

# MacREJ 5.



## Data Logger for Pressure-reducing and Metering stations

The **MacREJ 5** Data Logger designed for Pressure Reduction stations such as City Gates, CNG stations, Power Plants or Petrochemicals. Registers parameters such as inlet and outlet pressure, volume, flow, temperature, energy; monitors in real time the pressure reduction system and supervises the security units. MacREJ 5 is designed to operate in explosive zone 0. In battery mode, the transmission of recorded data is being transmitted according to the scheduled time (PUSH and PULL) or with the activation of emergency alarms. time, online. time.



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

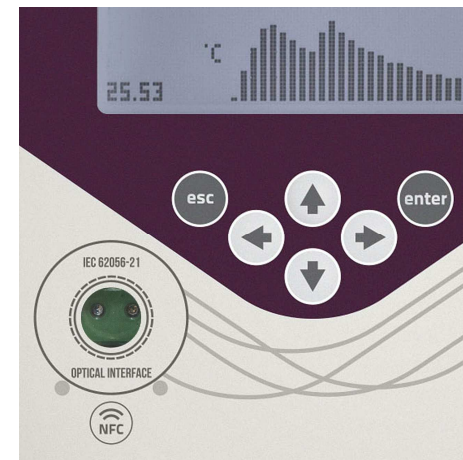
Functions indicated above are for illustrative purpose only, they are adjusted depending on Manufacturer/Producer and software of system concerned.

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

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# Main features.

- Integrated 4G LTE Cat.1, 3G and 2G modem
- Support for NFC proximity communication standard, optical connector compliant with IEC 62056-21 standard and two RS485 or RS232 serial ports
- Graphical 4" display with backlight, allowing operation in temperature up to -30 °C
- Configurable widgets on the main screen presenting daily/monthly graphs as bargraphs
- ATEX-certified for operation in any explosion hazard zone (to zones 0, 1, 2), also for integrated modem
- Process pressure sensors as integrated or external, integrated optional barometric sensor for conversion of gauge pressure/absolute value
- Support for eight bistate inputs: potential-free and inductive sensors NAMUR type with battery or mains power supply
- Two configurable LF pulse inputs for gas meters
- MODBUS RTU Master function for autonomous communication with external sensors/devices
- Equipped with up to ten metal glands allowing connection of signaling-measuring circuits
- Built-in terminal strip backlight when case is open (aluminum housing only)
- Low operating cost due to use of standard, commercially available lithium batteries
- Ability to operate on battery power supply for up to 15 years



# Technical data.

|                           |   |
|---------------------------|---|
| Dimensions / Weight       | 206x194x76 mm / 1,3 kg  |
| Housing material          | Poycarbonate/Aluminum   |
| Relatvie humidity         | Maximum 95% at temperature of 70°C  |
| Ambient temperature range | From -25°C to 70°C  |
| Housing protection class  | IP66 for outdoor installations  |
| Keyboard                  | 6 pushbuttons/18 pushbuttons  |
| Display                   | Graphical, 4",backlight, operation at full range of work temperature  |
| Ex marking                | II 1G Ex ia IIB T4 Ga Certificate: FTZU 17 ATEX 0047X   |
| Internal power supply     | Standard lithium battery size D 3,6V/17Ah. Operation time: 5 years/one battery  |
| Modem power supply        | Two lithium batteries size D 3,6V/17Ah. Operation time: up to 5 years with three transmissions per day  |
| External power supply     | INT-S3 communication interface – switchable RS485 port, intrinsically safe power supply, two digital inputs/outputs. Interface supply voltage 11-30V DC |
| Transmission protocols    | MODBUS RTU, MODBUS TCP(integrated modem version), MODBUS RTU MASTER MODE, GAZMODEM2, GAZMODEM3, other protocols per request                             |

