TELTONIKA | Networks

RUTXR1

HARDWARE

FRONT VIEW

Main power LED Reserve power LED Mobile network type LEDs Console port WAN Ethernet port

Reset button SIM holders Mobile signal strength LEDs WAN type LEDs USB port LAN Ethernet ports WAN SFP port

BACK VIEW

Main power connector Reserve power connector Mobile AUX antenna connector Security slot

WiFi antenna connectors Mobile MAIN antenna connector Grounding screw

POWER SOCKET PINOUT

Power / Red wire Ground / Black wire

Not connected Not connected

FEATURES

MOBILE

Mobile module	4G (LTE) – Cat 6 up to 300 Mbps, 3 – up to 42 Mbps
SIM switch	2 SIM cards, one for each mobile module, auto switch cases: weak signal, data limit, SMS limit, roaming, no network, network denied, data connection fail, SIM idle protection (planned
Status	Signal strength, SINR, RSRP, RSRQ, Bytes sent/received
SMS	SMS status, SMS configuration, send/read SMS via HTTP POST/GET, Email to SMS, SMS to Email, SMS to TTP, SMS to SMS, SMS auto replay, scheduled SMS (planned), SMPP (planned)
Black/White list	Operator black/white list
Multiple PDN	Possibility to use different PDNs for multiple network access and services
Band management	Band lock, Used band status display
APN	Auto APN
Bridge mode	Direct connection (bridge) between mobile ISP and device on LAN

ETHERNET

WAN	WAN port 10/100/1000 Mbps, compliance with IEEE 802.3, IEEE 802.3u, 802.3az standards, supports auto MDI/MDIX crossover, Fiber – 1 x SFP port (cannot work simultaneously with Ethernet WAN port)
LAN	4 x LAN ports, 10/100/1000 Mbps, compliance with IEEE 802.3, IEEE 802.3u, 802.3az standards, supports auto MDI/MDIX

NETWORK

Routing	Static routing, Dynamic routing (BGP, OSPF v2, RIP v1/v2, EIGRP, NHRP)
Network protocols	TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, FTP, SMTP, SSL v3, TLS, ARP, VRRP, PPP, UPNP, SSH, DHCP, Telnet, SNMP, 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 forwards, traffic rules, custom rules
QoS / Smart Queue Management (SQM)	Traffic priority queuing by source/destination, service, protocol or port, WMM, 802.11e
DHCP	Static and dynamic IP allocation, DHCP Relay, Relayd
DDNS	Supported >25 service providers, others can be configured manually
Network backup	VRRP, Mobile, Wired, Fiber and WiFi WAN options, each of which can be used as an automatic Failover
Load balancing	Balance Internet traffic over multiple WAN connections
SSHFS (optional)	Possibility to mount remote file system via SSH protocol (not available in standard FW)

SECURITY

Authetication	Pre-shared key, digital certificates, X.509 certificates
Firewall	Pre-configured firewall rules can be enabled via WebUI, 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 based and tag based VLAN separation
Mobile quota control	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

CONSOLE

Console	RS-232 (RJ45) console port for router configuration and debugging

VPN

OpenVPN	Multiple clients and a server can run 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, with 5 encryption methods for IPsec (DES, 3DES, AES128, AES192, AES256)
GRE	GRE tunnel
PPTP, L2TP	Client/Server instances can run simultaneously, L2TPv3 support
Stunnel	Proxy designed to add TLS encryption functionality to existing clients and servers without any changes in the program's code
DMVPN	Method of building scalable IPsec VPNs
SSTP	SSTP client instance support

WIRELESS

Wireless mode	802.11ac (WiFi 5) with data transmission rates up to 867 Mbps (Dual Band, MU-MIMO), 802.11r fast transition, Access Point (AP), Station (STA)
WiFi security	WPA2-Enterprise-PEAP, WPA2-PSK, WPA-PSK, WEP; AES-CCMP, TKIP, Auto Cipher modes, client separation
ESSID	ESSID stealth mode
Wireless Hotspot	Captive portal (Hotspot), internal/external Radius server, built in customizable landing page

MODBUS TCP SLAVE

ID filtering	Respond to one ID in range [1;255] or any
Allow remote access	Allow access through WAN
ID filtering	Modbus TCP custom register block, which allows to 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 RTU MASTER (RS232) (PLANNED)

