MB CONNECTLINE

8.002.704.00.00 - 22.03.2019

mbNET.rokey

RKH 210, RKH 216, RKH 235, RKH 259, from HW03

CE

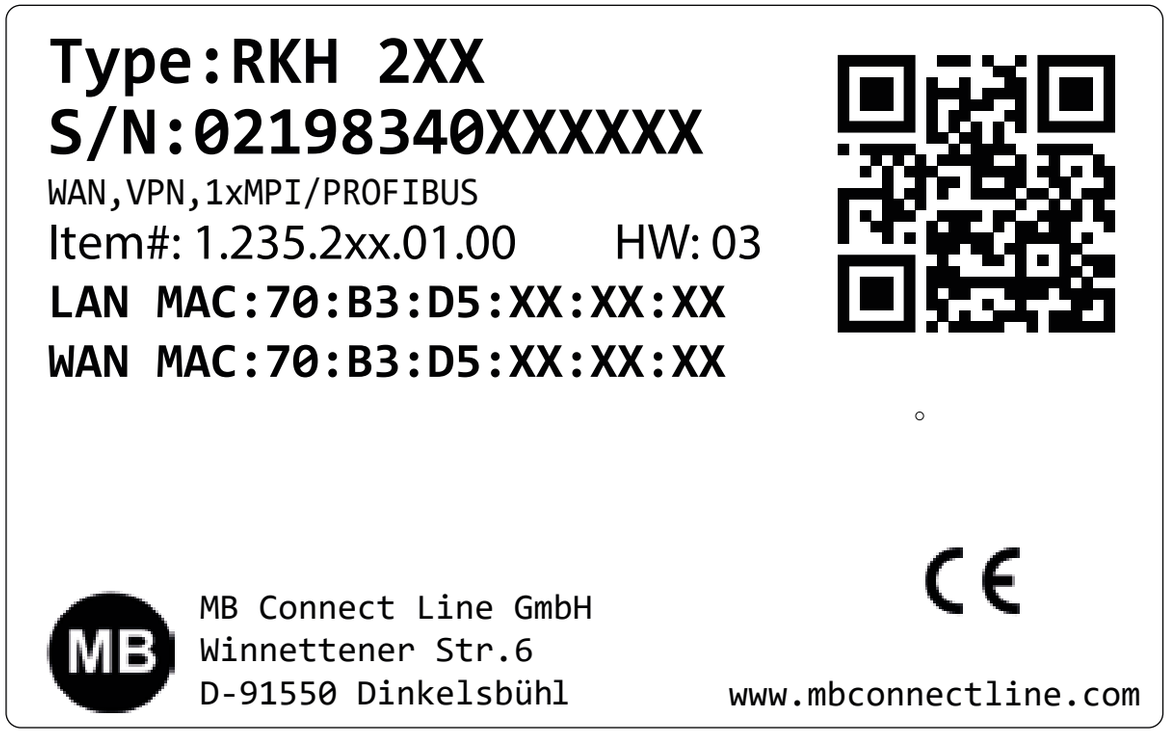
Quick start-up guide en (V 1.0 March 22nd, 2019)

Table of contents

1 IMPORTANT! - Read This

This Quick Start Guide provides a quick overview of selected operating procedures and functions of the mbNET industrial router (MDH800 – MDH859) from hardware version **HW02***.
However, the detailed manual with the important Notes and safety instructions can NOT be replaced by this document.
Read the following instructions carefully and keep them in a safe. Latest information, updates and the complete Manual, visit our website at www.mbconnectline.com.

* see device nameplate



2 Using Open Source Software

2.1 General Information

Our products contain, amongst others, so-called open-source software that is provided by third parties and has been published for free public use. The open-source software is subject to special open-source software licenses and the copyright of third parties. Basically, each customer can use the open-source soft-ware freely in compliance with the licensing terms of the respective producers. The rights of the customer to use the open-source software beyond the purpose of our products are regulated in detail by the respective concerned open-source software licenses. The customer use the open-source software freely, as provided in the respective effective license, beyond the purpose that the open-source software gets in our products. In case there is a contradiction between the licensing terms for one of our products and the respective open-source software license, the respective relevant open-source software license takes priority over our licensing terms, as far as the respective open-source software is concerned by this.

The use of the used open-source software is possible free of charge. We do not demand usage fees or any comparable fees for the use of the open-source software contained in our products. The use of the open-source software in our products by the customer is not part of the earnings we achieve with the contractual compensation.

All open-source software programs contained in our products can be taken from the available list. The most important open-source software licenses are listed in the Licenses section at the end of this publication.

As far as programs contained in our products are subject to the GNU General Public License (GPL), GNU Lesser General Public License (LGPL), the Berkeley Software Distribution (BSD), the Massachusetts Institute of Technology (MIT) or another open-source software license, which regulates that the source code must be made available, and if this software is not already delivered in source code on a data carrier with our product, we will send you this at any time upon request. If it is required to send this on a data carrier, the sending will be made against pay-ment of a cost compensation of € 35,00. Our offer to send the source code upon request ceases automatically 3 years after delivery of our product to the customer.

Requests must be directed to the following address, if possible under specification of the serial number:

MB CONNECT LINE GMBH
Fernwartungssysteme
Winnettener Str. 6
91550 Dinkelsbühl
GERMANY

Tel. +49 (0) 98 51 / 58 25 29 0
Fax +49 (0) 98 51 / 58 25 29 99
info@mbconnectline.com

2.2 Special Liability Regulations

We do not assume any warranty or liability, if the open-source software programs contained in our product are used by the customer in a manner that does not com-ply any more with the purpose of the contract, which is the basis of the acquisition of our product. This concerns in particular any use of the open-source software programs outside of our product. The warranty and liability regulations that are pro-vided by the respective effective open-source software license for the respective open-source software as listed in the following are effective for the use of the open-source software beyond the purpose of the contract. In particular, we are not liable, if the open-source software in our product or the complete software configu-ration in our product is changed. The warranty granted with the contract, which is the basis of the acquisition of our product, is only effective for the unchanged open-source software and the unchanged software configuration in our product.

Used Open-Source Software

For a list of the open-source software used in this product see

https://www.mbconnectline.com/downloads/open-source-software-licenses.txt

3 Included in delivery

Please check that your delivery is complete:

All device types

1 x Industrial router ***mbNET.rokey***
Includes two keys
(1 pc. red, 1 pc black)
Fig. representative

1 x Ethernet cabel, 1:1, 2 m
Art.-No.: 8.002.201.00.00

1 x Quick start-up guide
Art.-No.: 8.002.704.00.00

Types whith GSM modem

(RKH 259 EU; RKH 259 AT&T)

1 x GSM antenna
Art.-No.: 8.002.101.00.00

Should any of these parts are missing or damaged, please contact the following address:

MB connect line GmbH
Winnettener Str. 6
D-91550 Dinkelsbühl

Tel.: +49 (0)9851 58 25 29-0
Fax: +49 (0)9851 58 25 29-99
www.mbconnectline.com

4 Performance characteristics

- The router can be fully configured via
  - the portal mbCONNECT24, mymbCONNECT24.mini, -.midi, -.maxi, -.hosted, -.virtual
  - or using the web interface via locally connected computer, or remotely.
- Deployable worldwide using GSM modem connections, plus access via LAN, WLAN and Internet.
- Secure connection using an integrated firewall with IP filter, NAT and port forwarding, VPN with AES, DES/3DES/DESX, Blowfish or RC2 encryption, and authentication via pre-shared key (PSK), static key or certificate (X.509).
- Alarmmanagement:
  - Fully configurable digital inputs and outputs, and the ability to send via email, SMS or Internet dial-up.
  - Via remote output switching in the event of a fault or with an active Internet connection.
- Integrated server secures all settings, keys and certificates and allows data sharing within the network via connected USB flash or hard drive.
- Variable RS232, RS485, RS422 RS interface or optional MPI/PROFIBUS for connecting control systems.

