

Build your own flowmeter



90-250VAC
POWER SUPPLY



24VDC
POWER SUPPLY



12VDC
POWER SUPPLY



MAG X2



MAG B1



MAG S1



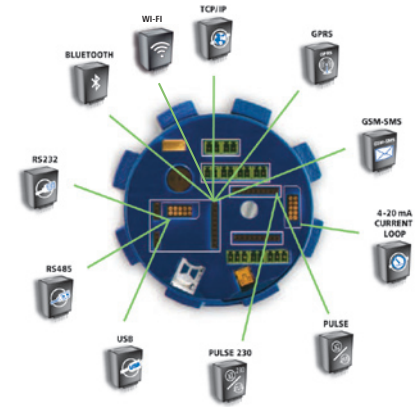
Agrimag
Series



USC Xseries

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

- ✎ The MAGX2 has an innovative modular design "Plug & Play"
- ✎ Accuracy $\pm 0.2\%$ 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 $\pm 0.5\%$ 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: $\pm 1\%$ from 10% to 100% of full scale range
- LCD display 128x64 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 $\pm 1.8\%$ to $\pm 4\%$ 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

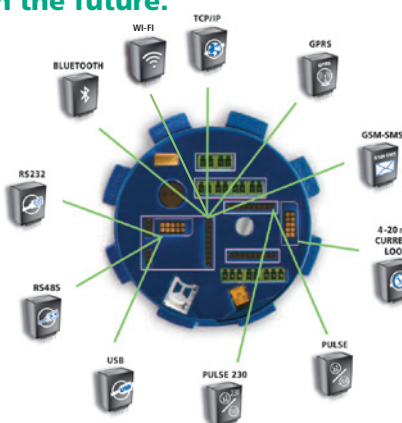
The MAGX2 has an innovative modular design "Plug & Play" and it is a fit-all, flexible, low-cost flow meter all at the same time. The transmitter consists of the low-cost basic unit plus optional modules according to the end-user's requirements. Each module is in fact a small electronic board, the size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

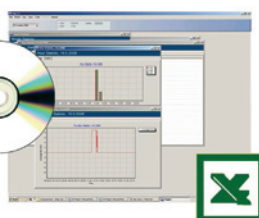
- Accuracy** - $\pm 0.2\%$ (0.5 - 10 m/s) of actual value
- Temperature sensor** - to measure temperature of the measured medium
- Communication protocol** - all communications via Modbus RTU
- Autocleaning** - automatic electrodes cleaning
- Unique design** - any upgrade, extra features inside of the 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 500m. 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 (all sensors include 4 electrodes, auto cleaning electrodes system and empty pipe detection)



Sensor communication module (calibration data are stored here)



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)



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.

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.



Current output
4-20mA



Pulse
output



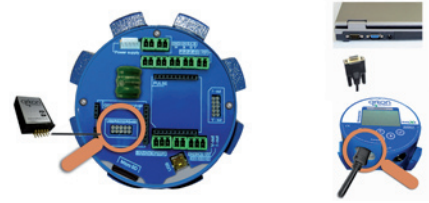
Pulse
230

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.



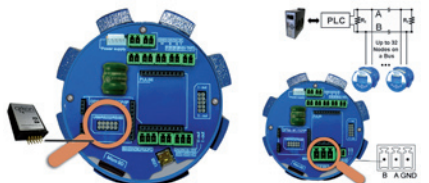
USB communication module

A standard for computer communication.



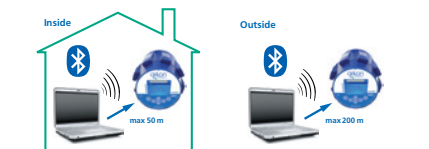
RS485 communication module

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.



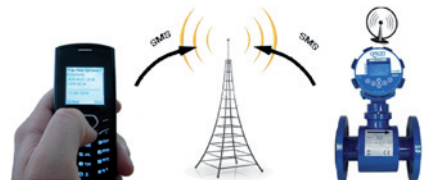
GPRS communication module

Wireless communication 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

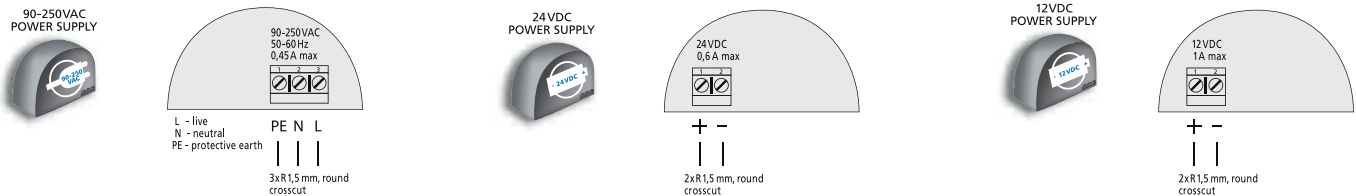
External pressure and temperature sensors supplement measurement of additional parameters.



Optional power supply modules

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

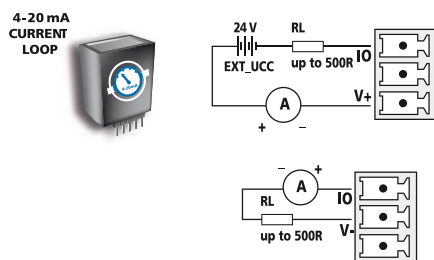
90-250 VAC	90-250 VAC 50/60HZ
24 VDC	24 VDC $\pm 5\%$ (22.8-25.2 VDC)
12 VDC	12 VDC $\pm 5\%$ (11.4-12.6 VDC)



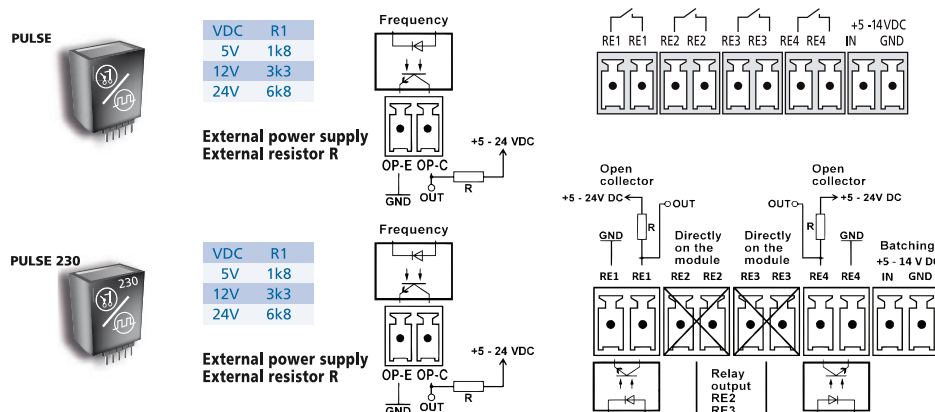
Sensor to transmitter connection cable



Optional analogue output modules



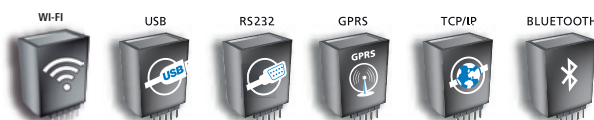
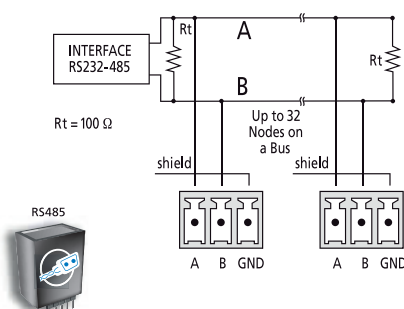
Current Loop output module	4-20 mA, with programmable flowrate and function
Pulse output module	4 output relays with programmable flowrate and function (max. 100 VDC/0.5A), Input signal for batching purposes (5-14V), Frequency output 2 – 1000Hz with adjustable duty cycle
Pulse 230	2 output relays and 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



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 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 (m³/h l/s, l/m, US.gal/min, UK.gal/min), volume (m³, 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 3 rd and 4 th electrode Automatic electrode cleaning

Technical Drawing Data-Sheet IP67 Transmitter MAGX2

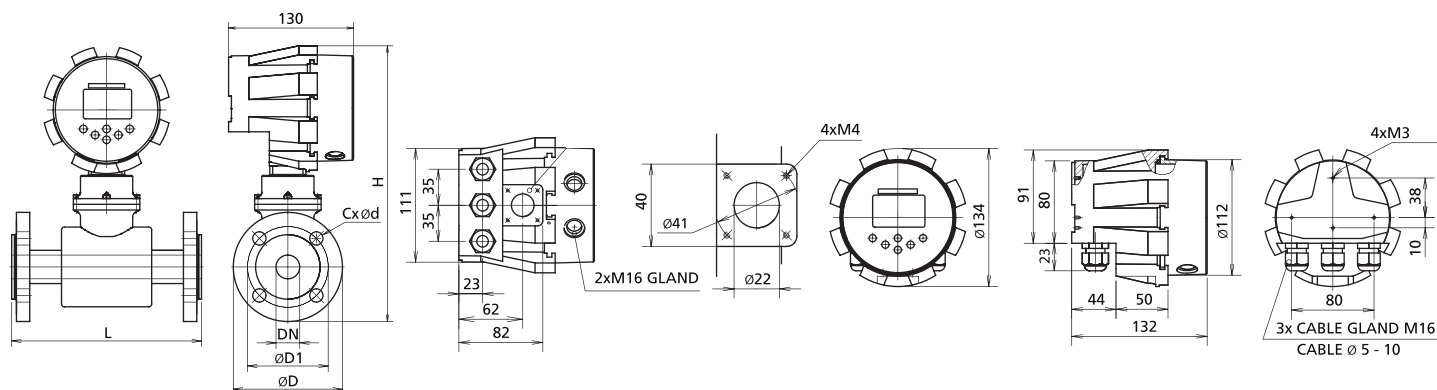
DIN

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

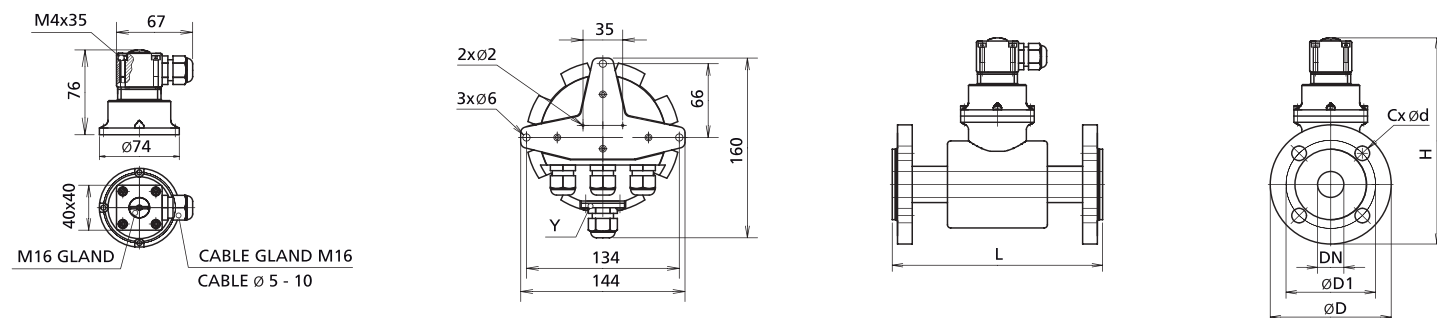
ANSI

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:



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.

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

Technical Drawing Data-Sheet IP68 Transmitter MAGX2

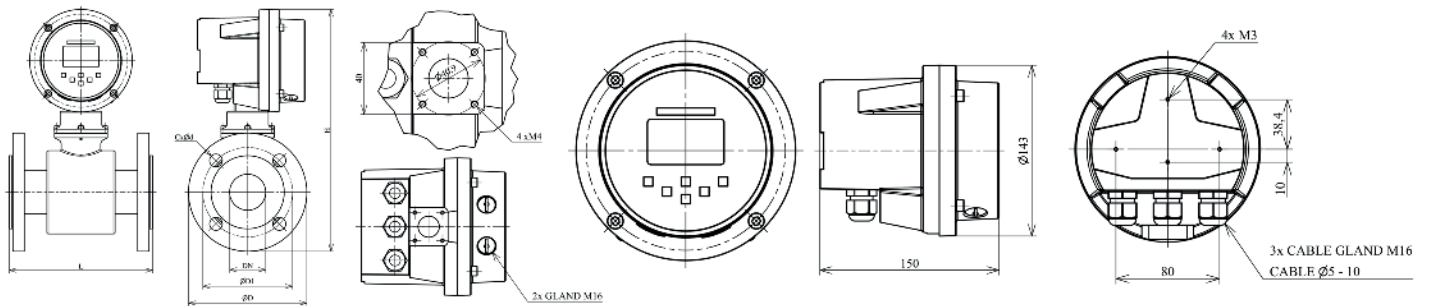
DIN

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

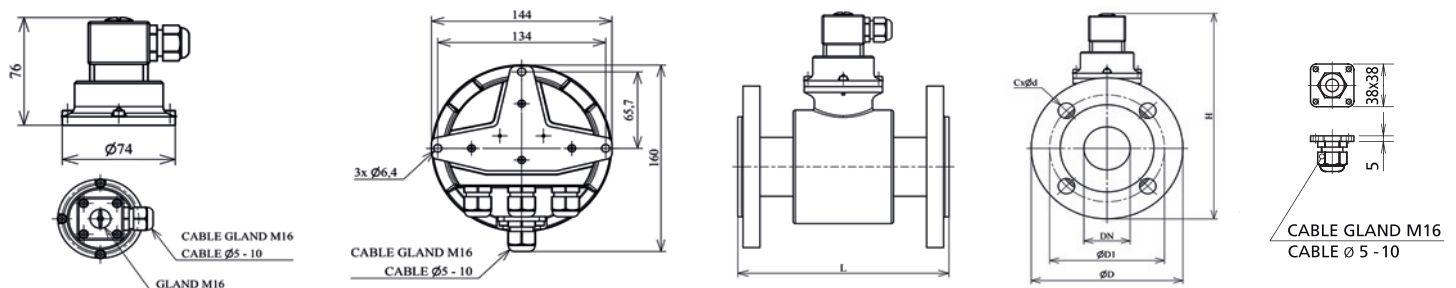
ANSI

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:



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.

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