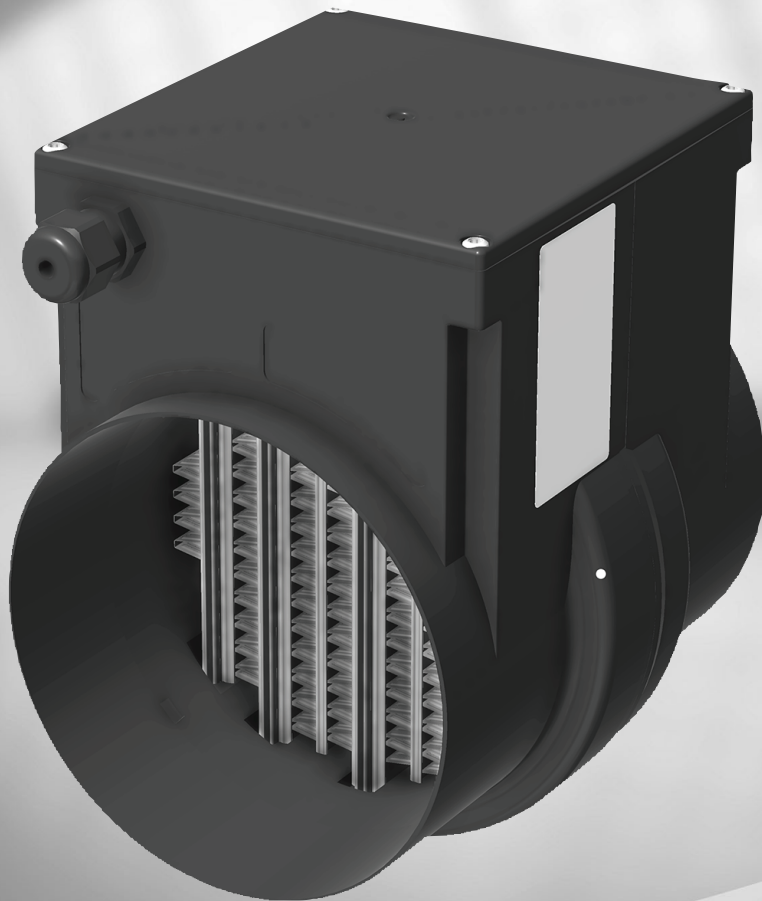


PTC – DN125

Installation and Operating Instructions

GB

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E&OE

Systemair UAB reserves the rights to change their products without notice.

This also applies to products already ordered, as long as it does not affect the previously agreed specifications.

Systemair is not liable or bound by the warranty if these instructions are not adhered to during installation or service.

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1 Introduction

1.1 Product description

The product is a duct heater with an insulated PTC heating element and plastic housing.

The product is designed for installation in a ventilation system to heat up the air to a desired target temperature. The product is controlled linearly via an analog signal 0–10 V or with Pulse-width modulation (PWM) signal.

The supply air must be clean and free of contaminants that could block or clog the built-in heating element. Use a filter in front of the product. The product have to operate in an environment free of particles and dust.

The product has an in-built temperature limiter that prevents the overheat of the heating element.

The product has an error signal relay that is located on the control board. The error signal relay can be connected to the ventilation system to indicate an error.

1.2 Intended Use

The product is used to heat the outdoor or supply air in the air duct.

The product is intended to be controlled via ventilation system.

A constant airflow of at least 40 m³/h must be ensured during the operation of the product.

The product is not applicable for use in permanently damp explosive, flammable or aggressive environment. The product is not applicable for locations where there is a risk of explosion.

Abide by the system-related conditions and requirements of the system manufacturer or plant constructor.

1.3 Document description

This document contains instructions for installation, operation and maintenance of the product. The procedures must be done by approved personnel only.

Speak to Systemair for more information on how to install the product in different installation locations.

1.4 Product overview

The product can be controlled either by an analogue voltage signal or a PWM signal.

Control signal	Parameter
Analogue signal	Voltage: 0 – 10 VDC Signal input resolution: 1% (0.1 V) Voltage proportional to the available heating power 0 – 100%
PWM signal	<ul style="list-style-type: none"> • Voltage: 10 VDC • Period duration: 1 s • Pulse duration resolution: 1% (10 ms) • Duty cycle proportional to the available heating power: 0 – 100%

Examples with 20% of available heating power:

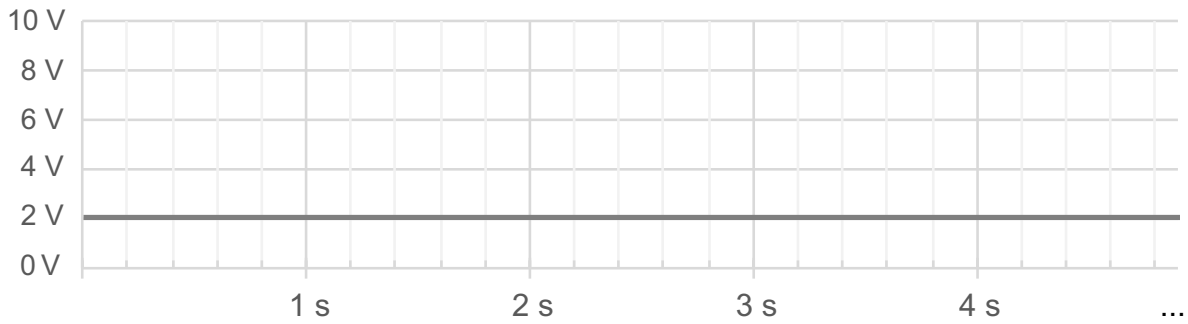


Fig. 1 Analogue signal: 2 V

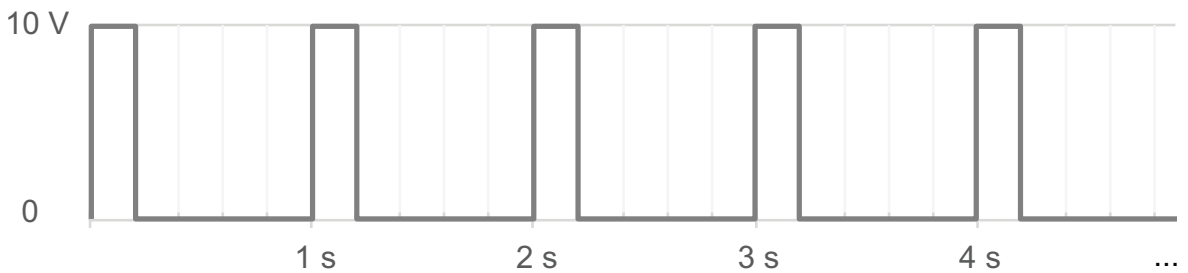


Fig. 2 PWM signal: Period duration 1 s, pulse duration 200 ms

1.5 Product liability

Systemair is not liable for damages that the product causes in these conditions:

- The product is incorrectly installed, operated or maintained.
- The product is repaired with parts that are not original spare parts from Systemair.
- The product is used together with accessories that are not original accessories from Systemair.

2 Safety

2.1 Safety definitions

Warnings, cautions and notes are used to point out specially important parts of the manual.



Warning

If you do not obey these instructions, there is a risk of death or injury.



Caution

If you do not obey these instructions, there is a risk of damage to the product, other materials or the adjacent area.



Note:

Information that is necessary in a given situation.

2.2 Safety instructions



Warning

Read the warning instructions that follow before you do work on the product.

- Read this manual and make sure that you understand the instructions before you do work on the product.
- Obey local conditions and laws.
- The ventilation contractor and the operator are responsible for correct installation and intended use.

