

# ***Remote Maintenance Gateway***

## ***RMG/938***

***with eSOM/7210***

## **First Steps**



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# 1 INTRODUCTION

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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

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Convention	Usage
<b>bold</b>	Important terms
<code>monospace</code>	Filenames, Pathnames, program code, command lines

**Table 1:** Conventions used in this document

## 2 SAFETY GUIDELINES

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**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

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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

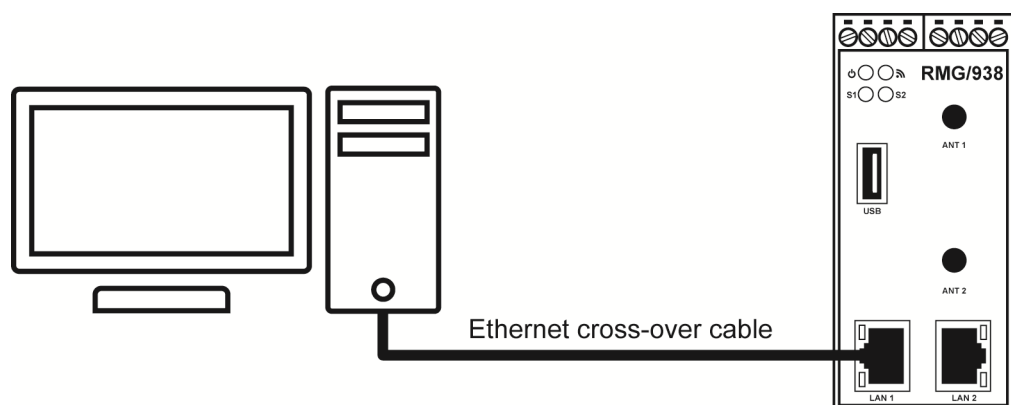
## 4 CONNECTIONS

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**.

