TE10P

MODEL

Ideal for :

- **Loads requiring high stability and accuracy**
- **Moving loads where the temperature is difficult to monitor**
- **Loads with characteristics that change with time or temperature**

Features :

- **16 - 400 amps**
- **Voltage up to 500V**
- **True power control**
- **High precision control**
- **Modbus + Profibus comms**
- **Drives all load types**

Single phase true power controller

Specification Sheet

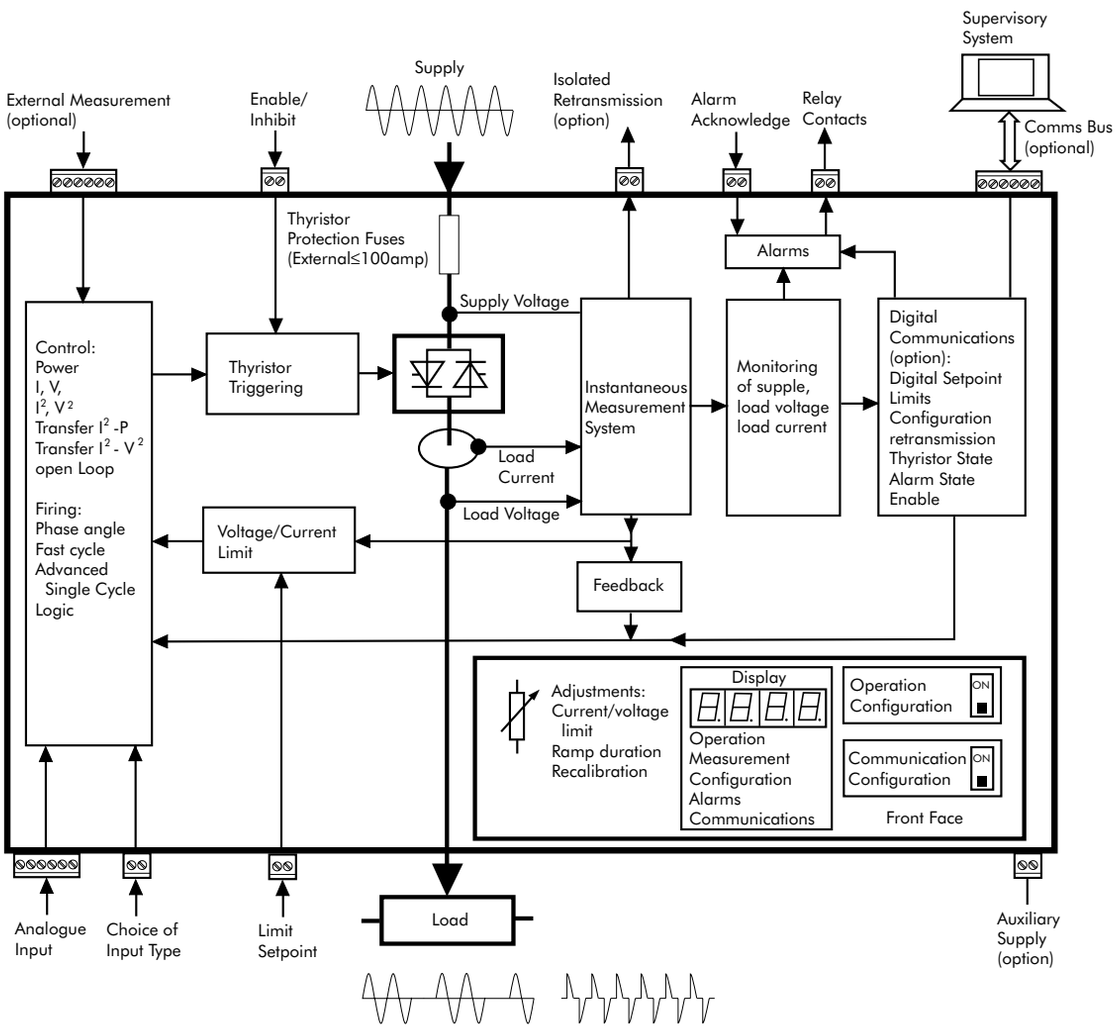
High precision control; accuracy and stability better than 1%
The TE10P provides accurate power control for a wide range of industrial, single phase loads. By using either an analogue or digital setpoint, the TE10P can be used for the precise control of power in loads that would otherwise prove difficult to accurately regulate.

