



# ALMAG

## Electromagnetic Flowmeter Model ALMAGHP Series

### GENERAL

The **SMC ALMAGHP** is an electromagnetic flowmeter designed to measure the flow rates of conductive liquids in applications with high operating pressures. The robust design of the ALMAGHP allows it to be used in applications with pressures in excess of 6000 psig (42 Mpa). Line sizes ranging from ¼" to 64" (6 to 1600 mm) can be accommodated by the ALMAGHP, with available process connections including ANSI, DIN, and JIS-type flanges. A wide selection of options are also available for the display/converter module including integral or remote mounting, 110-220 V<sub>AC</sub> or 17-26 V<sub>DC</sub> power, and HART, RS485 & Profibus communications.

This magmeter's unique ability to withstand high pressures, combined with its wide array of available features, makes it an ideal choice for many applications & industries. The ALMAGHP has been successfully used in wastewater, food & beverage, pulp & paper, and a variety of industrial applications.



### FEATURES

- Various liner/electrode material combinations can be selected in order to achieve chemical compatibility with different fluids.
- Capable of measuring fluid velocities of up to 40 feet/second (12 m/s), with a high turndown ratio.
- A variety of flange styles including ANSI, DIN, and JIS are available.
- Suitable for high pressure operation in excess of 6000 psig.
- IP68 protection class for submersible operation is available for the flow tube.
- Available FEP liner suitable for vacuum conditions.
- Excellent accuracy; ± 0.5% of reading standard, ± 0.2% optional
- Diagnostic features alert the user to empty pipe or reverse flow conditions.

### SPECIFICATIONS

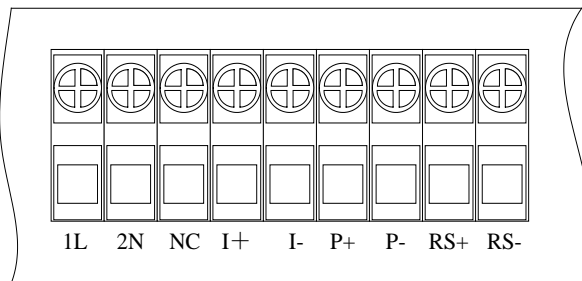
- Size - standard : ¼" ~ 64" (DN6 ~ DN1600)  
high pressure : 1" ~ 8" (DN25 ~ DN200)
- Pressure : 87-6100 psig (0.6~42 Mpa)
- Measuring Range : Velocity 0-.8 feet/sec (0 - 0.25 m/s)  
0-40 feet/sec (0 - 12 m/s max)
- Materials
  - Measuring Tube : Stainless Steel #304
  - Flange : Carbon Steel (standard)  
Stainless Steel #304 (Optional)  
Stainless Steel #316 (Optional)
  - Coil Housing : Carbon Steel (standard)  
Stainless Steel #304 (Optional)  
Stainless steel #316 (Optional)
  - Liners : Polyurethane - 1"-24" (25-600 mm)  
Neoprene - 2"-64" (50-1600 mm)  
FEP - ¼"-12" (6-300 mm)  
PTFE - 1"-32" (25-800 mm)
- Protection : IP 65 or IP 68  
IP 68 (Submersible)
- Conductivity : must be > 5 µS/cm
- Power supply : 85-253 V<sub>AC</sub> or 17-26 V<sub>DC</sub>
- Outputs : Analog, HART, Modbus
- Electrode & Grounding : Stainless Steel 316L  
Hastelloy B  
Hastelloy C  
Titanium  
Tantalum  
Tungsten Carbide
- Cable Entry : 2 X PG11
- Ambient Temperature : -13 to 140 °F (-25 to 60 °C)
- Process Connections : Flange  
JIS 10K / JIS 20K / JIS 40K  
ANSI 150# / ANSI 300# / ANSI 600#  
DIN PN 10 / PN 16 / PN25 / PN 40
- Grounding Resistance : Must be ≤ 10 Ω
- Accuracy : ±0.5% of reading (fluid velocity ≥ 0.5 m/s)  
±0.0025 m/s (fluid velocity < 0.5 m/s)  
±0.2% of reading (optional)
- Temperature : 14 ~ 140 °F (-10 ~ 60 °C) - Polyurethane  
-4 ~ 158 °F (-20 ~ 70 °C) - Neoprene  
-40 ~ 356 °F (-40 ~ 180 °C) - FEP  
-40 ~ 356 °F (-40 ~ 180 °C) - PTFE

