

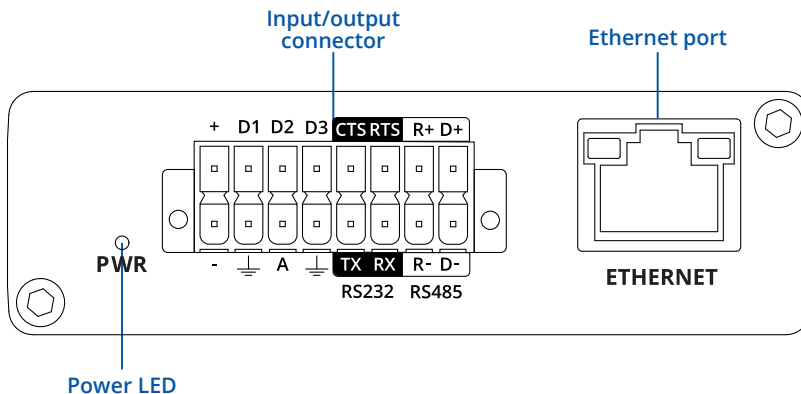


TRB245

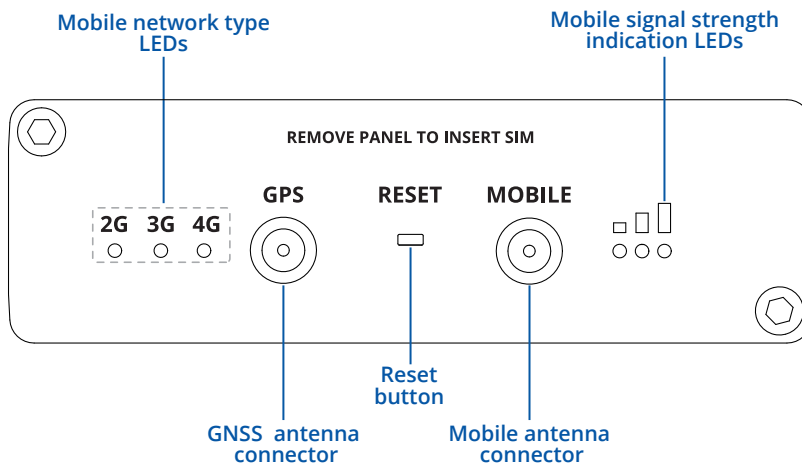


HARDWARE

FRONT VIEW

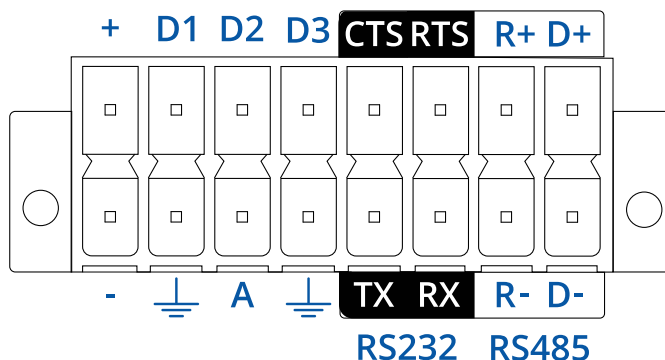


BACK VIEW



INPUT/OUTPUT 16 PIN 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.



FEATURES

MOBILE

| | |
|------------------|---|
| Mobile module | 4G (LTE) – Cat 4 up to 150 Mbps, 3G – Up to 42 Mbps, 2G – Up to 236.8 kbps |
| 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, 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 |

ETHERNET

| | |
|-----|--|
| LAN | 1 x LAN port, 10/100 Mbps, compliance with 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 |
| 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 |
| 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 | 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 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) |

MODBUS RTU MASTER (RS232)

| | |
|------------------------|--|
| Supported baud rates | From 300 to 115200 |
| 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), HEX, ASCII |
| Number of data bits | From 7 to 8 |
| Number of stop bits | 1 or 2 |
| Parity | None, Even, Odd |
| Flow | None, RTS/CTS, Xon/Xoff |
| Duplex | Full duplex |

