



REX¹⁰⁰ Quick Start Guide

Version

1 en

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Please note: Write down the serial number and MAC address for your REX 100 router before installing the router in your system. You will need it in order to configure the device!

Introduction

Please note: Write down the serial number and MAC address for your REX 100 router before installing the router in your system. You will need it in order to configure the device!

The REX 100 is an industrial router designed to be installed on DIN rails and used for worldwide remote access to IP-capable devices (PLC, HMI, IP-Camera, etc.). This Quick Start Guide goes over how to create a basic configuration for a REX 100 in the myREX24 portal and then transfer the configuration to the actual REX 100 unit.

1. Preparing the REX 100 unit

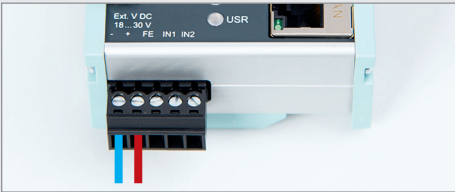
Start by connecting the REX 100 unit to a supply voltage of 10–30 VDC.

REX 100 3G/LAN

Connect the antenna and insert your SIM card.

REX 100 WAN/LAN

In order to establish an internet connection you have to connect the REX 100 router's WAN port (port 1) to the network or DSL modem.



2. Creating a REX 100 configuration in the myREX24 VPN portal

REX 100 routers need to be configured entirely in the myREX24 VPN portal. Once the corresponding configuration is ready, it can be transferred to the actual REX 100 unit in a variety of ways.

I. Register

If you do not yet have a myREX24 portal account, you will first have to visit www.myREX24.net and register under "Request access."

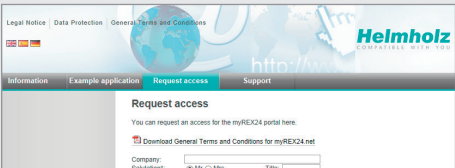
Make sure to fill out all mandatory fields.

Once you submit the form, you will receive an e-mail containing your personal login data.

Using this login data, go to

"www.myREX24.net" -> "Support" -> "Download,"

where you will be able to download the required software (shDIALUP), as well as some application examples.

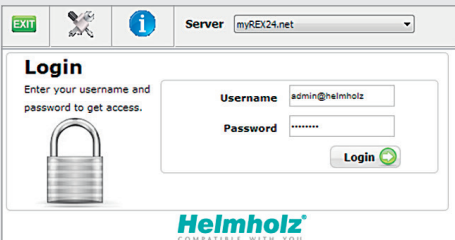


II. Log in to the myREX24 portal

Once you install and open the shDIALUP program, you can use your login data to log in to the myREX24 portal.

Note: Your login name will be made up of a username followed by the at sign (@) and your company's name. Example: admin@helmholz

Additional users can be created and managed after the login in to the myREX24 portal.




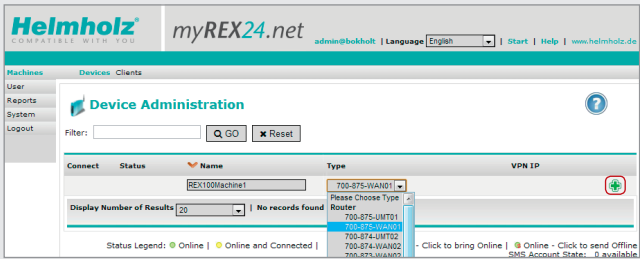
III. Create a router configuration

The following information goes over the configuration steps required in order to be able to establish a VPN portal connection. For a more detailed description of the advanced functions and configuration options available, please use the portal's online help.

Note: You should always change your login data instead of keeping the default usernames and passwords assigned by the system. For more information, make sure to consult the portal's online help function (?).

Once a connection to the portal is successfully established, a new browser window with your myREX24.net online account will open. Click on the "Machines" option and create a new device.

Click on the  icon to get to the next submenu.

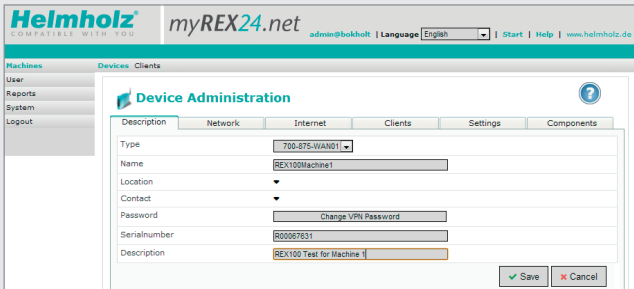


Note: Umlauts, special characters, and spaces are not permitted. In addition, every device name must be unique.


