

List of Contents

1. Introduction	3
1.1. Operating Principle	3
1.2. Applications	3
1.3. Safety Instructions	3
1.4. Unpacking the flowmeter	3
2. Installation.....	4
2.1. Remote or Compact	4
2.2. Sensor installation	4
2.3. Dry liner	5
2.4. Installation of the transmitter	6
2.5. Module installation	7
2.6. Cables connections	8
2.7. IP68 Certificate	9
2.8. Potting the remote sensor terminal box for sensor communication module	10
2.9. Fill up of a cable gland of MAGX2 IP68 housing	11
2.10. Ambient conditions	11
3. MAGX2 Transmitter Unit	12
3.1. Main screen	12
3.2. Flowmeter Menu	15
3.3. Info menu	15
3.4. Display menu	16
3.4.1. Display > Unit Flow.....	16
3.4.2. Display > Unit Volume.....	16
3.4.3. Display > Unit Temperature	16
3.4.4. Display > Unit Pressure	16
3.4.5. Display > Language	17
3.4.6. Display > Contrast	17
3.4.7. Display > Backlight	17
3.5. User Settings Menu	17
3.5.1. User Settings>Measurement	17
3.5.2. User Settings> Datalogger Interval.....	18
3.5.3. User Settings> CSV Format.....	18
3.5.4. User Settings> Air Detector.....	18
3.5.5. User Settings>Air Constant	18
3.5.6. User Settings> Delete Auxiliary Volume	19
3.5.7. User Settings> Start Delay.....	19
3.5.8. User Settings> Samples per Avg.	19
3.5.9. User Settings> Low Flow Cut-off.....	19
3.5.10. User Settings> Flow Qn.....	19
3.5.11. User Settings> Invert Flow	19
3.5.12. User Settings> Current Loop	20
3.5.13. User Settings> Pulse Output	21
3.5.14. User Settings> Frequency output.....	24
3.5.15. User Settings> Load Default Settings.....	25
3.5.16. User Settings> Date Setting	25
3.5.17. User Settings> Time Setting	25
3.5.18. User Settings> Password Setup	25
3.5.19. User Settings> Modbus.....	25
3.5.20. User Settings> Electrode Cleaning	26
3.5.21. User Settings> Totalizer Cycling.....	27
3.5.22. User Settings> Wi-Fi AP mode	27
3.5.23. User Settings> Leak detection (FW21.45 and above)	27
3.6. External Measurements Menu	28
3.6.1. External Measurements > Temperature	28
3.6.2. External Measurements > Pressure.....	29
3.6.3. External Measurements > External Input (FW 21.50).....	30

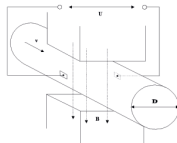
3.7. Service Settings Menu	31
3.7.1. Service Settings > Error Delete.....	31
3.7.2. Service Settings> OK Delete	31
3.7.3. Service Settings> Delete Volume -	31
3.7.4. Service Settings> Delete Volume +	31
3.7.5. Service Settings> Delete Volume Total.....	32
3.7.6. Service Settings>Flow Simulation.....	32
3.7.7. Service Settings> Simulated Flow	32
3.7.8. Service Settings> Service mode.....	32
3.8. Factory Settings Menu	32
3.9. Authorize Menu	33
4. Modules.....	34
4.1. Power Supply Module Version 5	34
4.2. Battery backup	35
4.3. Datalogger	35
4.4. Module positioning	36
4.5. USB Module	37
4.6. RS485 Module	38
4.7. RS232 Module	39
4.8. TCP/IP Module	40
4.9. M-Bus Module	41
4.10. BLUETOOTH Module	42
4.11. 3G/GPRS/SMS Module	43
4.12. Wi-Fi Module	44
4.13. LoRa Module	45
4.14. Pulse Output Module	46
4.15. Pulse 230 Module	47
4.16. External Temperature Module	48
4.17. Current Loop Output Module	49
4.18. External Pressure Module	50
5. OIML R49 certification.....	51
6. Maintenance.....	52
6.1. Self –cleaning electrodes	52
7. Liner and electrode selection	53
8. Flowmeter Dimensions	54
9. How to order your MAGX2.....	56
10. MAGX2 Error Code Table	57
11. Firmware version compatibility	59
12. Appendix.....	60
12.1. Country of Origin	60
12.2. CE requirements	60
12.3. Warranty	60
12.4. Contact	60

1. Introduction

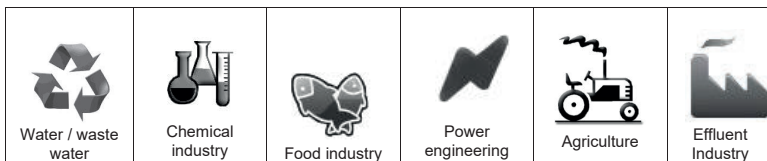
1.1. Operating Principle

The measurement is based on the principle of Faraday's law on electromagnetic induction in which an electric voltage is induced in an electrically conductive body that moves in a magnetic field.





Liquid flows through a tube in the direction of the magnetic field. Liquid with a certain minimum electrical conductivity induces a voltage which is detected by two electrodes located in a 90 degree angle from the magnetic field and the flow direction.



1.2. Applications



1.3. Safety Instructions

	Please read this manual carefully before using the product.
	Keep this manual for future reference. Arkon Flow Systems, s.r.o will not be liable for any damage caused by improper use of the product or its accessories.
	If the device is used any different way than is specified, the electric protection may be disrupted.
	The MAGX2 flowmeter must not be mounted in explosive hazardous areas.

1.4. Unpacking the flowmeter



- 1 While unpacking the flowmeter, conduct a visual check of the flowmeter upon receipt to make sure the product has not been damaged during transport.
- 2 Check the completeness of the package. In case of any problem, contact the Arkon sales department without delay.

Flowmeter
Cables
USB Flash drive + Manual
Mounting kit

2. Installation

2.1. Remote or Compact

Any MAGX2 flowmeter can be delivered in two versions: Compact or Remote. The compact version has the transmitter unit connected directly to the sensor body. This version does not require any further mounting or installation of the transmitter.

The remote version has a separated transmitter. It is connected to the sensor with a cable. The cable entry into the sensor is protected by a junction box, which can be potted to IP68 (page 10).

The cable entry on the transmitter side is through a M20x1.5 gland.



The cable type used for the connection between sensor and transmitter for remote versions: UNITRONIC® LiYCY (TP) 0035 810, 2x2x0.5

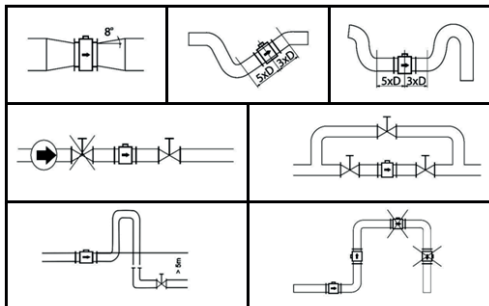
The MAGX2 is equipped with an electronic board located inside the sensor neck. This board sends a digital signal to the transmitter, unlike traditional flowmeters, which send an analogue signal. This allows the MAGX2 to carry its signal over much longer distances than conventional flowmeters; up to 500m is possible.

2.2. Sensor installation

Sensor dimensions can be found on page 53.

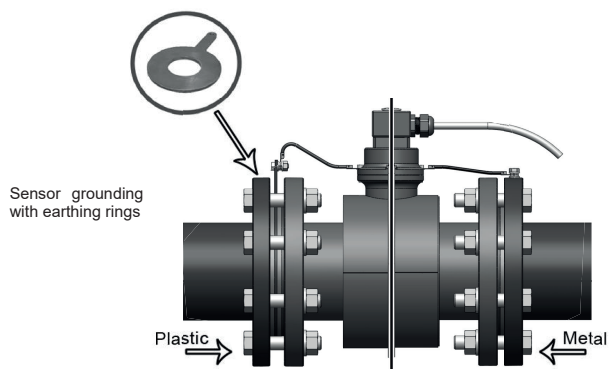
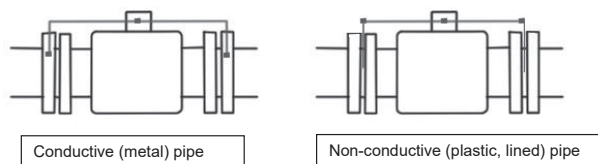
Proper sensor installation is extremely important in order for your flowmeter to work correctly. Below, you will find minimum sensor installation requirements that need to be respected at all time. Sensor must not be installed neck facing down.

Sensor installation requirements:



NOTE: 5xD | 3xD requirement NOT applicable for versions with Reduced-bore sensor body.

All MAGX2 sensors are supplied with 2 built in earthing electrodes which is sufficient for all applications with metal pipes and tanks. However on applications where all pipes and tanks are manufactured from plastic, it is recommended that earthing rings are also installed to ensure the maximum resistance of the sensor to earth is <1 ohm.



To ensure correct meter operation make sure the earthing rings and sealings around are centered.

2.3. Dry liner

Flowmeters with a Hard Rubber liner can show incorrect readings during the first 2-3 days after installation. This is due to the fact that the time needed for transport and the time before installation is long enough for the liner to dry out, and thus it changes shape/size. This change, in effect, affects reading accuracy. Simply by keeping the meter wet, this problem solves itself within 2-3 days and no other action is required at all.

2.4. Installation of the transmitter



The transmitter contains harmless silica gel for moisture absorbent purpose. Please do not remove from the meter.

In case of a compact flowmeter version, the transmitter will need no further installation, and should be ready for use. In case of a remote version, the following 4 steps are necessary.

- 1 Mount the transmitter to a wall, panel, or DIN-rail.

Wall mounting:



DIN-rail mounting:



Panel mounting:



The electronics have to be protected against direct sunlight and high temperatures!



The transmitter housing should be exposed to minimal mechanical strain only (max. 1kg)!



- 2 Connect the transmitter to the signal cable from the sensor.

To do this undo four M6x22 screws using Allen key nr.5 that is part of the delivery.

After the meter is opened, pull the signal cable through the cable gland on the bottom of the transmitter housing. Connect the connector at the end of the signal cable from the sensor to the transmitter circuit board.



Electrical installation should only be done by a qualified person. Standard safety regulations for hazardous electrical installations have to be respected.

The O-ring sealing shall be exchanged every 6 months of operation.

- 3 Connect the transmitter to network power.

The customer is assumed to supply its own network power supply cable (90-250VAC, 12-36VDC)

First pull the cable end through one of the cable glands (ideally the closest one to used power supply terminal) on the bottom of the transmitter.

Recommend 3x1mm round crosscut cable, OD 7-11mm.
 After connecting the power cable, close the housing and connect the cable to network power. This will make the flowmeter switch on.



For electrical connection the appropriate temperature rated cables have to be used (Ta=70degC)

➊ Set up the transmitter for use.

You are now ready to start using your flowmeter or to customize its settings as per your requirements. For example;

- Set-up the measurement unit of flow-rate displayed, e.g. m3/hr.
- Set up of the unit for the volume displayed. For all volume counters this same unit will be used.

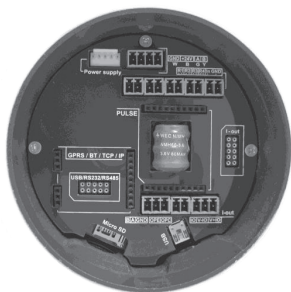
2.5. Module installation

➋- Always check if the module does not have a bent or broken pin, before placing it in the correct module slot of the MAGX2 motherboard.

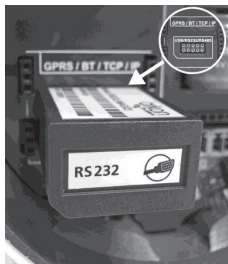
➌ - Always make sure you place the module in the correct slot of the motherboard! The name that is written on the module itself has to match the name written next to the slot. **Placing the module in an incorrect slot can cause damage to the module and the motherboard, and has to be avoided by careful module installation!**

➍- Check whether you are placing the module in the correct position. It does matter how you turn the module to fit the slot! The white line around the actual slot on the motherboard indicates the correct position of installation. The bevelled corner should be your point of orientation (note the picture below).

➎- Now you can place the module in its slot:



Correct installation



Incorrect installations



The RS232 Module is placed in a different slot.



The RS232 Module is placed in the correct slot, but with the bevelled corner in the wrong direction.

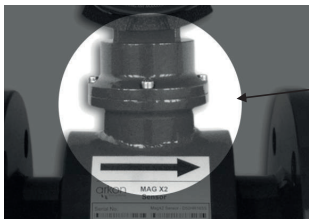
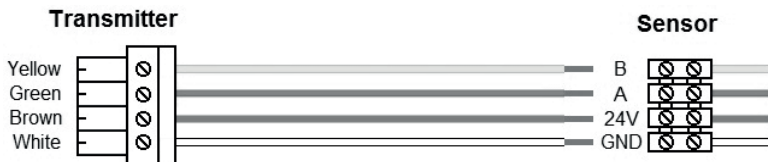


Any connection or disconnection of any module has to be done with network power to the meter switched off.