**FLOW RANGES**

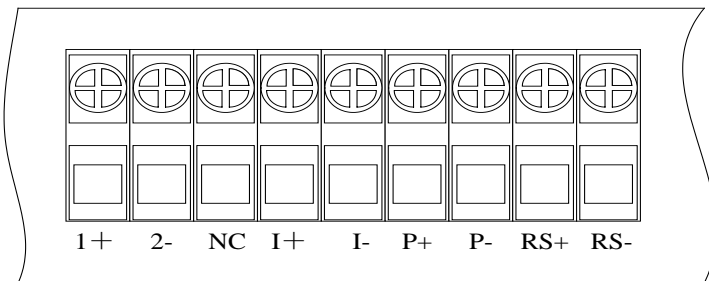
Normal Size		Standard Pressure psig (Mpa)	Flow Range	Integral Weight lbs (kg)
mm	Inch			
6	¼"	580 (4)	0.25-2.6 GPM (1-10 LPM)	11 (5)
10	⅜"	580 (4)	0.6-6 GPM (2.25-22.5 LPM)	12 (5.5)
15	½"	580 (4)	1.3-13 GPM (5.0-50 LPM)	12 (5.5)
20	¾"	580 (4)	2-20 GPM (7.5-75 LPM)	13 (6)
25	1"	580 (4)	2.6-26 GPM (10-100 LPM)	14 (6.5)
32	1-¼"	580 (4)	5.3-53 GPM (20-200 LPM)	18 (8)
40	1-½"	580 (4)	8-80 GPM (30-300 LPM)	19 (8.5)
50	2"	580 (4)	13-130 GPM (3-30 m³/h)	24 (11)
65	2-½"	580 (4)	25-260 GPM (6-60 m³/h)	35 (16)
80	3"	580 (4)	40-400 GPM (9-90 m³/h)	42 (19)
100	4"	232 (1.6)	50-525 GPM (12-120 m³/h)	44 (20)
125	5"	232 (1.6)	90-925 GPM (21-210 m³/h)	68 (31)
150	6"	232 (1.6)	130-1,300 GPM (30-300 m³/h)	73 (33)
200	8"	145/232 (1.0/1.6)	240-2,400 GPM (54-540 m³/h)	121 (55)
250	10"	145/232 (1.0/1.6)	400-4,000 GPM (90-900 m³/h)	179 (81)
300	12"	145/232 (1.0/1.6)	525-5,250 GPM (120-1200 m³/h)	190 (86)
350	14"	145/232 (1.0/1.6)	725-7,250 GPM (165-1650 m³/h)	320 (145)
400	16"	145/232 (1.0/1.6)	1,000-10,000 GPM (225-2250 m³/h)	397 (180)
450	18"	145/232 (1.0/1.6)	1,320-13,200 GPM (300-3000 m³/h)	415 (188)
500	20"	145/232 (1.0/1.6)	1,450-14,500 GPM (330-3300 m³/h)	432 (196)
600	24"	145 (1.0)	2,100-21,000 GPM (480-4800 m³/h)	609 (276)
700	28"	145 (1.0)	2,900-29,000 GPM (660-6600 m³/h)	703 (319)
800	32"	145 (1.0)	3,950-39,500 GPM (900-9000 m³/h)	902 (409)
900	36"	145 (1.0)	5,280-52,800 GPM (1200-12000 m³/h)	1230 (558)
1000	40"	145 (1.0)	5,950-59,500 GPM (1350-13500 m³/h)	1277 (579)
1200	48"	87 (0.6)	9,250-92,500 GPM (2100-21000 m³/h)	Consult Factory
1400	56"	87 (0.6)	12,000-120,000 GPM (2700-27000 m³/h)	Consult Factory
1600	64"	87 (0.6)	15,850-158,500 GPM (3600-36000 m³/h)	Consult Factory

