arkon
flow systems

MAG X2

Build your own flowmeter

USB | RS232 | RS485 | TCP/IP | BLUETOOTH | WI-FI | GPRS | GSM-SMS | 4-20 mA CURRENT LOOP | PULSE | PULSE 230

90-250VAC POWER SUPPLY

24VDC POWER SUPPLY

12VDC POWER SUPPLY

Agrimag Series

USC X series

MAG B1

MAG S1

Flow Measurement & Control Specialists

MAGX2 : Modular design suitable from most basic to most advanced applications

- The MAGX2 has an innovative modular design "Plug & Play"
- Accuracy ±0.2% of actual value
- Sizes from DN10 to DN1000
- Connection: DIN, ANSI, JIS, others on request
- Communication protocol: all communications via Modbus RTU
- Temperature sensor
- Graphic display with multi-language menu
- Intelligent sensor design: digital communication allows communication between the transmitter and the sensor for up to a 500 m range. Calibration data is stored in the sensor
- Wi-Fi, GPRS, TCP/IP, GSM-SMS and Bluetooth communication available
- Data-logging on a standard micro-SD card
- 6 buttons to operate

„Built in design" for upgrades

GPRS module

Control, monitor, set up your flowmeter from your office!

- Wireless communication system, which is performed by the GPRS network
- The measurement can be done anywhere in the world and read from your office
- No need to visit the site

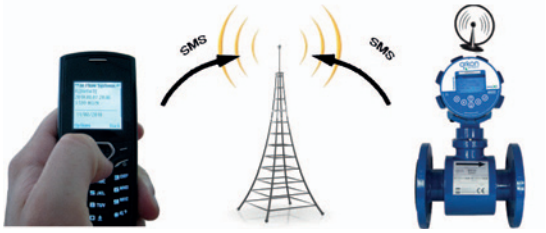
APPLICATIONS

- Wireless control of, and communication between transmitter and the PC or PLC systems

GSM - SMS module

Getting data from the flowmeter to your mobile phone!

- Receives flow rate and total volume from MAGX2 by SMS in a specific intervals
- Specific interval of SMS transmissions can be set up through the MAGX2 software
- SMS is sent to a specific phone number or SMS server (up to 3 phone numbers)



MAGB1 : Battery powered flowmeter

- Suitable for irrigation, remote applications and any other application where power supply lines are difficult or expensive to instal
- Modbus RTU communication protocol via USB or RS485
- Data logger: 1820 records, selectable interval of logging (5min - 24h)
- Sizes from DN20 to DN250, others on request
- Connection: DIN, ANSI, JIS, others on request
- Accuracy ±0.5% of actual value
- Empty pipe detection
- Battery life up to 5 years (up to 15 years with external battery pack)
- Graphic display and touch button for operation and instant access to information

MAGS1 : Stand-alone flowmeter

- MAGS1 is a stand-alone version of flowmeter, which does not need a transmitter and can be operated on its own
- Suitable for applications where the flowmeter is connected to a PLC on RS485 Modbus RTU protocol
- Powered with 24VDC, has a standard RS485 line with Modbus RTU protocol as a unique output/communication
- Connection: DIN, ANSI, JIS, others on request
- Liner: Hard Rubber, PTFE, other materials on request
- Maximum nominal pressure: PN 40/300 psi

Agrimag Series: User friendly low cost plastic flowmeter for agricultural and multiple applications

- Available in 3 sizes (25, 50 and 80mm)
- Manifold clamping flanges connections, compatible with fitting kits for DIN, BSP, NPT and other common connections
- Accuracy: ±1% from 10% to 100% of full scale range
- LCD display 128×64 px graphical
- Empty pipe detection and battery saving mode
- Body material: glass filled polypropylene
- Working pressure 150psi or 10.3 bars

Agrimag: powered by 6 standard AA batteries, easily interchangeable

AgrimagP: powered by 9-35 VDC power supply, one frequency output

AgrimagP2: powered by 9-35 VDC power supply, 4-20 mA output, Modbus RTU, data logger

Parshall flumes: for open channels measuring

- Primary flow devices with a wide range of applications, for measuring open channel flow
- They can be used for flow measurement in creeks, irrigation and/or drainage channels, sewer outfalls, waste water treatment plants
- Flowrates from 0.26 to 1841 l/s
- Velocities inside Parshall flumes are high enough to prevent them from the deposition of sediments or accumulation of debris
- Minimum maintenance requirements, long life-span

MQU ultrasonic flowmeter and MHU ultrasonic level meter: easy solution to use combined with a flume to measure open channels and level in tanks

- Innovative and high-power transmitter for every applications
- Digital display, data logger for 2 month capacity, 4-20mA and pulse output and Modbus RTU via RS485
- Applications: Water treatment, Chemical, Food, Pharmaceutical industry, Power, Civil engineering, Agriculture
- Accuracy ±1.8% to ±4% of range

USCXseries: Ultrasonic clamp-on flowmeters

- Based on transit time method of measurement, suitable for various kinds of liquids and gases
- Wide range of process outputs including RS485, Modbus RTU, Profibus and HART
- Easy installation with own wizard for correct installation

ARKON.CLOUD: designs and supplies wireless telemetry systems for monitoring water, industrial and environmental applications at remote locations

- Systems are used by companies in every sector of business around the world including water companies, environmental regulators such as the Environment Agency, manufacturing and process companies and governmental organizations.
- Truly unique and allow any user to install a monitoring station anywhere in the world regardless of any constraints over power, signal or even planning issues. The loggers are available in battery powered, D.C powered and A.C powered units.
- The only requirement is a GSM/GPRS coverage in order to remotely transmit data to remote servers. The loggers connect with the main data collection center with Dynamic IP so there is no need to purchase individual Static IP data packages for the data loggers, which is very expensive in most countries.

Applications

- **Water & Wastewater -** distribution networks, irrigation, sludge/sewage, water treatment, leakage management, desalination, marine, checking of pumps and water wells
- **Public utilities -** water supply system, sewage systems, wastewater, industrial water, sludge, human waste etc.
- **Petrochemical/chemicals** - corrosive liquids, chemicals, industrial water, waste water
- **Paper & Pulp** - low concentration of pulp, additives, bleaches, colorants, liquor
- **Construction** - building material slurry, sediment slurry, cement slurry, industrial water, etc.
- **Hygienic/Sanitary -** potable water metering, food & beverages, pharmaceutical, medium and high density fluids, blending, dosing, batching

Advantages

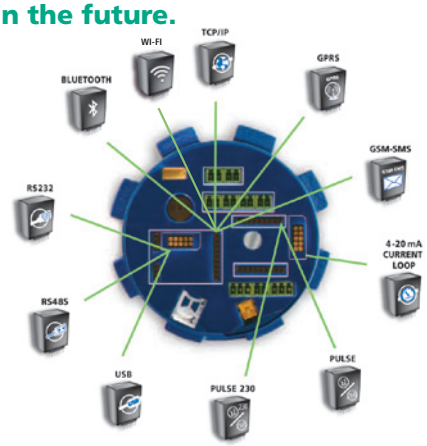
The MAGX2 has an innovative modular design "Plug & Play" and it is a fit-all, flexible, low-cost flow meter all at the same time. The transmitter consists of the low-cost basic unit plus optional modules according to the end-user's requirements. Each module is in fact a small electronic board, the size of a large stamp, which can be freely installed and removed from the main board in seconds.

You do not pay for options you do not want or need.
You can build a flowmeter exactly as per your requirements.
You can upgrade your flowmeter at anytime in the future.

„Built in design" for upgrades

STANDARD

Transmitter
Power supply modules
(12VDC/24VDC/90-250VAC)
Sensor communication module
CD + free Software
Sensor



UPGRADES

Choose your communication
Choose your outputs
Use SD card

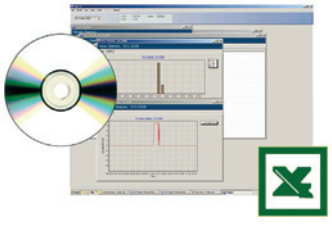
Features

- **Accuracy** - ± 0.2% (0.5 - 10 m/s) of actual value
- **Temperature sensor** - to measure temperature of the measured medium
- **Communication protocol** - all communications via Modbus RTU
- **Autocleaning** - automatic electrodes cleaning
- **Unique design** - any upgrade, extra features inside of the flowmeter, extra protection - „Built in design"
- **Graphic display** - multi-language menu. Higher protection via lock-out system for buttons and 3 levels of passwords – User, Service, Factory settings.
- **Intelligent sensor design** - digital communication allows communication between the transmitter and the sensor up to 500 m. Calibration data are stored in the sensor communication module. If the transmitter is changed for whatever reason, all the calibration data will be taken from the sensor directly. No calibration download mistakes.

Data logger

The MAGX2 uses a standard micro SD card for data-logging purposes, a 2GB micro SD card could be ordered with the flowmeter and a higher capacity card could be inserted as an upgrade if required. It can be easily installed and ejected from the data socket. Data is stored in *.CSV format (compatible with Excel, Open Office & other programs). Record intervals are selectable from 1 minute to 24 hours.

+ **software free of charge**



MAGX2 BASIC WORKING VERSION CONSISTS OF:

Transmitter

Power supply
You can choose from 3 options (12VDC, 24VDC or 230VAC)

Sensor communication module
(calibration data are stored here)

Sensor (all sensors include 4 electrodes, auto cleaning electrodes system and empty pipe detection)

That is basic configuration for a MAGX2 working unit. It only allows communication with the flowmeter via keypad and does not include any output or data-logging function. Flowrate and totalizer can be checked on the display only.

Arkon offers a wide range of optional modules which are not necessary for a working unit but can be added to the basic configuration to add extra features.

Currently the following optional modules are available:

- Communication modules to allow communication via Modbus (except GSM-SMS - it has its own system using sms messages)

MODBUS

WI-FI

GPRS

GSM-SMS

Bluetooth

TCP/IP

RS485

RS232

USB

- Arkon offers two output options: one 4-20 mA and two pulse output options. Both options can be used separately or combined. Out of the two pulse options only one pulse option could be used or installed at any given time.

Current output 4-20mA

Pulse output

Pulse 230

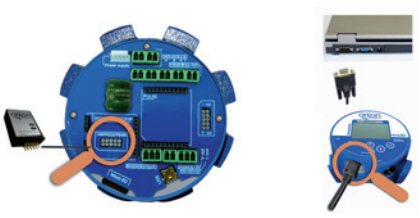
- Data-logging option
MAGX2 motherboard includes a real time clock. For data-logging you just need a standard micro SD memory card. We can supply it for you or you can buy it yourself locally.

The most important advantage of Arkon's modular system is the flexibility for the customer to design his own solution for each application. Modular system also allows big savings by selecting and paying exactly for the required features on each application.

The MAGX2 flowmeter can be upgraded easily at any time by adding or exchanging modules.

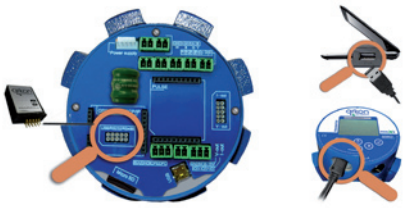
RS232 communication module

Standard for serial communication data transmission, commonly used for PLC and old PC.



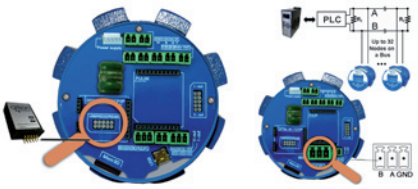
USB communication module

A standard for computer communication.



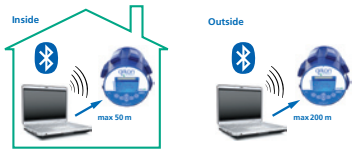
RS485 communication module

A standard for industrial communication, up to 32 devices on one line without repeaters. Termination resistor may be needed.



Bluetooth communication module

Cables are not required to check your flowmeter within a 200 m range.



TCP/IP communication module

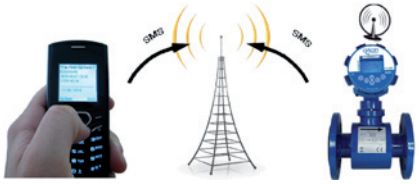
Ethernet communication with flowmeter within your local network or even through internet.
A MODBUS RTU over TCP/IP (serial) protocol is used.

GPRS communication module

Wireless communciation system which is performed by the GPRS network. The measurement can be evaluated from anywhere in the world. You will have your flowmeter under control.

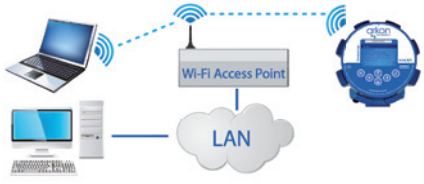
GSM-SMS communication module

Getting data from your flowmeter to your mobile phone. The user can send SMS commands by a remote SMS server or phone.



Wi-Fi communication module

Easy communication between flowmeter, PC or PLC system with no data cables needed.



External sensors

External pressure and temperature sensors supplement measurement of additional parameters.

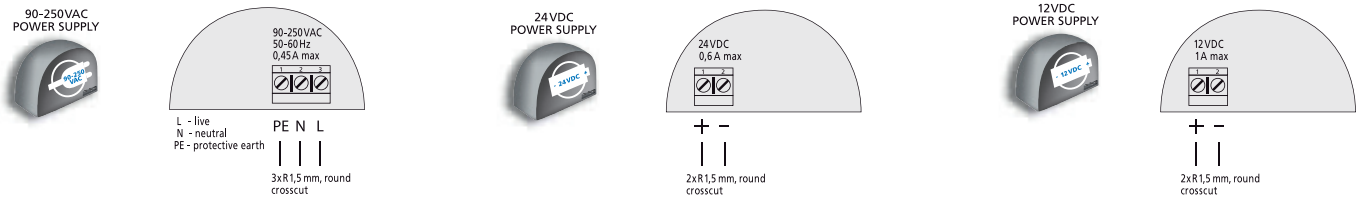
Technical Specifications

MAG X2

Optional power supply modules

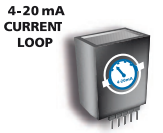
All power supply modules have an automatic electronic fuse.
Max. 15VA

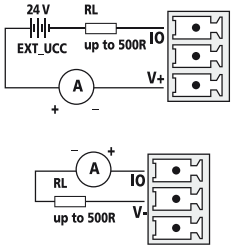
90-250 VAC	90-250VAC 50/60HZ
24 VDC	24VDC±5% (22.8-25.2VDC)
12 VDC	12VDC±5% (11.4-12.6VDC)



Sensor to transmitter connection cable

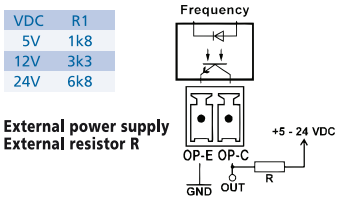
Optional analogue output modules

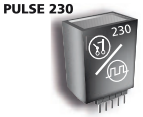




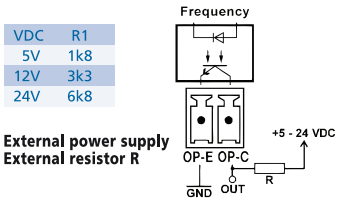
Current Loop output module	4-20 mA, with programmable flowrate and function
Pulse output module	4 output relays with programmable flowrate and function (max. 100 VDC/0.5A), Input signal for batching purposes (5-14 V), Frequency output 2 – 1000 Hz with adjustable duty cycle
Pulse 230	2 output relays and 2 open collector outputs, max relay voltage (RE2, RE3) 250VAC/220VDC at 120VA/60W, output frequency 2-1000Hz, max input voltage (batching) +5-14V DC

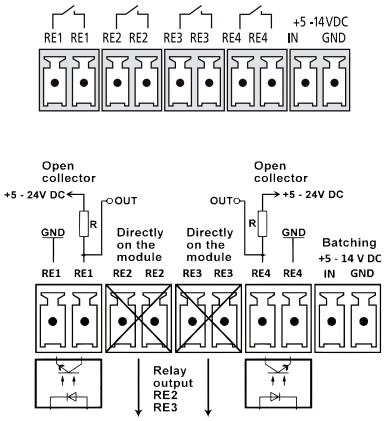
VDC	R1
5V	1k8
12V	3k3
24V	6k8





VDC	R1
5V	1k8
12V	3k3
24V	6k8

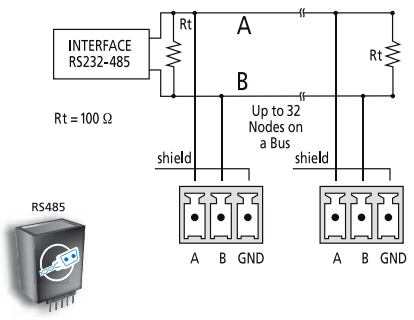


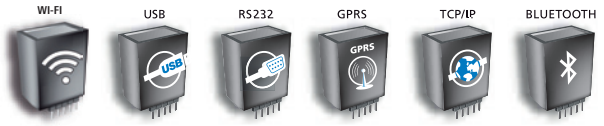


Optional digital outputs/communication modules

Only one of the following modules can be used/installed at the same time

RS232	Including RS232 cable
RS485	Terminators may be needed
USB	Including USB cable
BLUETOOTH	Outside up to 200 m / Inside up to 50 m
TCP/IP	TCP/IP internet communication, amplifiers may be needed
GPRS	GSM850, GSM900, DCS1800, PCS1900
GSM-SMS	GSM850, GSM900, DCS1800, PCS1900
Wi-Fi	Up to 200 m





MODBUS

Modbus RTU can be used with all communication modules, except GSM - SMS - which has its own system using sms messages.

Transmitter specifications MAGX2

IP67 Transmitter

IP68 Transmitter

Measurable media	Conductive fluids
Min. media electrical conductivity	≥5µS/cm or ≥20µS/cm for demineralized water
Flow range	0.1 to 10 m/s
Displayed values	Actual flow (m^3/h l/s, l/m, US.gal/min, UK.gal/min), volume (m^3, l, US.gal, UK.gal), positive, negative, total volume and auxiliary (clearable) volume, sensor temperature
Accuracy	±0.2% (0.5 - 10 m/s) of actual value
Power supply options	90-250 VAC 50/60 Hz or 24 VDC or 12 VDC
Power consumption	Max. 15VA
Communication protocol	Modbus RTU can be used with all the communication modules i.e. RS232, RS485, USB, BLUETOOTH, TCP, Wi-Fi
Flow direction	Bi-directional measurement
Ambient temperature	- 20°C to 60°C (-4°F to 140°F)
Display	LCD 128 x 64 px graphical, contrast setup
Controls	6 touch buttons + communication modules (IP67 Transmitter); 6 optical buttons + communication modules (IP68 Transmitter)
Low flow cut-off	OFF, 0.5%, 1%, 2%, 5%, 10% of Flow Qn
Adjustable filter constant	1 -120 samples; default value is 15 samples
Max. electronics weight (including housing)	2kg
Housing material	Aluminium (powder coated)
Housing dimensions	Ø 134 - 132 mm
Cable terminal	3+1xM16x1.5 IP68 cable glands
Electronics protection	Standard IP67 / IP68 optionable
Other features	Auto-diagnostics Multi-language options (English, Spanish, Russian or Ukrainian, other languages possible) Indicative temperature measurement up to 150°C Test of excitation coils Empty pipe detection Zero flow adjustment Flow simulator
Excitation frequency	3.125 Hz or 6.25 Hz
Real time	Clock function for data-logging
Analogue outputs	Optionals: Current 4-20 mA, Pulse, Pulse 230
Digital outputs (communication)	Optionals: USB, RS232, RS485, BLUETOOTH, GPRS, TCP/IP, GSM-SMS, Wi-Fi
Data logger	Micro SD card
Certification	EMC, ES, PED, IP68, WRAS, OIML R49

Sensor specifications MAGX2

Connection types	DIN, ANSI, JIS flanges. Other types on request
Flange	Steel 1.0036 or higher, Dimensions according to DIN EN 1092-1, ASME B 16.5, JIS B 2239
Nominal size	10-1000 mm (1/2" - 40")
Maximum nominal pressure	PN 40/300 psi
Max.media temperature	70°C (158°F) for Hard Rubber liner, 130°C (266°F) for PTFE liner in remote version
Ambient temperature	- 20 to 60°C (-4 to 140°F)
Sensor protection	Remote IP68 (NEMA 6)
Liner	Hard Rubber, PTFE other material on request, WRAS approved material available for sizes up to DN600
Electrodes	CrNi (Stainless) steel 1.4571 / 316Ti, other materials on request
Measuring tube	Stainless steel 1.4301 dimensions according to EN 10027-2
Outer casing	Carbon steel (1.0036) as standard
External coating	Lacquered finish (anticorrosive)
Accessories options	Earthing rings for plastic and lined pipes
Coils resistance	80 / 100 Ω
Other features	Earthing through 3rd and 4th electrode Automatic electrode cleaning

