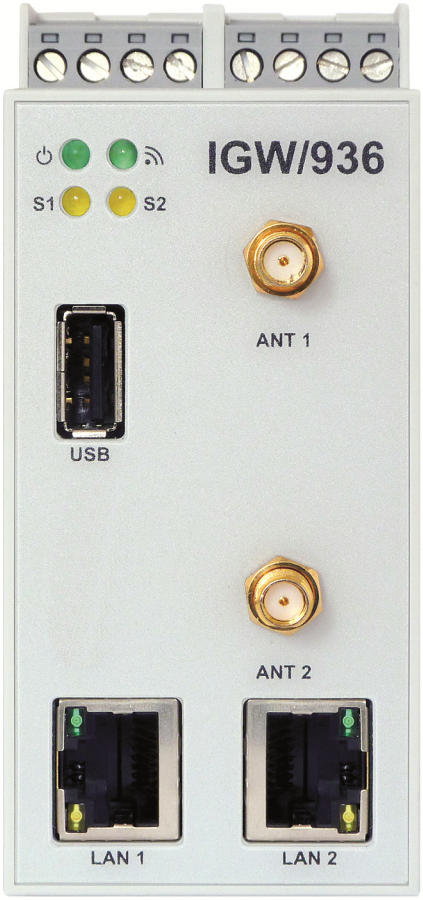
LTE ROUTER

IGW/936-L

with eSOM/3517



Hardware Reference

SSV SOFTWARE SYSTEMS

Document Revision 1.9 // 2023-07-07

CONTENT

1 INTRODUCTION 3
1.1 Safety Guidelines 3
1.2 Conventions 3
1.3 Main Applications 3
1.4 Features and Technical Data 4

2 OVERVIEW 5

3 PINOUTS 6
3.1 10/100 Mbps Ethernet Interface LAN1 6
3.2 10/100 Mbps Ethernet Interface LAN2 6
3.3 USB 2.0 Host Port 6
3.4 Screw Terminals 7
3.5 LED Functions 7

4 SIM CARD 8

5 HELPFUL LITERATURE 9

CONTACT 9

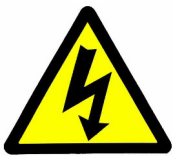
DOCUMENT HISTORY 9

1 INTRODUCTION

This document describes the basic hardware components of the IGW/936-L.

1.1 Safety Guidelines

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



ATTENTION!
Observe precautions for handling – electrostatic sensitive device!

- Discharge yourself before you work with the device, e.g. by touching a heater of metal and stay grounded while working with the device, to avoid damages through electrostatic discharge.
- 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.

1.2 Conventions

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

Table 1: Conventions used in this document

1.3 Main Applications

- (Web) Application Gateway
- LTE Router
- Industrial Firewall
- Proxy Server
- VPN Gateway / Router
- Linux Device Server

1.4 Features and Technical Data

Processor	
Manufacturer / Type	Texas Instruments AM3517 32-bit ARM Cortex-A8 SoC (eSOM/3517)
Clock speed	600 MHz
Memory	
RAM	256 MB SDRAM
Flash	1 GB NAND memory, 8 MB NOR memory
Storage media	1x internal microSD card holder
Interfaces	
Ethernet	2x 10/100 Mbps (RJ45)
USB	1x USB 2.0 Host
Serial I/Os	1x RS485 serial port (screw terminal) 1x RS232/RS485 serial port (screw terminal)
Antenna	2x SMA female (bulkhead) connector
Special Functions	
RTC	1x Real Time Clock
Watchdog	1x Timer watchdog (hardware-based, software-configurable) 1x Power supervisor (hardware-based)
SIM card	1x Mini-SIM card holder (accessible from the outside)
Wireless Module	
Mobile radio standards	GSM/UMTS/HSPA+/LTE
Transfer rates	150 Mbps peak download, 50 Mbps peak upload
Frequency bands	**LTE:** 2600 MHz (B7), 2100 MHz (B1), 1800 MHz (B3), 900 MHz (B8), 850 MHz (B5), 800 MHz (B20) **WCDMA:** 2100 MHz (B1), 850 MHz (B5), 900 MHz (B8) **GSM/GPRS:** Quad-band 850/900/1800/1900 MHz
Authentication	PAP, CHAP, CHAT, none
Supported APNs	Telekom, Vodafone, 02, E-Plus, user-defined
Displays / Control Elements	
LEDs	1x Power 1x Wireless 1x System status (programmable) 1x VPN status (programmable)
Electrical Characteristics	
Power supply	12 .. 24 VDC (typ. 24 VDC) from external power supply
Power consumption	< 15 W
Mechanical Characteristics	
Protection class	IP20 industrial case for 35 mm DIN-rail mounting
Mass	< 270 g
Dimensions	112 mm x 100 mm x 45 mm
Operating temperature	0 .. 60 °C
Standards and Certifications	
EMC	CE
Environmental standards	RoHS, WEEE
Industrial standards	VHPready (Virtual Heat & Power Ready)

2 OVERVIEW

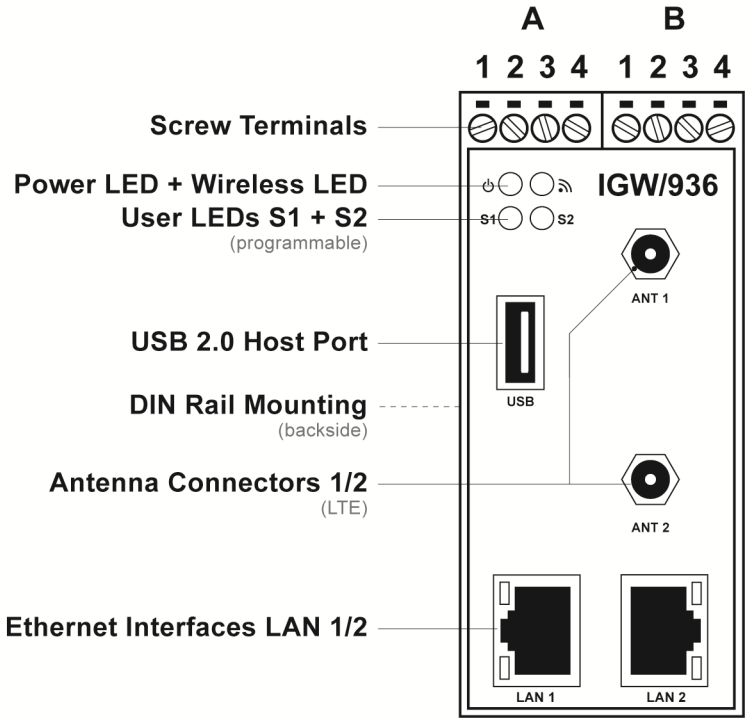
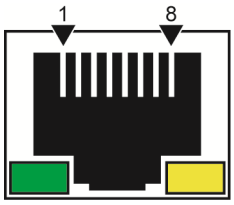


Figure 1: Overview IGW/936-L

3 PINOUTS

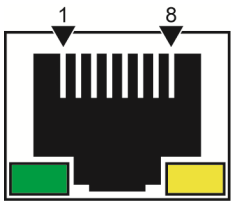
3.1 10/100 Mbps Ethernet Interface LAN1



Pin	Name	Function
1	TX+	10/100 Mbps LAN, TX+
2	TX-	10/100 Mbps LAN, TX-
3	RX+	10/100 Mbps LAN, RX+
4	---	Not Connected
5	---	Not Connected
6	RX-	10/100 Mbps LAN, RX-
7	---	Not Connected
8	---	Not Connected

Table 2: Pinout Ethernet interface LAN1

3.2 10/100 Mbps Ethernet Interface LAN2



Pin	Name	Function
1	TX+	10/100 Mbps LAN, TX+
2	TX-	10/100 Mbps LAN, TX-
3	RX+	10/100 Mbps LAN, RX+
4	---	Reserved
5	---	Reserved
6	RX-	10/100 Mbps LAN, RX-
7	---	Reserved
8	---	Reserved

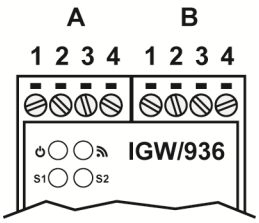
Table 3: Pinout Ethernet interface LAN2

3.3 USB 2.0 Host Port

Pin	Name	Function
1	VCC5	5 VDC Power Output
2	DATA-	USB Host -
3	DATA+	USB Host +
4	GND	Ground

Table 4: Pinout USB host port

3.4 Screw Terminals



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 5: Pinout screw terminal

3.5 LED Functions

LED	Description	Off	Flash	On
⏻	Power	No Power	---	Power On
📶	Wireless	Always Off	---	---
S1	System	Not ready	Booting	Ready
S2	Modem/VPN	Off	Connecting	Ready

Table 6: LED functions

The **LED S2** shows the modem state by different flashing provided the modem is used.

After the modem connection is established and VPN is enabled, the **LED S2** shows the state of the VPN connection.

The following table describes the functions of the particular LED signals.

On Time	Off Time	Description
Permanent	---	Modem connected or/and VPN connected
0.9 s	**0.1 s**	Good mobile signal (20 ASU - 31 ASU)
0.3 s	**0.3 s**	Normal mobile signal quality (13 ASU - 19 ASU)
0.1 s	**0.9 s**	Bad mobile signal quality (0 ASU - 12 ASU)
1 s	**1 s**	VPN-client tries connecting the VPN-server
2 s	**2 s**	Modem in init sequence, missing antenna, unknown signal
---	**Permanent**	Unknown state, modem disabled, wrong PIN, VPN disconnected

Table 7: LED S2 functions

4 SIM CARD

The internal SIM card of the IGW/936-L can be changed through the slot on the backside.

To remove the SIM card just push it gently with a screw driver until you hear a soft "click". The SIM card is ejected a few millimeters and can be pulled out easily.

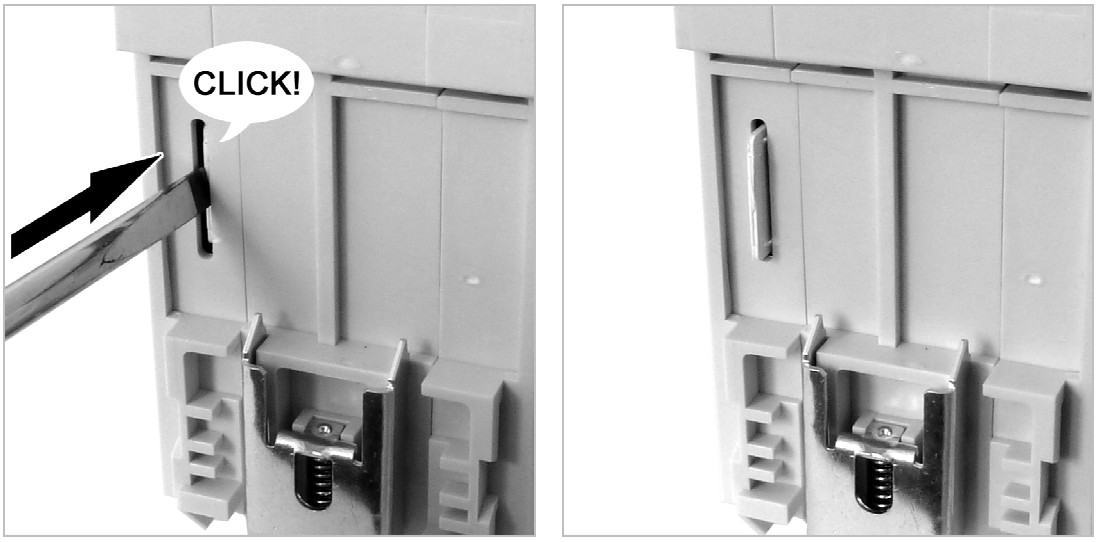


Figure 2: Removing the SIM card

To insert the SIM card just push it by hand as deep as possible into the slot.

Please note:
Pay attention to the correct orientation of the SIM card like shown in **fig. 3**!

Then use a screw driver to push it gently further into the slot until you here a soft "click".

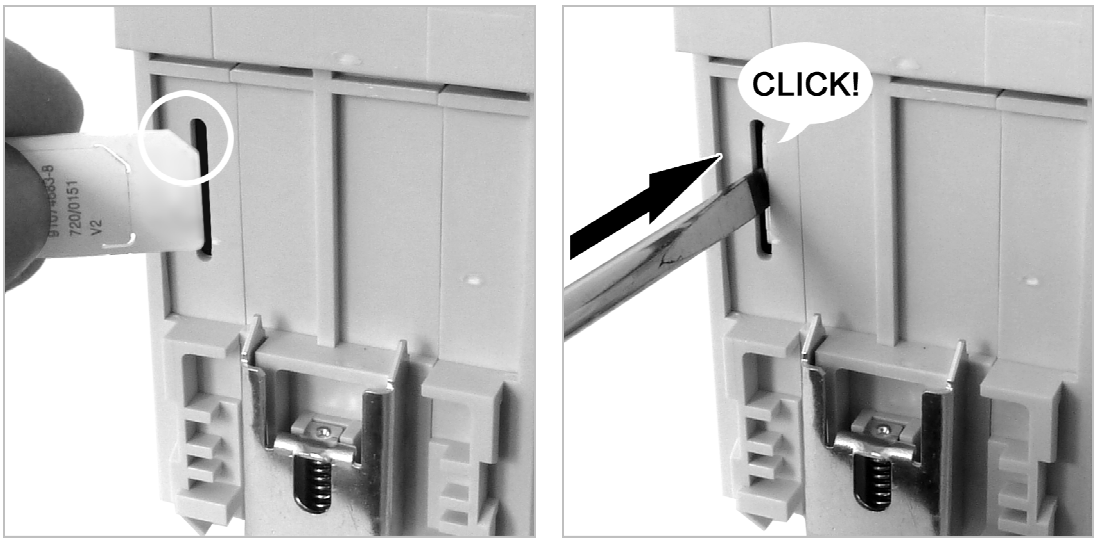


Figure 3: Inserting the SIM card

5 HELPFUL LITERATURE

- eSOM/3517 Hardware Reference
- SSV Web ConfigTool User Manual

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DOCUMENT HISTORY

Revision	Date	Remarks	Name	Review
1.0	2013-11-18	First version	WBU	KDW
1.1	2014-03-27	Edited chapter 3.1, added chapter 3.2, edited chapter 3.5	WBU	SSC
1.2	2014-04-23	Added chapter 4	WBU	SSC
1.3	2015-08-26	Edited chapter 1.3	WBU	SSC
1.4	2016-06-15	Edited chapter 3.5, added chapter 3.6	WBU	HNE
1.5	2017-03-17	Changed “power consumption” in chapter 1.4	WBU	KDW
1.6	2018-12-04	Updated features of “wireless module” in chapter 1.4	WBU	SSC
1.7	2020-09-15	Edited power consumption in chapter 1.4	WBU	SSC
1.8	2022-07-14	Edited information of LAN2 (1 Gbps changed to 100 Mbps)	WBU	SSC
1.9	2023-07-07	Removed information about DVI interface	WBU	ENE

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