

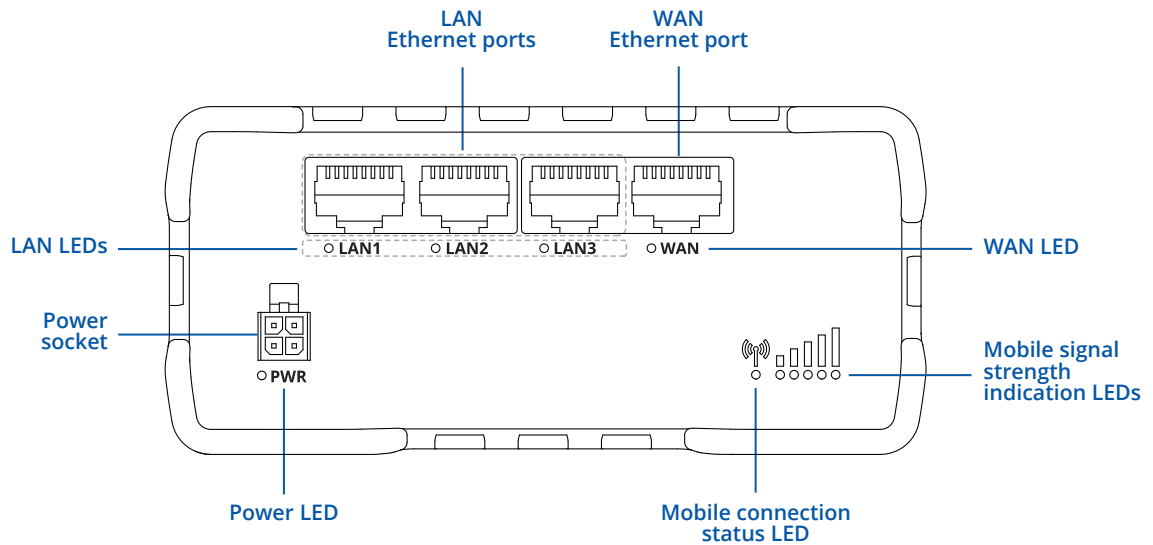
 **TELTONIKA** | Networks

# RUT901

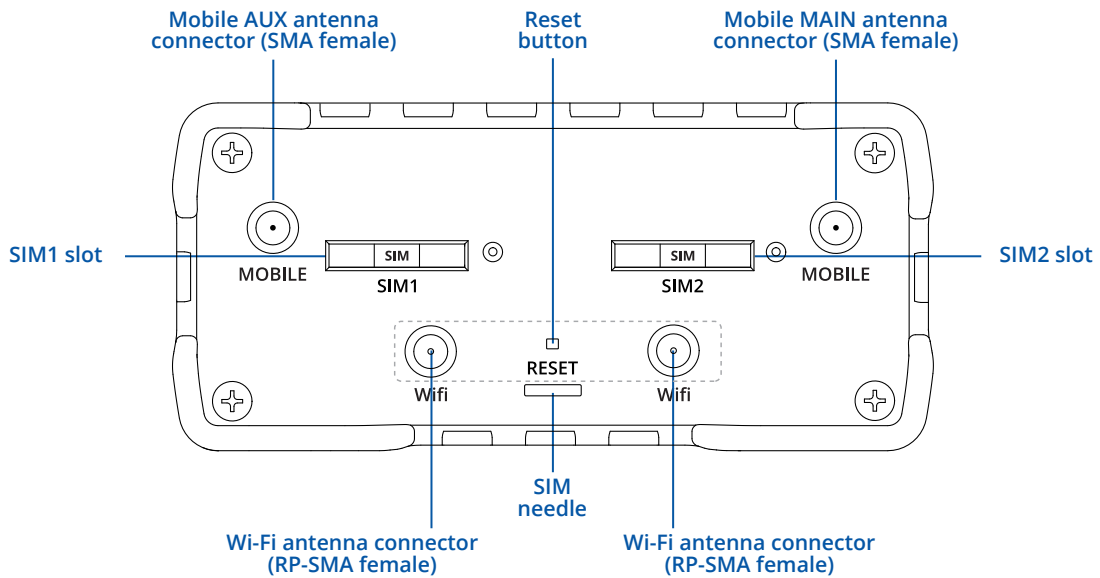


# HARDWARE

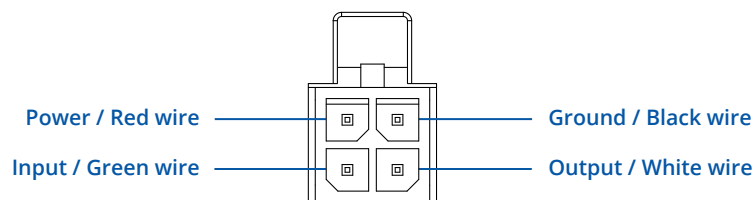
## FRONT VIEW



## BACK VIEW



## POWER SOCKET PINOUT



## FEATURES

### MOBILE

Mobile module	4G (LTE) – Cat 4 up to 150 Mbps, 3G – Up to 21 Mbps, 2G – Up to 236.8 kbps
SIM switch	2 SIM cards, auto-switch cases: weak signal, data limit, SMS limit, roaming, no network, network denied, data connection fail, SIM idle protection
Status	Signal strength (RSSI), SINR, RSRP, RSRQ, EC/IO, RSCP, Bytes sent/received, connected band, IMSI, ICCID
SMS	SMS status, SMS configuration, send/read SMS via HTTP POST/GET, EMAIL to SMS, SMS to EMAIL, SMS to HTTP, SMS to SMS, scheduled SMS, SMS autoreply, SMPP
Black/White list	Operator black/white list
Band management	Band lock, Used band status display
APN	Auto APN
Bridge	Direct connection (bridge) between mobile ISP and device on LAN
Passthrough	Router assigns its mobile WAN IP address to another device on LAN

### WIRELESS

Wireless mode	IEEE 802.11b/g/n, Access Point (AP), Station (STA)
Wi-Fi security	WPA-PSK/WPA2-PSK Mixed Mode, WPA2-PSK, WPA2-EAP, WPA2-EAP/WPA3-EAP Mixed Mode, WPA3-EAP, WPA2-PSK/WPA3-SAE Mixed Mode, WPA3-SAE, OWE; AES-CCMP, TKIP, Auto Cipher modes, client separation
SSID	SSID stealth mode and access control based on MAC address
Wi-Fi users	Up to 100 simultaneous connections
