

Features

- Full Seamless Control of Resistive Loads
- Alarm Output for Fault Condition
- PWM (Pulse Width Modulation) Control
- Over-Temperature Protection with Auto Reset
- Adjustable Cycle Time & Signal Rescaling Facility
- Manual Override Facility
- Neutral Pass Through Terminals
- LED pulses when output ON
- DIN rail mounting

Applikation

- Electric Heater Batteries
- Ceiling Heating
- Radiant heating
- Hot Water Tanks
- Heating Cable
- Furnaces
- Plastic Processing
- Space Heating
- Extruders
- Heater Mats
- Air Curtains
- Soldering Pots
- Stress Relieving
- Under Floor Heaters
- Ultraviolet Heaters
- Trace Heating
- Smelting
- Infrared Heaters
- Industrial Heaters
- Dryers
- Heating Tape
- Immersion Heaters
- Hot Plates
- Annealing
- Space Heating
- Dust Heaters

Technical Data

TUD 104

Control Input	0-10Vdc	CE
Power supply	24Vac/dc (+/-10%)	
Terminals		
Control	Rising clamp for 0.5-2.5mm ² cable	
Power	Rising clamp for 4mm ² or 6mm ² Solid Core Cable	
Alarm output	24Vac/dc as power supply - 0V when over temperature alarm is active(not 6kW)	
LED indication	ON when output is on.	
Max. heater duty	TUD 104: 4kW TUD 106: 6kW TUD 109: 9kW	
TUD 109	0 to 55°C The units are rated at 30°C. If using higher ambient temperature de-rate the units by 10% for every 5°C above 30°C	
Others	0 to 55°C The units are rated at 40°C. If using higher ambient temperature de-rate the units by 10% for every 5°C above 40°C	
No. of phases	1	
Rated supply	220-255V/50-60Hz	
Dissipated heat	TUD 104: 18W TUD 106: 34W TUD 109: 63W	
Rated load	TUD 104: 18A TUD 106: 25A TUD 109: 37,5A	
Conformity	CE-marked	

General

The TUD-series, DIN rail mounting Power Controllers are designed to provide continuously adjustable control of electric heating loads from a BMS controller or similar.

The TUD Power Controller 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 to mount on TS35 section DIN rail.

No additional heatsinks are needed.

Ordering

TUD 104	6 kW	220-255Vac	Power Controller
TUD 106	6 kW	220-255Vac	Power Controller
TUD 109	9 kW	220-255Vac	Power Controller



Operation

The TUD-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 on the PCB and particular care should be taken.

The TUD 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 TUD-series are designed for 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.

When using the TUD 109 running at full power, enclosures or control panels should provide forced cool air movement over the heatsink.

See note on technical data for de-rating to be applied above ambient of 40°C(30°C for TUD 109)

Over Temperature Monitoring

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

The TUD-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.

The alarm output will also change from the control supply to 0V.

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(TUD 109 =+30°C).

Installation and Configuration

The TUD Power Controllers are designed for mounting on a TS35 Section DIN Rail and must be installed with their heatsink cooling fins in a vertical plane.

Allow a minimum of 100mm between units mounted in a vertical plane.

Electrical Installation

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

Load Supply and Back-Up Protection

It is recommended that a load disconnect switch and a contactor are installed in the load supply.

The supply to the contactor coil should be interrupted by sensors for over temperature in the heater and also upon air flow loss.

Fuses or MCBS (miniature circuit breakers) are required to provide back-up protection.

High speed fuses will protect the solid-state switching devices against short circuit currents.

External Fuse Ratings:

TUP 104	20A High Speed Semiconductor Type
TUP 106	25A High Speed Semiconductor Type
TUP 109	40A High Speed Semiconductor Type

Maximum Heating Load

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

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

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 & Signal Rescaling

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 and signal rescaling is possible using JP1, JP2, VR1 and VR2 but is not normally required.

Caution:

Adjustment of these controls can cause an overload condition and subsequent destruction of the TUD 1xx unit.

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

Manual Override

The TUD-series are supplied preset to the auto position, it is possible to manually override the input signal by placing the M/A jumper in the M position.

With the jumper in the M position the load will 100% ON.

The output load can be adjusted downwards using the signal rescaling facility. (See Caution).

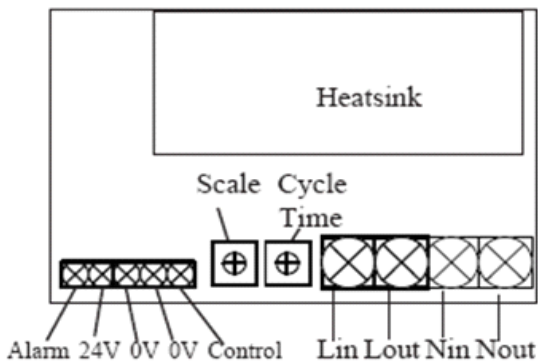
Weight

TUD 104 0,25kg
TUD 106: 0,4 kg
TUD 109: 0,7 kg

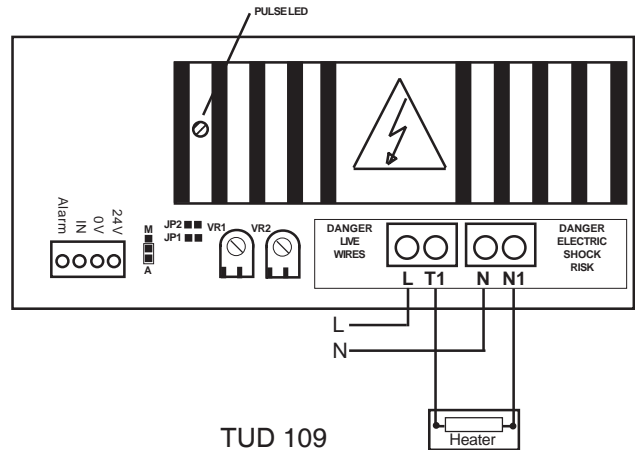
Dimensions

W100 x H80 x D72mm
W178 x H95 x D75mm
W160 x H95 x D95mm

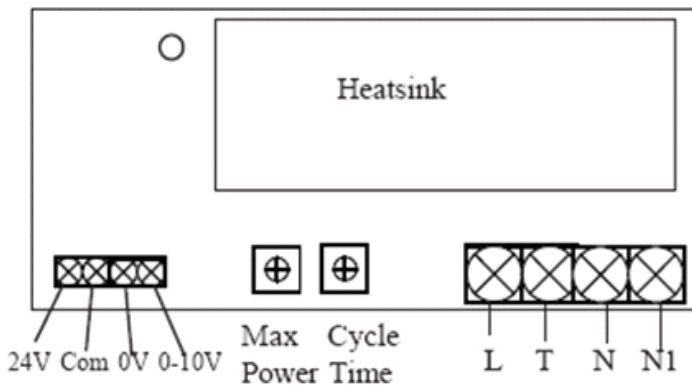
Connection



TUD 104



TUD 109



TUD 106

NB: Terminals N & N1 are connected internally.

Neutral may be connected directly to heater if permitted by local regulations.

The TUD-Series are fully isolated and do not require a separate earth conductor.

We reserve the right to make changes and improvements in our products which may effect the accuracy of the information contained in this leaflet.

