

RUT976

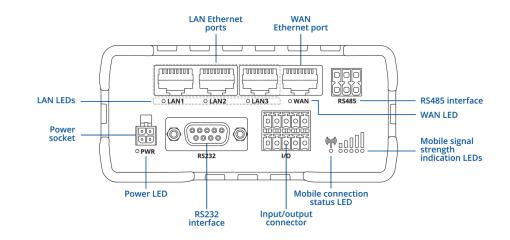


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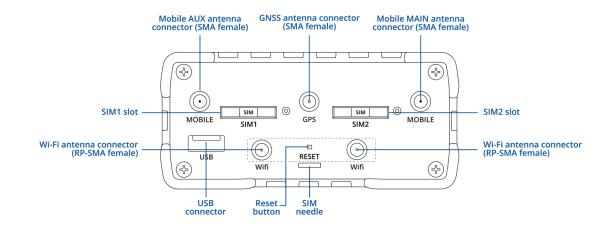


HARDWARE

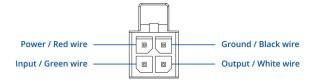
FRONT VIEW



BACK VIEW



BACK VIEW





FEATURES

Mobile		
Mobile module	5G Sub-6Ghz SA 223 Mbps DL , 123 Mbps UL; 4G LTE Cat 4 – LTE 195 Mbps DL, 105 Mbps UL	
3GPP Release	Release 17 RedCap	
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, 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	



Wireless

Wireless mode	802.11b/g/n (Wi-Fi 4), Access Point (AP), Station (STA)	
Wi-Fi security	WPA2-Enterprise: PEAP, WPA2-PSK, WPA-EAP, WPA-PSK, WPA3-SAE, WPA3-EAP, OWE; AES-CCMP, TKIP, Auto-cipher modes, client separation, EAP-TLS with PKCS#12 certificates, disable auto-reconnect, 802.11w Protected Management Frames (PMF)	
SSID/ESSID	SSID stealth mode and access control based on MAC address	
Wi-Fi users	Up to 100 simultaneous connections	
Wireless Connectivity Features	Wireless mesh (802.11s), fast roaming (802.11r), BSS transition management (802.11v) radio resource measurement (802.11k)	
Wireless MAC filter	Allowlist, blocklist	
Wireless QR code generator	Once scanned, a user will automatically enter your network without needing to input login information	
Ethernet		
WAN	1 x WAN port 10/100 Mbps, compliance IEEE 802.3, IEEE 802.3u, 802.3az standards, supports auto MDI/MDIX	
LAN	3 x LAN ports, 10/100 Mbps, compliance IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX	



Network

Routing	Static routing, Dynamic routing (BGP, OSPF v2, RIP v1/v2, EIGRP, NHRP), Policy based routing	
	6	
Network protocols	TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, SFTP, FTP, SMTP, SSL v3, TLS, ARP, VRRP, PPP, PPPoE, UPNP, SSH, DHCP, Telnet, SMPP, SNMP, MQTT, Wak on Lan (WOL), VXLAN	
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 of change their transmission speed, and so on	
Network topology	Visual representation of your network, showing which devices are connected to whic other devices	
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	
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	
SSHFS	Possibility to mount remote file system via SSH protocol	



Security

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, AES192GCM16, 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, Phase 2 and Phase 3 and Dual Hub support	
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	RS485, TCP	
OPC UA		
Supported modes	Client, Server	
Supported connection types	TCP	



MODBUS

Supported modes	Server, Client	
Supported connection types	RTU (RS232, RS485), 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 a single server; Custom LUA scripting, allowing scripts to utilize the router's Data to server feature	
MQTT Gateway		
Modbus MQTT Gateway	Allows sending commands and receiving data from MODBUS Server through MQTT broker	
DNP3		
Supported modes	TCP Master, DNP3 Outstation	
Supported connection types	RS232, RS485, TCP, USB	
DLMS		
DLMS Support	DLMS - standard protocol for utility meter data exchange	
Supported modes	Client	
Supported connection types	RS232, RS485, TCP	
ΑΡΙ		
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

v		
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- on/off	
Email	Receive email message status alerts of various services	
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 - Cloud of Things	Allows monitoring of: Device Model, Revision and Serial Number, WAN Type and IP, Mobile Cell ID, ICCID, IMEI, Connection Type, Operator, Signal Strength. Has reboot and firmware upgrade actions	
Azure loT Hub	Can be configured with Data to Server to send all the available parameters to the cloud. Has Direct method support which allows to execute RutOS API calls on the IoT Hub. Also has Plug and Play integration with Device Provisioning Service that allows zero-touch device provisioning to IoT Hubs	
System Characteristics		
CPU	Mediatek, 580 MHz, MIPS 24KEc	
RAM	128 MB, DDR2	
FLASH storage	16 MB, NOR 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 use 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	
Serial		
RS232	DB9 connector, RS232 (with RTS, CTS flow control)	
RS485	RS485 Full Duplex (4 wires) and Half Duplex (2 wires). 300-115200 baud rate	
Serial functions	Console, Serial over IP, Modem, MODBUS gateway, NTRIP Client	



