SFPR1

FAIL-SAFE TRANSFORMER CONTROLLER

Mounting and operating instructions

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SAFETY AND PRECAUTIONS

Read all information, the datasheet, mounting instructions and wiring scheme before working with the product. For personal and equipment safety, and for optimum product performance, make sure you entirely understand the contents before installing, using, or maintaining this product.

For safety and licensing (CE) reasons, unauthorised conversion and / or modifications to the product are not permitted.

The product must not be exposed to abnormal conditions, such as: extreme temperatures, direct sunlight or vibrations. Chemical vapours with high concentration in combination with long exposure times can affect the product performance. Make sure the work environment is as dry as possible; check for condensation spots.

All installations shall comply with the local health and safety regulations and local electrical codes. This product can only be installed by an engineer or a technician who has an expert knowledge of the product and safety precautions.

Avoid contacts with energised electrical parts; always treat the product as if it is life. Always disconnect the power source before connecting the power cables, servicing or repairing the product.

Always verify that you apply appropriate power supply to the product and use wires with appropriate size and characteristics. Make sure that all the screws and nuts are well tightened and fuses (if any) are fitted well.

Recycling of equipment and packaging should be taken into consideration and disposed in accordance with local and national legislation / regulations.

In case there are any questions that are not answered, please contact your technical support or consult a professional.

PRODUCT DESCRIPTION

The SFPR1 transformer controller is based on the principle of voltage control with autotransformers. It controls the rotational speed of single-phase voltage controllable motors (230 VAC, 50 / 60 Hz) in five steps. The controller is fitted out with thermal contacts (TK) for thermal motor protection. It has an extra sensing input for a flow detector (or pressure sensor) that controls a gas valve / actuator through a relay output. The relay output contacts changeover when the flow / pressure contacts close, within 60 seconds after the unit is switched on.

ARTICLE CODES

Code	Nominal current, [A]	Fuse, [A]
SFPR1-35L22	3,5	(5*20 mm) F T-5,00
SFPR1-50L22	5,0	(5*20 mm) F T-8,00
SFPR1-75L22	7,5	(5*20 mm) F T-12,5
SFPR100L22	10,0	(6*32 mm) F T-16,0
SFPR1130L22	13,0	(6*32 mm) F T-20,0

INTENDED AREA OF USE

- Output voltage control in five steps for single-phase AC motors / fans
- Flow / pressure control in ventilation systems
- Clean air and non-aggressive, non-combustible gases
- For indoor use only

TECHNICAL DATA

- Power supply: 230 VAC ± 10 % - 50 / 60 Hz
- Unregulated output: 230 VAC / 2 A
- Sensing input for a flow detector / pressure sensor
- Potential free relay contact output (COM/NO/NC), controlled by a flow / pressure sensing input (to switch a gas valve / actuator)
- Run / Stop contacts: normally closed
- Motor protection: by connecting the thermal (overheating) contacts of the motor
- Switch: 5 positions + off position
- Operating indication
- Fault indication
- Plastic enclosure:
  - plastic R-ABS, UL94-V0
  - grey colour (RAL 7035)
- Steel sheet enclosure:
  - steel sheet (polyester powder coating)
  - grey colour (RAL 7035)
- Protection standard: IP54 (according to EN 60529)
- Operating ambient conditions:
  - temperature: 0—35 ºC
  - rel. humidity: < 95 % rH (non-condensing)
- Storage temperature: -20—50 ºC
- Storage humidity: 10—80 % rH

STANDARDS

- Low Voltage Directive 2006/95/EC
- EN 61558-1: 2005/A1: 2009
- EN 61558-2-13
- WEEE Directive 2012/19/EU
- RoHs Directive 2011/65/EU