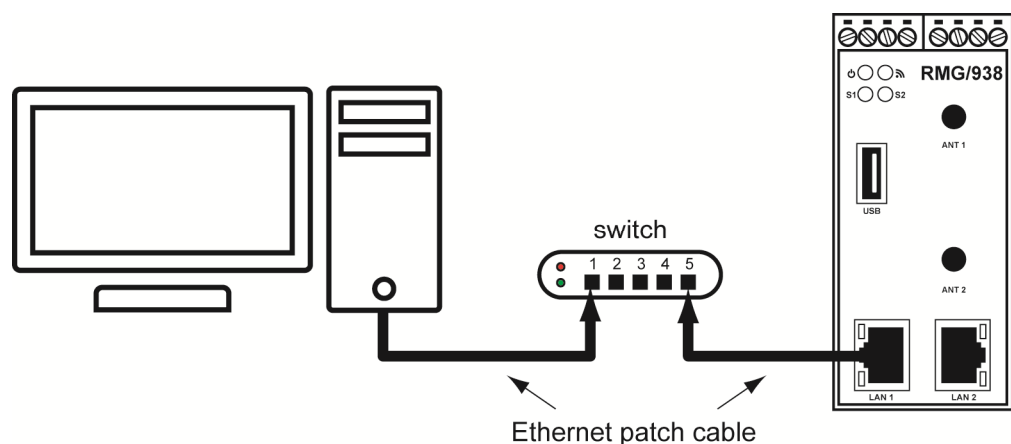


**Figure 1: Ethernet link with cross-over cable**



**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.

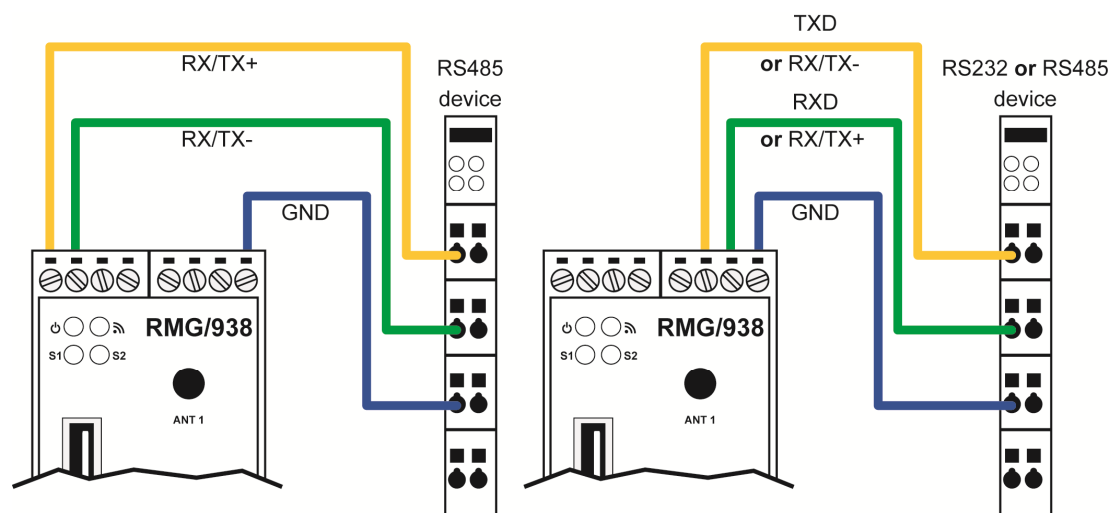


Figure 3: Serial links on COM2 and COM3

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**.

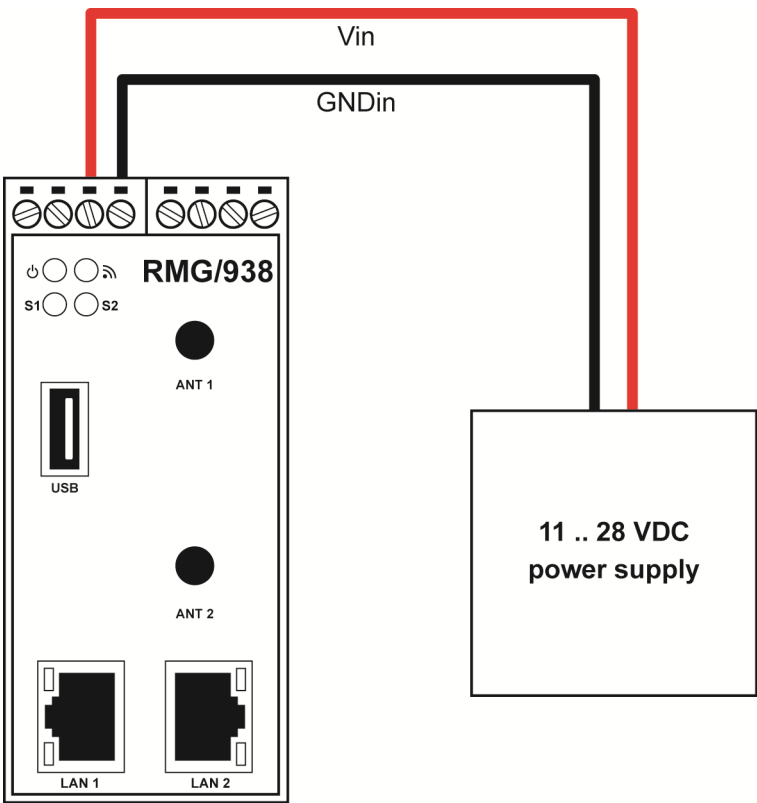
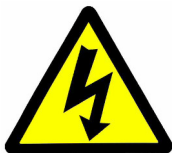


Figure 4: Power supply for the RMG/938

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

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### 5.1 Booting the RMG/938

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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

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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.

