TRB256

Industrial NB-IoT Gateway



Energy & utilities

Enterprise

Industrial & automation

Retail

Smart city

CONNECTIVITY

4G/LTE Cat M1/Cat NB1, NB2/EGPRS

450 MHZ BAND

Greater LTE signal penetration and increased connectivity coverage

DUAL SIM

Auto-failover, backup WAN, and more switching scenarios

INTERFACES

Ethernet, I/Os, and Serial (RS232, RS485) interfaces with 16-pin terminal block

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Mobile	
Mobile module	4G LTE Cat M1 up to 588 DL/ 1119 UL kbps, Cat NB2 up to 127 DL/158.5 UL kbps, Cat NB1 up to 32 DL/70 UL kbps (simultaneous operation of cellular and GNSS connectivity is not supported)
3GPP Release	Release 14
SIM switch	2 SIM cards, auto-switch cases: weak signal, data limit, SMS limit, on roaming, no network, network denied, data connection fail
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, EMAIL to SMS, SMS to EMAIL, SMS to HTTP, SMS to SMS, scheduled SMS, SMS autoreply, SMPP
Block/Allow list	Operator block/allow list (by country or separate operators)
Band management	Band lock, Used band status display
SIM idle protection service	Provides the possibility to configure the router to periodically switch to the unused SIM card and establish a data connection in order to prevent the SIM card from being blocked
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	Gateway assigns its mobile WAN IP address to another device on LAN

Ethernet	
Ethernet	1 x ETH port, 10/100 Mbps, compliance with IEEE 802.3, IEEE 802.3u, 802.3az standards, supports auto MDI/MDIX crossover

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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), 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, TTL target customisation
Firewall status page	View all your Firewall statistics, rules, and rule counters
Port 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 >77 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	VRRP, Wired options, each of which can be used as an automatic Failover, Mobile
SSHFS	Possibility to mount remote file system via SSH protocol
Traffic Management	Real-time monitoring, wireless signal charts, traffic usage history

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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	Preconfigured firewall rules can be enabled via WebUI, unlimited firewall configuration via CLI, DMZ, NAT, NAT-T, NAT64
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	Tag-based VLAN separation
Mobile quota control	Mobile data limit, customizable period, start time, warning limit, phone number
WEB filter	Block list for blocking out unwanted websites, allow list for specifying allowed sites only
Access control	Flexible access control of SSH, Web interface, CLI and Telnet
Certificate Manager	Certificate creation tool allows to create CA, server, client, let's encrypt, SCEP certificates
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, 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.

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BacNET	
Supported modes	Router
Supported connection types	IP, RTU (RS485)
Configuration options	Support for multiple BACnet/IP interfaces, Network number assignment, Preconfigured BDT entries for BBMD (BACnet Broadcast Management Device)

OPC UA	
Supported modes	Client, Server
Supported connection types	TCP

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

MODBUS	
Supported modes	Server, Client
Supported connection types	RTU (RS232, RS485), TCP
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
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

DNP3	
Supported modes	Station, Outstation
Supported connection types	RS232, RS485, TCP

DLMS/COSEM	
DLMS Support	DLMS - standard protocol for utility meter data exchange. Support trough serial and TCP
Supported modes	Client
Supported connection types	RS232, RS485, TCP

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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
Call	Reboot, Status, Mobile data on/off, Output on/off, answer/hang-up with a timer
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 IoT 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
AWS IoT Core	Utility to interact with the AWS cloud platform. Jobs Support: Call the device's API using AWS Jobs functionality

System Characteristics	
CPU	Mediatek, 580 MHz, MIPS 24KEc
RAM	128 MB
FLASH storage	16 MB

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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 - under development); (simultaneous operation of GNSS and cellular connectivity is not supported)
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	Terminal block connector: TX, RX, RTS, CTS
RS485	Terminal block connector: D+, D-, R+, R- (2 or 4 wire interface)
Serial functions	Console, Serial over IP, Modem, MODBUS gateway, NTRIP Client

Input/Output	
Input	3x Configurable Digital Inputs, 0 - 6 V detected as logic low, 8 - 30 V detected as logic high, 1x Analog input (0 - 30 V)
Output	3x Configurable Digital Outputs, 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

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Power	
Connector	2-pin in 16-pin industrial terminal block
Input voltage range	9 – 30 VDC, reverse polarity protection, surge protection +/-1 kV 50 µs max
Power consumption	Idle: <2 W, Max: <3.5 W

Physical Interfaces	
Ethernet	1 x RJ45 port, 10/100 Mbps
I/O's	3 x Configurable digital I/O in 16-pin terminal block, 1 x analog input
Status LEDs	3 x connection status LEDs, 3 x connection strength LEDs, 1 x power LED, 1 x Eth port status LED
SIM	2 x SIM slots (Mini SIM – 2FF), 1.8 V/3 V, double stacked SIM tray
Power	1 x 16-pin terminal block
Antennas	1 x SMA connector for LTE, 1 x SMA connector for GNSS
RS232	4-pin in 16-pin terminal block (TX, RX, RTS, CTS)
RS485	4-pin in 16-pin terminal block (D+, D-, R+, R-)
Reset	Reboot/User default reset/Factory reset button

