always first recognized by the REX 200/250 (Fc1 + Fc3 flashes). If you don't press the FCN button within 10 seconds, the REX 200/250 changes to the configuration file (Fc1 + Fc2 flash). If you here too don't react within 10 seconds, the router once again reverts to the normal mode.

14. Alternative configuration without myREX24-V2 portal

If you want to use the REX 200/250 without our mediation server "myREX24 V2", you can also use another OpenVPN software or e.g. set up the IPsec encryption embedded in your hardware. If you have selected the selection for the classic router in the "First Start" screen, you can reach the corresponding step by step configurator of the web interface via the menu item "Wizards" in the upper right corner.

For the aforementioned parameterization options are appropriate Documents with application examples under www.helmholz.com free of charge available for download.

15. Technical data

Performance data	
Voltage V (DC)	24 V DC, 18... 28 V DC
Current draw	Max. 160 mA @ DC 24 V
Protection rating IP	IP 20
Location of use	Dry location
Temperature (operating)	-40 – +75 °C
Temperature (warehouse)	-40 – +85 °C
Humidity	0 - 95%, non-condensing
Real-time clock	In the event of a power failure, date and time of day are retained for up to 7 days (depending upon the ambient temperature).
Dimensions (max.)	REX 250: 75 mm x 100 mm x 35 mm (H x W x D) / REX 200: 75 mm x 89 mm x 35 mm (H x W x D)
Weight (max.)	REX 200: 220 g / REX 250: 250 g
Power dissipation (max.)	4 watts
Installation	DIN rail assembly pursuant to DIN EN50022
I/Os and standard interfaces	
Digital inputs	4 pieces, DIN EN 61131-2 Type 3
Digital input/outputs	2 pieces, max. 0.5 A for each output
LAN interfaces	4 pieces, 10/100 mbps full and semi-duplex operation, automatic detection patch cable / crossover cable (auto-detection)
USB interface	USB host 2.0 TypeA
SD card slot	currently being prepared
VPN	
VPN protocol	IPsec/PPTP/OpenVPN, 64 tunnel
Encryption Method	Blowfish, AES, DES/3DES
Encryption algorithms	MD5, SHA1
Authentication	Pre-shared key, X.509
Network/security	
Firewall	1:1 NAT, IP filter, port forwarding, stateful inspection
IP router	NAT IP, TCP/IP routing, IP forwarding
Services	DHCP server, DHCP client, DNS server, NTP client, PPP server, DynDNS
Time comparison	NTP server

Optional interfaces REX 250	
Interface 1 (Serial)	RS-232/422/485 (can be switched with software)
Interface 2 (PROFIBUS) SIM card slots	RS-232/485 (can be switched with software) PC adapter or MPI/PROFIBUS driver up to 12 mbps 2x SIM card reader for mini-SIM 1.8V/3V
Communication	
WAN interface	10/100 mbps full and semi-duplex operation, automatic detection patch cable / crossover cable (auto-detection)
Devices with UMTS (3G) modem	Quadband GPRS/EDGE Data Interface
GSM frequency bands	GSM/GPRS/EDGE: 850, 900, 1800, 1900
UMTS frequency bands	UMTS/HSPA: (B5)800/850, (B8)900, (B4)AWS 1700, (B2)1900, (B1)2100 Klasse 1
Antenna terminal	1 piece SMA-connector
Data transmission rate	HSPA+ (Upload 5,76 Mbit/s Download 21,0Mbit/s)
Transmit power	Class 1, E2, 3, 4
Devices with LTE (4G) modem EU	Multiband GSM/GPRS/WCDMA/LTE Data
GSM frequency bands	GSM 900, DCS1800
GSM/GPRS/EDGE	900, 1800 MHz; max. 236 kbps
UMTS frequency bands	B5(850), B8 (900), B1 (2100)
LTE frequency bands	B20 (800), B3 (1800), B7 (2600)
Antenna terminals	2 pieces SMA-connector
Data transmission rate	HSPA+ (Upload 5,76 Mbit/s Download 42,0 Mbit/s); LTE (Upload 50 Mbit/s Download 100 Mbit/s)
Transmit power	Class 1, E2, 3, 4

The contents of this Quick Start Guide have been checked by us so as to ensure that they match the hardware and software described. However, we assume no liability for any existing differences, as these cannot be fully ruled out.

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