



Compact SCR Power Controller

Specification sheet

- Nominal load current from 1 amp to 63 amps
- Voltage up to 500V
- Compact DIN Rail and bulkhead Mounting Format
- Configurable via iTools (PC software) or front panel
- Plug and play Ethernet communications with Zero configuration networking (zeroconf)
- V^2 , I^2 or True power control
- Controls comprehensive range of loads: resistive, infra-red, transformer primary, molybdenum disilicide, silicon carbide
- Energy usage measurement
- Advanced load diagnostics
- Integrated dual port Ethernet switch for "daisy chained" communications
- Modbus® TCP protocol

EPack power controller is a compact fully featured power controller from Invensys Eurotherm, combining a high level of functionality and configurability with simplicity of setup and operation. The combination of advanced configurable firing modes allows close matching to load characteristics for maximum process efficiency. EPack is highly configurable and may be adapted for current and future needs using a software key to purchase additional functionality when needed.

Ratings and Physical Format

EPack power controllers are designed to carry currents from 1 to 63 amps, with operating voltage between 100 and 500 Volts. It has a compact DIN rail and bulkhead mounting format in two widths depending on the current rating (16A to 32A or 40A to 63A). The units are specified for normal operation up to 45°C; however operation at 50°C is possible with current de-rating. There are two options for auxiliary power supply, 24V ac/dc or 100-500V ac.

The display

Clear visualisation of all operating and configuration information is available on the clear, high definition 1.5" TFT display. This includes alarm indication as well as process and operating data such as nominal current, load voltage and energy usage. Should a control system fault occur, clear messages allow the precise origin of the problem to be determined, reducing down-time.

Applications

- Plastic - Extrusion, Injection moulding
- Food and Beverage - Drying, sterilization, baking
- Glass - Float manufacturing
- Infra-red heating

connect control improve

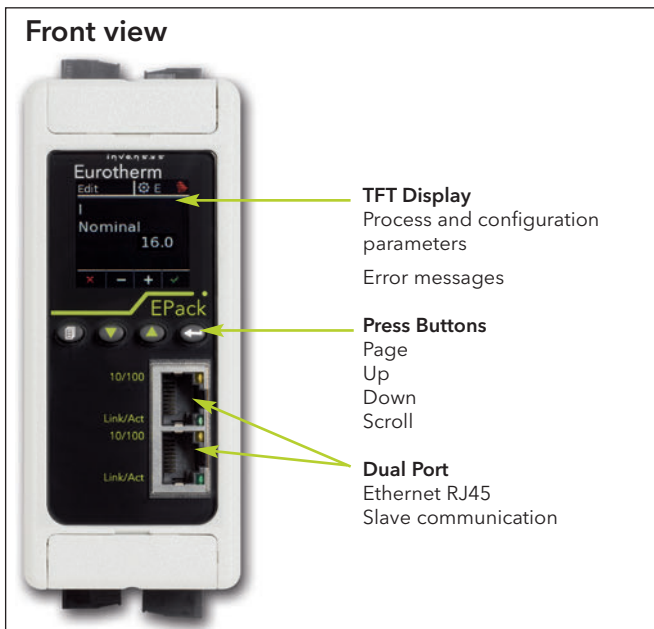
Communications

E-Pack power controller has Ethernet communications as standard, and includes an integrated dual port switch so that units may be "daisy chained". This allows integration with other plant equipment using standard Ethernet protocols such as Modbus/TCP, allowing connection to process and temperature controllers, Programmable Logic Controllers and SCADA/Supervisory systems. Full diagnostic and operational data is available for use by higher level systems and to allow process improvements. Plug and play Ethernet connection is provided via "zero configuration" protocol.

Analogue communication for power setpoints is fully supported, using standard current and voltage inputs to the E-Pack unit.