**ELECTRICAL CONNECTIONS**

**AC power supply**

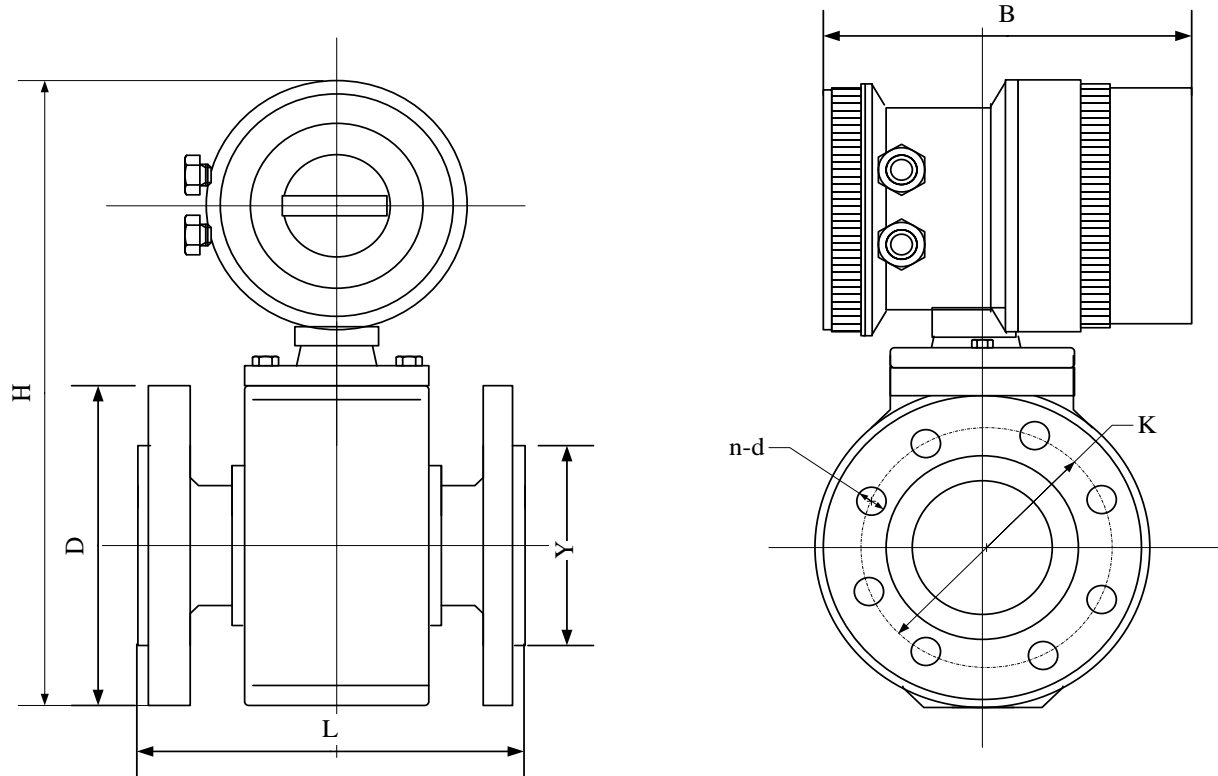


**DC power supply**



No.	Marked	Function	Note
L	<b>1L</b>	Supply voltage 85~265 V <sub>AC</sub>	L means AC phase
N	<b>2N</b>	Supply voltage 85~265 V <sub>AC</sub>	N means AC neutral
+	<b>1+</b>	Supply voltage 18~36V <sub>DC</sub>	Power Supply 24V+
-	<b>2-</b>	Supply voltage 18~36V <sub>DC</sub>	Power Supply 24V-
NC	<b>NC</b>	Power Shield	
1	<b>I+</b>	Supply voltage ( 4~20mA ) +	load resistance≤500Ω; when HART communication option is selected, an external 24 V <sub>DC</sub> power supply can be used
2	<b>I-</b>	Current output( 4~20mA ) -	
3	<b>P+</b>	Frequency/Pulse output +	Frequency or pulse output is +24V <sub>DC</sub> ; load current is ≤ 50mA
4	<b>P-</b>	Frequency/Pulse output -	
5	<b>RS+</b>	RS-485 Data +	
6	<b>RS-</b>	RS-485 Data -	

