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1 FEATURES

- The MAGX2 sends the flow rate and the total volume by SMS at specific intervals.
- Specific interval of sending SMS is possible to setup, by sending an SMS, or through the MAGX2 SW.
- The SMS is sent to a specific phone number or SMS server (up to 3 phone numbers)
- Authorization is according to the unit number of MAGX2 transmitter and the SIM phone number.
- The GSM module works bi-directionally.
- The user could send the SMS commands by a remote SMS server or a phone.
- The GSM module accepts the SMS commands for data request or GSM module settings.
- Send the data-logger contents by SMS to a phone or a SMS server.
- Send the SMS on event (empty pipe, error detect, zero flow)

2 SYSTEM INFORMATION

2.1 Supported Bands

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

2.2 Environmental

- Operating temperature: -20c +60c

2.3 SIM Card

- 3.0V
- STK 3.1

2.4 SMS

- The SMS, is as defined within the GSM 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.

2.5 Authorization

- To avoid unauthorized access to the data, the customer is responsible for keeping flowmeter serial number and SIM card number secret.

3 INSTALLATION

- Unplug the power supply
- Open the transmitter
- Deactivate the SIM card PIN lock
- Plug-in the SIM card to the GSM SMS Module, see picture 1
- Plug-in the GSM SMS module into the transmitter (into same port as GPRS Module, see picture 2)
- Install external antenna to the GSM SMS Module
- Plug-in the power supply

3.1 SIM interface

Before inserting or replacing SIM card – MAGX2 transmitter must be switched off!
Otherwise, MAGX2 transmitter, SIM card or GPRS module may get damaged!

The GSM SMS 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, signalling and protocol specifications of a GSM SIM card.

The manufacturer does not supply the SIM card, which is mandatory for a connection to the GSM network! The SIM card may be purchased from your GSM (mobile) service provider! You must insert a GPRS enabled SIM card into GPRS module.

3.2 SIM card installation

Insert the SIM card to the GPRS module according to picture bellow.



Picture 1. SIM card installation into the GSM SMS Module

3.3 Antenna installation

Install antenna according to pictures bellow.



Picture 2. Antenna installation

3.4 GSM SMS module installation



Picture 3. Install GSM SMS Module into the transmitter

	For more information about installation see MAGX2 Manual
	Warning electrostatic sensitive device.
	Any connection or disconnection of any module has to be done with the network power to the meter switched off.

4 SMS COMMANDS

4.1 Get Actual Flow

This command reads actual flow rate from the MAGX2 and sends it immediately by SMS.

Syntax	Response	Remarks
GET FLOWRATE	FLOWRATE 2010.05.15 16:06 15.3 M3/H	The command returns the current flow rate.

4.2 Get Total Positive Volume

This command reads actual total positive volume from MAGX2 and sends it immediately by SMS.

Syntax	Response	Remarks
GET TOTALPOS	TOTALPOS 2010.05.15 16:06 3515.3 M3	The command returns the actual Total Volume +.

4.3 Get Total Negative Volume

This command reads actual total negative volume from MAGX2 and sends it immediately by SMS.

Syntax	Response	Remarks
GET TOTALNEG	TOTALNEG 2010.05.15 16:06 3515.3 M3	The command returns the actual Total Volume -.

4.4 Get Total Volume

This command reads actual total volume from MAGX2 and sends it immediately by SMS.

Syntax	Response	Remarks
GET TOTAL	TOTAL 2010.05.15 16:06 3515.3 M3	The command returns the actual Total Volume.

4.5 Get Aux Volume

This command reads actual Auxiliary Volume from MAGX2 and sends it immediately by SMS.

Syntax	Response example	Remarks
GET AUX	TOTALAUX 2010.05.15 16:06 3515.3 M3	The command returns the current Auxiliary Volume.

4.6 Get Actual Error

This command reads the actual error code from a MAGX2 and sends it immediately by SMS.

Syntax	Response example	Remarks
GET ERROR	ERROR 2010.05.15 16:06 00000003	The command returns the actual Error code

4.7 Get Data-logger Contents

This command reads the data-logger contents from MAGX2 and sends it immediately by SMS.

Query:

GET DATALOGGER DATE TIME COUNT

COUNT – number of data-logger contents (records) which will be sent. Maximum number is 1000.

Syntax	Response example	Remarks
GET DATALOGGER 20100315 1251 0100	DATALOGGER 0001 20100315 1300 3515.3 254.45 5 00000008;0002 20100315 1400 3565.2 254.46 0 00000000;0003 20100315 1500 3601.2 255.40 0 00000000;...	The command returns the data-logger contents. The MAGX2 sends back the nearest data-logger content which was requested. The MAGX2 returns number of requested data-logger contents. If the answer goes over one SMS (160 characters) the MAGX2 sends next SMS.

Response Format:

DATALOGGER NUMBER DATE TIME TOTALPOS TOTALNEG ERRORMIN ERRORCODE; NUMBER DATE TIME TOTALPOS
TOTALNEG ERRORMIN ERRORCODE;...

DATE – date format YYYYMMDD (i.e.: 20100331)



TIME – time format HHMMSS (i.e.: 1253)

TOTAL POS – positive totalizer in m³

TOTAL NEG – negative totalizer in m³

ERROR MIN – error minutes counter

ERROR CODE – error code

	During finding the right record the flowmeter is inaccessible. Time needed to find the right record depends on count of records.
	Number of SMS being sent depends on the required number of records.

4.8 Set Sending Interval

This command sets up the sending interval and the GSM module confirms the settings immediately by SMS.

Query:

SET INTERVAL UNITNO MMMM – MMMM means number of minutes for sending interval.

Syntax	Response example	Remarks
SET INTERVAL 01234567 0120	INTERVAL 01234567 0120	GSM module sends every 2 hours flow and totalizers to specific phone numbers.