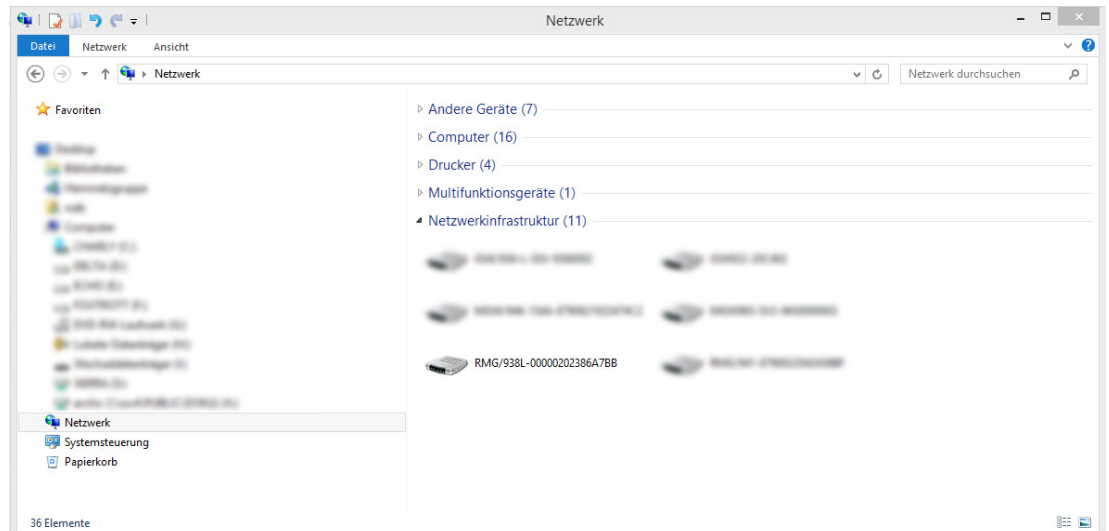


Figure 5: Login page of the SSV/WebUI

### 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**

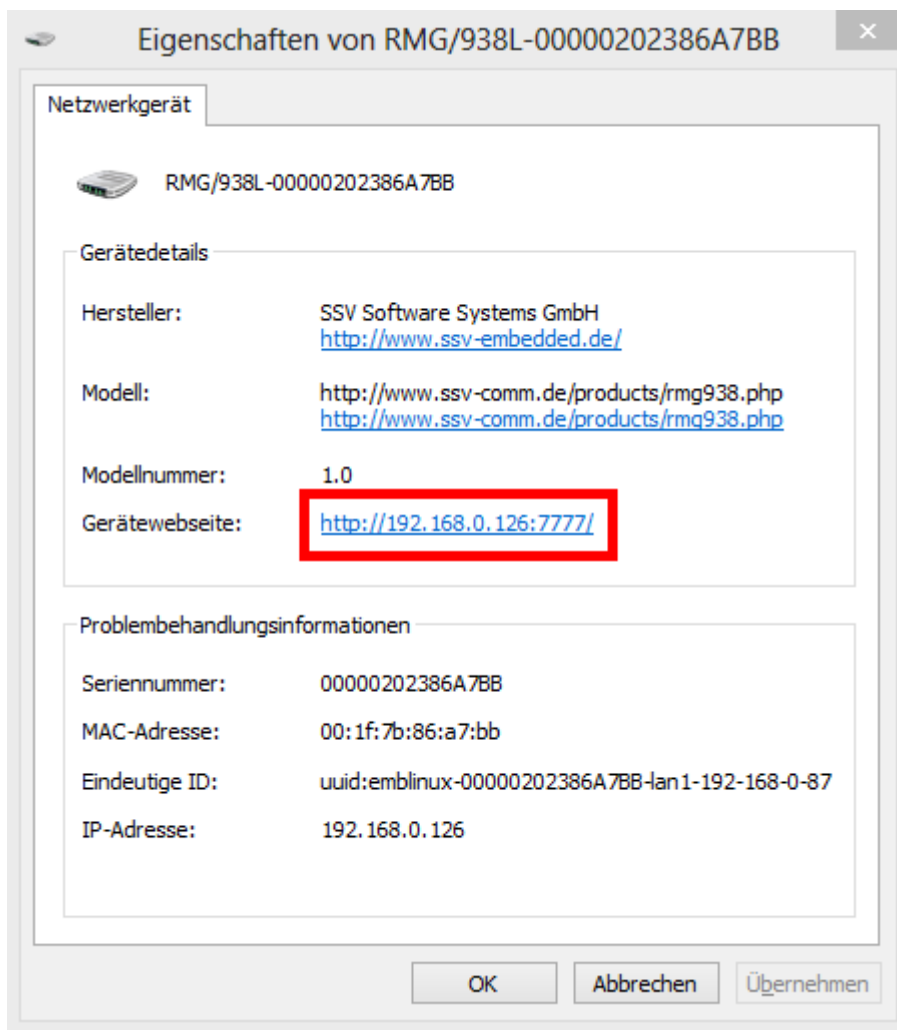
Just **right-click** on the RMG/938 to open the properties dialog, where you can see the current IP address of the RMG/938 like shown in **fig. 7**.

