



ECR-LW300



The professional router ECR-LW300 is a smart, compact and versatile device for your M2M and IoT applications.

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 ECR-LW300 is a LTE version and offers cellular redundancy via dual SIM and fallback 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 to realise applications like reporting or benchmarking across different plants thanks to a plug & play connection to cloud services.

Technical Highlights

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

Mobile communication

Frequency bands, data rates	4G/LTE*: 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)
Antenna connection	1 x 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

Ethernet-Switch, interfaces

Ports	2 x RJ45, 10/100 MBit/s, full/half-duplex, auto MDI-X, 1.5 kV isolation voltage
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In addition to a 2-port switch, the LTE mobile router also has two serial interfaces, with which serial devices can be connected directly to the router and thus be integrated into IP networks. Sensors, actuators and similar devices can be connected via two digital inputs and outputs each.

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Create a VPN connection easily and securely With the DELTA LOGIC Connectivity Service.

<https://connectivity.deltalogic.de>

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, SNMP traps, MCIP; switching profile, switching connection, changing modem state, starting timer, switching output or pulse sequence, activating firmware, reset, restart SmartBox container
Serial interfaces	
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 for VPN service DELTA LOGIC Connectivity Service
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 (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

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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
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Supply

Voltage	12 ... 24 V DC ($\pm 20\%$)
Terminals	2-pin terminal connectors, rigid/flexible conductors up to 1,5 mm ²
Power consumption	typical approx. 2.0 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 x H x D) in mm	105 x 90 x 42
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...+70 °C +70...+75 °C under restricted conditions (refer to www.insys-icom.com/restricted)
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)

* 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.



Through the integrated icom SmartBox, a Linux environment based on LXC technology, the router provides a platform independent of the operating system, including: for local storage and processing of data or for executing further programs and scripts (edge computing).