TELTONIKA | Networks

RUT850

HARDWARE

FRONT VIEW

SIM holder   Reset button   Mobile signal stength indication LEDs

Power LED

POWER   **SIM**   **RESET**   **WiFi**   **2G 3G 4G**

WiFi LED

Mobile network type LEDs

BACK VIEW

Power socket

POWER   **GNSS**   **MOBILE**   **MOBILE**

IGN

(GND) -   + (PWR)

GPS antenna connector   Mobile AUX antenna connector   Mobile MAIN antenna connector

POWER SOCKET PINOUT

Not connected / White wire   Ignition / Green wire

Ground / Black wire   Power / Red wire
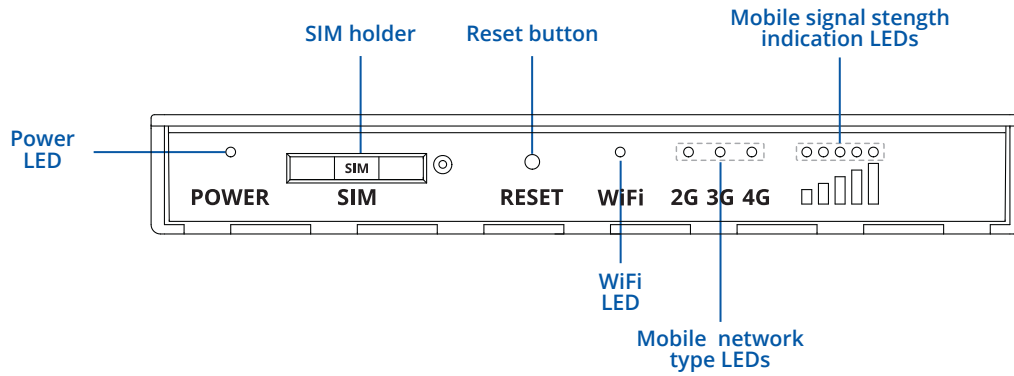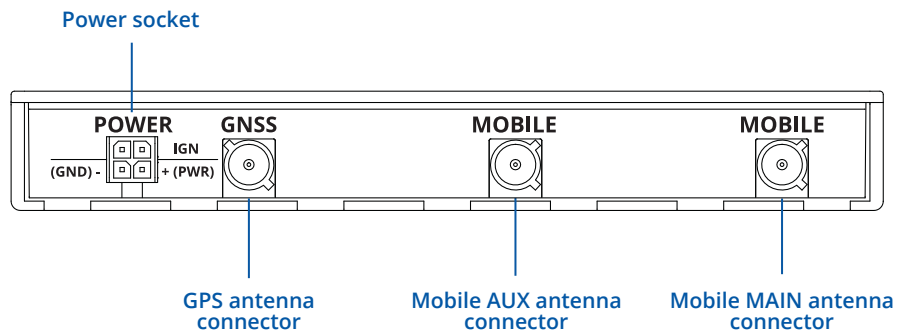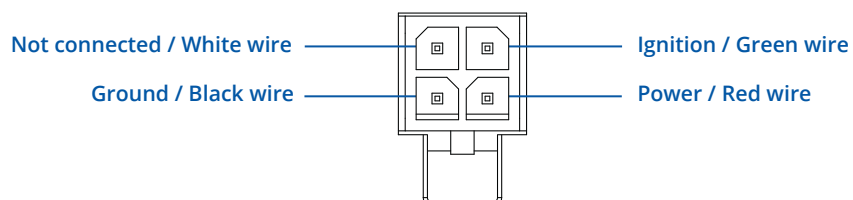
FEATURES

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
Black/White list	Black/White list
SMS	SMS status, SMS configuration, send/read SMS via HTTP POST/GET, EMAIL to SMS (optional), SMS to EMAIL(optional), SMS to HTTP (optional), SMS to SMS (optional), scheduled SMS, SMS autoreply, SMPP (optional)
Multiple PDN (optional)	Possibility to use different PDNs for multiple network access and services
Band management	Band lock, Used band status display