Wireless Hotspot	Captive portal (Hotspot), internal/external Radius server, built in customizable landing page

### ETHERNET

WAN	1 x WAN port (can be configured to LAN) 10/100 Mbps, compliance IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX
LAN	3 x LAN ports, 10/100 Mbps, compliance IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX

### NETWORK

Routing	Static routing, Dynamic routing (BGP, OSPF v2, RIP v1/v2, NHRP)
Network protocols	TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, FTP, SMTP, SSL v3, TLS, ARP, VRRP, PPP, PPPoE, UPNP, SSH, DHCP, Telnet, SMPP, SMNP, MQTT, Wake On Lan (WOL)
VoIP passthrough support	H.323 and SIP-alg protocol NAT helpers, allowing proper routing of VoIP packets
Connection monitoring	Ping Reboot, Wget Reboot, Periodic Reboot, LCP and ICMP for link inspection
Firewall	Port forward, traffic rules, custom rules
DHCP	Static and dynamic IP allocation, DHCP Relay, Relayd
QoS / Smart Queue Management (SQM)	Traffic priority queuing by source/destination, service, protocol or port, WMM, 802.11e
DDNS	Supported >25 service providers, others can be configured manually
Network backup	VRRP, Mobile, Wired and WiFi WAN options, each of which can be used as backup, using automatic Failover
Load balancing	Balance your internet traffic over multiple WAN connections
SSHFS	Possibility to mount remote file system via SSH protocol (not available in standard FW)

