TRB141

INDUSTRIAL RUGGED GPIO LTE GATEWAY



Energy & utilities

Enterprise

Industrial & automation

Retail

Smart city

CONNECTIVITY

4G/LTE (Cat 1), 3G, 2G

COMPACTNESS

Small size, easy installation

I/OS

Wide range of multiple Inputs/Outputs for remote monitoring and control

PROTOCOLS

Compatible with industrial DNP3 & Modbus communication protocols

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Mobile	
Mobile module	4G LTE Cat 1 up to 10 DL/5 UL Mbps; 3G up to 384 DL/384 UL kbps; 2G up to 296 DL/236.8 UL kbps
3GPP Release	Release 12
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
USSD	Supports sending and reading Unstructured Supplementary Service Data messages
Block/Allow list	Operator block/allow list (by country or separate operators)
Band management	Band lock, Used band status display
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

Site Manager	
Supported modes	Manager
Functionalities	Centralized management of TAP access points and Teltonika's managed switches — including device pairing and grouping, FOTA updates, device status monitoring, automatic reboot scheduling with ping/wget health checks, wireless SSID configuration, and VLAN assignment across the site.

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Network	
Routing	Static routing
Network protocols	TCP, UDP, IPv4, IPv6, ICMP, NTP, DNS, HTTP, HTTPS, FTP, SMTP, SSL v3, TLS, ARP, VRRP, PPP, PPPoE, UPNP, SSH, DHCP, Telnet, SMPP, SNMP, MQTT
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
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	Mobile, VRRP, Wired options, each of which can be used as an automatic Failover
SSHFS	Possibility to mount remote file system via SSH protocol
Traffic Management	Real-time monitoring, wireless signal charts, traffic usage history

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	Port and 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

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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	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.

BacNET	
Supported modes	Router
Supported connection types	IP
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

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MODBUS	
Supported modes	Server, Client
Supported connection types	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	TCP

DLMS/COSEM	
DLMS Support	DLMS - standard protocol for utility meter data exchange
Supported modes	Client
Supported connection types	TCP

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

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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	ARM Cortex-A7 1.2 GHz
RAM	128 MB, DDR2
FLASH storage	512 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
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

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FIRMWARE CUSTOMISATION	
Operating system	RutOS (OpenWrt based Linux OS)
Supported languages	Busybox shell, Lua, C, C++, and Python in Package manager
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

Input/Output	
Input	2 x Digital inputs (configurable passive or active), 1 x Isolated input, 1 x Analog input (with 4-20 mA capability). 1 x Configurable Inputs. Digital input 0 - 5 V detected as logic low, 8 - 30 V detected as logic high.
Output	2 x Relay outputs (latching and non latching). 1 x Configurable 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	4-pin industrial DC power socket
Input voltage range	9 – 30 VDC, reverse polarity protection; surge protection >31 VDC 10us max
Power consumption	< 5 W

Physical Interfaces	
I/O's	3 x Digital Inputs, 1 x Analog input, 2 x Relays on 16 pin connector, 2 x I/O pins on 4 pin power connector
Status LEDs	3 x connection type status LEDs, 5 x connection strength LEDs, 1 x Power LED
SIM	1 x SIM slot (Mini SIM – 2FF), 1.8 V/3 V
Power	1 x 4-pin power connector
1-Wire	1 x 1-Wire interface on 16 pin connector
Antennas	1 x SMA for LTE
USB	1 x Virtual network interface via micro USB
Reset	Reboot/User default reset/Factory reset button

Physical Specification	
Casing material	Anodised aluminium housing and panels
Dimensions (W x H x D)	74.5 x 25 x 64.4 mm
Weight	136 g
Mounting options	DIN rail, wall mount, flat surface (all require additional kit)

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Operating Environment

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

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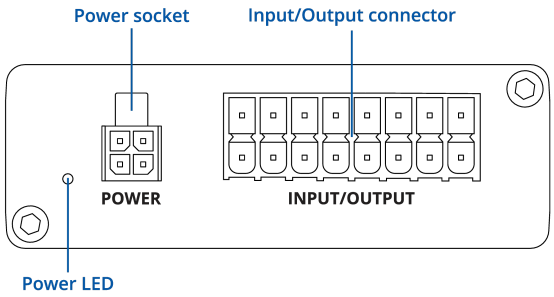
Certification

