Technical Data Sheet

ECR-EW (LAN/Wi-Fi)
ECR-LW (LTE/Wi-Fi)

VPN Routers / IoT Gateways

ECR - the all-rounder

All-purpose with universal mounting options

The routers of the ECR series provide all important interfaces for realising extensive applications from remote services to IIoT. Both, the LAN and the LTE variant provide Wi-Fi for an operation as access point for local connection or as client for integration into an IT infrastructure. The LTE version offers cellular redundancy via dual SIM and fall-back to HSPA and GSM. The ECR is also suitable for an easy retrofit of existing plants due to its interfaces RS232 and RS485. The integrated digital I/Os extend the range of applications additionally. This VPN router can be mounted universally like the SCR and suitable for both, switch cabinets and small distribution boxes.

The icom SmartBox, an integrated Linux environment that enables to execute scripts and programs directly on the router, is also included besides the INSYS operating system icom OS.

With this, an ECR router can not only be used for secure remote maintenance and control, but also for acquiring and processing application data within the scope of edge computing. Amongst other things, this permits to monitor the conditions and values of connected devices as well as realise applications like reporting or benchmarking across different plants thanks to a plug & play connection to cloud services.

Highlights

This VPN router offers the following impressive highlights:

- Wi-Fi access point and client
- RS232, RS485 and 2+2 digital I/Os
- Dual SIM (4G version)
- Sleep mode for energy self-sufficient applications
- Mounting on wall and DIN rail
- Installation in control cabinets and small distribution boards

On board thanks to the operating system icom OS:

- Comprehensive IT security functions
- Connection redundancy incl. multiple VPNs
- Comprehensive network functionality with multiple IP networks
- Integrated edge computing and IoT functions

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Technical Data

ECR-E (LAN/Wi-Fi), ECR-L (LTE/Wi-Fi)

Mobile communication ECR-L	
Frequency bands, data rates ECR-LW300	4G/LTE [1]: 700, 800, 900, 1.800, 2.100 MHz (bands 1, 3, 8, 20, 28) LTE Cat. 1 (DL: max. 10.2 Mbps, UL: max. 5.2 Mbps) 3G/UMTS/HSPA: 900, 2.100 MHz (bands 1, 8), HSDPA/HSUPA (DL: max. 7.2Mbps, UL: max. 5.7Mbps) 2G/GPRS/EDGE: 900, 1.800 MHz; GPRS/EDGE Class 12 (DL: max. 85.6 kbps, UL: max. 85.6 kbps)
Frequency bands, data rates ECR-LW320 (Australia)	4G/LTE: 700, 850, 900, 1.800, MHz (bands 3, 5, 8, 28) LTE Cat. 1 (DL: max. 10.2 Mbps, UL: max. 5.2 Mbps) 3G/UMTS/HSPA: 850, 900, 2.100 MHz (bands 1, 5, 8), HSDPA/HSUPA (DL: max. 7.2Mbps, UL: max. 5.7Mbps)
Antenna connection	1x SMA female
SIM	Dual SIM: 2 slots for Mini-SIM cards (2FF), locked
Wi-Fi communication	
Standard	IEEE 802.11 b/g/n
Frequency, output power	2.4 GHz, max. 100 mW
Wi-Fi modes	Wi-Fi station (client), Wi-Fi access point with up to 10 stations at the same time
Security	WPA/WPA2 (AES, TKIP), 802.1x (EAP: TLS, TTLS, PEAP)
Antenna connection	Reverse SMA male
Router	
Function	Up to 5 IP local networks (LAN) or as WAN with both, DHCPv4 and DHCPv6 clients, with static IP addresses, VLAN incl. tags and trunk ports; SLAAC, router advertiser, own DHCPv4 and DHCPv6 server per IP network; static routing, configurable routing priority; dynamic routing OSPF, BGP, RIP, RIPv2, RIPng; net filters: D-NAT, S-NAT, IP/port forwarding, netmapping, DNS relay, dynDNS support
Security	OpenVPN (client and server), IPsec, GRE (incl. multi-port), DMVPN, IP filters (stateful firewall) also in VPN tunnel, several VPN tunnels in parallel possible, MAC filters, PPTP server, PPPoE for external DSL modem
Redundancy	WAN chains: several WAN accesses configurable (prioritised and event-controlled), WAN groups: parallel operation of WAN interfaces or VPNs, several OpenVPN servers, dual SIM for redundancy; provider redundancy when using a multi roaming SIM card (see chapter “suitable accessories”)
Ethernet switch, interfaces	
Ports	2x RJ45, 10/100 MBit/s, full/half-duplex, auto MDI-X, 1.5 kV isolation voltage
Function	Each port can be freely assigned to the IP networks, Link up/down detection, configuration port
Inputs/outputs	2 digital inputs, high-active (as per EN 61131-2, Type 1), 2 open drain outputs (24 V/100 mA)
Events (selection)	Change: input, Ethernet port, WAN chain, profile, supply input, cellular field strength; timer expiry, firewall violation, login attempt detection, pulse sequence at digital input, counter
Event-controlled actions (selection)	Messages via e-mail, SMS (only cellular variant), SNMP traps, MCIP; switching profile, switching connection, changing modem state, starting timer, switching output or pulse sequence, activating firmware, reset, restart SmartBox container
Serial interface	
RS232 (Serial1)	1 x RS232 / D-Sub-9 (m)
RS485 (Serial2)	Terminal connector (D+, D-, GND)
Functions	Serial-Ethernet gateway (incoming and outgoing connections, Modbus TCP/RTU gateway, modem emulation, editable AT answer list, phone number conversion to IP addresses)
Operation	
Wizards	Configuration of connection incl. VPN, adding LAN networks, quick start of icom Connectivity Suite – VPN
Help	Web interface with inline help texts, online help, FAQ, exemplary profiles, plausibility check
Configuration	Local and remote web interface (http, https; with session management), command line interface (CLI), Telnet, SSH, ASCII and binary file (also for backup), configuration management with switchable profiles (event-controlled)
Indications (LEDs)	Power, WAN (Internet connection), Signal (for cellular radio)
Authentication	Several users, different user roles and rights, certificate-based authentication with revocation list
Diagnostics	SNMP traps and agent, configurable system logs, remote syslog, support packet, help functions Diagnosis tools: ping, tcpdump, traceroute, DNS lookup, AT commands
Firmware updates	Incremental, fail-safe, automated via update server (http, ftp, https, ftps)
System clock	NTP client and server, real time clock

1 Please check the availability of the LTE frequencies in the planned operating area. Above specified frequencies are currently used in Europe, Middle East, Africa and, to some extent, in the Asia-Pacific region, Australia and South America.

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ECR-E (LAN/Wi-Fi), ECR-L (LTE/Wi-Fi)

Edge Computing	
icom SmartBox	Linux programming environment: creation of LXC containers for programs and scripts (apps), ARMv7 CPU, 448 MB RAM, 3 GB flash memory
Supply	
Voltage	12 ... 24 V DC (± 20%)
Terminals	2-pin terminal connectors, rigid/flexible conductors up to 1.5 mm²
Power consumption	Cellular radio variant: typical approx. 3.0 W, max. 7.0 W LAN variant: typical approx. 2.5 W, max. 4.0 W Sleep mode: typical approx. 65 mW
Sleep mode	Sleep mode: Energy conservation mode with event-triggered activation, stopping via timer, reset, re-establishing supply or state change of digital input
Ambient conditions	
Dimensions (W × H × D)	105 × 90 × 42 mm
Mounting	DIN rail mounting and wall mounting Horizontal pitch when mounting on DIN rail: 2.5 units / 42 mm (control cabinet) or 6 units / 105 mm (small distributor)
Operating temperature	-30...+75 °C [2]
Humidity	0...95 % (non-condensing)
Protection class	Housing: IP40
Approvals & Standards	
Certifications	CE
EMC	Emission: EN 55032 Class B; Immunity: EN 61000-6-2, EN 55024
Safety	IEC/EN 62368-1
Environmental conditions	Temperature tests as per EN 60068-2-1, EN 60068-2-2, EN 60068-2-14, EN 60068-30
Mean lifetime	MTBF > 770.000 h (25°C), used standard SN 29500 (according IEC 61709)

Available variants

Product designation	Features	Article number
ECR-EW300	LAN/Wi-Fi router, 2x LAN, 1x RS232, 1x RS485, 2 digital inputs, 2 digital outputs	10021493
ECR-LW300	LTE/Wi-Fi router, 2x LAN, 1x RS232, 1x RS485, 2 digital inputs, 2 digital outputs	10021494
ECR-LW320	LTE/Wi-Fi router (Australian frequencies), 2x LAN, 1x RS232, 1x RS485, 2x digital input, 2x digital output	10021495

Suitable accessories

Product designation	Description	Article number/ Information
Magnetic Antenna 4G/3G/2G SMA	Frequencies (MHz): 700, 800, 850, 900, 1800, 1900, 2100	10019504
Outdoor wall Antenna 4G/3G/2G SMA	Frequencies (MHz): 700, 800, 850, 900, 1800, 1900, 2100	10020596
Antenna Extension Cable 5 m SMA	Device connector: SMA (f), antenna connection: SMA (m)	10015193
Antenna Extension Cable 10 m SMA	Device connector: SMA (f), antenna connection: SMA (m)	10018607
Antenna Extension Cable 15 m SMA	Device connector: SMA (f), antenna connection: SMA (m)	10000735
Magnetic Antenna Wi-Fi 2.4 GHz rev. SMA	Cable length: 1.5m, Protection class: IP67	10019797
Outdoor Wall Antenna Wi-Fi 2.4GHz rev. SMA	Cable length: 2.5 m, protection class: IP65	10021255
Antenna with hinge Wi-Fi 2.4 GHz rev. SMA	Mounting directly on device connector, variable hinge angle 0-90°	10000661
Power Supply 24V	TDK Lambda DSP 10-24 AC/DC power supply unit for DIN rail	10014249
icom Connectivity Suite – VPN	VPN Service for M2M Applications	insys-icom.de/iCS/VPN
icom Connectivity Suite – M2M SIM	Industrial SIM cards, multi-roaming, pooling, management portal	insys-icom.de/iCS/SIM
icom OAM – Device Management	Central management of devices, configurations, certificates and update packages	insys-icom.com/iCS/OAM

2 +70…+75 °C under restricted conditions (refer to www.insys-icom.com/restricted)