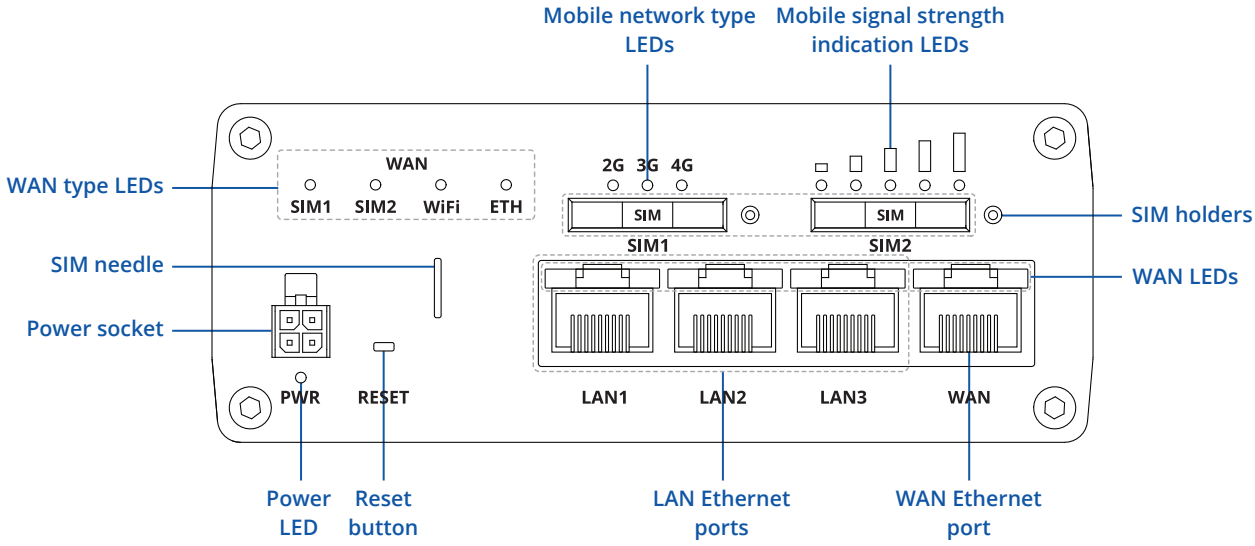
TELTONIKA | Networks

# RUTX11

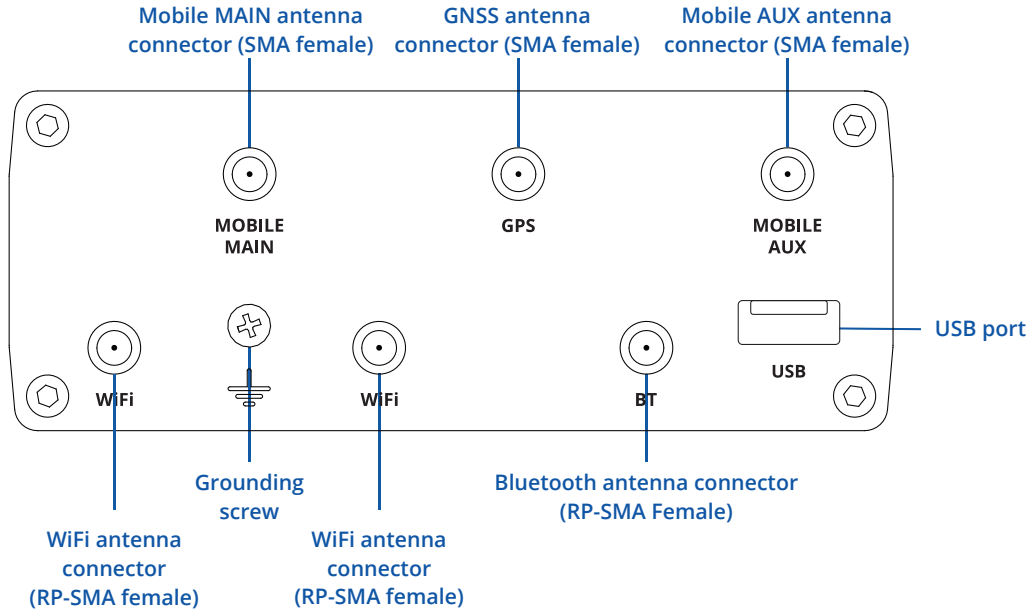
Copyright © 2023, TELTONIKA NETWORKS. Specifications and information given in this document are subject to change by TELTONIKA NETWORKS without prior notice.