EMEA	TRB141 CE/RED TRB141 UKCA TRB141 EAC TRB141 Ukraine UCRF TRB141 RoHS TRB141 REACH TRB141 Kenya TRB141 ICASA TRB141 Morocco ANRT
APAC	TRB141 RCM TRB141 Giteki TRB141 MTCTE
AMERICAS	TRB141 Anatel TRB141 NOM
CARRIER	TRB141 Deutsche Telekom AG
MISCELLANEOUS	TRB141 GCF
SAFETY & ENVIROINMENTAL	TRB141 WEEE

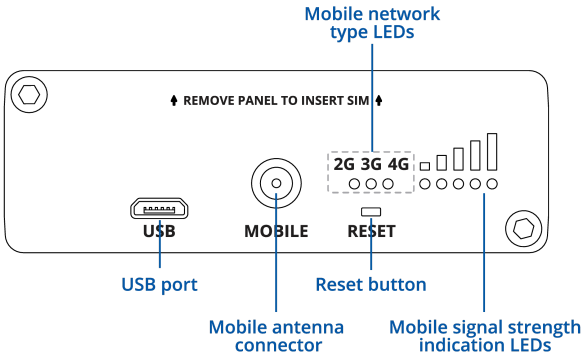
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Hardware

FRONT VIEW

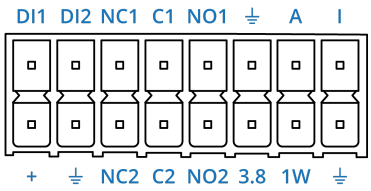


BACK VIEW

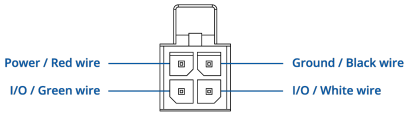


INPUT/OUTPUT CONNECTOR PINOUT

DI1 and **DI2** are DRY/WET configurable inputs. WET: 0-1.9 V is detected as logical "0", 1.9-3.8 V is detected as logical "1". DRY: Logical "0" is detected when input is shorted to GND, otherwise input is detected as logical "1".
NC*, **C*** and **NO*** are respectively Normally Closed, Common and Normally Open contacts of internal Relays 1 and 2. Maximum Relay 1 (Non-latching) ratings: 0.5 A at 60 VDC/70 VAC, 1 A at 30 VDC/VAC. Maximum Relay 2 (Latching) ratings: 0.8 A at 70 VDC, 0.9 A at 70 VAC, 2 A at 30 VDC/VAC.
DI1 and **DI2** are DRY/WET configurable inputs. WET: 0-1.9 V is detected as logical "0", 1.9-3.8 V is detected as logical "1". DRY: Logical "0" is detected when input is shorted to GND, otherwise input is detected as logical "1".
A is ADC input. Analog voltage range 0-30 V. Input can be configured for 4-20mA sensor protocol as current measurement of 0-30 mA.
I and ⏚ are isolated input contacts. 0-7.3 V is detected as logical "0", 7.3-71 V is detected as logical "1".
I/O pins: programmable Input/Output pins (Open Collector output, max 30 V or Digital input where 0-7.3 V is detected as logical "0", 7.3-30 V is detected as logical "1").
+ is power output connected directly to gateway's power supply intput pin. This Output can be used for powering external 4-20 mA current sensor.
3.8 is 3.8V power output which can be used to power 1-Wire sensors when needed.
1W 1-Wire protocol input/output.
Power pin: +9 ... +30 VDC positive power input..
Ground pin: negative/ground connection from power supply.
⏚ is GND contact.



