

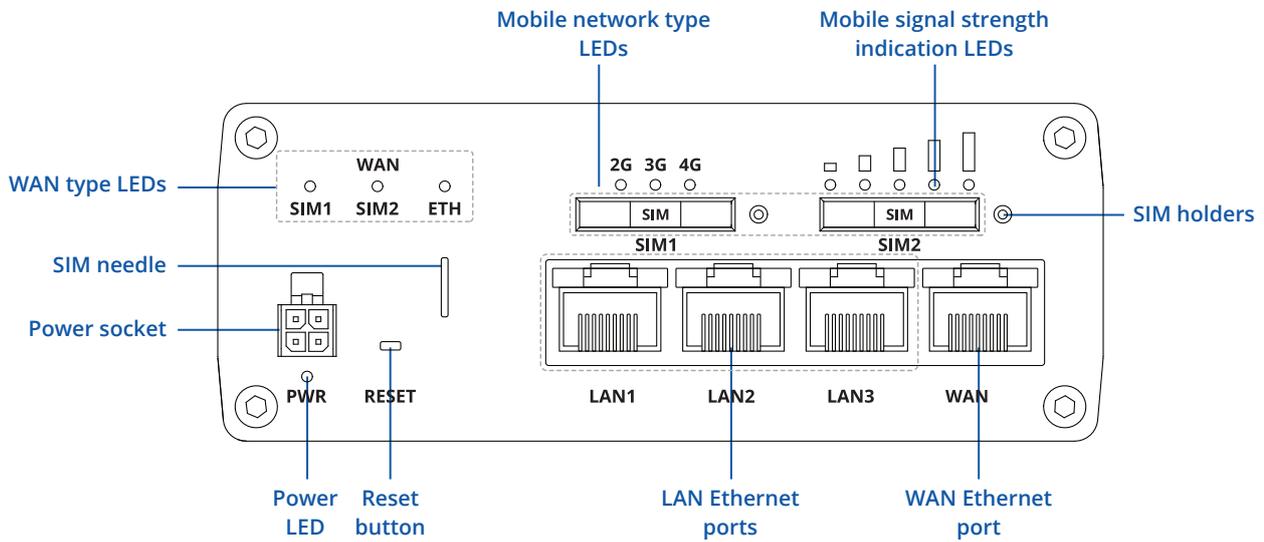


RUTX09

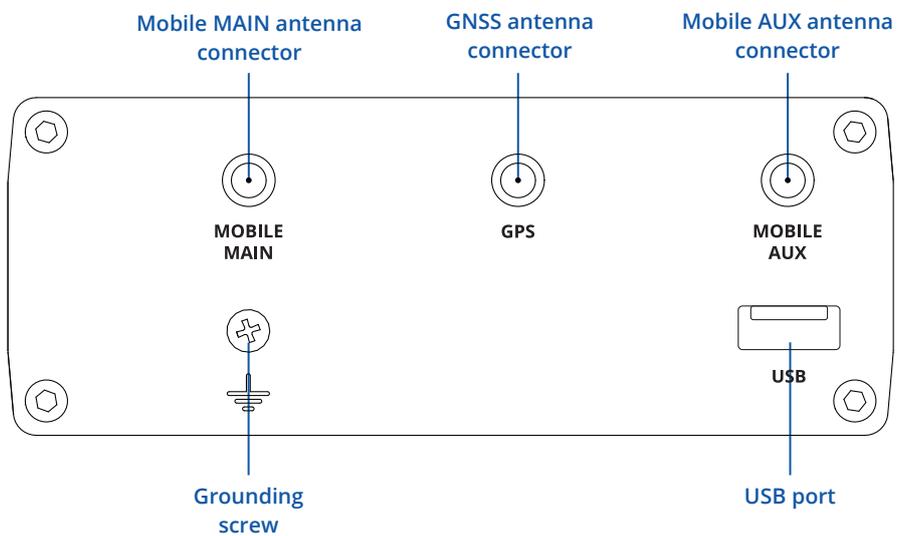


HARDWARE

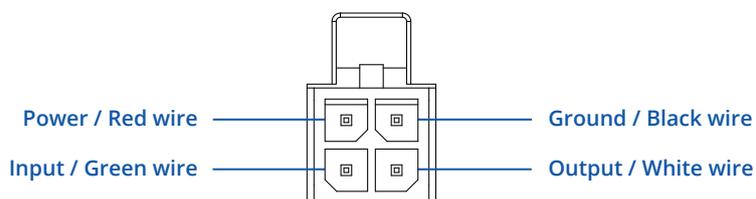
FRONT VIEW



BACK VIEW



POWER SOCKET PINOUT



FEATURES

MOBILE

| | |
|-----------------------------|--|
| Mobile module | 4G LTE Cat 6 up to 300 DL/ 50 UL Mbps; 3G up to 42 DL/ 5.76 UL Mbps |
| 3GPP Release | Release 12 |
| 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 | IMSI, ICCID, operator, operator state, data connection state, network type, CA indicator, bandwidth, connected band, signal strength (RSSI), SINR, RSRP, RSRQ, EC/IO, RSCP, data sent/received, LAC, TAC, cell ID, ARFCN, UARFCN, EARFCN, MCC, and MNC |
| 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 |
| USSD | Supports sending and reading Unstructured Supplementary Service Data messages |
| Black/White list | Operator black/white list (by country or separate operators) |
| Multiple PDN | Possibility to use different PDNs for multiple network access and services |
| Band management | Band lock, Used band status display |
| SIM idle protection service | When working with devices with two SIM slots, the one not currently in use will remain idle until the device switches to it, meaning that no data is used on the card until then |
| SIM PIN code management | SIM PIN code management enables setting, changing, or disabling the SIM card's PIN |
| 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 |

ETHERNET

| | |
|-----|---|
| WAN | 1 x WAN port 10/100/1000 Mbps, compliance with IEEE 802.3, IEEE 802.3u, 802.3az standards, supports auto MDI/MDIX crossover |
| LAN | 3 x LAN ports, 10/100/1000 Mbps, compliance with IEEE 802.3, IEEE 802.3u, 802.3az standards, supports auto MDI/MDIX crossover |

NETWORK

| | |
