

# 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 <sup>1)</sup>	-0.4 ... 7	8 ... 22	bar	0.2 ... 6	11 ... 22	0.6 ... 6	---	---	3	16	32	304 SS
L2H5 <sup>1)</sup>	-0.4 ... 7	8 ... 30	bar	0.2 ... 6	12 ... 30	0.6 ... 6	---	---	4	16	32	Phosphor bronze
L2H4 <sup>1)</sup>	12 inHg ... 100	116 ... 319	psi	3.2 ... 100	160 ... 319	9 ... 87	---	---	44	232	464	304 SS
L2H5 <sup>1)</sup>	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

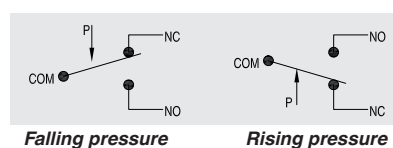
### Non-repeatability of the switch point

≤ 2 % of span

### Switch contact

1 x change-over contact / SPDT <sup>2)</sup>

Ranges: L1, L2, L2H4 <sup>3)</sup> Ranges: H1, H2 H3 and L2H5 <sup>3)</sup>

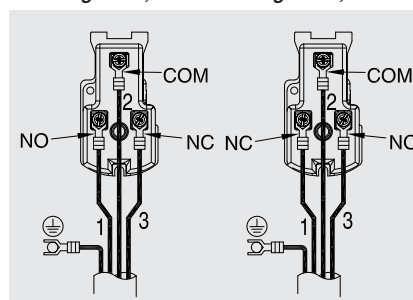


- NC Normally closed
- COM Common contact
- NO Normally open
- p Pressure

### Terminal assignment

Ranges: L1, L2

Ranges: H1, H2 H3



- 1 NC Normally closed
- 2 COM Common contact
- 3 NO Normally open
- ⊕ GND Ground connection

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

IP30

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)

<sup>1)</sup> Manual reset option is available only in the high pressure port

<sup>2)</sup> Single pole double throw

<sup>3)</sup> Low port, falling pressure and High port, rising pressure

## Electrical rating

Current consumption <sup>4)</sup>	Voltage	Current
<b>Resistive load AC-1</b>	AC 230 V	10 A
<b>Inductive load AC-15</b>	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				
<b>Range code</b>					
Refer table		□			
<b>Service</b>					
General				1	
Ammonia				2	
<b>Reset</b>					
Manual (not available with adjustable differential)					M
Auto					A
<b>Options</b>					
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

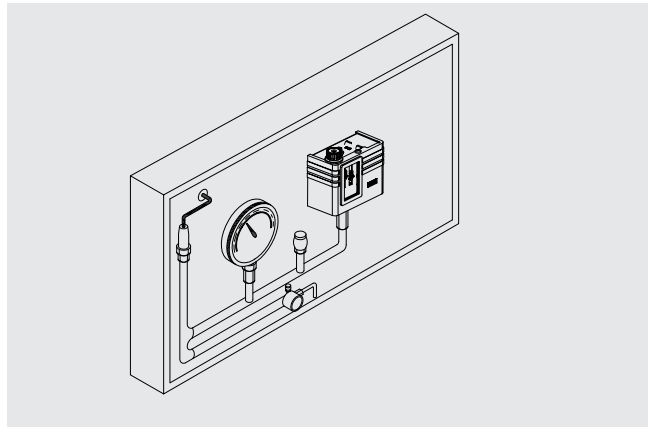
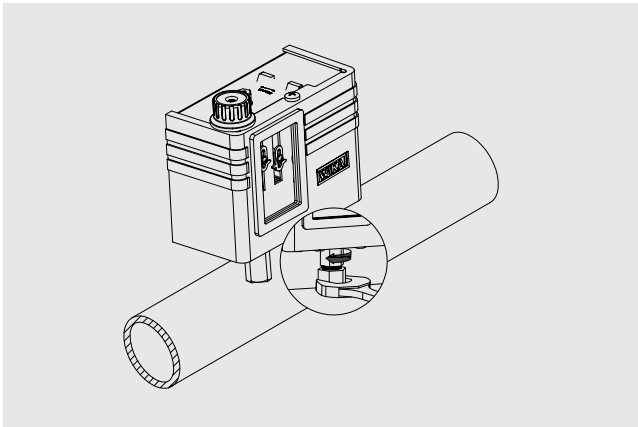
## Approvals

Logo	Description	Country
CE	<b>EU declaration of conformity</b> <ul style="list-style-type: none"><li>■ Low voltage directive</li><li>■ RoHS directive</li></ul>	European Union

Approvals and certificates, see website

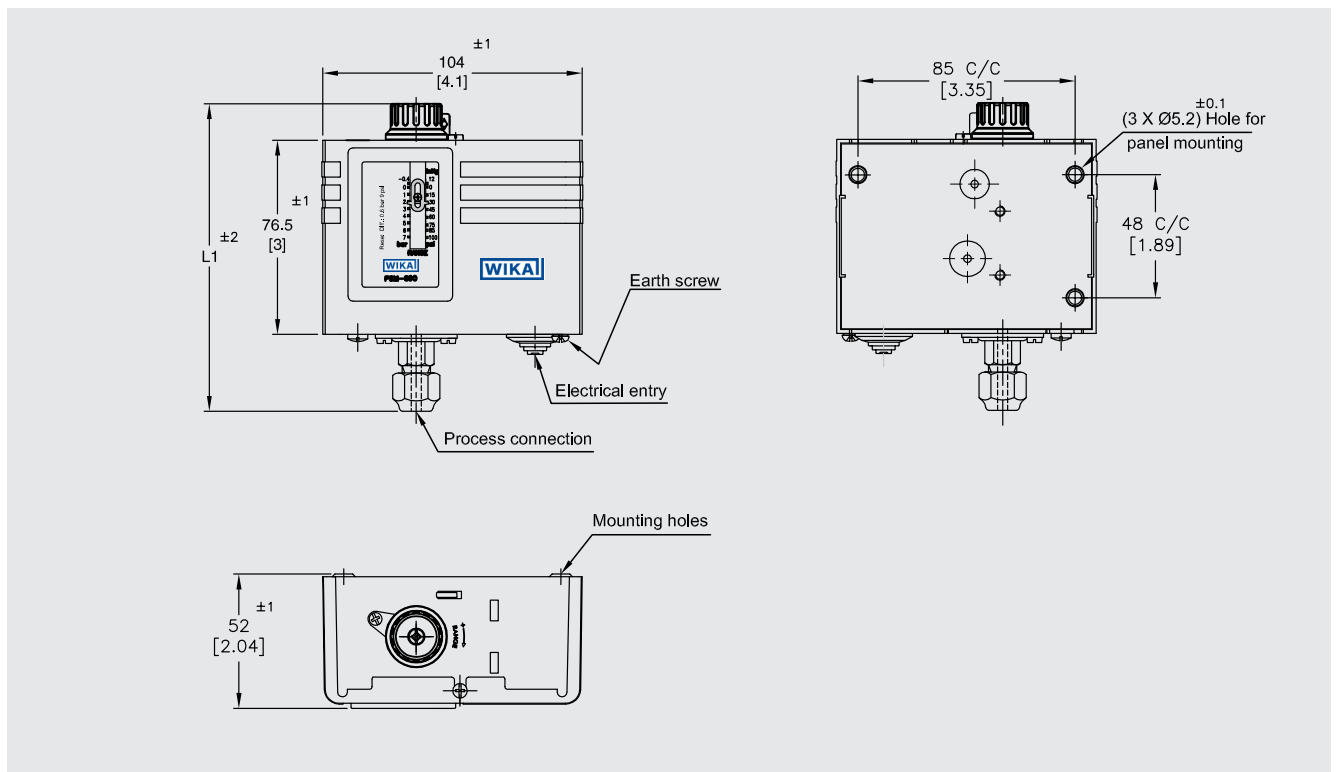
## Mounting

### Mounting option



## Dimensions in mm (in)

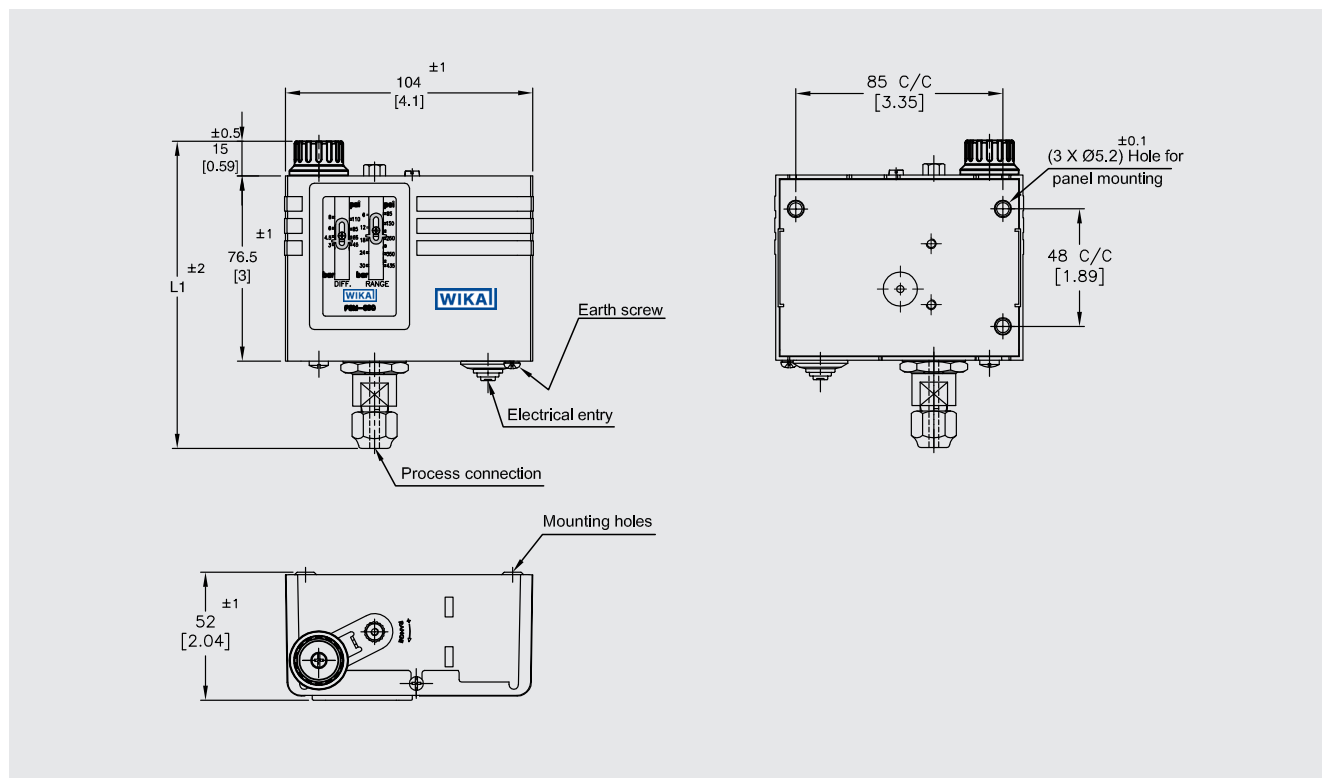
### Low pressure with manual reset



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 (in)

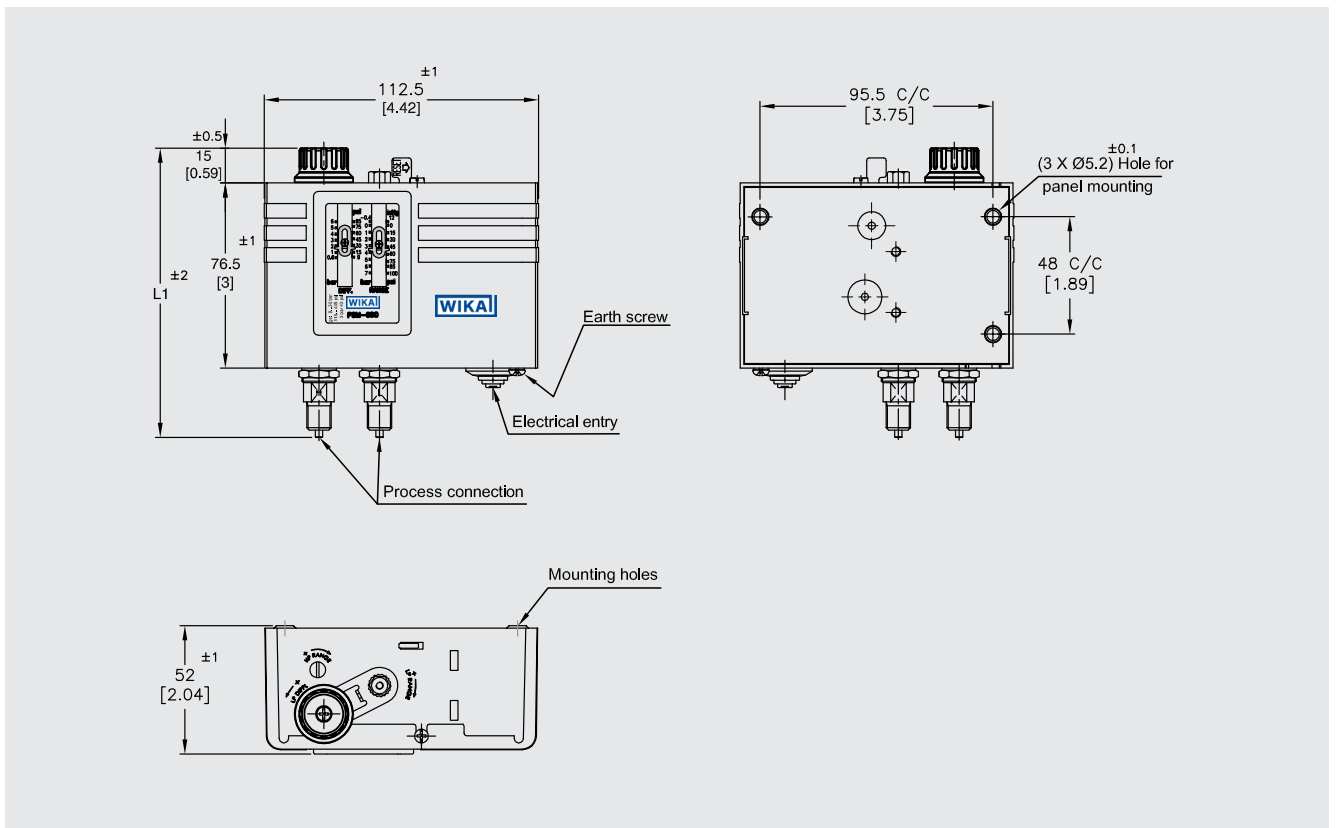
### High pressure with auto reset



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 (in)

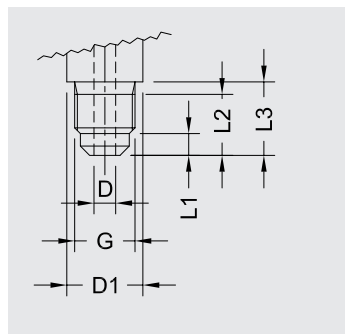
### Dual pressure port with manual reset for ammonia



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

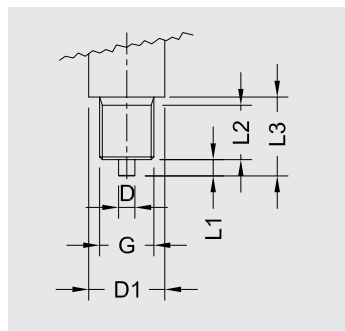
### 1/4" flare per ISO 228-1



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 <sup>4)</sup>
-0.4 ... +7	---			A/F 12			
---	6 ... 15			A/F 14			
---	6 ... 30			A/F 14			
-0.4 ... +7	8 ... 30			A/F 12 A/F 11			

<sup>4)</sup> For brass process connection L3 length is 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

© 2018 Switzer Process Instruments Pvt Ltd. all rights reserved.  
The specifications given in this document represent the state of engineering at the time of publishing.  
We reserve the right to make modifications to the specifications and materials.



**Switzer Process Instruments Pvt. Ltd.**  
128 SIDCO North Phase  
Ambattur Industrial Estates, Chennai 600 098  
Tel. +91 44 2625 2017 / 2018 / 4991 / 4324  
sales@switzerprocess.co.in  
www.switzerprocess.co.in

**Works**  
C-123, Site No.1, Industrial Area  
Bulandshahar Road, Ghaziabad 201 009