

Series P78

Dual Pressure Controls for Refrigeration, Air-conditioning and Heatpump Applications

Introduction

These dual pressure controls are designed for use in a variety of applications involving refrigeration high or low pressure. Models supplied have a whole range design, enabling them to be used with refrigerants R22, R134A, R404A and all other non-corrosive refrigerants which are within the operating range of the control. They may also be used for other high or low pressure applications such as air, water etc. Models which can be used with ammonia as well as controls tested, conforming to DIN 32733, and approved by TÜV are included in the program.



**P78 Dual Pressure Control for
 Refrigeration**

Description

The P78 series pressure controls may be used for control functions or limit functions, depending on model number. All models are provided with alarm contacts (except P78ALA). All standard models have phosphor bronze bellows and brass pressure connections. Models for use with ammonia are provided with stainless steel bellows and connectors. Devices conforming to DIN 32733 have a double bellows on the high pressure versions. Their IP54 classification means that these pressure controls are suitable for almost all applications.

Feature and Benefits

<input type="checkbox"/> Generous wiring space	Easy wiring and maintenance
<input type="checkbox"/> Splash-proof enclosure (IP54)	Can be used for indoor/outdoor applications
<input type="checkbox"/> Trip-free manual reset	Override is not possible in the control function
<input type="checkbox"/> Patented separate alarm contacts for both low pressure and high pressure cut-out (except P78ALA)	Easy monitoring of the fault location

Note

These controls are designed for use only as operating controls. Where an operating control failure would result in personal injury or loss of property it is the responsibility of the installer to add devices or systems that protect against, or warn of, control failure.

Note

To facilitate order handling special ordering codes have been added to some commonly used models

Type number matrix

- P78LCA Automatic reset both sides
- P78MCA Automatic reset low side manual reset high side
- P78PGA Manual reset both side
- P78LCW Automatic reset both sides conform DIN32733
- P78MCB Automatic reset low side manual reset high side conform DIN32733
- P78MCS Automatic reset low side manual reset high side conform DIN32733
- P78PLM 2 x manual rest HP conform DIN32733
- P78ALA Dual fan cycling control (2 x SPST close high)

Adjustment

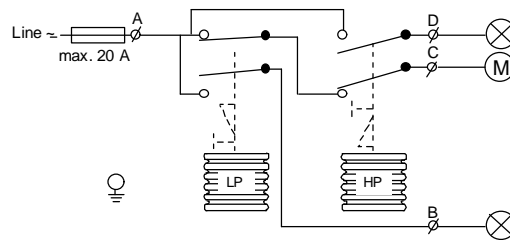
On most models the range scale indicates the high switch point (exception: LP side of P78PGA, here the range scale indicates the low switching point). To obtain low switch point deduct differential value from the high switch point.

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 or cover label.

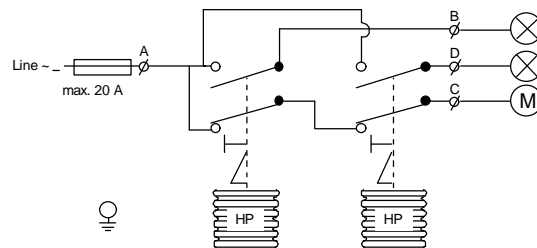
Contact functions

(see also Type Number Selection table)



- LP.** A - C opens on pressure decrease
A - B closes simultaneously
- HP.** A - C opens on pressure increase
A - D closes simultaneously

Fig. 1



- Left side HP.** A - C opens on pressure increase
A - B closes simultaneously
- Right side HP.** A - C opens on pressure increase
A - D closes simultaneously

Fig. 2

Switching action P78ALA

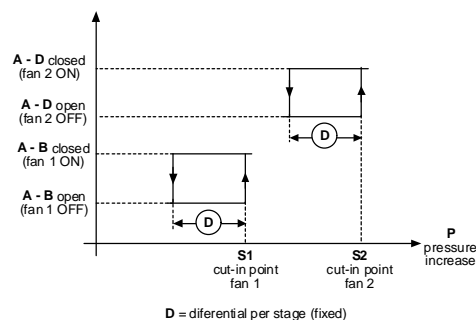


Fig.3a

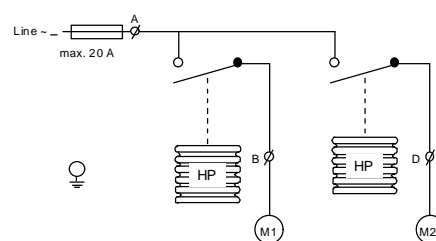


Fig. 3b

Type number selection table

Dual pressure controls for Non-corrosive refrigerants. LP Pmax.: 22bar HP Pmax.:33 bar

Family Code	Pressure Connection				Left Side		Right Side		Contact function (Figure)	Construction
	Style 5			Style 30	Range (bar)	Diff. (bar)	Range (bar)	Diff. (bar)		
	Ind. Pack.	Code***	Bulk-pack	Ind. Pack.						
P78LCA	-9300	P78L	-9320	-9400	-0.5 to 7	0.5 to 3	3 to 30	3 (fixed)	1	LP/HP
P78MCA	-9300	P78M	-9320	-9400	-0.5 to 7	0.5 to 3	3 to 30	Man. res.**	1	
P78PGA	-9300	P78P	-9320	-9400	-0.5 to 7	Man. res.**	3 to 30	Man. res.**	1	

- *** Wholesaler code only for individual pack
- ** Resetable at 3 bar below cut-out point
- * Resetable at 0.5 bar above cut-out point

Dual pressure controls for Non-corrosive refrigerants, built in accordance with DIN 32733 and approved by TÜV Germany. LP Pmax.: 20 bar HP Pmax.:33 bar

Family Code	Pressure Connection				Left Side		Right Side		Contact function (Figure)	Construction
	Style 5			Style 28	Range (bar)	Diff. (bar)	Range (bar)	Diff. (bar)		
	Ind. Pack.	Code***	Bulk-pack	Ind. Pack.						
P78LCW	-9300	P78W	-9320	-9800	-0.5 to 7	0.5 to 3	3 to 30	3 (fixed)	1	DWFK/DWK
P78MCB	-9300	P78B	-9320	-9800	-0.5 to 7	0.5 to 3	3 to 30	Man. res.**	1	DWFK/DBK
P78MCS	-9300	P78S	-9320	-9800	-0.5 to 7	Man. res.**	3 to 30	Man. res.**	1	DWFK/SDBK
P78PLM	-9350	P78BS		-9850	3 to 30	Man. res.**	3 to 30	Man. res.**	2	DBK/SDBK

- *** Wholesaler code only for individual pack
- ** Resetable at 3.5 bar below cut-out point
- * Resetable at 0.5 bar above cut-out point

Dual pressure controls for Ammonia and Non-corrosive refrigerants, LP Pmax.: 20 bar HP Pmax.:33 bar

Family Code	Pressure Connection				Left Side		Right Side		Contact function (Figure)	Construction
	Style 15				Range (bar)	Diff. (bar)	Range (bar)	Diff. (bar)		
	Ind. Pack.	Code***	Bulk-pack							
P78LCA	-9700		****		-0.5 to 7	0.5 to 3	3 to 30	3 (fixed)	1	LP/HP
P78MCA	-9700		****		-0.5 to 7	0.5 to 3	3 to 30	Man. res.**	1	
P78PGA	-9700		****		-0.5 to 7	Man. res.**	3 to 30	Man. res.**	1	

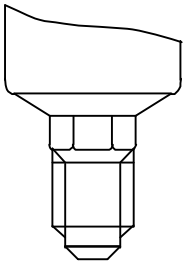
- **** Can be set-up for quantity orders
- *** Wholesaler code only for individual package
- ** Resetable at 3 bar below cut-out point
- * Resetable at 0.5 bar above cut-out point

Dual pressure Fan cycling controls for Air-cooled condensers (Non-corrosive refrigerants) HP Pmax.: 30 bar

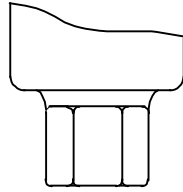
Family Code	Pressure Connection				Left Side		Right Side		Contact function (Figure)	Construction
	Style 5			Style 30	Range (bar)	Diff. (bar)	Range (bar)	Diff. (bar)		
	Ind. Pack.	Code***	Bulk-pack	Ind. Pack.						
P78ALA	-9351	P78A	****	-9451	3.5 to 21	1.8 (fixed)	3.5 to 21	1.8 (fixed)	3	HP/HP