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!**



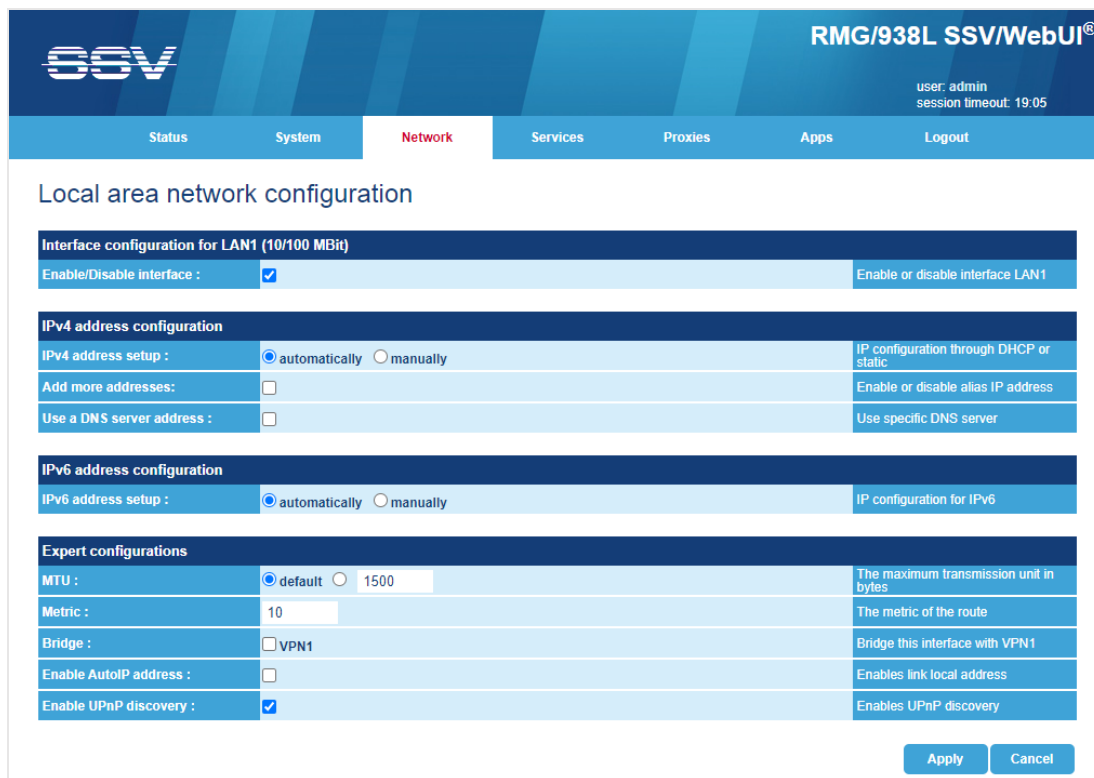
**Figure 7: The properties dialog shows the current IP address**

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**.



SSV RMG/938L SSV/WebUI®  
user: admin  
session timeout: 19:05

Status System **Network** Services Proxies Apps Logout

### Local area network configuration

Interface configuration for LAN1 (10/100 MBit)

Enable/Disable interface : ☒ Enable or disable interface LAN1

IPv4 address configuration

IPv4 address setup : ☒ automatically ☐ manually IP configuration through DHCP or static

