

TE10P

MODEL



Single phase true power controller

Specification Sheet

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

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

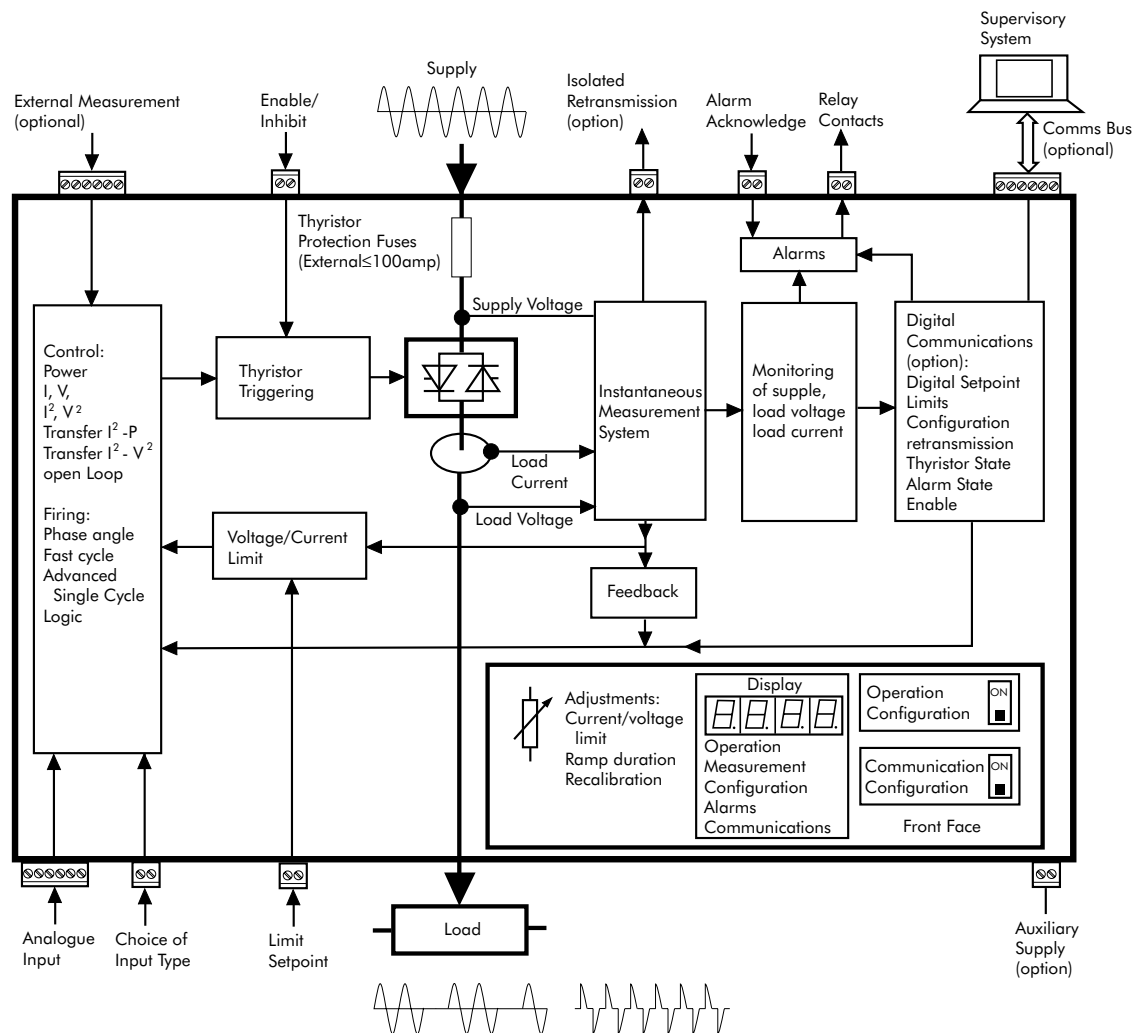
Optional RS422 or RS485 communications with Modbus or Profibus protocol allow the TE10P to be configured or controlled from an external supervisory system.

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.