|------------------------------------|--|
| Routing | Static routing, Dynamic routing (BGP, OSPF v2, RIP v1/v2, EIGRP, NHRP), Policy based routing |
| Network protocols | TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, SFTP, FTP, SMTP, SSL/TLS, ARP, VRRP, PPP, PPPoE, UPNP, SSH, DHCP, Telnet, SMPP, 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 forward, traffic rules, custom rules |
| Firewall status page | View all your Firewall statistics, rules, and rule counters |
| Ports management | View device ports, enable and disable each of them, turn auto-configuration on or off, change their transmission speed, and so on |
| Network topology | Visual representation of your network, showing which devices are connected to which other devices |
| Hotspot | Captive portal (hotspot), internal/external Radius server, Radius MAC authentication, SMS authorisation, SSO authentication, internal/external landing page, walled garden, user scripts, URL parameters, user groups, individual user or group limitations, user management, 9 default customisable themes and optionality to upload and download customised hotspot themes |
| DHCP | Static and dynamic IP allocation, DHCP relay, DHCP server configuration, status, static leases: MAC with wildcards |
| 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 |
| DNS over HTTPS | DNS over HTTPS proxy enables secure DNS resolution by routing DNS queries over HTTPS |
| Network backup | Wi-Fi WAN, Mobile, VRRP, Wired options, each of which can be used as an automatic Failover |
| Load balancing | Balance Internet traffic over multiple WAN connections |
| SSHFS | Possibility to mount remote file system via SSH protocol |
| VRF support | Initial virtual routing and forwarding (VRF) support |

