MAGB2

MAGB2 3G/GPRS/GSM Installation User Guide

arkon flow systems

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1 FEATURES

• The MAGB2 sends the flow rate and the total volume by 3G/GPRS/GSM data at specific intervals.
• Specific interval of sending 3G/GPRS/GSM data is possible to setup.
• The SMS is sent to a specific phone number or SMS server (up to 3 phone numbers)
• The GPRS data are sent to a specific server (Arkon.Track) at a specific format using TCP port.
• All settings are done via flowmeter keyboard

2 SYSTEM INFORMATION

2.1 Supported Bands

- Quad Band: 850/900/1800/1900 MHz

2.2 Environmental

- Operating temperature: -20 °C +60 °C

2.3 SIM Card

- 3.0V
- STK 3.1

2.4 SMS

- The SMS, is as defined within the GSM 850/900/1800/1900 digital mobile phone standard.
- A single short message can be up to 160 characters of ASCII text in length (7-bit coded).
- Message text can comprise words, numbers or an alphanumeric combination.

3 INSTALLATION

- Open the transmitter.
- Unplug the battery.
- Deactivate the SIM card PIN lock.
- Delete all SMS messages in SIM memory.
- Insert the SIM card to the 3G/GPRS/GSM Module, see picture 1.
- Install external antenna to the 3G/GPRS/GSM Module, see picture 2.
- Plug-in the 3G/GPRS/GSM module battery, see picture 2
- Plug-in the 3G/GPRS/GSM module into the transmitter (into the GPRS Module slot, see picture 3).
- Plug-in the MAGB2 main battery
- **In User settings - Module select - set GPRS**

3.1 SIM interface

Before inserting or replacing SIM card – MAGB2 transmitter must be switched off! Otherwise, MAGB2 transmitter, SIM card or 3G/GPRS/GSM module may get damaged!

The 3G/GPRS/GSM module incorporates a SIM interface, which conforms to the GSM 11.11 and GSM 11.12 standards that are based on the ISO/IEC 7816 standard. These standards define the electrical, signaling and protocol specifications of a GSM SIM card.

The manufacturer does not supply the SIM card, which is mandatory for a connection to the GPRS/GSM network! The SIM card may be purchased from your GSM (mobile) service provider!

3.2 SIM card installation

Insert the SIM card to the 3G/GPRS/GSM module according to picture bellow.

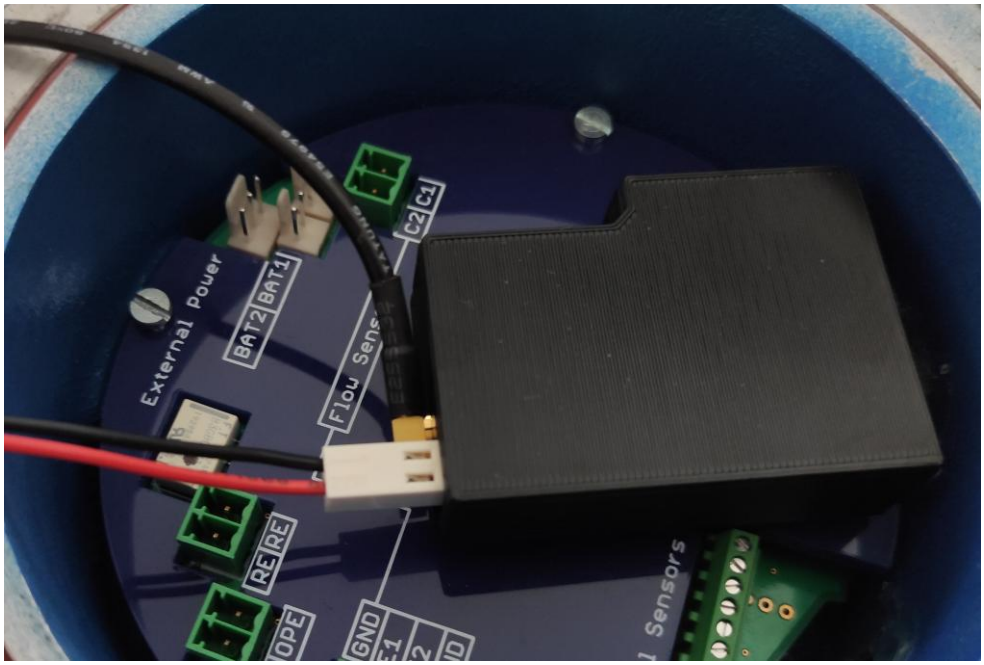
Picture 1. SIM card installation into the 3G/GPRS/GSM Module