Flexibility
The TE10P is configurable for different types of input, firing mode, feedback and load type. It is suitable for driving either simple resistive loads or complex loads such as Silicon Carbide, Platinum, Molybdenum or Short Wave Infrared lamps.
Dynamic load fault detection allows continuous monitoring of loads, including those with characteristics that are dependent on temperature or time.
The feedback type can be selected from; RMS Voltage, RMS Current, I^2, V^2, Transfer Between I^2 and V^2, transfer between I^2 and Power, True Power or Open Loop.

Communications
Optional RS422 or RS485 communications with Modbus or Profibus protocol allow the TE10P to be configured or controlled from an external supervisory system.

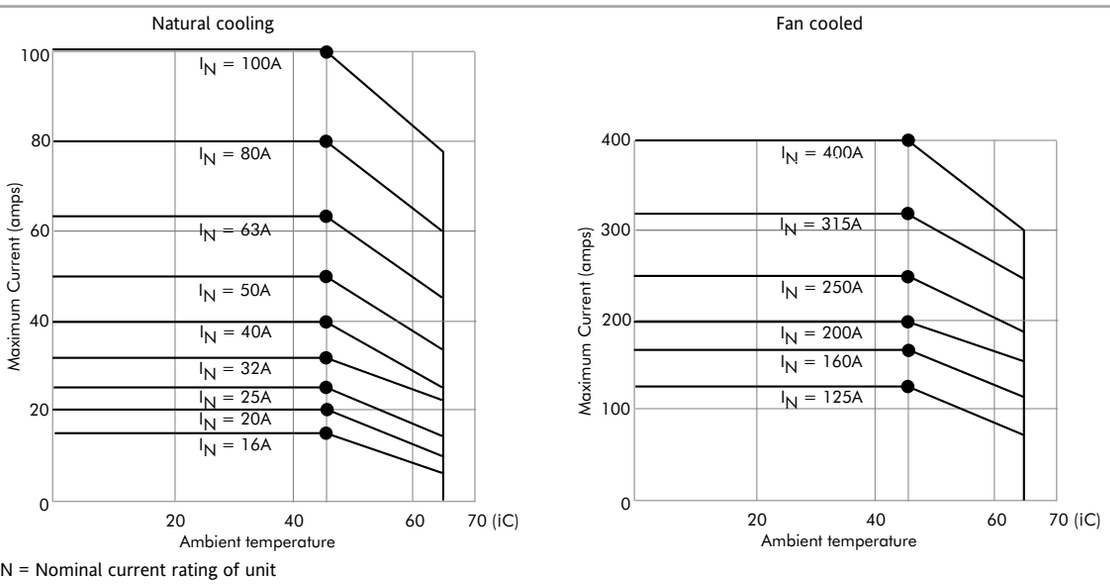
Features

- Current range from 16 to 400 amps, voltage range from 100 to 500 volts.
- Four digit display and single push button, simplify Operating, Commissioning, Maintenance and Configuration.
- Isolated Analogue retransmission of power.
- Configurable Alarm Relay.



