

Industrial All-round Router MoRoS



MoRoS GPRS/HSPA



MoRoS ADSL



MoRoS LAN



MoRoS Modem/ISDN

The all-rounders for highest flexibility

The MoRoS series of INSYS icom is characterised by a large variety of possibilities that exceed pure routing by far. MoRoS devices consist of a modem, a router and a switch, provide a RS232 interface, digital inputs/ outputs and feature an integrated programming environment for user-specific applications (Linux sandbox).

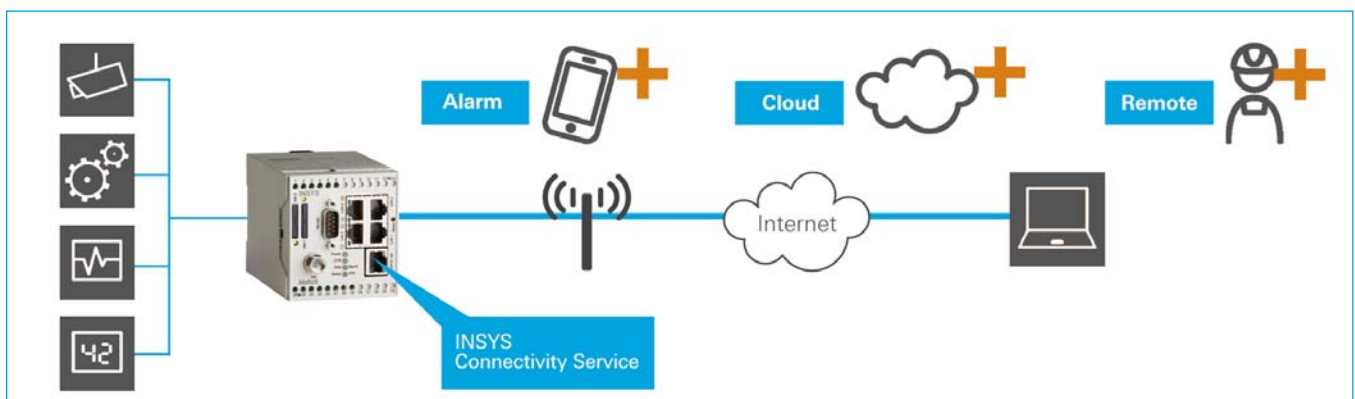
The configuration of the devices is simple and intuitive and can be managed via web interface. The combination of VPN and firewall provides a maximum of IT security. You'll set-up your own VPN network quick and easy with the optional INSYS Connectivity Service. PCs, routers and locally connected network devices can be integrated in just a few steps.

The Monitoring App allows you to extend the functionality of the devices by monitoring controls and other devices as well as sending messages via e-mail or SMS.

Moreover, application data can be transferred quick and easy to cloud services like Cumulocity or Telekom "Cloud der Dinge" for central management and visualisation.

Highlights

- Modem, router and switch in one device
- Comprehensive functionality and interfaces incl. RS232 + I/Os
- IT security: VPN, stateful firewall
- 4+1-port switch with 10/100 Mbit/s
- Redundant communication paths
- Integrated programming environment Linux sandbox
- Quick start for VPN service INSYS Connectivity Service
- Monitoring App for monitoring Siemens LOGO!™, S7 and Modbus TCP/RTU devices
- MoRoS ADSL supports VLAN tagging of German Telekom



Sample application with cellular radio networks

Technical Data

MoRoS - General Functions

Router	
Function	IPv4/IPv6 router, connection management, DHCP server and client, Full NAT (IP forwarding, port forwarding, netmapping), DNS relay, dynDNS support, PPOE for ADSL modem via LAN (ext), dial-in, dial-out, callback
Security	OpenVPN (client and server), IPsec (ESP normal/aggressive mode), GRE, PPTP, stateful firewall and MAC filters, RADIUS authentication, 10 users for dial-in, authentication via PAP/CHAP/MS-CHAP/MS-CHAP 2, dial filters for dial-out, Linkloss Detection, Failed Login Detection, no backdoor
Redundancy	LAN ext. port for external DSL modem (except MoRoS ADSL), RS232 interface for external phone modem, 2 dial-out targets, 2 OpenVPN servers, 2 SIM card slots (with MoRoS GPRS/HSPA)
Connection stability	Connection monitoring on several levels, hardware watchdog

