TELTONIKA | Networks

RUTM50

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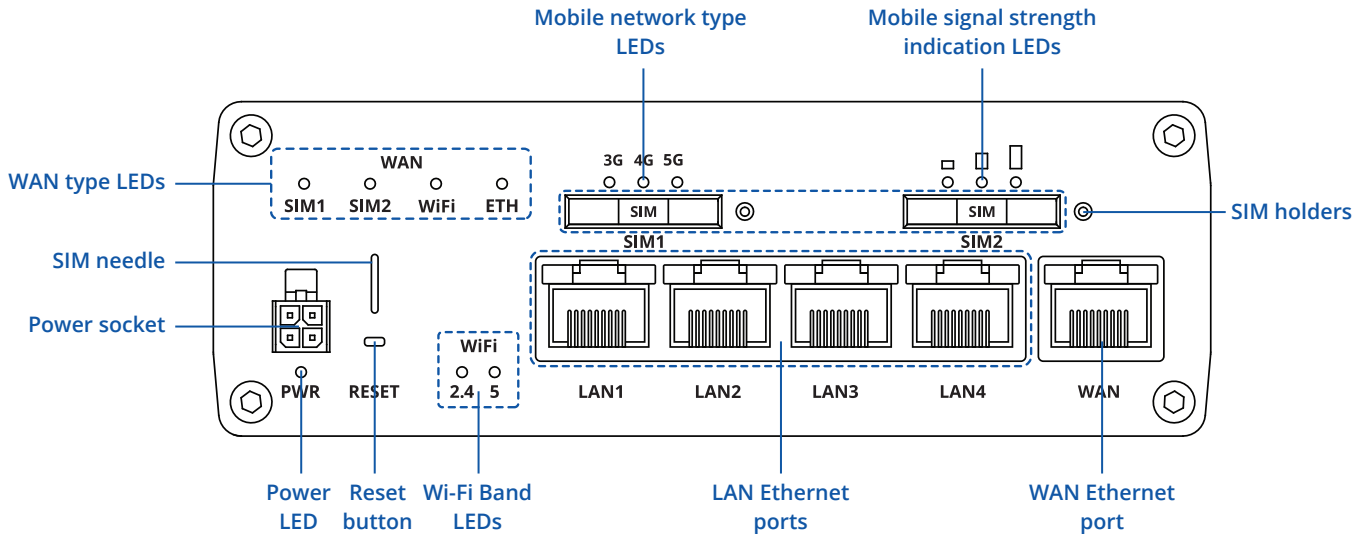
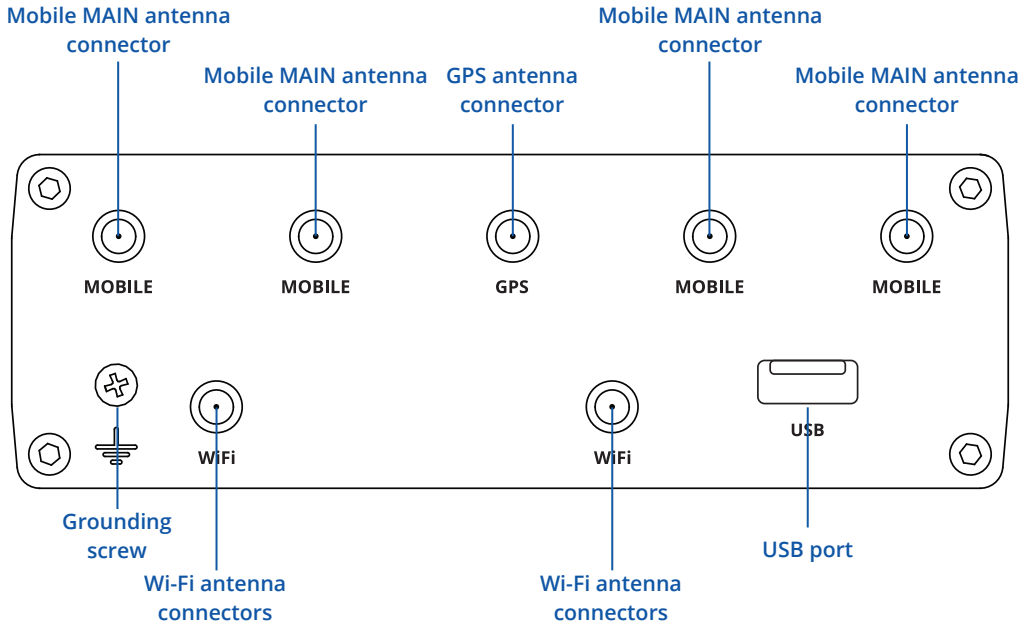
HARDWARE