Functional diagram of TE10P

Current Derating Curves



I_N = Nominal current rating of unit

TECHNICAL SPECIFICATION

Additional information and documentation available on www.eurotherm.co.uk

ELECTRICAL	
Nominal current (at 45 Deg. C)	16A to 400A
Nominal voltage	100V to 500V (+10%, -15%) as product code
Supply frequency	40 to 70 Hz automatic adaptation
Electronics supply	Internal or optionally 115V or 230V external (10VA)
Power dissipation	1.3 watts per amp
Fusing	High speed fuses: External for 16A to 100A (order separately), internal for 125A to 400A
Cooling	Natural cooling up to 100amps
	Fan cooled from 125 amps upwards (25VA fan)
Load	Any type of single phase load (except capacitive)
OPERATING	
Inputs	0-5V or 0-10V (Input impedance >100K)
	0-20mA or 4-20mA (input impedance 250 Ohms)
	Logic: 5V, 10V or 20mA
	Digital Comms (optional): RS422 or RS485
Firing modes	Logic (ON/OFF)
	Burst firing (selectable soft start)
	Advanced Single Cycle
	Phase Angle (selectable ramp)
Control mode	Power - calculated from instantaneous measurements
	RMS voltage
	RMS current
	V^2
	I^2
	Automatic transfer I^2 <->P
	Automatic transfer I^2 <->V^2
	Open Loop
Linearity and stability	Better than ±1% of full scale
Input limit	Analogue- by potentiometer or by external signal
	Digital- by communications bus (optional)
Current or voltage limit	Either chop-off (with alarm) or revert to phase angle and reduce firing angle
Retransmission	Analogue 0-10V or 4-20mA isolated (accuracy ±1%)
	Digital via comms link
Diagnostics	Diagnostics port available for use with model 260 Diagnostic unit
DIGITAL COMMUNICATIONS	
Protocol	PROFIBUS-DP or MODBUS
ALARMS	
Mains	Under or over voltage, frequency out of range
Load	Over current or load fault (static or dynamic)
Thyristors	Short circuit or over temperature (fan cooled units)
ENVIRONMENT	
Temperature	0 to 45°C operating, -10 to 70°C storage
Humidity	5% to 95% RH Non condensing, non streaming
Altitude	2000 metres maximum
Atmosphere	Non explosive, non conductive and non corrosive
Pollution	Pollution degree 2 admissible, defined by IEC664
Protection (mechanical)	IP20 on front face according to IEC529
Dimensions	16 to 100A: 225mm (H) x 116mm (W) x 169mm (D)
	125 to 400A: 470mm (H) x 133mm (W) x 260mm (D)
Weight	16A to 100A: 3.2kg. 125 to 400A: 11.5kg
Mounting	DIN rail mounting up to 100amps
	Bulkhead mounting available for all units
EUROPEAN DIRECTIVES	
Safety	The TE10P carries the CE mark to show compliance with the European Low Voltage Directive 73/23/EEC
EMC- Immunity	Conforms to: EN 500082-2, EN 61000-4-2, EN 61000-4-4, ENV 50204, ENV 50140, ENV 50141
EMC- radiated emission	Conforms to: EN 55011 class A
EMC- conducted Emmission	Conforms to: EN 500081-2 without fiter in Burst Firing modes for resistive loads up to 100amps. An external filter may be required for other operating conditions
	Conforms to IEC 1800-3 (EN610800-3) without filter
	For use in second (industrial) environment
UL approval	Products ≤100A are UL approved

ORDERING CODE

TE10P	1	2	3	4	5	6	7	8	9	10	11	12	13	14

15	16	17	18	19	20	21	22	23	24	25	26

1 Current

16A	16 amps
20A	20 amps
25A	25 amps
32A	32 amps
40A	40 amps
50A	50 amps
63A	63 amps
80A	80 amps
100A	100 amps
125A	125 amps
160A	160 amps
200A	200 amps
250A	250 amps
315A	315 amps
400A	400 amps

2 Voltage

100V	100 volts
115V	115 volts
200V	200 volts
230V	230 volts
240V	240 volts
277V	277 volts
380V	380 volts
400V	400 volts
415V	415 volts
440V	440 volts
460V	460 volts
480V	480 volts
500V	500 volts

3 Auxiliary Supply Voltage

AUTO	None (Internal)
External	
115V	115 volts (10VA)
230V	230volts (10VA)

4 Fan Supply Voltage

000	None (Internal)
External	
115	115 volts (10VA)
230	230volts (10VA)

5 Analogue Input

0V5	0 - 5 volts
0V10	0 - 10 volts
0mA20	0 - 20mA
4mA20	4 - 20mA

6 Input Limit

SPOT	Potentiometer On Unit
External	
S0V5	0 - 5 volts
S0V10	0-10 volts
S0mA20	0-20 mA
S4mA20	4-20 mA

7 Firing Mode

LGC	Logic (ON/OFF)
PA	4-20 mA
Burst firing cycle	
FC1	1 cycle
FC8	8 cycles
C16	16 cycles
128	128 cycles
SCA	Advanced single cycle

8 Ramp Start of Burst (or PA)

URP	Ramp
NRP	No ramp

9 Ramp Safety

AR	Safety ramp active
NR	No safety ramp

10 Load Type

LTCL	Low temperature coeffient load
HTCL	High temperature coeffient load (molybdenum, tungsten, molybdenum disilicide)
TTDL	Time and/or temp. dependent loads (Silicon carbide)
SWIR	Short wave infrared load

11 Controlled Parameter

P	Power
IE	RMS current
VE	RMS voltage
I2	I^2
V2	V^2
OL	Open loop
Transfer of controlled parameter	
I2V2	I^2 < - >V^2
I2P	I^2 < - >P

12 Current/Voltage Limit*

ICHO	Stop conduction at current limit
ILI	Reduce firing angle at current limit (PA only)
VLI	Reduce firing angle at voltage limit (PA only)

** For **SWIR** loads in Phase Angle mode only.*
*For **HTCL** loads use **ICHO** for **SCA** firing mode and **ILI** in other modes.*

13 Current/Voltage Signal

LPOT	Potentiometer On Unit
External Signal	
Trim potentiometer on unit	
L0V5	0-5 volts
L0V10	0-10 volts
L0mA20	0-20mA
L4mA20	4-20mA

14 Fixing

BKD	Bulkhead
DIN	DIN rail (≤100A)

15 Alarm Relay

NC	Closed in alarm
NO	Open in alarm

16 Communications Protocol

000	No digital communications
MOP	Modbus protocol
PFP	Profibus-DP protocol

17 Communications Speed

Profibus	
RAUT	Read only 1.5M bauds
WAUT	Read and write 1.5M bauds
Modbus	
R96	Read only 9.6 kbauds
R192	Read only 19.2 kbauds
W96	Read/write 9.6 kbauds
W192	Read/write 19.2 kbauds

18 8 Default Configuration

CSW	Configuration by switches
CEP	Configuration held in memory

19 Option 1

Retransmission:	
R0V10	0-10V
R4mA20	4-20mA
-	No option

20 Option 2

DB9	9 Pin comms connectors
-	No option

21 Option 3

IEXT	External current measurement
-	No option

22 Option 4

External voltage measurement	
XXXV	(select range XXX from Voltage field)

23 Internal Filter

FILT	≤100A: Internal EMC filter (fast cycle)
-	No internal filter

24 Fuse

FUSE	Fuse and fuseholder
MSFUSE	Microswitch fuse
NOFUSE	No fuse

25 Language

ENG	English
FRA	French
GER	German

26 Special

99	Special
-	No special

FUSES - NO MICROSWITCH/TRIP INDICATOR

External fuses (order separately)

Current rating amps	Fuse holder	Fuse and fuseholder assembly		Replacement fuse
		Reference	H x W x D	
16	CP018525	FU1038/16A/00	81 x 17.5 x 68	CH260024
20	CP018525	FU1038/20A/00	81 x 17.5 x 68	CH260034
25	CP018525	FU1038/25A/00	81 x 17.5 x 68	CH260034
32	CP171480	FU1451/32A/00	95 x 30 x 86	CH330044
40	CP171480	FU1451/40A/00	95 x 30 x 86	CH330054
50	CP173083	FU2258/50A/00	140 x 35 x 90	CS173087U063
63	CP173083	FU2258/63A/00	140 x 35 x 90	CS173087U080
80	CP173083	FU2258/80A/00	140 x 35 x 90	CS173087U100
100	CP173245	FU2760/100A/00	150 x 38 x 107	CS173246U125

Internal fuses (included)

Unit rating	Fuse rating	Reference
125A	200A	LA172468U200
160A	200A	LA172468U200
200A	400A	LA172468U400
250A	400A	LA172468U400
315A	400A	LA172468U400
400A	500A	LA172468U500

Note: For Fuses with Microswitch/Trip Indicators consult Eurotherm Sales

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