WIRELESS

Wireless mode	IEEE 802.11b/g/n, Access Point (AP), Station (STA)
WiFi	WPA2-Enterprise (with external/internal Radius server), WPA2-PSK, WPA-PSK, WEP, MAC Filter
WiFi security	WPA2-Enterprise - PEAP, TLS, TTLS, AES-CCMP, TKIP, Auto Cipher modes, Client separation
SSID	SSID stealth mode and access control based on MAC address
WiFi users	Up to 80 simultaneous connections
Wireless Hotspot	Captive portal (Hotspot), internal/external Radius server , built in customizable landing page

NETWORK

Routing	Static routing, Dynamic routing (Optional - BGP, OSPF v2, RIP v1/v2)
Connection monitoring	Ping Reboot, Periodic Reboot, LCP and ICMP for link inspection
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, SMNP, VoIP passthrough support
Firewall	Port forward, traffic rules, custom rules
DHCP	Static and dynamic IP allocation, DHCP Relayd
DDNS	Supported >25 service providers, others can be configured manually
QoS / Smart Queue Management (SQM)	Traffic priority queuing by source/destination, service, protocol or port, WMM, 802.11e
Network backup	Mobile and WiFi WAN options, each of which can be used as backup, using automatic Failover
Load balancing (optional)	Balance your internet traffic over multiple WAN connections
NetSnapper (optional)	Mobile connection management, data compression VPN client (not available in standard FW)
SSHFS (optional)	Possibility to mount remote file system via SSH protocol (not available in standard FW)

SECURITY

Authentication	Pre-shared key, digital certificates, X.509 certificates
Firewall	Pre-configured firewall rules can be enabled via web-ui, 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)
WiFi security	WPA2-Enterprise – PEAP, EAP-TLS, TLS, TTLS. AES-CCMP, TKIP, Auto Cipher modes. Client separation
Mobile quota control	Set up custom data limits for the 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

SYSTEM CHARACTERISTICS

CPU	Atheros Hornet, MIPS 74Kc, 550 MHz
RAM	64 MB, DDR2
FLASH memory	16 MB SPI Flash

VPN

OpenVPN	Multiple clients and server can be running 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 (optional)	IKEv1, IKEv2, supports up to 4 x VPN IPsec tunnels (instances), with 5 encryption methods (DES, 3DES, AES128, AES192, AES256)
GRE (optional)	GRE tunnel
PPTP, L2TP (optional)	Client/Server services can run simultaneously

MONITORING & MANAGEMENT

WEB UI	HTTP/HTTPS, status, configuration, FW update, CLI ,troubleshoot, event log, system log, kernel log
FOTA	Firmware update from sever, automatic notification
SSH	SSH (v1, v2)
SMS	SMS status, SMS configuration, send/read SMS via HTTP POST/GET
TR-069	OpenACS, EasyCwmp, ACSLite, tGem, LibreACS, GenieACS, FreeACS, LibCWMP, Friendly tech, AVSystem
SNMP (optional)	SNMP (v1, v2, v3), SNMP trap
JSON-RPC	Management API over HTTP/HTTPS
RMS	Teltonika Remote Management System (RMS)

FIRMWARE / CONFIGURATION

WEB UI	Update FW from file, check FW on server, configuration profiles, configuration backup, restore point
FOTA	Update FW/configuration from server
RMS	Update FW/configuration for multiple devices
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	GPL package with built environment provided

LOCATION TRACKING

GNSS	GPS, GLONASS, BeiDou, Galileo and QZSS
Coordinates	GNSS coordinates via WebUI, SMS, TAVL, RMS
NMEA	NMEA 0183
Server software	supported server software TAVL, RMS
Mobile Network Geolocation	Location without using GPS, get approximate location based on mobile tower on RMS
Startup	Hot start < 2.5 s, Warm start < 26 s, Cold start < 35 s
Tracking	55 simultaneous satellites channels
Sensitivity	-157 dBM
Accuracy	< 1.5 m
Geofencing	Configurable multiple geofence zones

POWER

Connector	4 pin DC power socket
Power consumption	< 5W
Input voltage range	9 – 30 VDC (4 pin industrial socket), reverse polarity protection, overvoltage protection up to 60 VDC, surge protection >66 VDC 10us max

PHYSICAL INTERFACES (PORTS, LEDS, ANTENNAS, BUTTONS, SIM)

Status LEDs	3 x connection type status LEDs, 1 x WiFi status LED, 5 x connection strength LEDs, 1 x Power LED
SIM	1 x SIM slots (Mini SIM – 2FF), 1.8 V/3 V, external SIM holder
Power	4 pin DC connector
Antennas	2 x FAKRA connectors for LTE, 1 x FAKRA connector for GNSS
Reset	Reset/restore to default button

PHYSICAL SPECIFICATION

Casing material	Plastic housing, plastic panels
Dimensions	79 x 131 x 18 mm (L x W x H)
Weight	115 g

OPERATING ENVIRONMENT

Operating temperature	-40 °C to 75 °C
Operating humidity	10% to 90% non-condensing
Ingress Protection Rating	IP30
MTBF	290000 h

REGULATORY & TYPE APPROVALS

Regulatory	CE/RED, EAC, RoHS, WEEE
Operator	AT&T (planned), Verizon (planned)
Vehicle	ECE R10 (E-mark)

EMI IMMUNITY

|	
Standards	Draft EN 303 446-1 V1.1.0
ESD	EN61000-4-2:2009
RS	EN 61000-4-3:2006, A1:2008 and A2:2010
EFT	EN 61000-4-4:2004
CS	EN 61000-4-6:2009

RF

Standards	EN 300 328 V2.1.1, EN 301 511 V12.5.1, EN 301 908-1 V11.1.1, EN 301 908-2 V11.1.1, EN 301 908-13 V11.1.1, EN 303 413 V1.1.0

SAFETY

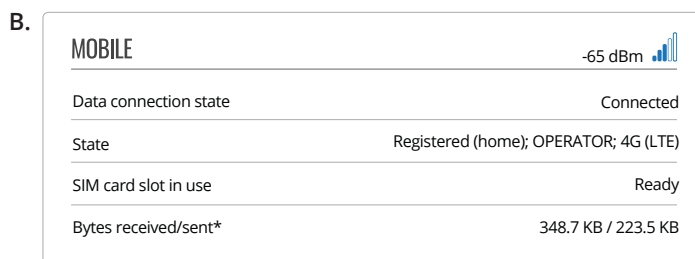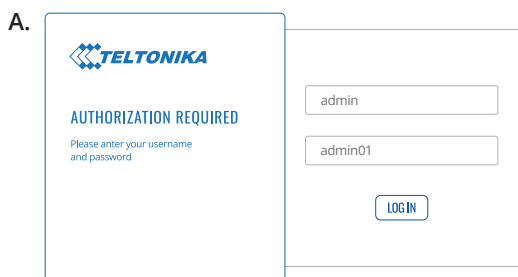|	
Standards	IEC 60950-1:2005 (Second Edition) + Am 1:2009 + Am 2:2013 EN 50665:2017, EN 62311:2008

5

HARDWARE INSTALLATION

1. Push the SIM holder button with the SIM needle.
2. Pull out the SIM holder.
3. Insert your SIM card into the SIM holder.
4. Slide the SIM holder back into the router.
5. Attach all antennas.
6. Connect the power adapter to the socket on the front of the device. Then plug the other end of the power adapter into a power outlet.
7. Connect to the device wirelessly using SSID and password provided on the device information label.
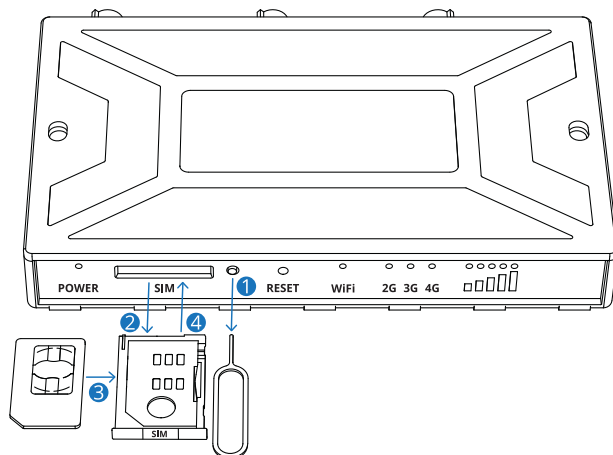
LOGIN TO DEVICE

