FLEXIHEAT UK LTD

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INDUSTRIAL SOLUTIONS

Technical documentation

ELECTRIC UNIT HEATER IN STEEL CASING FHEUH SERIES

MODEL:

FHEUH14

CONTENTS

1. INTRODUCTION

1.1 GENERAL INFORMATION

The owner and the user of electric unit heater should read carefully this instruction and follow included guidelines. In case of any doubts, please reach out directly to Flexiheat UK

The key recommendations from safety point of view are marked with the warning triangle (like the one on the left). Read them before interfering with the unit.

For the same reason, the requirements for periodic inspection and maintenance of the device are marked with the wrench symbol (like the one on the left).

During installation, usage or maintenance of the heater, all local safety requirements must be respected.

The product was made in the EU.

1.2 STORAGE AND TRANSPORT

The product must be kept and transported on an appropriate pallet, in ambient temperature ranging from -30°C to 60°C and relative humidity ≤ 90%.

Due to its weight, the unit heater should be handled by two people.

1.3 APPLICATION

The FHEUH14 heater is designed for industrial and indoor usage. It can be used to heat production halls, warehouses, commercial rooms, service spaces, garages, workshops, etc. However, the heating device should not be used to remove dust or aggressive and explosive chemicals. It shouldn't be used in corrosive environments for steel, as well as in highly dusty environments (above 0.3 g/m3). The device cannot also be used in places where it would be exposed to too high humidity levels (relative humidity higher than 90%) or direct contact with water, exceeding the permissible contact due to IP protection class (see next section).

2. DEVICE CHARACTERISTIC

2.1 IP PROTECTION CLASS

IP determines the tightness of the electrical device (like a fan motor), which is defined by two digits:

- **first characteristic digit** - specifies protection of the device against direct access to its interior as well as against penetration of smaller solids (such as dust).
- **second characteristic digit** - determines the resistance of the engine to water ingress, i. e. its waterproofness.

The motor of the fan used in FHEUH14 with IP 54 has the following protection:

- Enclosure protected against ingress of dust in harmful quantities.
- Water splashed against the enclosure from any direction shall have no harmful effects.

2.2 CONSTRUCTION AND PRINCIPLE OF OPERATION

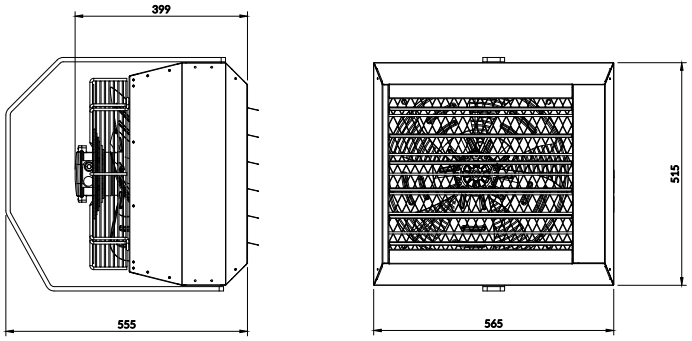
Casing: made of carbon steel casing, powder-coated in RAL 9023 color.

Air louvres: made of carbon steel, powder-coated in RAL 9023 color. Manually adjustable to set the needed direction of the air flow.

Heat exchanger: made of a PTC-type heater that regulates its own temperature according to the air flow and prevents overheating. Due to the uniformly heated surface of the heater, the device ensures maximum usage of heating power at each heating stage.

Axial blowing fan: made of steel. The purpose of the fan is to ensure air flow through the exchanger. It has a single-phase, three speed motor. The fan has diameter 400 [mm].

