

Volume logger MacR6



Place for approximation or application of the magnet

INSTALLATION MANUAL FOR WATER METER

DOCUMENT EDITION: 1.1

IS RELATED TO SOFTWARE: 002.01

May 2014

1. Preparation of device for installation

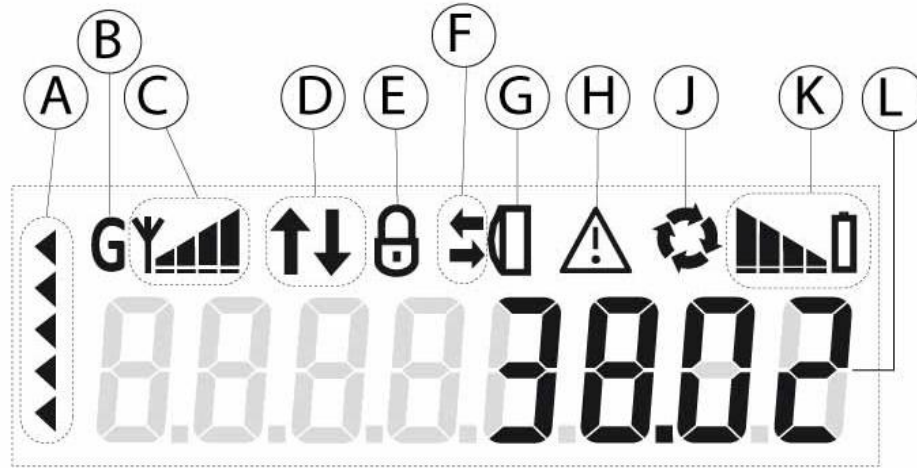
Shipped device may have turned off display, which suggest enabled storage operating mode (battery save). In order to turn on the device user need to quickly touch four times OPTICAL INTERFACE window with magnet. This procedure will enable first function of device menu called "SLEEP 3". At this point all indicators (A), place on the left side of the display will turn on and the start to dim out in sequence (from down to up). After touching device with magnet before all icon will dim out, on display will show sign "SLEEP2", then "SLEEP1" and "START" –after time indicated by progress bar– device is enabled

| magnet ↓↑ | magnet ↓↑ | magnet ↓↑ | magnet ↓↑ |
|-----------|-----------|-----------|-----------|
| | | | |

2. Menu

On the display of MacR6 P are presented icons indicating operating status and cyclic, basic information (L):

- Status of counter; current date and time



3. Service menu

Device have built-in Menu with service functions. It is enabled by tree quick touches of magnet to OPTICAL INTERFACE windows (it is indicated by tree blinks of icon (G)). This activates first option in menu marked as “SEr 1”. At this point indicator (A) will display all segments and start to dim out from up to down. During that moment, when touched again with magnet, device will go to next position in menu “SEr 2” etc. When stopped on selected menu – after elapsing of time indicated by bar (A) – options available in this menu are going to be displayed.

| | | | |
|--|--|--|--|
| Presentation of programmed rate of pulses and version of device software – alternately. | | Autotest procedure, required during installation process – allows to send data to server. | |
| IP number, obtained after logging to programmed APN | | Starts procedure of dynamic control of signal level for around one minute. | |
| ICCID number of installed SIM card. | | Entering this function will force sending of registered since the beginning of current month | |
| Battery replacement procedure. | | Starts of pressure measurement – every 5 seconds for around 1 minute (option available only in devices MacR6 PC - equipped with pressure transducer) | |
| Position in menu which doesn't enable any service function and allow to exit from service menu without modifications | | | |

4. Initial verification of pressure transducer (only devices MacR6 PC are equipped with pressure transducer)

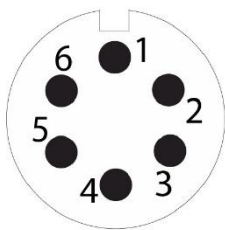
Using magnet enable option from service menu (“SEr8”), which allows for more frequent measurement of pressure (readout of transducer every 5 seconds for time of 1 minute), and presents results

on the device display. When transducers in not mounted to target point of measurement, then displayed value of pressure should oscillate in range of 0 ± 0.3 .

5. Installation

At point of device installation needs to be available, sufficient signal of GSM network to which used SIM card have access. SIM card used in device needs to meet the standards ETSI ETS 300 608 – it is necessary for proper operation of device in full range of ambient temperature.

Pulse transmitter mounted on the water meter needs to be connected to MacR6 socket using appropriate plug. Rate of pulses adequate to used transmitter need to be programmed in MacR6.



Pin nr. signal

- 1 Pulse input, (Pulse)
- 2 Tamper contact (no connection with grounding point means alarm)
- 3 Reverse direction of flow
- 4 Grounding point
- 5 NC

6 NC

(view from the side of socket)

Pressure transducer (the device MacR6 PC is equipped with one) have 1/2 inch connector, which allow to connect to water system. After connecting, again verify measured pressure – description in point 2. Measured pressure should change on the value, which is expected on measuring point.