5 Safety instructions

- Only qualified specialist personnel may install, start up, and operate the router. The national safety and accident prevention regulations must be observed.
- The router is built to the latest technological standards and recognized safety standards (see Declaration of Conformity).
- The router is only intended for operation in the control cabinet and with SELV according to IEC 60950/EN 60950/VDE 0805.
- The router may only be connected to devices, which meet the requirements of EN 60950.
- The router is for indoor use only.
- Never open the router chassis. Unauthorized opening and improper repair can pose a danger to the user. Unauthorized modifications are not covered by the manufacturer’s warranty.

Opening up the device voids the warranty!

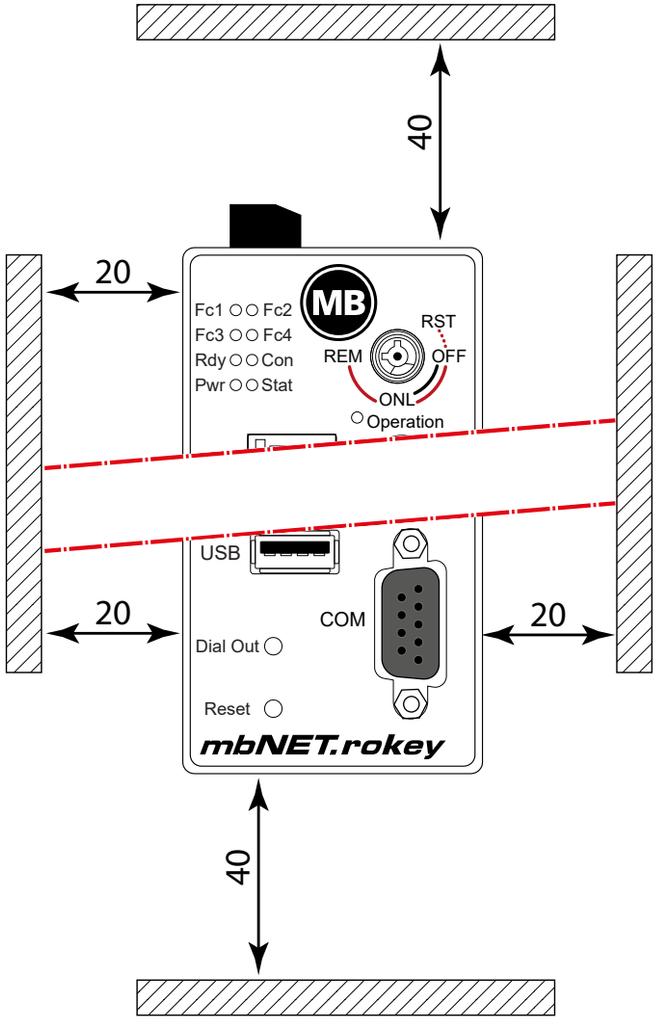
NOTE:
elctrostatic discharge!
Observe the necessary safety precautions when handling components that are vulnerable to electrostatic discharge (EN 61340-5-1 and IEC 61340-5-1)!

The mbNET routers are maintenance-free units.
If an mbNET router have damage or malfunction, the device must be immediately taken out of service and secured against inadvertent operation.

6 Router installation

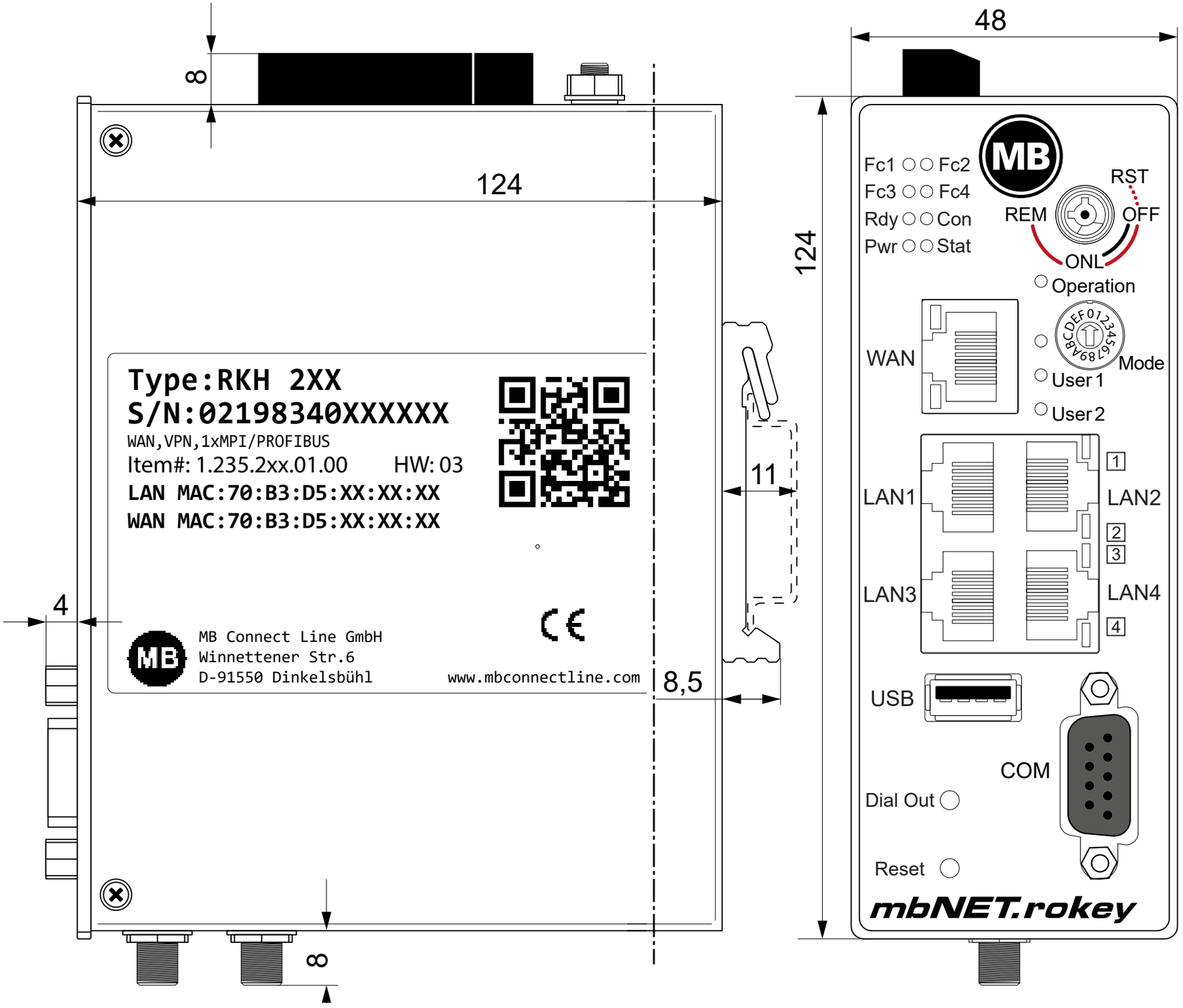
6.1 Installation position / minimum distances

The mbNET router is for mounting on DIN rails (according to DIN EN 50 022) designed and intended for the control cabinet installation.
Installation and mounting must be in accordance with VDE 0100 / IEC 364. The router may only be mounted in a vertical position as described.

