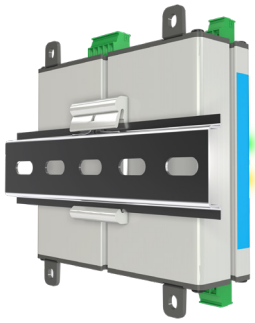
Technical Data Sheet

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

VPN Routers / IoT Gateways



ECR - the all-rounder

Versatile applications with universal mounting options

Due to their extensive range of interfaces, ECR routers can be used in a variety of ways. They are suitable both for secure remote maintenance and for recording and processing application data (edge computing). Thanks to the plug & play connection to cloud services and applications, remote access and monitoring can be implemented quickly and easily.

Wi-Fi
Easy internet access or wireless web interface access

Dual SIM
Provider redundancy thanks to the use of two SIM cards (4G version)

Serial interfaces
One RS232 and one RS485 interface each for connecting external devices

Ethernet and I/O
Two RJ45 connections; 2x2 digital inputs and outputs

Flexible mounting
DIN rail mounting in control cabinets and small distribution boards, as well as wall mounting

Sleep Mode
Energy-saving mode for applications with solar or battery operation

Hardened router operating system
Operating system with extensive security and network functions

IoT-ready
Local data processing as well as connection to IoT platforms and cloud systems

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

Technical Data

Cellular communication (ECR-LW)		
Frequency bands, Data rates ECR-LW300 [1]	4G/LTE:	1 (2100 MHz), 3 (1800 MHz), 8 (900 MHz), 20 (800 MHz), 28 (700 MHz); LTE Cat 1 (DL: max. 10.2 Mbit/s, UL: max. 5.2 Mbit/s)
	3G/UMTS/HSPA:	1 (2100 MHz), 8 (900 MHz) ; HSDPA/HSUPA (DL: max. 7.2 Mbit/s, UL: max. 5.7 Mbit/s)
	2G/GPRS/EDGE:	900, 1800 MHz; GPRS/EDGE Class 12 (DL: max. 85,6 kbit/s, UL: max. 85,6 kbit/s)
Frequency bands, Data rates ECR-LW320 (Frequency bands for Australia)	4G/LTE:	3 (1800 MHz), 5 (850 MHz), 8 (900 MHz), 28 (700 MHz); LTE Cat 1 (DL: max. 10.2 Mbit/s, UL: max. 5.2 Mbit/s)
	3G/UMTS/HSPA:	1 (2100 MHz), 5 (850 MHz), 8 (900 MHz) ; HSDPA/HSUPA HSDPA, HSUPA (DL: max. 7.2 Mbit/s, UL: max. 5.7 Mbit/s)
Antenna connection	1x SMA female	
SIM	Dual SIM: 2 slots for Mini-SIM cards (2FF), locked; automatic failover; Further provider redundancy with multi-roaming SIM cards (see section “appropriate accessories”)	
Dual APN	Splitting of cellular data traffic over 2 APNs (with 2 SIM cards) , e.g. separation of user and management data	
Cellular Status	Signal field strength, RSSI, RSCP / Ec/No, RSRP / RSRQ, Cell-ID, Location-ID	
Wi-Fi		
Standard	IEEE 802.11 b/g/n	
Frequency, transmission power	2.4 GHz, max. 100 mW	
WLAN (Wi-Fi) modes	WLAN (Wi-Fi) Station (Client) or WLAN (Wi-Fi) Access Point with up to 10 stations simultaneously	
Security	WPA/WPA2 (AES, TKIP), 802.1x (EAP: TLS, TTLS, PEAP)	
Antenna connection	Reverse SMA male	
Hardware Interfaces		
Ethernet ports	2x RJ45 shielded, 10/100 Mbit/s, Full/half duplex, Auto MDI-X, 1.5 kV isolation voltage	
Ethernet function	Assignment to IP network freely configurable per port, link up/down detection	
I/Os	2 digital inputs, high-active (as per EN 61131-2, type 1), 2 open drain outputs (24 V / 100 mA)	
RS232 (serial1)	1 x RS232 / D-Sub-9 (m)	
RS485 (serial2)	Push-in terminal connector (D+, D-, GND)	
Functions of serial interfaces	Serial-Ethernet gateway (incoming and outgoing connections, Modbus TCP/RTU gateway, modem emulation, editable AT answer list, translation of phone numbers to IP addresses)	
Signal LEDs	Power, WAN (Internet connection), Signal (for Cellular communication)	
Network		
Network functions	5 local IP networks, IP static/DHCP, TCP, UDP, IPv4, IPv6, NTP, DHCP, DNS, HTTP/S, ARP, SSH, 802.1Q VLAN incl. tags and trunk ports	
Service	DHCP Server v4/v6 per IP network, DHCP relay, NTP server, DNS, DynDNS, IPv6 Router Advertiser	
Routing	Static routing, routing priority, RSTP, dynamic routing (OSPF, BGP, RIPv1, RIPv2, RIPng)	
WAN redundancy/failover	Several WAN connections configurable also in parallel operation, fallback level for connection breakdown (failover), event-based WAN changeover (see events)	
Connection check	Periodic, ping/icmp, DNS request, link up/down	
DSL	PPPoE for external DSL modems	
NAT/PAT	SNAT/DNAT (masquerade, netmapping, port forwarding, IP forwarding) unlimited number of rules	
VPN		
icom Connectivity Suite	Supports VPN service for remote maintenance, remote access and M2M-communication	
OpenVPN	Client/server, several parallel tunnels, server with up to 20 clients, tls-auth/tls-crypt, dead peer detection (DPD)	
OpenVPN encryption	Blowfish 128 Bit, DESX 192 Bit, DES 64 Bit, DES EDE 128 Bit, DES EDE3 192 Bit, AES 128-256 Bit, RC2 40-128 Bit, IDEA 128, CAST5 128 Bit, SHA1, SHA 224-512	
IPsec	IKEv1, IKEv2 (automatic, fix), several parallel tunnels, pre-shared keys, certificates, tunnel mode, transport mode, dead peer detection (DPD)	

