Remote Maintenance Gateway

RMG/938

with eSOM/7210

First Steps

SSV Software Systems GmbH
Dünenweg 5
D-30419 Hannover
Phone: +49 (0)511/40 000-0
Fax: +49 (0)511/40 000-40
Email: sales@ssv-embedded.de

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CONTENT

1 INTRODUCTION

This documentation gives an overview about the initial operation and the first steps of use with the RMG/938.

IMPORTANT!
You will need further equipment to operate the RMG/938. Please refer to **chapter 3**.

1.1 Conventions

Convention	Usage
bold	Important terms
`monospace`	Filenames, Pathnames, program code, command lines

Table 1: Conventions used in this document

2 SAFETY GUIDELINES

Please read the following safety guidelines carefully! In case of property or personal damage by not paying attention to this manual and/or by incorrect handling, we do not assume liability. In such cases any warranty claim expires.

- The power supply should be in immediate proximity to the device.
- The power supply must provide a stable output voltage between 11 – 28 VDC. The output power should be at least 2.5 W.
- Please pay attention that the power cord or other cables are not squeezed or damaged in any way when you set up the device.
- Do NOT turn on the power supply while connecting any cables, especially the power cables. This could cause damaged device components! First connect the cables and THEN turn the power supply on.
- The installation of the device should be done only by qualified personnel.
- Discharge yourself electrostatic before you work with the device, e.g. by touching a heater of metal, to avoid damages.
- Stay grounded while working with the device to avoid damage through electrostatic discharge.
- The case of the device should be opened only by qualified personnel.

3 REQUIRED EQUIPMENT

To operate the RMG/938 the following hardware is required:

- **24 VDC power supply**
- One Ethernet cross-over cable or two Ethernet patch cables and a switch.

To configure the RMG/938 a computer with the following features is required:

- Windows 7 or higher
- Web browser (e.g. Firefox, Chrome)
- Telnet/SSH client (e.g. TeraTerm)
- FTP client (e.g. FileZilla)
- 10/100 Mbps Ethernet network controller and TCP/IP configuration

4 CONNECTIONS

For a quick and easy start with the RMG/938 there are a few cable connections necessary.

4.1 Ethernet Link

The Ethernet link between the PC and **LAN1** of the RMG/938 can be made on two ways:

- Direct with an Ethernet cross-over cable like shown in **fig. 1**.
- With two standard Ethernet patch cables over a hub or switch like shown in **fig. 2**.

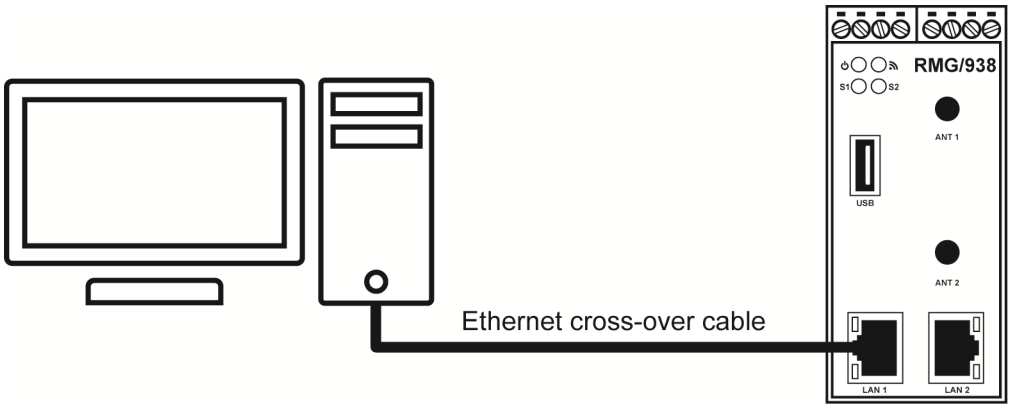


Figure 1: Ethernet link with cross-over cable

Please note:
For the Ethernet connection in **fig. 1** it is required to use a **cross-over cable**. Do not use an ordinary patch cable. Both types of cables are in most cases visual indistinguishable. But the internal wiring is fully different. Mixing up these types of cables leads to LAN errors. Hence pay attention to the label of the cable or packing.