CE

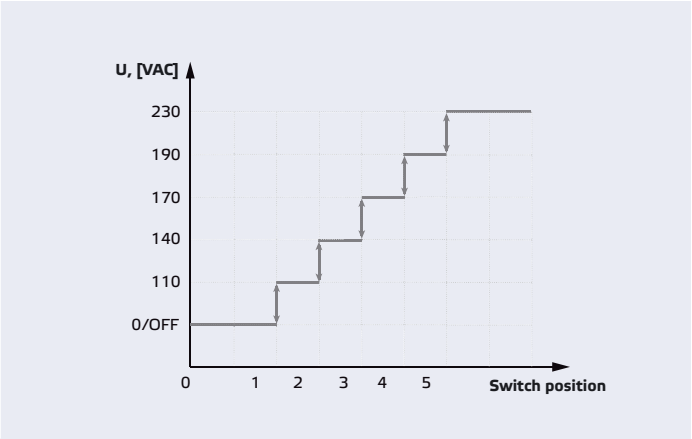
WIRING AND CONNECTIONS

L, N	Supply voltage 230 VAC ± 10 % - 50 / 60 Hz
PE	Earth terminal
OUTPUTS	
L1, N	Unregulated output, 230 VAC / 2 A
N, U	Regulated output to the motor (0 / 110 / 140 / 170 / 190 / 190 / 230 VAC ± 5 %)*
PE	Earth terminal
COM, NO, NC	Changeover relay contacts, (230 VAC / 2 A)
INPUTS	
TK, TK	Thermal contacts
NC, NC	Run / Stop contacts, normally closed
FL, FL	Flow / pressure sensing contacts
Connections	Cable gland clamping range: 8—13 mm Cable cross section: depends on the article (see **Table** *Cable cross sections*)

* 80 VAC is optional

Code	Max. cable cross section
SFPR1-35L22	2,5 mm²
SFPR1-50L22	2,5 mm²
SFPR1-75L22	2,5 mm²
SFPR1100L22	6,0 mm²
SFPR1130L22	6,0 mm²

OPERATIONAL DIAGRAM

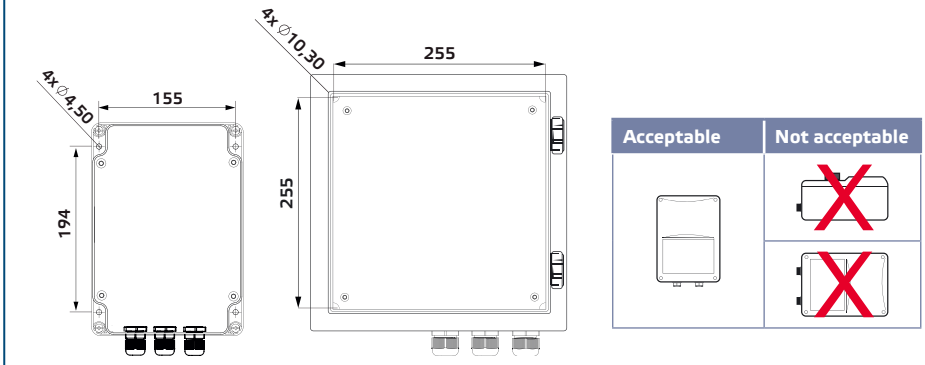


MOUNTING INSTRUCTIONS IN STEPS

Before you start mounting the SFPR1 controller read carefully **"Safety and Precautions"**. Choose a smooth surface for an installation location (a wall, panel and etc.). Follow these steps.

1. Open the enclosure cover and fix the unit to the wall or panel using the provided dowels and crews. Mind the correct mounting position and unit mounting dimensions. (See **Fig. 1** *Mounting dimensions*.)

Fig. 1 Mounting dimensions



2. Connect the motor(s), voltage supply and earth as shown in **Fig. 2** *Wiring diagrams*. Use cables with appropriate cross section (see **Table** *Max. cable cross sections*).
3. Install a safety switch with a suitable fuse on the mains side. The recommended current fuse is time-lag with rating approximately of 1,5 x I_{max}.

⚠ ATTENTION

Use only fuses with type and rating specified above; otherwise, loss of warranty will ensue.