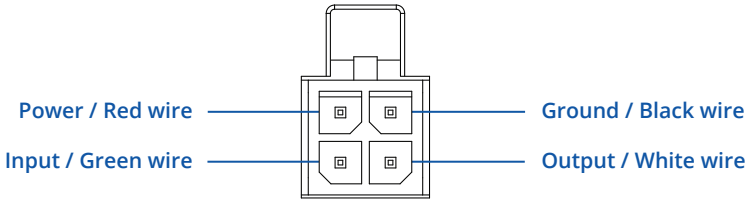
FRONT VIEW



BACK VIEW



POWER SOCKET PINOUT



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FEATURES

MOBILE

Mobile module	5G Sub-6 GHz SA, NSA 2.4, 3.4Gbps DL (4x4 MIMO) 900, 550Mbps UL (2x2 MIMO); 4G (LTE): DL Cat 19 1.6Gbps (4x4 MIMO), UL Cat 18 200Mbps
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, Call utilities
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 (Wi-Fi 5) with data transmission rates up to 867 Mbps (Dual Band, MU-MIMO)
Wi-Fi security	WPA3-EAP, WPA3-SAE, WPA2-Enterprise-PEAP, WPA2-PSK, WEP; AES-CCMP, TKIP, Auto Cipher modes, client separation
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

ETHERNET

WAN	1 x WAN port (can be configured as LAN) 10, 100, 1000 Mbps, compliance with IEEE 802.3, IEEE 802.3u, 802.3az standards, supports auto MDI, MDIX crossover
LAN	4 x ETH ports, 10/100/1000 Mbps, 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 forwards, traffic rules, custom rules
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

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 the WebUI, unlimited firewall configuration via CLI; 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

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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

BACNET

Supported modes	Router
Supported connection types	TCP

OPC UA

Supported modes	Client, Server (planned)
Supported connection types	TCP

DNP3

Supported modes	Station, Outstation
Supported connection types	TCP, USB

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 Slave 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

Protocols	HTTP(S), MQTT, Azure MQTT

Modbus MQTT GATEWAY

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

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)

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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, 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, 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, Temperature, PIN count to Azure IoT Hub server

SYSTEM CHARACTERISTICS

CPU	MediaTek MT7621A, Dual-Core, 880 MHz, MIPS1004Kc
RAM	256MB DDR3
FLASH storage	16MB serial NOR flash, 256MB serial NAND 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

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	Supports server software: TAVL, RMS
Geofencing	Multiple configurable 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 - 50 V detected as logic high
Output	1 x Digital Output, Open collector output, max output 50 V, 300 mA
Events	SMS, Email, RMS
I/O juggler	Allows setting certain I, O conditions to initiate event

POWER

Connector	4-pin industrial DC power socket
Input voltage range	9 – 50 VDC, reverse polarity protection, surge protection >51 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, Mode B, LAN1 Port, 9 - 50 VDC
Power consumption	Idle: <5 W, Max: <18 W

