



EsuMag® SERIES

ELECTROMAGNETIC FLOW METERS

ESM 720 / 730

Data Sheet

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1. IDENTIFICATION

Manufacturer: STIX Durchflussmesstechnik GmbH
Product type: Electromagnetic flow meter
Product name: EsuMAG® Series – In compact and remote version

2. RANGE OF APPLICATION

The EsuMAG® Series are best suited for bi-directional flow measurement of fluids with a minimum conductivity of 5 $\mu\text{S}/\text{cm}$. The meters are highly accurate (± 0.20 % of actual flow). The measurement is independent of density, temperature, and pressure of the medium.

The EsuMAG® Series is superior for measurements in a variety of applications from the water and wastewater industry to the chemical and pharmaceutical industry as well as in the food beverage industry. Available sizes are DN10 to DN2000 with several different connections (DIN, ANSI, AWWA, JIS, etc.) with nominal pressures up to PN100. Tri-clamp, wafer and thread connections are also available. Liner materials are hard and soft rubber/ PTFE/ PFA and polyurethane.

For applications without power supply, we offer our battery powered version, with a battery life span of up to 5 years with standard sampling rate.

3. FEATURES

- DN10 to DN2000
- Accuracy up to ± 0.20 % of actual flow
- Flow velocity from 0.03 to 12 m/s
- Protection Class IP67 / IP68
- Compact / Remote convertor
- Power supply 220 VDC / 24 VAC / Battery
- Up to PN100
- Analogue 4-20 mA output
- Frequency output / Pulse
- Interface: ModBus R485 / HART and M-Bus