4. Customise the factory settings to the desired ones:

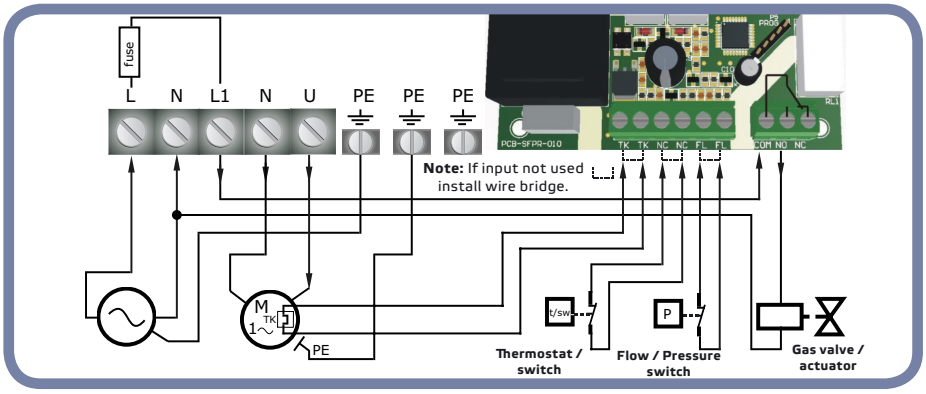
4.1 If you use the thermal protection input, remove the red bridge between the TK contacts. (See **Fig. 2a and 2b.**)

4.2 If you use the run / stop input, remove the red bridge between the NC contacts. (See **Fig. 2a and 2b.**)

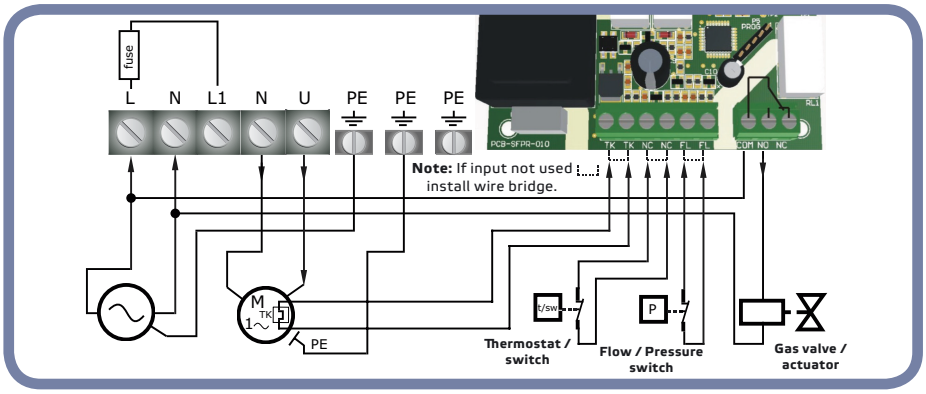
4.3 If you use the flow / pressure input, remove the red bridge between the FL contacts. (See **Fig. 2a and 2b.**)

Fig. 2 Wiring diagrams

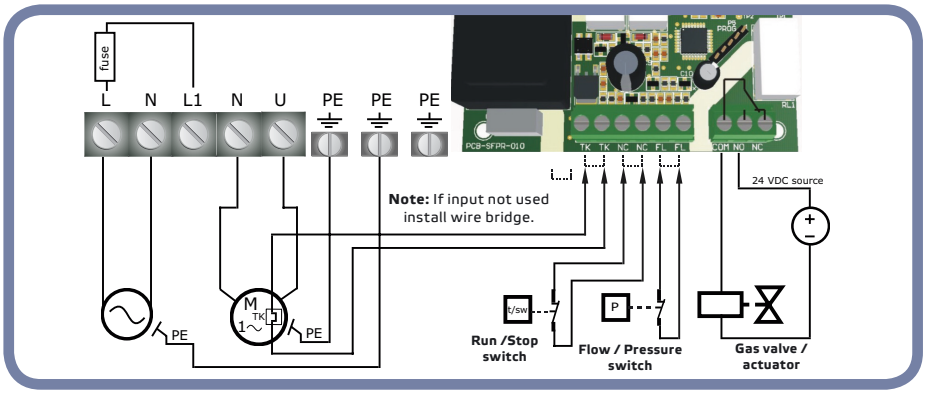
1a. 230 VAC gas valve / actuator supplied from L1, N terminals with internal fuse protection (max. 2 A)



1b. 230 VAC gas valve / actuator supplied from L, N terminals without separate fuse protection (max. 6 A)



1c. Gas valve / actuator supplied from external 24 VDC supply.



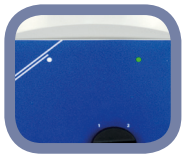
5. Connect the supply voltage of the controlled equipment (a gas valve / actuator) as shown in **Fig. 2c**.

6. Close the enclosure.
7. Switch on the power supply.
8. Verify the operating condition of your unit. Follow the steps given in section **"Verification of installation instructions"**.
9. Fix the cover after you make sure that the unit is ready for operation.

VERIFICATION OF INSTALLATION INSTRUCTIONS

To check the wiring correctness follow the instructions below:

1. Check the status of the green operating indicator on the front cover (**Fig. 3** *Operating indication*) after you switch on your unit. If it is OFF, check the connections. If the light indicator / LED is ON proceed with the next step.
2. Check the status of the green mini LED on the printed circuit board. See **Fig. 4** *Miniature LED*.
   - 2.1 If it blinks rapidly, your unit is ready for operation.
   - 2.2 If it blinks slowly, it is possible that:
     - regulated voltage is not supplied. Check the connections.
     - the bridge between the NC contacts is not installed. Your unit is ready for operation without remote control.

Fig. 3 Operating indication	Fig. 4 Miniature LED
 	

ATTENTION

The status of the miniature LED on the printed circuit board can be checked only when the unit is energised. Take the relevant safety measures!

NOTE

*The red light indicator on the front cover (**Fig. 3**) indicates fault conditions. It should be OFF during your check on the correctness of the controller installation.*

OPERATING INSTRUCTIONS

Select the required output voltage by the control switch on the front cover. The switch positions 1—5 correspond to the output voltage settings shown in the operational diagram. Position "0" is OFF position. See section "**Operational diagram"**.

Light indications:

- The controller is in normal operation when the green light indicator on the front cover (**Fig. 3**) illuminates continuously and the miniature LED on the circuit board (**Fig. 4**) blinks rapidly.
- The motor is in stand-by mode when the green light indicator on the front cover (**Fig. 3**) illuminates continuously and the miniature LED on the circuit board (**Fig. 4**) blinks slowly.
- The red light indicator on the front cover (**Fig. 5** *Fault indication*) indicates detection of one of the following fault conditions:
  - no flow is detected 60 seconds after the unit is switched on;
  - there is loss of flow during the operation;
  - motor overheating
- Restart the controller after eliminating fault conditions by turning the control switch to "0" position or disconnecting the power supply of the controller minimum for 5 seconds.

Fig. 5 Fault indication

NOTE

The gas valve output (COM, NO) will only be powered if the sensing input contacts (FL, FL) close within 60 seconds after the unit is switched on.

TRANSPORT AND STOCK KEEPING INFORMATION

Avoid shocks and extreme conditions; stock in original packing.

WARRANTY INFORMATION AND RESTRICTIONS

Two years from the delivery date against defects in manufacturing. Any modifications or alterations to the product after the date of publication relieve the manufacturer of any responsibilities. The manufacturer bears no responsibility for any misprints or mistakes in this data.

MAINTENANCE

In normal conditions this product is maintenance-free. If soiled, clean with a dry or dampish cloth. In case of heavy pollution, clean with a non-aggressive product. In these circumstances the unit should be disconnected from the supply. Pay attention that no fluids enter the unit. Only reconnect it to the supply when it is completely dry.