Supported baud rates	From 300 to 115200
Supported functions	01, 02, 03, 04, 05 (only for alarms), 06 (only for alarms), 15 (only for alarms), 16 (only for alarms)
Number of data bits	From 5 to 8
Number of stop bits	1 or 2
Parity	None, Even, Odd
Flow	None, RTS/CTS, Xon/Xoff

MQTT GATEWAY

Gateways	Allows sending commands and receiving data from Modbus Master trough MQTT broker

MODBUS DATA TO SERVER

Protocols	HTTP(S), MQTT, Azure MQTT (planned)

FIRMWARE/CONFIGURATION

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

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, Mobile data on/off, Output on/off
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 Systems (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	Quad-core ARM Cortex A7, 717 MHz
RAM	256 MB, DDR3
FLASH storage	256 MB SPI Flash

FIRMWARE CUSTOMIZATION

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

SERIAL

RS232	RJ45 connector, full RS232 (with RTS, CTS)
Serial functions	Console (active by default), Modbus gateway (planned), Modbus RTU master (planned), Serial OverIP (planned), Modem mode (Full or partial) (planned), Ntrip client (planned)

USB

Data rate	USB 2.0
Applications	Samba share, custom scripts (planned)
External devices	Possibility to connect external HDD, flash drive, additional modem, printer
Storage formats	FAT, FAT32, NTFS

INPUT/OUTPUT

Events	SMS, Email, RMS

POWER

Connector	2 x 4 pin industrial DC power sockets for main and redundancy power sources
Input voltage range	9 – 50 VDC, reverse polarity protection, voltage surge/transient protection
Power consumption	idle: <3W, max: 18W

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

|	
Ethernet	5 x RJ45 ports, 10/100/1000 Mbps
Console	1 x RJ45, RS232 communication
Fiber	1 x SFP port
Status LEDs	2 x WAN type, 2 x Mobile connection type, 3 x Mobile signal strength, 2 x active SIM, 10 x Ethernet status, 2 x Console status (RX – yellow, TX – green), 2 x Power for each socket
SIM	2 x SIM slots (Mini SIM - 2FF), 1.8 V/3 V, external SIM holders
Power	2 x 4 pin DC connector
Antennas	2 x SMA for LTE, 2 x RP-SMA for WiFi
USB	USB A port for external devices
Reset	Reboot/User default reset/Factory reset button
Other	Grounding screw, lock

PHYSICAL SPECIFICATION

Casing material	Full steel housing
Dimensions (W x H x D)	272 x 42.6 x 122.6 mm
Weight	1050 g
Mounting options	Rack mounting, flat surface placement

OPERATING ENVIRONMENT

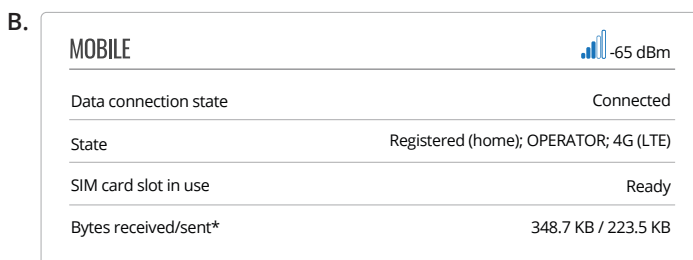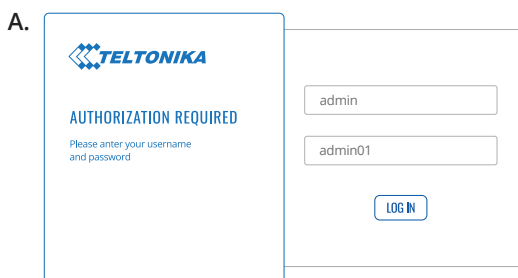|	
Operating temperature	-40°C to +70°C
Operating humidity	10 % to 90 % non-condensing

