

Pressure switch mechanical for refrigeration applications With settable / fixed differential Model PSM-690

Switzer data sheet PSM-690



Applications

- Refrigeration compressors
- Chillers
- Driers
- HVAC

Special features

- Robust mechanism
- Auto or manual reset
- Designed for use in refrigeration systems
- No tools required to adjust the setpoint
- Fail safe double ply bellow element for high pressure

Description

The PSM-690 is used in refrigeration control, monitoring and alarm applications. The switch point can be specified by the customer on site.

The instrument can switch electrical loads of up to AC 230 V, 10 A.

The PSM-690 pressure switch is specially designed for refrigeration applications.



Fig. top: Refrigeration pressure switch, single pressure port, model PSM-690

Fig. bottom: Refrigeration pressure switch, dual pressure port, model PSM-690

Specifications

Single pressure port

Range code	Setting range	Unit	Permissible switch point on rising pressure	Adjustable switch differential	Fixed differential	Maximum working pressure	Bellows
L1	-0.15 ... 5	bar	0.25 ... 5	0.4 ... 4	0.4	16	Phosphor bronze or 304 SS
L2	-0.4 ... 7		0.2 ... 7	0.6 ... 6	0.6	16	
H1	6 ... 15		7.5 ... 15	1.5 ... 5	1.5	32	Phosphor bronze
H2	6 ... 22		8 ... 22	2 ... 8	2	32	304 SS
H3	6 ... 30		9 ... 30	3 ... 8	3	32	Phosphor bronze
L1	4 inHg ... 72	psi	4 ... 72	6 ... 58	6	232	Phosphor bronze or 304 SS
L2	12 inHg ... 100		3.2 ... 100	9 ... 87	9	232	
H1	87 ... 217		109 ... 217	22 ... 72	22	464	Phosphor bronze
H2	87 ... 319		116 ... 319	29 ... 116	29	464	304 SS
H3	87 ... 435		131 ... 435	44 ... 116	44	464	Phosphor bronze

Dual pressure port

Range code	Setting range		Unit	Permissible switch point on rising pressure		Adjustable switch differential		Fixed differential		Maximum working pressure		Bellows
L2H4	-0.4 ... 7	8 ... 22	bar	0.2 ... 6	11 ... 22	0.6 ... 6	---	---	3	16	32	304 SS
L2H5	-0.4 ... 7	8 ... 30	bar	0.2 ... 6	12 ... 30	0.6 ... 6	---	---	4	16	32	Phosphor bronze
L2H4	12 inHg ... 100	116 ... 319	psi	3.2 ... 100	160 ... 319	9 ... 87	---	---	44	232	464	304 SS
L2H5	12 inHg ... 100	116 ... 435	psi	3.2 ... 100	174 ... 435	9 ... 87	---	---	58	232	434	Phosphor bronze

Reset

- Auto
- Manual

Differential

Single pressure port

- Fixed for manual reset
- Adjustable for auto reset

Dual pressure port

- Adjustable for low range
- Fixed for high range

Process connection

1/4" flare with nut for general refrigerant
M10x0.75 for ammonia

Non-repeatability of the switch point

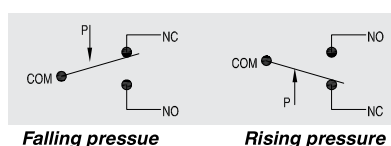
≤ 2 % of span

Switch contact

1 x change-over contact / SPDT ¹⁾

Ranges: L1, L2

Ranges: H1, H2 H3



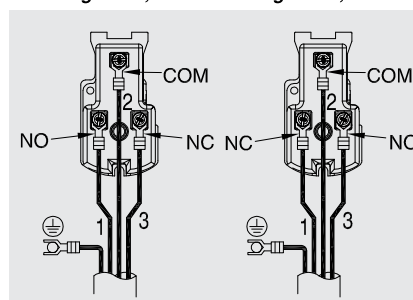
- NC Normally closed
- COM Common contact
- NO Normally open
- p Pressure

¹⁾ Single pole double throw

Terminal assignment

Ranges: L1, L2

Ranges: H1, H2 H3



Falling pressure

Rising pressure

Electrical connection

Rubber grommet for cables Ø 6 ... 14 mm (Ø 0.24 ... 0.55 in)

Ingress protection per IEC/EN 60529

IP33

The ingress protection is only valid if all mounting holes on the rear of the instrument are covered, or for panel mounting on flat surfaces.

Suitable refrigerants

R22, R134A, R404A, R407A, R407C, R407F, R422D, R438A, R507A, R717 (with 304SS bellows)

Electrical rating

Current consumption ⁴⁾	Voltage	Current
Resistive load AC-1	AC 230 V	10 A
Inductive load AC-15	AC 230 V	6 A

4) per DIN EN 60947-1

Operating conditions

Permissible temperature ranges

Ambient: -40 ... +70 °C (-40 ... +158 °F)

Medium: -20 ... +70 °C (-4 ... +158 °F)

Storage: -20 ... +80 °C (-4 ... +176 °F)

Reference conditions

Relative humidity per BS 6134

< 50 % r. h. at 40 °C (104 °F)

< 90 % r. h. at 20 °C (68 °F)

Process connections

Process connection per	Thread size
ISO 228-1	1/4" flare with nut
	M10 × 0.75

Materials

Wetted parts

Bellows: Copper alloy CuSn6 per EN 1652

Stainless steel, 1.4301 for ammonia service

Process connection

Free cutting steel EN1A per EN 10277-3, tin plated

Options

- Steel capillary for ammonia service
- Solder connection
- Angle mounting bracket
- Wall mounting bracket
- Process connection copper alloy CuSn6 per EN 1652 non ammonia service

Model Codification

Basic model number	PSM-690				
Range code					
Refer table					
Service					
General				1	
Ammonia				2	
Reset					
Manual (not available with adjustable differential)				M	
Auto				A	
Options					
Steel capillary (1000 mm)					S11
Solder connection (100 mm)					S12
Angle mounting bracket, CRCA					AM
Wall mounting bracket, CRCA					W
Copper alloy CuSn6 per EN 1652 process connection for non ammonia service					1

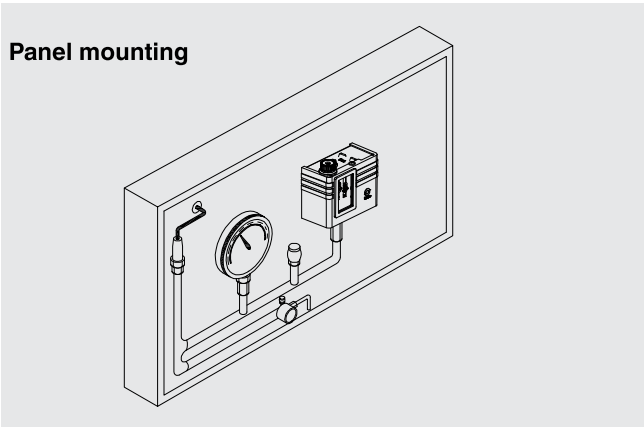
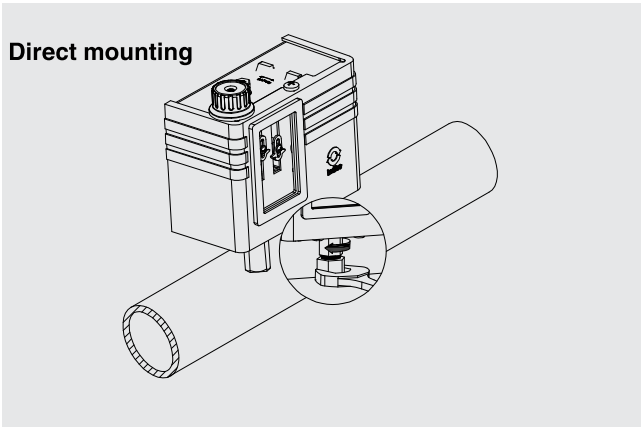
Approvals

Logo	Description	Country
CE	EU declaration of conformity ■ Low voltage directive ■ RoHS directive	European Union

Approvals and certificates, see website

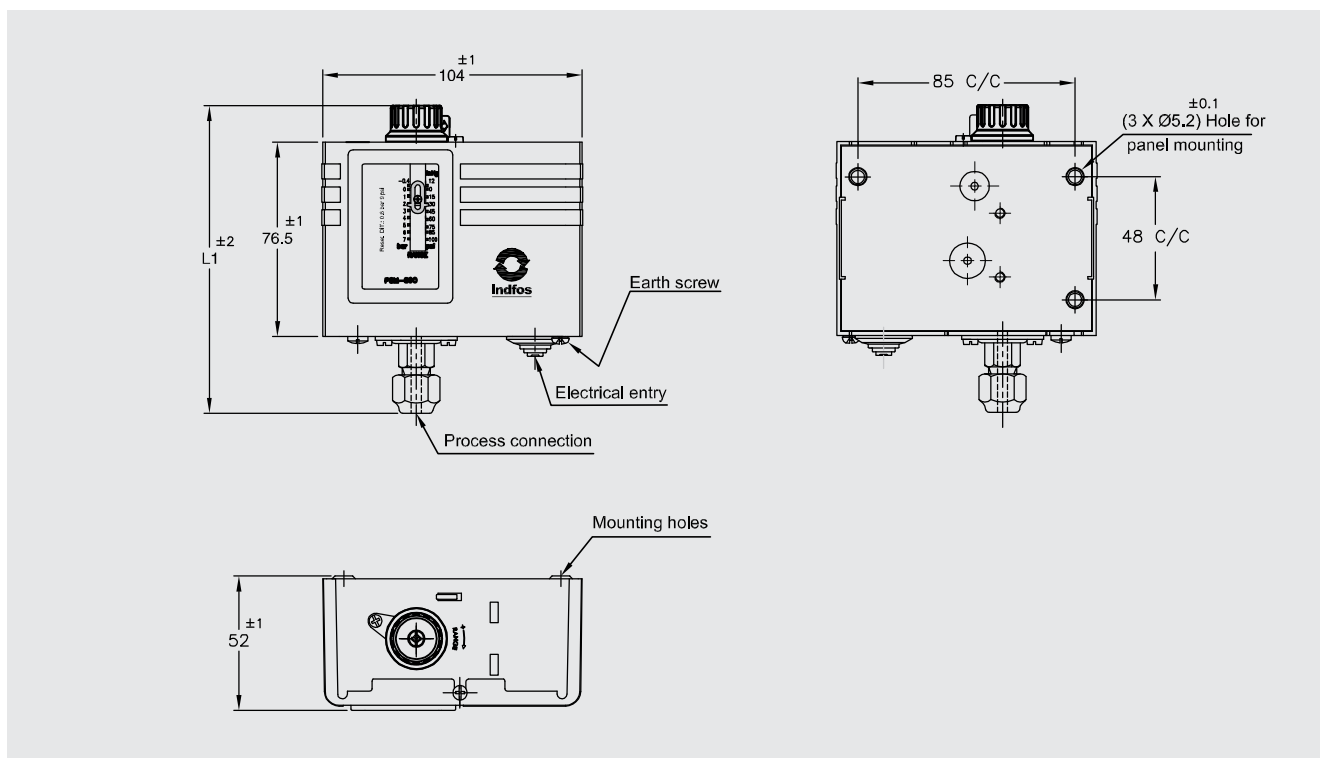
Mounting

Mounting option



Dimensions in mm

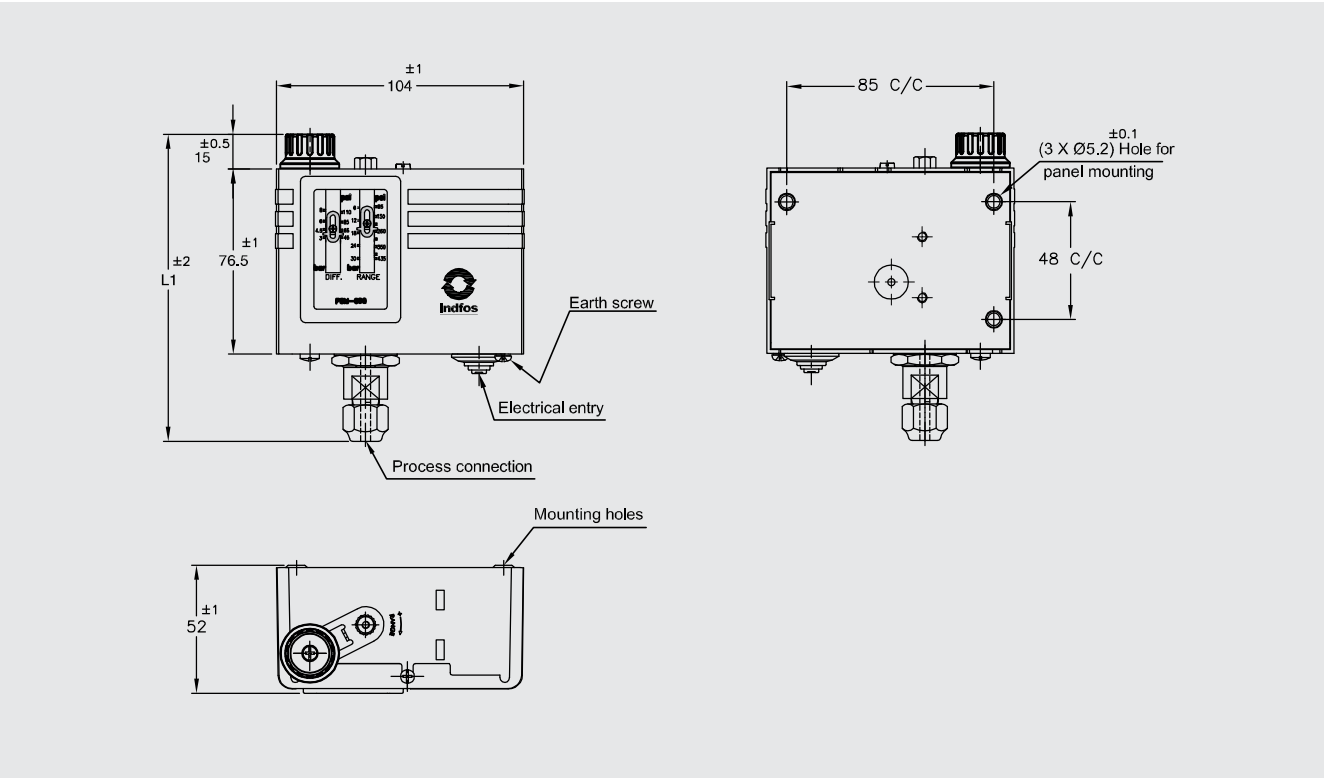
Low pressure with manual reset



Range			Dimensions in mm 'L1'	Service	Reset
Range Code	in bar	in PSI			
L1	-0.15 ... 5	4 inHg ... 72	119	General	Auto
	-0.15 ... 5	4 inHg ... 72	117	Ammonia	Auto
	-0.15 ... 5	4 inHg ... 72	119	General	Manual
	-0.15 ... 5	4 inHg ... 72	117	Ammonia	Manual
L2	-0.4 ... 7	12 inHg ... 100	119	General	Auto
	-0.4 ... 7	12 inHg ... 100	117	Ammonia	Auto
	-0.4 ... 7	12 inHg ... 100	119	General	Manual
	-0.4 ... 7	12 inHg ... 100	117	Ammonia	Manual

Dimensions in mm

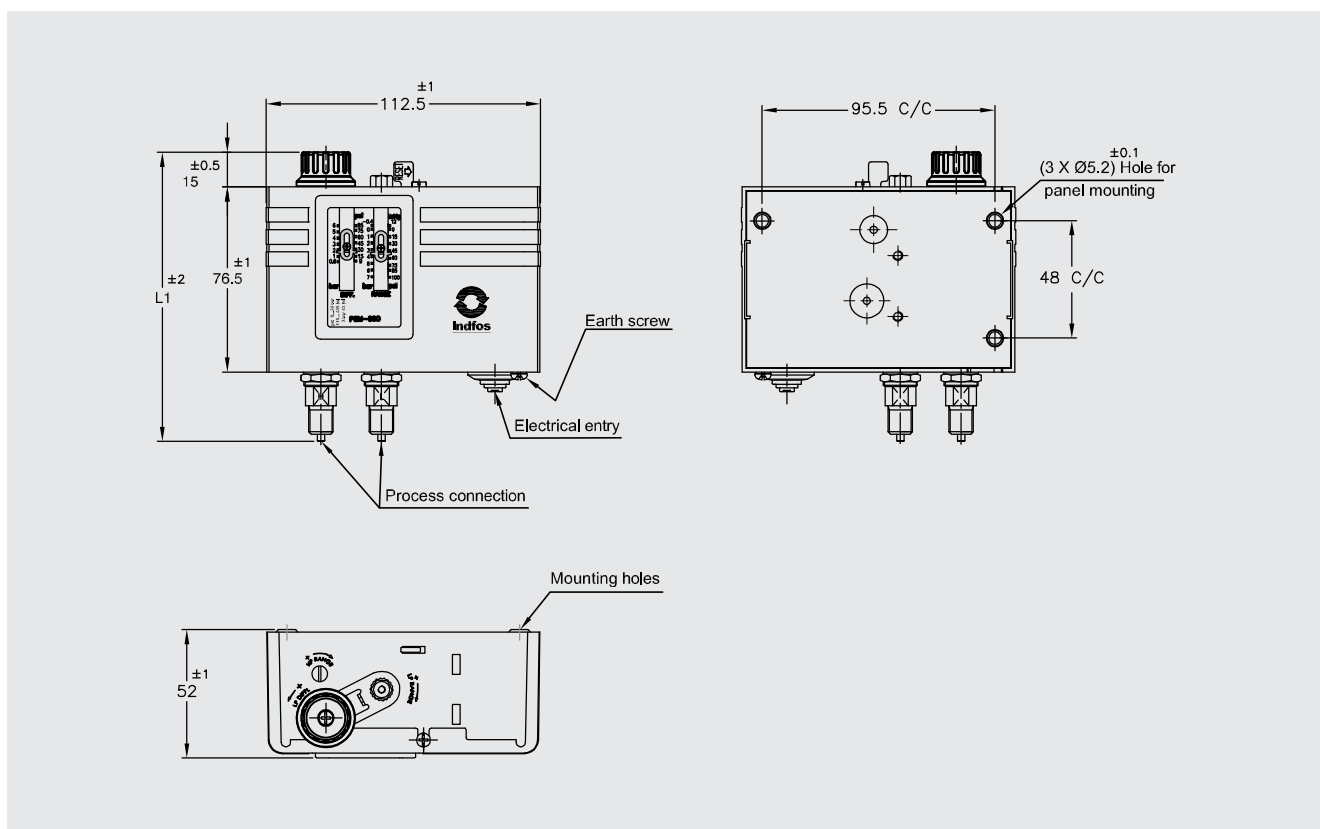
High pressure with auto reset



Range			Dimensions in mm 'L1'	Service	Reset
Range code	in bar	in psi			
H1	6 ... 15	87 ... 217	125	General	Auto
H1	6 ... 15	87 ... 217	127	General	Manual
H2	6 ... 22	87 ... 319	121	Ammonia	Auto
H2	6 ... 22	87 ... 319	123	Ammonia	Manual
H3	6 ... 30	87 ... 435	125	General	Auto
H3	6 ... 30	87 ... 435	127	General	Manual

Dimensions in mm

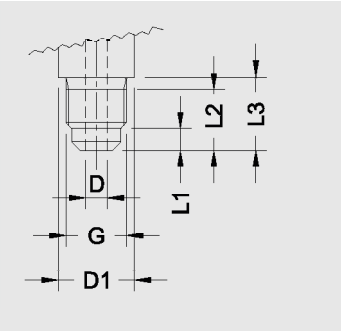
Dual pressure port with manual reset for ammonia



Range 1			Range 2		Dimensions in mm 'L1'	Service	Reset
Range code	in bar	in psi	in bar	in PSI			
L2H4	-0.4 ... 7	12 inHg ... 100	8 ... 22	116 ... 319	118	Ammonia	Auto
L2H4	-0.4 ... 7	12 inHg ... 100	8 ... 22	116 ... 319	118	Ammonia	Manual
L2H5	-0.4 ... 7	12 inHg ... 100	8 ... 30	116 ... 435	122	General	Auto
L2H5	-0.4 ... 7	12 inHg ... 100	8 ... 30	116 ... 435	122	General	Manual

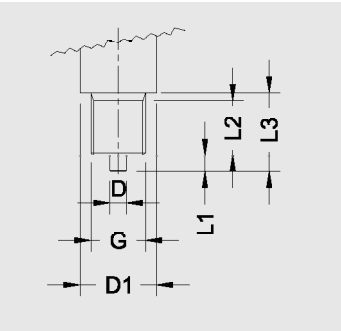
Process connection

1/4" flare per ISO 228-1



Low range (bar)	High range (bar)	Dimensions in mm (in)					
		G	D	D1	L1	L2	L3
-0.15 ... 5	---	1/4" flare	Ø 4	A/F 12	4.0	11.2	14
-0.4 ... +7	---			A/F 12			14
---	6 ... 15			A/F 14			13.5
---	6 ... 30			A/F 14			13.5
-0.4 ... +7	8 ... 30			A/F 12 A/F 11			13.5

M10 × 0.75 with steel capillary tube (Optional)



Low range (bar)	High range (bar)	Dimensions in mm (in)					
		G	D	D1	L1	L2	L3
-0.15 ... 5	---	M10 × 0.75	Ø 3	AF/11	3	10	14.5
-0.4 ... +7	---	M10 × 0.75	Ø 3	A/F 11	3	10	14.5
---	6 ... 22			A/F 14			
-0.4 ... +7	8 ... 22			A/F 12 A/F 11			

Ordering information
PSM-690 / Range code / Service / Reset

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