1. To enter the router's Web interface (WebUI), type http://192.168.1.1 into the URL field of your Internet browser.
2. Use login information shown in image A when prompted for authentication.
3. After you log in, you will be prompted to change your password for security reasons. The new password must contain at least 8 characters, including at least one uppercase letter, one lowercase letter, and one digit. This step is mandatory, and **you will not be able to interact with the router's WebUI before you change the password.**
4. When you change the router's password, the Configuration Wizard will start. The Configuration Wizard is a tool used to set up some of the router's main operating parameters.
5. Go to the Overview page and pay attention to the Signal Strength indication (image B). To maximize the cellular performance try adjusting the antennas or changing the location of your device to achieve the best signal conditions.

A.

TELTONIKA

AUTHORIZATION REQUIRED

Please anter your username and password

admin

admin01

LOG IN

B.

MOBILE	-65 dBm
Data connection state	Connected
State	Registered (home); OPERATOR; 4G (LTE)
SIM card slot in use	Ready
Bytes received/sent*	348.7 KB / 223.5 KB

TECHNICAL INFORMATION

Radio specifications	
RF technologies	2G, 3G, 4G, WiFi, GNSS
Max RF power	33 dBm@GSM, 24 dBm@WCDMA, 23 dBm@LTE, 20 dBm@ WiFi
Bundled accessories specifications*	
Power adapter	Input: 0.4A@100-240VAC, Output: 9VDC, 1A, 4-pin plug
Mobile antenna	690/900/1800/1900/2100/2700 MHz, 50 Ω, VSWR < 3.2, gain** 3.5 dBi, omnidirectional, FAKRA D female connector
~~WiFi antenna~~	1575.42~1602 MHz, 2.2-5 VDC, VSWR < 1.5, active total gain** 26 dB (typ.), RHCP polarization, FAKRA C female connector

*Order code dependent.
**Higher gain antenna can be connected to compensate for cable attenuation when a cable is used. The user is responsible for the compliance with the legal regulations.

WHAT'S IN THE BOX?

STANDARD PACKAGE CONTAINS

- RUT850
- Power cable (2 m)
- 2 x LTE antennas (adhesive, FAKRA-D, 3 m cable)
- 1 x GNSS antenna (adhesive, FAKRA-C, 3 m cable)
- 2 x screws
- 2 x adhesive tape profiles
- 2 x hook and loop profiles
- QSG (Quick Start Guide)
- Packaging box

RUTX850	**2 X LTE ANTENNAS (ADHESIVE, FAKRA-D, 3 M CABLE)**	**1 X GNSS ANTENNA (ADHESIVE, FAKRA-C, 3 M CABLE)**
POWER CABLE (2 M)	**2 X SCREWS**	**2 X ADHESIVE TAPE PROFILES**
2 X HOOK AND LOOP PROFILES		

STANDARD ORDER CODES

PRODUCT CODE	HS CODE	HTS CODE	PACKAGE CONTAINS
RUT850 911210	851762	8517.62.00	Standard package

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

STANDARD ORDER CODES

PRODUCT CODE	REGION (OPERATOR)	FREQUENCY
RUT850 9*****	Europe, the Middle East, Africa, Korea, Thailand, India	• 4G (LTE-FDD): B1, B3, B7, B8, B20, B28A • 4G (LTE-TDD): B38, B40, B41 • 3G: B1, B8 • 2G: B3, B8
RUT850 4*****	North America (AT&T, Bell, T-Mobile)1	• 4G (LTE-FDD): B2, B4, B12 • 3G: B2, B4, B5
RUT850 5*****	North America (Verizon)1	• 4G (LTE-FDD): B4, B13
RUT850 6*****	Australia (Telstra)	• 4G (LTE-FDD): B1, B3, B5, B7, B28 • 3G: B1, B5
RUT850 7*****	South America, Australia, New Zealand, Taiwan	• 4G (LTE-FDD): B1, B2, B3, B4, B5, B7, B8, B28 • 4G (LTE-TDD): B40 • 3G: B1, B2, B5, B8 • 2G: B2, B3, B5, B8
RUT850 8*****	Japan	• 4G (LTE-FDD): B1, B3, B8, B18, B19, B26 • 4G (LTE-TDD): B41 • 3G: B1, B6, B8, B19
RUT850 A*****	Global	• 4G (LTE-FDD): B1, B2, B3, B4, B5, B7, B8, B12, B13, B18, B19, B20, B25, B26, B28 • 4G (LTE-TDD): B38, B39, B40, B41 • 3G: B1, B2, B4, B5, B6, B8, B19 • 2G: B2, B3, B5, B8

The price and lead-times for region (operator) specific versions may vary. For more information please contact us.
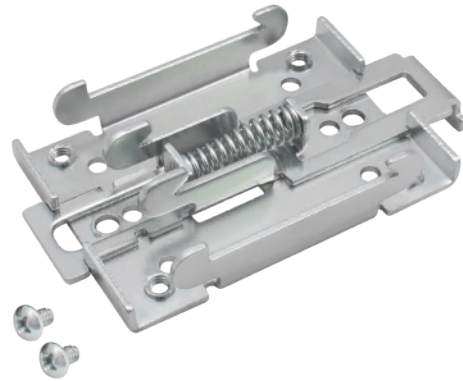
* - For more detailed information, visit our Wiki
1 - Router is not certified on AT&T, Verizon, Bell, T-Mobile network.

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	PRODUCT CODE	HS CODE	HTS CODE
088-00267	PR5MEC00	73269098	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	PRODUCT CODE	HS CODE	HTS CODE
088-00270	PR5MEC11	73269098	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	PRODUCT CODE	HS CODE	HTS CODE
088-00281	PR5MEC12	73269098	7326.90.98

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

# RUT850 SPATIAL MEASUREMENTS & WEIGHT

MAIN MEASUREMENTS

H x W x D dimensions for RUT850:

Device housing*:	131 x 79 x 18
Box:	173 x 148 x 71

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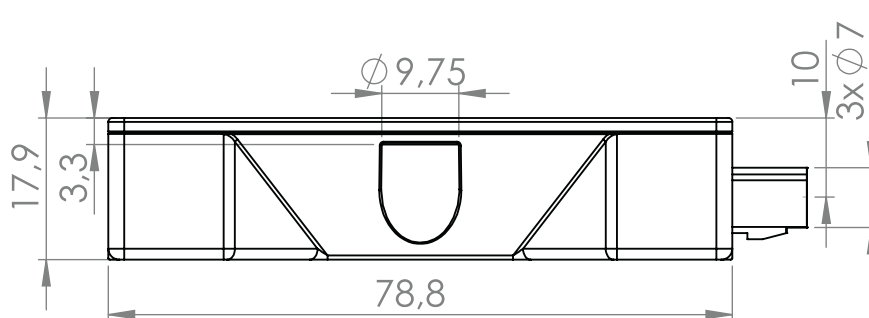
TOP VIEW

