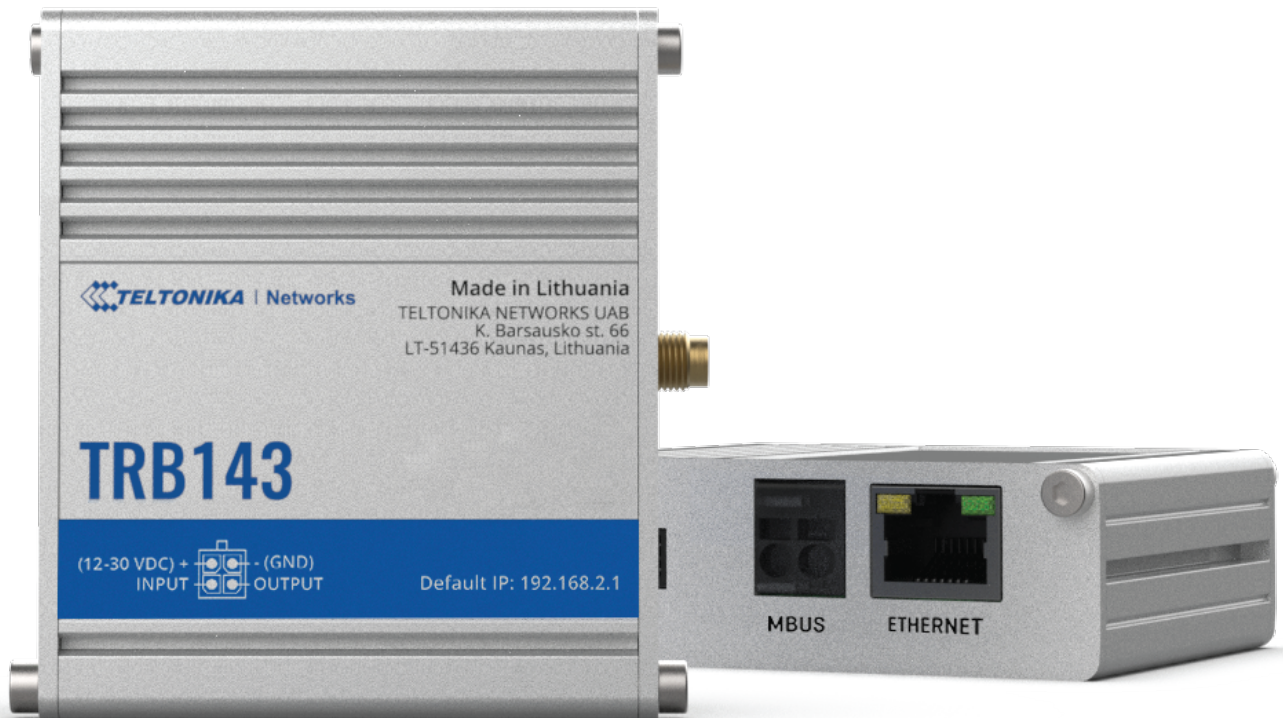


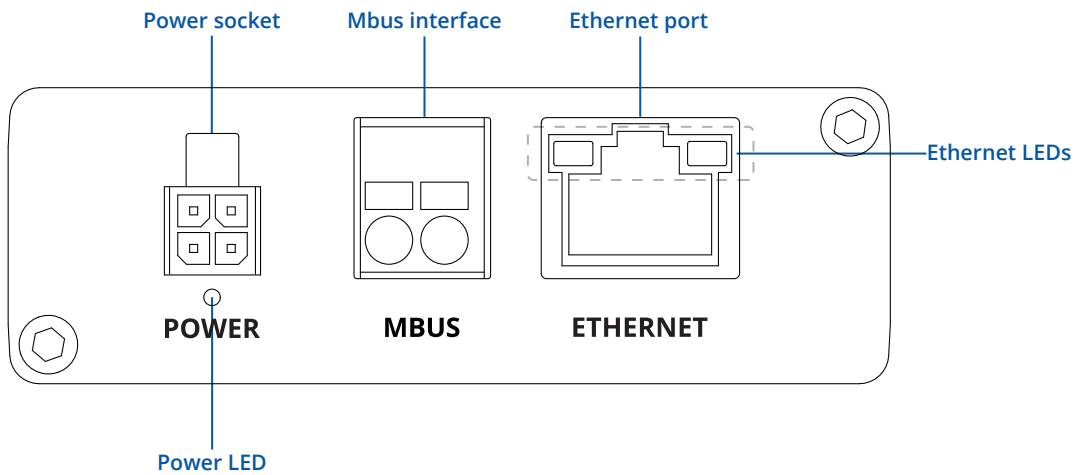


# TRB143

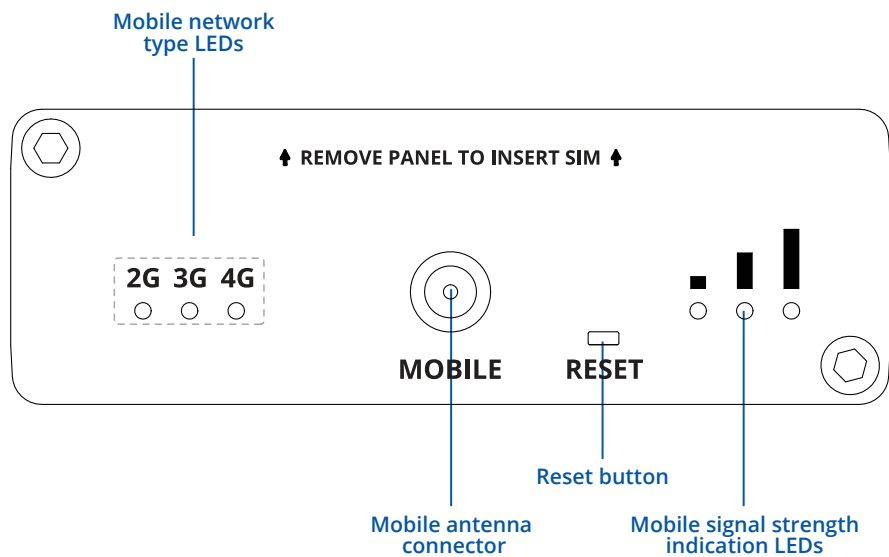


# HARDWARE

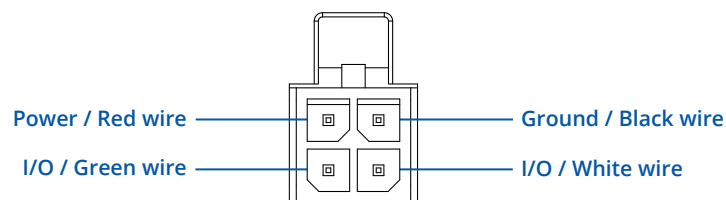
## FRONT VIEW



## BACK VIEW



## POWER SOCKET PINOUT



## FEATURES

### MOBILE

|                  |   |
|------------------|---|
| Mobile module    | 4G (LTE) – Cat 4 up to 150 Mbps, 3G – Up to 42 Mbps, 2G – Up to 236.8 kbps  |
| Status           | Signal strength (RSSI), SINR, RSRP, RSRQ, EC/IO, RSCP Bytes sent/received, connected band, IMSI, ICCID.   |
| SMS/Call         | 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   |
| Band management  | Band lock, Used band status display   |
| 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  |
| Multiple PDN     | Possibility to use different PDNs for multiple network access and services (optional)   |

### ETHERNET

|     |   |
|-----|---|
| LAN | 1 x RJ45 port, 10/100/1000 Mbps, supports auto MDI/MDIX crossover |
|-----|---|

### NETWORK

|                                    |  |
|------------------------------------|--|
| Network protocols                  | TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, SMTP, SSL v3, TLS, PPP, PPPoE, SSH, DHCP, SNMP, MQTT, Wake on LAN (WOL) |
| Routing                            | Static routing, Dynamic routing (BGP, OSPF v2, RIP v1/v2, EIGRP, NHRP)   |
| 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   |
| QoS / Smart Queue Management (SQM) | Traffic priority queuing by source/destination, service, protocol or port  |
| DDNS                               | Supported >25 service providers, others can be configured manually   |
| SSHFS                              | Possibility to mount remote file system via SSH protocol   |