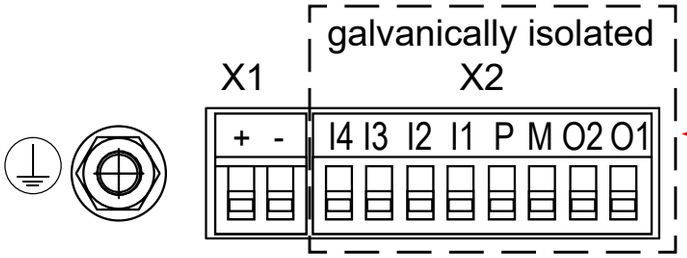


NOTICE
Non-compliance with the minimum distances can destroy the device at high ambient temperatures!

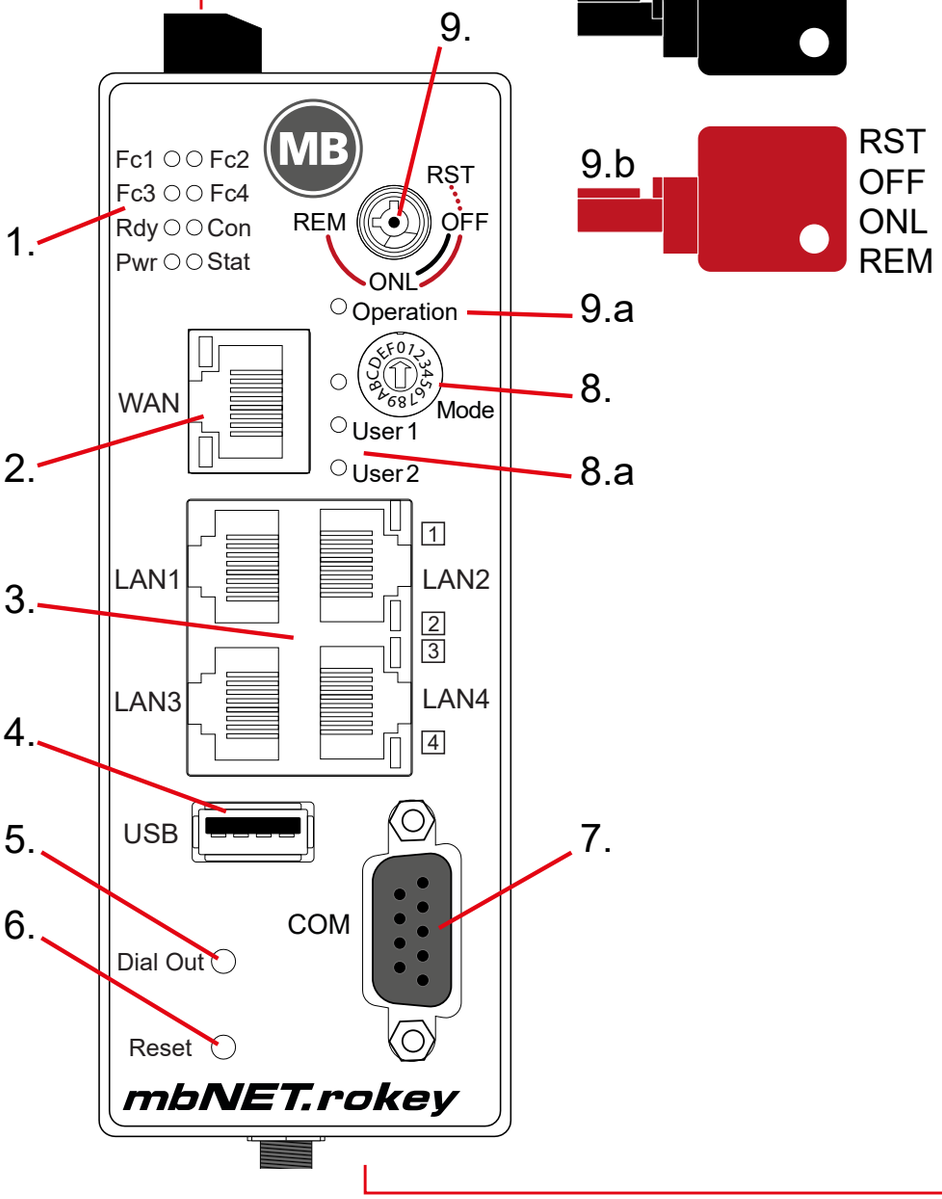
6.2 Device dimensions



7 Displays, controls and connections

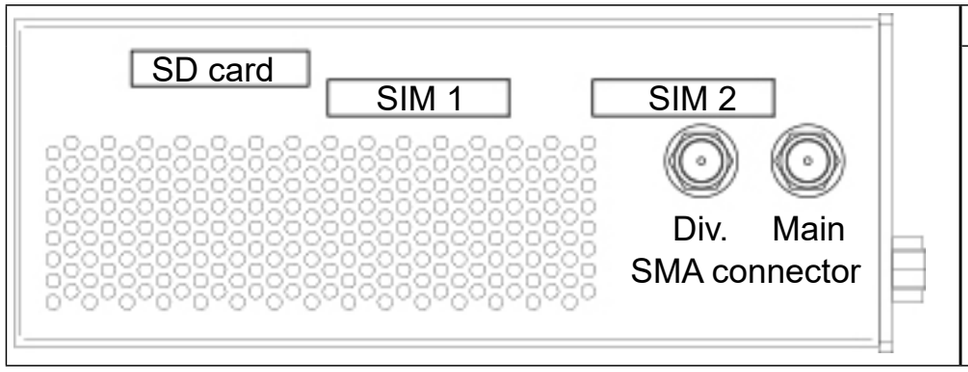


X1	+	Power supply connection 10-30V DC
	–	0V DC connection
X2	4	Digital input I4 (10-30V)
	3	Digital input I3 (10-30V)
	2	Digital input I2 (10-30V)
	1	Digital input I1 (10-30V)
	P	Fuse-protection 10-30V DC
	M	0V DC connection
	O2	Digital output O2
	O1	Digital output O1