- Keep this manual at the location of the product.
- Do not install or operate the product if it is defective.
- Do not remove or disconnect safety devices.
- Make sure that you can read all warning signs and labels on the product when it is installed. Replace labels that have damage.
- Only permit approved personnel to work on the product and to be in the adjacent area during all work on the product.
- Make sure that you know how to stop the product quickly in an emergency.
- Use applicable safety devices and personal protective equipment during all work on the product.
- Before you do work on the product, stop the product and wait until the heating element to cool. Make sure that there is no voltage on the control board terminals.
- Do not operate the product near flammable materials, fluids, and gases.
- If the maintenance is not correctly and regularly done, there is risk of injury and damage to the product.
- Only do the maintenance as given in this manual. Speak to Systemair technical support if other servicing is necessary.
- Always use spare parts from Systemair.
- The product is not to be used by persons, including children, with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction.
- Do not allow children to play with the device.

2.3 Personal protective equipment

Use personal protective equipment during all work on the product.

- Approved eye protection
- Approved protective helmet
- Approved hearing protection
- Approved protective gloves
- Approved protective shoes
- Approved work clothing

3 Transportation and storage



Warning

Make sure that the product does not become damaged or wet during transportation. A damaged or wet product can cause fire or electric shock.

Always transport the product in the original packaging.

Prevent impact stress to the product and its packaging at all times.

Inspect the device for any transport damage after delivery. The product must be stored in the original packaging, dry, weather-protected, at a temperature between -10 °C to 40 °C.

The packaging material must be disposed in accordance with local rules and regulations.

4 Installation

4.1 To do before the installation of the product

- Make sure that you have the necessary installation accessories.
- Use installation material with fire resistance rating for the installation location.
- Examine the packaging for transportation damage and remove the packaging from the product carefully.
- Examine the product and all components for damage.
- Install the product in a location where there is space for commissioning, troubleshooting and maintenance.
- Make sure that the installation location is clean and dry, for full safety during electrical work.

- Make sure that all cable glands are tight against the cables to prevent leaks.

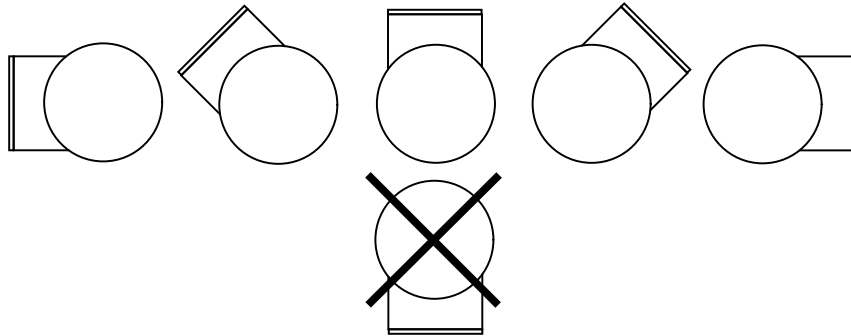
4.2 To install the product

- The product can be installed horizontally or vertically in the air duct.



Warning

The product installation with electronic housing pointing downwards is not allowed. Possible condensate in the ventilation system can otherwise penetrate the housing and cause damage to the electronics.



1. Connect the product to the air duct. Use only standard DN125 female connection with surrounding seals.



Caution

Use the air duct with high temperature resistance and check the air duct temperature during operation.



Note:

Use of fastening screws on the air duct and the product connection is not permitted.

2. Insulate the product.



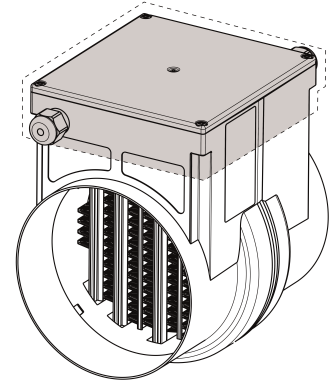
Warning

Do not insulate the electric housing. Internal components heat up during the operation and heat must be allowed to emitted across the surface of the electric housing.



Caution

The housing of the product can heat up to 100 °C in case of failure. Use insulation which can withstand such temperature.



5 Electrical connection

5.1 To do before the electrical connection

Make sure that the environment for electrical connection is clean and dry.

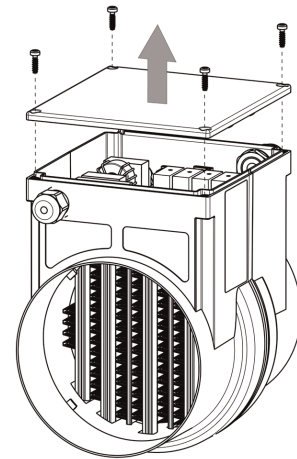
Make sure that the duct heater is connected to the electrical circuit with residual current circuit breaker.

Make sure to meet requirements for connection cables:

Line	Requirement
Power supply 230 VAC	Cross-section area: 3 x 1,5 mm ² Line layout: single-wire or multi-wire Maximum cable diameter: 8 mm Recommended length for individual wires (L, N, PE): 80 mm
Combined line for control signal (10 VDC) and error signal relay (230 VAC)	Rated voltage for the line allowed up to 230 VAC Cross-section area: 4 x 0,5 mm ² Line layout: multi-wire (ferrules recommended) Maximum cable diameter: 8 mm Maximum cable length: < 3 m Recommended length for individual wires: 80 mm

5.2 To connect the product to the power supply

1. Loosen 4 screws (M3.5 x 12 – T15) from the electrical junction box.
2. Remove the cover.



3. Connect the power supply cable to the J2 terminal (L, N, PE).
4. Connect the combined cable of the control signal and error signal to connection terminals J5 and J6.
5. Tighten both cable glands.
6. Close the junction box cover and install previously removed screws.