Configuration

E-Pack is fully software configurable, with all options and advanced functions available when needed. Software modules may be purchased when required by use of a software key so that existing units may be adapted to changing needs over time. The instrument order code allows pre-configured units to be delivered ready for use, or alternatively a "Quick Start Code" using integrated HMI may be used to quickly configure for use. When a deeper level of configuration is required, Invensys Eurotherm iTools provides comprehensive access to all functions with context sensitive help.



Specification

General

General

Directive:	EMC directive 2004/108/EC Low Voltage Directive 2006/95/EC
Safety specification:	EN 60947-4-3:2000 (2000-01-12) + EN 60947-4-3:2000/A1:2006 (2006-12-08) + EN 60947-4-3:2000/A2:2011 (2011-09-02)
EMC emissions specification:	EN 60947-4-3:2000 (2000-01-12) + EN 60947-4-3:2000/A1:2006 (2006-12-08) + EN 60947-4-3:2000/A2:2011 (2011-09-02)
EMC immunity specification:	Class A product EN 60947-4-3:2000 (2000-01-12) + EN 60947-4-3:2000/A1:2006 (2006-12-08) + EN 60947-4-3:2000/A2:2011 (2011-09-02)
Safety tests:	
Vibration tests:	EN60947-1 annex Q category E
Shock tests:	EN60947-1 annex Q category E
Approvals:	cUL: UL609747-4-1A and UL60947-1 CE: EN60947-4-3 and EN 60947-1 GOST-R: Certificate of exemption
Protection (According to EN60529):	IP10

Condition of use

Directive:	EMC directive 2004/108/EC
Atmosphere:	Non-corrosive, non-explosive, non-conductive
Usage temperature:	0 to 45°C
Stocking temperature:	-25°C to 70°C (maximum)
Altitude:	1000m maximum at 45 degrees
Degree of pollution:	Degree 2

Mechanical Details

Dimensions:	Model 16 to 32 amps: 129.2 mm (H) x 51 mm (W) x 136.2 mm (D) Model 40 to 63 amps: 129.2 mm (H) x 72 mm (W) x 158.2 mm (D) See drawings on Page 3 for more details
Weight:	Model 16 to 32 amps: 0.800 kg Model 40 to 63 amps: 0.950 Kg
Mounting:	DIN rail or bulkhead mounting

Power

Nominal current:	1 to 63 amps
Nominal voltage:	100V to 500V +10%/-15%
Frequency:	47Hz to 63Hz
Protection:	High speed fuse
Type of loads:	AC51: Pure resistive AC-55b: Infra Red (With Derating) AC-56a: Transformer Primary or MOSI (e.g. Molybdenum disilicide) Time temperature dependant loads (e.g. Silicon Carbide)

Control

Auxillary power supply:	100V to 500V +10%/-15% or 24 ac/dc (±20%)
Control setpoint:	Analogue input or digital comms
Analogue input signal:	Voltage: Range: 0-5V, 0-10V or 2-10V Impedance: 1M ohms typical (0-10V signal)
Current:	Range: 0-20mA or 4-20mA
Input resistance:	100 ohms to allow for three units wired in series to be driven from a single Controller's analogue output
Resolution:	12 bits
Linearity:	±0.1% of Scale
Firing mode:	Phase angle Intelligent Half cycle Variable Modulation Burst firing (Default 16 cycles) Fix modulation period (default 2 seconds) Logic mode
Control mode:	V ² control, I ² control, True Power control, Open loop with feed forward and Trim modes, Threshold limit or by transfer V ² <-> I ² or P <-> I ²
Auxillary inputs/outputs:	One fixed for enable signal and one configurable
Two digital inputs:	Logic or Voltage Active level: + 4.4V min/+30V max Non-active level: -30V min/+2.3V max Input current at 12V (sinking): 0.25mA max Input current at 0V (sourcing): 15uA
Voltage:	Opened > 500 ohms Closed < 150 ohms
One Alarm Relay:	Changeover relay -2A rms - 264V rms- normally energised This relay will be de-energised in case of serious alarms: short circuit thyristor, open thyristor, fuse blown, missing main, chop off