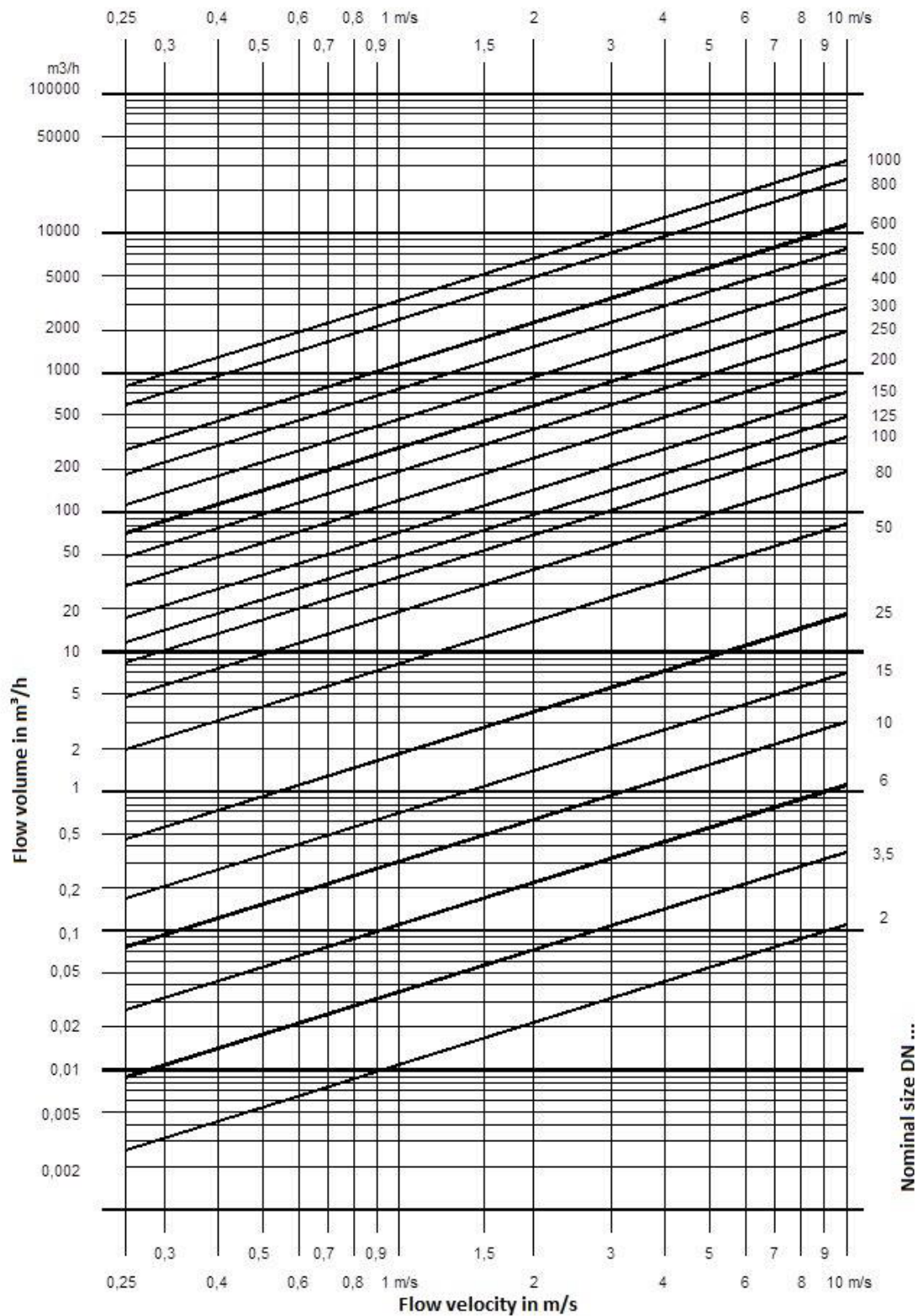
4. TECHNICAL DATA

Detector / Sensor	
Size	DN10 to DN2000
Connections	Flange: DIN, ANSI, AWWA, JIS, Wafer Connection, Thread-connection, Tri-Clamp and customized connections on request
Protection Class	IP67 (Optional IP68 with remote converter)
Nominal Pressure	Up to PN40 (up to PN100 on request)
Working Temperature	-20 °C to +60 °C (-40 °C to +150 °C with PTFE/ETFE) 0 °C to +70 °C (compact mounted , rubber liner) 0 °C to +90 °C (remote mounted , rubber liner) -40 °C to +100 °C (compact mounted, with PTFE liner) -40 °C to +160 °C (remote mounted, with PTFE liner)
Electrode Material	SS 316, Hastelloy C, Hb, Ti, Ta, Pt, Others on request
Liner Material	Hard/Soft Rubber/ PTFE/ ETFE/ FEP/Polyurethane
Measuring Tube Material	SS 316
Housing	Carbon Steel / Optional Stainless Steel
Lay length	Std. acc. ISO 13359, (Others on request)

Transmitter / Converter	
Type	Transmitters Model: ESM720 – external powered ESM730 – battery powered
Size	DN10 to DN2000
Flow Direction	Bi - Directional
Accuracy	ESM720: ± 0.20 % of actual flow, ± 1 mm/s from end value ESM730: ± 0.40 % of actual flow, ± 1 mm/s from end value
repeatability	0,1 %
Conductivity	$\geq 5 \mu\text{S/cm}$
Ambient temperature	-20 °C to +70 °C, relative humidity 90 %
Power supply	85-265 VAC (50/60 Hz) / 9-36 VDC / Battery (appr.5 years lifetime)
Flow Range	0.03 – 12 m/s
Analogue Output	4 – 20 mA
Digital Output	Frequency output/ Pulse (Active)
Empty pipe detection	YES
communication	RS485 or HART® Protocol
Display	7 Digits flow rate / 8 digits totalizer / LCD Graphic display
housing	Aluminum IP65 / 67 (optional IP68)
Remote version	Standard 10m cable, up to 100m with standard junction box

5. FLOW RANGE CHART BY PIPE SIZE

Determination of the end values of the measuring range or selection of the nominal sensor size (DN):