2.6. Cables connections

The following diagrams show the connections of the cables between sensor and transmitter.

Sensor communication module version 8.0



Use this cable connection only for "sensor to transmitter communication module – version 8.0".

Important: In case of IP68 transmitter it is needed to use silicone gel to extra protect cable glands from inside of the meter. Pour neutral silicone gel into the cable gland from inner side and pull the cable 3mm out of the housing to make the cable gland extra protected for IP68. Chapter 2.9.

2.7. IP68 Certificate



Strojirenský zkušební ústav, s.p. (Engineering Test Institute, Public Enterprise),
Hudcova 424/56b, 621 00 Brno, Czech Republic

CERTIFICATE

B-32-00337-16

Manufacturer: Arkon Flow Systems, s.r.o.
Berkova 534/92, 612 00 Brno - Královo Pole
Czech Republic
Company ID No.: 27683826

Products: Electromagnetic flowmeters

Type designation: MAGX2

Versions: Compact, Remote

The Engineering Test Institute, Public Enterprise, hereby certifies that the characteristics of the sample of the products concerned have been found conforming to the applicable requirements


for the IP 68 protection rating as per ČSN EN 60529:1993 (at a water level of 1.25 m above the top edge of the sample for the duration of 15 hours).

This Certificate has been issued based on Final Report 32-0261 of 2016-03-23, issued by the Engineering Test Institute, Public Enterprise.

The rules for using the Certificate are specified on Page 2.

Brno, 2016-03-23




Ing. Tomáš Hruška
Director

B-32-00337-16, page 1 (2)

Strojirenský zkušební ústav, s.p., Hudcova 56b, 621 00 Brno, Česká republika
Engineering Test Institute, public enterprise, Hudcova 56b, 621 00 Brno, Czech Republic

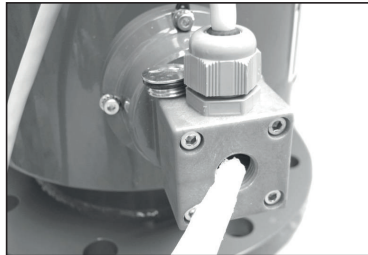
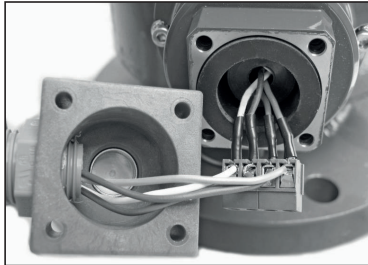
www.szufest.cz



2.8. Potting the remote sensor terminal box for sensor communication module

For sensor communication module, to guarantee IP68 protection of the sensor, it is necessary to pot the sensor terminal box properly. The proper way to do this is described below:

❶	Connect the wires into the sensor (matching the same colours).
❷	Screw the small terminal box to the sensor neck (4 screws).
❸	Fill the terminal box completely with silicone, by squeezing it through the opening on top of the box.
❹	Close the small terminal box with the sealing screw.



2.9. Fill up of a cable gland of MAGX2 IP68 housing

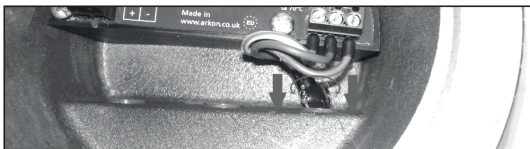
❶	Fit MAGX2 IP68 housing with standard round cross-cut cable. Example: Power Supply (see pic. 1).
❷	Apply sufficient amount of silicone gel to cable gland of opened round cross cut cable end inside housing of MAGX2 (see pic. 2).
❸	Slightly pull out the cable while turning the cable to achieve sufficient spread of silicon around the cable in the cable gland (see pic. 3 and pic. 4).
❹	Do a visual control – focus on full spread of silicone gel around the cable.



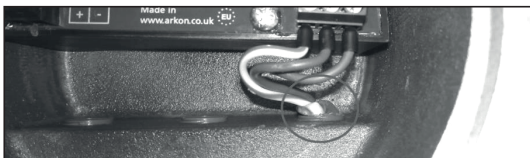
Pic. 1 round cross cut cable properly connected inside of MAGX2 IP68 housing



Pic. 2 Application of silicon binder on cable sheath of opened round cross cut cable end



Pic. 3 Manipulation with the cable to achieve sufficient fill up of a cable gland



Pic. 4 Do a visual control to verify sufficient fill up of the cable gland which satisfy IP68 standard

2.10. Ambient conditions

Ambient temperature: -20 – 60 °C

Relative humidity: up to 100%, non-condensing

3. MAGX2 Transmitter Unit

Module Name:	Module Short Name:	Ordering Code:
MAGX2 Transmitter Unit	Transmitter	MAGX2 IP68 T*****

The MAGX2 Transmitter unit is the main part of the flowmeter. It consists of the MAGX2 motherboard, a graphical display, touch-button controls and a transmitter housing.

Through the display and with help of the touch buttons, you can go through the various menus for data reading, configuration and setup of your flowmeter.

The following symbols are used in this manual and on the flowmeter display.

☑	ENTER	⤵	LEFT
⊠	Esc	⤵⤴	Selection menu
⬅	Back	🔒	Key-lock
⬇	DOWN	⚡	Electrode cleaning
➡	RIGHT	D	Demo mode
⬆	UP	💾	SD card present

Touch-buttons are working on capacitance principle therefore any conductive material close to button's area will cause button press. Even water can do it so it is strongly recommended to use key lock when any presence of water is expected. 30 seconds after turning the flowmeter on, touch buttons autocalibration is started so function of the touch buttons may be unstable.

The MAGX2 transmitter has a key-lock possibility. You can lock touch-buttons by touching the Esc key first followed by the Enter key within one second. This will lock the flowmeter and there will be a lock symbol on display.

Touching the buttons will have no effect on flowmeters function. To unlock buttons touch the buttons same way as for locking.

If flowmeter is in cleaning electrode there is a lightning symbol on display.

Upon starting the flowmeter, you will automatically see the main screen of the menu.

If transmitter is switched off from power supply longer than 3 months, output settings may be lost.



3.1. Main screen

Total Volume

This is the total volume counter; the sum of all historical flows for a particular flowmeter. The user is not able to zero this counter without use of the service password. Direction of flow is ignored for this counter (negative flow is calculated the same way as positive flow).

▶▶	m3/h	9:59:11
	9.999	
	9.999	
Total		m3

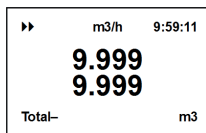
Positive Volume

This counter is only credited when the measured medium is flowing in the chosen positive direction. In case the flow is 0, or if it is flowing in the opposite (negative) direction, the number on the counter remains the same.

▶▶	m3/h	9:59:11
	9.999	
	9.999	
Total+		m3

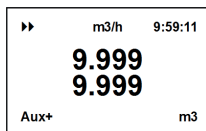
Negative Volume

This counter works the same way as the positive volume counter, yet in the opposite direction. In case the flow is 0, or flowing in the designated positive direction, the number on this counter will remain the same.



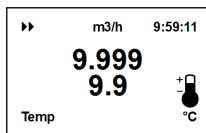
Auxiliary Volume

This is a 2nd total volume counter. It works the same as the Total Volume positive counter, yet with the only difference being that it can be reset to 0 at any time, with **User Settings** password.



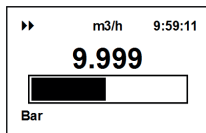
Temperature

This item is a temperature indication for the measured medium.



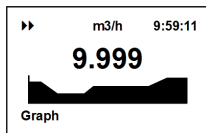
Bar Graph

Represents actual flowrate in a proportion to Qn (100%). The Qn – maximal flow value can be changed in **User Settings**.



Time Graph

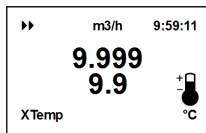
Shows last 2minutes of actual flow in time based graph (1 second step). Maximum of the graph is Qn value, can be changed in **User Settings**.



External Measurements - Temperature

This item is a temperature measured by the connected external temperature sensor.*

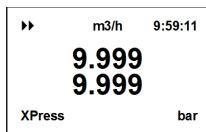
*External Measurement Temperature module must be used.



External Measurements - Pressure


This item is a pressure measured by the connected pressure sensor.*

*External Measurement Pressure module must be used.



You can cycle through these 9 indication screens by pressing the **up** and **down buttons** on the transmitter.

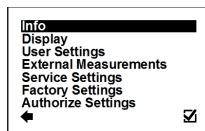
<p>▶▶ m3/h 9:59:11</p> <p>9.999 9.999</p> <p>Total m3</p>	<p>It is possible to change the number of decimal digits of the actual flow displayed in the main screen:</p> <p>decimal numbers →</p> <p>By using the ⏪ ⏩ buttons</p>	<p>▶▶ m3/h 9:59:11</p> <p>9 9.999</p> <p>Total m3</p>
---	---	---

	<p>If value of any Volume counter higher than 4 000 000 m3, then value of Volume show only in m3 unit. If value of any Volume counter higher than 999 999 999 m3, then this Volume will be reset to 0.</p>
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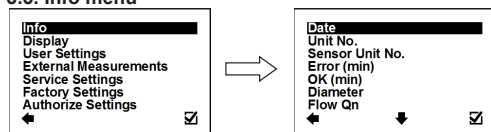
3.2. Flowmeter Menu

After pressing the enter button you get to into the root-menu. From here, you can chose any of the sub-menu's displayed in the picture on the right.

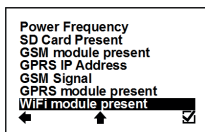
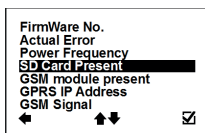
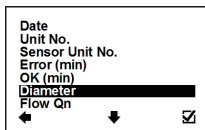
Navigate with **⬅** and select your choice with **☑**.



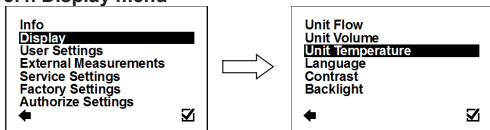
3.3. Info menu



- | | |
|----------------------------|--|
| Date | This item shows the current date according to the transmitter's setup. It can be changed in the User Settings menu. |
| Unit No. | Displays the serial number of the motherboard. This number is allocated during production by the manufacturer. |
| Sensor Unit | Displays the serial number of the sensor. This number is allocated during production by the manufacturer. This item is working with sensor ver. 8 and newer. |
| Error (min) | The number of minutes the device was not measuring because of errors. |
| OK (min) | The number of minutes that the device measured correctly. |
| Diameter | This item shows the nominal sensor diameter that is currently configured for the given flowmeter. |
| Flow Qn | Here, the flowmeter displays the predicted nominal flow. Values can be changed under User Settings. |
| Firmware No. | This shows the current firmware version. |
| Actual Error | This shows all actual errors (see chapter 10). |
| FW Checksum | Second FW identifier. |
| SD card present | Shows if the SD card is inserted in the flowmeter. |
| GSM module present | Shows if the GPRS module is inserted in the flowmeter. |
| GPRS IP address | Displays IP address of GPRS module. (Not used) |
| GSM Signal | Signal strength of the GSM SMS Module. (Not used) |
| GPRS module present | Shows if the GPRS module is inserted in the flowmeter. |
| Wifi module present | Shows if the Wi-Fi module is inserted in the flowmeter. |



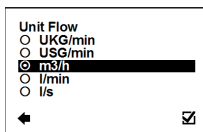
3.4. Display menu



3.4.1. Display > Unit Flow

Setup of the displayed measurement unit for current flow.

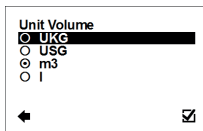
- ← Back with no change
- ↻ Item selection
- Selection identification
- ☑ Confirmation of setup and saving to memory
- UKG / min UK gallon per minute
- USG / min US gallon per minute
- m³ / h Cubic meters per hour
- l / min Litres per minute
- l / s Litres per second



3.4.2. Display > Unit Volume

Setup of the displayed measurement unit for total flow.

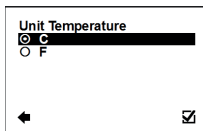
- ← Back with no change
- ↻ Item selection
- Selection identification
- ☑ Confirmation of setup and saving to memory
- UKG UK gallon
- USG US gallon
- m³ Cubic meter
- l Litre



3.4.3. Display > Unit Temperature

Setup of the displayed measurement unit of temperature indication and external measurement of temperature.

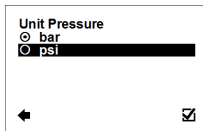
- ← Back with no change
- ↻ Item selection
- Selection identification
- ☑ Confirmation of setup and saving to memory
- C Degrees Celsius
- F Degrees Fahrenheit



3.4.4. Display > Unit Pressure

Setup of the displayed measurement unit of the external pressure measurement.

