

Series P215DP

Single/Dual Pressure Input Condenser Fan Speed Controllers For Single Phase Motors (incl. built-in RFI suppression filter)

Introduction

These controllers are designed for speed variation of single phase motors, especially for fan speed control on air cooled condensers.

Head pressure control of a refrigeration system, through speed variation of the fan on an air-cooled condenser, results in optimum performance throughout the year.

Using a pressure transducer as the input device to the fan speed controller, gives the most direct and fastest response to pressure variations in the refrigerant system. The controller varies the supply voltage to the motor from 45 % to at least 95 % over the proportional band using the phase cutting principle.

If the pressure drops below the adjusted setpoint minus the proportional band, the output to the motor is zero volt or the adjusted min. speed setting. This provides speed variation of permanent split capacitor or shaded pole motors which do not draw more than 8 A (rms) full load current.

The controller used for dual pressure input varies the fan speed by directly sensing the pressure changes of two separate refrigerant circuits.

The setpoint of each pressure transducer can be separately adjusted. The controller selects the input with the greatest cooling demand to control the fan speed. The transducers can be used in non-corrosive refrigerant systems.



P215DP
Condenser Fan Speed Controller

The motor manufacturer should have approved his product for this speed control principle. It is recommended to confirm with the electric motor manufacturer, that the motor can be used with a controller, using the phase cutting principle for speed variation.

You can also provide a copy of this P215DP product data sheet to the motor manufacturer/supplier for review.

Feature and Benefits

- | | |
|--|--|
| <input type="checkbox"/> Condenser pressure control by fan speed variation. | Optimum condenser pressure control all the year round.
Less noise during colder (night) period. |
| <input type="checkbox"/> Pressure input. | Direct and fast response to pressure variations.
Easy to install |
| <input type="checkbox"/> Transducers with proven reliability. | More than half a million in use today. |
| <input type="checkbox"/> Easy accessible setpoint screw. | Setpoint easy adjustable. For use on various non-corrosive refrigerants. |
| <input type="checkbox"/> Built-in suppression filter. | The control meets the electro magnetic compatibility requirements of the 89/336/EEC directive. |
| <input type="checkbox"/> Adjustable minimum speed or cut-off selection. | Selection to keep the fan running on (adjusted) minimum rpm or to switch it off. |
| <input type="checkbox"/> Dual input possibility. | Can be used on condensers with two separate refrigerant circuits. |
| <input type="checkbox"/> IP54 enclosure. | Can be mounted outdoor. |

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.

Caution

The P215DP is intended to control equipment under normal operating conditions. Where failure or malfunction of the P215DP 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 malfunction of the P215DP must be incorporated into and maintained as part of the control system.

Description

The P215DP can be used for single or dual pressure input. For single input the transducer and the electronics are built in an IP54 enclosure.

For dual input a separate P35AC pressure transducer (IP20) must be ordered (see type number selection table).

In the case of dual input the controller selects the input with the greatest cooling demand to control the fan speed.

There are three pressure ranges: 8 to 14 bar
 14 to 24 bar
 22 to 42 bar

Pressure connections are:

style 50 - 90 cm capillary/machined flare with valve depressor

style 51 - 90 cm capillary/machined flare without valve depressor

style 28 - 15 cm brazing tube 6 mm ODM

Installation

The device is provided with a drain hole at the cable inlet side. To maintain the IP54 protection-class the controller must be mounted in a vertical position to assure a permanent drain function. For proper air-circulation there should be a clearance around the controller of at least 10 mm. When mounted inside a cabinet, holes for air circulation should be provided. If the P215DP cannot be mounted vertically, additional limitations apply. The maximum allowable current will be 6A instead of 8A or the maximum allowable ambient temperature is reduced to 40 °C instead of 55 °C. For dual input the second transducer can be installed in any convenient location, provided that the ambient conditions are suitable for IP20 enclosure. Enclosed mounting bracket can be used. If a pump-down system is used the pressure connection must be made at the high-pressure side of the system, (before the solenoid valve).

Note

For style 50 and 51 pressure connections two copper sealings (one spare) are delivered with the control. Each time the pressure connection is removed this sealing has to be replaced.

Wiring (see Fig. 1)

To meet the EMC directive shielded cable has to be used for motor wiring in case the distance between controller and motor is more than 2 meters. If the distance is less than 2 meters it is allowed to use non-shielded cable.

Non shielded cable may be used if the control and motor are mounted in one frame.

Both sides of the shield (motor and second pressure transducer wiring) have to be connected to earth. To prevent stray current, the earth connections of the transducer, the controller, the motor earth connection as well as the cable shield, all have to be connected to one earthing pole.

EMC

The controller does have a built-in suppression filter and meets all required EC directives. Please note that when two or more EMC compliant components are built together the total system may not be compliant. To make the total system compliant is the responsibility of the producer.

Note

Three earth connections are provided except for the 22-42 bar models which have two earth connections.

More motors can be wired in parallel, provided that the total current will not exceed 8 A rms.

Dual input connection

The second input can be connected as indicated in fig. 1.

If the distance between the transducer and the controller exceeds two metres shielded cable has to be used (The shield can be connected under the screw used to connect the transducer to the mounting bracket).

Enclosed quick connector plug can be used to connect wires to the transducer.

Caution

The enclosed quick connector plug is especially designed (special terminal numbering) for this control and should not be used for other purposes. Take care to connect the correct wires when the original connector is replaced by a non Johnson Control type.

Caution

There will be line voltage on the wiring between the second input pressure transducer and the P215DP.

Measuring

For measuring amps or volts values a true rms meter should be used.



Caution

The P215DP is not equipped with a power switch. Therefore an additional switch to isolate the device should be used in the power supply wiring to the P215DP. Also the P215DP should be externally fused against miswiring or short circuits. Use a thermal/current overload relay with a current rating according to the motor (max. 16 A/slow).