Ethernet Switch, interfaces	
Ports	4+1 x RJ45 (4 switch ports + 1 LAN/ext) 10/100 MBit/s for full and half duplex operation
Function	Automatic detection of patch cable/cross-over cable, automatic speed adjustment, port mirroring
Serial interface	Serial-Ethernet gateway (incoming and outgoing connections, Modbus TCP/RTU gateway, modem emulation, editable AT answer list, phone number conversion to IP addresses)
Inputs/Outputs	2 digital inputs (low active) for message dispatch, dial-out connection establishment (dial out, VPN serial), VPN tunnel, 2 potential-free outputs switchable via web interface, via SMS, time-controlled, connection display PPP/VPN

Operation	
Configuration	Local and remote web interface (http, https), command line interface (CLI), Telnet, SSH, text and binary file (also for backup), quick start for ICS Menu languages: German, English, French
Indications (LEDs)	Connection status, data/signal, device status/VPN, power, switch ports
Diagnosis	Comprehensive log files, support package, integrated help functions, Diagnosis tools: ping, tcpdump, traceroute, DNS lookup, AT commands
Customer-specific programming environment	User access to embedded Linux (sandbox), 150 MB permanent memory, socket access, example programs: e-mail and SMS client, serial logger, etc.
Messages	Hardware watchdog, system messages via e-mail, SMS (not MoRoS LAN and ADSL), SNMP traps, SNMP V1/V2c/V3
Events for messages (selection)	Establishing WAN or VPN connection, alarm or pulses on input 1, auto update, ethernet link up/down, configuration change, firewall violation, failed authentication
Additional features	NTP client and server, buffered real-time clock, optional monitoring packages
Updates	Update of firmware and configuration (local and remote), daily auto update via server (http, ftp)

Environmental conditions	
Power supply	10 ... 60 V DC ($\pm 0\%$)
Humidity	0...95% (non-condensing)
Mounting / protection class	DIN rail mounting / housing: IP40, terminals: IP20
Applied standards	Radiation: EN 55022 Class B, EN 61000-6-3 Interference resistance: EN 55024, EN 61000-6-2 Security: EN 60950-1 (except MoRoS LAN, since not required)

Monitoring App (monitoring function)	
Monitoring elements	Timer, incoming SMS for cellular devices, internal flags
Logical combination of the elements	AND, OR, NOR, NAND, XOR
Actions	Message dispatch, http call, timer start
Messages	SMS, e-mail: Freely configurable text, also actual values from monitored elements

Technical Data

MoRoS Variants - Specific Functions of Individual Versions

MoRoS GPRS/HSPA - Cellular radio

MoRoS GPRS	2G: 850, 900, 1,800, 1,900 MHz; CSD, GPRS/EDGE Class 12 Max. downlink 236 kbps / max. uplink 236 kbps
MoRoS HSPA	3G: 850, 1,900, 2,100 MHz; UMTS/HSPA 3GPP Release 6 max. downlink 7.2 Mbps / max. uplink 5.7 Mbps 2G: 850, 900, 1,800, 1,900 MHz; CSD, GPRS/EDGE Class 12 Max. downlink 236 kbps / max. uplink 236 kbps
Antenna connection	1 x FME male
SIM	2 slots for 2 redundant Mini-SIM card (2FF), locked
Power consumption (during connection)	Approx. 3 W (logged in), max. 6.5 W (data transmission)
Dimensions (WxHxD)	70 x 75 x 110 mm (4 HP)
Operating temperature	-30...+55 °C -30...+60 °C under restricted conditions (refer to www.insys-icom.com/restricted)
Applied radio standards	MoRoS HSPA: EN 301 489-1, EN 301 489-7, EN 301 489-24 MoRoS GPRS: EN 301 489-1, EN 301 489-7, EN 301 511
Certifications	CE, FCC part 15 class A (not for MoRoS GPRS)

MoRoS LAN - Ethernet

Power consumption (during connection)	Approx. 2.5 W, max. 3 W
Dimensions (WxHxD)	70 x 75 x 110 mm (4 HP)
Operating temperature	-30...+70 °C -30...+85 °C under restricted conditions (refer to www.insys-icom.com/restricted)
Certifications	CE, FCC part 15 class A

MoRoS ADSL - ADSL

MoRoS ADSL A	Annex A/M/L
MoRoS ADSL B	Annex B
MoRoS ADSL J	Annex J/B*
ADSL protocol	ADSL (TR-067), ADSL2, ADSL2+ (G.992.1, G.992.2, T1.413, G992.3, G.992.5, TR-100) PPPoE, PPPoA, bridge (RFC 1 483), IPoE (static or DHCP); LLC and VC-MUX encapsulation
Power consumption (during connection)	Approx. 5 W, max. 6 W
Dimensions (WxHxD)	100 x 75 x 110 mm (approx. 5.7 HP)
Operating temperature	-20...+ 55 °C
Certifications	CE, FCC part 15 class A

* Please use MoRoS ADSL 2.1B PRO in case of parallel operation with ISDN devices

MoRoS Modem/ISDN - PSTN/ISDN

MoRoS Modem	Analogue modem (PSTN): Dial-up line up to 56 kBits/s, international use
MoRoS ISDN	ISDN: Euro ISDN up to 64 kBits/s
Power consumption (during connection)	Approx. 2.5 W, max. 3 W
Dimensions (WxHxD)	70 x 75 x 110 mm (4 HP)
Operating temperature	
MoRoS Modem	0...+55 °C
MoRoS ISDN	-20...+55 °C
Certifications	CE, FCC part 15 class A (not for MoRoS ISDN)

Order Numbers

MoRoS

Order numbers

Product description	Features	Order number
MoRoS LAN PRO	LAN-LAN router	10000208
MoRoS Modem PRO	Analogue modem (PSTN)	10000199
MoRoS ISDN PRO	ISDN TA	10000202
MoRoS GPRS PRO	2G	10000205
MoRoS HSPA PRO	2G/3G	10000212
MoRoS ADSL A PRO	ADSL Annex A/M/L	10014487
MoRoS ADSL B PRO	ADSL Annex B	10000216
MoRoS ADSL J PRO	ADSL Annex J/B*	10016203

* Please use MoRoS ADSL B PRO in case of parallel operation with ISDN devices

Suitable accessories

Product description	Features	Order number
Magnetic base antenna GSM/UMTS (2G/3G)	Frequencies (MHz): 850, 900, 1,800, 1,900, 2,100	10000647
Outside mounted antenna GSM/UMTS (2G/3G)	Frequencies (MHz): 850, 900, 1,800, 1,900, 2,100	10000657
Threaded roof antenna GSM/UMTS (2G/3G)	Frequencies (MHz): 850, 900, 1,800, 1,900, 2,100	10000674
Antenna extension	5 m; device connection: FME (f), antenna connection: FME (m)	10000737
Antenna extension	10 m; device connection: FME (f), antenna connection: FME (m)	10000738
Antenna extension	15 m device connection FME (m), antenna connection: FME (m)	10000739
Antenna extension	20 m; device connection: FME (f), antenna connection: FME (m)	10000740
Power supply unit	24 V power supply unit for DIN rail	10014249
INSYS Connectivity Service	VPN Service for M2M Applications	www.insys-icom.com/connectivity
M2M SIM cards	Cards, management portals, etc.	www.insys-icom.com/M2M-SIM

Monitoring Packages

Product description	Features	Order number
Monitoring package LOGO!™	Licence for monitoring Siemens LOGO!™ 0BA4 through 0BA8	10017303
Monitoring package Modbus TCP/RTU	Licence for monitoring Modbus TCP/RTU, function codes 1-6	10017305
Monitoring Package S7	Licence for monitoring Siemens S7 -200/-300/-400/-1200/-1500	10017306