

IK-401.

Industrial 4G LTE cat.4 modem

Communication interface IK-401 is a device operating in 4G LTE/3G/2G networks.

It provides a network infrastructure via Ethernet port and three RS485 ports.

Work parameters can be modified locally or remotely, as well from internet browser level (WEB server password protected) as via dedicated software. Remote management of device's work is possible also with the help of **SNMP or GAZ-MODEM 3 protocol**.

The interface has an advanced mechanism that monitor connection correctness with **4G/3G/2G** networks and a mechanism to perform remote firmware update. Use of two SIM cards, two independent, monitored power supply connections, provides a redundancy and additionally improves network reliability. Due to typical network problems regarding connection stability, the modem has been equipped with a number of advanced mechanisms allowing maintaining high quality of connection, monitor and re-log device to the network if necessary.

IK-401 allows connecting additional expansion modules with **bistate NAMUR** inputs of normal and intrinsically safe structure, current and bistate outputs.

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PLUM Sp. z o.o. reserves the right to introduce amendments in construction of the devices, without prior notice.

Functions indicated above are for illustrative purpose only, they are adjusted depending on Manufacturer/Producer and software of system concerned.

Contracting entity is obliged to inform PLUM Sp. z o.o. of required functionalities.



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Main features.

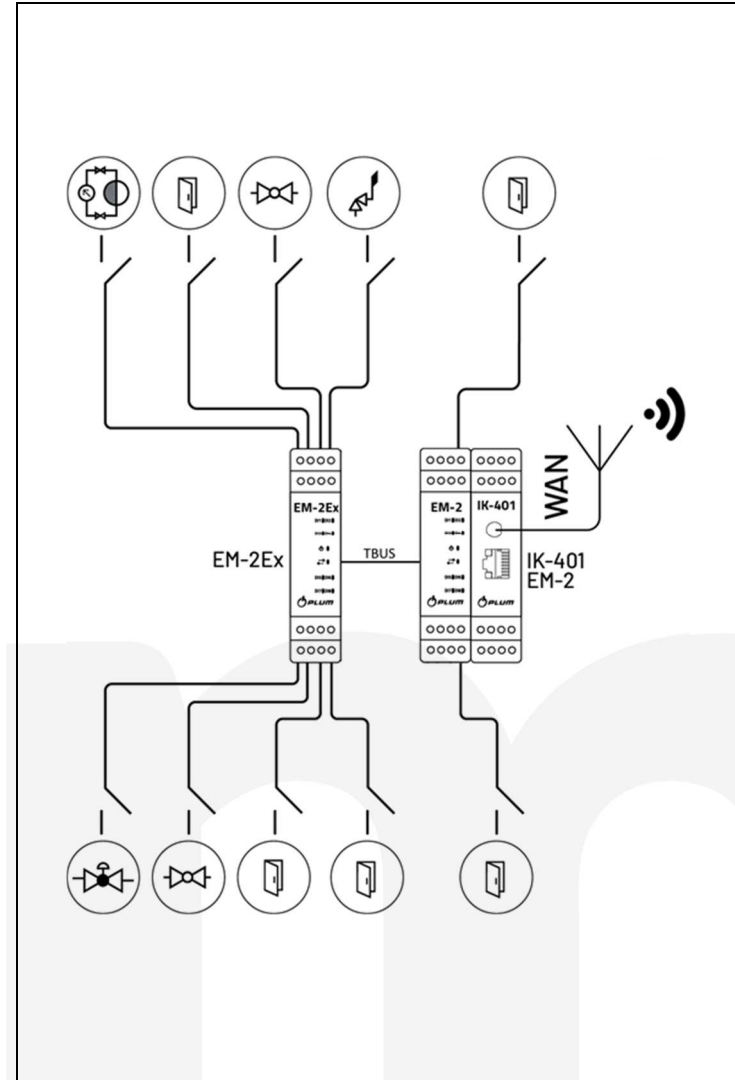
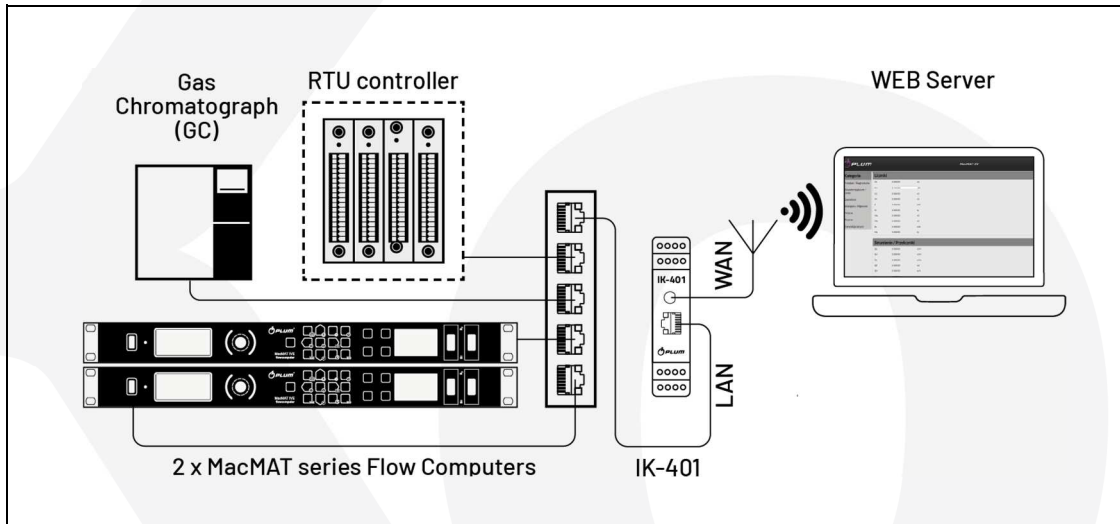
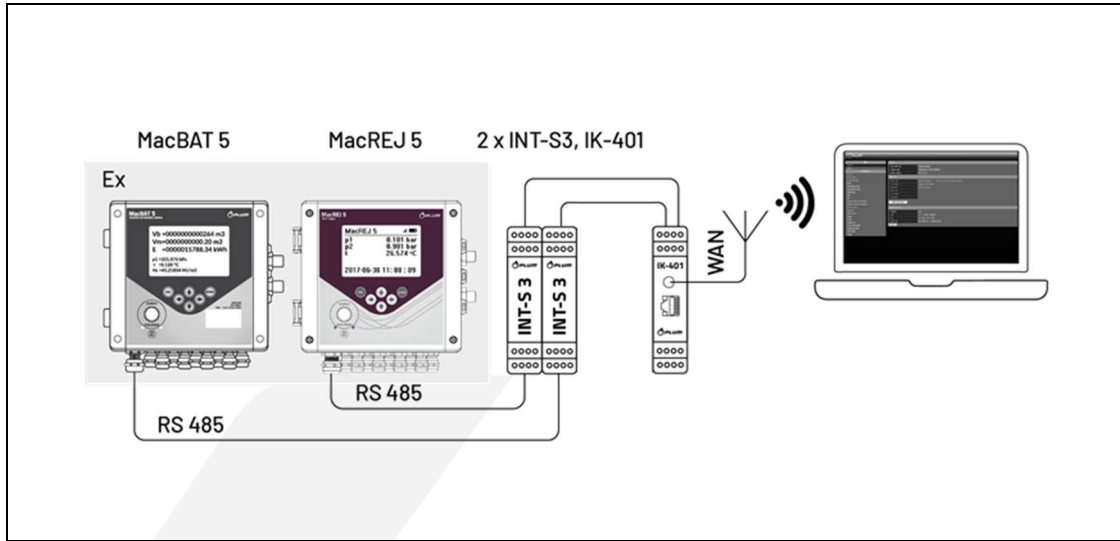
- Six-band modem working in following technologies: 4G LTE cat.4, 3G, HSPA+, GPRS, EDGE
- Support for virtual MVNO network operators
- Wide range of working temperature $-25^{\circ}\text{C} \div +65^{\circ}\text{C}$
- Redundant system to support two SIM cards and two independent power supplies
- Local and remote modem configuration and encoded firmware update
- Three independent RS485 ports (two of them galvanically insulated) and the Ethernet port
