GATEWAY

IGW/936

with eSOM/3517

First Steps

SSV SOFTWARE SYSTEMS

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1 INTRODUCTION

This documentation gives you an overview about the initial operation and the first steps of use with the IGW/936.

1.1 Checklist

Compare the content of your IGW/936 start-up package with the checklist below. If any item is missing or appears to be damaged, please contact SSV.

- ✓ IGW/936
- ✓ Adapter cable with power and RS232 connector
- ✓ Plug-in power supply
- ✓ Screwdriver
- ✓ Documentation
- ✓ CD-ROM for eSOM/3517

1.2 Required Equipment

To operate the IGW/936 the following hardware is required:

- One Ethernet cross-over cable or two Ethernet patch cables and a switch.

To configure the IGW/936 a PC 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
- CD-ROM drive

1.3 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 12 .. 24 VDC ±10%. The output power should be at least 10 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 CONNECTIONS

For a quick and easy start with the IGW/936 there are a few cable connections necessary. The following chapters describe how these connections have to be made.

3.1 Ethernet Link

The Ethernet link between the PC and **LAN1** of the IGW/936 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**.

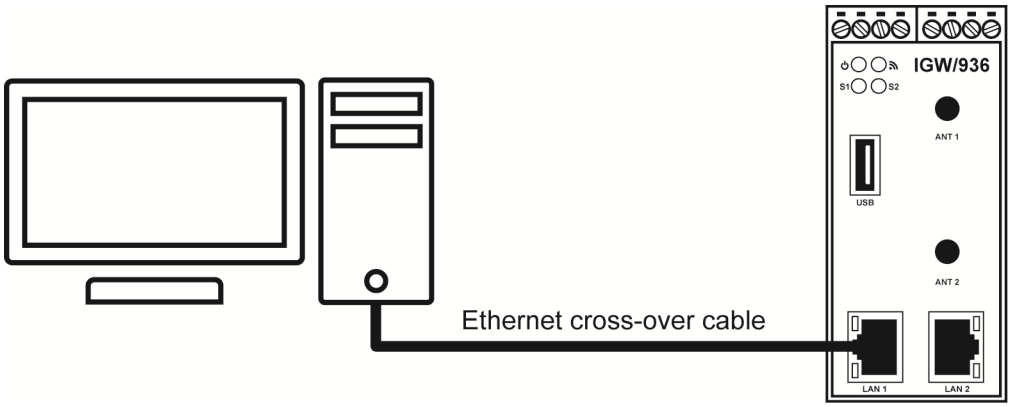


Figure 1: Ethernet link with cross-over cable

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.

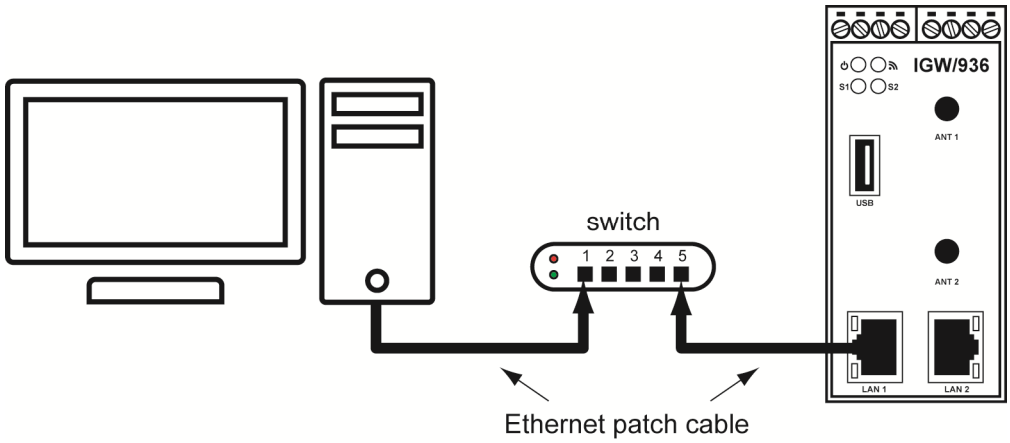


Figure 2: Ethernet link with hub or switch

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

3.2 Serial Ports COM2 and COM3

You can create an RS485 serial link on port COM2 and COM3 of the IGW/936.

