# RUT301

INDUSTRIAL ETHERNET ROUTER




Industrial & automation

Energy & utilities

Enterprise

Retail

Smart city

## INTERFACES

5 x Ethernet ports (10/100 Mbps), Digital I/Os, and USB 2.0

## RMS

For remote management, access & VPN services

## SECURITY SUITE

Pre-configured firewall and multiple VPN services

## DURABLE

Industrial-grade design for withstanding harsh environments

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| Ethernet | |
|---|---|
| WAN | 1 x WAN port 10/100 Mbps, compliance IEEE 802.3, IEEE 802.3u, 802.3az standards, supports auto MDI/MDIX |
| LAN | 4 x LAN ports, 10/100 Mbps, compliance with IEEE 802.3, IEEE 802.3u, 802.3az standards, supports auto MDI/MDIX crossover |

| 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, SNMP, MQTT, Wake On Lan (WOL), VXLAN |
| 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 | VRRP, Wired options, each of which can be used as an automatic Failover |
| Load balancing | Balance Internet traffic over multiple WAN connections |
| Hotspot | Captive portal (hotspot), internal/external Radius server, Radius MAC authentication, SMS authorisation, SSO authentication, internal/external landing page, walled garden, user scripts, URL parameters, user groups, individual user or group limitations, user management, 9 default customisable themes and optionality to upload and download customised hotspot themes |
| SSHFS | Possibility to mount remote file system via SSH protocol |
| Traffic Management | Real-time monitoring, wireless signal charts, traffic usage history |

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| 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 |
| 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 |
| 802.1x | Port-based network access control server |

| 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. |

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| BacNET | |
|---|---|
| Supported modes | Router |
| Supported connection types | IP, RTU (USB) |
| 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 |

| MODBUS | |
|---|---|
| Supported modes | Server, Client |
| Supported connection types | TCP, USB |
| 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, USB |

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

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| 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 |

| 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) |
| 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 | |
|---|---|
| Cumulocity - Cloud of Things | Allows monitoring of: Device Model, Revision and Serial Number, WAN Type and IP. 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 |

| System Characteristics | |
|---|---|
| CPU | Mediatek, 580 MHz, MIPS 24KEc |
| RAM | 128 MB, DDR2 |
| FLASH storage | 16 MB serial NOR 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++ |
| 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 |

| USB | |
|---|---|
| Data rate | USB 2.0 |
| Applications | Samba share, USB-to-serial |
| External devices | Possibility to connect external HDD, flash drive, additional modem, printer, USB-serial adapter |
| Storage formats | FAT, FAT32, exFAT, NTFS (read-only), ext2, ext3, ext4 |

| Input/Output | |
|---|---|
| Input | Up to 2 x Configurable digital Inputs (shared), 0 - 6 V detected as logic low, 8 - 30 V detected as logic high |
| Output | Up to 2 x Configurable digital Outputs (shared), Open collector output, max output 30 V, 300 mA |
| Events | Email, RMS |
| 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, voltage surge/transient protection |
| PoE (passive) | Passive PoE (Optional - different hardware required; contact your sales manager) |
| Power consumption | Idle: < 0.8 W, Max: < 3.8 W |

| Physical Interfaces | |
|---|---|
| Ethernet | 5 x RJ45 ports, 10/100 Mbps |
| I/O's | 2 x Configurable digital I/O on 4-pin power connector |
| Status LEDs | 1 x WAN type LED, 4 x LAN status LEDs, 1 x Power LED |
| Power | 1 x 4-pin power connector |
| USB | 1 x USB A port for external devices |
| Reset | Reboot/User default reset/Factory reset button |

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| Physical Specification | |
|---|---|
| Casing material | Anodised aluminium housing and panels |
| Dimensions (W x H x D) | 100 x 30 x 85 mm |
| Weight | 233 g |
| Mounting options | DIN rail, wall mount, flat surface (all require additional kit) |

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

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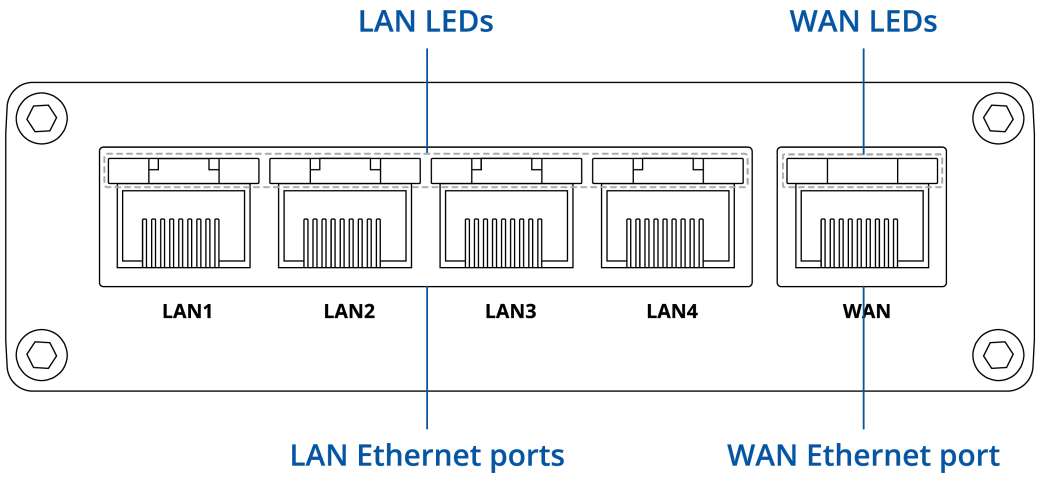
## Certification

| | |
|---|---|
| EMEA | RUT301 CE<br>RUT301 UKCA<br>RUT301 RoHS<br>RUT301 REACH<br>RUT301 Kenya<br>RUT301 ICASA<br>RUT301 ANRT |
| APAC | RUT301 RCM<br>RUT301 Giteki<br>RUT301 MTCTE |
| AMERICAS | RUT301 FCC<br>RUT301 IC(ISED)<br>RUT301 NOM |
| MISCELLANEOUS | RUT301 CB Scheme |
| SAFETY & ENVIROINMENTAL | RUT301 WEEE |

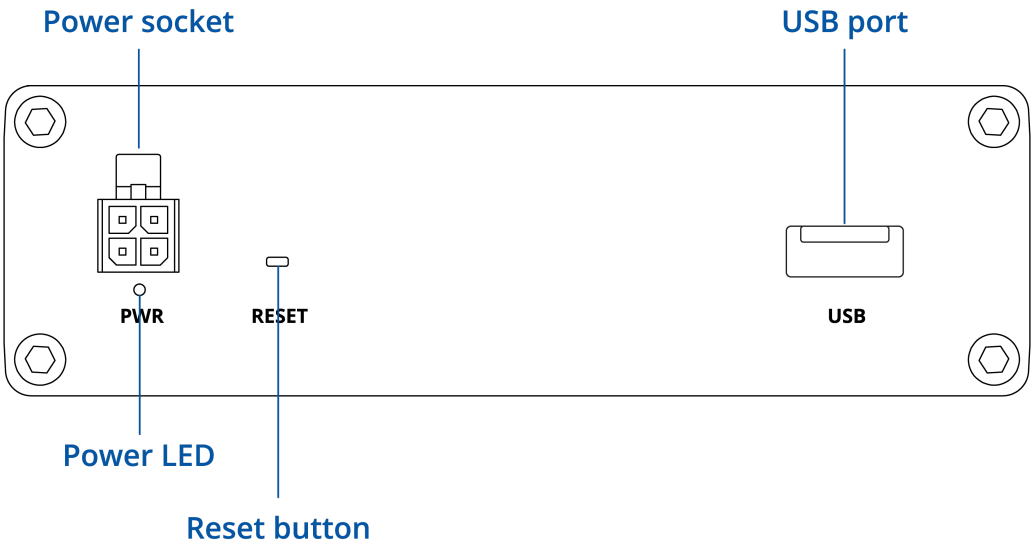
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## Hardware

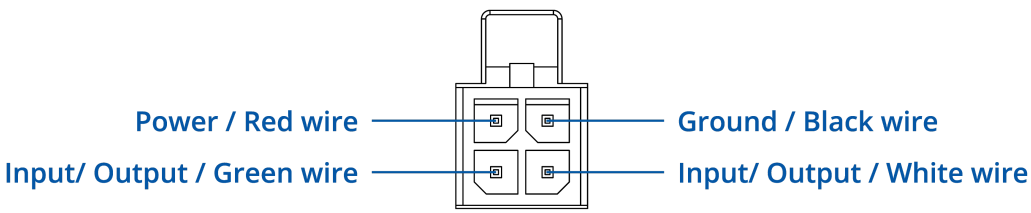
### FRONT VIEW




### BACK VIEW




### POWER SOCKET PINOUT




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## Ordering

**Standard package***




RUT301



QUICK START GUIDE



9W PSU



ETHERNET CABLE 1.5 M

*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

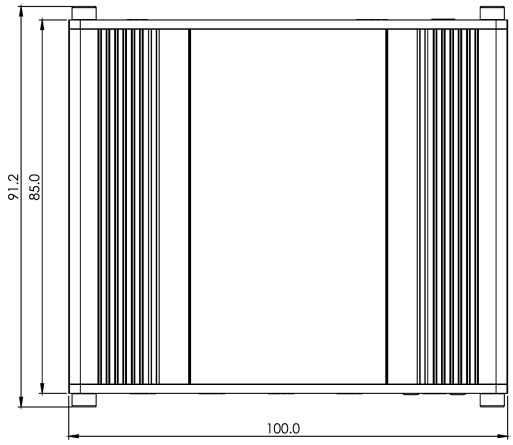
| Hardware version | Supported frequencies | Standard order code / Package Contains |
|---|---|---|
| RUT301 ****** | N/A | RUT301000000 / Standard package with EU PSU<br>RUT301000400 / Standard package with JP PSU<br>RUT301000500 / Standard package with AU PSU<br>RUT301000600 / Standard package with Universal PSU<br>RUT301000700 / Standard package with US PSU<br>RUT301000800 / Standard package with UK PSU<br>RUT301000300 / Standard package with power cable (4-way screw terminal)<br>RUT301000100 / Mass packing code |

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

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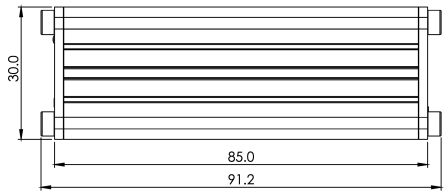
## TOP VIEW

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



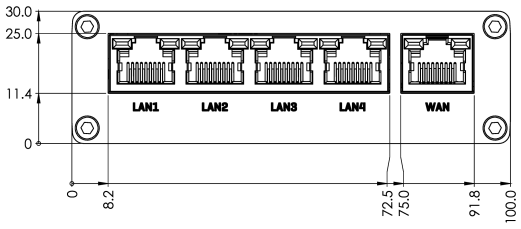

## RIGHT VIEW

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



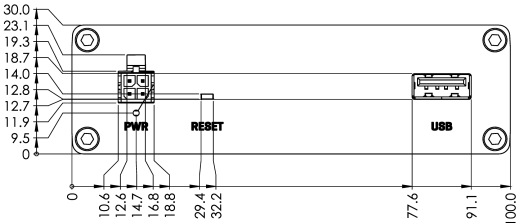

## FRONT VIEW

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




## REAR VIEW

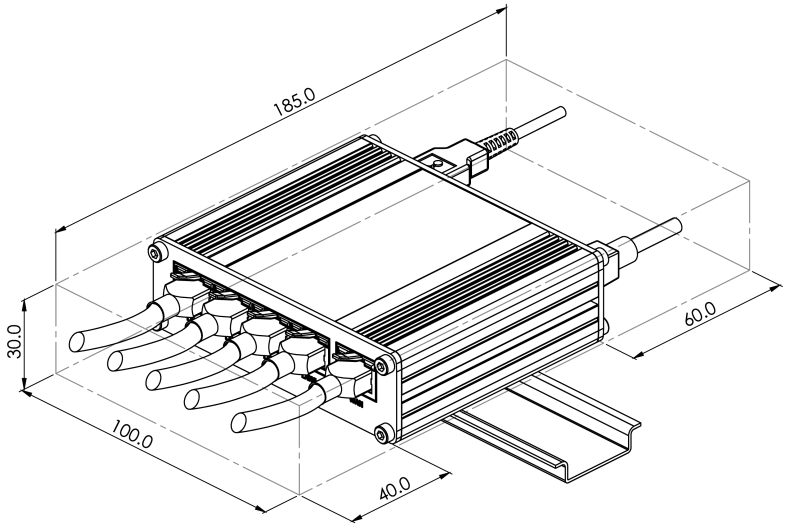
The figure below depicts the measurements of device and its components as seen from the back panel side:




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## MOUNTING SPACE REQUIREMENTS

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




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# Millbeck.

IoT Connectivity

## ABOUT

Millbeck is a UK-based IoT and M2M connectivity specialist, supplying the SIM technology, networking hardware and technical expertise that keep connected devices online, wherever they're deployed.

With over 20 years' experience in cellular networking, our team has built deep sector knowledge and strong partnerships with leading carriers and hardware manufacturers across the UK, Europe and globally.

## TIMELINE

**2002 — MILLBECK FOUNDED**
Business connectivity for UK SMEs

**2008 — FIRST IOT SIM SOLUTION PROVIDED**
Cellular SIM solutions commence

**2018 — ROAMING IOT SIMS LAUNCHED**
The next step in IoT connectivity begins

**2024 — TELTONIKA DIAMOND PARTNER**
Millbeck appointed as a key Teltonika partner

**NOW — UK, EUROPE & GLOBAL DEPLOYMENTS**
Connecting devices across every sector

## EXPERTISE

- Routers
- Antennas
- Networking
- IoT SIMs
- IoT Consultancy

## SIM TECHNOLOGIES

- 2G/3G, 4G LTE, 5G, CAT-M1, LTE-M, VoLTE & NB-IoT
- eUICC
- eSIM
- Fixed Public IP
- Fixed Private IP
- IPSec VPN
- SSL VPN

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