Every 2 hours GSM module sends data in following format:

UNITNO 01234567 2010.05.12 16:02 FLOWRATE 12.3 M3/H TOTALPOS 254.32 M3 TOTALNEG 12.58 M3
UNITNO 01234567 2010.05.12 18:02 FLOWRATE 10.5 M3/H TOTALPOS 344.12 M3 TOTALNEG 13.11 M3

4.9 Set Phone Number

This command sets up the phone number and the GSM module confirms the settings immediately by SMS.

Query:

```
SET PHONE1 UNITNO NUMBER OR NONE  
SET PHONE2 UNITNO NUMBER OR NONE  
SET PHONE3 UNITNO NUMBER OR NONE
```

UNITNO means the unit number of MAGX2 where the query is sent.

UNITNO is used for authorization.

NUMBER means requested phone number for sending interval.

Parameter NONE erases existing phone number.

It is possible to set up to 3 phone numbers. GSM module sends data from MAGX2 at specific intervals to all 3 phone numbers. It is possible to set up just one or two phone numbers.

Syntax	Response example	Remarks
SET PHONE1 0123456 +420123456789 SET PHONE2 0123456 +987654321 SET PHONE3 0123456 NONE	PHONE1 0123456 +420123456789 PHONE2 0123456 +987654321 PHONE3 0123456 NONE	GSM module sends data in specific intervals to all 3 phone numbers.



All phone numbers must be in international format (e.x. +420123456789)

4.10 Set GSM Service Center Address

This command sets up the GSM service center address and the GSM module confirms the settings immediately by SMS.

Query:

```
SET GSMSERVICE UNITNO ADDRESS
```

UNITNO means the unit number of MAGX2 where the query is sent.

UNITNO is used for authorization.

ADDRESS means the phone number of the Service Center.

Syntax	Response example	Remarks
SET GSMSERVICE 01234567 +420603052000	GSMSERVICE 01234567 +420603052000	This command sets the service center address.



All phone numbers must be in international format (e.x. +420123456789)

4.11 Stop SMS sending

This command stops the SMS sending by GSM module. The GSM module confirms settings immediately by SMS.

Query:
STOP SMS UNITNO

UNITNO means the unit number of MAGX2 where the query is send.
UNITNO is used for authorization.

Syntax	Response example	Remarks
STOP SMS 01234567	0123456 SMS SENDING STOPPED	This command stops the SMS sending.

When the GSM SMS module receives query i.e. "GET FLOWRATE", the GSM SMS module sends answer "SMS ARE STOPPED".

4.12 Start SMS sending

This command starts the SMS sending by GSM module. The GSM module confirms settings immediately by SMS.

Query:
START SMS UNITNO

UNITNO means the unit number of MAGX2 where the query is sent.
UNITNO is used for authorization.

Syntax	Response example	Remarks
START SMS 01234567	01234567 SMS SENDING STARTED	This command starts the SMS sending.

4.13 Set Sending on Event

This command sets up sending the SMS on event and the GSM module confirm settings immediately by SMS.

Query:
SET EVENT UNITNO EMPTYPIPE ON / ON-OFF / STOP
SET EVENT UNITNO ZEROFLOW ON / ON-OFF / STOP
SET EVENT UNITNO ERROR ON / STOP

UNITNO means the unit number of MAGX2 where the query is sent.
UNITNO is used for authorization.
It is possible to set up to 3 events.

Syntax	Response example	Remarks
SET EVENT 01234567 EMPTYPIPE ON SET EVENT 01234567 EMPTYPIPE ON-OFF SET EVENT 01234567 EMPTYPIPE STOP SET EVENT 01234567 ERROR ON SET EVENT 01234567 ERROR STOP SET EVENT 01234567 ZEROFLOW ON SET EVENT 01234567 ZEROFLOW ON-OFF SET EVENT 01234567 ZEROFLOW STOP	EVENT 01234567 EMPTYPIPE ON EVENT 01234567 EMPTYPIPE ON-OFF EVENT 01234567 EMPTYPIPE STOP EVENT 01234567 ERROR ON EVENT 01234567 ERROR STOP EVENT 01234567 ZEROFLOW ON EVENT 01234567 ZEROFLOW ON-OFF EVENT 01234567 ZEROFLOW STOP	This command sets the sending SMS on event.

When an event occurs the GSM module sends SMS in following format:
EVENT 01234567 EMPTYPIPE DETECTED
EVENT 01234567 EMPTYPIPE NOT DETECTED
EVENT 01234567 ZEROFLOW DETECTED
EVENT 01234567 ZEROFLOW NOT DETECTED
EVENT 01234567 ERROR CODE – CODE means error code of actual error.

5 GSM & MAGX2 SW

Section the GSM SMS in the MAGX2 SW allows setting of some options for the GSM SMS Module:

Menu | Time | Date | Real-time measurement | Calibration | GPRS | GSM SMS

Load actual setting

Phone 1
+

Phone 2
+

Phone 3
+

Read

Write

unknown status

Write setting

Set Event

Empty Pipe

Zero Flow

Error

Sending Event

Empty Pipe

Zero Flow

Interval Time

Read

Write

Reading successfully

- **Phone (1 - 3)** – Set the phone numbers for sending interval data and event. Phone numbers must be in international format (“+” is automatically insert, write only numbers, e.x.420123456789)
- **Set Event** – Set type of the event. If the event occurs the GSM SMS module sends the SMS.
- **Sending event** – Set, which changes will be sent in selected events. Options are bellow:
 - ON and OFF – SMS is sent if the event starts and when the event finish.
 - Only ON – SMS is sent only if the even is detected.(Format incoming message is in chapter 4.13)