An RS232 serial link is only possible on port COM3.

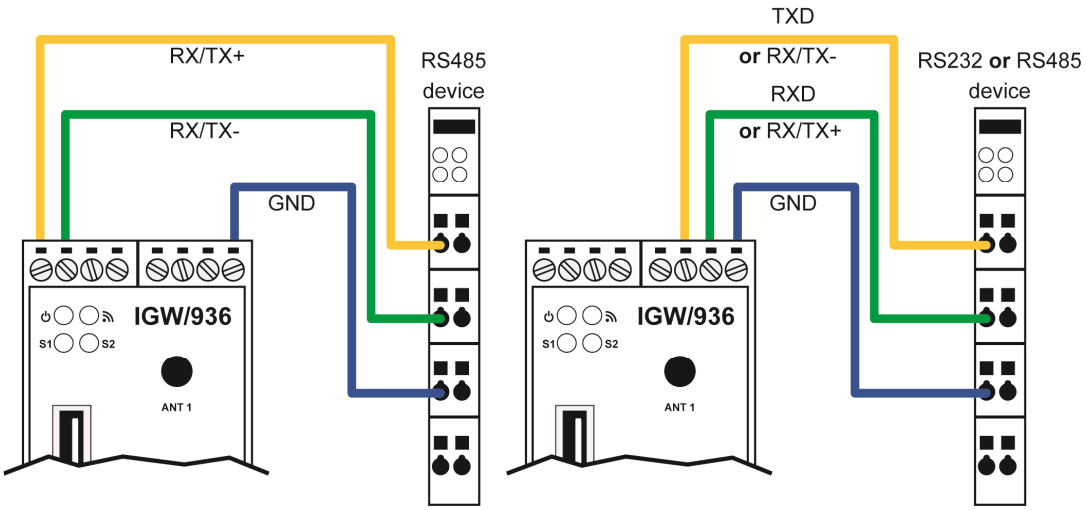


Figure 3: Serial links on COM2 and COM3

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 IGW/936 and the field devices needs termination resistors on both ends for proper operation. The IGW/936 **does not offer internal termination resistors**. Please make sure, that the RS485 cable connection is equipped with external termination resistors.

3.3 Power Supply

The IGW/936 needs a supply voltage of 12 .. 24VDC to work.

Connect the cables of an appropriate power supply to provide the system with the necessary power like shown in **fig. 4**.

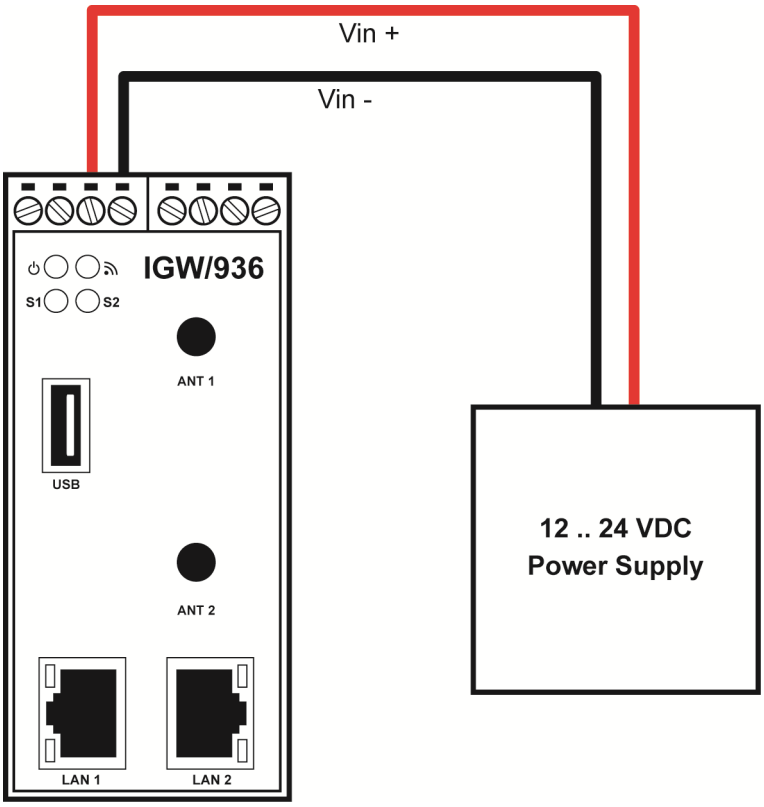
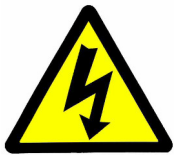


Figure 4: Power supply for the IGW/936

Terminal	Signal
A3	Vin + (12 .. 24 VDC)
A4	Vin -

Table 4: Screw terminal power



CAUTION!
Providing the IGW/936 with a higher voltage than the regular 12 .. 24 VDC could cause damaged device components!

Do **NOT** turn on the power supply while connecting it with the IGW/936. This could cause damaged device components! First connect the power supply and **THEN** turn it on.

4 OPERATION

4.1 Booting the IGW/936

Just power up the IGW/936 and the boot process starts immediately. The IGW/936 boots thereby an embedded Linux out of its Flash memory. This may take up to one minute.

4.2 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 IGW/936 manually in a web browser:

`http://192.168.0.126:7777`

Enter the username **admin** and the password **ssvadmin** and click on **[Login]**.

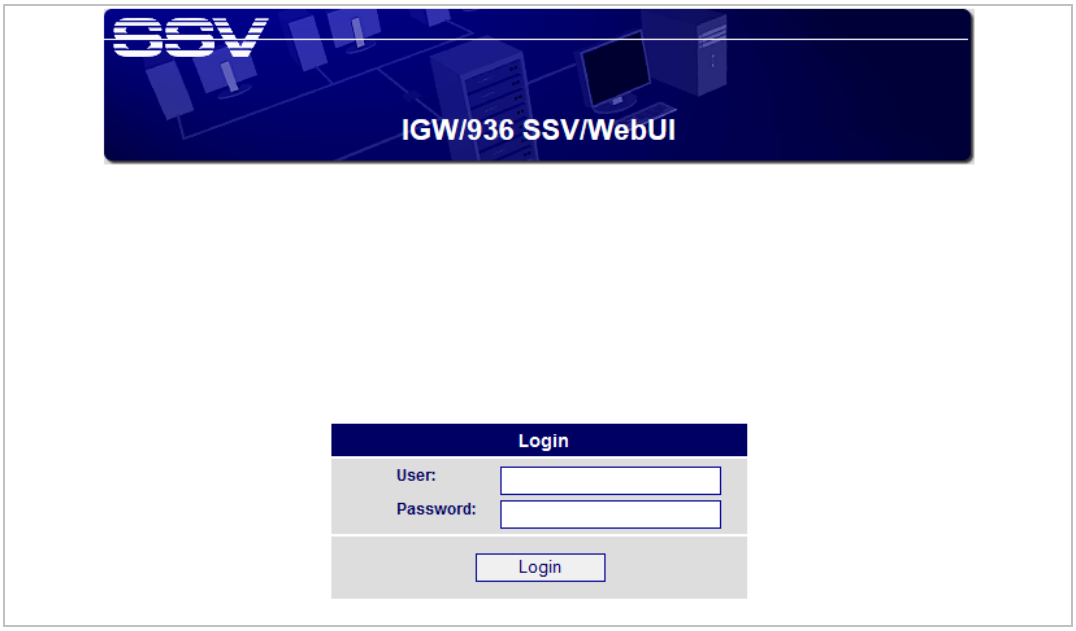


Figure 5: Login page of the SSV Web WebConfig

4.3 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 IGW/936 via a Telnet client or a web browser.

Therefore open in Windows **Control Panel > Network and Internet > View network computers and devices**. The IGW/936 should show up in this list.

