Remote Access Gateway IGW/922-W
with DIL/NetPC ADNP/9200

Hardware Reference

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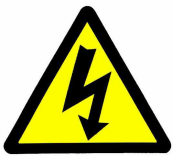
CONTENT

1 INTRODUCTION

This document describes the hardware components and the necessary cable connections of the Remote Access Gateway IGW/922-W.

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, to avoid damages.
- Stay ground while working with the device to avoid damage through electrostatic discharge.
- Please pay attention that the power cord or other cables are not squeezed or damaged in any way when you set up the device.
- The installation of the device should be done only by qualified personnel.
- The case of the device should be opened only by qualified personnel.

1.2 Conventions

Convention	Usage
bold	Important terms
italic	Filenames, user inputs and command lines
`monospace`	Pathnames, internet addresses and program code

Table 1: Conventions used in this document

1.3 Features and Technical Data

Processor	
Manufacturer / Type	Atmel AT91RM9200 32-bit ARM9-MCU (DIL/NetPC ADNP/9200 on QIL-128 socket)
Clock speed	180 MHz
Memory	
RAM	64 MB SDRAM
Flash	32 MB NOR memory
Storage media	1x internal microSD card holder with 4 GB card (preconfigured with SQLite database)
Interfaces	
Ethernet	2x 10/100 Mbps (RJ45)
Serial I/Os	1x RS232 serial port with handshake (Sub-D) 1x RS232/RS485 serial port with software-selectable mode switch (screw terminal)
Alarm output	1x Semiconductor relay output (max. 30 VDC, 500 mA)
Special Functions	
RTC	1x Real Time Clock with battery-backup (CR1225 Lithium 3 V)
Watchdog	1x Timer watchdog (hardware-based, software-configurable) 1x Power supervisor (hardware-based)
Wireless Module	
WiFi standards	IEEE 802.11 b/g/n (2.4 GHz)
Network protocols	TCP/IP, UDP/IP
Operating modes	Simultaneous Soft AP Client mode with DHCP server
Security	IEEE 802.11i support with WPA/WPA2 256-bit AES encryption
Management	Web server with landing page and WebUI
Displays / Control Elements	
LEDs	1x Power 1x IGW start-up + VPN status (programmable) 1x LAN LED for each Ethernet interface
Electrical Characteristics	
Power supply	12 .. 24 VDC (typ. 24 VDC) from external power supply
Power consumption	< 4 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 .. 70 °C
Standards and Certifications	
EMC	CE
Environmental standards	RoHS, WEEE
Industrial standards	VHPready (Virtual Heat & Power Ready)
Security	Penetration testing and dynamic analysis: fuzzing tested by SoftScheck GmbH

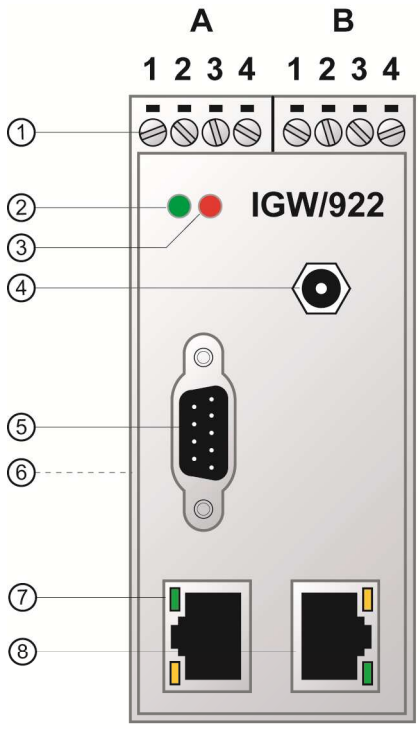
1.4 Main Applications

- Remote Access Security Gateway
- Industrial Firewall
- Application Gateway
- Proxy Server
- VPN Gateway / Router
- Linux Device Server

1.5 Demo Applications

- Smartphone App Backend
- Data logger with cloud connection

2 OVERVIEW



① Screw terminals A1- 4 and B1-4
② Power LED
③ User LED (programmable)
④ Antenna connector
⑤ Serial port COM1
⑥ DIN-rail mounting (backside)
⑦ Ethernet interface LAN 1
⑧ Ethernet interface LAN 2

Figure 1: Overview Remote Access Gateway IGW/922-W

3 PINOUTS

3.1 Screw Terminals

The **table 2** shows the pinout of the screw terminals of the IGW/922-W.