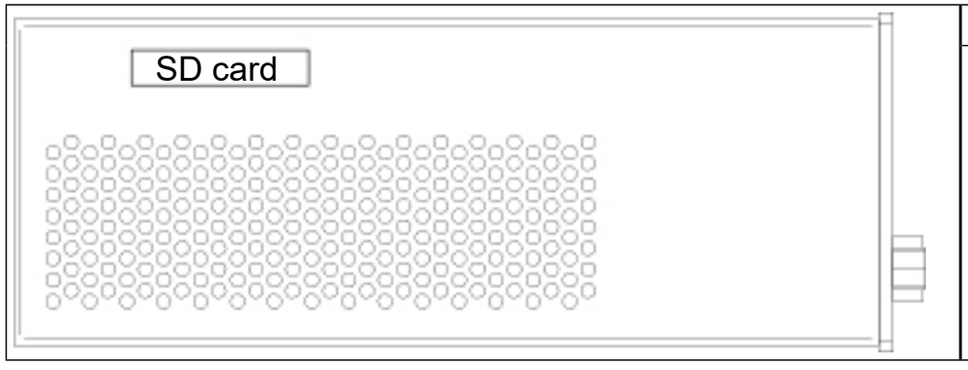


1. Function / status LEDs
2. WAN interface
3. LAN interfaces 1 – 4
4. USB Host 2.0
5. Dial Out button
6. Reset button
7. Serial interface COM
8. Coding switch hexadecimal
8.a Function / status LEDs for coding switch
9. Key switch
9.a Function / status LEDs for key switch
9.b **Key (red) for switch positions OFF, ONL, RST *, REM**
9.c Key (black) for switch positions **OFF**, **ONL**

* The switch position RST has just a tactile function.



Type	Equipment features
RKH 259	1 x SD card slot 2 x SIM card slot 2 x SMA connector for GSM antenna (MIMO)



Type	Equipment features
RKH 210 RKH 216 RKH 235	1 x SD card slot

Function / status LEDs

LED	Colour	Status	Description
Fc1	**orange**	LED off	No receive data to COM1
		LED flashes	Data received at COM1
	green	LED off	No data transmission to COM1
		LED flashes	Data transmission to COM1
Fc2	**orange**	LED off	No receive data to COM2
		LED flashes	Data received at COM2
	green	LED off	No data transmission to COM2
		LED flashes	Data transmission to COM2
Fc3	**orange**	LED off	GSM devices: no reception
		LED on	GSM devices: **flashing**: 1Hz == 20% - 50%
	green	LED off	GSM devices: reception depending on Fc4
		LED on	GSM devices: **lights up** (+ Fc4 green): 71 - 100%
Fc4	**orange**	LED off	GSM devices: no reception
		LED on	GSM Geräte: **blinkt** (+Fc3 Orange): 1Hz == 51 % – 70 %
		LED off	GSM Geräte: Empfang anhängig von Fc3
		LED on	GSM Geräte: **leuchtet** (+Fc3 Green): 71 – 100 %
	green	LED flashes	During the activation phase of ***mbEDGE*** the LED Fc4 flashes at a frequency of **3 Hz** (fast).
			After completion of activation at a frequency of **1.5 Hz** (slow).
Rdy	**orange**	LED off	Waiting for Bootloader or Signature successfully checked.
		LED on	Check Signature, loads kernel
	green	LED off	Waiting for kernel
		LED flashes	Loads rootFs
		LED on	Boot process completed device can be used.

LED	Colour	Status	Description
Con	**orange**	LED off	No VPN connection started
		LED on	Internet connection established + VPN connection started
		LED flashes	Flashing frequency 1.5 Hz: VPN connection established.
	green	LED off	No Internet connection
		LED flashes	Flashing frequency 3 Hz: Internet connection is being made.
		LED on	Internet connection is established.
Pwr	**green**	LED off	The power supply to the router is interrupted / the router is not connected to the power supply.
		LED on	Power supply is connected to the terminal block and switched on.
Stat	**red**	LED on	Found fault
		LED flashes	Error in the error memory
	green	LED on	In connection with the portal mbCONNECT24: User connected to device (mbNET)
Operation	**red**	LED on	For key position: **RST** and **REM**
	green	LED on	For key position: **OFF** and **ONL**
User 1	-	-	Currently without function.
User 2	-	-	Currently without function.

Interfaces and buttons

Label	Status	Description
WAN	–	Router WAN port (customer network, DSL modem ...)
WAN-LED	LED green	lights = Network connection available
	LED orange	flashing = Network data transfer active

Interfaces and buttons

Label	Status	Description
LAN 1 - 4	–	Local network ports (e.g. machine network)
LAN-LED 1- 4 (Dual LED)	LED green	lights = Network connection available
	LED orange	flashing = Network data transfer active
USB	–	Portable USB drive port
COM	–	COM port is for either connecting to devices with MPI interface or to devices with RS232 / RS485, RS422 interface. This de-pends on your device type.
Dial Out	–	This button establishes an Internet or VPN connection.
Reset	–	Pushing this button restarts the router (so-called cold start).

Key switch

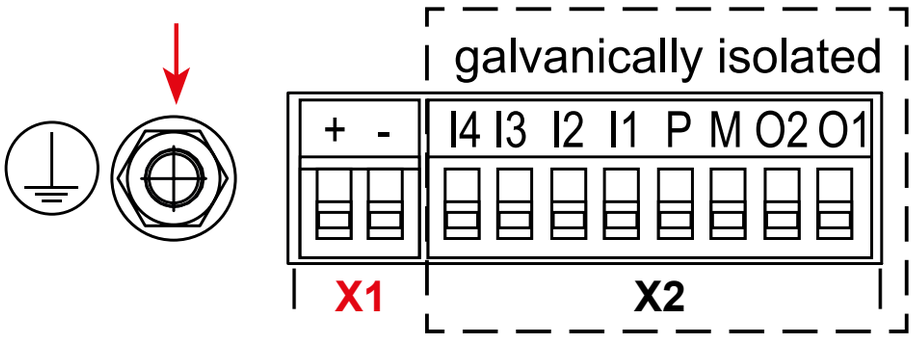
Switch position	Key color	Description
RST	red	Loading the factory settings
OFF	red / black	It is **not** possible to establish a VPN connection. Modem devices can **not** connect to the Internet.
ONL	red	It **can** be established a VPN connection. With modem devices an Internet connection **can** be established.
REM	red	It **can** be established a VPN connection. Including routing to the LAN side of the router. With modem devices an Internet connection **can** be established. Including routing to the LAN side of the router.

8 First time operation

Connect, depending on device type, an antenna, and insert a SIM card.

Before connecting the router to a network or PC, first ensure that it is properly connected to a power supply, otherwise it may cause damage to other equipment.

- Connect equipotential bonding to the grounding lug on the router's top panel.



- Connect the (10-30V DC) power supply to the **X1** terminal of the router.

  Make sure that the polarity is correct.

- After switching on the supply voltage the Pwr LED lights up and the device performs a system check.
  - After a total of about 90 sec., both LED Pwr and LED Rdy light up.

The ***mbNET*** is now ready for operation.

9 Initial configuration

Requirements:

- You have a user account on the **R**emote **S**ervice **P**ortal ***mbCONNECT24*** V 2.x

If you do not have a user account on ***mbCONNECT24***, please contact your system administrator or authorized sales partner.
For more information about ***mbCONNECT24*** see **www.mbconnectline.com**

- Windows PC with remote client software ***mbDIALUP*** * installed .
  With ***mbDIALUP*** you establish a secure VPN connection to ***mbCONNECT24***.

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

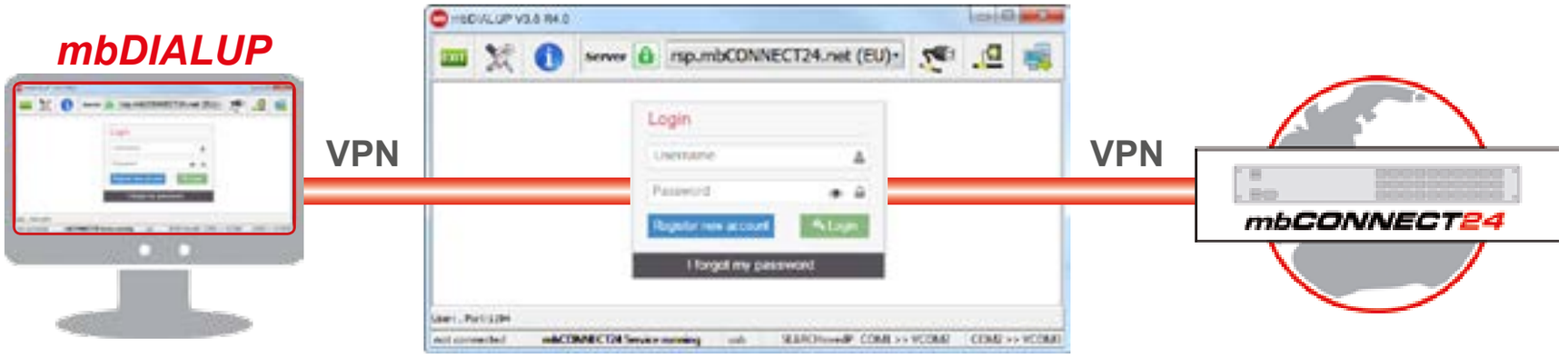
Generally following procedure applies:

- Add the mbNET in the portal ***mbCONNECT24*** as a new device.
- Enter the necessary basic data, so that the device can connect to the portal (for example, device name, network settings, connection information, etc.).
- Transfer the device configuration from the portal into the ***mbNET***.
- After the ***mbNET*** has been connected to the portal, it can be configured completely there.

More information about configuring devices, see the ***mbNET*** Manual (download under www.mbconnectline.com) or in the ***mbCONNECT24*** online help.

9.1 Initial configuration via RSP mbCONNECT24 V 2.x

9.1.1 Login mbCONNECT24



ADVICE: Change unconditionally and without delay the default login information!
Navigation: Administration > Users

9.1.2 Creating a project

Navigation: Administration > Projects

In the project overview, click the plus  and assign the next screen a Project **Name** (all other inputs / information can be made up later).

9.1.3 Create a device

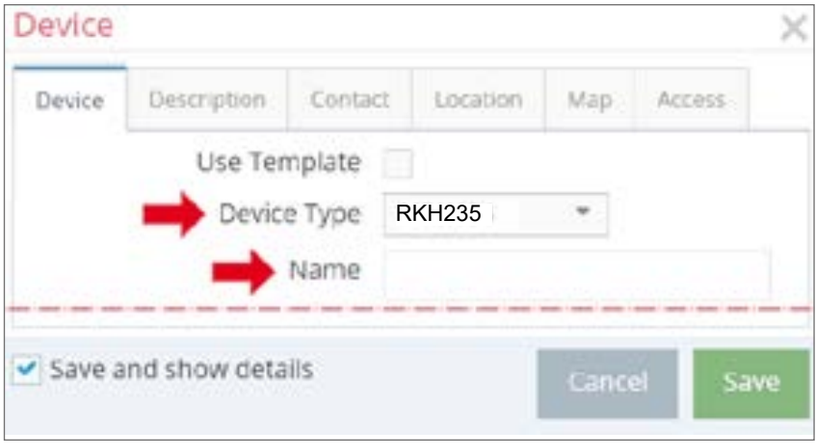
Navigation: Administration > Projects > *Project Alpha (selected project)*

In the selected project, click the plus  and select “Create new device“.

For the basic configuration, you only need to select your “Device Type“ and enter a unique device „Name“.

You can create your own name for the Device.

Following are allowed:
Numbers: 0 to 9, A to Z, a to z (avoid blanks)
Letters: A to Z and a to z
Characters: Point, hyphens and underscores



After saving your settings you will be automatically redirected to the device settings.

For the initial configuration here the “**Interfaces**“ menu is relevant.

9.1.4 Configuring the device (connection data)

Navigation: Administration > Projects > *Project Alpha (selected project)* > *NewDecice (selected device)*

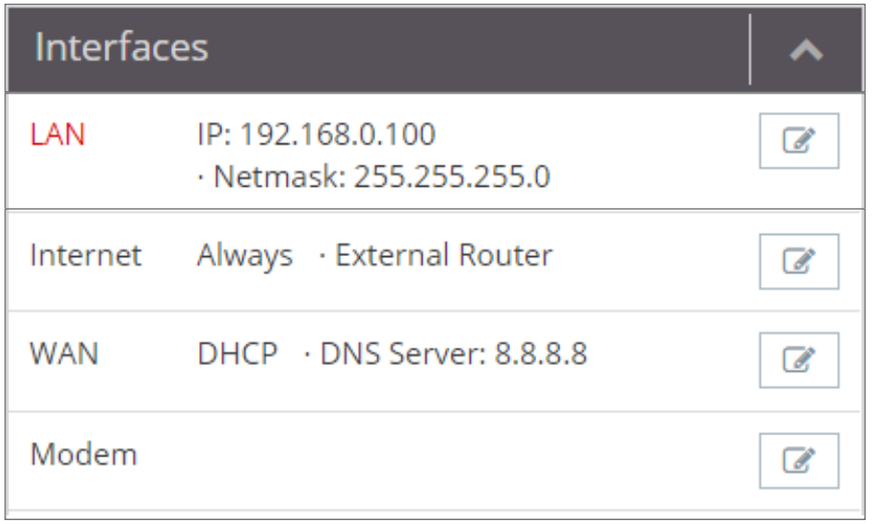
Here the following menus are relevant for the initial configuration:

- **LAN** (all devices)
  Make sure that the LAN IP and the WAN IP are in different address ranges.

- **Internet** (all devices)
  *For the initial configuration, it is advisable to select "**Always**" in the selection field "**Connect to Server at**". Only in this setting, the device automatically tries to establish a connection to the portal.*

- **WAN** (devices with WAN interface)
  Make sure that the WAN IP and the LAN IP are in different address ranges.