6. FLOW CHARACTERISTIC VALUES BY PIPE SIZE

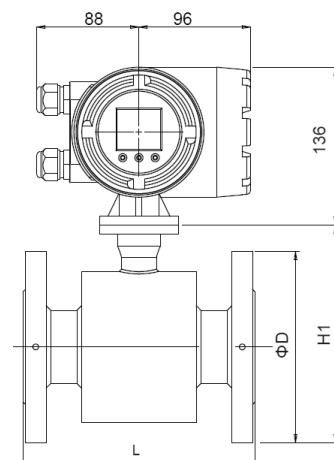
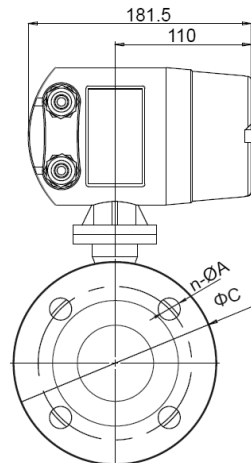
Nominal Diameter		Recommended flow Min / Max full scale value Velocity ~ 0.03 – 12 m/s (Recommended, flow velocity is 2-3 m/s)
[mm]	[Inch]	
15	½	4 to 100 l/min
20	¾	6 to 200 l/min
25	1	9 to 300 l/min
32	1 ¼	15 to 500 l/min
40	1 ½	25 to 700 l/min
50	2	2.1 to 66 m³/h
65	2 ½	3.6 to 120 m³/h
80	3	5.4 to 180 m³/h
100	4	8.7 to 282 m³/h
125	5	13.2 to 450 m³/h
150	6	20 to 600 m³/h
200	8	35 to 1100 m³/h
250	10	55 to 1700 m³/h
300	12	80 to 2400 m³/h
350	14	110 to 3300 m³/h
400	16	140 to 4200 m³/h
500	20	220 to 6600 m³/h
600	24	310 to 9600 m³/h
700	28	410 to 12000 m³/h
800	32	560 to 16000 m³/h
900	36	800 to 17500 m³/h
1000	40	1200 to 20000 m³/h

7. Dimensions and weight:

Compact:

mm							
D N (m m)	Max Working pressure (bar)	L	D	K	n-øA	Compact type (kg)	Remote type (kg)
10	40	150	90	60	4-ø14	6	4
15		150	95	65	4-ø14	6	4
20		150	105	75	4-ø14	6	4
25		150	115	85	4-ø14	7	5
32		150	140	100	4-ø18	9	7
40		150	150	110	4-ø18	10	8
50		200	165	125	4-ø18	12	10
65		200	185	145	8-ø18	17	15
80		200	200	160	8-ø18	17	15
100	16	250	220	180	8-ø18	22	20
125		250	250	210	8-ø18	24	22
150		300	285	240	8-ø22	35	33
200	10	350	340	295	8-ø22	45	43
250		400	395	350	12-ø22	84	82
300		500	445	400	12-ø22	102	100
350		500	505	460	16-ø22	123	121
400		600	565	515	16-ø26	147	145
450		600	615	565	20-ø26	212	207
500		600	670	620	20-ø26	229	210
600		600	780	725	20-ø30	252	250
700		700	895	840	24-ø30	352	350
800		800	1015	950	24-ø33	462	460
900		900	1115	1050	28-ø33	558	550
1000	6	1000	1235	1120	28-ø36	690	680
1200		1200	1405	1340	32-ø33	785	780
1400		1400	1630	1560	36-ø36	1258	1250

ESM 720 - Compact Version



Remote:

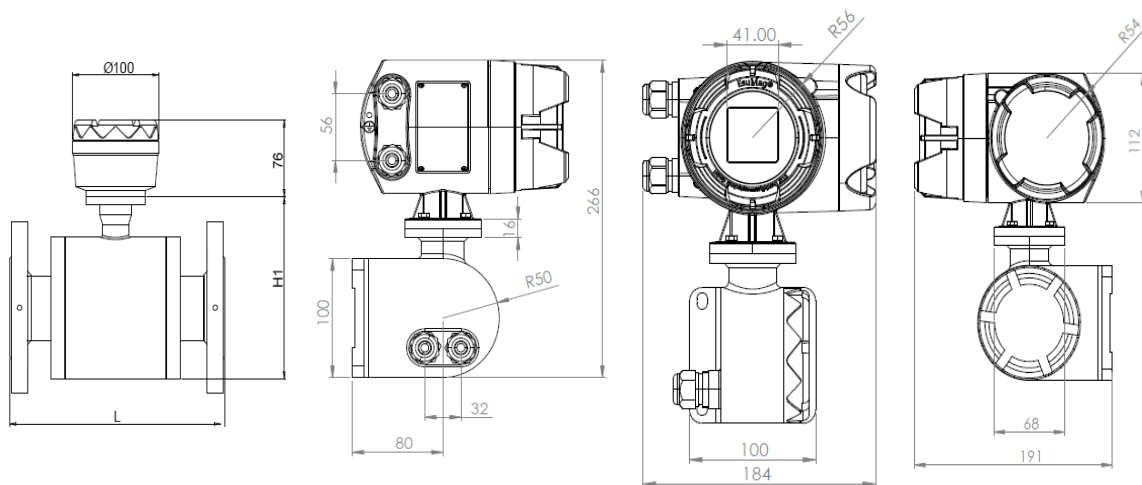
External dimensions for compact and remote type (Base on DN standard)