### SECURITY

Authentication	Pre-shared key, digital certificates, X.509 certificates
Firewall	Pre-configured firewall rules can be enabled via web-ui, unlimited firewall configuration via CLI; DMZ; NAT; NAT-T
Attack prevention	DDOS prevention (SYN flood protection, SSH attack prevention, HTTP/HTTPS attack prevention), port scan prevention (SYN-FIN, SYN-RST, X-mas, NULL flags, FIN scan attacks)
VLAN	Port and tag based VLAN separation
Mobile quota control	Set up custom data limits for both SIM cards
WEB filter	Blacklist for blocking out unwanted websites, whitelist for specifying allowed sites only
Access control	Flexible access control of TCP, UDP, ICMP packets, MAC address filter

## VPN

OpenVPN	Multiple clients and server can be running simultaneously, 12 encryption methods
OpenVPN Encryption	DES-CBC, RC2-CBC, DES-EDE-CBC, DES-EDE3-CBC, DESX-CBC, BF-CBC, RC2-40-CBC, CAST5-CBC, RC2-64-CBC, AES-128-CBC, AES-192-CBC, AES-256-CBC
IPsec	IKEv1, IKEv2, supports up to 4 x VPN IPsec tunnels (instances), with 5 encryption methods (DES, 3DES, AES128, AES192, AES256)
GRE	GRE tunnel
PPTP, L2TP	Client/Server services can run simultaneously
Stunnel	Proxy designed to add TLS encryption functionality to existing clients and servers without any changes in the programs' code
DMVPN	Method of building scalable IPsec VPNs
SSTP	SSTP client instance support
ZeroTier	ZeroTier VPN
WireGuard	WireGuard VPN client and server support

## MODBUS TCP SLAVE

ID range	Respond to one ID in range [1;255] or any
Allow Remote Access	Allow access through WAN
Custom registers	MODBUS TCP custom register block requests, which read/write to a file inside the router, and can be used to extend MODBUS TCP Slave functionality

## MODBUS TCP MASTER

Supported functions	01, 02, 03, 04, 05, 06, 15, 16
Supported data formats	8 bit: INT, UINT; 16 bit: INT, UINT (MSB or LSB first); 32 bit: float, INT, UINT (ABCD (big-endian), DCBA (little-endian), CDAB, BADC)

## MODBUS DATA TO SERVER

Protocol	HTTP(S), MQTT, Azure MQTT
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## MQTT GATEWAY

Gateway	Allows sending commands and receiving data from MODBUS Master through the MQTT broker
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## DNP3

Supported modes	DNP3 Station, DNP3 Outstation
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## MONITORING & MANAGEMENT

WEB UI	HTTP/HTTPS, status, configuration, FW update, CLI, troubleshoot, event log, system log, kernel log
FOTA	Firmware update from server, automatic notification
SSH	SSH (v1, v2)
SMS	SMS status, SMS configuration, send/read SMS via HTTP POST/GET
Call	Reboot, Status, WiFi on/off, Mobile data on/off, Output on/off, answer/hang-up with a timer
TR-069	OpenACS, EasyCwmp, ACSLite, tGem, LibreACS, GenieACS, FreeACS, LibCWMP, Friendly tech, AVSystem
MQTT	MQTT Broker, MQTT publisher
SNMP	SNMP (v1, v2, v3), SNMP trap
JSON-RPC	Management API over HTTP/HTTPS
MODBUS	MODBUS TCP status/control
RMS	Teltonika Remote Management System (RMS)

## IoT PLATFORMS

Clouds of things	Allows monitoring of: Device data, Mobile data, Network info, Availability
ThingWorx	Allows monitoring of: WAN Type, WAN IP Mobile Operator Name, Mobile Signal Strength, Mobile Network Type
Cumulocity	Allows monitoring of: Device Model, Revision and Serial Number, Mobile Cell ID, ICCID, IMEI, Connection Type, Operator, Signal Strength, WAN Type and IP
Azure IoT Hub	Can send device IP, Number of bytes send/received/ 3G connection state, Network link state, IMEI, ICCID, Model, Manufacturer, Serial, Revision, IMSI, Sim State, PIN state, GSM signal, WCDMA RSCP WCDMA EC/IO, LTE RSRP, LTE SINR, LTE RSRQ, CELL ID, Operator, Operator number, Connection type, Temperature, PIN count to Azure IoT Hub server