POWER SOCKET PINOUT



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Ordering

Standard package*



TRB141



QUICK START GUIDE



9W PSU



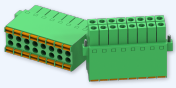
MOBILE MAGNETIC SMA ANTENNA



MICRO-USB CABLE (0.8 M)



HEX KEY



2X8PIN CONNECTOR

*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
TRB141 **0***** Europe[1], The Middle East[1], Africa, Korea, Thailand, India	**4G (LTE-FDD)**: B1, B3, B7, B8, B20, B28A **3G**: B1, B8 **2G**: B3, B8	TRB141003000 / Standard package with EU PSU TRB141004000 / Standard package with UK PSU TRB14100A000 / Mass packing code
TRB141 **1***** South America, Australia, New Zealand, Taiwan	**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	TRB141106000 / Standard package with AU PSU TRB141105000 / Standard package with US PSU TRB141103000 / Standard package with EU PSU TRB14110A000 / Mass packing code
TRB141 **4***** Japan	**4G (LTE-FDD)**: B1, B3, B8, B18, B19, B26	TRB14140A300 / Standard package with JP PSU TRB14140A000 / Mass packing code

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

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

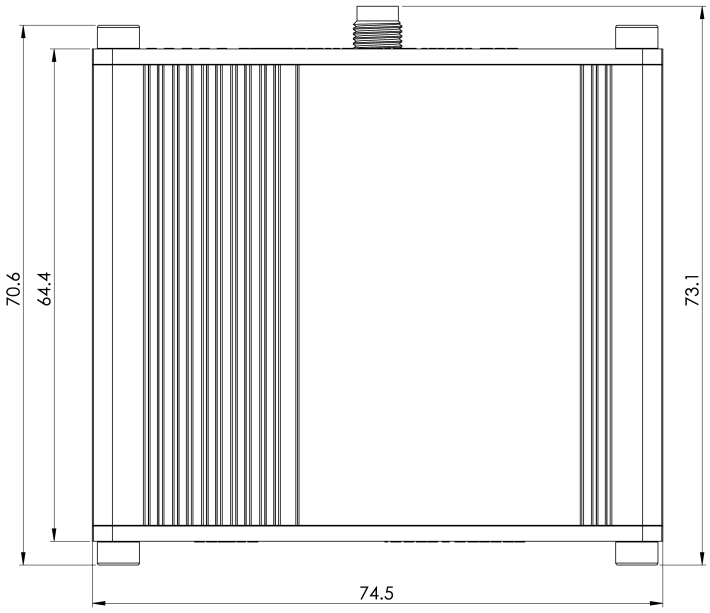
TRB141 spatial measurements

Available versions	
Device housing (W x H x D)*	74.5 x 25 x 64.4 mm
Box (W x H x D):	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

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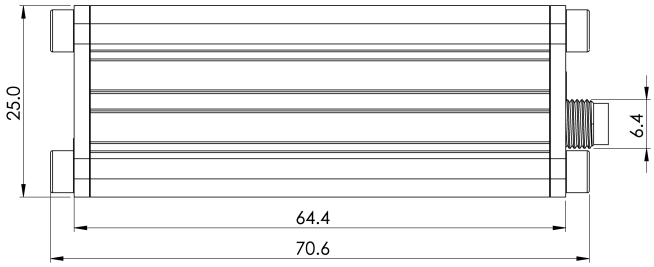
TOP VIEW

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



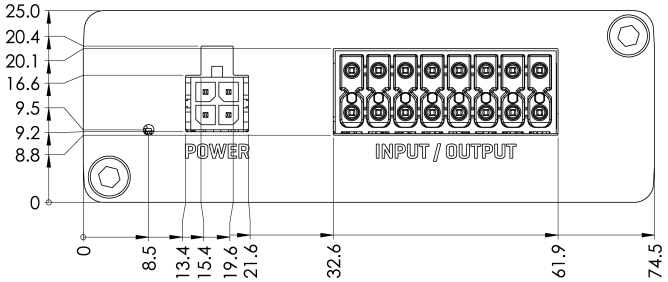
RIGHT VIEW

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



FRONT VIEW

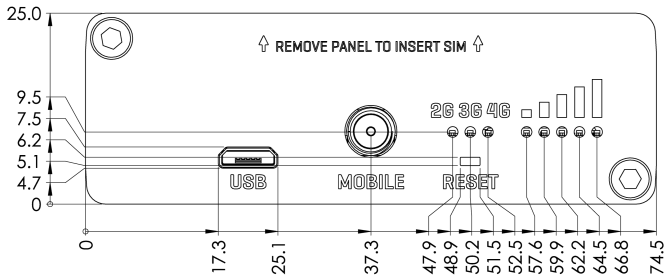
The figure below depicts the measurements of device and its components as seen from the front panel side:



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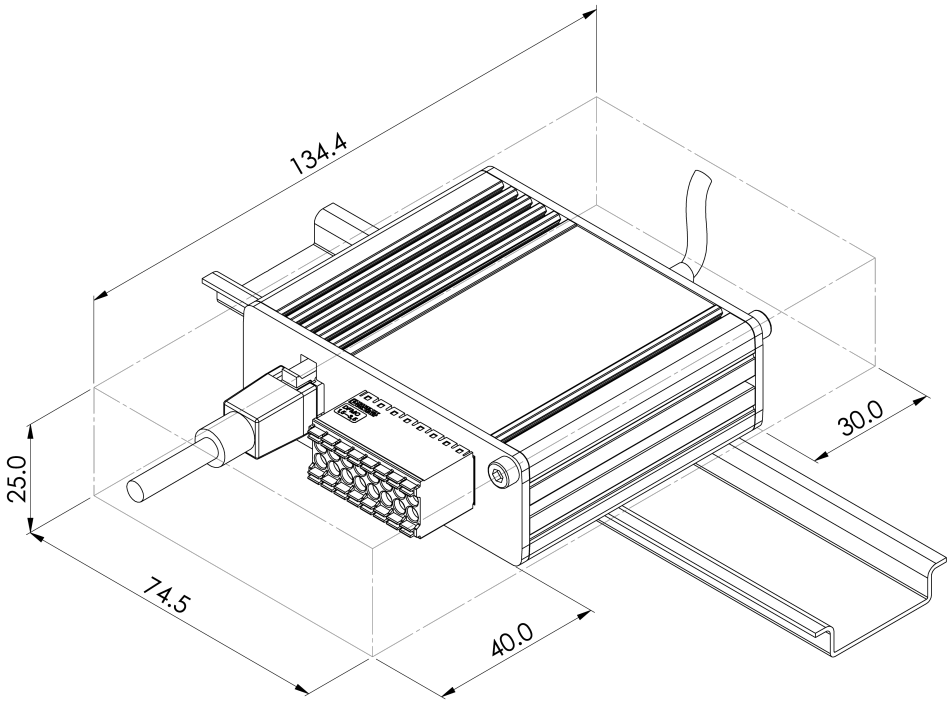
REAR VIEW

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

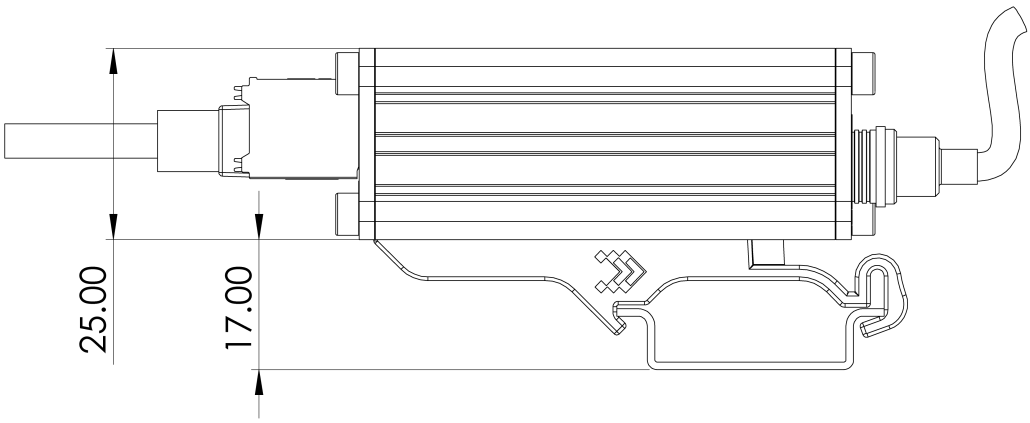


MOUNTING SPACE REQUIREMENTS

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



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