MODBUS RTU MASTER (RS485)

| | |
|------------------------|--|
| Supported baud rates | From 300 to 300000 |
| 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), HEX, ASCII |
| Number of data bits | 7 or 8 |
| Number of stop bits | 1 or 2 |
| Parity | None, Even, Odd |
| Flow | None, Xon/Xoff |
| Duplex | Half duplex |

DATA TO SERVER

| | |
|----------|------------------------------------|
| Protocol | HTTP(S), MQTT, Azure MQTT, Kinesis |
|----------|------------------------------------|

MQTT GATEWAY

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

DNP3

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

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 |
| 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 RSRQ, LTE SINR, LTE RSRQ, CELL ID, Operator, Operator number, Connection type |

SYSTEM CHARACTERISTICS

| | |
|---------------|--------------------------------------|
| CPU | Qualcomm QCA9531, MIPS 24kc, 650 MHz |
| RAM | 64 MB, DDR2 |
| FLASH storage | 16 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 |
| Tracking sensitivity | -157 dBm |
| Position Accuracy | 2.5m CEP |

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 | 3 x Digital Input, 0 - 6 V detected as logic low, 8 - 30 V detected as logic high. 1 x Analog input (0 - 30 V) |
| Output | 3 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 | 2 pins 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: < 1.2 W, Max: < 5 W |

PHYSICAL INTERFACES

| | |
|-------------|--|
| Ethernet | 1 x RJ45 port, 10/100 Mbps |
| I/O's | 3 x Configurable I/O, 1 x Analog input in 16 pin terminal block |
| 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 pins in 16-pin terminal block (TX, RX, RTS, CTS) |
| RS485 | 4 pins in 16-pin terminal block (D+, D-, R+, R-) |
| Reset | Reboot/User default reset/Factory reset button |

PHYSICAL SPECIFICATION

| | |
|------------------------|--|
| Casing material | Aluminum housing |
| Dimensions (W x H x D) | 83 x 25 x 74.2 mm |
| Weight | 165 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 | CE/RED, UKCA, CB, EAC, UCRF, RoHS, REACH, CITC, ICASA, ANRT, RCM, NBTC, GITEKI, NTC, FCC, IC, NOM |
|------------|---|

WHAT'S IN THE BOX?

STANDARD PACKAGE CONTAINS*

- Gateway TRB245
- 9 W PSU
- 1x LTE antenna (swivel, SMA male)
- 1x GNSS antenna (adhesive, SMA male, 3 m cable)
- 16 pin terminal block
- 1x hex key
- Ethernet cable (1.5 m)
- QSG (Quick start guide)
- Packaging box

| | | |
|---|---|--|
|  <p>GATEWAY TRB245</p> |  <p>9 W PSU</p> |  <p>1X LTE ANTENNA (SWIVEL, SMA MALE)</p> |
|  <p>1X GNSS ANTENNA (ADHESIVE, SMA MALE, 3 M CABLE)</p> |  <p>16 PIN TERMINAL BLOCK</p> |  <p>1X HEX KEY</p> |
|  <p>ETHERNET CABLE (1.5 M)</p> |  <p>QSG</p> | |

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

STANDARD ORDER CODES

| PRODUCT CODE | HS CODE | HTS CODE | PACKAGE CONTAINS |
|---------------|---------|------------|------------------------------|
| TRB245 000000 | 851762 | 8517.62.00 | Standard Package with EU PSU |
| TRB245 100100 | 851762 | 8517.62.00 | Standard Package with US PSU |
| TRB245 200300 | 851762 | 8517.62.00 | Standard Package with AU PSU |
| TRB245 400800 | 851762 | 8517.62.00 | Standard Package with JP PSU |

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

AVAILABLE VERSIONS

| PRODUCT CODE | REGION (OPERATOR) | FREQUENCY |
|---------------|---|--|
| TRB245 0***** | Europe ¹ , The Middle East, Africa, Thailand | 4G (LTE-FDD): B1, B3, B7, B8, B20, B28A 4G (LTE-TDD): B38, B40, B41 3G: B1, B8 2G: B3, B8 |
| TRB245 1***** | North America | 4G (LTE-FDD): B2, B4, B5, B12, B13, B14, B66, B71 3G: B2, B4, B5 |
| TRB245 2***** | South America, Australia, New Zealand | 4G (LTE-FDD): B1, B2 ² , B3, B4, B5, B7, B8, B28 4G (LTE-TDD): B40 3G: B1, B2, B5, B8 2G: B2, B3, B5, B8 |
| TRB245 4***** | Japan | 4G (LTE-FDD): B1, B3, B8, B18, B19, B26 4G (LTE-TDD): B41 3G: B1, B6, B8, B19 |

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

1 - Regional availability - excluding Russia & Belarus.
 2 - LTE-FDD B2 does not support Rx-diversity.

TRB245 SPATIAL MEASUREMENTS & WEIGHT

MAIN MEASUREMENTS

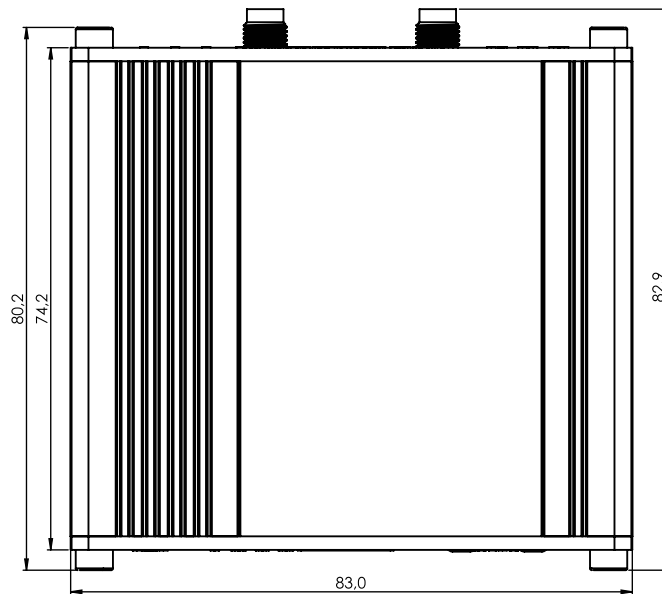
W x H x D dimensions for TRB245:

| | |
|------------------|-------------------|
| Device housing*: | 83 x 25 x 74.2 mm |
| Box: | 173 x 71 x 148 mm |

*Housing measurements are presented without antenna connectors and screws; for measurements of other device elements look to the sections below.

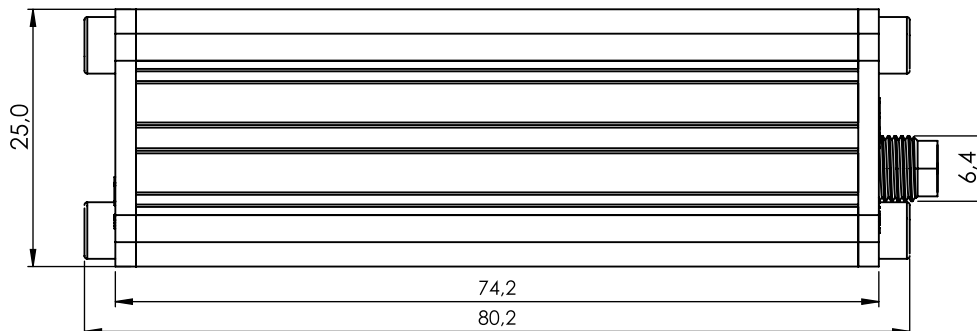
TOP VIEW

The figure below depicts the measurements of TRB245 and its components as seen from the top:



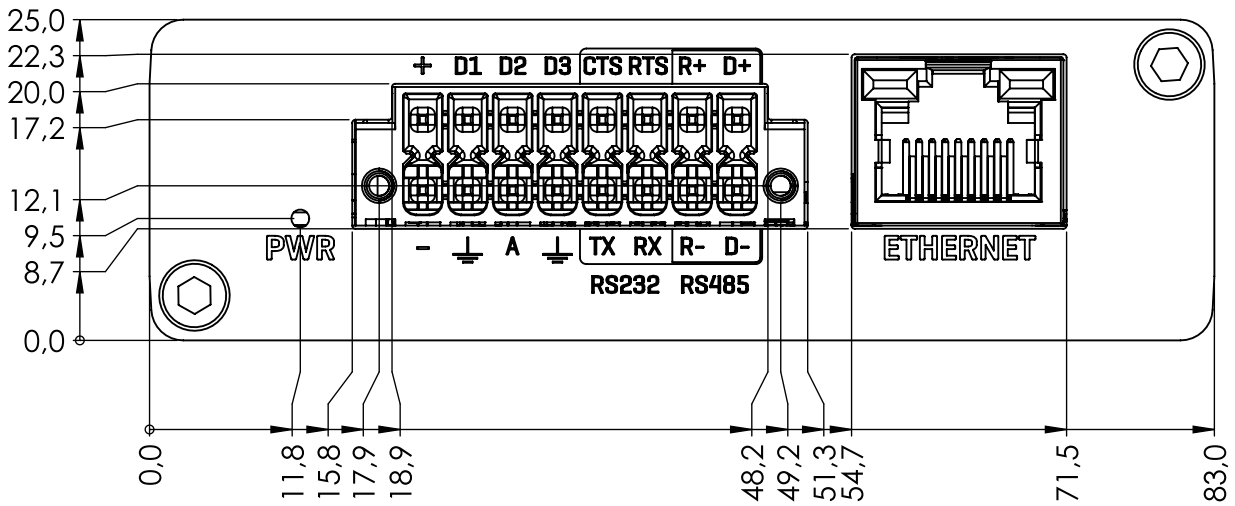
RIGHT VIEW

The figure below depicts the measurements of TRB245 and its components as seen from the right side:



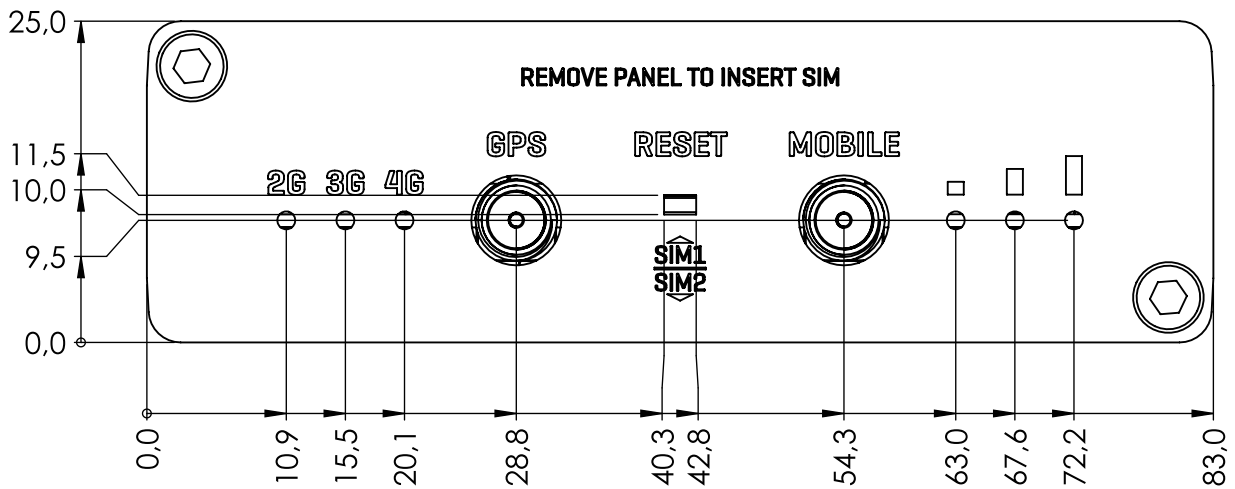
FRONT VIEW

The figure below depicts the measurements of TRB245 and its components as seen from the front panel side:



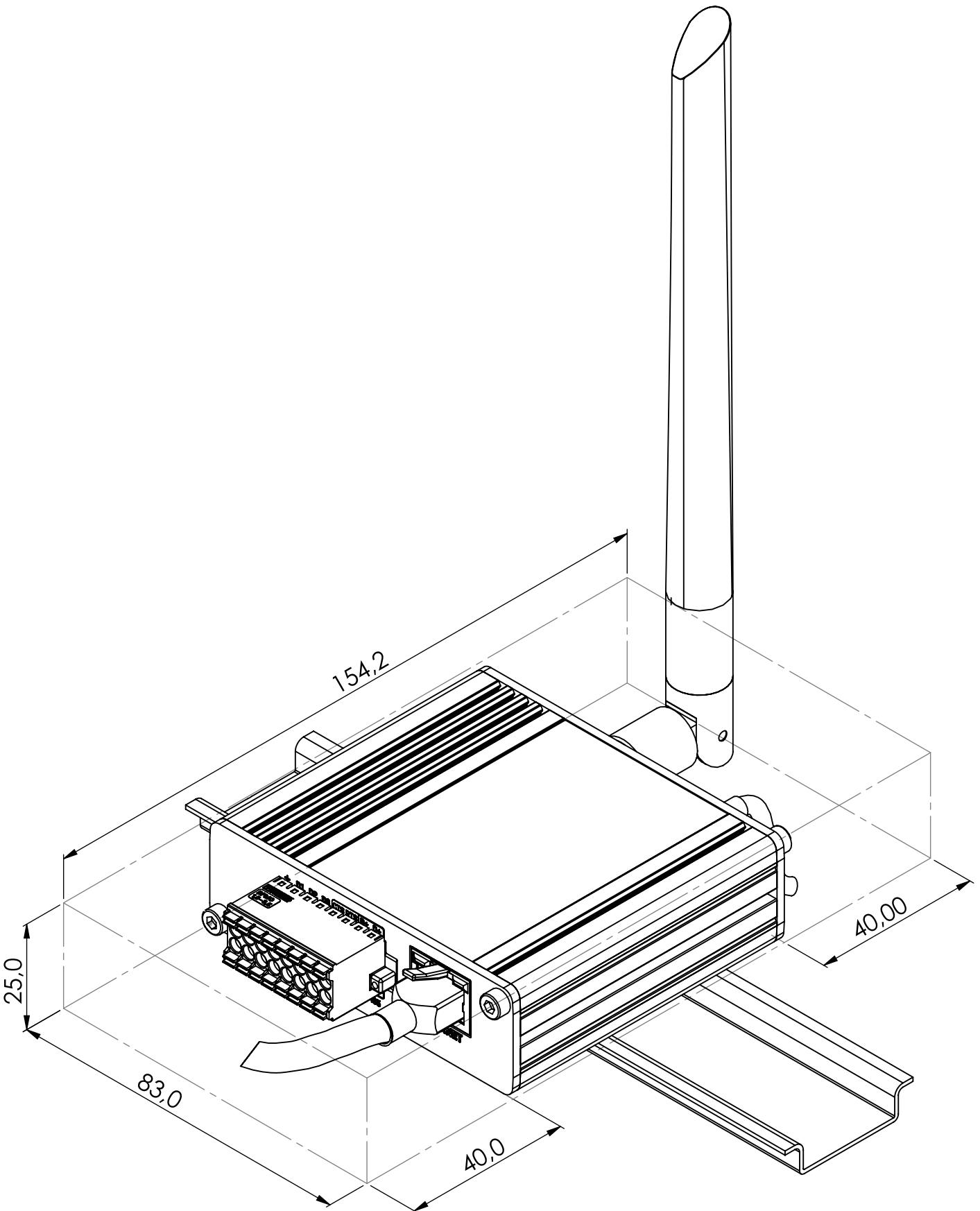
REAR VIEW

The figure below depicts the measurements of TRB245 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:



DIN RAIL

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