3.3 Antenna installation

Install antenna according to pictures below.

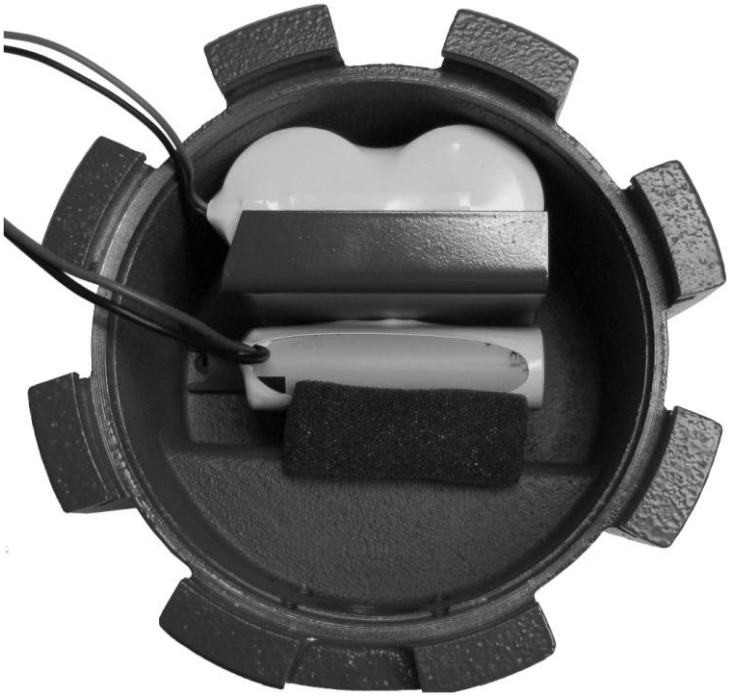
Picture 2. Antenna and GPRS battery installation

3.4 3G/GPRS/GSM module installation,



Picture 3. Install 3G/GPRS/GSM Module into the transmitter

3.5 3G/GPRS/GSM module batteries



Picture 4. Install 3G/GPRS/GSM battery (the smaller one)

	Warning electrostatic sensitive device.
	Any connection or disconnection of any module has to be done with the battery switched off.

4 SETTINGS

Generally all the settings are done from GPRS settings menu using meter touch buttons.
The GPRS settings menu is protected by user password.
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4.1 Set Interval and Start hour

In case of meter automatic SMS or data sending it is needed to set interval of the messages sending.
Interval – is set in minutes (1-999999 min)
Start hour – is set in hours – defines when the interval starts

Example: User wants to send data twice a day at 8:00 and at 20:00.
Solution: Start hour = 8h, Interval = 720min.

Example: User wants to send data every four hours.
Solution: Start hour = 0h, Interval = 240min.

It is recommended to use intervals that will end in the start hour (1, 2, 4, 6, 12, 24, 48hours…)