2.3 DIMENSIONS



2.4 TECHNICAL DATA

TECHNICAL DATA Product code		FHEUH14
Heater power [kW]	II STAGE	14
	I STAGE	7
Maximum heater current [A]	II STAGE	20
	I STAGE	10
Maximum airflow [m³/h]	III STAGE	3000
	II STAGE	2000
	I STAGE	1200
Maximum horizontal range [m]		17
Heater supply voltage [V] / Heater supply frequency [Hz]		400/50
Motor supply voltage [V] / Motor supply frequency [Hz]		230/50
Nominal motor current [A]	III STAGE	0.82
	II STAGE	0.62
	I STAGE	0.41
Nominal motor speed [rpm]	III STAGE	1380
	II STAGE	1030
	I STAGE	650
Nominal motor power [W]	III STAGE	185
	II STAGE	140
	I STAGE	90
Heater protection class IP [-]		X3
Fan protection class IP [-]		54
Net weight [kg]		25
Noise [dB]*	III STAGE	57
	II STAGE	55
	I STAGE	49

** measurement at the distance of 5 m*

Parameters	FHEUH14 **III stage 3000 [m³/h]**									
Heater power [kW]	14					7				
Air inlet temperature [°C]	0	5	10	15	20	0	5	10	15	20
Air outlet temperature [°C]	12.5	17	21.5	26	30.5	6.5	11.5	16	21	25.5

3. INSTALLATION PRINCIPLES

3.1 GENERAL PRINCIPLES

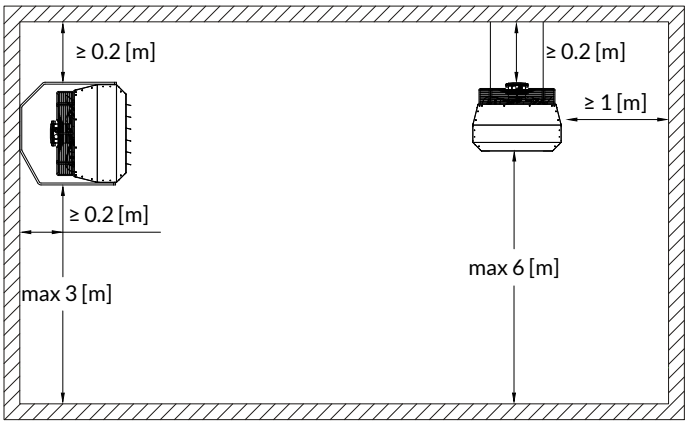
The heater should be installed and uninstalled by experinced people or if local law requires it with appropriate qualifications.

Due to the relatively large weight and the dimensions of the heater, the assembly should be performed by at least two people and at least one of them must meet the requirements in the paragraph above.

It is the responsibility of the installators to make the mounting according to the guidelines from this instruction and in accordance with the local regulations in force.

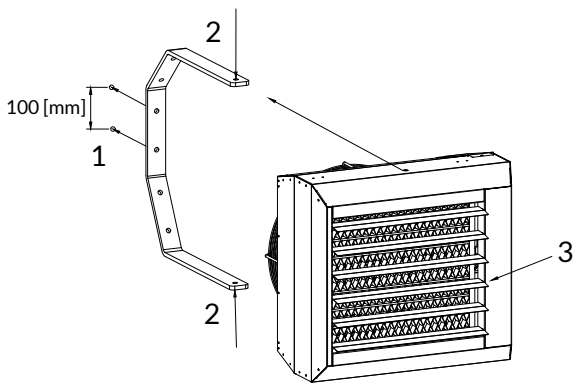
The heater should be mounted in way that provides a horizontal or the vertical air stream, keeping the minimum gaps shown in the drawing at the end of this section. The heater must be mounted using elements with a load capacity appropriate to its weight.

The air deflectors must be opened at least 20° before the start-up of the fan.



3.2 WALL MOUNTING

The example below shows the wall mounting with the rotating mounting bracket.



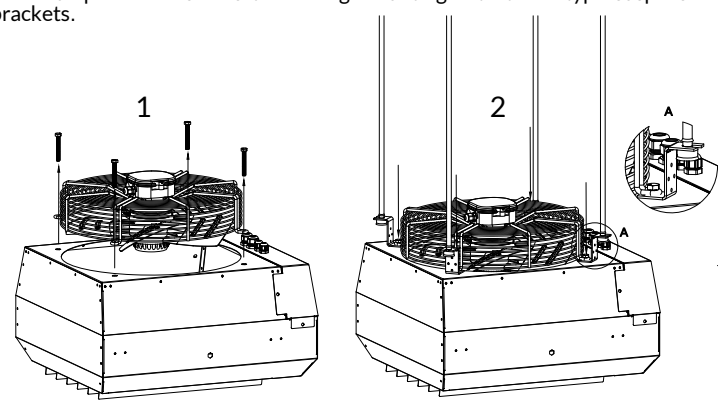
1 - The rotating mounting bracket should be attached to a partition with the appropriate load capacity (see the net weight of the heater in the section 2.4) with e. g. mounting pins and screws M8 x 80 [mm] (or longer).

2 - Hang the heater on the rotating mounting bracket using M8 bolts and spring washers (between the bracket and the bolt). Then turn the device on the bracket according to a required position and tighten the screws securely.

3 - Deflect air deflectors at least 20° before the start-up of the fan to achieve the right airflow.

3.3 CEILLING MOUNTING

The example below shows the ceiling mounting with the Z-type suspension brackets.



1 - Unscrew the mounting screws of the heater.

2 - Put the Z-type suspension brackets, spring washers and screw the screws back. The heater is ready to mounting by the Z-type suspension brackets.

4. ELECTRICAL INSTALLATION PRINCIPLES

Before connecting the unit to an electrical installation, it must be installed permanently to a suitable partition (according to the recommendations contained in the section 3).

All installation, repairs and dismantling must be performed by qualified persons, i. e. having the appropriate qualifications. It is the responsibility of the installer to make the installation according to the guidelines from this instruction and under the local regulations in force.

Do not install, service or operate the device with wet hands or barefoot.

4.1 CONNECTION TO ELECTRICAL INSTALLATION

The electrical installation must be carried out in accordance with the state of the art and the local regulations in force.

The electrical connection of the heater to the installation with the electrical parameters according to the section 2.4 should be made in according to the appropriate connection diagram (see section 7).

The electrical circuit to which the device is connected should include all safety elements required by the law, and the main ON/OFF switch should enable safe disconnection of the heater from the electrical system.

Before the start up, it is required to check the electrical installation and controls in terms of damaged insulation, incorrect connection in the terminals, risk of potential short circuits etc.

The PTC heating element's safety feature is the supervisory relay which measures the current drawn by the fan. If the current is too high or too low compared to the nominal value, the relay prevents the heating element from activating. This protects the system from activating the PTC heating element when the fan is not running.

All products with electric heaters must be equipped with a residual current circuit breaker (RCCB) with a rated residual operating current of 300 mA as fire protection.

5. OPERATION

5.1 OPERATION PRINCIPLES

The user is obliged to be familiar with this instruction before exploitation of the device.

It is forbidden to touch the device during operation. Before any interference in the device, the electricity supply to the heater must be isolated. Components of the device may be warm after shutting down.

The device cannot be operated by children or adults with reduced mobility, sensory or intellectual disability. Access to the heater by parties like unauthorised people, children and animals is forbidden and should be prevented or at least hindered.

The device cannot work with covered or restricted air inlet or outlet (e.g. as a result of not keeping the minimum distances from partitions or obstructed inlet/outlet).

Keep the device away from water and its solutions and splashing or dripping liquids. Never put objects with liquids on top or close the device.

The unit is designed for handling air at temperatures ranging from -30°C to 60°C and with relative humidity ≤ 90%.

In case of any malfunctions (like blowing a fuse, unusual noise, etc.), immediately cut off the device from the electrical system and contact directly with the installer, the manufacturer or the distributor. It is forbidden to turn on the unit before diagnosing and removing the reason of this malfunction.

If the device is not used for a long time, disconnect the unit from the electrical installation.

Periodical inspection and maintenance of the device should be carried out with the given frequencies and always after two-weeks or a longer period of inactivity according to the guidelines below.

Before starting any maintenance work, the heater must be disconnected from the power supply.

At the periodic inspection and maintenance, the following should be successively done:

- check the condition of the wiring for its damage and remove/repair any damage,
- use compressed air to blow out dust particles from the heater,
- clean the remaining elements from residue with a soft cloth at least twice a year,
- at least once per year, connect the device to the power supply and assess if the fan works correctly; additional murmur, metallic reverberation, grinding noise, vibration, etc., indicate a malfunction. In such a case, immediately cut off the device from the electrical system and contact directly with the installer, the manufacturer or the distributor.

Inspection and maintenance of the heater should be carried out by a user who is familiar with these instructions. Additionally, if local regulations require, the inspection and maintenance must be carried out by an external entity that is authorized to work with electricity or at heights.

The frequency of the service should depend on the actual dirtiness - if the device is operating in an environment with a high concentration of dust, periodic cleaning should be performed much more often than it is specified above.

After exploitation time, please utilise the unit according to the local regulations.

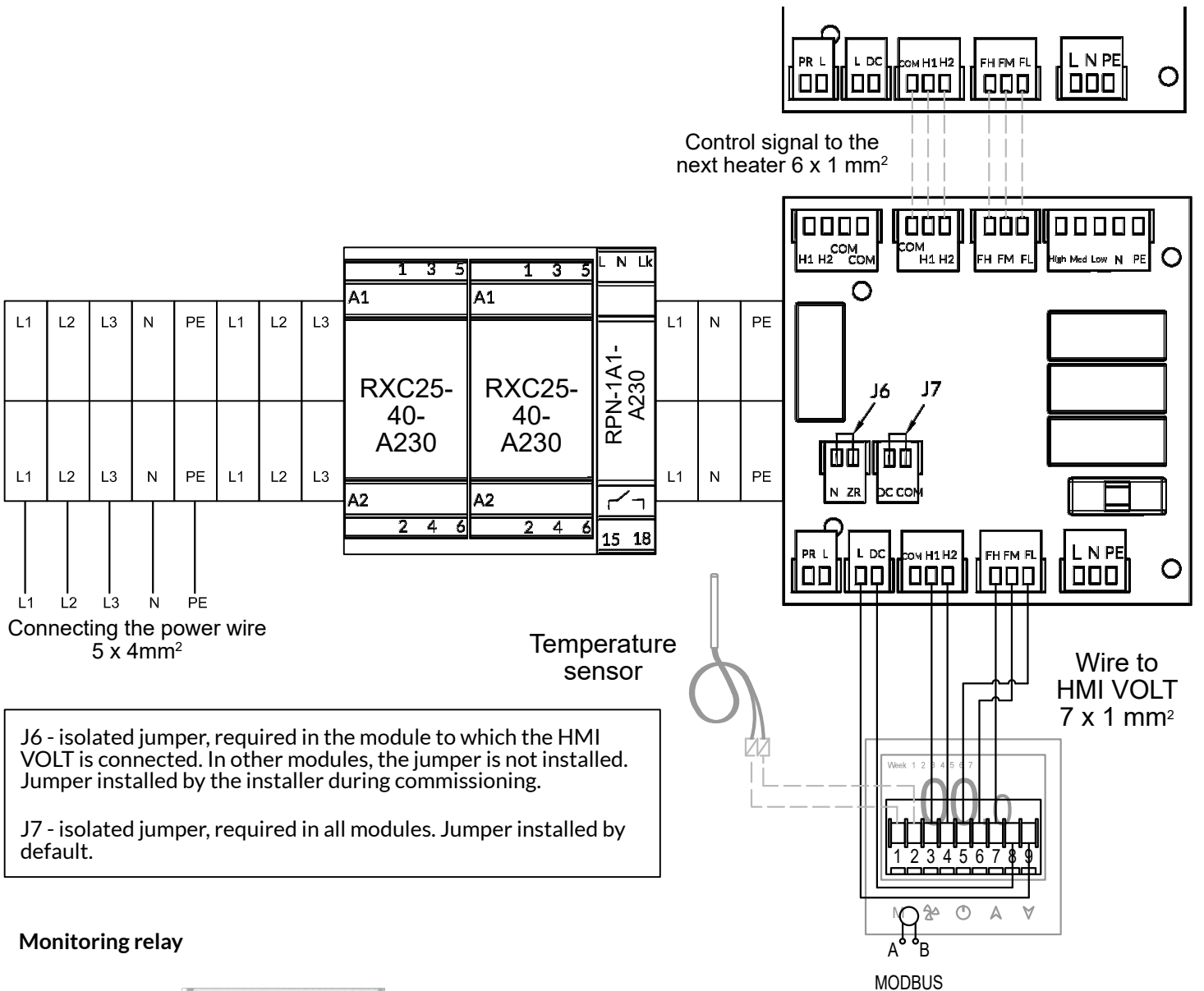
6. CONTROLS

PROGRAMMABLE CONTROLLER HMI VOLT

Controller is used to regulate devices equipped with 3-stage fans. Controller has functions like programmable mode, operation in heating or ventilation mode, automatic selection of the fan speed and can be integrated with BMS building control system. The controller has a function to cool down the heater, i.e. after turning off the device, the fan still runs for about 45 seconds, so the heater cools down. For one controller, connect maximal 10 devices.

Voltage/ Frequency: 230 V AC / 50 – 60 Hz
Maximum current load of fan: 5 A (inductive)
Maximum current load of L1/L2: 5 A (inductive)
Operating temperature range: 0 - 45°C
Regulation range: 5°C - 35°C
Regulation accuracy: ± 0.5°C
Communication: RS485
Dimensions: 86 x 86 x 13.3 mm
Weight: 270 g
Degree of protection (housing): IP 20

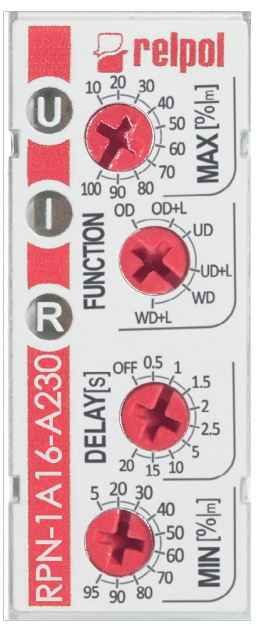
7. WIRING DIAGRAMS



J6 - isolated jumper, required in the module to which the HMI VOLT is connected. In other modules, the jumper is not installed. Jumper installed by the installer during commissioning.

J7 - isolated jumper, required in all modules. Jumper installed by default.

Monitoring relay



Before starting the device (during electrical connection) verify the settings of the monitoring relay according to the attached formula.

MAX threshold-adjusting knob: 100%

Function-adjusting knob: WD

Tripping delay-adjusting knob: 1

Min threshold-adjusting knob: 25%

DECLARATION OF CONFORMITY EC

No 12/25

Flexiheat UK Ltd,
Unit 49 Azura Close,
Woolsbridge Industrial Estate,
Three Legged Cross,
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declares under our sole responsibility, that the products:

FHEUH14

TYPE: Electric unit heater

conform to the following directives and regulations:

EMC 2014/30/EU

LVD 2014/35/EU

ErP 2009/125/EC

ROHS 2011/65/EU & (EU) 2015/863

and the following harmonized standards have been applied:

EN 60034-1: 2010

EN 61000-6-4: 2019

EN 61000-6-2: 2019

The above declaration is the basis for the CE marking.

Place of issue: United Kingdom

Date of Issue: 23/04/2025

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Position: Managing Director

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