The description page for the device you just created will appear now. Please note that the location and contact information fields are optional.

A field for entering a phone number for the SIM card will be shown for GSM devices only. If you do enter a number, the portal will be able to control the REX 100 router using SMS text messages.

The field that says "Change VPN Password" does not have to be edited.



To make sure that the configuration is sent to the right device, you will need to enter the REX 100 router's serial number. The purpose of the additional description field is to make it possible to distinguish between several remote servicing units internally.

Open the "Network" tab without clicking on .

Helmholz COMPATIBLE WITH 100 **myREX24.net** admin@buehlt | Language: English | Start | Help | www.helmholz.de

Machines Devices Clients

User Reports System Logout

Device Administration

Description Network Internet Clients Settings Components

VPN IP 10.2.30.6

LAN IP 192.168.0.100

LAN Netmask 255.255.255.0

1:1 NAT Network ☐

Save Cancel

Enter the IP address and the appropriate subnet mask for your equipment network into the LAN parameter fields. REX 100 routers use 192.168.0.100/24 as their default IP address.

If you want to connect additional TCP/IP components to the REX 100 router's LAN ports for remote servicing purposes, this IP address will also be the default gateway for the connected devices (see page 14).

Open the "Internet" tab without clicking on **Save**.

Helmholz COMPATIBLE WITH 100 **myREX24.net** admin@buehlt | Language: English | Start | Help | www.helmholz.de

Machines Devices Clients

User Reports System Logout

Device Administration

Description Network Internet Clients Settings Components

Connect to Server on Always

Internetconnection GPRS

Monitoring Internet Connection

Test-Address 0.0.0.0

Test-Interval (s) 60

Modem Settings

Mobile APN (Provider) Germany - T-Mobile D1 Mobil

APN internet-mobile

User t-mobile

Password **

SIM Pin

After connection established Send Email ☒

Email Address

VPN Settings

VPN Port TCP 1194

Save Cancel

Select the trigger that will make the device connect using your account and configure the settings for establishing a connection to the Internet.

Before selecting one of the VPN ports available for selection, check to make sure that the port is also open on the plant side (-> customer location) (refer to the "Tips and tricks" section on page 13 as well).

You have now configured the basic settings for the router and can click on **Save** to proceed to transfer the configuration into the REX 100 router via one of the selectable methods (see page 6).

If you just configured a newly created device, the dialog box for transferring the configuration to the device will appear automatically. If you want, you can close this dialog box by clicking on Cancel (you can access it again later on if you want).

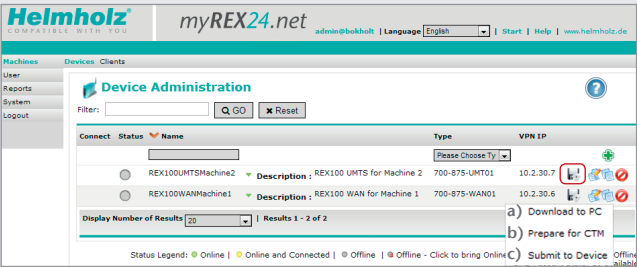
Note: The myREX24 portal's online help function provides detailed information on the various advanced settings available.

If you enable DHCP, make sure that the DHCP server does not assign an IP address that is already in use on the LAN side to the WAN port.

IP addresses from two different subnets must be assigned to a router's LAN and WAN ports.

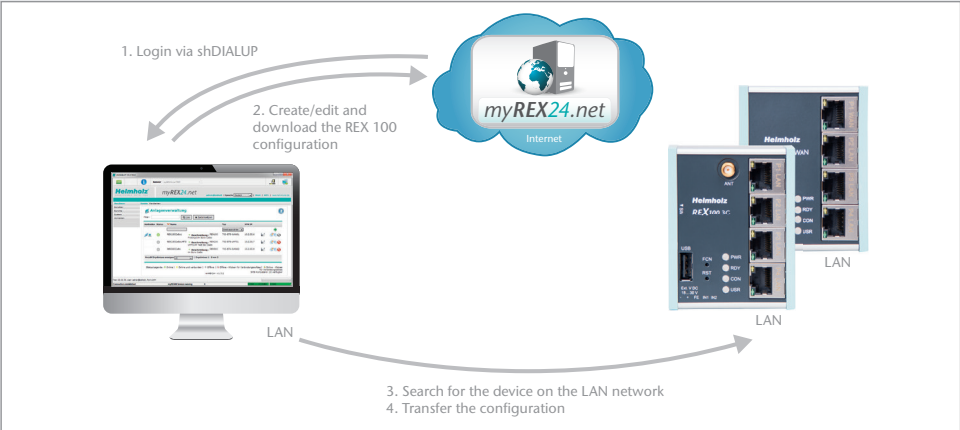
3. Router configuration transfer options

Once you have created a configuration, you can click on the floppy disk icon in order to select one of three available transfer methods (see options a through c).