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

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	3 x connection status LEDs, 3 x connection strength LEDs, 10 x Ethernet port status LEDs, 4 x WAN status LEDs, 1x Power LED, 2 x 2.4G and 5G Wi-Fi LEDs
SIM	2 x SIM slot (Mini SIM – 2FF), 1.8 V, 3 V
Power	1 x 4-pin DC power connector
Antennas	4 x SMA for Mobile, 2 x RP-SMA for Wi-Fi, 1 x SMA for GNSS
USB	1 x USB A port for external devices
Reset	Reboot, User default reset, Factory reset button
Grounding	1 x Grounding screw

PHYSICAL SPECIFICATION

Casing material	Aluminum housing
Dimensions (W x H x D)	132 x 44.2 x 95.1 mm
Weight	519 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

REGULATORY & TYPE APPROVALS

Regulatory	FCC, IC, PTCRB

EMC EMISSIONS & IMMUNITY

Standards	47 CFR Part 15 Subpart B ICES-003: Issue 7 (October 2020)

RF

Standards (Wi-Fi 2.4 GHz, 5 GHz)	47 CFR Part 15 Subpart C - § 15.247, Subpart E - § 15.407 RSS-247 Issue 2 (February 2017), RSS-Gen Issue 5 (April 2018) Amendment 2 (February 2021) KDB 905462 D02 UNII DFS Compliance Procedures New Rules v02 KDB 905462 D04 Operational Modes for DFS Testing New Rules v01
Standards (4G, 5G)	47 CFR Part 2, Part 22 Subpart H, Part 24 Subpart E, Part 27 Subpart C, Part 90 Subpart R/S, Part 96 RSS-130 Issue 2 (February 2019), RSS-132 Issue 3 (January 2013), RSS-133 Issue 6 (January 2018) Amendment, RSS-139 Issue 3 (July 2015), RSS-140 Issue 1 (April 2018), RSS-192 Issue 4 (May 2020), RSS-195 Issue 2 (April 2014), RSS-197 Issue 1 (February 2010), RSS-199 Issue 3 (December 2016), RSS-Gen Issue 5 (April 2018) Amendment 2 SRSP-503 Issue 7 (September 2008), SRSP-510 Issue 5 (February 2009), SRSP-513 Issue 3 (July 2015), SRSP-516 Issue 1 (April 2014), SRSP-517 Issue 1 (July 2014), SRSP-518 Issue 2 (February 2019), SRSP-520 Issue 2 (November 2021)

RF EXPOSURE

Standards	47 CFR - § 2.1091 KDB 447498 D04 Interim General RF Exposure Guidance v01 RSS-102 Issue 5 (March 2015) Amendment 1

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WHAT'S IN THE BOX?

STANDARD PACKAGE CONTAINS*

- RUTM50 Router
- 18 W PSU
- 4 x Mobile antennas (swivel, SMA male)
- 2 x Wi-Fi antennas (magnetic mount, RP-SMA male, 1.5 m cable)
- 1 x GNSS antenna (adhesive, SMA male, 3 m cable)
- Ethernet cable (1.5 m)
- SIM Adapter kit
- QSG (Quick Start Guide)
- Packaging box

RUTM50 ROUTER

18 W PSU

4 X LTE ANTENNAS (SWIVEL, SMA MALE)

2 X WI-FI 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, except for PSU.

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STANDARD ORDER CODES

PRODUCT CODE	HS CODE	HTS CODE	PACKAGE CONTAINS
RUTM50 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
RUTM50 0*****	North America	• **5G NR NSA:** n2, n5, n7, n12, n13, n14, n25, n26, n29, n30, n38, n41, n48, n66, n70, n71, n77, n78 • **5G NR SA:** 5G NR SA: n2, n5, n7, n12, n13, n14, n25, n26, n29, n30, n38, n41, n48, n66, n70, n71, n77, n78 • **5G DL 4 × 4 MIMO:** n2, n5, n7, n12, n13*, n14, n25, n26*, n29, n30, n38, n41, n48, n66, n70, n71, n77, n78 • **4G (LTE-FDD):** B2, B4, B5, B7, B12, B13, B14, B17, B25, B26, B29, B30, B66, B71 • **4G (LTE-TDD):** B38, B41, B42, B43, B48

The price and lead-times for region (operator) specific versions may vary. For more information please contact us.
1 - Regional availability - excluding Russia & Belarus.

