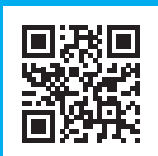


# Product Catalogue

Electromechanical controllers



# **Product catalogue**

Electromechanical controllers

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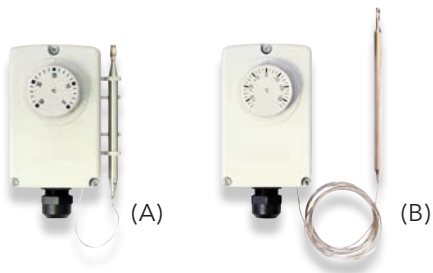
## ELECTROMECHANICAL CONTROLLERS

The controllers and components included in this catalogue, well-known on the market for their reliability and quality of manufacture, are designed especially for use in refrigeration, air-conditioning and civil and industrial comfort applications.



# Series W35

## SPDT multifunctional thermostats



### Applications

The W35 thermostats can be used in ambient (A) or contact applications (B) depending on the models.

The W35 thermostat opens (hot version) or closes (cold version) the main contact automatically when the temperature set by way of the knob registers at the bulb sensing element. When the temperature falls subsequently by the differential value (standard is 3K), the contact is re-closed (hot version) or re-opened (cold version). The controlled temperature is therefore kept within a minimum fluctuation range.

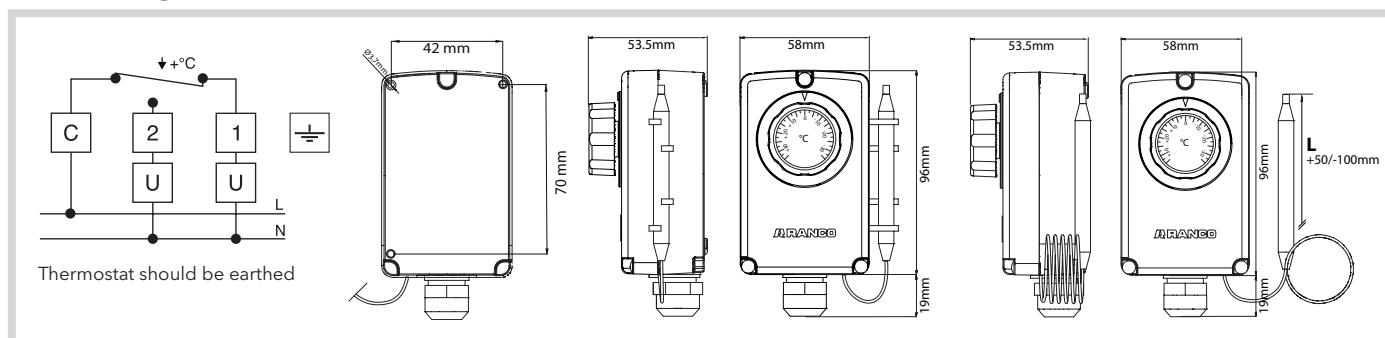
### Technical data

	W35
Contact capacity - hot version:	C-1 15(2,5)A@250V~ / C-2 2,5(0,4)A@250V~
Contact capacity - cold version:	C-1 2,5(0,4)A@250V~ / C-2 15(2,5)A@250V~
Load control:	ON-OFF type
Temperature variation at bulb:	less than 1K/min
Life cycle:	100,000 cycles
Minimum current:	200mA without gold-plated contacts
Maximum body temperature:	80°C
Maximum bulb temperature:	operating range max value +15%
Calibration range:	see the table
Dielectric strength:	AC 2000V 1 min
Connections:	FASTON 6.3x0.8 - screw
Type test standard:	Internal thermostat to ENEC03
Protection rating:	see the table
Insulation class:	I
Sensor:	Available with built-in or remote sensor

Part number	Description	Enclosure rating
<b>W3510C0150C00</b>	Wall-mount thermostat -35 °C ...+35 °C, with 6.0x108 mm BULB and 1500 mm CAPILLARY - STAINLESS STEEL	IP40
<b>W3510H1150C00</b>	Wall-mount thermostat 0 °C ...+90 °C, with 6.0x75 mm BULB and 1500 mm CAPILLARY - STAINLESS STEEL	IP40
<b>W3510H3150C00</b>	Wall-mount thermostat 0 °C ...+120 °C, with 6.0x75 mm BULB and 1500 mm CAPILLARY - STAINLESS STEEL	IP40
<b>W3520C0000C00</b>	Wall-mount thermostat -35 °C ...+35 °C, with 6.5x98 mm BULB ATTACHED	IP40
<b>W3520H7000C00</b>	Wall-mount thermostat 0 °C ...+40 °C, with 6.5x98 mm BULB ATTACHED	IP40
<b>W351NC0150C00</b>	Bare thermostat -35 °C ...+35 °C, with 6.0x108 mm BULB and 1600 mm CAPILLARY - STAINLESS STEEL	IP00
<b>W351NH1150C00</b>	Bare thermostat 0 °C ...+90 °C, with 6.0x75 mm BULB and 1500 mm CAPILLARY - STAINLESS STEEL	IP00
<b>W351NH3150C00</b>	Bare thermostat 0 °C ...+120 °C, with 6.0x75 mm BULB and 1500 mm CAPILLARY - STAINLESS STEEL	IP00

Special versions are available upon request.

### Electrical diagram and dimensions





# E37

## Liquid level and ice thickness electronic regulator



### Applications

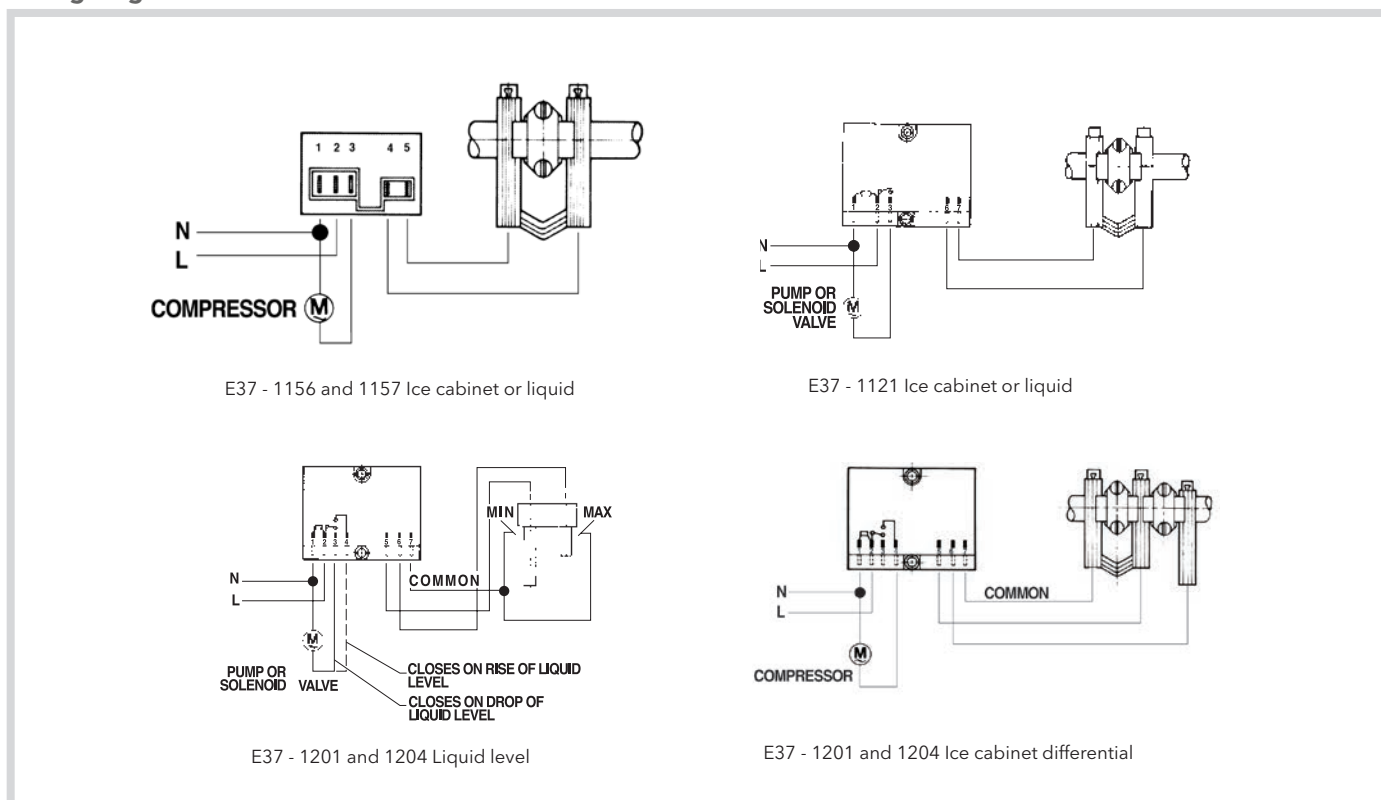
The regulators E37 detect the electrical conductivity between a group of electrodes and change the status of the output switch in accordance with the change of conductivity. They are available in different versions with two or three sensor electrodes and SPDT or SPST relay output. Stainless steel L56 sensors compatible with E37 regulators have been specially designed.

### Common features

	E37
Absorbed power:	less than 3VA
Ambient temperature during operation:	0...+60 °C
Storage temperature:	-25...+85 °C
Input/output isolation:	2.5kV
Terminal sizes:	input 6.3 mm / sensor 4.8 mm
Sensor:	L56 STAINLESS STEEL

Part number	Application	Power supply	Configuration		Relay Current (Amp)		Resistance (K ohm)			Delay (sec.)	
			Sensors	Relay	Inductive FLA (LRA)	Resistive	Relay cut-on	Relay cut-off	Diff.	Relay cut-on	Relay cut-off
E37M1121001	ice/liquid cabinet	230Vac 50/60Hz	2	SPST	5A (5max 20)	10A	47	85	38	2	25
E37M1156001	ice/ liquid cabinet	230Vac 50/60Hz	2	SPST	4A (4max 20)	4A	47	85	38	2	25
E37M1157001	ice/ liquid cabinet	115Vac 60Hz	2	SPST	4A (4max 20)	4A	47	85	38	2	25
E37M1201001	Liquid level or ice thickness	230Vac 50/60Hz	3	SPDT	4A (4max 20)	10A	47	85	38	/	/
E37M1204001	Liquid level or ice thickness	230Vac 50/60Hz	3	SPDT	4A (4max 20)	10A	45	85	40	/	/

### Wiring diagrams

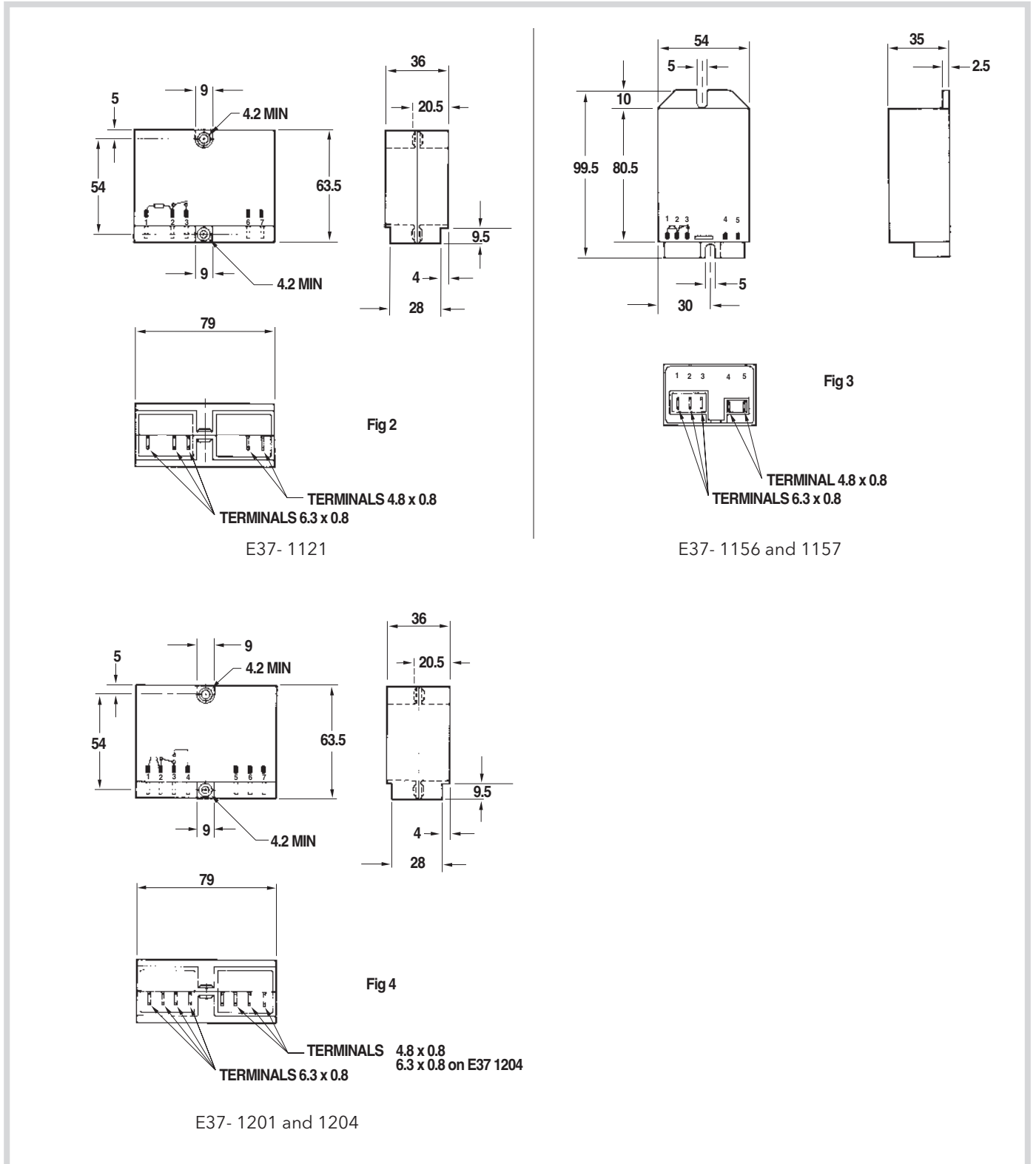


# E37

## Liquid level and ice thickness electronic regulator



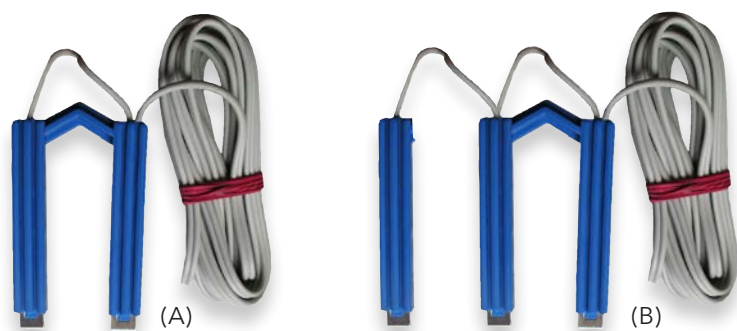
### Dimensions





# L56

## Liquid and ice sensor



### Applications

The L56 sensor is used in combination with the E37 controller to measure accurately and reliably the variation of conductivity, typically between air and water, or between water and ice.

Each pack includes specific mounting accessories.

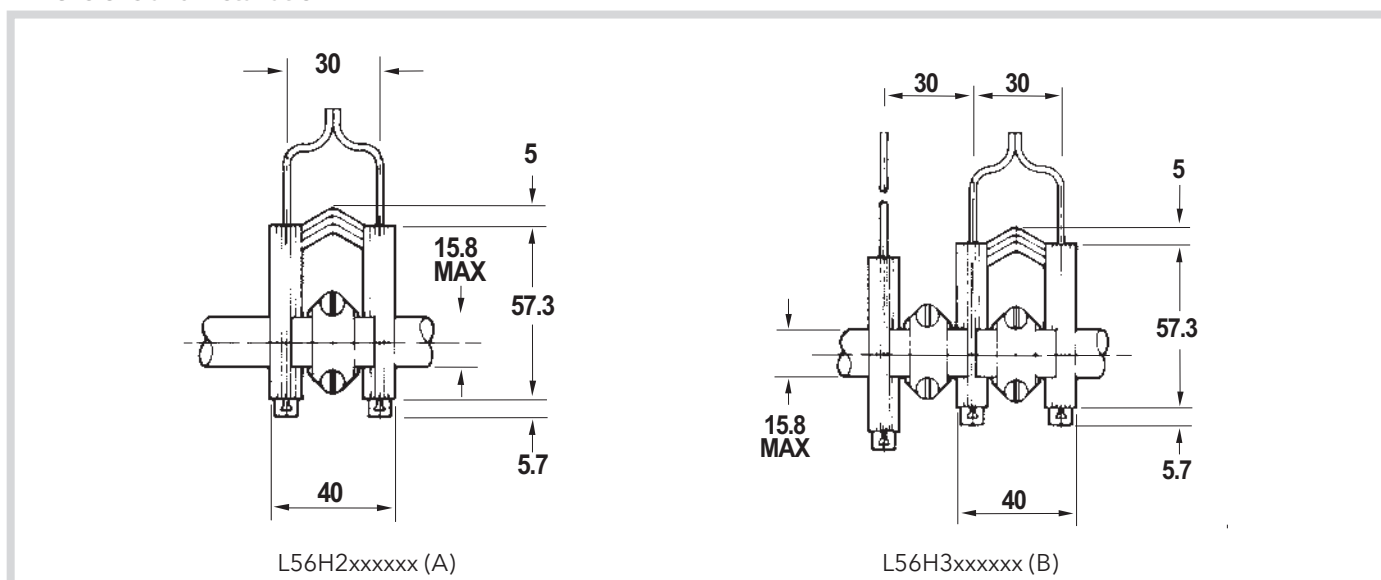
Part number	Description - Cable length	Application	Sensing element material	Type electrode	Compatible controller
<b>L56H2001001</b>	L56 electric probe 3 metres	ice/liquid cabinet	stainless steel	(A)	E37M11xxxxx
<b>L56H2002001</b>	L56 electric probe 5 metres	ice/liquid cabinet	stainless steel	(A)	E37M11xxxxx
<b>L56H2006001</b>	L56 electric probe 12 metres	ice/liquid cabinet	stainless steel	(A)	E37M11xxxxx
<b>L56H2015001</b>	L56 electric probe 1.5 metres	ice/liquid cabinet	stainless steel	(A)	E37M11xxxxx

Part number	Description - Cable length	Application	Sensing element material	Type electrode	Compatible controller
<b>L56H3001001</b>	L56 electric probe 3 metres	liquid level or ice thickness	stainless steel	(B)	E37M12xxxxx

### Technical data

	L56
Cable type:	NYFAFW 1x0.75 mm <sup>2</sup>
Conformity:	DIN VDE 0281 part 7
Rated voltage:	300/500V
Isolation:	Y1 8 conforming to VDE 0207 part 4
External diameter:	2.30 ± 0,10mm
Operating temperature:	-5...+90°C flexible -25...+90°C static max 105°C with service life reduction
Fork and sensing element:	AISI 301
Fork and body:	Moplen HP501H
Cable and sensor:	Crimped
Sensor and assembly:	Co-moulded
Enclosure rating:	IP00

### Dimensions and installation



# O16

## Temperature controllers for ambient applications



### Applications

O16 instruments are thermostats equipped with a unipolar SPDT switch that opens or closes when the temperature increases or decreases.

### Common features

Common features		O16 - ambient applications
SPDT single pole switch electrical rating:		16 (16) A 250V~ normally open or normally closed 1 (1) A 250V~ opposite side.
Ambient operating / storage temperature:		-30°C...+55°C / -40°C...+65°C
Electrical contacts:		1 common; 2 opens the contact when the temperature increases; 4 closes the contact when the temperature increases
Cable entry:		14mm insulating bushing
Installation:		two threaded holes in the back of the casing to accept M4x6mm screws (supplied)
Regulation:		by means of hex nut incorporating recess for crosshead screwdriver, on both range and differential spindles. An adjustable knob is also available, supplied as standard with certain models.
Casing enclosure rating:		IP44 (with top cover installed)

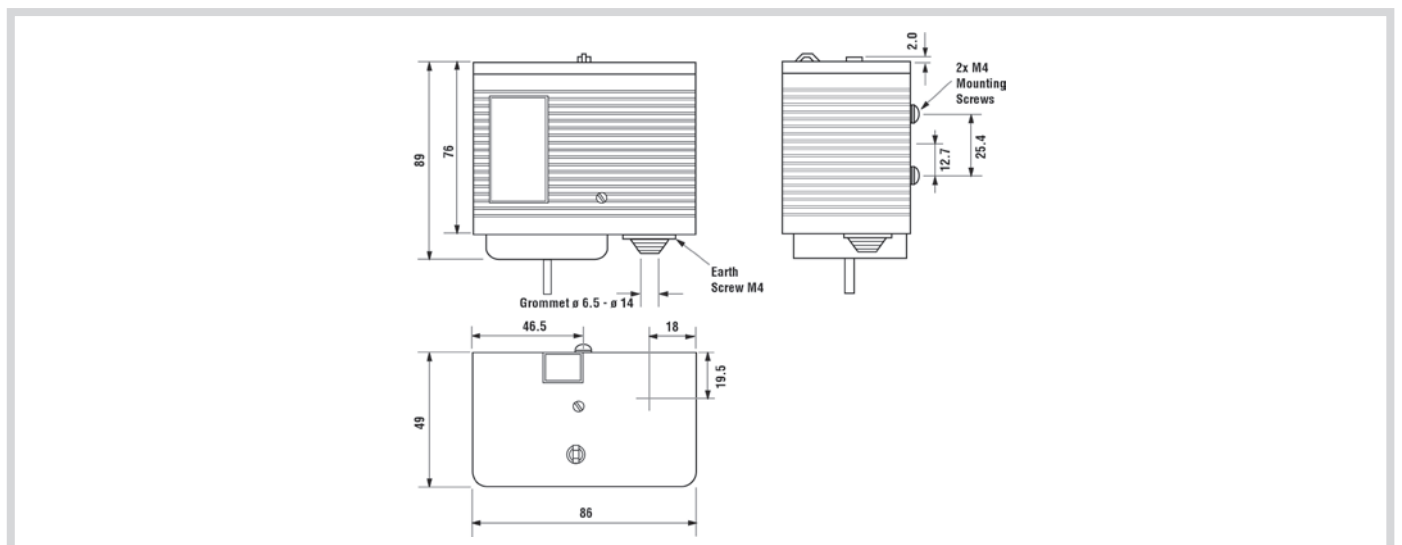
Part number	Measurement range* (°C)	Differential** (°C)		Dimensions sensing element (mm)
		Upper limit	Lower limit	
<b>O16-H6900</b>	from (-40)-35 to -7	1.0 fixed	1.5 fixed	Ø 49 max x 43 max
<b>O16-H6901</b>	from (-22)-18 to +13	1.0 fixed	1.5 fixed	Ø 49 max x 43 max
<b>O16-H6902</b>	from (-10)-5 to +25	1.0 fixed	1.5 fixed	Ø 49 max x 43 max
<b>O16-H6903</b>	from (+5)+10 to +40	1.0 fixed	1.5 fixed	Ø 49 max x 43 max
<b>O16-H6904</b>	from (-40)-35 to -7	from 1.0 to 6.0	from 3.0 to 12.0	Ø 49 max x 43 max
<b>O16-H6905</b>	from (-22)-18 to +13	from 1.0 to 6.0	from 3.0 to 12.0	Ø 49 max x 43 max
<b>O16-H6906</b>	from (-10)-5 to +25	from 1.0 to 6.0	from 3.0 to 12.0	Ø 49 max x 43 max
<b>O16-H6907</b>	from (+5)+10 to +40	from 1.0 to 6.0	from 3.0 to 12.0	Ø 49 max x 43 max

Special versions are available upon request.

\* Values in brackets preceding the measurement range indicate minimum lower operating limit values. Accordingly, the range /differential combination must never fall below these values.

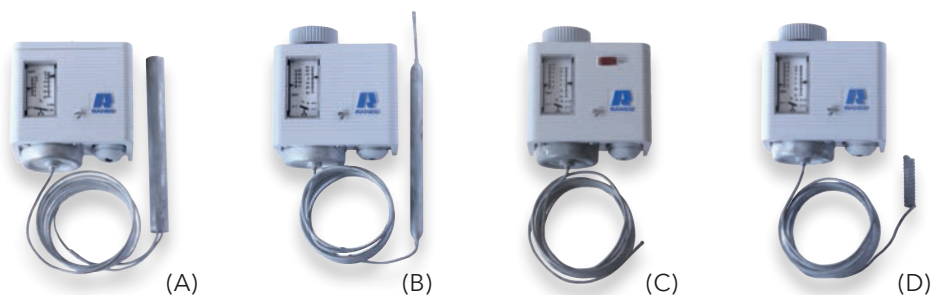
\*\* The differential does not remain constant across the integral measurement range. This is due to the physical properties of the bellows charge gas.

### Dimensions



# O16

## Temperature controllers with contact sensing element



### Applications

O16 instruments are thermostats for room and commercial refrigeration, and are equipped with a unipolar SPDT switch that opens or closes when the temperature increases or decreases.

### Common features

Common features	O16 - bulb / coiled / capillary sensing element
SPDT single pole switch electrical rating:	16 (16) A 250V~ normally open or normally closed 1 (1) A 250V~ opposite side.
Ambient operating / storage temperature:	-30°C...+55°C / -40°C...+65°C
Electrical contacts:	1 common; 2 opens the contact when the temperature increases; 4 closes the contact when the temperature increases
Cable entry:	14mm insulating bushing
Installation:	two threaded holes in the back of the casing to accept M4x6mm screws (supplied)
Regulation:	by means of hex nut incorporating recess for crosshead screwdriver, on both range and differential spindles. An adjustable knob is also available, supplied as standard with certain models.
Casing enclosure rating:	IP44 (with top cover installed)

Part number	Measurement range* (°C)	Differential** (°C)		Length of capillary including bulb (mm)	Tube dimensions (mm)	Sensing element type
		Upper limit	Lower limit			
<b>O16-H6980</b>	from (-22)-18 to +13	from 1.7 to 7.0	from 3.0 to 12.0	2000	Ø 14,5 x 140	(A) Cross ambient
<b>O16-H6981</b>	from (-10)-5 to 25	from 1.7 to 7.0	from 3.0 to 12.0	2000	Ø 14,5 x 140	(A) Cross ambient
<b>O16-H6982</b>	from (-2)-1 to 10	1.0 fixed	1.0 fixed	1830	Ø 14,5 x 140	(A) Cross ambient
<b>O16-H6983</b>	from (+5)+10 to 40	from 1.7 to 8.0	from 3.0 to 12.0	1830	Ø 14,5 x 140	(A) Cross ambient
<b>O16-H6930</b>	from (-40)-34 to 32	from 3.0 to 22.0	from 3.0 to 22.0	2000	Ø 9,5 x 150	(B) Cross ambient
<b>O16-H6932</b>	from (+30)+35 to 115	from 2.0 to 14.0	from 2.0 to 14.0	2000	Ø 9,5 x 150	(B) Cross ambient
<b>O16-H6989 °</b>	from (-10)-5 to 29	from 1.7 to 7.0	from 3.0 to 12.0	2000	Ø 14,5 x 140	(A) Cross ambient
<b>O16-H6931 °</b>	from (-40)-34 to 32	from 3.0 to 22.0	from 3.0 to 12.0	2000	Ø 9,5 x 150	(B) Cross ambient
<b>O16-H6921</b>	from (-40)-35 to -7	from 1.7 to 7.0	from 3.0 to 12.0	2000	-	(C) Straight capillary
<b>O16-H6922</b>	from (-22)-18 to +13	from 1.7 to 7.0	from 3.0 to 12.0	2000	-	(C) Straight capillary
<b>O16-H6924</b>	from (-10)-5 to 25	from 1.7 to 7.0	from 3.0 to 12.0	2000	-	(C) Straight capillary
<b>O16-H6950</b>	from (-40)-35 to -7	from 1.7 to 7.0	from 3.0 to 12.0	2000	Ø 9,3 x 38	(D) Coiled capillary
<b>O16-H6951</b>	from (-22)-18 to +13	from 1.7 to 7.0	from 3.0 to 12.0	2000	Ø 9,3 x 38	(D) Coiled capillary
<b>O16-H6953 #</b>	from (-22)-18 to +13	1.0 fixed	1.0 fixed	2000	Ø 9,3 x 38	(D) Coiled capillary
<b>O16-H6954</b>	from (-10)-5 to 25	from 1.7 to 7.0	from 3.0 to 12.0	2000	Ø 9,3 x 38	(D) Coiled capillary
<b>O16-H6959 °</b>	from (-22)-18 to +13	1.0 fixed	1.0 fixed	2000	Ø 9,3 x 38	(D) Coiled capillary
<b>O16-H8923</b>	from (-22)-18 to +13	1.0 fixed	1.0 fixed	6000	-	(C) Straight capillary
<b>O16-H8926 #</b>	from (-22)-18 to +13	1.0 fixed	1.0 fixed	6000	-	(C) Straight capillary

Special versions are available upon request.

\* Values in brackets preceding the measurement range indicate minimum lower operating limit values. Accordingly, the range /differential combination must never fall below these values.

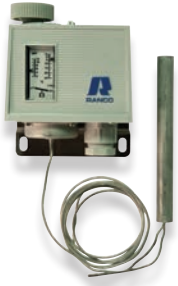
\*\* The differential does not remain constant across the integral measurement range. This is due to the physical properties of the bellows charge gas.

° Versions with stop/auto button

# Versions with manual reset

## O52

### Temperature controller for ambient application or with contact sensing element



#### Applications

O52 instruments are thermostats for room and commercial refrigeration, and are equipped with a unipolar SPDT switch that opens or closes when the temperature increases or decreases. They differ from the O16 models for the dimensions of the enclosure and for the IP degree of protection.

#### Common features

	O52 temperature
SPDT single pole switch electrical rating:	16 (16) A 250V~ normally open or normally closed 1 (1) A 250V~ opposite side.
Ambient operating / storage temperature:	-30°C...+55°C / -40°C...+65°C
Electrical contacts:	1 common; 2 opens the contact when the temperature increases; 4 closes the contact when the temperature increases
Cable entry:	P.G. connector 16
Installation:	through the mounting bracket integrated in the cover
Regulation:	by means of hex nut incorporating recess for crosshead screwdriver, on both range and differential spindles. An adjustable knob is also available, supplied as standard with certain models.
Casing enclosure rating:	IP66

#### O52 for ambient applications

Part number	Measurement range* (°C)	Differential** (°C)		Dimensions sensing element (mm)
		Upper limit	Lower limit	
O52-H6900	from (-40)-35 to -7	1.0 fixed	1.5 fixed	Ø 49 max x 43 max
O52-H6902	from (-10)-5 to +25	1.0 fixed	1.5 fixed	Ø 49 max x 43 max
O52-H6905	from (-22)-18 to +13	from 1.0 to 6.0	from 3.0 to 12.0	Ø 49 max x 43 max
O52-H6907	from (+5)+10 to +40	from 1.0 to 6.0	from 3.0 to 12.0	Ø 49 max x 43 max

#### O52 with contact sensing element

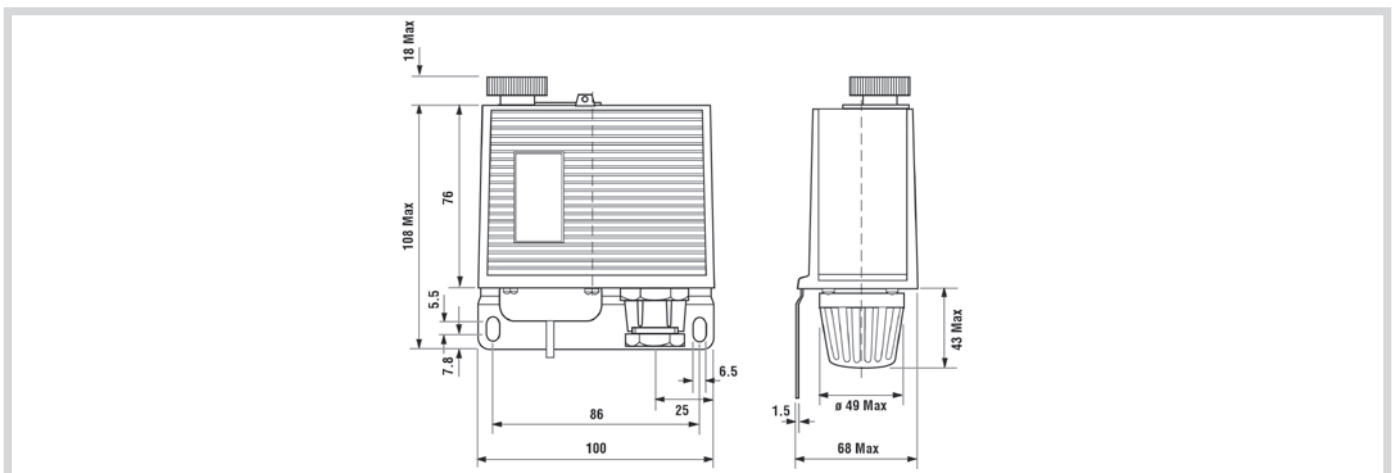
Part number	Measurement range* (°C)	Differential** (°C)		Length of capillary including bulb (mm)	Tube dimensions	Sensing element type
		Upper limit	Lower limit			
O52-H6980	from (-22)-18 to +13	from 1.7 to 7.0	from 3.0 to 12.0	2000	Ø 14,5 x 140	Cross ambient
O52-H6981	from (-10)-5 to 25	from 1.7 to 7.0	from 3.0 to 12.0	2000	Ø 14,5 x 140	Cross ambient
O52-H6924	from (-10)-5 to 25	from 1.7 to 7.0	from 3.0 to 12.0	2000	-	Straight capillary
O52-H6951	from (-22)-18 to +13	from 1.7 to 7.0	from 3.0 to 12.0	2000	Ø 9,3 x 38	Coiled capillary
O52-H6954	from (-10)-5 to 25	from 1.7 to 7.0	from 3.0 to 12.0	2000	Ø 9,3 x 38	Coiled capillary

Special versions are available upon request.

\* Values in brackets preceding the measurement range indicate minimum lower operating limit values. Accordingly, the range /differential combination must never fall below these values.

\*\* The differential does not remain constant across the integral measurement range. This is due to the physical properties of the bellows charge gas.

#### Dimensions





# O16

## High-precision ice cabinet controllers with fixed setting



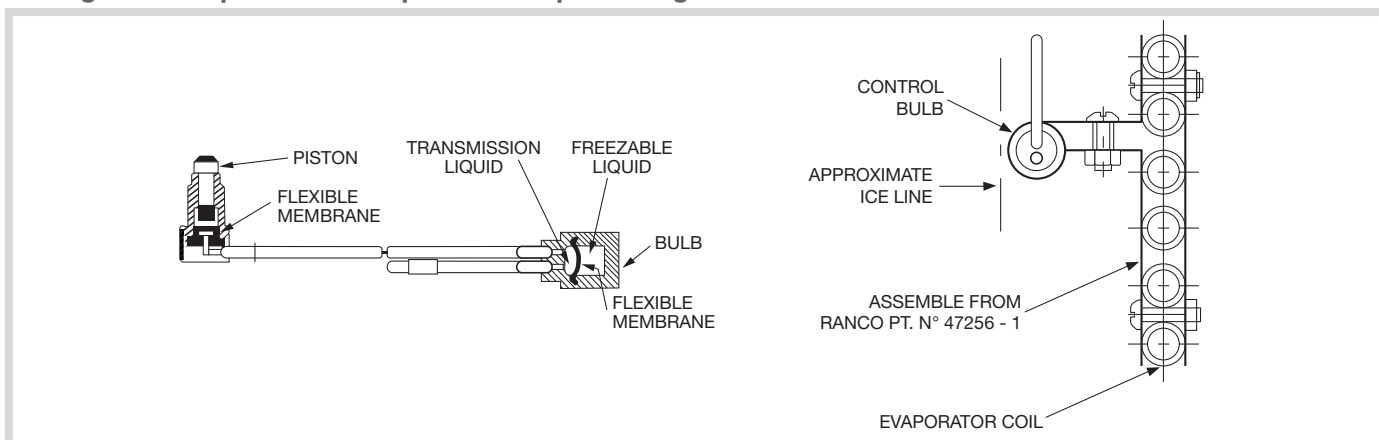
### Applications

The O16H6999 controller is used to determine the thickness of ice in the main commercial refrigeration applications.

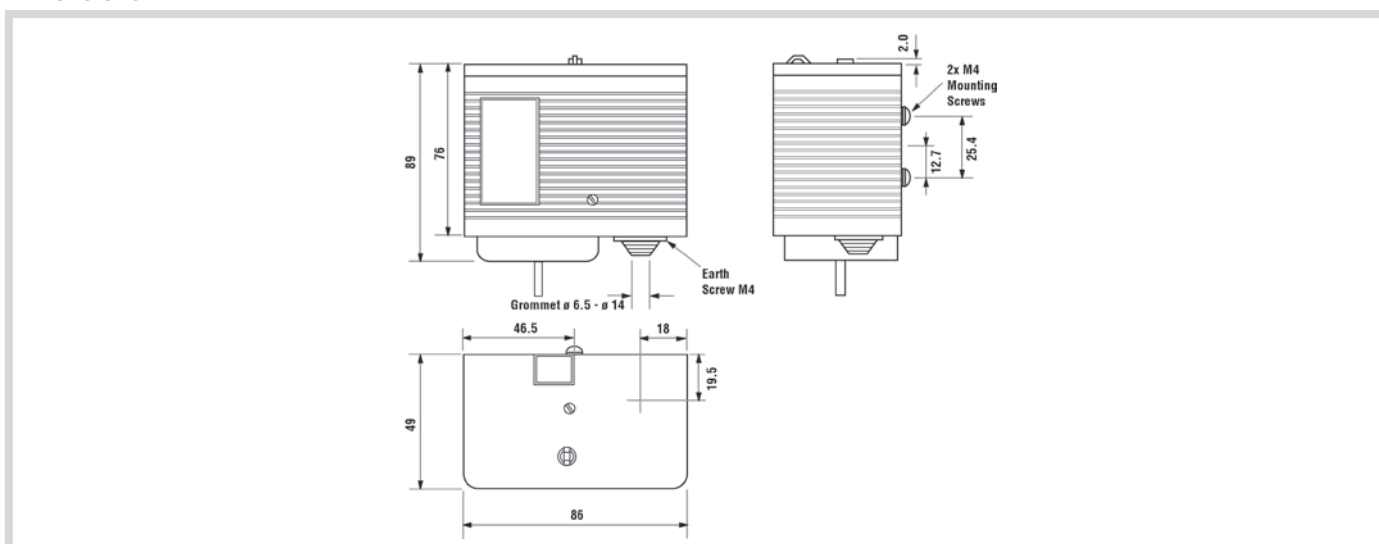
### Common features

Common features		O16 - Ice bank controls
SPDT single pole switch electrical rating:		16 (16) A 250V~ normally open or normally closed 1 (1) A 250V~ opposite side.
Ambient operating / storage temperature:		-30°C...+55°C / -40°C...+65°C
Electrical contacts:		1 common; 2 opens the contact when the temperature increases; 4 closes the contact when the temperature increases
Cable entry:		14mm insulating bushing
Installation:		two threaded holes in the back of the casing to accept M4x6mm screws (supplied)
Casing enclosure rating:		IP44 (with top cover installed)

### Sensing element optimised size, operation and positioning



### Dimensions



# O16

## Single pressure controllers



### Applications

O16 instruments are single mechanical pressure switches for high and low pressure, equipped with a single pole switch SPDT that closes and opens as the pressure increases or decreases.

### Common features

SPDT single pole switch electrical rating:

### O16 pressure

16 (16) A 250V~ normally open or normally closed  
1 (1) A 250V~ opposite side.

Ambient operating / storage temperature:

-30°C...+55°C / -40°C...+65°C

Connection to pressure line:

7/16 - 20 UNF straight male output connector,  
1/4 flared female connector

Cable entry:

14mm insulating bushing

Refrigerant:

Equipment suitable for use with the most common gases

Installation:

two threaded holes in the back of the casing to accept M4x6mm screws (supplied)

Regulation:

by means of crosshead recessed hex nut for both the set and the differential.  
An adjustable knob is also available, as standard with certain models.

Terminals:

1 common; 2 opens when the pressure increases; 4 closes when the pressure increases.

Casing enclosure rating:

IP44 (with top cover installed)

### Operating and safety pressures

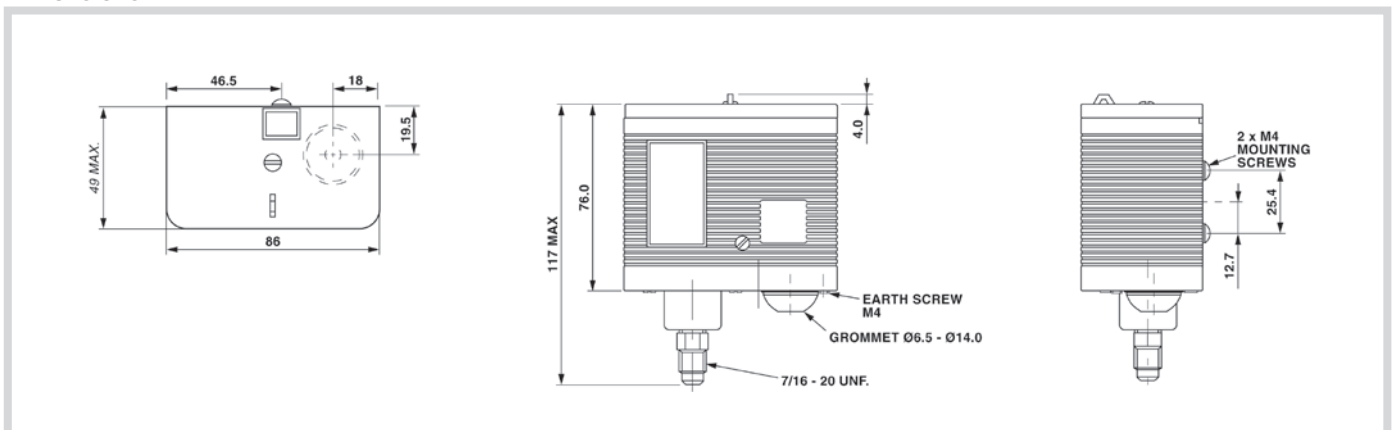
Bellows type	Maximum stationary pressure (bar)	Burst Pressure (bar)
Low Pressure	20	80
High Pressure	35	128
TÜV	35	80 (safety)

Part number	High or Low	Reset	Measurement range PSI (bar)	Differential PSI (bar)	Type of bellows	Connection
<b>O16-H6703</b>	low	automatic	10...100 (-0.3...7)	9...58 (0.6...4)	standard	7/16" - 20 UNF male
<b>O16-H6704</b>	low	automatic	10...100 (-0.3...7)	9...58 (0.6...4)	standard	braze welded tube diam. 6 mm L.100 mm
<b>O16-H6713</b>	low	automatic	10...100 (-0.3...7)	9...58 (0.6...4)	standard	1000 mm capillary with 1/4" SAE nut
<b>O16-H6705</b>	low	manual	10...100 (-0.3...7)	9 (0.6)	standard	7/16" - 20 UNF male
<b>O16-H6750</b>	high	automatic	100...435 (7...30)	35...115 (2...8)	standard	7/16" - 20 UNF male
<b>O16-H6763</b>	high	automatic DWK	100...435 (7...30)	35...115 (2...8)	TÜV	braze welded tube diam. 6 mm L.100 mm
<b>O16-H6751</b>	high	manual	100...435 (7...30)	45 (3.2)	standard	7/16" - 20 UNF male
<b>O16-H6758</b>	high	automatic DWK	100...435 (7...30)	42...115 (3...8)	TÜV	7/16" - 20 UNF male
<b>O16-H6759</b>	high	manual DBK*	100...435 (7...30)	45 (3.2)	TÜV	7/16" - 20 UNF male
<b>O16-H6764</b>	high	manual DBK*	100...435 (7...30)	45 (3.2)	TÜV	braze welded tube diam. 6 mm L.100 mm
<b>O16-H6760</b>	high	manual SDBK**	100...435 (7...30)	45 (3.2)	TÜV	7/16" - 20 UNF male
<b>O16-H6765</b>	high	manual SDBK**	100...435 (7...30)	45 (3.2)	TÜV	braze welded tube diam. 6 mm L.100 mm

\* reset without cover removal

\*\* reset with cover removal

### Dimensions



# O52

## Single pressure controllers



### Applications

O52 instruments are single mechanical pressure switches for high and low pressure, equipped with a single pole switch SPDT that closes and opens as the pressure increases or decreases. They differ from the O16 models for the dimensions of the enclosure and for the IP degree of protection.

### Common features

	O52 pressure
SPDT single pole switch electrical rating:	16 (16) A 250V~ normally open or normally closed 1 (1) A 250V~ opposite side.
Ambient operating / storage temperature:	-30°C...+55°C / -40°C...+65°C
Connection to pressure line:	7/16 - 20 UNF straight male output connector, 1/4 flared female connector
Cable entry:	P.G. connector 16
Refrigerant:	equipment suitable for use with the most common gases
Installation:	two threaded holes in the back of the casing to accept M4x6mm screws (supplied)
Regulation:	by means of crosshead recessed hex nut for both the set and the differential An adjustable knob is also available, as standard with certain models.
Terminals:	1 common; 2 opens when the pressure increases; 4 closes when the pressure increases.
Casing enclosure rating:	IP66

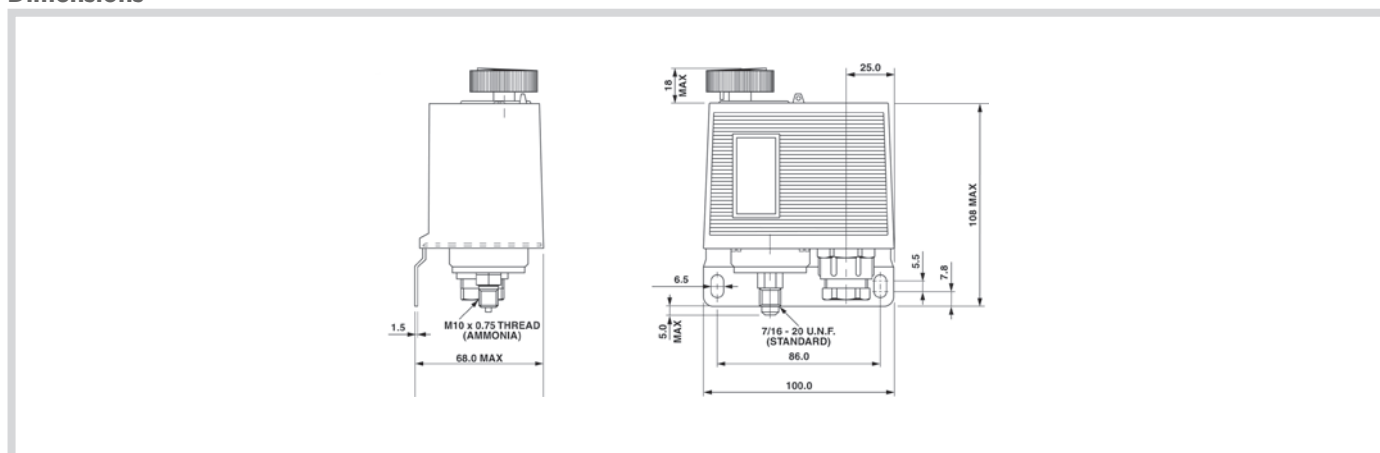
### Operating and safety pressures

Bellows type	Maximum stationary pressure (bar)	Burst Pressure (bar)
Low Pressure	20	80
High Pressure	35	128
TÜV	35	80 (safety)

Part number	High or Low	Reset	Measurement range PSI (bar)	Differential PSI (bar)	Type of bellows	Connection
O52-H6703	low	automatic	10...100 (-0.3...7)	9...58 (0.6...4)	standard	7/16" - 20 UNF male
O52-H6750	high	automatic	100...435 (7...30)	35...115 (2...8)	standard	7/16" - 20 UNF male
O52-H6763	high	automatic DWK	100...435 (7...30)	35...115 (2...8)	TÜV	braze welded tube diam. 6 mm L.100 mm
O52-H6751	high	manual	100...435 (7...30)	45 (3.2)	standard	7/16" - 20 UNF male
O52-H6758	high	automatic DWK	100...435 (7...30)	42...115 (3...8)	TÜV	7/16" - 20 UNF male
O52-H6760	high	manual SDBK **	100...435 (7...30)	45 (3.2)	TÜV	7/16" - 20 UNF male

\*\* reset with cover removal

### Dimensions



# O17

## Dual pressure controllers



### Applications

O17 instruments are dual mechanical pressure switches for high and low pressure, and are equipped with a unipolar SPDT switch that closes and opens as the pressure increases or decreases.

### Common features

	O17 pressure
SPDT single pole switch electrical rating: (except in the case of the dual signal version)	16 (16) A 250V~ normally open or normally closed 1 (1) A 250V~ opposite side.
Ambient operating / storage temperature:	-30°C...+55°C / -40°C...+65°C
Connection to pressure line:	7/16 - 20 UNF straight male output connector, 1/4 flared female connector
Cable entry:	14mm insulating bushing
Refrigerant:	Equipment suitable for use with the most common gases
Installation:	two threaded holes in the back of the casing to accept M4x6mm screws (supplied)
Regulation:	by means of crosshead recessed hex nut for both the set and the differential An adjustable knob is also available, as standard with certain models.
Standard O17 terminals:	1 common, 2 opens when low pressure increases and opens when high pressure increases.
Dual signal O17 terminals:	1 common, 2 closes signal circuit when low pressure decreases, 3 closes signal circuit when high pressure increases, 4 closes when low pressure increases and opens when high pressure increases.
O17 version with dual signal:	terminals 1 and 4 as above, terminals (1 and 2) and (1 and 3): 0,1A 250V~

### Operating and safety pressures

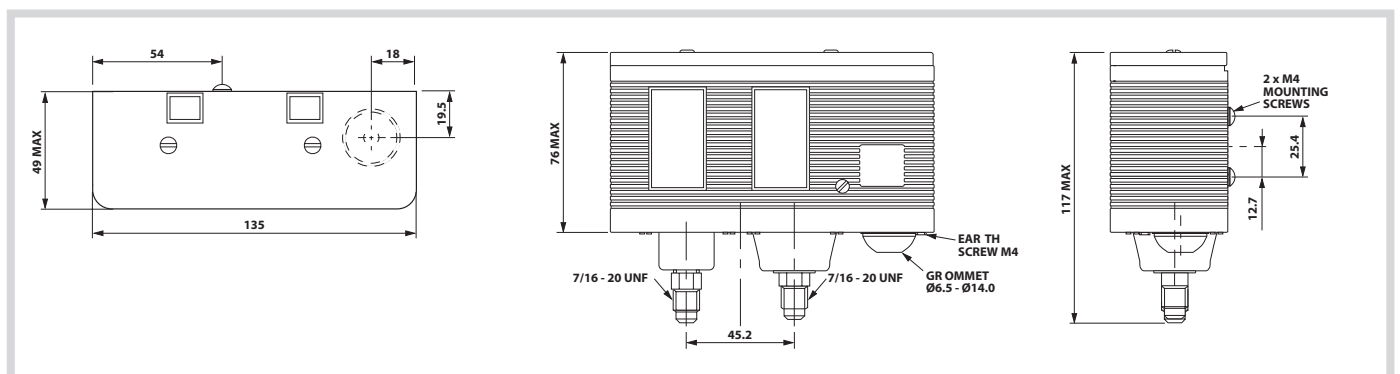
Bellows type	Maximum stationary pressure (bar)	Burst Pressure (bar)
Low Pressure	20	80
High Pressure	35	128
TÜV	35	80 (safety)

Part number	Reset		Measurement range PSI (bar)		Differential PSI (bar)		Type of bellows	Connection
	High	Low	High	Low	High	Low		
O17-H4701	automatic	automatic	100...435 (7...30)	10"...100 (-0.3...7)	50 (3.5)	9...58 (0.6...4)	standard	7/16" - 20 UNF male
O17-H4702	automatic	automatic	100...435 (7...30)	10"...100 (-0.3...7)	50 (3.5)	9...58 (0.6...4)	standard	braze welded tube Ø 6 mm L.100 mm
O17-H4703	manual	manual	100...435 (7...30)	10"...100 (-0.3...7)	50 (3.5)	9 (0.6)	standard	7/16" - 20 UNF male
O17-H4704	manual	manual	100...435 (7...30)	10"...100 (-0.3...7)	50 (3.5)	9 (0.6)	standard	braze welded tube Ø 6 mm L.100 mm
O17-H4713	manual	manual	100...435 (7...30)	10"...100 (-0.3...7)	50 (3.5)	9 (0.6)	standard	1000 mm capillary with 1/4" SAE nut
O17-H4705	manual	automatic	100...435 (7...30)	10"...100 (-0.3...7)	50 (3.5)	9...58 (0.6...4)	standard	7/16" - 20 UNF male
O17-H4706	manual	automatic	100...435 (7...30)	10"...100 (-0.3...7)	50 (3.5)	9...58 (0.6...4)	standard	braze welded tube Ø 6 mm L.100 mm
O17-H4715	manual	automatic	100...435 (7...30)	10"...100 (-0.3...7)	50 (3.5)	9...58 (0.6...4)	standard	1000 mm capillary with 1/4" SAE nut
O17-H4758	automatic DWK	automatic	100...435 (7...30)	10"...100 (-0.3...7)	58 (4)	9...58 (0.6...4)	TÜV	7/16" - 20 UNF male
O17-H4763	automatic DWK	automatic	100...435 (7...30)	10"...100 (-0.3...7)	58 (4)	9...58 (0.6...4)	TÜV	braze welded tube Ø 6 mm L.100 mm
O17-H4759	manual DBK*	automatic	100...435 (7...30)	10"...100 (-0.3...7)	58 (4)	9...58 (0.6...4)	TÜV	7/16" - 20 UNF male
O17-H4760	manual SDBK**	automatic	100...435 (7...30)	10"...100 (-0.3...7)	58 (4)	9...58 (0.6...4)	TÜV	7/16" - 20 UNF male
O17-H4764	manual DBK*	automatic	100...435 (7...30)	10"...100 (-0.3...7)	58 (4)	9...58 (0.6...4)	TÜV	braze welded tube Ø 6 mm L.100 mm

\* reset without cover removal

\*\* reset with cover removal

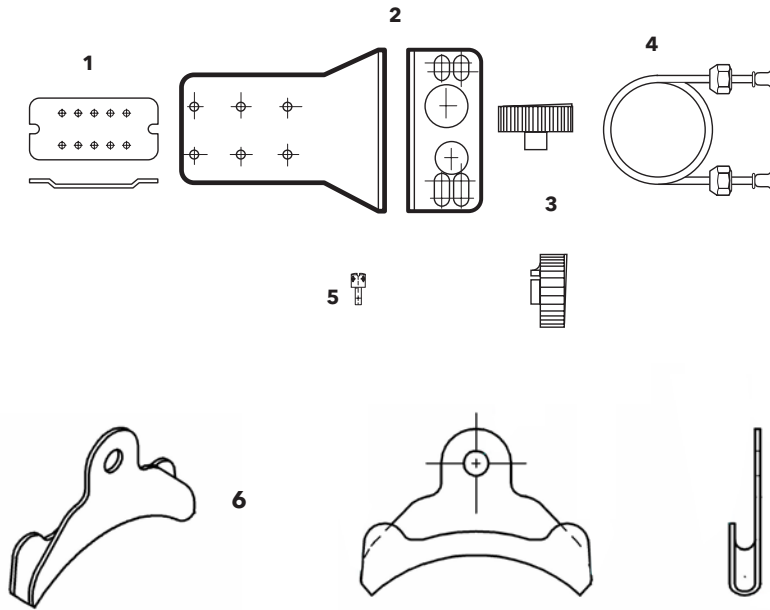
### Dimensions





# Accessories for O series controllers

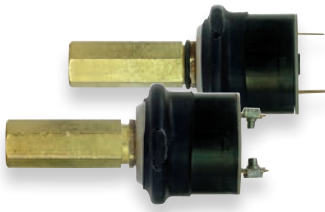
## Accessories for O series controllers



Part number	Description	Notes
<b>00048129003</b> (1)	Flat mounting bracket	-
<b>00031696001</b> (2)	Angle mounting bracket	-
<b>03200115001</b> (3)	Knob	-
<b>06309138001</b> (4)	1000 mm capillary with 7/16" fittings, without valve opener	-
<b>06309138002</b> (4)	1500 mm capillary with 7/16" fittings, without valve opener	-
<b>00450199004</b> (5)	Screw with clearance hole	-
<b>06223029001</b> (6)	clip for temperature capillary	only O16 temperature
<b>06223029006</b> (6)	clip for temperature capillary- KIT 6pcs	only O16 temperature

# G60 - G63

## Fixed setting pressure switches



### Applications

Pressure switches of the G60 - G63 range are designed to protect refrigeration systems against critical conditions by setting high and low pressure limits. The G60 low pressure switch protects the compressor against low suction pressures where there is a danger of liquid refrigerant entering the compressor and causing damage. The G63 high pressure switch protects the system against excessive discharge pressures, which can be dangerous and cause expensive damage to equipment.

### Technical data

	G60 - G63
Differential	setting fitting, see graphs
Refrigerants	compatible with HFC/HCFC refrigerants (for other refrigerants contact the sales department)
Ambient temperature - switch head	-30°C...+55°C
Maximum compressor head temperature	135°C
Storage and transport temperature limits	-30°C ...+70°C
Switch	S.P.D.T. or S.P.S.T.
Electrical rating	a) 6 (6)A 250V; b) 5A at 14V CC (inductive)
Switch markings	Terminal 1 Common. Terminal 2 Break on pressure rise Terminal 4 Break on pressure drop
Enclosure rating	IP00 - IP44 - IP66

### G60 low pressure

- Operating range: fixed within limits of - 10"Hg vacuum (-0.35 bar) to 100 psi (7 bar) cut out; 160 psi (11 bar) cut in
- Reset mode: automatic reset. Manual reset for cut-out on pressure drop only

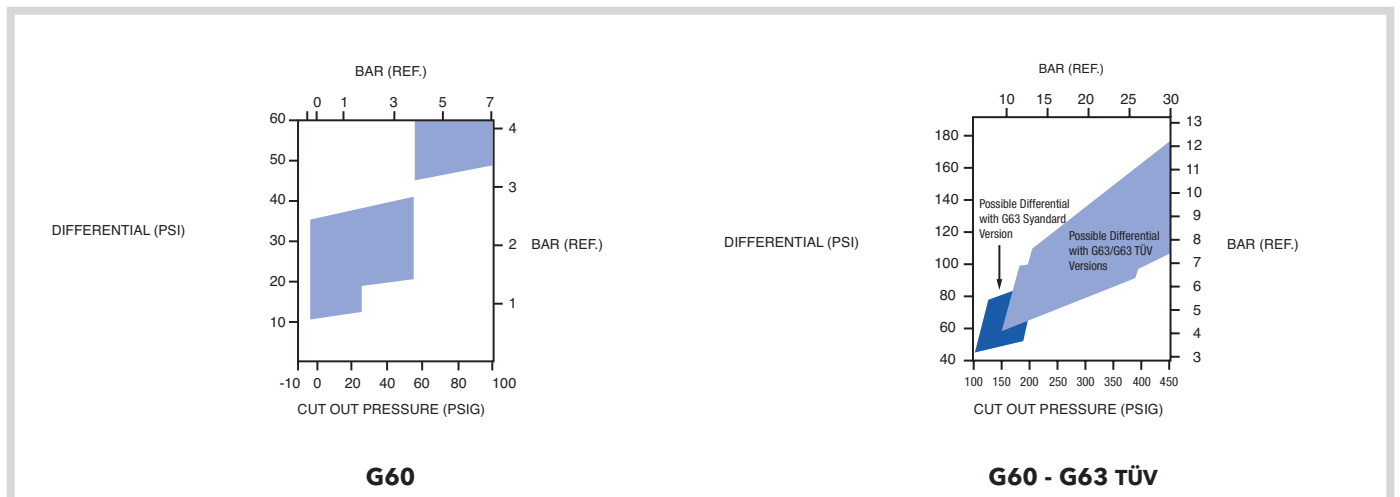
Pressure range	Tolerance	Differential	Tolerance	TÜV
V~ - 75 psi	± 2 psi	7 - 15 psi	± 3 psi	-
V~ - 75 psi	± 2 psi	20 - 35 psi	± 4 psi	-
50 - 100 psi	± 4 psi	40 - 55 psi	± 7 psi	-

### G60 high pressure

- Operating range: fixed within limits of - 450 PSI (31 bar) to 100 psi (7 bar) cut out; 75 psi (5.2 bar) cut in
- Reset mode: automatic reset. Manual reset for cut-out on pressure rise only

Pressure range	Tolerance	Differential	Tolerance	TÜV
100 - 180 psi	± 4 psi	50 - 70 psi	± 7 psi	Yes
150 - 250 psi	± 4 psi	70 - 110 psi	± 10 psi	Yes
250 - 350 psi	± 6 psi	100 - 140 psi	± 14 psi	Yes
340 - 450 psi	± 10 psi	120 - 180 psi	± 14 psi	Yes
400 - 450 psi	± 10 psi	150 - 200 psi	± 16 psi	Yes

### Differential



# G60 - G63

## Fixed setting pressure switches



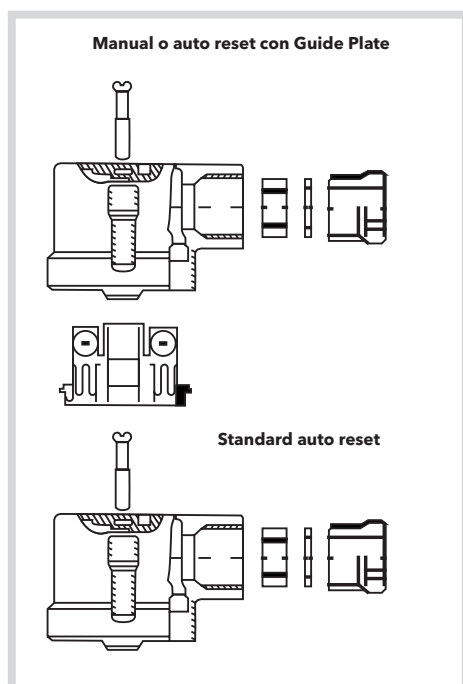
### Features and options

Type	Diaphragm thickness (mm)	Maximum stationary pressure PSI (bar)	Burst Pressure PSI (bar)
G60	0.076	290 PSI (20 bar)	1015 PSI (70 bar)
G60	0.1 / 0,15	510 PSI (35 bar)	2030 PSI (140 bar)
G63	0.15	510 PSI (35 bar)	2030 PSI (140 bar)
TÜV (safety)	0.076	/	675 PSI (47 bar)

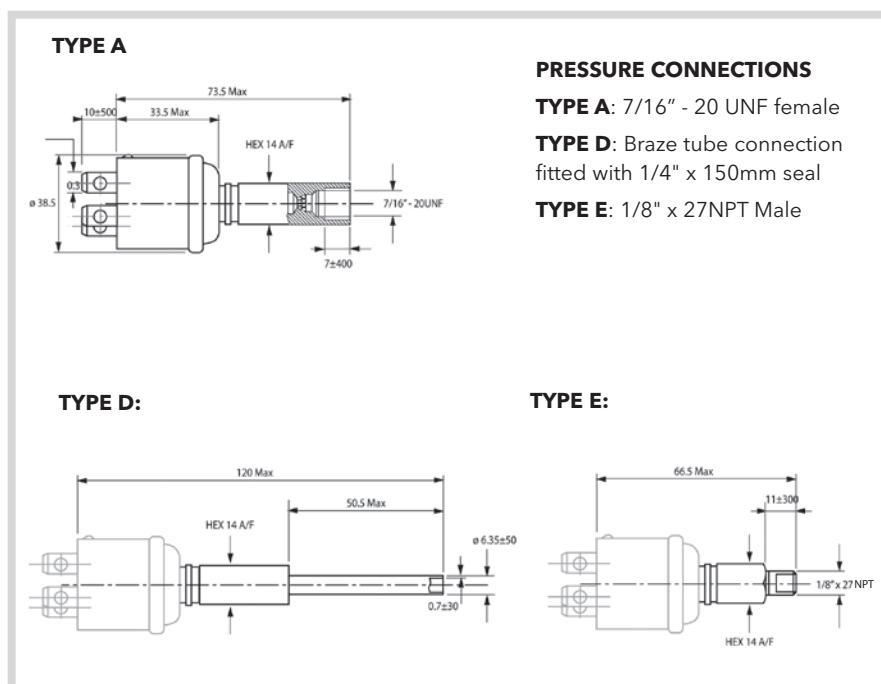
### Accessories kits

Part number	Description	Type	Notes
<b>03301270001</b>	Cap kit	Automatic reset	Without guide plate
<b>03301270002</b>	Cap kit	Automatic reset	Without guide plate
<b>03301270005</b>	Cap kit	Manual reset	Without guide plate
<b>03301270006</b>	Cap kit	Manual reset	Without guide plate

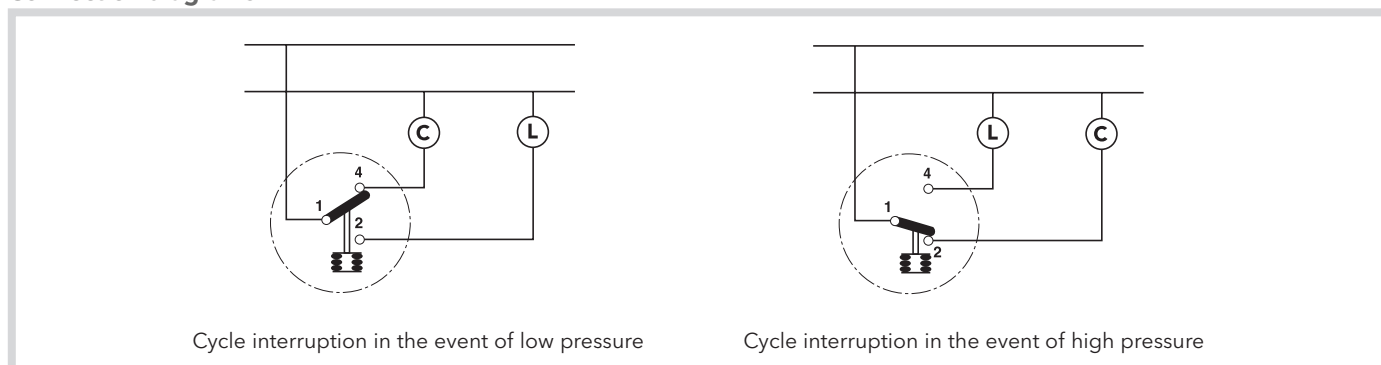
### Dimensions



### Pressure connections



### Connection diagrams



# NSD

## Fixed setting pressure switches



### Applications

The new range of Ranco electromechanical pressure switches with fixed setting are compact, lightweight and easy to install.

They are products designed to protect refrigeration systems against critical conditions by setting high or low pressure limits. The stainless steel control element is designed so as to ensure a better life of the product with high performance.

Thanks to the modern construction technology, Ranco pressure switches offer the best solutions for applications in refrigeration systems, residential and commercial air conditioning, automotive, ice machines, etc.

They can also be used to control the pressure in hydraulic or steam systems, in air compressors and in industrial equipment.

### Technical data

	NSD
Compatible refrigerants:	HCFC, HFC, HFO, HC and respective lubricant oils, CO <sub>2</sub>
Contacts configuration:	SPST-NO, SPST-NC, SPDT
Reset:	Automatic, Manual
Standard electrical connection:	1/4" fast-on (6.35 mm) UL1015 18AWG 1.0 m cable Other types of electrical connection upon request
Standard pressure fitting:	7/16-20 UNF with depressor Other types of fittings upon request
Contact resistance:	< 50 mΩ
Dispersion current:	< 0,75mA
Resistance to flame:	94V-0
Protection rating:	IP67 (versions with cable)
Ambient operating temperature:	-30°C...+80°C
Fluid temperature:	-50°C...+135°C
Pressure range:	Automatic reset: -1...55 bar Manual reset: 10...55 bar CO <sub>2</sub> : 90...180 bar
Certifications:	CE0035 - UL - VDE (automatic reset)

### Electrical specifications

Models	NSDHA, NSDHF, NSDLA Automatic reset				
Voltage	250 Vac	36 Vdc	24 Vac	120 Vac	240 Vac
Current	6A	3A	125VA	375VA	375VA
Load type	Inductive	-	Pilot Duty		
Frequency	50 / 60 Hz	-	50 / 60 Hz		
Number of cycles	100,000 (250,000 special versions)				

Models	NSDHM Manual reset			
Voltage	250 Vac	24 Vac	120 V~ac	240 Vac
Current	3A	125VA	375VA	375VA
Load type	Inductive	Pilot Duty		
Frequency	50 / 60 Hz			
Number of cycles	10,000			

Models	NSDCA for CO <sub>2</sub> Automatic reset
Voltage	250 Vac
Current	6A
Load type	Resistive
Number of cycles	30,000



# NSD

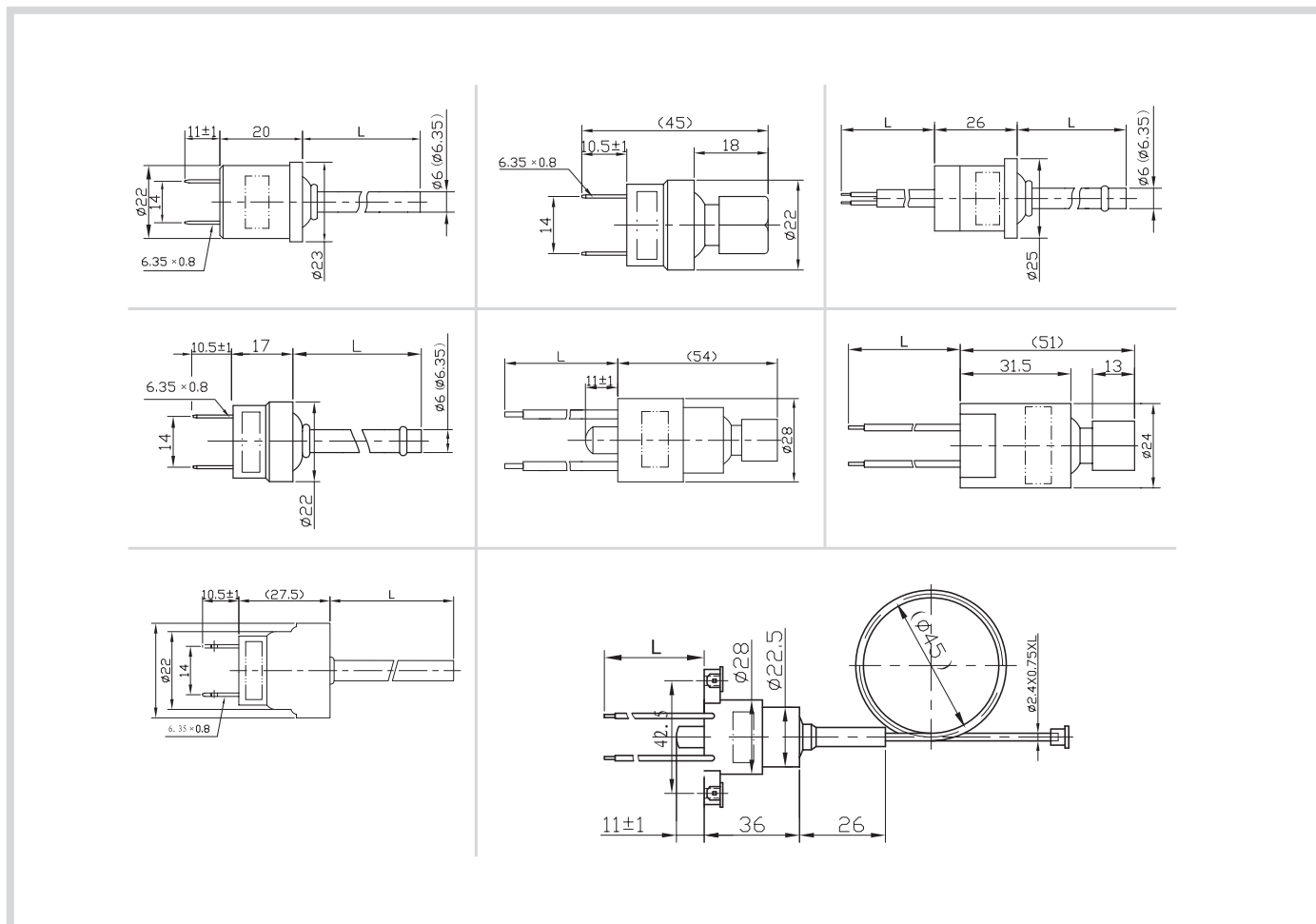
## Fixed setting pressure switches



Part number*	Application	Reset	Cut out (bar)	Cut in (bar)	Contact configuration	UL models family
<b>NSDHA00B39101</b>	High Pressure	automatic	18	13	SPST - NC	NSD03H
<b>NSDHM00C39006</b>		manual	18	13	SPST - NC	NSDM
<b>NSDHA00B39107</b>		automatic	24	18	SPST - NC	NSD03H
<b>NSDHA00B39102</b>		automatic	26	20	SPST - NC	NSD03H
<b>NSDHA00B39103</b>		automatic	28	21	SPST - NC	NSD03H
<b>NSDHM00C39007</b>		manual	28	21	SPST - NC	NSDM
<b>NSDHA00B39104</b>		automatic	42	33	SPST - NC	NSD03H
<b>NSDHM00C39008</b>		manual	42	33	SPST - NC	NSDM
<b>NSDLA00A39112</b>	Low Pressure	automatic	0.7	1.7	SPST - NO	NSD03L
<b>NSDLA00A39100</b>		automatic	1.7	2.7	SPST - NO	NSD03L
<b>NSDLA00A39114</b>		automatic	2.5	4.2	SPST - NO	NSD03L
<b>NSDHF00A39103</b>	Fan control	automatic	8.5	11	SPST - NO	NSD03H
<b>NSDHF00A39104</b>		automatic	13	16	SPST - NO	NSD03H
<b>NSDCA11B32300</b>	High pressure CO2	automatic	125	90	SPST - NC	//

\* Standard codes with 1 m cable length, and ¼ SAE female connection with depressor

### Dimensions



# Conversion tables

## Appendix

### Celsius/Fahrenheit conversion table

°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F	°C	°F
-100	-148	12	53.6	34	93.2	56	132.8	78	172.4	100	212.0	310	590
-90	-130	13	55.4	35	95.0	57	134.6	79	174.2	110	230.0	320	608
-80	-112	14	57.2	36	96.8	58	136.4	80	176.0	120	248.0	330	626
-70	-94	15	59.0	37	98.6	59	138.2	81	177.8	130	266.0	340	644
-60	-76	16	60.8	38	100.4	60	140.0	82	179.6	140	284.0	350	662
-50	-58	17	62.6	39	102.2	61	141.8	83	181.4	150	302.0	360	680
-40	-40	18	64.4	40	104.0	62	143.6	84	183.2	160	320.0	370	698
-30	-22	19	66.2	41	105.8	63	145.4	85	185.0	170	338.0	380	716
-20	-4	20	68.0	42	107.6	64	147.2	86	186.8	180	356.0	390	734
-10	14	21	69.8	43	109.4	65	149.0	87	188.6	190	374.0	400	752
0	32	22	71.6	44	111.2	66	150.8	88	190.4	200	392.0	410	770
1	33.8	23	73.4	45	113.0	67	152.6	89	192.2	210	410.0	420	788
2	35.6	24	75.2	46	114.8	68	154.4	90	194.0	212	415	430	806
3	37.4	25	77.0	47	116.6	69	156.2	91	195.8	220	428	440	824
4	39.2	26	78.8	48	118.4	70	158.0	92	197.6	230	446	450	842
5	41.0	27	80.6	49	120.2	71	159.8	93	199.4	240	464	460	860
6	42.8	28	82.4	50	122.0	72	161.6	94	201.2	250	482	470	878
7	44.6	29	84.2	51	123.8	73	163.4	95	203.0	260	500	480	896
8	46.4	30	86.0	52	125.6	74	165.2	96	204.8	270	518	490	914
9	48.2	31	87.8	53	127.4	75	167.0	97	206.6	280	536	500	932
10	50.0	32	89.6	54	129.2	76	168.8	98	208.4	290	554		
11	51.8	33	91.4	55	131.0	77	170.6	99	210.2	300	572		

# Conversion tables

## Appendix

### Psi / bar conversion table

psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar	psi	bar
1	0.069	30	2.07	59	4.07	88	6.07	170	11.72	460	31.72	750	51.71
2	0.138	31	2.14	60	4.14	89	6.14	180	12.41	470	32.41	760	52.40
3	0.207	32	2.21	61	4.21	90	6.21	190	13.10	480	33.10	770	53.09
4	0.276	33	2.28	62	4.27	91	6.27	200	13.79	490	33.79	780	53.78
5	0.345	34	2.34	63	4.34	92	6.34	210	14.48	500	34.48	790	54.47
6	0.414	35	2.41	64	4.41	93	6.41	220	15.17	510	35.16	800	55.16
7	0.483	36	2.48	65	4.48	94	6.48	230	15.86	520	35.85	820	56.54
8	0.552	37	2.55	66	4.55	95	6.55	240	16.55	530	36.54	840	57.92
9	0.621	38	2.62	67	4.62	96	6.62	250	17.24	540	37.23	860	59.30
10	0.690	39	2.69	68	4.69	97	6.69	260	17.93	550	37.92	880	60.68
11	0.758	40	2.76	69	4.76	98	6.76	270	18.62	560	38.61	900	62.06
12	0.827	41	2.83	70	4.83	99	6.83	280	19.31	570	39.30	920	63.43
13	0.896	42	2.90	71	4.89	100	6.90	290	20.00	580	39.99	940	64.81
14	0.965	43	2.96	72	4.96	101	6.96	300	20.69	590	40.68	960	66.19
15	1.03	44	3.03	73	5.03	102	7.03	310	21.37	600	41.37	980	67.57
16	1.10	45	3.10	74	5.10	103	7.10	320	22.06	610	42.06	1000	68.95
17	1.17	46	3.17	75	5.17	104	7.17	330	22.75	620	42.75	1500	103.4
18	1.24	47	3.24	76	5.24	105	7.24	340	23.44	630	43.44	2000	137.9
19	1.31	48	3.31	77	5.31	106	7.31	350	24.13	640	44.13	2500	172.4
20	1.38	49	3.38	78	5.38	107	7.38	360	24.82	650	44.82	3000	206.8
21	1.45	50	3.45	79	5.45	108	7.45	370	25.51	660	45.51	3500	241.3
22	1.52	51	3.52	80	5.52	109	7.52	380	26.20	670	46.20	4000	275.8
23	1.59	52	3.59	81	5.58	110	7.58	390	26.89	680	46.89	4500	310.3
24	1.66	53	3.65	82	5.65	115	7.93	400	27.58	690	47.58	5000	344.8
25	1.72	54	3.72	83	5.72	120	8.27	410	28.28	700	48.27	5500	379.2
26	1.79	55	3.79	84	5.79	130	8.96	420	28.96	710	48.95	6000	419.7
27	1.86	56	3.86	85	5.86	140	9.65	430	29.65	720	49.64		
28	1.93	57	3.93	86	5.93	150	10.34	440	30.34	730	50.33		
29	2.00	58	4.00	87	6.00	160	11.03	450	31.03	740	51.02		

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