### SECURITY

|                      |   |
|----------------------|---|
| Authentication       | Pre-shared key, digital certificates, X.509 certificates  |
| 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) |
| Mobile quota control | Set up custom data limits for SIM card  |
| 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, 12 encryption methods   |
| OpenVPN Encryption | DES-CBC, RC2-CBC, DES-EDE-CBC, DES-EDE3-CBC, DESX-CBC, BF-CBC, RC2-40-CBC, CAST5-CBC, RC2-64-CBC, AES-128-CBC, AES-192-CBC, AES-256-CBC |
| IPsec              | IKEv1, IKEv2, supports up to 5 x VPN IPsec tunnels (instances), with 5 encryption methods (DES, 3DES, AES128, AES192, AES256)           |
| GRE                | GRE tunnel  |
| PPTP, L2TP         | Client/Server services can run simultaneously, L2TPv3 support   |
| SSTP               | SSTP client instance 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  |
| ZeroTier           | ZeroTier VPN  |
| WireGuard          | WireGuard VPN client and server support   |

## M-Bus

|                 |   |
|-----------------|---|
| M-Bus Interface | The M-Bus interface can support up to 250 slave devices and can power up to 6 slave devices |
|-----------------|---|

## MODBUS TCP SLAVE

|                     |  |
|---------------------|--|
| ID filtering        | Respond to one ID in range [1;255] or any  |
| Allow remote access | Allow access through WAN   |
| Allow remote access | MODBUS TCP custom register block, which allows to 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), HEX, ASCII |

## MQTT GATEWAY

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

## DATA TO SERVER

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

## 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  |
| 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, 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           | ARM Cortex-A7 1.3 GHz CPU               |
| RAM           | 256 MB (160 MB available for userspace) |
| FLASH storage | 512 MB (200 MB available for userspace) |

## 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 |

## INPUT/OUTPUT

|                  |   |
|------------------|---|
| Configurable I/O | 1 x Digital Input, 0 - 6 V detected as logic low, 8 - 30 V detected as logic high |
| Output control   | HTTP POST/GET, Schedule   |
| Events           | SMS, EMAIL  |
| I/O juggler      | Allows to set certain I/O conditions to initiate event                            |

## POWER

|                     |   |
|---------------------|---|
| Connector           | 4-pin industrial DC power socket  |
| Input voltage range | 12 - 30 VDC (4-pin industrial socket), reverse polarity protection, surge protection >33 VDC 10us max |
| Power consumption   | up to 3 W idle, up to 6W max  |

## PHYSICAL INTERFACES (PORTS, LEADS, ANTENNAS, BUTTONS, SIM)

|             |   |
|-------------|---|
| Ethernet    | 1 x RJ45 port, 10/100/1000 Mbps   |
| M-Bus       | 1 x M-Bus Interface   |
| I/Os        | 2 x Configurable I/O pins on 4-pin power connector  |
| Status LEDs | 3 x connection type status LEDs, 3 x connection strength LEDs, 2 x LAN status LEDs, 1 x Power LED |
| SIM         | 1 x SIM slot (Mini SIM - 2FF), 1.8 V/3 V  |
| Power       | 1 x 4-pin DC power connector  |
| Antenna     | 1 x SMA for LTE   |
| Reset       | Reboot/User default reset/Factory reset button  |

## PHYSICAL SPECIFICATION

|                        |  |
|------------------------|--|
| Casing material        | Aluminum housing   |
| Dimensions (W x H x D) | 74.5 x 25 x 64.4 mm  |
| Weight                 | 145 g  |
| Mounting options       | DIN rail, wall mounting (additional kits needed), flat surface placement |

## OPERATING ENVIRONMENT

|                           |                             |
|---------------------------|-----------------------------|
| Operating temperature     | -40 °C to 75 °C             |
| Operating humidity        | 10 % to 90 % non-condensing |
| Ingress Protection Rating | IP30                        |

## CERTIFICATION & APPROVALS

|            |                                 |
|------------|---------------------------------|
| Regulatory | CB, CE, UKCA, RoHS, REACH, WEEE |
|------------|---------------------------------|

## SAFETY




|           |                  |
|-----------|------------------|
| Standards | IEC 62368-1:2018 |
|-----------|------------------|

## WHAT'S IN THE BOX?

### STANDARD PACKAGE CONTAINS\*

- TRB143
- 18 W PSU
- 1 x LTE antenna (magnetic mount, SMA male, 3 m cable)
- 1 x hex key
- LAN cable
- QSG (Quick Start Guide)
- Packaging box



|   |  |  |
|---|--|--|
|  <p><b>TRB143</b></p>       |  <p><b>18 W PSU</b></p>                |  <p><b>1 X LTE ANTENNA (MAGNETIC MOUNT, SMA MALE, 3 M CABLE)</b></p> |
|  <p><b>1 X HEX KEY</b></p> |  <p><b>ETHERNET CABLE (1.5 M)</b></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 |
|--------------|---------|------------|------------------|
| TRB143000000 | 851762  | 8517.62.00 | Standard Package |

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

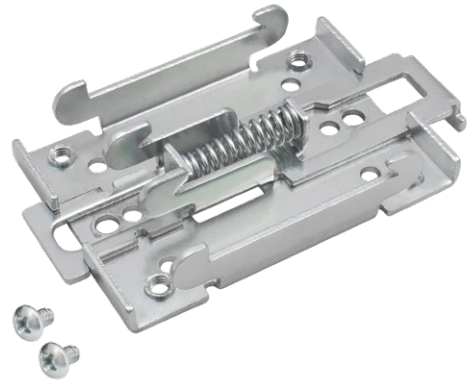
## AVAILABLE VERSIONS

| PRODUCT CODE  | REGION (OPERATOR)                         | FREQUENCY  |
|---------------|---|--|
| TRB143 0***** | Europe, the Middle East, Africa, Thailand | <ul style="list-style-type: none"> <li>● 4G (LTE-FDD): B1, B3, B7, B8, B20, B28A; 4G (LTE-TDD): B38/B40/B41</li> <li>● 3G: B1, B8</li> <li>● 2G: B3, B8</li> </ul> |

## MOUNTING OPTIONS

### DIN RAIL KIT

| Parameter         | Value                                   |
|-------------------|---|
| Mounting standard | 35mm DIN Rail                           |
| Material          | Low carbon steel                        |
| Weight            | 57g                                     |
| Screws included   | Philips Pan Head screw #6-32×3/16, 2pcs |
| Dimensions        | 82 mm x 46 mm x 20 mm                   |
| RoHS Compliant    | V                                       |



#### DIN RAIL KIT

- DIN Rail adapter
- Philips Pan Head screw #6-32×3/16, 2pcs for RUT2xx/RUT9xx

#### ORDER CODE

PR5MEC00

#### HS CODE

73269098

#### HTS CODE

7326.90.98

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

### COMPACT DIN RAIL KIT

| Parameter         | Value                                   |
|-------------------|---|
| Mounting standard | 35mm DIN Rail                           |
| Material          | ABS + PC plastic                        |
| Weight            | 6.5 g                                   |
| Screws included   | Philips Pan Head screw #6-32×3/16, 2pcs |
| Dimensions        | 70 mm x 25 mm x 14,5 mm                 |
| RoHS Compliant    | V                                       |



#### DIN RAIL KIT

- Compact plastic DIN Rail adapter (70x25x14,5mm)
- Philips Pan Head screw #6-32×3/16, 2pcs

#### ORDER CODE

PR5MEC11

#### HS CODE

73269098

#### HTS CODE

7326.90.98

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

### SURFACE MOUNTING KIT

| Parameter         | Value                                   |
|-------------------|---|
| Mounting standard | Flat surface mount                      |
| Material          | ABS + PC plastic                        |
| Weight            | 2x5 g                                   |
| Screws included   | Philips Pan Head screw #6-32×3/16, 2pcs |
| Dimensions        | 25 mm x 48 mm x 7.5 mm                  |
| RoHS Compliant    | V                                       |



#### DIN RAIL KIT

- Surface mounting kit
- Philips Pan Head screw #6-32×3/16, 2pcs

#### ORDER CODE

PR5MEC12

#### HS CODE

73269098

#### HTS CODE

7326.90.98

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



# TRB143 SPATIAL MEASUREMENTS & WEIGHT

## MAIN MEASUREMENTS

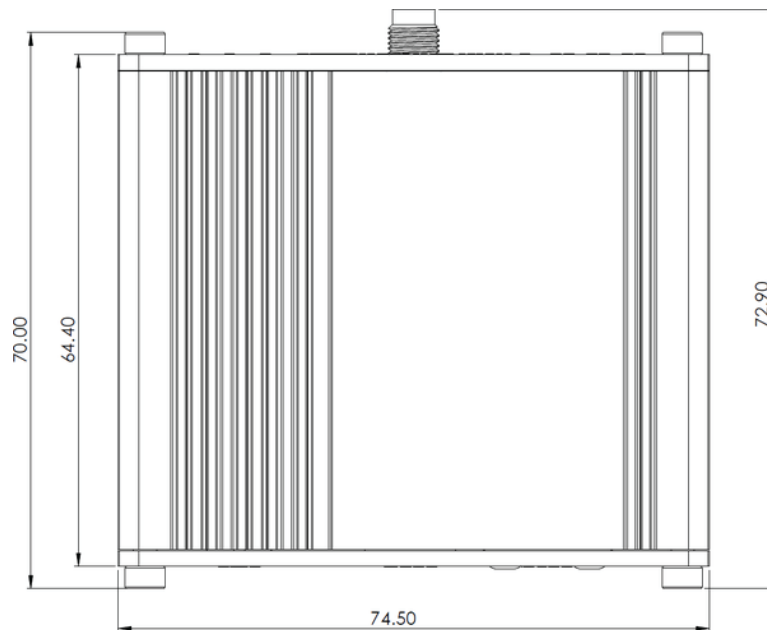
W x H x D dimensions for TRB143

|                  |                  |
|------------------|------------------|
| Device housing*: | 74,5 x 25 x 64,4 |
| Box:             | 173 x 71 x 148   |

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

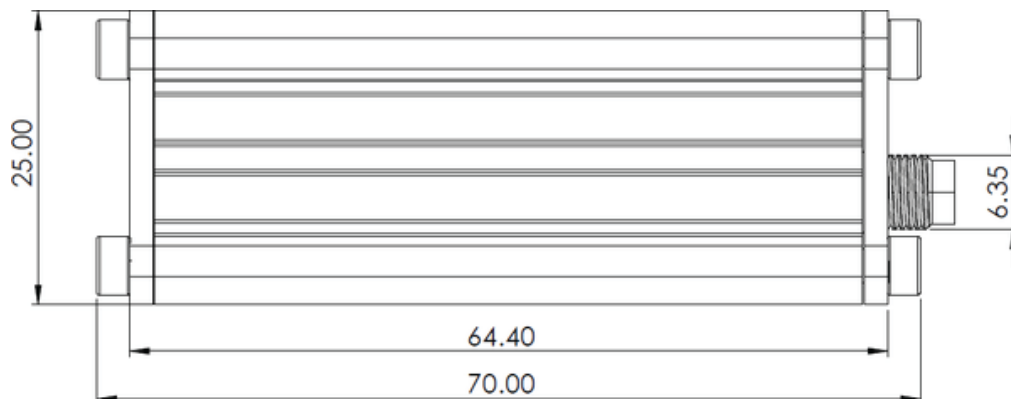
## TOP VIEW

The figure below depicts the measurements of TRB143 and its components as seen from the top:



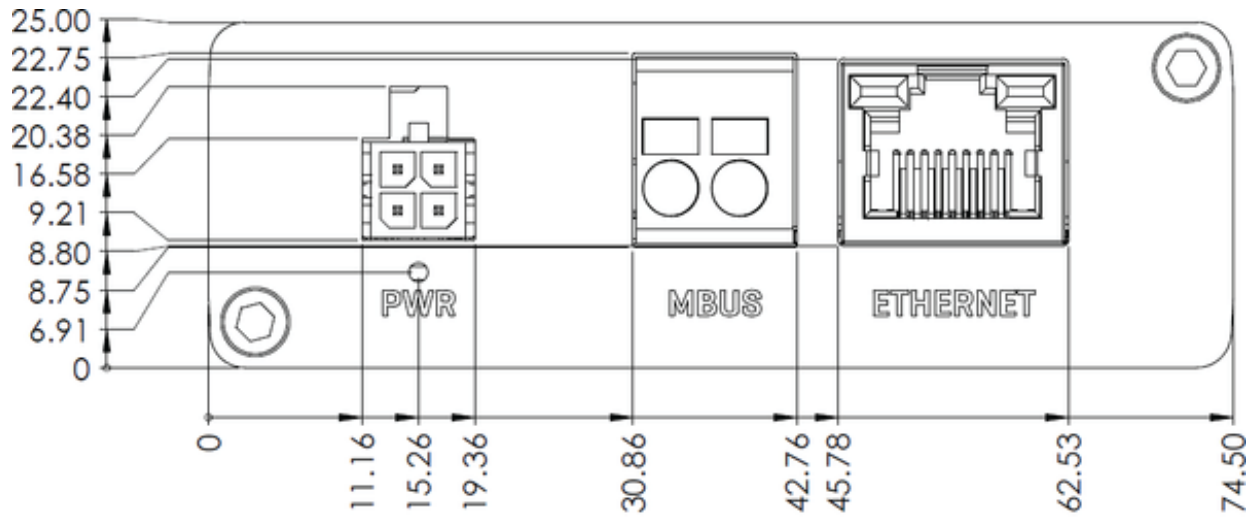
## RIGHT VIEW

The figure below depicts the measurements of TRB143 and its components as seen from the right side:



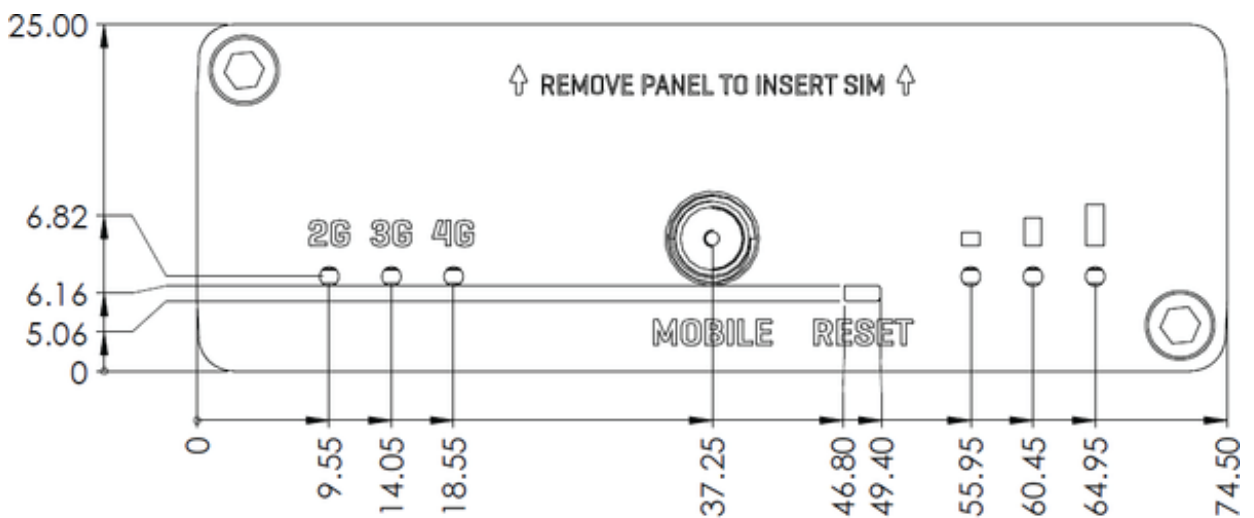
**FRONT VIEW**

The figure below depicts the measurements of TRB143 and its components as seen from the front:



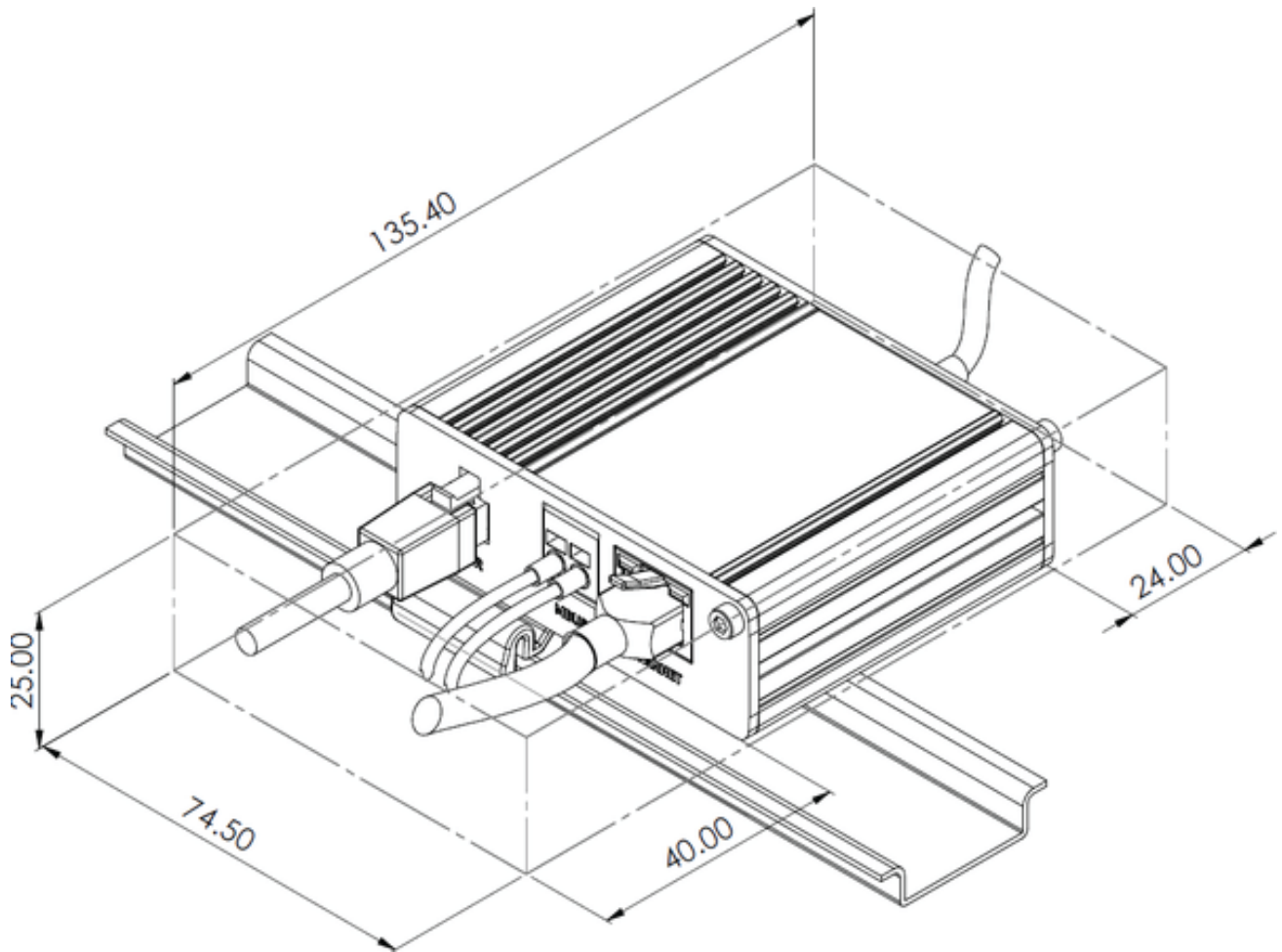
**REAR VIEW**

The figure below depicts the measurements of TRB143 and its components as seen from the back:



**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:

