

FS-380P Series - Industrial Strength Inline Plastic Flow Switch

FLOW
SWITCHES

Flow Rate Settings: 1.0 l/min to 7.6 l/min

Port Size: 3/8" NPT Male and 1/4" Quick Disconnect (QDC) Male

Primary Construction Material: Polypropylene

Setting Type: Fixed

This rugged inline flow switch offers the same superior performance to non-clogging as its metal cousin (FS-380). The fixed set point and simple design make it a dependable switch. The FS-380P is an ideal choice for coolant applications requiring reliable flow detection in HVAC, semiconductor, welding, medical and other industries. 1/4" quick disconnect units have a host of snap-on mating adapters to fit most piping requirements.

Specifications

Wetted materials

Housing	Glass Reinforced Polypropylene
Piston	PPS Composite
Spring	316 Stainless Steel
O-Ring	Fluorocarbon
Operating pressure	8.6 bar @ 21°C (70°F), 50 PSI @ 100°C (212°F)
Operating temperature	-18°C to +100°C (0°F to 212°F)
Set Point accuracy	20% of Set Point
Set Point differential	20% Maximum
Switch*	SPST, 20VA, N.O. at no Flow
Electrical termination	0.6 (approx) Polymeric Leads, 22 AWG
Filtration	100 Micron
Approvals	UL and CSA Pending

How to Order

Specify Part Number based on flow settings. Adapters for the 1/4" Quick Disconnect (QDC) Male unit are listed in the table at right.

Flow Settings L/min	Part Numbers	
	3/8" NPT Male	1/4" QDC Male*
1.0	197081	197091
1.9	197082	197092
3.8	197083	197093
5.7	197084	197094
7.6	197085	197095

*See selection of adapters below. QDC = Quick Disconnect

Description	Part Numbers	
	Straight Through	with Shut-Off Valve
1/4" NPT Male Pipe Thread	PLC10004	PLCD10004
1/4" BSPT Male Pipe Thread	PLC10004BSPT	PLCD10004BSPT
3/8" NPT Male Pipe Thread	PLC10006	PLCD10006
3/8" BSPT Male Pipe Thread	PLC10006BSPT	PLCD10006BSPT
1/4" O.D., .27" I.D. (6mm O.D., 4.3mm I.D.) Polytube	PLC13004	PLCD13004
3/8" O.D., 1/4" I.D. (9.5mm O.D., 6mm I.D.) Polytube	PLC13006	PLCD13006
1/4" (6.4mm) I.D. Barb	PLC17004	PLCD17004
5/16" (7.9mm) I.D. Barb	PLC17005	PLCD17005
3/8" (9.5mm) I.D. Barb	PLC17006	PLCD17006
1/4" O.D. (6.4mm) O.D. JG®	PLC14004	PLCD14004
3/8" O.D. (9.5mm) O.D. JG®	PLC14006	PLCD14006

JG® is a registered trademark of John Guest USA, Inc.

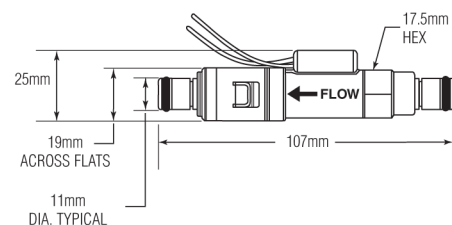
Standard Products in **bold**



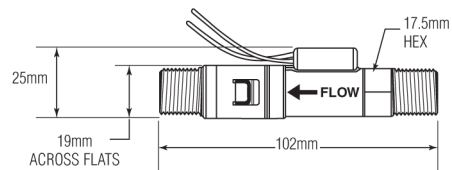
Dimensions (in mm)

1/4" Quick Disconnect Male Adapter

See table at bottom right for adapter Part Numbers.



3/8" NPT Port



Acetal Adapters for 1/4" Quick Disconnect Male Tube Fitting Units (82°C max.)

These adapters are available with or without an integral shut-off valve. The shut-off valve will stop line flow when the adapter is removed from the unit. Flow resumes when connected.



Typical shown: 1/4" NPT Male Pipe Thread with Shut-off Valve

PISTON TYPE

FLOW SWITCHES

FS-6 0.4 - 6.0 (l/min)

PISTON TYPE

Pre-adjusted set points

The FS-6 range of flow switches provides economical flow protection for a wide range of industrial applications such as photocopiers, heavy-duty floor cleaners and industrial dishwashers. The European integral G 1/4" connections obviate the need for additional adaptors and the design allows for easy mounting.

Specifications

(all data related to water at +20°C)

Max. flow	12 l/min
Max. operating pressure	30 bar at +20 °C 16 bar at +50 °C 13 bar at +70 °C 5 bar at +85 °C
Proof pressure	45 bar
Max. temperature	+85 °C
Set points	see order number
Switching function (related to increasing flow)	NC, NO, SPDT
Factory calibration position	vertical, inlet port down
Mounting orientation	Any position
Repeatability	±1%
Adjustment accuracy	±15%
Hysteresis	max. 20%
Mounting	G1/4"
Electrical connections	cable: PVC, 0.34 mm ² (length: approx. 1 m)
Enclosure	IP 65
Electrical data contact rating	NC/NO: 100 VA, 3 A, 220 V~ SPDT: 20 VA, 0.5 A, 250 VA
Weight:	0.16 kg

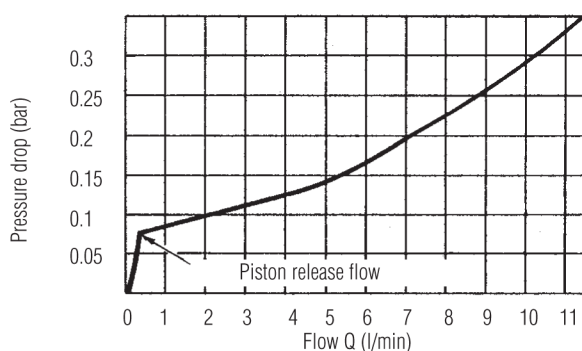
Please note: For mineral oil applications please order brass piston instead of polysulphone piston.
Add GE169 to order number e.g. 020-0290 - GE169

How to Order

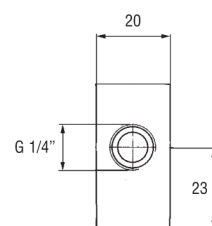
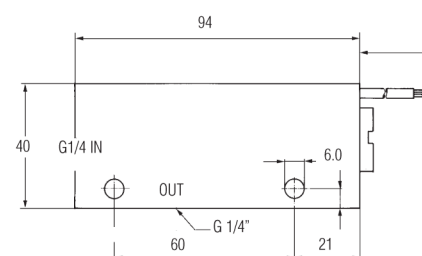
set points (l/min)	order number		
	NO	NC	SPDT
0.4	020-0290	020-0297	020-0304
1.0	020-0291	020-0298	020-0305
2.0	020-0292	020-0299	020-0306
3.0	020-0293	020-0300	020-0307
4.0	020-0294	020-0301	020-0308
6.0	020-0295	020-0302	020-0309

Pressure drop diagram

(at min. set point adjustment)



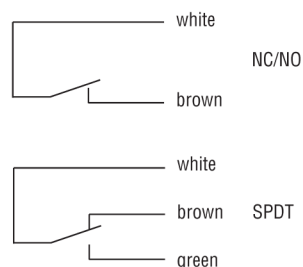
Dimensions (in mm)



Housing: Delrin®
Piston: Polysulfone*
Spring: Stainless Steel
O-Ring: Viton®

* Option Brass

Wiring Diagram



FS-200 2.0 - 190 (l/min) with pre-adjusted set points

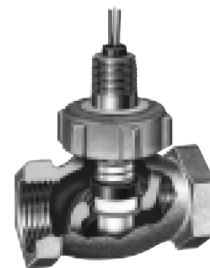
The FS-200 range of flow switches offer accurate flow detection, with 1% repeatability, with a wide range of flow and port sizes. The durable construction delivers long life repeatability in either water or oil. The design of large flow paths keep pressure drop low, thus are ideal for detection of flow in high volume lubrication, cooling or process applications.

Specifications (all data related to water at +20°C)

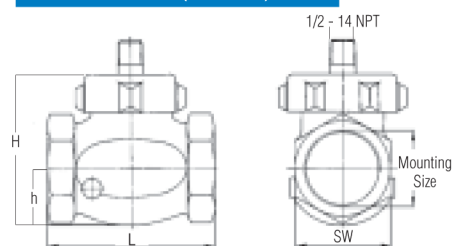
Max. flow	see order numbers
Max. operating pressure	27 bar at +20 °C
Proof pressure	45 bar
Temperature range	- 20 °C...+150 °C
Set points	see order numbers
Switching function (related to increasing flow)	SPDT
Factory calibration position	horizontal, electrical connection up
Mounting orientation	any position
Repeatability	±1%
Adjustment accuracy	±10%
Hysteresis	max. 15%
Mounting	1" NPT...2" NPT (see "dimensions" and "order number")
Electrical connections	- lead wire: Polymeric, 18 AWG (length: approx. 0.6m)
Enclosure	- IP 44 (with lead wire) - IP 54 (with conduit box IP65 [with K6])
Electrical data contact rating	20 VA; 0,5 A; 250 V~
Weight	see "dimensions"

How to Order

Set point (l/min)	Mounting	Max. flow (l/min)	Order number Housing Bronze	Order number Housing Stainless Steel
2.0 4.0	1" NPT	80	27051 27052	27059 27060
7.5 11.5			27053 27054	27061 27062
15.0 19.0			27055 27056	27063 27064
22.5 30.0			27057 27058	27065 27066
4.0 7.5	1 1/4" NPT	140	27067 27068	27076 27077
15.0 22.5			27069 27070	27078 27079
30.0 37.5			27071 27072	27080 27081
45.0 60.0 75.0			27073 27074 27075	27082 27083 27084
6.0 11.5	1 1/2" NPT	200	27085 27086	27093 27094
19.0 28.5			27087 27088	27095 27096
37.5 57.0			27089 27090	27097 27098
75.0 115.0			27091 27092	27099 27100
7.0 15.0	2" NPT	350	27101 27102	27109 27110
19.0 37.5			27103 27104	27111 27112
57.0 95.0			27105 27106	27113 27114
132.5 190.0			27107 27108	27115 27116



Dimensions (in mm)

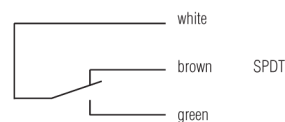


Housing: Bronze or Stainless Steel
Disc: Stainless Steel
Spring: Stainless Steel
O-Ring: Viton®
Magnet: PTFE/Ceramic

Mounting D	1" NPT	1 1/4" NPT	1 1/2" NPT	2" NPT
L	83	115	115	150
h	26	30	35	44
SW	42	53	62	72
H	71	83	98	118
Approx. weight	1.2 kg	1.8 kg	2.5 kg	4.0 kg

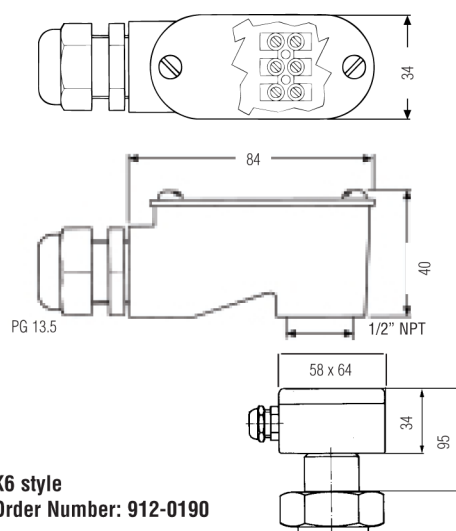
Pressure Drop Diagram see previous page

Wiring Diagram



Terminal boxes

Conduit style Order Number: 912-0615



K6 style
Order Number: 912-0190

*Order numbers are valid for units with the electrical connection "lead wire". If you need a unit with the electrical connection "terminal box", please select the respective "lead wire" order number and add: "...with mounted terminal box 912-0615 or 912-0625. See drawing (previous page)

FS-105E 0.005 - 150 l/min with adjustable set-points

FS-107E 0.1 - 90 l/min Viscosity Compensated with adjustable set-points

The FS-105E model operates in any mounting position. It is equipped with a calibrated piston which is displaced by flow to magnetically actuate a sealed hermetic reed switch. When flow decreases a positive spring returns the piston to its prior position and de-actuates the reed switch. The reed switch assembly is movable to allow for customer setting of flow rate within the limits of the switch selected. The adjustment does not effect the flow path, therefore pressure drop is not influenced when changing set-points. Versions available are for Liquid flow only. Robust components allow a pressure of 250 bar, ideally suited for high pressure cleaning and lubrication systems.

The FS-107E model operates in any mounting position. It is equipped with a calibrated piston in a calibrated orifice for viscosity compensation over 1 to 600 cSt. The piston is displaced by flow to magnetically actuate a sealed hermetic reed switch. When flow decreases a positive spring returns the piston to its prior position and de-actuates the reed switch. The reed switch assembly is movable to allow for customer setting of flow rate within the limits of the switch selected. The adjustment does not effect the flow path, therefore pressure drop is not influenced when changing set-points. Robust components allow a pressure of 250 bar, ideally suited for high pressure lubrication systems.

Specifications

	FS-105E	FS-107E
Max flow	100% above max. set-point range	100% above max. set-point range
Max operating pressure	250 bar	250 bar
Pressure drop	0.02 to 0.4 bar	0.02 to 0.4 bar
Operating temperature	-20° to 120°C	-20° to 120°C
Adjustable range	see order number	see order number
Switching function	NO with no flow, SPDT available	NO with no flow, SPDT available
Mounting orientation	Any position	Any position
Repeatability	1% of range	1% of range
Adjustment scale accuracy	+/- 10%	+/- 5%
Hysteresis	max 20%	max 20%
Mountings	G1/4, G1/2, G1	G1/2, G1
Electrical connection	Din 43650, Mini for G1/4, G1/2, Std for G1	Din 43650
Enclosure	IP 65	IP 65
Electrical contact rating	NO - 250V, 1A, 100VA - G1 port NO - 220V, 1A, 100VA - G1/2 port NO - 200V, 1A, 20VA - G1/4 port SPDT - 250V, 1.5A, 50VA - G1, G1/2 SPDT - 200V, 1A 20VA - G1/4 port	NO - 250V, 3A, 100VA - G1 port NO - 220V, 1A, 100VA - G1/2 port
Weight (approx)	G1/4 - 140g, G1/2 - 350g, G1 - 1000g	

How to Order

Order numbers for FS-105E

Adj Range L/min	Order 'NO'	Number 'SPDT'	Port
5-60 ml	027-0100	027-0120	G1/4"
20-140ml	027-0101	027-0121	G1/4"
0.1-0.6	027-0102	027-0122	G1/4"
0.2-1.2	027-0103	027-0123	G1/4"
0.4-2.0	027-0104	027-0124	G1/4"
0.5-3.0	027-0105	027-0125	G1/4"
1.0-5.0	027-0106	027-0126	G1/4"
0.02-0.2	027-0107	027-0127	G1/2"
0.1-0.6	027-0108	027-0128	G1/2"
0.4-1.8	027-0109	027-0129	G1/2"
0.8-3.2	027-0110	027-0130	G1/2"
2-7	027-0111	027-0131	G1/2"
3-13	027-0112	027-0132	G1/2"
4-20	027-0113	027-0133	G1/2"
8-30	027-0114	027-0134	G1/2"
15-45	027-0115	027-0135	G1"
30-90	027-0116	027-0136	G1"
60-150	027-0117	027-0137	G1"

Order numbers for FS-107E

Adj Range L/min	Order 'NO'	Number 'SPDT'	Port	Order No with visual indication 'NO'	'SPDT'
0.1-0.8	027-0300	027-0320	G1/2"		
0.4-1.6	027-0301	027-0321	G1/2"		
0.8-3	027-0302	027-0322	G1/2"		
2-7	027-0303	027-0323	G1/2"		
0.1-0.8	027-0304	027-0324	G1"	027-0340	027-0360
0.5-1.5	027-0305	027-0325	G1"	027-0341	027-0361
1-4	027-0306	027-0326	G1"	027-0342	027-0362
2-8	027-0307	027-0327	G1"	027-0343	027-0363
3-10	027-0308	027-0328	G1"	027-0344	027-0364
5-15	027-0309	027-0329	G1"	027-0345	027-0365
8-24	027-0310	027-0330	G1"	027-0346	027-0366
10-30	027-0311	027-0331	G1"	027-0347	027-0367
15-45	027-0312	027-0332	G1"	027-0348	027-0368
20-60	027-0313	027-0333	G1"	027-0349	027-0369
30-90	027-0314	027-0334	G1"	027-0350	027-0370

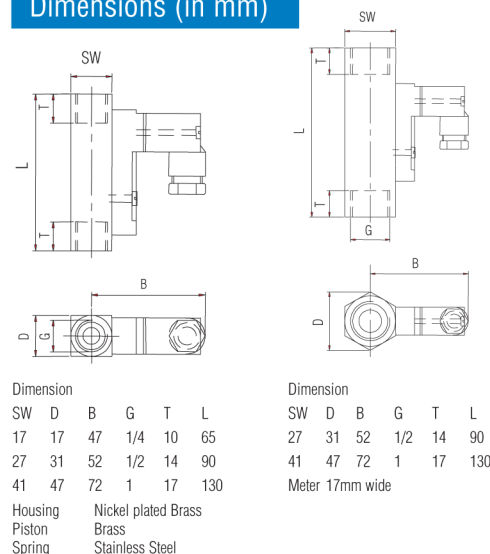
FS-105E



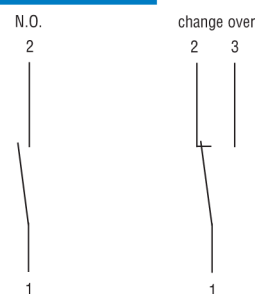
FS-107E



Dimensions (in mm)



Wiring Diagram



FS-105E 0.005 - 150 l/min with adjustable set-points

FS-107E 0.1 - 90 l/min Viscosity Compensated with adjustable set-points

The FS-105E model operates in any mounting position. It is equipped with a calibrated piston which is displaced by flow to magnetically actuate a sealed hermetic reed switch. When flow decreases a positive spring returns the piston to its prior position and de-actuates the reed switch. The reed switch assembly is movable to allow for customer setting of flow rate within the limits of the switch selected. The adjustment does not effect the flow path, therefore pressure drop is not influenced when changing set-points. Versions available are for Liquid flow only. Robust components allow a pressure of 250 bar, ideally suited for high pressure cleaning and lubrication systems.

The FS-107E model operates in any mounting position. It is equipped with a calibrated piston in a calibrated orifice for viscosity compensation over 1 to 600 cSt. The piston is displaced by flow to magnetically actuate a sealed hermetic reed switch. When flow decreases a positive spring returns the piston to its prior position and de-actuates the reed switch. The reed switch assembly is movable to allow for customer setting of flow rate within the limits of the switch selected. The adjustment does not effect the flow path, therefore pressure drop is not influenced when changing set-points. Robust components allow a pressure of 250 bar, ideally suited for high pressure lubrication systems.

Specifications

	FS-105E	FS-107E
Max flow	100% above max. set-point range	100% above max. set-point range
Max operating pressure	250 bar	250 bar
Pressure drop	0.02 to 0.4 bar	0.02 to 0.4 bar
Operating temperature	-20° to 120°C	-20° to 120°C
Adjustable range	see order number	see order number
Switching function	NO with no flow, SPDT available	NO with no flow, SPDT available
Mounting orientation	Any position	Any position
Repeatability	1% of range	1% of range
Adjustment scale accuracy	+/- 10%	+/- 5%
Hysteresis	max 20%	max 20%
Mountings	G1/4, G1/2, G1	G1/2, G1
Electrical connection	Din 43650, Mini for G1/4, G1/2, Std for G1	Din 43650
Enclosure	IP 65	IP 65
Electrical contact rating	NO - 250V, 1A, 100VA - G1 port NO - 220V, 1A, 100VA - G1/2 port NO - 200V, 1A, 20VA - G1/4 port SPDT - 250V, 1.5A, 50VA - G1, G1/2 SPDT - 200V, 1A 20VA - G1/4 port	NO - 250V, 3A, 100VA - G1 port NO - 220V, 1A, 100VA - G1/2 port
Weight (approx)	G1/4 - 140g, G1/2 - 350g, G1 - 1000g	

How to Order

Order numbers for FS-105E

Adj Range L/min	Order 'NO'	Number 'SPDT'	Port
5-60 ml	027-0100	027-0120	G1/4"
20-140ml	027-0101	027-0121	G1/4"
0.1-0.6	027-0102	027-0122	G1/4"
0.2-1.2	027-0103	027-0123	G1/4"
0.4-2.0	027-0104	027-0124	G1/4"
0.5-3.0	027-0105	027-0125	G1/4"
1.0-5.0	027-0106	027-0126	G1/4"
0.02-0.2	027-0107	027-0127	G1/2"
0.1-0.6	027-0108	027-0128	G1/2"
0.4-1.8	027-0109	027-0129	G1/2"
0.8-3.2	027-0110	027-0130	G1/2"
2-7	027-0111	027-0131	G1/2"
3-13	027-0112	027-0132	G1/2"
4-20	027-0113	027-0133	G1/2"
8-30	027-0114	027-0134	G1/2"
15-45	027-0115	027-0135	G1"
30-90	027-0116	027-0136	G1"
60-150	027-0117	027-0137	G1"

Order numbers for FS-107E

Adj Range L/min	Order 'NO'	Number 'SPDT'	Port	Order No with visual indication 'NO'	'SPDT'
0.1-0.8	027-0300	027-0320	G1/2"		
0.4-1.6	027-0301	027-0321	G1/2"		
0.8-3	027-0302	027-0322	G1/2"		
2-7	027-0303	027-0323	G1/2"		
0.1-0.8	027-0304	027-0324	G1"	027-0340	027-0360
0.5-1.5	027-0305	027-0325	G1"	027-0341	027-0361
1-4	027-0306	027-0326	G1"	027-0342	027-0362
2-8	027-0307	027-0327	G1"	027-0343	027-0363
3-10	027-0308	027-0328	G1"	027-0344	027-0364
5-15	027-0309	027-0329	G1"	027-0345	027-0365
8-24	027-0310	027-0330	G1"	027-0346	027-0366
10-30	027-0311	027-0331	G1"	027-0347	027-0367
15-45	027-0312	027-0332	G1"	027-0348	027-0368
20-60	027-0313	027-0333	G1"	027-0349	027-0369
30-90	027-0314	027-0334	G1"	027-0350	027-0370

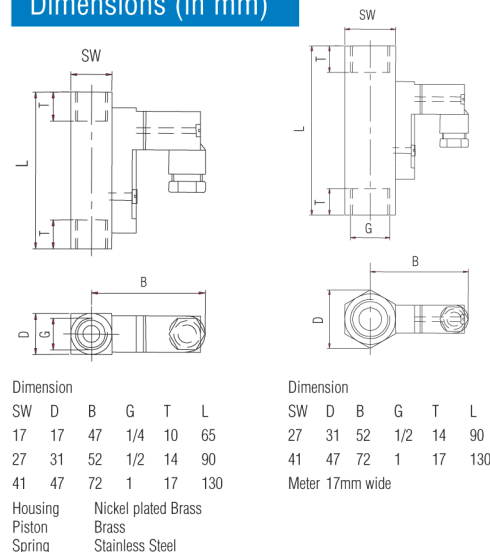
FS-105E



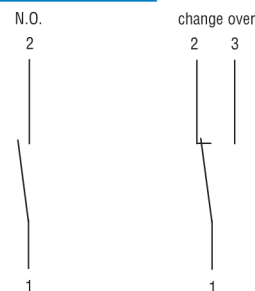
FS-107E



Dimensions (in mm)



Wiring Diagram



FS-925E 0.4 - 6.0 (l/min) with pre-adjusted set points
 FS-926E 0.05 - 0.3 (l/min) with pre-adjusted set points

FLOW
SWITCHES

PISTON TYPE

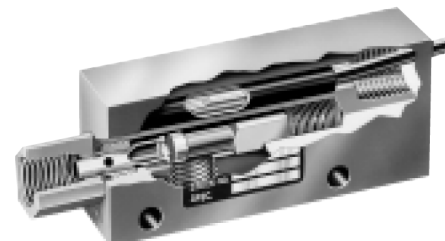
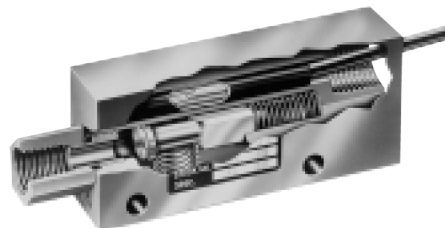
These two series of precision-calibrated switches provides reliable and consistent performance; repeatability is within 1%. FS-925E and FS-926E units are factory preset for actuation at specified flow rates.

These switches provide accurate detection of excessive or insufficient flow rates in such applications as: protecting against loss of fluid flow in hydraulic systems, assuring proper coolant flow in semiconductor processing equipment, monitoring high pressure lubrication systems, and ensuring proper air flow in water/waste systems.

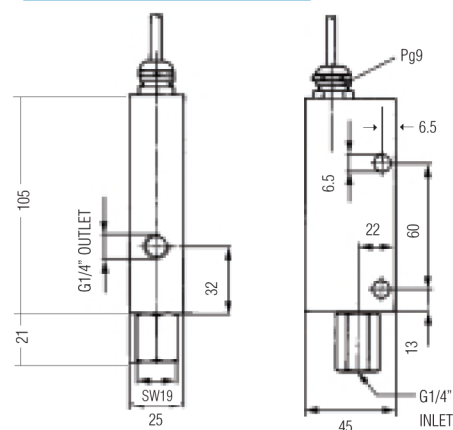
Specifications

(all data related to water at +20°C)

	FS-925E	FS-926E
Max. flow	12 l/min	3 l/min
Max. operating pressure	68 bar	68 bar
Proof pressure	100 bar	100 bar
Temperature range	- with Polysulfone piston (standard), with cable, with plug connector: -20 °C...+80 °C - with metal piston and terminal box: -20 °C...+150 °C	
Set points (l/min)	0.4; 1.0; 2.0; 3.0; 4.0; 6.0	0.05, 0.1, 0.15; 0.1; 0.25; 0.3
Switching function (related to increasing flow)	NC, NO, SPDT	NC, NO, SPDT
Mounting orientation	any position	any position
Factory calibration position with set point adjustment	vertical, inlet port down, electrical connection up	
Repeatability	± 1%	± 1%
Adjustment accuracy	±10%	±10%
Hysteresis	max. 15%	max. 20%
Mounting	G 1/4"	G 1/4"
Electrical connections	- cable: PVC, 2 or 3 x 0.34 mm ² (length: approx. 1 m) - plug connector per DIN 43650 - terminal box	
Enclosure	- IP 65	IP 65
Electrical data contact rating	- SPST (NC/NO): max. 100 VA, 3 A, 220 V~ - SPDT: max. 20 VA, 0.5 A, 250 V~	
Weight	0.5 kg	0.5 kg

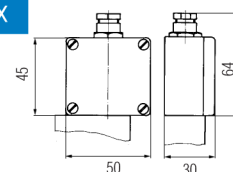


Dimensions (in mm)

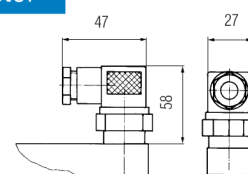


Housing: Brass or Stainless Steel
 Piston: Polysulfone* or Stainless Steel (* option Brass)
 Spring: Stainless Steel
 O-Ring: Viton®

Terminal Box



Plug Connector



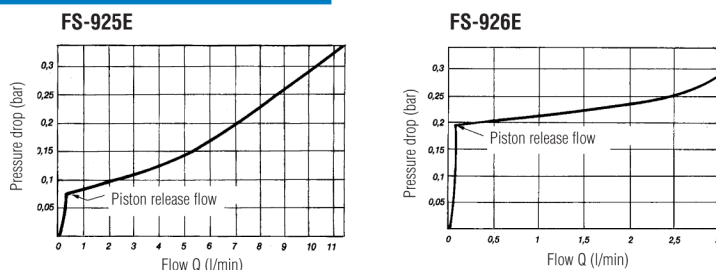
How to Order for FS-925E / FS-926E

Type code: FS-925E..... -
 Set points: (l/min) (0.4), (1.0), (2.0), (3.0), (4.0), (6.0)
 Type code: FS-926E..... -
 Set points: (l/min) (0.05), (0.1), (0.15), (0.2), (0.25), (0.3)
 Housing material: Brass M
 Stainless Steel C
 Electr. connection: Cable P
 Terminal box K
 Plug connector S
 Type of contact: NO S
 NC O
 SPDT W

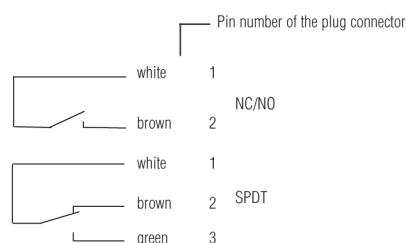
Note: For mineral oil applications please order brass piston instead of polysulfone piston, -GE169 to the number e.g. FS-925E-0.4-M-P-W-GE169

Pressure Drop Diagram

(at min. set point adjustment)



Wiring Diagram



FLOW SWITCHES

FS-550E 15.0 - 125.0 (l/min) with pre-adjusted set points

FLOW
SWITCHES

PISTON TYPE

Standard FS-550E switches sense liquid flow in either direction to monitor flow/no-flow conditions. The paddle is trimmed during installation to permit switch actuation at the desired flow rate. As flow increases in a pipe, the paddle of the switch pivots to move out of the liquid path, producing less than 200mb of pressure drop regardless of pipe size.

Specifications (all data related to water at +20°C)

Max. flow	determined by the pipe's inside diameter
Max. operating pressure	55 bar
Proof pressure	82 bar
Max. pressure drop	0.2 bar
Temperature range	cable: -20 °C...+80 °C terminal box: -20 °C...+150 °C
Set points	see set point adjustment guideline
Switching function (related to increasing flow)	-SPDT
Mounting orientation	vertical, electrical connection up
Repeatability	±5%
Adjustment accuracy	±25%
Hysteresis	max. 50%
Mounting	R1"
Electrical connections	- cable: PVC, 3 x 0.34 mm ² (length: approx. 1 m) - terminal box
Enclosure	- IP 65
Electrical data contact rating	- SPDT max. 20 VA, 0.5 A, 250 V~
Weight	0.6 kg

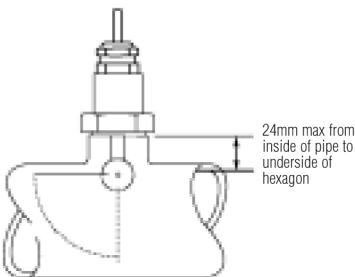
How to Order

Electrical Connection	Brass	Stainless Steel
Cable	020-3493	020-3495
Terminal box	020-3497	020-3499

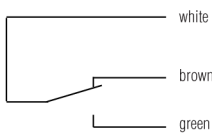
Set Point Adjustment (approximate)

Cut-off size	Pipeline sizes							
	1 1/2"		2"		2 1/2"		3"	
	Set points (l/min) with increasing and decreasing flow							
	incr.	decr.	incr.	decr.	incr.	decr.	incr.	decr.
1 1/2"	57	42	106	80	144	114		
2"			84	57	103	76	182	144
2 1/2"					80	53	152	99
3"							118	76

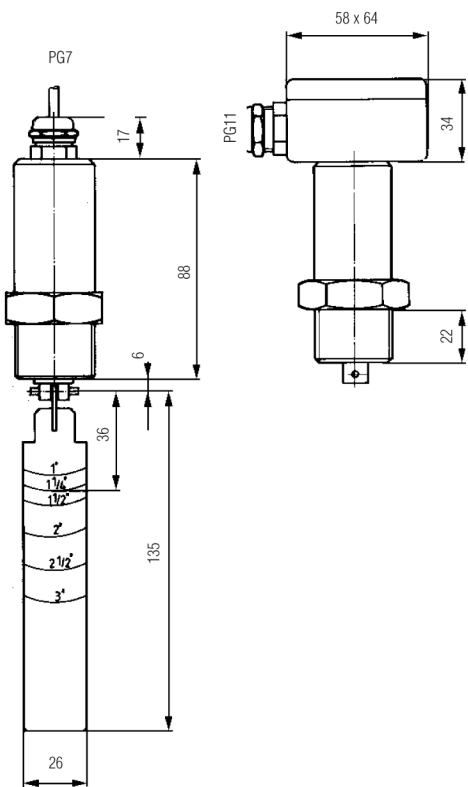
Mounting Method



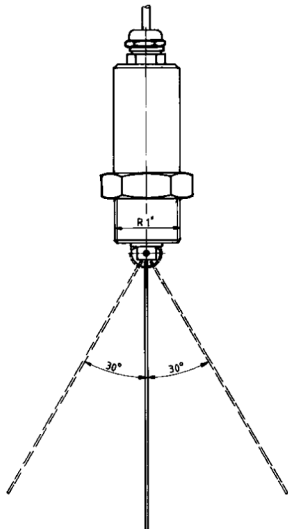
Wiring Diagram



Dimensions (in mm)



Housing: Brass or Stainless Steel
Paddle: Stainless Steel
Spring: Stainless Steel
Magnet: PTFE

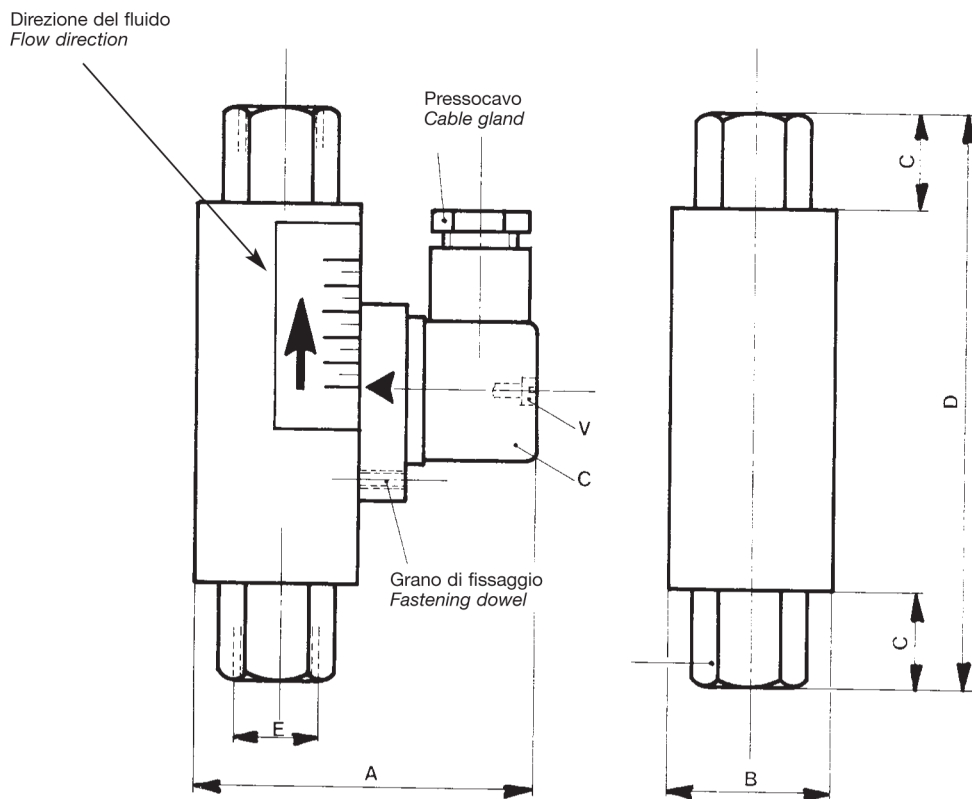


FLOW SWITCHES

FLUSSOSTATI ELETTRICI REGOLABILI

Adjustable electric flow switches

IFE



MONTAGGIO

Installare il flussostato IFE lontano da campi magnetici ed evitare di fissarlo contro pareti ferromagnetiche che possono smagnetizzare il magnete interno all'otturatore interrompendone il funzionamento.

È opportuno fissare il flussostato in posizione verticale con l'entrata del fluido dal basso verso l'alto.

Il flusso da controllare deve essere esente da impurità in sospensione che possono altrimenti bloccare l'otturatore.

Per regolare il contatto elettrico di allarme portata spostare il cursore portacontatti verso l'alto e poi abbassarlo lentamente fino a fare chiudere il contatto reed posto nel suo interno. Infine bloccarlo con l'apposito grano di fissaggio.

Negli ordini specificare: il tipo di fluido da controllare, la viscosità, la temperatura e la pressione di lavoro.

INSTALLATION

Mount the IFE flow switch far from any interacting magnetic fields and avoid to fix it against iron walls that could degauss the magnet housed inside the shutter and affect the correct working.

It is advisable to fix the device in vertical position to let the fluid flow upwards.

The fluid to be monitored must be absolutely free from any impurity that could prevent the shutter working correctly.

To adjust the electric alarm contact shift the cursor upwards and then slowly bring it down to let the reed contact housed inside close. Then secure it with the proper fixing dowel.

When ordering, please indicate: the fluid to be checked, temperature, viscosity, pressure and any other useful information.

Codice Part no.	Tipo Model	Campo di lavoro Operating range (L/min - H ₂ O)	Dimensioni / Size						Peso Weight (gr.)
			A (mm)	B (mm)	C (mm)	D (mm)	E (GAS)	Ch/AF	
3.7.025	IFE1R3	0,3 - 3	60	20	13,5	89	1/8"	15	215
3.7.050	IFE2R9	1 - 9	62	22	13,5	93	1/4"	17	260
3.7.075	IFE3R18	2 - 18	64	24	15,5	104	3/8"	20	330
3.7.100	IFE4R24	3 - 24	68	28	18,5	115	1/2"	24	485
3.7.125	IFE5R35	6 - 35	72	32	22,5	132	3/4"	32	750
3.7.150	IFE6R60	15 - 60	85	45	24,5	157	1"	40	1570

FLUSSIMETRI AD AREA VARIABILE

Variable Area Flow Meters

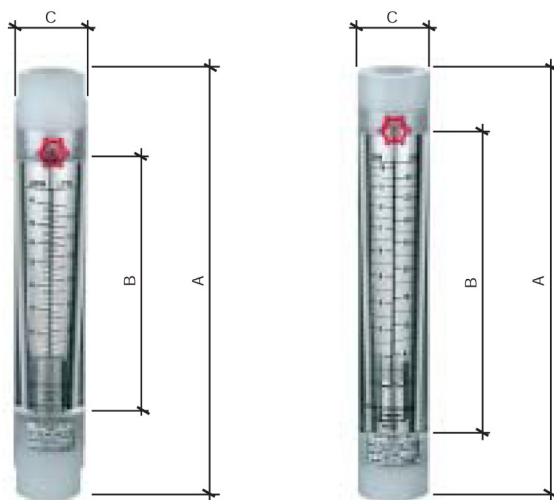
TFM...V

IMPIEGO

I flussimetri ad area variabile della serie TFM...V sono ideali per misurare la portata istantanea di un flusso continuo e vengono normalmente utilizzati per il controllo del passaggio di un liquido, modello TFM...VL, o di un gas, modello TFM...VG, in un circuito. Sono realizzati con tubo di misura in acrilico trasparente sui cui è serigrafata la scala graduata, raccordi superiori e inferiori in polipropilene o ABS, galleggiante in acciaio inox e guarnizioni di tenuta in silicone o FPM.

USE

Variable area flow meters, TFM...V series, are ideal to monitor the single-phase non-pulsating discharge of liquid, TFM...VL model, or gas, TFM...VG model, in a circuit. They have been designed with tube in Acrylic and graduated scale silk-screened directly on it, PP or ABS fittings, stainless steel float and O-ring available in Silicone or Fluorine rubber.



DATI TECNICI

Precisione: 4%
 Pressione max.: 10 bar
 Campo di temperatura: 0 - 60°C
 Montaggio: Verticale
 Tubo di misura: Acrilico trasparente
 Raccordi: Polipropilene (standard)
 ABS (a richiesta)
 Galleggiante: Acciaio Inox
 Guarnizioni: Silicone (standard)
 FPM (a richiesta)

SPECIFICATIONS

Accuracy: 4%
 Max. Pressure: 10 bar
 Working Temperature: 0 - 60°C
 Fixing: Vertical
 Tube: Acrylic
 Fitting: Polypropylene (standard)
 ABS (on request)
 Float: Stainless Steel
 O-ring: Silicone (standard)
 FPM (on request)

FLUSSIMETRI PER LIQUIDI LIQUID FLOW METER			FLUSSIMETRI PER GAS GAS FLOW METER		FILETTATURA BSP BSP THREAD	DIMENSIONI / SIZE (mm)		
MODELLO MODEL	PORTATE/RANGE		SIGLA MODEL	PORTATA/RANGE				
	GPM	L/min		Nm³/h				
	(Liquid)	(Liquid)		(Gas)				
TFM01VL4	0.1 - 1	0.5 - 4	TFM01VG10	1 - 10	G1/2" Femmina / Female	210	180	32
TFM02VL7	0.2 - 2	1 - 7	TFM02VG16	1.6 - 16	G1/2" Femmina / Female	210	180	32
TFM03VL18	0.5 - 5	1.8 - 18	TFM03VG40	4 - 40	G1/2" Femmina / Female	210	180	32
TFM04VL36	1 - 10	4 - 36	TFM04VG60	6 - 60	G3/4" Femmina / Female	278	236	45
TFM05VL70	2 - 20	10 - 70	TFM05VG160	16 - 160	G1" Femmina / Female	265	235	51
TFM06VL100	5 - 30	20 - 100	TFM06VG250	25 - 250	G1" Femmina / Female	265	235	51
TFM07VL150	5 - 40	20 - 150	TFM07VG350	35 - 350	G1" Femmina / Female	265	235	51
TFM08VL110	5 - 30	20 - 110	TFM08VG250	25 - 250	G1 1/2" Maschio / Male	306	235	51
TFM09VL150	5 - 40	20 - 150	TFM09VG350	35 - 350	G1 1/2" Maschio / Male	306	235	51
TFM10VL220	20 - 60	80 -220	TFM10VG400	80 - 400	G1 1/2" Maschio / Male	306	235	51
TFM11VL300	20 - 80	80 - 300	TFM11VG500	100 - 500	G2" Maschio / Male	380	270	75
TFM12VL360	20 - 100	80 - 360	TFM12VG600	120 - 600	G2" Maschio / Male	380	270	75
TFM13VL450	40 - 120	150 - 450	TFM13VG850	300 - 850	G2" Maschio / Male	380	270	75
TFM14VL550	50 - 150	190 - 550	TFM14VG1200	400 - 1200	G2" Maschio / Male	380	270	75
TFM15VL750	60 - 200	220 - 750	TFM15VG1400	550 - 1400	G2" Maschio / Male	380	270	75

SIGLA D'ORDINAZIONE ORDERING CODE

Per ogni ordine specificare modello, materiale raccordi e guarnizioni
 When ordering please specify model, fitting and O-ring material

Modello / Model	Materiale raccordi / Fitting material	Guarnizioni / O-ring
	A = ABS P = Polypropylene	F = FPM S = Silicone

FT-210 Series – TurboFlow® Low Flow Turbine Sensor

- ▶ Low Flow Rates .1 to 2.5 LPM and High Accuracy $\pm 3\%$ of Reading
- ▶ Lightweight Turbine Ensures Fast Startup
- ▶ Mounts In Any Orientation

Gems FT-210 features proven turbine technology in a small package for low flow applications. The turbine technology provides a highly repeatable sensor ideally suited for measurement of either volume dispensing and/or flow rate applications. The small turbine reacts quickly to on/off dispensing applications. Each sensor is 100% tested, ensuring years of service life.

Specifications

Wetted Materials	
Body	Nylon 12 (Grilamid TR55)
Turbine	Nylon 12 Composite
Bearings	PTFE/15% Graphite
Operating Pressure	350 PSI (24 bar)
Burst Pressure	1400 PSI (97 bar)
Flow Range	.026-.65 gallons/minute 0.1-2.5 liters/minute 3.4-84.5 ounces/minute
Pulses	83,200 per gallon 22,000 per liter 650 per ounce
Frequency Output	36.6-917 Hz
Operating Temperature	-4°F to 212°F (-20°C to 100°C)
Viscosity	32 to 70 SSU (.8 to 16 Centistokes)
Filter	<50 Microns
Input Power	5 to 24 VDC
Output (Hz)	NPN Sinking Open Collector @ 20mA Maximum Leakage Current 10 μ A (3K-30K Pull up resistor required)
Accuracy	$\pm 3\%$ of Reading
Repeatability	0.5% of Full Scale
Electrical Connection	9.4mm Spacing 3-pole DIN Connector (1" high)
Inlet/Outlet Ports	1/4" NPT (1/4" G Male also available)

How To Order

Specify Part Number based on desired electrical termination and port size.

3-Pole DIN (Male)				3-Foot Cable	
With DIN Mate		Without DIN Mate		1/4" NPT	1/4" G
1/4" NPT	1/4" G	1/4" NPT	1/4" G		
212465E	212460E	212465	212460	212465-C	212460-C

FT-210 Accessories

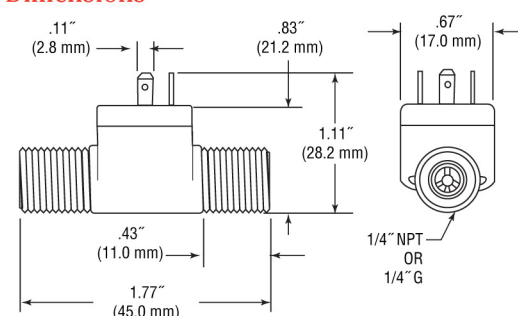
Consult factory for special customized OEM versions.

Description	Part Number
1 meter DIN Cable Assembly with 10K pull-up resistor	218572 ⚡
Mating DIN Connector	212404 ⚡

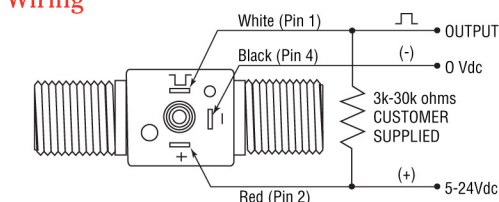
⚡ – Stock Items.



Dimensions

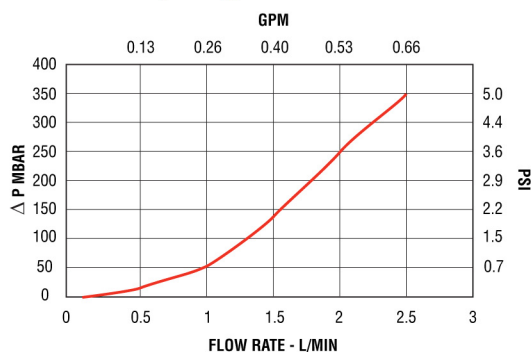


Wiring



Pin Code: 1 = Output
2 = Supply
4 = Common

Pressure Drop—Typical



See Flow Sensor Display and Power Accessories in the Master Catalog.

Rate Meters and Totalizers complete your flow monitoring system.

FT-110 Series - TurboFlow™

Economical Flow-Rate Sensors

- ▶ Low Cost Plus High Accuracy $\pm 3\%$ of Reading
- ▶ Measures Low Liquid Flow Rates of 0.4 to 30 l/min
- ▶ FDA Approved Materials
- ▶ Lightweight Plastic design enables mounting in any position

Hall effect turbine flow rate sensor is ideal for OEM applications involving low flow liquid monitoring. The low cost coupled with 0.5% repeatability makes it an ideal candidate for replacing dispensing timer systems. Unlike existing timing systems, turbine technology is not influenced by changes in system pressure caused by ageing filters. The sensor's standard power and output specifications make it easy to retrofit to existing controllers.

Specifications

Wetted materials	
Body	Nylon 12
Turbine	Nylon 12 Composite
Bearings	PTFE/15% Graphite
Operating pressure	14bar max
Burst pressure	170bar
Operating temperature	-20°C to 100°C (Ambient +80°C for cable)
Viscosity	32 to 81 SSU (.8 to 16 Centistokes)
Filter	<50 Microns
Input power	5 to 24 VDC @ 8mA
Output	NPN Sinking Open Collector @ 50mA Maximum (1 to 2.2K Ohm Pull-Up Resistor Required) (Hz Output)
Accuracy	$\pm 3\%$ of Reading
Repeatability	0.5% of Full Scale
Electrical connection	Spade Terminals 2.8/6.3 x .8mm : 1m cable
Inlet/outlet ports	3/8" NPT Male : G 3/8" Male

How to Order

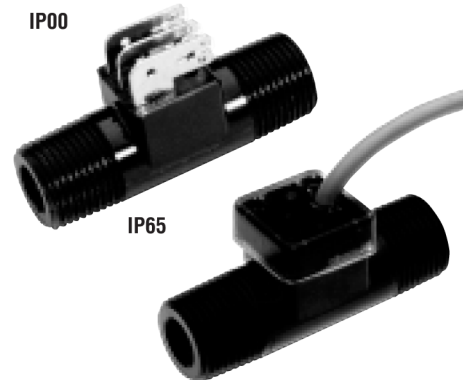
Specify Part Number based on desired flow range and thread type

Flow Range Litres/m	Pulses per Litre	Frequency Output	Part Number				Pressure Drop Code
			Terminals	Cable			
			3/8" NPT	G 3/8"	3/8" NPT	G 3/8"	
.5-5	6900	58-575 Hz	173931	173936	173931-C	173936-C	A
1-10	3300	55-550 Hz	173932	173937	173932-C	173937-C	
1-15	4600	76-1150 Hz	173933	173938	173933-C	173938-C	
1-15	2200	37-550 Hz	173934	173939	173934-C	173939-C	B
2-30	1000	33-500 Hz	173935	173940	173935-C	173940-C	

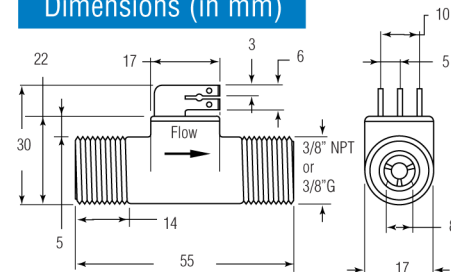
- Consult Sales Office if there is a possibility of particles in the flow stream.

FT-110 Accessories

Description	Part Number
Mating connector w/1m, 3 conductor, PVC pigtail leads	173941
Mating connector w/3m, 3 conductor, PVC pigtail leads	173942

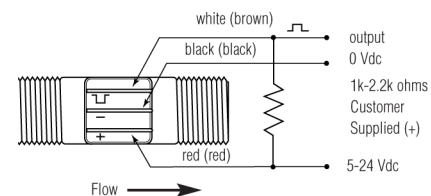


Dimensions (in mm)

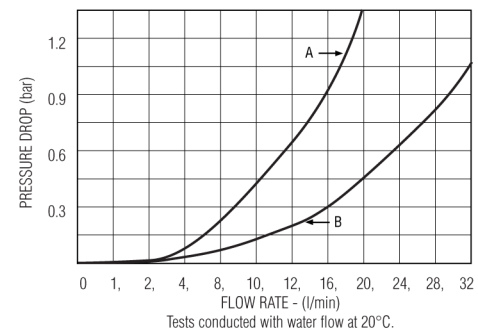


Wiring

(Integral Cable in brackets)



Pressure Drop - Typical



RotorFlow - RFO and RFA Types

4.5 - 24 VDC Pulsed Output - RFO

0 - 10 V, 4 to 20mA Linear Output - RFA

popularised the Rotor-Flow's paddlewheel design by combining high visibility rotors with solid-state electronics that are packaged into compact, panel mounting housings. They provide accurate flow rate output with integral visual confirmation ... all with an unprecedented price/performance ratio.



Hall-Effect-Sensor sends a voltage pulse with each pass of magnetic field

Specifications

Wetted materials	Polypropylene (Hydrolytically Stable, Glass Reinforced), Stainless Steel or Brass		
Body			
Rotor pin	Ceramic		
Rotor	Ryton Composite, Colour: Black		
Lens	Polysulfone		
O-Ring	Buna N (Metal body = Viton)		
Max. operating pressure	Polypropylene Body:	7 bar	
	Metal Body:	14 bar	
Max. operating temperature	Polypropylene Body:	80 °C	
	Metal:	100 °C	
Electronics (both bodies)	65 °C Ambient		
Max. viscosity	45 cSt		
Input power	4.5 to 24 Vdc, (24Vdc Regulated Supply for RFA models)		
Output signal	4.5 to 24 Vdc Pulse, Pulse Rate dependent on Flow Rate, Port Size and Range 0 to 10 V, 4 to 20mA available (RFA model), consult Sales Office		
Max. current source output	70 mA		
Frequency output range	25 Hz (Low Flow) to 225 Hz (High Flow)		
Electrical termination	AWG 22 PVC-Jacketed Cable, Length 60 cm Colour Code: Red = + Vdc, Black = Ground, White = Signal output		
Typical pressure drop	See Graphs		

How to Order

Body	Port	Flow Ranges (l/min)		Output (Hz)	RFO		RFA
		Low Range*	Standard Range		BSP	NPT	
Polypropylene	1/4"	0.4 to 4.0 (±7%)	2.0 to 20.0 (±7%)	15-180	155421BSPP	155421	Consult Factory
	1/2"	6.0 to 45.0 (±7%)	15.0 to 75.0 (±15%)	20-190	155481BSPP	155481	
Brass	1/4"	0.4 to 4.0 (±7%)	2.0 to 20.0 (±7%)	15-180	156261BSPP	156261	Consult Factory
	1/2"	6.0 to 45.0 (±7%)	15.0 to 75.0 (±15%)	20-190	156262BSPP	156262	
	3/4"	---	20 to 112.5 (±15%)	25-210	194761BSPP	194761	
	1"	---	30 to 225 (±15%)	15-180	194762BSPP	194762	
Stainless Steel	9/16 - 18 UNF	0.4 to 4 (±7%)	2 to 20.0 (±7%)	15-180	N/A	165071	Consult Factory
	1/2"	6 to 45 (±7%)	15.0 to 75.0 (±15%)	20-190	165075BSPP	165075	
	3/4"	---	20 to 112.5 (±15%)	25-210	194763BSPP	194763	
	1"	---	30 to 225 (±15%)	15-180	194764BSPP	194764	

* With use of Low-Flow-Adaptor supplied

High Resolution Black Rotor

Ryton composite. Each of the six rotor arms are magnetized.



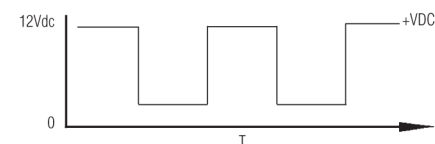
Signal Output

Output signal for RFO Types is an on/off pulse of the DC voltage supplied to the unit, it is compatible with all digital logic families. Input voltage range is 4.5 to 24 Vd.c.

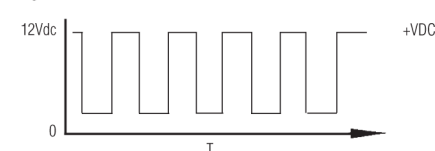
Frequency of the output pulse is proportional to the flow rate and ranges from approximately 25 Hz at low flow to 225 Hz at high flow. See order number for more information.

Following examples are at 12Vdc supply

Low Flow



HighFlow



* With use of Low-Flow-Adapter supplied.

See page 70 for more information.

For dimensions see page RFS

Please consult factory for detailed flow rate / frequency curves.

FLUSSIMETRI AD AREA VARIABILE

Variable Area Flow Meters

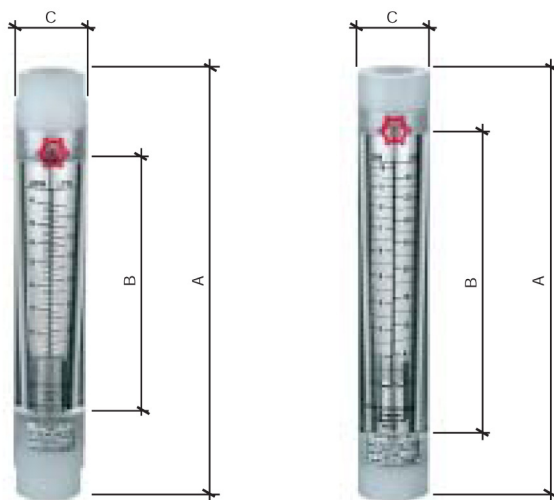
TFM...V

IMPIEGO

I flussimetri ad area variabile della serie TFM...V sono ideali per misurare la portata istantanea di un flusso continuo e vengono normalmente utilizzati per il controllo del passaggio di un liquido, modello TFM...VL, o di un gas, modello TFM...VG, in un circuito. Sono realizzati con tubo di misura in acrilico trasparente sui cui è serigrafata la scala graduata, raccordi superiori e inferiori in polipropilene o ABS, galleggiante in acciaio inox e guarnizioni di tenuta in silicone o FPM.

USE

Variable area flow meters, TFM...V series, are ideal to monitor the single-phase non-pulsating discharge of liquid, TFM...VL model, or gas, TFM...VG model, in a circuit. They have been designed with tube in Acrylic and graduated scale silk-screened directly on it, PP or ABS fittings, stainless steel float and O-ring available in Silicone or Fluorine rubber.



DATI TECNICI

Precisione: 4%
 Pressione max.: 10 bar
 Campo di temperatura: 0 - 60°C
 Montaggio: Verticale
 Tubo di misura: Acrilico trasparente
 Raccordi: Polipropilene (standard)
 ABS (a richiesta)
 Galleggiante: Acciaio Inox
 Guarnizioni: Silicone (standard)
 FPM (a richiesta)

SPECIFICATIONS

Accuracy: 4%
 Max. Pressure: 10 bar
 Working Temperature: 0 - 60°C
 Fixing: Vertical
 Tube: Acrylic
 Fitting: Polypropylene (standard)
 ABS (on request)
 Float: Stainless Steel
 O-ring: Silicone (standard)
 FPM (on request)

FLUSSIMETRI PER LIQUIDI LIQUID FLOW METER			FLUSSIMETRI PER GAS GAS FLOW METER		FILETTATURA BSP BSP THREAD	DIMENSIONI / SIZE (mm)		
MODELLO MODEL	PORTATE/RANGE		SIGLA MODEL	PORTATA/RANGE		A	B	C
	GPM	L/min		Nm³/h				
	(Liquid)	(Liquid)		(Gas)				
TFM01VL4	0.1 - 1	0.5 - 4	TFM01VG10	1 - 10	G1/2" Femmina / Female	210	180	32
TFM02VL7	0.2 - 2	1 - 7	TFM02VG16	1.6 - 16	G1/2" Femmina / Female	210	180	32
TFM03VL18	0.5 - 5	1.8 - 18	TFM03VG40	4 - 40	G1/2" Femmina / Female	210	180	32
TFM04VL36	1 - 10	4 - 36	TFM04VG60	6 - 60	G3/4" Femmina / Female	278	236	45
TFM05VL70	2 - 20	10 - 70	TFM05VG160	16 - 160	G1" Femmina / Female	265	235	51
TFM06VL100	5 - 30	20 - 100	TFM06VG250	25 - 250	G1" Femmina / Female	265	235	51
TFM07VL150	5 - 40	20 - 150	TFM07VG350	35 - 350	G1" Femmina / Female	265	235	51
TFM08VL110	5 - 30	20 - 110	TFM08VG250	25 - 250	G1 1/2" Maschio / Male	306	235	51
TFM09VL150	5 - 40	20 - 150	TFM09VG350	35 - 350	G1 1/2" Maschio / Male	306	235	51
TFM10VL220	20 - 60	80 - 220	TFM10VG400	80 - 400	G1 1/2" Maschio / Male	306	235	51
TFM11VL300	20 - 80	80 - 300	TFM11VG500	100 - 500	G2" Maschio / Male	380	270	75
TFM12VL360	20 - 100	80 - 360	TFM12VG600	120 - 600	G2" Maschio / Male	380	270	75
TFM13VL450	40 - 120	150 - 450	TFM13VG850	300 - 850	G2" Maschio / Male	380	270	75
TFM14VL550	50 - 150	190 - 550	TFM14VG1200	400 - 1200	G2" Maschio / Male	380	270	75
TFM15VL750	60 - 200	220 - 750	TFM15VG1400	550 - 1400	G2" Maschio / Male	380	270	75

SIGLA D'ORDINAZIONE ORDERING CODE

Per ogni ordine specificare modello, materiale raccordi e guarnizioni
 When ordering please specify model, fitting and O-ring material

Modello / Model	Materiale raccordi / Fitting material	Guarnizioni / O-ring
A = ABS P = Polypropylene		F = FPM S = Silicone

RotorFlow - RFS Types Flow Setpoint Switching

RotorFlow Switches build an extra level of reliability and protection into your equipment. By principle of operation, the rotor cannot be deceived into indicating a positive flow situation when no flow actually exists. Once set to a desired actuation point, RotorFlow will switch to a 'no-flow' condition should the rotor stop for any reason.

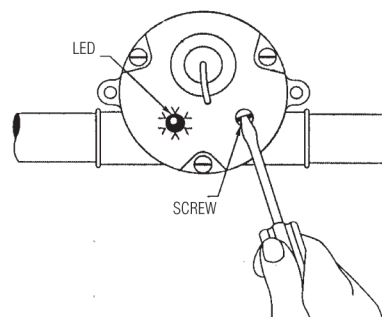
Specifications

Wetted Materials	Polypropylene, Brass, S Steel (Hydrolytically Stable, Glass Reinforced)		
Body	Ceramic		
Rotor Pin	Ryton Composite, Colour: Black		
Rotor	Polysulfone		
Lens	Buna N		
O-Ring			
Max. Operating Pressure	Polypropylene Body:	7 bar	
	Metal Body:	14 bar	
Max. Operating Temperature	Polypropylene Body:	80 °C	
	Metal Body:	100 °C	
Electronics	65°C Ambient		
Max. Viscosity	45 cst		
Input Power	12 Vd.c., 24 Vd.c. or 110 Va.c. (230 V a.c. on request)		
Relay Contact Ratings (SPDT)	1A, 24 Vd.c. Resistive 0,5 A, 110 Va.c. (230 V a.c. on request)		
Repeatability	2% max. Deviation		
Set Point Accuracy (Factory Set)	± 5%		
Hysteresis	max. 15%		
Electrical Termination	22 AWG PVC-Jacketed Cable, Length 60 cm, Colour Code: Red = +Va.c./Vd.c., Black = Ground, White = N.O., Brown = N.C., Green = Common		
Typical Pressure Drop:	See Graphs		

Switch Set Point Calibration With LED Signal (RFS Type)

With the unit installed in the line and power supplied, complete the following steps to calibrate switch actuation point with proper flow rate. A small flat-blade screwdriver is the only tool required.

1. Adjust liquid flow in the line to the rate at which switch actuation is desired.
2. Insert screwdriver into opening on backside of housing and fit blade into the potentiometer adjustment screw inside.
3. If LED is not illuminated, slowly turn screwdriver counterclockwise and stop as soon as LED illuminates.
4. If LED is illuminated, turn screwdriver clockwise until LED light goes out. Then, slowly turn screwdriver counterclockwise and stop as soon as LED illuminates.



How to Order

Body Material	Port Size	Flow Ranges (l/min)		Input Power	Order Number	
		Low Range*	Standard Range		BSP	NPT
Polypropylene	1/4"	0.4 to 4.0	2.0 to 20.0	24 VDC 110 VAC	155425BSPP 155876BSPP	155425 155876
	1/2"	6.0 to 45.0	15.0 to 75.0	24 VDC 110 VAC	155485BSPP 155886BSPP	155485 155886
Brass	1/4"	0.4 to 4.0	2.0 to 20.0	24 VDC 110 VAC	156265BSPP 156266BSPP	156265 156266
	1/2"	6.0 to 45.0	15.0 to 75.0	24 VDC 110 VAC	156268BSPP 156269BSPP	156268 156269
	3/4"	---	20 to 112.5	24 VDC 110 VAC	180395BSPP 180396BSPP	180395 180396
	1"	---	30 to 225	24 VDC 110 VAC	181688BSPP 181689BSPP	181688 181689
Stainless Steel	9/16" - 18UNF	0.4 to 4	2.0 to 20.0	24 VDC 110 VAC	N/A N/A	165073 165074
	1/2"	6 to 45	15.0 to 75.0	24 VDC 110 VAC	165077BSPP 165078BSPP	165077 165078
	3/4"	---	20 to 112.5	24 VDC 110 VAC	181691BSPP 181692BSPP	181691 181692
	1"	---	30 to 225	24 VDC 110 VAC	181693BSPP 181694BSPP	181693 181694

* With use of Low-Flow-Adapter supplied,