



Three Phase Power Controller

72/105kW

TUP 372
TUP 3105

Feb.09



Features

- Alarm Output for Over Temperature and Power Supply Failure
- Power supply 24Vac/dc to control signal 0-10Vdc
- PWM control
- Over-Temperature Protection with Auto Reset and alarm output
- Adjustable Cycle Time & Signal Rescaling Facility
- Manual override facility
- Ambient range 0...+55°C, 80% RH
- LED indication, when output ON
- Small Footprint

Technical Data

Control Input	0-10Vdc
Power Supply	24Vac/dc (+/-10%)
Terminals Signal	Rising Clamp for 0.5-2.5mm ² cable
Alarm Output	VFC (Volt free contact) Closed when over temperature alarm is active
LED indication	Pulses when output ON
Max. Heater Duty	TUP 372: 42/72 kW TUP 3105: 61/105 KW
	Over 40°C, de-rating should be approx. 10% for every 5C more ambient than specified
No. of Phases	3
Rated Supply	230 or 380-440V/50-60Hz
Dissipated Heat	TUP 372: 335 W TUP 3105: 487 W
Rated Load	TUP 372: 104,4A per phase TUP 3105: 152,2A per phase
Terminals	TUP 372: Rising Clamp 35mm ² (max) Cable. Torque 3Nm slotted screw TUP 3105: Rising Clamp 70mm ² (max) Cable. Torque 7Nm 5mm hex w rench
Amb.temp. Range	0...+55°C, 80%RH max.
Dimensions	W250 x H270 x D215 mm
Weight	7,3 kgs approx

This product meets the requirements of CE



Application

- Electric Heater Batteries
- Ceiling Heating
- Radiant Heating
- Hot Water Tanks
- Heating Cable
- Furnaces
- Plastic Processing Equipment.

General

The TUP 372 and TUP 3105 panel mounting Power Controllers are designed to provide continuously adjustable control of electric heating loads from a BMS controller or similar.

TUP 372 and TUP 3105 use solid-state switching with "zero crossing technology" to reduce RFI problems and provide accurate switching control.

All Power Controllers in this series feature Over Temperature Protection with automatic reset and Alarm Output, LED indication of output ON and are designed for panel mounting.

The TUP 372 and 3105 features integral cooling fans which turn on automatically when required.

No additional heatsinks are needed.

Ordering

Three Phase Power Controller
230/380-440Vac @ 50-60 Hz

TUP 372	42/72kW	104,4A max
TUP 3105	61/105kW	152,2A max



Operation

The TUP-series are designed to control electric heating loads in linear proportion to the incoming 0-10Vdc control signal.

Control is by solid-state semiconductor devices which control the load using pulse width modulation (PWM) techniques.

These devices feature zero crossing point switching of the AC load which virtually eliminates RFI problems.

Caution!!!

In normal operation the heatsink surface can exceed +90°C.

Dangerous voltages exist inside the unit and particular care should be taken.

No attempt should be made to open the unit.

The TUP Power Controllers must be installed in accordance with the relevant statutory regulations and installation must be carried out by an experienced and fully qualified engineer.

Ventilation

The TUP 372 and TUP 3105 Power Controllers are designed to operate in a maximum ambient temperature of +55°C, which should not be exceeded.

If necessary, enclosures or control panels should be ventilated with a cooling fan.

Refer to technical data for derating to be applied above 40°C.

Over Temperature Monitoring

An electronic thermal cutout is fitted to the heatsink to protect against over temperature.

The TUP-series will switch off the load if the heatsink temperature exceeds +95°C and will reconnect the load once the heatsink temperature has dropped below +85°C.

Under normal operating conditions the heatsink temperature will not reach +95°C but this might occur, for example, if the ambient temperature exceeds +40°C.

The TUP 372 and TUP 3105 are fitted with a fan, the fan will turn on and off as required to control the heatsink temperature.

Earthing

The protective conductor terminal (M6 stud provided) must always be bonded to a good Earth.

This earth bond lead should be rated higher than maximum load.

Location / Electrical Installation

The TUP-series Power Controllers are designed for mounting on a vertical panel.

It is important that free air movement around the heatsink is not restricted.

Allow sufficient air space between adjacent units to allow optimum performance of the heatsink.

Installation must be carried out by a suitably trained electrician, and in accordance with the relevant statutory regulations.

This units **MUST** be earthed using the M6 stud provided and the Load Terminals must be tightened to the torque specified in the Technical Data.

Load Supply and Back-Up Protection

The TUP 372 and TUP 3105 feature internal quick acting semiconductor fuses to protect the switching devices.

The Load Cables must be protected by external appropriate fuses or MCB's in usual manner.

Load cables must be sized such that they are rated in excess of the fuse ratings.

If in doubt, contact Automatikprodukter for advice.

Internal Fuse Ratings:

TUP 372	120A BS88:4 Semiconductor Type
TUP 3105	180A BS88:4 Semiconductor Type

Semiconductor Fuse Replacement:

Disconnect from the main supply before attempting to remove the cover.

Remove the main cover earth strap and then the four cover retaining screws.

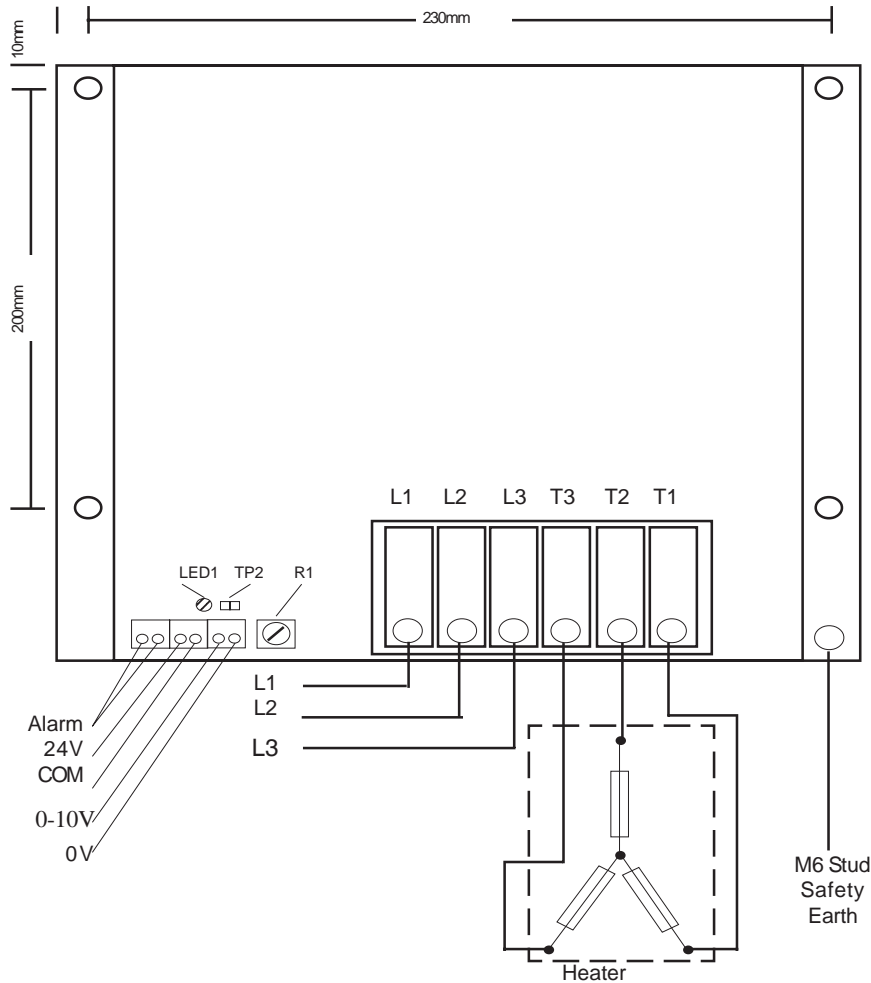
The main cover earth strap must be fitted before re-applying the power.

Maximum Load

The power rating of the units are given as a guide.

The maximum current (which is dependant on the actual supply voltage and actual load) as shown in the above table must not be exceeded.

Connection



Warning:
Do not connect
Neutral to the
star point of
Heater

Control Supply

The control circuitry is fully isolated from the load supply and needs its own 24V (ac or dc) supply.

The control supply common is linked to the 0-10V Input Signal common.

All low voltage signal and supply cables should be kept separate from high voltage or mains cables, separate trays or conduit should be used.

Screened cable should be used for connections to BMS controllers, where possible the cable screen should be connected to a functional earth (not mains safety earth); normally the screen should be earthed at one end only to avoid earth loops.

Cycle Time

The Cycle Time is preset.

An 0-10Vdc input signal of 5V equates to the load being at 50% ON and likewise with an input of 2.5V the load will be 25% ON.

A 10V input will equal 100% i.e.full ON.

Adjustment of the cycle time is possible using Test Point J2, and R1 but is not normally required.

Caution

Incorrect adjustment of these controls can cause an overload condition and subsequent destruction of the TUP 372 and TUP 3105 Power Controllers.

DO NOT ATTEMPT TO ADJUST THESE CONTROLS WITHOUT REFERENCE TO THE FACTORY



**Three Phase
Power Controller**

72/105kW

**TUP 372
TUP 3105**

Feb.09