TELTONIKA | Networks

# RUTX12

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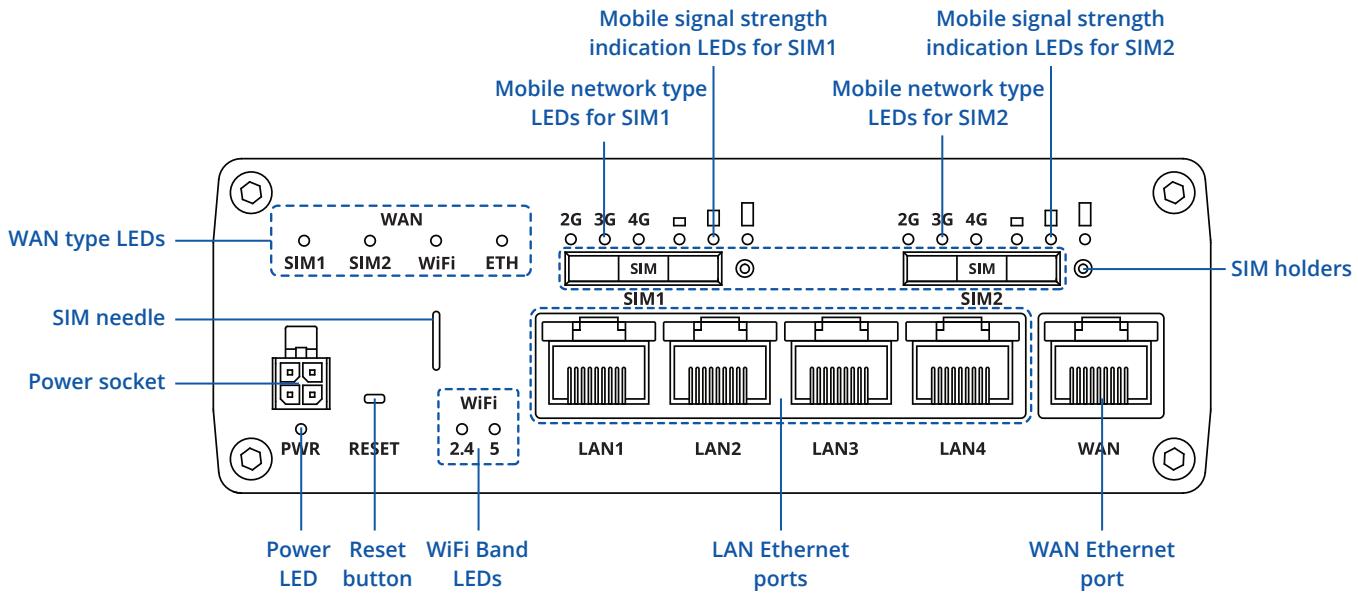
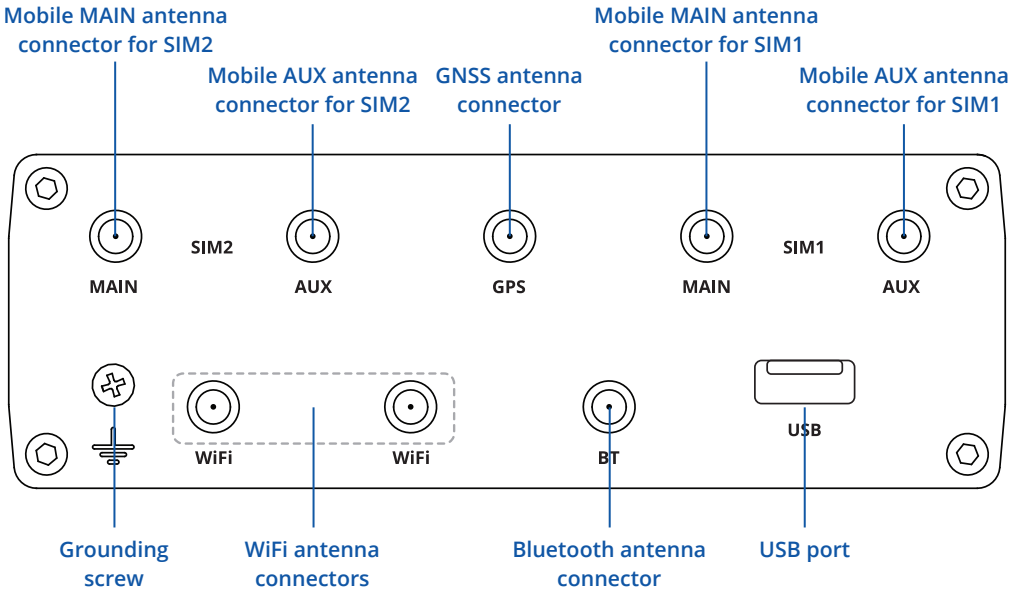
# HARDWARE

