

ICR-4133, ICR-4233

Industrial LTE-A Router & IoT Gateway



Features

- LTE-Advanced Cat.6 Cellular Connectivity
- Quad-core CPU with 1 GB RAM
- 2x SIM, TPM 2.0
- 2x Gigabit Ethernet
- USB Host 3.0
- 2x Serial RS232/RS485, 4x DI, 2x DO (ICR-4200)
- GNSS Receiver, Micro SD Card
- Robust metal cover with wall and DIN mount options
- Wide operational temperature range
- Optional Tri-Band WiFi 6
- Optional Bluetooth V5.2

Project-based customization: Chip, SIM (MFF2)

Introduction



ICR-4133/ICR-4233 router family stands at the forefront of industrial routers using full potential of LTE Cat.6 technology and its advantages over lower LTE categories. Tailored for the EMEA market and global markets using the same frequency spectrum as in Europe routers offer unparalleled data transfer speeds, minimal latency and exceptional network reliability. Positioned as a superior choice for 4G/LTE data transfers the ICR-4133/4233 router family excels in a diverse range of industrial applications ranging from energy market (oil&gas distribution, EV charging/electricity distribution), remote access for machine builders, transaction management (kiosks/lottery terminals/ticketing machines), smart city or CCTV camera, surveillance and various monitoring applications.

One of the most notable advantages of LTE Cat.6 over lower LTE releases is improved network capacity and latency in cellular networks of mobile providers. This feature plays a pivotal role in real-time responsiveness, rendering the routers ideal for applications demanding immediate feedback or interaction especially in densely populated areas.

At the heart of the routers lies a robust hardware platform featuring 1.6 GHz CPU. This powerful processor complemented by 1 GB RAM and 2.9 GB of space for customer applications delivers the necessary power for today's world. The advanced processor empowers industries to harness the full potential of edge computing facilitating the processing and analysis of data closer to the network edge.

As a standard ICR-4133/ICR-4233 hosting two Gigabit Ethernet ports, one USB Host 3.0, GNSS receiver, two SIM card readers and four digital inputs and 2 digital outputs. This impressive set of connectivity options is even extended by two serial ports RS232/RS485 in case of ICR-4233.

Optionally can be a router equipped with two serial ports (RS232/RS485), four digital inputs, two digital outputs, and also with WiFi 6 (IEEE802.11 ax/ac/a/b/g/n 2.4 GHz / 5 GHz / 6 GHz, 2x2 MIMO) and Bluetooth V5.2.





Cyber security is an important topic and we think on that during hardware design to be able to operate units within critical infrastructure systems. Incorporating features such as TPM 2.0 and a Tamper Button integrity and safety of data transmission is assured. With robust security measures in place businesses can confidently deploy these routers in sensitive environments.

The advanced networking features and management capabilities enable users to configure and manage routers remotely, supporting multiple configuration profiles, automatic firmware updates and customizable software options. The adaptability would be even wider when RouterApps are operated (Docker, Node-Red and others) or if the customer take advantage of customized scripting or programming of the own RouterApps on top of ICR-OS based on linux kernel that empowers the routers. By that additional feature tailoring to specific business needs can be reached.

For streamlined management and deployment ICR-4133/4233 router family can be efficiently handled using the comprehensive cloud-based tool WebAccess/DMP. This software tool facilitates centralized management, provisioning, and monitoring of multiple routers, simplifying the scaling and maintenance of a network infrastructure or centralizing the management of VPN connections.



Order Codes

| Model no. - Order Codes | REGION | 2x Gigabit Ethernet | 2x Serial RS232 R485 | GNSS | I/O | 1x USB Host 3.0 | 2x SIM | WiFi 6 | Bluetooth V5.2 |
|-----------------------------------------------------------------------------------------------|--------|---------------------|----------------------|------|-----|-----------------|--------|--------|----------------|
|  ICR-4233 | EMEA* | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | | |
|  ICR-4233W | EMEA* | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ |
|  ICR-4133 | EMEA* | ✓ | | ✓ | | ✓ | ✓ | | |
|  ICR-4133W | EMEA* | ✓ | | ✓ | | ✓ | ✓ | ✓ | ✓ |

* - The router is compatible with cellular networks in the indicated region. The importer/operator needs to check locale legislation (standards, national Telecom approvals, etc.) and compare with standards available for the product if possible to operate the router in the target region legally.