Physical Specification	
Casing material	Anodised aluminium housing and panels
Dimensions (W x H x D)	83 x 25 x 74.2 mm
Weight	165 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

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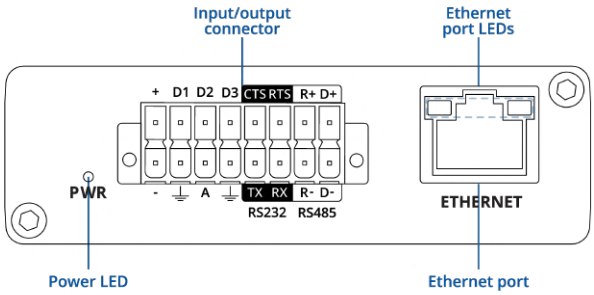
Certification

EMEA	TRB256 CE/RED TRB256 UKCA TRB256 RoHS TRB256 REACH TRB256 Kenya TRB256 ICASA
APAC	TRB256 RCM TRB256 MTCTE
AMERICAS	TRB256 Anatel
MISCELLANEOUS	TRB256 CB Scheme
SAFETY & ENVIROINMENTAL	TRB256 WEEE

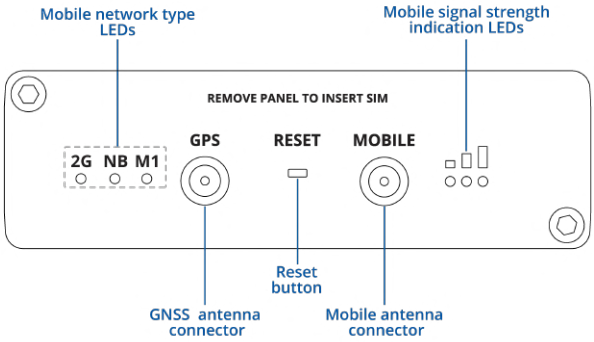
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Hardware

FRONT VIEW

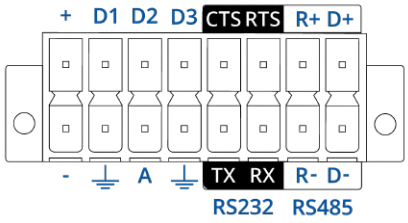


BACK VIEW



INPUT/OUTPUT CONNECTOR PINOUT

D1, D2, D3 - Configurable digital Input/Output pins. Open collector output, max output 30 V, 300 mA or Digital input where 0-6 V detected as logic low and 8-30 V – logic high.
+ - 9-30 VDC positive power pin
CTS - RS232 clear data to send pin (output).
RTS - RS232 request data to send pin (input).
R+ - RS485 receiver positive signal pin.
D+ - RS485 driver positive signal pin.
- - Negative/ground power pin.
⏚ - Ground pins for D1, D2, D3, A, RS232 and RS485.
A - Analog input pin. Analog voltage range 0-30 V.
TX - RS232 transmitted data (input).
RX - RS232 received data (output).
R- - RS485 receiver negative signal.
D- - RS485 driver negative signal.



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Ordering

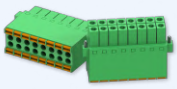
Standard package*



TRB256



QUICK START GUIDE



2X8PIN CONNECTOR



HEX KEY

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

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

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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
TRB256 **0******* Global[1]	**4G (LTE-FDD) Cat M1**: B1, B2, B3, B4, B5, B8, B12, B13, B18, B19, B20, B25, B26, B27, B28, B31, B66, B72, B73, B85 **4G (LTE-FDD) Cat NB2**: B1, B2, B3, B4, B5, B8, B12, B13, B18, B19, B20, B25, B28, B31, B66, B72, B73, B85	TRB256000400 / Standard Package TRB256000200 / Standard package with AU PSU TRB256000500 / Mass packing code

1 - Regional availability - excluding Russia, Belarus & Iran

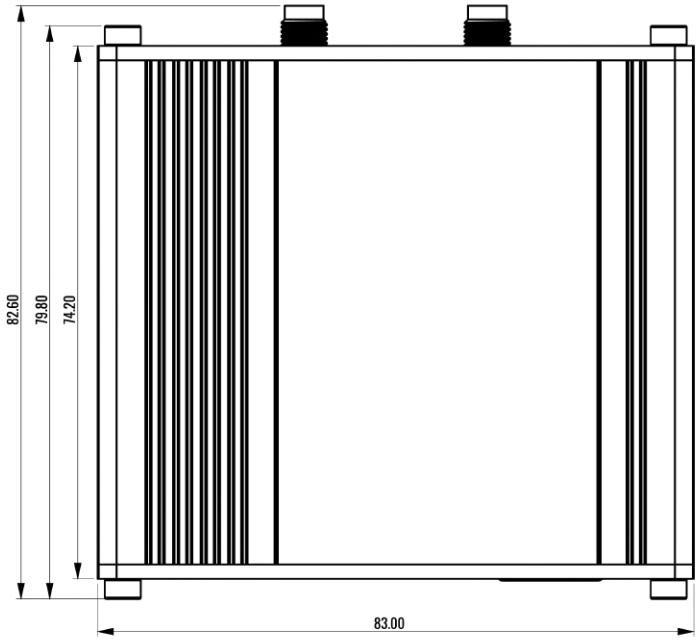
TRB256 spatial measurements

Available versions	
Device housing (W x H x D)*	83 x 25 x 74.2 mm
Box (W x H x D):	111 x 31 x 89 mm
	*Housing measurements are presented without antenna connectors and screws; for measurements of other device elements look to the sections below