HARDWARE INSTALLATION

1. Push the SIM holder button with the SIM needle.
2. Pull out the SIM holder.
3. Insert your SIM card into the SIM holder.
4. Slide the SIM holder back into the router.
5. Attach all antennas.
6. Connect the power adapter to the socket on the back of the device. Then plug the other end of the power adapter into a power outlet.
7. Connect to the device wirelessly using SSID and password provided on the device information label or use an Ethernet cable connected to LAN port.
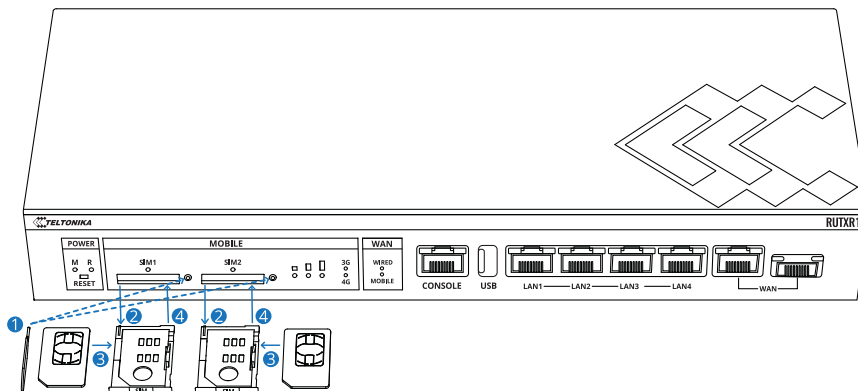
LOGIN TO DEVICE

1. To enter the router's Web interface (WebUI), type http://192.168.1.1 into the URL field of your Internet browser.
2. Use login information shown in image A when prompted for authentication.
3. After you log in, you will be prompted to change your password for security reasons. The new password must contain at least 8 characters, including at least one uppercase letter, one lowercase letter, and one digit. This step is mandatory, and **you will not be able to interact with the router's WebUI before you change the password.**
4. When you change the router's password, the Configuration Wizard will start. The Configuration Wizard is a tool used to set up some of the router's main operating parameters.
5. Go to the Overview page and pay attention to the Signal Strength indication (image B). To maximize the cellular performance try adjusting the antennas or changing the location of your device to achieve the best signal conditions.

A.

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AUTHORIZATION REQUIRED

Please enter your username and password

admin

admin01

LOG IN

B.

MOBILE	▂▃▅ -65 dBm
Data connection state	Connected
State	Registered (home); OPERATOR; 4G (LTE)
SIM card slot in use	Ready
Bytes received/sent*	348.7 KB / 223.5 KB

TECHNICAL INFORMATION

Radio specifications	
RF technologies	3G, 4G, WiFi
Max RF power	24 dBm@WCDMA, 23 dBm@LTE, 23 dBm@WiFi
Bundled accessories specifications*	
Power adapter	Input: 0.6 A@100-240 VAC, Output: 12 VDC, 1.5 A, 4-pin plug
Mobile antenna	698~960 / 1710~2690 MHz, 50 Ω, VSWR<3, gain** 3 dBi, omnidirectional, SMA male connector
WiFi antenna	2400~2483.5 MHz / 5150~5905 MHz, 50 Ω, VSWR<2, gain** 5 dBi, omnidirectional, RP-SMA male connector

*Order code dependent.
**Higher gain antenna can be connected to compensate for cable attenuation when a cable is used. The user is responsible for the compliance with the legal regulations.

WHAT'S IN THE BOX?

STANDARD PACKAGE CONTAINS

• Router RUTXR1
• 18W Euro PSU
• 2 x LTE antennas (magnetic mount, SMA male, 3 m cable)
• 2 x WiFi antennas (magnetic mount, RP-SMA male, 1.5 m)
• Ethernet cable (1.5 m)
• QSG (Quick Start Guide)
• Packaging box

RUTXR1	2 X LTE ANTENNAS (MAGNETIC MOUNT, SMA MALE, 3 M CABLE)	2 X WIFI ANTENNAS (MAGNETIC MOUNT, RP-SMA MALE, 1.5 M)
18 W EURO PSU	1 X GNSS ANTENNA (ADHESIVE, SMA MALE)	ETHERNET CABLE (1.5 M)

STANDARD ORDER CODES

PRODUCT CODE	HS CODE	HTS CODE	PACKAGE CONTAINS
RUTXR10000000	851762	8517.62.00	Standard package

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

AVAILABLE VERSIONS

PRODUCT CODE	REGION (OPERATOR)	FREQUENCY
RUTXR1 0*****	Region (operator) Europe, the Middle East, Africa, APAC2	• 4G (LTE-FDD): B1, B3, B5, B7, B8, B20, B28, B32[1] • 4G (LTE-TDD): B38, B40, B41 • 3G: B1, B3, B5, B8

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

1 - LTE-FDD B29 and B32 Support Rx Only, and in 2×CA it is Only for Secondary Component Carrier.
2 - Excluding Japan and CMCC.

MOUNTING OPTIONS

DIN RAIL KIT

Parameter	Value
Mounting standard	35mm DIN Rail
Material	Low carbon steel
Weight	57g
Screws included	Philips Pan Head screw #6-32×3/16, 2pcs
Dimensions	82 mm x 46 mm x 20 mm
RoHS Compliant	V
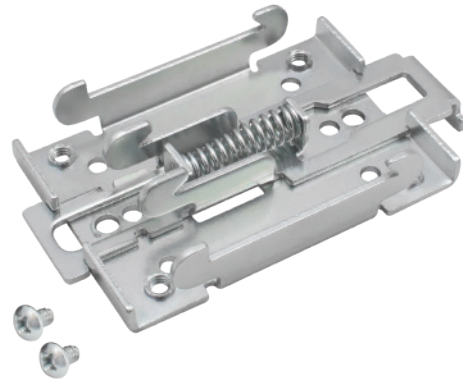
DIN RAIL KIT

- DIN Rail adapter
- Philips Pan Head screw #6-32×3/16, 2pcs for RUT2xx/RUT9xx

ORDER CODE	PRODUCT CODE	HS CODE	HTS CODE
088-00267	PR5MEC00	73269098	7326.90.98

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

COMPACT DIN RAIL KIT

Parameter	Value
Mounting standard	35mm DIN Rail
Material	ABS + PC plastic
Weight	6.5 g
Screws included	Philips Pan Head screw #6-32×3/16, 2pcs
Dimensions	70 mm x 25 mm x 14,5 mm
RoHS Compliant	V

DIN RAIL KIT

- Compact plastic DIN Rail adapter (70x25x14,5mm)
- Philips Pan Head screw #6-32×3/16, 2pcs

ORDER CODE	PRODUCT CODE	HS CODE	HTS CODE
088-00270	PR5MEC11	73269098	7326.90.98

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

SURFACE MOUNTING KIT

Parameter	Value
Mounting standard	Flat surface mount
Material	ABS + PC plastic
Weight	2x5 g
Screws included	Philips Pan Head screw #6-32×3/16, 2pcs
Dimensions	25 mm x 48 mm x 7.5 mm
RoHS Compliant	V

DIN RAIL KIT

- Surface mounting kit
- Philips Pan Head screw #6-32×3/16, 2pcs

ORDER CODE	PRODUCT CODE	HS CODE	HTS CODE
088-00281	PR5MEC12	73269098	7326.90.98

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

RUTX11 SPATIAL MEASUREMENTS & WEIGHT

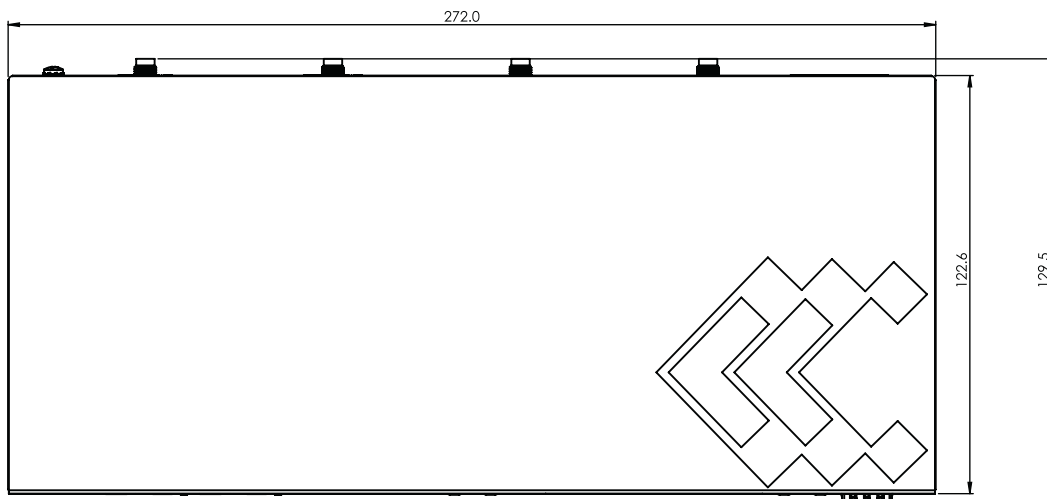## MAIN MEASUREMENTS

H x W x D dimensions for RUTX11:

Device housing*:	122.6 x 272 x 48.1
Box:	355 x 175 x 60

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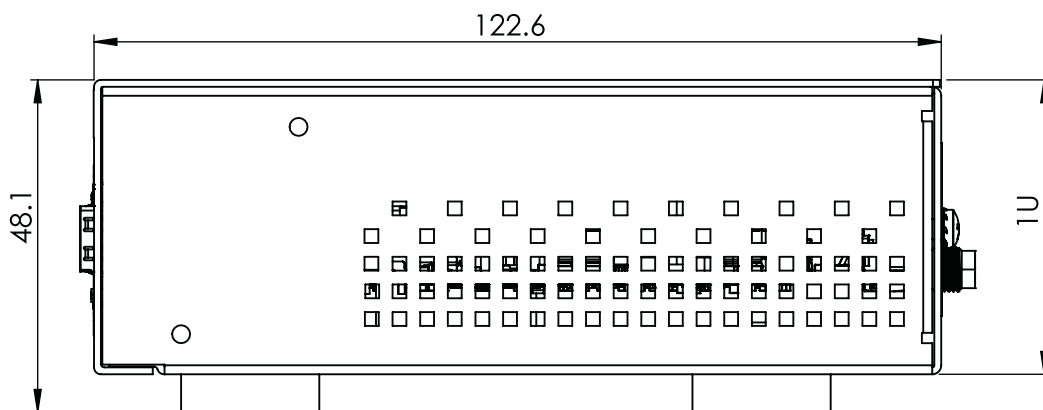
TOP VIEW

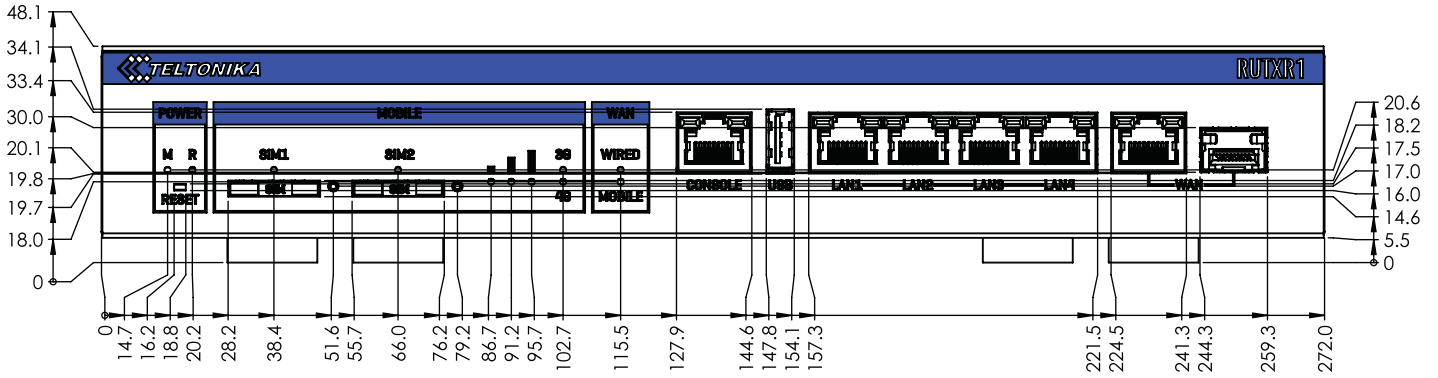The figure below depicts the measurements of RUTXR1 and its components as seen from the top:

RIGHT VIEW

The figure below depicts the measurements of RUTXR1 and its components as seen from the right side:
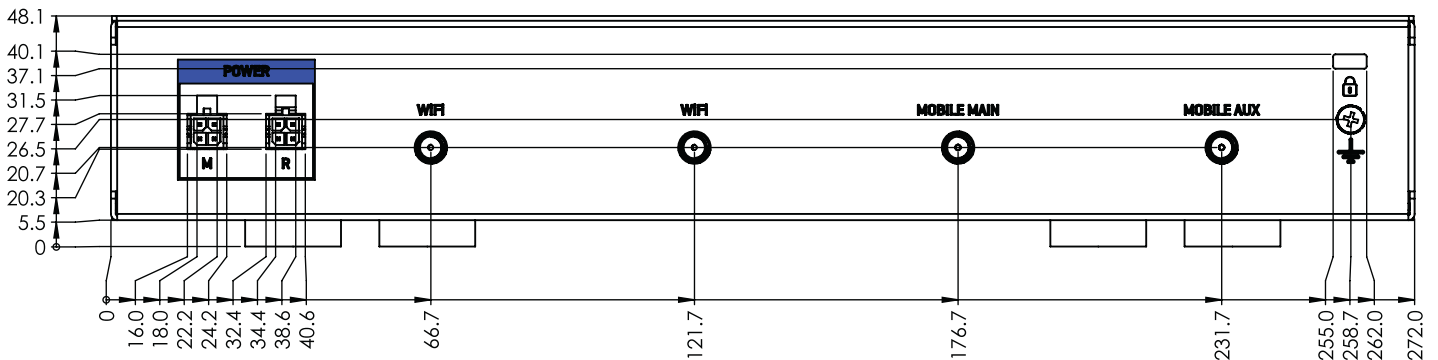
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FRONT VIEW

The figure below depicts the measurements of RUTXR1 and its components as seen from the front panel side:
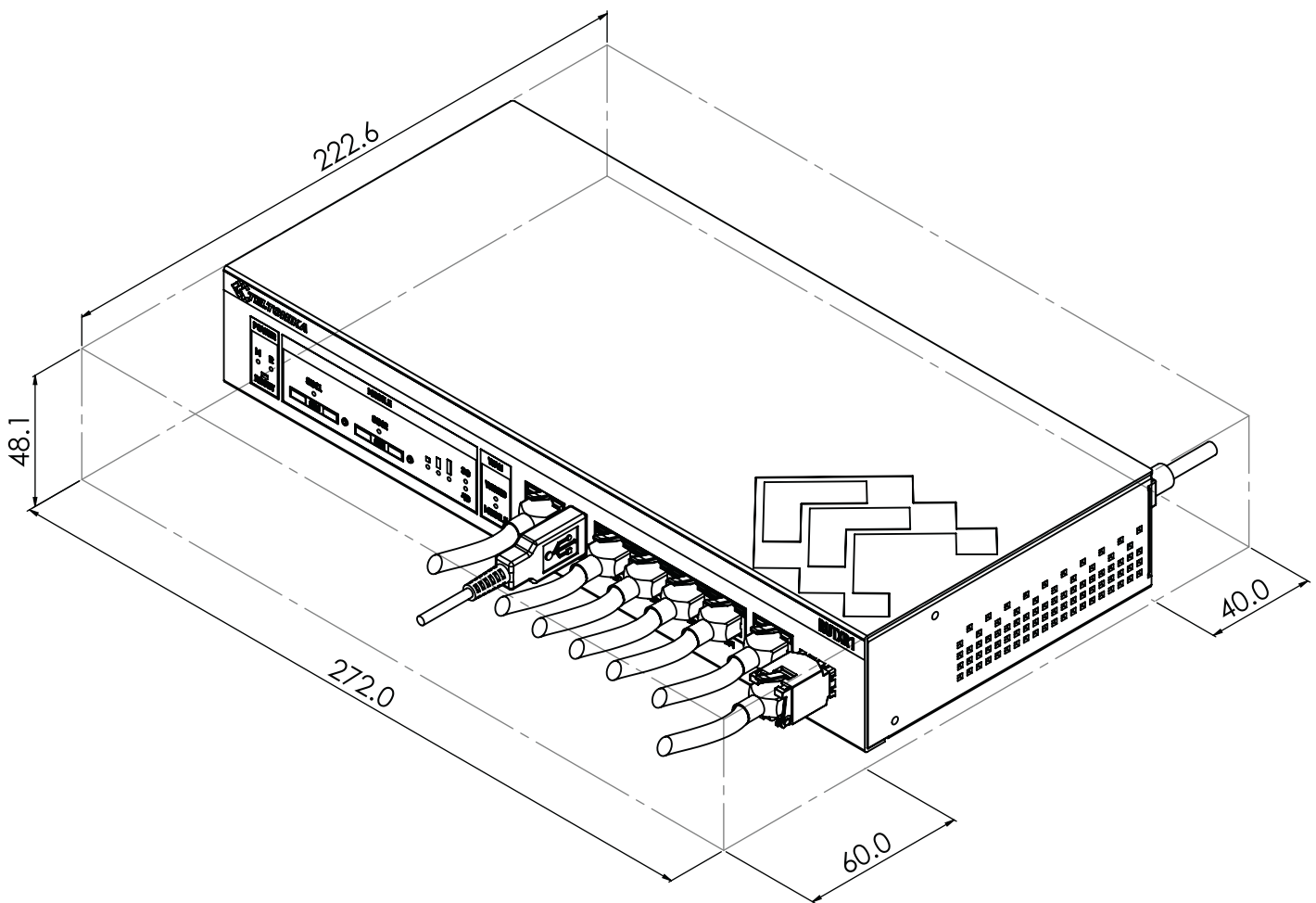