Specifications

| System | |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| CPU | Quad-Core ARM Cortex-A53, 1.6 GHz |
| Memory | RAM - 1GB, eMMC - 8 GB (2.18 GB for Router Apps, 474 MB for customer data, 231 MB for system data) |
| Watchdog | HW Watchdog |
| RTC | Battery backup RTC |
| TPM | Trusted Platform Module (TPM) 2.0 |
| Interfaces | |
| Ethernet | 2× Ethernet, RJ45, 10/100/1000 Mbps, isolation 1.5 kV |
| Serial Lines (ICR-4200) | 2× RS232/RS485 independently selectable by DIP switch RS232 (Tx, Rx, GND, RTS, CTS), RS485 (A(-), B(+), GND), 16-pin terminal block (no isolation) |
| I/O (ICR-4200) | 4× Digital Input (48 V / 3 mA consumption) 2× Digital Output (Open Drain, 48 V / 500 mA) 16-pin terminal block (no isolation) |
| USB | 1× USB 3.0 Host Connector |
| MicroSD Card | 1× Micro SD Card Slot |
| Reset Button | Reboot / Factory reset |
| LED Indicators | System, 3-level signal strength, Data activity, SIM1/SIM2 status, 3G/4G/LTE-A technology, WiFi, User, ETH |

| GNSS | |
|----------------------|--------------------------------------------------------|
| Antenna | 1× SMA connector, Passive antenna only |
| Systems | GPS, GLONASS, BDS, Galileo |
| Protocol | NMEA |
| Ac Time-to-First-Fix | Cold start: 40 s Warm start: 35 s Hot start: 3 s |

| Environmental | |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------|
| Power Supply | 9 – 48 V DC (2-pin terminal block) |
| Consumption | Without WiFi: Idle 4.2 W / Average 5.9 W / Maximum 11.6 W With WiFi: Idle 4.3 W / Average 6.8 W / Maximum 12.2 W |
| Sleep Mode | Yes, ICR-4133(W) 10 mW Yes, ICR-4233(W) 15 mW |
| Operating Temperature | -40 to +75 °C |
| Storage Temperature | -40 to +85 °C |
| Humidity | 0 to 95 % |
| IP Cover | IP30 |
| Physical Characteristics | |
| Dimensions | 43 × 130 × 90 mm |
| Enclosure | Robust Metal Case, Grounding Screw |
| Mounting | Wall Mounting, DIN Rail |
| Weight | ICR-4133: 500 g ICR-4133W: 510 g ICR-4233: 505 g ICR-4233W: 515 g |

| WiFi - optional (ICR-4133W, ICR-4233W) | |
|----------------------------------------|------------------------------------------------------------------------------|
| Antenna | 2× R-SMA connectors, 2×2 MIMO |
| Standards | IEEE802.11 ax/ac/a/b/g/n 2.4 GHz / 5 GHz / 6 GHz |
| Data Rate | Up to 450 Mbps @ 2.4 GHz Up to 950 Mbps @ 5 GHz Up to 950 Mbps @ 6 GHz |
| Security | TKIP, AES, WPA, WPA2, WPA3, 802.1X |
| Modes | Access Point (up to 15 clients), Station, Multirole STA & AP |

| Bluetooth - optional (ICR-4133W, ICR-4233W) | |
|---------------------------------------------|-------------------------------------|
| Antenna | Shared R-SMA WiFi antenna connector |
| Bluetooth | Bluetooth V5.2 |

| Cellular Interface | |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------|
| SIM Slots | 2× SIM (Mini SIMs – 2FF) *1× Chip SIM (MFF2) |
| Antennas | 2× SMA connector |
| LTE-A Parameters | LTE-FDD Bands: B1/B3/B5/B7/B8/B20/B28/B32 LTE-TDD Bands: B38/B40/B41 Transfer rate: 300 Mbps (DL), 50 Mbps (UL) |
| HSPA+/UMTS Parameters | Supported frequency bands: B1/B3/B5/B8 Transfer rate: 42 Mbps (DL), 5.76 Mbps (UL) |