- a) Download to PC:
Used to save the configuration as a file and then use a USB flash drive to transfer it to the REX 100 unit (see page 12).
Choose this option if the REX 100 router cannot be reached through the local network (LAN) or through the Internet at the beginning.
- b) Prepare for CTM:
Used to download the configuration from the myREX24 portal using the REX 100 router's Internet connection (CTM= Configuration Transfer Manager, see page 8).
This option will be the default transfer method for the configuration as soon as the REX 100 router has established a connection to the myREX24 portal. Once the REX 100 router has established a connection to the myREX24 portal, the CTM will be automatically used for all additional configuration changes.
- b) Submit to Device;
Used to transfer the configuration via the local LAN connection of the computer on which shDIALUP is running (see below).
You can use this option if the REX 100 router can be reached directly through the local network (LAN).

3c Transferring the configuration using a local LAN connection

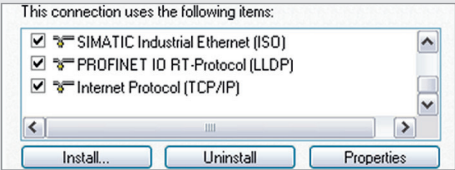


In order to be able to transfer the configuration through the LAN network, it must be possible to reach the REX 100 unit (the one being configured) on the same network on which the computer with the shDIALUP program is active.

REX 100 routers come with a default IP address of 192.168.0.100 (subnet mask: 255.255.255.0). In order to be able to reach the REX 100 router, the NIC must be set up as necessary using the router's IP address range and subnet mask.

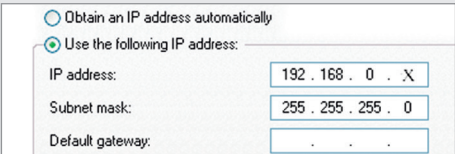
I. Start by opening the properties for your LAN connection.
In Windows XP: Start -> Control Panel -> Network Connections
In Windows 7: Start -> Control Panel -> Network and Internet -> Network and Sharing Center -> Change adapter settings

II. Open the Properties dialog box for the network connection that you want to use in order to establish a connection to your REX 100 unit. To change your computer's IP address, select "Internet Protocol (TCP/IP)" and click on the "Properties" button.

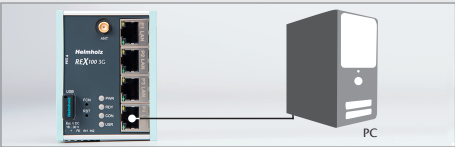


III. Your IP address must fall within the "192.168.0.x" address space. The subnet mask must match the subnet mask used by the REX 100 unit (default 255.255.255.0).

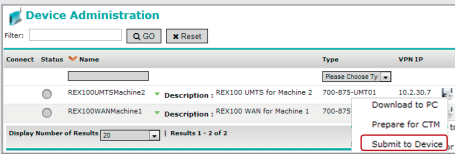
Note: Make sure that there are no address space conflicts with any other network units (do not assign the same IP address more than once). If there are, you will not be able to communicate with your REX 100 unit properly.



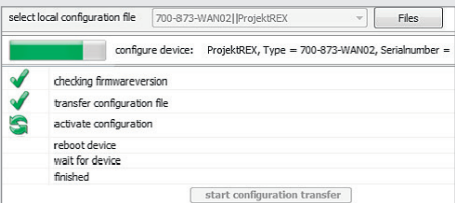
IV. Connect your computer's network interface card (LAN adapter) to the REX 100 unit's LAN port. Please make sure to use a standard Cat5 patch cable to establish the direct connection between your computer and the router.