Add more addresses: ☐ Enable or disable alias IP address

Use a DNS server address : ☐ Use specific DNS server

IPv6 address configuration

IPv6 address setup : ☒ automatically ☐ manually IP configuration for IPv6

Expert configurations

MTU : ☒ default ☐ 1500 The maximum transmission unit in bytes

Metric : 10 The metric of the route

Bridge : ☐ VPN1 Bridge this interface with VPN1

Enable AutoIP address : ☐ Enables link local address

Enable UPnP discovery : ☒ Enables UPnP discovery

Apply Cancel

**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.

```

192.168.0.126/23 - Tera Term VT
File Edit Setup Control Window Help
Debian GNU/Linux comes with ABSOLUTELY NO WARRANTY, to the extent
permitted by applicable law.
root@emblinux:~# cd /
root@emblinux:~# ls -al
total 76
drwxr-xr-x 20 root root 4096 Jan 1 2007 .
drwxr-xr-x 20 root root 4096 Jan 1 2007 ..
drwxr-xr-x 2 root root 4096 Jan 1 2007 bin
drwxr-xr-x 2 root root 16384 Jan 1 1970 boot
drwxr-xr-x 11 root root 3560 Feb 21 15:48 dev
drwxrwxrwt 74 root root 100 Feb 21 15:47 etc
drwxr-xr-x 12 root root 4096 Dec 4 16:12 home
drwxr-xr-x 13 root root 4096 Jan 1 2007 lib
drwxr-xr-x 2 root root 16384 Jan 1 2007 lost+found
drwxr-xr-x 2 root root 4096 Jan 1 2007 media
drwxr-xr-x 2 root root 4096 Jan 30 10:17 mnt
drwxr-xr-x 2 root root 4096 Jan 30 10:17 opt
dr-xr-xr-x 89 root root 0 Jan 1 1970 proc
lrwxrwxrwx 1 root root 15 Jan 1 2007 root -> /var/local/root
drwxr-xr-x 15 root root 560 Feb 21 15:48 run
drwxr-xr-x 2 root root 4096 Jan 1 2007 sbin
drwxr-xr-x 2 root root 4096 Jan 30 10:17 srv
dr-xr-xr-x 12 root root 0 Feb 21 15:47 sys
drwxrwxrwt 13 root root 260 Feb 21 17:18 tmp
drwxr-xr-x 10 root root 4096 Jan 1 2007 usr
drwxr-xr-x 19 root root 200 Feb 21 17:05 var
root@emblinux:~# cat /proc/cpuinfo
processor       : 0
model name     : ARMv7 Processor rev 1 (v7l)
BogoMIPS      : 350.31
Features       : half thumb fastmult vfp edsp vfpv3 vfpv3d16 tls vfpv4
CPU implementer : 0x41
CPU architecture: 7
CPU variant    : 0x0
CPU part       : 0xc05
CPU revision   : 1

Hardware       : Atmel SAM5
Revision      : 0000
Serial        : 0000000000000000
root@emblinux:~#