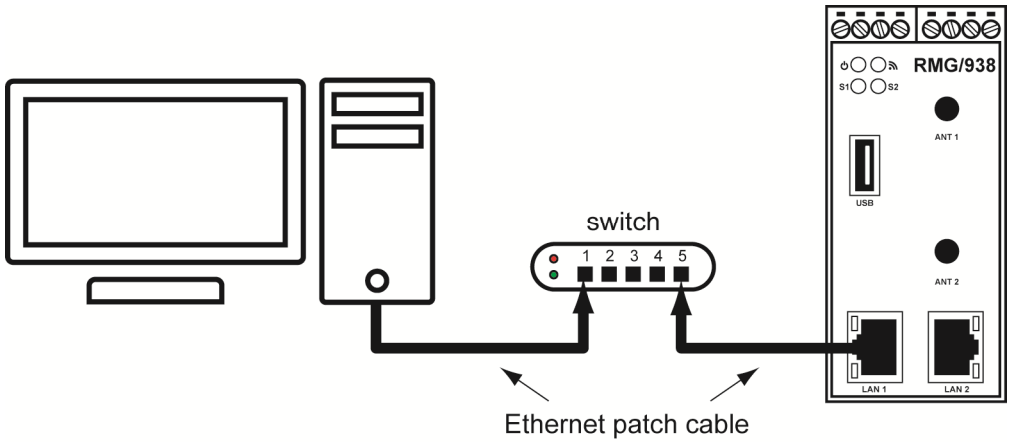


Figure 2: Ethernet link with hub or switch

The IP address of the LAN1 interface is ex-factory set to **192.168.0.126**.

4.2 Serial Ports COM2 and COM3

You can create an RS485 serial link on port COM2 and COM3 of the RMG/938.

An RS232 serial link is only possible on port COM3.

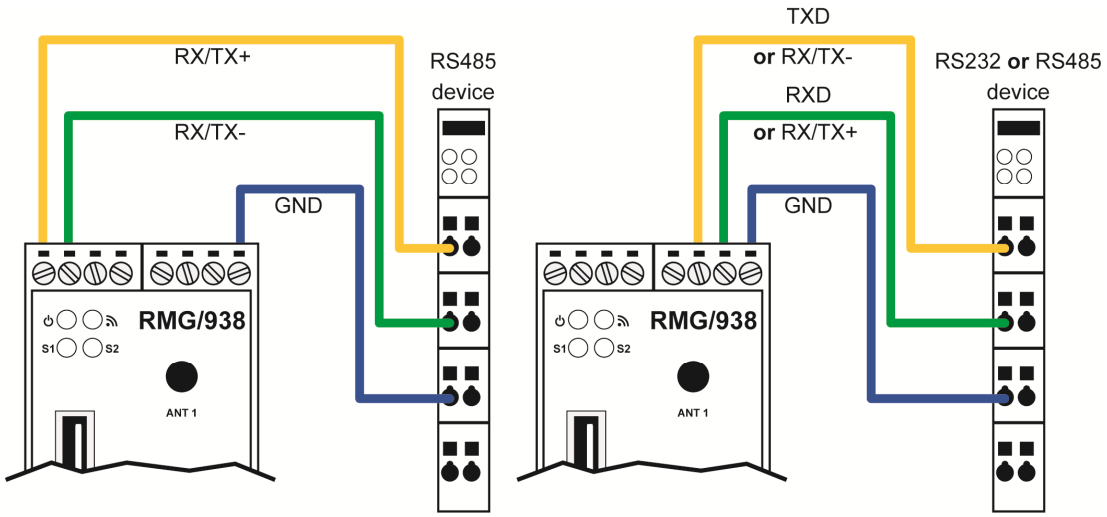


Figure 3: Serial links on COM2 and COM3

Terminal	Signal
A1	COM2 RS485 Serial Port RX /TX+
A2	COM2 RS485 Serial Port RX /TX-
B4	Signal Ground

Table 2: Screw terminals COM2

Terminal	Signal
B2	COM3 Serial Port: TXD (RS232), RX/TX- (RS485)
B3	COM3 Serial Port: RXD (RS232), RX/TX+ (RS485)
B4	Signal Ground

Table 3: Screw terminals COM3

Please note:
The RS485 (officially called TIA/EIA-485-A) connection between your RMG/938 and the field devices needs termination resistors on both ends for proper operation. The RMG/938 **does not offer internal termination resistors**. Please make sure, that the RS485 cable connection is equipped with external termination resistors.

4.3 Power Supply

The RMG/938 needs a supply voltage of 11 – 28 VDC to work.

Connect the cables of an appropriate power supply like shown in **fig. 4**.