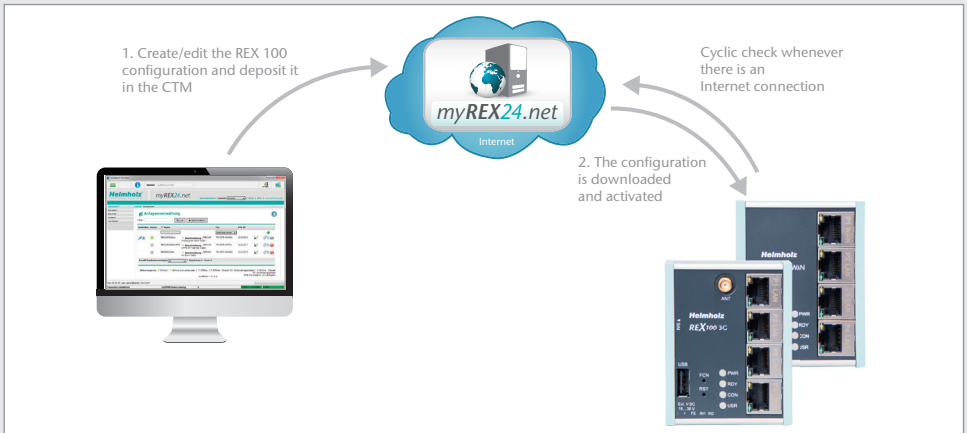
V. In the myREX24 portal (shDIALUP), go to the "Device Administration" page and select the "Submit to Device" option.



VI. The dialog box that appears next will automatically search for REX 100 devices. Once a device with the corresponding serial number is found, the configuration will be transferred and the REX 100 router will restart with the new configuration.



3b Configuration Transfer Manager (CTM)



The Configuration Transfer Manager makes it possible to transfer the configuration to the REX 100 router once the router has established an Internet connection to the myREX24 portal. If the REX 100 unit has a connection to the myREX24 portal, it will check whether there is a newer configuration available for its serial number. If there is one, it will start loading it automatically.

Note: In order to be able to transfer the configuration, the Configuration Transfer Manager needs an Internet connection established using a WAN network or SIM card.

If you are using your REX 100 router for the first time, you can establish this connection directly on the router by using the “First Start” webpage.

I. Establishing an Internet connection through the “First Start” webpage

If you have not yet configured your REX 100 router using one of the other two configuration methods (directly on the computer or using a USB flash drive), you can establish an Internet connection directly on the REX 100 router by using the “First Start” webpage so that you can set the router up.

If the REX 100 unit is already able to establish an Internet connection, please skip ahead to page 10, subsection V, "Automatic configuration download."

In order to be able to use the First Start webpage to set up the REX 100 router, it must be possible to reach the router at its default IP address of 192.168.0.100 on the local network, i.e., the computer must be set up accordingly (see option c, "Transferring the configuration using a local LAN connection," on page 6). If your computer is already set up accordingly, open a browser (Firefox, Chrome, Opera) and enter the router's IP address into the address bar (URL) as follows: <http://192.168.0.100>.

Now enter the following default username and password to log in to the REX 100 web interface:

Username: helmholz
Password: router

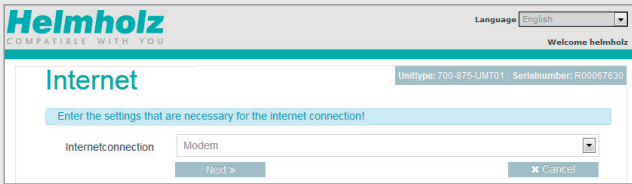
Note: For your own security, you should change the username and password after setting up your router. You can change your username and password in the configuration menu of the myREX24 portal.

The Internet connection path for the REX 100 unit only needs to be configured once on the “First Start” webpage.

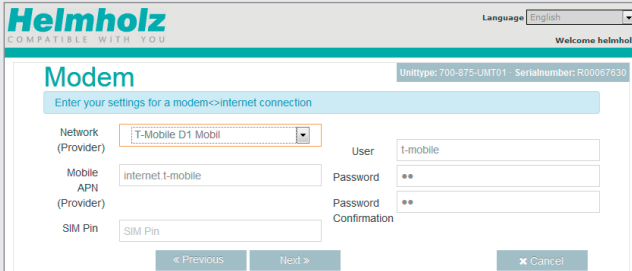
If the REX 100 router is able to reach the myREX24 portal using the configured path, it will automatically download and activate the configuration stored for its serial number.

II. Establishing an Internet connection through “First Start” with a REX 100 3G router

If you are using a REX 100 3G model, you will now need to provide the following for the modem: The login data for the carrier (APN) and the SIM card ID number (SIM PIN).



The screenshot shows the 'Internet' configuration screen of the Helmholz router. At the top, there's a language dropdown set to 'English' and a 'Welcome helmholz' message. Below that, the unit type is '700-875-UMT01' and the serial number is 'R00067630'. A blue instruction bar says 'Enter the settings that are necessary for the internet connection!'. The 'Internetconnection' dropdown is set to 'Modem'. At the bottom, there are 'Next >' and 'Cancel' buttons.