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RUTM50 SPATIAL MEASUREMENTS & WEIGHT

MAIN MEASUREMENTS

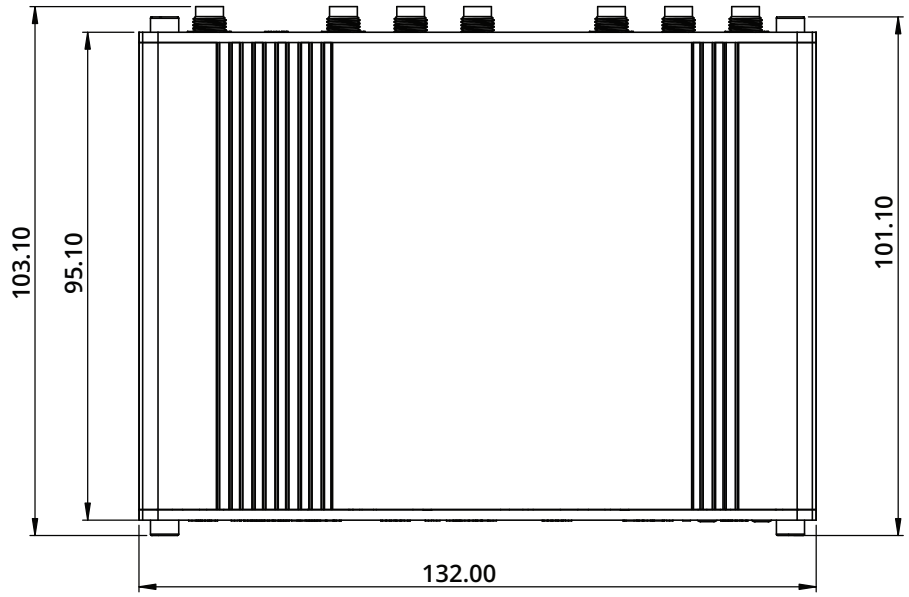
W x H x D dimensions for RUTM50:

Device housing*:	132 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.

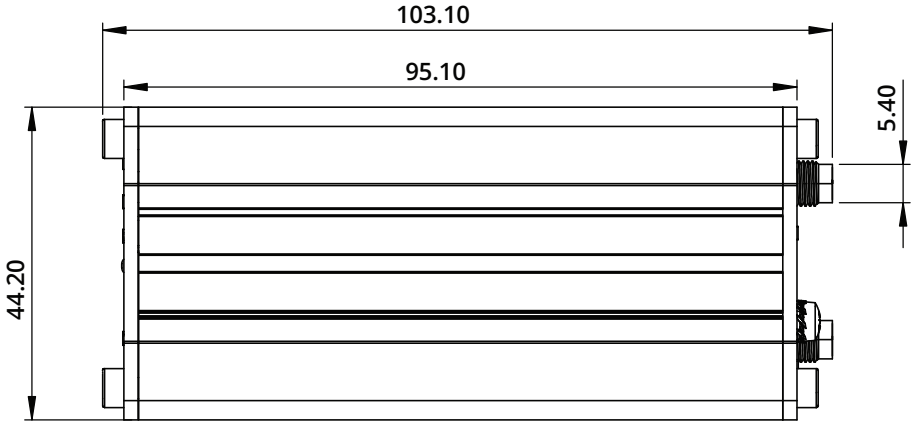
TOP VIEW

The figure below depicts the measurements of RUTM50 and its components as seen from the top:



RIGHT VIEW

The figure below depicts the measurements of RUTM50 and its components as seen from the right side:



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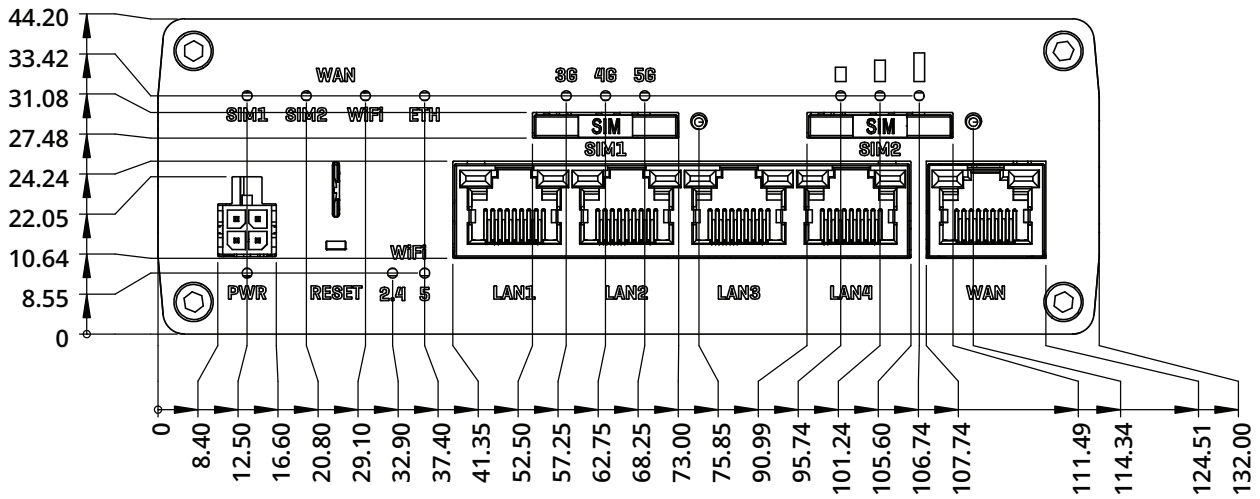
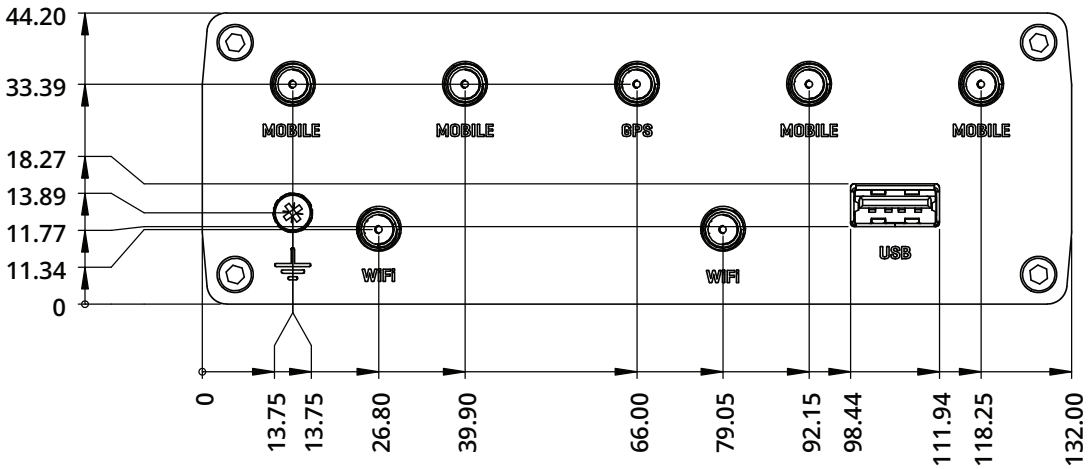
FRONT VIEW

The figure below depicts the measurements of RUTM50 and its components as seen from the front panel side:



REAR VIEW

The figure below depicts the measurements of RUTM50 and its components as seen from the back panel side:



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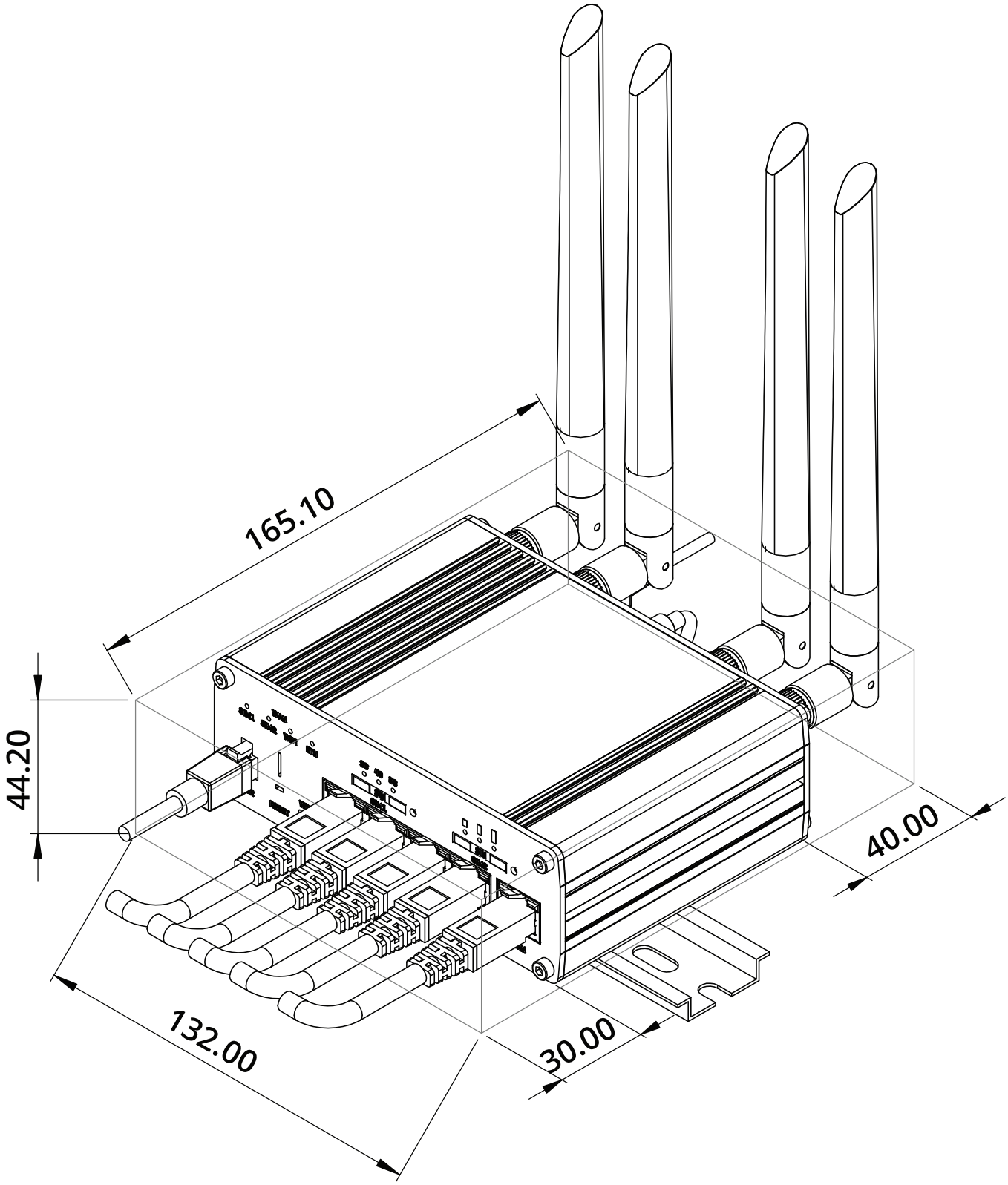
MOUNTING SPACE REQUIREMENTS