SECURITY

| | |
|----------------------------|--|
| 802.1x | Port-based network access control client |
| Authentication | Pre-shared key, digital certificates, X.509 certificates, TACACS+, Internal & External RADIUS users authentication, IP & login attempts block, time-based login blocking, built-in random password generator |
| 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 and tag-based VLAN separation |
| Mobile quota control | Mobile data limit, customizable period, start time, warning limit, phone number |
| WEB filter | Blacklist for blocking out unwanted websites, Whitelist for specifying allowed sites only |
| Access control | Flexible access control of SSH, Web interface, CLI and Telnet |
| SSL certificate generation | Let's encrypt support |

VPN

| | |
|--------------------|---|
| OpenVPN | Multiple clients and a server can run simultaneously, 27 encryption methods |
| OpenVPN Encryption | DES-CBC 64, RC2-CBC 128, DES-EDE-CBC 128, DES-EDE3-CBC 192, DESX-CBC 192, BF-CBC 128, RC2-40-CBC 40, CAST5-CBC 128, RC2-64-CBC 64, AES-128-CBC 128, AES-128-CFB 128, AES-128-CFB1 128, AES-128-CFB8 128, AES-128-OFB 128, AES-128-GCM 128, AES-192-CFB 192, AES-192-CFB1 192, AES-192-CFB8 192, AES-192-OFB 192, AES-192-CBC 192, AES-192-GCM 192, AES-256-GCM 256, AES-256-CFB 256, AES-256-CFB1 256, AES-256-CFB8 256, AES-256-OFB 256, AES-256-CBC 256 |
| IPsec | XFRM, IKEv1, IKEv2, with 14 encryption methods for IPsec (3DES, DES, AES128, AES192, AES256, AES128GCM8, AES192GCM8, AES256GCM8, AES128GCM12, AES192GCM12, AES256GCM12, AES128GCM16, AES192GCM16, AES256GCM16) |
| GRE | GRE tunnel, GRE tunnel over IPsec support |
| PPTP, L2TP | Client/Server instances can run simultaneously, L2TPv3, L2TP over IPsec 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 |
| ZeroTier | ZeroTier VPN client support |
| WireGuard | WireGuard VPN client and server support |
| Tinc | Tinc offers encryption, authentication and compression in it's tunnels. Client and server support |
| Tailscale | Tailscale offers speed, stability, and simplicity over traditional VPNs. Encrypted point-to-point connections using the open source WireGuard protocol |

OPC UA

| | |
|----------------------------|----------------|
| Supported modes | Client, Server |
| Supported connection types | TCP |

MODBUS

| | |
|----------------------------|--|
| Supported modes | Server, Client |
| Supported connection types | TCP, USB |
| 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 Client functionality |
| 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), HEX, ASCII |

DATA TO SERVER

| | |
|----------------|---|
| Protocol | HTTP(S), MQTT, Azure MQTT, Kinesis |
| Data to server | Extract parameters from multiple sources and different protocols, and send them all to a single server; Custom LUA scripting, allowing scripts to utilize the router's Data to server feature |

MQTT GATEWAY

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|---------------------|---|
| Modbus MQTT Gateway | Allows sending commands and receiving data from MODBUS Server through MQTT broker |
|---------------------|---|

DNP3

| | |
|----------------------|---------------------|
| Supported modes | Station, Outstation |
| Supported connection | TCP, USB |

DLMS

| | |
|----------------------------|--|
| DLMS Support | DLMS - standard protocol for utility meter data exchange |
| Supported modes | Client |
| Supported connection types | TCP, USB |

API

| | |
|---|---|
| Teltonika Networks Web API (beta) support | Expand your device's possibilities by using a set of configurable API endpoints to retrieve or change data. For more information, please refer to this documentation: https://developers.teltonika-networks.com |
|---|---|

MONITORING & MANAGEMENT

| | |
|----------|---|
| WEB UI | HTTP/HTTPS, status, configuration, FW update, CLI, troubleshoot, multiple event log servers, firmware update availability notifications, event log, system log, kernel log, Internet status |
| 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, answer/hang-up with a timer, Wi-Fi 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, Brute force protection |
| JSON-RPC | Management API over HTTP/HTTPS |
| RMS | Teltonika Remote Management System (RMS) |