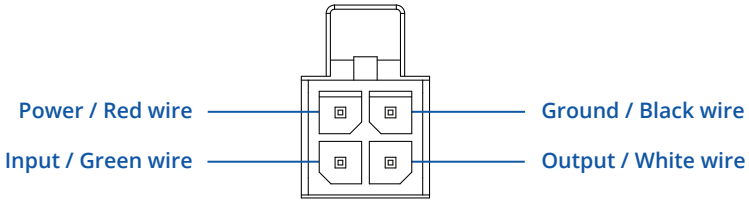
## FRONT VIEW




## BACK VIEW




## POWER SOCKET PINOUT

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# FEATURES

## MOBILE

| | |
|---|---|
| Mobile module | 2 x 4G (LTE) – Cat 6 up to 300 Mbps, 3G – up to 42 Mbps |
| Status | Signal strength (RSSI), SINR, RSRP, RSRQ, EC/IO, RSCP, Bytes sent/received, connected band, IMSI, ICCID, Carrier aggregation |
| 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 |
| 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 | 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 | 802.11b/g/n/ac Wave 2 (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, WEP, WPA-EAP, WPA-PSK; AES-CCMP, TKIP, Auto Cipher modes, client separation |
| SSID/ESSID | ESSID stealth mode |
| WiFi users | up to 150 simultaneous connections |
| Wireless Hotspot | Captive portal (Hotspot), internal/external Radius server, built in customizable landing page |

## BLUETOOTH

| | |
|---|---|
| Bluetooth 4.0 | Bluetooth low energy (LE) for short range communication |

## 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 | 4 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, 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 | WiFi WAN, Mobile, VRRP, Wired options, each of which can be used as an automatic Failover |
| Load balancing | Balance Internet traffic over multiple WAN connections |
| Hotspot | Internal/external Radius server, captive portal, built in customizable landing page |
| SSHFS | Possibility to mount remote file system via SSH protocol |

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## SECURITY

| | |
|---|---|
| Authentication | Pre-shared key, digital certificates, X.509 certificates, TACACS+, Radius, IP & Login attempts block |
| 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 | 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 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 | 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 |

## 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 |

## MQTT GATEWAY

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

## DNP3

| | |
|---|---|
| Supported modes | TCP Master, 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, Mobile data on/off, Output on/off, answer/hang-up with a timer, WiFi 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 System (RMS) |

## IOT PLATFORMS

| | |
|---|---|
| Cloud 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, 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 |

## FIRMWARE CUSTOMIZATION

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

## 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 |
| Storage formats | FAT, FAT32, NTFS |

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## 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) | Passive PoE over spare pairs. Possibility to power up through LAN port, not compatible with IEEE802.3af, 802.3at and 802.3bt standards, Mode B, LAN1 Port, 9 - 50 VDC |
| Power consumption | Idle: < 4 W, Max: < 22 W |

## PHYSICAL INTERFACES

| | |
|---|---|
| Ethernet | 5 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 | 4 x connection status LEDs, 6 x connection strength LEDs, 10 x Ethernet port status LEDs, 4 x WAN status LEDs, 1x Power LED, 2 x 2.4G and 5G WiFi LEDs |
| SIM | 2 x SIM slots (Mini SIM - 2FF), 1.8 V/3 V, external SIM holders |
| Power | 1 x 4-pin power connector |
| Antennas | 4 x SMA for LTE, 2 x RP-SMA for WiFi, 1 x RP-SMA for Bluetooth, 1 x SMA for GNNS |
| 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 | Full aluminium housing |
| Dimensions (W x H x D) | 132 x 44.2 x 95.1 mm |
| Weight | 540 g |
| Mounting options | DIN rail (can be mounted on two sides), flat surface placement |

## OPERATING ENVIRONMENT

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

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# WHAT'S IN THE BOX?

## STANDARD PACKAGE CONTAINS*

- RUTX12
- 24 W PSU
- 4 x LTE antennas (swivel, SMA male)
- 2 x WiFi antennas (magnetic mount, RP-SMA male, 1.5 m cable)
- 1 x GNSS antenna (adhesive, SMA male, 3 m cable)
- 1 x Bluetooth antenna (magnetic mount, RP-SMA male, 1.5 m cable)
- Ethernet cable (1.5 m)
- SIM Adapter kit
- QSG (Quick Start Guide)
- Packaging box

ROUTER RUTX12

24 W PSU

4 X LTE ANTENNAS (SWIVEL, SMA MALE)

2 X WIFI ANTENNAS (MAGNETIC MOUNT, RP-SMA MALE, 1.5 M CABLE)

1 X GNSS ANTENNA (ADHESIVE, SMA MALE, 3 M CABLE)

1 X BLUETOOTH ANTENNA (MAGNETIC MOUNT, RP-SMA MALE, 1.5 M CABLE)

ETHERNET CABLE (1.5 M)

SIM ADAPTER KIT

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

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# STANDARD ORDER CODES

| PRODUCT CODE | HS CODE | HTS CODE | PACKAGE CONTAINS |
|---|---|---|---|
| RUTX12 000000 | 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 |
|---|---|---|
| RUTX12 0***** | Europe[3], the Middle East, Africa, Australia, APAC[2], Brazil, Malaysia | • **4G (LTE-FDD):** B1, B3, B5, B7, B8, B20, B28, B32[1]<br>• **4G (LTE-TDD):** B38, B40, B41<br>• **3G:** B1, B3, B5, B8 |
| RUTX12 1***** | North America | • **4G (LTE-FDD):** B2, B4, B5, B7, B12, B13, B25, B26, B29[1],B30, B66<br>• **3G:** B2, B4, B5 |

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

3 - Regional availability - excluding Russia & Belarus.

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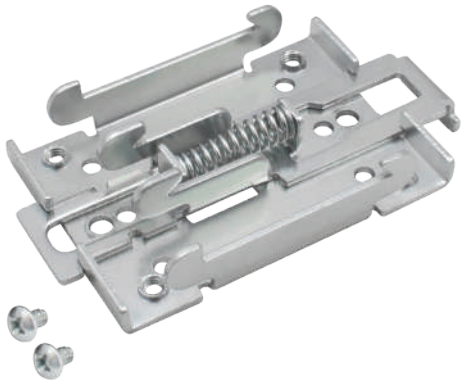
# MOUNTING OPTIONS

## 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 | HS CODE | HTS CODE |
|---|---|---|
| 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 | HS CODE | HTS CODE |
|---|---|---|
| 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 | HS CODE | HTS CODE |
|---|---|---|
| PR5MEC12 | 73269098 | 7326.90.98 |

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

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# RUTX12 SPATIAL MEASUREMENTS & WEIGHT