|   |  |
|---|--|
| Transmission ports                                      | <ul style="list-style-type: none"> <li>Two independent RS485 or RS232 COM1 and COM2 serial transmission ports, speed up to 256 kb/s</li> <li>Optical interface IEC 62056-21</li> <li>NFC IEC 14443 interface</li> <li>Optional integrated modem 4G LTE Cat.1, 3G, 2G</li> </ul>  |
| Resistance to mechanical and electromagnetic conditions | M2/E2  |
| Horizon of data registration                            | <ul style="list-style-type: none"> <li>Data registered in period of 1 second</li> <li>Hourly data – over 2 years</li> <li>Daily data – over 3 years</li> <li>Monthly data – over 10 years</li> <li>Events memory – over 4000 records</li> </ul>  |
| Inputs  | <ul style="list-style-type: none"> <li>8 intrinsically safe programmable digital inputs:</li> <li>2 reed LF/bistate inputs</li> <li>4 reed bistate inputs</li> <li>2 intrinsically safe inputs NAMUR type in EN60947 5-6 standard, ability to operate inputs on battery</li> <li>Pressure sensor p1, p2: 0-0,1 bar, 0-0,3 bar, 0-1 bar, 0-6 bar, 0-10 bar, 4-20 bar, 7-35 bar, 5-55 bar, 10-70 bar, 10-100 bar ended with M12x1.5 or NPT 1/4" thread – typical pressure indications accuracy – 0,15% of the range</li> <li>Temperature sensor PT1000 class A (4-wired) with cable length compensation, diameter 5,7mm</li> </ul> |
| Control outputs   | <ul style="list-style-type: none"> <li>Four intrinsically safe, bistate OC outputs:</li> <li>One configurable as bistate or frequency (0-5000Hz)</li> <li>three bistate outputs</li> </ul>   |