Communications

Connection:	Dual port Ethernet - RJ45 Integral switch
Protocol:	Modbus TCP
Baud rate:	10/100 full or half duplex

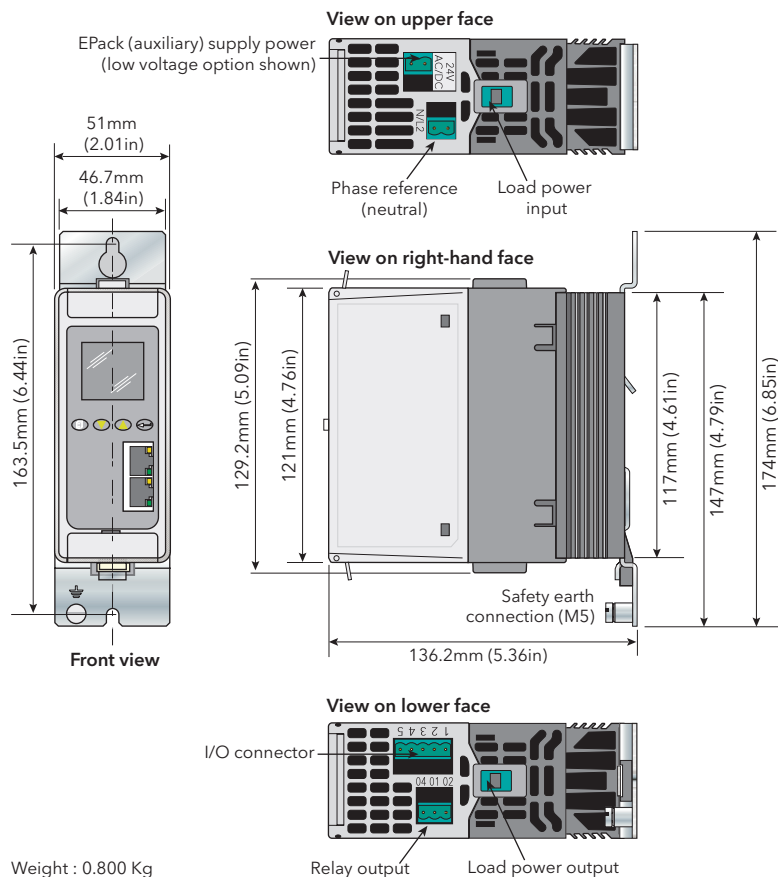
Display

Technology:	TFT
Size:	1.5"
Messages:	Process parameters (Current, Voltage...), Fault (Short circuit, Total Load failure, Partial load failure, under/over voltage, over current, comms network fault)

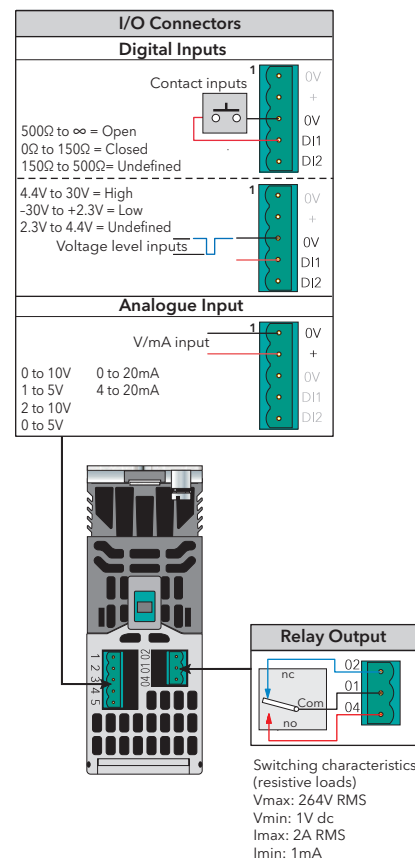
Mechanical details

Connectors Details (pinout)

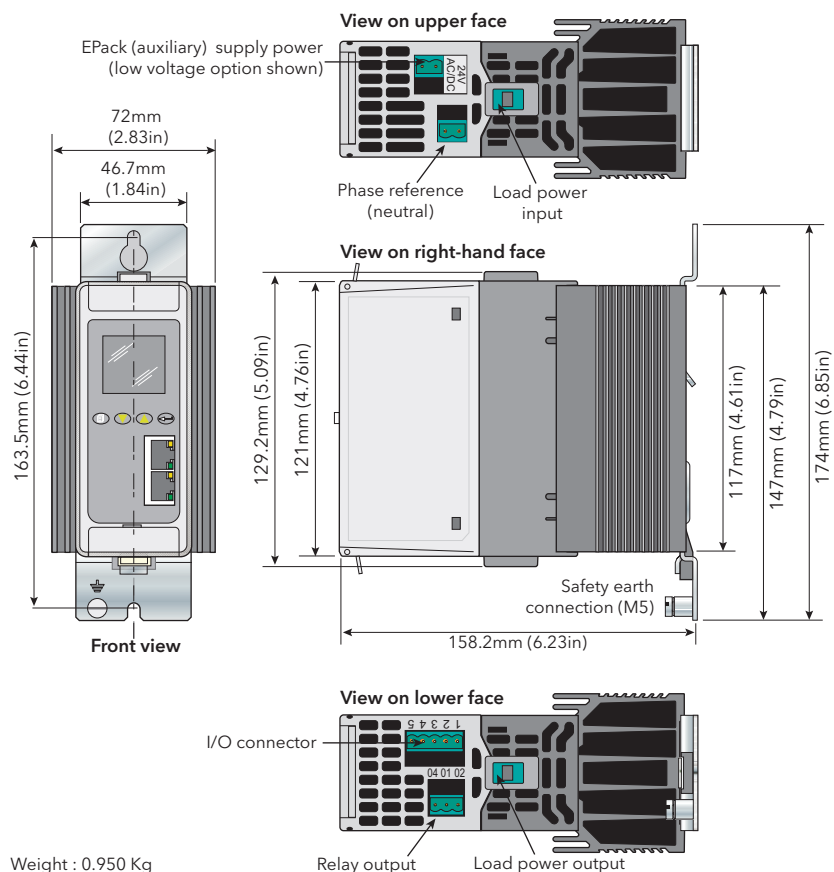
E-Pack - from 16 to 32 Amps Model



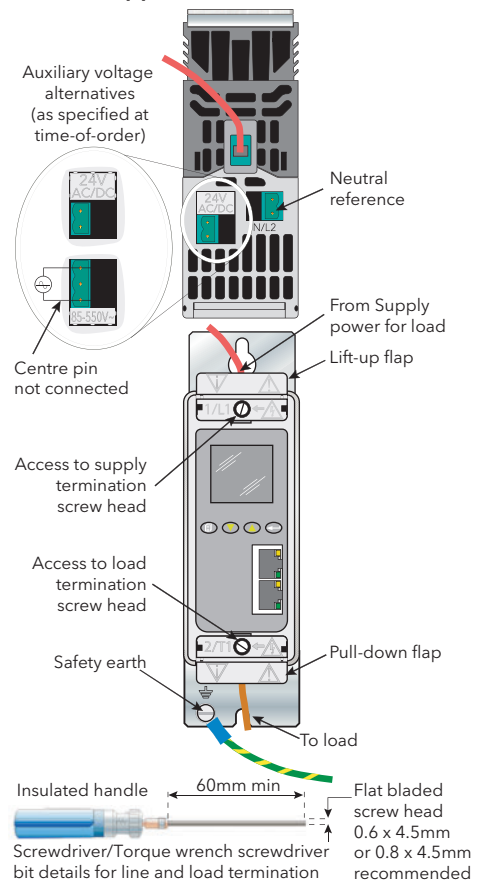
View on lower face



E-Pack - from 40 to 63 Amps Model



View on upper face



Order codes

E-Pack power controller is ordered using a short code for hardware and chargeable software options and an optional extended code section configuration of commissioning options.