## MAIN MEASUREMENTS

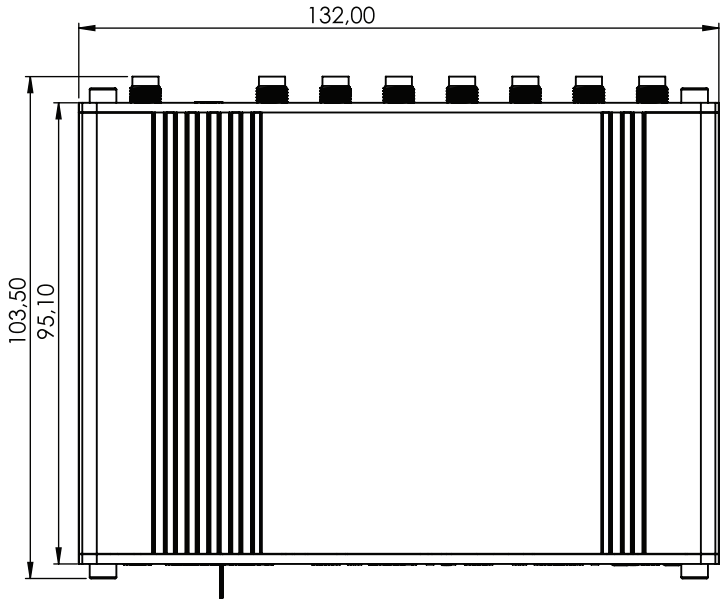
W x H x D dimensions for RUTX12:

| | |
|---|---|
| Device housing*: | 132 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.

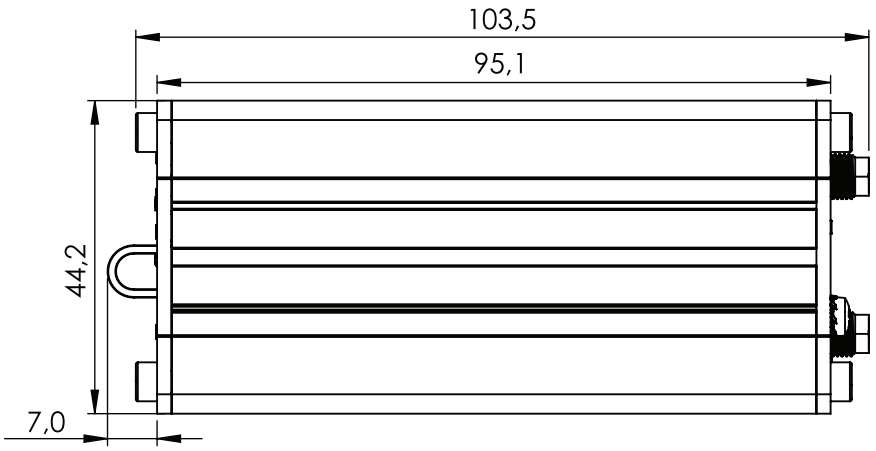
## TOP VIEW

The figure below depicts the measurements of RUTX12 and its components as seen from the top:




## RIGHT VIEW

The figure below depicts the measurements of RUTX12 and its components as seen from the right side:

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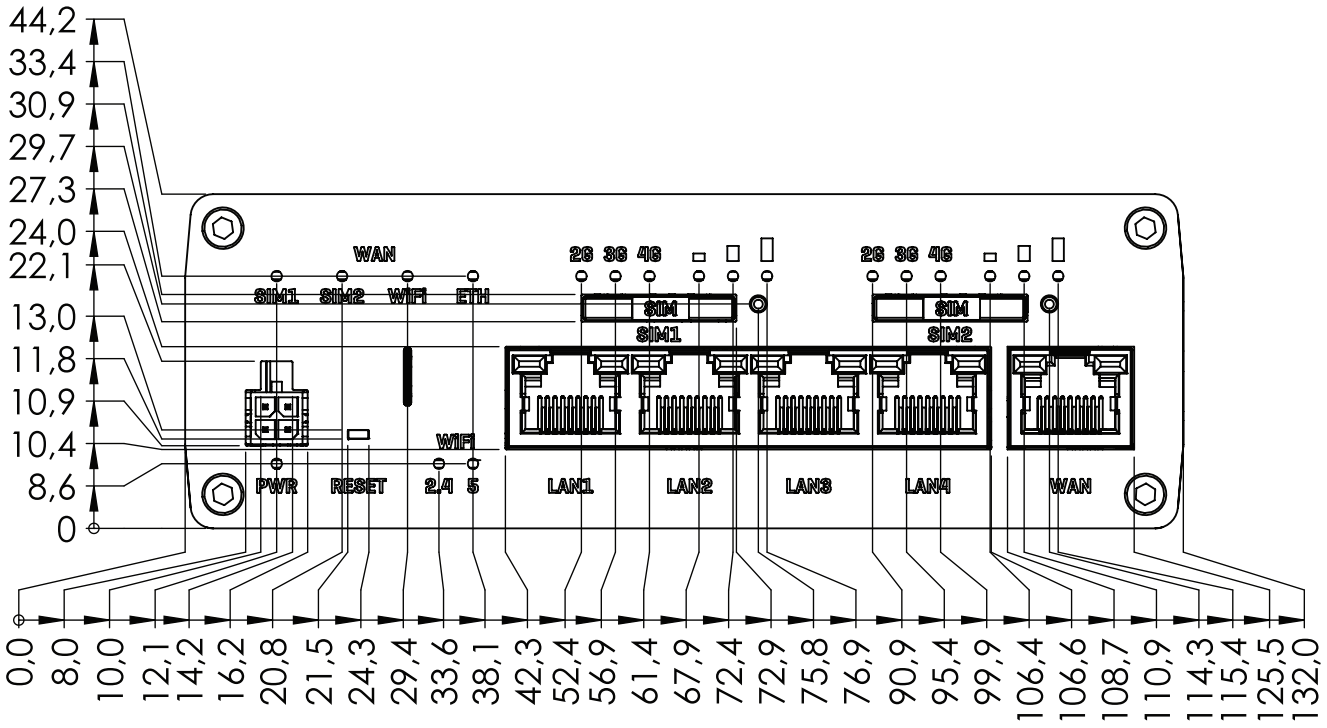
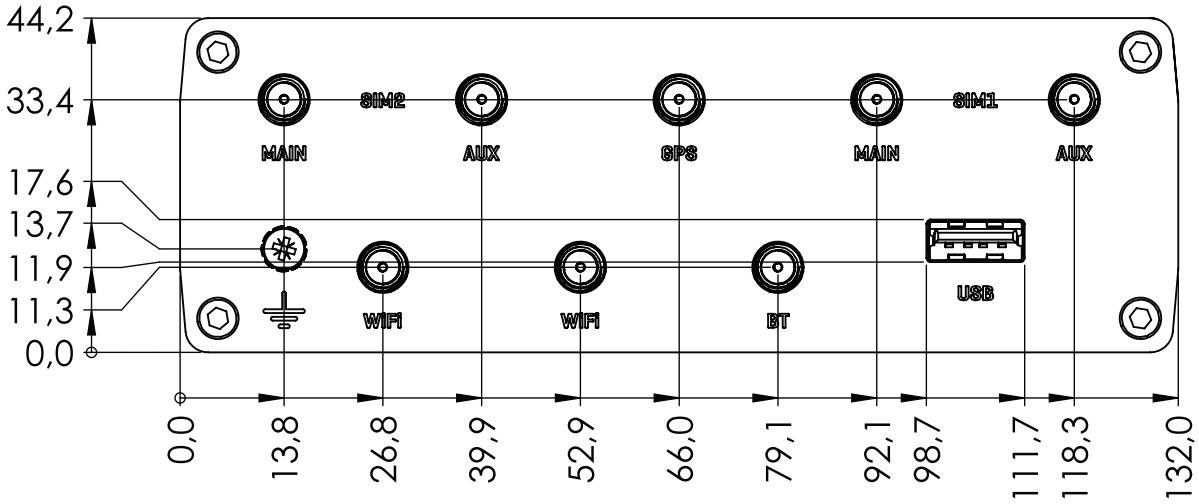
## FRONT VIEW

The figure below depicts the measurements of RUTX12 and its components as seen from the front panel side:




## REAR VIEW

The figure below depicts the measurements of RUTX12 and its components as seen from the back panel side:

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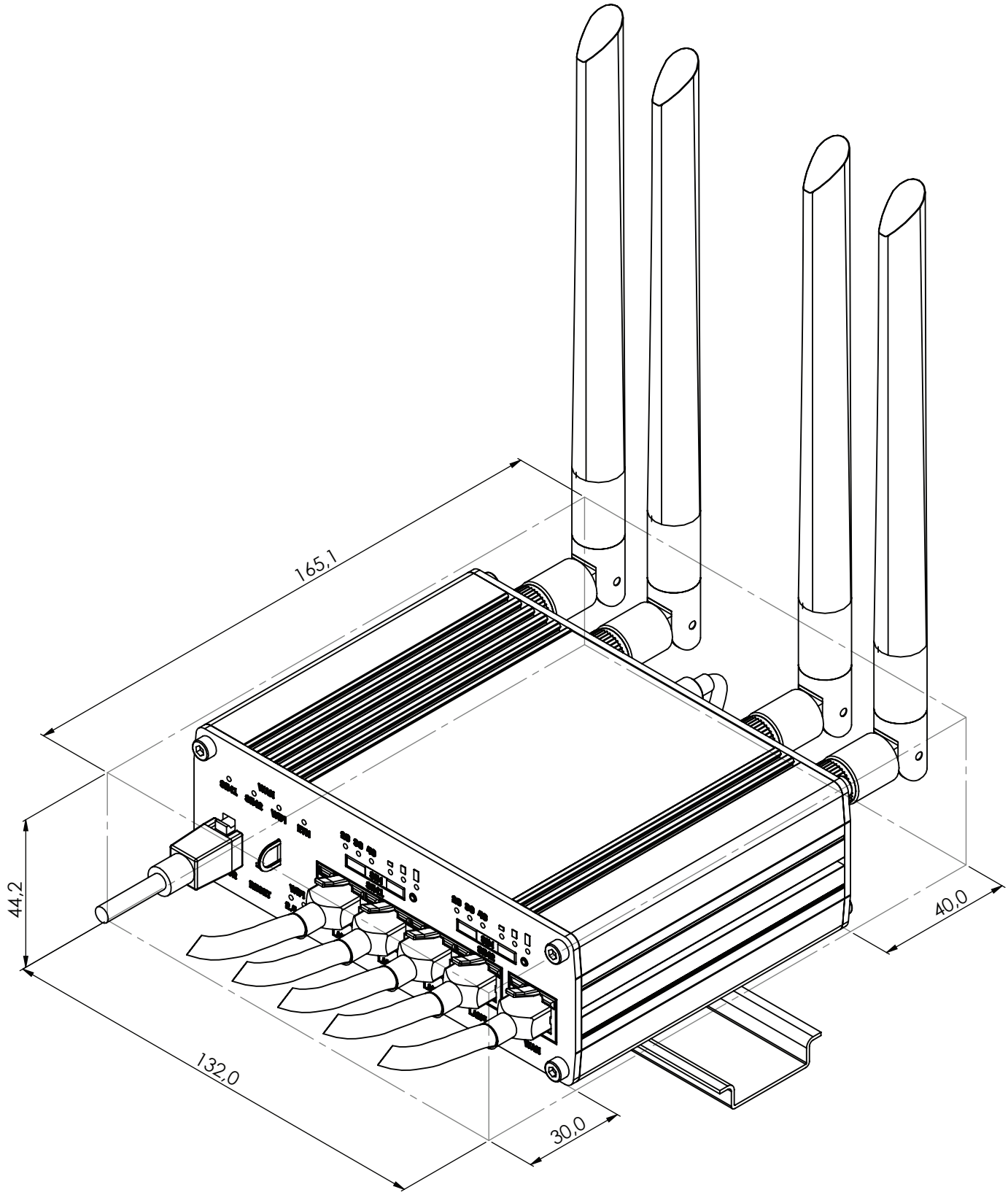
## MOUNTING SPACE REQUIREMENTS