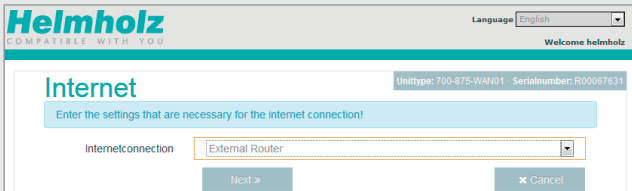


The screenshot shows the 'Modem' configuration screen. It includes the same header as the previous screen. A blue instruction bar says 'Enter your settings for a modem->internet connection'. The 'Network (Provider)' dropdown is set to 'T-Mobile D1 Mobil'. The 'User' field is 't-mobile'. The 'Mobile APN (Provider)' field is 'Internet t-mobile'. The 'SIM Pin' field is empty. There are 'Password' and 'Confirmation' fields, both showing two asterisks. At the bottom, there are '< Previous', 'Next >', and 'Cancel' buttons.

III. Establishing an Internet connection through First Start with a REX 100 WAN router

In the case of wired models, access to the Internet can only be established through the "external router" on the plant side.

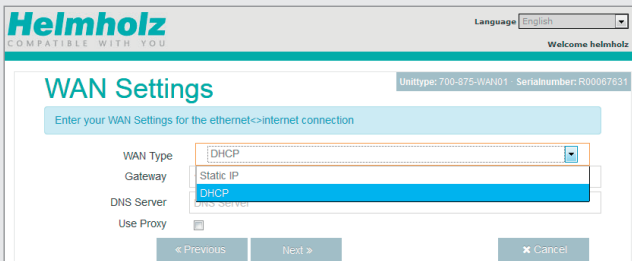
To do this, the WAN port needs to be connected to the customer's server/DSL modem.



The screenshot shows the 'Internet' configuration screen for a WAN router. It has the same header. A blue instruction bar says 'Enter the settings that are necessary for the internet connection!'. The 'Internetconnection' dropdown is set to 'External Router'. At the bottom, there are 'Next >' and 'Cancel' buttons.

If you select "DHCP," you do not have to configure any WAN settings.

Please make sure to either disable MAC address filtering on the DSL modem and/or external firewall or to add the REX router's MAC address to the filtering whitelist.



The screenshot shows the 'WAN Settings' configuration screen. It has the same header. A blue instruction bar says 'Enter your WAN Settings for the ethernet->internet connection'. The 'WAN Type' dropdown is set to 'DHCP'. The 'Gateway' field is 'Static IP'. The 'DNS Server' field is '192.168.1.1'. There is a 'Use Proxy' checkbox which is unchecked. At the bottom, there are '< Previous', 'Next >', and 'Cancel' buttons.

If you are using a WAN port with a static IP address, the responsible network administrator should have the corresponding values. If applicable, the settings for access through proxy servers also need to be configured in the WAN Settings.

The screenshot shows the 'WAN Settings' page of the Helmholz web interface. At the top, there is a 'Language' dropdown set to 'English' and a 'Welcome helmholz' message. Below this, the 'WAN Settings' title is displayed, followed by a subtitle 'Enter your WAN Settings for the ethernet->internet connection'. The interface includes several input fields: 'WAN Type' (a dropdown menu currently showing 'Static IP'), 'IP-address' (192.168.1.100), 'Netmask' (255.255.255.0), 'Gateway' (192.168.1.1), and 'DNS Server' (8.8.8.8). There is also a 'Use Proxy' checkbox which is currently unchecked. At the bottom, there are three buttons: '< Previous', 'Next >', and 'Cancel'.

IV. Next step: Establishing an Internet connection through “First Start” with REX 100 3G & WAN routers

The default portal server does not have to be changed. The code for the session key is optional and does not have to be entered when setting up the router.

The screenshot shows the 'Cloudserver' settings page of the Helmholz web interface. It features a 'Language' dropdown set to 'English' and a 'Welcome helmholz' message. The 'Cloudserver settings' section includes a 'Cloudserverlist' dropdown menu (showing 'Europe'), a 'Cloudserver address/name' text field (containing 'vpn.myrex24.net'), and a 'Session-Key' text field (containing 'Sitzungs-Schlüssel'). At the bottom, there are three buttons: '< Previous', 'Next >', and 'Cancel'.

As soon as all settings have been transferred and saved in the REX 100 router, the router will establish an Internet connection.