USB

Data rate	USB 2.0	
Applications	Samba share, USB-to-serial	
External devices	Possibility to connect external HDD, flash drive, printer, USB-serial adapter	
Storage formats	FAT, FAT32, exFAT, NTFS (read-only), ext2, ext3, ext4	
Input / Output		
Input	1 x digital dry input (0 - 3 V), 1 x digital galvanically isolated input (0 - 30 V), 1 x analo input (0 - 24 V), 1 x Digital non-isolated input (on 4-pin power connector, 0 - 5 V detected as logic low, 8 - 30 V detected as logic high)	
Output	1 x digital open collector output (30 V, 250 mA), 1 x SPST relay output (40 V, 4 A), 1 x Digital open collector output (30 V, 300 mA, on 4-pin power connector)	
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 – 30 VDC, reverse polarity protection; surge protection >31 VDC 10us max	
PoE-out input voltage range	44 – 57 VDC	
PoE (passive)	Passive PoE over Port LAN1. "Mode A/B" style. Not compatible with 802.3af/at/bt.Passive PoE over spare pairs. Possibility to power up through LAN pol not compatible with IEEE802.3af, 802.3at and 802.3bt standards, Mode B, LAN1 Pol 9 - 30 VDC	
Power consumption	Idle: 3 W, Max: 7 W	



Physical Interfaces

Ethernet	4 x RJ45 ports, 10/100 Mbps	
I/O's	2 x Inputs and 2 x Outputs on 10-pin industrial socket, 1 x Digital input and 1 x Digita output on 4-pin power connector	
Status LEDs	1 x Bi-color connection status, 5 x Mobile connection strength, 4 x ETH status, 1 x Power	
SIM	2 x SIM slots (Mini SIM - 2FF), 1.8 V/3 V, external SIM holders, eSIM (Optional - different hardware required; contact your sales manager)	
Power	1 x 4-pin power connector	
Input/output	1 x 10-pin industrial socket for inputs/outputs	
Antennas	2 x SMA for Mobile, 3 x RP-SMA for Wi-Fi, 1 x SMA for GNSS	
USB	1 x USB A port for external devices	
RS232	1 x DB9 socket	
RS485	1 x 6-pin industrial socket	
Reset	Reboot/User default reset/Factory reset button	
Physical Specification		
Casing material	Aluminum housing, plastic panels	
Dimensions (W x H x D)	110 x 50 x 100 mm	
Weight	295 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	WEEE	



ORDERING

STANDARD PACKAGE*

- RUT976 router
- 9 W PSU
- 2x 5G Mobile antennas (swivel, SMA male)
- 2x Wi-Fi antennas (magnetic mount, RP-SMA male, 1.5 m cable)
- GNSS antenna (adhesive, SMA male, 3 m cable)
- RS485 connector block
- I/O connector block
- Ethernet cable (1.5 m)
- SIM Adapter kit
- QSG (Quick Start Guide)
- · Packaging box

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

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

CLASSIFICATION CODES

HS Code: 851762

HTS: 8517.62.00

AVAILABLE VERSIONS

RUT976 0*****	5G NR SA: n1, n2, n3, n5, n7, n8, n12, n13, n14, n18,	RUT976000000 / Standard
Global ¹	n20, n25, n26, n28, n30, n38, n40, n41, n48, n66,	package with Universal PSU
	n70, n71, n77, n78, n79	
	4G (LTE-FDD): B1, B2, B3, B4, B5, B7, B8, B12, B13,	
	B14, B17, B18, B19, B20, B25, B26, B28, B30,	
	B66, B70, B71	
	4G (LTE-TDD): B34, B38, B39, B40, B41, B42, B43,	
	B48	

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

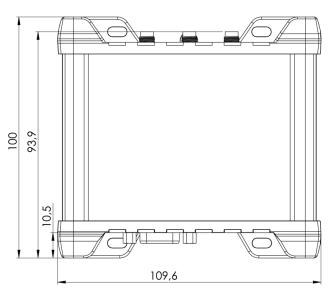
1 - Regional availability - excluding Russia & Belarus



RUT976 SPATIAL MEASUREMENTS

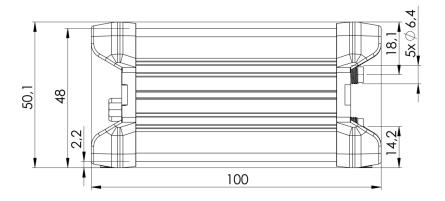
TOP VIEW

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



RIGHT VIEW

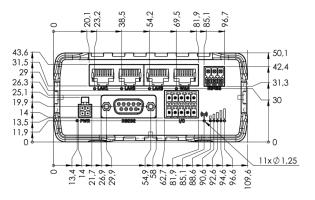
The figure below depicts the measurements of device and its components as seen from the right side:





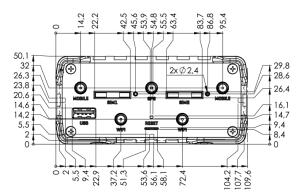
FRONT VIEW

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



REAR VIEW

The figure below depicts the measurements of device 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:

