TE10S

MODEL



Solid State Relay

Specification Sheet

- **Rated up to 50A at 45°C**
- **240V and 480V options**
- **AC and DC logic input**
- **Partial load failure detection**
- **Simple installation and maintenance**

A compact, low cost, 240 and 480 volt solid state relay for 16, 25, 40 and 50 amps, rated at 45°C.

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 to be replaced 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 driven by 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. The TE10S is able to detect element failures to heaters with multiple elements in parallel.

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 ISO9001:2000 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 so it can withstand fast voltage and current changes (500V/µs and 100A/µs) and momentary over-current (at least 400A for 10ms). 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), three phase loads (3 x TE10S) firing independently.

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 certificates 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 installation guide (part no. HA025464) is available on request.

SPECIFICATION

Current:	16A, 25A, 40A and 50A at 45°C. 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 63 Hz

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 32Vdc (ON>8V, OFF<2V)
	LAC 32 to 48Vac, (ON>30V, OFF<5V)
	HAC 100 to 240Vac (ON>85V, OFF<10V)
Current:	LGC 9mA dc (self limiting). (ON>9mA, 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

Environmental

Humidity:	5 to 95% non condensing
Enclosure protection:	IP20 (IEC 529)
Isolation:	All distances comply with IEC 644
	Control signals isolated from power, tested to 3600Vac. Isolation to earth tested to 2000Vac
Electrical protection:	RC snubber network
	External high speed fuse (to be ordered separately)
Leakage current:	Less than 30mA
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, EN61000-4-4, PrEN 61000-4-3
Emission test standard:	EN55011, EN50081-2 without external filter (optional parallel filters must be fitted for 2 phase control pf 3 phase loads)
Safety:	Complies with Low 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

TE10S	1	2	3	4	5	6	00

1 Current

16A	16 amps
25A	25 amps
40A	40 amps
50A	50 amps

2 Voltage

120V	120 volts
240V	240 volts
480V	480 volts
500V	500 volts

3 Input

LGC	Universal DC
LAC	48 VAC input
HAC	100-240 VAC
PDS1	PDS (1) Heater Break Detect
PDS2	PDS (1) Current Monitoring

(1) PDS (not available with PLF/IPF) uses the same two wires to control the switching of the TE10S and to feedback load status.
PDS Heater Break Detect will transmit the power demand signal to a TE10S typically from a 2200 Series controller and read back a heater break alarm.
Similarly, PDS Current Monitoring will transmit the power demand signal to a TE10S and read back load current, open and short circuit alarms.

4 Language

ENG	English
FRA	French
GER	German

5 Option

Partial load failure	
00	None
PLF	Relay open in alarm
IPF	Relay closed in alarm

6 Fuse

FUSE	Fuse without microswitch
MSFU	Fuse with microswitch
NONE	No fuse *

* High speed fuses are not recommended for SWIR loads

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

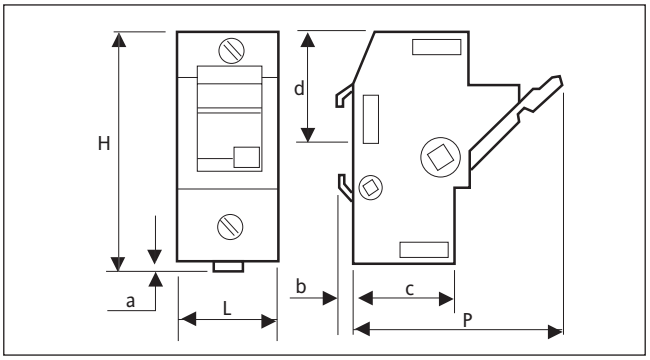
SPARE FUSE AND HOLDER

Current rating amps	Fuse and holder assembly	Fuse and Holder with Microswitch
16	**FU1038/16A/00**	**MSFU1451/16A**
25	**FU1038/25A/00**	**MSFU1451/25A**
40	**FU1451/40A/00**	**MSFU1451/40A**
50	**FU2258/50A/00**	**MSFU2258/50A**

SPARE FUSE

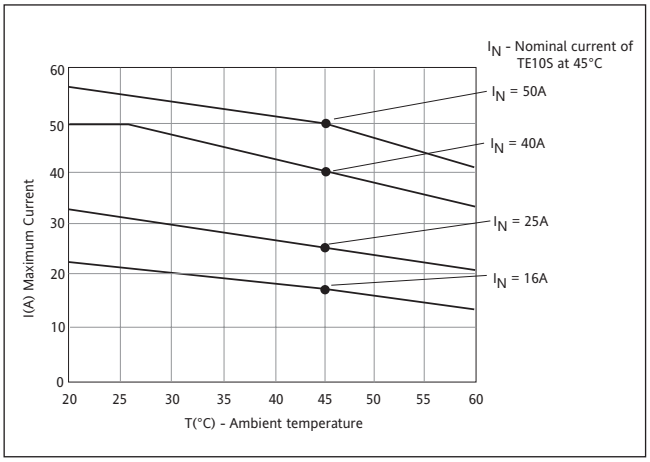
Current rating amps	Fuse rating amps	Fuse number	Fuse Trip with Indicator
16	20	**CH260024**	**CS176513U020**
25	32	**CH260034**	**CS176513U032**
40	50	**CH330054**	**CS176513U050**
50	63	**CS173087U063**	**CS176461U063**

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

Current derating



Eurotherm: International sales and service

Understanding and providing local support is a key part of Eurotherm's business. Complementing worldwide Eurotherm offices are a whole range of partners and a comprehensive technical support team... to ensure you get a service you will want to go back to.

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Part No. HA023806 Issue 5 TE10S Specification sheet Printed in England 08.07