# Application.

1. Direct data transmission to the system – data readout via integrated modem with battery supply .

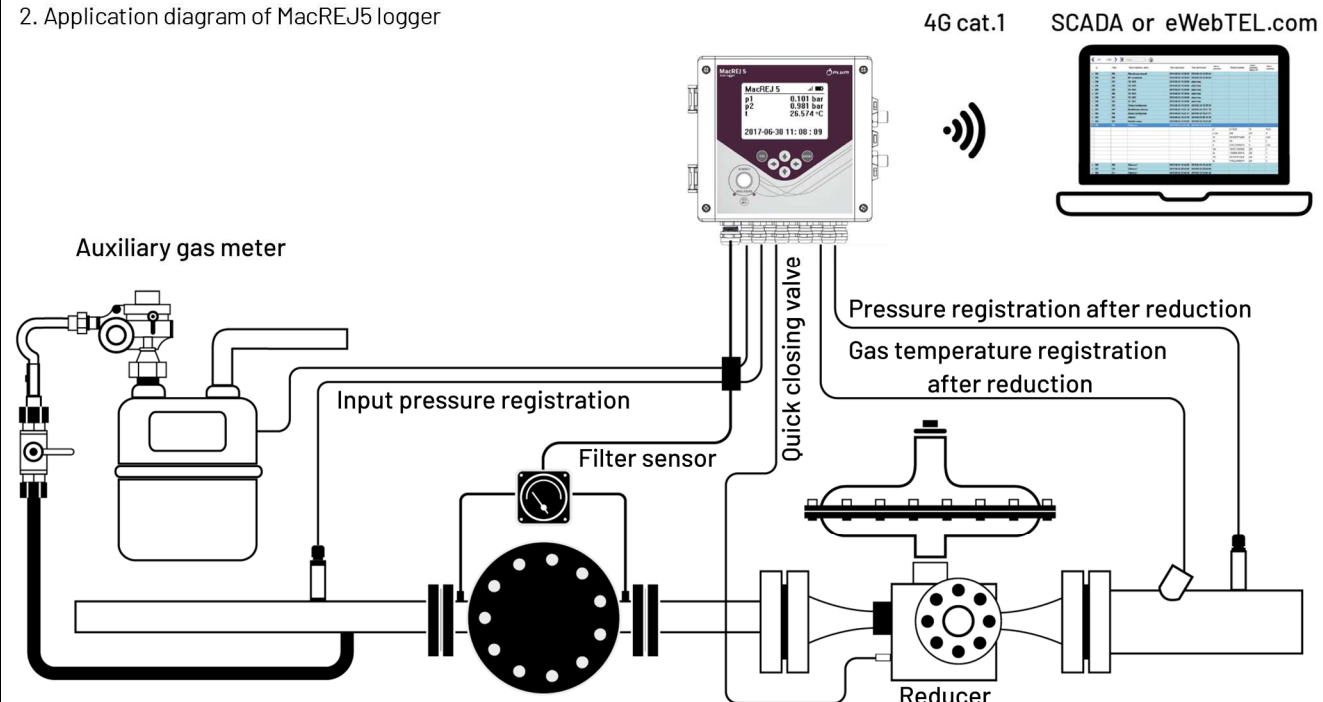
SCADA or eWebTEL.com



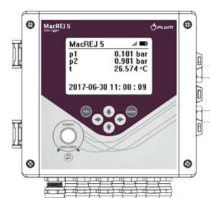
GSM/GPRS



2. Application diagram of MacREJ5 logger



3. Local readout and configuration



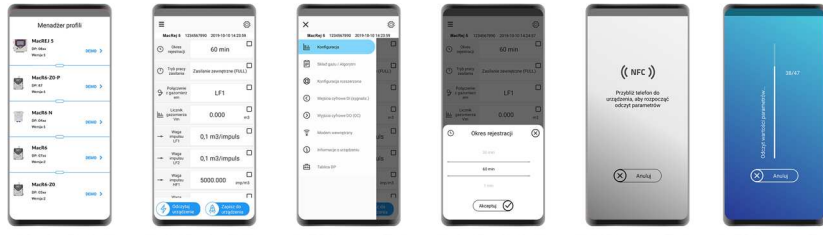
Optical interface OptoBTEx



NFC



# IT tools.



## ConfIT!

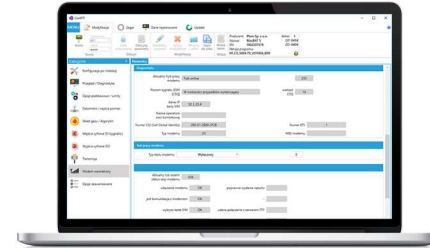
### Mobile application.

„ConfIT! data loggers“ application is designed for configuration of telemetric modules for water , gas and pressure loggers, including MacREJ5 produced by PLUM.

Application allows supporting installataion on a target object, configuration and edit of basic logger parameters.

Application communicates with devices directly using NFC or OptoBTeX bluetooth head via optical channel.

Download from Google Play store.



## ConfIT!

### PC tool for configuration and diagnostics of PLUM devices.

ConfIT! software allows configuration of PLUM products based on transparent graphical interface, which can be freely customized if needed. The basic functionality of the graphical device profiles allows configuration in basic and advanced mode. There is also configuration in text mode available. Each modified and unsaved value is marked with a distinctive color, so that the user is aware of each implemented modification. Is is also possible to replace the software in PLUM devices without using additional interfaces or programs. The program saves list of recently used devices, so there is no need to search for the device anew each time.

Configuration and software replacement in PLUM devices without additional interfaces and programs. Graphical user interface and functionality of graphical device profiles. Additional configuration in text mode. Installation in Windows system environment.

Download from the [www.plummac.com](http://www.plummac.com) website.



# Accessories.



## INT-S3.

### Communication interface.

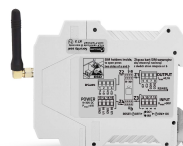
Interface ensures power supply and separation of connected measuring devices in stationary telemetry systems, powered from 230V mains or batteries. Data transmission is possible to computers or other devices with battery or mains supply, equipped with RS485 port. It allows for data readout from the devices placed in explosion hazard zone.



## EM-1.

### Expansion module.

EM-1 module is a device expanding functionalities of MacBAT 5 corrector by two additional current outputs working in the 4÷20mA, current loop standard and four OC type bistate outputs. The module can also operate as a standalone device. It has own table of available parameters, which can be programmed remotely using GAZMODEM2 protocol and MODBUS. Data readout and modification can be done from computer or other device with battery/ mains supply, equipped with serial port in RS485 standard.



## IK-401.

### Industrial router/communication interface 4G cat.4.

Communication interface IK-401 is a device that allows using telecommunication network for telemetric readings. The device is to be mounted on a DIN bus. The interface can operate in industrial environment. It has built-in and configurable by user self-control systems. In case of detection of operation disturbances device reset system is activated. IK-401 enables establishing connection in 4G/3G/2G (TCP/IP, UDP, FTP) mode. It has a built-in webserver of GAZMODEM2/3 protocol.



## eWebTEL.

### Software.

eWebTEL system is a platform collecting measurement results for comprehensive control and maintenance of gas network. It allows locating devices, graphical visualization of data transmitted from manometer and logger sensors. The software allows history overview of registered measurements and generating reports on:

- Average pressure measurements,
- Exceeding limits,
- Occurrence of failures and their duration,
- History of values of parameters defining the status of gas network.



## OptoBTEx .

### Optical interface.

OptoBTEx head serves for wireless data transmission from the devices equipped with optical communication interface compliant with IEC 62056-21 standard.

It allows using configuration software installed in mobile devices with MS Windows or Android (tablet, smartphone, laptop) operating system. Wireless communication takes place in Bluetooth 2.1+EDR Class 2 standard.



## Antenna 4G/3G/2G

### Antenna.

Base with a magnet, FME plug, cable length 1,5 m.

Properties:

- Frequency: 800/900/1800 MHz
- VSWR: ≤ 1.5
- Enhancement (dBi): 3
- Input impedance: 50 Ω
- Polarity type: Vertical
- Cable type: RG58