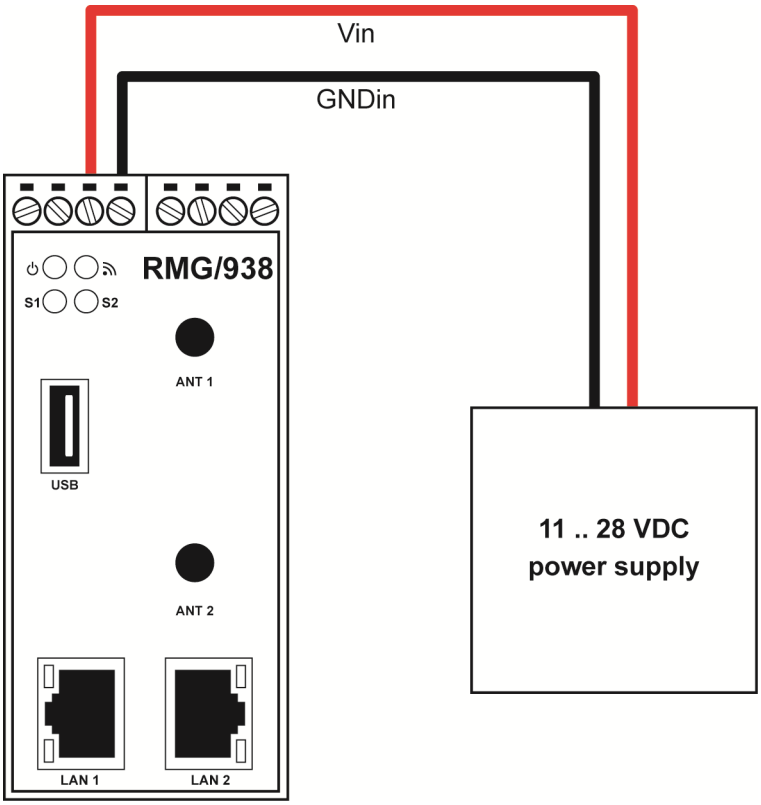
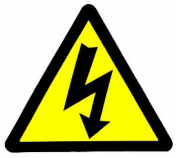


Figure 4: Power supply for the RMG/938

Terminal	Signal
A3	Vin (11 .. 28 VDC)
A4	GNDin

Table 4: Screw terminal power



CAUTION!
Providing the RMG/938 with a higher voltage than the regular 11 – 28 VDC could cause damaged device components!

Do **NOT** turn on the power supply while connecting it with the RMG/938. This could cause damaged device components! First connect the power supply and **THEN** turn it on.

5 OPERATION

5.1 Booting the RMG/938

Just power up the RMG/938 and the boot process starts immediately. This may take up to one minute.

5.2 Accessing the SSV/WebUI

To open the login page of the SSV/WebUI enter the ex-factory IP address and port number of LAN1 of the RMG/938 manually in a web browser:

`https://192.168.0.126:7777`

Enter your username and password and click on **[Login]**. Both username and password can be found on the **nameplate** of the RMG/938.

Figure 5: Login page of the SSV/WebUI

5.3 Accessing the SSV/WebUI with DHCP enabled

If the automatic IP address configuration of LAN1 via DHCP is enabled, you have to check the assigned IP address, which is necessary to access the RMG/938 via a Telnet client or a web browser.

Therefore open in Windows **Control Panel > Network and Internet > View network computers and devices**. The RMG/938 should show up in this list.

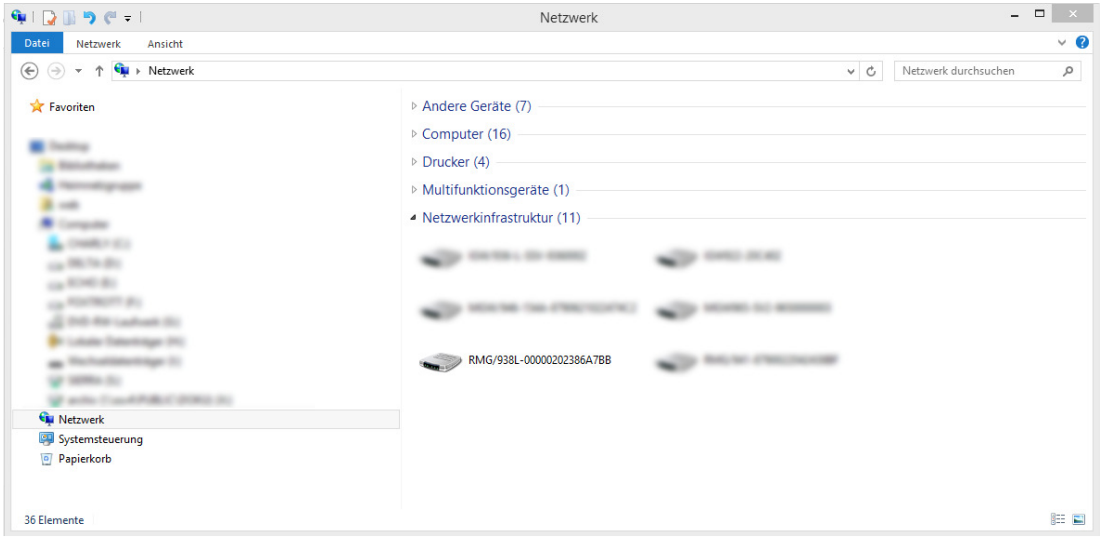


Figure 6: Selecting the RMG/938

Just **right-click** on the RMG/938 to open the properties dialog, where you can see the current IP address of the RMG/938 like shown in **fig. 7**.