## SYSTEM CHARACTERISTICS

CPU	MediaTek, MIPS 24KEc, 580MHz
RAM	128 MB, DDR2
FLASH storage	16 MB, SPI Flash

## FIRMWARE / CONFIGURATION

WEB UI	Update FW from file, check FW on server, configuration profiles, configuration backup, restore point
FOTA	Update FW
RMS	Update FW/configuration for multiple devices
Keep settings	Update FW without losing current configuration

## FIRMWARE CUSTOMIZATION

Operating system	RutOS (OpenWrt based Linux OS)
Supported languages	Busybox shell, Lua, C, C++
Development tools	SDK package with build environment provided

## INPUT/OUTPUT

Input	1 x Digital Input, 0 - 5 V detected as logic low, 8 - 30 V detected as logic high
Output	1 x Digital Output, Open collector output, max output 30 V, 300 mA
Events	SMS
I/O juggler	Allows to set certain I/O conditions to initiate event

## POWER

Connector	4-pin industrial DC power socket
Input voltage range	9 - 30 VDC, reverse polarity protection; surge protection >31 VDC 10us max
PoE (passive)	Passive PoE over spare pairs. Possibility to power up through LAN port, not compatible with IEEE802.3af, 802.3at and 802.3bt standards
Power consumption	< 2 W idle, < 7 W Max

## PHYSICAL INTERFACES (PORTS, LEDS, ANTENNAS, BUTTONS, SIM)

Ethernet	4 x RJ45 ports, 10/100 Mbps
I/O's	1 x Digital Input, 1 x Digital Output on 4-pin power connector
Status LEDs	1 x bi-color connection status LED, 5 x connection strength LEDs, 4 x LAN status LEDs, 1 x Power LED
SIM	2 x SIM slots (Mini SIM - 2FF), 1.8 V/3 V, external SIM holders, eSIM (Optional)
Power	1 x 4-pin power connector
Antennas	2 x SMA female for LTE, 2 x RP-SMA female for WiFi antenna connectors
Reset	Reboot/User default reset/Factory reset button

## PHYSICAL SPECIFICATION

Casing material	Aluminium housing, plastic panels
Dimensions (W x H x D)	110 x 50 x 100 mm
Weight	297 g
Mounting options	DIN rail (can be mounted on three sides), flat surface placement

## OPERATING ENVIRONMENT

Operating temperature	-40 °C to 75 °C
Operating humidity	10% to 90% non-condensing
Ingress Protection Rating	IP30

**REGULATORY & TYPE APPROVALS**


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Regulatory	CE/RED, UKCA, EAC, UCRF, CB
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**EMI IMMUNITY**


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Standards	EN 301 489-1 V2.2.3, Draft EN 301 489-17 V3.2.4, EN 301 489-52 V1.2.1, EN 55032:2015+A11:2020+A1:2020, EN 55035:2017+A11:2020; EN IEC 61000-3-2:2019+A1:2021; EN 61000-3-3:2013 + A1:2019+A2:2021;
ESD	EN 61000-4-2:2009
RS	EN 61000-4-2:2009
EFT	EN 61000-4-4:2012
Surge protection	EN 61000-4-5:2014+A1:2017
CS	EN 61000-4-6:2014
DIP	EN IEC 61000-4-11:2020

**RF**


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Standards	EN 300 328 V2.2.2, EN 301 511 V12.5.1, EN 301 908-1 V15.1.1, EN 301 908-2 V13.1.1, EN 301 908-13 V13.1.1
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**SAFETY**


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Standards	EN IEC 62311:2020; IEC 62368-1:2018 EN IEC 62368-1:2020+A11:2020; EN 50665:2017
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## WHAT'S IN THE BOX?