REAR VIEW

The figure below depicts the measurements of RUTXR1 and its components as seen from the back panel side:
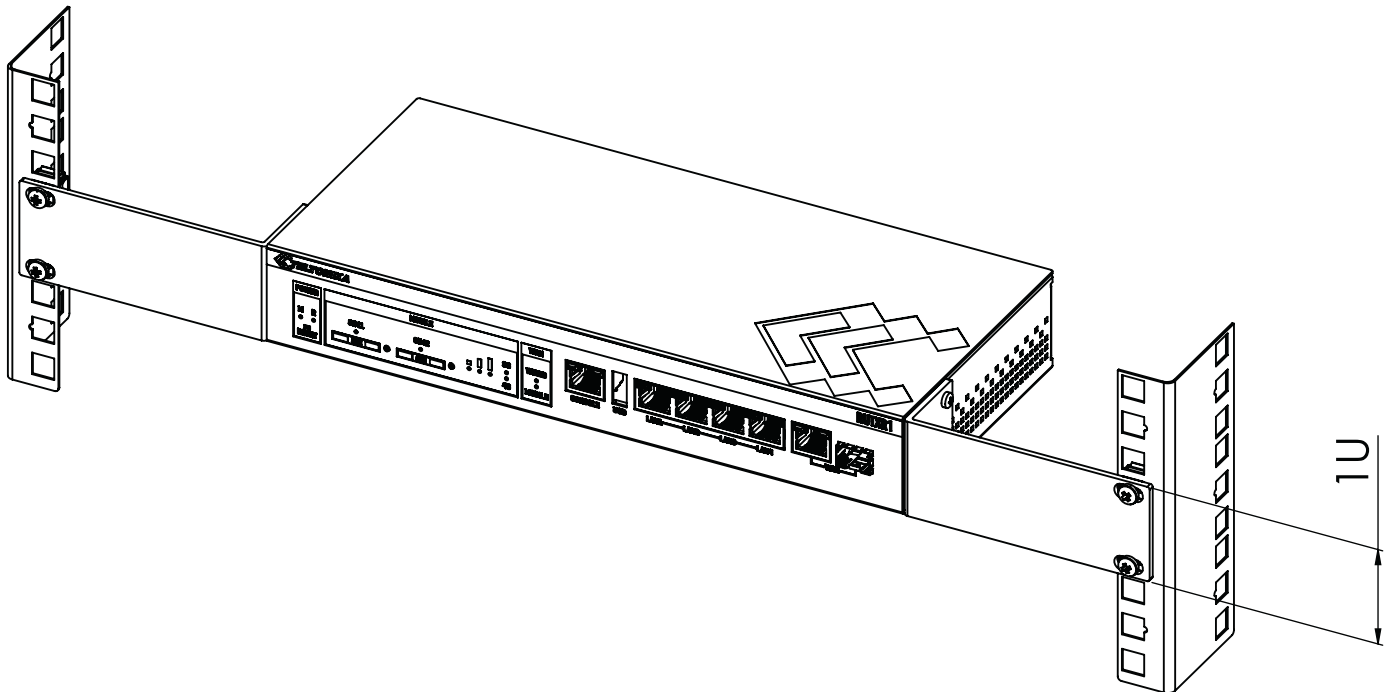
MOUNTING SPACE REQUIREMENTS

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:

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RUT2400DE000 RUT241010000 RUT300000000 RUT360000000 RUT950J02400 RUT950K02400 RUT950U022C0 RUT950U025A0
RUT950V022C0 RUT951100000 RUT9550033B0 RUT955J034S0 RUT955K034S0 RUT955M036V0 RUT955T033B0 RUT955T03530
RUT956100000 RUTX08 RUTX09000000 RUTX10 RUTX11000000 RUTX11000300 RUTX11100400 RUTX12000000 RUTX14000000
RUTXR10000000 TCR100000000 TRB140003000 TRB141003000 TRB142003000 TRB145003000 TRB245000000 TSW100000000
TSW110000000