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



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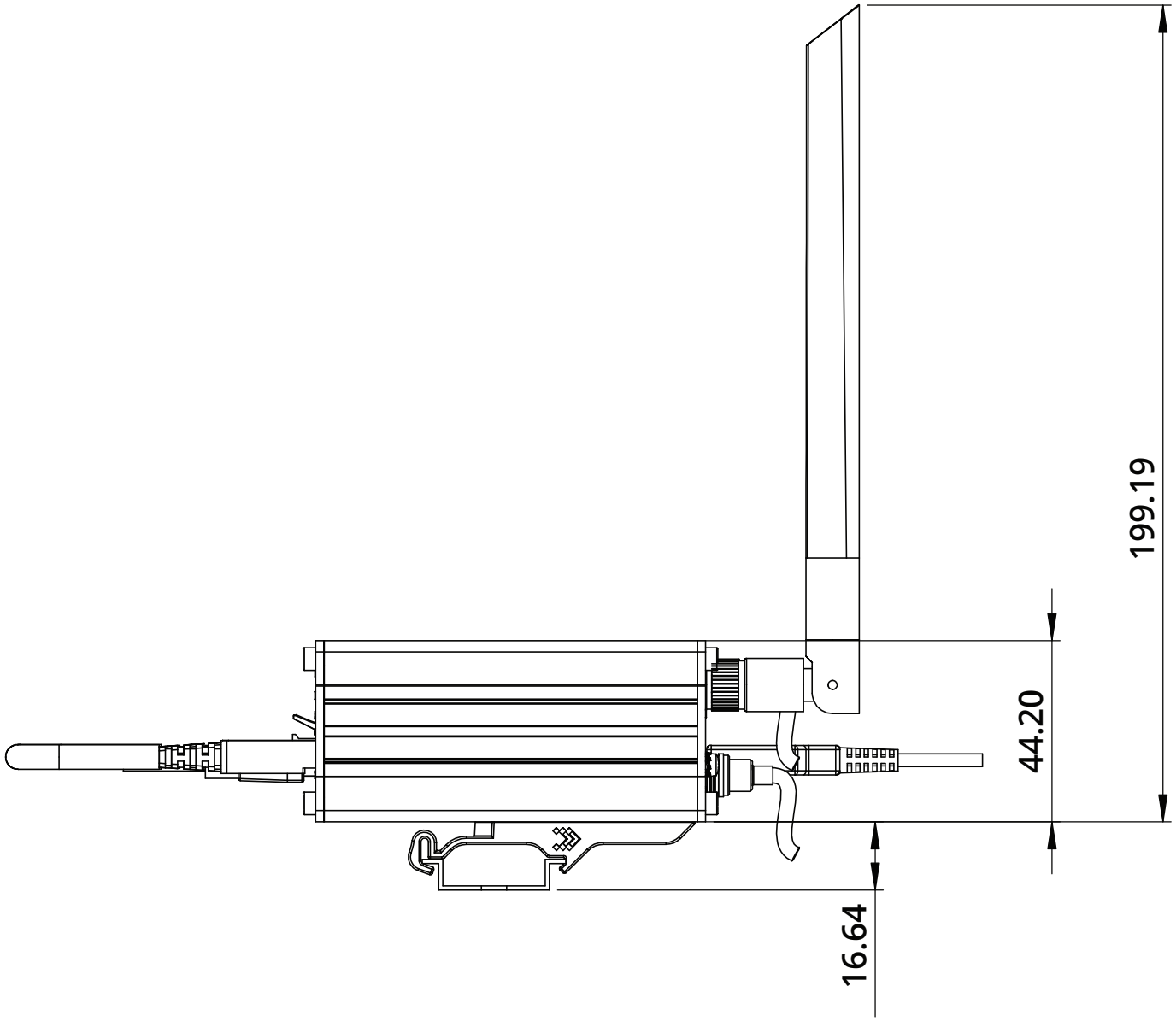
DIN RAIL

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



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