

ICR-2452 RedCap

Entry-Level 5G Router



Features

- 5G RedCap with LTE fallback
- 2× SIM for redundancy
- 2× Ethernet 10/100 Mbps
- 1× RS232, 1× RS485
- 1× DI, 1× DO
- Wide operational temperature range
- Wall and DIN mount options
- Linux based OS & SW customization
- Optional WiFi 802.11n
- Optional GNSS receiver



Introduction

The ICR-2452 industrial cellular router is designed for wireless communication in mobile networks, supporting 5G RedCap (Reduced Capability) in 5G Standalone (SA) with fallback to LTE. This combination ensures reliable, high-performance connectivity for a wide range of industrial and IoT applications.

With 5G RedCap, the router delivers improved responsiveness, lower latency, and optimized throughput for mid-range data needs. It supports peak downlink speeds of up to 223 Mbps and uplink speeds of up to 123 Mbps, depending on network conditions and available spectrum. Thanks to LTE fallback, the ICR-2452 provides a future-proof solution, enabling immediate deployment while ensuring long-term compatibility as 5G networks become more widely available. This makes it ideal for applications such as remote monitoring, industrial automation, smart infrastructure, and energy systems.

The router is equipped with two independently configurable Ethernet ports (LAN or WAN), 1x serial port RS232, 1x RS485, and with digital I/O connectivity (1x DI, 1x DO). Optional built-in WiFi 802.11 ac/a/b/g/n with AP, Client, and Multirole modes or optional integrated GNSS functionality is available.

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. With open Linux platform and wide possibilities of programming customer SW applications in Python, C/C++. The Advantech existing app library Router Apps (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 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.



ICR-OS

WebAccess/DMP





RouterApp



python™



Order Codes

Model no. - Order Codes		REGION	2× Ethernet 10/100 Mbps	RS232 RS485	I/O	1× ANT 1× DIV	2× SIM	WiFi	GNSS (Passive)
	ICR-2452G	EMEA	✓	✓	✓	✓	✓		✓
	ICR-2452W	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.

Specifications

System	
CPU	ARM926EJ-S, 600 MHz
Memory	RAM - 128 MB NOR Flash - 64 MB (12 MB for Router Apps, 2 MB for customer data)
Watchdog	HW Watchdog
RTC	Battery backup RTC
Interfaces	
Ethernet	2× Ethernet (1+ 1), RJ45, 10/100 Mbps
Serial Lines	1× RS232 (Tx, Rx, GND, RTS, CTS) 1× RS485 (A(-), B(+), GND) (7-pin terminal block)
I / O	1× Digital Input (48 V / 0.5 mA) 1× Digital Output (Open Drain, 48 V / 100 mA) (6-pin terminal block together with PWR)
Reset Button	Reboot / Factory reset
LED Indicators	System, Signal strength, Data activity, SIM1/SIM2 status, 2G/3G/4G technology, Input, Output, User, ETH

Environmental	
Power Supply	9 – 48 V DC
Consumption	ICR-2452G: Idle 2.1 W / Average 2.5 W / Maximum 3.4 W ICR-2452W: Idle 2.3 W / Average 2.7 W / Maximum 3.7 W
Operating Temperature	-40 to +75 °C
Storage Temperature	-40 to +85 °C
Humidity	5 to 95 %, non-condensing
IP Cover	IP30
Physical Characteristics	
Dimensions	103 mm x 95 mm x 25 mm
Enclosure	Metal Case, Grounding Screw
Mounting	Wall mount, * Optional DIN Rail mount
Weight	ICR-2452G: 345 g ICR-2452W: 355 g

WiFi - ICR-2452W	
Antenna	1× R-SMA connector
Standards	IEEE802.11 ac/b/g/n 2.4 GHz / 5 GHz
Security	WEP, TKIP, AES, WPA, WPA2, WPA3, 802.1X
Modes	Access Point (up to 8 clients), Station, Multirole STA & AP

GNSS - ICR-2452G	
Antenna	1× SMA connector, Passive antenna only
Systems	GPS, GLONASS, BeiDou, Galileo, NavIC
Protocol	NMEA 0183
Ac Time-to-First-Fix	Hot start: 1.5 s Warm start: 29.6 s Cold start: 32.1 s

Cellular Interface	
SIM Slots	2× SIM (Micro SIM – 3FF)
Antennas	2× SMA connector (1× Main, 1× Diversity)
5G NR Parameters	Supported frequency bands: 5G SA Bands: n1/2/3/5/7/8/12/13/14/18/20/25/26/28/30/38/40/41/48/66/70/71/77/78/79 Transfer rate: 223 Mbps (DL), 123 Mbps (UL)
LTE Parameters	Supported FDD frequencies: B1/2/3/4/5/7/8/12/13/14/17/18/19/20/25/26/28/30/66/71 Supported TDD frequencies: B34/38/39/40/41/42/43/48 Transfer rate: 150 Mbps (DL), 50 Mbps (UL)

Standards & Regulations	
Radio	EN 301 908-1, EN 301 908-13, EN 301 908-25, EN 301 893, EN 300 328, EN 303 413
EMC	ETSI EN 301 489-1, ETSI EN 301 489-17, ETSI EN 301 489-19, ETSI EN 301 489-52, IEC 61000-6-2, IEC 61000-6-3, EN 61000-4-2, EN IEC 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 55032
Safety	EN IEC 62368-1, IEEE 802.3
Cybersecurity	EN 18031-1
Transportation	
National	CE, UKCA
Mechanical	EN 60529
Climatic	EN 60068-2-1, EN 60068-2-2, EN 60068-2-14, EN 60068-2-30
Environmental	REACH, RoHS3, WEEE

