

ICR-3201

Industrial IoT LAN Router & Gateway



- LAN VPN Gateway for Industrial IoT applications
- Powerful CPU with 1.3 GB storage to host customer SW applications
- 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)
- E-Mark and EN 50155 Railway compliance

Introduction



The ICR-3201 wired router & gateway is the perfect way to connect IP or serial devices to a LAN network via WAN interface. Industrial M2M and IoT applications include kiosks, industrial PCs, HMIs, traffic controllers, meters, UPS systems, and much more.

In addition to its two independent Ethernet ports, serial ports RS232 and RS485, ICR-3201 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.

The ICR-3201 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-3201 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-3201 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*	2× Ethernet	RS232 RS485	I/O	WIFI 802.11ac	2× MIMO	Bluetooth v5.1 (class1)
ICR-3201	GLOBAL	✓	✓	✓			
ICR-3201W	GLOBAL	✓	✓	✓	✓	✓	✓

* - Importer/operator needs to check locale legislation (standards, national 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 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)
I / O	1× Digital Input 1× Digital Output (10-pin terminal block)
Reset Button	Reboot / Factory reset
LED Indicators	System, Data activity, 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 / Peak 11 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-3201 - 457g ICR-3201W - 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

Standards & Regulations	
Radio	EN 301 893, EN 300 328
EMC	EN 301 489-1, EN 301 489-17, AS/NZS CISPR 32, FCC Part 15 Subpart B, ICES-003 Issue 6, 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, EN 45545-2
Railway	EN 50155 compliant
National	CE, UKCA, FCC, IC, RCM compliant
Environmental	REACH, RoHS3 and WEEE compliant

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

*Functionality is available with installed Router App

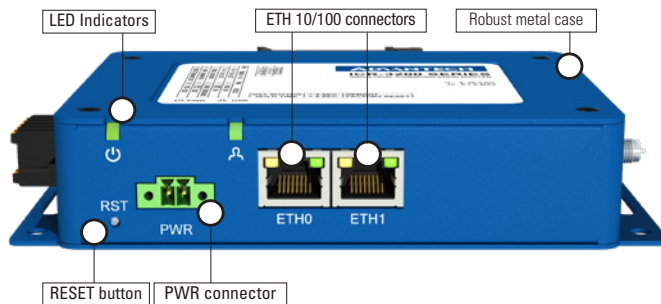
Accessories

		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	✓	
OPT1-ANT-WFT-06	Antenna Wi-Fi, 2.4 GHz / 5 GHz / 6 GHz (2 pcs are recommended for full 2x2 MIMO performance)		✓
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		✓
OPT1-RPS-1212-AUS	Power Supply, 12V/1A, Open wires, AUS plug		✓

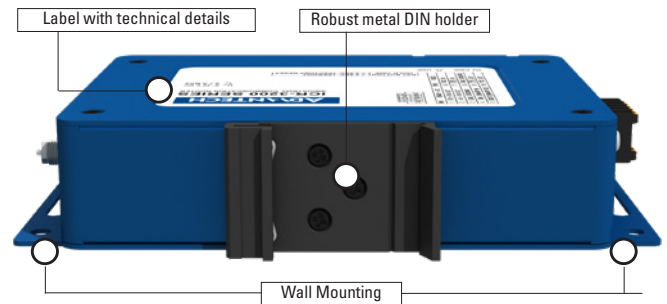
For more accessories (Antennas, Power Supplies) visit www.advantech.com

