



techsystem

automatyka klimatyzacja wentylacja

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Series P100

Encapsulated Pressure Control.

Auto-reset Standard Duty and Heavy Duty. Manual reset Standard Duty.

Introduction

The P100 Series are encapsulated, non-adjustable, direct mount pressure controls typically used for low and high-pressure cut-outs for OEM applications.

The P100 series are produced according to switchpoint requirements of customers. The small dimensions, weight and protection class makes the P100 series applicable for use without the need of additional mounting brackets.

The P100 Series can be used for all non-corrosive refrigerants like R134a; R22; R404, R410A and others.

Applications include:

- Computer room air conditioning
- Refrigeration/ Air conditioning condensers
- Commercial refrigeration
- Ice machines
- Food service equipment



P100 pressure controls, manual reset (top) automatic reset standard duty with 1/4" male quick-connectors (left) automatic reset heavy-duty (right) and automatic reset standard duty (bottom)

Feature and Benefits

<input type="checkbox"/> Compact size and light weight	Allows direct mounting without the need of mounting brackets
<input type="checkbox"/> Encapsulated, dust tight switch IP67	No pollution by electro-magnetic influences
<input type="checkbox"/> Manual reset models have a trip-free design	Contacts cannot be overridden in the control function
<input type="checkbox"/> Models with gold-plated contacts available.	A minimum current of 5 mA is possible
<input type="checkbox"/> Broad variety of electrical and pressure connections.	Applicable in most applications
<input type="checkbox"/> PED cat IV approved	Applicable as safety device

Description

The pre-set snap-acting disc utilised in the P100 series reverses its shape when pressurised to a selected actuation pressure setting. When the disc snaps, it drives a set of electrical contacts open or close. When the pressure falls to the de-actuation pressure setting, the snap-acting disc and electrical contacts reset to their pre-set position.

Note: For manual reset models the electrical contacts have to be reset manually.

Automatic reset models

Standard automatic reset models are provided with SPST contacts for either "Open High" or "Open Low" function.

Special heavy-duty automatic reset models are available for "Open High" or "Open Low" function and are provided either with heavy-duty SPST contacts or with heavy-duty SPDT contacts.

Manual reset models

These models are available with standard duty "Open High" SPST contacts.

The latching mechanism in the P100 manual reset models provides electrical cut-out even when the reset button is held fully depressed. This trip-free design allows restarting the compressor only when the line pressure has returned to the pre-determined level.

Note

The controls are intended to control equipment under normal operating conditions. Where failure or malfunctioning of the controls could lead to an abnormal operating condition that could cause personal injury or damage to the equipment or other property, other devices (limit or safety controls) or systems (alarm or supervisory systems) intended to warn of or protect against failure or malfunctioning of the controls must be incorporated into and maintained as part of the control system.

Adjustment

These controls are factory set on customers' requirements and are not field adjustable. The trip-points can be selected from here after listed tables.

Note: Manual reset models can only be selected on high trip-point.

Automatic reset models pressure range differentials and tolerances

(A) Actuation pressure range*	(B) Standard tolerance*	(C) Minimum tolerance*	Optimum differential band*	Minimum Release Pressure***	Maximum Release Pressure***
psig bar **	psi bar **	psi bar**	% of Actuation	% of Actuation	% of Actuation
<u>0 to 50</u> 0 to 3,4	<u>± 5</u> ± 0,3	<u>± 4</u> ± 0,3	40-65	30	70
<u>51 to 120</u> 3,5 to 8,3	<u>± 8</u> ± 0,6	<u>± 5</u> ± 0,3	50-75	40	80
<u>121 to 250</u> 8,3 to 17,2	<u>± 10</u> ± 0,7	<u>± 7</u> ± 0,5	60-75	50	80
<u>251 to 350</u> 17,3 to 24,1	<u>± 15</u> ± 1	<u>± 10</u> ± 0,7	60-75	55	80
<u>351 to 500</u> 24,2 to 34,5	<u>± 20</u> ± 1,4	<u>± 10</u> ± 0,7	65-80	60	85
<u>501 to 750</u> 34,6 to 52	<u>± 25</u> ± 1,7	<u>± 15</u> ± 1	70-80	65	85

* At room ambient temperature.

** Values are rounded.

*** Do not use smaller differentials or smaller tolerances as necessary for the application (price consequences)

Manual reset models pressure range and tolerances

Nominal setpoint	Standard tolerance	Minimum tolerance*
$\frac{\text{psig}}{\text{bar}^{**}}$	$\frac{\text{psi}}{\text{bar}^{**}}$	$\frac{\text{psi}}{\text{bar}^{**}}$
200 to 250 14 to 17,2	± 15 ± 1	± 7 ± 0.5
251 to 350 17,3 to 24,1	± 15 ± 1	± 7 ± 0.5
351 to 500 24,2 to 34.5	± 20 $\pm 1,4$	± 7 $\pm 0,5$
501 to 750 34,6 to 52	± 20 $\pm 1,4$	10 0,7

Cut-in pressure is 70% (± 30 PSIG) of the nominal setpoint

Contact functions

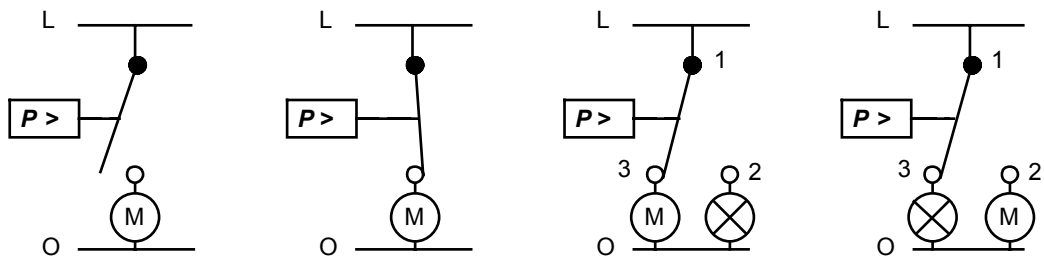


Fig. 1

SPST-NO
LP protection
+ fan-cycling

P100AA,AE

SPST-NC
HP protection

P100CA,DA,CE

SPDT
HP protection

P100EE

SPDT
LP protection

P100EE

Wire leads for SPDT contacts are marked: White = Common (1) Blue = N.O. (2) Black = N.C. (3)

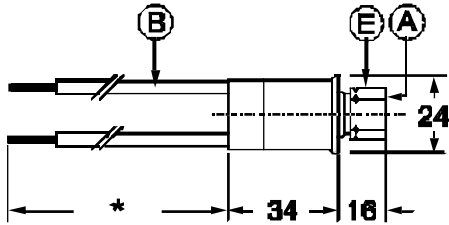
Repair and replacement

Repair is not possible. In case of an improperly functioning control, please check with your nearest supplier.

When contacting the supplier for a replacement you should state the type/model number of the control. This number can be found on the data plate.

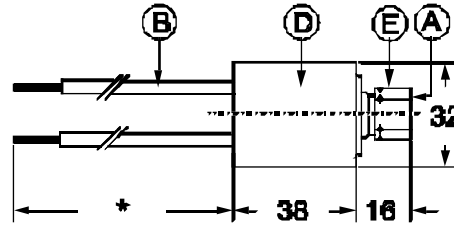
Dimensions

Standard duty models
P100AA; CA; DA

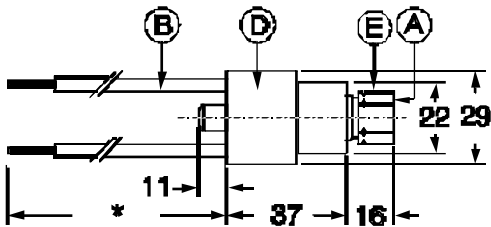


P100AA; CA with leads

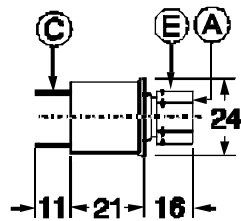
Heavy duty models
P100AE; CE; DE



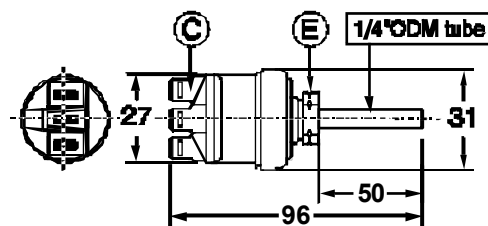
P100AE; CE; EE with leads



P100DA with leads



P100AA; CA with quick connect terminals



P100EE with quick connect terminals

Fig. 2

- A. 7/16"-20 UNF female flare tube fitting with valve depressor (SAE 1/4").
- B. 18 AWG (0.8 mm²) PVC insulated wire.
- C. 1/4" Quick-connect terminals (6.35 x 0.81 mm).
- D. Nylon sleeve, epoxy filled for environmental seal.
- E. 9/16" HEX.

P100 Specification Worksheet

A: General

- Standard Duty Control (SPST Contacts)
- Heavy Duty Control
 - SPST Contacts
 - SPDT Contacts

B: High Trip Point _____ PSIG
(bar)

C: Auto Reset Models Only

- High trip point tolerance _____ PSI (bar)
- Low trip point _____ PSIG (bar)
- Low trip point tolerance _____ PSI (bar)

Mark one section from each of the category
D through F.

D: Control Construction

- Open high, close low
- Open low, close high
- Open high manual reset (standard duty models only)

E: Electrical Termination

Wire leads with 1/2 " stripped ends.

- 6" 12" 18" 24"
- 30" 36" 42" 48"
- 60" 72"

Without wire leads

- Spade terminals 90° (auto reset models only)
- Screw terminals 90° (heavy duty auto reset models only)
- Spade terminals 45° (heavy-duty SPST models only)
- Screw terminals 45° (heavy-duty SPST models only)
- Other options (please describe)

F: Pressure Connection

Pressure Connection Standard

- 1/4 " Female Flare with Internal Depressor

Brazed Fittings

- 2 " Straight 1/4 " Diameter tube
- 50 mm Straight 6 mm Diameter tube
- Other options (please describe)

Customer information

Customers Name: _____

Date: _____

Contact Person: _____

Telephone: _____

Brief description of Application: _____

Annual usage (min. order qty 250)

(For P100AP-** and P100CP-** models
min. order qty: 100pcs)

**Mail/Fax complete form to your local
Johnson Controls office**

Specifications

Type number*	P100AA P100CA P100DA P100AE P100CE P100EE	standard duty; standard duty; standard duty; heavy duty; heavy duty; heavy duty;	SPST; SPST; SPST; SPST; SPST; SPDT;	open low; open high; open high; open low; open high;	auto. reset. auto. reset. man. reset. auto. reset. auto. reset. auto. reset.
Short term overpressure	Range 20 to 100 PSIG : (1.4 to 6.9 bar)	250 PSIG (17.2 bar)			
	Range 101 to 500 PSIG: (6.9 to 34.5 bar)	600 PSIG (41.4 bar)			
	Range 501 to 750 PSIG: (34.5 to 52 bar)	950 PSIG (65 bar)			
Burst pressure	3500 PSIG (241 bar)				
Life at Rated Current	Auto. reset models :	100.000 cycles			
	Man. reset models:	10.000 cycles			
Temperature	Ambient:	-30 to + 65 °C (Cable connection)			
		-40 to 135 °C (Quick connect terminals)			
	Refrigerant:	-55 to +135 °C			
Vibration	15 G max. (between 20 to 2000 Hz)				
Range and differential	See pressure range tables				
Setpoint tolerances	From ± 3 to ± 25 PSIG (± 0.2 to ± 1.7 bar) See pressure range tables.				
Approvals	UL reg. file SA 516 Guide SDFY 2 CSA reg. file LR 63963 Class 1222-01 PED 97/23/EG category IV (TUV) DIN 32733				
Protection Class	IP67 for models provided with wires; IP20 for models provided with QC terminals				
Electrical Ratings	Standard duty : SPST # FLA 2.9 A, LRA 15 A at 240 Vac Pilot duty 375 VA at 120/240 Vac Max. 28 Vdc, 2 A				
	Heavy duty : SPST # FLA 10 A, LRA 45 A at 240 Vac Pilot duty 720 VA at 240 Vac Max. 28 Vdc, 15 A				
	SPDT # NO: FLA 2.9 A, LRA 17.4 A at 240 Vac Pilot duty 728 VA at 240 Vac NC: FLA 10 A, LRA 45 A at 240 Vac Pilot duty 720 VA at 240 Vac Max. 28 Vdc, 15 A				
Electrical connections	1/4" quick connect terminals (6.35 x 0.81 mm) Auto. reset models only. Cable 18 AWG (0.8 mm ²) stranded and tinned copper with 600V 105°C PVC 1/16" insulation. Available for both Auto. Reset models and Man. Reset models in lengths on request in multipliers of 6" (Standard length 48")				
Pressure connections	1/4" Female flare with valve depressor 1/4" ODM solder connection 6 mm ODM solder connection Other connections available on request				

- Quantity orders only
- # FLA = Full Load Amp
RLA = Resistance Load Amp.
LRA = Locked Rotor Amp.

The performance specifications are nominal and conform to acceptable industry standards. For applications at conditions beyond these specifications, consult the local Johnson Controls office or representative. Johnson Controls shall not be liable for damages resulting from misapplication or misuse of its products.

**JOHNSON
CONTROLS**

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