### STANDARD PACKAGE CONTAINS\*

- Router RUT901
- 9 W PSU
- 2 x LTE antennas (swivel, SMA male)
- 2 x Wi-Fi antennas (swivel, RP-SMA male)
- Ethernet cable (1.5 m)
- SIM Adapter kit
- QSG (Quick Start Guide)
- Packaging box



 <p><b>ROUTER RUT901</b></p>	 <p><b>9 W PSU</b></p>	 <p><b>2 X LTE ANTENNAS (SWIVEL, SMA MALE)</b></p>
 <p><b>2 X WI-FI ANTENNAS (SWIVEL, RP-SMA MALE)</b></p>	 <p><b>SIM ADAPTER KIT</b></p>	 <p><b>ETHERNET CABLE (1.5 M)</b></p>

\* For all standard order codes standard package contents are the same, except for PSU.

## STANDARD ORDER CODES

PRODUCT CODE	HS CODE	HTS CODE	PACKAGE CONTAINS
RUT901 000000	851762	8517.62.00	Standard package with Euro PSU
RUT901 100000	851762	8517.62.00	Standard package with Euro PSU

For more information on all available packaging options – please contact us directly.

## AVAILABLE VERSIONS

PRODUCT CODE	REGION (OPERATOR)	FREQUENCY
RUT901 0*****	Europe <sup>1</sup> , Asia-Pacific, Australia	<ul style="list-style-type: none"> <li>● <b>4G (LTE-FDD):</b> B1, B3, B5, B7, B8, B20, B28</li> <li>● <b>4G (LTE-TDD):</b> B38, B40, B41</li> <li>● <b>3G:</b> B1, B5, B8</li> <li>● <b>2G:</b> B3, B8</li> </ul>
RUT9011*****	Latin America	<ul style="list-style-type: none"> <li>● <b>4G (LTE-FDD):</b> B1, B2, B3, B4, B5, B7, B8, B28, B66</li> <li>● <b>4G (LTE-TDD):</b> B40</li> <li>● <b>3G:</b> B1, B2, B4, B5, B8</li> <li>● <b>2G:</b> B2, B3, B5, B8</li> </ul>

The price and lead-times for region (operator) specific versions may vary. For more information please contact us.

\* - For more detailed information, visit our Wiki  
<sup>1</sup> - Regional availability - excluding Russia & Belarus.



## RUT901 SPATIAL MEASUREMENTS & WEIGHT

### MAIN MEASUREMENTS

W x H x D dimensions for RUT901:

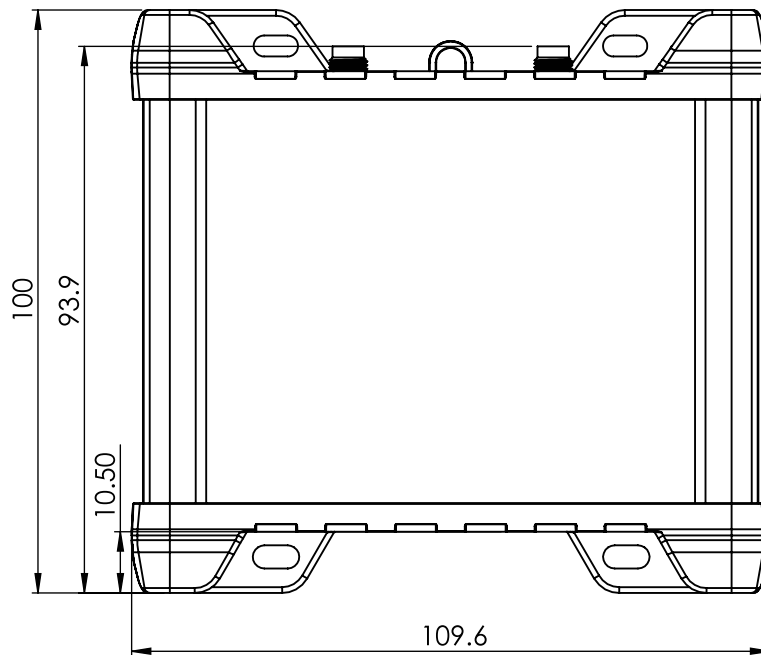
Device housing\*: 110 x 50 x 100 mm

Box: 355 x 60 x 175 mm

\*Housing measurements are presented without antenna connectors and screws; for measurements of other device elements look to the sections below.