6. Configuration of MacR6 with the use of OptoBTEx interface and application “Konfigurator rejestratorów”

In order to perform configuration, following things are required:

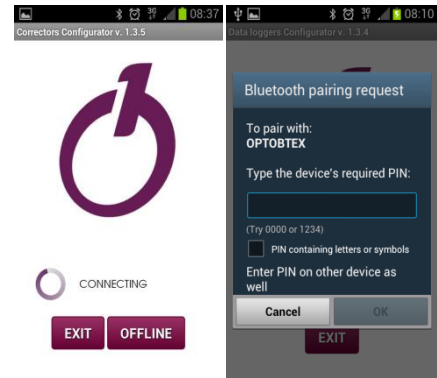
- Cell phone with Android operating system, which allow for wireless Bluetooth transmission
- OptoBTEx head,
- installed on cell phone application “Konfigurator rejestratorów” (available in Google Play <https://play.google.com/store/apps/details?id=com.plum.konfiguratorRejestratory>).

Operating steps

| | |
|--|---|
| a) Enable OptoBTEx head – touch the head with the label side to ferromagnetic metal. Blue LED will blink |  |
| b) Place OptoBTEx head on the MacR6 – On display should be visible icon (G) |  |
| c) Start on cell phone application „ |  |

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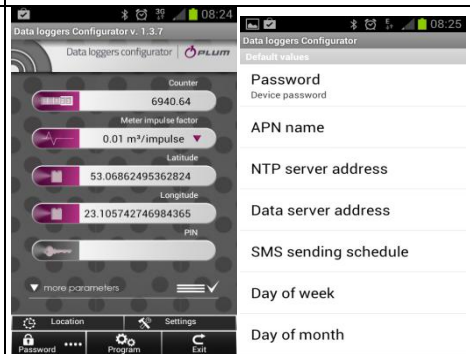
- d) Pair the OptoBTE_x head with the smartphone. During first pairing it is necessary to enter PIN number of OpteBTE_x head – it is available on the label of transmitter



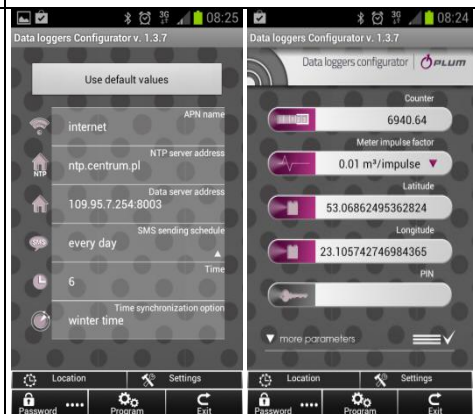
- e) After pairing is done, serial number of device and its configuration will be readout. On the display of device blinks icon (F)



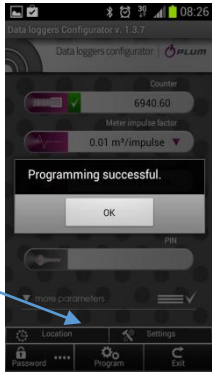

- f) After readout is complete a menu which allows for basic configuration is displayed. Option “Settings” allow for programming of parameters which are common for larger group of devices (i.e. parameter APN).



- g) Option „more parameters” allow for programming of additional parameters. When cell phone have GPS connection, then with option “Location” user can program into MacR6 its current localization. This information can be also set manually



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| | |
|---|---|
| h) Save new configuration to device – use button „Program”. |  |
| i) Remove OptoBTEx head. Icon (G) should disappear. |  |
| j) Verify on the display of device that the changes are implemented | |

7. Configuration with the SMS message

Device have option to configure its settings with SMS message. **In order to do this, number of used in MacR6 SIM card is required.**

Structure of SMS message is following:

K; authorization password; *parameter_1=new_value; parameter_2= new_value;.. ;parameter_n=new_value;*

K – Notethat this is configuration message

Authorization password – data which authorize the message (for modification), by default value 4096

parametr_1, parametr_2, parametr_n– string of letters (abbreviation) which is assigned to every modifiable parameter, detailed information are available in table with most common configured parameters





new_value – new value of modified parameter. As a decimal separator use period (recommended) or comma

NOTE: Sending SMS message without configured parameters (SMS in form: K; 4096;”), may be used for verification of device set up

List of most common configured parameters:













| Parameter | abr | Additional info |
|---------------------|------|--|
| Volume counter | v= | |
| Pulse rate | w= | Available options:[1],[10],[100],[1000] |
| schedule | h= | configure frequency of data report: everyday [1], once a week[2], once a month [3] |
| Report hour | g= | |
| Report day | d= | |
| APN name | apn= | |
| Data server address | asd= | Consist of address separated with colon from number of port. i.e.: www.ewebtel.com:80 |
| NTP server address | ntp= | Only address of the server |