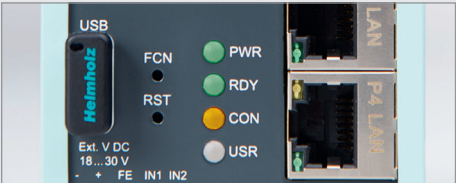
The screenshot shows the 'Finish' page of the Helmholz web interface. It features a 'Language' dropdown set to 'English' and a 'Welcome helmholz' message. A green banner with a checkmark icon and the text 'Click on Apply to Save and Enable the Settings on the Device.' is displayed. At the bottom, there are three buttons: '< Previous', 'Apply', and 'Cancel'.

V. Automatic configuration download

If the REX 100 router is able to establish an Internet connection, it will connect to the myREX24 portal and log in to it using its serial number.


Once a connection is successfully established, the "CON" LED on the router will start flashing (see LED description on page 15).

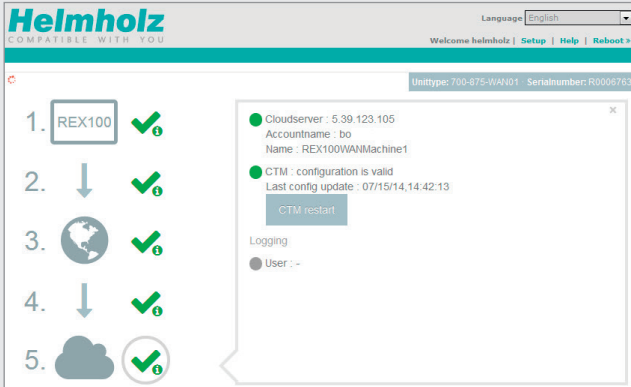
If a configuration is available on the portal, it will be automatically downloaded and activated in the device.



VI. REX 100 status page

The status page for the REX 100 router shows the router's state and active configuration.

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

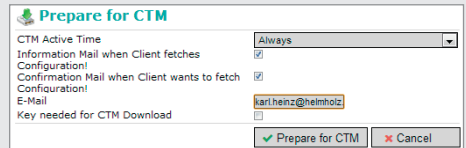


You can use the status page to trigger test functions or to manually make the router obtain its configuration through the CTM once again.


VII. Changing the configuration with the Configuration Transfer Manager (CTM)

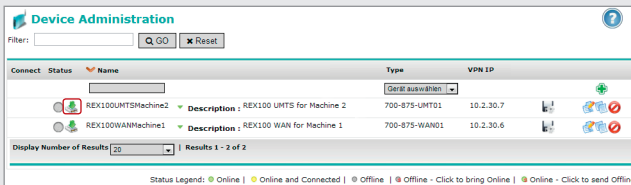
If the REX 100 router has already received a configuration, you will be able to transfer any new configuration changes to the router using the CTM.

If the router has already been configured using the CTM and you click on "Save" in the "Device Administration" page after making changes to a configuration, the "Prepare for CTM" dialog box will appear.

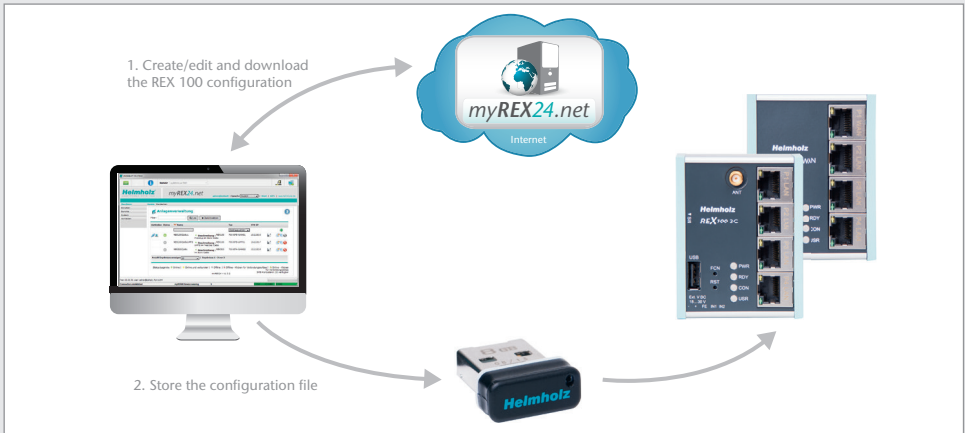


Alternatively, you can start transferring the configuration at any time from the "Device Administration" screen by clicking on the floppy disk icon.

If there is a configuration ready to be transferred using the CTM, the  icon will be shown in the "Device Administration" screen.



3a Transferring the configuration using a USB flash drive



Choose this option if the REX 100 router cannot be reached through the local network (LAN) or through the Internet at the initial startup.

In the portal, go to the "Device Administration" page and select the "Download to PC" option.