- **Modem** (devices with 4G modem)

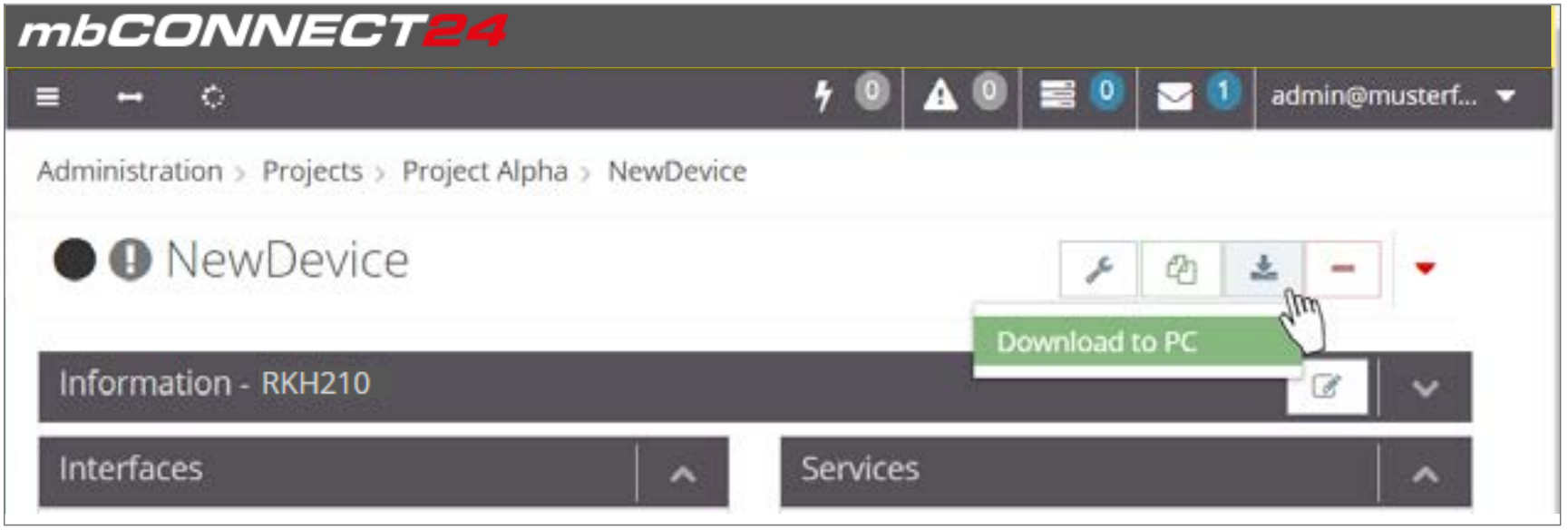


Click the edit icon  to edit the settings of the respective sub-menus.

9.1.5 Creating a configuration

Navigation: Administration > Projects > *Project Alpha (selected project)* > *NewDecice (selected device)*

After entering all necessary data, you must transfer the configuration to the mbNET. Therefor connect an USB stick to your configuration PC (*the USB stick must have the file format FAT!*).



Click the Sync icon  and select "**Download to PC**".

The configuration file "mbconnect24.mbn" can now be downloaded to the USB stick.

IMPORTANT: The downloaded configuration file "mbconnect24.mbn" must not be renamed and must be in the root directory of the USB stick!

9.1.6 Transfer configuration to the mbNET

When the mbNET is ready to operate, insert the USB stick into the USB port of the device.

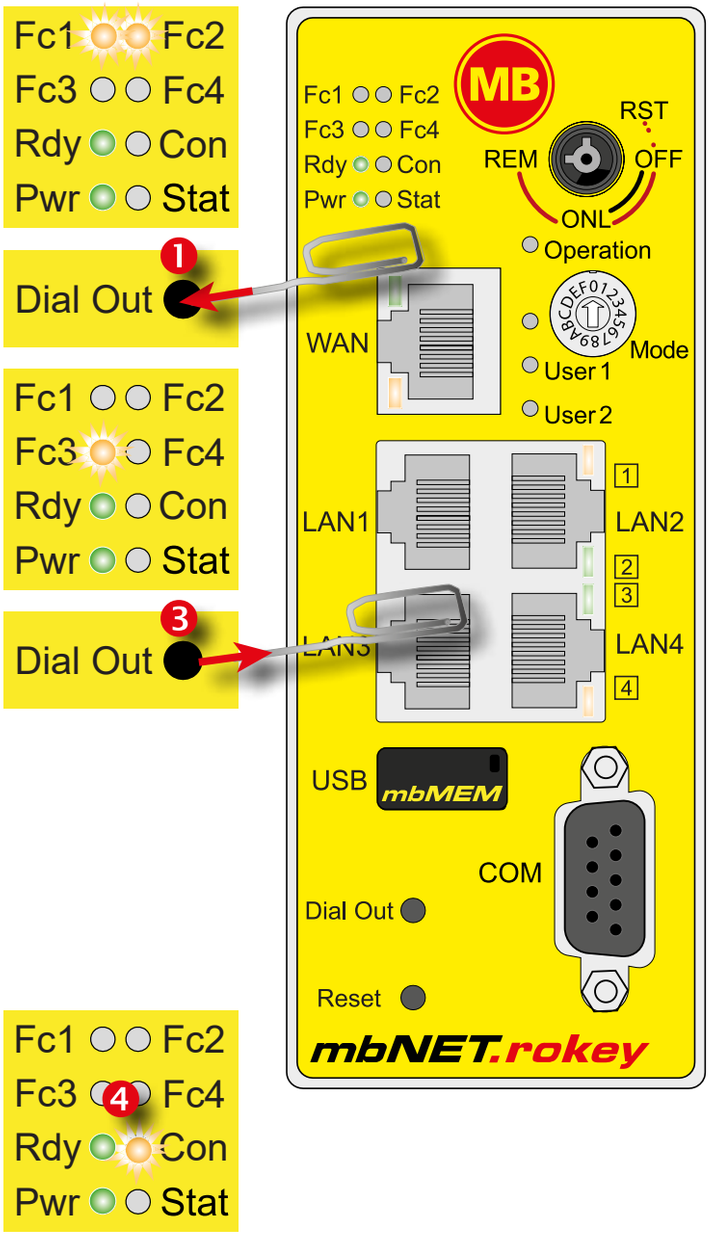
As soon the ***mbNET*** recognizes the configuration file, both LED **Fc1** + LED **Fc2** are **flashing**.

Now press and hold down the **Dial Out** button ❶ until **LED Fc3 flashes** ❷.

Release the **Dial Out** button ❸.

The settings from ***mbCONNECT24*** are now automatically copied to the ***mbNET*** and the device reboots.

If the ***mbNET*** is able to connect to the Internet (e.g. network, telephone cable, SIM card, antennae installed), the device will subsequently log in to your account.
This is displayed by the flashing LED Con ❹.



If the flashing frequency of the LED Con is 3 Hz, the device is attempting to log into the portal. If the login has been successful, the flashing frequency is reduced to 1.5 Hz.

10 Access the web interface of the mbNET

On the web interface of the ***mbNET*** a Status page and a Diagnostic page is available.

On the **Status** page, five steps with additional information are displayed, which must be run through when connecting the ***mbNET*** with the portal.
The **Diagnostic** page helps you in case of a failed connection establishment in trobleshooting.