A **double-click** on the RMG/938 opens the **SSV/WebUI** in a web browser.

Please note:
To access the SSV/WebUI, it is important to add the port number **7777** to the current IP address of the RMG/938, e.g.: `http://192.168.0.126:7777`!

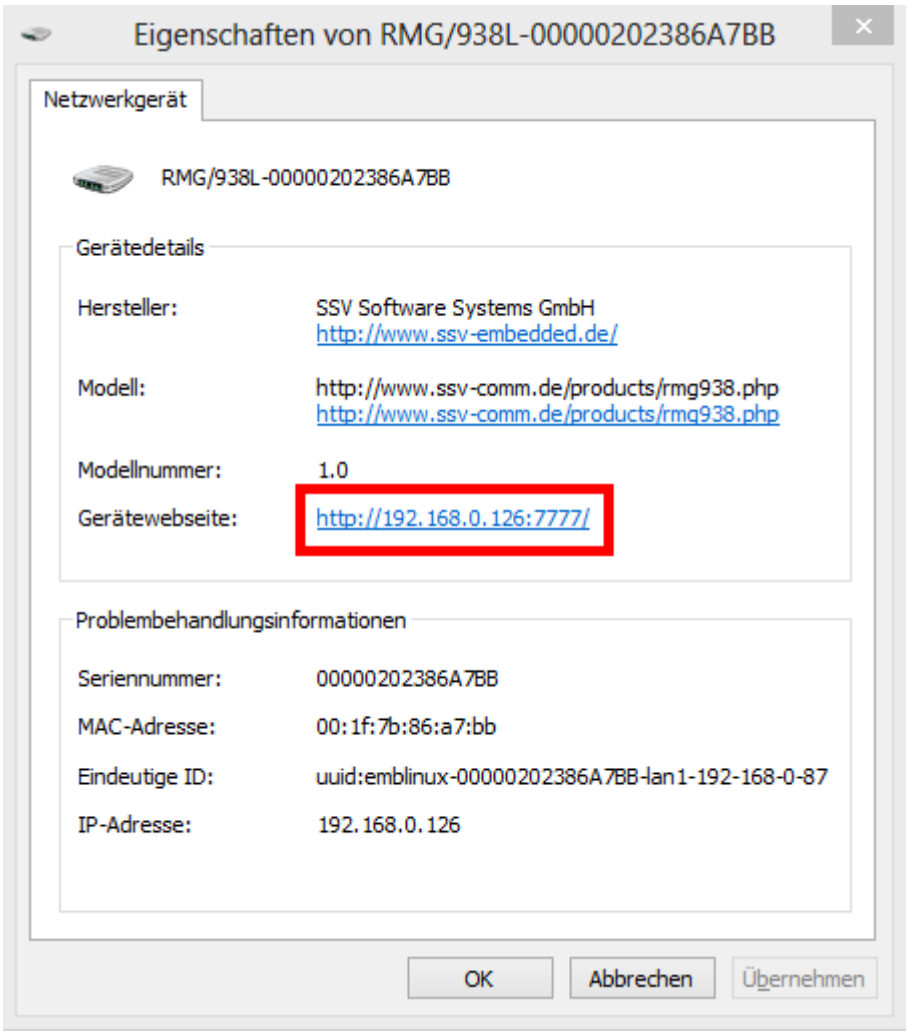


Figure 7: The properties dialog shows the current IP address

Now you are able to access the RMG/938 via a Telnet client or a web browser.

5.4 LAN1 Configuration

The IP address of the LAN1 interface is ex-factory set to **192.168.0.126**.

To configure the LAN1 settings choose from the menu **Network > LAN1**.