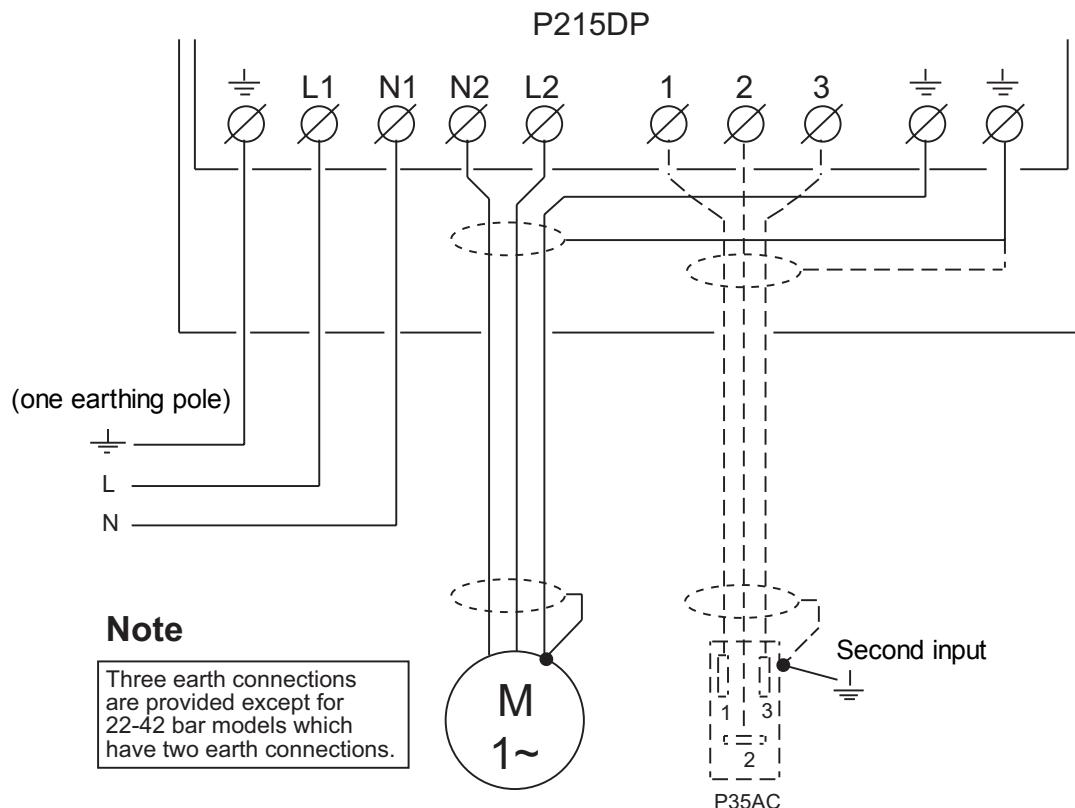


Fig. 1

Adjustments

The P215DP gives a control characteristic according to fig. 2.

The control characteristic can be affected by the load and the supply voltage.

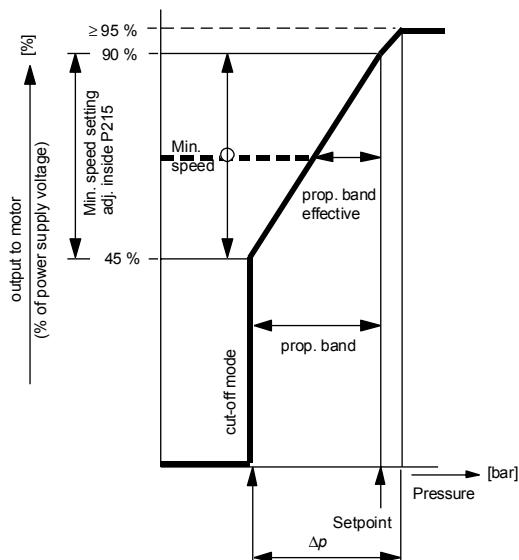


Fig .2

The proportional band is fixed and defined as the pressure difference between the points where the output values are 45% and 90% of the supply voltage.

	Range in bar		
	8 to 14	14 to 24	22 to 42
Prop. band	2.5 ± 0.5	4 ± 1	5 ± 2
Δ p (max.)	4	6	8

There is a built-in (fixed) hysteresis. This is not indicated in the control characteristic. The hysteresis is included in the prop. band.

Minimum speed setting

The minimum speed voltage setting, to prevent fan speed reduction below desirable levels, can be adjusted between 45 % and 90 % of the line voltage by means of the potentiometer inside the controller (see fig. 3). By turning this potentiometer clockwise into the minimum speed section, the output to the motor stays at a higher level. The minimum speed setting influences the proportional band. A higher setting of the minimum speed results in a smaller proportional band.

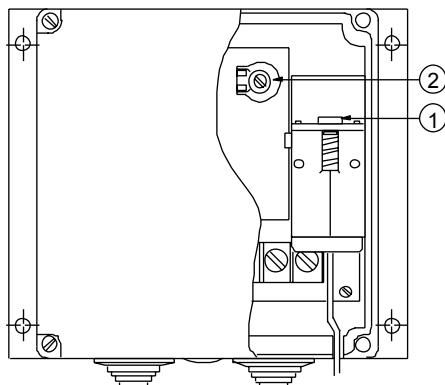


Fig. 3

- 1 Setpoint adjusting screw
2 Minimum speed / cut-off potentiometer

Cut-off mode

If minimum speed is not required, turn the potentiometer completely counter-clockwise. The output to the motor drops to 0 V when the pressure decreases below setpoint pressure minus proportional band. (fan stops.)

Setpoint

The pressure setpoint at which your equipment has to work can be adjusted by the setpoint adjusting screw (see fig. 2 and 3) between 8 to 14, 14 to 24 or 22 to 42 bar.

The setpoint is factory set at:

range 8 to 14 bar	10 bar
range 14 to 24 bar	16 bar
range 22 to 42 bar	30 bar

Note

If a second input is used and it is necessary to make setpoint adjustments on the P215DP care should be taken that the additional transducer does not affect the output voltage of the controller while adjustment is being made on the other transducer. The easiest way to do this is to set the built-in transducer to high pressure (+). Then adjust the second transducer to the required value. After adjusting disconnect the blue connector. Then set the built-in transducer to the required value. Reconnect the blue connector of the second transducer.

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.

Type number selection table

Order nr.	Range (bar)	Element style	Setting (bar)	Prop. band (bar)	Second input pressure transducer	See Figure
P215DP-9100	14 to 24	50	16	4	P35AC-9100	7A
P215DP-9101	8 to 14	50	10	2.5	P35AC-9101	7A
P215DP-9102	22 to 42	50	30	5	P35AC-9512	7B
P215DP-9600	14 to 24	51	16	4	P35AC-9507	7A
P215DP-9601	8 to 14	51	10	2.5	P35AC-9508	7A
P215DP-9800	14 to 24	28	16	4	P35AC-9100	7A

All models are delivered with a single pressure transducer A second pressure transducer can be ordered. For type number see type number selection table

Note: 1 bar = 100 kPa ≈ 14.5 psi

Pressure connections

There are two types of pressure connections available.

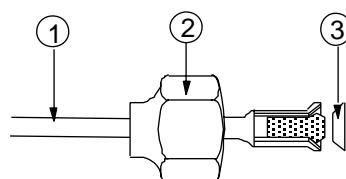


Fig. 4
Style 50 (incl. valve depressor mounted into machined flare)

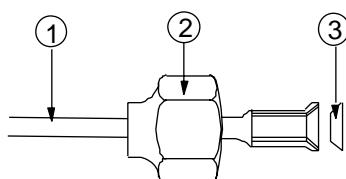


Fig. 5
Style 51 (excl. valve depressor)

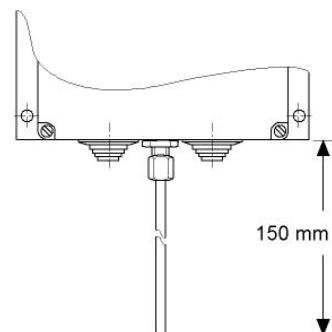


Fig. 6
Style 28 Braze connection
6 mm ODM

1. 90 cm capillary. 2. 7/16 - 20 UNF flare nut. 3. copper sealing

Dimensions (mm)

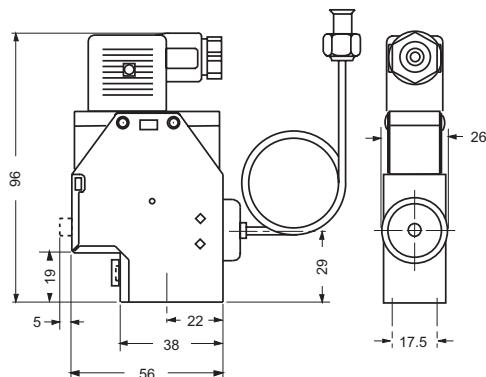


Fig. 7A
P35AC

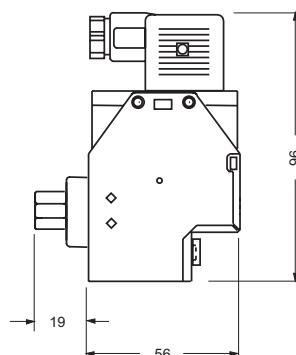


Fig. 7B
P35A

Dimensions (mm)

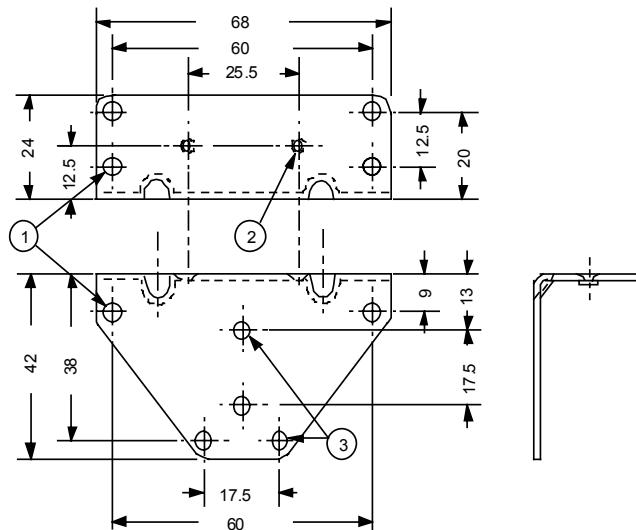


Fig. 8
Mounting Bracket 210-25

- 1** Mounting hole ø 4 mm
 - 2** Extruded 6-32 UNC thread
 - 3** Mounting hole for P35AC ø 4 mm

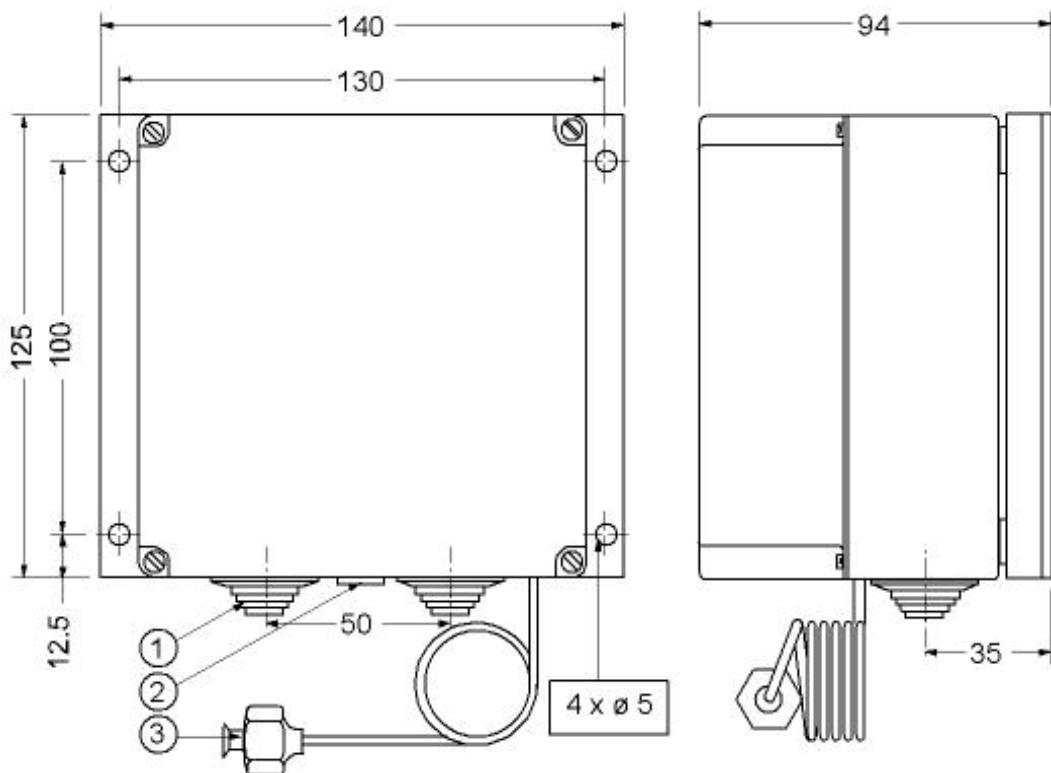


Fig. 9

- 1 cable inlet grommets
 - 2 cable inlet second input transducer
 - 3 7/16 - 20 UNF flare nut

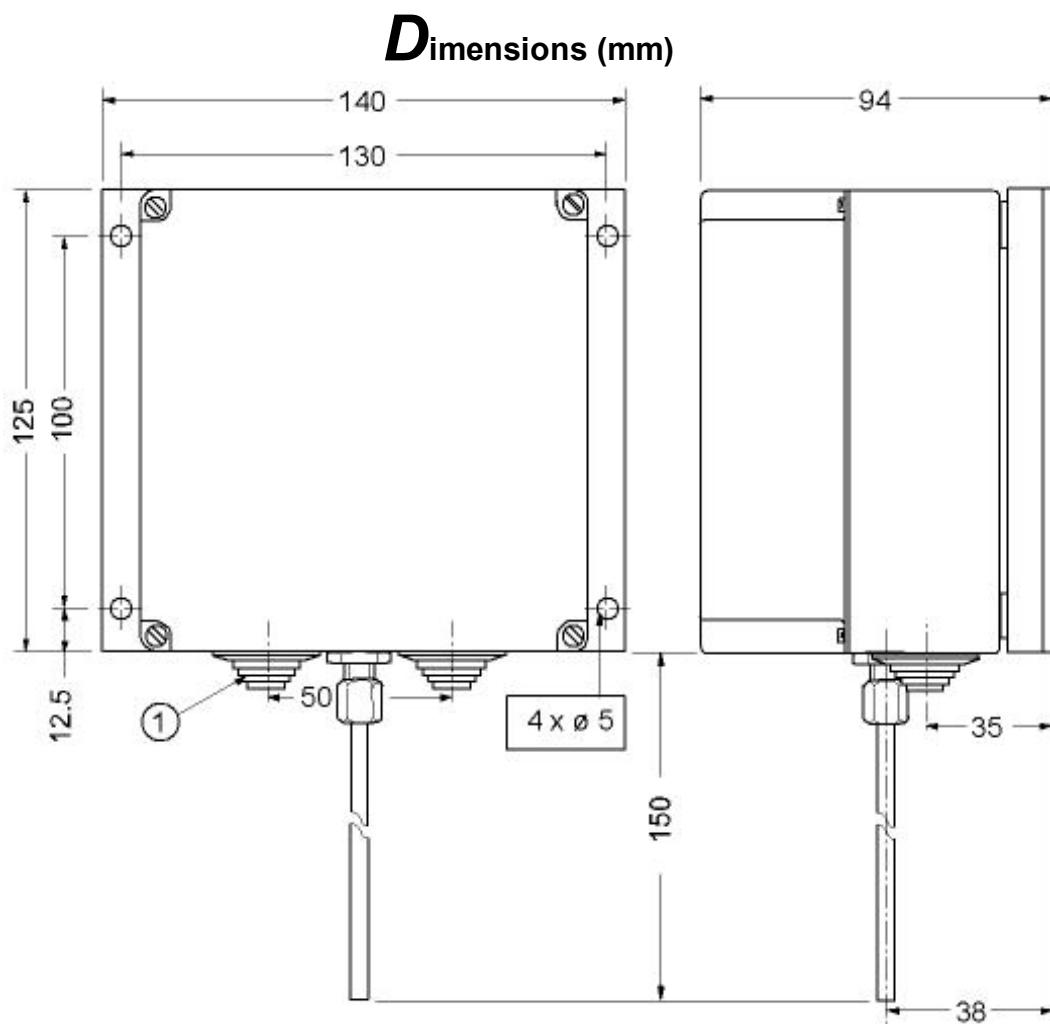


Fig. 10
1 cable inlet grommets

Specifications

Product type	P215DP		
Pressure range	22 to 42 bar 14 to 24 bar 8 to 14 bar		
Maximum overrun pressure	22 to 42 bar = 48 bar 14 to 24 bar = 40 bar 8 to 14 bar = 34 bar		
Pressure connection	style 50 with 90 cm of capillary style 51 with 90 cm of capillary style 28 with 150 mm tube 6mm ODM		
Control action	direct		
Maximum output voltage	$\geq 95\%$ of supply voltage		
Maximum current	8 A rms (at maximum voltage output)		
Minimum current	≥ 100 mA		
Power factor ($\cos\phi$) motor	≥ 0.6		
Mains supply voltage	230 Vac +10 % / -15 %		
Mains supply frequency	50/60 Hz		
Operating ambient temperature	-20 to +55° C		
Operating /storage ambient humidity.	10 to 98 % R.H. (non-condensing)		
Storage ambient Temp.	-40 to 85 °C		
Min. speed	adjustable from 45 to $\geq 90\%$ of supply voltage		
Cut-off point	45 % of supply voltage		
Prop. band	range	22 to 42 bar = 5 ± 2 bar	at minimum speed adjustment of 45% of line voltage.
	range	14 to 24 bar = 4 ± 1 bar	
	range	8 to 14 bar = 2.5 ± 0.5 bar	
additional pressure transducer	Enclosure	IP54	
		IP20	
Material case/cover	polycarbonate		
heatsink	aluminium		
press. connection	90 cm copper capillary with brass flare nut		
Shipping weight	individual pack 1.0 kg		
Residual current motor	in cut-off mode ≤ 15 mA		
Wiring connections	screw terminals 1 mm ² up to 2½ mm ²		
additional P35AC	screw terminals 1 mm ² up to 1½ mm ²		

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.



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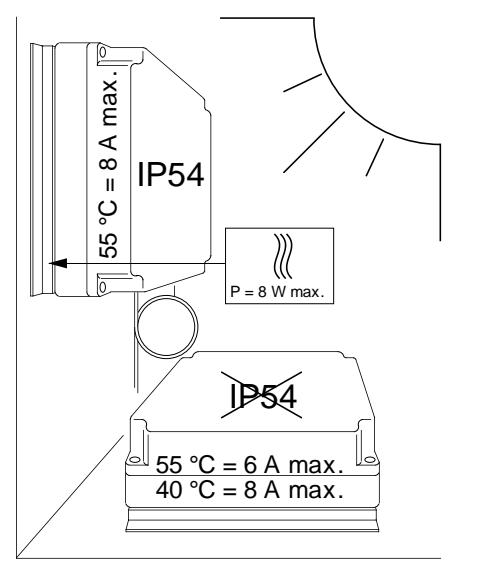
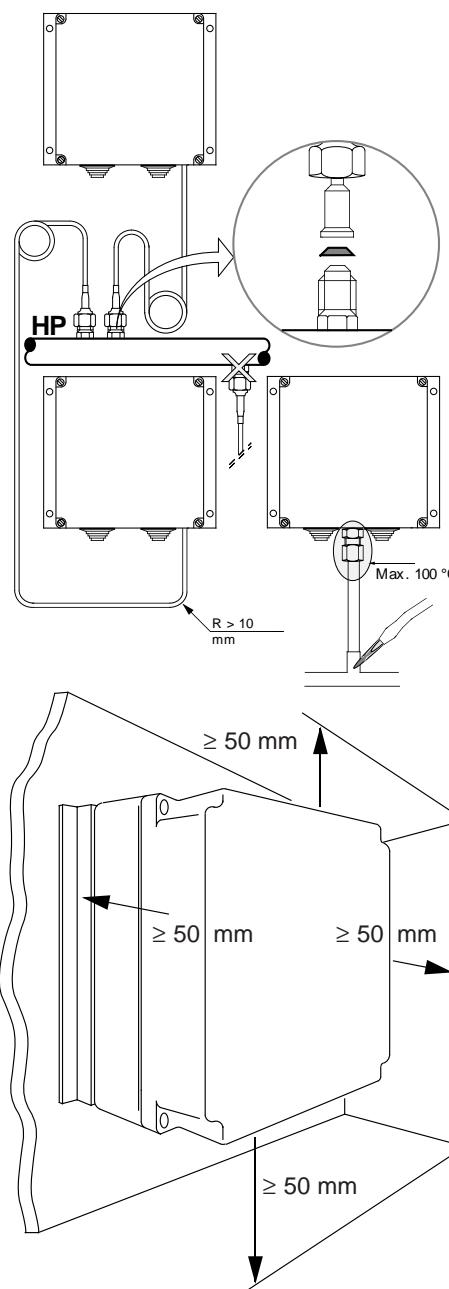
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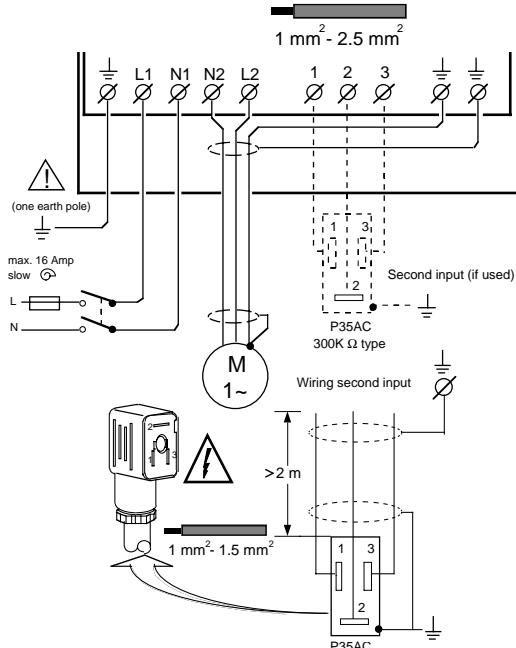
Instruction sheet

P215DP

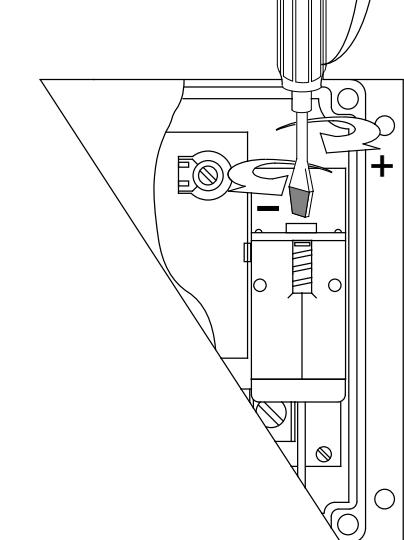
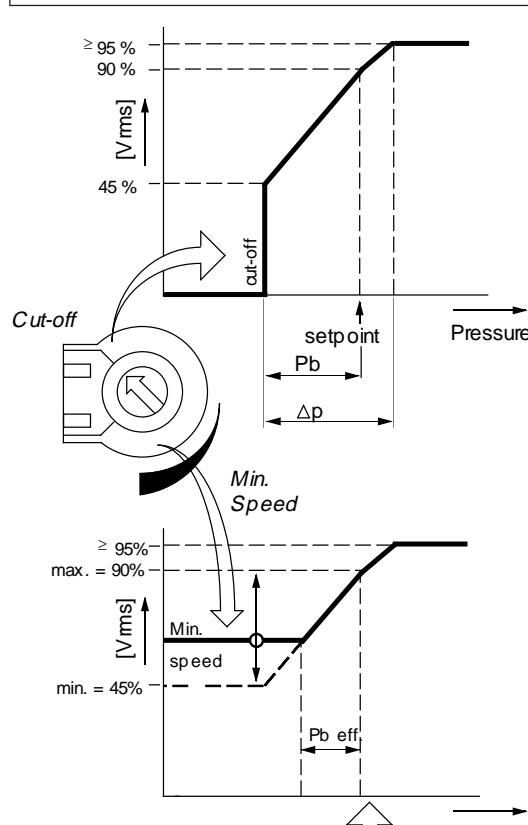
Mounting	Montage	Montaje	Montage	Montering	Montering	Montage	Kiinnitys	Montáž
Montagem	Montagem	Montering	Montagem	Montering	Montering	Montagem	Kiinnitys	Montáž



Wiring	Raccordement	Verdrahtung
Bedraging	Cableado	Cablaggio
Cablagem	Ledningar	Jodotus
Elektrisk installation	Kabling	Kαλωδιώση
Zapojení		



Adjustment	Instelling	Réglage	Ajuste	Justerig	Einstellung	Regolazione	Säätö	Püheμiση
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ENGLISH

READ THIS INSTRUCTION SHEET CAREFULLY BEFORE INSTALLING, RETAIN IT SAFELY FOR FUTURE REFERENCE.

Specification	8 to 14	Range (bar)	22 to 42
Max. overrun pressure:	34	40	48
Prop. band:	2.5	4	5
Δ P max.:	4	6	8
Factory setting	10	16	30
Max. continuous load:	8 A rms (at max. output voltage and max. ambient temp. of 55 °C)	8 A _{eff} (bei max. Ausgangsspannung und max. Umgebungstemperatur von 55 °C)	
Ambient hum.:	10 to 98% R.H. (non-condensing)	10-98% rel. F. (nicht kondensierend)	

The P215DP is a pressure actuated fanspeed controller for single phase motors and used for non-corrosive refrigerants. The controller characteristic is affected by the load and supply voltage.

The P215DP can be used for single or dual pressure input. The setpoint of each pressure transducer can be separately adjusted. The controller selects the input with the greatest cooling demand to control the fanspeed.

According to EN 60730 it is a type 1 action, incorporated control suitable for surface mounting on a plane surface and for use in normal pollution situation.

The P215DP is intended to control equipment under normal operating conditions. Where failure or malfunction of the P215DP 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 malfunction of the P215DP must be incorporated into and maintained as part of the control system.

⚠ To prevent electrical shock or damage to equipment, the utmost care should be taken when the cover is removed (authorized personnel only) for adjustments or check-out. In all other cases when the cover is removed, the power should be switched off.

Installation

- Replace copper seal ring after pressure disconnection.

Wiring

- All wiring should conform to local codes and must be carried out by authorized personnel only. When using multi stranded wire apply a cable ferrule to the cable end.

⚠ To prevent stray current, the motors, controller and second transducer earth connections have to be connected to one earth pole. (Both sides of the shields have to be connected).

Note

Three earth connections are provided except for the 22-42 bar models which do have two earth connections.

- To meet the EMC directive shielded cable has to be used for motor wiring in case the distance between controller and motor is more than 2 meters. If the distance is less than 2 meters it is allowed to use non-shielded cable.
- Non shielded cable may be used if the control and motor are mounted in one frame.
- More motors can be wired in parallel provided that the total current not exceeds 8 A rms.
- For measuring Amp. or Volt. values a true rms meter should be used.
- Vrms = output voltage to motor in percentage of line voltage.

Note

If a second input is used and it is necessary to make setpoint adjustments on P215DP care should be taken that the additional transducer does not affect the output voltage of the controller while adjustment is being made on the other transducer. The easiest way to do this is to set the built-in transducer to high pressure (+). Then adjust the second transducer to the required value. After adjusting disconnect the blue connector. Then set the built-in transducer to the required value. Connect the blue connector of the second transducer again.

Check out procedure

Before leaving the installation observe at least three complete operating cycles to be sure that all components are functioning correctly. If not contact your supplier.

FRANÇAIS

⚠ LISEZ ATTENTIVEMENT CES INSTRUCTIONS AVANT DE COMMENCER L'INSTALLATION ET CONSERVEZ-LES POUR VOUS Y REFERER ULTERIEUREMENT

Spécifications	8 à 14	Plage (bar)	14 à 24	22 à 42
Pression de dépassement maximale	34	40	48	
Bande prop.	2,5	4	5	
Δ P max.:	4	6	8	
Reglage d'usine	10	16	30	
Charge continue maximale	8 Ams (à une tension de sortie maximale et à une température ambiante maximale de 55 °C)			
Humidité ambiante	10 à 98% d'humidité relative (sans condensation)			

Le P215DP est un pressostat combiné de régime de ventilateur pour moteurs monophasés utilisés dans des circuits réfrigérants non corrosifs. Les caractéristiques du pressostat sont influencées par la charge et la tension d'alimentation.

Le modèle P215DP peut être utilisé pour une entrée à pression unique ou double. La consigne de chaque transducteur de pression peut être réglée séparément. Le régulateur sélectionne l'entrée avec la plus grande demande de refroidissement pour contrôler la vitesse du ventilateur.

D'après la norme EN 60730 c'est un régulateur incorporé, action type1, conçu pour un montage sur surface plane et utilisé dans des environnements normalement pollués.

Le contrôleur P215DP est destiné à commander des équipements dans des conditions d'exploitation normales. Lorsqu'une défaillance ou un mauvais fonctionnement de l'P215DP peut entraîner des conditions d'exploitation anormales pouvant provoquer des dommages corporels ou matériels, il convient d'intégrer dans le système de commande d'autres dispositifs (commandes de limite ou de sécurité) ou systèmes (systèmes d'alarme ou de surveillance) destinés à prévenir ou à protéger contre toute défaillance ou dysfonctionnement de l'P215DP. Ces dispositifs et systèmes complémentaires doivent en outre faire l'objet d'un entretien et d'une maintenance appropriés.

⚠ Pour éviter d'éventuels chocs électriques ou dommage aux équipements, un soin tout particulier doit être accordé quand le couvercle est enlevé (seulement par du personnel autorisé) pour le réglage et la vérification. Dans tous les autres cas, avant d'enlever le couvercle, on doit couper l'alimentation électrique.

Installation

- Remplacez le joint d'étanchéité en cuivre après avoir déconnecté la pression.

Câblage

Tous les raccordements doivent être conformes aux normes en vigueur et ne peuvent être réalisés que par du personnel autorisé.

En cas d'utilisation de câble souple multi-brins, utiliser un embout à sertir.

⚠ Pour éviter toute perte de courant, connexions à la terre des moteurs, du régulateur et du second transducteur doivent être connectées à un fil de mise à la terre. (Les deux côtés des blindages doivent être connectés).

Remarque

Trois raccordements à la terre sont fournis, excepté ce qui concerne les modèles 22-42 barres, qui ne présentent que deux raccordements à la terre.

- Afin de satisfaire à la directive sur la compatibilité électromagnétique, il convient d'utiliser, pour le câblage du moteur, un câble blindé si la distance entre le contrôleur et le moteur est supérieure à 2 mètres. Si cette distance est inférieure à 2 mètres, un câble non blindé peut être utilisé.
- Un câble **non blindé** peut être utilisé si la commande et le moteur sont installés dans un châssis.
- D'avantage de moteurs peuvent être câblés en parallèle pour autant que le courant total ne dépasse pas 8 A rms.
- Un véritable compteur rms doit être utilisé pour mesurer les valeurs Amp. ou Volt.
- Vrms = tension de sortie au moteur en pourcentage de la tension du réseau.

Remarque

Si une seconde entrée est utilisée et s'il est nécessaire d'ajuster la consigne sur le P215DP, veillez à ce que le capteur additionnel n'influence pas la tension de sortie du régulateur durant le réglage du capteur concerné.

La façon la plus facile d'y arriver, c'est de fixer le transducteur encastré à une pression élevée (+). Puis de régler le second transducteur à la valeur requise. Après le réglage, déconnectez le connecteur bleu. Puis fixez le transducteur encastré à la valeur requise. Connectez à nouveau le connecteur bleu du second transducteur.

Procédure de contrôle

Après avoir terminé l'installation, observez au moins trois cycles complets de fonctionnement pour s'assurer que tous les composants fonctionnent correctement. Si cela n'est pas le cas, contactez votre fournisseur.

DEUTSCH

BITTE LESEN SIE DIESE ANWEISUNGEN VOR DER INSTALLATION SORGFÄLTIG DURCH UND BEWAHREN SIE SIE ZUR WEITEREN VERWENDUNG AUF.

Spezifikation	8 bis 14	Druckbereich (bar)	14 bis 24	22 bis 42
Max. Überlaufdruck:	34	40	48	
B-P. Bereich:	2,5	4	5	
Δ P max.:	4	6	8	
Werksseitige Einstellung:	10	16	30	
Max. Dauerlast:	8 A _{eff} (bei max. Ausgangsspannung und max. Umgebungstemperatur von 55 °C)			
Luftfeuchtigkeit:	10-98% rel. F. (nicht kondensierend)			

Der P215DP ist ein druckgesteuerte Lüfterdrehzahlregler für Einphasenmotoren und für säurefreie Kühlmittel geeignet. Die Regelkurve linnt wird durch die Last und die Versorgungsspannung beeinflusst.

P215DP kann in Verbindung mit einfacher oder doppelter Druckeingang verwendet werden. Der Sollwert der einzelnen Druckgeber ist trennbar einstellbar. Der Regler wählt den Eingang mit dem größten Kühlbedarf zur Regelung der Lüfterdrehzahl aus.

Dieses ist entsprechend EN 60730 ein Wirkungsweise Typ 1, Integriertes Regel- und Steuergerät, Geeignet als Aufbaugerät, z. B. für Wandmontage und für Anwendung in Umgebungsbedingungen mit üblicher Verunreinigung.

Das P215DP ist zur Steuerung von Geräten unter normalen Betriebsbedingungen ausgelegt. In Fällen, in denen eine Fehlfunktion oder ein Defekt des P215DP zu außergewöhnlichen Betriebsbedingungen führen könnte, die Verletzungen oder die Beschädigung von Geräten oder anderen Einrichtungsgegenständen nach sich ziehen könnten, sollten andere Geräte (Toleranz- oder Sicherheitssteuerungen) oder Systeme (Alarm- oder Überwachungssysteme), die vor einem Defekt oder einer Fehlfunktion des P215DP warnen oder dagegen schützen, als Teil des Steuersystems eingesetzt und gewartet werden.

⚠ Zur Vermeidung eines elektrischen Schläges oder Beschädigung des Reglers ist mit äußerer Vorsicht bei der Einstellung oder Überprüfung bei abgenommener Gerätedeckung zu verfahren (befugten Personen vorbehalten). Bei allen anderen Arbeiten am Gerät bei abgenommener Abdeckung ist die Stromzufuhr abzuschalten.

Einbau

- Kupferdichtungsring nach Trennen der Druckanschlüsse wieder aufsetzen.

Verdrahtung

Alle Verdrahtungen müssen den am Einsatzort geltenden Vorschriften entsprechen und sind ausschließlich dazu befugten Personen vorbehalten. Bei Verwendung feindräger Leitungen sind Adernendhülsen zu verwenden.

⚠ Zur Vermeidung von Streustrom müssen die Erdanschlüsse von Motor, Regler und zweitem Geber an einem Erdpol angeschlossen sein. (Beide Seiten der Kabelschirme müssen daran angeschlossen sein.)

Hinweis

Es stehen drei Anschlüsse für die Erdung zur Verfügung, lediglich die Modelle für 22-42 Bar bieten zwei Anschlüsse für die Erdung.

- Um die Anforderungen der Anleitung bezüglich elektromagnetischer Verträglichkeit zu erfüllen, müssen geschützte Kabel als Motorverdrahtung verwendet werden, wenn die Entfernung zwischen Steuereinheit und Motor mehr als zwei Meter beträgt. Liegt die Entfernung unter zwei Metern, so können auch ungeschützte Kabel verwendet werden.
- Nichtabgeschirmtes Kabel kann verwendet werden, wenn sich Regler und Motor in einem Gehäuse befinden.
- Die Parallelschaltung mehrerer Motoren ist unter der Voraussetzung, daß der Gesamtstrom 8 A_{eff} nicht überschreitet, zulässig.
- Zur Messung der Strom- bzw. Spannungswerte sollte ein Effektivwert-Meßgerät verwendet werden.
- V_{eff} = Ausgangsspannung an Motor in Prozent der Leitungsspannung.

Hinweis

Bei Änderung der Sollwerteinstellung kann die Ausgangsspannung des Reglers durch den zweiten angeschlossenen Druckwandler, an dem in dem Moment keine Einstellung vorgenommen wird, beeinträchtigt werden.

Die einfachste Vorgehensweise besteht in der Einstellung des eingebauten Gebers auf Hochdruck (+). Dann kann der zweite Geber auf den erforderlichen Wert eingestellt werden. Nach der Einstellung sollte der blaue Steckverbinder getrennt werden. Danach ist der eingebaute Geber auf den erforderlichen Wert einzustellen. Zum Schluss ist der blaue Steckverbinder des zweiten Gebers wieder anzuschließen.

ITALIANO

! LEGGERE ATTENTAMENTE LE ISTRUZIONI PRIMA DELL'INSTALLAZIONE E CONSERVARE PER FUTURE CONSULTAZIONI.

Caratteristiche	da 8 a 14	Campo (bar)	da 14 a 24	da 22 a 42
Max. sovrappressione:	34	40	48	
Nastro elica:	2,5	4	5	
Δ P max.:	4	6	8	
Valore preimpostato:	10	16	30	

Carico continuo max.: potenza media efficace 8 A (a max. tensione d'uscita e temp.ambiente max. 55°C) da 10% a 98% UR (senza condensa)

Il P215DP è un controller a pressione per la regolazione della velocità per ventilatori per motori monofase e viene utilizzato per refrigeranti non corrosivi. La caratteristica del controller è dipendente dal carico e dalla tensione di alimentazione.

Il P215DP può essere utilizzato per uno o due segnali d'entrata della pressione. Il valore di riferimento di ciascuno dei trasduttori di pressione può essere regolato separatamente. Il controller seleziona l'entrata con il carico di raffreddamento più elevato per la regolazione delle velocità del ventilatore.

Secondo le EN 60730 è un azione tipo 1, Regolatore incorporato, adatto per montaggio su una superficie piatta e per uso in situazioni di normale inquinamento.

P215DP è previsto per il controllo di apparecchiature in condizioni operative normali. Nei casi in cui un guasto o un errore funzionale di P215DP potesse portare a una condizione operativa anomala in grado di provocare lesioni alle persone o danni all'apparecchiatura e ad altro, è necessario incorporare dispositivi (limitatori o comandi di sicurezza) o sistemi (sistemi di allarme o di supervisione) aggiuntivi destinati a dare segnalazioni o protezione in caso di guasto o errore funzionamento di P215DP e questi devono essere mantenuti come parte del sistema di controllo.

! Per evitare scariche elettriche o danneggiamenti alle attrezzature deve essere prestata la massima attenzione quando viene rimosso il coperchio per taratura o controlli (solo personale autorizzato). In tutti gli altri casi in cui viene rimosso il coperchio la tensione deve essere tolta.

Installazione
- Sostituire l'anello di guarnizione in rame dopo la depressurizzazione.

Cablaggio
Il cablaggio deve essere conforme alle normative locali ed essere eseguito esclusivamente da personale autorizzato.
Quando si usa un cavo con filo a trefoli occorre applicare un capocorda alla fine di ogni filo.

! Per evitare correnti di dispersione, la messa a terra del motore, del controller e del secondo trasduttore deve essere eseguita a un unico polo di terra. (Devono essere collegati ambo i lati della scommatura)

Nota
Sono forniti tre collegamenti di terra, ad eccezione dei modelli barra 22-42, che ne dispongono di due.

- Per rispettare la direttiva sulla compatibilità elettromagnetica, per il collegamento del motore è necessario usare un cavo schermato nel caso in cui la distanza tra regolatore e motore sia superiore a 2 metri. Se tale distanza è inferiore a 2 metri, è possibile usare un cavo non schermato.
- È ammesso utilizzare cavi non schermati se il comando e il motore sono montati in un unico telaio.
- È possibile collegare più motori in parallelo a condizione che la corrente totale non superi una potenza effettiva di 8 A.

- Per la misurazione dei valori della corrente e della tensione va utilizzato un misuratore della potenza effettiva.

- Vrms = tensione erogata al motore in percentuale della tensione di linea.

Nota
Se si utilizza un secondo ingresso ed è necessario eseguire delle registrazioni dei punti di regolazione sul P215DP, fare attenzione affinché il trasduttore supplementare non incida sulla tensione d'uscita del regolatore mentre vengono effettuate le registrazioni sull'altro trasduttore.

La procedura più semplice da seguire consiste nell'impostare il trasduttore incorporato sull'altra pressione (+) e quindi impostare il secondo trasduttore sul valore richiesto. Dopo la regolazione, collegare il connettore blu, quindi impostare il trasduttore incorporato sul valore richiesto. Collegare nuovamente il connettore blu del secondo trasduttore.

Messa in funzione
Prima di concludere l'installazione, osservare almeno tre cicli operativi completi per accettare il corretto funzionamento di tutti i componenti. In caso di irregolarità, contattare il proprio fornitore.

PORTUGUÊS

! LEIA ATENTAMENTE ESTA FOLHA DE INSTRUÇÕES ANTES DE PROCEDER À INSTALAÇÃO E GUARDE-A PARA UTILIZAÇÃO FUTURA.

Especificação	Gama (bar)	8 a 14	14 a 24	22 a 42
Pressão de transbordamento max.		34	40	48
Banda de prop.		2,5	4	5
Δ P max.:		4	6	8
Ajuste de fábrica		10	16	30

Carga contínua max.: 8 A rms (com tensão de saída max. e temperatura ambiente max. de 55 °C)

Humidade ambiente: 10 a 98% (relativa, sem condensação)

O P215DP é um controlador de velocidade de ventilador actuado por pressão para motores monofásicos e utilizado para refrigerantes não corrosivos. As características do controlador são afectadas pela carga e a tensão eléctrica de alimentação.

O P215DP pode ser utilizado para uma entrada de pressão simples ou dupla. O ponto de referência de cada transdutor de pressão pode ser ajustado separadamente. Para controlar a velocidade do ventilador, o controlador selecciona a entrada com a maior necessidade de refrigeração.

Segundo EN 60730 é um acção tipo 1, Controlador incorporado, apropriado para montagem de superfície sobre uma superfície plana e para a utilização em condições normais de poluição.

O P215DP serve para controlar equipamento em condições de funcionamento normais. Onde falhas ou avarias do P215DP possam conduzir a uma condição de funcionamento anormal e provocar lesões pessoais ou danos no equipamento ou outra propriedade, tem de integrar e manter como parte do sistema de controlo outros dispositivos (controles de segurança ou limite) ou sistemas (sistemas de alarme ou supervisão) para avisar ou proteger contra falhas ou avarias do P215DP.

! Para evitar choques eléctricos ou danos ao equipamento, deve-se tomar o máximo cuidado ao retirar a tampa (somente pessoal autorizado) para os ajustes ou controles. Em todos os outros casos em que a tampa for retirada, a alimentação eléctrica deve ser desligada.

Instalação
- Substitua o anel de estanqueidade de cobre depois da desconexão da pressão.

Conexões
Todas as conexões devem estar conforme os códigos locais e efectuadas somente por pessoal autorizado.

Ao ser utilizado cabo multifilar, monte um adaptador de cabo na extremidade do cabo.

! Para evitar correntes parasitas, as conexões de terra dos motores, do controlador e do segundo transdutor devem estar ligadas a um polo de terra. (Ambos os lados da blindagem devem ser ligados).

Observação
São fornecidas três ligações de terra, excepto para os modelos de 22-42 bar que têm apenas duas ligações de terra.

- Para cumprir a directiva EMC, tem de utilizar cabo armado na instalação do motor no caso da distância entre o motor e o controlador ser superior a 2 metros. Se a distância for inferior a 2 metros, pode utilizar cabo não armado.

- Pode ser utilizado cabo não blindado quando o controlador e o motor estiverem montados num só armário.

- Podem ser ligados vários motores em paralelo, desde que a corrente total não seja superior a 8 A rms.

- Para a medição da amperagem ou voltagem, deve ser utilizado um medidor rms fiel.

- Vrms = tensão de saída ao motor em percentagem da tensão de rede.

Observação
Ao ser utilizada uma segunda entrada e for preciso fazer ajustes no ponto de referência no P215DP, deve-se certificar de que o transdutor adicional não afete a tensão de saída do controlador enquanto estejam sendo feitos ajustes no outro transdutor.

A maneira mais segura e fácil de lograr isso, é colocar o transdutor integrado em alta pressão (+). Em seguida, ajuste o segundo transdutor ao valor requerido. Depois do ajuste, desligue o conector azul. Em seguida, ajuste o transdutor integrado ao valor requerido. Torna a ligar o conector azul ao segundo transdutor.

Procedimento de controlo
Antes de abandonar a instalação, observe pelo menos três ciclos de funcionamento completos para assegurar-se de que todos os componentes funcionem correctamente. Do contrário, contacte o seu fornecedor.

SVENSKA

LÄS NOGA DESSA INSTALLATIONSANVISNINGAR INNAN INSTALLATIONEN UTFÖRS OCH BEVARA DEM FÖR FRAMTIDA REFERENS.

Specificatörer	Omräde (bar)	8 - 14	14 - 24	22 - 42
Max övertryck		34	40	48
Prop. band:		2,5	4	5
Δ P max.:		4	6	8
Fabriksinställning		10	16	30
Max konstant belastning:	8 A rms (vid max utteffekt och max omgivnings-temperatur på 55 °C)			
Omgivande fuktighet:	10 - 98% relativ fuktighet (icke kondenserande)			

P215DP är en tryckdriven styrenhet för fläktbehag för enfasmotorer och används för icke-korrosiv kylning. Styrenheten bekräftas påverkas av belastningen och förbrukningspåslängningen.

P215DP kan användas för enkelt eller dubbelt ingående tryck. Inställningspunkt för varje trycktransdukt kan justeras separat. Styrenheten väljer den insignal med det största kylningsbehovet för att styra fläktbehagstiden.

I hänvisningen till EN 60730 är av typ 1 styrning, inkorporerad styrning lämpade för montering på plan yta i en normalt nedsmutsad omgivning.

P215DP är avsedd för att styra utrustning under normala driftförhållanden. Om ett fel eller defekt hos P215DP kan leda till driftavvikelse som kan leda till personskada, maskinskada, skada till egendom, mäste andra utrustningar/gräns- eller säkerhetsmekanikerna eller system (alarm- eller övervakningssystem), avsedda att varna eller skydda mot fel eller defekter hos P215DP installeras och underhållas som en del av kontrollsystemet.

! För att undvika elektriska stötar eller skada på utrustningen, ta det ytterst försiktigt när täcklocket tas bort (enbart auktoriserad personal) vid justeringar eller kontroller. I alla andra fall får täcklocket tas bort ska spänningen kopplas bort.

Installation

- Byt ut kopparpackningen nära fränkopplingen av trycket utförts.

Ledningar

- När det används mångledad kabel, sätt dit i en kabelsko i kabeländarna.

När det används mångledad kabel, sätt dit i en kabelsko i kabeländarna.

! För att förebygga läckström ska motorerna, styrenheten och den andra transduktorn jordas till en jordpol (skärmarnas båda sidor måste anslutas).

Obs

De tre jordanslutningarna finns i alla utöveranden utom modellerna 22-42 bar som har två jordanslutningar.

- För att uppfylla EMC-direktivet används skärmade kablar för motoranslutningen i de fall avståndet mellan kontrollern och motorn är större än 2 meter. När avståndet är mindre än 2 meter är det tillåtet att använda ej skärmade kablar.

- Icke skärmade ledningar kan användas och styrenheten och motorn är monterade i en ram.

- Fler motorer kan kopplas parallellt förutsätt att den totala strömmen inte överstiger 8 A rms.

- Använd rätt rms-mätare för mätning av ampere eller volt.

- Vrms = utspänning till motorn i procent av nätspänningen.

Obs

Om en andra inmatning används och det är nödvändigt att ändra grundinställningen på P215DP måste man se till att den extra omvandlaren inte påverkar utgångs-spänningen från styrenheten medan den andra omvandlaren ställs in.

Det enklaste sättet att utföra detta är att ställa in den inbyggda transduktorn på högt tryck (+). Justera därefter den andra transduktorn till önskat värde. Efter justeringen kopplas den blåa kontakten bort. Ställ därefter in den inbyggda transduktorn till den önskade värden och anslut åter den andra transduktorn till den blåa kontakten.

Kontrollera proceduren

Efter installationen bör man övervaka minst tre hela operationscyklar fungerar som de ska. Om detta inte är fallet, kontakta leverantören.

Test procedure

För installationen avsluttes. Observer minst tre kompletta betjänings cyklusser, för att være sikker på, at alle komponenter fungerer korrekt. Hvis det ikke er tilfældet, vedtak kontakt med Deres leverandør.

Test procedure

För installationen avsluttes. Observer minst tre kompletta betjänings cyklusser, för att være sikker på, at alle komponenter fungerer korrekt. Hvis det ikke er tilfældet, vedtak kontakt med Deres leverandør.

Bemerk

Hvis en anden indgang er brugt og det er nødvendigt at justere den indstillet værdi på P215DP, skal man passe på, at de supplerende transducer ikke har indflydelse på den udgående netspænding fra kontrolfunktionen, mens den anden transducer justeres.

Den letteste måde at gøre det på, er at indstille indbygnings transduceren på et højere tryk (+). Derefter justeres den anden transducer til den ønskede værdi. Forbind den blå forbundelse og den anden transducer igen.

Test procedure

Før installationen afsluttes. Observer minst tre komplette betjænings cyklusser, for at være sikker på, at alle komponenter fungerer korrekt. Hvis det ikke er tilfældet, vedtak kontakt med Deres leverandør.

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