EPack

MODEL

invensys

Eurotherm



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

Communications

EPack 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 EPack unit.

Configuration

EPack 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.

Front view



TFT Display
Process and configuration parameters

Error messages

Press Buttons
Page
Up
Down
Scroll

Dual Port
Ethernet RJ45
Slave communication

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) Class A product
EMC immunity 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)
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
	Logic:	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

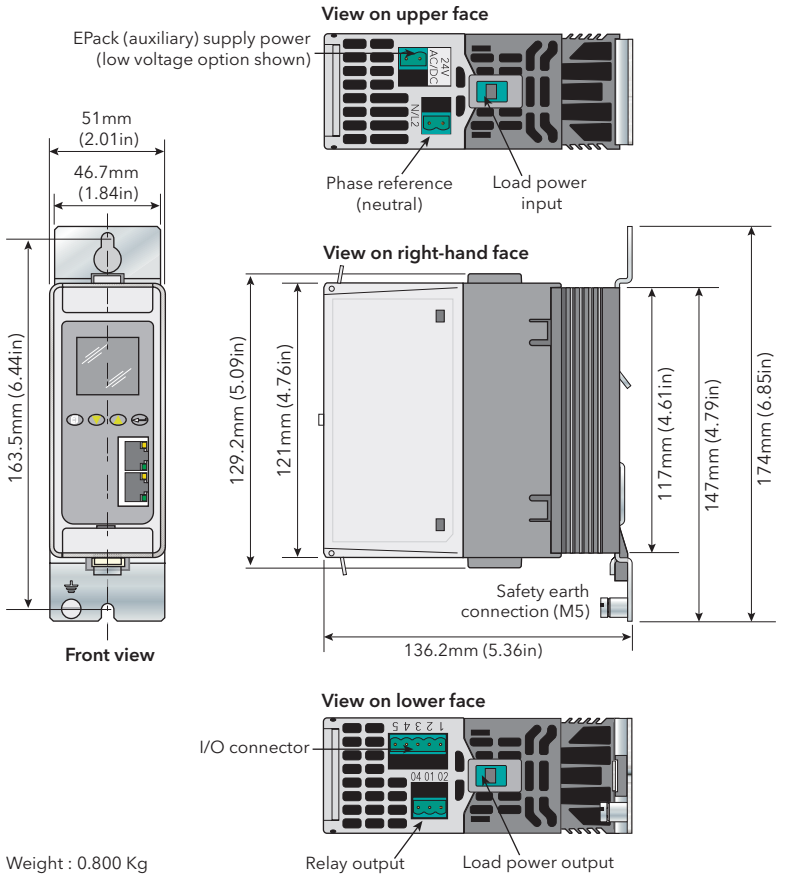
Connection:	Dual port Ethernet - RJ45 Integral switch
Protocol:	Modbus TCP
Baud rate:	10/100 full or half duplex