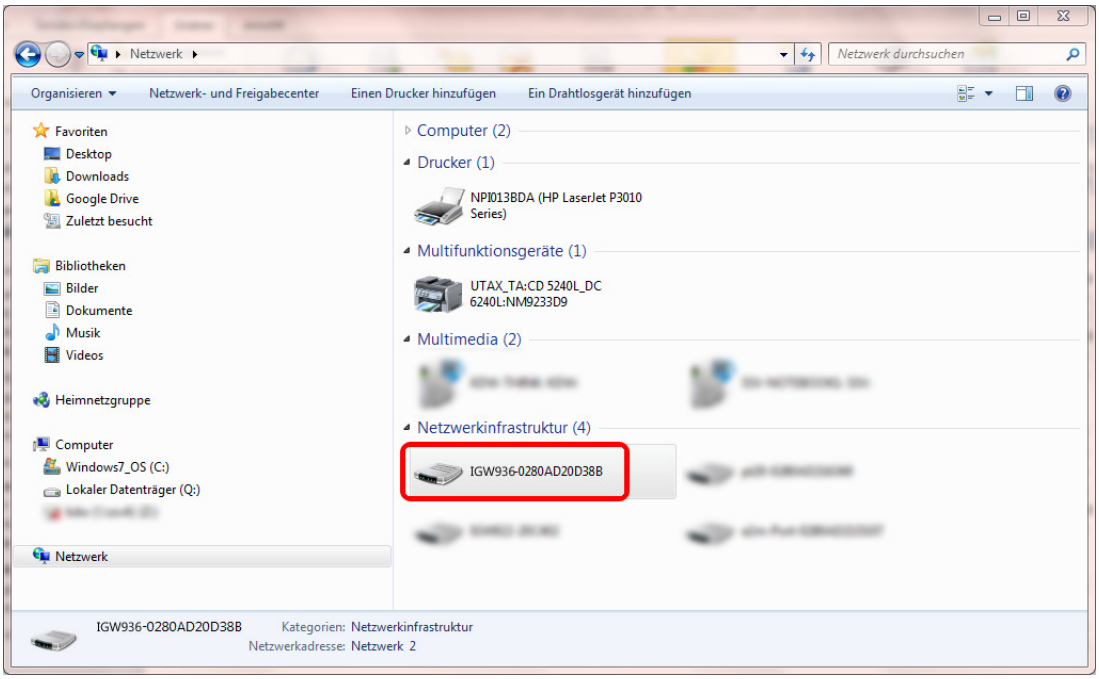


Figure 6: Selecting the IGW/936

Just **right-click** on the IGW/936 to open the properties dialog, where you can see the current IP address of the IGW/936 like shown in **fig. 6**.

A **double-click** on the IGW/936 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 IGW/936, e.g.: `http://192.168.0.126:7777`!

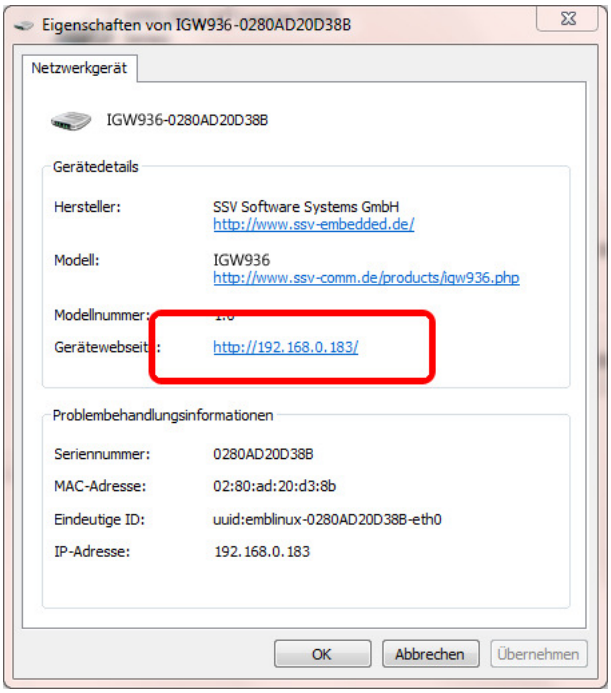


Figure 7: The properties dialog shows the current IP address

Now you are able to access the IGW/936 via a Telnet client or a web browser.

4.4 Firewall Configuration

Choose from the menu **Services > Firewall and NAT**.

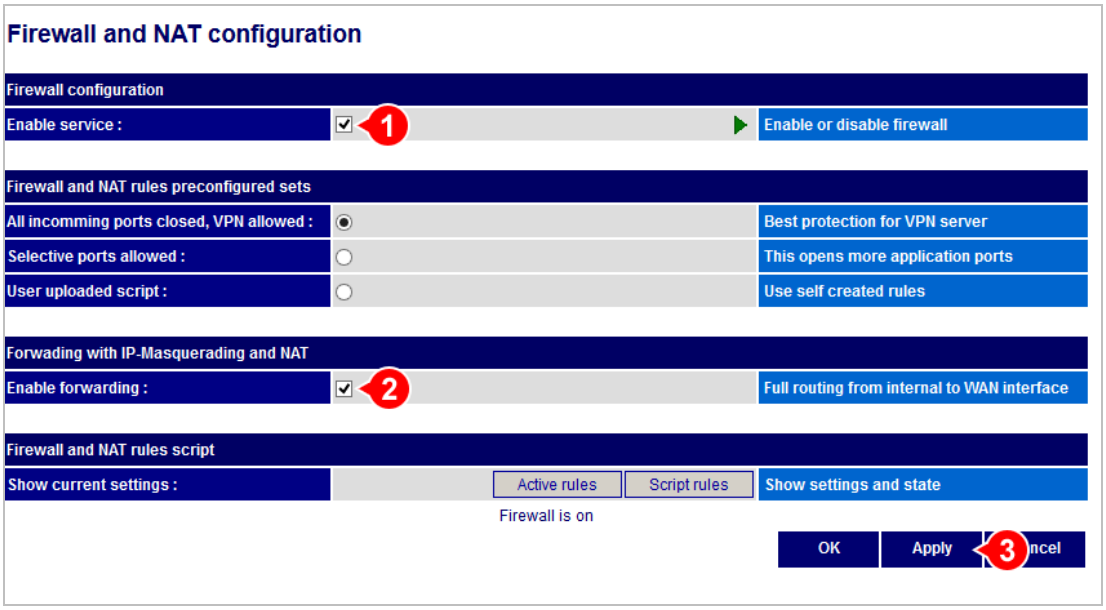


Figure 8: Firewall and NAT settings

1. In the section **Firewall configuration** enable the checkbox.
2. In the section **Forwarding with IP-Masquerading and NAT** enable the checkbox.
3. Click on **[Apply]**.

4.5 LAN1 Configuration

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

To configure the LAN1settings choose from the menu **Network > LAN1**.

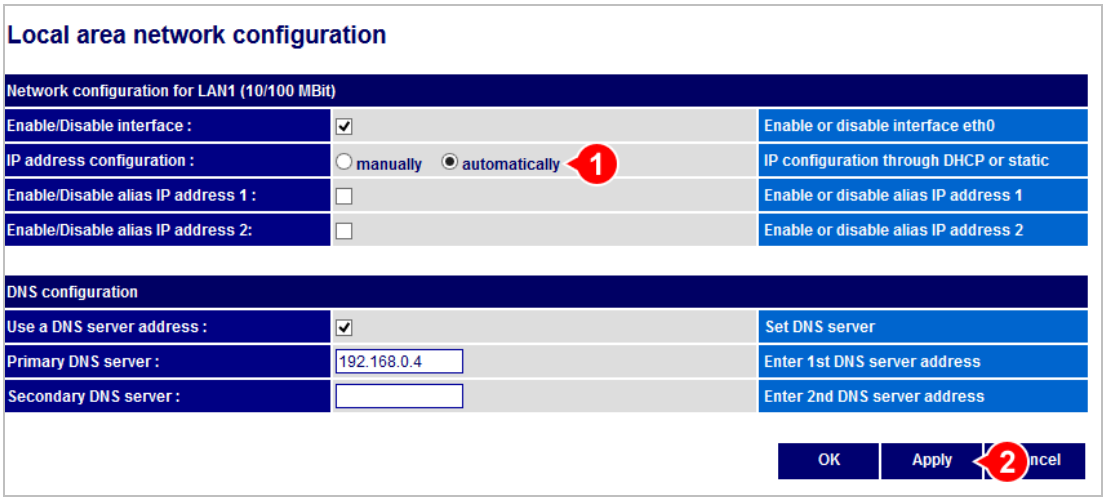


Figure 9: LAN1 settings

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 4.3** to find out the current IP address.

4.6 LAN2 Configuration

The LAN2 interface is ex-factory disabled.

To enable LAN2 choose from the menu **Network > LAN2**.

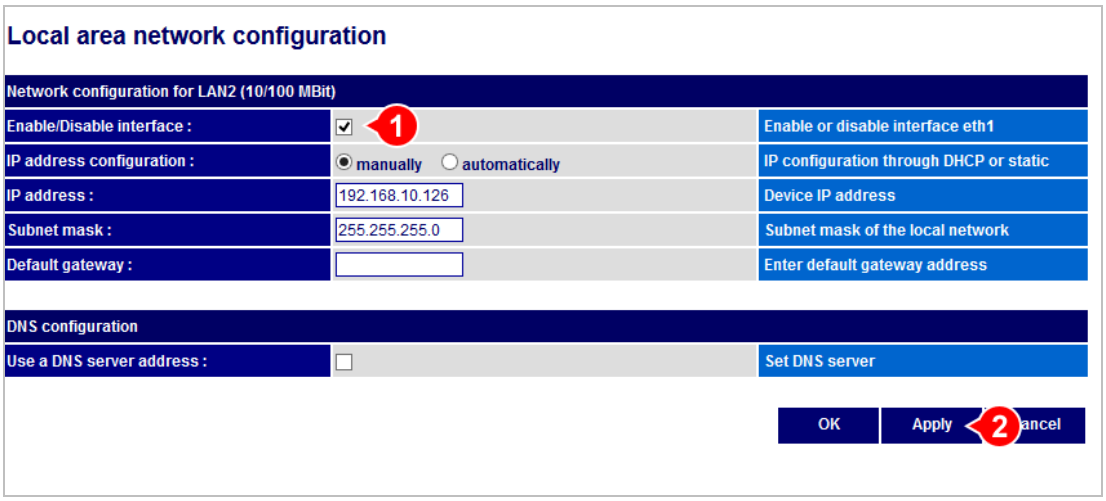


Figure 10: LAN2 settings

1. In the section **Network configuration for LAN2** enable the checkbox. The IP address is preset to `192.168.10.126`.

2. Click on **[Apply]**.

4.7 Access via Telnet

To access the IGW/936 via Telnet please open a Telnet client program (like **TeraTerm**) on your host PC and enter the current IP address* of the IGW/936 to activate a Telnet session.

In the upcoming Telnet window you can login with the username **root** and the password **root**.

Now you can enter any Linux commands, which will be executed by the IGW/936 operating system.

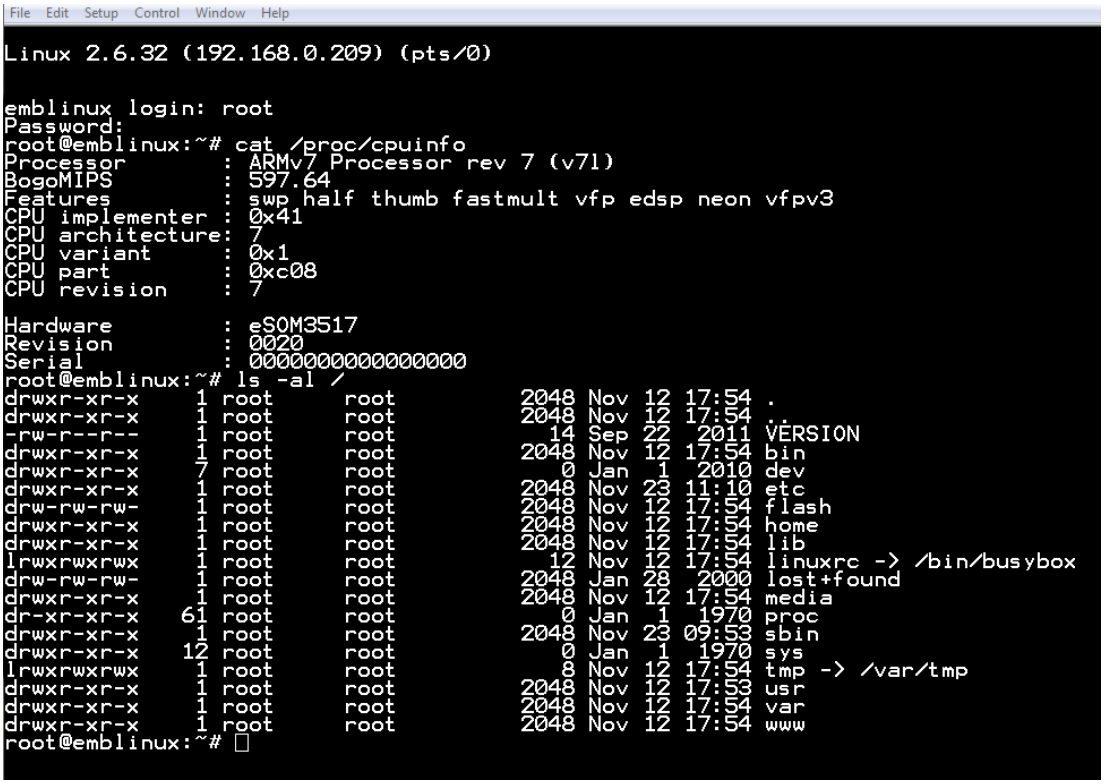


Figure 11: Access via Telnet client

***Please note:**
The ex-factory IP address of the LAN1 interface is **192.168.0.126**. If DHCP is enabled, please refer to **chapter 4.3** to find out the current IP address.

4.8 Access via FTP

The IGW/936 comes with a pre-installed FTP server, which allows the file transfer via Ethernet between a PC and the IGW/936. To access the IGW/936 via FTP use an FTP client like e.g. **FileZilla**.

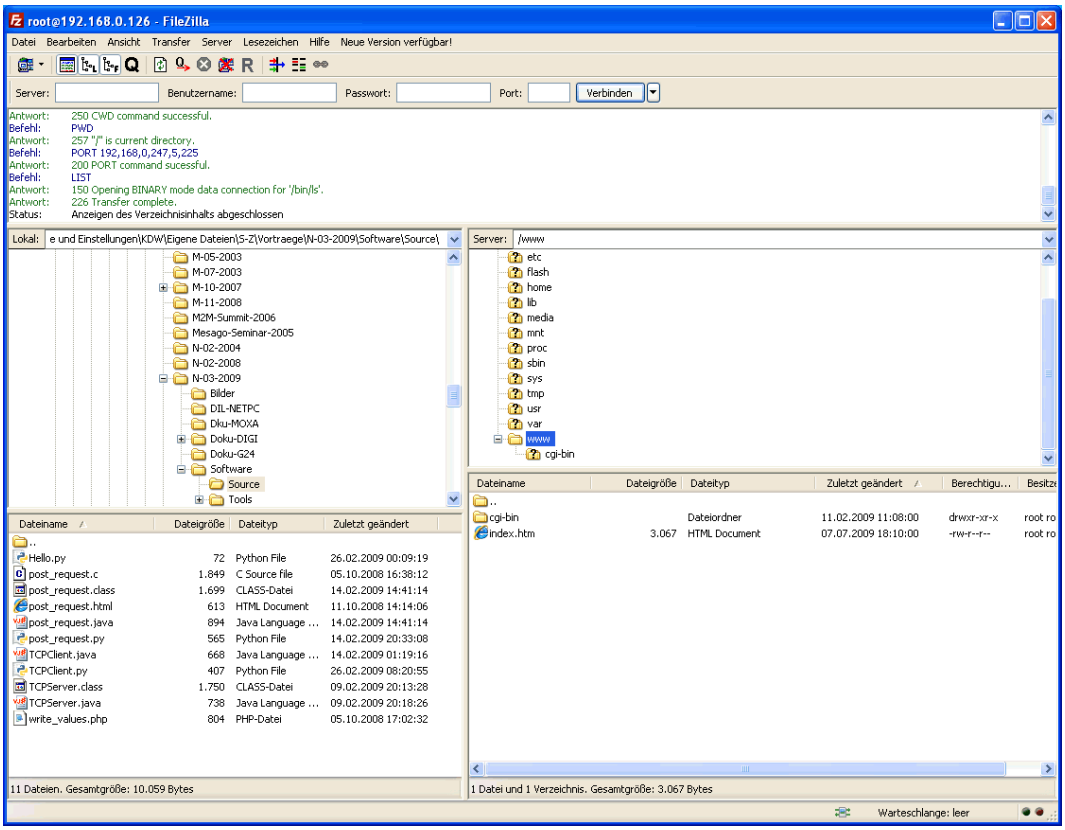


Figure 12: FileZilla as FTP client to access the FTP server

Use for the FTP login the current IP address* of the IGW/936, the username **root** and the password **root**. With this login you have FTP read/write permission in the file system.

The default setting of the root file system after the boot process is **read-only**. There are only three exceptions, which are shown in **table 5**:

Directory	Remark
`/flash`	R/W directory, non-volatile memory within Flash
`/home/root`	R/W directory, RAM disk, volatile memory
`/var/volatile`	R/W directory, RAM disk, volatile memory

Table 5: R/W directories in the file system

The read-only restriction protects all files of the file system. Under ordinary operating conditions it is not possible to overwrite or delete a file which is necessary for the eSOM/3517 within the IGW/936.

To disable the write protection just login with the username **root** and the password **root** and enter the following command:

```
mount / -o remount,rw
```

This command „mounts„ the file system as **read/write**. All files are now writable and deletable. Please pay attention not to damage important system files! With the command

```
mount / -o remount,ro
```

the system is set back to the read-only initial condition after the boot process.

***Please note:**
The ex-factory IP address of the LAN1 interface is **192.168.0.126**. If DHCP is enabled, please refer to **chapter 4.3** to find out the current IP address.

5 TECHNICAL DATA

Supply voltage ..... 12 .. 24 VDC

Weight ..... < 0,5 kg

Mechanical Dimensions (LxWxH) ..... 112 mm x 46 mm x 100 mm

Temperature range ..... 0° C – 60° C

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

6 PINOUT SCREW TERMINALS

The **table 6** shows the pinout of the screw terminals of the IGW/936.

Terminal	Signal
A1	COM2 Serial Port: RS485 RX/TX+
A2	COM2 Serial Port: RS485 RX/TX-
A3	Vin + (12 .. 24 VDC)
A4	Vin -
B1	---
B2	COM3 Serial Port: TXD (RS232), RX/TX- (RS485)
B3	COM3 Serial Port: RXD (RS232), RX/TX+ (RS485)
B4	Signal Ground

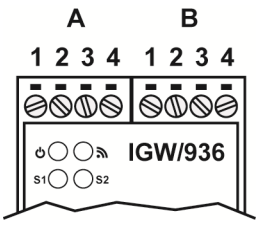


Table 6: Pinout of the screw terminals

Please note:
The RS485 (officially called TIA/EIA-485-A) connection between your IGW/936 and the field devices needs termination resistors on both ends for proper operation. The IGW/936 **does not offer internal termination resistors**. Please make sure, that the RS485 cable connection is equipped with external termination resistors.

7 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 1: LED S2 functions

8 TROUBLE SHOOTING IP ADDRESS PROBLEMS

If the IP addresses of LAN1 and LAN2 are not configured properly it is possible, that the SSV/WebUI (the configuration user interface) of the IGW/936 cannot be accessed anymore.

In that case it is necessary to restore the factory settings of the IGW/936. To do so please follow these steps:

1. Connect the LAN1 interface of the IGW/936 via a cross-over-cable with the LAN interface of a Windows PC. Disconnect (if present) the cable from the LAN2 interface of the IGW/936. If not already running turn on the IGW/936.

2. Make sure that DHCP (IP address is obtained automatically) is enabled within the network settings of the Windows PC for the LAN interface.

3. Take a USB memory stick and format it under Windows with FAT16 or FAT32.

4. Create a new simple text file on the memory stick, name it **`factoryreset`** and remove the file extension.

Please note:
Keep in mind that Windows hides file extensions by default!

5. At first unmount the memory stick over the USB symbol in the Windows system tray before removing it from the PC.

6. Now plug the memory stick into the USB port of the (running) IGW/936.

7. The IGW/936 makes a reboot and the LED S1 turns off after 15 to 30 seconds.

8. Remove the memory stick (at the latest when the LED S1 begins to blink).

9. The Windows PC shows the message **Network restricted** after 30 to 60 seconds.

10. The IGW/936 answers via UPnP with its new IP address within the AutoIP range of `169.254.x.x`. It can now be found as an icon within the Windows network environment. A double click on this icon opens the IGW/936's login page in a browser. The URL of the login page looks like this: **`http://169.256.x.x:7777`**.

9 HELPFUL LITERATURE

- IGW/936 hardware reference manual
- eSOM/3517 hardware reference manual

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DOCUMENT HISTORY

Revision	Date	Remarks	Name	Review
1.0	2017-08-30	First version	WBU	HNE
1.1	2018-08-28	Added chapter 8	WBU	HNE
1.2	2023-07-11	Removed information about DVI	WBU	ENE

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