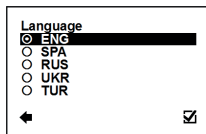
- ← Back with no change
- ↻ Item selection
- Selection identification
- ☑ Confirmation of setup and saving to memory
- bar Pressure in bar unit (1 bar = 100 kPa = 14,50 psi)
- psi Pressure in psi unit (1 psi = 6,89 kPa = 0,07 bar)



3.4.5. Display > Language

Setup of the language for flowmeter menu.

- ← Back with no change
- ⬇ Item selection
- Selection identification
- ☑ Confirmation of setup and saving to memory
- ENG English
- SPA Spanish
- RUS Russian
- UKR Ukrainian
- TUR Turkish
- ARA Arabic (Only for FW21.37 Arabic)

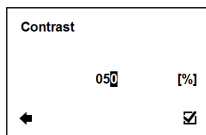


3.4.6. Display > Contrast

Contrast of the display setup.

Possible range: 0 – 100 %

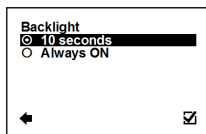
- ← Back with no change
- ⬇ Selection of digit position
- ⬇ Value setting
- ☑ Confirmation of setup and saving to memory



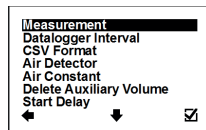
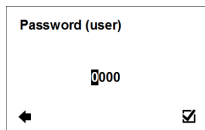
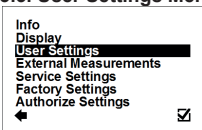
3.4.7. Display > Backlight

Setup of the backlight for flowmeter display.

- ← Back with no change
- ⬇ Item selection
- Selection identification
- ☑ Confirmation of setup and saving to memory
- 10 seconds The backlight would turn off 10 seconds after the last button touch
- Always ON The backlight will be always on



3.5. User Settings Menu

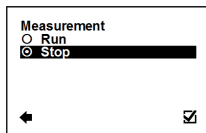


To enter this part of the menu, it is necessary to enter the **User Password**. The default factory setting is **1111**. See page 25. for user password settings.

3.5.1. User Settings>Measurement

This option allows selecting flow measurement to be on or off.

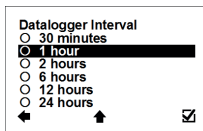
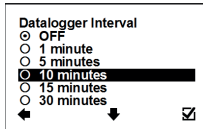
- ← Back with no change
- ⬇ Item selection
- Selection identification
- ☑ Confirmation of setup and saving to memory
- Run The device is measuring, the totalizers are active
- Stop The display will show a value, yet the totalizers are off



3.5.2. User Settings> Datalogger Interval

This option allows select how often will be totalizers saved on SD card.

- ← Back with no change
 - Item selection
 - Selection identification
 - Confirmation of setup and saving to memory
- OFF** Totalizer is not used (SD card not necessary)
- 1 minute** The interval of saving totalizers; SD card needed
- 5 minutes**
- 10 minutes**
- 15 minutes**
- 30 minutes**
- 1 hour**
- 2 hours**
- 6 hours**
- 12 hours**
- 24 hours**



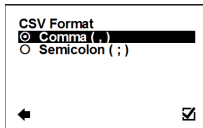
While there is an error "SD card not inserted" or "SD Open file" active and the user plugs in the SD card, error will disappear after next write to the datalogger. It is recommended to setup the datalogger interval again or restart the flowmeter after every SD card plug.

It is not recommended to use 1 minute statistic for a long term logging. 1 minute datalogging is mainly used for troubleshooting of the meter.

3.5.3. User Settings> CSV Format

This option allows selecting separator between each data in datalogger.

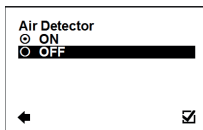
- ← Back with no change
 - Item selection
 - Selection identification
 - Confirmation of setup and saving to memory
- Comma (,)** Select comma
- Semicolon (;)** Select semi-colon



3.5.4. User Settings> Air Detector

This option allows selecting empty pipe check (air detector) to be on or off.

- ← Back with no change
 - Item selection
 - Selection identification
 - Confirmation of setup and saving to memory
- ON** The detector is active
- OFF** The detector is switched off

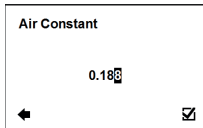


3.5.5. User Settings> Air Constant

Constant value to determine the empty pipe detection limit.

Possible range: **0.000 – 0.999**

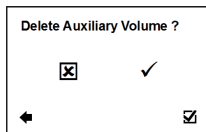
- ← Back with no change
- ↻ Selection of digit position
- Item selection
- Value setting
- Confirmation of setup and saving to memory



3.5.6. User Settings> Delete Auxiliary Volume

This function serves to zero the auxiliary flow totalizer.

- ← Back with no change
- ⇄ Item selection
- ☑ Confirmation of choice
- ☒ No change
- ☑ Zero the auxiliary totalizer

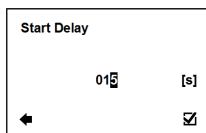


3.5.7. User Settings> Start Delay

Time delay for the flowmeter where it, after switching on, will not request measurement data from the sensor.

Possible range: 0 – 120 s

- ← Back with no change
- ⇄ Selection of digit position
- 00 Value setting
- ☑ Confirmation of setup and saving to memory

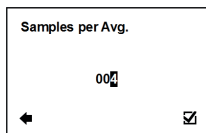


3.5.8. User Settings> Samples per Avg.

The number of samples that the flowmeter will use for calculation of its displayed average flow value/time unit.

Possible range: 0 – 120 samples/avg

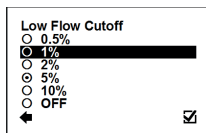
- ← Back with no change
- ⇄ Selection of digit position
- 00 Value setting
- ☑ Confirmation of setup and saving to memory



3.5.9. User Settings> Low Flow Cut-off

This function serves to set the minimum flow the flowmeter will react on. Sets in percentage of Flow Qn.

- ← Back with no change
- ⇄ Item selection
- Selection identification
- ☑ Confirmation of setup and saving to memory

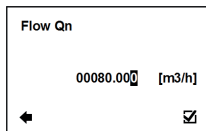


3.5.10. User Settings> Flow Qn

This function serves to setup the nominal flow-rate.

Possible range: 0 – 36000 m3/h

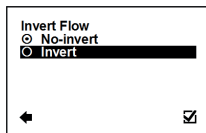
- ← Back with no change
- ⇄ Selection of digit position
- 000 Value setting
- ☑ Confirmation of setup and saving to memory



3.5.11. User Settings> Invert Flow

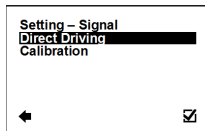
This function serves to change the definition of flow direction.

- ← Back with no change
- ⇄ Item selection
- Selection identification
- ☑ Confirmation of setup and saving to memory



3.5.12. User Settings> Current Loop

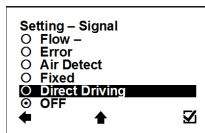
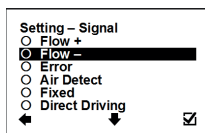
- ← Back with no change
- ⏪ Item selection
- ☑ Enter this part of the menu



User Settings> Current Loop > Settings Signal

This function serves to select which signal the output should be giving.

- ← Back with no change
- ⏪ Item selection
- ⊙ Selection identification
- ☑ Confirmation of setup and saving to memory
- Flow+ Output: **10 mA**, for any positive flow
- Flow- Output: **10 mA**, for any negative flow
- Error Output: **10 mA**, for any error identified by the device
The signal can be cancelled by pressing any push button on the flowmeter.
- Air Detect Output: **10 mA**, during air detection (empty pipe)
- Fixed Output: fixed output of 10 mA
- Direct Driving Output: Direct Driving – setup is below
- OFF Output: fixed output of **4 mA**

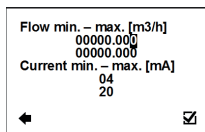


User Settings> Current Loop > Direct Driving

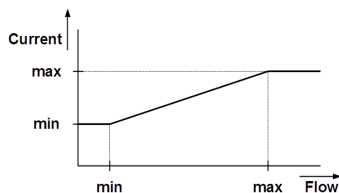
This function serves to set flow values in relation to current output.

Possible range: **0 – 36000 m3/h; 4 – 20 mA**

- ← Back with no change
- ⏪ Selection of digit position
- ⏪ Value setting
- ☑ Confirmation of setup and saving to memory
- Flow min. – max. Setup of measurement flow-range (only positive values)
- Current min. – max. Setup of the current output range, corresponding to the actual flow-rate within the given range



When changing an item for the current loop output, all settings for the voltage output are to be changed, to make sure there will be no signal conflict at the output port. The output that is not used has to be switched off (Settings – Signal – OFF).

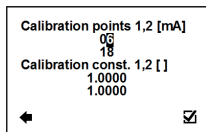


User Settings> Current Loop > Calibration

This function serves to modify current loop output signal.

Possible range: **4 – 20 mA; 0.5000 – 1.5000**

- ← Back with no change
 - ⇄ Selection of digit position
 - ⊖ Value setting
 - Confirmation of setup and saving to memory
- Calibration** Setup of calibration point 1, 2. First point must be less than second point.
- Calibration point 1,2** Setup of calibration constant for first and for second calibration point.



Formula for calibration constant calculation:

Expected value: 6 mA, Measured value: 6.1 mA

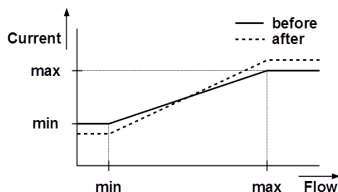
Calibration point one: 6mA

$$\text{Calibration constant one} = \frac{6}{6.1} = 0.9836$$

Expected value: 18 mA, Measured value: 17.9 mA

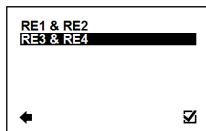
Calibration point two: 18mA

$$\text{Calibration constant two} = \frac{18}{17.9} = 1.0056$$



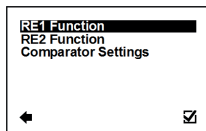
3.5.13. User Settings> Pulse Output

- ← Back with no change
- ⊖ Item selection
- Enter this part of the menu



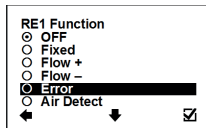
User Settings> Pulse Output > RE1 & RE2

- ← Back with no change
- ⊖ Item selection
- Enter this part of the menu

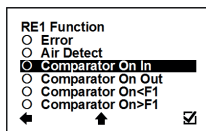


User Settings> Pulse Output > RE1 & RE2 > RE1 (RE2) function
This function serves to select which signal the output should be giving. The relays are independent to each other.

- ← Back with no change
 - ⊖ Item selection
 - ⊙ Selection identification
 - Confirmation of setup and saving to memory
- OFF** Output: **OFF**, fixed status signal
- Fixed** Output: **ON**, fixed status signal
- Flow+** Output: **ON**, for any positive flow
- Flow-** Output: **ON**, for any negative flow
- Error** Output: **ON**, for any error identified by the device



- The signal can be cancelled by pressing any push button on the flowmeter.
- Air Detect** Output: **ON**, during air detection (empty pipe)
- Comparator On In** Output: **ON**, if the actual flow-rate is within the given range (can be set under Comparator Flow)

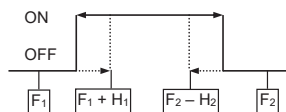


Comparator On Out Output: **ON**, if the actual flow-rate is outside the given range (can be set under Comparator Flow)

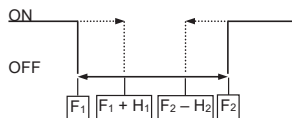
Comparator On<F1 Output: **ON**, if the actual flow flow-rate is smaller than the value set as "Flow1" (can be set under Comparator Flow)

Comparator On>F1 Output: **ON**, if the actual flow-rate is bigger than the value set as "Flow1" (can be set under Comparator Flow)

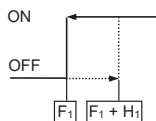
On In:



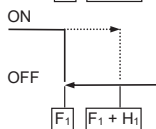
On Out:



On > F1:



On < F1:



User Settings> Pulse Output > RE1 & RE2 > Comparator Settings

Possible range: 0 – 36000 m3/h; 0 – 36000 m3/h

- ← Back with no change
- ↻ Selection of digit position
- ⊖ Value setting
- Confirmation of setup and saving to memory
- Flow 1, 2** This function serves to configure the flow-range for the Comparator Mode. Flow1 < Flow2
- Hysteresis** Setup of hysteresis for the Comparator Mode

Flow 1, 2 [m3/h]	00000.000
	00000.000
Hysteresis [m3/h]	00000.000
	00000.000
←	<input checked="" type="checkbox"/>

User Settings> Pulse Output > RE3 & RE4

- ← Back with no change
- ⊖ Item selection
- Enter this part of the menu

RE3 Function	
RE4 Function	
Volume Plus	
Volume Minus	
Dose (Batch)	
←	<input checked="" type="checkbox"/>

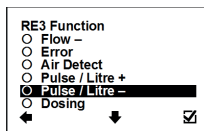
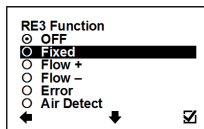
User Settings> Pulse Output > RE3 & RE4 > RE3 (RE4) function

This function serves to select which signal the output should be giving. The relays are independent to each other.

- ← Back with no change
- ⊙ Item selection
- ⊙ Selection identification
- ☑ Confirmation of setup and saving to memory
- OFF** Output: **OFF**, fixed status signal
- Fixed** Output: **ON**, fixed status signal
- Flow+** Output: **ON**, for any positive flow
- Flow-** Output: **ON**, for any negative flow
- Error** Output: **ON**, for any error identified by the device.

The signal can be cancelled by pressing any push button on the flowmeter

- Air Detect** Output: **ON**, during air detection (empty pipe)
- Pulse/litre+** The unit generate pulse 160 ms when the volume plus pass through the flowmeter
- Pulse/litre-** The unit generate pulse 160 ms when the volume minus pass through the flowmeter
- Dosing** This function serves to control dosing (batching)

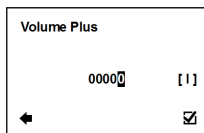


User Settings> Pulse Output > RE3 & RE4 > Volume Plus

This function serves to configure the positive flow volume after which a 160 ms output pulse is generated to correspondent Relay. In case of a power failure, the output will start counting volume from 0.

Possible range: **0 – 99999 l**

- ← Back with no change
- ⊙ Selection of digit position
- ⊙ Value setting
- ☑ Confirmation of setup and saving to memory

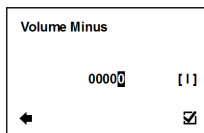


User Settings> Pulse Output > RE3 & RE4 > Volume Minus

This function serves to configure the negative flow volume after which a 160 ms output pulse is generated to correspondent Relay. In case of a power failure, the output will start counting volume from 0.

Possible range: **0 – 99999 l**

- ← Back with no change
- ⊙ Selection of digit position
- ⊙ Value setting
- ☑ Confirmation of setup and saving to memory

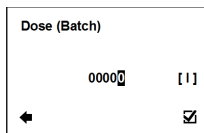


User Settings> Pulse Output > RE3 & RE4 > Dose (Batch)

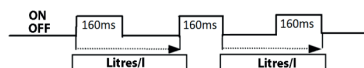
This function serves to control dosing (batching). A dose is activated through a pulse input on Pulse input. At the same time with the relay (RE3 and/or RE4) open. After reaching the required volume, relay (RE3 and/or RE4) is closed.

Possible range: **0 – 99999 l**

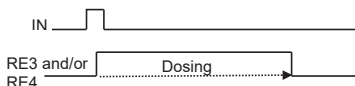
- ← Back with no change
- ⊙ Selection of digit position
- ⊙ Value setting
- ☑ Confirmation of setup and saving to memory



Litres/1 (Q+)/(Q-):

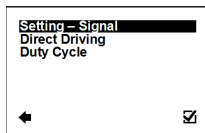


Dosing:



3.5.14. User Settings> Frequency output

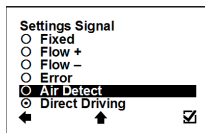
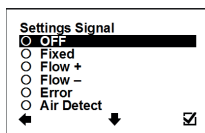
- ← Back with no change
- ↻ Item selection
- ☑ Enter this part of the menu



User Settings> Frequency output > Settings Signal

This function serves to select which signal the output should be giving.

- ← Back with no change
- ↻ Item selection
- ⊙ Selection identification
- ☑ Confirmation of setup and saving to memory
- OFF Output: **OFF**
- Fixed Output: **100Hz** fixed output
- Flow+ Output: **100Hz**, for any positive flow
- Flow- Output: **100Hz**, for any negative flow
- Error Output: **100Hz**, for any error identified by the device
- Air Detect Output: **100Hz**, during air detection (empty pipe)
- Direct Frequency output changing according to actual flow
- Driving

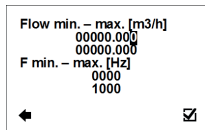


User Settings> Frequency output > Direct Driving

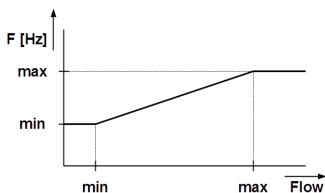
This function serves to set flow values in relation to frequency output.

Possible range: **0 – 36000 m3/h; 0 – 1000 Hz**

- ← Back with no change
- ↻ Selection of digit position
- ↻ Value setting
- ☑ Confirmation of setup and saving to memory
- Flow Setup of the active flow-range for the Frequency output module
- min. – max. Configuration of the active flow-range for the Frequency output module
- F min. – max. Configuration of the Frequency output range, corresponding to the actual flow-rate within the given range.



Minimal frequency 2 Hz
Maximal frequency 1000 Hz

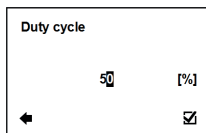


User Settings> Frequency output > Duty Cycle

Function to set duty cycle of the Frequency output. Percentage of high level.

Possible range: 1 – 99 %

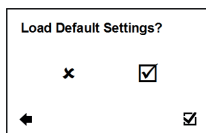
- ← Back with no change
- ⇄ Selection of digit position
- 00 Value setting
- ☑ Confirmation of setup and saving to memory



3.5.15. User Settings> Load Default Settings

This function will load default factory settings.

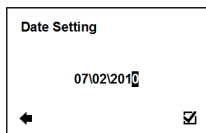
- ← Back with no change
- ⇄ Item selection
- ☑ Confirmation of choice
- ☒ No change
- ☑ Loads default settings



3.5.16. User Settings> Date Setting

Function to set date.

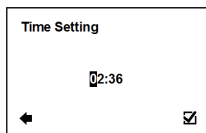
- ← Back with no change
 - ⇄ Selection of digit position
 - 00 Value setting
 - ☑ Confirmation of setup and saving to memory
- Date format DD \ MM \ YYYY



3.5.17. User Settings> Time Setting

This function serves to set current time.

- ← Back with no change
 - ⇄ Selection of digit position
 - 00 Value setting
 - ☑ Confirmation of setup and saving to memory
- Time format HH : MM

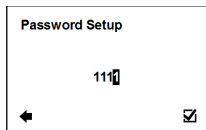


3.5.18. User Settings> Password Setup

This function serves to setup the flowmeter user password.

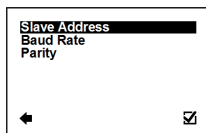
Possible range: 0000 – 9999

- ← Back with no change
- ⇄ Selection of digit position
- 00 Value setting
- ☑ Confirmation of setup and saving to memory



3.5.19. User Settings> Modbus

- ← Back with no change
- 00 Item selection
- ☑ Enter this part of the menu



User Settings> Modbus > Slave Address

Modbus device address (Factory settings: 1).

- Back with no change
- Selection of digit position
- Value setting
- Confirmation of setup and saving to memory

Slave Address

00

←

User Settings> Modbus > Baud Rate

Setup communication speed (Factory settings: 9600).

- Back with no change
- Item selection
- Selection identification
- Confirmation of setup and saving to memory

Baud Rate

- 4800
- 9600
- 19200
- 38400

←

User Settings> Modbus > Parity

Setup communication parameters (Factory settings: Even, 1 stopbit).

- Back with no change
- Item selection
- Selection identification
- Confirmation of setup and saving to memory

Parity

- Even, 1 stopbit
- Odd, 1 stopbit
- None, 2 stopbits
- None, 1 stopbit

←

3.5.20. User Settings> Electrode Cleaning

- Back with no change
- Item selection
- Enter this part of the menu

Power

Clean Time

Start Now

←

User Settings> Electrode Cleaning > Power

Setup automatic electrodes cleaning.

- Back with no change
- Item selection
- Selection identification
- Confirmation of setup and saving to memory

Power

- OFF
- ON
- ON start

←

User Settings> Electrode Cleaning > Clean Time

Setup clean time for automatic electrode cleaning

(Factory setting: 500 s).

Possible range: 1 – 9999 s

- Back with no change
- Selection of digit position
- Value setting
- Confirmation of setup and saving to memory

Clean Time

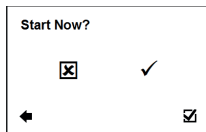
050 [s]

←

User Settings> Electrode Cleaning > Start Now

This function serves to start electrode cleaning now.

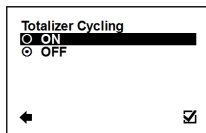
- ← Back with no change
 - ↻ Item selection
 - ☑ Confirmation of choice
 - ☒ No change
 - ☑ Start electrode cleaning now
- Recommended time is 3sec.



3.5.21. User Settings> Totalizer Cycling

Automatic totalizer cycling (time is set to 3 seconds).

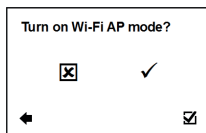
- ← Back with no change
- ↻ Item selection
- ⊙ Selection identification
- ☑ Confirmation of setup and saving to memory



3.5.22. User Settings> Wi-Fi AP mode

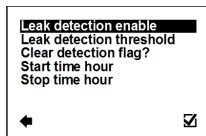
- ← Back with no change
- ↻ Item selection
- ☑ Confirmation of choice
- ☒ No change
- ☑ Turn on Wi-Fi AP mode

Allowing Wi-Fi module to AP mode - prepares the module to be set for operation from external PC or mobile device. For more information please refer to P31 MAGX2 Wi-Fi module installation procedure.



3.5.23. User Settings> Leak detection (FW21.45 and above)

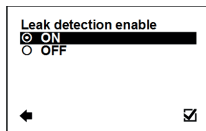
- ← Back with no change
- ↻ Item selection
- ☑ Enter this part of the menu



User Settings> Leak detection > Leak detection enable

Setup leak detection function on/off.

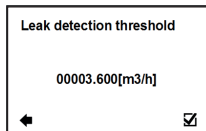
- ← Back with no change
- ↻ Item selection
- ⊙ Selection identification
- ☑ Confirmation of setup and saving to memory



User Settings> Leak detection > Leak detection threshold

Setup threshold to decide whether the leak is detected. Above this value between start and stop hour the leak error is triggered
Possible range: 0 – 36000 m3/h

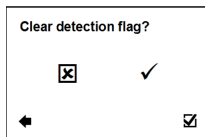
- ← Back with no change
- ↻ Selection of digit position
- ↻ Value setting
- ☑ Confirmation of setup and saving to memory



User Settings> Leak detection > Clear detection flag?

When leak has been triggered, the error needs to be manually cleared by this function

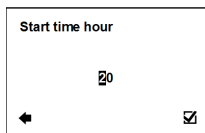
- Back with no change
- Item selection
- Confirmation of choice
- No change
- Clear the error now



User Settings> Leak detection > Start time hour

Defines from which hour the meter starts to detect the leaks.

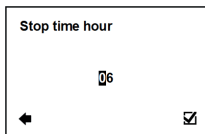
- Back with no change
- Selection of digit position
- Value setting
- Confirmation of setup and saving to memory



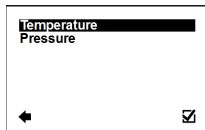
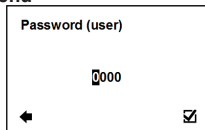
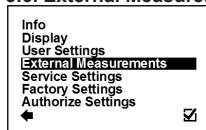
User Settings> Leak detection > Stop time hour

Defines from which hour the meter stops to detect the leaks.

- Back with no change
- Selection of digit position
- Value setting
- Confirmation of setup and saving to memory



3.6. External Measurements Menu

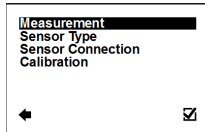


To enter this part of the menu, it is necessary to enter the **User Password**.

3.6.1. External Measurements > Temperature

Setup of the external measurement of temperature.

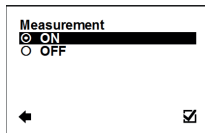
- Back with no change
- Item selection
- Enter this part of the menu



External Measurements > Temperature > Measurement

Measurement of external temperature.

- Back with no change
- Item selection
- Selection identification
- Confirmation of setup and saving to memory
- ON
When set ON, the value of external temperature is shown amongst totalizers (XTemp)*



*It is not possible to use simultaneously External Temperature Module and Pulse module

External Measurements > Temperature > Sensor Type

Sensor type selection.

- ← Back with no change
- ⏪ Item selection
- ⊙ Selection identification
- ☑ Confirmation of setup and saving to memory

Sensor Type
 Pt100
 Pt200
 Pt500
 Pt1000

External Measurements > Temperature > Sensor Connection

Sensor connection selection.

- ← Back with no change
- ⏪ Item selection
- ⊙ Selection identification
- ☑ Confirmation of setup and saving to memory

Sensor Connection
 2-wire
 3-wire
 4-wire

External Measurements > Temperature > Calibration

Calibration of the external temperature sensor.

- ← Back with no change
- ⏪ Item selection
- ☑ Enter this part of the menu

Temperature
Start Now

External Measurements > Temperature > Calibration > Temperature

Calibration temperature at the time of calibration.*

- ← Back with no change
- ⇄ Selection of digit position
- ⏪ Value setting
- ☑ Confirmation of setup and saving to memory

Temperature
0000.0 [°C]

*Reference temperature of known temperature sensor at the time of calibration

External Measurements > Temperature > Calibration > Start Now

Start of the calibration.

- ← Back with no change
- ⇄ Item selection
- ☑ Confirmation of setup and saving to memory
- ☑ Calibration temperature will not change
- ☑ New calibration temperature changed

Start Now?
x ☑

3.6.2. External Measurements > Pressure

Setup of the external measurement of pressure.

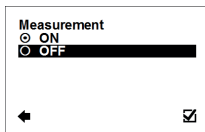
- ← Back with no change
- ⏪ Item selection
- ☑ Enter this part of the menu

Measurement
Current Loop

External Measurements > Pressure > Measurement

Measurement of pressure.

- Back with no change
- Item selection
- Selection identification
- Confirmation of setup and saving to memory
- ON When set ON, the value of pressure is shown amongst totalizers (XPress)*



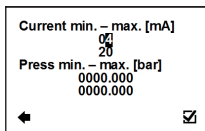
*It is not possible to use simultaneously Pressure Module and I-Out

External Measurements > Pressure > Current Loop

4-20mA external pressure sensor settings.*

Possible range: **4 – 20mA, Pressure – according to sensor**

- Back with no change
- Selection of digit position
- Value setting
- Confirmation of setup and saving to memory

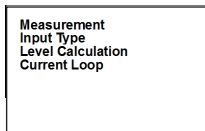


*Any external pressure sensor working on passive 4-20mA. i.e. WIKA A-10 (P#1105VX3J)

3.6.3. External Measurements > External Input (FW 21.50)

Setup of the external measurement..

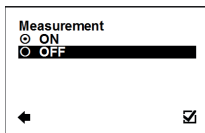
- Back with no change
- Item selection
- Enter this part of the menu



External Measurements > External Input > Measurement

External measurement on/off.

- Back with no change
- Item selection
- Selection identification
- Confirmation of setup and saving to memory
- ON When set ON, the value of external sensor is shown amongst totalizers (XPress, XTemp2, XLevel, XpH, XCust - dependent on Input Type setting)*

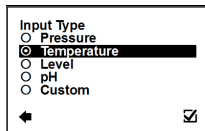


*It is not possible to use simultaneously External Input Module and I-Out

External Measurements > External Input > Input Type

4-20mA external module sensor type setting.

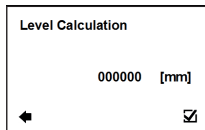
- Back with no change
- Selection identification
- Item selection
- Confirmation of setup and saving to memory



External Measurements > External Input > Level Calculation

Used for Input Type Level sensor as installation height above the bottom of the tank.

- Back with no change
- Selection identification
- Item selection
- Confirmation of setup and saving to memory



External Measurements > External Input > Current Loop

4-20mA external sensor settings.*

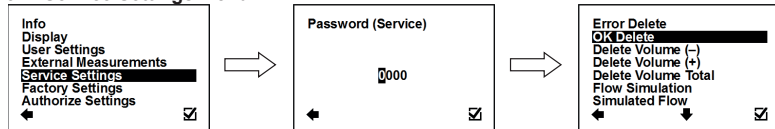
Possible range: **4 – 20mA, Input – according to sensor**

- ← Back with no change
- ↻ Selection of digit position
- ⊖ Value setting
- ☑ Confirmation of setup and saving to memory

Current min. – max. [mA]
04
20
Input min. – max. []
00000000
00000000

*Any external sensor working on passive 4-20mA. i.e. pressure sensor WIKA A-10 (P#1105VX3J)

3.7. Service Settings Menu



To enter this part of the menu, it is necessary to enter the **Service** Password.

3.7.1. Service Settings > Error Delete

This option serves to zero the totalizer for number of minutes the flowmeter signalled an error.

- ← Back with no change
- ↻ Item selection
- ☑ Confirmation of choice
- ☒ No change
- ☑ Resets error minute totalizer

Error Delete?
☒ ✓

3.7.2. Service Settings> OK Delete

This option serves to zero the totalizer for number of minutes of operation.

- ← Back with no change
- ↻ Item selection
- ☑ Confirmation of choice
- ☒ No change
- ☑ Resets operation minute totalizer

OK Delete?
☒ ✓

3.7.3. Service Settings> Delete Volume –

Option to zero the totalizer for negative flow.

- ← Back with no change
- ↻ Item selection
- ☑ Confirmation of choice
- ☒ No change
- ☑ Resets negative volume totalizer

Delete Volume (-)?
☒ ✓

3.7.4. Service Settings> Delete Volume +

Option to zero the totalizer for positive flow.

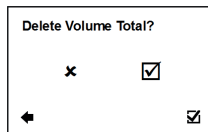
- ← Back with no change
- ↻ Item selection
- ☑ Confirmation of choice
- ☒ No change
- ☑ Resets positive volume totalizer

Delete Volume (+)?
☒ ✓

3.7.5. Service Settings> Delete Volume Total

Option to zero the totalizer for total flow.

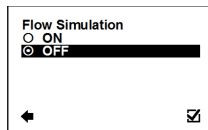
- ← Back with no change
- ⌂ Item selection
- ☑ Confirmation of choice
- ☑ No change
- ☑ Resets total volume totalizer



3.7.6. Service Settings>Flow Simulation

Switching on/off the flow simulation mode.

- ← Back with no change
- ⌂ Item selection
- ⊙ Selection identification
- ☑ Confirmation of setup and saving to memory
- ON Flow Simulation status is ON
- OFF Flow Simulation status is OFF

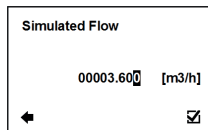


3.7.7. Service Settings> Simulated Flow

Simulation flow in m3/hr (Factory setting: 3.6m3/h).

Possible range: 0 – 36000m3/h

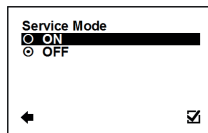
- ← Back with no change
- ⌂ Selection of digit position
- ⌂ Value setting
- ☑ Confirmation of setup and saving to memory



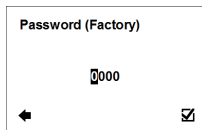
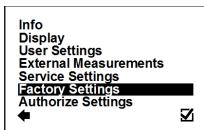
3.7.8. Service Settings> Service mode

Switching on/off the service mode for troubleshooting purposes.

- ← Back with no change
- ⌂ Item selection
- ⊙ Selection identification
- ☑ Confirmation of setup and saving to memory
- ON Service Mode is ON
- OFF Service Mode is OFF



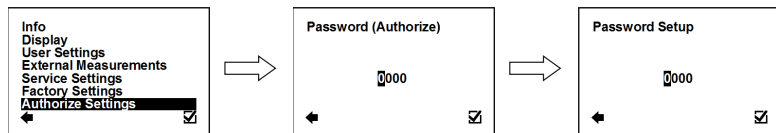
3.8. Factory Settings Menu



To enter this part of the menu, it is necessary to enter the **Factory** Password.

This function is available to Arkon staff in the Arkon workshop.

3.9. Authorize Menu



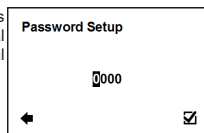
To enter this part of the menu, it is necessary to enter the **Authorize** Password.

This function is available to Arkon staff in the Arkon workshop.

Authorize Settings > Password Setup

Here, it is possible to change a forgotten user password. It is necessary to call the Arkon sales office and provide the serial number. The authorisation number is provided based on this serial number.

- ← Back with no change
- ↻ Selection of digit position
- ⊖ Value setting
- ☑ Confirmation of setup and saving to memory
- Password** Enter value between 0000 and 9999



4. Modules

4.1. Power Supply Module Version 5

Module Name:	Symbol:	Ordering Code:
Power Supply Module		*5*****

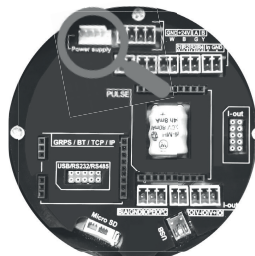
APPLICATIONS:

Industrial Power Supplies 90-250 V AC

12-36 V DC Distributed Power Systems.

This module is necessary for the complete flowmeter.

PIN LOCATION



Electrical Specifications

Input Voltages $\pm 5\%$ / max power / possible current consumption
 AC 90 - 250V (50-60 Hz) / max. 15 VA / max 170 mA
 DC 12 – 36V / max 15W / max 1,25 A

External battery backup: DC 12 – 36V / max 15W*
 The power supply is not charging the backup battery

Output Voltages 3.3V / 2A
 23.6V/500mA

Temp. Range -20 – 70 °C

Dimensions: R = 50mm
 H(230V) = 58mm
 H(12,24V) = 58mm

Weight 300g




	<p>The device does not have a network power switch. For any electrical work or housing open it is necessary to disconnect the device from the network power, and this has to be done via a switch. The mains protective earth wire has to be connected to the PE terminal (power supply class 1). A switch or circuit breaker (B6) has to be in the building installation if mains supply 90 – 250 V AC from building installation is connected to the power supply module. It must be in close proximity to the equipment and within easy reach of the operator, and it shall be marked as the disconnecting device for the flowmeter.</p>
--	---

90-250 V AC / 15VA Recommended power supply cable minimum 3xØ1mm ²	12 – 36 V DC / 15W Recommended power supply cable minimum 2xØ.5mm ²	Backup power 12 – 36 V DC / 15W *If using backup battery, its voltage needs to be lower than usually used DC power supply or less than 24V in case of using AC power source See P32 - Backup battery procedure
All used wires have to be round crosscut cables.		

	Any connection or disconnection of any module has to be done with the network power to the meter switched off. The flowmeter is CAT II – CAT III device.
--	--

4.2. Battery backup

Module Name:	Symbol:	Ordering Code:
Battery back-up – Li-Ion 5200 mAh		11606

Application:

UPS for MAGX2 flowmeter

Electrical Specifications:

Input Voltage ±5%

90 - 250VAV (50-60 Hz)

Max. input current

0,96A at 90 VAC

Output voltage

DC 12,5 – 24,0 VDC
(unstabilized)

Max. output current

0,5A

Max. operation on battery time

20h

Max. battery charging time

8h

Temp. Range

0 - 60 °C

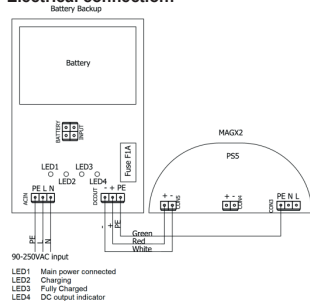
Dimensions

100 x 225 x 85 mm

Weight

2,5 kg

Electrical connection:



Order of power connection:

1. Battery backup cable to the flowmeter (Interconnection between each)
2. Power supply cable to the battery backup
3. 4-port battery connector to the PCB 4-port connector

Panel Mounting:

To mount the battery pack onto the panel - recommended 4 bolts Allen head (DIN912 M4x40), spacing 66x186mm.

Please note 10mm of the bolt remain inside the housing.



Take special care not to cross connect input and output terminals - doing so will cause severe damage to the battery backup.



The device does not have a network power switch. For any electrical work or housing open it is necessary to disconnect the device from the network power, and this has to be done via a switch.

The mains protective earth wire has to be connected to the PE terminal (power supply class 1). A switch or circuit breaker (B6) has to be in the building installation if mains supply 90 – 250 V AC from building installation is connected to the battery backup module. It must be in close proximity to the equipment and within easy reach of the operator.

90-250 VAC Recommended power supply cable minimum 3xØ1mm²

Cable for MAGX2 already fitted, length 2 meters

Short-circuit protection - fused by F1A. Spare fuse inside the battery backup - remove before use.

All used wires have to be round crosscut cables.



Any connection or disconnection of any MAGX2 module has to be done with the network power to the meter switched off. To do that disconnect power to battery backup and disconnect the 4pin battery input connector to unplug the batteries. After that the flowmeter should be de-powered. The flowmeter is CAT II – CAT III device. Lithium batteries inside!

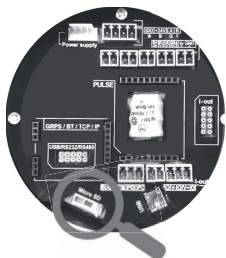
In case LED4 is not on and batteries and/or mains supply is connected most likely there is a blown fuse. Fix the origin of the short on power system, change fuse and start the battery pack again.

In case LED4 is dim most likely internal electronic fuse took place. Fix the origin of the short on power system, change fuse and start the battery pack again.

4.3. Datalogger

Module Name:	Symbol:	Ordering Code:
Micro SD card		4601

BASIC CIRCUIT CONNECTIONS:



Size:
11mm x 15mm x 1.0mm

Durability:
10,000 insertion/removal cycles

Weight:
0.4g

Minimal Capacity:
32 MB

The data are stored in *.csv format.

To read the datalogger simply plug the SD card to your computer and open the file using any table processor.

The logging interval is possible to set from 1 minute to 1 day

Each record consist of:

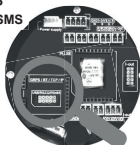
Date and time, FW number, Measurement(Run/Stop), Total, Total+, Total-, Aux, Error Min, OK min, Error Code, Temperature, External Temperature (if present), External Pressure/Input (if present)

While there is an error "SD card not inserted" or "SD Open file" active and the user plugs-in the SD card, error will disappear after next write to the datalogger. It is recommended to setup the datalogger interval again or restart the flowmeter after every SD card plug-in.

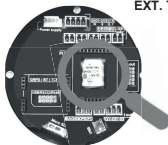
4.4. Module positioning

Individual module installation is straightforward thanks to a plug-and-play system. Yet, some caution is required when selecting the correct installation slot according to the picture below.

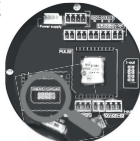
GPRS
BLUETOOTH
TCP/IP
GSM-SMS



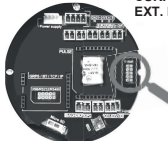
PULSE
EXT. TEMPERATURE




RS232
RS485
USB



CURRENT-LOOP
EXT. PRESSURE/INPUT



4.5. USB Module

Module Name:	Symbol:	Ordering Code:
MAGX2 USB Module		*****USB

APPLICATIONS:

Any System Requiring, USB Communications, Peripheral - PC and Terminal. USB 1.1 and USB 2.0 compatible

BASIC CIRCUIT CONNECTIONS:



Requirement: Microsoft Windows XP or newer version of operating system




Drivers are included in MAGX2 SW.



Any connection or disconnection of any module has to be done with the network power to the meter switched off. PELV device.

4.6. RS485 Module

Module Name:	Symbol:	Ordering Code:
MAGX2 RS485 Module	RS 485 	*****485

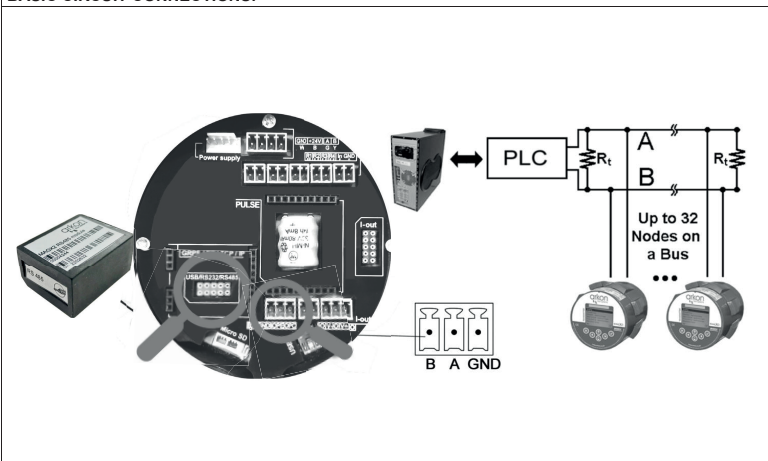
APPLICATIONS:

Industrial Automation, Industrial Process Control, Peripheral - PC and Terminal.

Electrical Specifications



VCC to Ground	3.3 VDC
Baud rate	Max. 115200 baud/s

BASIC CIRCUIT CONNECTIONS:




Multi-Node Network with End Termination Using module RS485

Terminator R_t with resistance 100Ω should be connected to the end of line RS-485.

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

4.7. RS232 Module

Module Name:	Symbol:	Ordering Code:
MAGX2 RS232 Module	RS 232 	*****232

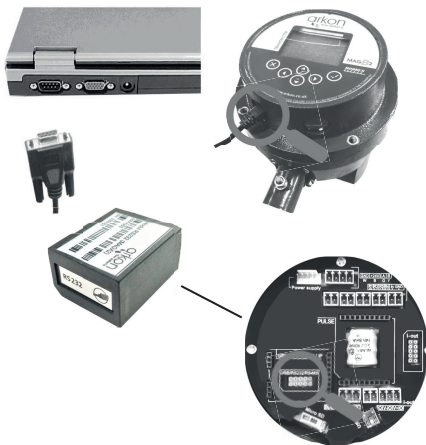
APPLICATIONS:

Industrial Automation, Industrial Process Control, Peripheral - PC and Terminal.

Electrical Specifications

VCC to Ground	3.3 VDC
Baud rate	Max. 115200 baud/s

BASIC CIRCUIT CONNECTIONS:



A special cable Canon9 – mini USB is included.




Warning electrostatic sensitive device.



Any connection or disconnection of any module has to be done with the network power to the meter switched off.

4.9. M-Bus Module

Module Name:	Symbol:	Ordering Code:
MAGX2 M-Bus Module		*****MBUS

APPLICATIONS:

Industrial Automation, Industrial Process Control

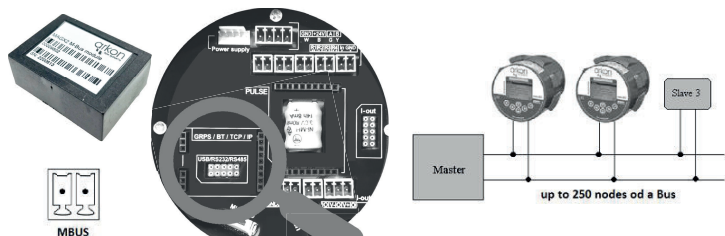
Electrical Specifications

Baud rate 2400 baud

Temp. Range -20 – 70 °C

BASIC CIRCUIT CONNECTIONS:

Using the M-bus Module



See M-Bus installation 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.

4.10. BLUETOOTH Module

Module Name:	Symbol:	Ordering Code:
MAGX2 BLUETOOTH Module	Bluetooth 	*****BTO

APPLICATIONS:

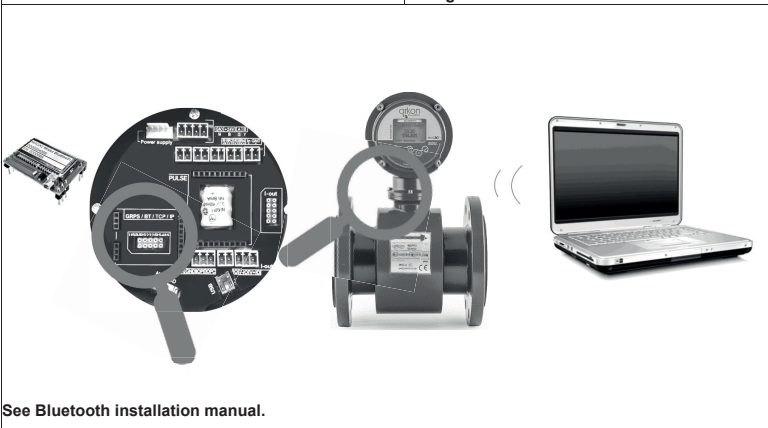
Wireless control of and communication between transmitter and PC or PLC systems
Any System Requiring Bluetooth Communications

Electrical Specifications

VCC to Ground	3.3 VDC
Power Supply Current	120 mA
Baud Rate	Max. 460.8 Kbaud/s
Carrier Frequency	2.402 – 2.480 GHz
Range	100m (class 1)
Temp. Range	-20 – 70 °C

BASIC CIRCUIT CONNECTIONS:

Using the TCP/IP Module



Warning! There is a condition that must be fulfilled for the Bluetooth module to be able to operate correctly: line speed of the communication protocol Modbus **must** be set up on **19200Bd, Parity none, 1 stop bit**. If there is a different setting the communication will not work. You can find the setting in the following MAGX2 flow meter menu: "Menu / User settings / Modbus / Baud rate" and "Menu / User settings / Modbus / Parity".




Warning electrostatic sensitive device.



Any connection or disconnection of any module has to be done with the network power to the meter switched off.

4.11. 3G/GPRS/SMS Module

Module Name:	Symbol:	Ordering Code:
MAGX2 3G/GPRS/GSM Module	GPRS 	*****GPRS

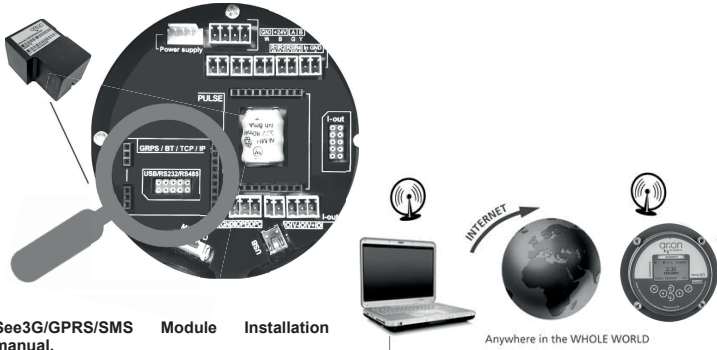
APPLICATIONS:

Wireless monitoring of the flowmeter via SMS messages and/or 3G/GPRS data transfer,
Wireless data collection systems, SCADA, Arkon.Track

Electrical Specifications

VCC to Ground	3.3 VDC
Power Supply Current	RMS 400mA, MAX 1500mA
Operating Systems	GSM 850 / GSM 900 DCS 1800 / PCS 1900 3G
Multi-slot class	10 (4 Rx / 2 Tx / 5 Sum)
SIM Card	3.0 / 1.8 V
Temp. Range	-20 – 70 °C



BASIC CIRCUIT CONNECTIONS:




See 3G/GPRS/SMS Module Installation manual.

Anywhere in the WHOLE WORLD

Warning! The module installation is described in separate document: MAGX2 3G-GPRS-GSM User Guide. Setting of the module is done through SMS commands described in the manual above. The meter is sending flow and totalizer information in selected time interval to maximum 3 phone numbers in form of SMS message and/or 3G/GPRS TCP packet to selected IP address and port. The module can be used in IOT platform Arkon.Track.

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

4.12. Wi-Fi Module

Module Name:	Symbol:	Ordering Code:
MAGX2 WiFi Module	Wi-Fi 	*****WIFI

APPLICATIONS:

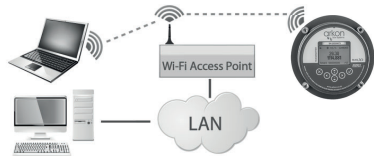
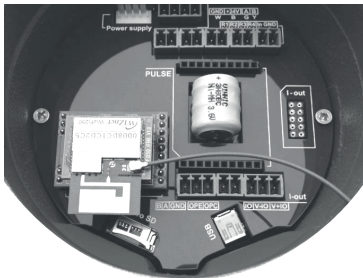
Wireless communication for short and medium distances.

Electrical Specifications

VCC to Ground	3.3 VDC
Power Supply Current	up to 430 mA
Baud Rate	4800 - 38400 baud/s
Carrier Frequency	2,400 – 2,484 GHz
Range	up to 200 m
Temp. Range	-20 – 70 °C

BASIC CIRCUIT CONNECTIONS:

Using the Wi-Fi Module



See Wi-Fi module installation procedure (P31).



Warning electrostatic sensitive device.



Any connection or disconnection of any module has to be done with the network power to the meter switched off.

4.13. LoRa Module

Module Name:	Symbol:	Ordering Code:
MAGX2 LoRa Module		*****LoRa

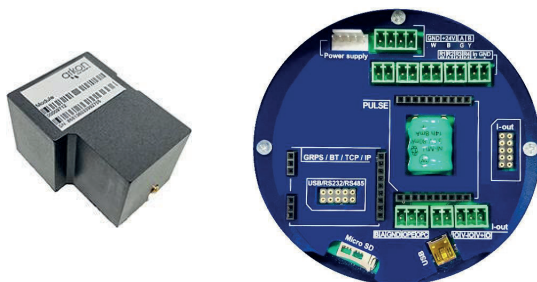
APPLICATIONS:

Wireless data collection systems, SCADA, AMR

Electrical Specifications

VCC to Ground	3.3 VDC
Power Supply Current	Max 200mA
Operating Systems	868 MHz
Output power	Up to +19dBm
Range	Up to 15km (Line of Sight)
Authentication method	OTAA
Temp. Range	-20 – 70 °C

BASIC CIRCUIT CONNECTIONS:



See MAGX2 RF Module Installation user guide for more info.

Warning! The module is sending data automatically every 30seconds. An identification tag with all need information (Device EUI, APP EUI and APPKey) is sent with the module.




Warning electrostatic sensitive device.



Any connection or disconnection of any module has to be done with the network power to the meter switched off.