- **** Can be set-up for quantity orders
 - *** Wholesaler code only for individual package
- Note: 100 kPa = 1 bar ≈ 14.5 psi

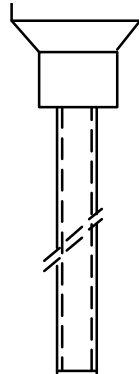
Pressure connections



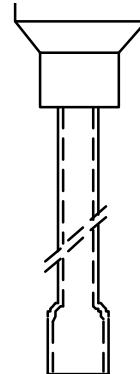
**Fig. 4
Style 5**
Male connector
7/16"-20 UNF for
1/4" 6 mm flare nut.



**Fig. 5
Style 15**
Female connector
1/4"-18 NPT



**Fig. 6
Style 28**
Braze connection
6 mm ODM



**Fig. 7
Style 30**
Braze connection
1/4" ODF

Accessories (optional)

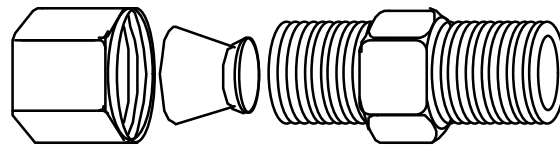


Fig. 8

Description	Application	Order number
Fits into style 15 pressure connectors	For 6 mm copper or steel tubing	CNR003N001R
	For 8 mm copper or steel tubing	CNR003N002R

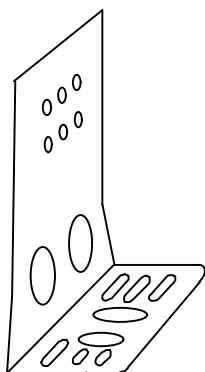


Fig. 9
Mounting bracket
Order number **271-51**

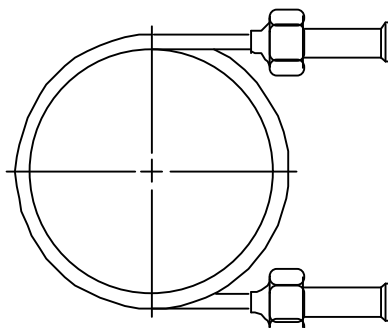


Fig. 10
90 cm Capillary with (2) flare
nuts (1/4" SAE)
Order number **SEC002N600**

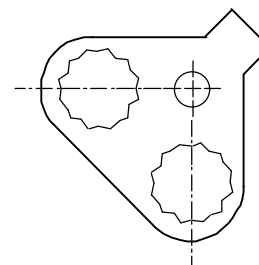
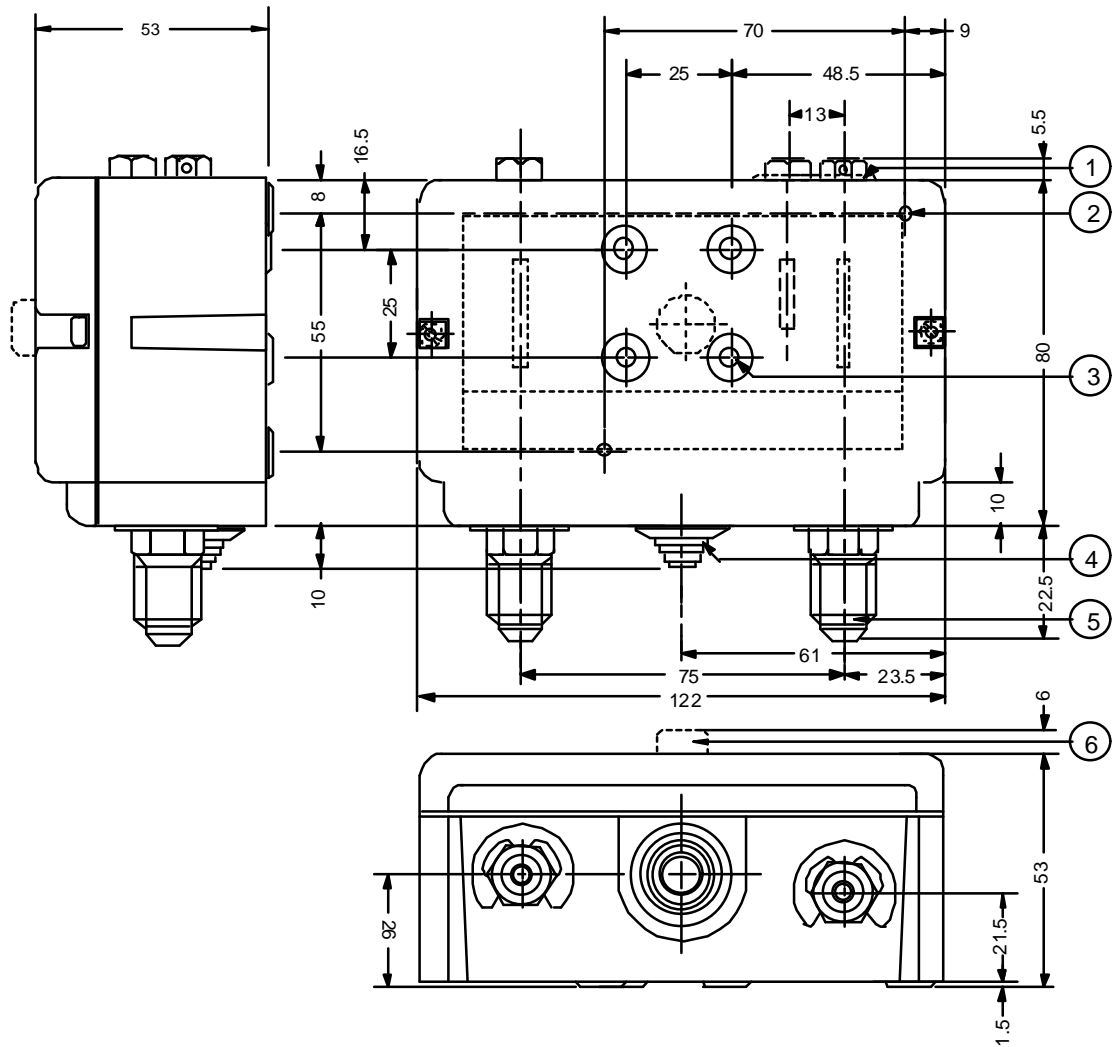


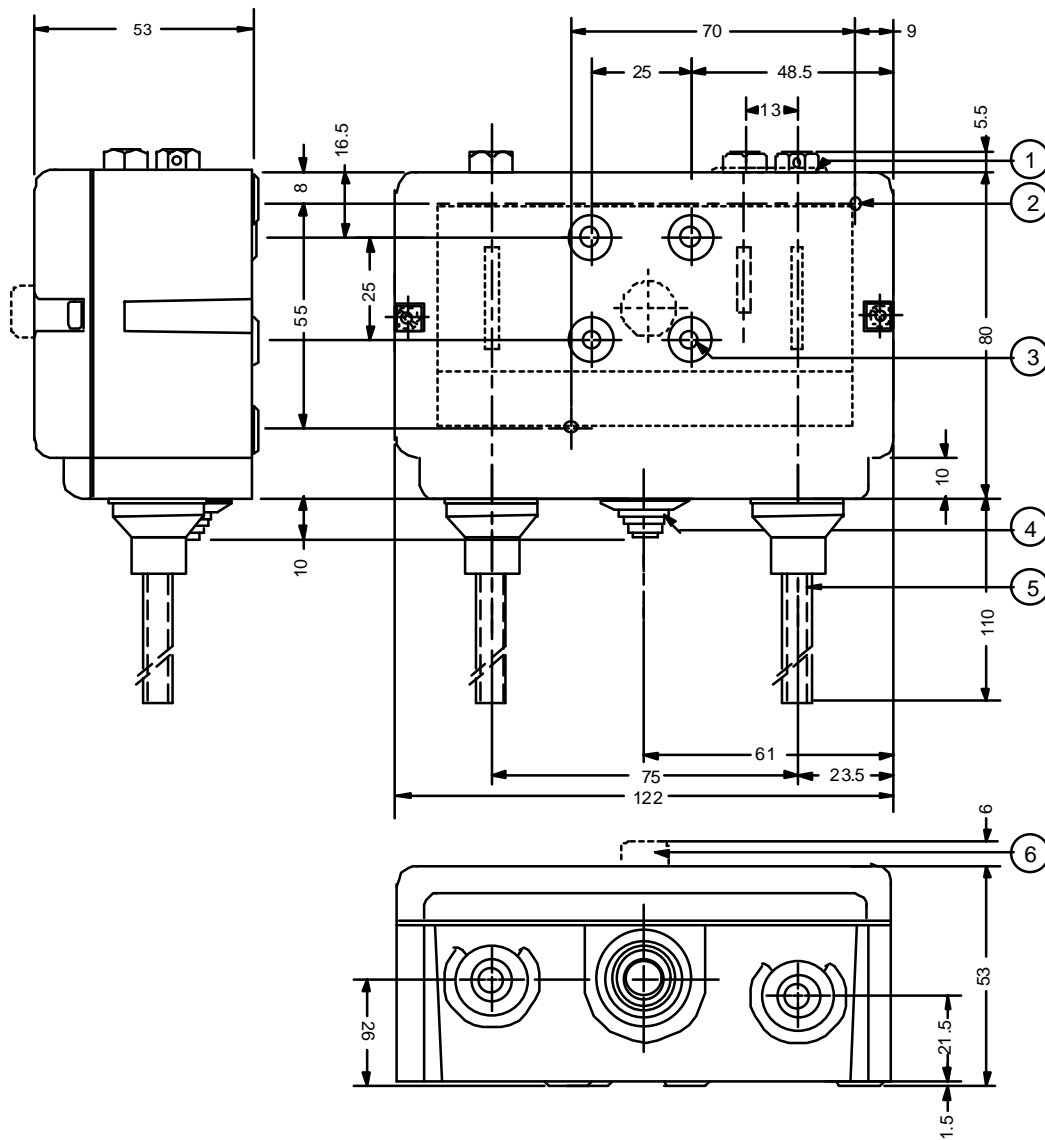
Fig. 11
Locking kit
Order number **KIT023N600**

Dimensions (mm)



1. lock plate (if applied)
2. two mounting holes $\text{\O} 4.5$ mm (knock out)
3. four mounting holes $\text{\O} M4$ (back side)
4. cable inlet grommet (cable range $\text{\O} 5$ to $\text{\O} 13$ mm)
5. power element:
Style 5: $\frac{7}{16}$ "-20 UNF male (shown)
Style 15: $\frac{1}{4}$ "-18 NPT female
6. reset button

Fig. 12

Dimensions (mm)

1. lock plate (if applied)
2. two mounting holes $\text{\O} 4.5$ mm (knock out)
3. four mounting holes $\text{\O} M4$ (back side)
4. cable inlet grommet (cable range $\text{\O} 5$ to $\text{\O} 13$ mm)
5. power element:
Style 28: Braze connection 6 mm ODM (shown)
Style 30: Braze connection 1/4" ODF
6. reset button

Fig. 13

Notes

Specifications

Pressure connections	Style 5, 15, 28, 30 (see drawings)		
Operating ranges and diff.	See type number selection		
Adjustments	See type number selection		
Ambient temp. limit	-50 to +55 °C (+70 °C max. duration two hours) -20 to +55 °C for DIN models		
Electrical ratings	380 Vac	contact A-C	16(10) A
		contact A-B	8(5) A
		contact A-D	8(5) A
	220 Vdc 12 W (pilot duty only)		
Pulsation plug	Fitted into all HP bellows		
Locking plate and screw	To lock and seal range and/or differential screw. Standard on types P78LCW, MCB, MCS and PLM. Optional on all other types (quantity orders only)		
Protection Class	IP54		
Material	Case and cover	Weatherproof aluminium (die-cast)	
	Contact unit	Large copper-backed silver cadmium contacts (AgCdO) on conductor leaves	
Accessories (see pag. 4)	Mounting bracket Compression coupling 90 cm capillary with two flare nuts		
Shipping weight	ind. pack	0.8 kg	
	-93xx	{	Ind. overpack 30 pcs. (24.5 kg)
	-97xx		Bulk pack 24 pcs. (19.5 kg)
	-94xx	{	Ind. overpack 13 pcs. (11 kg)
	-98xx		

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**

Johnson Controls International, Inc.

Headquarters: Milwaukee, WI, USA
 European Headquarters: Westendhof 8, 45143 Essen, Germany
 European Factories: Lomagna (Italy), Leeuwarden (The Netherlands) and Essen (Germany)
 Branch Offices: Principal European Cities.

This document is subject to change

Printed in Europe