

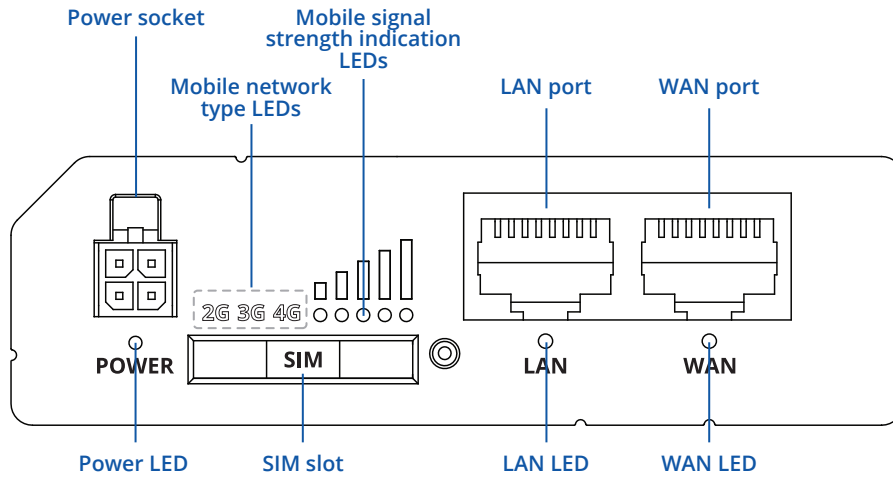


# RUT241

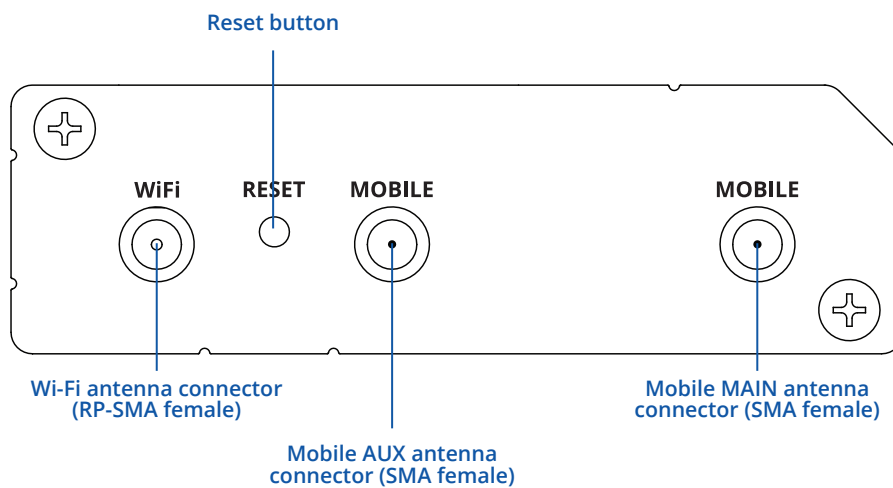


# HARDWARE

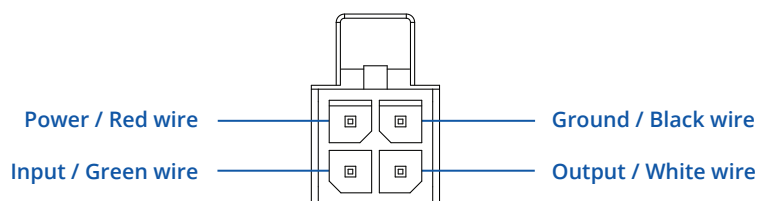
## FRONT VIEW



## 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  |
| 3GPP Release     | Release 10/11 depending on the hardware version   |
| 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   |