Industrial Cellular Routers & Gateways

ICR-2452 RedCap

Software	
Operating System	ICR-OS (Linux based)
SW Customization	Router App
Application Development	Open Linux, *Python, BASH, C/C++
Industrial Protocols and IoT	*Modbus RTU/TCP gateway, *IEC 60870-5-101 to 104 gateway, *DF1, *DNP3, *MQTT, *LWM2M
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
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 3072, Ed25519, MD5, SHA
Firmware Management	Automatic firmware updates – server, locally via LAN or remotely via WAN
Diagnostic/Log	Status – Signal Strength, Data Usage 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) 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 RouterApp

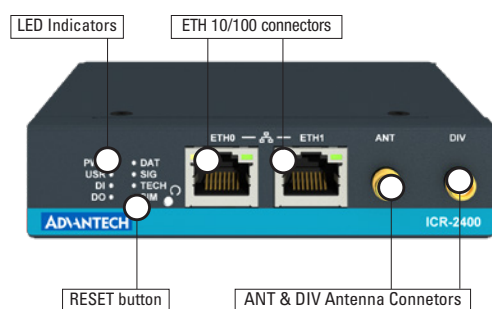
Accessories

Part Number	Description	Included in the package
CON-ICR2-6-PWR	6-pin PWR / IO connector	✓
CON-ICR2-7-SER	7-pin Serial connector	✓
	Wall mount kit	✓
BB-DIN-ICR32	DIN Clip	
BB-KD-ETH	Ethernet cross cable, length 1.5m	
ANT-LTE5G-025	Antenna 5G/LTE, Terminal, SMA-M	
OPT1-ANT-WFT-06	Antenna Wi-Fi, Terminal	
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	
ACC-KIT-ICR2-001	ICR-2000 family accessory kit, 2x 5G/LTE ANT, EU Power Supply, ETH cable	

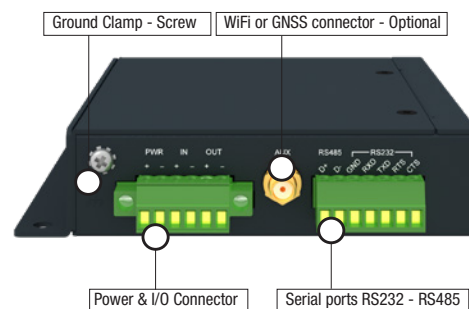
*For more Antenna accessories visit www.advantech.com

Views

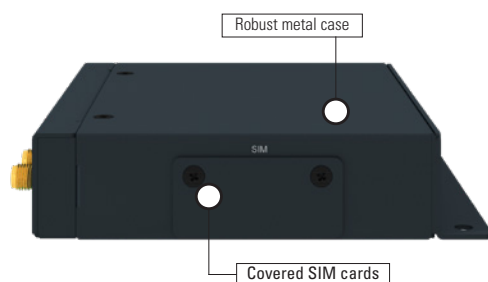
FRONT VIEW



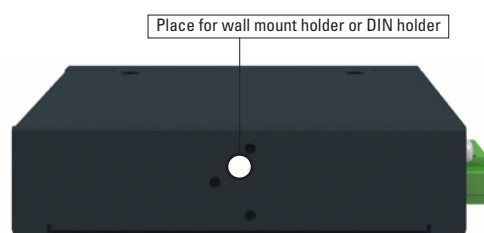
LEFT SIDE VIEW



RIGHT SIDE VIEW



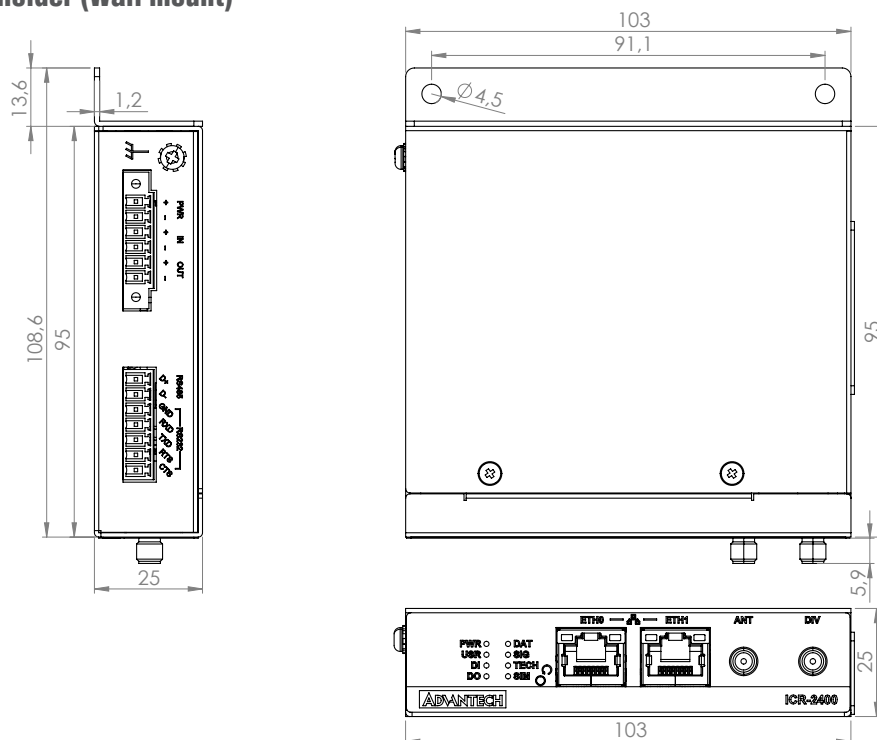
REAR VIEW



Dimensions - Technical Drawing

Version with L holder (Wall mount)

Unit: mm



Version with DIN holder (*Optional Accessories)

