# Eurotherm®

## Adaptable power control expertise

## EPack-1PH Compact SCR Power Controllers

### Benefits

OEMs and system integrators need to be able to react quickly to customer needs while maximizing resources. End users continually need to improve operational efficiency and productivity. Eurotherm EPack™-1PH Compact SCR Power Controllers have been designed to deliver real savings, helping to reduce energy costs. Quick and easy to install, integrate and commission. Compact, with powerful and versatile features that help minimize costs whilst improving productivity and quality.

- Improved energy consumption to help reduce energy bills
- Help maximize yield with accurate and repeatable control
- Customizable options provide better value for money
- Easy to specify with reduced number of hardware variants
- Fast integration and commissioning
- Monitor efficiently with integrated measurements
- Simplified design reduces stock and spares holding

### Key features

- Native communication: Modbus® TCP and EtherNet/IP or PROFINET or EtherCAT comms for easy connection to PLC
- True power control with current limitation
- Large voltage capability from 100V to 500V adjustable in the same variant
- Measurements: current, voltage, power, impedance, energy usage and more
- SCCR 100kA with fuse

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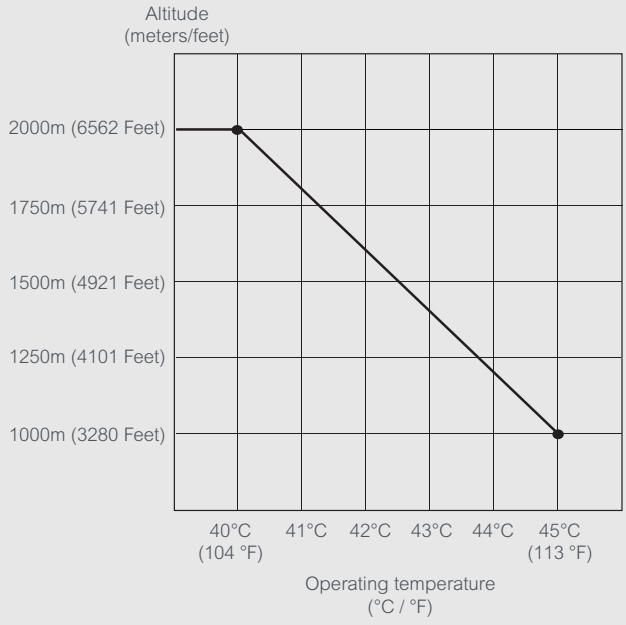
# Specifications

| General | |
|---|---|
| Safety specification | IEC / EN60947-4-3:2014 |
| EMC emissions specification | IEC / EN60947-4-3:2014 - Class A product |
| EMC immunity specification | IEC / EN60947-4-3:2014 |
| Vibration tests | IEC / EN60947-1 annex Q category E |
| Shock tests | IEC / EN60947-1 annex Q category E |
| Approvals | |
| European community CE | EN60947-4-3:2014: Low-voltage switchgear and controlgear - Part 4-3:Contactors and motor-starters - AC semiconductor controllers and contactors for non-motor loads (identical to IEC60947-4-3:2014)Declaration of Conformity available on request. |
| US & Canada c UL US LISTED | UL60947-4-1 CAN/CSA C22.2 NO.60947-4-1-14 Low-Voltage Switchgear and Controlgear - Part 4-1: Contactors and Motor-Starters - Electromechanical Contactors and Motor-Starters - U.L. File N° E86160 |
| Australia | Regulatory Compliance Mark (RCM) to Australian Communication and Media Authority Based on compliance to EN60947-4-3:2014 |
| China | Product not listed in catalog of products subject to China Compulsory Certification (CCC) |
| Communication EtherNet/IP ODVA | EtherNet/IP: ODVA Declaration of Conformity |
| Communication EtherCAT | EtherCAT: ETG certification for Semiconductor industry is not yet available. Waiting for SDP profile |
| Communication achilles | All protocols except EtherCAT: Certified to Achilles® CRT Level 1 Cybersecurity |
| Protection | CE: IP10 according to EN60529 (16 to 63A) or IP20 according to EN60529 (80 to 125A)<br>UL: open type |

| Condition of use | |
|---|---|
| Atmosphere | Non-corrosive, non-explosive, non-conductive |
| Degree of pollution | Degree 2 according to IEC60947-1 |
| Storage temperature | -25°C (-13°F) to 70°C (158°F) |
| Temperature & Altitude | 0 to 45°C at 1000m (32°F to 113°F at 3280 Feet)<br>0 to 40°C at 2000m (32°F to 104°F at 6562 Feet) |
| Derating curves |  |