### WIRELESS

|                                |   |
|--------------------------------|---|
| Wireless mode                  | IEEE 802.11b/g/n, Access Point (AP), Station (STA)  |
| Wi-Fi security                 | WPA2-Enterprise - PEAP, WPA2-PSK, WEP, WPA-EAP, WPA-PSK; AES-CCMP, TKIP, Auto Cipher modes, client separation |
| SSID/ESSID                     | SSID stealth mode and access control based on MAC address   |
| Wi-Fi users                    | Up to 50 simultaneous connections   |
| Wireless Connectivity Features | Fast roaming (802.11r), Relayd  |
| Wireless MAC filter            | Whitelist, blacklist  |
| Wireless QR code generator     | Once scanned, a user will automatically enter your network without needing to input login information         |

### NETWORK

|                                    |  |
|------------------------------------|--|
| Hotspot                            | Captive portal (Hotspot), internal/external Radius server, SMS authorization, internal/external landing page, walled garden, user scripts, URL parameters, user groups, individual user or group limitations, user management, 9 default customizable themes and option to upload and download customised hotspot themes |
| 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  |
| 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 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, SMS authorization, internal/external landing page, walled garden, user scripts, URL parameters, user groups, individual user or group limitations, user management, 9 default customizable themes and option to upload and download customised hotspot themes |
| 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                     | 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   |
| SSHFS                              | Possibility to mount remote file system via SSH protocol   |

### ETHERNET

|     |  |
|-----|--|
| WAN | 1 x WAN port 10/100 Mbps, compliance IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX       |
| LAN | 1 x LAN port, 10/100 Mbps, compliance with IEEE 802.3, IEEE 802.3u standards, supports auto MDI/MDIX |

### DLMS

|              |  |
|--------------|--|
| DLMS Support | DLMS - standard protocol for utility meter data exchange |
|--------------|--|

## 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 SSH, Web interface, CLI and Telnet   |

## 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   |

## OPC UA

|                            |                          |
|----------------------------|--------------------------|
| Supported modes            | Client, Server (planned) |
| Supported connection types | TCP                      |

## 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) |

## 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 to a single server |

## MQTT GATEWAY

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

## DNP3

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

## 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, Wi-Fi 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, 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 RSRP, LTE SINR, LTE RSRQ, CELL ID, Operator, Operator number, Connection type |

## SYSTEM CHARACTERISTICS

|               |                               |
|---------------|-------------------------------|
| CPU           | Mediatek, 580 MHz, MIPS 24KEc |
| RAM           | 128 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   |
| GPL customization   | You can now create your own custom firmware and web page application, with some examples to make the creation process easier; and brand our firmware by changing colours, logos, and so on to fit your or your clients' needs |

## INPUT / OUTPUT

|             |   |
|-------------|---|
| Input       | 1 x Digital Input, 0 - 6 V detected as logic low, 8 - 30 V detected as logic high |
| Output      | 1 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           | 4-pin industrial DC power socket  |
| Input voltage range | 9 - 30 VDC, reverse polarity protection; surge protection >31 VDC 10us max  |
| PoE (passive)       | Passive PoE over spare pairs. Possibility to power up through LAN1 port, not compatible with IEEE802.3af, 802.3at and 802.3bt standards, Mode B, 9 - 30 VDC |
| Power consumption   | < 6.5 W Max   |

**PHYSICAL INTERFACES**

|             |   |
|-------------|---|
| Ethernet    | 2 x RJ45 ports, 10/100 Mbps   |
| I/O's       | 1 x Digital Input, 1 x Digital Output on 4-pin power connector                                    |
| Status LEDs | 3 x Connection type status LEDs, 5 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, external SIM holder                                     |
| Power       | 1 x 4-pin power connector   |
| Antennas    | 2 x SMA for LTE, 1 x RP-SMA for Wi-Fi antenna connectors  |
| Reset       | Reboot/User default reset/Factory reset button  |

**PHYSICAL SPECIFICATION**

|                        |   |
|------------------------|---|
| Casing material        | Aluminium housing, plastic panels           |
| Dimensions (W x H x D) | 83 x 25 x 74 mm                             |
| Weight                 | 125 g                                       |
| Mounting options       | Bottom and sideways DIN rail mounting slots |