Requirements:

- The configuration PC and the ***mbNET*** must be in the same IP address range.
  Depending on the LAN IP that you assigned to the device in the portal, you may need to assign the configuration PC to the same address range.
  If you assigned the ***mbNET*** e.g. the LAN IP 192.168.2.200, you need the configuration PC to assign the same address range (192.168.2.X). This applies to both the IP address and subnet mask.

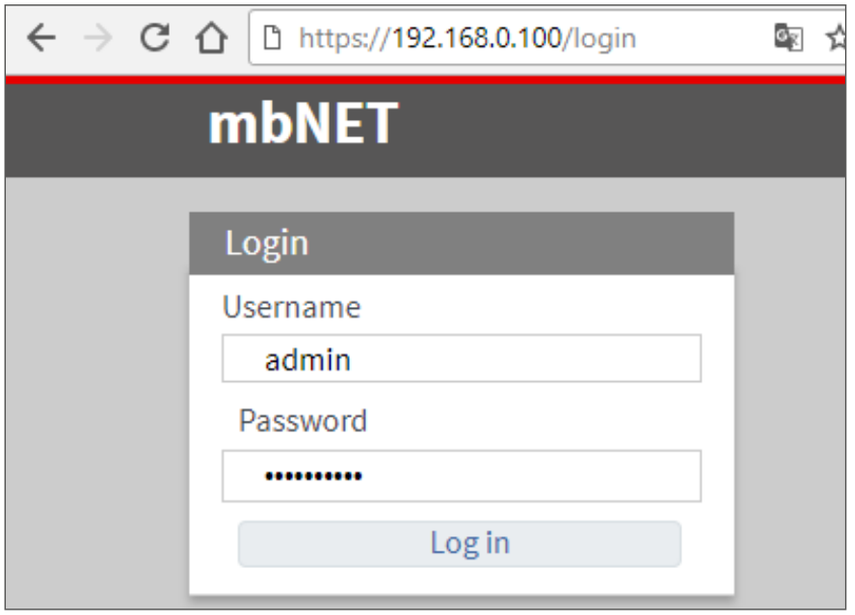
- The ***mbNET*** must be accessible via the LAN interface of the configuration PC.

Start a browser and enter the LAN IP you have assigned in the portal to the ***mbNET***.

To log on to ***mbNET*** enter the following data:

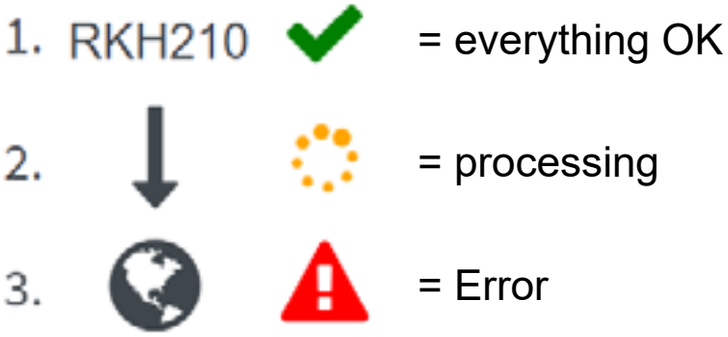
Username: admin

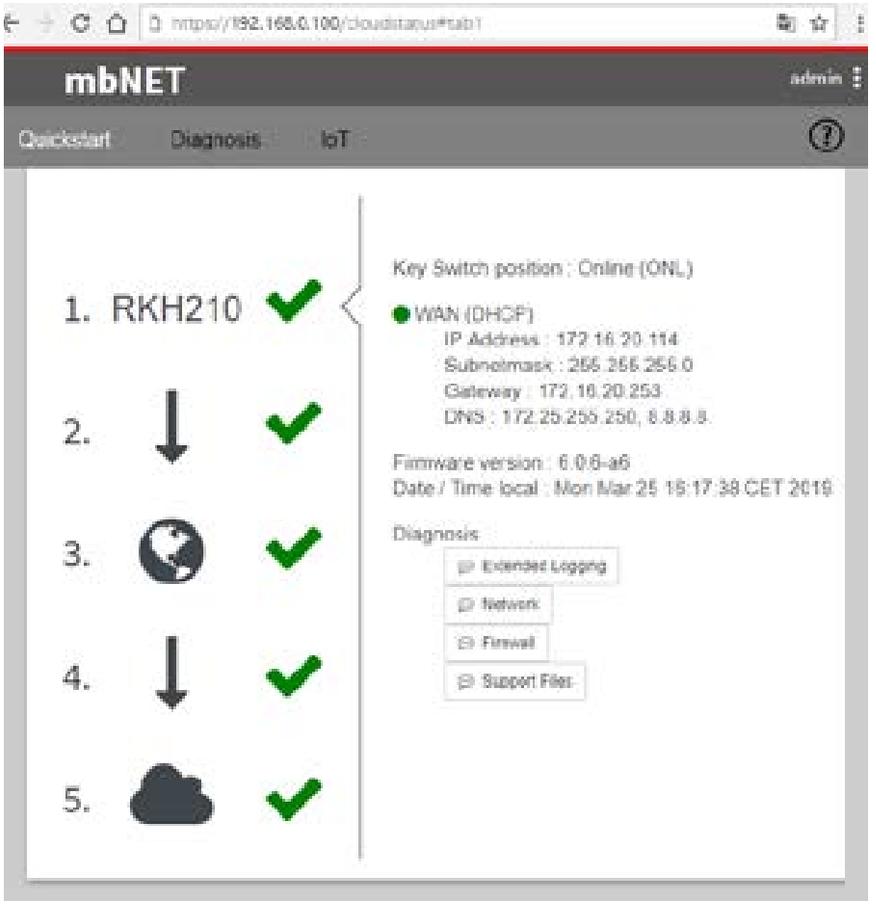
Password: The default password is located on the back of the device.



10.1 Quick Start

After a successful login you will see in the Quick Start menu the device state.
Here, five steps are displayed that are required so that the device can connect to the portal.

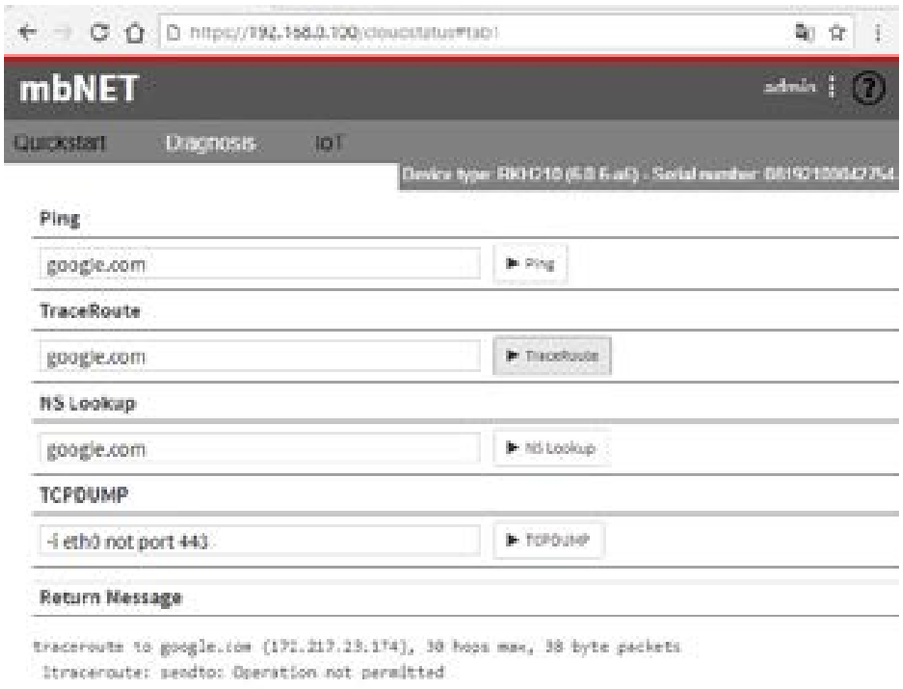




Click on the icon to the right of each progress to get details / information about this step.
If all five steps have been completed successfully, the ***mbNET*** is connected to the portal ***mbCONNECT24***.