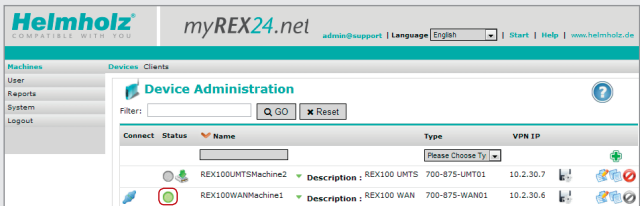
- Save the "myrex24.mbnx" configuration file in the root directory of a USB flash drive formatted with the FAT filesystem
- Plug the USB flash drive into the REX 100 router's USB port.
- Once the USB LED starts flashing, you will have ten seconds to press the FCN button
- Once the USB LED lights up with a solid light, you can release the FCN button, at which point the data will be loaded from the USB flash drive

Once the configuration file is successfully transferred, the file will be renamed "X...mbnx" and it will not be possible to reuse it by an oversight.

4. Establishing a connection to REX routers through the myREX24 portal

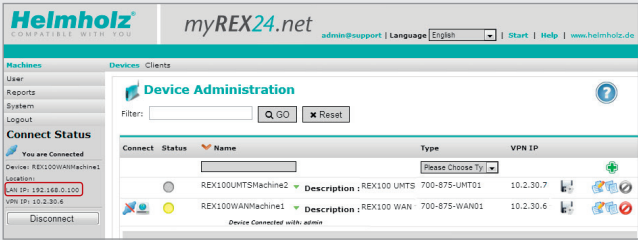
Note: In order for the following steps to work, the REX router must have already been configured.

I. After you log in successfully with shDIALUP, your online account will be opened and all the REX devices you have created will be shown. If REX devices are logged in to the VPN portal, a green circle will be shown next to them.

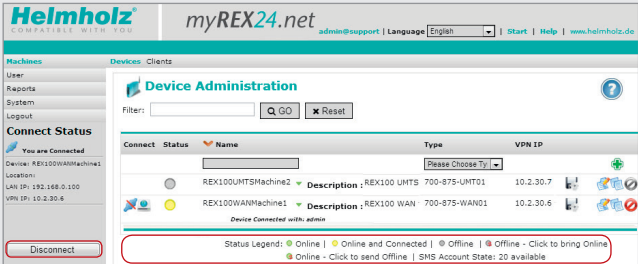


II. If you want to connect to a REX router, you can click on the "QuickConnect" button to establish a connection to your device.

III. The "Connect Status" box will show the REX "LAN IP" address on the plant side (important for the PG/PC interface, for example; see page 14).



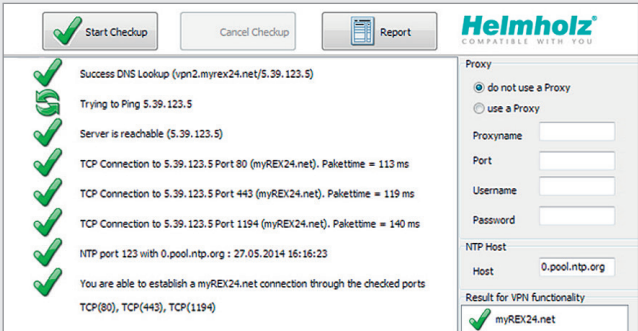
IV. Once a connection to the REX 100 unit has been established, all the IP packets that are valid for the LAN network in the field will be sent.
To terminate the remote access connection, click on the "Disconnect" button.
The "Status Legend" provides more information on additional "statuses."



V. Tips and tricks

If logging in to the portal does not work on the first try, please install our "shCHECK" testing tool on a PC. This free program will check whether the ports needed to successfully establish a connection to the myREX24 portal are open.
This test must be conducted from within the same network the REX router uses to establish the internet connection.

In order to be able to establish a connection to the myREX24 portal, at least one of the TCP ports (80, 1194, or 443) required for the VPN tunnel must be open.



5. Remotely servicing an Ethernet PLC

I. In order to be able to access an Ethernet PLC through a VPN connection, the "Use router" option must be enabled and correctly filled out in the PLC for the Ethernet port being used for remote servicing purposes.

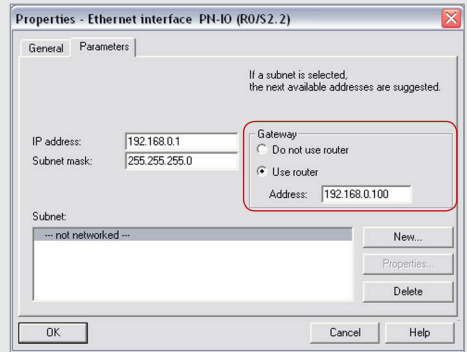
Enter the REX 100 unit's LAN IP address into the "Address" field.