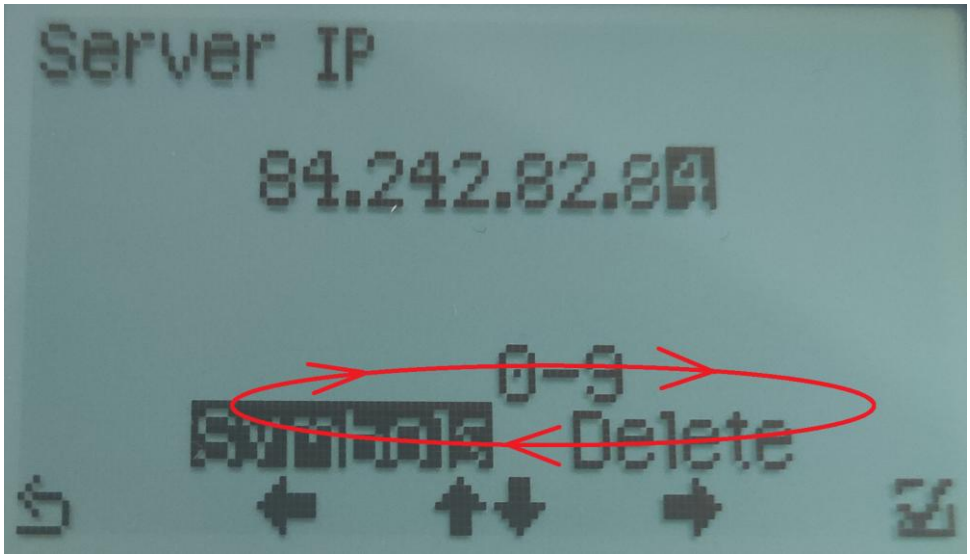
4.2 Auto message send

It is possible to set the meter to send automatically data and/or SMS at selected hour and interval.
In function Auto message send user can select:

- Off – the sending is off and data nor the SMS are sent.
- TCP – only data packets are sent on specified interval and hour
- SMS – only SMS messages are sent on specified interval and hour
- TCP and SMS – both data packets and SMS messages are sent on specified interval and hour

4.3 Set Server IP address

In case of data packets are being used a server IP address needs to be set. This address should be static and public (or at least in the same network as the GPRS module is).
The IP address is in format xxx.xxx.xxx.xxx.



Use Left arrow of the touch buttons to select function between:

- **0-9** – allows you to press up/down button to change number on highlighted position, once ready press right button to move to next position.
- **Symbols** – used basically for placing dot (point) – use up/down button to find a dot and then right button to move one position ahead.
- **Delete** – up/down button press will delete highlighted number or symbol

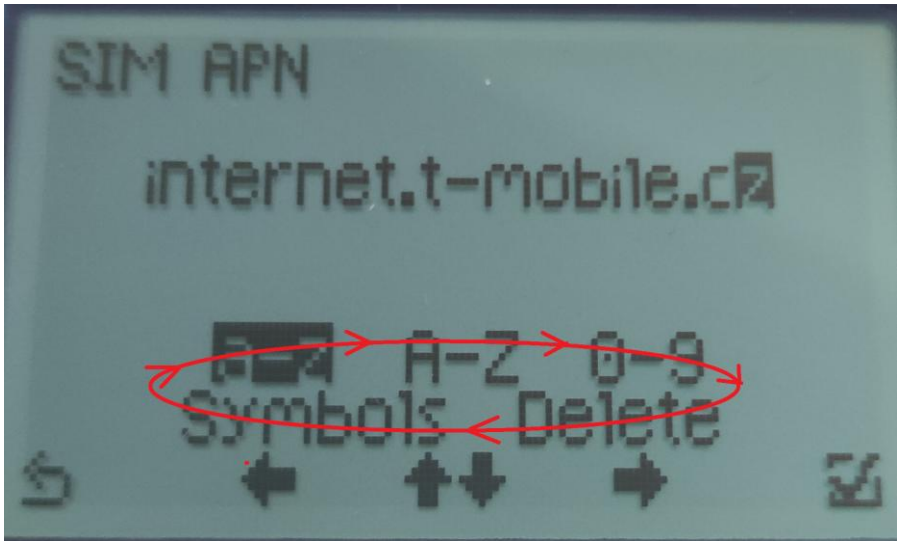
In real use it is practical to first delete all the numbers and symbols and then set your IP address from scratch.
Arkon.Track test server IP address is 84.242.82.84.