Pin	Power	COM2		Alarm
		RS232	RS485*	
A1				Alarm -
A2				Alarm +
A3	V+ IN			
A4	GND IN			
B1				
B2		TXD	RX/TX -	
B3		RXD	RX/TX +	
B4		GND	GND	

Table 2: Pinout of the screw terminals

*** Please note:** The RS485 (officially called TIA/EIA-485-A) connection between your IGW/922-W and the field devices needs termination resistors on both ends for proper operation. The IGW/922-W does **not** offer internal termination resistors. Please make sure, that the RS485 cable connection is equipped with external termination resistors.

3.2 Ethernet LAN1 and LAN2

The Ethernet LAN1 and LAN2 interfaces are standard RJ45 connectors.

Both have a green LED. It is on when there is a LAN link established and blinks when there is traffic. The yellow LED is not connected.

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

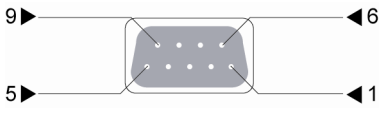
Table 3: Pinout Ethernet interfaces

3.3 Serial Port COM1

The serial port COM1 is a standard Sub-D connector.

Pin	Name	Function
1	DCD	COM1 Serial Port, DCD pin (RS232)
2	RXD	COM1 Serial Port, RXD pin (RS232)
3	TXD	COM1 Serial Port, TXD pin (RS232)
4	DTR	COM1 Serial Port, DTR pin (RS232)
5	GND	Ground
6	DSR	COM1 Serial Port, DSR pin (RS232)
7	RTS	COM1 Serial Port, RTS pin (RS232)
8	CTS	COM1 Serial Port, CTS pin (RS232)
9	DCD	COM1 Serial Port, DCD pin (RS232)

Table 4: Pinout COM1 connector



4 CONNECTIONS

4.1 Serial Port COM2

To create an RS232 serial link on port COM2 of the Remote Access Gateway IGW/922-W connect the adapter cable and the null-modem cable like shown in the figure below.