WRAS APPROVED PRODUCT

WRAS approved product available for DN25, DN50 and DN80

Technical Drawing Data-Sheet IP67 Transmitter MAGX2

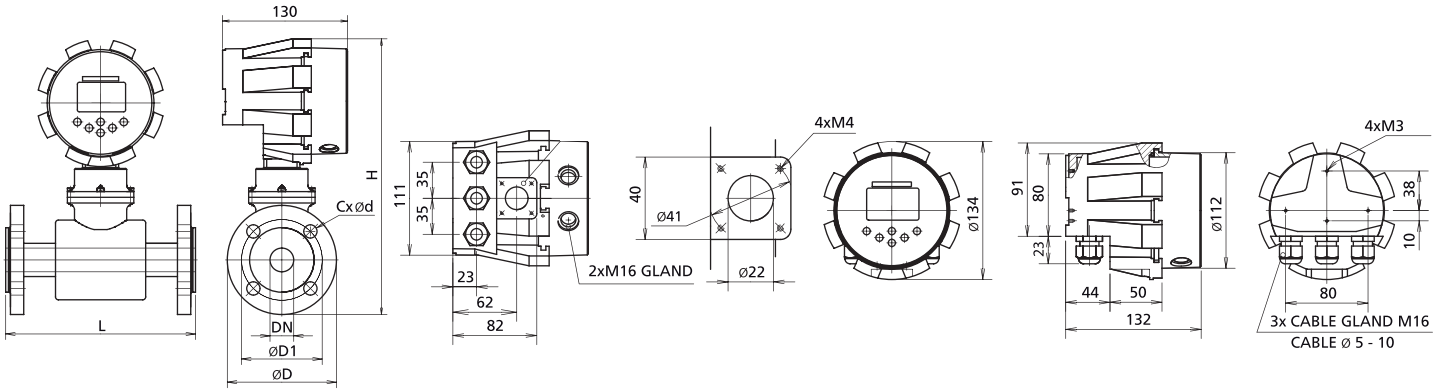
DIN

DN	ØD	D1	CxØd	L	H-compact	H-remote
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
10	90	60	4x14	200	275	180
15	95	65	4x14	200	280	185
20	105	75	4x14	200	288	193
25	115	85	4x14	200	293	198
32	140	100	4x18	200	312	217
40	150	110	4x18	200	320	225
50	165	125	4x18	200	334	239
65	185	145	8x18	200	354	259
80	200	160	8x18	200	373	278
100	220	180	8x18	250	393	298
125	250	210	8x18	250	419	324
150	285	240	8x22	300	458	363
200	340	295	12x22	350	514	419
250	405	355	12x26	400	584	489
300	460	410	12x26	500	633	538
350	520	470	16x26	500	701	606
400	580	525	16x30	600	754	659
450	640	585	20x30	600	797	702
500	715	650	20x33	600	865	770
600	840	770	20x36	600	982	887

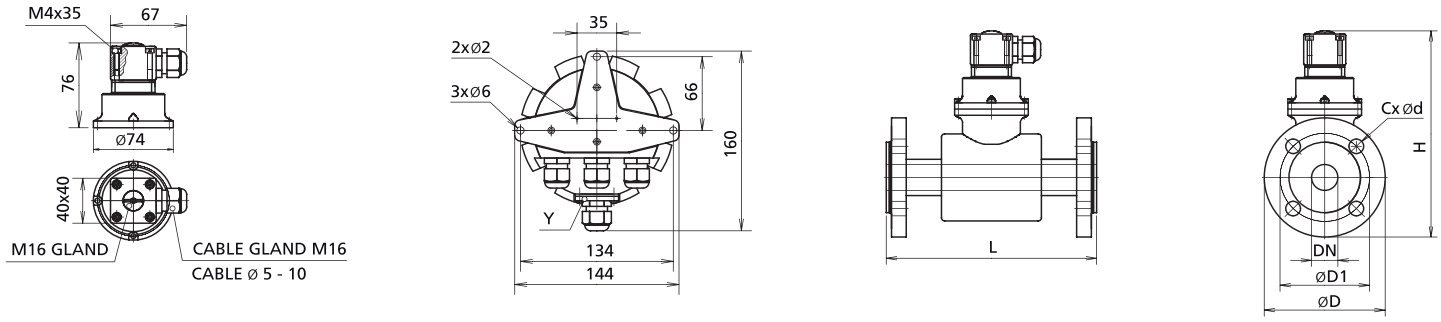
ANSI

DN	ØD	D1	CxØd	L	H-compact	H-remote
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
1/2"	88.9	60.5	4x16	200	277	182
3/4"	98.6	69.9	4x20	200	284	189
1"	108	79.2	4x20	200	290	195
1.1/4"	117.3	88.9	4x20	200	300	205
1.1/2"	127	98.6	4x23	200	309	214
2"	152.4	120.7	8x20	200	328	233
2.1/2"	177.8	139.7	4x20	200	350	255
3"	190.5	152.4	4x20	200	368	273
4"	228.6	190.5	8x20	250	397	302
5"	254	215.9	8x23	250	421	326
6"	279.4	241.3	8x23	300	455	360
8"	342.9	298.5	8x23	350	515	420
10"	406.4	362	12x26	400	584	489
12"	482.6	431.8	12x26	500	644	549
14"	533.4	476.3	12x29	500	708	613
16"	596.9	539.8	16x29	600	762	667
18"	635	577.9	16x32	600	795	700
20"	698.5	635	20x32	600	856	761
24"	812.8	749.3	20x35	600	968	873

Compact version:



Remote version:



Max. electronics weight (including housing)	2 kg
Housing material	Aluminium + powder coating
Housing dimensions	Ø 134 - 132 mm
Cable terminal	3+1xM16x1.5 IP68 cable glands
Electronics protection	IP67 / NEMA 5

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.

Technical Drawing Data-Sheet IP68 Transmitter MAGX2

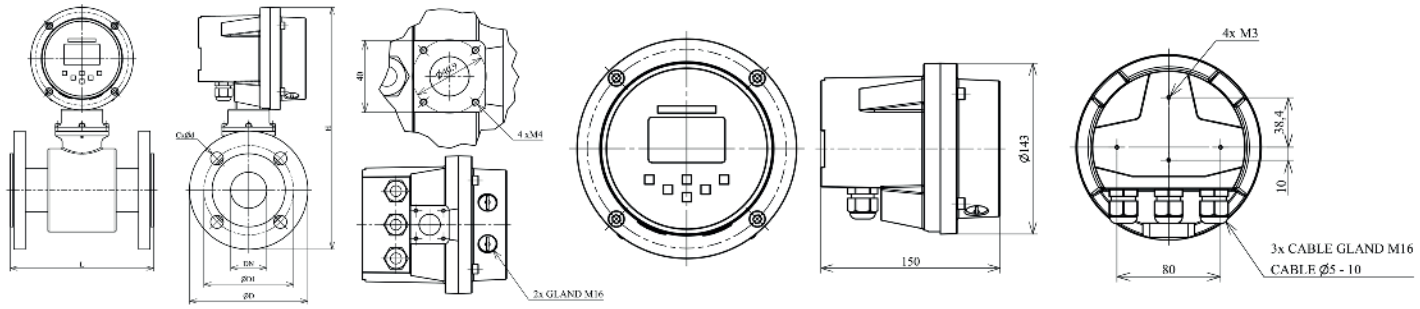
DIN

DN	ØD	D1	CxØd	L	H-compact	H-remote
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
10	90	60	4x14	200	275	180
15	95	65	4x14	200	280	185
20	105	75	4x14	200	288	193
25	115	85	4x14	200	293	198
32	140	100	4x18	200	312	217
40	150	110	4x18	200	320	225
50	165	125	4x18	200	334	239
65	185	145	8x18	200	354	259
80	200	160	8x18	200	373	278
100	220	180	8x18	250	393	298
125	250	210	8x18	250	419	324
150	285	240	8x22	300	458	363
200	340	295	12x22	350	514	419
250	405	355	12x26	400	584	489
300	460	410	12x26	500	633	538
350	520	470	16x26	500	701	606
400	580	525	16x30	600	754	659
450	640	585	20x30	600	797	702
500	715	650	20x33	600	865	770
600	840	770	20x36	600	982	887

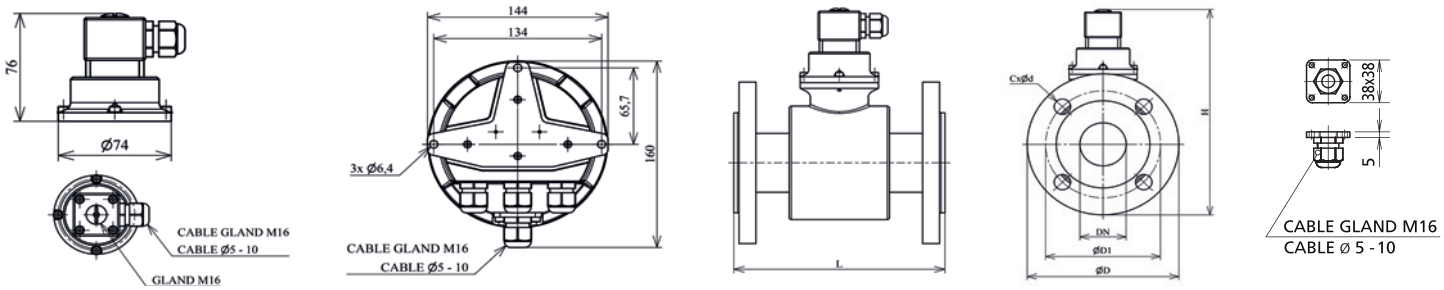
ANSI

DN	ØD	D1	CxØd	L	H-compact	H-remote
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
1/2"	88.9	60.5	4x16	200	277	182
3/4"	98.6	69.9	4x20	200	284	189
1"	108	79.2	4x20	200	290	195
1.1/4"	117.3	88.9	4x20	200	300	205
1.1/2"	127	98.6	4x23	200	309	214
2"	152.4	120.7	8x20	200	328	233
2.1/2"	177.8	139.7	4x20	200	350	255
3"	190.5	152.4	4x20	200	368	273
4"	228.6	190.5	8x20	250	397	302
5"	254	215.9	8x23	250	421	326
6"	279.4	241.3	8x23	300	455	360
8"	342.9	298.5	8x23	350	515	420
10"	406.4	362	12x26	400	584	489
12"	482.6	431.8	12x26	500	644	549
14"	533.4	476.3	12x29	500	708	613
16"	596.9	539.8	16x29	600	762	667
18"	635	577.9	16x32	600	795	700
20"	698.5	635	20x32	600	856	761
24"	812.8	749.3	20x35	600	968	873

Compact version:



Remote version:



Max. electronics weight (including housing)	2 kg
Housing material	Aluminium + powder coating
Housing dimensions	134 - 132 mm
Cable terminal	3+1xM16x1.5 IP68 cable glands
Electronics protection	IP68 / NEMA 6

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.

Applications

- **Water & Wastewater** - distribution networks, irrigation, sludge/sewage, water treatment, desalination, marine, checking of pumps and water wells
- **Petrochemical/chemicals/sanitary** - corrosive liquids, dosing of additives, chemicals, industrial water, waste water, potable water metering, food, pharmaceutical industry, medium and high density fluids, blending
- **Paper & Pulp** - additives, bleaches, colorants, liquor

Advantages

Possibility to install a reliable flowmeter virtually anywhere without sacrificing accuracy or performance. Top accuracy is ±0.5% of actual value. No mains power required. Suitable for irrigation, remote applications and any other application where power supply lines are difficult or expensive to install.

Features

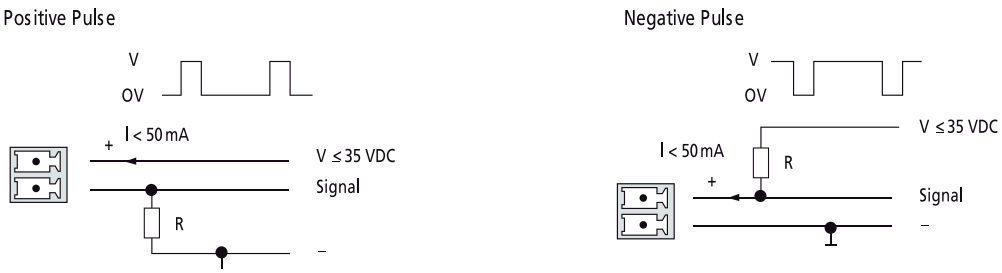
- Battery powered electromagnetic flowmeter
- Accuracy: ±0.5% of actual value (DN20 - DN150)
- Empty pipe detection, automatically turns off the excitation to prolong battery life
- Graphic display and keypad for simple operation and instant access to information about 4 totalizers: total +, total -, total, aux. Modbus RTU communication protocol via USB or RS485
- Standard USB interface for configuration and data collection using MAGB1 software
- Easy access to data on-site
- Isolated binary output (pulse per liters or alarm or flowrate functions)
- Error detection
- Data logger: 1820 records, selectable interval of logging (5 min - 24 h)
- GSM-SMS module

- Adjustable time constant 1 – 30 samples
- Maintenance free
- Two built-in earthing electrodes
- No moving parts in measuring tube

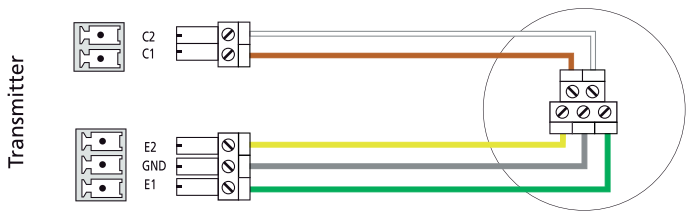
Battery

- Standard 2 x 3.6 V battery pack placed inside the transmitter. Battery life up to 5 years.
- Optional 5 x 3.6 V battery pack placed inside the transmitter. Battery life up to 10 years.
- External battery pack for battery life up to 15 years
- Battery conservation when the pipe is empty for all battery options

Binary output



Sensor to transmitter connection cable



C1 - Coil 1
C2 - Coil 2
GND - Ground
E1 - Electrode 1
E2 - Electrode 2

Transmitter specifications MAGB1

IP67 Transmitter

IP68 Transmitter

Measurable media	Conductive fluids
Min. media electrical conductivity	≥5µS/cm or ≥20µS/cm for demineralized water
Flow range	0.1 to 10 m/s
Displayed values	Actual flow (m^3/h l/s, l/m, US.gal/min, UK.gal/min), volume (m^3, l, US.gal, UK.gal), positive, negative, total volume and auxiliary (clearable) volume
Accuracy	±0.5% of actual value for sizes up to 150 mm and ±2% for 200 mm and bigger sizes
Power supply	3.6 V internal lithium battery - 38000 mAh
Communication	Modbus RTU over USB or RS485 (standard)
Flow direction	Bi-directional measurement
Ambient temperature	-20 to 60°C (-4 to 140°F)
Display	LCD 128 x 64 px graphical, contrast setup, sleep mode
Control	Touch button, USB (standard), RS485 (optional)
Low flow cut-off	OFF, 0.5%, 1%, 2%, 5%, 10% of Flow Qn
Electronics weight (including housing)	1.5 kg
Housing material	Aluminium (powder coated)
Housing dimensions	Ø 134 - 132 mm
Cable terminals	1+1xM16x1.5 IP68 cable glands
Electronics protection	Standard IP67 / IP68 optionable
Other features	Test of excitation coils Empty pipe detection Zero flow adjustment Flow simulator
Excitation frequency	1/60 Hz, 1/30 Hz, 1/15 Hz, 1/5 Hz, 1.5625 Hz, 3.125 Hz, 6.25 Hz
Real time	Clock function for data-logging
Outputs	Pulse output with programmable volume function and pulse width
Adjustable filter constant	1 - 30 samples
Error logger	Logging last 10 errors
Data logger	1820 records, selectable interval of logging (5 min - 24 h)
Certification	EMC, ES, PED, IP68, OIML R49

Sensor specifications MAGB1

Connection types	DIN, ANSI, JIS flanges. Other types on request
Flange	Steel 1.0036 or higher, Dimensions according to DIN EN 1092-1, ASME B 16.5, JIS B 2239
Nominal size	20-250 mm, other sizes on request
Maximum nominal pressure	PN 40/300 psi
Max.media temperature	70°C (158°F) for Hard Rubber liner, 130°C (266°F) for PTFE liner in remote version
Ambient temperature	-20 to 60°C (-4 to 140°F)
Sensor protection	Remote IP68 (NEMA 6)
Liner	Hard Rubber, PTFE and other materials on request WRAS approved material available for all standard sizes
Electrodes	CrNi (Stainless) steel 1.4571 / 316Ti, other materials on request
Measuring tube	Stainless steel 1.4301 dimensions according to EN 10027-2
Outer casing	Carbon steel (1.0036) as standard
External coating	Lacquered finish (anticorrosive)
Accessories options	Earthing rings for plastic and lined pipes
Coils resistance	100 Ω
Other features	Earthing through 3rd and 4th electrodes

MAGB1 can be verified by VeriMAG device, which is a smart stand-alone field testing instrument, which has the capability to test the integrity of an installed flowmeter for functionality of the connection between the sensor and the transmitter unit, and all other important internal components of the flowmeter.

Technical Drawing Data-Sheet IP67 Transmitter MAGB1

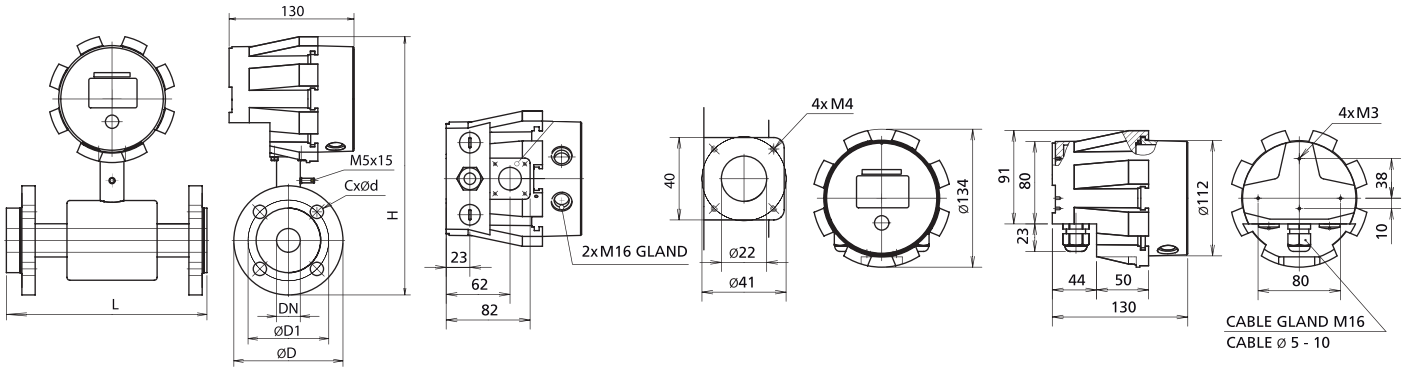
DIN

DN	ØD	D1	CxØd	L	H-compact	H-remote
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
10	90	60	4x14	200	250	165
15	95	65	4x14	200	255	170
20	105	75	4x14	200	263	178
25	115	85	4x14	200	268	183
32	140	100	4x18	200	287	202
40	150	110	4x18	200	295	210
50	165	125	4x18	200	309	224
65	185	145	8x18	200	329	244
80	200	160	8x18	200	348	263
100	220	180	8x18	250	368	283
125	250	210	8x18	250	394	309
150	285	240	8x22	300	433	348
200	340	295	12x22	350	489	404
250	405	355	12x26	400	559	474
300	460	410	12x26	500	608	523
350	520	470	16x26	500	676	591

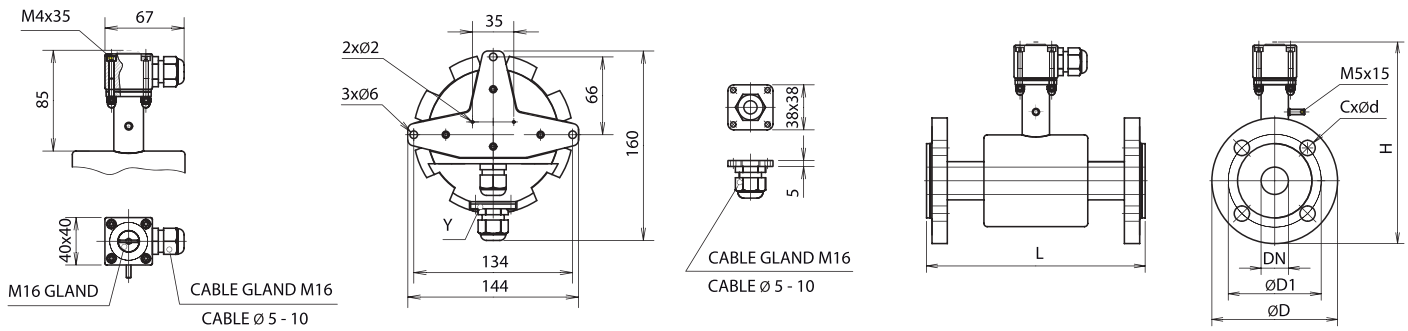
ANSI

DN	ØD	ØD1	CxØd	L	H-compact	H-remote
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
1/2"	88.9	60.5	4x16	200	252	167
3/4"	98.6	69.9	4x20	200	259	174
1"	108	79.2	4x20	200	265	180
1.1/4"	117.3	88.9	4x20	200	275	190
1.1/2"	127	98.6	4x23	200	284	199
2"	152.4	120.7	8x20	200	303	218
2.1/2"	177.8	139.7	4x20	200	325	240
3"	190.5	152.4	4x20	200	343	258
4"	228.6	190.5	8x20	250	372	287
5"	254	215.9	8x23	250	396	311
6"	279.4	241.3	8x23	300	430	345
8´´	342.9	298.5	8x23	350	490	405
10´´	406.4	362	12x26	400	559	474
12´´	482.6	431.8	12x26	500	619	534
14´´	533.4	476.3	12x29	500	683	598

Compact version:



Remote version:



Electronics weight (Including Housing)	1.5 kg
Housing material	Aluminium + powder coating
Housing dimensions	Ø 134 - 132 mm
Cable terminals	1+1xM16x1.5 IP68 cable glands
Electronics protection	IP67 / NEMA 5

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.

