TE10S

SOLID STATE RELAY

CE

EUROTHERM CONTROLS

Product data

TE10S Solid State Relay

A compact, low cost, 240 and 480 volt solid state relay for 16, 25, 40 and 50 amps.

Easy replacement for mechanical contactors - Mechanical contactors in heating applications may operate three million times per year. The lifetime of such contactors is 1 to 3 years, so they need replacing several times during the life of an industrial machine. Alternatively the TE10S from Eurotherm has no moving parts and will not wear out. Its wiring is similar to contactors and it has simple DIN rail mounting. It takes a broad range of AC and DC inputs with a front face LED to show the control signal to help commissioning and diagnostics.

Extend the life of your heaters -Tests performed by a well known heater supplier have shown that heaters can last up to 7 times longer when used with a solid state relay. Faster on/off cycle times cause less thermal expansion and contraction of the heaters to reduce breakage due to fatigue and thermo-mechanical stress. Your savings include the cost of the heaters, installation costs, scrap reduction and lost production.

Why choose a fully assembled unit from Eurotherm? - In short, it gives you a well designed, tested and compact solution. The TE10S is assembled in an ISO 9002 registered factory, follows international safety regulations and comes with a 2 year warranty. The alternative would be to take a solid state device, heatsink, thermal transfer compound, load and control terminals, protection covers, mounting hardware, design regulations and then find the labour to put them all together. Self assembled installations tend to use more panel space, whether they are mounted directly on the cubicle metal work or on oversized heatsinks. Detailed thermal analysis allows Eurotherm to supply the most compact unit for a given current.

Tough enough for infrared applications - The TE10S uses two thyristors - not triacs - so it can withstand fast voltage and current changes (500V/μs and 100 A/μs) and momentary over-current (at least 400A for 10 ms). The TE10S is tough enough to handle the current surges that arise when you burst fire short-wave infrared elements.

Simple wiring for single and three phase loads - No wiring for electronics supply (self powered). Can be used for single phase loads (1 x TE10S), 3 phase, 3 wire loads (2 x TE10S), 3 Phase 4 wire loads (3 x TE10S) or 3 phase 6 wire loads ((3 x TE10S).

CE marking - TE10S Units are CE marked to show that they meet the essential requirements of the European Low Voltage Directive. No exposed parts are at a dangerous voltage.
Eurotherm certifies that the TE10S units have successfully passed the EMC tests and enable the system which incorporates them to comply with the EMC Directive as far as the TE10S is concerned.

An EMC instruction guide (part no. HA025464) is available on request.

TECHNICAL SPECIFICATION

Current	16A, 25A, 40A and 50A. Under certain conditions e.g. lower ambient temperature these units may be run at slightly higher currents. Consult your local Eurotherm engineer.	
Voltage	48 to 240 Vac (+10%, -15%) or 96 to 500 Vac (+10%, -15%)	
Supply frequency	47 to 63Hz	
Load		
Load type	Constant resistance or shortwave infrared elements	
Single phase connection	Line-to-line or line-to-neutral	
Three phase connection	Three wire star or delta - two units control two limbs of the load	
	Four wire star with neutral or six wire open delta - three units together	
Firing mode	Logic firing (ON/OFF) with zero voltage switching	
Input	Polarity insensitive, + and - can be crossed	
	Command signal indication by green LED	
Voltage	LGC 8 to 32 V dc (ON >8V, OFF <2V)	
	LAC 32 to 48V ac, (ON >30V, OFF <5V)	
	HAC 100 to 240Vac, (ON >85V, OFF <10V)	
Current	LGC 10 to 20 mA dc (ON>8mA, OFF <0.5mA)	
Option		
Partial load failure detection	Detects an increase in load impedance due to failure or disconnection of part of the heating load.	
	Discrimination: 1 element in 6 for single phase load	
Installation		
Dimensions (mm)	16A 115H x 35W x 93D (53W with PLF/IPF); 25A 115H x 53W x 93D (70W with PLF/IPF);	
	40A 115H x 88W x 93D (105W with PLF/IPF); 50A 115H x 105W x 93D (123W with PLF/IPF)	
Mounting	Vertical on DIN rail	
Inter-unit spacing	10mm for full current operation	
Internal bus bar	8mm^2 copper bars	
Power terminals	Cable sizes 1.5 to 16mm^2. Tightening torque 1.2Nm	
Control terminals	Cable size 0.5 to 1.5mm^2. Terminals are removable for easy maintenance	
Weight	16A 320g, 25A 500g, 40A 770g, 50A 880g	
Environment		
Humidity	5 to 95% non condensing	
Enclosure protection	IP20 (IEC 529)	
Isolation	All distances comply with IEC 664	
	Control signals isolated from power, tested to 3600 Vac. Isolation to earth tested to 2000 Vac	
Electrical protection	RC snubber network	
	External high speed fuse (to be ordered separately)	
Leakage current	Less than 30 mA	
Storage temperature	-10°C to 70°C	
Cooling	Natural convection	
Operating temperature	0°C to 45°C (up to 60° with derating)	
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.	
European Directives		
Electromagnetic compatibility	Immunity test standards:	EN61000-4-2, EN 61000-4-4, PrEN 61000-4-3
	Emission test standard:	EN 55011, EN50081-2 without external filter (optional parallel filters must be fitted for 2 phase control of 3 phase loads)
Safety	Complies with the Low Voltage Directive 73/23/EEC dated 19/2/73 amended by Directive 93/68/EEC dated 22/7/93 (product installed and used in compliance with its user manual)	
CE marking	TE10S products carry the CE mark in compliance with the European Low Voltage Directive. A CE declaration of conformity is available on request.	

ORDERING CODE

Basic Product	Current	Voltage	Input	Option
TE10S				

Current	Code
16 amps	16A
25 amps	25A
40 amps	40A
50 amps	50A
Voltage	
240 volts	240V
480 volts	480V
Input	
DC Logic input	LGC
48V AC Logic input	LAC
100 - 240V AC Logic input	HAC
PDSIO mode 1 (1)	PDS1
PDSIO mode 2	PDS2
Option	
Partial load fail detection: *	
Relay open in alarm	PLF
Relay closed in alarm	IPF

* Partial load failure only available with LGC input

FUSE AND FUSEHOLDER

Unit Current	Fuse & Fuseholder Part No.
16 amps	FU1038/16A
25 amps	FU1038/25A
40 amps	FU1451/40A
50 amps	FU2258/50A

SPARE FUSES

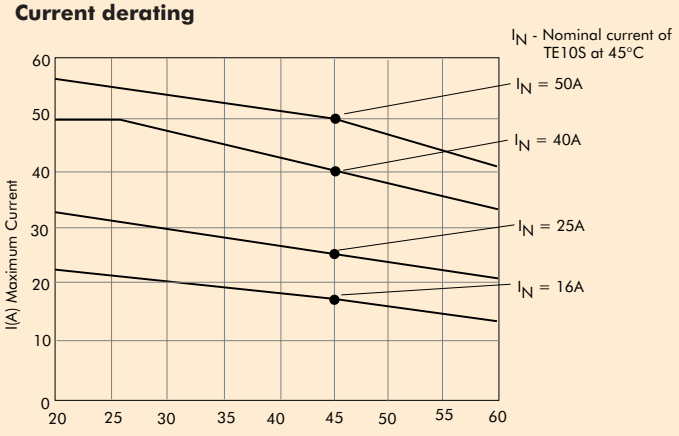
Unit Current	Fuse Part No.
16 amps	CH260024
25 amps	CH260034
40 amps	CH330054
50 amps	CS173087U063

Eurotherm recommend that a semi-conductor fuse be fitted with each solid state relay. With the TE10S these fuses must be ordered separately. A line protection fuse or circuit breaker must also be fitted for cable protection.

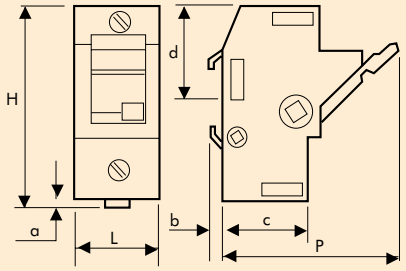
Please note that replacement fuses are marked with a higher rating than the solid state relays. This allows correct operation at elevated temperatures and does not imply that higher current is permissible.

(1) PDSIO is a proprietary technique developed by Eurotherm for bi-directional transmission of analogue and digital data between TE10S and 2000 Series instruments. Mode 1 provides logic heating of a TE10S solid state relay with feedback of a load failure alarm. Mode 2 provides logic heating of a TE10S solid state relay with feedback of load current and two alarms; solid state relay failure and heater circuit

Current derating



Fuse holder dimensions



Dimensions (mm)	Fuse-holder FU1038	FU1451	FU2258
Height (H)	81	95	124
Width (L)	17.5	26	35
Depth (P)	68	86	90

	FU1038	FU1451	FU2258
a	-	2	4
b	7.5	7.5	-
c	38	45	54
d	36.5	40.5	42

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