# Specifications

| Mechanical details | | | | |
|---|---|---|---|---|
| Unit | Height | Width | Depth | Weight |
| 16 to 32A | 129.2mm / 5.09in | 51mm / 2.01in | 136.2mm / 9.04in | 0.8kg / 1.76lb |
| 40 to 63A | 129.2mm / 5.09in | 72mm / 2.83in | 173.3mm / 9.04in | 0.95kg / 2.09lb |
| 80 to 100A | 197.6mm / 7.78in | 80mm / 3.15in | 202.1mm / 9.04in | 1.8kg / 3.97lb |
| 125A | 197.6mm / 7.78in | 120mm / 4.72in | 202.1mm / 9.04in | 2.5kg / 5.51lb |

| Fuses | | |
|---|---|---|
| Current rating | Fuse holder size | Unit |
| ≤25A without MS | 10x38mm / 13/32x1-1/2in | 88.5x17.5x64.5mm / 3.48x0.69x2.54in |
| ≤25A with MS | 14x51mm / 9/16x2in | 110.8x26.5x76.5mm / 4.36x1.04x3.01in |
| 32A with or without MS | 14x51mm / 9/16x2in | 110.8x26.5x76.5mm / 4.36x1.04x3.01in |
| 40A with or without MS | 14x51mm / 9/16x2in | 110.8x26.5x76.5mm / 4.36x1.04x3.01in |
| 50A with or without MS | 22x58mm / 2-9/32in | 127.5x35x76.5mm / 5.02x1.38x3.01in |
| 63A with or without MS | 27x60mm / 1-1/16x2-3/8in | 149.4x40x93.5mm / 5.88x1.57x3.68in |
| 80A with or without MS | 27x60mm / 1-1/16x2-3/8in | 149.4x40x93.5mm / 5.88x1.57x3.68in |
| 100A with or without MS | 27x60mm / 1-1/16x2-3/8in | 149.4x40x93.5mm / 5.88x1.57x3.68in |
| 125A with or without MS | 27x60mm / 1-1/16x2-3/8in | 149.4x40x93.5mm / 5.88x1.57x3.68in |

| Power | |
|---|---|
| Nominal current | 4 to 125 amps |
| Nominal voltage | From 100V to 500V +10%/–15% |
| Accuracy | ±2% of full scale from 100V to 500V +10%/–15% |
| Frequency | 47Hz to 63Hz |
| Short circuit protection | By external supplemental high speed fuses |
| Rated conditionnal short-circuit current | 100kA (coordination type 1) |
| Utilization categories | |
| AC51 | Resistive or slightly inductive load (cos phi>0.8) |
| AC-55b | Switching of incandescent lamps |
| AC-56a | Transformer Primary |
| Heater type | Low/high temperature coefficient and non-aging/aging types: MOSI Molybdenum Silicide, Silicon Carbide, Carbon, SWIR. |

| Control | |
|---|---|
| Auxillary power supply | 100V to 500V +10%/–15% or 24V ac/dc (±20%) |
| Control setpoint | Analog or Logic input or Digital Comms |
| Analog input signal | |
| Voltage | Range: 0-5V, 1-5 V, 0-10V or 2-10V<br>Impedance: 140 kOhms typical (0-10V signal) |
| Current | Range: 0-20mA or 4-20mA<br>Input resistance: 100 Ohms to allow for three units wired in series to be driven from a single controller's analogue output |
| Resolution | 11 bits |
| Linearity ±0.1% of scale | ±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 feedforward and Trim modes, Current limitation by threshold or by transfer $V^2$ to $I^2$ or P to $I^2$ |
| Configurable digital inputs | Input 1: enable by default ; Input 2: setpoint in logic mode, alarm acknowledgment, 10V supply, ... |
| Voltage inputs | PLC compatible inputs type 1 & 2 according to IEC 61131-2<br>- Active level (high): 11V<Vin<30V with 6mA<Iin<30mA<br>- Non-active level (low): -3V<Vin<5V with 2mA<Iin<30mA or 5V<Vin<11V with Iin<2mA |
| Contact closure inputs | - Current source: 10mA min; 15mA max<br>- Open contact (non active) resistance: 800 Ohms to ∞<br>- Closed contact (active) resistance: 0 to 450 Ohms<br>- Absolute Maximum ±30V or ±25mA |
| One alarm relay | Changeover relay 2A rms - 264V rms normally energised. (250V rms max for UL). This relay will be de-energised in case of serious alarms: short circuit thyristor, open circuit, fuse blown, missing main, chop off |

# Specifications

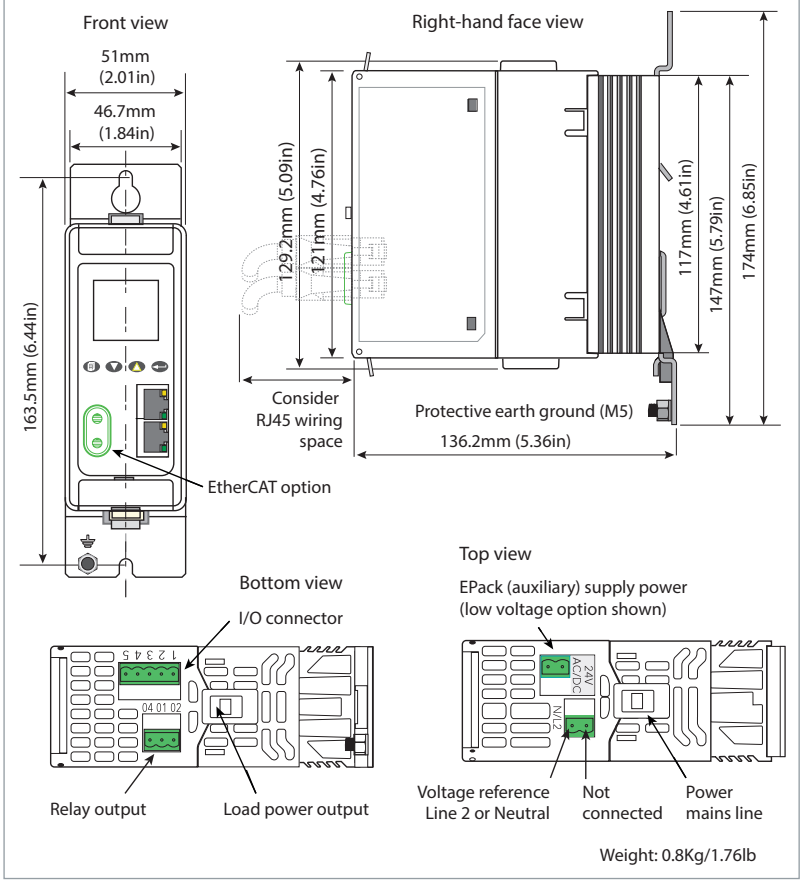
| Communications | |
|---|---|
| Connection | Dual port Ethernet - RJ45 integrated switch |
| Protocols | Modbus TCP, EtherNet/IP, PROFINET or EtherCAT |
| Speed rate | 10/100 Mbps full or half duplex, except if EtherCAT option (100 Mbps full duplex only) |

| Display | |
|---|---|
| Technology | TFT |
| Size | 1.4” diagonal (35.56mm) |
| Messages | Configuration, Monitoring and Diagnostics |