```

Figure 9: Accessing the RMG/938 via Telnet client

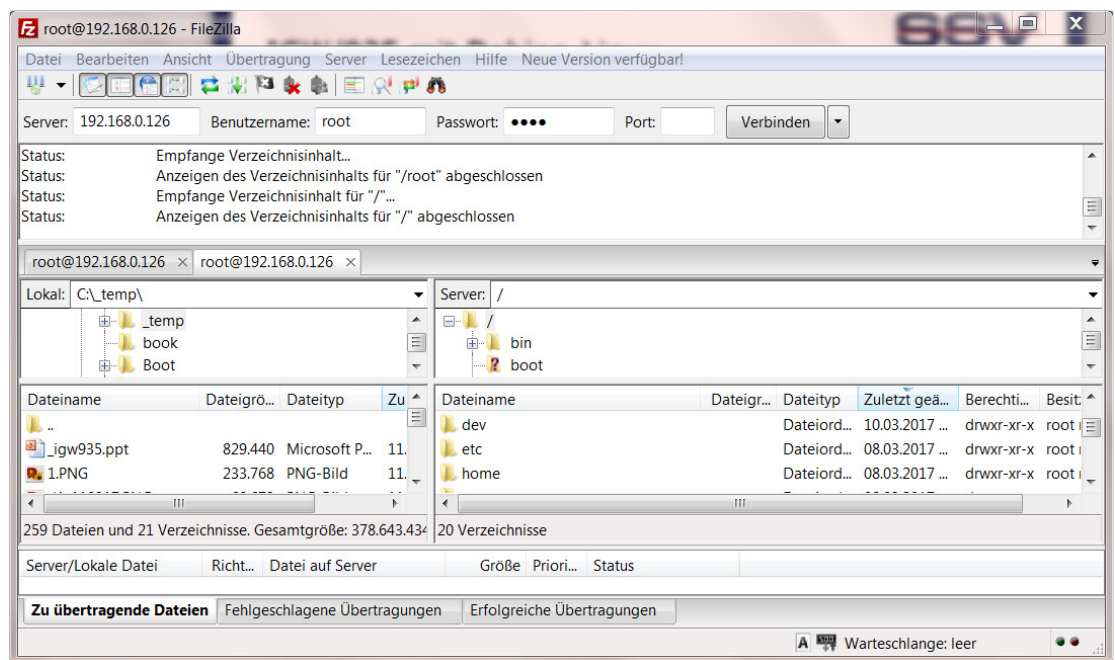
## 5.6 Access via FTP



### 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**.



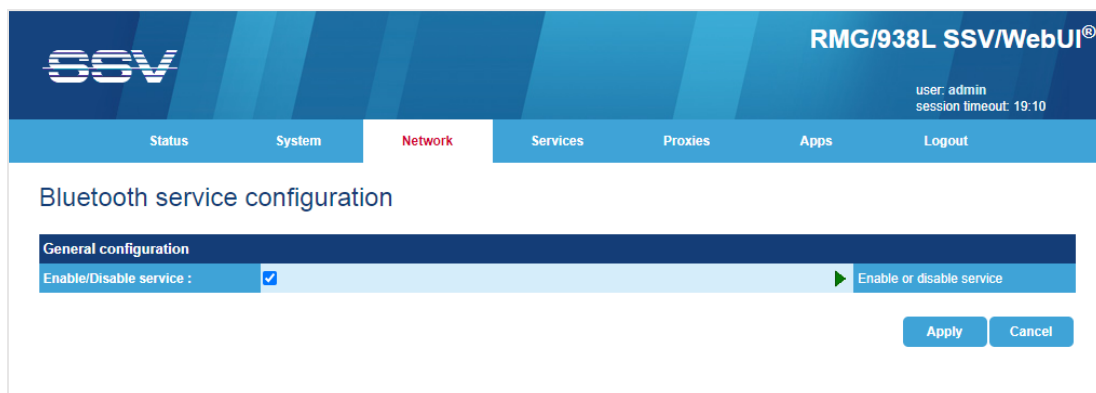
**Figure 10: FileZilla as FTP client to access the FTP server**

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**

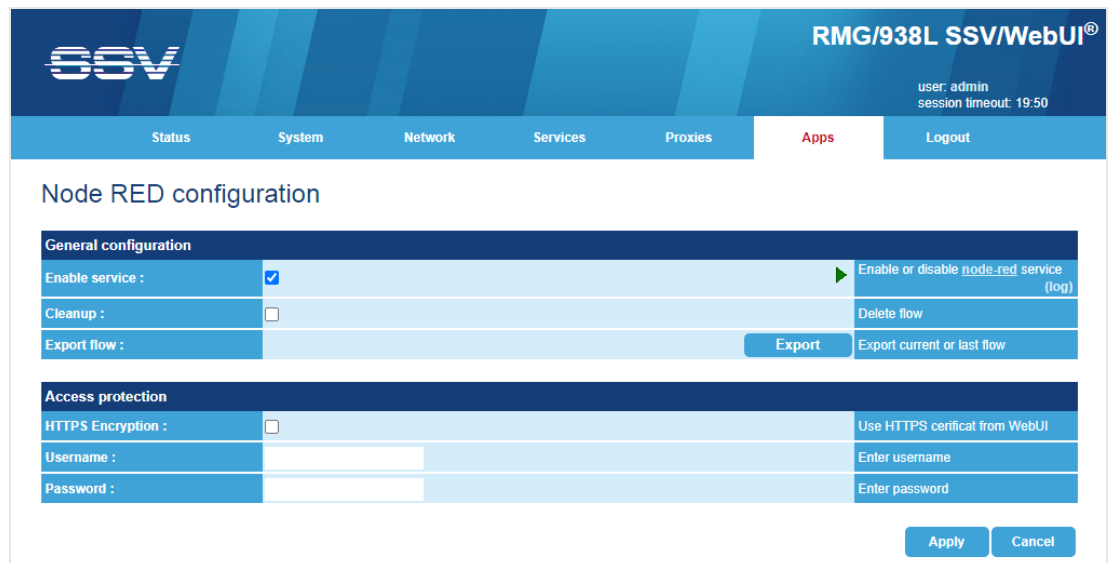
To enable the Bluetooth interface follow these steps:

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**.