* Project-based customization

Industrial Cellular Routers & Gateways

ICR-4133, ICR-4233

| Software | |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Operating System | ICR-OS (Linux based) |
| SW Customization | Router App |
| Application Development | Open Linux, *Python, BASH, C/C++, *Node-RED, *Docker |
| Networking Features and Protocols | DHCP, NAT/PAT, SSH, VRRP, PPPoE, SNMP, SMTP, Dynamic DNS client, DNS proxy, VLAN, QoS, *DMVPN, NTP Client/Server, *Routing protocols RIP, BGP, OSPF, IS-IS, NHRP, Backup Routes, Port Forwarding, Host Port Routing, Ethernet Bridging, Load Balancing, IPv6 Dual Stack |
| Industrial Protocols and IoT | *Modbus RTU/TCP gateway, *IEC 60870-5-101 to 104 gateway, *DF1, *DNP3, *MQTT, *LWM2M |
| Security | HTTPS, SSH, SFTP, DMZ, Firewall (IP Filtering, MAC address filtering, Inbound and outbound Port filtering) VPN Tunneling – WireGuard, OpenVPN, *EasyVPN, IPsec with IKEv1 and IKEv2, GRE, L2TP, PPTP Authentication – RADIUS, TACACS+, 2FA, *SCEP Encryption – DES, 3DES, AES, RSA, MD5, SHA |
| Firmware Management | Automatic firmware updates – server, locally via LAN or remotely via WAN Over-the-Air cellular module firmware updates |
| Diagnostic/Log | Status – Signal Strength, Data Usage, Detailed Long Term Statistics One CLICK report – Current Configuration, Factory Identification, Routing Table Log – System Log, Reboot Log, Kernel Log Remote Diagnostics (via SSH) |
| Event Engine | StartUp script & Up/Down script (Own rules based on Digital Inputs, Network Parameters, Data Usage, Timer, Power, Device Temperature) Report Types: SMS, email, SNMP Trap |
| Configuration | Web server, SSH, Four configuration switchable profiles, Automatic configuration update from server, Backup & Restore configuration |
| Advanced Software Tools | WebAccess/DMP – Remote Device Provisioning, Monitoring & Management Platform WebAccess/VPN – Advanced Secure Networking Platform |

*Functionality is available with installed Router App

| Standards & Regulations | |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Radio | EN 301 908-1, EN 301 908-2, EN 301 908-16, EN 303 413, EN 300 328, EN 301 893, EN 303 687 |
| EMC | EN 301 491-1, EN 301 489-17, EN 301 489-19, EN 301 489-52, EN 610000-6-2, EN 610000-6-3, EN 55032, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6 |
| Safety | IEC 62368-1, IEC 62311 |
| Transportation | E-mark |
| National | CE, UKCA |
| Mechanical | EN 60529, EN 60068-2-27, EN 60068-2-64 |
| Climatic | EN 60068-2-2, EN 60068-2-1, EN 60068-2-14, EN 60068-2-78 |
| Environmental | REACH, RoHS3, WEEE |
| Cellular Module Approvals* | Regulatory: GCF, CE, RCM, UKCA |

*- Approvals are valid for the integrated cellular module inside the router only. Cellular module approvals are not always applicable for the whole router – see “Standards and Regulations” chart for complete router approvals available.

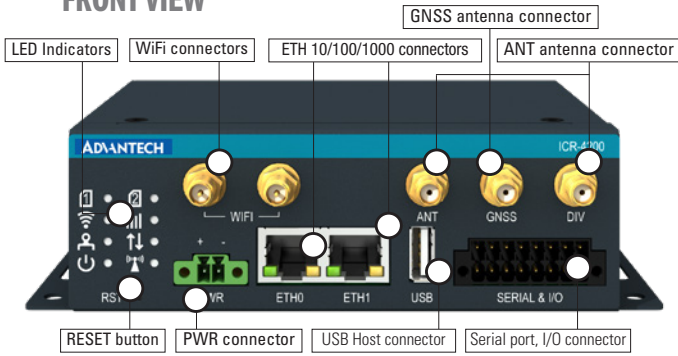
Accessories

| Part Number | Description | Included in the package |
|--------------------|----------------------------------------------------------------------------------------------|-------------------------|
| BB-CON-WR2 | 2-pin PWR connector | ✓ |
| CON-ICR28-16 | 16-pin Serial / IO connector | |
| | Wall mount kit | |
| BB-DIN-ICR32 | DIN clip | |
| RPS-ICR4-WR2-M | Wall mount Power supply, 12 V / 1.5 A, EU, UK, US, AUS plugs | Optional |
| BB-KD-ETH | Ethernet cross cable, 1.5 m, Shielded | |
| OPT1-ANT-WFT-06 | Antenna Wi-Fi, 2.4 GHz / 5 GHz / 6 GHz (2 pcs are recommended for full 2x2 MIMO performance) | |
| ANT-LTE5G-025 | Antenna 5G/LTE, Terminal (2 pcs are recommended for full cellular performance) | |
| BB-2J6024BA-150 | Antenna LTE 2in1 MIMO, Low profile Screw mount, 2x cable 1.5 m | |
| BB-2J6983MPA-150 | Antenna 2in1 5G/LTE MIMO, Magnetic and Adhesive mount, 2x cable 1.5 m | |
| BB-2J7041BGFAP-300 | Antenna LTE 3in1 MIMO, GPS passive, dome screw mount, 3x cable 3m | |
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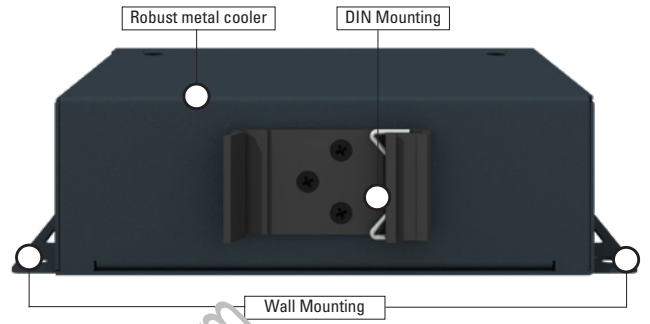
For more Antenna accessories visit www.advantech.com

ICR-4200 Views

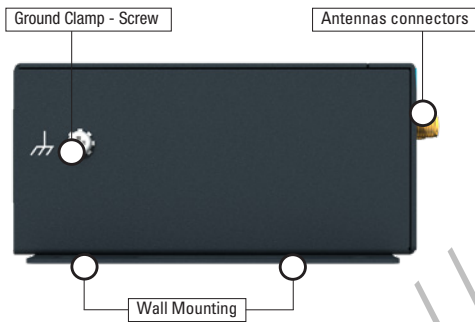
FRONT VIEW



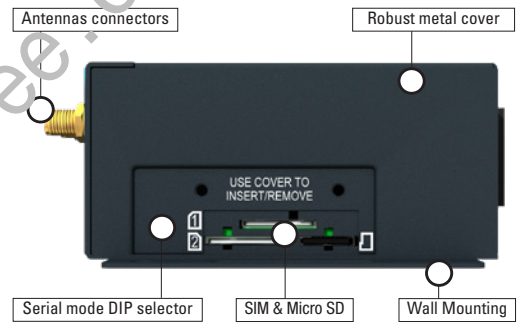
REAR VIEW



LEFT SIDE VIEW

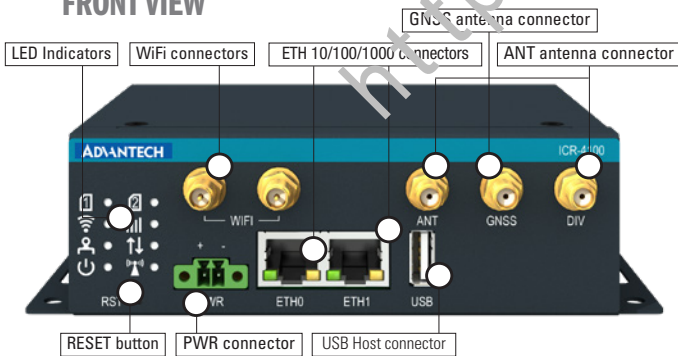


RIGHT SIDE VIEW

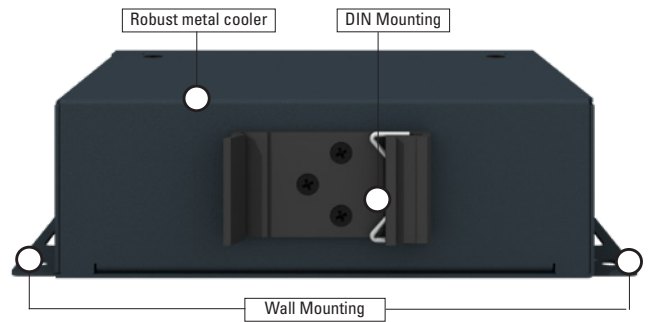


ICR-4100 Views

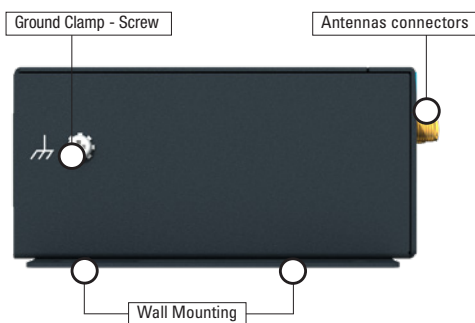
FRONT VIEW



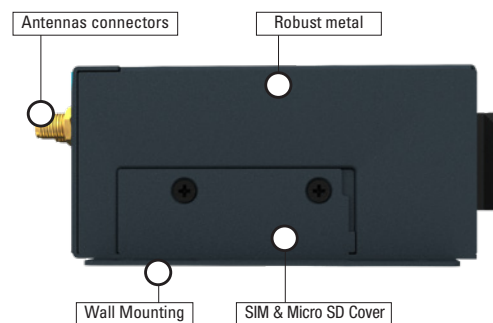
REAR VIEW



LEFT SIDE VIEW



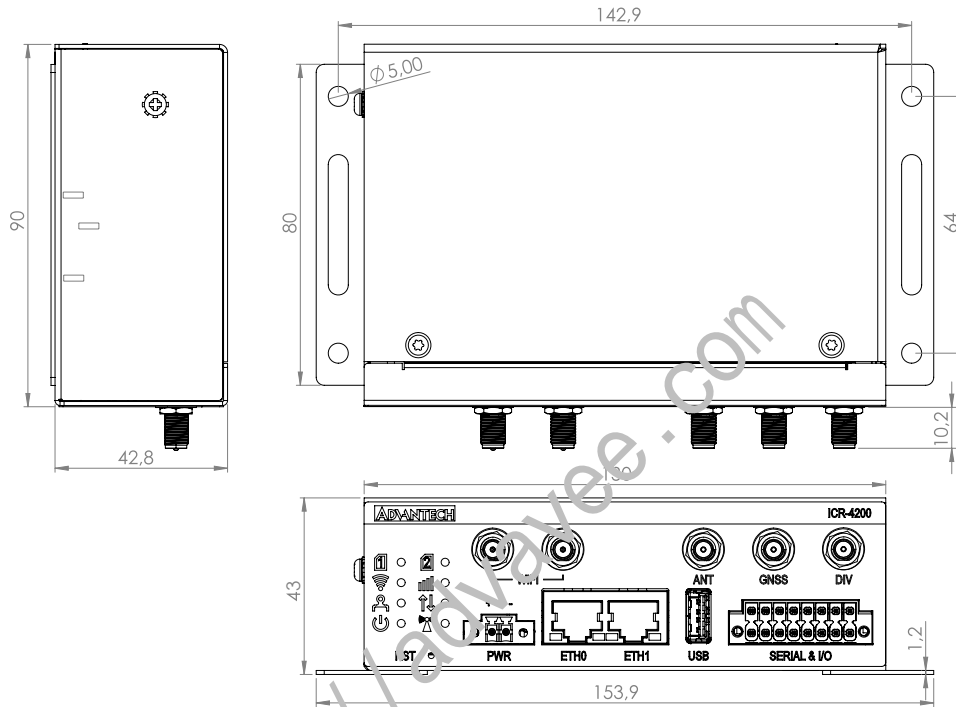
RIGHT SIDE VIEW



Dimensions - Technical Drawing

Unit: mm

Wall Mount



DIN Holder

