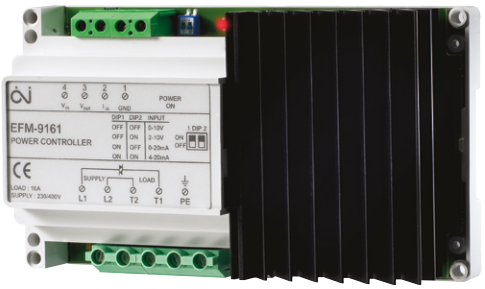
Single/Two Phase Power Controller



EFM

- Easy installation
- No electrical noise
- No excessive temperatures

Single/Two Phase Power Controller
The EFM is a series of power controllers for controlling small heating cables, electric heater coils and radiators.

The EFM is engineered to replace solid-state relays in a large range of applications, providing a more accurate and noiseless control.

The EFM has been successfully installed in many residential and commercial buildings. It is primarily used within the HVAC industry for the control of electrical heater coils in air handling units ensuring the precise control of the heating. It can also be applied for ceilings, floors and radiant heating etc.

The EFM series has been developed to give our customers an advantageous combination of high quality, accurate control of any heat requirement and low life cycle costs.

Easy Installation
With the built-in signal converter, the wiring required to install the EFM has been reduced. All that is required is to connect the load and a 0-10 V DC signal from a temperature controller like the EFRP controllers.

No Electrical Noise
Due to the use of zero transition triggering, there is no electrical noise from the EFM. And as an additional advantage, the mains cables to the EFM can be dimensioned for the current supplied to the heating elements with a low installation factor.

No Excessive Temperatures
Due to the modulation on the output, which the triac of the EFM provides, it is now possible to avoid the excessive temperatures, which are unavoidable, when using solid-state relays.

Low Life Cycle Cost
With the built-in thermal protection and the galvanic isolation between controls and power, the life expectancy of the EFM power controller is much longer than that of a traditional solid-state relay.

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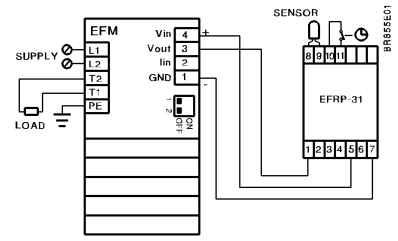
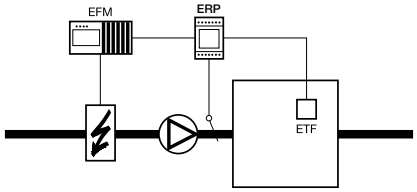
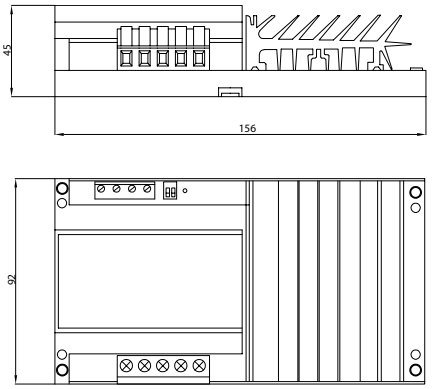


Wiring diagram



Application example



Dimensions

Pulse Width Modulated Control

It is possible to control the EFM by ON/OFF signal, i.e. a PWM signal. The voltage should be in the range 24-400 V AC. For more information visit www.ojelectroncis.com.

A Complete Solution

With a matching range of temperature controllers and sensors, OJ Electronics can offer a complete solution for your single and two phased installations.

CE Marking

The EFM meets the requirements of the below standards.

EMC directive	Low voltage directive
EN 50081-2 EN 50082-2	EN 60730-1

Mounting of the Controller

The EFM range is mounted on a DIN-rail inside an enclosure with a suitable enclosure rating.

Mounting of the Control Cable

The control cable from the external controller can be up to 50 m. The control signal cables must not be placed in parallel with any mains carrying cables, as voltage signals may occur which could interrupt the function of the controller.

It is not always necessary to use a screened cable to the controller, however the immunity of the controller to noise will be improved. The screen is connected with a bracket to the back plate of a metal enclosure or to the PE-terminal. The enclosure must be grounded to a ground potential equal to that of the controller.

PRODUCT PROGRAMME

Type	Product
EFM-9161	Power controller 16 A, 230 V / 3.7 kW, 400 V / 6.4 kW
EFM-9251	Power controller 25 A, 230 V / 5.7 kW, 400 V / 10 kW

Control equipment & Accessories	
EFRP-31	Temperature controller for DIN-rail
EFRP-91	Temperature controller for wall mounting
EFRP-900	Manual setting potentiometer for wall mounting (0-100 %)
ETT-6	Step controller with 6 steps

TECHNICAL DATA

Supply voltage	EFM-9161: 1x230/400 V AC ±10 % 50/60 Hz EFM-9251: 1x230/400 V AC ±10 % 50/60 Hz
Voltage input	0/2-10 V DC, 100kΩ
Current input	0/4-20 mA (<3.3 V DC voltage loss)
Thermal fuse	85 °C
Cos PHI	0.98
Heat output	EFM-9161 3.7 / 6.4 kW EFM-9251 5.7 / 10 kW
Load form	Ohmic
Minimum output load	500 W
Insulation voltage	2500 V RMS
Supply output	+14 V DC/15 mA
Period time	Approx. 45 secs.
Recommended prefuse (type G)	EFM-9161 16 A EFM-9251 25 A
Ambient temperature	-10/+40 °C
Power consumption	5 VA
Housing	IP20
Dimensions (W X D X H)	156 x 45 x 92 mm
Weight	530 g

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