**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, UKCA, ANRT, Kenya, ICASA, FCC, IC, PTCRB, NOM, RCM, KC, Giteki, IMDA, E-mark, CB, UL/CSA Safety, RoHS, REACH |
| Operator   | AT&T, Verizon, T-Mobile, Uscellular  |

**EMI IMMUNITY**

|   |   |
|---|---|
| Standards                               | EN 55032:2015 + A11:2020<br>EN 55035:2017 + A11:2020<br>EN IEC 61000-3-2:2019<br>EN 61000-3-3:2013 + A1:2019<br>EN 301 489-1 V2.2.3<br>EN 301 489-17 V3.2.4<br>Final Draft EN 301 489-52 V1.2.0 |
| ESD                                     | EN 61000-4-2:2009   |
| Radiated Immunity                       | EN IEC 61000-4-3:2020   |
| EFT                                     | EN 61000-4-4:2012   |
| Surge Immunity<br>(AC Mains Power Port) | EN 61000-4-5:2014 + A1:2017   |
| CS                                      | EN 61000-4-6:2014   |
| DIP                                     | EN 61000-4-11:2020  |

**RF**





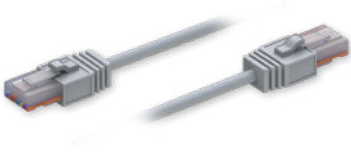


|           |  |
|-----------|--|
| Standards | EN 300 328 V2.2.2<br>EN 301 511 V12.5.1<br>EN 301 908-1 V15.2.1<br>EN 301 908-2 V13.1.1<br>EN 301 908-13 V13.2.1 |
|-----------|--|

**SAFETY**

|           |  |
|-----------|--|
| Standards | CE: EN IEC 62368-1:2020 + A11:2020, EN IEC 62311:2020, EN 50665:2017<br>RCM: AS/NZS 62368.1:2022<br>CB: IEC 62368-1:2018<br>UL/CSA Safety: UL 62368-1, Ed. 3 dated December 13, 20, CAN/CSA C22.2 No. 62368-1:19 |
|-----------|--|

## STANDARD PACKAGE\*

- Router RUT241
- 9 W PSU
- 2 x LTE antennas (swivel, SMA male)
- 1 x Wi-Fi antenna (swivel, RP-SMA male)
- Ethernet cable (1.5 m)
- SIM Adapter kit
- QSG (Quick Start Guide)
- Packaging box

|   |  |   |
|---|--|---|
|  <p><b>ROUTER RUT241</b></p>                             |  <p><b>9 W PSU</b></p>                  |  <p><b>2 X LTE ANTENNAS (SWIVEL, SMA MALE)</b></p> |
|  <p><b>1 X WI-FI ANTENNA (SWIVEL, RP-SMA MALE)</b></p> |  <p><b>ETHERNET CABLE (1.5 M)</b></p> |  <p><b>SIM ADAPTER KIT</b></p>                   |
|  <p><b>QSG</b></p>                                     |  |   |