If the extended code is not used, software configuration is completed using a quick start procedure or using Eurotherm iTools software.

E-Pack may be upgraded with additional chargeable options at any time using a software key order code.

Basic product coding

EPACK-1PH	1	2	3	4	5	6	7	8	9	10	11	12	13
			XXX					XXX					

14	15	16	17	18	19	20	21	22

Basic Product		7 Comms Option
EPACK-1PH	Compact SCR Power Controller	TCP Modbus TCP (standard)
1 Maximum current of the unit		8 Reserved
16A 16 Amps 25A 25 Amps 32A 32 Amps 40A 40 Amps 50A 50 Amps 63A 63 Amps		XXX Reserved
2 Auxillary Power Supply		9 Warranty
500V 500V max 24V 24V ac/dc		XXXX Standard Warranty WL005 5 Year Warranty USWL3 US Extended Warranty
3 Reserved		10 Custom Labeling
XXX Reserved		XXXX Standard Label (Eurotherm) SLnnnn Special Label (nnnn: reference number) Note: SL0000 = blank label (for distributors)
4 Control Option		11 Graphical Edition
V2 V ² control (standard) V2CL V ² with current limitation by threshold PWRL Power control with current limit		XXX Standard configuration (no graphical edition) GWE Graphical Wiring Edition
5 Transfer Option		12 Fuse
XXX No transfer TFR I ² Transfer		XXX Without Fuse HSP High Speed Fuse
6 Energy Option		13 Configuration
XXX None EMS Energy measurement		XXXXXX Default LC Long code

Optional configuration coding

14 Load Current (Nominal)	18 Firing mode
nnnA 1 - Value field 1	PA Phase angle IHC Intelligent Half cycle BF Variable Modulation Burst firing (default 16 cycles) FX Fix modulation period (default 2 seconds) LGC Logic mode
15 Line Voltage (Nominal)	19 Analog input function
100V 100 Volts 110V 110 Volts 115V 115 Volts 120V 120 Volts 127V 127 Volts 200V 200 Volts 208V 208 Volts 220V 220 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	XX None SP Setpoint HR Setpoint limit IL Current limit TS Current Transfer Span
16 Load type	20 Analog input type
XX Resistive TR Transformer	0V 0-10 Volt 1V 1-5 Volt 2V 2-10 Volt 5V 0-5 Volt 0A 0-20 mA 4A 4-20A
17 Heater type	21 Digital input 2 function
XX Resistive MOSI Molybdenum disilicide CSI Silicon Carbide SWIR Short Wave Infra-Red	XX None AK Alarm acknowledgement RS Remote Setpoint selection SP Digital Setpoint FB Fuse Blown
	22 Reserved
	XXX Reserved

Software upgrade options

1	2	3	4	5	6	7
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1 Serial number instrument

nnnn	Serial Number
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2 Current ratings

XXX	(no change)
16A-25A	Upgrade 16A to 25A
16A-32A	Upgrade 16A to 32A
25A-32A	Upgrade 25A to 32A
40A-50A	Upgrade 40A to 50A
40A-63A	Upgrade 40A to 63A
50A-63A	Upgrade 50A to 63A

3 Control Option

XXX	(no change)
V2-V2CL	Upgrade V2 to V2CL
V2-PWRCL	Upgrade V2 to PWRCL
V2CL-PWRCL	Upgrade V2CL to PWRCL

4 Transfer

XXX	(no change)
TFR	I ² Transfer

5 Energy option

XXX	(no change)
EMS	Energy measurement

6 Comms option

XXX	(no change)
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7 Graphical wiring

xxx	(no change)
GWE	Graphical Wiring Editor



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Operations Management