

ICR-3231

Industrial 4G Router & IoT Gateway



- LTE Cat.4 with 3G/2G fallback
- Powerful CPU with 1.3 GB storage to host customer SW applications
- 2× SIM with cover
- 2× Ethernet 10/100, 1× RS232, 1× RS485 and I/O
- Robust metal cover with DIN and Wall mount options
- Operational temperature range from -40 °C to +75 °C
- Backup real time clock
- Sleep mode & Power ignition
- Optional Wi-Fi 802.11ac, 2×2 MIMO
- Optional Bluetooth v5.1 (class 1)
- Optional GNSS receiver
- E-Mark and EN 50155 Railway compliance

Project-based customization: Chip SIM (MFF2)

Introduction



The ICR-3200 4G LTE gateway is the perfect way to connect IP or serial devices via a cellular network. Industrial M2M and IoT applications include SCADA, industrial PCs, HMIs, traffic controllers, CCTV, meters, kiosks, UPS systems, and much more.

With LTE Cat. 4 upload speeds of up to 50 Mbps and download speeds of up to 150 Mbps, the router provides ample bandwidth for high data-demand applications. The device has two SIM card readers for carrier failover redundancy. As an addition the router can be customized for using an embedded SIM.

In addition to its two independent Ethernet ports, serial ports RS232 and RS485, ICR-3200 has built-in digital I/O connectivity, a backup real-time clock, and sleep mode support.

An optional built-in Wi-Fi module is available, supporting 802.11a/b/g/n/ac modes and MIMO, and Bluetooth v5.1. An optional built-in GNSS chipset provides accurate positioning information for the router.

The ICR-3200 places intelligence at the network edge with a powerful Cortex A8 CPU at 1GHz, 512 MB RAM, and 4 GB EMMC FLASH memory in pSLC mode for a long lifetime and critical industrial applications. 1.3 GB of memory space is allocated for customer SW applications and data.

With an open Linux-based ICR-OS operating system and wide possibilities of programming customer SW applications in Python, C/C++ or browser-based flow editor Node-RED, or even Docker containers the ICR-3200 offers a real open development platform for Industrial IoT applications.

The Advantech existing Router App library (User modules) with apps already developed to enhance specific router functionality including industrial protocol conversions and support of IoT platforms such as MS Azure, Cumulocity, and others are supported on the router.

The router supports VPN tunnel creation using various protocols to ensure safe communications. The router provides diagnostic functions which include automatic monitoring of the wireless and wired connections, automatic restart in case of connection losses, and a hardware watchdog that monitors the router status.

The ICR-3200 is easy to manage using WebAccess/DMP a full-featured, cloud-based platform for device management, provisioning, and monitoring. It is ideal for mass deployment and VPN management, enabling secure remote access.

The models ICR-3200-EL support EdgeLink. The comprehensive software platform enables easy integration of industrial protocols and secure and flexible data acquisition. This helps users optimize industrial operations and ensure reliable, secure connectivity between field devices and cloud or SCADA/MES systems.



Order Codes

| Model no. - Order Codes | Region | 2× Ethernet | RS232 RS485 | I/O | LTE ANT + DIV | 2× SIM | GNSS | WiFi 802.11ac | Bluetooth v5.1 (class1) | EdgeLink Support |
|-------------------------|--------|-------------|-------------|-----|---------------|--------|------|---------------|-------------------------|------------------|
| ICR-3231 | EMEA* | ✓ | ✓ | ✓ | ✓ | ✓ | | | | |
| ICR-3231W | EMEA* | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | ✓ | |
| ICR-3231-EL | EMEA* | ✓ | ✓ | ✓ | ✓ | ✓ | | | | ✓ |

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

Vertrieb durch


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Industrial Cellular Routers & Gateways

ICR-3231

Specifications

| System | |
|----------------|--|
| CPU | Cortex-A8, 1000 MHz |
| Memory | RAM – 512 MB eMMC – 4096 MB (838 MB for Router Apps, 512 MB for customer data) |
| Watchdog | HW Watchdog |
| RTC | Battery backup RTC |
| Interfaces | |
| Ethernet | 2x Ethernet, RJ45, 10/100 Mbps, Isolation 1.5 kV |
| Serial Lines | 1x RS232 (Tx, Rx, RTS, CTS, GND) 1x RS485 (A(-), B(+), GND) (10-pin terminal block) |
| I / O | 1x Digital Input 1x Digital Output (10-pin terminal block) |
| Reset Button | Reboot / Factory reset |
| LED Indicators | System, 3-level signal strength, Data activity, SIM1/SIM2 status, 2G/3G/4G technology, User, ETH |

| Bluetooth - optional | |
|----------------------|--|
| Antenna | Shared R-SMA WiFi antenna connector |
| Version | Bluetooth 5.1, class 1 (Bluetooth Low Energy), Bluetooth@SIG Qualification |
| Data rate | 1 Mbps (GFSK), 2 Mbps (π/4-DQPSK), 3 Mbps (8-DPSK) |

| Environmental | |
|--------------------------|---|
| Power Supply | 9 – 36 V DC (2-pin terminal block) |
| Consumption | With WiFi: Idle 2.5 W / Average 4 W / Maximum 11 W HW Rev 1.0 With WiFi: Idle 2.6 W / Average 4.3 W / Maximum 5.8 W HW Rev 2.0 |
| Sleep Mode | Yes, 100 mW HW Rev 1.0 , 20 mW HW Rev 2.0 |
| Operating Temperature | -40 to +75 °C |
| Storage Temperature | -40 to +85 °C |
| Humidity | 5 to 95 % |
| IP Cover | IP30 |
| Physical Characteristics | |
| Dimensions | 31.2 × 94 × 129 mm |
| Enclosure | Metal Case, Grounding Screw |
| Mounting | Wall Mount kit, DIN Rail |
| Weight | ICR-3231 - 457g ICR-3231W - 477g |

| WiFi - optional | |
|-----------------|---|
| Antenna | 2x R-SMA connectors, 2x2 MIMO |
| Standards | IEEE802.11 ac/a/b/g/n 2.4 GHz / 5 GHz |
| Security | WEP, WPA, WPA2, WPA3, 802.1X |
| Modes | Access Point (unlimited clients), Station, Multirole STA & AP |

| GNSS - optional | |
|----------------------|-------------------------------------|
| Antenna | Active, 1x SMA connector |
| Systems | GPS, GLONASS, BeiDou, Galileo, QZSS |
| Protocol | NMEA |
| Ac Time-to-First-Fix | Cold 35 s, Warm 26 s |

| Standards & Regulations | |
|----------------------------|---|
| Radio | EN 301 511, EN 301 908-1, EN 301 908-2, EN 301 908-13, EN 303 413, EN 301 893, EN 300 328 |
| EMC | EN 301 489-1, EN 301 489-19, EN 301 489-52, EN 301 489-17, EN 61000-6-2 |
| Safety | UL/EN/AS/NZS 62368-1 |
| Cybersecurity | EN 18031-1 |
| Mechanical | 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, MIL-STD-810G, SAE J1455 |
| Transportation | E-Mark certified, EN 45545-2 |
| Railway | EN50155 Railway compliance |
| National | CE, UKCA |
| Environmental | REACH, RoHS3 and WEEE compliant |
| Cellular Module Approvals* | Regulatory: GCF, CE, NCC, RCM Carrier: Deutsche Telekom, British Telecom |

*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.

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| 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, IPsec with IKEv1 and IKEv2, GRE, L2TP, PPTP Authentication – RADIUS, TACACS+, 2FA, *SCEP Encryption – DES, 3DES, AES, RSA up to 4096, Ed25519, 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 Monitoring, Management & VPN Platform *EdgeLink – Platform enables easy integration of industrial protocols and secure and flexible data |

*Functionality is available with installed Router App

| Cellular Interface | |
|-----------------------|---|
| SIM Slots | 2x SIM (Mini SIM – 2FF) with cover, *1x Chip SIM (MFF2) |
| Antennas | 2x SMA connector (1x Main, 1x Diversity) |
| LTE Parameters | Cat.4, 3GPP E-UTRA Release 11 Supported FDD frequencies: B1 (2100 MHz), B3 (1800 MHz), B7 (2600 MHz), B8 (900 MHz), B20 (800 MHz), B28A (700 MHz) Transfer rate: 150 Mbps (DL), 50 Mbps (UL) Supported TDD frequencies: B38 (2600 MHz), B40 (2300 MHz), B41 (2500 MHz) Transfer rate: 130 Mbps (DL), 35 Mbps (UL) |
| HSPA+/UMTS Parameters | Supported frequencies: B1 (2100 MHz), B8 (900 MHz) Transfer rate: 42 Mbps (DL), 5.76 Mbps (UL) |
| EDGE/GPRS Parameters | Supported frequencies: B3 (1800 MHz), B8 (900 MHz) Transfer rate: 236.8 kbps (DL), 236.8 kbps (UL) |

*Project-based customization

Accessories

| Part Number | Description | Included in the package | Optional |
|------------------|--|-------------------------|----------|
| | Wall mount kit | ✓ | |
| BB-DIN-ICR32 | DIN clip | ✓ | |
| BB-CON-ICR32-10 | Serial / IO connector | ✓ | |
| BB-CON-WR2 | PWR connector | ✓ | |
| ANT-LTE5G-025 | Antenna 5G/LTE, Terminal (2 pcs are recommended for full cellular performance) | | ✓ |
| OPT1-ANT-WFT-06 | Antenna Wi-Fi, 2.4 GHz / 5 GHz / 6 GHz (2 pcs are recommended for full 2x2 MIMO performance) | | ✓ |
| OPT1-ANT-GNS-20 | Antenna GPS/GLONASS, magnetic, cable 2m, SMA-M | | ✓ |
| OPT1-RPS-1212-EU | Power Supply, 12V/1A, Open wires, EU plug | | ✓ |
| OPT1-RPS-1212-UK | Power Supply, 12V/1A, Open wires, UK plug | | ✓ |
| OPT1-RPS-1212-US | Power Supply, 12V/1A, Open wires, US plug | | ✓ |

For more accessories (Antennas, Power Supplies) visit www.advantech.com

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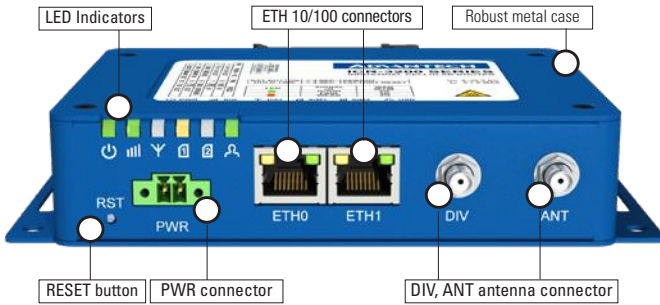
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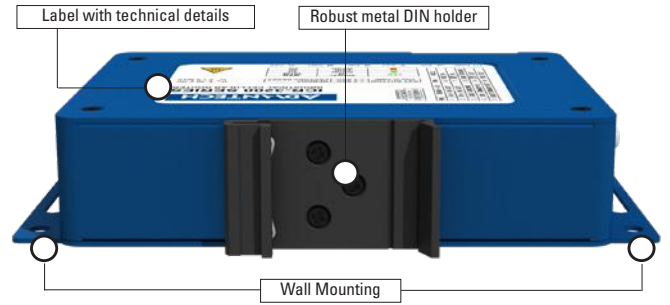
ICR-3231

Views

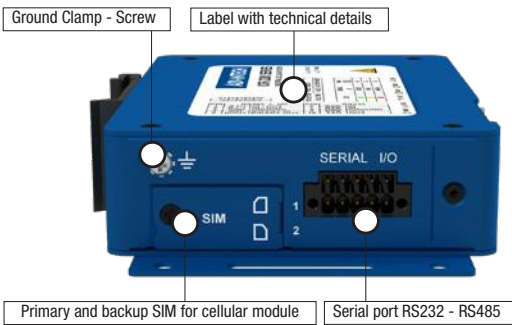
FRONT VIEW



REAR VIEW



LEFT SIDE VIEW



RIGHT SIDE VIEW

ICR-3231 - VERSION WITHOUT WIFI AND GPS



LEFT SIDE VIEW ROUTER WITHOUT SIM COVER



RIGHT SIDE VIEW

ICR-3231W - VERSION WITH WIFI AND GPS



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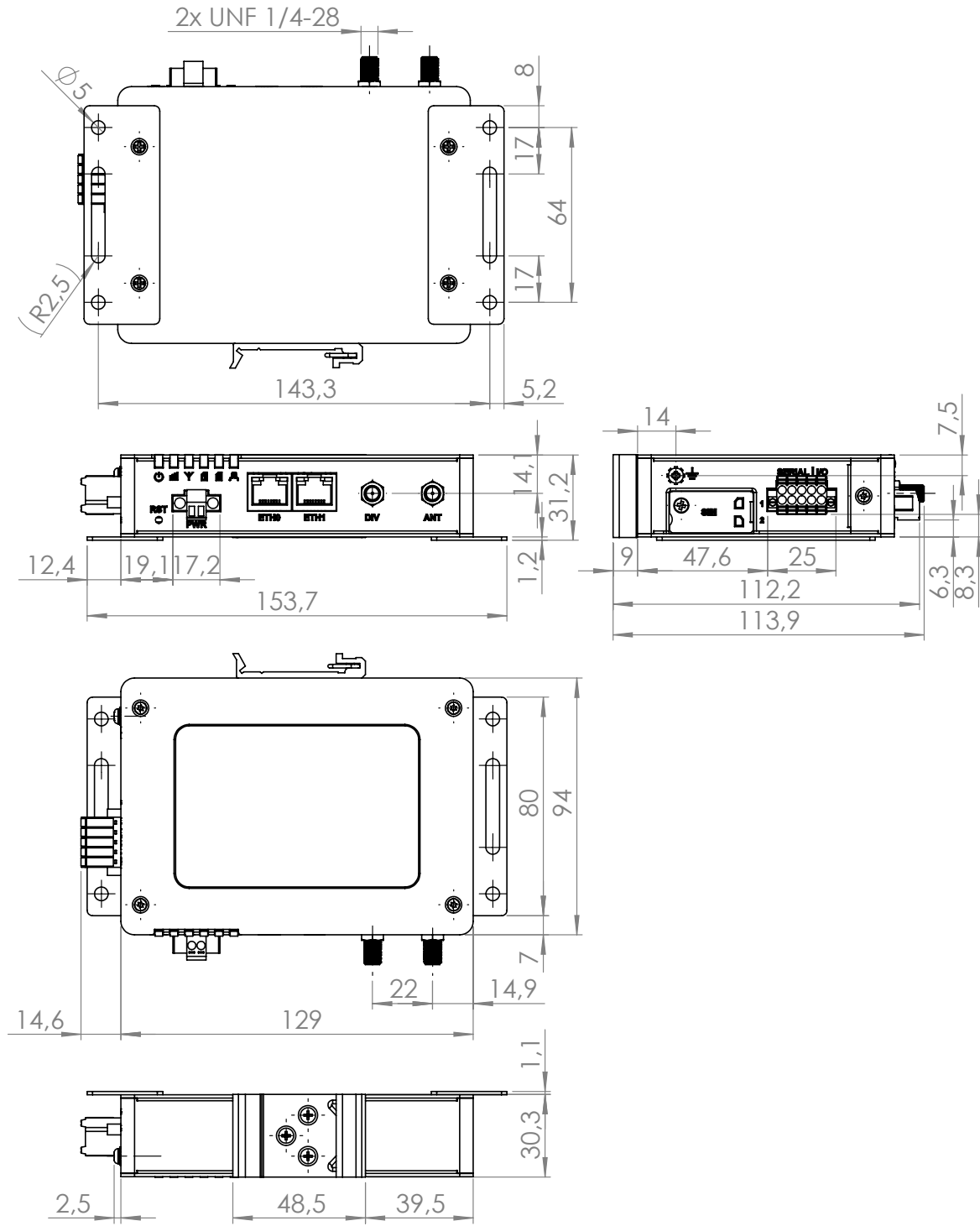
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Dimensions - Technical Drawing

Unit: mm



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