ANSI FLANGED HIGH PRESSURE DIMENSIONS



Nom. Dia.	Dimensions (inches)							Weight - lbs. (kg)	
	ANSI (Class)	L	H	B	D	K	n x dia	Integral	Remote
1" (25 mm)	600	11 1/8	13 3/4	13 3/4	4 15/16	3 1/2	4 x 3/4"	20 (9)	18 (8)
	900	12	14 1/4		5 15/16	4	4 x 1"	29 (13)	27 (12)
	1500	14	14 1/4		5 15/16	4	4 x 1"	29 (13)	27 (12)
	2500	15 3/16	14 1/2		6 1/4	4 1/4	4 x 1"	37 (17)	35 (16)
2" (50 mm)	600	12	11 1/4	13 3/4	6 1/2	5	8 x 3/4"	42 (19)	38 (17)
	900	14 1/4	12 1/4		8 1/2	6 1/2	8 x 1"	71 (32)	66 (30)
	1500	16 1/4	12 1/4		8 1/2	6 1/2	8 x 1"	71 (32)	66 (30)
	2500	18 3/16	12 9/16		9 1/4	6 3/4	8 x 1 3/16"	106 (48)	102 (46)
3" (80 mm)	600	12 3/4"	11 7/16	13 3/4	8 1/4	6 5/8	8 x 7/8"	62 (28)	57 (26)
	900	14 1/4	12		9 7/16	7 1/2	8 x 1"	84 (38)	80 (36)
	1500	17 1/2	12 1/2		10 7/16	8	8 x 1 1/4"	124 (56)	120 (54)
	2500	21 7/16	13 1/4		12	9	8 x 1 3/8"	216 (98)	210 (95)
4" (100 mm)	600	14 1/4	16	13 3/4	10 13/16	8 1/2	8 x 1"	108 (49)	104 (47)
	900	15 3/16	16 1/4		11 7/16	9 1/4	8 x 1 1/4"	137 (62)	132 (60)
	1500	18	16 11/16		12 1/4	9 1/2	8 x 1 5/8"	172 (78)	165 (75)
	2500	23 5/8	17 1/2		14	10 3/4	8 x 1 5/8"	327 (148)	320 (145)
6" (150 mm)	600	15 3/16	20	13 3/4	14	11 1/2	12 x 1 3/16"	194 (88)	188 (85)
	900	17 1/4	20 1/2		15	12 1/2	12 x 1 1/4"	269 (122)	263 (119)
	1500	21 5/8	20 3/4		15 1/2	12 1/2	12 x 1 1/2"	377 (171)	371 (168)
	2500	29 11/16	22 1/2		19	14 1/2	8 x 2 3/16"	807 (366)	800 (362)
8" (200 mm)	600	16 11/16	22 5/8	13 3/4	16 1/2	13 3/4	12 x 1 1/4"	291 (132)	282 (128)
	900	19	23 5/8		18 1/2	15 1/2	12 x 1 1/2"	441 (200)	432 (196)
	1500	25	23 7/8		19	15 1/2	12 x 1 3/4"	613 (278)	604 (274)
	2500	33 5/8	25 3/16		21 5/8	17 1/4	12 x 2 3/16"	1224 (555)	1212 (550)

**\*\* Please contact your local SMC application engineer**

**You also need to provide the following information:**

Type of Fluid	Please provide the name of your fluid, including operating PH & conductivity if possible
Full Scale Flow	Maximum and minimum flow rates, in unit of Lb/hr, LPM or GPM, etc..
Line Size	Please indicate pipe size as well connection type (flange, threaded, etc..)
Pressure & Temperature	We will calibrate your flowmeter as close to your operating conditions as possible
Type of Electronics	Indicate wheter integral or remote electronics are required
Power Requirements	Specify your power requirements such as 24 V <sub>DC</sub> or 230 V <sub>AC</sub>

## Model Selection Guide

ALMAGHP Series																
Example:																
ALMAGHP-	*-	**-	*	*-	*	*-	*	*-	*	*-	*	*-	*	*-	**	Description
Clamped	0														Type	
Flanged	1															
Insertion with ball valve	2															
Insertion without ball valve	3															
Integral Type	0														Converter	
Remote	1															
Remote for IP68 Submersible	2															
Polyurethane / 14 ~ 140 °F (-10 ~ 60 °C)	0														Linner material	
Chloropene rubber /-4 ~ 158 °F (-20 ~ 70 °C)	1															
PTFE /-40 ~ 356 °F (-40 ~ 180 °C)	2															
PFA/-22 ~ 356 °F (-30 ~ 180 °C)	3															
Other	9															
0Cr18Ni12Mo2Ti	A														Electrode material	
Hastelloy B2	B															
Hastelloy C4	C															
Titanium (Ti)	D															
Tantalum (Ta)	E															
Platinum-Iridium	F															
DN6~1600mm	**														Pipe Size	
0.6MPa	A														Pressure Rating	
1.0MPa	B															
1.6MPa	C															
2.5MPa	D															
4.0MPa	E															
6.4Mpa	F															
Other pressure	Z															
IP65	A														Protection	
IP67	B															
IP68 (Submersible, separate withconverter only)	C															
4~20mA	1														Output	
0~3KHz	2															
Pulse X..XXX m <sup>3</sup> /cp	3															
None	0														Communication	
RS485	1															
HART	2															
110 / 220V <sub>AC</sub>	T														Power supply	
24 V <sub>DC</sub>	W															
±0.5%	5														Accuracy	
None	1														Earthing ring	
316SS earthing ring	4															
Explosion Proof - Ex d II CT4	EX														Approval	
Non Hazardous	NX															
Options	**														Option	