4.14. Pulse Output Module

Module Name:	Symbol:	Ordering Code:
MAGX2 Pulse Output Module	PULSE 	*****P*

APPLICATIONS:

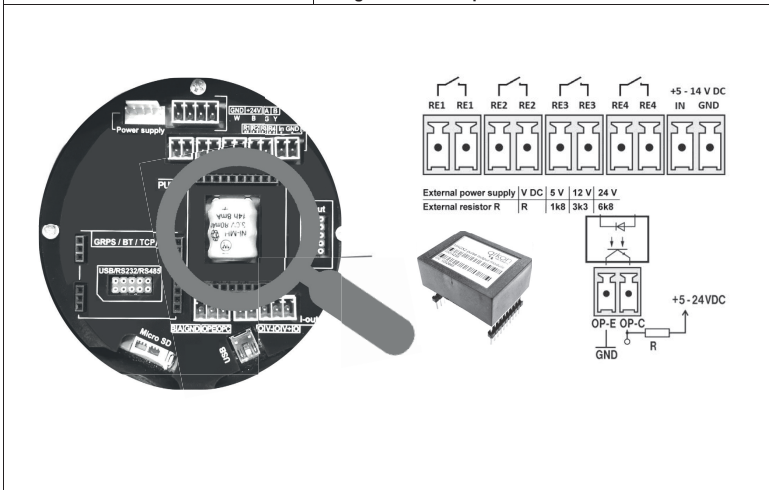
Industrial Automation, Industrial Process Control, Test Systems, Smart Transmitter

Electrical Specifications

VCC to Ground	3.3 VDC
Output mode	Frequency, Pulse
Max Relay Voltage	110VDC/0.5A
Output Frequency	2-1000 Hz
Batching Voltage Input Rate	+5 - 14VDC
Temp. Range	-20 – 70 °C

BASIC CIRCUIT CONNECTIONS:

Using the Pulse Output Module




Warning electrostatic sensitive device.



Any connection or disconnection of any module has to be done with the network power to the meter switched off.

4.15. Pulse 230 Module

Module Name:	Symbol:	Ordering Code:
MAGX2 Pulse 230 Module	PULSE 230 	*****P2*

APPLICATIONS:

Industrial Automation, Industrial Process Control, Test Systems, Smart Transmitter

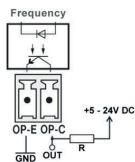
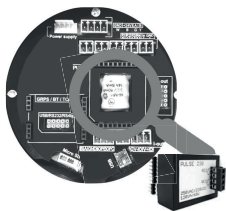
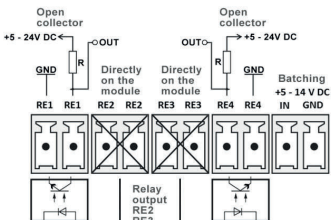
Electrical Specifications

VCC to Ground	3.3 VDC
Output mode	Frequency, Pulse - relay and open collector
Max Relay Voltage (RE2,RE3)	250VAC/220VDC at 120VA/60W
Output Frequency	2-1000Hz
Batching Voltage Input Range	+5-14V DC
Temp. Range	-20 to +70C

BASIC CIRCUIT CONNECTIONS:

Using the Pulse 230 Output Module

External power supply	V DC	5 V	12 V	24 V
External resistor R	R	1k Ω	3k Ω	6k Ω




Warning electrostatic sensitive device.



Any connection or disconnection of any module has to be done with the network power to the meter switched off.

4.16. External Temperature Module

Module Name:	Symbol:	Ordering Code:
MAGX2 External Temperature Module	External Temperature 	****ET*

APPLICATIONS:

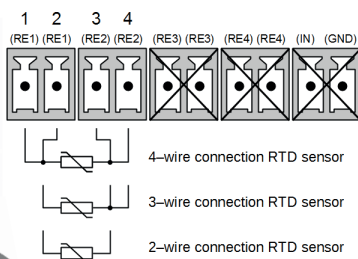
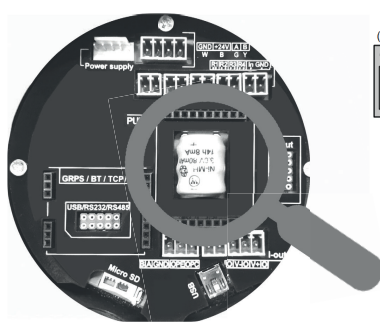
Industrial Automation, Industrial Process Control, Test Systems, Smart Transmitter

Electrical Specifications

VCC to Ground	3.3 VDC
RTD Sensor Type	Pt100, Pt200, Pt500, Pt1000
Tolerance RTD Sensors	Class A, Class B
RTD Sensor connection	2-wire, 3-wire, 4-wire
Measurement Range	-30 – 180 °C (or according to the manufacturer's specifications of the sensor)
Temp. Range	-20 – 70 °C

BASIC CIRCUIT CONNECTIONS:

The actual physical connection have to be selected in menu: External measurements – Temperature – Sensor Type




Warning electrostatic sensitive device.



Any connection or disconnection of any module has to be done with the network power to the meter switched off.

4.17. Current Loop Output Module

Module Name:	Symbol:	Ordering Code:
MAGX2 4-20mA Current Loop Output Module		****C**

APPLICATIONS:

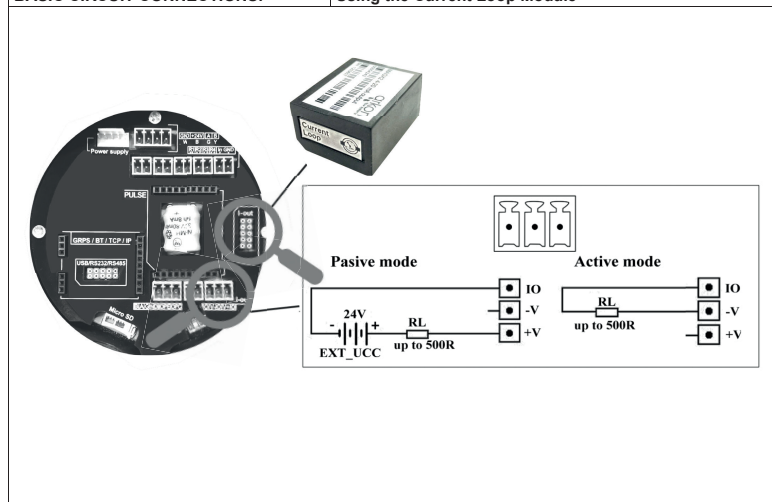
Industrial Automation, Industrial Process Control, Test Systems, Smart Transmitter

Electrical Specifications:

VCC to Ground	3.3 VDC
Type	12-bit DAC
Maximum resolution	3.9 μ A
Current out	4 – 20 mA
Output mode	Active or Passive
Temp. Range	-20 – 70 °C

BASIC CIRCUIT CONNECTIONS:

Using the Current Loop Module




Warning electrostatic sensitive device.



Any connection or disconnection of any module has to be done with the network power to the meter switched off.

4.18. External Pressure Module

Module Name:	Symbol:	Ordering Code:
MAGX2 External Pressure Module	External Pressure 	****EP**

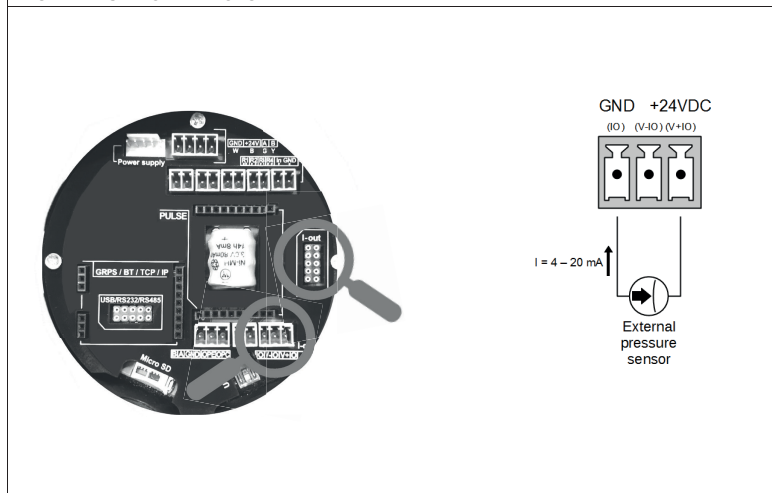
APPLICATIONS:

Industrial Automation, Industrial Process Control, Test Systems, Smart Transmitter

Electrical Specifications:

VCC to Ground	3.3 VDC
Output type Pressure Sensor	passive 4 – 20 mA (ext. power supply from Pressure Module)
Measurement Range	according to the manufacturer's specifications the sensor
Measurement Unit	bar, psi
Temp. Range	-20 – 70 °C

BASIC CIRCUIT CONNECTIONS:



Warning electrostatic sensitive device.



Any connection or disconnection of any module has to be done with the network power to the meter switched off.

5. OIML R49 certification

MAGX2 have been type tested and internationally proven and endorsed to the highest accuracy class 2 for cold and hot potable water meters – OIML R49-1 (Organisation Internationale de Métrologie Légale). For full details, OIML R49 is available to download from www.oiml.org. Its requirements are in line with other international standards, such as EN14154 and ISO4064. MAGX2 flowmeter has been evaluated by type approval at the Czech Metrology Institute to OIML R49 and passed the very highest accuracy designations for sizes DN25 to DN300 (1 to 12 in. NB).

The OIML R49-1 certificate of conformity is available on our website (www.arkon.co.uk).

Climatic class: **B**

Electromagnetic class: **E2**

Pressure class: **MAP10**

Temperature class: **T50**

Pressure loss: **ΔP 10**

Installation condition: **U5D3**, any installation position*

Accuracy class: **2**

Flow direction: **positive**

Q3/Q1 ratio is described in following table:

DN	R	Flow Rate [m3/hr]				R	Flow Rate [m3/hr]				R	Flow Rate [m3/hr]			
		Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4
25	50	0,32	0,51	16,00	20,00	100	0,16	0,26	16,00	20,00	160	0,10	0,16	16,00	20,00
32	50	0,50	0,80	25,00	31,25	100	0,25	0,40	25,00	31,25	160	0,16	0,25	25,00	31,25
40	50	0,80	1,28	40,00	50,00	100	0,40	0,64	40,00	50,00	160	0,25	0,40	40,00	50,00
50	50	1,26	2,02	63,00	78,75	100	0,63	1,01	63,00	78,75	160	0,39	0,63	63,00	78,75
65	50	2,00	3,20	100,00	125,00	100	1,00	1,60	100,00	125,00	160	0,63	1,00	100,00	125,00
80	50	3,20	5,12	160,00	200,00	100	1,60	2,56	160,00	200,00	160	1,00	1,60	160,00	200,00
100	50	4,00	6,40	200,00	250,00	100	2,00	3,20	200,00	250,00	160	1,25	2,00	200,00	250,00
125	50	8,00	12,80	400,00	500,00	100	4,00	6,40	400,00	500,00	160	2,50	4,00	400,00	500,00
150	50	12,60	20,16	630,00	787,50	100	6,30	10,08	630,00	787,50	160	3,94	6,30	630,00	787,50
200	50	16,00	25,60	800,00	1000,00	100	8,00	12,80	800,00	1000,00	160	5,00	8,00	800,00	1000,00
250	50	20,00	32,00	1000,00	1250,00	100	10,00	16,00	1000,00	1250,00	160	6,25	10,00	1000,00	1250,00
300	50	32,00	51,20	1600,00	2000,00	100	16,00	25,60	1600,00	2000,00	160	10,00	16,00	1600,00	2000,00

DN	R	Flow Rate [m3/hr]				R	Flow Rate [m3/hr]				R	Flow Rate [m3/hr]			
		Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4		Q1	Q2	Q3	Q4
25	200	0,08	0,13	16,00	20,00	250	0,06	0,10	16,00	20,00	400	0,04	0,06	16,00	20,00
32	200	0,13	0,20	25,00	31,25	250	0,10	0,16	25,00	31,25	400	0,06	0,10	25,00	31,25
40	200	0,20	0,32	40,00	50,00	250	0,16	0,26	40,00	50,00	400	0,10	0,16	40,00	50,00
50	200	0,32	0,50	63,00	78,75	250	0,25	0,40	63,00	78,75	400	0,16	0,25	63,00	78,75
65	200	0,50	0,80	100,00	125,00	250	0,40	0,64	100,00	125,00	400	0,25	0,40	100,00	125,00
80	200	0,80	1,28	160,00	200,00	250	0,64	1,02	160,00	200,00	400	0,40	0,64	160,00	200,00
100	200	1,00	1,60	200,00	250,00	250	0,80	1,28	200,00	250,00	400	0,50	0,80	200,00	250,00
125	200	2,00	3,20	400,00	500,00	250	1,60	2,56	400,00	500,00	400	1,00	1,60	400,00	500,00
150	200	3,15	5,04	630,00	787,50	250	2,52	4,03	630,00	787,50	400	1,58	2,52	630,00	787,50
200	200	4,00	6,40	800,00	1000,00	250	3,20	5,12	800,00	1000,00	400	2,00	3,20	800,00	1000,00
250	200	5,00	8,00	1000,00	1250,00	250	4,00	6,40	1000,00	1250,00	400	2,50	4,00	1000,00	1250,00
300	200	8,00	12,80	1600,00	2000,00	250	6,40	10,24	1600,00	2000,00	400	4,00	6,40	1600,00	2000,00

* NOTE: U5D3 requirement is NOT applicable for versions with Reduced-bore body.