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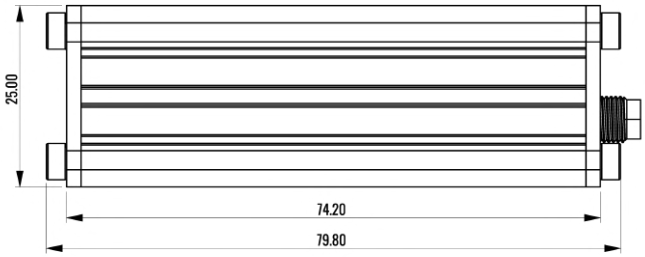
TOP VIEW

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



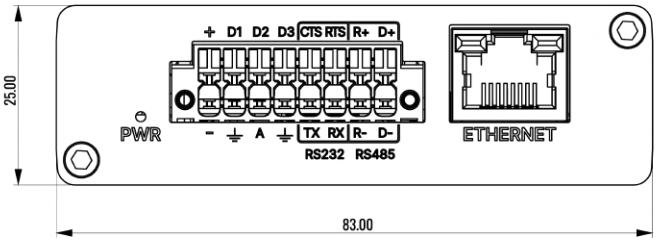
RIGHT VIEW

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



FRONT VIEW

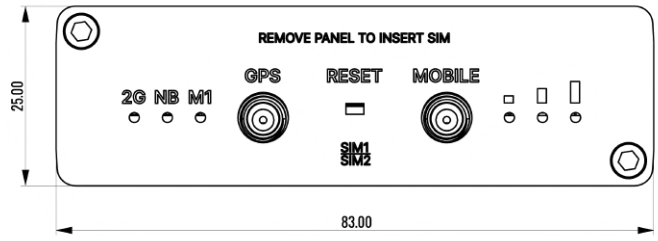
The figure below depicts the measurements of device and its components as seen from the front panel side:



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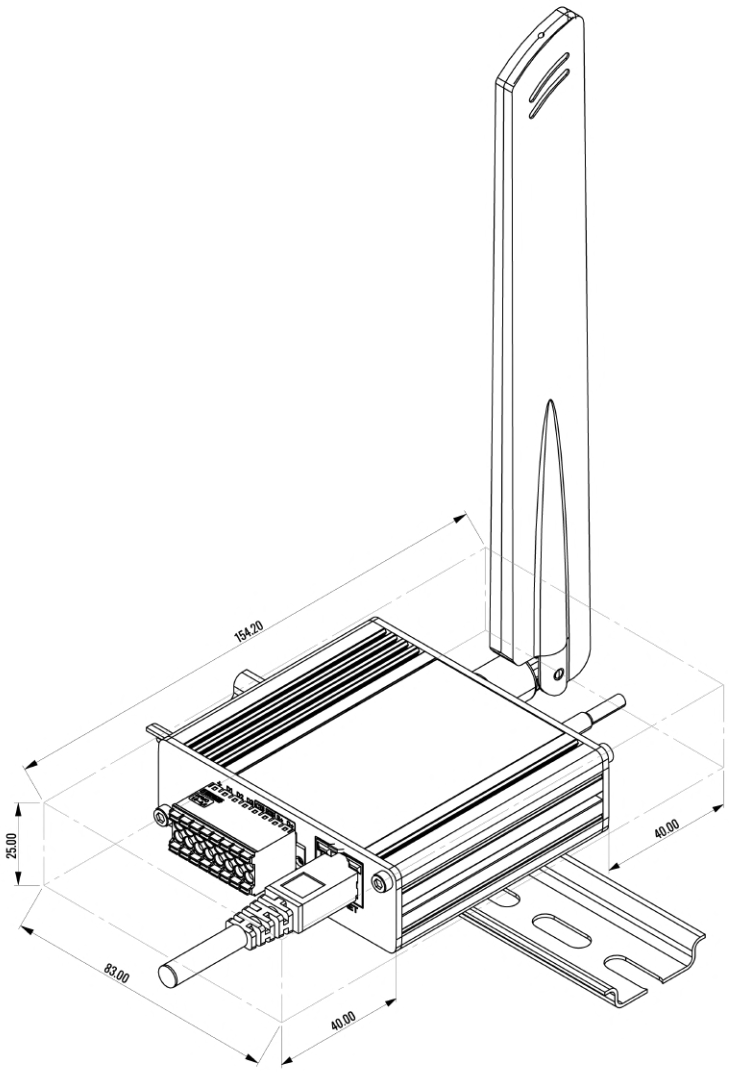
REAR VIEW

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:



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