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IPsec encryption	DES EDE3 192 Bit, AES 128-256 CBC/GCM, SHA1, MD5, SHA 256-512, DH-Group 1-31 (Diffie-Hellman 768 - 25519), ChaCha20-Poly1305
GRE	GRE via IPsec, point-to-point, multipoint
PPTP	PPTP client/server; PAP/CHAP/MS CHAP/MS CHAP V2; MPPE 40-128
Dynamic VPN	Dynamic multipoint VPN (GRE, IPsec, NHRP, EIGRP, OSPF, RIPv1/v2, BGP)
IT security	
Authentication	Pre-shared key, X.509 certificates, RADIUS, access rights (read, write, status)
Firewall / netfilter	IP filters (stateful firewall) also in VPN tunnel; packet filter: TCP, UDP, ICMP, ESP, AP, GRE; MAC filter; pre-defined firewall rules can be activated
Security	Booting signed firmware, HTTP/HTTPS attack prevention; response upon events: configuration change, link up/down, restart, login attempt, netfilter violation, password hashing
IoT and Cloud (icom Data Suite, license required)	
Function icom Data Suite	Machine connection and data processing; connection to cloud and SCADA Systems; arithmetic & logic functions; data logger; dashboard
Data acquisition	CODESYS, Modbus TCP/RTU, MQTT, Siemens S7, OPC UA Client, IEC 60870-5-101, digital input, analogue input (if present)
Data transmission	MQTT, OPC UA Server, IEC 60870-5-104, Modbus TCP/RTU, e-mail, SMS, SFTP, digital input, analogue input (if present)
IoT platforms	MQTT compatibility: Thingsboard, Cumulocity, AnyViz, Azure IoT Hub, Bosch IoT Suite, AWS IoT Core
Events & Actions	
Event & Action Handler	Notification, alarming, diagnosis, attack detection, fault handling, operation and commissioning logic
Events / alarms	Change: digital input, Ethernet port, WAN chain, profile status, supply input (with MRX), cellular field strength; timer expired, firewall violation, login attempt detection, pulse sequence on digital input, counter, netfilter rule
Event-triggered	Messages via e-mail, SMS (only LTE variants), SNMP traps, MCIP; switch profile, switch connection, change modem state, start timer, switch output or pulse sequence, activate firmware, reset, restart container
Programming environment/scripting	
Container environment	Installation of several application containers, container with own IP end point, assignment to IP networks - full firewall and routing transparency; access control, SDK available
Container Resources	CPU: 50% of ARMv7 (600 MHz), RAM: 448 MB, Flash: 1 GB eMMC
Lua scripting	Lua interpreter for own scripts
Monitoring and Management	
Monitoring	SNMP traps and agent, configurable system logs, remote syslog, link up/down detection, netfilter violation
Certificate management	SCEP, CRL
icom Router Management	Supports central router management for FW updates, configuration management, connection monitoring, container updates, mass rollout, certificate management, available as public/private cloud (server) installation or onPremises
Administration	
Configuration	Web Interface HTTP(S) with session management, command line interface (CLI), Telnet, SSH, configuration profiles as ASCII and binary file, ample configuration profiles event-triggered, REST API
Diagnosis tools	Ping/icmp, tcpdump, traceroute, DNS lookup, AT commands, port mirroring
FW update	Incremental, failsafe, update server (HTTP, FTP, HTTPS, FTPS), icom Router Management (WebSocket)
System time	NTP client and server
Help	Web interface: inline help, online help; example profiles, plausibility check, Configuration Guides