IOT PLATFORMS

| | |
|---------------|--|
| 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, WAN Type and IP, Mobile Cell ID, ICCID, IMEI, Connection Type, Operator, Signal Strength |
| Azure IoT Hub | Can send device IP, Number of bytes send/received, Temperature, PIN count to Azure IoT Hub server, Mobile 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 |

SYSTEM CHARACTERISTICS

| | |
|---------------|----------------------------------|
| CPU | Quad-core ARM Cortex A7, 717 MHz |
| RAM | 256 MB, DDR3 |
| FLASH storage | 256 MB, SPI Flash |

FIRMWARE / CONFIGURATION

| | |
|------------------------|---|
| WEB UI | Update FW from file, check FW on server, configuration profiles, configuration backup |
| FOTA | Update FW |
| RMS | Update FW/configuration for multiple devices at once |
| Keep settings | Update FW without losing current configuration |
| Factory settings reset | A full factory reset restores all system settings, including the IP address, PIN, and user data to the default manufacturer's configuration |

FIRMWARE CUSTOMISATION

| | |
|---------------------|---|
| Operating system | RutOS (OpenWrt based Linux OS) |
| Supported languages | Busybox shell, Lua, C, C++ |
| Development tools | SDK package with build environment provided |
| GPL customization | You can create your own custom, branded firmware and web page application by changing colours, logos, and other elements in our firmware to fit your or your clients' needs |
| Package Manager | The Package Manager is a service used to install additional software on the device |

LOCATION TRACKING

| | |
|-----------------|--|
| GNSS | GPS, GLONASS, BeiDou, Galileo and QZSS |
| Coordinates | GNSS coordinates via WebUI, SMS, TAVL, RMS |
| NMEA | NMEA 0183 |
| NTRIP | NTRIP protocol (Networked Transport of RTCM via Internet Protocol) |
| Server software | Supported server software TAVL, RMS |
| Geofencing | Configurable multiple geofence zones |

USB

| | |
|------------------|---|
| Data rate | USB 2.0 |
| Applications | Samba share, USB-to-serial |
| External devices | Possibility to connect external HDD, flash drive, additional modem, printer, USB-serial adapter |
| Storage formats | FAT, FAT32, exFAT, NTFS (read-only), ext2, ext3, ext4 |

INPUT / OUTPUT

| | |
|-------------|---|
| Input | 1 x Digital Input, 0 - 6 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 | Email, RMS, 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 - 50 VDC, reverse polarity protection, voltage surge/transient protection |
| PoE (passive) | Possibility to power up through LAN1 port, not compatible with IEEE802.3af, 802.3at and 802.3bt standards, Mode B, 9 - 50 VDC |
| Power consumption | 9 W Max |

PHYSICAL INTERFACES

| | |
|-------------|--|
| Ethernet | 4 x RJ45 ports, 10/100/1000 Mbps |
| I/O's | 1 x Digital Input, 1 x Digital Output on 4-pin power connector |
| Status LEDs | 3 x WAN type, 2 x Mobile connection type, 5 x Mobile connection strength, 8 x LAN status, 3 x WAN status, 1x Power |
| SIM | 2 x SIM slots (Mini SIM - 2FF), 1.8 V/3 V, external SIM holders |
| Power | 1 x 4-pin power connector |
| Antennas | 2 x SMA for LTE, 1 x SMA for GNSS |
| USB | 1 x USB A port for external devices |
| Reset | Reboot/User default reset/Factory reset button |
| Other | 1 x Grounding screw |

PHYSICAL SPECIFICATION

| | |
|------------------------|---|
| Casing material | Aluminium housing |
| Dimensions (W x H x D) | 115 x 44.2 x 95.1 mm |
| Weight | 455 g |
| Mounting options | DIN rail, wall mount, flat surface (all require additional kit) |

OPERATING ENVIRONMENT

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

REGULATORY & TYPE APPROVALS

| | |
|------------|---|
| Regulatory | CE, UKCA, EAC, UCRF, CITC, ANRT, ICASA, NOM, RCM, IMDA, NTC, E-mark, UL/CSA Safety, CB, RoHS, REACH |
| Operator | Deutsche Telekom AG |