- Built-in four programmable analog/digital inputs
- Two built-in digital outputs
- TBUS data and power supply bus connector for expanding the intrinsically safe and normal signaling digital input modules
- Built-in GAZMODEM2/3 protocol webserver – GM Reader function for direct readout, configuration, diagnostics of devices connected with this protocol



Technical data.

Dimensions	99 x 22,6 x 122 mm (height, width, length)	Ethernet port	1x RJ45 LAN 100Mbit, Auto-MDI/MDIX
Housing	Mounting on DIN TS35 bus, protection level IP40	Power consumption with supply voltage=12V (average value)	<ul style="list-style-type: none"> • Standby mode in 2G/3G network: 160mA • Standby mode in 4G network: 180mA • Transmmission in 2G/3G network (RSSI -80dBm): 240mA • Transmission in 4G network (RSSI -76dBm): 220mA
Working temperature range	-25°C ÷ 65°C, cold start-up -25°C	Inputs	<p>4 inputs working as:</p> <ul style="list-style-type: none"> • Analog inputs $U_{in}=0\div 10V$; • Bistate inputs; low state (L) below 0,8V; high state (H) above 1,5 V <p>($U_{in}=0\div 30V$); selectable signal for active state</p>
Modem	4G, bands: B1, B3, B7, B8, B20, B28 3G, bands: B1, B8 2G, bands: 900, 1800 MHz	Outputs	2x DO, OC with max. load 0,1A/channel
Data transmission technologies	LTE cat 4, HSPA+, GPRS, EDGE	Transmission protocols	Modbus RTU, Modbus TCP (readout of inputs status, work parameters, configuration, outputs control), GAZ-MODEM 2, GAZ-MODEM 3 (readout of inputs status, work parameters, load/save configuration, events registration readout, data structure readout)
Network protocols	TCP/IP, UDP, HTTP, SMTP, DHCP, ICMP, SNMP, FTP, SMS	Autodiagnostics	Integrated hardware and software watch-dog. Standalone ping diagnostics. Built-in ability to remotely reboot from SMS and web. System log available from web panel.
SIM sockets, SIM card	2 microSIM sockets (3FF), 3V/1,8V		
Antenna socket	SMA-F, 50 Ω		
Supply voltage range	DC: 9V÷30V; two independent supply inputs with voltage measurement		
Transmission ports	3x RS485, 2x galvanically insulated (up to 2kV), Supported transmission speed: 4800, 9600, 19200, 38400, 57600, 115200, 230400, 460800 [b/s]. Parity control: none, even, odd, mark		
Reporting events	SMS, EMAIL, TCP, SNMP		

Communication.



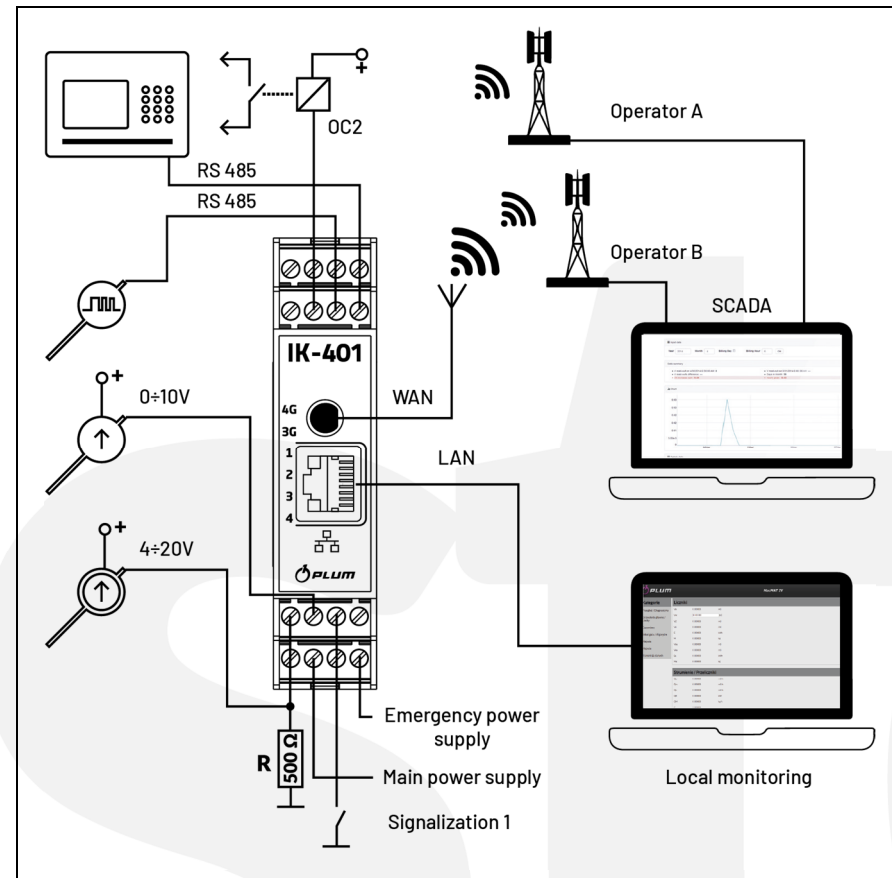
Application.

The interface is equipped with four inputs. Each input can work as bistate or analog. Input activation in bistate mode (grounding short-circuit) can initiate **sending text message via SMS, TCP or e-mail**. The content of these messages is set by user and can be different for the beginning of active state occurrence and its ending. **Input activity is also indicated with relevant LED diode (1...4).**

Input in analog mode for remote readout of transducers or other devices with **0÷10V output**. Using additional measuring resistor allows cooperation with 4÷20mA output devices, which provide current loop power supply.

IK-401 has also two digital, bistate outputs. Activation of these outputs is defined by user or incidentally: they can react to transmission redirection to one of RS485 ports in order to activate connected devices or to indicate no connection to GSM network. It can also be controlled remotely.

Additional connector placed on the bottom side of the device's housing, allows cooperation with expansion module, equipped with additional options, such as e.g. analog inputs, signal inputs. To connect the device with additional expansion module it is necessary to use special TBUS bus connector.



GM2 Reader.

IK-401 has the GM2 Reader function, to configure the devices (e.g. gas volume correctors, pressure loggers) equipped with GAZ-MODEM 2/3 protocol. Local modem interface allows to test local communication, readout, DP table parameters configuration and direct work diagnostics of the correctors connected to RS485 ports, by reading events along with additional information.

