plum GAS

MacREJ 5

electronic gas volume, pressure and temperature data logger

MacREJ 5 is a complete data logger solution designed to record and inspect the performance and stability of the whole Pressure Regulating and Metering Stations. It can work supplied from internal batteries or be connected to the external power source, what converts it to online station monitor for SCADA systems.

Design of the device allows for its work directly on the metering station even in Ex Zone 0. Device equipped with pressure and temperature sensors can work as a remote pressure regulator maintenance device.

Installed internal modem working in various modes can inform immediately station service about malfunction or predict and prevent upcoming replacement of pressure regulators.

key benefits

- configurable bar graphs with historical records of pressure allowing for instant pressure regulator inspection on site, showing unwanted pressure fluctuations
- immediate alarming of gas station service when quantities are out of programmed ranges
- significance level of the alarms - thresholds with flag of alarm and warning
- interface-free configuration using NFC
- internal modem presence does not affect Ex feature of the complete unit
- NAMUR inputs for proximity sensors working on battery
- possibility to add any sensor communicating in Modbus protocol

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edition
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technical data

housing material	poycarbonate (version 1)/ aluminum (version 2)
dimensions/ weight	207 x 194 x 77 mm/ 1.3 kg (version 1) 202 x 167 x 93 mm/ 3.5 kg (version 2)
relative humidity	maximum 95% at temperature of 70 °C
ambient temp. range	from -25 °C to 70 °C
housing protection class	IP66 for outdoor installations
keyboard	6 pushbuttons (version 1)/ 18 pushbuttons (version 2)
display	graphical, 4”, backlight, operation in the full range of operating temperatures
Ex feature	II 1G Ex ia IIB T4 Ga certificate: FTZÚ 17 ATEX 0047X
internal power supply	3 lithium D-size batteries: • 1 battery to supply data logger • 2 batteries to supply internal modem
external power supply	dedicated interface INT-S3, intrinsically safe power supply source for EVC and internal modem at the same time; technical data: 11÷30 VDC input voltage, 5.7 VDC output voltage (Ex side), inputs and outputs separation, transmission separation
transmission protocols	Modbus RTU, Modbus TCP (available in version with integrated modem), Modbus RTU MASTER MODE, GAZ-MODEM 1, 2, 3 (other protocols per request)
transmission ports	• three independent serial transmission ports (COM1 - RS485 or optional RS232, COM2 - RS485 - shared with Modbus MASTER input baud rate up to 256 kb/s, optical interface IEC 62056-21 • NFC IEC 14443 interface • optional integrated modem 4G LTE/ 2G
resistance to mechanical and electromagnetic conditionse	M2/ E2
control outputs	• up to 4 intrinsically safe, configurable digital outputs (OC type): - 1 configurable as binary or frequency (0÷5000 Hz) output - 3 binary outputs • binary outputs triggered by alarm/event or counter • frequency output triggered by measured value (p1, p2, t, Qm) • 2 4÷20mA outputs triggered by measured value (p1, p2, t, Qm) realized by extension module EM-1
horizon of data registration	• data registered in period 1-60 minutes – 55000 records (over 6 years @60min) • hourly data – over 2 years • daily data – over 4 years • monthly data – over 10 years • momentary data (triggered 1-second logging) • alarms/ events memory – over 6000 records
inputs	• up to 6 intrinsically safe, configurable, binary digital inputs, shared with: - 2 LF inputs, frequency 0÷2 Hz, WIEGAND standard 0÷60 Hz (option), flow direction detection • up to 10 intrinsically safe, configurable digital inputs NAMUR type (EN60947-5-6): - 2 binary inputs, work with NAMUR proximity sensors on battery mode - 8 additional NAMUR inputs realized by extension module EM-2Ex • pressure sensor p1/p2 - internal or external – absolute or gauge pressure sensor. Gauge pressure ranges: 0÷0.1/ 0÷0.3/ 0÷6/ 0÷10/ 0÷20/ 0÷40/ 0÷70/ 0÷100 bar G; absolute pressure ranges the same as for p1 sensor; typical error of p1/p2 pressure measurement (gauge): 0.15% of range • temperature sensor Pt1000 class A or B with cable length compensation, four wires, diameter 5.7 mm or 6 mm;

20 °C (± 3 °C)	**(-25 ÷ 70) °C**
± 0,1%	± 0,2%

typical error of temperature measurement: 0.08%

• RS485 Modbus MASTER input (shared with COM2 port; with 3.6V power supply output) for readout of up to 16 external devices with Modbus RTU output (e.g. digital pressure or temperature transducers), capable to operate on battery

accessories	• eWebtel - measuring data acquisition system • ConfIT! - configuration software for PC • ConfIT! data loggers - mobile application • OptoBTEx - optical interface • INT-S3 - signal barrier, power supply source, transmission interface • EM-1/EM-2/EM-2Ex - extension module

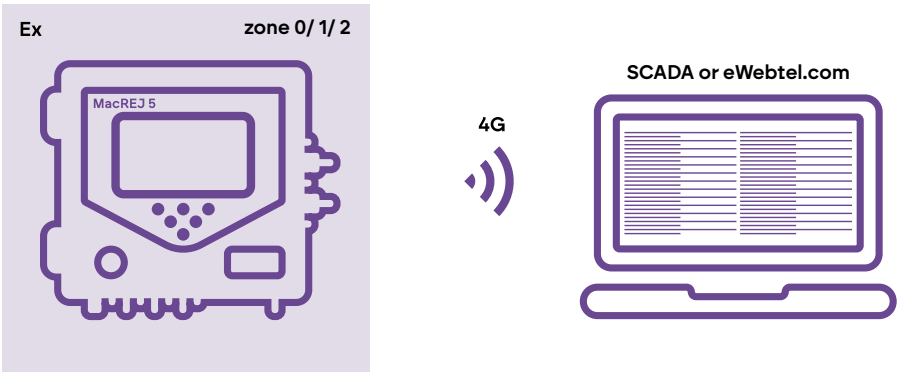
features

- optional built-in modem for 4G LTE Cat.1 and 2G networks
- support for NFC communication standard, optical connection and two RS485 serial ports
- graphical 4” display with backlight works in temperatures down to -30 °C
- configurable main screen widgets with pressure stability trends and other configured values as bar graphs
- ATEX-certified for operation in any explosion hazardous zone (up to zone 0, 1, 2), also with integrated modem
- internal or external pressure sensors
- configurable two LF pulse inputs for gas meters
- possibility of reading/controlling in Modbus MASTER mode up to 16 external devices in Modbus RTU
- protocol via RS485 (e.g. digital pressure transmitters, EM series extension modules)
- 10 cable glands for connection of signal and measurement circuits
- built-in illumination of the connection terminals (aluminum housing version)
- low operating costs due to the use of standard lithium batteries

application

- **direct data transmission**

  Direct data transmission to the IT system via built-in 4G LTE modem.



- **application**

  of the MacREJ 5 data logger