Unit (mm)

DN mm	Working pressure MPa	L	D	C	n-øA	H1	Compact Weights (KG)	Remote Weights (KG)
10	4.0	150	90	60	4-ø14	130	6	4
15		150	95	65	4-ø14	132.5	6	4
20		150	105	75	4-ø14	137.5	8	6
25		150	115	85	4-ø14	145	9	7
32		150	140	100	4-ø18	162.5	11	12
40		150	150	110	4-ø18	172.5	13	14
50		200	165	125	4-ø18	187.5	15	15
65		200	185	145	8-ø18	202.5	16	18
80		200	200	160	8-ø18	220	19	20
100	1.6	250	220	180	8-ø18	230	23	25
125		250	250	210	8-ø18	270	27	29
150		300	285	240	8-ø22	302.5	33	36
200	1.0	350	340	295	8-ø22	352.5	51	49
250		400	395	350	12-ø22	407.5	70	70
300		500	445	400	12-ø22	460	102	100
350		500	505	460	16-ø22	517.5	123	121
400		600	565	515	16-ø26	572.5	147	145
450		600	615	565	20-ø26	622.5	212	207
500		600	670	620	20-ø26	675	229	210
600		600	780	725	20-ø30	745	252	250
700		700	895	840	24-ø30	892	352	350
800		800	1015	950	24-ø33	1002.5	462	460
900		900	1115	1050	28-ø33	1102.5	558	550
1000	0.6	1000	1175	1120	28-ø30	1182.5	690	680
1200		1200	1405	1340	32-ø33	1397.5	785	780
1400		1400	1630	1560	36-ø36	1610	1258	1250
1600		1600	1830	1760	40xø36	1810	1565	1550
1800		1800	2045	1970	44xø39	2017.5	2085	2080
2000		2000	2265	2180	48xø42	2227.5	2605	2600

* Note: Please advise standard if need special requirements.

ESM 730 - Remote Version



8. EsuMAG® model code description:

ESM									
INSTALLATION									
ESM720 (220VAC – Compact version)	A1								
ESM720 (24VDC – Compact version)	A2								
ESM730 (Battery – Compact version)	A3								
ESM720 (220VAC – Remote version)	B1								
ESM720 (24VDC – Remote version)	B2								
ESM730 (Battery – Remote version)	B3								
CABLE LENGTH FOR REMOTE VERSION									
10m	10								
Other	XX								
FLANGE STANDARD									
PN10		2							
PN16		3							
PN25		4							
PN40		5							
ANSI 150 #RF		7							
JIS 10K #RF		8							
Other		9							
FLANGE MATERIAL									
Carbon Steel			A						
SST 304			B						
SST 316			C						
Other			X						
SENSOR DIAMETER									
DN10 to DN2000									
ELECTRODE MATERIAL									
316L Stainless steel						L			
Hc Hastelloy-C						C			
Hb Hastelloy-B						B			
Ti Titanium						T			
Pt Platinum						P			
Ta Tantalum						A			
LINER MATERIAL									
Soft rubber							1		
Hard rubber							2		
PTFE							3		
Polyurethane							4		
PFA							5		
CONVERTOR PROTECTION									
IP65								1	
IP67								2	
IP68 (On request)								3	
OUTPUTS									
4-20 mA / Pulse									A
4-20 mA/ Pulse/ RS485, (Modbus)									R
4-20 mA/ Pulse/ HART®									H
Pulse/ RS485 (Battery version)									P

EXAMPLE: ESM B1 10 3 A 200 C 1 2 A

- Customized Cable length/Connections/ Flange material shall be ordered separately.
- Grounding Method (Grounding electrode in standard, Grounding ring shall be ordered separately).
- DN10 to DN40, meter with PTFE liner in Standard,
- PN40 - meter with grounding electrode up to DN20, meter lay length +50 mm