10.2 Diagnostics

In case of a failed connection setup, the Diagnostic page supports for trobleshooting. The respective result of the individual, independent functions / commands you need, inter alia in case of support.



11 Factory settings on delivery

The ***mbNET*** is delivered with the following factory settings:

IP address	192.168.0.100
Subnet mask	255.255.255.0
Username	admin
Password	The default password is located on the back of the device.

ADVICE:
Change unconditionally and without delay the default login information!

12 Loading the factory settings

NOTICE

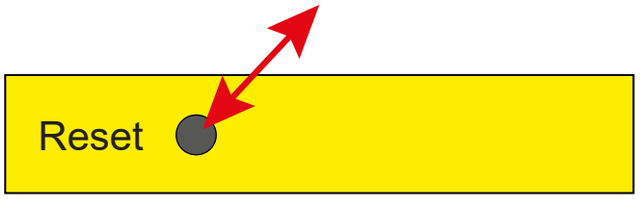
Before you configure the device to its factory settings, you should note the following:

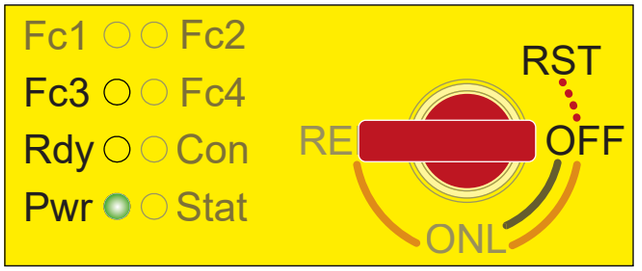
- Save your configuration first. After restoring the factory settings, all of your settings/ changes will be deleted.
- The IP address of the device is reset to the original IP address (192.168.0.100).
- You may also need to modify the network settings of the configuration PC accordingly.
- The device password is reset to its individual default password. The default password can be found on the back of the unit.
- No USB stick/USB storage medium should be connected to the device.

Execution:

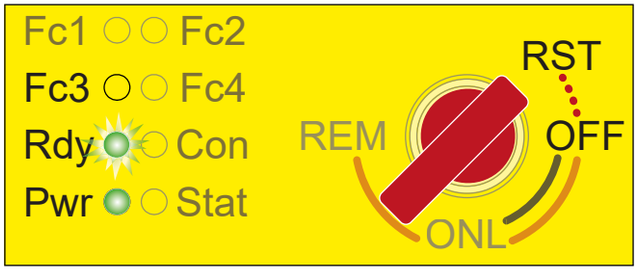
1. a) Switch on the mbNET **or**

   b) if the mbNET is ready for operation, press the Reset button.

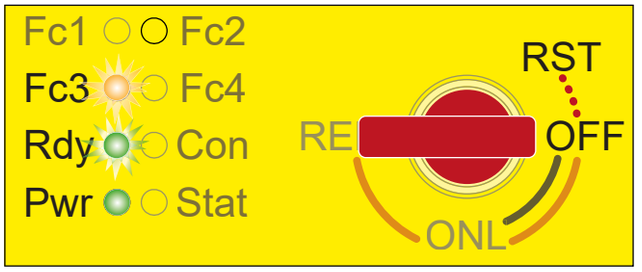




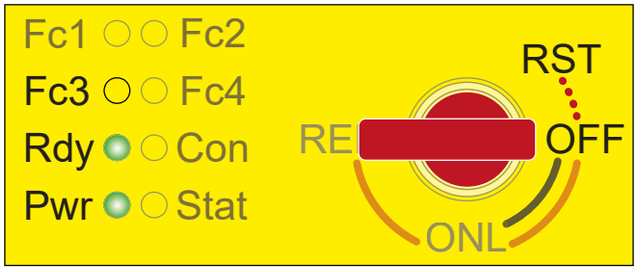
2. When the LED **Rdy flashes**, turn the key switch - with the red key - to the switch position **RST** and hold this key position.



3. When LED Fc3 is flashing (orange), release the key.



When both the **Pwr** and **Rdy** LEDs **light up**, the mbNET is reset to its „factory settings at the time of delivery" and can/must be reconfigured.



13 Technical Data

Performance data	
Voltage V (DC)	10 – 30 V DC (external Power Supply or other SELV Power Supply Source, rated 10-30V DC, max. 40A)
Power consumption	max. 1300 mA @ 24 V
IP protection class	IP 30*
Area of application	Dry environments
Operating temperature	-40 – +75 °C
Storage temperature	-40 – +85 °C
Humidity	0 – 95% (non condensing)
Dimensions (max.)	48 mm x 137 mm x 140 mm (W x D x H)
Weight (max.)	650 g
Housing / material	metal
Mounting	DIN rail mounting (based on DIN EN 50022)

* at full occupancy of all connections and interfaces Alternatively, unused interfaces can be covered with dust protection plugs.

I/Os and standard interfaces	
Digital inputs	4 pcs. digital inputs, 10–30 VDC (galv. isolated), (Low 0-3,2 VDC, High 8-30 VDC)
Digital outputs	2 pcs. digital outputs, 10 – 30 V DC (galvanically isolated), max. 1,5 A / output
LAN interfaces	4 pcs. 10/100 Mbit/s full and half duplex operation, autodetection patch cable / crossover cable
USB interface	USB Host 2.0
SD card slot	For SD cards (32,0 mm x 24,0 mm x 2,1 mm) max. 64 GB; Format FAT / FAT32, or for holding mbEDGE *.

** ***mbEDGE*** is a software kit that extends the mbNET and mbNET.rokey industrial routers to an IOT gateway.

14 Technical Support

For technical support (FAQ, troubleshooting, most recent information, etc.)
see our website www.mbconnectline.com.
For support enquiries, always give the serial number of your router.

E-mail: support@mbconnectline.com
Tel.: (EU) +49 (0) 98 51 / 58 25 29 900 / (US) +1-630-797-6067

SIMPLIFIED EU DECLARATION OF CONFORMITY
Hereby, MB connect line GmbH declares that the radio equipment type RKH 259 EU is in compliance with Directive 2014/53/EU.
The full text of the EU declaration of conformity is available at the following internet address:
www.mbconnectline.com

NOTICE
Device type RKH 259 AT&T bear no CE marking and may not be used or put into operation in the European economic area (EEA)!

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