

ICR-4401

High Speed Wired Router & Powerfull Edge Computing Gateway



Features

- Quad-core CPU with 1 GB RAM
- 5x Gigabit Ethernet (Optional 4x POE+ PSE)
- SFP Connector for SFP modules up to 10 Gbps
- TPM 2.0
- RS232, RS485, CAN BUS, 2x DI, 2x DO, USB Host
- Micro SD Card
- Robust metal cover with wall and DIN mount options
- Wide operational temperature range
- Optional Dual-Band Wi-Fi

Project based customization: SSD disc, Dual Concurrent WiFi AP, Bluetooth



Introduction

The ICR-4401 is a High-Speed Wired Router & Powerful Edge Computing Gateway. This router is an ideal solution for critical industrial systems and IIoT. It serves well also for connection of traffic and security camera systems, individual computers, LAN networks and various self-service terminals.

The new router platform "v4" provides intelligence at the network edge with an extremely powerful Cortex A72 CPU at 1200 MHz, 4 GB eMMC memory, 4 MB flash memory, and 1024 MB RAM. The focus on high security underlines using TPM 2.0, and Tamper Button that ensure safe use in critical infrastructure systems. The ICR-4401 is powered by the ICR-OS Linux operating system that provides a wide range of enhanced networking features. A secure Web interface allows users to configure and manage routers from remote locations.

The router supports multiple configuration profiles, automatic firmware updates, etc. The router can be used as a powerful edge computing gateway because of the support of many ways of software customization. Users may insert Linux scripts and add new features by additional applications called Router Apps (User Modules).

There is an existing free library of Router Apps or the user may create own app using Advantech SDK. The gateway can easily run applications like Node-RED or Docker that open the way to a multi-container world.






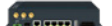
The ICR-4401 is designed and manufactured for use in tough environmental conditions. Specifications include a wide operating temperature ranges from -40 to +75 °C. It accepts input voltage range from 9 V DC to 48 V DC and is equipped with sleep mode for reducing electrical consumption.

As a standard, ICR-4401 is equipped with five Ethernet 10/100/1000 Mbps (1x independent and 4x switch), SFP cage (independent port), one USB host 2.0, microSD reader, serial lines RS232 and RS485, CAN Bus, two binary inputs, and two binary outputs. ICR-4401 has two mPCIe connectors that can be used for two WiFi modules. The router is supplied in a robust metal casing for a wall mount (DIN mount is optional).

ICR-4401 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.



WebAccess/DMP WebAccess/VPN

| Model no. - Order Codes | REGION | 5x Gigabit Ethernet | 4x PoE PSE+ | SFP cage (up to 10 Gbps) | RS232 RS485 CAN BUS | I/O | WiFi 802ac | Operating Temperature |
|---|---------|---------------------|-------------|--------------------------|---------------------|-----|------------|-----------------------|
|  ICR-4401 | GLOBAL* | ✓ | | ✓ | ✓ | ✓ | NONE | -40 to +75 °C |
|  ICR-4401S | GLOBAL* | ✓ | ✓ | ✓ | ✓ | ✓ | NONE | -40 to +75 °C |
|  ICR-4401W | GLOBAL* | ✓ | | ✓ | ✓ | ✓ | 3x3 MIMO | -40 to +75 °C |
|  ICR-4401WS | GLOBAL* | ✓ | ✓ | ✓ | ✓ | ✓ | 3x3 MIMO | -40 to +75 °C |
|  ICR-4401W1 | GLOBAL* | ✓ | | ✓ | ✓ | ✓ | 3x3 MIMO | -40 to +60 °C |
|  ICR-4401W1S | GLOBAL* | ✓ | ✓ | ✓ | ✓ | ✓ | 3x3 MIMO | -40 to +60 °C |

* - 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 | Quad-Core ARM Cortex-A72, 1200 MHz |
| Memory | RAM - 1024 MB eMMC - 4096 MB (838 MB for Router Apps, 512 MB for customer data) |
| Watchdog | HW Watchdog |
| RTC | Battery backup RTC |
| TPM | Trusted Platform Module (TPM) 2.0 |
| Interfaces | |
| Ethernet | 5× Ethernet (4+1), RJ45, 10/100/1000 Mbps *Optional 4× PoE PSE, IEEE 802.3at-2009 (PoE+) and IEEE 802.3af-2003 (PoE) (PoE use is limited – see the ICR-4461 user manual) |
| SFP Cage | 1× SFP cage (up to 10 Gbps) |
| Serial Lines | 1× RS232 (Tx, Rx, GND, RTS, CTS) 1× RS485 (A(-), B(+), GND) 1× CAN (CAN_H, CAN_L) (14-pin terminal block) |
| I / O | 2× Digital Input (3 mA consumption) 2× Digital Output (Open Drain, 48 V / 500 mA) (14-pin terminal block) |
| USB | 1× USB 2.0 Host Connector |
| MicroSD Card | 1× Micro SD Card Slot |
| Reset Button | Reboot / Factory reset |
| LED Indicators | System, User, 2× Input, 2× Output, ETH |

| Environmental | |
|--------------------------|--|
| Power Supply | 9 – 48 V DC (2-pin terminal block) |
| Consumption | Without WiFi Idle 4.2 W / Average 4.2 W / Peak 12.5 W With WiFi Idle 5.4 W / Average 5.5 W / Peak 14.5 W PoE PSE without WiFi Idle 4.4 W / Average 4.6 W / Peak 127 W PoE PSE with WiFi Idle 5.7 W / Average 5.8 W / Peak 129 W |
| Sleep Mode | Yes, 24 mW, 310 mW for PoE PSE |
| Operating Temperature | -40 to +75 °C -40 to +60 °C - ICR-4401W1, ICR-4401W1S |
| Storage Temperature | -40 to +85 °C |
| Humidity | 0 to 95 % |
| IP Cover | IP30 |
| Physical Characteristics | |
| Dimensions | 47 × 109 × 195 mm |
| Enclosure | Robust Metal Case, Grounding Screw |
| Mounting | Wall Mounting, DIN Rail (optional) |
| Weight | 1350 g |

| WiFi - optional (ICR-4401W, ICR-4401WS, ICR-4401W1, ICR-4401W1S) | |
|--|---|
| Antenna | 3× R-SMA connectors, 3×3 MIMO |
| Standards | IEEE802.11 ac/a/b/g/n 2.4 GHz / 5 GHz |
| Data Rate | Up to 600 Mbps @ 2.4 GHz Up to 1300 Mbps @ 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, EN 61000-6-2, EN 55032, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6 |
| Safety | EN 62368-1, IEEE 802.3 |
| Transportation | E-mark |
| National | CE, UKCA |
| Mechanical | EN 60068-2-27, EN 60068-2-64, EN 60529 |
| Climatic | EN 60068-2-2, EN 60068-2-1, EN 60068-2-14, EN 60068-2-30 |
| Environmental | RoHS3, Reach, WEEE |

** - Models having ICR-4401W1, ICR-4401W1S order codes have no E8 certification.

| 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 |
| Networking Features | DHCP, NAT/PAT, VRRP, Dynamic DNS client, DNS proxy, VLAN, QoS, *DMVPN, *WOL, NTP Client/Server, 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 – 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: 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

Accessories

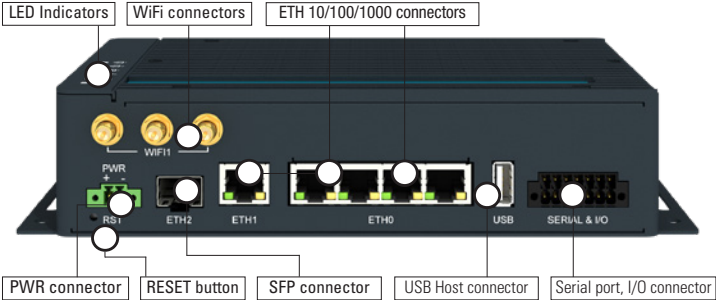
| Part Number | Description | Included in the package |
|------------------|---|-------------------------|
| BB-CON-WR2 | 2-pin PWR connector | ✓ |
| CON-ICR44-14 | 14-pin Serial / IO connector | |
| | Wall mount kit | |
| BB-DIN-ICR32 | DIN clip (2 pcs are necessary for the mounting) | Optional |
| RPS-ICR4-WR2-M | Wall mount Power supply, 12 V/1.5 A, EU, UK, US, AUS plugs | |
| RPS-ICR4-WR2-PSE | **Desktop Power supply POE PSE, 48 V / 1.35 A, (without Power Cord) | |
| BB-PWRCORD-AUS | AUS Power Cord (for RPS-ICR4-WR2-PSE) | |
| BB-PWRCORD-EU | EU Power Cord (for RPS-ICR4-WR2-PSE) | |
| BB-PWRCORD-UK | UK Power Cord (for RPS-ICR4-WR2-PSE) | |
| BB-PWRCORD-US | US Power Cord (for RPS-ICR4-WR2-PSE) | |
| BB-KD-ETH | Ethernet cross cable, 1.5 m, Shielded | |
| OPT1-ANT-WFT-06 | Antenna Wi-Fi, Terminal (3 pcs are recommended for full 3x3 MIMO performance) | |

For more accessories visit www.advantech.com

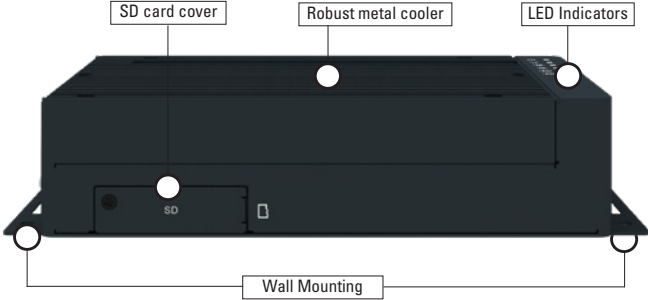
**Required power supply when used PoE/PoE+ on all ports is 48V / 150W

Views

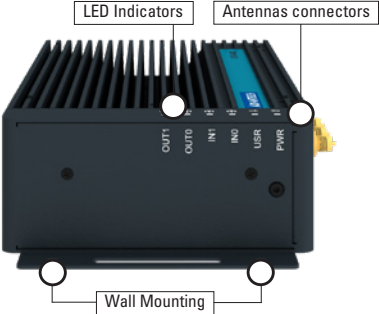
FRONT VIEW



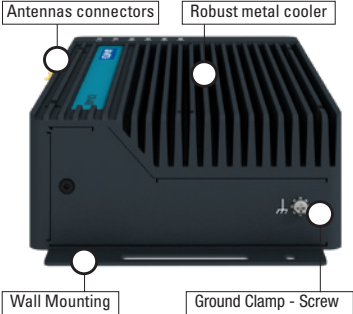
REAR VIEW



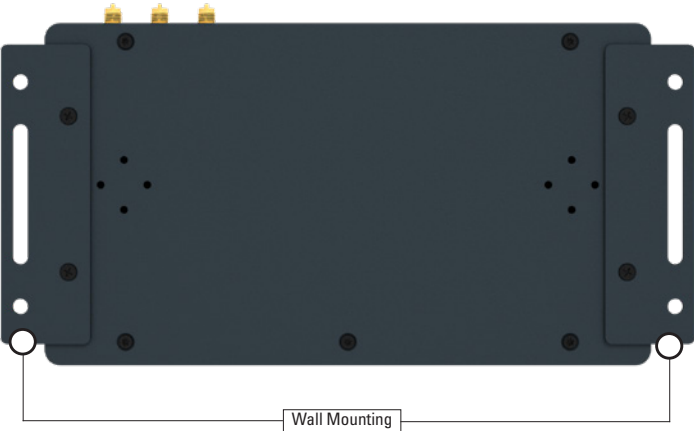
LEFT SIDE VIEW



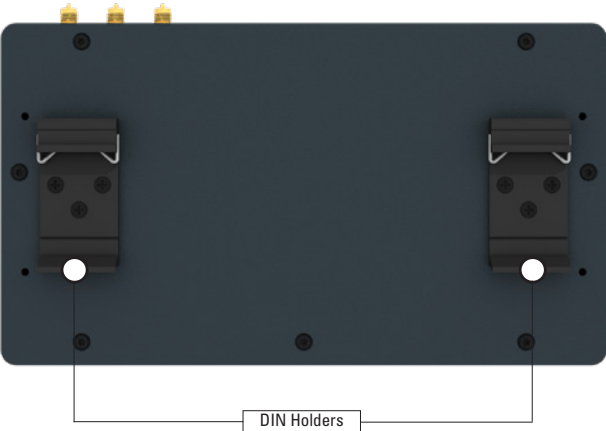
RIGHT SIDE VIEW



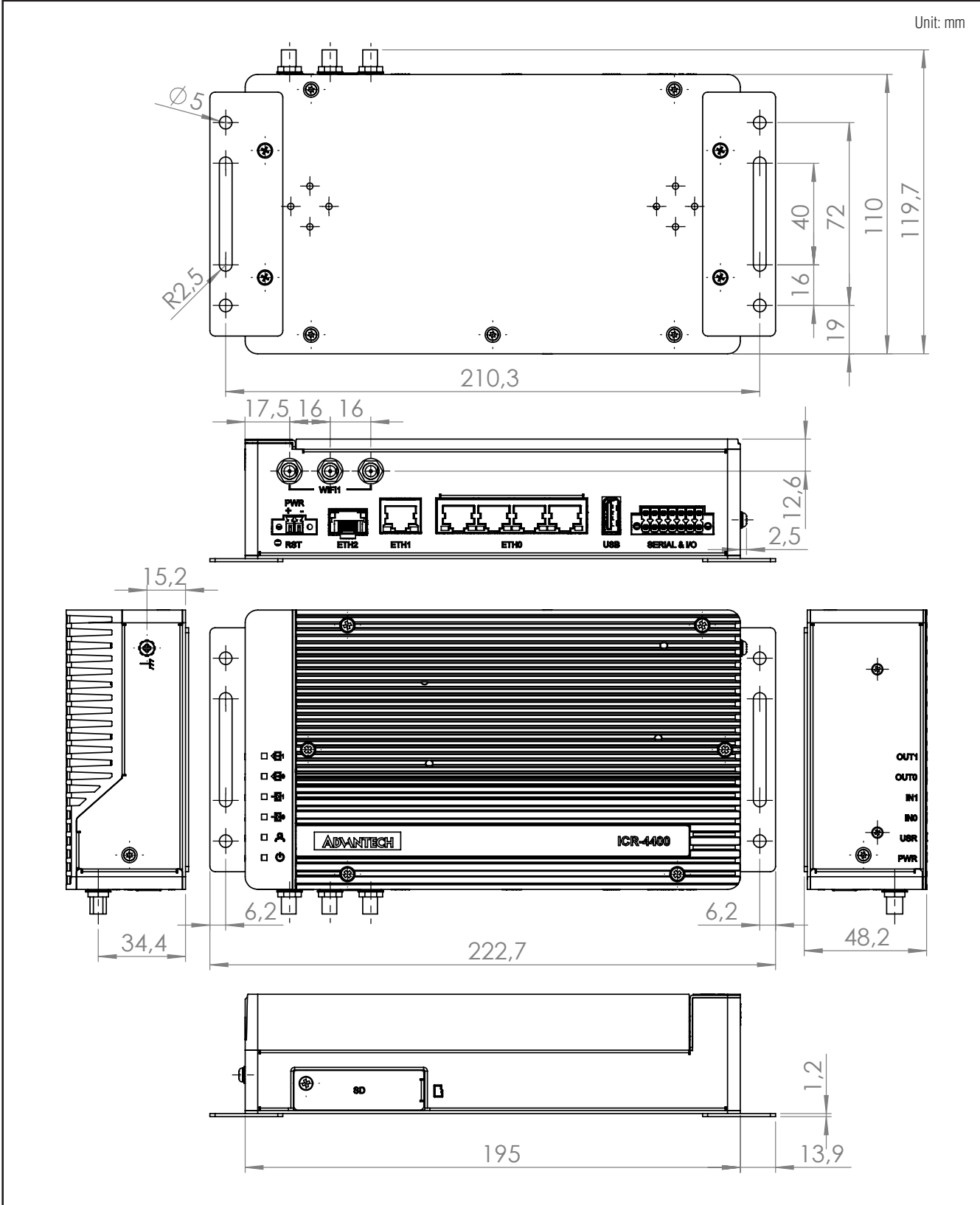
BOTTOM VIEW - WALL MOUNT KIT



BOTTOM VIEW - DIN HOLDERS



Dimensions - Technical Drawing - Wall Mount



Dimensions - Technical Drawing - DIN Holders