Note: The PLC's IP address must fall within the address space corresponding to the REX 100 unit's LAN port.

If you can't enable the "Use router" option in your project or are using an Ethernet device into which a gateway IP address cannot be entered, please go to the "Device Administration" page in the myREX24 portal, open the "Settings" tab, and check the security settings there.

The SNAT function should be enabled under "General Firewall Settings" so that you will be able to reach devices in which a gateway IP has not been entered.

This function is always enabled in myREX24 configurations.

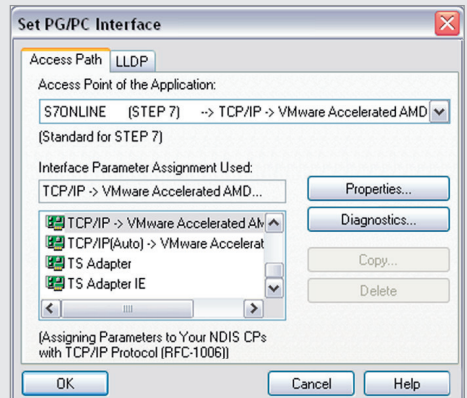


II. In order to be able to reach the PLC via the VPN tunnel, you will now have to select the appropriate PG/PC interface.

To do so, select it in such a way that TCP/IP points to the shDIALUP interface (TCP/IP -> shDIALUP).

Note: You can use either crossover or standard Ethernet cables in order to connect PLCs to the REX 100 unit.

The "Available Participant" function is not supported by the software when using VPN connections.



III. As soon as a VPN connection to the REX 100 unit has been established, you can start working with the PLC from the project (e.g., transferring a hardware project, monitoring variables, etc.).

6. Description of LEDs and buttons

PWR	Indicator light for the power supply
RDY	Readiness indicator (this LED must show a solid light after a max. of 110 s)
CON	<i>Off</i> : There is no active Internet or VPN connection <i>Solid light</i> : Active Internet connection <i>Rapid flashing (3 Hz)</i> : The router is attempting to establish an Internet or VPN connection <i>Flashing (1.5 Hz)</i> : Active VPN connection
USR	<i>Solid light</i> : When loading default settings, firmware files, or device configurations <i>Flashing (1.5 Hz)</i> : A portal configuration has been detected on the USB flash drive* <i>Rapid flashing (3 Hz)</i> : A firmware file has been detected on the USB flash drive*
FCN	1. Function button used to manually establish a connection to the portal server (see page 5) 2. * If the USR LED starts flashing, this means that you have ten seconds to press this button in order to load data from the USB flash drive.
RST	Reset button for restarting the router

7. Restoring the REX 100 router to its default settings

Note: If a USB flash drive with a configuration file is plugged into the router during this process, the router will load the file from the USB flash drive and activate it.

To restore your REX 100 unit's default settings, follow the steps below:

- Apply a supply voltage (or press "RST") until the "PWR" LED lights up
- Wait until the "RDY" LED flashes
- Hold down the FCN button for about 10–15 sec. until the "USR" LED flashes up orange
- After you release the "FCN" button, the REX router will boot up again with its default settings

Important: The REX 100 LAN port's IP address will be reset to 192.168.0.100/24.

8. Technical Specifications

Technical Specifications	
Voltage V (DC)	18 – 30 V
Current draw (max.)	250 mA at 24 V (DC)
Protection rating	IP 20
Location of use	Dry location
Temperature (operating)	0 to +50 °C
Temperature (storage)	-20 to +60 °C
Weight (approx.)	3G = 270 g WAN = 250 g
Air humidity	0 to 95%, non-condensing
Dimensions (D x W x H)	35 x 59 x 75 mm
Ports	Three or four 10/100 Mbps LAN ports One 10/100 Mbps WAN port USB 2.0 Type A port
Number of inputs/switching point	2/24 V (DC), as per DIN EN 61131-2 Type 2
Modem	Quad-band GPRS/EDGE data interface
Antenna connection	SMA connector (external thread)
SIM card type	Standard mini-SIM, 1.8 V/3 V
Data transfer rates	HSPA+ (upload: 5.76 Mbps download: 21.0 Mbps)
GSM frequency bands (MHz)	GSM/GPRS/EDGE: 850, 900, 1800, 1900
UMTS frequency bands (MHz)	UMTS/HSPA: 800/850, 900, AWS 1700, 1900, 2100
Transmit power	Class 1, E2, 3, 4
Certifications	CE, GCF, FCC, PTCRB, IC

Note:
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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