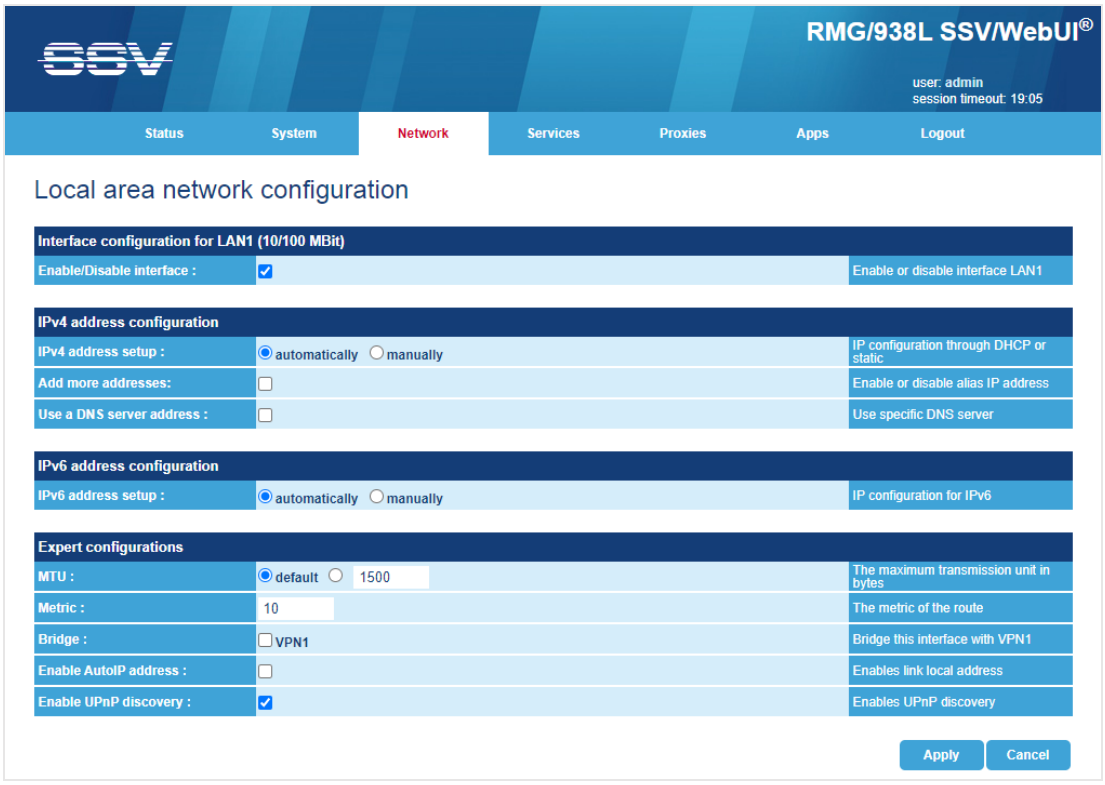


Figure 8: LAN1 settings

To enable the automatic IP address assignment via DHCP follow these steps:

1. In the section **IP address configuration** enable the radio button **automatically**.
2. Click on **[Apply]**.

Please note:
After DHCP was enabled, it is necessary to re-log into the SSV/WebUI with the new assigned IP address of LAN1. Please refer to **chapter 5.3** to find out the current IP address.

5.5 Access via Telnet

Please note:
The Telnet server must be enabled via the SSV/WebUI. Therefore choose from the menu **Services > General**, enable the checkbox in the line **Telnet server** and click on **[Apply]**.

To access the RMG/938 via Telnet open a Telnet client program (like **TeraTerm**) on your host PC and enter the current IP address of the RMG/938 to activate a Telnet session.

In the upcoming Telnet window you can enter your login data.