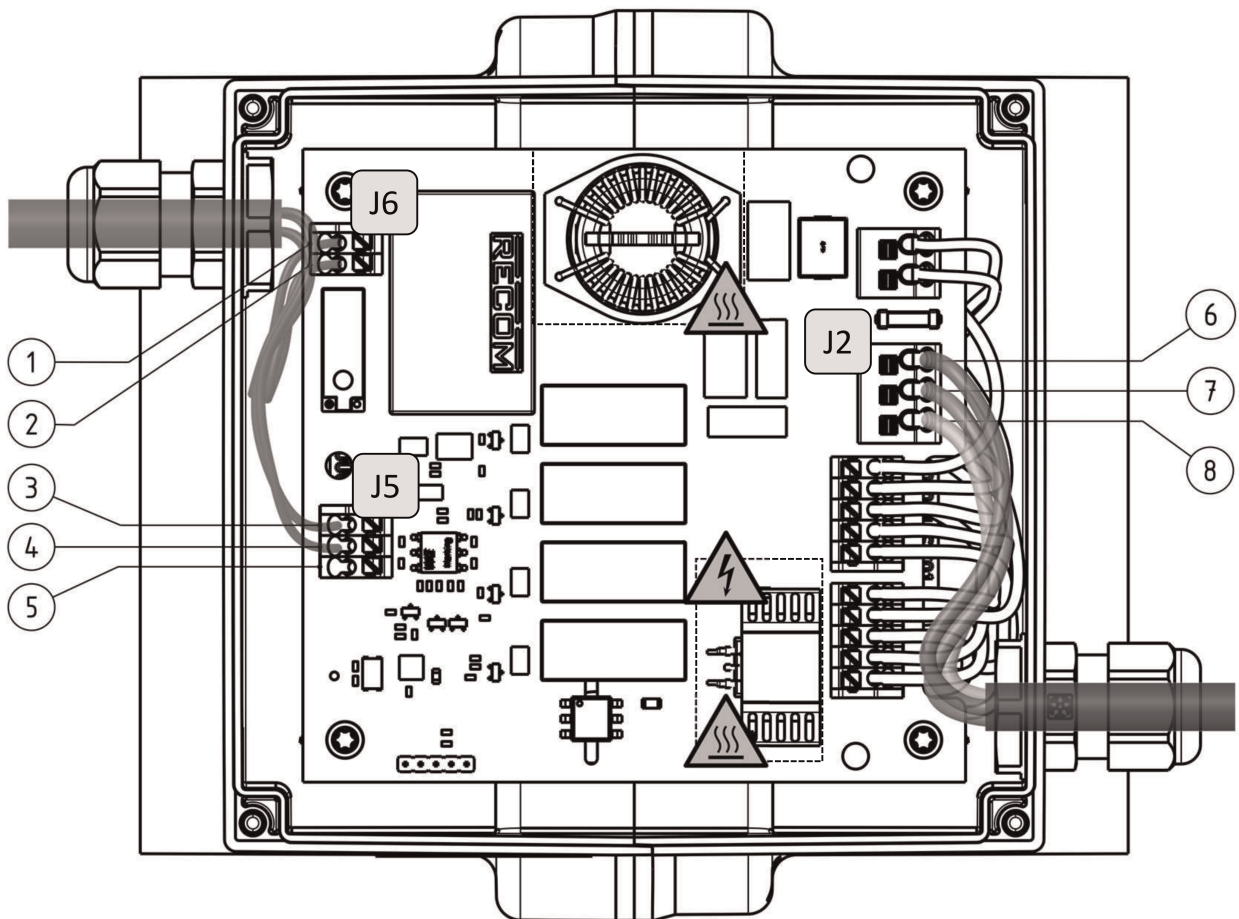


Fig. 3 Wiring

No.	Terminal	Name	Connection	Description
1	J6	Error signal	Error signal relay (normally-open contact)	Max. 230 VAC
2				
3	J5	AN+	analogue control signal	0 – 10 VDC
4		0 V	0 V control signal (GND)	Combined reference
5		PWM	PWM control signal	10 VDC
6	J2	L	Supply voltage L	230 VAC
7		N	Supply voltage N	
8		PE	Protective conductor PE	Functional ground

6 Commissioning

6.1 To do before the commissioning

- Make sure that the installation and electrical connection are correctly done.
- Visually examine the product and accessories for damage.
- Make sure that the safety devices are correctly installed.
- Make sure that there are no blockages in the air inlet and the air outlet.
- Make sure that installation material and unwanted objects are removed from the product and the ducts.

6.2 To do the commissioning

1. Make sure that air is flowing through the heating element.

**Note:**

A constant airflow of at least 40 m³/h must be ensured during operation.

2. Turn on the power supply.

3. Activate the control signal via the external controller.

To start the product with an analogue control signal, the connected voltage from the external controller must be > 0,5 VDC. Otherwise the products remains inactive.

**Warning**

- Beware of hot surface on the heating element during maintenance and service. Risk of burn.

7 Maintenance

**Danger**

- Make sure that the mains supply to the unit is disconnected before performing any maintenance or electrical work!

The duct heater is maintenance-free and does not contain parts that need to be maintained by the user.

Visible dirt on the heating element must be cleaned carefully by qualified personnel without the aid of any chemical or liquid cleaners.

Regularly check the product for any loose or damaged parts. If irregularities or malfunctions are detected, then the entire device must be replaced.

**Caution**

- Repairs are not permitted.

8 Troubleshooting

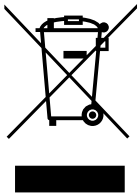
**Note:**

If you cannot find a solution to your problem in this section, speak to Systemair technical support.

Problem	Possible causes	Solutions
No heating power.	<ul style="list-style-type: none"> • Supply voltage cable not connected. • Incorrect supply voltage. • Analogue control signal < 0,5 V VDC. • Control signal cable not connected. • Temperature of device is too high: the internal temperature limiter is active. • Internal fuse has blown (not replaceable). 	<ul style="list-style-type: none"> • Check all cable connections. • Check voltage of the power supply. • Check the control signal voltage. • Check the minimum airflow. <p>If the problem continues contact your installation company or place of purchase.</p>
No heating power, temporary or recurring.	<ul style="list-style-type: none"> • Temperature of the device is too high: the internal temperature limiter is active intermittently. 	<ul style="list-style-type: none"> • Check the minimum airflow. • Check position and function of external temperature sensor. • Check all cable connections. • Check the heating element for any dirt and clean if necessary.

Problem	Possible causes	Solutions
Increased heating power.	<ul style="list-style-type: none"> • Voltage of the control signal is too high. • External controller is not working correctly. • External temperature sensors are not installed or positioned correctly. • Observe PTC effect. 	<ul style="list-style-type: none"> • Check external controller settings. • Check the minimum air flow. • Check position and function of external temperature sensors. • Short increase in heating power is possible due to PTC effect.
Reduced heating power.	<ul style="list-style-type: none"> • Voltage of the control signal is too low. • External controller is not working correctly. • External temperature sensors are not installed or positioned correctly. • The heating element is blocked or dirty. • Observe PTC effect. 	<ul style="list-style-type: none"> • Check external controller settings. • Check the minimum air flow. • Check position and function of external temperature sensors. • Check the heating element for any dirt and clean if necessary. • Short decrease in heating power is possible due to PTC effect.
Odour formation.	<ul style="list-style-type: none"> • The heating element is blocked or dirty. • Peculiar odour of intake air. 	<ul style="list-style-type: none"> • Check the heating element for any dirt and clean if necessary.

9 Disposal



The product follows the WEEE directive. This symbol on the product or the packaging of the product shows that this product is not domestic waste. The product must be recycled at an approved disposal location for electrical and electronic equipment.

9.1 To disassemble and discard the parts of the product

1. Disconnect and disassemble the product in the opposite sequence of electrical connection and installation.
2. Recycle the product parts and the packaging at an applicable disposal location.
3. Obey the local and national requirements for disposal.

10 Technical data

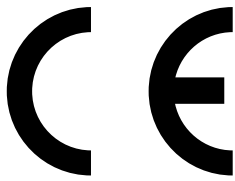
Type	PTC - DN125 - 0.8 kW	PTC - DN125 - 1.2 kW
Maximum power *	850 W (+5/-10%)	1200 W (+5/-10%)
Differential pressure **	25 Pa	36 Pa
Maximum inrush current	7 A	9 A
Nominal voltage	230 VAC	
Standby power	0,5 W	
Analogue control voltage	0 - 10 VDC	
Connection diameter	DN125 (female)	
Outside dimensions	232 x 152 x 165 (H x W x D)	
Temperature limiter	$T_{Open} = 60\text{ °C} \pm 5\text{ K}$, $T_{Reset} = 30\text{ °C} \pm 15\text{ K}$	
Error signal relay	Normally open contact; max 230 VAC; 30 VDC; 2 A (AC/DC)	
PWM control signal	10 VDC	

* 10 °C; 150 m³/h; Control voltage = 10 VDC; homogeneous flow

** 20 °C; 150 m³/h

11 EU Declaration of Conformity

Manufacturer



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hereby confirms that the following products:

PTC – DN125 – 0.8 kW, PTC – DN125 – 1.2 kW

(The declaration applies only to product in the condition it was delivered in and installed in the facility in accordance with the included installation instructions. The insurance does not cover components that are added or actions carried out subsequently on the product).

Comply with all applicable requirements in the following directives:

- Low Voltage Directive 2014/35/EU
- EMC Directive 2014/30/EU
- RoHS Directive 2011/65/EU

The following harmonized standards are applied in applicable parts:

EN 60 335-1	Household and similar electrical appliances – Safety Part 1: General requirements
EN 61000-6-1	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity standard for residential, commercial and light-industrial environments
EN 61000-6-3	Electromagnetic compatibility (EMC) – Part 6-3: Generic standards – Emission standards for residential, commercial and light-industrial environments
EN 61000-3-2	Electromagnetic compatibility (EMC) Limits. Limits for harmonic current emissions (equipment input current ≤16 A per phase)
EN 61000-3-3	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤= 16 A per phase and not subject to conditional connection

The complete technical documentation is available.

Ukmergė, 20-01-2022

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