

## Series P315PR

### Direct Mount Pressure Actuated Condenser Fan Speed Controllers for Electronically Commutated Motors

#### Introduction

The Series P315PR direct mount pressure actuated condenser fan speed controllers are designed for speed control of electronically commutated (EC) condenser fan motors. Condenser pressure control of a refrigeration system, via speed control of the fans on an air-cooled condenser, results in optimum performance throughout the year. The Series P315PR controllers are designed for non-corrosive refrigerant systems.

A pressure actuated control provides the most direct and fastest response to pressure changes in a refrigerant system. The controller varies the supply voltage to the motor from 5% to at least 95% over the proportional band.



**Figure 1: Series P315PR  
Direct Mount Pressure Actuated  
Condenser Fan Speed Controller**

Feature	Benefit
<b>Condenser Fan Speed Directly Controlled by Condenser Pressure</b>	Provides optimum condenser pressure control year round; reduces short-cycling during low temperatures; and increases condenser fan motor efficiency, which saves energy.
<b>Can Be Mounted Directly to Pressure Connections on Condenser Outlets</b>	Enables easy installation and provides direct and fast response to condenser pressure changes.
<b>Easy Access Setpoint Adjustment Screw on Top of Controller</b>	Provides easy and precise setpoint adjustment to meet your application needs.
<b>IP65 Enclosure</b>	Enables you to mount the controller outdoors.
<b>Compact Design</b>	Fits into small spaces and provides a small turning radius for screwing the controller onto the condenser fitting.
<b>Quick Connector Electrical Plug</b>	Enables easy wiring and quick installation.
<b>Compatible with 1 ~ or 3 ~ EC Motors</b>	Provides inexpensive and efficient fan speed control for low and high horsepower motors.

**IMPORTANT:** Use this Series P315PR Condenser Fan Speed Controller only as an operating control. Where failure or malfunction of the P315PR Controller could lead to personal injury or property damage to the controlled equipment or other property, additional precautions must be designed into the control system. Incorporate and maintain other devices, such as supervisory or alarm systems or safety or limit controls, intended to warn of or protect against failure or malfunction of the P315PR Controller.

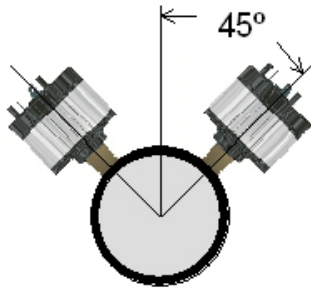
#### Installation

The controller must be mounted in upright position on the refrigerant line, preferably at the condenser outlet side, to reduce pressure pulsation as much as possible.

Mount the controller within a 45° angle on both sides of the top of the high pressure line to avoid accumulation of oil inside the controller bellows and maintain the class IP65 rating. See Figure 2.

If you are using a pump-down system, the controller connection must be made at the high-pressure side of the system and upstream from the solenoid valve to avoid low pressure during pump-down.

The controller (IP65) can be mounted outdoors. When mounted inside a cabinet, holes for air circulation must be provided.



**Figure 2: Mounting Position Range**

## Wiring



### **WARNING: Risk of Electric Shock.**

Disconnect or isolate all power supplies before making electrical connections. More than one disconnect or isolation may be required to completely de-energize equipment. Contact with components carrying hazardous voltage can cause electric shock and may result in severe personal injury or death.

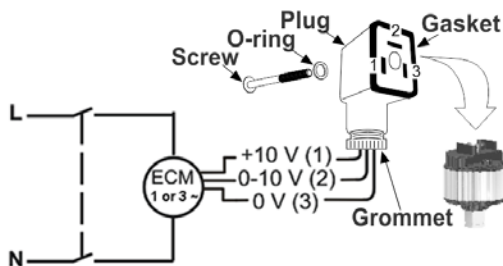


### **CAUTION: Risk of Property Damage.**

Do not apply power to the system before checking all wiring connections. Short circuited or improperly connected wires may result in permanent damage to the equipment.

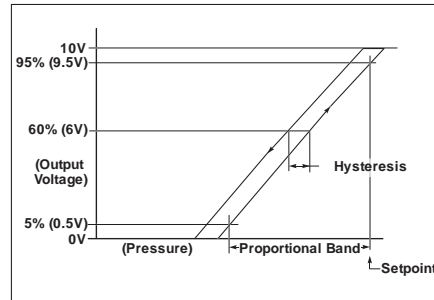
Wire the P315PR Series controller according to the details shown in Figure 3.

The rubber gasket must be placed between the quick connector plug and the controller terminals to maintain the IP65 protection class. The O-ring must be placed on the screw. Tighten screw securely. The screw fastens the connector plug to the controller terminals. The gasket, grommet, and O-ring keep the IP65 protection class for the controller.



**Figure 3: Wiring Details**

## Control Characteristic



Range	360°
5-15	-1.7 bar
8-25	-2.5 bar
22-42	-3.7 bar

**Figure 4: Control Versus Pressure\***

\* Controller voltage output (measured across wires 2 and 3) with supply voltage at + 10 VDC (measured across wires 1 and 3).

The controller's proportional band is fixed and defined as the difference between the two pressure values at which the output voltage values are 5% and 95% (+0.5 and +9.5 VDC) of the supply voltage from the EC motor. The proportional band is typically 4 bar (58 psi) for the 5 to 15 and 8 to 25 bar ranges and typically 5 bar (72.5 psi) for the 22 to 42 bar range.

Setpoint Adjustment Screw



**Figure 5: Setpoint Adjustment Screw Location**

## Setpoint Adjustment

The setpoint is defined at 95% output value. The pressure setpoint at which your equipment operates can be adjusted by using the setpoint adjustment screw.

The controller ships with the following factory-default setpoints:

- P315PR-9203: 6 bar (87 psi)
- P315PR-9202: 19 bar (276 psi)
- P315PR-9200: 26 bar (377 psi)

## Repair Information

If a Series P315PR Condenser Fan Speed Controller fails to operate within its specifications, replace the unit. For a replacement Series P315PR, contact the nearest Johnson Controls® representative. Provide the model number of the control when ordering a replacement. This number is found on the data plate.

**Table 1: Product Selection Chart**

Product Code Number	Range (bar)*	Element Style	Setting (bar)	Prop. Band (bar)	Controller Mode**	Minimum Shipping Qty	Additional Features
<b>P315PR-9200C</b>	8 to 25	47	19	4	N/A	1	--
<b>P315PR-9200D</b>	8 to 25	47	19	4	N/A	25	Bulk Pack
<b>P315PR-9202C</b>	22 to 42	47	26	5	N/A	1	--
<b>P315PR-9203C</b>	5 to 15	47	6	4	N/A	1	--
<b>P315PR-9203D</b>	5 to 15	47	6	4	N/A	25	Bulk Pack

\*1 bar = 100 kPa ≈ 14.5 psi

\*\*Minimum speed.



**Figure 6: Pressure Connection: Style 47  
(Dimensions in mm)**

## Technical Specifications

<b>Product Type</b>	P315PR Pressure Control	
<b>Pressure Range</b>	<b>P315PR-9200C and P315PR-9200D</b> 8 to 25 bar (116 to 363 psi)  <b>P315PR-9202C</b> 22 to 42 bar (319 to 609 psi)  <b>P315PR-9203C and P315PR-9203D</b> 5 to 15 bar (72.5 to 218 psi)	
<b>Maximum Overrun Pressure</b>	<b>P315PR-9200C and P315PR-9200D</b> 40 bar  <b>P315PR-9202C</b> 48 bar  <b>P315PR-9203C and P315PR-9203D</b> 25 bar	
<b>Pressure Connection</b>	Style 47 (7/16-20 UNF female including valve depressor)	
<b>Control Action</b>	Direct	
<b>Operating Ambient Temperature</b>	-20 to 55°C	
<b>Main Supply Voltage</b>	Excitation Voltage from EC Motor (+10 V maximum 1,1 mA)	
<b>Proportional Band</b>	<b>P315PR-9200C, P315PR-9203C, and P315PR-9203D</b> 4 bar typical  <b>P315PR-9202C</b> 5 bar typical	
<b>Storage Ambient Humidity</b>	10 to 98% Relative Humidity (RH)	
<b>Storage Ambient Temperature</b>	-40 to 85°C	
<b>Enclosure</b>	IP65	
<b>Material</b>	Top/Bottom	Polycarbonate (glass filled)
	Heat Sink	Aluminium
	Pressure Connection	Brass
<b>Shipping Weight</b>	0.2 kg (Individual Pack)	
<b>Wiring Connections</b>	Screw Terminals 1-1/2 mm <sup>2</sup> maximum Quick Connector Plug PG9 (6 up to 8 mm cable)	

*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 International, Inc.**

Headquarters:  
 European Headquarters:  
 European Factories:  
 Branch Offices:  
 This document is subject to change

Milwaukee, WI, USA  
 Westendhof 8, 45143 Essen, Germany  
 Lomagna (Italy), Leeuwarden (The Netherlands) and Essen (Germany)  
 Principal European Cities.  
 Printed in Europe