SSV

RMG/938L SSV/WebUI®

user: admin  
session timeout: 19:50

Status System Network Services Proxies **Apps** Logout

### Node RED configuration

General configuration	
Enable service :	<input checked="" type="checkbox"/> <a href="#">Enable or disable node-red service (log)</a>
Cleanup :	<input type="checkbox"/> <a href="#">Delete flow</a>
Export flow :	<a href="#">Export</a> <a href="#">Export current or last flow</a>

Access protection	
HTTPS Encryption :	<input type="checkbox"/> <a href="#">Use HTTPS certificat from WebUI</a>
Username :	<input type="text"/> <a href="#">Enter username</a>
Password :	<input type="password"/> <a href="#">Enter password</a>

[Apply](#) [Cancel](#)

**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]**.

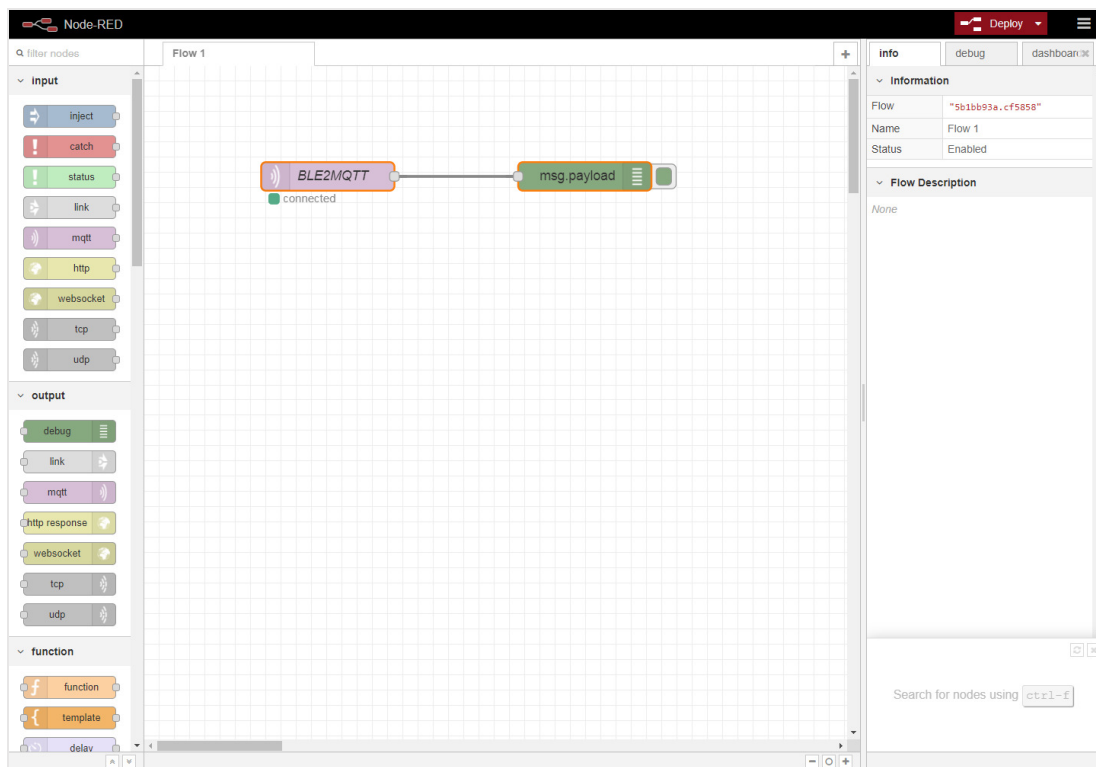
A **green arrow** on the right side indicates that Node-RED is enabled.

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 humidity ..... 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

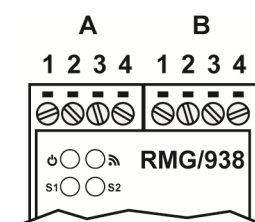




Table 5: Pinout of the screw terminals



**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	---	---	---
<b>S1</b>	System	Not ready	Booting	Ready
<b>S2</b>	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
<b>Permanent</b>	---	VPN connected
<b>1 s</b>	<b>1 s</b>	VPN-client tries connecting the VPN-server
---	<b>Permanent</b>	Unknown state, VPN disconnected

**Table 2: LED S2 functions**

## 9 HELPFUL LITERATURE

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- <https://nodered.org>

## CONTACT

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Wiki: [mewi.ssv-embedded.de](http://mewi.ssv-embedded.de)

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## DOCUMENT HISTORY

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1.0	2022-06-03	First version	WBU	ENE

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