4.4 Set Server Port

In case of data packets are being used a server port needs to be set. The range of selectable port numbers is 0001-9999. On the other side there needs to be open port listening to incoming TCP data paclets
Arkon.Track test server port is 8080.

4.5 Set SIM Access Point Name (APN)

In case of data packets are being used an Access point name needs to be set. You can obtain your APN settings from your SIM card provider.

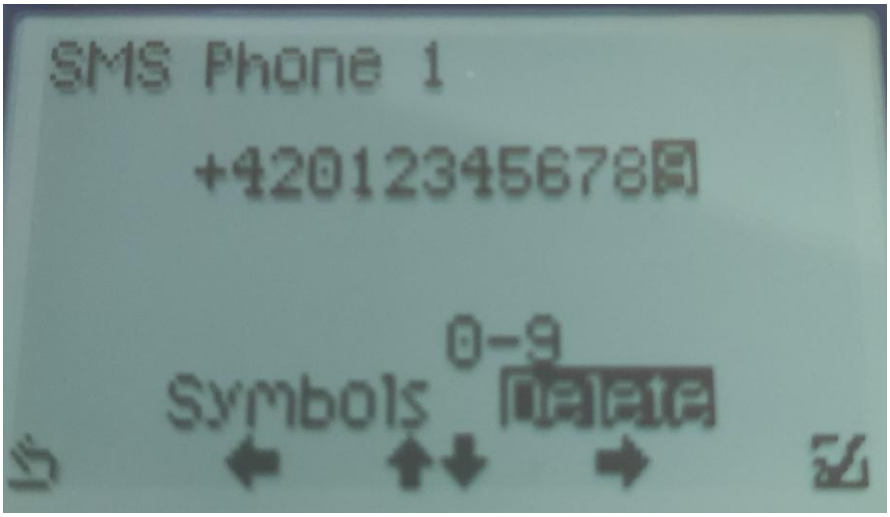


Use Left arrow of the touch buttons to select function between:

- **a-z** – allows you to press up/down button to change lowercase letter on highlighted position, once ready press right button to move to next position.
- **A-Z** – allows you to press up/down button to change uppercase letter on highlighted position, once ready press right button to move to next position.
- **0-9** – allows you to press up/down button to change number on highlighted position, once ready press right button to move to next position.
- **Symbols** – used basically for placing dot (point) – use up/down button to find a dot and then right button to move one position ahead.
- **Delete** – up/down button press will delete highlighted number or symbol

4.6 Set SMS Phone Number 1-3

In case of SMS messages are being used for getting the flow and totalizer information, the receiver SMS phone number (at least one, up to three) needs to be set.



Use Left arrow of the touch buttons to select function between:

- **0-9** – allows you to press up/down button to change number on highlighted position, once ready press right button to move to next position.
- **Symbols** – used basically for placing plus sing – use up/down button to find a dot and then right button to move one position ahead.
- **Delete** – up/down button press will delete highlighted number or symbol

	All phone numbers must be in international format (for example +420123456789)

4.7 Set ID number for Arkon.Track

For data packets use in Arkon.Track there needs to be an unique ID number of the station. In case you are using Arkon.Track the ID number will be assigned to you. In case you are using your own system you can use it as per your internal needs. The range is 200000 to 299999.

4.8 Set SMS format

So far two different possible SMS formats can be used – default and NMX style. See section 5 for more informations.

4.9 NMX RFC, UV, Latitude and Longtitude

RFC is Mexican tax payer code in format 12 or 13 characters, settings are similar to APN settings.
Latitude is Latitude in UTM coordinates in format xxx.xxxxx
Longitude is Longitude in UTM coordinates in format xxx.xxxxx
UV is used for verification, format xxx

4.10 Send test GPRS message or SMS data

After all settings are done it is possible to test your SMS or data message by sending one SMS/data packet.