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

Technical Data

Supply		
Voltage	12 ... 24 V DC (±20 %), reverse-polarity protected	
Terminals	2-pin push-in terminal connectors, rigid/flexible conductors up to 1.5 mm²	
Power consumption	LTE variants:	Typical approx 3.0 W, max. 7.0 W
	LAN variant:	Typical approx 2,5 W, max. 4.0W
	Sleep mode:	Typical approx 65 mW
Sleep mode	Energy conservation mode with event-triggered activation, stopping via timer, reset, re-establishing supply or state change on digital input	
Ambient conditions		
Dimensions	42 x 95 x 105 mm (W x H x D)	
Weight	290 g	
Mounting	Mounting on DIN rails, wall mounting horizontal pitch (HP) on DIN rail : 2.5 units (control cabinet) or 6 units (small distributor)	
Operating temperature	-30 .... +75°C [2]	ECR-EW300
	-30 .... +70°C [3]	ECR-LW300 / ECR-LW320
Humidity	0 ... 95 % (non-condensing)	
IP rating	Housing: IP40	
Approvals & Standards		
Certifications	ECR-LW300:	CE, UKCA
	ECR-LW320:	CE, RCM (only via Australian sales partner)
	ECR-EW300:	CE, UKCA
EMC	Emission: EN 55032 Class B, EN 61000-6-3; Immunity: EN 55035 (replaces EN 55024), EN 61000-6-2	
Product safety	IEC/EN 62368-1	
Environmental Tests	Tests vibration and mechanical shock as per DIN EN 61131-2 and EN 60068-2-6, EN 60068-2-27; temperature tests as per EN 60068-2-1, EN 60068-2-2, EN 60068-2-14, EN 60068-2-30	
Operation time	MTBF > 770.000 h (25 °C), as per standard SN 29500 (according to IEC 61709)	

[1] Please check the availability of the Cellular communication 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 and South America.

[2] +70 ... +75 °C: extended temperature range

[3] +65 ... +70 °C: extended temperature range

(refer to www.insys-icom.com/en/extended-temperature-range/)

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

Order Numbers and Accessories

Available variants

Product Description	Features	Art. no.
ECR-EW300	LAN/Wi-Fi router, 2 Ethernet ports, 1x RS232, 1x RS485, 2 digital inputs, 2 digital outputs	10021493
ECR-LW300	4G/Wi-Fi router, 2 Ethernet ports, 1x RS232, 1x RS485, 2 digital inputs, 2 digital outputs	10021494
ECR-LW320 end of life	4G/Wi-Fi router (Australian variant), 2 Ethernet ports, 1x RS232, 1x RS485, 2 digital inputs, 2 digital outputs	10021495

Suitable accessories

Product description	Description	Art.-nr
Magnetic Antenna 4G/3G/2G SMA	Magnet mounting, height 72 mm, 3 m cable, SMA (m), IP rating IP65	10019504
Outdoor Wall Antenna 4G/3G/2G SMA	Wall mounting incl. bracket, height 220 mm, 5 m cable, SMA (m), IP rating IP65	10020596
Allround Antenna 5G/L4G/3G/2G	Screw or wall mounting, incl. steel angle, height 82 mm, 5 m cable, SMA (m), protection class IP66	10022961
Roof mount antenna 4G/3G/2G SMA	Screw mounting, height 15 mm, 3 m cable, SMA (m), IP rating IP67	10022309
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	Magnet mounting, height 72 mm, 1.5m cable rev.SMA(m), protection class IP67	10019797
Outdoor Wall Antenna Wi-Fi 2.4 GHz rev.SMA	Wall mounting, incl. bracket, height 270 mm, 2.5 m cable rev.SMA (m), protection class IP65	10022599
Antenna with hinge Wi-Fi 2.4 GHz rev. SMA	Mointing directly on device socket, length 137 mm, variable angle 0-90°	10000661
Power supply 24V 15W	Power supply unit for DIN rail, wide-range input voltage AC and DC, protection against short circuit / overload / over voltage	10022848
Wall power supply 24V 25W international	Power supply AC/DC with mains plug, suitable for desktop use, wide input, voltage range, protection against short circuit/overload/over voltage	10022849
icom Connectivity Suite - VPN	Supports VPN service for remote maintenance, remote access and M2M communication www.insys-icom.com/produkte/managed-services/vpn-service/	various
icom Connectivity Suite - M2M SIM	Industrial SIM cards, multi-roaming, pooling, management portal www.insys-icom.com/produkte/managed-services/m2m-sim-service/	various
icom Router Management	Supports central router management for FW updates, configuration management, connection monitoring, container updates, mass rollout, certificate management; available as public/private cloud (server) Available as public/private cloud (server) installation or onPremises www.insys-icom.com/produkte/managed-services/device-management/	various

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