# HARDWARE

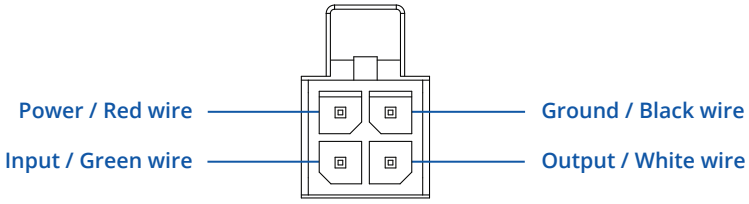
## FRONT VIEW




## BACK VIEW




## POWER SOCKET PINOUT




Copyright © 2023, TELTONIKA NETWORKS. Specifications and information given in this document are subject to change by TELTONIKA NETWORKS without prior notice.

# FEATURES

## MOBILE

| | |
|---|---|
| Mobile module | 4G (LTE) – Cat 6 up to 300 Mbps, 3G – Up to 42 Mbps |
| 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, 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 |
| 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 |
| 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) |
| Wi-Fi security | WPA2-Enterprise - PEAP, WPA2-PSK, WEP, WPA-EAP, WPA-PSK; AES-CCMP, TKIP, Auto Cipher modes, client separation |
| SSID/ESSID | ESSID stealth mode |
| Wi-Fi users | up to 150 simultaneous connections |
| Wireless Hotspot | Captive portal (Hotspot), internal/external Radius server, SMS authorization, internal/external landing page, walled garden, user scripts, URL parameters, user groups, individual user or group limitations, user management, 9 default customizable themes |
| Wireless Connectivity Features | Wireless mesh (802.11s), fast roaming (802.11r), Relayd |
| Wireless MAC filter | Whitelist, blacklist |
| Wireless QR code generator | Once scanned, a user will automatically enter your network without needing to input login information |

## 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 | 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, 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 |
| 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, SMS authorization, internal/external landing page, walled garden, user scripts, URL parameters, user groups, individual user or group limitations, user management, 9 default customizable themes and option to upload and download customised hotspot themes |
| DHCP | Static and dynamic IP allocation, DHCP Relay |
| 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 | 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 |

Copyright © 2023, TELTONIKA NETWORKS. Specifications and information given in this document are subject to change by TELTONIKA NETWORKS without prior notice.

## 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 | 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 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) |

## 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 |

## MQTT GATEWAY

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

## DNP3

| | |
|---|---|
| Supported modes | TCP Master, DNP3 Outstation |

## DLMS

| | |
|---|---|
| DLMS Support | DLMS - standard protocol for utility meter data exchange |

## 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, 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 |
| JSON-RPC | Management API over HTTP/HTTPS |
| MODBUS | MODBUS TCP status/control |
| RMS | Teltonika Remote Management System (RMS) |

Copyright © 2023, TELTONIKA NETWORKS. Specifications and information given in this document are subject to change by TELTONIKA NETWORKS without prior notice.

## 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++, and Python, Java in Package manager |
| Development tools | SDK package with build environment provided |
| GPL customization | You can now create your own custom firmware and web page application, with some examples to make the creation process easier; and brand our firmware by changing colours, logos, and so on to fit your or your clients' needs |

## 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, 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<br>24 - 36 VDC for railway version of the code RUTX11 020G00 |
| PoE (passive) | Possibility to power up through LAN1 port, not compatible with IEEE802.3af, 802.3at and 802.3bt standards, Mode B, 9 - 30 VDC |
| Power consumption | 16 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 | 4 x WAN type LEDs, 2 x Mobile connection type, 5 x Mobile connection strength, 8 x LAN status, 1 x Power, 2 x 2.4G and 5G Wi-Fi |
| 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, 2 x RP-SMA for Wi-Fi, 1 x RP-SMA for Bluetooth, 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 |

Copyright © 2023, TELTONIKA NETWORKS. Specifications and information given in this document are subject to change by TELTONIKA NETWORKS without prior notice.

## PHYSICAL SPECIFICATION

| | |
|---|---|
| Casing material | Aluminum housing |
| Dimensions (W x H x D) | 115 x 44.2 x 95.1 mm |
| Weight | 456 g |
| Mounting options | DIN rail, 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

| | |
|---|---|
| Regulatory | CE/RED, UKCA, CB, EAC, RoHS, REACH, Railway [EN 50155, EN 50121], UCRF, CITC, ICASA, ANRT, RCM, SIRIM, IMDA, ETA-WPC, NTC, , FCC, IC (ISED), PTCRB, UL/CSA, NOM |
| Operator | AT&T, Verizon, T-Mobile, Deutsche Telekom |

## EMI IMMUNITY

| | |
|---|---|
| Standards | EN 55032:2015, EN 55035:2017, Draft ETSI EN 301 489-1 V2.2.1, ETSI EN 301 489-3 V2.1.1, Draft ETSI EN 301 489-17 V3.2.0 |
| ESD | EN 61000-4-2:2009 |
| RS | EN 61000-4-3:2006 + A1:2008 + A2:2010 |
| EFT | EN 61000-4-4:2012 |
| Surge protection | EN 61000-4-5:2014 |
| CS | EN 61000-4-6:2014 |
| DIP | EN 61000-4-11:2004 |

## RF

| | |
|---|---|
| Standards | ETSI EN 300 328 V2.1.1, ETSI EN 301 893 V2.1.1, ETSI EN 300 440 V2.1.1 |

## SAFETY

| | |
|---|---|
| Standards | IEC 62368-1:2014 (Second Edition) EN 62368-1:2014+A11:2017 EN 50385:2017 EN 62232:2017 |

Copyright © 2023, TELTONIKA NETWORKS. Specifications and information given in this document are subject to change by TELTONIKA NETWORKS without prior notice.

# WHAT'S IN THE BOX?

## STANDARD PACKAGE CONTAINS*

- Router RUTX11
- 18 W PSU
- 2 x LTE antennas (swivel, SMA male)
- 2 x WiFi antennas (swivel, RP-SMA male)
- 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 RUTX11

18 W PSU

2 X LTE ANTENNAS (SWIVEL, SMA MALE)

2 X WIFI ANTENNAS (SWIVEL, RP-SMA MALE)

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.

Copyright © 2023, TELTONIKA NETWORKS. Specifications and information given in this document are subject to change by TELTONIKA NETWORKS without prior notice.

# STANDARD ORDER CODES

| PRODUCT CODE | HS CODE | HTS CODE | PACKAGE CONTAINS |
|---|---|---|---|
| RUTX11000000 | 851762 | 8517.62.00 | Standard package with EU PSU |
| RUTX11100400 | 851762 | 8517.62.00 | Standard package with US PSU |

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

# AVAILABLE VERSIONS

| PRODUCT CODE | REGION (OPERATOR) | FREQUENCY |
|---|---|---|
| RUTX11 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 |
| RUTX11 020G00<br>**Railway version** | Europe[3], The Middle East, Africa, Australia, APAC2, 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 |
| RUTX11 1***** | North America[2] | • **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.
4 - For more detailed information about certified carriers, visit our Wiki page

Copyright © 2023, TELTONIKA NETWORKS. Specifications and information given in this document are subject to change by TELTONIKA NETWORKS without prior notice.

# RUTX11 SPATIAL MEASUREMENTS & WEIGHT

## MAIN MEASUREMENTS

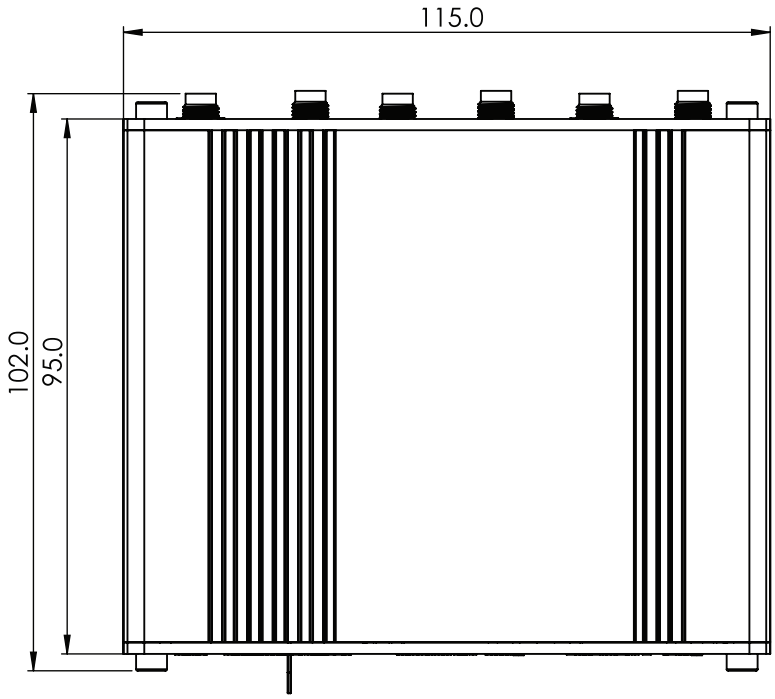
W x H x D dimensions for RUTX11:

| | |
|---|---|
| Device housing*: | 115 x 44.2 x 95.1 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.

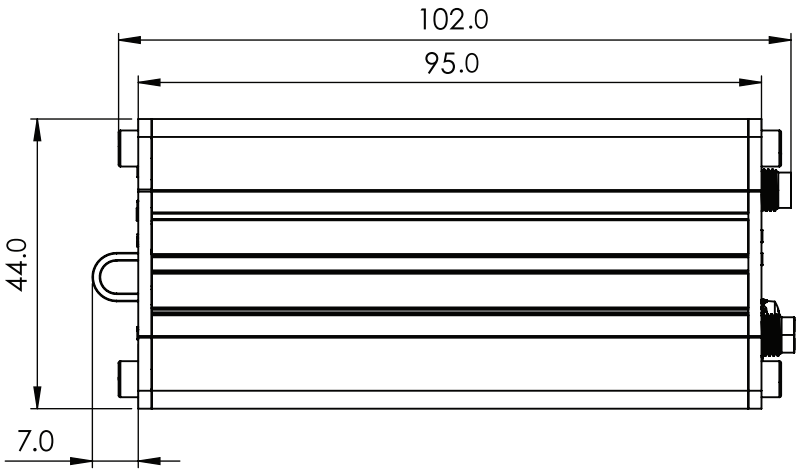
## TOP VIEW

The figure below depicts the measurements of RUTX11 and its components as seen from the top:




## RIGHT VIEW

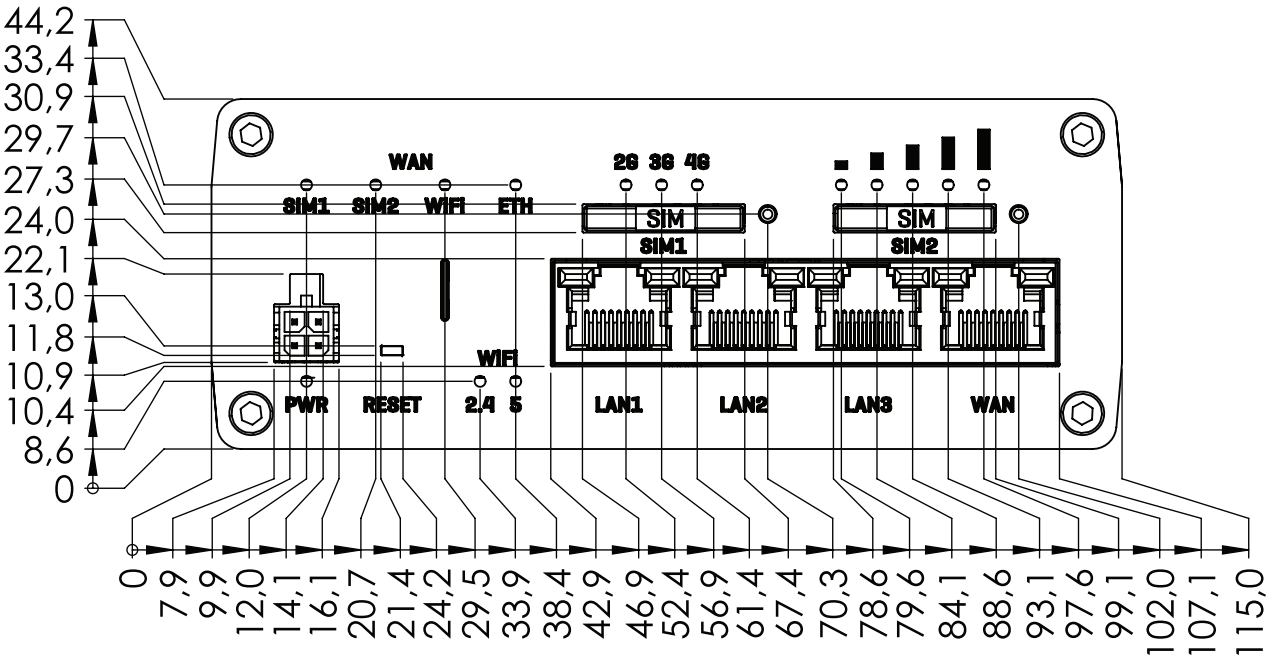
The figure below depicts the measurements of RUTX11 and its components as seen from the right side:




Copyright © 2023, TELTONIKA NETWORKS. Specifications and information given in this document are subject to change by TELTONIKA NETWORKS without prior notice.

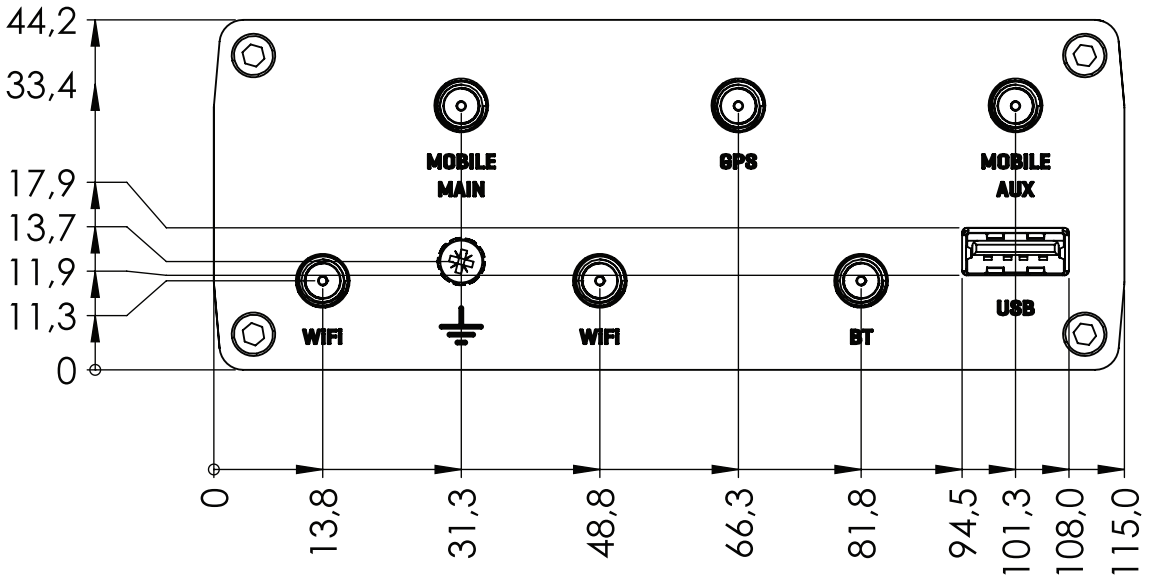
## FRONT VIEW

The figure below depicts the measurements of RUTX11 and its components as seen from the front panel side:




## REAR VIEW

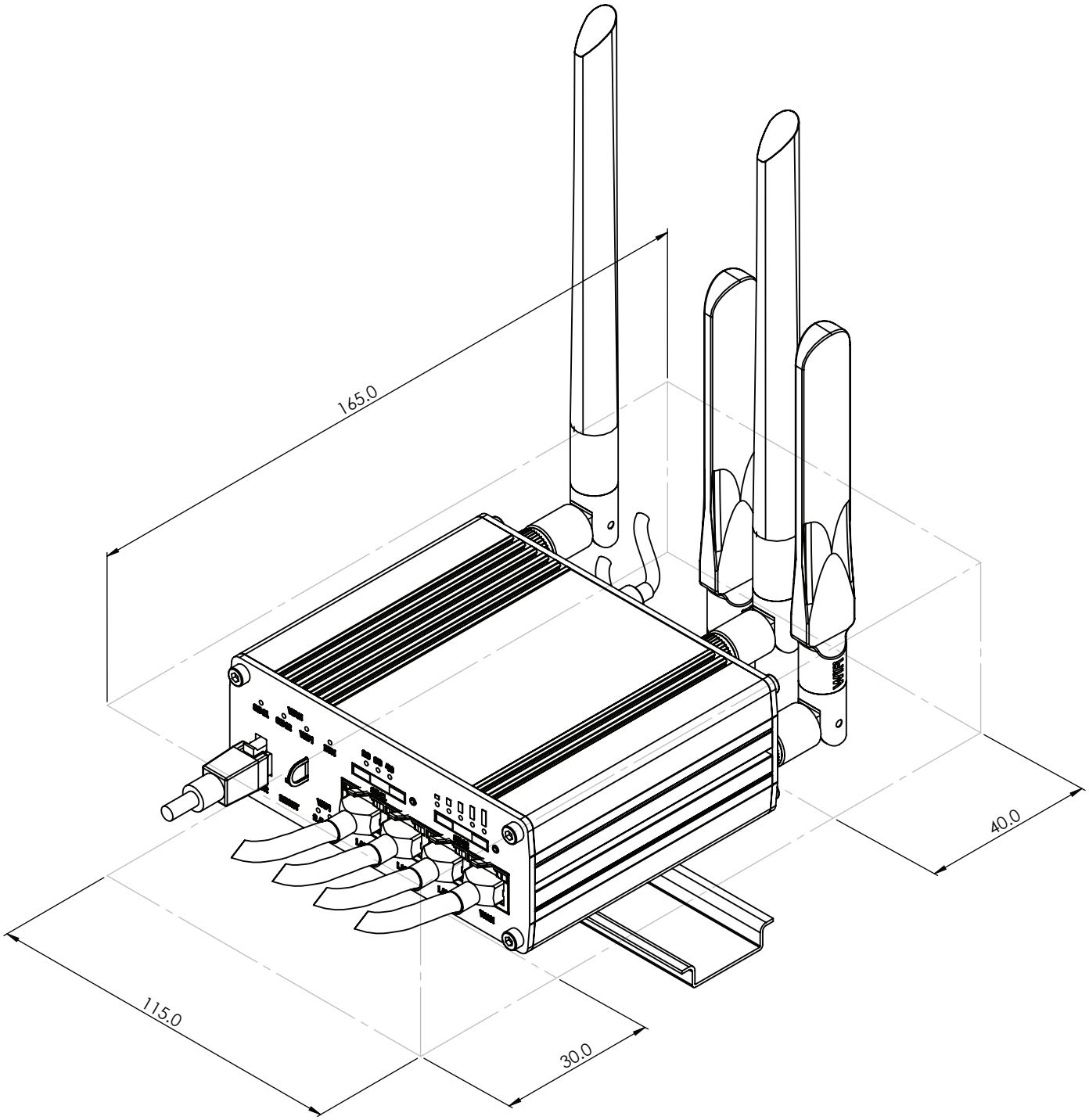
The figure below depicts the measurements of RUTX11 and its components as seen from the back panel side:




Copyright © 2023, TELTONIKA NETWORKS. Specifications and information given in this document are subject to change by TELTONIKA NETWORKS without prior notice.

## MOUNTING SPACE REQUIREMENTS

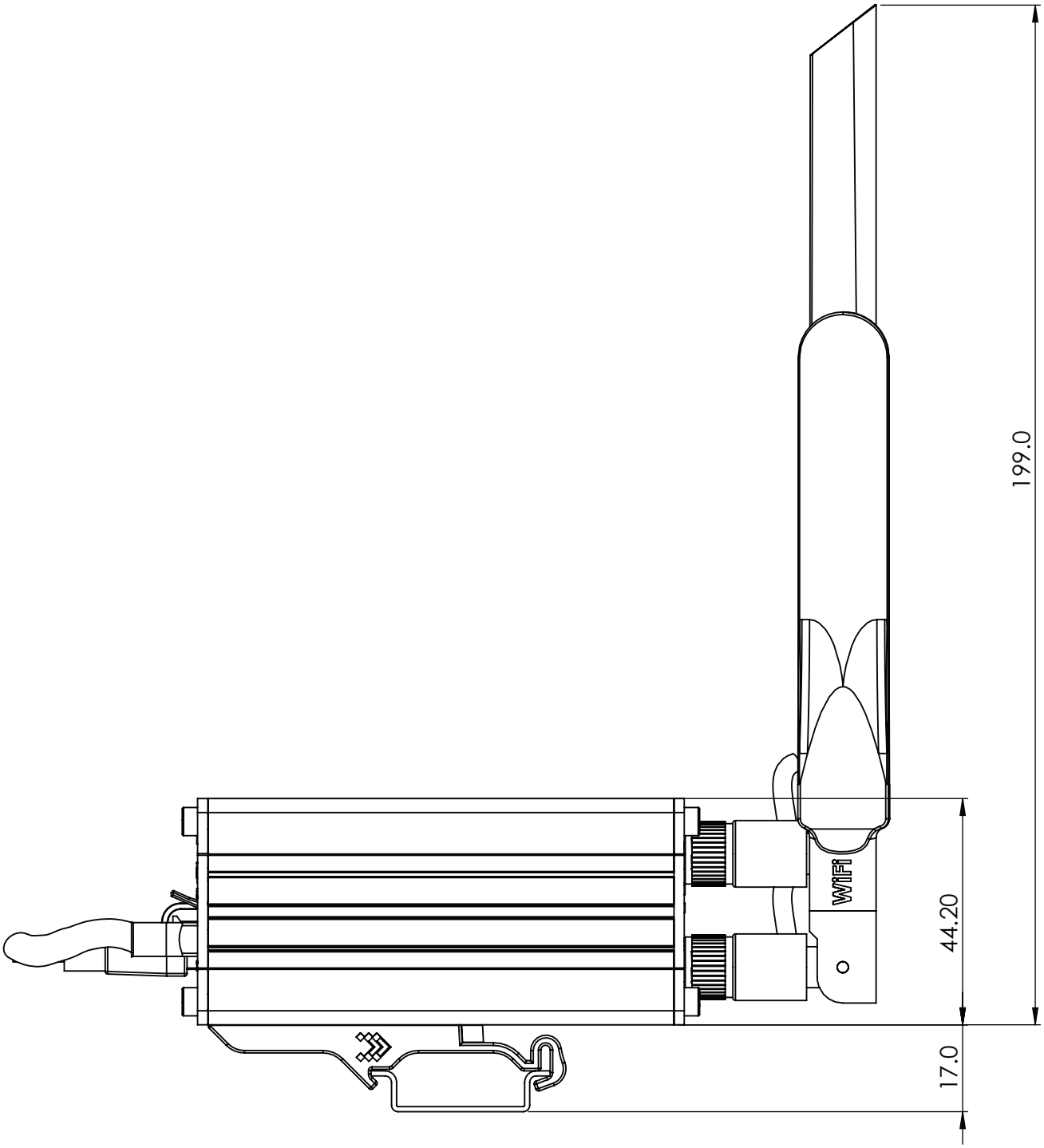
The figure below depicts an approximation of the device's dimensions when cables and antennas are attached:




Copyright © 2023, TELTONIKA NETWORKS. Specifications and information given in this document are subject to change by TELTONIKA NETWORKS without prior notice.

## DIN RAIL

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




Copyright © 2023, TELTONIKA NETWORKS. Specifications and information given in this document are subject to change by TELTONIKA NETWORKS without prior notice.