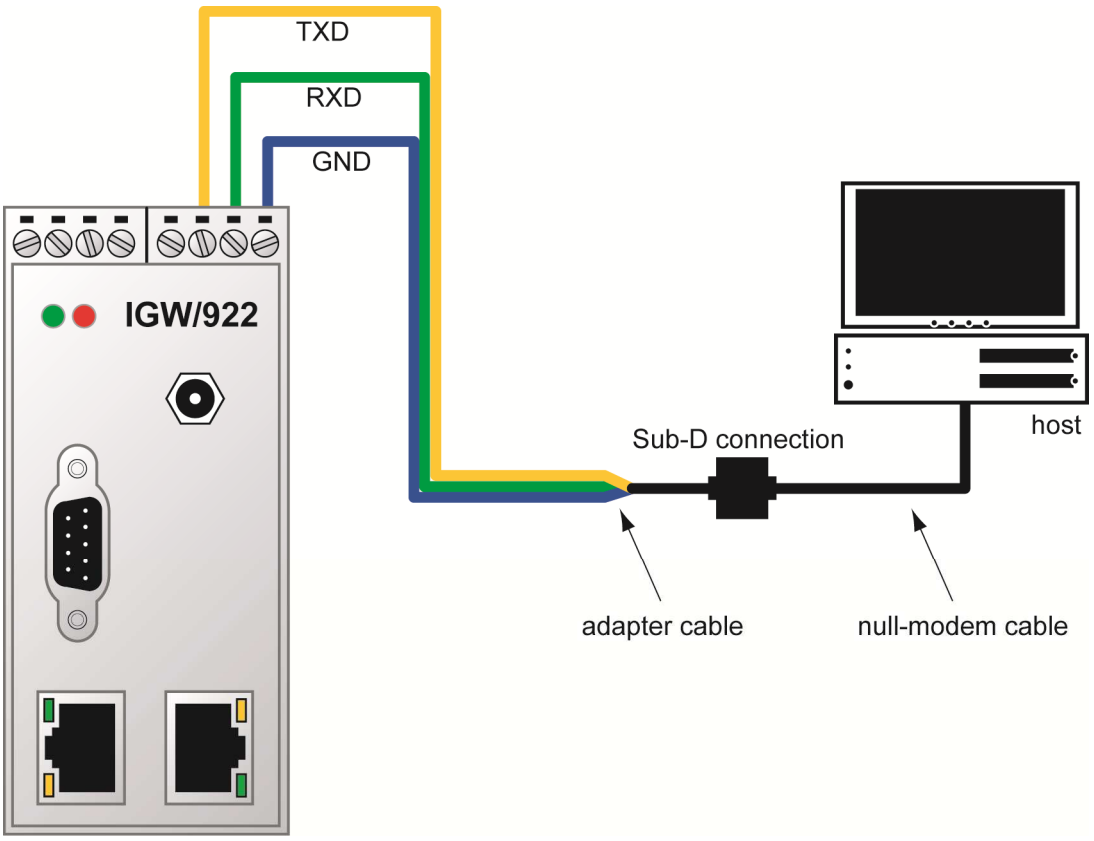


Figure 2: RS232 link on serial port COM2

Terminal	Signal
B2	COM2 Serial Port: TXD (RS232), RX/TX- (RS485)
B3	COM2 Serial Port: RXD (RS232), RX/TX+ (RS485)
B4	Ground

Table 5: Screw terminal COM2

4.2 Power Supply

The Remote Access Gateway IGW/922-W needs a stable supply voltage of 11 .. 28 VDC. Use the power adapter cable to connect an external DIN-rail power supply like shown in the figure below. The power supply should be in immediate proximity to the Remote Access Gateway IGW/922-W. The power supply should be Class 2 (LPS).

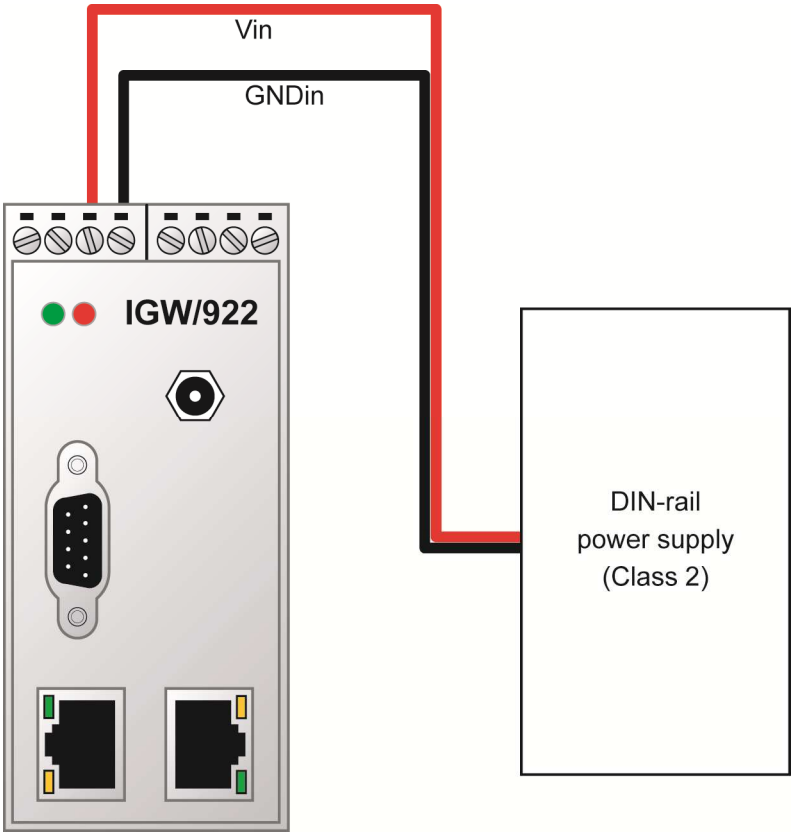
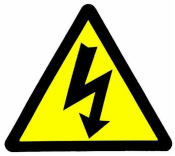


Figure 3: Power supply for the Remote Access Gateway IGW/922-W

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

Table 6: Screw terminal power

CAUTION!
Providing the Remote Access Gateway IGW/922-W with a higher voltage than the regular 11 .. 28 VDC could cause damaged board components! The output power should be at least 2.5 W.