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

## 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   |
|--|---|--|
| RUT241 *0****<br>Europe1, The Middle East,<br>Africa, Thailand | <b>4G (LTE-FDD):</b> B1, B3, B7, B8, B20, B28A<br><b>3G:</b> B1, B8<br><b>2G:</b> B3, B8  | RUT241000000 / Standard package with EU PSU<br>RUT241001000 / Standard package with UK PSU<br>RUT241004000 / Standard package with Power cable with 4-way screw terminal<br>RUT241002030 / Mass packing code   |
| RUT241 *1****<br>Europe1, The Middle East,<br>Africa           | <b>4G (LTE-FDD):</b> B1, B3, B5, B7, B8, B20<br><b>4G (LTE-TDD):</b> B40<br><b>3G:</b> B1, B5, B8<br><b>2G:</b> B3, B8  | RUT241010000 / Standard package with EU PSU<br>RUT241011000 / Standard package with UK PSU<br>RUT241012030 / Mass packing code   |
| RUT241 *3****<br>Global1                                       | <b>4G (LTE-FDD):</b> B1, B2, B3, B4, B5, B7, B8, B12, B13, B18, B19, B20, B25, B26, B28<br><b>4G (LTE-TDD):</b> B38, B39, B40, B41<br><b>3G:</b> B1, B2, B4, B5, B6, B8, B19<br><b>2G:</b> B2, B3, B5, B8 | RUT241030000 / Standard package with EU PSU<br>RUT241034000 / Standard package with Power cable with 4-way screw terminal<br>RUT241033000 / Standard package with Universal PSU<br>RUT241038000 / Standard package with US PSU<br>RUT241032030 / Mass packing code |
| RUT241 *6****<br>Australia, New Zealand, Taiwan                | <b>4G (LTE-FDD):</b> B1, B3, B5, B7, B8, B28<br><b>4G (LTE-TDD):</b> B40<br><b>3G:</b> B1, B5, B8<br><b>2G:</b> B3, B5, B8  | RUT241065000 / Standard package with AU PSU<br>RUT241063000 / Standard package with Universal PSU<br>RUT241062030 / Mass packing code  |
| RUT241 *7****<br>Latin America                                 | <b>4G (LTE-FDD):</b> B1, B2, B3, B4, B5, B7, B8, B28<br><b>4G (LTE-TDD):</b> B40<br><b>3G:</b> B1, B2, B4, B5, B8<br><b>2G:</b> B2, B3, B5, B8  | RUT241070000 / Standard package with EU PSU<br>RUT241073000 / Standard package with Universal PSU<br>RUT241075000 / Standard package with AU PSU<br>RUT241072030 / Mass packing code   |
| RUT241 *8****<br>Japan   | <b>4G (LTE-FDD):</b> B1, B3, B8, B18, B19, B26<br><b>4G (LTE-TDD):</b> B41<br><b>3G:</b> B1, B6, B8, B19  | RUT241087000 / Standard package with JP PSU<br>RUT241082030 / Mass packing code  |
| RUT241 *9****<br>North America2                                | <b>4G (LTE-FDD):</b> B2, B4, B5, B12, B13, B14, B66, B71<br><b>3G:</b> B2, B4, B5   | RUT241098000 / Standard package with US PSU<br>RUT241092030 / 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

2 - For more detailed information about certified carriers, visit our Wiki page



# RUT241 SPATIAL MEASUREMENTS & WEIGHT

## MAIN MEASUREMENTS

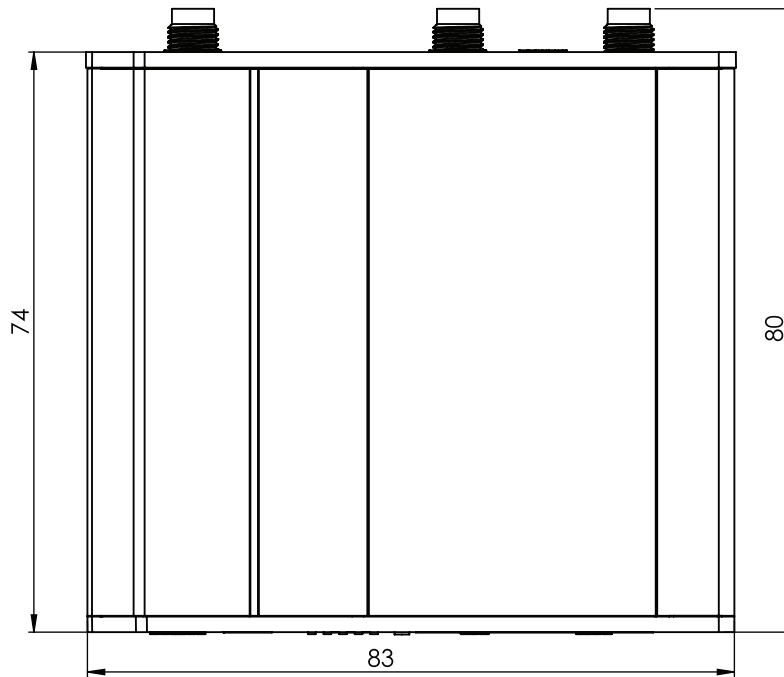
W x H x D dimensions for RUT241:

|                  |                   |
|------------------|-------------------|
| Device housing*: | 83 x 25 x 74 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.

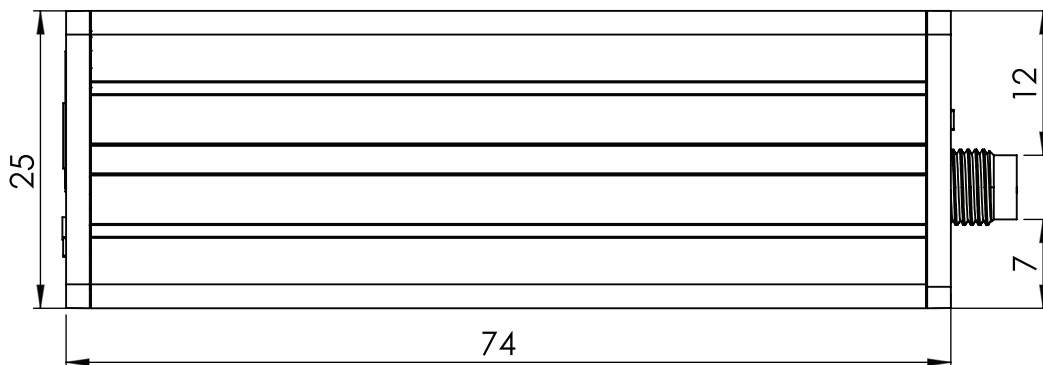
## TOP VIEW

The figure below depicts the measurements of RUT241 and its components as seen from the top:



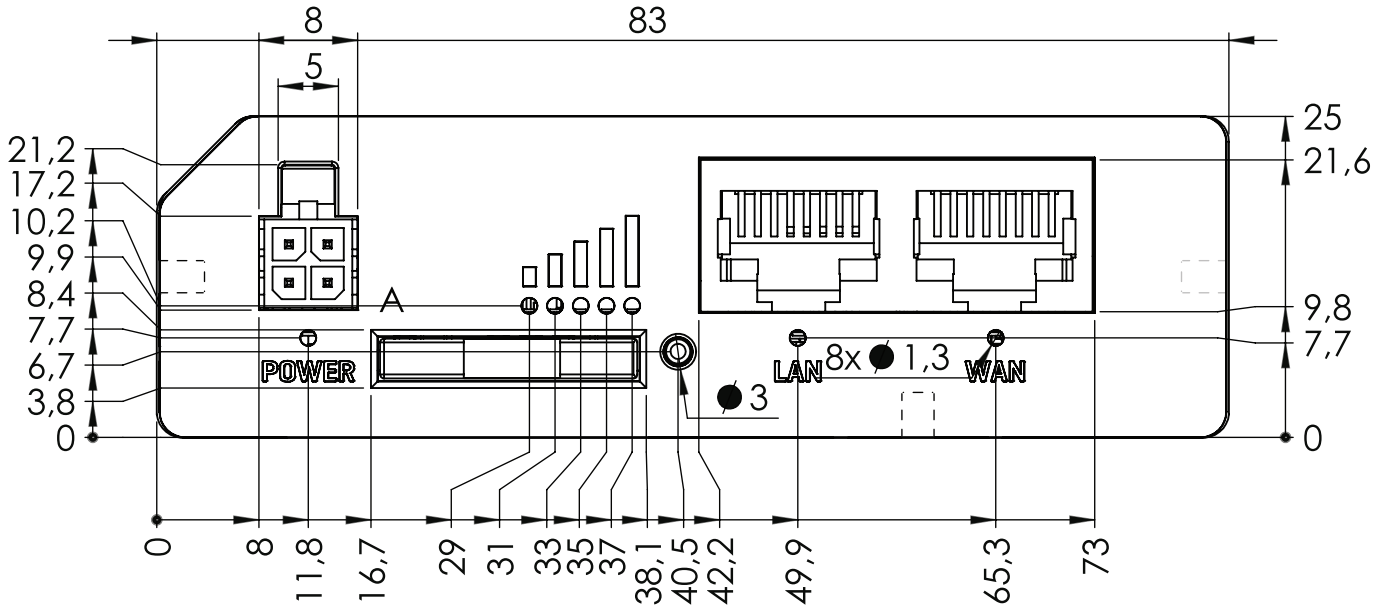
## RIGHT VIEW

The figure below depicts the measurements of RUT241 and its components as seen from the right side:



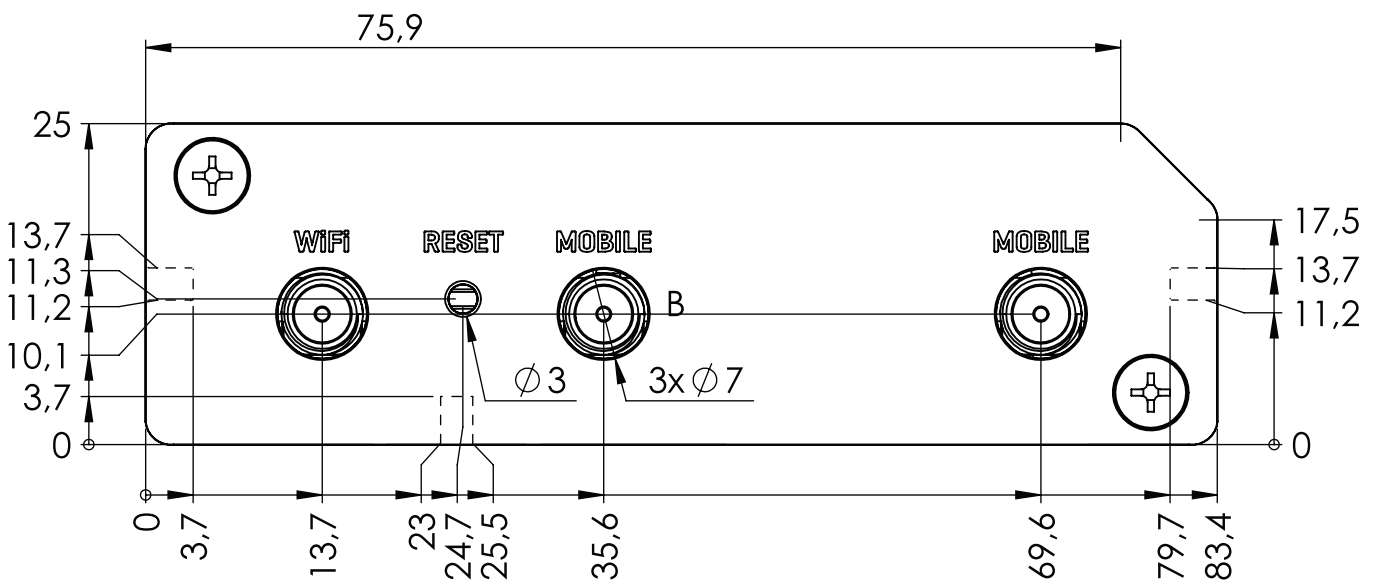
**FRONT VIEW**

The figure below depicts the measurements of RUT241 and its components as seen from the front panel side:



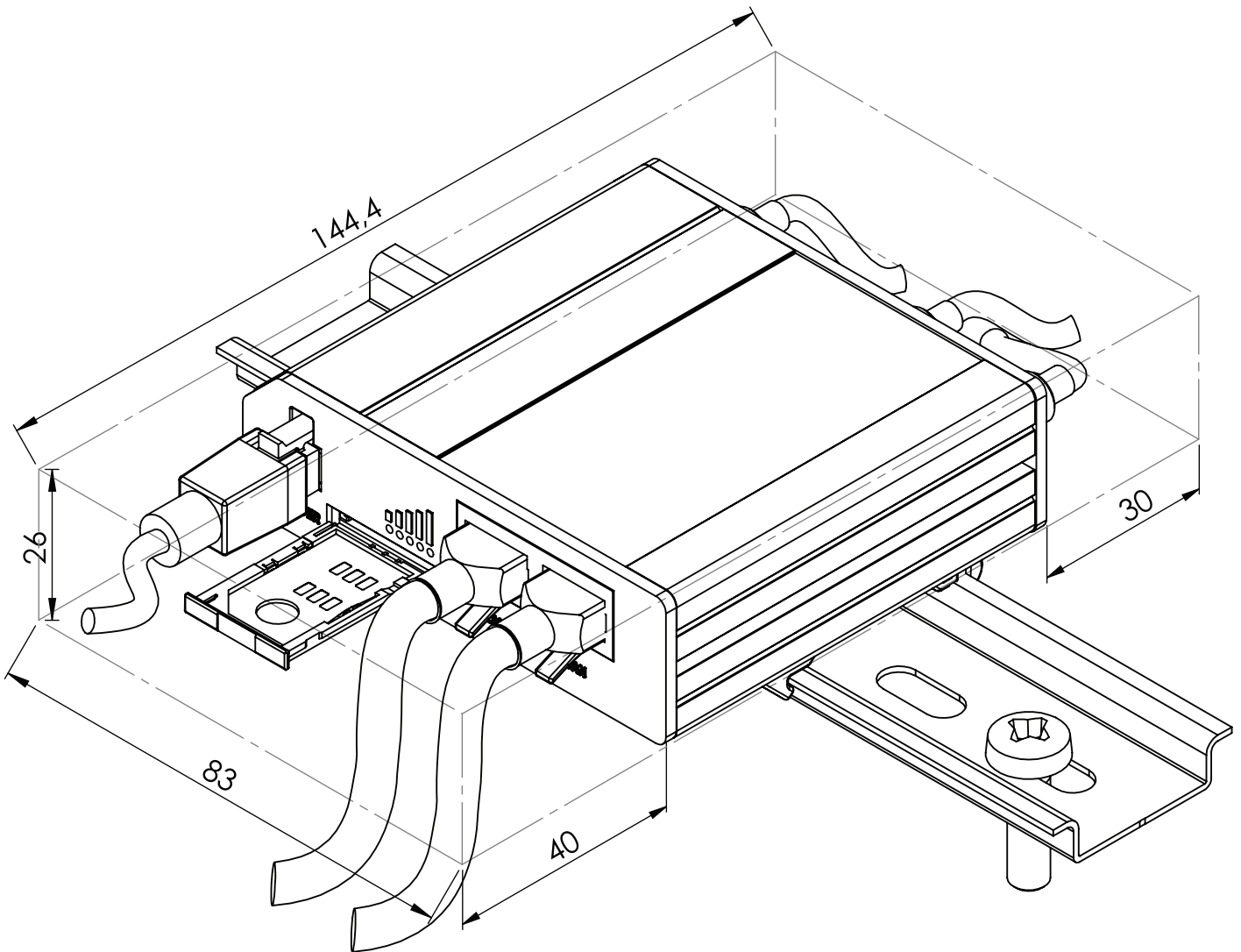
**REAR VIEW**

The figure below depicts the measurements of RUT241 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:

