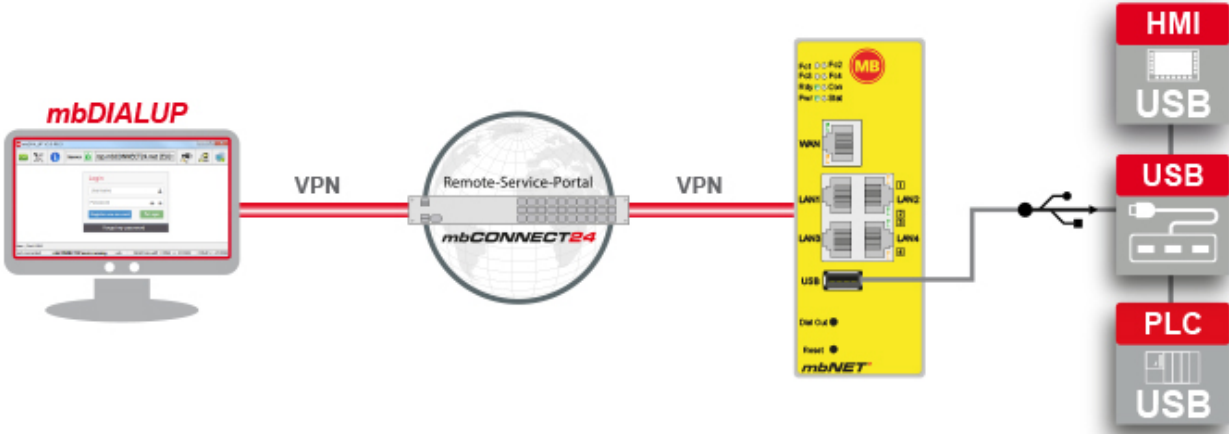




Functional Overview

Version: 1.0 DR02 - EN - Oct 14th, 2022



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1 General

Purpose of this documentation

This user document describes the "USB over IP" function.

Validity of this documentation

This manual is valid for the industrial router

- **mbNET** (MDH 800 - MDH 859) from hardware version HW 02 with firmware from Fw 6.0.2
- **mbNET.rokey** (RKH 210 - RKH 259) from Fw 6.0.6
- **mbNET.mini** (MDH 860 - MDH 867) from Fw V 1.7.0

Prerequisites / additional required components

- Standard Windows PC with network interface (ethernet interface).
- To establish a secure VPN connection to the portal **mbCONNECT24**, the Remote Client software **mbDIALUP** from version V 3.6* must be installed on the PC.
- You have an account on the RSP **mbCONNECT24** from version V 2.1.
- You have an industrial router with "USB over IP" functionality (**mbNET**, **mbNET.rokey** or **mbNET.mini**).
- The respective USB device drivers for the USB devices used (USB memory, PLC, webcams, etc.) must be installed on the **mbDIALUP**-PC.
- The **mbDIALUP**-PC has an Internet connection.

* The latest version can be downloaded from www.mbconnectline.com.

Release notes:

Version	Date	Comment
V 1.0	Apr 29 th , 2016	-
V 1.0 DR 01	Mar 11 th , 2021	General revision / update
V 1.0 DR 02	Oct 14 th , 2022	Correction of the validity for the mbNET router: Contrary to the original statement that this document is valid for the mbNET router (MDH 800 - MDH 859) from Fw 3.7.0, the following applies: mbNET router(MDH 800 - MDH 876) from hardware version HW 02 with firmware from Fw 6.0.2.

Currently manuals and more information

The latest manuals and more information about products related to secure remote maintenance can be found on www.mbconnectline.com in the download portal.



2 Legal information

Qualified Personnel

The product/system described in this documentation may be operated only by personnel qualified for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper use

The mbNET industrial routers may only be used as described in the associated manual.

Disclaimer

In this manual all technical information, data and instructions for installation, operation and maintenance are based on our previous experience and insights to the best knowledge. For the details, illustrations and descriptions in these instructions, no claims can be deduced. We assume no liability for damage due to:

- disregard of these operating instructions
- improper use
- technical modifications

Subject to technical and content changes.

Trademarks

The use of any trademark not listed herein is not an indication that it is freely available for use.

3 Information about cyber-security

To prevent unauthorized access to facilities and systems, observe the following security recommendations:

General

- Periodically ensure that all relevant components meet these recommendations and any additional internal security policies.
- Perform a security assessment of the entire system. Use a cell protection concept with suitable products.

For example, "ICS-Security-Kompendium" from the BSI (Federal Office for Security in Information Technology, Bundesamt für Sicherheit in der Informationstechnik)

https://www.bsi.bund.de/SharedDocs/Downloads/DE/BSI/ICS/ICS-Security_kompendium_pdf.html

shortened URL: <http://bit.ly/1rP9znm>

Physical access

- Restrict physical access to security-relevant components to qualified personnel.

Security of the software

- Keep software/firmware updated.
 - Stay informed about security updates for the product.
 - Stay informed about product updates.

You can find information about this at: www.mbconnectline.com

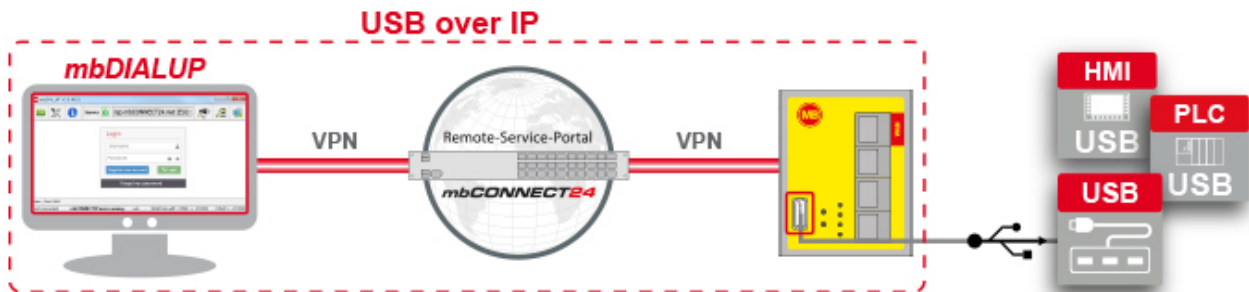
Passwords

- Define rules for the use of the devices and assigning passwords.
- Change passwords regularly, to increase security.
- Use only passwords with a high password strength. Avoid weak passwords such as "password1", "123456789".
- Make sure that all passwords are protected and inaccessible to unauthorized personnel.
- Do not use the same password for different users and systems.

4 Functional Overview

Brief Description

With the function "USB over IP" the USB port of the **mbNET.mini** is transmitted or made available directly to the PC of the **mbDIALUP** user. All devices connected to the USB port of the **mbNET.mini** (USB memory, PLC, webcams, etc.) are automatically available on the PC.



NOTICE

The "USB over IP" function uses the TCP/IP protocol to transfer all data and settings transmitted on the **mbNET** USB port to the remote station and vice versa.

The remote station is the PC with the client software **mbDIALUP**.

The translation from USB to TCP/IP and the transmission via the Internet result in longer runtimes for the data than with a direct USB-PC connection.

This can lead to functional limitations in some USB devices.

In the event of a fault, first check the possible timeout settings in your USB driver and increase them in order to adapt the driver to the longer data runtime. Ideally, the manufacturer of the connected USB device can provide information.

Devices that have already been tested by us as compatible are listed here in this document.

If the device you are using is not in the list of tested devices, please first ask the USB device manufacturer whether there are any restrictions for longer data runtime.

We cannot provide any technical information on other devices.

NOTICE

If the USB over IP function is activated, neither the configuration can be transferred via USB stick to the device nor a firmware update can be performed via USB stick. If the USB over IP function is deactivated, also the access via SFTP is blocked.

Conditions:

- The software **mbDIALUP** from version V3.6 must be installed on the PC.

When installing the **mbDIALUP** the necessary system drivers for the USB functionality "USB over IP" is installed. These drivers are available from the manufacturer "Eltima Software". Confirm the query for accessing the installation with "OK".

- The device used (**mbNET**, **mbNET.rokey**, **mbNET.mini**) meets the minimum requirements for hardware and firmware versions. [see chapter 1, "General"](#)
- You have an account on the remote service platform **mbCONNECT24** V 2.1.2 or higher.
- The appropriate USB device drivers (USB memory, PLC, webcams, etc.) must be installed on the **mbDIALUP** PC.

The following devices have been tested for use with the USB over IP function (from Mar. 8th, 2021):
Guaranteed support only if the components are connected directly without HUB.

Device	Manufacturer	Model / Type
SPS	Rockwell	Allen Bradley L16ER
	Schneider Electric	TM251 MESE (Firmware V4.0.2.11)
HMI	Schneider Electric	HMIGTO3510
USB hub	W&T	W&T (Industrial USB-Hub No. 33601)
	DELOCK	DELOCK USB HUB 87445 USB 2.0 4
USB stick	MB connect line	mbMEM
USB-Stick	swissbit	Industrial USB Flash Drive, U-56n, 4 GB, pSLC Flash

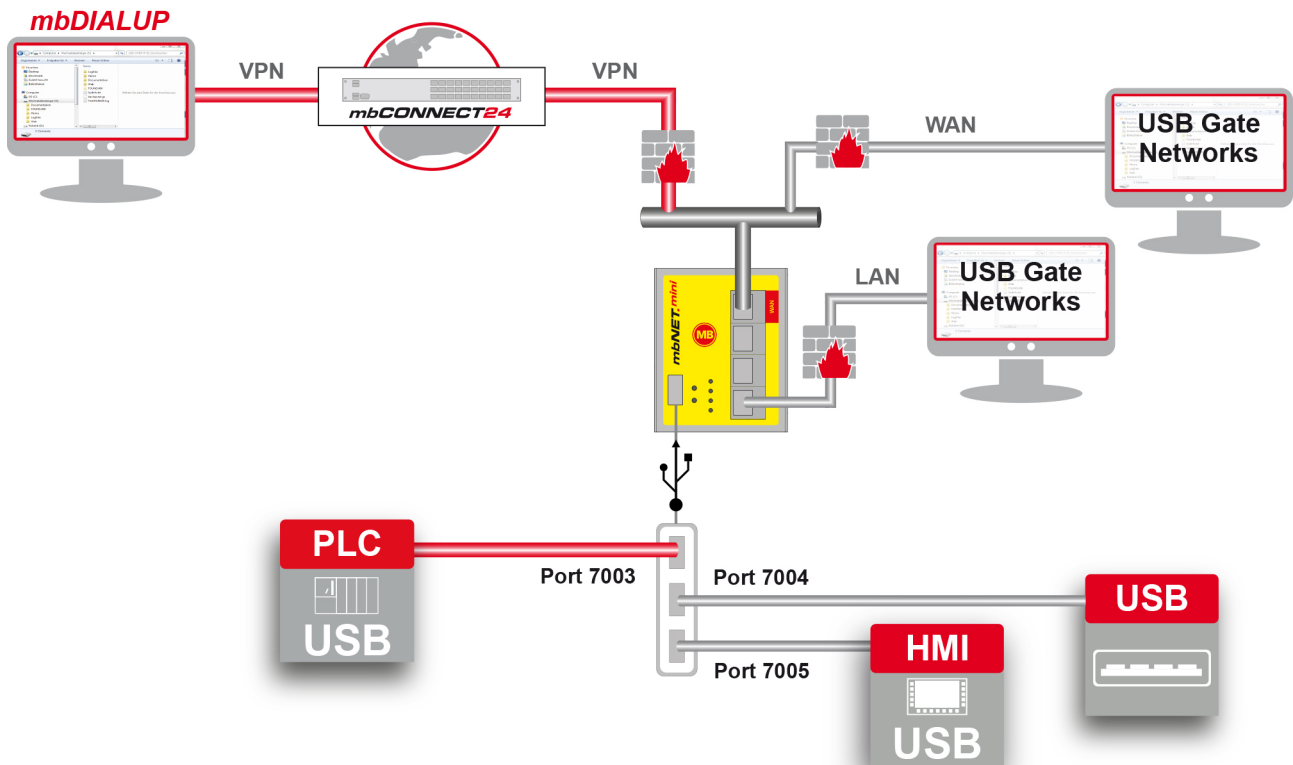
The function USB over IP provides a USB network proxy on the **mbNET**. The proxy uses the following ports:

- TCP 5473, 5475
- UDP 5474, 5475
- TCP (depending on the number of USB ports - start port is 7003)

These ports are in principle always accessible via the VPN connection. Exceptions can be controlled via the "Access" settings.

The corresponding "counterpart" is integrated in the **mbDIALUP** and is accessed automatically after the connection is established.

The accessibility of the ports via LAN and / or WAN is only possible using the free software "USB Gate Networks" by Eltima Software (www.eltima.com).



NOTICE

Note the following when using the "USB Gate Networks" software:

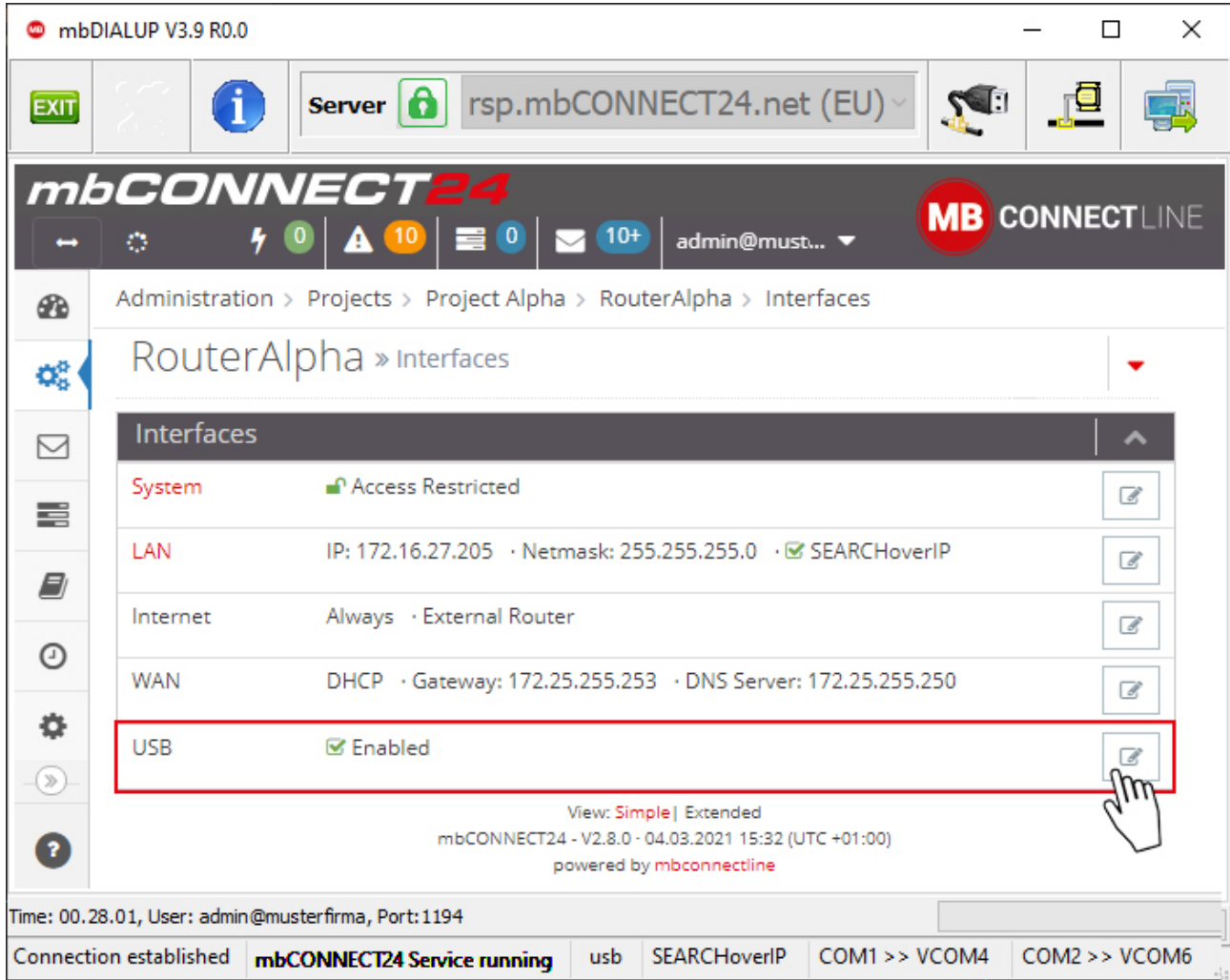
- **Only** install the "client" of this software!
- Do **NOT** install this software simultaneously on the same PC together with the mbDIALUP!
- This software is intended **exclusively** for access to the USB interface of the **mbNET** router via LAN and / or WAN / Modem!
- Simultaneous access to the same port via mbDIALUP and the LAN or WAN interface is **not possible!**

5 Configuration of the USB port






Navigation: Administration > Projects > *Project Gama (selected project)* > *GamaRouter (selected device)*

NOTICE

All USBoverIP settings must be made via the remote service portal (*my*)**mbCONNECT24**. The settings are then transferred to the **Device** (*mbNET.mini, mbNET, mbNET.rokey*).

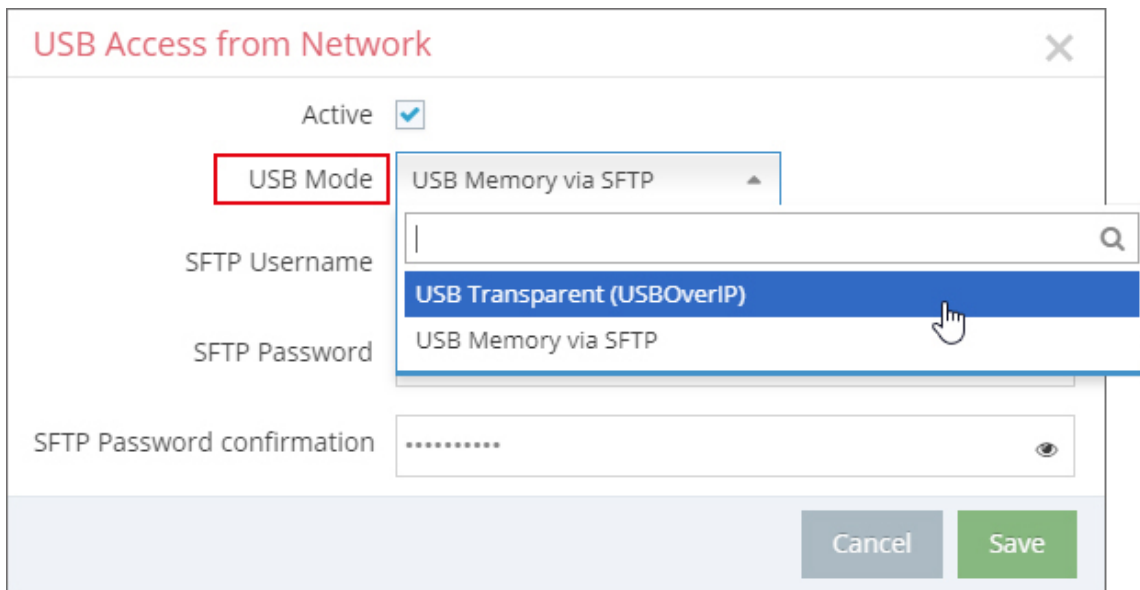


The screenshot shows the mbCONNECT24 web interface. The breadcrumb navigation is Administration > Projects > Project Alpha > RouterAlpha > Interfaces. The main heading is RouterAlpha > Interfaces. Below this is a table of interfaces:

Interfaces		
System	Access Restricted	
LAN	IP: 172.16.27.205 · Netmask: 255.255.255.0 · <input checked="" type="checkbox"/> SEARCHoverIP	
Internet	Always · External Router	
WAN	DHCP · Gateway: 172.25.255.253 · DNS Server: 172.25.255.250	
USB	<input checked="" type="checkbox"/> Enabled	

At the bottom of the interface, there is a status bar showing: Time: 00.28.01, User: admin@musterfirma, Port: 1194. Below that, a connection status bar shows: Connection established | mbCONNECT24 Service running | usb | SEARCHoverIP | COM1 >> VCOM4 | COM2 >> VCOM6.

In the device interface settings, click on the edit icon  to edit the access settings of the USB port.



The USB interface can be operated in two different modes:

1. **USB Memory via SFTP**

Here the USB interface of the **Device (mbNET.mini, mbNET, mbNET.rokey)** is only accessed via an SFTP client (e.g. "FileZilla").

Only a USB storage device that is directly connected to the device can be accessed.

or

2. **USB Transparent (USB over IP)**

With the function "USB over IP", the USB port of the **Device (mbNET.mini, mbNET, mbNET.rokey)** is transmitted or made available directly to the **mbDIALUP** PC.

All USB devices (USB memory, PLC, webcams, etc.) that are connected to the USB port of the **Device** are automatically available on the **mbDIALUP** PC.

5.1 USB Access from Network via SFTP

Navigation: Administratio > Projects > *Project Gama (selected project)* > *GamaRouter (selected device)* > Interfaces

USB Access from Network
✕

Active

USB Mode USB Memory via SFTP ▼

SFTP Username ftp

SFTP Password

SFTP Password confirmation

Cancel
Save

Here the USB interface of the **Device (mbNET.mini, mbNET, mbNET.rokey)** is only accessed via an SFTP client (e.g. "FileZilla"). Only a USB storage device that is directly connected to the device can be accessed.

USB Access from Network via SFTP	
Active	Checkbox to activate / deactivate this function. If disabled this function, neither via SFTP ("USB memory via SFTP") nor via USB Transparent ("USBOverIP") can be accessed on the USB interface.
USB Mode	Selection field for the USB Access from Network via <ul style="list-style-type: none"> SFTP ("USB Memory via SFTP") USB Transparent ("USBOverIP")
SFTP Username	"ftp" Specified default username to configure the SFTP client.
SFTP Password	Default settings: „SFTP Server“: Standard LAN IP of the Device „SFTP Username“: ftp „SFTP Password“: ftp
SFTP Password confirmation	

5.2 USB Access from Network via USB over IP

Navigation: Administration > Projects > *Project Gama (selected project)* > *GamaRouter (selected device)* > Interfaces

USB Access from Network
✕

Active

USB Mode USB Transparent (USBOVer... ▾)

Allow access through LAN
Interface

Allow access through
WAN/Modem Interface

USB-HUB Connected

Number of Ports 0 ⬆️
⬇️

Cancel
Save

With the function "USB over IP", the USB port of the **Device** (*mbNET.mini*, *mbNET*, *mbNET.rokey*) is transmitted or made available directly to the mbDIALUP PC.

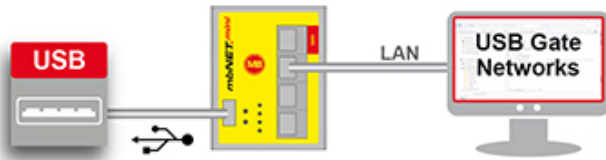
All USB devices (USB memory, PLC, webcams, etc.) that are connected to the USB port of the **Device** are automatically available on the **mbDIALUP** PC.

NOTICE

If the USB over IP function is activated, it is neither possible to transfer the configuration file to the **Device** via USB stick nor carry out a firmware update via USB stick.

USB Access from Network via USB over IP

Active	Checkbox to activate / deactivate this function. If disabled this function, neither via USB Transparent ("USBOverIP") nor via SFTP ("USB memory via SFTP") can be accessed on the USB interface.
USB Mode	Selection field for the USB Access from Network via <ul style="list-style-type: none"> USB Transparent ("USBOverIP") SFTP ("USB Memory via SFTP")



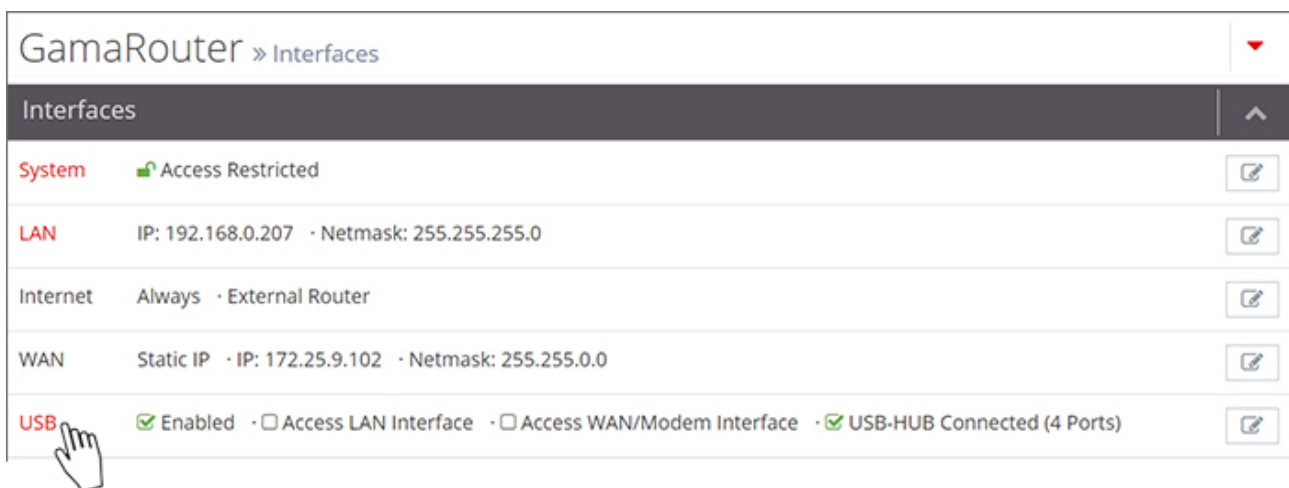
Allow access through LAN Interface	This function allows the access via the LAN interface of the Device on a USB device that is connected to the USB port of the Device . Therefore you need the free software "USB Gate Networks" by Company "Eltima Software" (www.eltima.com).
Allow access through WAN/Modem Interface	This function allows the access via the WAN interface or the modem of the Device on a USB device that is connected to the USB port of the Device . Therefore you need the free software "USB Gate Networks" by Company "Eltima Software" (www.eltima.com).

NOTICE

When using the "USB Gate Networks" software Note the following:

- Install **only** the "client" of this software.
- This software may be installed **NOT** simultaneously with the remote client for the portal on the same PC.
- This software is intended exclusively for access to the USB interface of the router via LAN or WAN / Modem.
- Simultaneous access via **mbDIALUP** and the LAN or WAN interface / modem to the USB port is **not possible**.

USB-HUB Connected	Activate this checkbox if you have connected a USB hub to the USB port of the Device . When using a USB hub, several devices can be connected and managed at the same time.
Number of Ports	Enter the number of USB ports on the USB hub.




After saving your entries, you can make additional settings regarding the USB components.

To do this, click on "**USB**"

5.2.1 USB over IP settings - Components


Navigation: Administration > Projects > *Project Gama (selected projects)* > *GamaModem (selected device)* > Interfaces - USB


Under "**USB Interface Informationen**" you see an overview of the interface setup.


To change the settings, click the edit button 

Under "**USB Components**" the components of the different ports of the USB hub are listed.

When using no USB hub, only one component is displayed.

Click on the minus icon  to remove a component. I.e.: if you, for example, remove the component with the address 1-1.3, the third USB port of the USB hub is no longer accessible.

By clicking on the plus icon in the headline , you add again this component, so the third USB port is available again.

To change the component settings, click on the name of the component ("**USB1**") or click the edit icon .

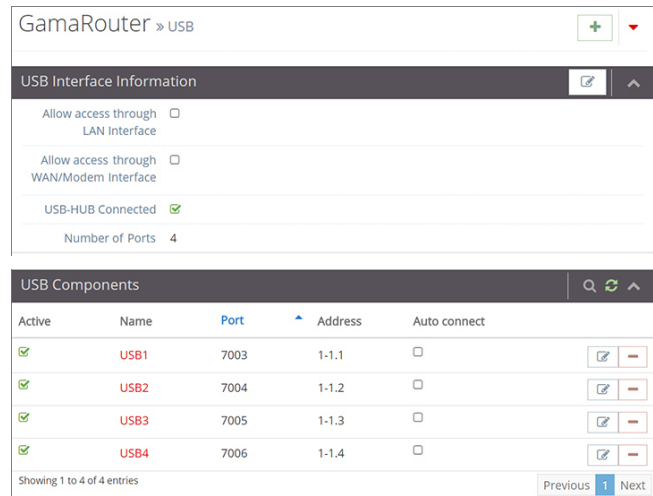


Image 1: Example configuration with selected USB hub with four ports.

Component

Active Checkbox to activate / deactivate this USB component.

If the USB component is deactivated, no connection to this USB port can be made - neither via **mbDIALUP** nor via **USB Gate Networks**.

Name The name of the component can be freely selected.

Address The base address of the USB port always is 1-1.

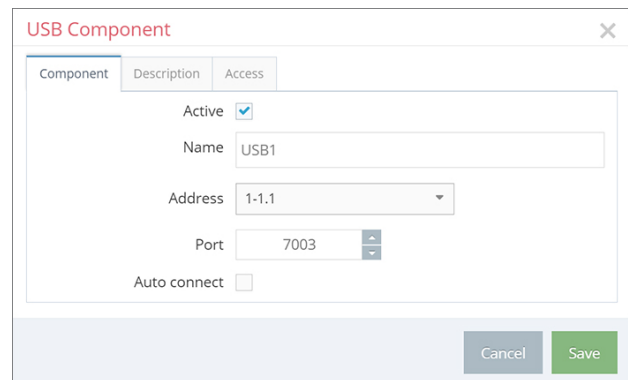
With a connected USB hub, the address for each USB port is incremented by 1 (Port1 = 1-1.1, Port2 = 1-1.2, Port..n = 1-1..n).

An address can not be changed.

Port The port can be freely selected. Note, however, that the used port is not already in use and is not blocked.

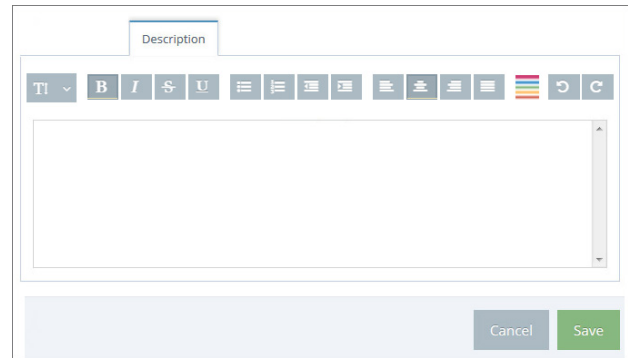
Auto connect If this function is activated, the connection to this USB port is produced by creating an active connection to the device automatically.

Disable this feature if the connection to the USB port should be made only when needed.



Description

A simple text editor is available for adding a detailed project description.



Access

NOTICE

The available functions depend on your purchased license. Information and details about your current license, see "System > In use/Licenses". More information about portal licenses, contact your reseller.

Access to ports is principally dependent on the general access settings in the "Interfaces" menu.

Access not restricted

Clients:

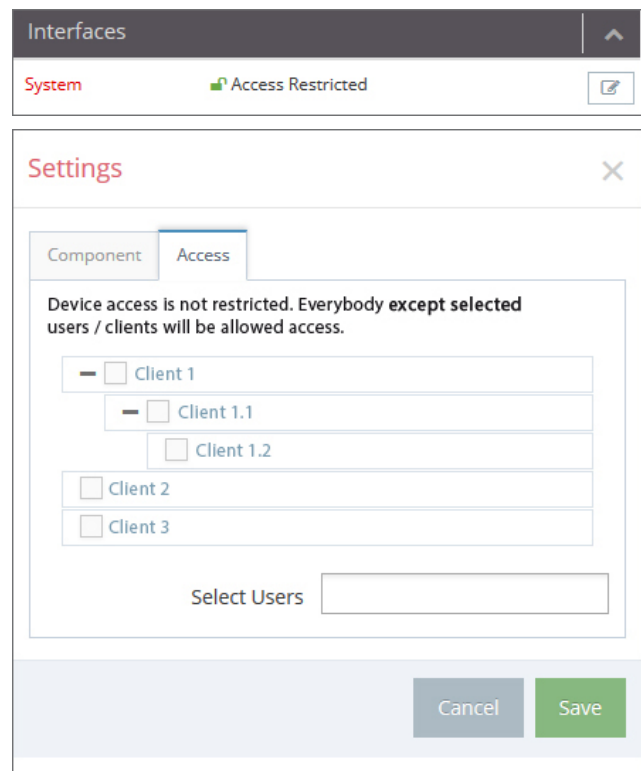
Here you select the clients that you want to exclude from access to this interface. The choice of a parent client has no influence on subordinate clients.

Select user:

Here you can select one or more users that are to be excluded from access to this interface.

NOTICE

A combination of clients and additional users is possible.



Access restricted

Use Device Settings:

When activating this checkbox, the access settings are taken from the device settings. The possible selections for individual clients and users are no longer available.

Clients:

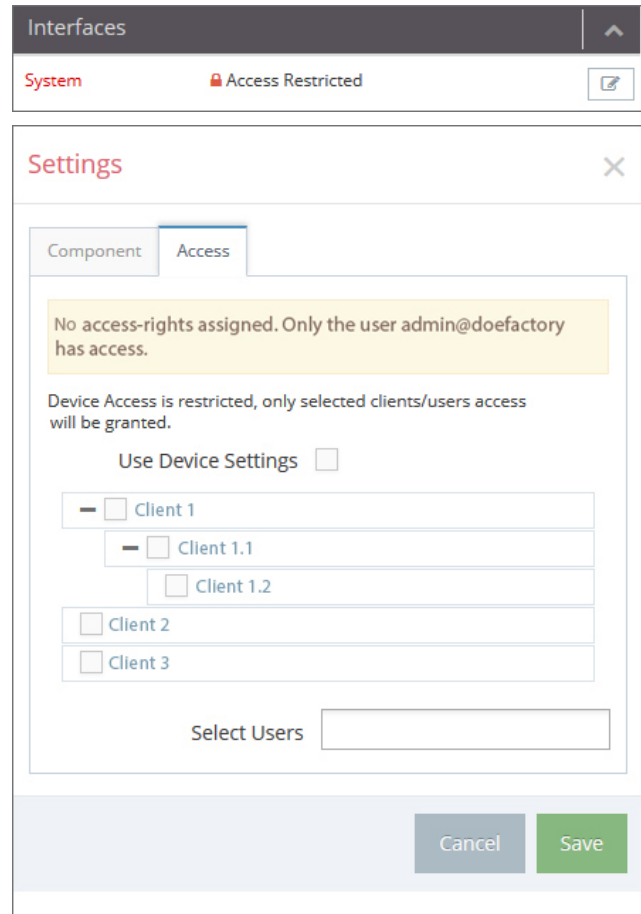
Here you select the clients that are exceptionally obtain access to this interface. The choice of a parent client has no influence on subordinate clients.

Select users:

Here you can select one or more users who are of exception obtain access to this interface.

NOTICE

A combination of clients and additional users is possible.



Interfaces

System Access Restricted

Settings

Component Access

No access-rights assigned. Only the user admin@doefactory has access.

Device Access is restricted, only selected clients/users access will be granted.

Use Device Settings

- Client 1
 - Client 1.1
 - Client 1.2
- Client 2
- Client 3

Select Users

Cancel Save

6 Connecting to the USB device

Navigation: Dashboard > *GamaRouter (selected device)*

The connection to the USB device / USB port can be done in two ways:

- a. **Automatic connection establishment** - by activating the checkbox "Auto connect" in the respective component setting.

Navigation: Administration > Projects > *Project Gama (selected project)* > *GamaRouter (selected device)* > Interfaces > USB > *USB1 (selected component)*

- b. **Establishing a manual connection**

⇒ Over the USB over IP menu in the **mbDIALUP**

⇒ or direct by clicking on the component in the device overview.

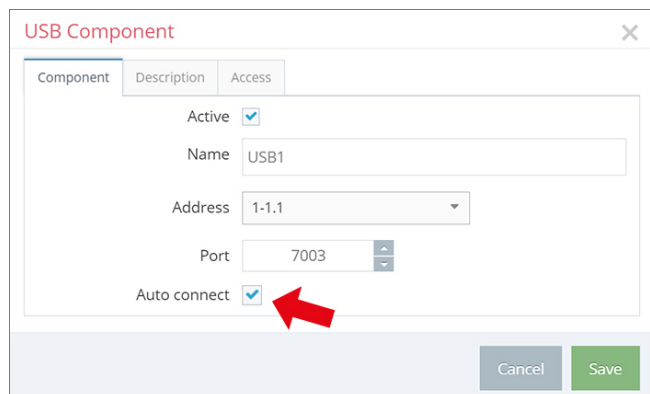
Navigation: Dashboard > *GamaRouter (selected device)*

Conditions:

- The **mbNET** has an active connection via **mbDIALUP** to the **RSP mbCONNECT24**.
- The USB device, which to be achieved, is connected to the USB port of **mbNET**.
- The USB device driver for this device is installed on the **mbDIALUP** PC.

6.1 Automatic connection establishment

If "Auto connect" feature is enabled in the component settings, the connection will be established automatically to this USB port after an active connection is established to the **mbNET**.



The screenshot shows the 'USB Component' configuration window. It has a title bar with 'USB Component' and a close button. Below the title bar is a table with columns 'Component', 'Description', and 'Access'. The main area contains the following settings:

- Active:
- Name: USB1
- Address: 1-1.1
- Port: 7003
- Auto connect: (highlighted with a red arrow)

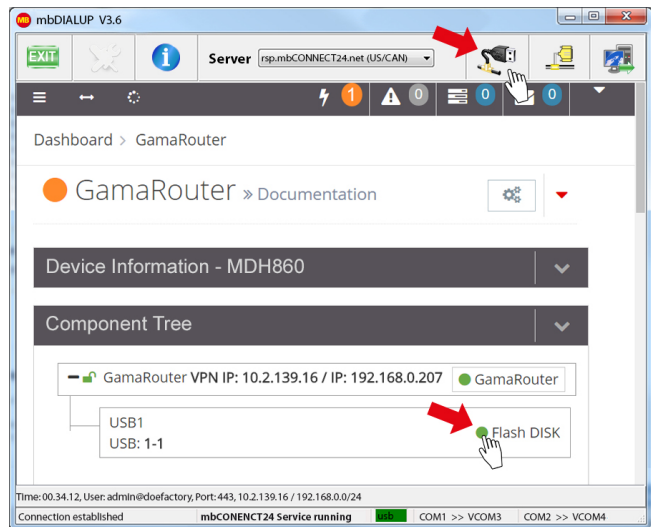
At the bottom right, there are 'Cancel' and 'Save' buttons.

NOTICE

If the connection is established, depending on the device used at the USB interface it can last up to several minutes until the driver is recognized by Windows or is activated (this is usually heard as a classic sound for events in Windows). In case of a USB memory device, normally the Windows File Explorer opens.

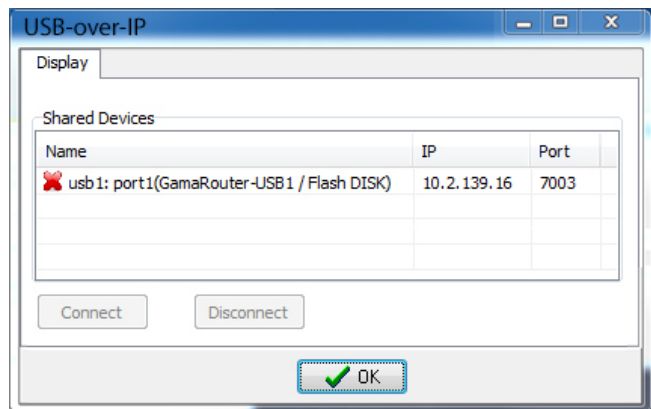
6.2 Establishing a manual connection

A manually established connection to the USB device can be done in two ways:

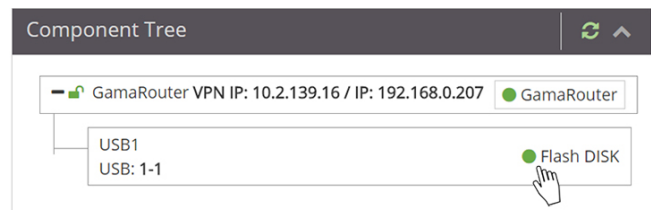


a) Over the USB over IP menu in the **mbDIALUP** 

Therefore, click on the appropriate connection and then click "Connect".



b) Direct by clicking on the component in the device overview.



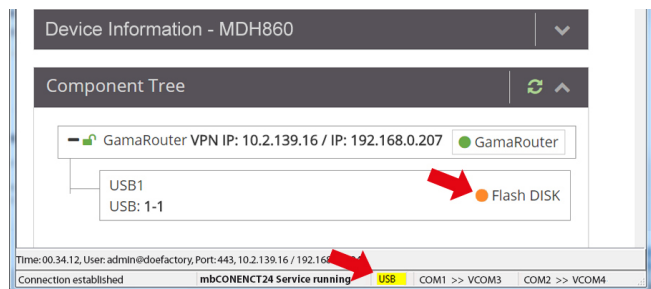
NOTICE

If the connection is established, depending on the device used at the USB interface it can last up to several minutes until the driver recognized by Windows or is activated (this is usually heard on classic sound for events of Windows). In case of a USB memory device, normally the Windows File Explorer opens.

7 Established connection

An established connection is indicated

- by the orange LED in the component overview (a flashing LED indicates that establishing the connection is not finished yet)
- **and** the yellow marked "usb" connection status in the footer of the *mbDIALUP*.



Meaning of color codes for the connection status

usb

No USB port is active

usb

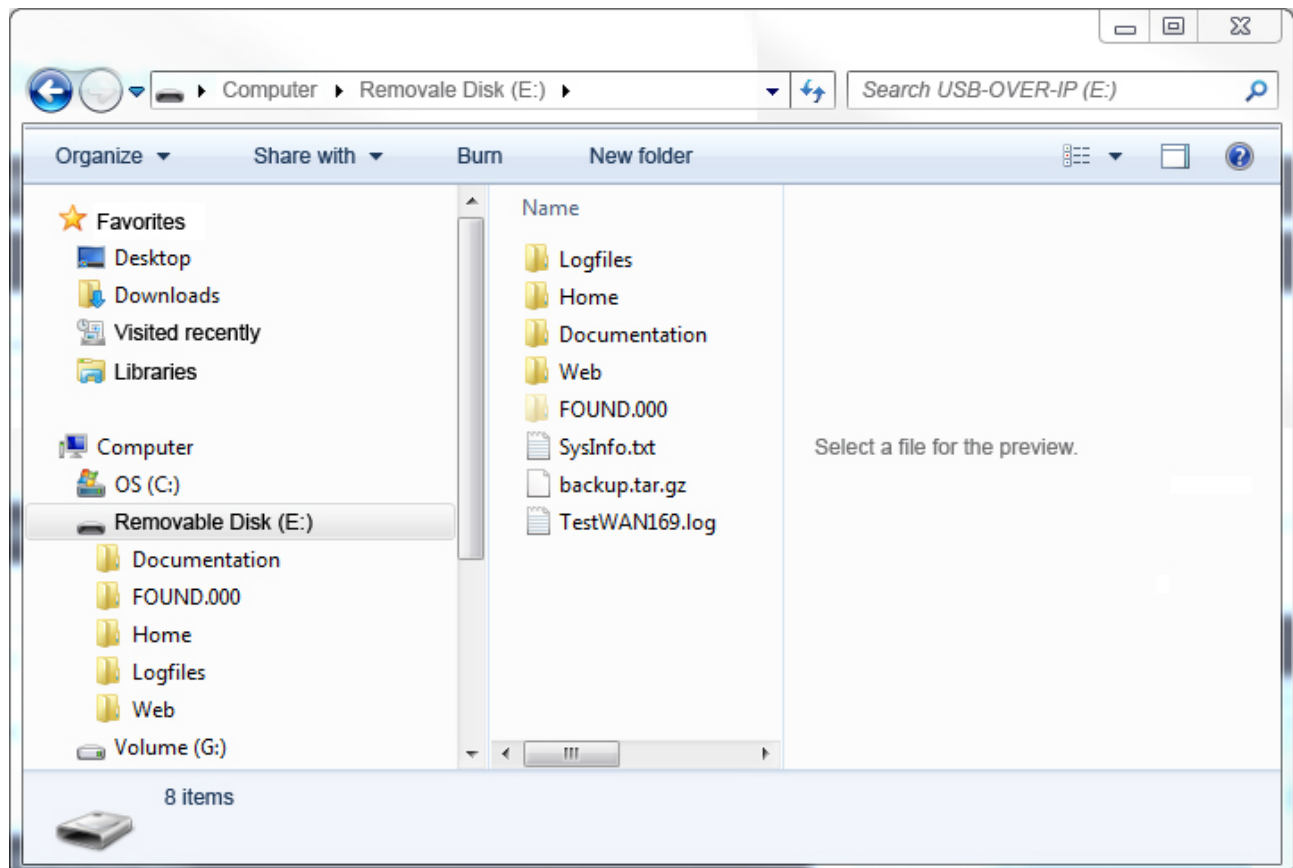
The USB port of at least one *mbNET* is activated, but not yet connected to the *mbDIALUP*.

usb

The USB port of at least one *mbNET* is activated and connected to the *mbDIALUP*.

NOTICE

If the connection is established, depending on the device used at the USB interface it can last up to several minutes until the driver recognized by Windows or is activated (this is usually heard on classic sound for events of Windows). In case of a USB memory device, normally the Windows File Explorer opens.



8 Disconnect from the USB device

Navigation: Dashboard > *GamaRouter (selected device)*

In order to disconnect

click again on the component in the device overview.

Or open the USB over IP menu in of the

mbDIALUP 

Here you click on the appropriate connection and then click "Disconnect".