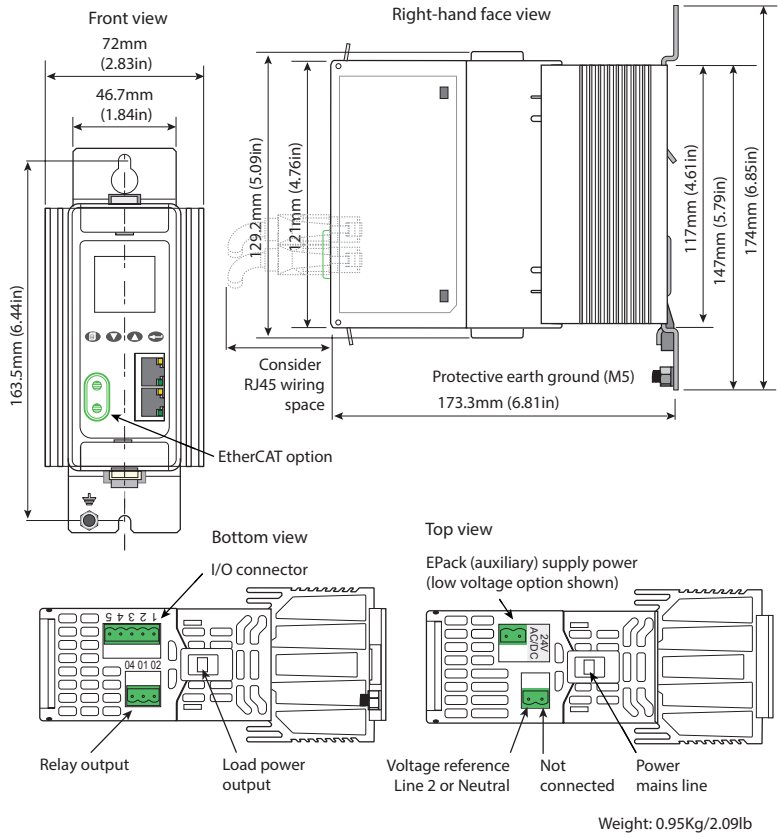
| Additional functions | |
|---|---|
| Standard | Counter, Logic & Math blocks, Linearization 16 points, Timer, Totalizer |
| Options | Energy counter, OEM security, Graphical wiring |

