INSYS icom

Industrial Data Communication

All-in-one Cellular 4G Router
MRO-L200/-L210

Compact Power Pack for secure M2M and IoT applications

Latest technology and high performance combined in a compact housing characterise the professional routers of the new MRO series. The first devices of the series is the LTE router MRO-L200 that is also available as USA/Canada version (MRO-L210).

Besides its 4-port switch, an RS232 interface as well as digital inputs and outputs are available. With the integrated icom SmartBox, a Linux environment based on LXC technology, the router provides an operating system-independent platform, for example for local storage and processing of data or executing further programs and scripts (edge computing).

Like all routers of INSYS icom, the devices of the MRO series are also characterised by high system stability, longevity and consistent user guidance. VPN, a stateful firewall and many other security features like event-based messages provide for security.

Highlights

- High performance for broadband networks and high VPN data rate
- Dynamic routing
- Dual APN: Traffic division across 2 APNs
- Several VPN tunnels can be used in parallel
- Stateful firewall also in VPN tunnel
- Segmentation in several local IP networks
- Integrated Linux programming environment (LXC) for edge computing (icom SmartBox)
- Flexible administration with profile manager
- Extended event-based control (e.g. profiles, connections, redundancy)
- Access control via user roles
- PPPoE for external ADSL modem
- Quick start for icom Connectivity Suite – VPN

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Technical Data
MRO-L200/-L210

Mobile communication	
Frequency bands	
MRO-L200	4G/LTE*: 800, 900, 1.800, 2.100, 2.600 MHz; LTE Cat. 3 (DL: max. 100 Mbps, UL: max. 50 Mbps) 3G/UMTS/HSPA: 900, 1.800, 2.100 MHz; UMTS, HSPA+ (DL: max. 42 Mbps, UL: max. 5,76 Mbps) 2G/GPRS/EDGE: 900, 1.800 MHz; GPRS/EDGE Class 12 (DL: max. 237 kbps, UL: max. 237 kbps)
MRO-L210 (USA/Canada version)	4G/LTE: 700, 850, 1.700/2.100 (AWS), 1.900 MHz; LTE Cat. 3 (DL: max. 100 Mbps, UL: max. 50 Mbps) 3G/UMTS/HSPA: 850, 1700/2100 (AWS), 1.900 MHz; UMTS, HSPA+ (DL: max. 42 Mbps, UL: max. 5,76 Mbps) 2G/GPRS/EDGE: 850, 900, 1.800, 1.900 MHz; GPRS/EDGE Class 12 (DL: max. 237 kbps, UL: max. 237 kbps)
Antenna connection	2x SMA female (2G/3G/4G: Main, 3G: Rx Diversity, LTE: MIMO)
SIM	Slot for 1 Mini-SIM card (2FF), locked

Router	
Function	Up to 5 IP networks local (LAN) or as WAN, VLAN incl. tags and trunk ports; own DHCP server per IP network, static routing, routing priority configurable; dynamic routing OSPF, BGP, RIP, RIPv2, RIPng; netfilters: DNAT, SNAT, IP/port forwarding, netmapping, IP filters (stateful firewall), DNS relay, dynDNS support, Dual APN: traffic division across 2 APNs - e.g. for separating payload and management data (only cellular radio)
Security	OpenVPN (client and server), IP filters (stateful firewall) also in VPN tunnel, several VPN tunnels in parallel possible, IPsec, GRE (incl. multi-port), DMVPN, PPTP server
Redundancy	WAN chains: several WAN accesses configurable (prioritised and event-controlled), WAN groups: parallel operation of WAN interfaces or VPNs, several OpenVPN servers, additional redundancy via further MRcards

Ethernet switch, interfaces	
Ports	5x 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
Digital inputs	2x digital inputs, 1x low-active, 1x high-active (as per EN 61131-2, Type 1)
Digital outputs	1x Open collector output
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)	E-mail messages, SMS, SNMP traps, MCIP, start timer, profile switching, connection switching, reset, log out/turn off modem, activate firmware, pulse sequence

Serial interface	
RS232 (Serial1)	1 x RS232 / D-Sub-9 (m)
Functions	Serial-Ethernet gateway (incoming and outgoing connections, Modbus TCP/RTU gateway, modem emulation, editable AT answer list, phone number conversion to IP addresses), PPPoE for external ADSL modem

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), 1x configurable, 1x Signal (for cellular radio)
Authentication	Several users, different user roles and rights, RADIUS
Diagnosis	Comprehensive log files, support package, integrated help functions, diagnosis tools: ping, tcpdump, traceroute, DNS lookup, AT commands
Firmware updates	Incremental, fail-safe, automated via update server (http, ftp, https, ftps)

Edge Computing	
icom SmartBox	Linux programming environment: creation of LXC containers for programs and scripts (apps), ARMv7 CPU, 192 MB RAM, 2 GB flash memory
Additional features	NTP client and server, buffered real-time clock

* 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 and South America.

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Supply	
Voltage	12 ... 24 V DC (± 20%)
Terminals	5-pin push-in terminal connectors (maintenance free), rigid/flexible conductors up to 2.5 mm²
Power consumption	MRO-L200/-L210: typical approx. 2.5 W, max. 8.0 W
Ambient conditions	
Dimensions (WxDxH)	54 x 88 x 117 mm
Operating temperature	-30...+70 °C, -30...+75 °C under restricted conditions (refer to www.insys-icom.com/restricted)
Humidity	0...95% (non-condensing)
Mounting / protection class	DIN rail mounting / housing: IP40, terminals: IP30
Approvals & Standards	
Certifications	MRO-L200: CE MRO-L210: FCC Part 15 Class B, IC
EMC	Emission: EN 55032 Class B; Immunity: EN 61000-6-2, EN 55024
Security	IEC/EN 60950, 62368
Environmental conditions	Vibration/shock as per PLC standard 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 60068-30

Product description	Features	Order number
MRO-L200	LTE router, international frequencies, 2 inputs, 1 output, 1x RS232	10019400
MRO-L210	LTE router, USA/Canada frequencies, 2 inputs, 1 output, 1x RS232	10019403

Appropriate Accessories

Product description	Description	Order number/Information
Magnetic base antenna GSM/UMTS/LTE SMA	Frequencies (MHz): 700, 800, 850, 900, 1700, 1800, 1900, 2000, 2100, 2500, 2600	10019504
Outside mounted antenna GSM/UMTS/LTE SMA	Frequencies (MHz): 700, 800, 850, 900, 1700, 1800, 1900, 2100, 2300, 2500, 2600	10020596
Magnetic/screw/adhesive antenna GSM/UMTS/LTE SMA (only MRO-L200)	Frequencies (MHz): 800, 850, 900, 1800, 1900, 2100, 2500, 2600	10017462
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
Power supply unit	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.com/iCS/VPN
icom Connectivity Suite – M2M SIM	Industrial SIM cards, multi-roaming, pooling, management portal	insys-icom.com/iCS/SIM