Operating steps

| | |
|--|---|
| Enable service option „SEr 5”. It is done by double touch of magnet to Optical Interface connector. Detail info. About service menu are available in previous part of this document. |  |
| Wait until device confirm possibility to receive of configuration data. It will stay in this state for 5 minutes |  |
| Send SMS message with configuration data | message, which modify value of counter V: <i>K;4096;v=678.95</i> |
| When device obtain configuration message with correct format, it displays a note on the screen: |  |
| MacR6 replies with two messages – first with current data, second with configuration data sn – serial number w – rate of the pulse h – type of schedule (1 – everyday, 2 – once a week, 3 – once a month) g – reporting hour and end of the billing period d – reporting day and end of the billing period apn – apn name asd – data server address ntp – ntp server address v – volume counter | Example replies from device: - configuration data <i>MacR6;sn=1000113295;w=100imp/m3; r=7;h=1;g=12;d=14;apn=Internet; asd=101.10.12.15:8003;ntp=101.10.12.15: 8003</i> - current data <i>MacR6;sn=1000113295;ip=192.23.1.34; v=76594.45m3;sygnal=20; date=2013.08.01 12:10; bat=75%;fv=H1.0.0_S001.03_V1307</i> |
| Device will login to GPRS network (blinking icon “G”) and send data from configuration to server (blinking icon “arrow up”) |  |
| After uploading data to server, on the telephone number from which configuration message was sent, MacR6 will send a recap of data to server transfer procedure | <i>MacR6;sn=1000113295;sygnal=20; GPRS=SUKCES;RAPORT=SUKCES</i> |

8. Diagnostics after installation

Description of display icons behavior

| Icon | Behavior | Description |
|---|--------------------|--|
|  | Disabled | During last operation of GSM modem it didn't connect to APN (only user APN) |
| | Enabled | During last operation of GSM modem it connects to APN properly (only user APN) |
| | Blinking | Device is now working in GPRS (connected to user APN) |
|  | Disabled | During last operation of GSM modem there was no connection with SIM card |
| | Enabled | During last operation of GSM modem there was connection with SIM card |
| | Blinking | Device have now enabled GSM modem |
|  | Disabled | During last operation of GSM modem, SIM card didn't registered itself in network or signal level is low and does not guarantee proper operation in GSM network |
| | Enabled | During last operation of GSM modem, SIM card registered itself in network. Level of network is indicated by the number of bars. |
|  | Enabled | During last operation of GSM modem, PIN code for SIM card was correct. |
| | Blinking | During last operation of GSM modem, PIN code for SIM card was incorrect or SIM card is locked (requires PUK code) |
|  | Disabled | During last operation of GSM modem, full report was not sent properly |
| | Enabled | During last operation of GSM modem, full report was sent properly |
| | Blinking | Device is now sending report data |
|  | Disabled | During last operation of GSM modem, device didn't received any proper transmission or it didn't connect with the service server |
| | Enabled | During last operation of GSM modem, device received proper transmission from service server |
| | Blinking | Device is now receiving data. |
|  | Disabled | No OptoBTE head detected on OPTICAL connector (or 5 minutes passed since last transmission) |
| | Blinking | OptoBTE head detected on OPTICAL connector |
|  | Disabled | Device is not sending data through OPTICAL connector |
| | Blinking | Device is now sending data through OPTICAL connector |
|  | Disabled | Device is not receiving data through OPTICAL connector |
| | Blinking | Device is now receiving data through OPTICAL connector |
|  | Disabled | No interference by magnet (proper counting) |
| | Enabled | Interference by magnet detected (interference of counting accuracy) |
|  | Disabled | No changes on pulse input |
| | Blinking | Water meter detection mechanism detected |
| | Change in sequence | Changes on pulse input – duration time is 5 seconds since last pulse |
|  | Enabled | Battery charge level is proper, charge level is indicated by the number of bars |
| | Blinking | Battery charge level less than 10% |
| | Disabled | Battery charge level is too low for GSM model enabling |

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|----------------------------|--|
| Power supply: | Lithium - Thionyl LSH20 battery with high current, nominal voltage 3.6 V and a maximum capacity of 13Ah Incl. SAFT. As a substitute lithium-thionyl SW-D02 battery, with high current nominal voltage of 3.6 V and a maximum capacity of 14 Ah Incl. Vitzro Cell or battery production ER34615MEVE |
| Battery life: | 10 years- reporting every 7 days, 5 years-reporting once a day. |
| Repalcing the battery: | Replaced by qualified personnel. |
| GSM Module: | Dual Band 900/1800 MHz or GSM 900/1800 MHz +UMTS900/2100MHz |
| GSM antenna: | Internal ceramic -band (GSM/DCS) or Outside the FME connector with maximum energy gain 5 dBi |
| Comunication Interface: | Opto GAZ according to IEC 62056-21 Transmission speed N81 9600 |
| Ambient temperature range: | -25° ≤ Ta ≤ 55°C Modem operates in the full range of operational temperature. |
| Casing protection degree: | IP68 |
| Weatherconditions: | Terms open with the possibility of a direct effect of precipitation and solar radiation (under the roof). It can work in terms of condensation of water vapor |
| Relative humidity: | Max 95% in 60°C temperature |
| Conditions of use: | Do not use near sources of strong electromagnetic field and in areas which can significantly suppress the GSM network signal. |
| Weight: | ok. 300g |
| Dimensions: | 124x85x30 |