



Three Phase Power Controller

12kW
18kW

TUD 312
TUD 318

Feb.09



TUD318

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
- Ambient Range 0...55°C, 80% RH
- LED indication
- DIN rail mounting
- Terminals for Simple Installation

Technical Data

Control Input	0-10Vdc
Power supply	24Vac/dc (+/-10%)
Terminals	
Control	Rising clamp for 0.5-2.5mm ² cable
Power	Rising clamp for 4mm ² Stranded or 6 mm ² Solid Core Cable
Alarm output	24Vac/dc as power supply 0V when over temperature alarm is active.
LED indication	Pulses when output ON
Max. heater duty	TUD 312: 6,9/12 kW TUD 318: 10,4/18 kW
	Over 40°C, de-rating should be approx. 10% for every 5°C more ambient than specified
No. of phases	3
Rated supply	230/380-440V/50-60Hz
Dissipated heat	TUD 312: 43 W TUD 318: 60 W
Rated load up to @40°C	TUD 312: 16,5A per phase TUD 318: 25A per phase
Terminals	Rising clamp for 6mm ² Solid Core or 4mm ² Stranded Cable
Amb.temp. range	0...+55°C maximum operation a 80%RH max.
Dimensions	TUD 312: W220 x H95 x D80 mm TUD 318: W285 x H95 x D85 mm
Weight	TUD 312/318: 0,7 kg
Conformity	CE-marked



Application

- 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

General

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

The TUD Power Controllers 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 312	6,9/12kW	230/380-440Vac	Power Controller
TUD 318	10,4/18kW	230/380-440Vac	Power Controller



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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.

See note in technical data for de-rating to be applied if ambient temp. is over 40°C

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.

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

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 100 mm 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 312	20A High Speed Semiconductor Type
TUP 318	25A High Speed Semiconductor Type

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

If in doubt, contact Automatikprodukter for advice.

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 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 units.

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

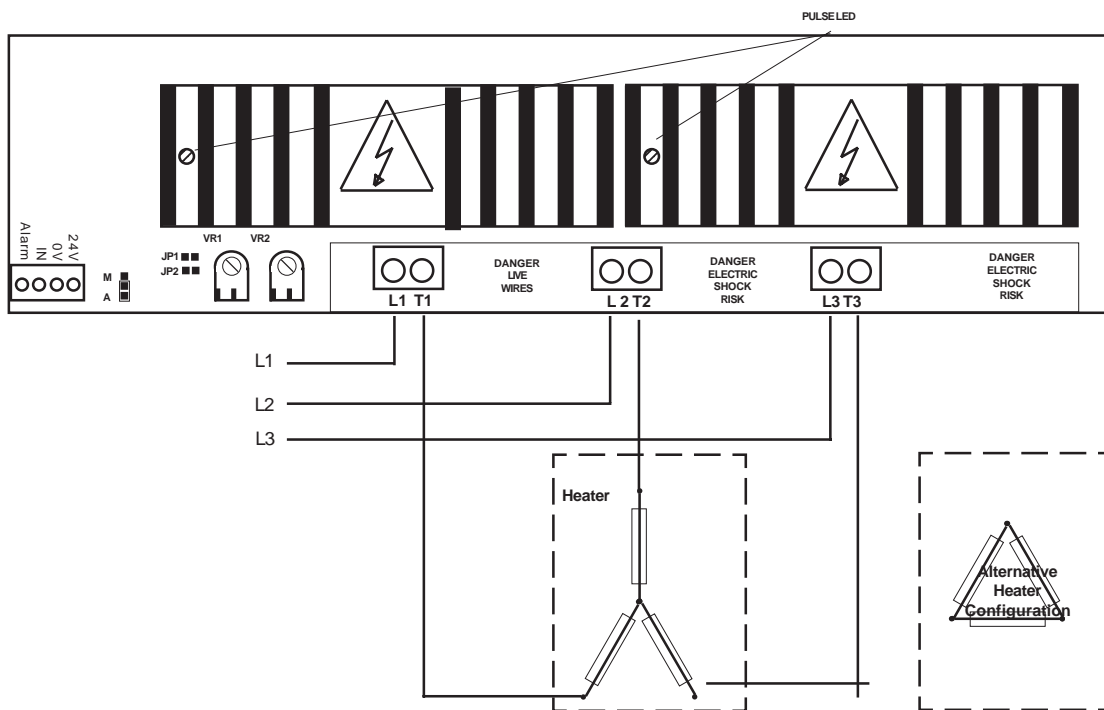
Manual Override

The TUD Power Controllers 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).

Connection



NB: Terminals L2 & T2 are internally linked.

L2 Supply may be connected directly to the heater element if local regulations permit.

Neutral must **not** be connected to the star point

For 415V only

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