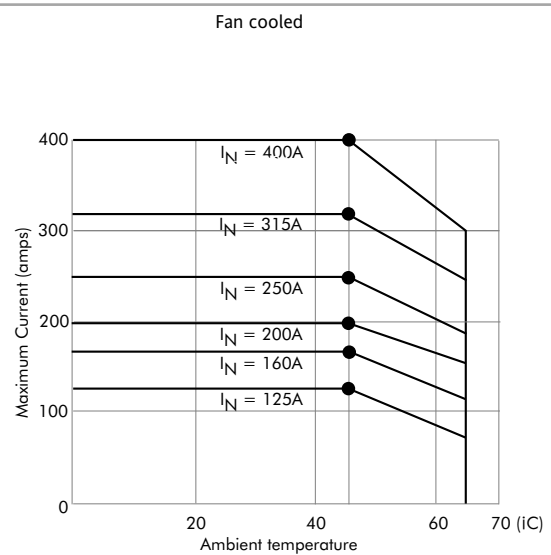
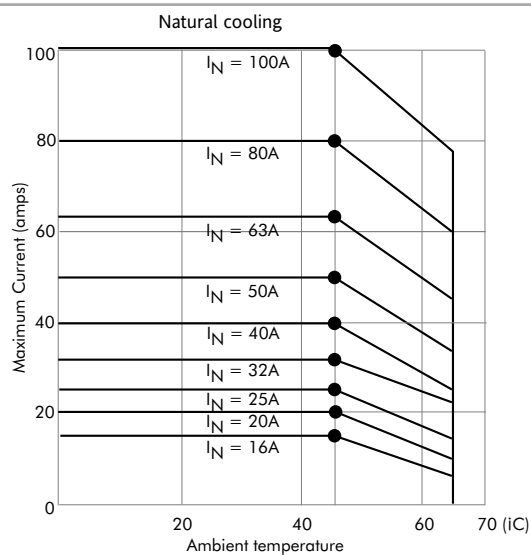


Invensys
EUROTHERM



Functional diagram of TE10P

Current Derating Curves



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 $I^2 \leftrightarrow P$ Automatic transfer $I^2 \leftrightarrow V^2$ Open Loop
Linearity and stability	Better than $\pm 1\%$ 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 $\pm 1\%$) Digital via comms link
Diagnostics	Diagnostics port available for use with model 260 Diagnostic unit

DIGITAL COMMUNICATIONS

Protocol	PROFIBUS-DP or MODBUS
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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 filter 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 $\leq 100A$ are UL approved

ORDERING CODE

TE10P	1	2	3	4	5	6	7	8	9	10	11	12	13	14
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15	16	17	18	19	20	21	22	23	24	25	26
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1 Current	3 Auxiliary Supply Voltage	6 Input Limit	10 Load Type	12 Current/Voltage Limit*	15 Alarm Relay	19 Option 1
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	AUTO None (Internal) External 115V 115 volts (10VA) 230V 230volts (10VA)	SPOT Potentiometer On Unit External S0V5 0 - 5 volts S0V10 0-10 volts S0mA20 0-20 mA S4mA20 4-20 mA	LTCL Low temperature coefficient load HTCL High temperature coefficient load (molybdenum, tungsten, molybdenum disilicide) TTDL Time and/or temp. dependent loads (Silicon carbide) SWIR Short wave infrared load	ICHO Stop conduction at current limit ILI Reduce firing angle at current limit (PA only) VLI Reduce firing angle at voltage limit (PA only) <i>* For SWIR loads in Phase Angle mode only. For HTCL loads use ICHO for SCA firing mode and ILI in other modes.</i>	NC NO Closed in alarm Open in alarm	Retransmission: R0V10 0-10V R4mA20 4-20mA - No option
2 Voltage	4 Fan Supply Voltage	7 Firing Mode	11 Controlled Parameter	13 Current/Voltage Signal	16 Communications Protocol	20 Option 2
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	000 None (Internal) External 115 115 volts (10VA) 230 230volts (10VA)	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	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	LPOT Potentiometer On Unit External Signal Trim potentiometer on unit L0V5 0-5 volts L0V10 0-10 volts L0mA20 0-20mA L4mA20 4-20mA	000 No digital communications MOP Modbus protocol PFP Profibus-DP protocol	DB9 9 Pin comms connectors - No option
5 Analogue Input	8 Ramp Start of Burst (or PA)	9 Ramp Safety	14 Fixing	17 Communications Speed	18 8 Default Configuration	21 Option 3
0V5 0 - 5 volts 0V10 0 - 10 volts 0mA20 0 - 20mA 4mA20 4 - 20mA	URP Ramp NRP No ramp	AR Safety ramp active NR No safety ramp	BKD Bulkhead DIN DIN rail (≤100A)	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	CSW Configuration by switches CEP Configuration held in memory	IEXT External current measurement - No option
18 8 Default Configuration	22 Option 4	23 Internal Filter	24 Fuse	25 Language	26 Special	99 Special
	External voltage measurement XXXV (select range XXX from Voltage field)	FILT ≤100A: Internal EMC filter (fast cycle) - No internal filter	FUSE Fuse and fuseholder MSFUSE Microswitch fuse NOFUSE No fuse	ENG English FRA French GER German		No special

FUSES - NO MICROSWITCH/TRIP INDICATOR

External fuses (order separately)

Current rating amps	Fuse holder	Fuse and fuseholder assembly Reference	H x W x D	Replacement fuse
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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