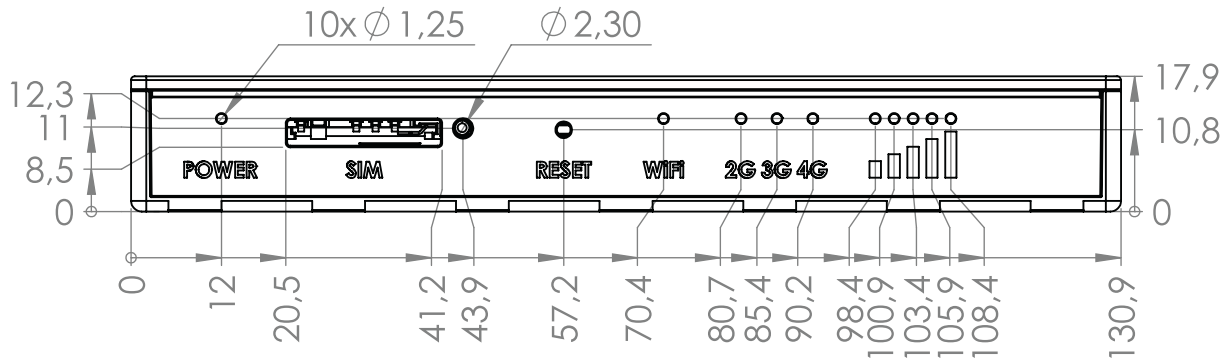The figure below depicts the measurements of RUT850 and its components as seen from the top:
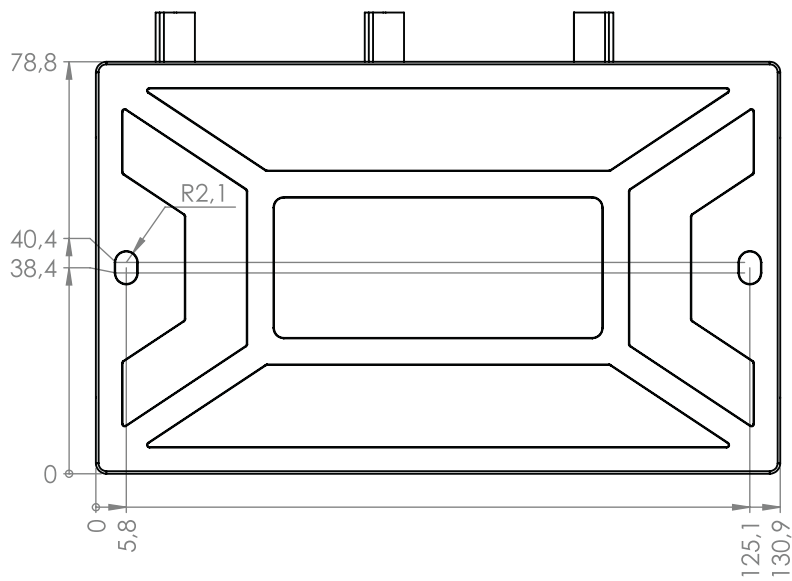
RIGHT VIEW

The figure below depicts the measurements of RUT850 and its components as seen from the right side:
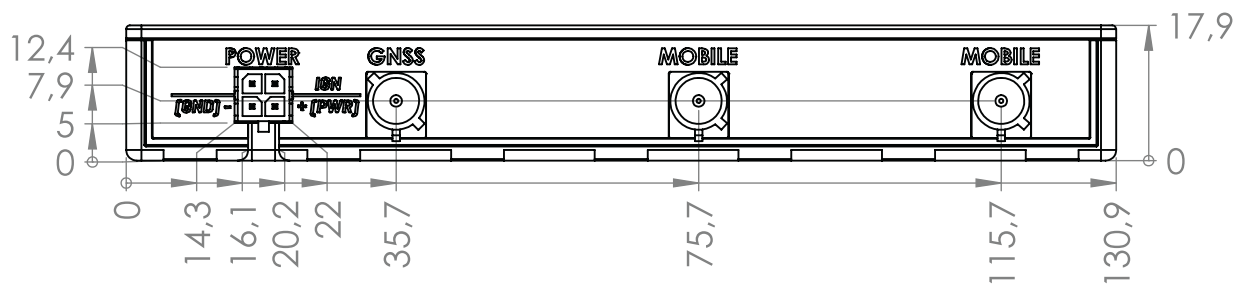
FRONT VIEW

The figure below depicts the measurements of RUT850 and its components as seen from the front panel side:

10x ⌀ 1,25   ⌀ 2,30

12,3
11
8,5
0

POWER   SIM   RESET   WIFI   2G 3G 4G

17,9
10,8
0

0   12   20,5   41,2   43,9   57,2   70,4   80,7   85,4   90,2   98,4   100,9   103,4   105,9   108,4   130,9

REAR VIEW

The figure below depicts the measurements of RUT850 and its components as seen from the back panel side:

12,4
7,9
5
0

POWER   IGN   GNSS   MOBILE   MOBILE
[GND] -   + [PWR]

17,9
0

0   14,3   16,1   20,2   22   35,7   75,7   115,7   130,9

MOUNTING SPACE REQUIREMENTS

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