CAUTION!
Do **NOT** turn on the power supply while connecting the power adapter cable with the Remote Access Gateway IGW/922-W. This could cause damaged board components! First connect the power adapter cable and THEN turn the power supply on.

4.3 Semiconductor Relay Output

The Remote Access Gateway IGW/922-W offers a semiconductor relay output to switch an external alarm device with up to 30 VDC and 500 mA on and off.

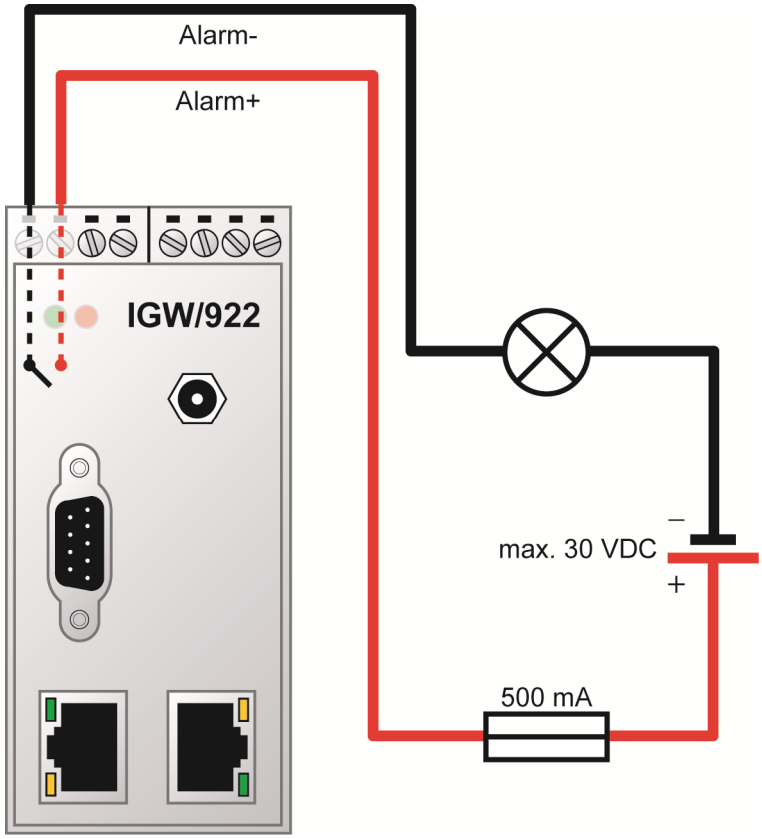
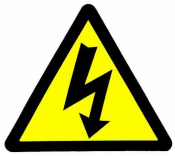


Figure 4: Connecting an external alarm device

Terminal	Signal
A1	Alarm- Semiconductor Relay Output (max. 30 VDC / 500 mA)
A2	Alarm+ Semiconductor Relay Output (max. 30 VDC / 500 mA)

Table 7: Screw terminal semiconductor relay output



CAUTION!
Using the alarm output with more than the regular 30 VDC and 500 mA could cause damaged board components!

5 HELPFUL LITERATURE

- IGW/92X-W first steps
- E2W/ESL2 hardware reference
- DIL/NetPC ADNP/9200 hardware reference

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DOCUMENT HISTORY

Revision	Date	Remarks	Name	Review
1.0	2014-09-24	first version	WBU	ENE
1.1	2015-08-26	edited chapter 1.3	WBU	ENE
1.2	2016-05-17	edited figure 4	WBU	FKI