

Installed System Documentation

It is recommended that a record is kept of the programmed settings on the EC-PRESS controller.

| | | |
|---------------------|----|---------------------|
| System Location | | |
| Fan Part No. | | |
| Inlet Ring Part No. | | |
| System Duty | Pa | m ³ /h * |
| Installation Date | | |
| Commissioning Date | | |

*Constant volume systems only

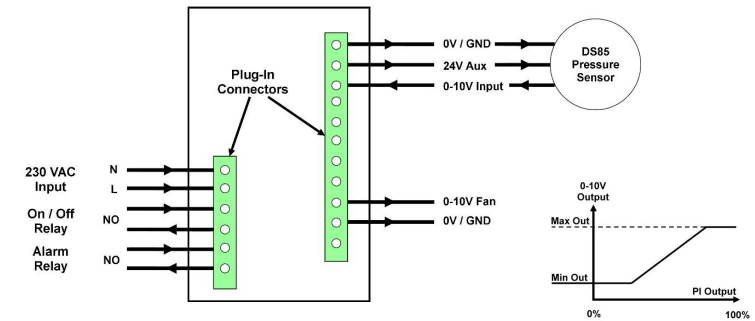
| Parameter | Description | Default Value | Set Value |
|-----------|---|---------------|-----------|
| Set Point | Pressure setting in Pascals | - | |
| MIN OUT | Minimum fan speed | 5% | |
| MAX OUT | Maximum fan speed | 95% | |
| P BAND | Proportional band setting for the PI regulator ** | 10 | |
| I TIME | Integration time setting for the PI regulator ** | 10 | |

** Adjustment of these parameters away from the default setting may lead to system instability.

| | | |
|-------|---------|-------|
| Name: | Signed: | Date: |
|-------|---------|-------|



Connection Diagram



| Keys pressed | Description | Range | Default |
|------------------|---|---|----------------|
| ↓ ↑ | Use to adjust setpoint. Hold down for rapid adjustment. Hold both to view setpoint when keypad is locked. | 0-1000 Pa dependent on selected sensor. | - |
| ↓ ↑ | Use in combination with other keys to adjust selected parameter. Hold down for rapid adjustment. | Depends on selected function | - |
| ON/OFF | Switches controller off. DC output goes to zero. Relay 1 closes. | - | - |
| SHOW OUT | Displays the 0-10V control output signal as a percentage. | 0-100% | - |
| SHOW IN | Displays the 0-10V sensor input signal as a percentage. | 0-100% | - |
| MIN OUT | Sets the minimum permitted 0-10V output signal as a percentage. | 5-95% | 5% |
| MAX OUT | Sets the maximum permitted 0-10V output signal as a percentage. | 5-100% | 95% |
| P BAND | Sets the proportional band for the PI regulator* | 0-100 | 10 |
| I TIME | Sets the integration time for the PI regulator* | 0-100 | 10 |
| SHOW OUT SHOW IN | Hold down both keys for 10 seconds to lock or unlock the keypad. | LOC when first locked | Locked |
| ↓ | Hold for 2 seconds on power up to select 0-50 Pa sensor. | 50 | Setpoint 15Pa |
| MIN OUT | Hold for 2 seconds on power up to select 0-200 Pa sensor. | 200 | Setpoint 60Pa |
| ↑ | Hold for 2 seconds on power up to select 0-500 Pa sensor. | 500 | Setpoint 150Pa |
| MAX OUT | Hold for 2 seconds on power up to select 0-1000 Pa sensor. | 1000 | Setpoint 300Pa |

IMPORTANT! Installation must be carried out by suitably qualified personnel in accordance with all statutory and local regulations. Ensure that electrical power is disconnected before commencing work.

Connect the controller in accordance with the connection diagram and refit front panel of case before applying power.

Application For use with ebm-papst EC products with 0-10V control input in HVAC constant pressure systems. Can also be used with a pressure tapped inlet ring to provide a constant air volume system.

Installation The unit must be mounted on a secure, vibration free surface away from direct heat. Maximum permissible ambient temperature is 45° C

Switching On On power up, press and hold the appropriate button for the sensor being used. e.g if using a 0-500 Pa sensor, press and hold the top right-hand (Up Arrow) button. The controller then displays, in turn, the software version, a count of the number of times power has been applied and the sensor range. (Note: This operation does not need to be repeated unless the sensor range is changed.)

CAUTION: On power-up the fan will start to rotate and then stop as an internal test is carried out.

ON-OFF Key Pressing this key switches off the controller output to the fan, causing the fan to stop. When selected off, Alarm Relay 1 closes and the OFF is displayed on the controller.

Keypad Lock The keypad is locked on first power-up and will lock itself after 10 minutes of inactivity. To unlock the keypad, hold the SHOW OUT and SHOW IN buttons simultaneously for 10 seconds. A long beep indicates when the keypad is unlocked. When locked, all parameters can be read by pressing the appropriate key but cannot be adjusted. The set point is read by pressing both arrow keys simultaneously. The ON-OFF key is operative at all times.

Pressure Setting Use the Up and Down arrows to set the required pressure on the display. Press the ON-OFF key to start the fan. The fan speed will increase slowly and the display will show the system pressure. The value may overshoot slightly as the controller seeks the selected pressure but will settle to the set point within a few minutes. Due to the constant variations within a ducted pressure system, the value will not always be constant but will stay within a few Pascals of the set point.

Maximum Output Setting The MAX OUT key, in combination with the Up and Down arrows, sets the maximum fan speed as a percentage of the fan's maximum speed. In a filtered constant pressure system, increasing fan speed is an indication of the filter becoming blocked or dirty and can therefore be used as a dirty filter alarm. If the fan speed reaches the maximum limit for a continuous period of 30 minutes, Alarm Relay 2 will close and HIGH will be displayed on the controller. Note that the fan speed will not increase beyond this limit and any further filter restriction will result in a drop in system pressure.

Minimum Output Setting The MIN OUT key, can be used in exactly the same way as the MAX OUT key but to indicate an over pressure situation. If the fan speed reaches the minimum limit for a continuous period of 30 minutes, Alarm Relay 2 will close and LO will be displayed on the controller.

SHOW OUT On pressing this key, the controller output to the fan is displayed as a percentage of maximum speed. For example, if the display reads 50.0 then the fan is being controlled at 50% of full speed. This function can be used in development to assess the appropriate maximum speed setting for a dirty filter condition.

SHOW IN This selection displays the input of the pressure sensor to the controller as a percentage of full range. For example, when using a 0-500 Pa sensor, the input will read 50.0 when the system pressure is 250 Pa.

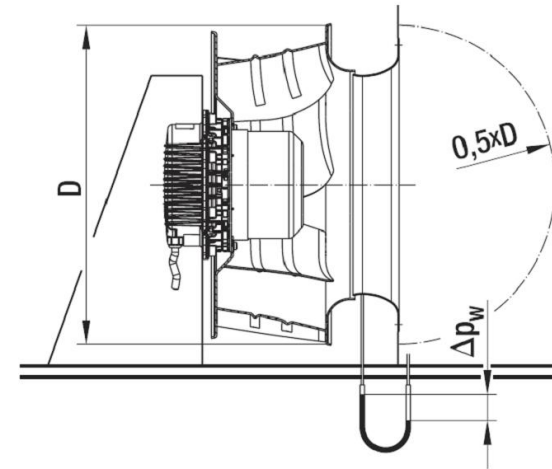
P BAND and I TIME The P BAND key shows the proportional setting of the controller and influences the speed at which the set point is reached. The I TIME key shows the Integration Time setting of the controller and influences the time taken to reach a stable pressure. The default setting for both is 10 and changes to this setting may result in hunting or instability of the system. You should seek technical assistance from ebm-papst UK before making any adjustment to these parameters.

Constant Volume Operation

By measuring the difference between the ambient inlet pressure and the pressure at the inlet ring, it is possible to calculate the air volume. If the pressure difference is kept constant, a constant volume system is established.

Inlet Rings A special inlet ring is required which has hose connections to measure the pressure inside the inlet ring. They also have a known K-factor, a constant relative to the airflow through the inlet ring, which is needed to calculate the air volume.

Application The fan should be installed as shown below using the appropriate inlet ring.



Air volume is calculated from the equation $V = k \sqrt{\Delta p_w}$ where V is the airflow in m³/h $\sqrt{\Delta p_w}$ = the pressure difference in Pa (Pascals) and K in the inlet ring constant. Therefore, to find the required pressure difference for the desired air volume, the following equation is used:

$$\Delta p_w = \frac{V^2}{K^2}$$

Note: K-factor must be obtained from the inlet ring manufacturer's specification.

Example:

Constant volume of 1000 m³/h in a system using a 280mm diameter backward curved ebm-papst EC fan, 280mm diameter special inlet ring and EC-PRESS controller with 0-200 Pa sensor.

$$V = 1000 \quad k \text{ factor} = 88 \quad \text{Pressure Difference} = \frac{1000^2}{88^2} = 129 \text{ Pa}$$

A set point of 129 Pa on the EC-PRESS controller will maintain a constant volume of 1000 m³/h