ICR-2412

Entry-Level 4G Router

Features

- LPWA communication Cat-M/Cat-NB/GPRS/EDGE
- 450 MHz support (B31 & B72)
- 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

Introduction

Industrial cellular router ICR-2412 is designed for wireless communication in the LPWA mobile networks LTE Cat-M/Cat-NB with fallback to the traditional 2G GPRS/EDGE network. GPRS/EDGE 2G standard allows deployment at places where LTE Cat-M/Cat-NB signal coverage is still under development.

ICR-2412 is the ideal gateway for global IoT applications because of the large number of cellular frequency bands supported. Among others, the router supports also the European LTE 450 MHz spectrum (bands B31 and B72) that is a key frequency for wireless communication in critical infrastructure e.g. in Energy distribution.

The router is equipped with two independently configurable Ethernet ports (LAN or WAN), 1× serial port RS232, 1× RS485, and with digital I/O connectivity (1× DI, 1× DO). 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.

Router is based on ICR-OS operation system. Open Linux platform enable wide possibilities of programming customer SW applications in Python, C/C++. Router supports uploading of RouterApps (User modules) that would extend standard firmware functionalities. Existing app library ready for free download by customer contains already developed software apps to enhance specific router functionality including industrial protocol conversions, support of IoT platforms such as MS Azure, Cumulocity, ThingWorx and a lot more.

ICR-OS   **WebAccess/VPN**   **RouterApp**

C++   **python™**   **WebAccess/DMP**

Order Codes

Model no. - Order Codes		REGION	2× Ethernet 10/100 Mbps	RS232 RS485	I/O	1× ANT	2× SIM
	ICR-2412	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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All product specifications are subject to change without notice.   Last updated: 25-Jul-2024

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, Mobile technology, Input, Output, User, ETH

Environmental	
Power Supply	9 – 48 V DC (6-pin terminal block together with I/O)
Consuption	Idle 2 W / Average 2.4 W / Maximum 2.9 W
Operating Temperature	-40 to +75 °C
Storage Temperature	-40 to +85 °C
Humidity	5 to 95 %
IP Cover	IP30

Physical Characteristics	
Dimensions	103 mm × 95 mm × 25 mm
Enclosure	Metal Case, Grounding Screw
Mounting	Wall mount, * Optional DIN Rail mount
Weight	345 g

Cellular Interface	
SIM Slots	2× SIM (Micro SIM – 3FF)
Antennas	1× SMA connector (1× ANT)
LTE Parameters	Supported Cat-M frequencies: B1, B2, B3, B4, B5, B8, B12, B13, B14, B18, B19, B20, B25, B26, B27, B28, B31, B66, B72, B85 Transfer rate: 589 Kbps (DL), 1119 Kbps (UL) Supported Cat-NB frequencies: B1, B2, B3, B4, B5, B8, B12, B13, B18, B19, B20, B25, B26, B28, B31, B66, B85 Transfer rate: 127 Kbps (DL), 158,5 Kbps (UL)
EDGE/GPRS Parameters	Supported frequencies: B5 (850), B8 (900), B3 (1800), B2 (1900) Transfer rate: 296 Kbps (DL), 236.8 Kbps (UL)

Standards & Regulations	
Radio	EN 301 511, EN 301 908-1, EN 301 908-13
EMC	EN 301 489-1, EN 301 489-12, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11
Safety	EN 62 368-1, IEC 802.3
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

Accessories

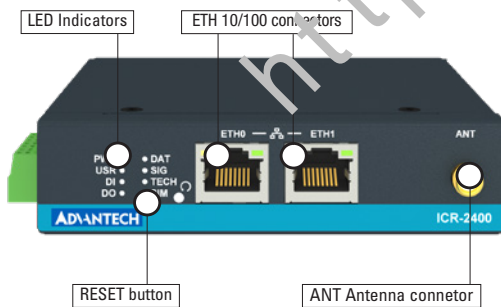| Part Number	Description	Included in the package
CON-ICR2-6-PWR	6-pin PWR / IO connector	✓
CON-ICR2-7-SER	7-pin Serial connector	✓
	Wall mount kit	✓
BB-DIN-ICR32	DIN Clip	
BB-KD-ETH	Ethernet cross cable, lenght 1.5m	
OPT1-ANT-450M-30	Antenna LTE450, Magnetic mount	
RPS-ICR2-EU	Power Supply EU, ICR2, 12V/1A, 6-pin, EU plug	

*For more Antenna accessories visit www.advantech.com

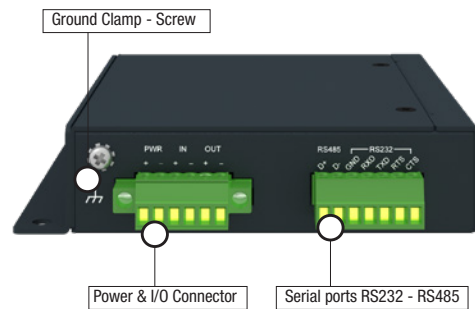| Software	
Operating System	ICR-OS (Linux based)
SW Customization	Router App
Application Development	Open Linux, *Python, BASH, C/C++
Industrial Protocols and IoT	*Modbus RTU/TCP gateway, *IEC 60870-5-101 to 104 gateway, *DF1, *DNP3, *MQTT, *LWM2M
Networking Features and Protocols	DHCP, NAT/PAT, SSH, 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, *EasyVPN, IPsec with IKEv1 and IKEv2, GRE, L2TP, PPTP Authentication – RADIUS, TACACS+, 2FA, *SCEP Encryption – DES, 3DES, AES, RSA, 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 Device Provisioning, Monitoring & Management Platform WebAccess/VPN – Advanced Secure Networking Platform

