

## ICR-3211B

### Industrial LTE Cat M1 & NB-IoT Router & Gateway



- Industrial IoT LPWAN Gateway
- Global LTE Cat.M1 & NB-IoT coverage with GSM fallback
- Powerful CPU with 1.3 GB storage to host customer SW applications
- 2x SIM with cover, eSIM ready
- 2x Ethernet 10/100, 1x RS232, 1x 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
- EN 50155 Railway compliance
- Last-gasp Supercapacitor

Project based customization: Chip SIM (MFF2)

## Introduction



The ICR-3211B industrial cellular gateway is designed for wireless communication in Category M1 (LTE-M) as well as Narrowband Internet of Things (NB-IoT) services on the cellular LTE networks.

LTE Cat M1 is a low-power wide-area (LPWA) air interface that lets you connect IoT and M2M devices with medium data rate requirements (375 kbps upload and download speeds in half-duplex mode). 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-3211B has built-in digital I/O connectivity, backup real-time clock and sleep mode support. The built-in Last-gasp supercapacitor ensures safe sending out of information about a power failure or transferring last processed data.

The ICR-3211B 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-3211B offers a real open development platform for Industrial IoT applications.


The Advantech existing Router App library 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's status.

The ICR-3211B 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.



## Order Codes

| Model no. - Order Codes   | Region  | 2x Ethernet | RS232 RS485 | I/O | LTE ANT | 2x SIM | LAST-GASP |
|---|---------|-------------|-------------|-----|---------|--------|-----------|
|  ICR-3211B | Global* | ✓           | ✓           | ✓   | ✓       | ✓      | ✓         |

\* - 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

### Specifications

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

| Environmental            |                                      |
|--------------------------|--------------------------------------|
| Power Supply             | 9 – 36 V DC (2-pin terminal block)   |
| Consumption              | Idle 2.5 W / Average 4 W / Peak 11 W |
| Sleep Mode               | Yes, 100 mW                          |
| 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-3211B, ICR-3211B-DMP - 457g      |

| Cellular Interface   |   |
|----------------------|---|
| SIM Slots            | 2× SIM (Mini SIM – 2FF) with cover, *1× Chip SIM (MFF2)   |
| Antennas             | 1× SMA connector  |
| LTE Parameters       | Cat M1 (LTE-M) / NB-IoT (cat. NB1)<br>FDD frequencies: B1 (2100 MHz) B2 (1900 MHz), B3 (1800 MHz), B4 (1700 MHz), B5 (850 MHz), B8 (900 MHz), B12, B13 (700 MHz), B18, B19 (850 MHz), B20 (800 MHz), B26 (850 MHz), B28 (700 MHz)<br>TDD frequencies: B39 (1900 MHz) Cat M1 only<br>Transfer rate Cat M1: 375 Kbps (DL), 375 Kbps (UL)<br>Transfer rate Cat NB1: 32 Kbps (DL), 70 Kbps (UL) |
| EDGE/GPRS Parameters | Supported frequencies: B2 (1900 MHz), B3 (1800 MHz), B5 (850 MHz), B8 (900 MHz)<br>Transfer rate: 296 Kbps (DL) / 236,8 Kbps (UL)   |

\* Project-based customization

| Standards & Regulations    |  |
|----------------------------|--|
| Radio                      | PTCRB, EN 301 511, EN 301 908-1, EN 301 908-13, EN 303 413   |
| EMC                        | EN 301 489-1, EN 301 489-19, EN 301 489-52, EN 61000-6-2, EN 61000-6-4, FCC 15.107Class B, FCC 15.109 Class B, IC  |
| Safety                     | EN 60 950-1:2006 + A11:2009 + A1:2010 + A12:2011 + A2:2013 + AC:2011   |
| Cybersecurity              | EN 18031-1   |
| Mechanical                 | EN 60068-2-27, EN 60068-2-64, EN 60068-2-64, MIL-STD-810G, SAE J1455   |
| Climatic                   | EN 60068-2-2, EN 60068-2-1, EN 60068-2-14, EN 60068-2-78, MIL-STD-810G, SAE J1455  |
| Transportation             | EN 45545-2   |
| Railway                    | EN 50155 compliant   |
| Carrier Approval           | Verizon, AT&T  |
| National                   | FCC, IC, CE, UKCA  |
| Environmental              | REACH, RoHS3 and WEEE compliant  |
| Cellular Module Approvals* | Regulatory: GCF, CE, FCC, PTCRB, IC, Anatel, IFETEL, CCC, KC, NCC, JATE/TELEC, RCM, NBTC, IMDA<br>Carrier: Vodafone, Deutsche Telekom, Telefónica, Verizon, AT&T, T-Mobile, Sprint, U.S. Cellular, Rogers, Telus, SKT, LGU+, NTT DOCOMO, SoftBank, KDDI, Telstra |

