

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

WIKA data sheet PV 35.04



## 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

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

## Dual pressure port

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

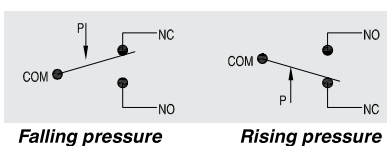
≤ 2 % of span

### Switch contact

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

Range <7 bar

Range >7 bar

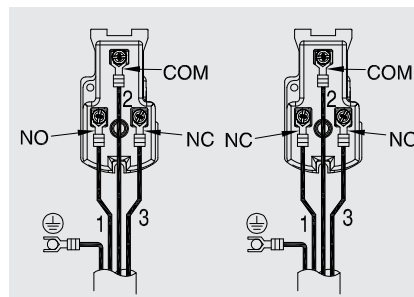


- NC Normally closed
- COM Common contact
- NO Normally open
- p Pressure

### Terminal assignment

Range <7 bar

Range >7 bar



- 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

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)

<sup>1)</sup> Single pole double throw

## Electrical rating

Current consumption <sup>4)</sup>	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

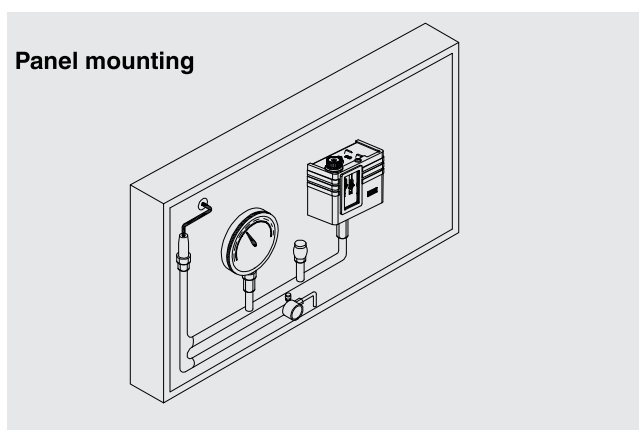
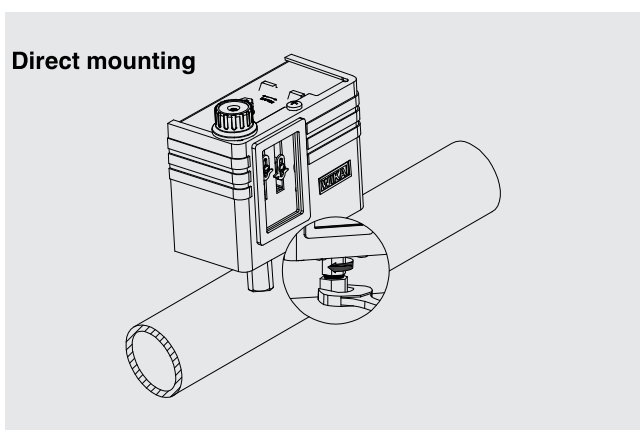
## Approvals

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

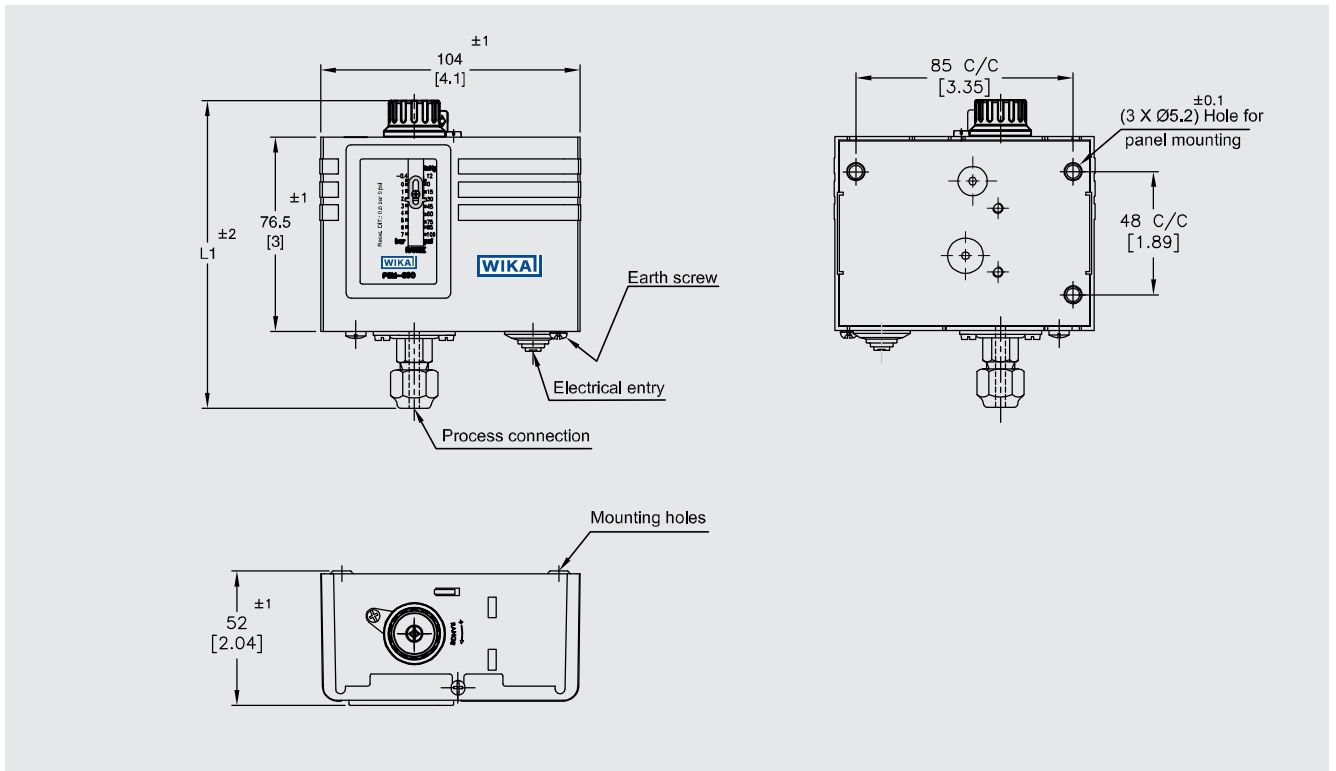
## Mounting

### Mounting option



## Dimensions in mm (in)

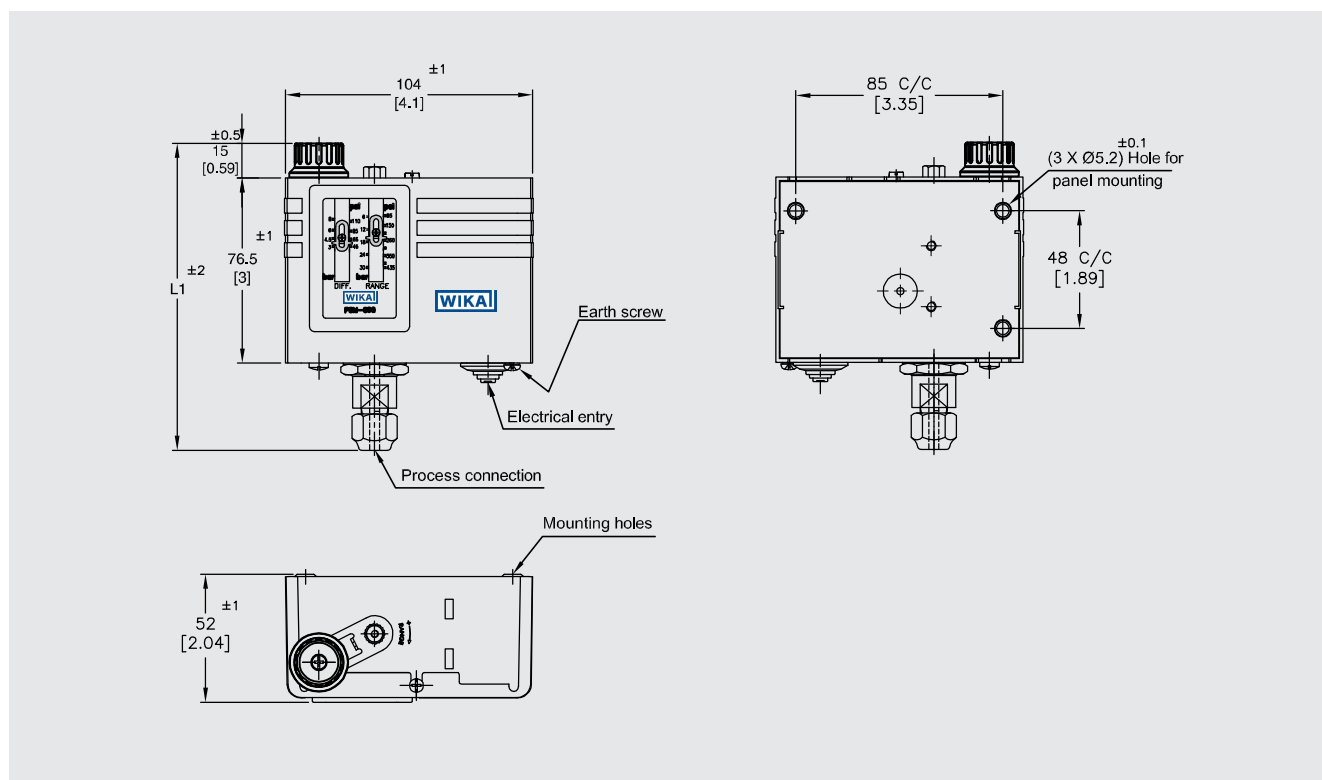
### Range <7 bar with manual reset



Setting Range		Dimensions in mm 'L1'	Service	Reset
in bar	in psi			
-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
-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)

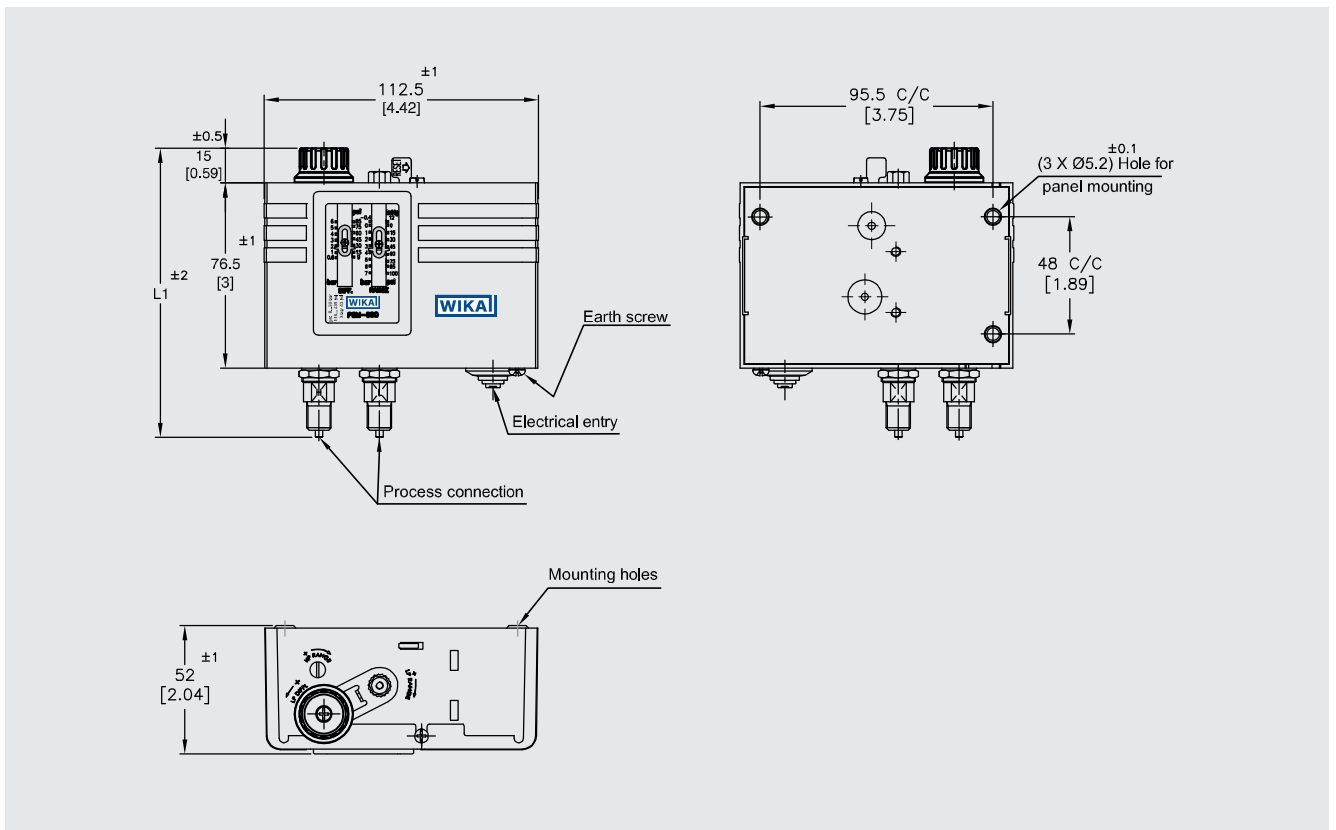
Range >7 bar with auto reset



Setting range		Dimensions in mm 'L1'	Service	Reset
in bar	in psi			
6 ... 15	87 ... 217	125	General	Auto
6 ... 15	87 ... 217	127	General	Manual
6 ... 22	87 ... 319	121	Ammonia	Auto
6 ... 22	87 ... 319	123	Ammonia	Manual
6 ... 30	87 ... 435	125	General	Auto
6 ... 30	87 ... 435	127	General	Manual

## Dimensions in mm (in)

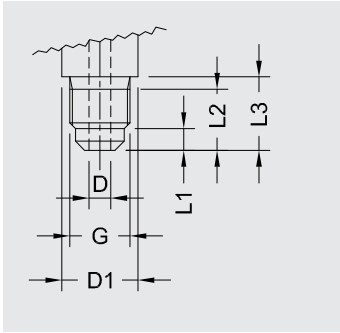
### Dual pressure port with manual reset for ammonia



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

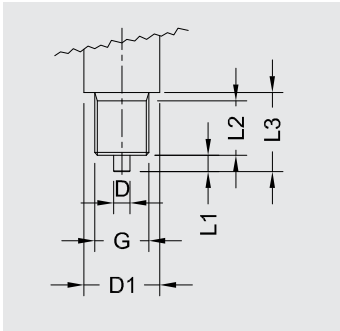
## Process connection

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



Setting range 1 (bar)	Setting range 2 (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)



Setting range 1 (bar)	Setting range 2 (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 / Options

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