EMC EMISSIONS & IMMUNITY

| | |
|---|---|
| Standards | EN 55032:2015 + A11:2020 EN 55035:2017 + A11:2020 EN 301 489-1 V2.2.3 Draft EN 301 489-19 V2.2.0 EN 301 489-52 V1.2.1 |
| ESD | EN 61000-4-2:2009 |
| Radiated Immunity | EN 61000-4-3:2006 + A1:2008 + A2:2010 |
| EFT | EN 61000-4-4:2012 |
| Surge Immunity (AC Mains Power Port) | EN 61000-4-5:2014 + A1:2017 |
| CS | EN 61000-4-6:2014 |
| DIP | EN 61000-4-11:2004 |

RF

| | |
|-----------|--|
| Standards | EN 303 413 V1.2.1 EN 301 908-1 V15.1.1 EN 301 908-2 V13.1.1 EN 301 908-13 V13.1.1 |
|-----------|--|

SAFETY

| | |
|-----------|---|
| Standards | CE: EN 62368-1:2014 + A11:2017, EN IEC 62311:2020, EN 50665:2017 RCM: AS/NZS 60950.1: 2015 CB: IEC 62368-1:2018 UL/CSA Safety: UL 62368-1 (3rd Ed., Rev. December 13, 2019), CAN/CSA C22.2 No. 62368-1:19 (3rd Ed., Rev. December 13, 2019) |
| Standards | CE: EN 62368-1:2014 + A11:2017, EN IEC 62311:2020, EN 50665:2017 RCM: AS/NZS 60950.1: 2015 CB: IEC 62368-1:2018 UL/CSA Safety: UL 62368-1 (3rd Ed., Rev. December 13, 2019), CAN/CSA C22.2 No. 62368-1:19 (3rd Ed., Rev. December 13, 2019) |

STANDARD PACKAGE*

- Router RUTX09
- 18 W PSU
- 2x Mobile antennas (swivel, SMA male)
- 1x GNSS antenna (adhesive, SMA male, 3 m cable)
- SIM Adapter kit
- Ethernet cable (1.5 m)
- QSG (Quick Start Guide)
- Packaging box

| | | |
|---|---|---|
|  <p>ROUTER RUTX09</p> |  <p>18 W PSU</p> |  <p>2X MOBILE ANTENNAS (SWIVEL, SMA MALE)</p> |
|  <p>1X GNSS ANTENNA (ADHESIVE, SMA MALE, 3 M CABLE)</p> |  <p>SIM ADAPTER KIT</p> |  <p>ETHERNET CABLE (1.5 M)</p> |
|  <p>QSG (QUICK START GUIDE)</p> | | |

* Standard package contents may differ based on standard order codes.

CLASSIFICATION CODES

HS Code: 851762

HTS: 8517.62.00

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

AVAILABLE VERSIONS

| HARDWARE VERSION | SUPPORTED FREQUENCIES | STANDARD ORDER CODE / PACKAGE CONTAINS |
|---|---|--|
| RUTX09 0***** Europe ³ , The Middle East, Africa, Australia, APAC ² , Brazil, Malaysia | 4G (LTE-FDD): B1, B3, B5, B7, B8, B20, B28, B32 ¹ 4G (LTE-TDD): B38, B40, B41 3G: B1, B3, B5, B8 | RUTX09000000 / Standard package with EU PSU RUTX09000A00 / Standard package with Power cable with 4-way screw terminal RUTX09000400 / Standard package with UK PSU RUTX09000300 / Standard package with AU PSU RUTX09000900 / Mass packing code |
| RUTX09 1***** North America | 4G (LTE-FDD): B2, B4, B5, B7, B12, B13, B25, B26, B291, B30, B66 3G: B2, B4, B5 | RUTX09100200 / Standard package with US PSU RUTX09100900 / Mass packing code |

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.

3 - Regional availability - excluding Russia & Belarus.