Technical Drawing Data-Sheet IP68 Transmitter MAGB1

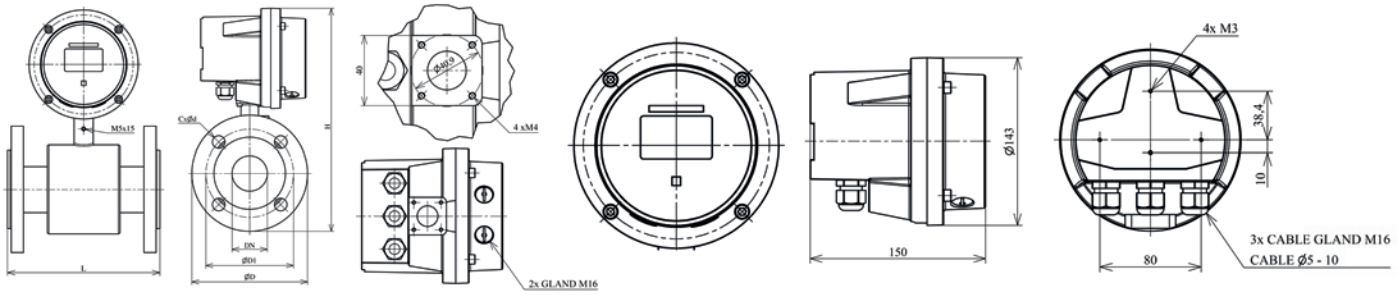
DIN

DN	ØD	D1	CxØd	L	H-compact	H-remote
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
10	90	60	4x14	200	257	160
15	95	65	4x14	200	262	165
20	105	75	4x14	200	269	172
25	115	85	4x14	200	275	178
32	140	100	4x18	200	293	196
40	150	110	4x18	200	302	205
50	165	125	4x18	200	316	219
65	185	145	8x18	200	336	239
80	200	160	8x18	200	354	257
100	220	180	8x18	250	374	277
125	250	210	8x18	250	407	310
150	285	240	8x22	300	440	343
200	340	295	12x22	350	496	399
250	405	355	12x26	400	566	469
300	460	410	12x26	500	615	518
350	520	470	16x26	500	683	586

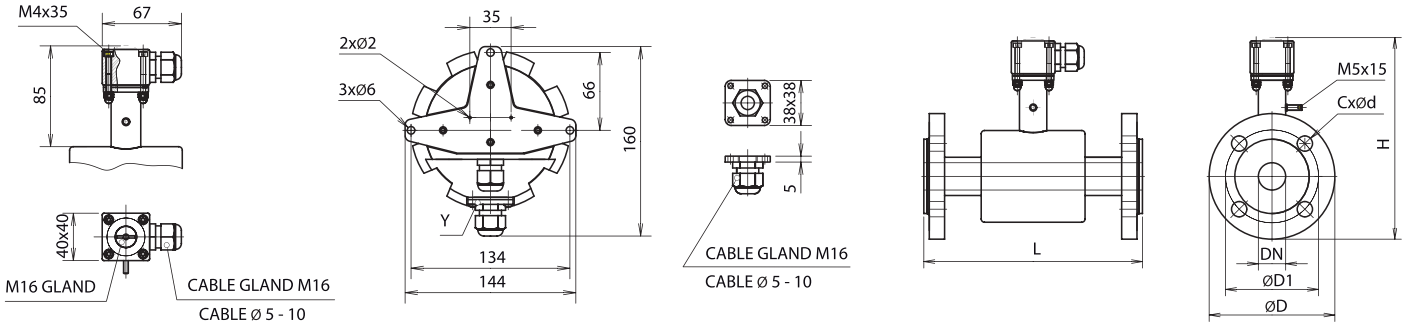
ANSI

DN	ØD	ØD1	CxØd	L	H-compact	H-remote
	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]
1/2"	88.9	60.5	4x16	200	258	161
3/4"	98.6	69.9	4x20	200	266	169
1"	108	79.2	4x20	200	271	174
1.1/4"	117.3	88.9	4x20	200	282	185
1.1/2"	127	98.6	4x23	200	290	193
2"	152.4	120.7	8x20	200	309	212
2.1/2"	177.8	139.7	4x20	200	332	235
3"	190.5	152.4	4x20	200	349	252
4"	228.6	190.5	8x20	250	378	281
5"	254	215.9	8x23	250	409	312
6"	279.4	241.3	8x23	300	437	340
8´´	342.9	298.5	8x23	350	497	400
10´´	406.4	362	12x26	400	566	469
12´´	482.6	431.8	12x26	500	626	529
14´´	533.4	476.3	12x29	500	690	593

Compact version:



Remote version:



Electronics weight (Including Housing)	1.5 kg
Housing material	Aluminium + powder coating
Housing dimensions	Ø 134 - 132 mm
Cable terminals	1+1xM16x1.5 IP68 cable glands
Electronics protection	IP68 / NEMA 6

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.

Applications

- **Water & Wastewater -** distribution networks, irrigation, sludge/sewage, water treatment, leakage management, desalination, marine, checking of pumps and water wells
- **Petrochemical/chemicals -** corrosive liquids, dosing of additives, chemicals, industrial water, waste water, pulp liquids
- **Paper & Pulp** - colorants, bleaches, additives
- **Construction -** building material slurry, industrial water
- **Sanitary -** potable water metering, food & beverage, pharmaceutical, medium and high density fluids, blending, dosing, batching

Advantages

MAGS1 is a stand-alone version of flowmeter, which does not need a transmitter and can be operated on its own. If you need a low cost flowmeter without readable display and outputs, this will be the right one!
Inexpensive solution for application with existing PLC System with RS485 Modbus RTU communication system. No display; fully operational electromagnetic flowmeter.
Cost-effective solution for installations where local display is not needed.

Features

The simple version is fed with 24VDC and has output/communication, a standard RS485 line on Modbus RTU protocol.

- Auto-diagnostics
- ±0.2% accuracy
- Cable length up to 500m

Technical specifications

Power supply	24VDC ± 10% @ 0.5A max
Communication	RS485 - Modbus RTU
Min. media electrical conductivity	≥5µS/cm ≥20µS/cm for demineralized water
Flow range	0.1 to 10 m/s
Accuracy	±0.2% (0.5 to 10m/s) of actual value
Connection types	DIN, ANSI, JIS flanged. Other types on request
Flange material	Steel 1.0036 or higher, Dimensions according to DIN EN 1092-1, ASME B 16.5, JIS B 2239
Nominal size	25 – 250 mm (1"-10")
Maximum nominal pressure	PN40/300 psi
Max. media temperature	70°C (158°F) for Hard Rubber liner, 130°C (266°F) for PTFE liner
Ambient temperature	-20 to 60°C (-4 to 140°F)
Sensor protection	IP68 (Nema 6), IP67 (Nema 5)
Liner	Hard Rubber, PTFE, other material on request, WRAS approved material available for sizes up to DN600
Electrodes	CrNi (Stainless) steel 1.4571 / 316Ti, other materials on request
Measuring tube	Stainless steel 1.4301 dimensions according to EN 10027-2
Outer casing	Carbon steel (1.0036) as standard
External coating	Lacquered finish (anticorrosive)
Accessories options	Earthing rings for plastic and lined pipes
Coils resistance	80/100 Ω
Other features	Earthing through 3rd and 4th electrode Automatic electrode cleaning Empty pipe detection Auto-diagnostics Test of excitation coils Zero flow adjusting

Agrimag Series

Applications

Plastic flowmeter with power supply for multiple applications.

- **Industrial wastewater discharge**
- **Water Recycling Systems**
- **Irrigation Water**
- **Well Pump Stations**

Agrimag

Advantages

Agrimag is a user friendly low cost flowmeter.
It is one piece built in polypropylene, powered by 6 AA batteries.
Connections offered: Manifold clamping flanges compatible with fitting kits for DIN, BSP, NPT and other common connections.
Available in DN 25, 50, 80mm (1, 2 and 3 inches) sizes.
Accuracy of 1% and a battery life of 1-3 years.

- **User friendly low cost flowmeter**
- **6x AA Battery powered**
- **No moving parts**
- **Fast and easy pipe connection**

Features

- Polypropylene body material
- Flange clamps connection
- Sizes available: 25, 50, 80 mm
- 4 stainless steel electrodes
- Battery life: 1 year with meter in use, 3 years on stock
- Empty pipe detection and battery saving mode

AgrimagP

Advantages

AgrimagP is a user friendly low cost flowmeter.
Rigid polypropylene casing powered by external power supply.
Available in DN 25, 50, 80 mm (1”, 2” and 3”) sizes.
Connections offered: Manifold clamping flanges.
Compatible with fitting kits for DIN, BSP, NPT and other common connections.
Accuracy rating of 1%.

- **One frequency output – open collector**
- **External power supply**
- **No moving parts**
- **No earthing rings required**

Features

- Sizes available: 25, 50, 80 mm
- 4 stainless steel electrodes
- Accuracy: ±1% from 10 % to 100 % of full scale range
- Power supply range is 9-35VDC

AgrimagP2

Advantages

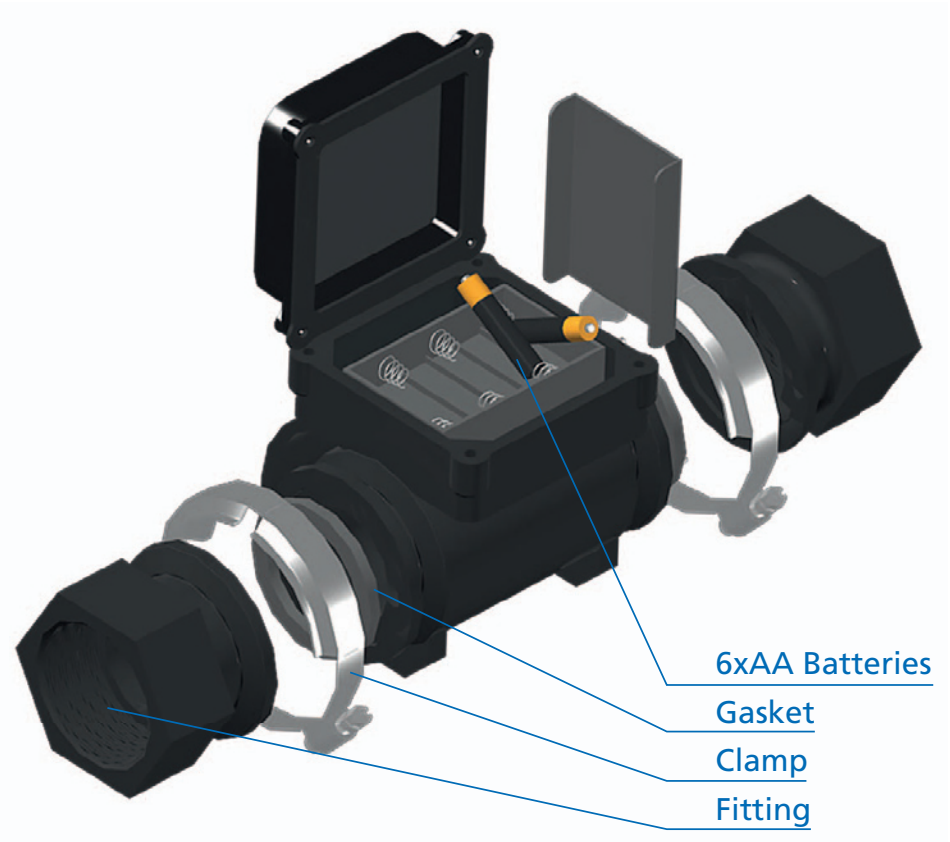
AgrimagP2 is a user friendly low cost flowmeter.
Rigid polypropylene casing powered by external power supply.
Corrosion resistant.
With the built in most common outputs, 4-20mA and RS485.
Available in DN 25, 50, 80 mm (1”, 2” and 3”) sizes.
Connections offered: Manifold clamping flanges.
Compatible with fitting kits for DIN, BSP, NPT and other common connections.
Accuracy rating of 1%.

- **4-20mA and RS485 outputs**
- **External power supply**
- **Internal Data logger**
- **No earthing rings required**

Features

- Sizes available: 25, 50, 80 mm
- 4 stainless steel electrodes
- Accuracy: ±1% from 10 % to 100 % of full scale range
- Power supply range is 9-35VDC
- Analogue output 4-20mA curent loop
- RS485 Modbus RTU

Installation with fitting kit

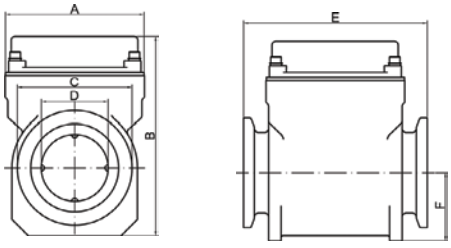


Agrimag Series technical specifications

Measurable media	Conductive fluids		
Min. Media electrical conductivity	≥20µS/cm		
Flow range	0.1 to 10 m/s		
Displayed values	Flow range (m3/h, l/s, l/m, US gal/min, UK gal/min), Volume (m3, l, US Gal, UK Gal), Total, Batch volume		
Accuracy	±1% of reading from 100% to 10% of full scale ±3% of reading from 10% of full scale to cut-off		
Full scale	1": 0.5 – 4.8 l/s	2": 1.9 – 18.9 l/s	3": 5.0 – 49.0 l/s
Power supply	**Agrimag:** 6 AA alkaline batteries	**AgrimagP, AgrimagP2:** 9-35VDC Power supply availible in special connector	
Flow direction	Bi-directional measurement		
Ambient temperature	-12 to 50°C (10 to 130°F)		
Media temperature	0 to 60°C (32 to 140°F)		
Working pressure	150psi or 10.3 bars		
Body material	Glass filled polypropylene		
Connections	Flange clamps		
Electrodes	4x stainless steel electrodes		
Display	LCD 128 x 64 px graphical, sleep mode		
Control	3 touch buttons		
Low flow cut-off	2% of full scale		
Electronics protection	Nema 4X standard		
Other features	Test of excitation coils, Earthing through 3rd and 4th electrodes, Empty pipe detection - battery conservation		
Excitation frequency	1/1.67s		
Samples per Average	4 excitations		
Coils resistance	100Ω		
Frequency output (AgrimagP)	Open collector proportional to flow 0-1000Hz for 0-Qmax , Max switching voltage 24VDC, max. current 50mA		
Current loop output (AgrimagP2)	Max. current 24mA		
Digital communication (AgrimagP2)	RS485 communication bus + I/O		
Digital data logger (AgrimagP2)	Flash memory 131072 records, 15seconds minimal record interval. Saves Date, Time and Total volume		

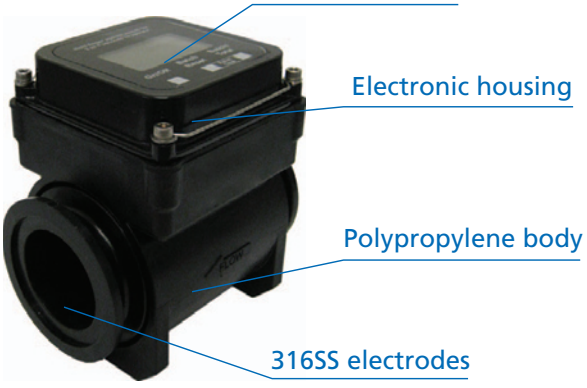
Dimensions (in mm)

	A	B	C	D	E	F
25 mm	100	130	80	25.4	139.7	41.402
50 mm	100	150	82.55	50.8	139.7	51.562
80 mm	100	180	111	76.2	185	64.8



Fitting kits available for Manifold

	25 mm	50 mm	80 mm
Male BSP	1" Male BSP	2" Male BSP	3" Male BSP
Female NPT	1/2", 3/4" and 1" Female NPT	2" Female NPT	3" Female NPT
Male NPT	3/4", 1" and 1.1/4" Male NPT	2" Male NPT	3" Male NPT
Male NPT in SS	1" Male NPT	1.1/2" and 2" Male NPT	1.1/2" and 2" Male NPT



MANIFOLD x MALE BSP	
MANIFOLD x FEMALE NPT THREAD	
MANIFOLD x NPT THREAD	
MANIFOLD x MALE NPT THREAD – 316SS	
MANIFOLD x MANIFOLD	
MANIFOLD x FEMALE COUPIER QDC	
MANIFOLD X FEMALE QDC	
MANIFOLD X HOSE BARB	
CLAMP	
GASKET	

USCXseries : Ultrasonic Clamp-On Flowmeters

Applications

- **Water and wastewater measurement**
- **Monitoring and controlling of Heating, Ventilation and Air Conditioning (HVAC) systems**
- **Automated process control**
- **Effluent measurement**
- **Cost effective large pipe measurement**
- **Automated process control**
- **In-line flowmeter performance verification, pump testing and inspection, leakage and blockage detection**

Advantages

USCXseries offers Ultrasonic clamp-on flowmeters based on transit time method of measurement, suitable for various kinds of liquids and gases with wide range of process outputs including RS485, Modbus RTU,Profibus and HART compatible output. With ultrasonic clamp-on meters you do not need to stop the process. USCXseries offers easy installation with own wizard for correct installation. Various models and modules offer solutions for one channel, two channel pernament installations or portable device for on site maintance and control for pipe sizes up to 6500 mm.

USCX100 : Standard Clamp-On Ultrasonic Flowmeter for basic applications

Features

- Low cost
- Wide range of process outputs including RS485, Modbus RTU and HART compatible output
- PT100 input for heat quantity (thermal energy) measurement
- Innovative installation wizard for quick and intuitive programming
- Bi-directional measurement with totaliser function
- Configuration can be changed to suit customer requirements
- Temperature range for sensor from -30°C to +80°C (-22 °F to +176 °F) and pipe diamter range from 10 mm to 3000 mm
- Flow velocity range from 0.01 to 25 m/s
- Accuracy of ±1 to 3% of measured value depending on application and up to 0.5% of measured value with process calibration
- Easy transmission of measured and logged data

USCX150 : Advanced Clamp-On Ultrasonic Flowmeter suitable from basic to advanced applications

Features

- Pipe diameter range from 10 mm to 6500 mm
- Temperature range for sensor from -30°C to +250°C (-22 °F to +482 °F), higher temperatures available on request
- Lockable an sturdy IP66 polycarbonate flowmeter enclosure
- Selectable three-line LCD display and full keypad
- Up to ten input or output slots available
- Measurement of two flows simultaneously with sum, average, difference and maximum calculations
- Communication options via RS485, Modbus RTU, Profibus PA and HART compatible output
- Process output options including current, open-collector, relay
- Current inputs for temperature, pressure and density
- Large data logger and software for sampling and data transfer
- Optional heat quantity (thermal energy) measurement

USCX200 : Hand-Held Clamp-On Ultrasonic Flowmeter

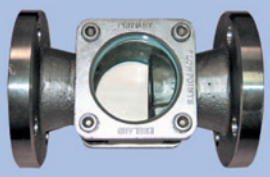
USCXseries

Features

- Robust IP65 enclosure with added rubber shock protector
- Selectable three-line LCD display and full keypad
- Battery life up to 26h with standard NiMH AA batteries for simple replacement
- Lightweight and tactile for easy one-handed use
- Stainless steel sensors, cable and connectors as standard
- Innovative installation wizard for quick and intuitive programming
- Full instrument diagnostics and scope function
- Large data logger and software for sampling and data transfer
- Crush-proof IP67 transport case or lightweight soft case and special waterproof solution available for harsh enviromental conditions

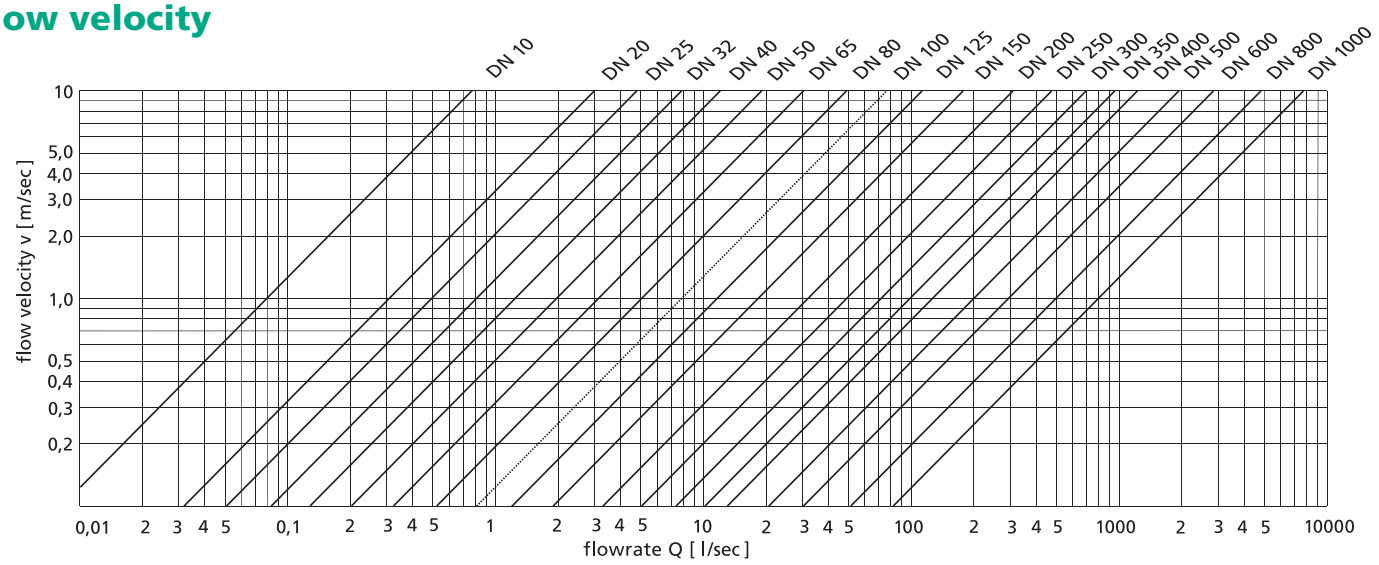
Technical specifications

	USCX100	USCX150	USCX200
Pipe diameter range	10 mm to 3000 mm	10 mm to 6500 mm	10 mm to 6500 mm
Flow velocity range	0.01 to 25 m/s		
Resolution	0.25 mm/s		
Repeatability	0.15% of measured value ±0.015 m/s		
Accuracy	Volume flow: ±1% to 3% of measured value depending on application ±0.5% of measured value with process calibration Flow velicty (mean): ±0.5% of measured value		
Turn down ratio	1/100 (equivalent to 0.25 ... 25 m/s)		
Measurement rate	100 Hz		
Response time	1 s (standard), 90 ms (optional)		
Damping of displayed value	0 ... 99 s (selectable by user)		
Gaseous and solid content liquid media	< 10% of volume		
Enclosure type	Wall mounted, optional pipe stand and brackets available	Only wall mounted	Hand-held
Degree of protection	IP 66 according to EN 60529	IP 66 according to EN 60529	IP 65 according to EN 60529
Operating temperature	-10°C to +60°C (+14°F to +140°F)		
Housing material	Die-cast aluminium	Polycarbonate (UL94 V-0)	ABS (UL 94 HB)
Measurement channels	1	2	1
Power supply	100-240 VAC 50/60 Hz 9-36 VDC	100-240 VAC 50/60 Hz 9-36 VDC	Internal rechargeable batteries: 4x NiMH AA2850 mAh Power adapter: 100-240 VAC input, 9VDC output External battery pack: 12 V 105 Ah
Display	LCD graphic display, 128 x 64 dots, backlit		
Dimensions	120 (h) x 160 (w) x 81 (d) mm	237 (h) x 258 (w) x 146 (d) mm	228 (h) x 72/124 (w) x 58 (d) mm
Weight	Approx. 750g	Approx. 2.3 kg	Approx. 650 g
Power consumption	< 5 W	< 10 W	< 3 W
Operating languages	English, French, German, Dutch, Spanish, Italian, Russian, Czech, Turkish, Romanian (others on request)		
Communication	RS232, USB cable, Modbus RTU via RS485	RS232, USB cable, RS485, Modbus RTU, HART, Profibus PA	RS232, USB cable
Transmitted data	Measured and totalised value, parameter set and configuration, logged data		
Storage capacity	N/A	Approx. 30 000 measurements with logger size 5 MB Approx. 100 000 measurement with logger size 16 MB	Approx. 30 000 measurements with logger size 5 MB Approx. 100 000 measurement with logger size 16 MB
Process inputs	Temperature by PT100 (clamp-on sensor), 3 or 4 wire circuit Current 0/4-20mA active or passive	Temperature by PT100 (clamp-on sensor), 3 or 4 wire circuit Current 0/4-20mA active or passive	N/A
Process outputs	Current 0/4-20mA active or passive Digital open-collector Digital relay Voltage Frequency	Current 0/4-20mA active or passive Digital open-collector Digital relay Voltage Frequency HART compatible 4-20mA	N/A

	APPLICATION	DESCRIPTION	PARAMETERS	IMAGE
Ball Flow	Maintaining demineralised water rinsing essential to electronics components manufacture. Showing the presence of condensate in steam return lines. Indicating chemical dosing on water treatment plants. Ensuring that flow of cooling water is maintained to specialised medical equipment. Detecting changes in colour and condition of liquids during processing.	The ball flow indicator is a single sided indicator. The white PTFE ball rises when there is flow of liquids or gasses and is clearly visible from a distance. Suitable for applications where a constant flow is required, such as cooling lines or for showing the presence of condensate in steam return lines.	Pressure: up to 16 bar. Temperature: up to 200°C Sizes: 15 to 40 mm Material: Stainless steel Connections: BSP and NPT	
Spinner Flow	Pump, compressor and diesel engine protection. Ensuring that flow of cooling water is maintained to specialised welding equipment. Detecting changes in colour and condition of liquids during processing. Indication of air entrainment. Early warning of overheating, bearing or seal failure.	The bright yellow spinner can be seen in the glass dome when there is flow. The Spinner flow indicator is a single sided indicator. The spinner starts to rotate when flow starts. The design offers low pressure losses and is suitable for installation in both horizontal and vertical pipework.	Pressure: up to 10 bar. Temperature: up to 100°C Sizes: 15 to 40 mm Material: Gunmetal Connections: BSP and NPT	
Paddle Wheel	Checks the flow of liquid in pipeline. Flow monitoring in full pipes.	Flow indicators with a highly visible PTFE paddle wheel to indicate the flow of liquids in the line. Suitable for clear and cloudy liquids. It can be used in vertical or horizontal lines and is ideal for flow monitoring in full pipes.	Pressure: up to 60 bar. Temperature: up to 250°C Sizes: 15 to 200 mm Materials: Carbon Steel, St. steel and Gunmetal Connections: BSP, NPT and ANSI150	
Plain Sight Flow	Checks for the presence of liquid where there is intermittent flow, partially filled lines or entrained air. Leak detection.	For viewing flow conditions in applications with intermittent flow, entrained air and partially filled pipes. A special version for use with steam and condensate uses borosilicate glass to ensure good long-term visibility. It can be used in vertical or horizontal lines.	Pressure: up to 60 bar. Temperature: up to 250°C Sizes: 15 to 200 mm Materials: Carbon Steel, St. steel and Gunmetal Connections: BSP, NPT and ANSI150	
Tube Flow	Checks for the presence of liquid where there is intermittent flow, partially filled lines or entrained air.	The tube indicator allows a 360° visual indication of the flow and contents in the pipes. It has a plain straight through borosilicate glass tube with stainless steel flanged ends and is used to check for the presence of liquid where there is intermittent flow, partially filled lines or entrained air.	Pressure: up to 10 bar. Temperature: up to 150°C Sizes: 15 to 200 mm Material: Stainless steel Connection: ANSI150	
Flap Flow	Checks the flow rate of liquid in a pipeline. Plant safety device where you need to maintain a constant flow.	The flap indicates flow on an easy to read scale. It is for use with liquids or steam. It is particularly suited for applications with low flow as the flow must move the flap to pass through the meter. It is ideal as a plant safety device where you need to maintain a constant flow, for example in lubricating or cooling systems.	Pressure: up to 60 bar. Temperature: up to 250°C Sizes: 15 to 200 mm Materials: Carbon Steel, St. steel and Gunmetal Connections: BSP, NPT and ANSI150	
Window	Provides for viewing the contents of a vessel or tank.	Circular sight glass for bolting or welding to tanks, vessels or pipes to allow viewing of the contents. This model is designed to provide a window for viewing the contents of a vessel or tank. Normally these are welded to the tank, but can be supplied suitable for bolting to a vessel or a pipe flange if required.	Pressure: up to 40 bar Temperature: up to 250°C Sizes: 40 to 200mm Materials: Carbon steel and Stainless steel	

Flow velocity, Flow rate, Quality management system

Flow velocity



Flow rate

DN	Flow rates [l/s]					Flow rates [m³/h]				
	Q 5%	QN	QN 50%	QN 100%	Q MAX	QN 5%	QN	QN 50%	QN 100%	Q MAX
10	0.04	0.2	0.39	0.79	0.98	0.14	0.8	1.41	2.83	3.53
15	0.09	0.5	0.88	1.77	2.21	0.32	2	3.18	6.36	7.95
20	0.16	0.9	1.57	3.14	3.93	0.57	3.2	5.65	11.31	14.14
25	0.25	1.4	2.45	4.91	6.14	0.88	5	8.84	17.67	22.09
32	0.4	2.2	4.02	8.04	10.05	1.5	8	14.5	29	36.2
40	0.6	4	6.3	12.6	15.7	2.3	13	22.6	45.2	56.6
50	1	6	9.8	19.6	24.5	3.5	20	35.3	70.7	88.4
65	1.7	9	16.6	33.2	41.5	6	35	59.7	119.5	149.3
80	2.5	14	25.1	50.3	62.8	9	50	90.5	181	226.2
100	3.9	20	39.3	78.5	98.2	14	80	141	283	353
125	6	30	61	123	153	22	150	221	442	552
150	9	50	88	177	221	32	200	318	636	795
200	16	100	157	314	393	57	300	565	1131	1414
250	25	150	245	491	614	88	500	884	1767	2209
300	35	200	353	707	884	127	800	1272	2545	3181
350	48	300	481	962	1203	173	1000	1732	3464	4330
400	63	400	628	1257	1571	226	1300	2262	4524	5655
500	98	600	982	1963	2454	353	2000	3534	7069	8836
600	141	800	1414	2827	3534	509	3000	5089	10179	12723
700	192	1000	1924	3848	4811	693	4000	6927	13854	17318
800	251	1200	2513	5027	6283	905	5000	9048	18096	22620
900	318	1500	3181	6362	7952	1145	6000	11451	22902	28630
1000	393	2000	3927	7854	9817	1414	8000	14137	28274	35340

Q5% recommended minimum flowrate / QN recommended nominal flowrate (expected working flowrate)
Q50% recommended maximum flowrate (maximum flowrate for industrial use) / Q100% maximum applicable flowrate (maximum flowrate with guaranteed accuracy)
QMAX maximum applicable overload (Q125%) (flowmeter is still measuring)

Quality management system & Traceability

Arkon quality management system is certified according to standard ISO 9001:2008.
All main processes of manufacturing, development, sale and services are certified and audited yearly by Bureau Veritas Certification.

All manufactured flowmeters are carefully tested according to internal standards and calibrated in independent laboratories specialized in flow rate and flow volume calibration of liquids.

Arkon main standards are traceable directly to Czech national standards in the Czech Metrology Institute (CMI). CMI is the Czech national metrology body and is traceable to international standards. CMI laboratories are accredited by Czech institute for accreditation, a member of European co-operation for accreditation.

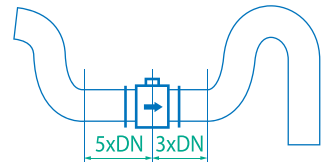
Recommended position for sensor installation

Sensor installation requirements

Proper installation is extremely important in order for your flowmeter to work correctly. There are minimum sensor installation requirements that need to be respected at all times. Please note that Arkon cannot warranty any installation which does not comply with these requirements:

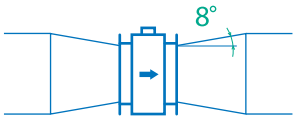
Horizontal standard mounting

The sensor tube must always remain full. The best way to achieve this is to locate the sensor in a low section of pipe, see the following picture.
It is mandatory to install the sensor in a section of straight pipe with at least 5 times the pipe diameter before sensor and 3 times after sensor.



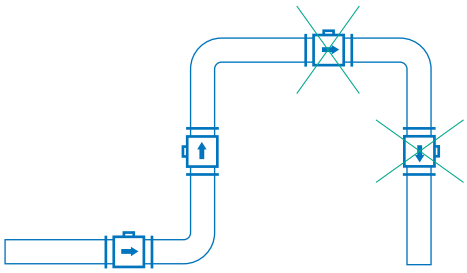
Pipe reducers

If the pipe diameter is not the same as the diameter of sensor, then pipe reducers can be used. So as not to lose accuracy of the measurement, the slope of reducers should not exceed 8°.



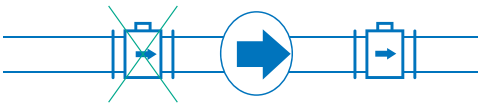
Vertical mounting

When the sensor is mounted on a vertical section of pipe, the flow direction must be upwards. In the case of a downward flow direction, air bubbles can collect in the sensor and the measurement could be unstable and inaccurate.



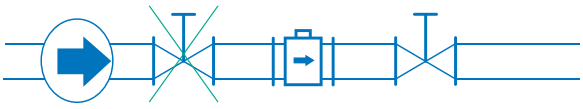
Pumps

Never install the sensor on the suction side of a pump or on a section of pipe where a vacuum is possible.



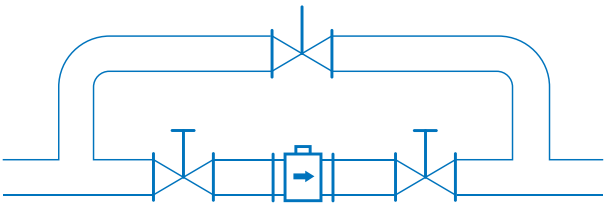
Valves

Suitable location of a shut off valve is downstream of a sensor.



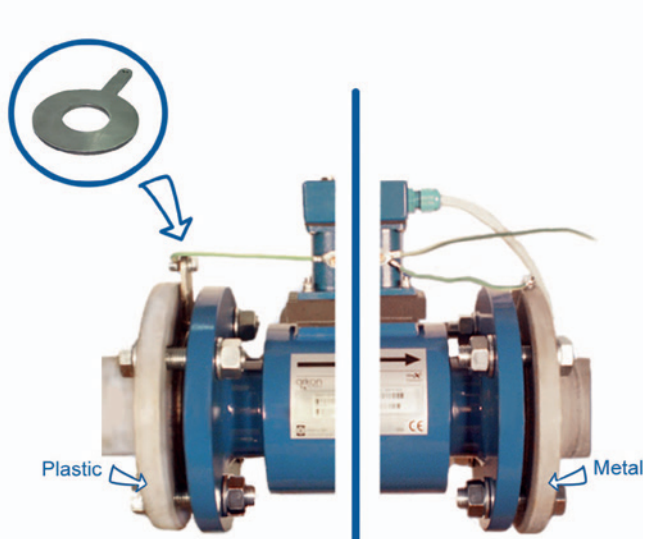
Removal during maintenance

If the application requires removal of the sensor for periodic maintenance, it is recommended to install a bypass section as the drawing below.



Earthing

All flowmeters must be earthed. Maximum resistance of the sensor to earth is <1 ohm. All the components in the loop, including flowmeter, pumps (especially submersible) valves, pipework, tanks and medium, should all be at the same earth potential. Problems can occur when different potentials are present which can happen, especially with submersible pumps. On applications with metal pipes and tanks it is enough to earth the flowmeter to the pipe's flanges. On applications where pipes and tanks are manufactured from plastic it is necessary that earthing rings are also installed to ensure the flowmeter works correctly.



Remote mounting system

Wall

DIN Rail

Panel

"Meeting your specific requirements"

Remote connection cable	UNITRONIC LiYCY (TP) 0035 830, 2x2x0.5 mm for MAGX2 UNITRONIC Li2YCY (TP) 0031 325, 2x2x0.34 mm for MAGB1
Wall mounting	
DIN Rail mounting	
Panel mounting	Max. Panel thickness 5 mm
Sensor junction box	30x40x40 mm

Certification

MAGX2 **MAGB1** **MAGS1** **Agrimag / AgrimagP / AgrimagP2**	EMC and ES certified PED 92/23 EC CE certified

OIML R49 for MAGX2 and MAGB1
IP68 for MAGX2 and MAGB1
GOST certification
WRAS certification for MAGX2 DN25, DN50 and DN80
Company is ISO 9001: 2008 certified

ISO 9001
BUREAU VERITAS
Certification

WRAS
APPROVED PRODUCT

CE

Model	Ordering code							Description
MAGX2 MAGX2 IP68	1	2	3	4	5	6	7	
	T							MAGX2 main board, display, 6 buttons control unit
								Power supply module
		230						Power supply module 90-250VAC - Version 4.
		24						Power supply module 24VDC - Version 4.
		12						Power supply module 12VDC - Version 4.
			CM					Sensor to transmitter communication module - Version 8
								Remote mounting kit
				N				None
				W				WALL mounting kit (including 6 m cable)
				P				PANEL mounting kit (including 6 m cable)
				D				DIN-Rail mounting kit (including 6 m cable)
								Output 1
					N			None
					C			4-20 mA current output signal module
					EP			External pressure sensor**
								Output 2
						N		None
						P		Pulse output module
						P2		Pulse 230
						ET		External temperature sensor**
								Communication
							N	None
							232	RS232 communication module, including 1.8 m cable
							USB	USB communication module, including 1.8 m cable
							BTO	Bluetooth communication module
							GPR	GPRS communication module
							485	RS485 communication module, distance up to 1 km
							TCP	TCP/IP communication module, amplifiers might be necessary
							SMS	GSM-SMS communication module
							WIFI	Wi-Fi communication module
Example								
MAGX2	T	230	CM	N	C	N	USB	

* Please note you need another communication module for setup of the GPRS module
** Input

Model	Ordering code					Description	
MAGX2 Sensor	1	2	3	4	5		
						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 / 3/8 200 / 8				10 mm / 3/8"	200 mm / 8"
		15 / 1/2 250 / 10				15 mm / 1/2"	250 mm / 10"
		20 / 3/4 300 / 12				20 mm / 3/4"	300 mm / 12"
		25 / 1 350 / 14				25 mm / 1"	350 mm / 14"
		32 / 1.1/4 400 / 16				32 mm / 1.1/4"	400 mm / 16"
		40 / 1.1/2 450 / 18				40 mm / 1.1/2"	450 mm / 18"
		50 / 2 500 / 20				50 mm /2"	500 mm / 20"
		65 / 2.1/2 600 / 24				65 mm / 2.1/2"	600 mm / 24"
		80 / 3 700 / 28				80 mm / 3"	700 mm / 28"
		100 / 4 800 / 32				100 mm / 4"	800 mm / 32"
		125 / 5 900 / 36				125 mm / 5"	900 mm / 36"
		150 / 6 1000 / 40				150 mm / 6"	1000 mm / 40"
						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	
					SS	Stainless Steel	
					HA	Hastelloy C	
					TA	Tantalum	
					TI	Titanium	
					PL	Platinum	
Example							
MAGX2 Sensor	D	100	HR	16	SS		

Please note that on official orders and quotes each item is listed separately with individual price.

MAGB1 ordering specification codes

Model	Ordering code							Description
MAGB1 MAGB1 IP68	1	2	3	4	5	6	7	
								Version
	C							Compact
	W							Remote: WALL mounting kit (including 6m cable)
	P							Remote: PANEL mounting kit (including 6m cable)
	R							Remote: DIN-Rail mounting kit (including 6m cable)
								Connection type
		D						DIN
		A						ANSI
								Connection type
			20 / 3/4					20 mm / 3/4"
			25/1					25 mm / 1"
			32 / 1.1/4					32 mm / 1.1/4"
			40 / 1.1/2					40 mm / 1.1/2"
			50 / 2					50 mm / 2"
			65 / 2.1/2					65 mm / 2.1/2"
			80 / 3					80 mm / 3"
			100 / 4					100 mm / 4"
			125 / 5					125 mm / 5"
			150 / 6					150 mm / 6"
			200 / 8					200 mm / 8"
			250 / 10					250 mm / 10"
								Liner material
				HR				HARD RUBBER
				SR				SOFT RUBBER
				PT				PTFE
				NR				HYGIENIC RUBBER
								Pressure
					150			150 psi
					300			300 psi
					10			PN 10
					16			PN 16
					25			PN 25
					40			PN 40
								Electrodes
						SS		Stainless Steel
						HA		Hastelloy C
						TA		Tantalum
						TI		Titanium
						PL		Platinum
								Communication
							SMS	GSM-SMS communication module
							RS485	RS485 communication module

Example

MAGB1	C	D	100	HR	16	SS	

MAGS1 ordering specification codes

Model	Ordering code					Description
MAGS1	1	2	3	4	5	
						Connection
	D					DIN
	A					ANSI
						Size
		25-250				25-250 mm
		1-10				1"-10"
						Liner
			HR			HARD RUBBER
			PT			PTFE
			SR			SOFT RUBBER
			NR			HYGIENIC RUBBER
						Pressure
				150		150 psi
				300		300 psi
				10		PN10
				16		PN16
				25		PN25
				40		PN40
						Electrodes
					SS	Stainless Steel
					HA	Hastelloy C
					TA	Tantalum
					TI	Titanium
					PL	Platinum

Example

MAGS1	D	100	HR	16	SS	

Agrimag ordering specification codes

Model	Ordering code		Description
Agrimag/AgrimagP/AgrimagP2	1	2	
			Size
	25		25 mm
	50		50 mm
	80		80 mm
			Connections
		NPT	NPT female (only for 25 mm)
		MAN	Manifold

Example

Agrimag	25	NPT

Please note that any order placed without details regarding flow-range (for example: 0-50 m³/hr or 0-100 l/s) and Pulse Output (for example 1 pulse/litre) will be processed with standard settings.

Please note for applications where all pipes and tanks are manufactured from plastic, earthing rings are recommended to ensure the accuracy of the measurements.

When placing orders for applications such as aggressive and corrosive liquids, please advise us about the specifics of the application and installation on your enquiry form or order. This will enable us to recommend or help you in choosing the best product for your application.

Arkon Flow Systems, s.r.o. is a Czech based company involved in the design, production, distribution of electromagnetic flowmeters & our range of products are complimented with ultrasonic flowmeters, level meters, Parshall flumes and flow indicators.

We offer a flexible approach to customers needs, by offering customized solutions for each application.

Arkon offers its products via a worldwide distributor network. Our products are used in over 20 countries with applications such as Water Treatment & Distribution, Waste Water Management, Irrigation, Mining & Chemical Industry as well as projects where efficiency and accuracy coupled with smart technology matters the most.

OUR NETWORK

We offer our products to customers via worldwide distributors. Some of the countries where we have official distributors are:

EUROPE

Finland, France, Greece, Latvia, Poland, Portugal, Russia, Ukraine, United Kingdom

NORTH AND SOUTH AMERICA

Colombia, Chile, Mexico, Peru

ASIA

Australia, China, Indonesia, Maldives, New Zealand, Philippines, Singapore, South Korea, Sri Lanka, Taiwan, Thailand, Vietnam

MIDDLE EAST

Bahrain, Egypt, Iran, Iraq, Kuwait, Oman, Pakistan, Qatar, Saudi Arabia, Turkey, United Arab Emirates

AFRICA

Nigeria, South Africa, Sudan, Tunisia

Representative:

Arkon Flow Systems
Nováčkova 11, 614 00 Brno, Czech Republic
Tel. +420 543 214 822, Tel./Fax +420 543 215 249
Enquiries/Orders/General questions: office@arkon.co.uk
Marketing support/brochures: marketing@arkon.co.uk
Technical support: support@arkon.co.uk
www.arkon.co.uk

EUROPEAN UNION
European Regional Development Fund
Operational Programme Entreprise
and Innovations for Competitiveness

ISO 9001
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Certification

version 05/2016