6. Maintenance

MAGX2 flowmeter does not require any special maintenance. Dependent on the media being measured it is recommended that approximately once a year, to remove the sensor from the pipe and clean the liner. Method of cleaning consists of removing mechanical dirt and any non-conductive coating (like oil film) from the liner. A very dirty liner could cause inaccuracy of the measurement. Check mechanical state of the liner.

6.1. Self –cleaning electrodes

If mechanical cleaning is not possible, MAGX2 has electrolytic method to clean electrodes.

An electrolytic method is advantageous for its simplicity, however it can only be applied for the contamination that can be removed by electrolysis. (Low contamination and deposit).









24VAC voltage is applied directly to sensor electrodes to clean them. The time that that voltage is applied is selectable for user from 1 to 9999 seconds. For more info please go to section 3.5.20. User settings. Recommended time is 3sec.

7. Liner and electrode selection




Liner and electrode material selection are an important issue when choosing your flowmeter. The tables below serve to give you an idea of general material compatibility. If you are not sure about suitability of liner/electrode material for a particular medium, please contact the Arkon sales department for further assistance, and the site where the flowmeter is to be used for what materials are acceptable for the process media. Arkon can only recommend materials, we cannot guarantee them.

Please note that Arkon offer WRAS approved material for sizes up to DN600. For more info contact our sales department.

Liner Selection:

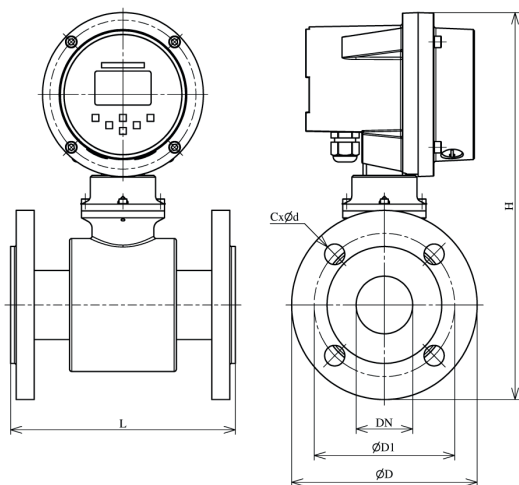
Hard Rubber	Drinking water and wastewater		 0 - 70°C
Soft Rubber	Water with abrasive particles		 0 - 70°C
PTFE	Chemicals, food industries and drinking water		 0 - 130°C
Hygienic rubber	Potable water; WRAS approved		 cold water

Electrode selection:

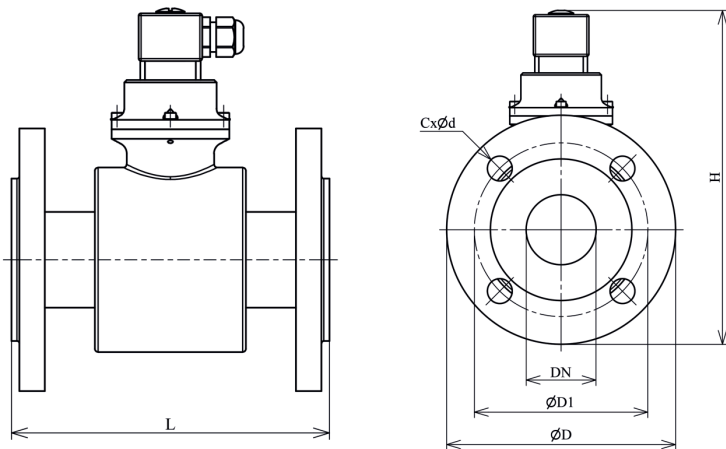
Hastelloy	General purpose, sewage, water, seawater, chemicals	
Titanium	Aggressive chemicals	
Platinum	Aggressive chemicals	

8. Flowmeter Dimensions

Compact version



Remote version



DN	ØD	ØD1	CxØd	H_compact	H_remote	L
10	90	60	4x14	275	180	200
15	95	65	4x14	280	185	200
20	105	75	4x14	288	193	200
25	115	85	4x14	293	198	200
32	140	100	4x18	312	217	200
40	150	110	4x18	320	225	200
50	165	125	4x18	334	239	200
65	185	145	8x18	354	259	200
80	200	160	8x18	373	278	200
100	220	180	8x18	393	298	250
125	250	210	8x18	419	324	250
150	285	240	8x22	458	363	300
200	340	295	12x22	514	419	350
250	405	355	12x26	584	489	400
300	460	410	12x26	633	538	500
350	520	470	16x26	701	606	500
400	580	525	16x30	754	659	600
450	640	585	20x30	797	702	600
500	715	650	20x33	865	770	600
600	840	770	20x36	982	887	600

DN	ØD	ØD1	CxØd	H_compact	H_remote	L
1/2"	88,9	60,5	4x16	277	182	200
3/4"	98,6	69,9	4x20	284	189	200
1"	108	79,2	4x20	290	195	200
1.1/4"	117,3	88,9	4x20	300	205	200
1.1/2"	127	98,6	4x23	309	214	200
2"	152,4	120,7	4x20	328	233	200
2.1/2"	177,8	139,7	4x20	350	255	200
3"	190,5	152,4	4x20	368	273	200
4"	228,6	190,5	8x20	397	302	250
5"	254	215,9	8x23	421	326	250
6"	279,4	241,3	8x23	455	360	300
8"	342,9	298,5	8x23	515	420	350
10"	406,4	362	12x26	584	489	400
12"	482,6	431,8	12x26	644	549	500
14"	533,4	476,3	12x29	708	613	500
16"	596,9	539,8	16x29	762	667	600
18"	635	577,9	16x32	795	700	600
20"	698,5	635	20x32	856	761	600
24"	812,8	749,3	20x35	968	873	600

Tolerance of built-in length:

DN 10 – DN 150 → L ± 5 mm

DN 200 – DN 1000 → L ± 10 mm

Standard pressure:

DN 10 – DN 50 → PN 40 / 150 lbs.

DN 65 – DN 150 → PN 16 / 150 lbs

9. How to order your MAGX2

Model	Ordering code							Description
MAGX2 IP68	1	2	3	4	5	6	7	Standard calibration
MAGX2 OIML IP68								OIML R49 Version (DN25-DN300)
MAGX2 MID IP68								MID Version – MI-001, Class 2 (DN25-DN300)
	T							MAGX2 main board, display, 6 buttons control unit
		5						Power supply module Version 5 – 12-35 VDC, 90-250 VAC, including battery back-up option
			CM					Sensor to transmitter communication module - Version 8
				N				Remote mounting kit None
				W				WALL mounting kit (including 6m cable)
				P				PANEL mounting kit (including 6m cable)
				D				DIN-Rail mounting kit (including 6m cable)
					N			Output 1 None
					C			4-20mA current output signal module
					EP			External pressure sensor
						N		Output 2 None
						P		Pulse output module
						P2		Pulse 230 output module
						ET		External temperature sensor
								Communication
						N		None
						232		RS232 communication module, including 1,8m cable
						USB		USB communication module, including 1,8m cable
						BTO		Bluetooth communication module
						GPR		GPRS communication module
						485		RS485 communication module, distance up to 1km
						TCP		TCP/IP communication module, amplifiers might be necessary
						SMS		GSM-SMS communication module
						WIFI		Wi-Fi communication module
						MBUS		M-Bus communication module

Example

MAGX2 IP68	T	5	CM	N	C	N	USB
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Example OIML, IP68 unit

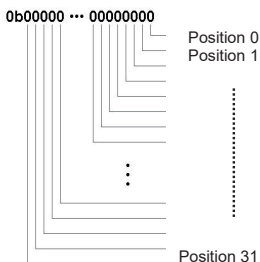
MAGX2 IP68 OIML	T	5	CM	N	N	N	485
-----------------	---	---	----	---	---	---	-----

Model	Ordering code					Description
Sensor	1	2	3	4	5	
Z						Reduced-bore body (up to DN150 only)
						Connection
D						DIN
A						ANSI
DS						DIN Flange St. St.
DSS						DIN St. St. body
AS						ANSI Flange St. St.
ASS						ANSI St. St. body
S						DIN 11851
SSS						DIN 11851 St. St. body
J						JIS
E						Table E
TD						Table D
T						Tri-clamp
W						Wafer
						Size
	10 / 1/2	150 / 6				10mm / 1/2"
	15 / 2/3	200 / 8				15mm / 2/3"
	20 / 3/4	250 / 10				20mm / 3/4"
	25 / 1	300 / 12				25mm / 1"
	32 / 1.1/4	350 / 14				32mm / 1.1/4"
	40 / 1.1/2	400 / 16				40mm / 1.1/2"
	50 / 2	450 / 18				50mm / 2"
	65 / 2.1/2	500 / 20				65mm / 2.1/2"
	80 / 3	600 / 24				80mm / 3"
	100 / 4	700 / 28				100 mm/ 4"
	125 / 5	800 / 32				125 mm/ 5"
	150 / 6	1000 / 40				150 mm / 6"
						Liner
			HR			HARD RUBBER
			PT			PTFE
			SR			SOFT RUBBER
			NR			HYGIENIC RUBBER
			CT			E-CTFE
						Pressure
				150		150 psi
				300		300 psi
				10		PN10
				16		PN16
				25		PN25
				40		PN40
						Electrodes
					HA	Hastelloy C
					TI	Titanium
					PL	Platinum

Example

Sensor	D	100	HR	16	HA
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10. MAGX2 Error Code Table



MAGX2 can detect and show a number of errors in one error code value.

Error position	Error Description
0	Empty Pipe (Air Detect)
1	Overloaded
2	Excitation
3	Sensor not responding
4	SD open file
5	SD card not inserted
6	Write flash
7	ADC
8	GSM SMS Module Timeout
9	GSM SMS Module Low Signal
10	GSM SMS Module SIM card error
11	GSM SMS Module send SMS error
12	GSM SMS Module error
13	Very low or high temperature of the sensor
14	GPRS COMMUNICATION
15	GPRS CHECK
16	GPRS TIMEOUT
17	GPRS RESET
18	GPRS ECHO
19	GPRS SIM PIN
20	GPRS SIGNAL
21	GPRS CALL
22	GPRS IP
23	GPRS ONLINE
24	OVERLOAD 2 - Flow> 4x Qn
25	ERROR Buttons
26	ERROR External Temperature Module
27	ERROR External Pressure Module
28	ERROR FW Tamper (MID, OIML R49 version)
29	ERROR Leak Detection
30-31	RESERVED (non-use)



Errors on the display are indicated in hex format. This number must be converted to binary format! The MAGX2 software version 2.0.0.13 and newer decode and show error in Real time measurement tab.

The error code has been converted to binary format, each position is related to a different error (see the table above). Number 1 indicates error and number 0 indicates no error.

Example:

Error shown on display:	Error position:	Read errors:
00000023 HEX	0000 ... 0010 0011 BIN	SD card not inserted / Overloaded / Empty pipe

11. Firmware version compatibility

It is possible to check the version of each MAGX2 in info menu> Firmware No. MAGX2 offers the option of updating the firmware version using microSD memory card. The following table shows compatibilities between different versions.

FW version	MB		Languages	External sensors	Wi-Fi
21.18	v7.1		ENG,SPA	No	No
21.37	v8.2		ENG, SPA, UKR, RUS, TUR	Yes	Yes
21.37 ARA	v8.2		ENG, SPA, UKR, RUS, TUR, ARA	Yes	Yes
21.39	v8.2	OIML R49/MID	ENG, SPA, UKR, RUS, TUR	Yes	Yes
21.40	v8.2	VeriMAG2	ENG, SPA, UKR, RUS, TUR	Yes	Yes
21.45	v8.2	Leak Detection	ENG, SPA, UKR, RUS, TUR	Yes	Yes
21.50	v8.2	External input	ENG, SPA, UKR, RUS, TUR	Yes	Yes

12. Appendix

12.1. Country of Origin

The MAGX2 Electromagnetic flowmeter is made in Czech Republic.

12.2. CE requirements

The MAGX2 Electromagnetic flowmeter is manufactured conform CE requirements.



12.3. Warranty

The warranty conditions are covered by Arkon Flow Systems, s.r.o. Terms & Conditions of Sale and by Arkon Flow Systems, s.r.o Return Regulations and Warranty Conditions. The Arkon Flow Systems, s.r.o Terms & Conditions of Sale and the Arkon Flow Systems, s.r.o Return Regulations and Warranty Conditions are an integral part of the Resellers contract and of any Order Confirmation. Please see your Resellers contract or www.arkon.co.uk; Support section. The Warranty sheet is part of the Packing note of any new goods sent. For the claim or return procedure, please consult our web site www.arkon.co.uk or call the Arkon Flow Systems, s.r.o sales office.

12.4. Contact



Technical support: support@arkon.co.uk
Skype: support.arkon

Sales office: arkon@arkon.co.uk

Office hours:
8:30 – 18:00 (GMT+1)

Direct technical support:
8:00 – 17:00 (GMT+1)