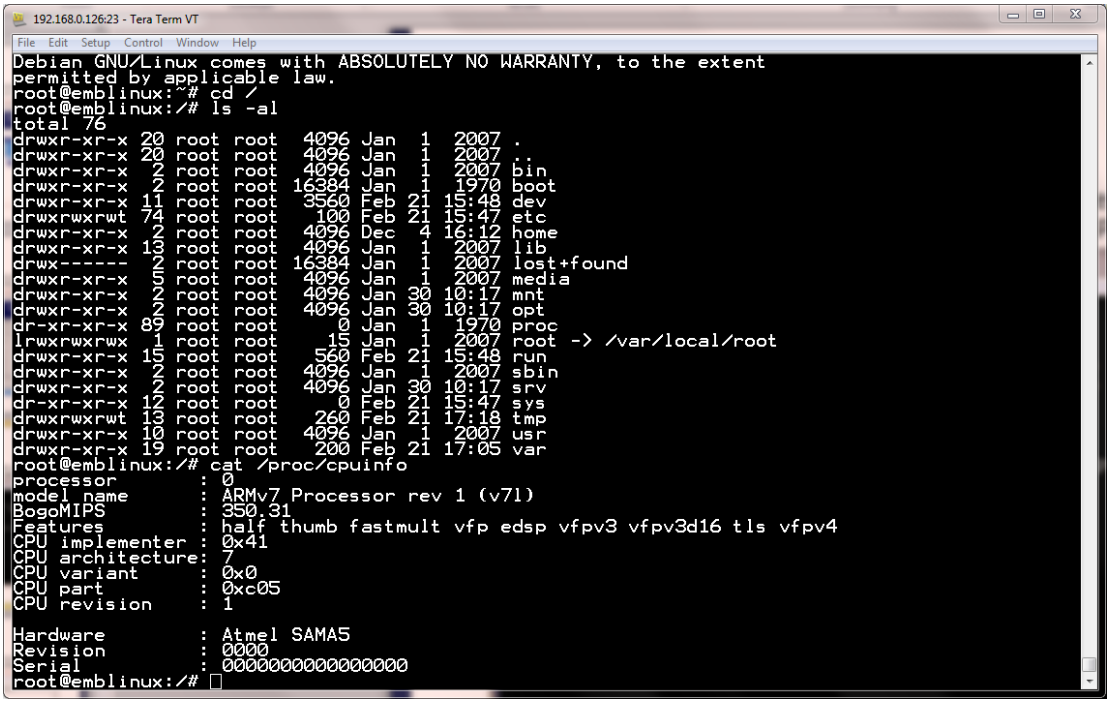


Figure 9: Accessing the RMG/938 via Telnet client

5.6 Access via FTP

Please note:
The FTP server must be enabled via the SSV/WebUI. Therefore choose from the menu **Services > General**, enable the checkbox in the line **FTP server** and click on **[Apply]**.

The RMG/938 comes with a pre-installed FTP server, which allows the file transfer via Ethernet between a PC and the RMG/938. To access the RMG/938 via FTP use an FTP client like e.g. **FileZilla**.

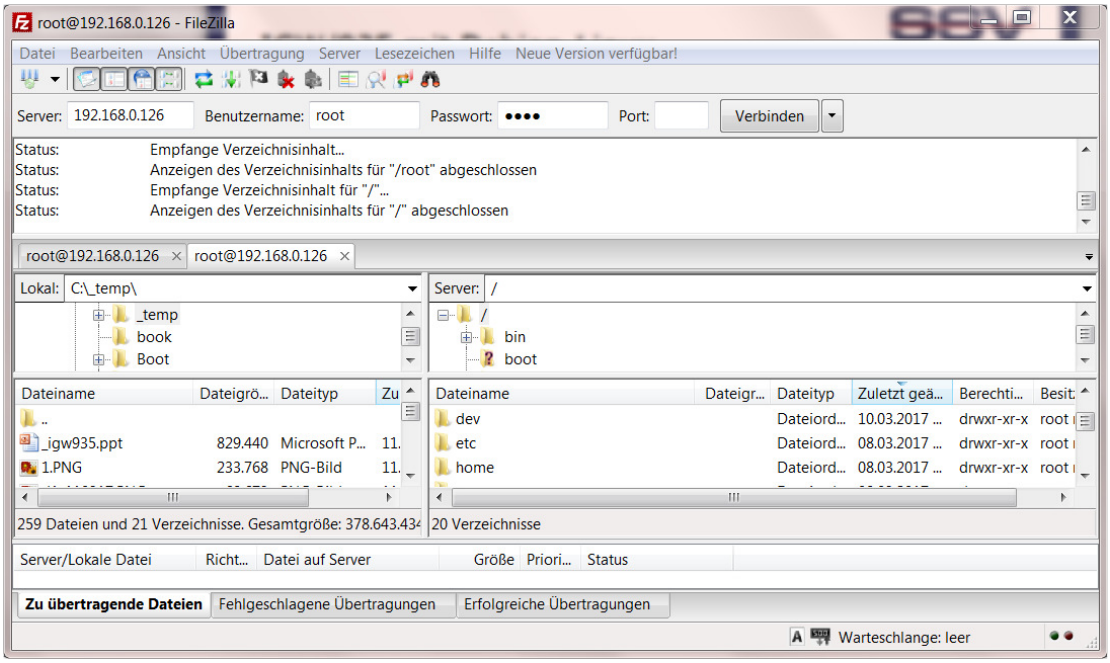


Figure 10: FileZilla as FTP client to access the FTP server

Use for the FTP login the current IP address of the RMG/938. After the login you have FTP read/write permission in the file system.

We recommend to use the directory **`/media/data`** to store own files.

5.7 Bluetooth Service Configuration

To configure the Bluetooth settings choose from the menu **Network > Bluetooth**.