RUTX09 SPATIAL MEASUREMENTS

MAIN MEASUREMENTS

W x H x D dimensions for RUTX09:

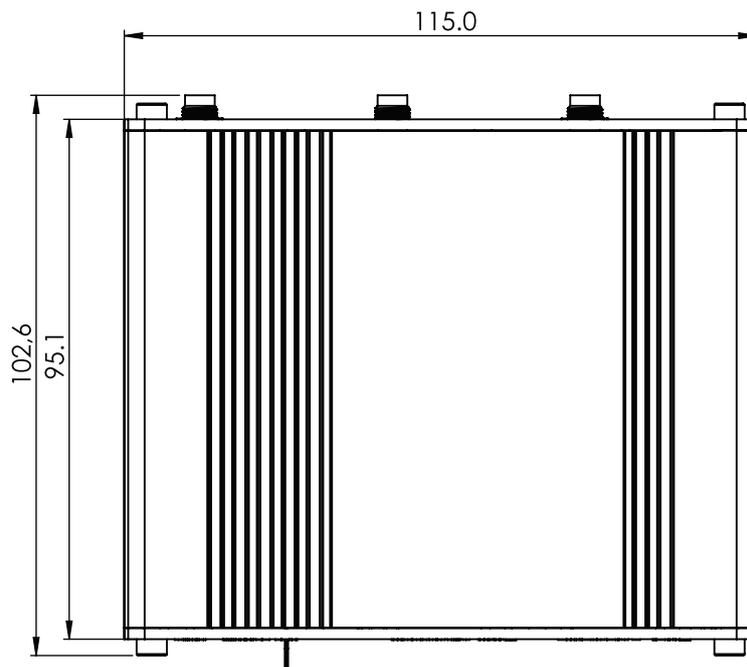
Device housing*: 115 x 44.2 x 95.1

Box: 355 x 60 x 175

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

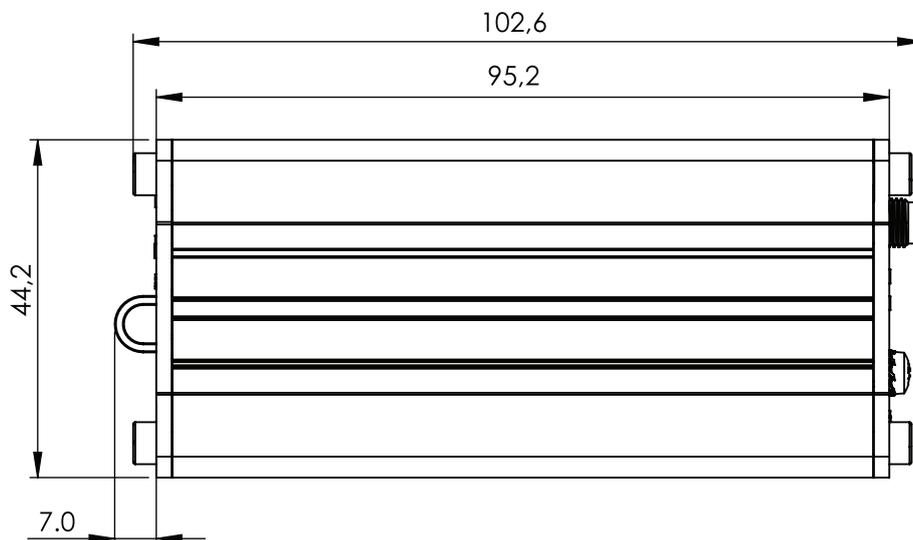
TOP VIEW

The figure below depicts the measurements of RUTX09 and its components as seen from the top:



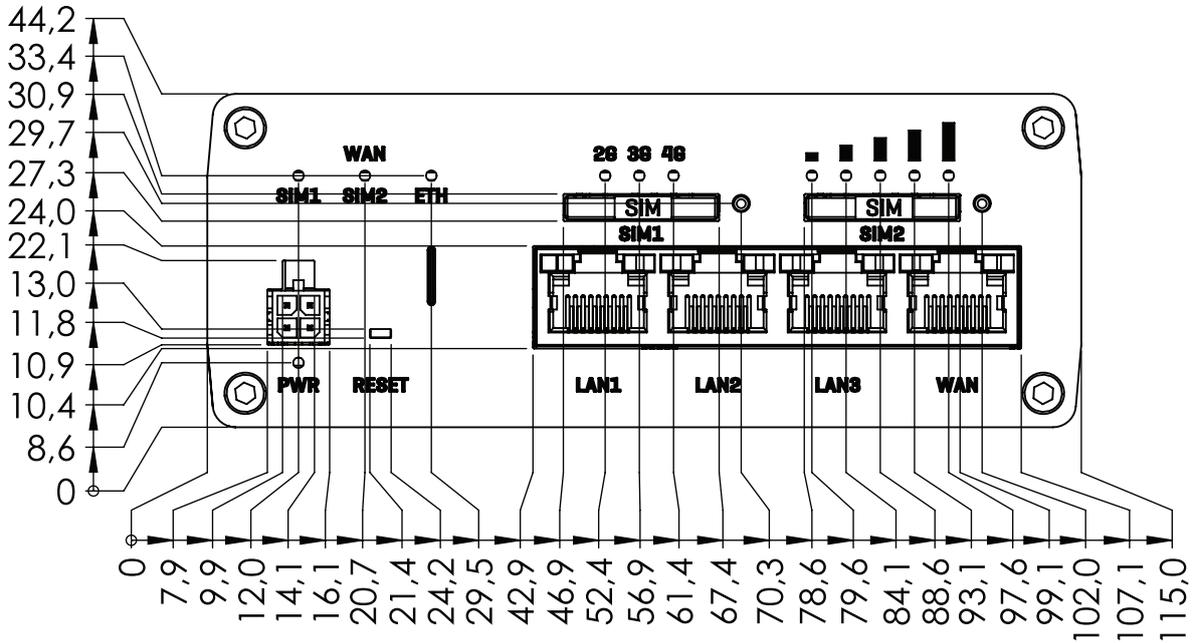
RIGHT VIEW

The figure below depicts the measurements of RUTX09 and its components as seen from the right side:



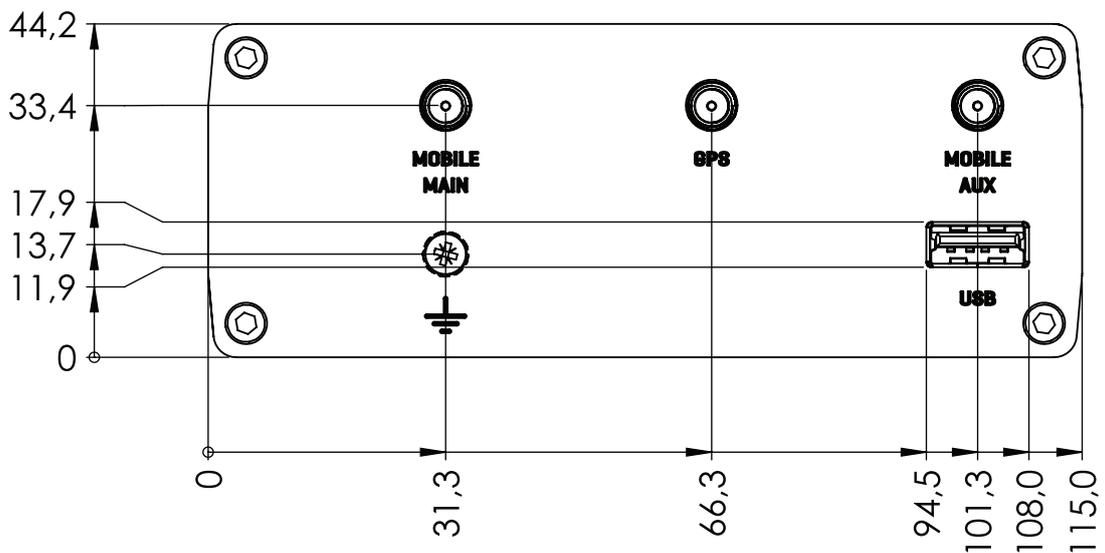
FRONT VIEW

The figure below depicts the measurements of RUTX09 and its components as seen from the front panel side:



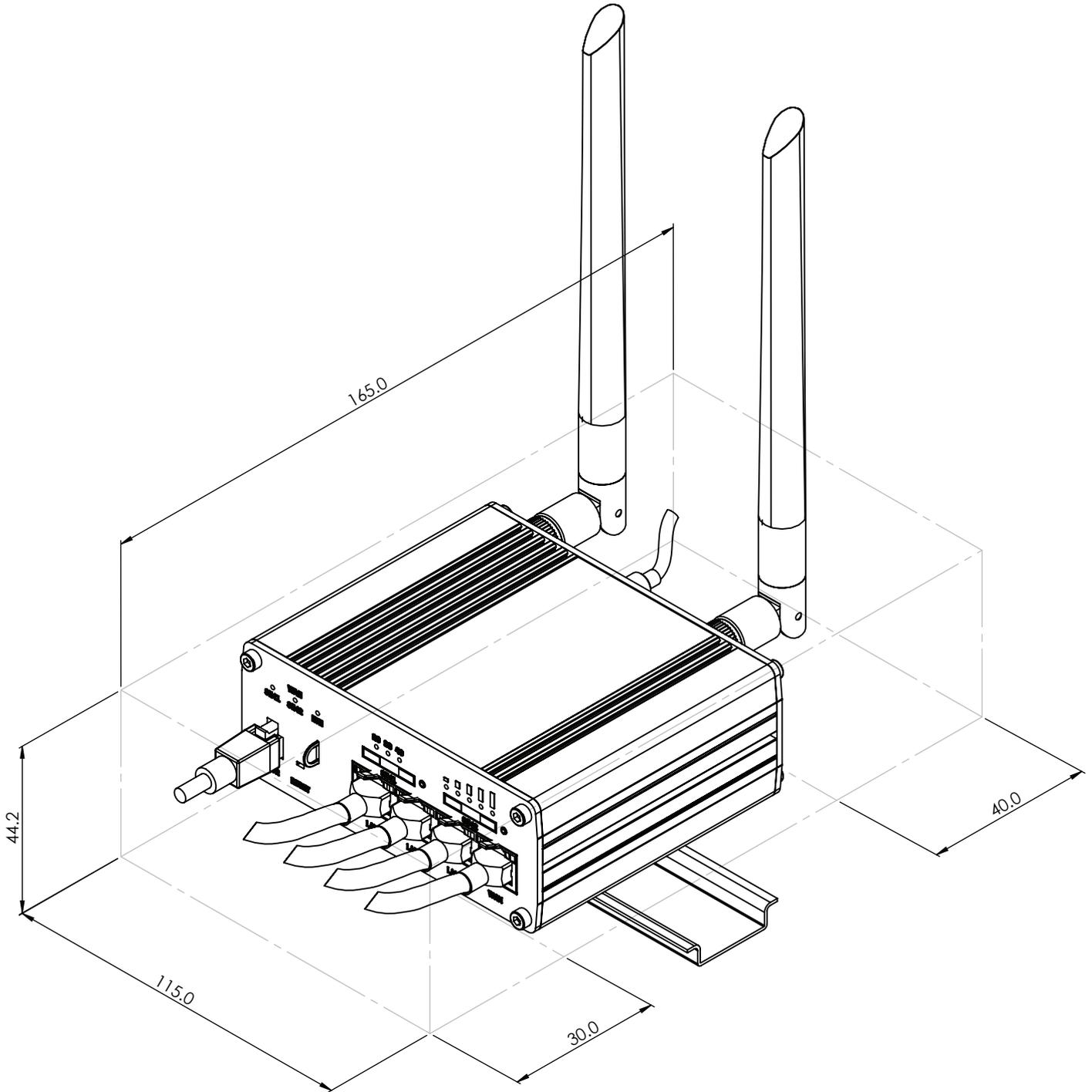
REAR VIEW

The figure below depicts the measurements of RUTX09 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:

