

# TE300



**EUROTHERM  
CONTROLS**

**THREE PHASE  
BURST FIRING  
POWER CONTROLLER**



**Product  
data**

# TE300

## Three phase burst firing power controller

### Multiple applications

The TE300 is a three phase burst fired SCR based power controller that is designed for general purpose three phase applications where a resistive load or infrared heaters are involved. Typical applications include paint drying (car industry), metallurgy, plastics, food processing and environmental temperature control.

### Ergonomic design

The TE300 is easily integrated into a control system because of its compact size, simplicity of wiring and DIN rail mounting. This design offers significant economic benefits over conventional 3 phase SCR solutions.

### Flexibility

The TE300 may be controlled by an external analog input signal which is selectable for DC current or voltage. Alternately, an internally provided 5V user voltage allows local control by a potentiometer. The TE300 may be specified for a range of standard three phase voltages but it can also be used to control non standard three phase voltages by using an optional auxiliary supply input.

### CE marking/safety

TE300 units meet the essential requirements of the European Low Voltage Directive. No exposed parts are at a dangerous voltage.

Eurotherm certifies that TE300 products installed and used in compliance with User Manual (HA175437ENG) meet the necessary EMC test standards. EMC filters are internal to the unit.

A copy of Eurotherm's Electromagnetic Compatibility Installation Guide (ref. HA025464) is available on request.

### High performance

The TE300 has, in addition to the standard burst firing and single cycle firing modes for resistive loads, an Advanced Single Cycle mode suitable for short wave infrared loads. This mode allows a complete number of half cycles for the "off" period and a complete number of full cycles for the "on" period. With advanced single cycle firing, the cycle time is reduced compared with normal single cycle operation. When phase angle firing is not acceptable, this mode reduces the visual flickering present when controlling SWIR elements. This is advantageous because it delivers the smoothest possible power to the load without generating noise.

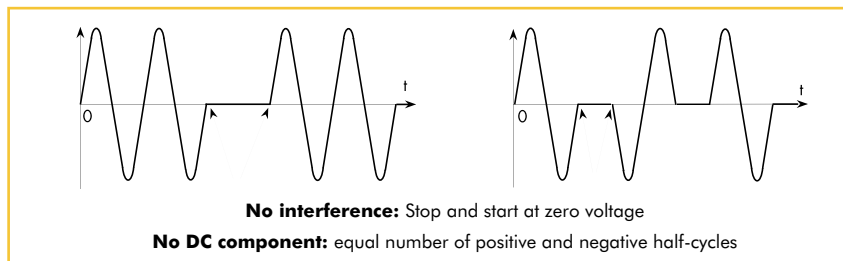
#### Load voltage examples (67% nominal power)

##### Burst firing and Single-cycle modes

For use with: any three-phase resistive load with a low temperature coefficient (Nickel-Chrome, Iron-Chrome-Aluminum...)

##### Advanced Single-Cycle mode

For use with:  
Short-wave infrared elements



## TECHNICAL SPECIFICATION

### Power

Nominal current (per phase)	16A, 25A, 50A or 63A (at 45°C)
Line-to-line supply voltage	230V to 500V (+10%, -15%)
Supply frequency	50Hz and 60Hz (±2Hz). Automatic selection
Dissipated power	1.3W (approx.) per amp, per phase. Fuses are external and produce 0.7W (approx) per amp and per phase
Cooling	Natural convection for 16A and 25A ratings. Permanent fan-cooling for 50A & 63A ratings
Insulation (1 min test)	Fan supply 115V or 230V (to be specified)
Load type	In series, 2000Vac between power and ground and 3600Vac between power and control
Load configuration	Resistive three-phase load with a low temperature coefficient or short-wave infrared elements (63A rating limited to 50A max for SWIR elements)
	Closed delta (3-wire) or inside delta (6-wire).
	Wye without neutral (3-wire) or with neutral (4-wire)
	Load configuration set by solder jumpers.

### Control performance

Control type	Power control: load voltage squared
Linearity & Stability	The power dissipated in the load is proportional to the setpoint for constant load resistance.
Firing modes	Better than ±2% for variations of the supply voltage +10%, -15% and of the temperature from 0 to 45°C.
	<b>Burst-firing</b> (number of firing cycles configurable: 1, 8, 16 or 128 cycles)
	<b>Advanced Single-cycle</b> (wye with neutral or open delta loads)
	Firing by complete cycles separated by half-cycles of non-firing without DC component
	<b>On/Off (Logic)</b> (power proportional to firing time of logic signal)
Switching	Conduction starts and ends at zero voltage
Indication	SCR firing is signalled by a green LED

### Control

External control signal	<b>Analog</b> (in Burst-firing and Single-cycle modes): voltage 0 to 5V or 0 to 10V or current 4 to 20mA
	<b>Logic</b> (in On/Off mode), nominal levels: voltage 5V or 10V or current 20mA
	On state ≥ 50% nominal value. Off state ≤ 25% nominal value.
Configuration	Solder jumpers) on driver board
Input impedance	Voltage input: ≥ 100kΩ, current input: 250Ω
Local control	5V user voltage available for control by 10kΩ potentiometer or by 'dry' contact (logic operation)

### Options

Auxiliary power supply	For use when operating with non-standard three-phase supply. The control electronics is powered separately with 115V or 230V (as specified).
Elimination of DC component	For loads configured as star without neutral or closed delta (no DC component in star with neutral or inside delta configurations).

### Approvals and European Directives

CE marking/Electrical safety	TE300 controllers carry the CE mark in compliance with the essential requirements of the European Low Voltage Directive 73/23/EEC (amended by the Directive 93/68/EEC)
Electromagnetic compatibility	TE300 products comply with Electromagnetic Compatibility test standards
	Immunity—Generic standard EN 50082-2, Test standards EN 61000-4-2, EN 61000-4-4, ENV 50140, ENV 50141
	Emissions—Generic standard EN 50081-2, Test Standard EN 55011, Product Standard IEC 1800-3

### Environment

Operating temperature	0°C to +45°C (60°C with derating)
Storage temperature	-10°C to +70°C
Safety standards	EN61010, installation category 3 (voltage transients must not exceed 4.0KV)
Atmospheres	Electrically conductive pollution must be excluded from the cabinet in which this controller is mounted. This product is not suitable for use above 2000m or in corrosive or explosive atmospheres without further protection.
Thyristor protection	External high-speed external fuses required (except for short-wave infrared element applications)
	Internal MOVs (varistors) and RC snubbers
Protection	IP20 on the front facia (to comply with Standard IEC 529)
External wiring	To be carried out in compliance with Standard IEC 364 or any other current National Standard
Humidity	RH: 5% to 95%, non-condensing and non-streaming
Dimensions (H x W x D mm)	215 x 141 x 186 (non fan-cooled unit) - (8.46 x 5.55 x 7.32 in.)
	233 x 141 x 186 (fan-cooled unit) - (9.17 x 5.55 x 7.32 in.)
Weight (kg)	3.1 (non fan-cooled unit) (6.8 lb.)
	3.5 (fan-cooled unit) (7.7 lb.)
Mounting	DIN rail or bulkhead mounting, leave gap of 5cm (0.2 in.) between units

Warranty: 2 years parts and labor (return to factory).

Eurotherm reserves the right to make changes to its specifications without advance notice.  
For any further information please contact Eurotherm Controls Inc.

## ORDERING CODE

Basic product	Nominal current	Nominal voltage	Fan supply	Input signal	Thyristor firing mode	Load config.	Mounting	Manual language	Options	Fuse	End
TE300											

Basic product	Code	Fan supply	Code	Load configuration	Code
	TE300	Without fan-cooling (16A to 25A rating)	000	Wye without neutral (3-wire)	3S
		With fan-cooling (50A & 63A):		Wye with neutral (4-wire)	4S
		115V	115V	Closed delta (3-wire)	3D
		230V	230V	Inside delta (6-wire)	6D
Nominal current		Input signal		Mounting	
16 amps	16A	0 to 5 volts	0V5	Bulkhead	BKD
25 amps	25A	0 to 10 volts	0V10	DIN rail	DIN
50 amps	50A	4 to 20 milliamps	4mA20	Manual language	
63 amps**	63A	Firing mode		English	ENG
		Logic (On/Off)	LGC	French	FRA
		Burst firing:		Italian	ITA
		1 cycle (Single-cycle)	FC1	Options	
		8 cycles	FC8	Auxiliary power supply 115 volts	115V
		16 cycles	C16	Auxiliary power supply 230 volts	230V
		128 cycles	128	Elimination of DC component (3-wire load configuration)	WDC
		Advanced Single-cycle (4- or 6-wire configuration)	SCA	Fuse Options	
				Two leg fuse kit	FUSE
				Fuse not included	NO FUSE
Nominal voltage *					
230 volts	230V				
240 volts	240V				
277 volts	277V				
380 volts	380V				
400 volts	400V				
415 volts	415V				
440 volts	440V				
480 volts	480V				
500 volts	500V				

\* The nominal voltage is the line-to-line voltage. The controller is calibrated to the nominal voltage. For non-standard line voltage: use the coding for the voltage immediately above and choose the option of power supply separated from electronics.

\*\* Limited to a 50A for short wave infrared elements.

## EXTERNAL FUSES AND FUSEHOLDER\*

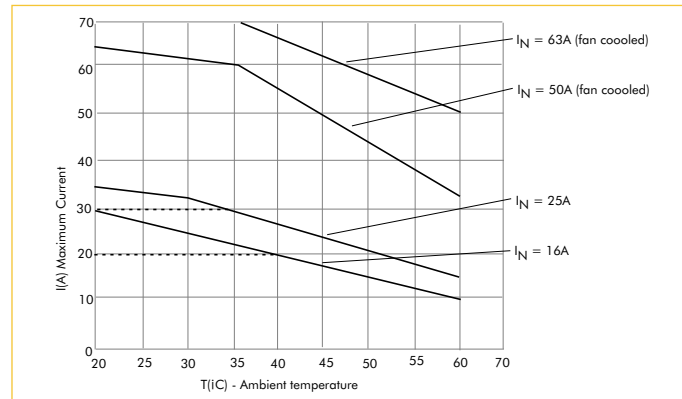
Nominal current of TE300	Fuse rating	Fuse & fuseholder code	Dimensions H x W x D (mm)
16A	20A	FU3038/16A/00	81 x 52.5 x 68
25A	30A	FU3038/25A/00	81 x 52.5 x 68
50A	63A	FU3258/50A/00	140 x 108 x 90
63A	80A	FU3760/63A/00	240 x 114 x 107

\*Tri-pole fuseholder plus 3 fuses

### Remember!

The external high-speed fuses recommended in the table are used only for SCR protection and under no circumstances should they be used to protect the installation. These fuses are not suitable for use with short wave infrared elements.

## CURRENT DERATING



RMS current per phase, derating as a function of ambient temperature. (Dotted line: limit of recommended fuse)

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