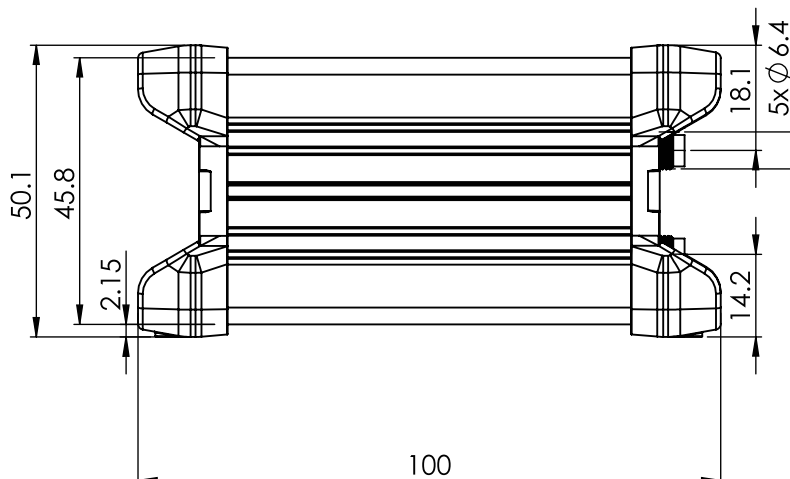
### TOP VIEW

The figure below depicts the measurements of RUT901 and its components as seen from the top:



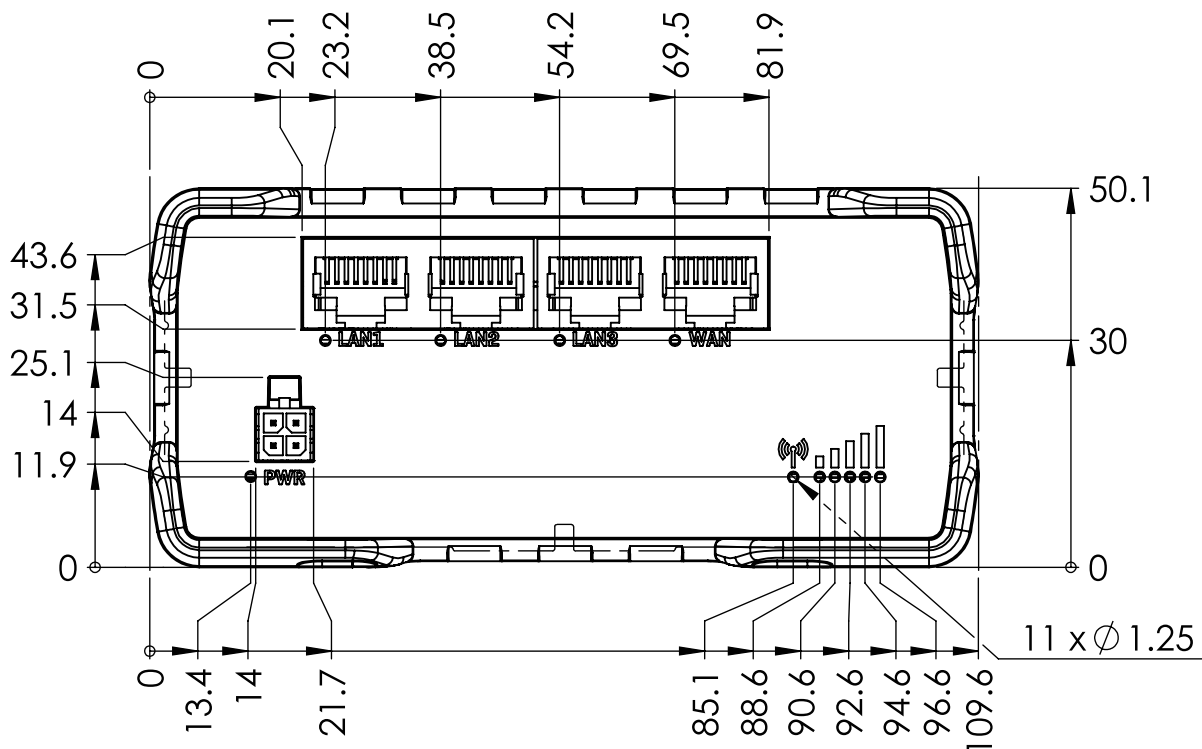
### RIGHT VIEW

The figure below depicts the measurements of RUT901 and its components as seen from the right side:



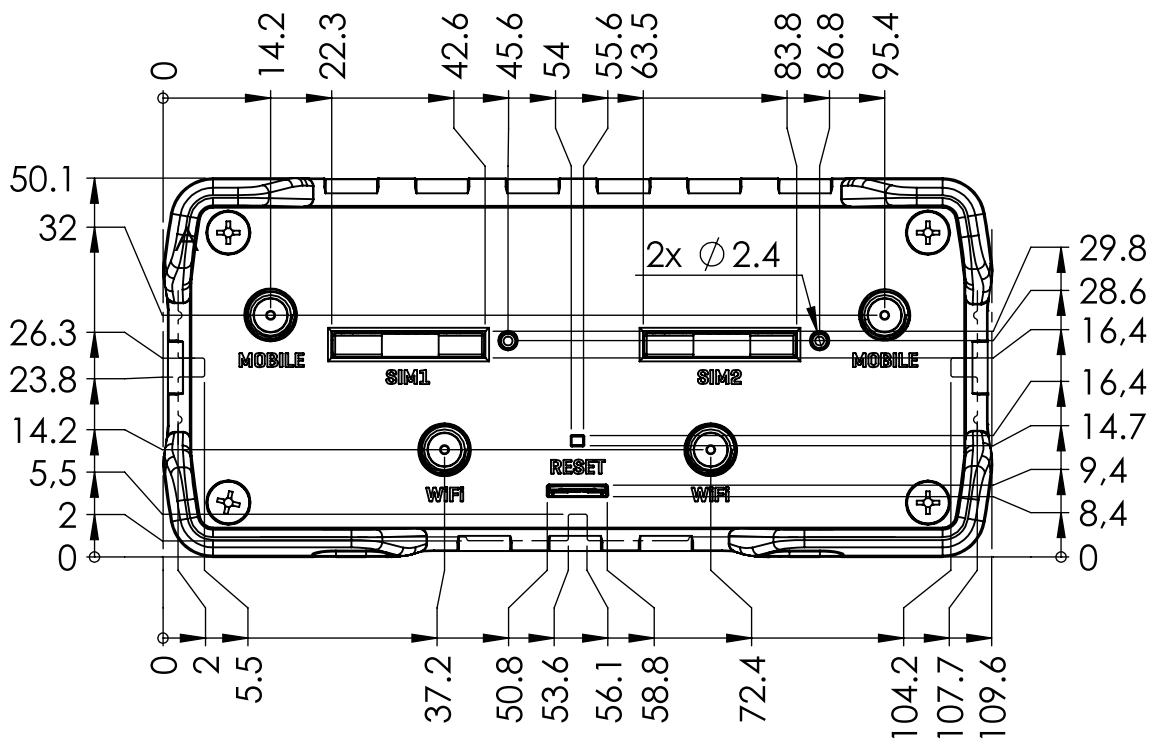
FRONT VIEW

The figure below depicts the measurements of RUT901 and its components as seen from the front panel side:



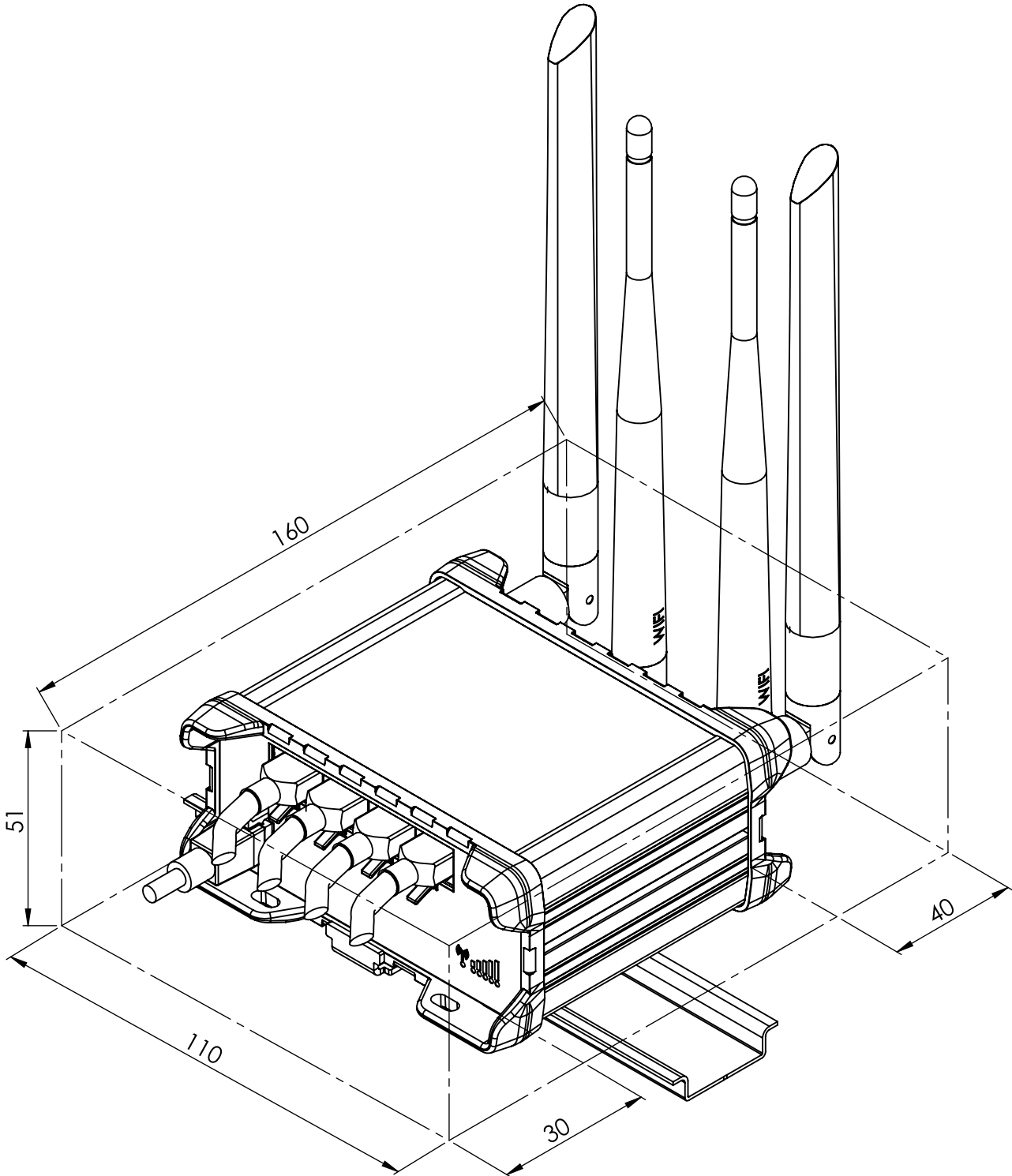
REAR VIEW

The figure below depicts the measurements of RUT901 and its components as seen from the back panel side:



**MOUNTING SPACE REQUIREMENTS**

The figure below depicts an approximation of the device's dimensions when cables and antennas are attached:



DIN RAIL

The scheme below depicts protrusion measurements of an attached DIN Rail:

