

Industrial Cellular Routers & Gateways

ICR-1602, ICR-1642

4G LTE Industrial Connectivity Gateway



Features

- Compact and ruggedized design
- LTE Cat.4 with 3G/2G fallback
- 2 × SIM for redundancy
- 2 × Ethernet 10/100/1000 Mbps
- Wide operational temperature range
- Wall-mount design and optional Din-Rail kits
- Linux based OS & SW customization
- Optional 1 × RS232 + 1 × RS485 + 1 × DI + 1 × DO (ICR-1642)
- Optional WiFi 5, IEEE802.11ac (ICR-1642W**)
- Optional GNSS receiver (ICR-1642G**)

** - Availability may vary. Please consult your local sales representative for more information.

Introduction



The ICR-1642/1602 series industrial connectivity gateway is designed for wireless communication, enabling IP devices and serial buses (ICR-1642) to connect to a cellular network. It is ideal for M2M and IoT applications, including kiosks, industrial PCs, HMIs, traffic controllers, meters, and UPS systems. LTE Cat.4 offers a peak downlink data rate of approximately 150 Mbps and an uplink peak data rate of 50 Mbps. The router features two Gigabit Ethernet ports and optional digital I/O (1 × DI, 1 × DO) and serial (1 × RS232 + 1 × RS485) connectivity on the ICR-1642. It can also be optionally equipped with WiFi 5 or GNSS.

The gateway supports VPN tunnel creation using various protocols to ensure secure communications. It includes diagnostic functions such as automatic monitoring of wireless and wired connections, automatic restart in case of connection loss, and a hardware watchdog that monitors the router status.

The ICR-1642/1602 series runs on the ICR-OS operating system, an open Linux platform that allows for extensive programming of custom software applications in Python, C/C++. The router also supports uploading certain RouterApps (basic features only) to extend standard firmware functionalities.



WebAccess/VPN

WebAccess/DMP

Order Codes

| Model no. - Order Codes | Region | 2 × Gigabit Ethernet | 2 × SIM | 1 × RS232 1 × RS485 1 × DI, 1 × DO | GNSS | WiFi 5 1T1R |
|-------------------------|--------|----------------------|---------|--|------|-------------|
| ICR-1602-EU-A | EMEA | ✓ | ✓ | | | |
| ICR-1642-EU-A | EMEA | ✓ | ✓ | ✓ | | |
| ICR-1602-CN-A | China | ✓ | ✓ | | | |
| ICR-1642-CN-A | China | ✓ | ✓ | ✓ | | |
| ICR-1642W-EU-A** | EMEA | ✓ | ✓ | ✓ | | ✓ |
| ICR-1642G-EU-A** | EMEA | ✓ | ✓ | ✓ | ✓ | |
| ICR-1642W-CN-A** | China | ✓ | ✓ | ✓ | | ✓ |
| ICR-1642G-CN-A** | China | ✓ | ✓ | ✓ | ✓ | |

** - Availability may vary. Please consult your local sales representative for more information.

Specifications

| System | | Environmental | |
|--|---|---------------------------------|--|
| CPU | Cortex-A7 1.2GHz, ARMv7 | Power Supply | 9 – 48 VDC (2-pin terminal block) |
| Memory | RAM - 256 MB NAND Flash - 512 MB (60 MB for Router Apps, 26.7 MB for customer data) | Consumption | Idle 3.8W / Average 4.5 W / Maximum 5.5 W (ICR-1642W) Idle 2.8W / Average 3.5 W / Maximum 3.8 W (ICR-1642) |
| Watchdog | HW Watchdog | Operating Temperature | -40 to +75°C |
| Interfaces | | Storage Temperature | -40 to +85°C |
| Ethernet | 2 × Ethernet, RJ45, 10/100/1000 Mbps | Humidity | 5 to 95 % |
| Serial Lines (Optional - ICR-1642 only) | 1 × RS232 (Tx, Rx, GND, RTS, CTS) 1 × RS485 (data+, data-, GND) (10-pin terminal block with Digital I/O) | IP Cover | IP30 |
| I/O (Optional - ICR-1642 only) | 1 × Digital input (dry contact) 1 × Digital output (open drain, 48 V / 100 mA) (10-pin terminal block together with RS232, RS485) | Physical Characteristics | |
| Reset Button | Reboot (< 4 s) / Factory reset (> 4 s) | Dimensions | 94 × 39 × 90 mm (W × H × D) |
| LED Indicators | PWR: green only, blinking while system is ready SIG: green/orange/red for good/fair/poor signal SIM: green/orange for SIM1/2 USR: user defined for WiFi, serial, DI/O etc. USR: user defined for WiFi, serial, DI/O etc. ETH0 & ETH1 on RJ45 | Enclosure | Metal case with grounding screw |
| | | Mounting | Wallmount Din-Rail (optional) |
| | | Weight | ICR-16XX: 331g (excluding accessories) LTE antenna: 25.2g WiFi antenna: 7.8g (for ICR-1642W only) Wall-mount bracket: 45g |

| WiFi - optional (ICR-1642W) | |
|-----------------------------|---|
| Antenna | 1 × R-SMA connector |
| Standards | IEEE802.11 ac/a/b/g/n 2.4GHz / 5GHz |
| Data Rate | Up to 433Mbps |
| Security | WEP, TKIP, AES, WPA, WPA2, WPA3, 802.1X |
| Modes | AP mode or STA mode |

| GNSS - optional (ICR-1642G) | |
|-----------------------------|-------------------------------------|
| Antenna | 1 × SMA connector |
| Systems | GPS, GLONASS, BeiDou, Galileo, QZSS |
| Protocol | NMEA 0183 |
| Ac Time-to-First-Fix | Warm start: 26 s, cold 35 s |

| Cellular Interface | |
|----------------------|---|
| SIM Slots | 2 × SIM (micro SIMs – 3FF) |
| Antennas | 2 × SMA female (1 × main, 1 × diversity) |
| LTE Parameters | ICR-16xxx-EU: LTE-FDD bands: B1 (2100 MHz), B3 (1800 MHz), B7 (2600 MHz), B8 (900 MHz), B20 (800 MHz), B28A (700 MHz) LTE-TDD bands: B38 (2600 MHz), B40 (2300 MHz), B41 (2500 MHz) ICR-16xxx-CN: LTE-FDD bands: B1 (2100 MHz), B3 (1800 MHz), B5 (850MHz), B8 (900 MHz) LTE-TDD bands: B34 (2000MHz), B38 (2600 MHz), B39 (1900MHz), B40 (2300 MHz), B41 (2500 MHz) Transfer rate: LTE-FDD: 150 Mbps (DL), 50 Mbps (UL) LTE-TDD: 130 Mbps (DL), 30 Mbps (UL) |
| UMTS Parameters | ICR-16xxx-EU: WCDMA: B1/B8 Transfer rate: 384 kbps (DL/UL) ICR-16xxx-CN: WCDMA bands: B1/B8 Transfer rate: 384 kbps (DL/UL) TD-SCDMA bands: B34/B39 Transfer rate: 2.4 Mbps (DL), 2.2 Mbps (UL) |
| EVDO/CDMA Parameters | ICR-16xxx-CN: CDMA800 Transfer rate EVDO: 3.1 Mbps (DL), 1.8 Mbps (UL) |
| GSM Parameters | Supported frequencies: EGSM900/ DCS1800 Transfer rate: GPRS: 107 kbps (DL), 85.6 kbps (UL) EDGE: 296 kbps (DL), 236.8 kbps (UL) |

Industrial Cellular Routers & Gateways

ICR-1602, ICR-1642

| Software | |
|-----------------------------------|--|
| Operating System | ICR-OS (Linux based) |
| Application Development | Open Linux, BASH, C |
| Networking Features and Protocols | DHCP, NAT/PAT, SSH, VRRP, PPPoE, SNMP, SMTP, dynamic DNS client, DNS proxy, VLAN, QoS, NTP client/server, backup routes, port forwarding, host port routing, Ethernet bridging, load balancing, IPv6 dual stack |
| Industrial Protocols and IoT | *Modbus TCP2RTU, Modbus to MQTT |
| 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 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) |
| 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

| Standards & Regulations | |
|----------------------------|--|
| Radio | EN 301 511, EN 301 908-1, EN 301 908-2, EN 301 908-3, EN 301 908-4, EN 301 908-5, EN 301 908-6, EN 301 908-7, EN 301 908-8, EN 301 908-9, EN 301 908-10, EN 301 908-11, EN 301 908-12, EN 301 908-13, EN 301 908-14, EN 301 908-15, EN 301 908-16, EN 301 908-17, EN 301 908-18, EN 301 908-19, EN 301 908-20, EN 301 908-21, EN 301 908-22, EN 301 908-23, EN 301 908-24, EN 301 908-25, EN 301 908-26, EN 301 908-27, EN 301 908-28, EN 301 908-29, EN 301 908-30, EN 301 908-31, EN 301 908-32, EN 301 908-33, EN 301 908-34, EN 301 908-35, EN 301 908-36, EN 301 908-37, EN 301 908-38, EN 301 908-39, EN 301 908-40, EN 301 908-41, EN 301 908-42, EN 301 908-43, EN 301 908-44, EN 301 908-45, EN 301 908-46, EN 301 908-47, EN 301 908-48, EN 301 908-49, EN 301 908-50, EN 301 908-51, EN 301 908-52, EN 61000-4-2, EN 61000-4-3, EN 61000-4-4, EN 61000-4-5, EN 61000-4-6, EN 61000-4-11 |
| EMC | EN 301 489-1, EN 301 489-17, EN 301 489-19, EN 301 489-52, 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 62368-1 |
| National | CE, UKCA |
| Mechanical | EN 60529, EN 60068-2-27, EN 60068-2-34 |
| Climatic | EN 60068-2-1, EN 60068-2-2, EN 60068-2-14, EN 60068-2-30 |
| Environmental | REACH, RoHS3, WEEE |
| Cellular Module Approvals* | ICR-16XX-EU: GCF/ CE/ UKCA/ NCC/ RCM ICR-16XX-CA: SRRC/ NAL/ CCC |

* - 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.

Accessories

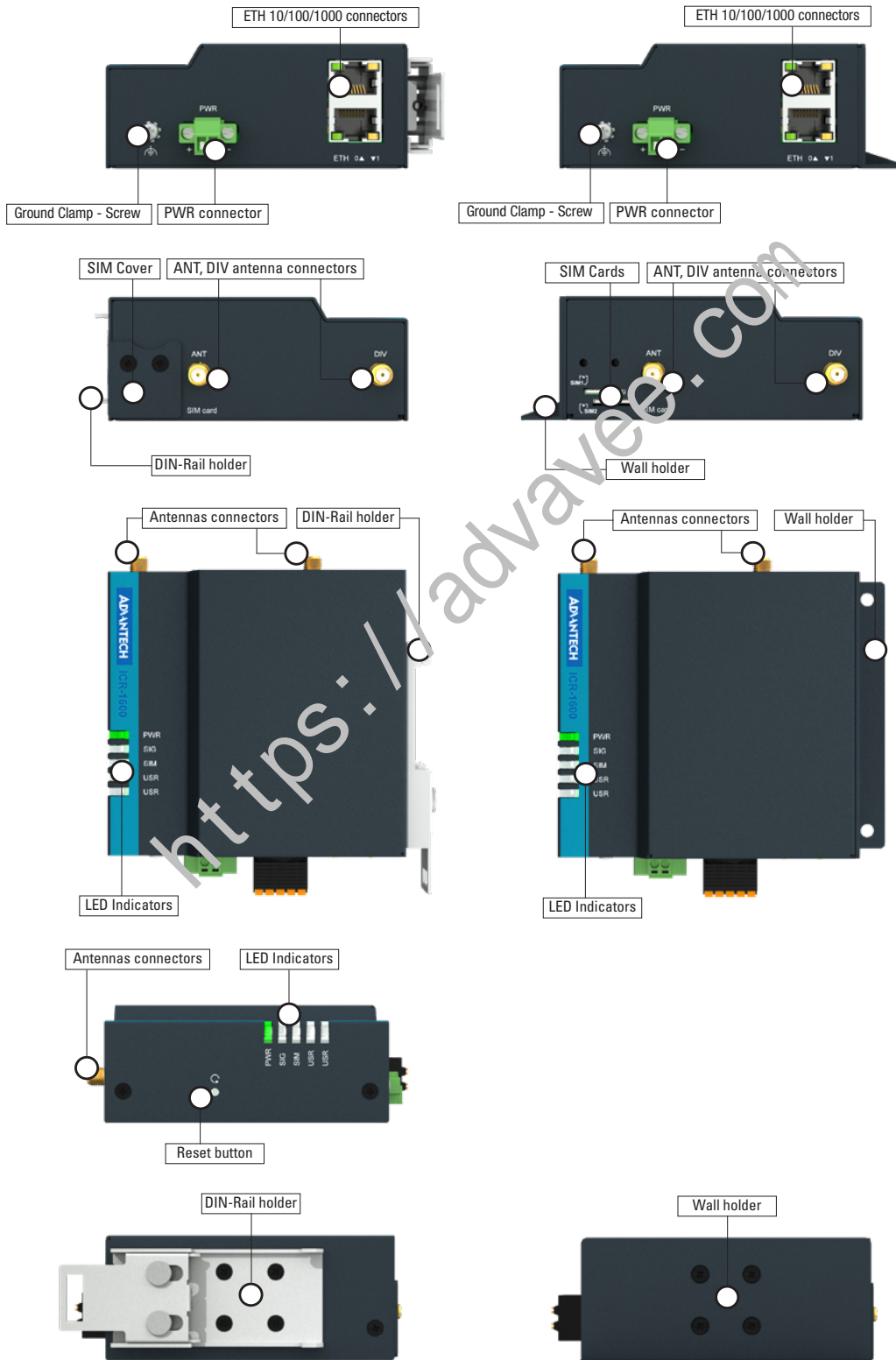
| Part Number | Description | Included in the package |
|-------------------|--|-------------------------|
| 1751000532-01 | 2 x LTE antenna | ✓ |
| 1751000533-01 | 1 x WiFi antenna, 2.4 / 5GHz (for ICR-1642W only) | |
| 1652008574-01 | 10-pin Serial / IO connector (for ICR-164x only) | |
| 1652002024 | 2-pin Power connector | |
| 1960115642N001 | Wall-mount bracket | |
| OPT1-DIN-ICR1X-00 | DIN-Rail brackets (30 mm) | Optional |
| BB-RPS-v2-WR2-EU | Power Supply, 12V/1A, 2-pin, UK plug | Optional |
| BB-RPS-v2-WR2-UK | Power Supply, 12V/1A, 2-pin, UK plug | Optional |
| BB-RPS-v2-WR2-US | Power Supply, 12V/1A, 2-pin, US plug | Optional |
| OPT1-ANT-GNS-20 | Active GNSS antenna, magnetic base, SMA-M (optional for ICR-16xxG) | Optional |

For more Antenna accessories visit www.advantech.com

ICR-1602 Views

DIN mount

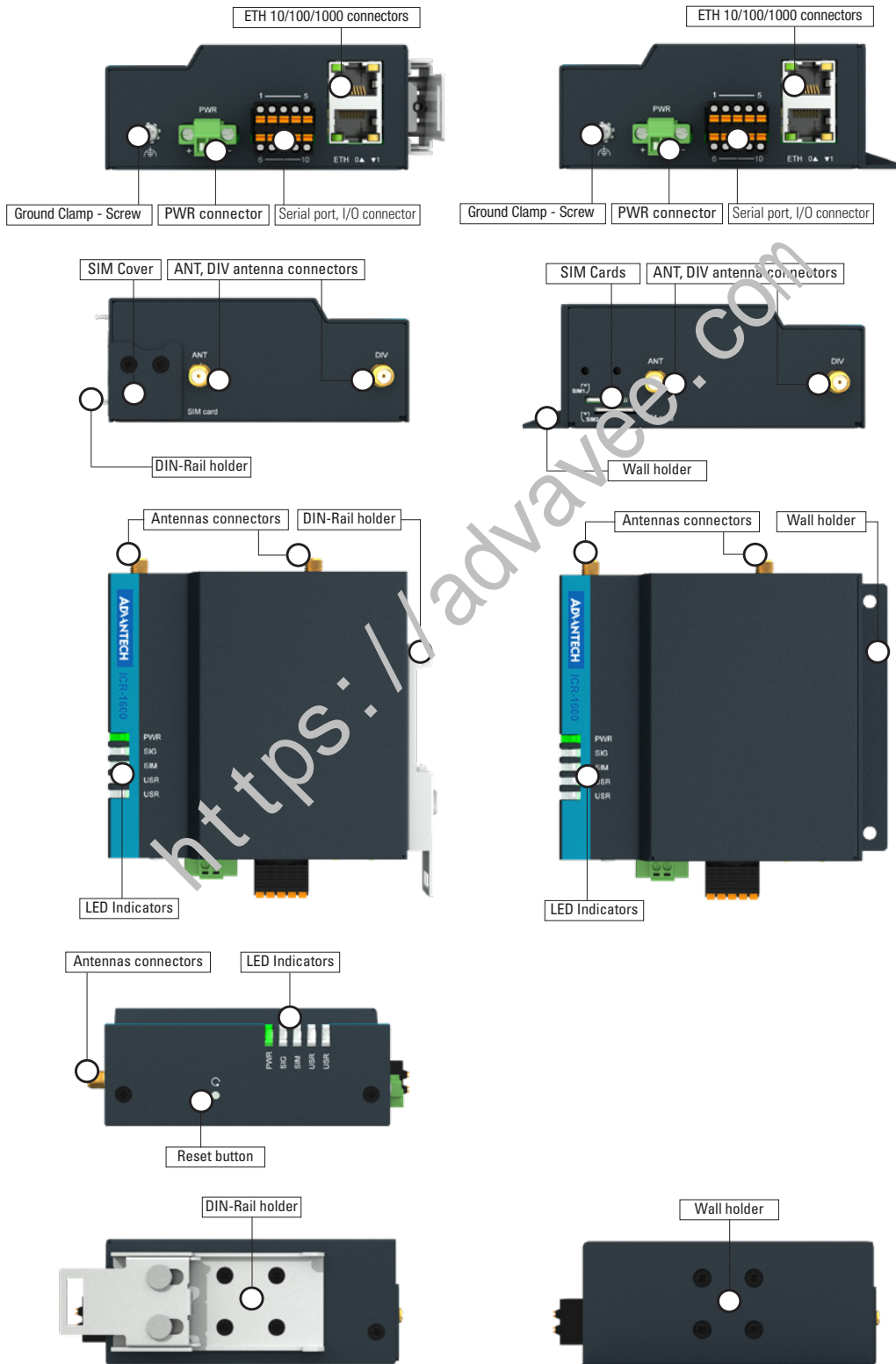
Wall mount



ICR-1642 Views

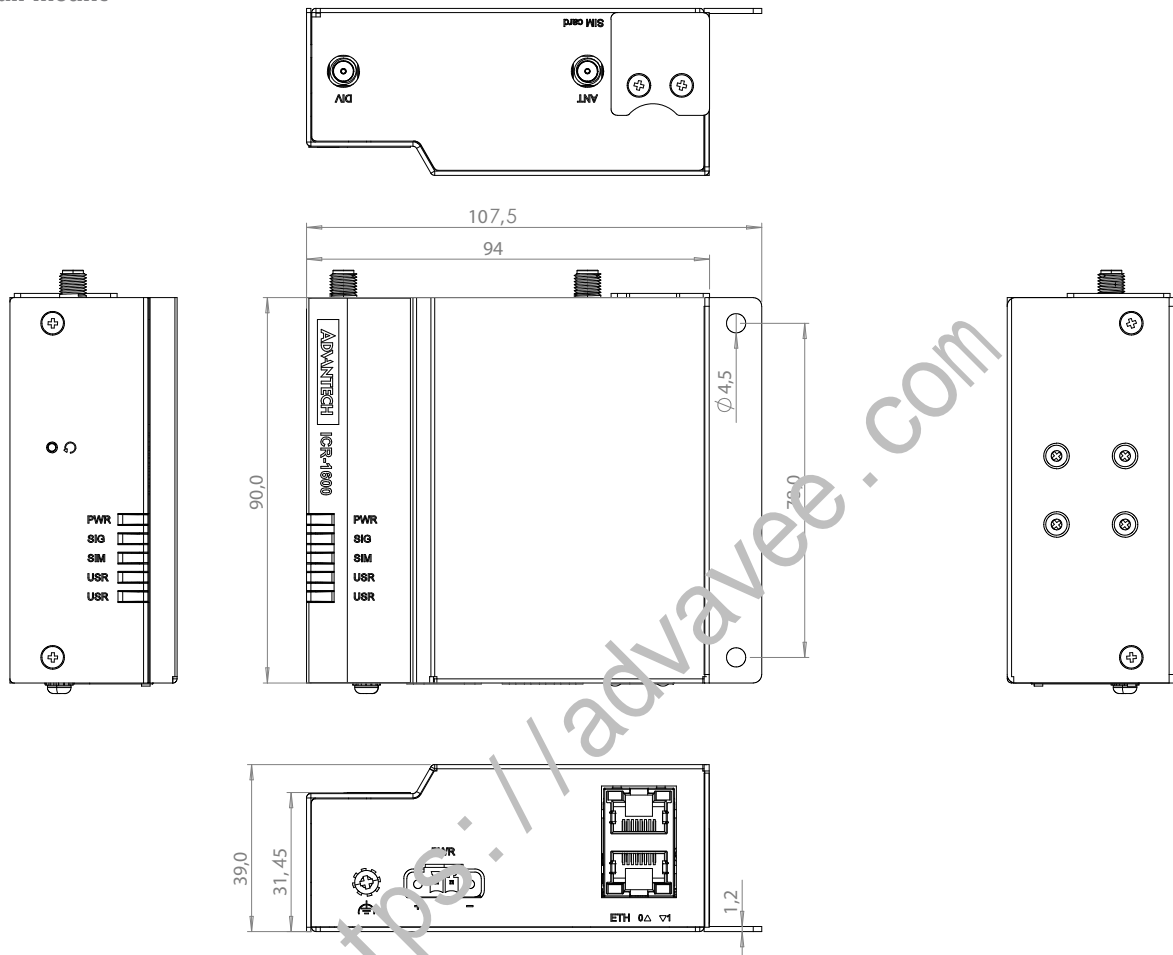
DIN mount

Wall mount

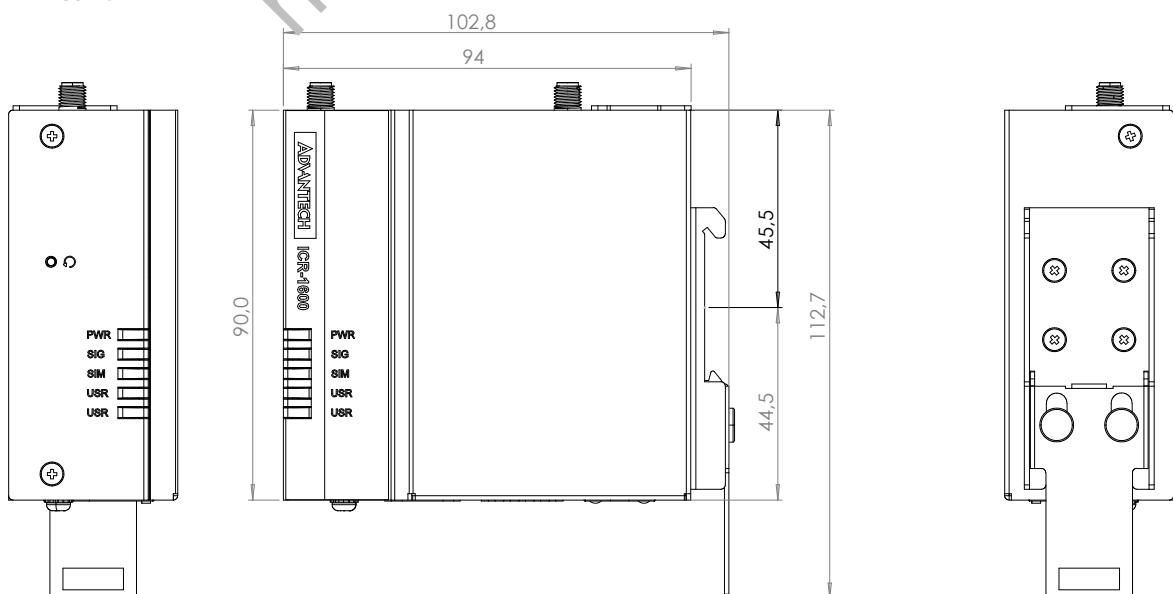


ICR-1602 - Dimensions - Technical Drawing

Wall mount



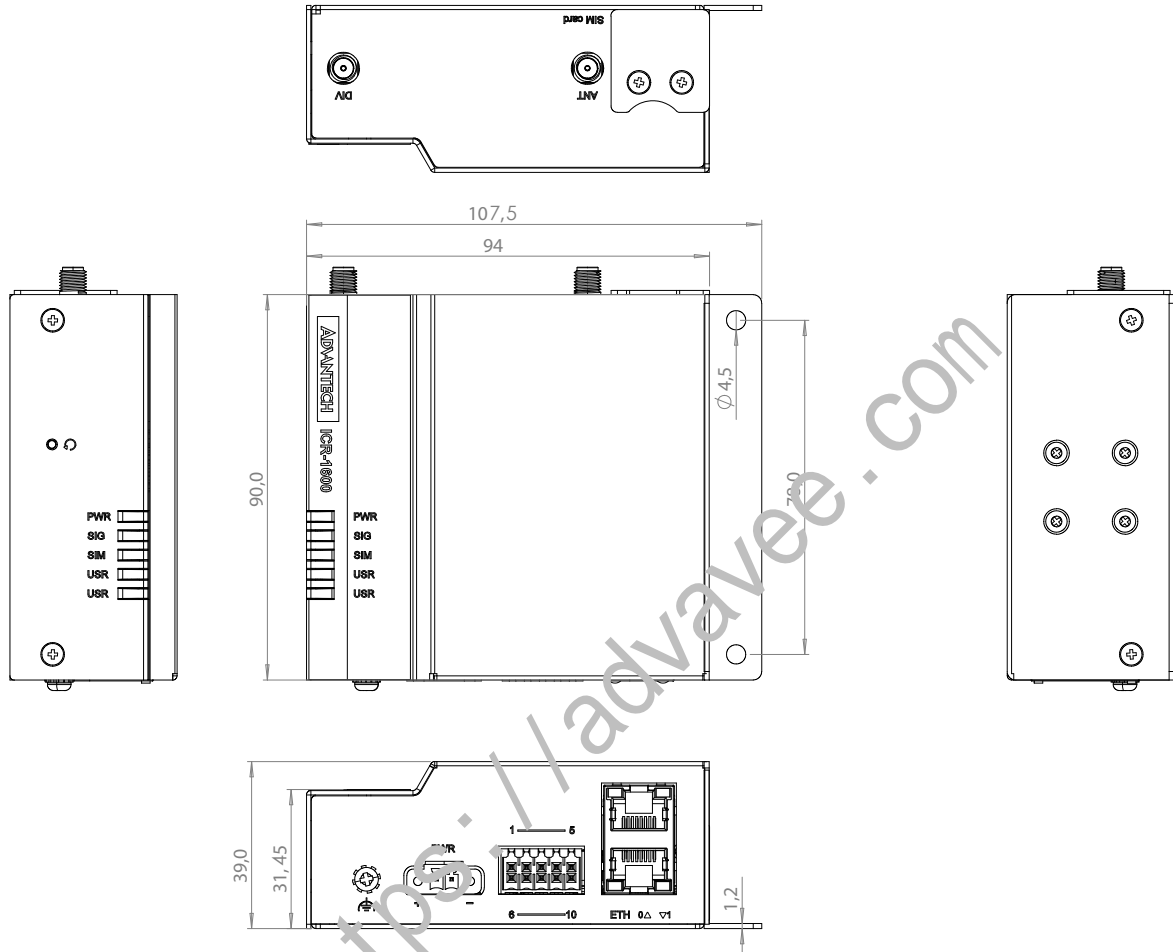
DIN Mount



ICR-1642 Dimensions - Technical Drawing

Unit: mm

Wall Mount



DIN Mount