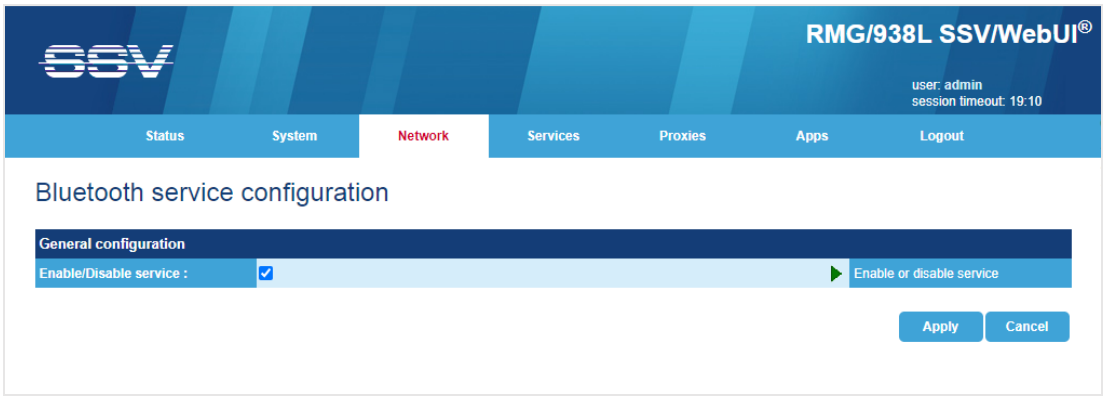


Figure 11: Bluetooth settings

To enable the Bluetooth interface follow these steps:

1. In the section **General configuration** enable the checkbox.
2. Click on **[Apply]**.

A **green arrow** on the right side indicates that Bluetooth is enabled.

5.8 Node-RED Configuration

To configure Node-RED click in the menu on **Apps > Node-RED**.

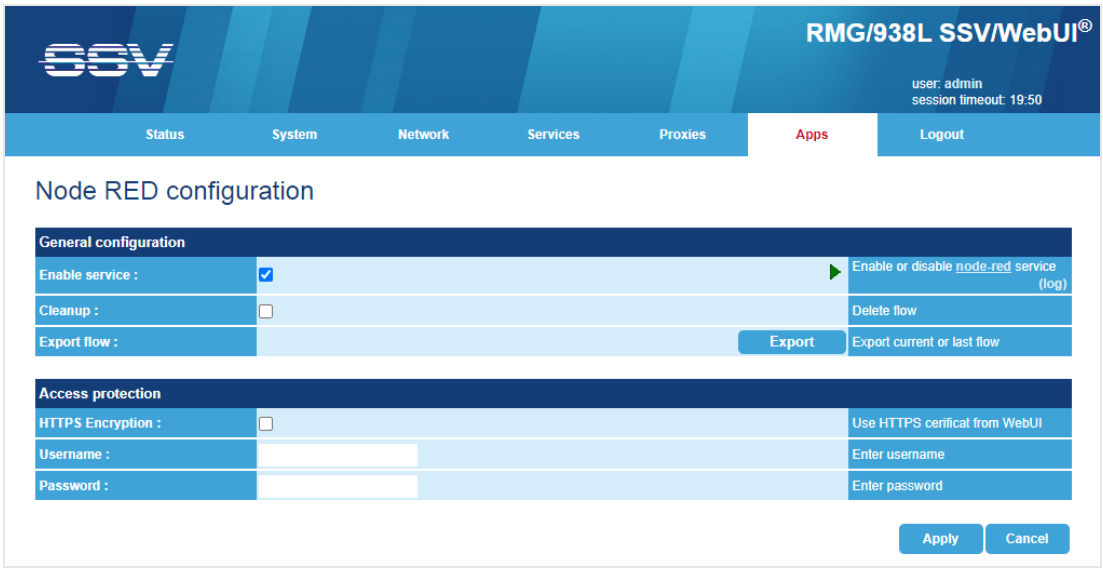


Figure 12: Node-RED settings

To enable Node-RED follow these steps:

1. In the section **General configuration** enable the checkbox.
2. Click on **[Apply]**.

A **green arrow** on the right side indicates that Node-RED is enabled.

After a few seconds the **Node-RED editor** can be opened with the hyperlink **node-red** on the right side.

Alternatively you can enter the RMG/938's IP address with the port number 1880 directly in the address bar of the web browser, e.g. **`https://<IP address>:1880`**.

The Node-RED editor offers a simple flow to display incoming Bluetooth data in the debug window on the right side of the workspace.