5 SMS AND DATA FORMATS

5.1 SMS Data format

Example data for default style SMS data:

UNITNO 01234567 2010.05.12 16:02 FLOWRATE 12.3 M3/H TOTALPOS 254.32 M3 TOTALNEG 12.58 M3 BATT 100% GSMBATT 76%

UNITNO means the unit number of MAGB2. (01234567)
DATE AND TIME shows time and date when the sample was taken. (2010.05.12 16:02)
FLOWRATE actual flow at a time of SMS sent. (12.3 M3/H)
TOTALPOS actual value of Total+ at a time of SMS sent. (254.32 M3)
TOTALNEG actual value of Total- at a time of SMS sent. (12.58 M3)
BATT actual charge of the main flowmeter battery at a time of SMS sent. (100%)
GSMBATT actual charge of the module battery at a time of SMS sent. (76%)

Example data for NMX style SMS data:

Type of register	Information structure
Meter	M | Date | Time | RFC | NSM | NSUE | Lec | Lat | Long | ker

Code	Name of the variable	Unit	Format (*)	Comment
M	Indicator	N/A	M	Indicator that the data It comes from a meter.
Date	Date	year/month/day	yyyymmdd	• It is the local date when it's take the reading • Variable measured by the system. • It can be modified only by an authorized verifier.
Hour	Hour	hour: minutes: seconds	hhmmss	• It is the local time of the site where the meter or hour format. • Variable measured by the system. • It can be modified only by an authorized verifier.
RFC	Federal taxpayer registration	Alphanumeric	********** ****	Sequence of 13 positions for persons and 12 positions for Enterprises
NSM	Serial number of the meter	Alphanumeric	**********	Meter serial number
NSUE	Serial number of the Unit Electronics Data	Alphanumeric	**********	Electronic Unit Serial Number connected to the meter.
Lec	Reading	m3	**********	Variable registered by the meter at 00:01 each day.
Lat	latitude	M	**. *****	Latitude in UTM coordinates using

				the system of reference WGS84 in format decimal, from the site where the meter is installed, taken by an accredited and approved unit, separating the values integers of decimals to through a period (.).
Long	Length	M	***. *****	UTM coordinate length using the system reference WGS84 in decimal format, from the site where the meter is installed, taken by an accredited and approved unit, separating the values integers of decimals to through a period (.).
ker	Error code	Adim	***	Error code sent by the system (by example, warning when battery of the system is low, or when not it could take a reading).

Example data:

Type of register	Information structure
Meter	M|20201009|00:01:00|1234567890123|010200649|010200649|500.54155|19.43268|-99.13323|000

DATE: 2020/10/09
TIME: 0:01:00
RFC: 1234567890123
SN OF THE METER: 010200649
SN OF THE ELECTRONICS: 010200649 *
VOLUME: 500.54155M^3
LAT, LONG - PLAZA DE LA CONSTITUCION MEXICO CITY
ERROR 000

* SAME AS THE SN OF THE METER

5.2 TCP Data format

Example data:

#STB:200099;L:117;TM:1004212241;A01:88;P01:15208588;P02:1.990000;P03:13600;P04:0;P05:0.000000;P06:0.000000;P07:100;P08:0;5A#

200099 - ID number for Arkon.Track
L:117 - Length of sent data
TM:1004212241 - Time stamp
A01:88 - GPRS module battery status in %
P01:15208588 - Serial number of the flowmeter
P02:1.990000 - Total+
P03:13600 - Actual Flow * 1000 (no sign)
P04:0 - Sign for Actual Flow (0=positive direction, 1=negative direction)
P05:0.000000 - Total-
P06:0.000000 - Reserved
P07:100 - Meter main battery
P08:0 – MAGB2 Error code
5A# - Checksum

6 FACTORY DELIVERED DEFAULT SETTINGS

6.1 Default settings of 3G/GPRS/GSM module

- None of the three possible phone numbers is set.
- Sending SMS and GPRS is stopped.
- Sending interval is set to 720 minutes (12 hours).
- Service center number is set by the default profile of settings stored in the SIM card, which is usually pre-set by the mobile network operator.
- GPRS is preset to send the data to Arkon.Track

ERROR CODES

– General MAGB2 error code for GPRS module is 0008 (log. 1 in third position from the end) For more information see MAGB2 User guide.