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

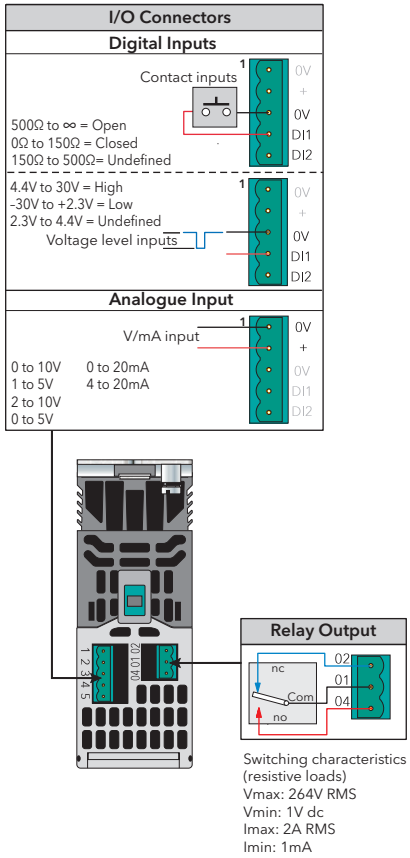
EPack – from 16 to 32 Amps Model



Weight : 0.800 Kg

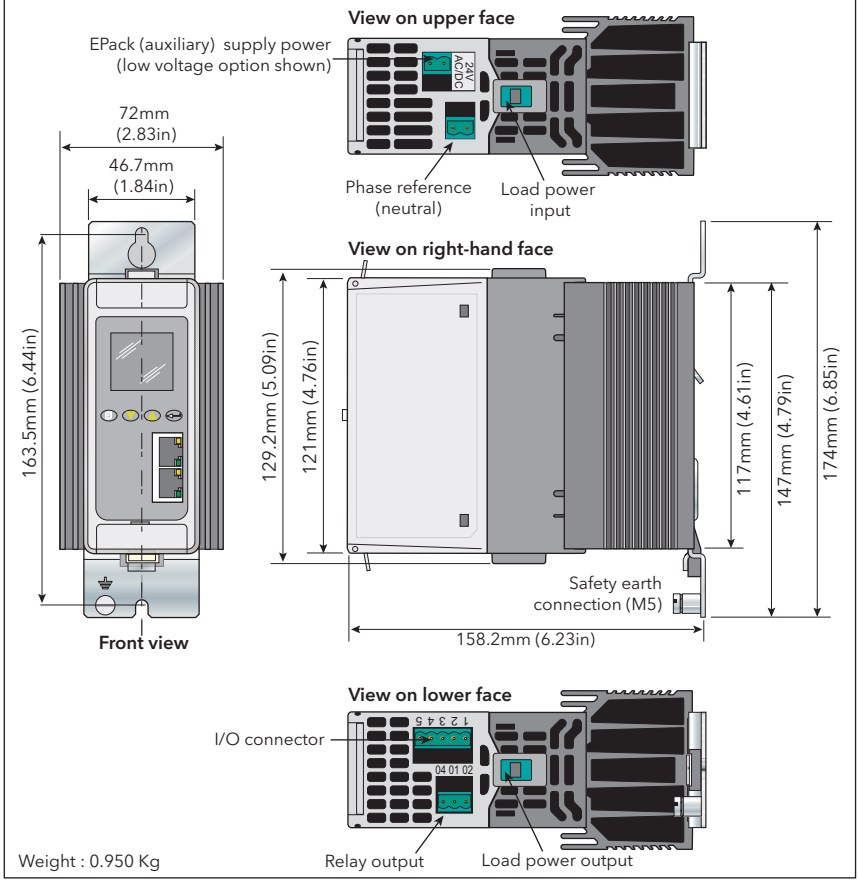
Connectors Details (pinout)

View on lower face



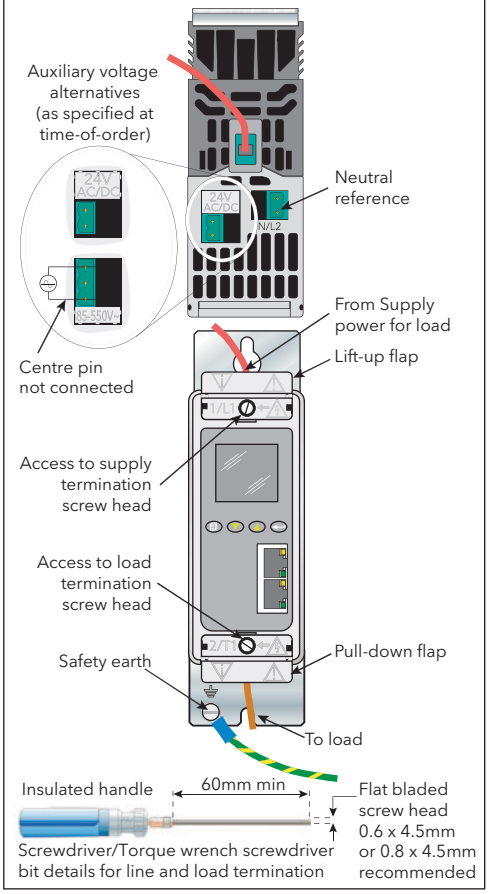
Switching characteristics
(resistive loads)
Vmax: 264V RMS
Vmin: 1V dc
Imax: 2A RMS
Imin: 1mA

EPack – from 40 to 63 Amps Model



Weight : 0.950 Kg

View on upper face



Screwdriver/Torque wrench screwdriver bit details for line and load termination

Order codes

EPack 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.

EPack 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

EPACK-1PH	Compact SCR Power Controller

1 Maximum current of the unit

16A	16 Amps
25A	25 Amps
32A	32 Amps
40A	40 Amps
50A	50 Amps
63A	63 Amps

2 Auxillary Power Supply

500V	500V max
24V	24V ac/dc

3 Reserved

XXX	Reserved

4 Control Option

V2	V^2 control (standard)
V2CL	V^2 with current limitation by threshold
PWRCL	Power control with current limit

5 Transfer Option

XXX	No transfer
TFR	I^2 Transfer

6 Energy Option

XXX	None
EMS	Energy measurement

7 Comms Option

TCP	Modbus TCP (standard)

8 Reserved

XXX	Reserved

9 Warranty

XXXX	Standard Warranty
WL005	5 Year Warranty
USWL3	US Extended Warranty

10 Custom Labeling

XXXX	Standard Label (Eurotherm)
SLnnnn	Special Label (nnnn: reference number) Note: SL0000 = blank label (for distributors)

11 Graphical Edition

XXX	Standard configuration (no graphical edition)
GWE	Graphical Wiring Edition

12 Fuse

XXX	Without Fuse
HSP	High Speed Fuse

13 Configuration

XXXXXX	Default
LC	Long code

Optional configuration coding

14 Load Current (Nominal)

nnnA	1 - Value field 1

15 Line Voltage (Nominal)

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

16 Load type

XX	Resistive
TR	Transformer

17 Heater type

XX	Resistive
MOSI	Molybdenum disilicide
CSI	Silicon Carbide
SWIR	Short Wave Infra-Red

18 Firing mode

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

19 Analog input function

XX	None
SP	Setpoint
HR	Setpoint limit
IL	Current limit
TS	Current Transfer Span

20 Analog input type

0V	0-10 Volt
1V	1-5 Volt
2V	2-10 Volt
5V	0-5 Volt
0A	0-20 mA
4A	4-20A

21 Digital input 2 function

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

1 Serial number instrument

nnnn	Serial Number

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 V^2 to V^2CL
V2-PWRCL	Upgrade V^2 to PWRCL
V2CL-PWRCL	Upgrade V^2CL 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)

7 Graphical wiring

xxx	(no change)
GWE	Graphical Wiring Editor



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