Views

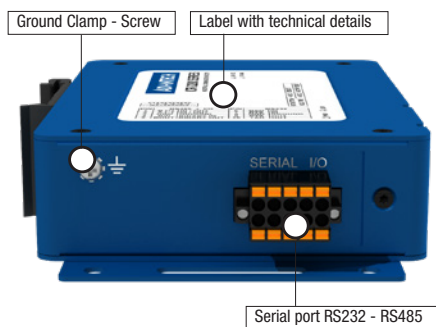
FRONT VIEW



REAR VIEW



LEFT SIDE VIEW

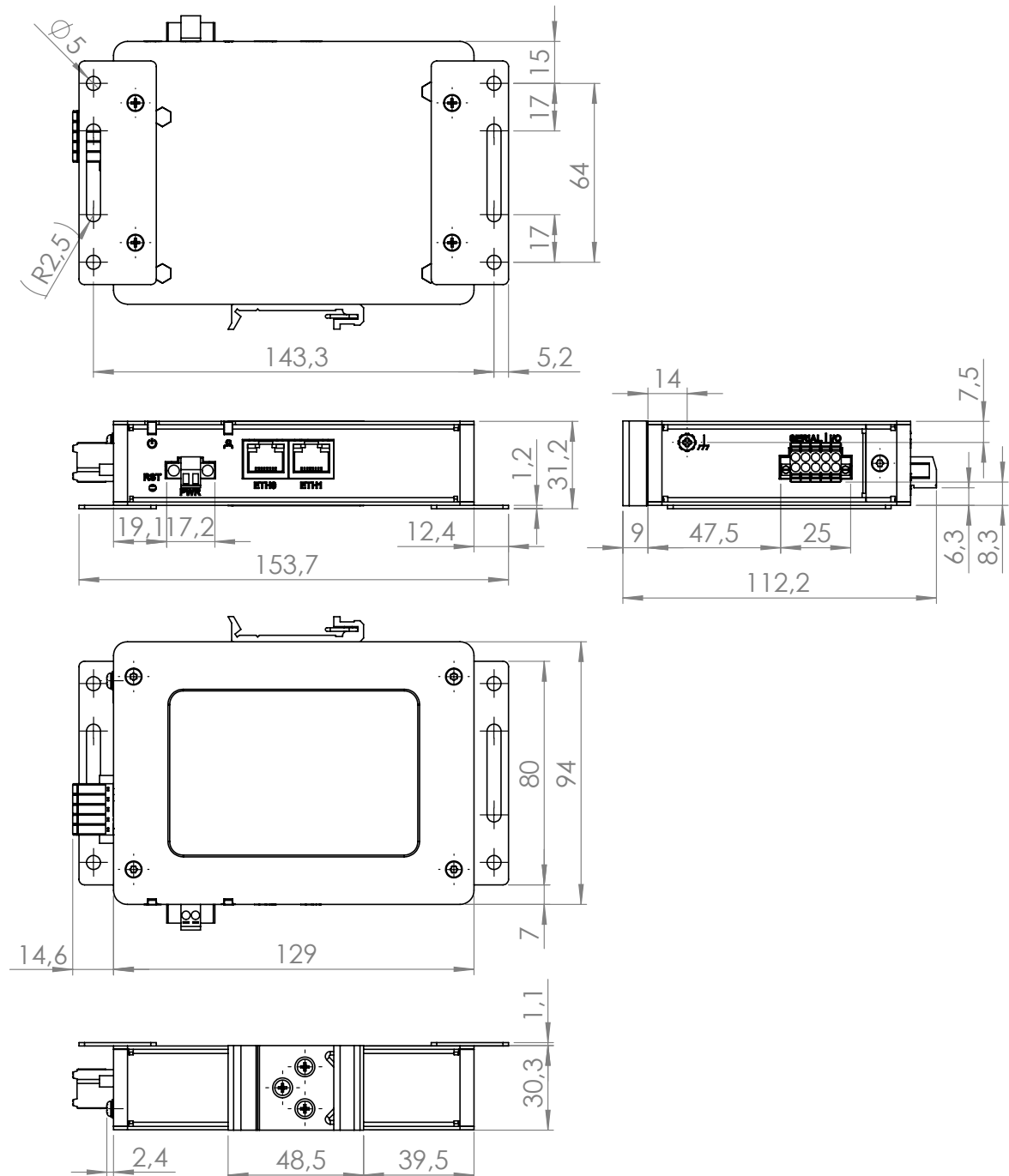


RIGHT SIDE VIEW



Dimensions - Technical Drawing

Unit: mm



Dimensions - Technical Drawing

Unit: mm