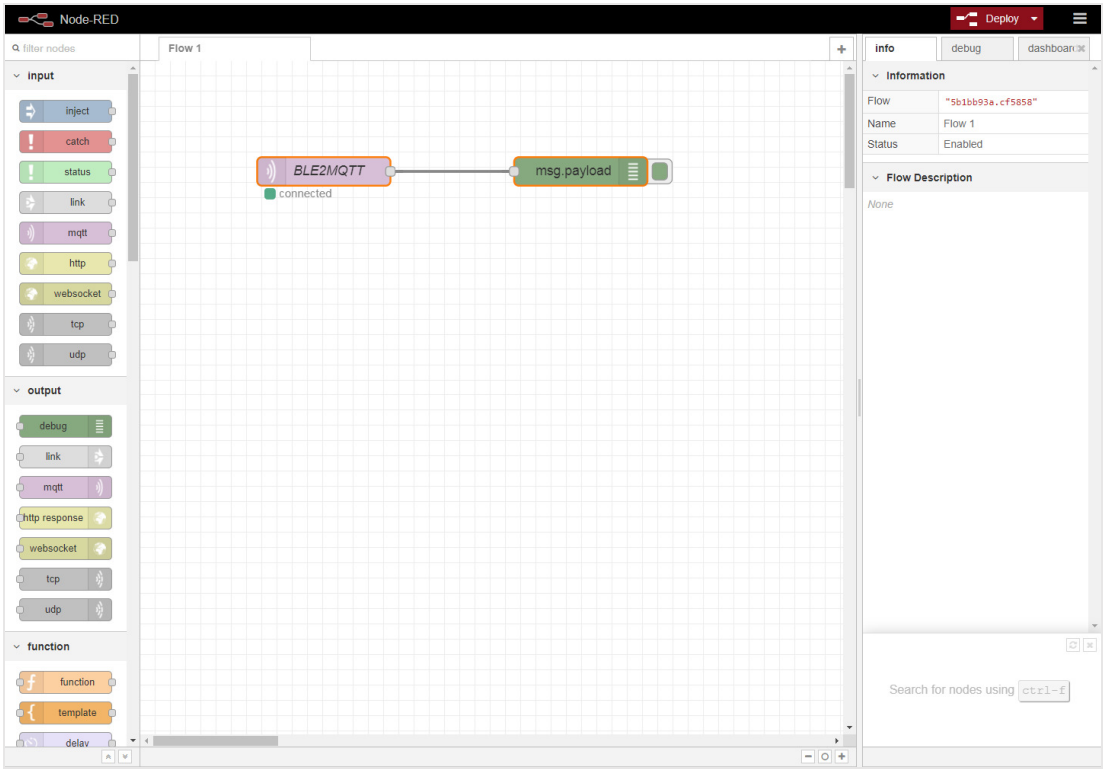


Figure 13: Node-RED editor

6 TECHNICAL DATA

Supply voltage ..... 11 – 28 VDC

Weight ..... < 270 g

Mechanical Dimensions (LxWxH) ..... 112 mm x 45 mm x 100 mm

Temperature range ..... 0° C – 60° C

Rel. air himudity ..... max. 85%

7 PINOUT SCREW TERMINALS

Table 6 shows the pinout of the screw terminals of the RMG/938.

Terminal	Signal
A1	COM2 Serial Port: RS485 RX/TX+
A2	COM2 Serial Port: RS485 RX/TX-
A3	Vin (11 .. 28 VDC)
A4	Power Ground
B1	---
B2	COM3 Serial Port: TXD (RS232), RX/TX- (RS485)
B3	COM3 Serial Port: RXD (RS232), RX/TX+ (RS485)
B4	Signal Ground

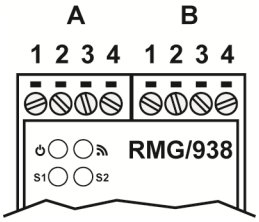


Table 5: Pinout of the screw terminals

Please note:
The RS485 (officially called TIA/EIA-485-A) connection between your RMG/938 and the field devices needs termination resistors on both ends for proper operation. The RMG/938 **does not offer internal termination resistors**. Please make sure, that the RS485 cable connection is equipped with external termination resistors.

8 LED FUNCTIONS

LED	Description	Off	Flash	On
⏻	Power	No Power	---	Power On
📶	N/A	---	---	---
S1	System	Not ready	Booting	Ready
S2	VPN state	Off	Connecting	Ready

Table 1: LED functions

The **LED S2** shows the VPN connection state by different flashing. The following table describes the functions of the particular LED signals.

On Time	Off Time	Description
Permanent	---	VPN connected
1 s	**1 s**	VPN-client tries connecting the VPN-server
---	**Permanent**	Unknown state, VPN disconnected

Table 2: LED S2 functions

9 HELPFUL LITERATURE

- https://nodered.org

CONTACT

SSV Software Systems GmbH
Dünenweg 5
D-30419 Hannover

Phone: +49 (0)511/40 000-0
Fax: +49 (0)511/40 000-40
Email: info@ssv-embedded.de

Internet: www.ssv-embedded.de
Forum: www.ssv-comm.de/forum
Wiki: mewi.ssv-embedded.de
Social: https://www.linkedin.com/company/ssv-software-systems

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