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

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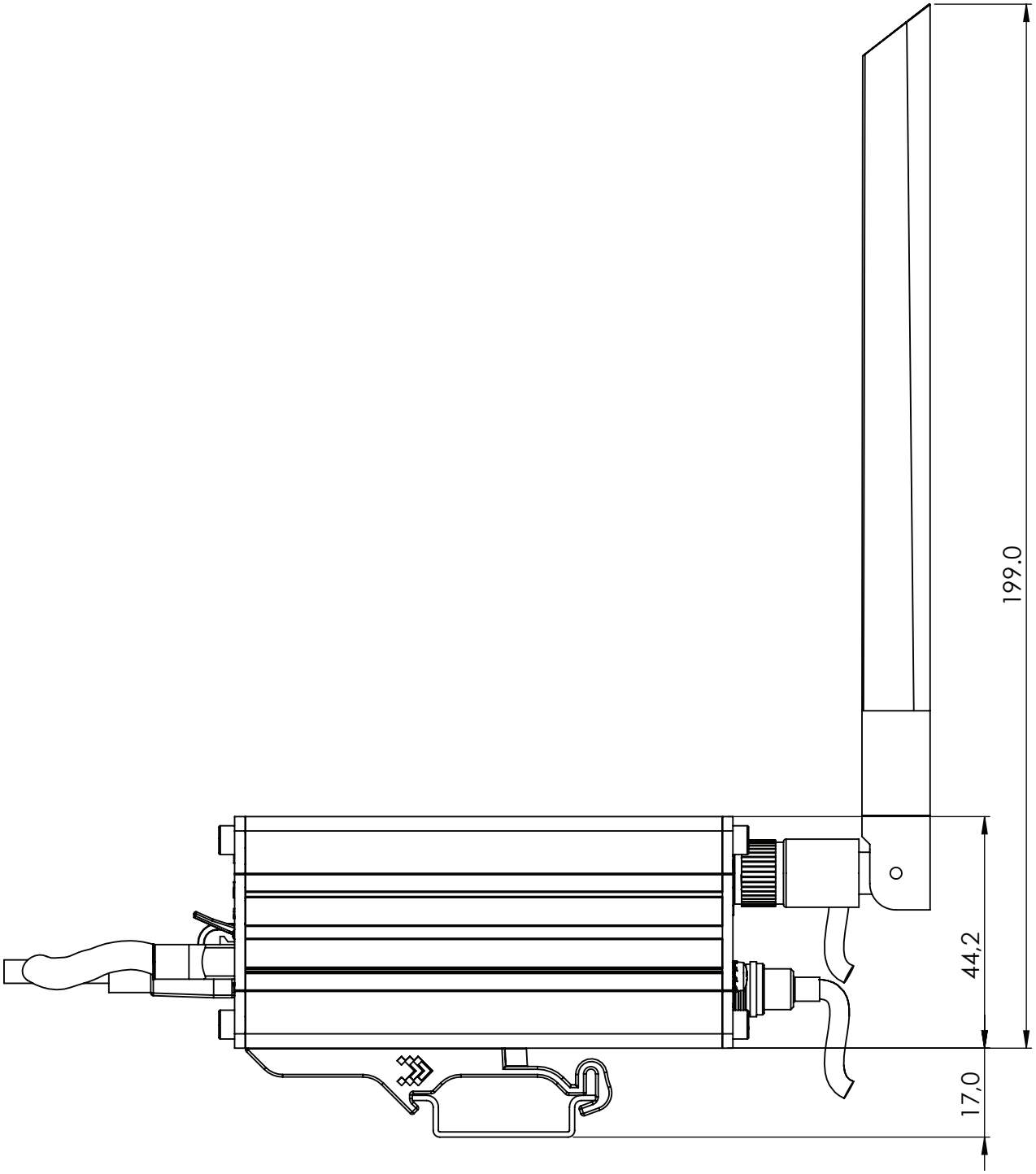
## DIN RAIL

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

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