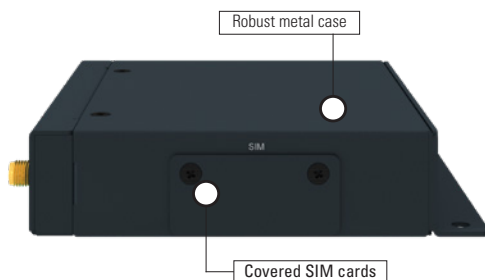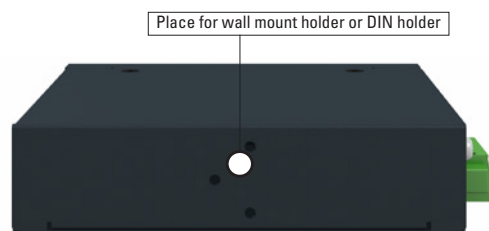*Functionality is available with installed Router App

Views

FRONT VIEW

- LED Indicators
- ETH 10/100 connectors
- RESET button
- ANT Antenna connetor

LEFT SIDE VIEW

- Ground Clamp - Screw
- Power & I/O Connector
- Serial ports RS232 - RS485

RIGHT SIDE VIEW

- Robust metal case
- Covered SIM cards
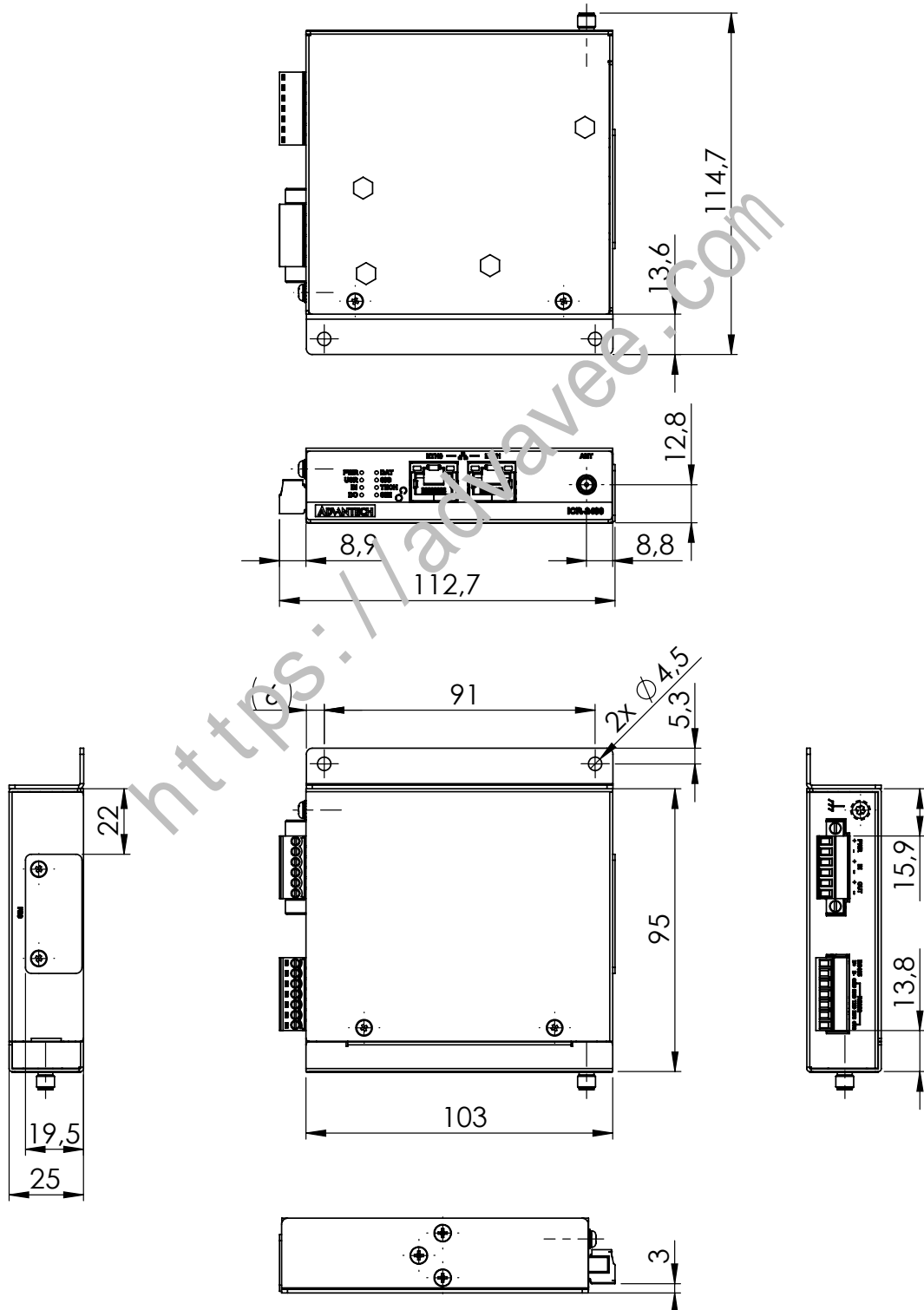
REAR VIEW

- Place for wall mount holder or DIN holder

Dimensions - Technical Drawing

Version with L holder (Wall mount)

Unit: mm

Dimensions - Technical Drawing

Version with DIN holder (*Optional Accessories)