\*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.

| 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)<br>VPN Tunneling – WireGuard, OpenVPN, IPsec with IKEv1 and IKEv2, GRE, L2TP, PPTP<br>Authentication – RADIUS, TACACS+, 2FA, *SCEP<br>Encryption – DES, 3DES, AES, RSA up to 4096, Ed25519, MD5, SHA |
| Firmware Management               | Automatic firmware updates – server, locally via LAN or remotely via WAN<br>Over-the-Air cellular module firmware updates   |
| Diagnostic/Log                    | Status – Signal Strength, Data Usage, Detailed Long Term Statistics<br>One CLICK report – Current Configuration, Factory Identification, Routing Table<br>Log – System Log, Reboot Log, Kernel Log<br>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)<br>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           | <a href="#">WebAccess/DMP</a> – Remote Monitoring, Management & VPN Platform  |

\*Functionality is available with installed Router App

## 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                  |                         | ✓        |
| BB-RPS-v2-WR2-EU  | Wall mount Power Supply 12V/1A, EU plug  |                         | ✓        |
| BB-RPS-v2-WR2-UK  | Wall mount Power Supply 12V/1A, UK plug  |                         | ✓        |
| BB-RPS-v2-WR2-US  | Wall mount Power Supply 12V/1A, US plug  |                         | ✓        |
| BB-RPS-v2-WR2-AUS | Wall mount Power Supply 12V/1A, AUS plug |                         | ✓        |

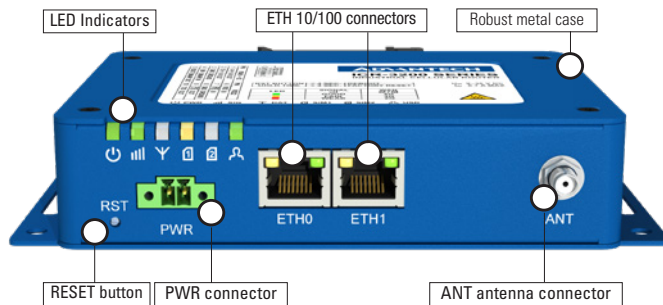
For more accessories (Antennas, Power Supplies) visit [www.advantech.com](http://www.advantech.com)

# Industrial Cellular Routers & Gateways

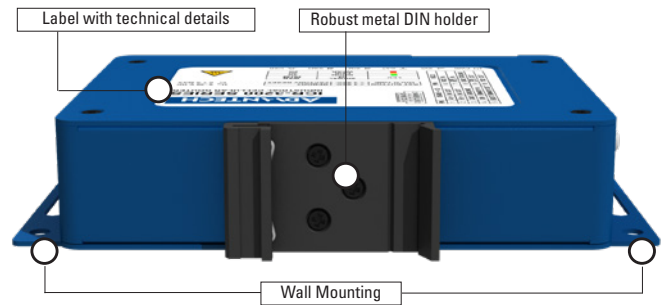
ICR-3211B

## Views

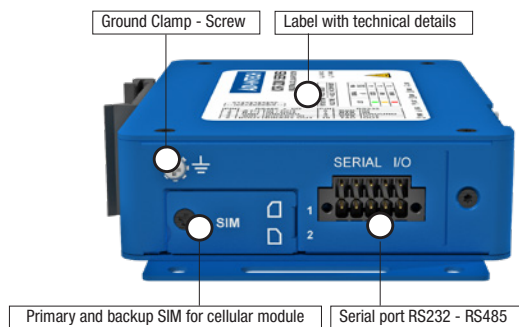
### FRONT VIEW



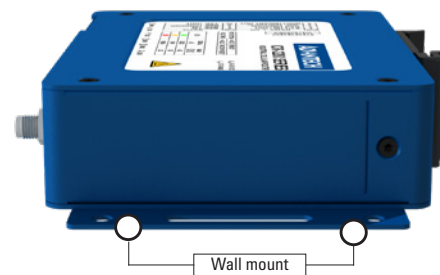
### REAR VIEW



### LEFT SIDE VIEW



### RIGHT SIDE VIEW



### LEFT SIDE VIEW ROUTER WITHOUT SIM COVER



### Dimensions - Technical Drawing

Unit: mm

