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, 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
- 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 is ready to use internal eSIM (Customization).

In addition to its two independent Ethernet ports, serial ports RS232 and RS485, ICR-3200 has built-in digital I/O connectivity, backup real-time clock and sleep mode support. An optional built-in modules WiFi with 802.11a,b,g,n,ac modes, 2×2 MIMO support and Bluetooth v5.1 are available. Optional built-in GNSS chipset provides information about the accurate position of 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.

ICR-3200 is easy to manage using WebAccess/DMP, full-featured cloud-based management, provisioning, and monitoring tool for mass deployment.

The WebAccess/VPN is a perfect way how to create secure virtual private networks on the Internet.

















Vertrieb durch



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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)
7000 a	ICR-3231	EMEA*	✓	✓	✓	✓	✓			
TRA ST	ICR-3231W	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





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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	2× Ethernet, RJ45, 10/100 Mbps, Isolation 1.5 kV	
Serial Lines	1× RS232 (Tx, Rx, RTS, CTS, GND) 1× RS485 (A(-), B(+), GND) (10-pin terminal block)	
1/0	1× Digital Input 1× 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 (σ/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 With WiFi: Idle 2.6 W / Average 4.3 W / Maximum 5.8 W				
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	2× R-SMA connectors, 2×2 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	Shared R-SMA WiFi antenna connector			
Versions	Bluetooth 5.1, class 1 (Bluetooth Low Energy), Bluetooth®SIG Qualification			
Data rates	1 Mbps (GFSK), 2 Mbps (σ/4-DQPSK), 3 Mbps (8-DPSK)			

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			
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 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, *EasyVPN, IPsec with IKEv1 and IKEv2, GRE, L2TP, PPTP Authentication – RADIUS, TACACS+, *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

Cellular Interface	Cellular Interface				
SIM Slots	2× SIM (Mini SIM – 2FF) with cover, *1× Chip SIM (MFF2)				
Antennas 2× SMA connector (1× Main, 1× 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

		Included in the package	Optional
Part Number	Description		
	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		✓
OPT1-ANT-WFT-06	Antenna WiFi, Terminal		✓
OPT1-ANT-GNS-20	Antenna GNSS, Magnetic mount		✓
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		✓

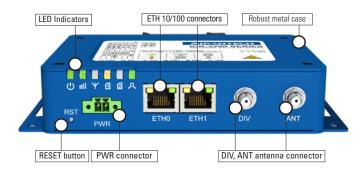
For more accessories (Antennas, Power Supplies) visit www.advantech.com



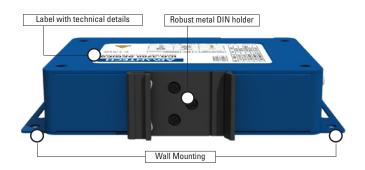
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Views

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

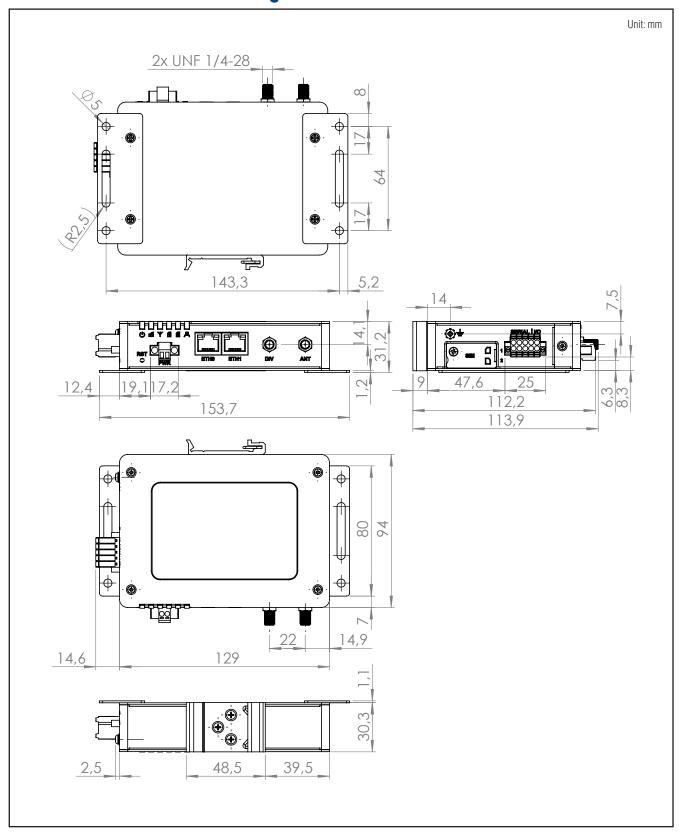
ICR-3231W - VERSION WITH WIFI AND GPS





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Dimensions - Technical Drawing





ICR-3231W

Dimensions - Technical Drawing