# Mechanical details

## 16A to 32A

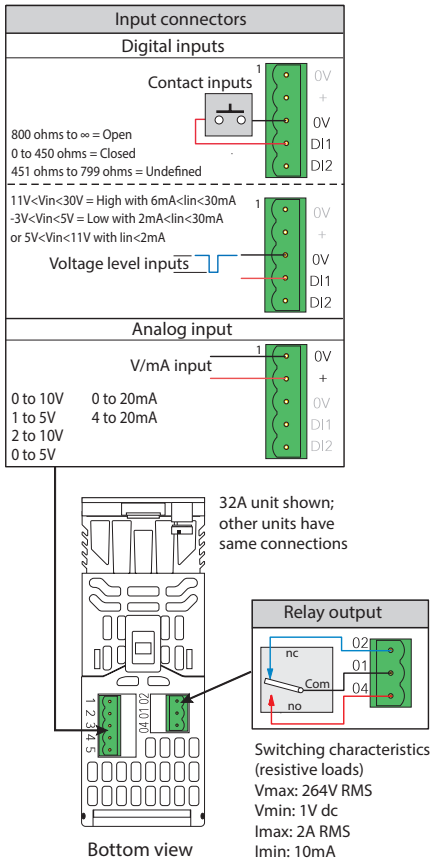



## 40A to 63A

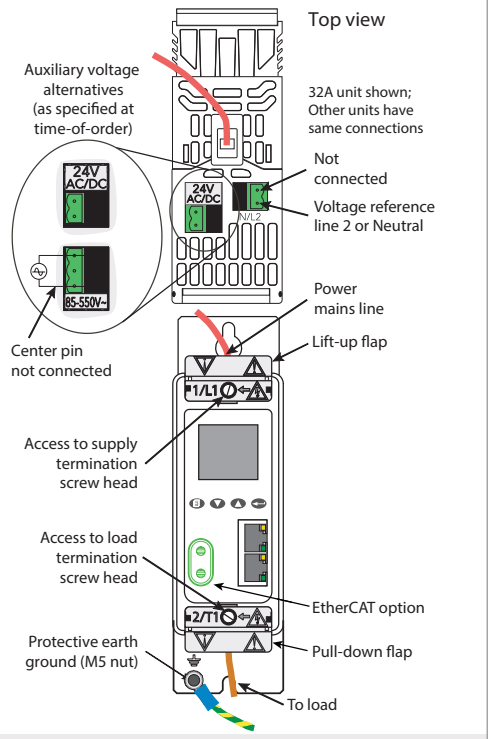



# Connector details (pinout)

## I/O Details

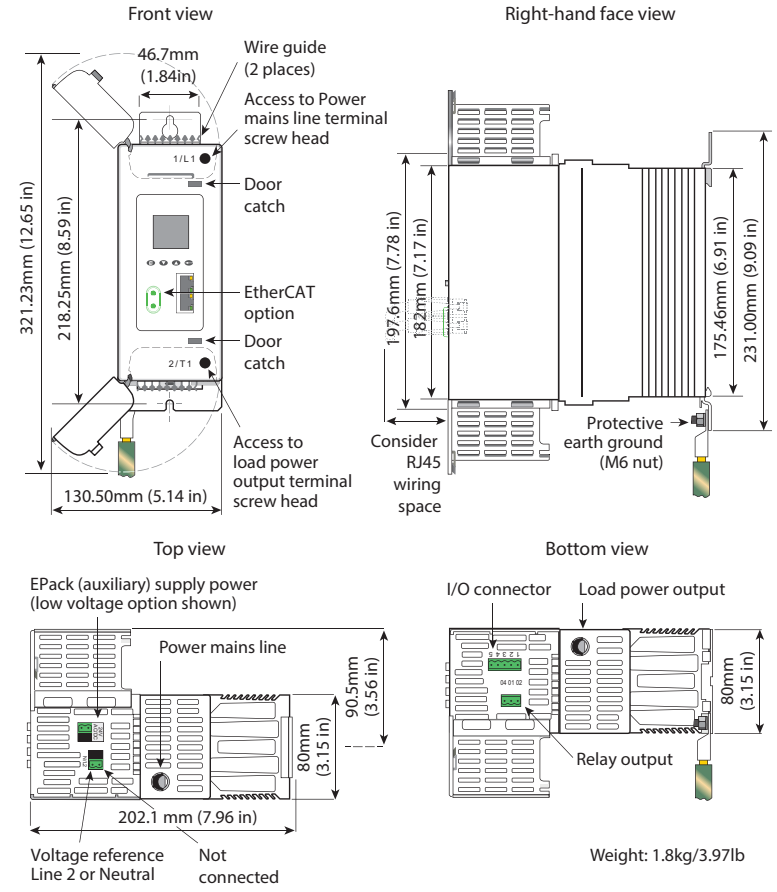



## Power supply details
## 16A to 63A



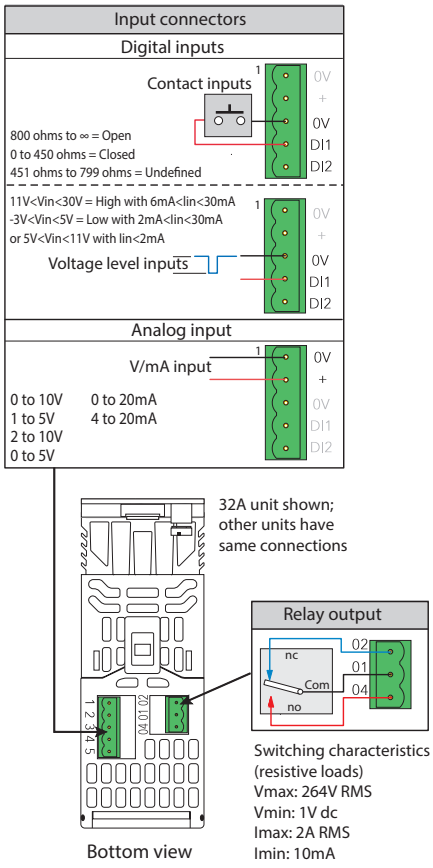
# Mechanical details

## 80A to 100A

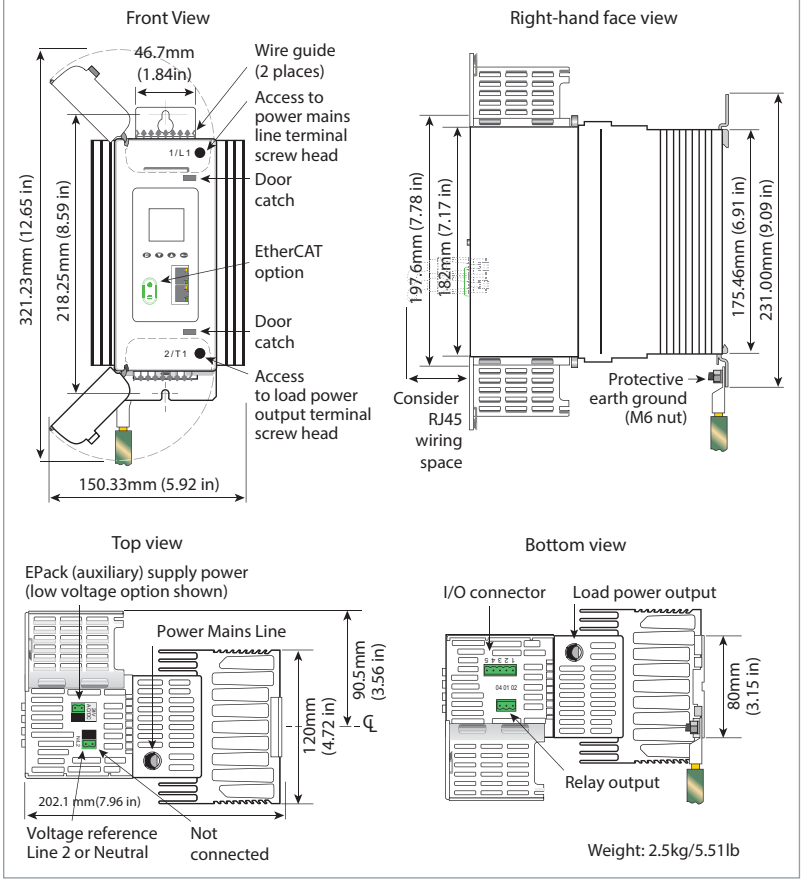



# Connector details (pinout)

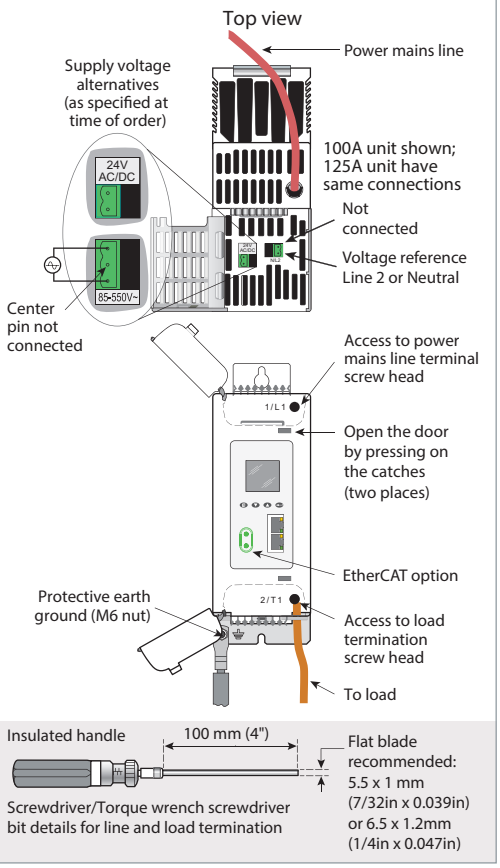
## I/O details




## 125A




## Power supply connection details 80A to 125A



# Specifications

## EPack-1PH controller order codes

The 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, the software configuration is completed using a quick start procedure or using Eurotherm iTools software.

EPack controllers may be upgraded with additional chargeable options at any time using a software key order code.

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

| 14 | 15 | 16 | 17 | 18 | 19 | 20 | 21 | 22 | 23 |
|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | XXX |

**Model**

| | |
|---|---|
| EPACK-1PH | Power Controller |

**1 Maximum current**

| | |
|---|---|
| 16A | 16 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 |

**2 Auxillary power supply** note

| | |
|---|---|
| 500V | 500V max |
| 24V | 24V ac/dc |

**3 Reserved**

| | |
|---|---|
| XXX | Reserved |

**4 Control option**

| | |
|---|---|
| V2CL | $V^2$ with current limitation by threshold (standard) |
| I2 | $I^2$ control |
| V2 | $V^2$ control |
| 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) |
| IP | EtherNet/IP |
| PN | PROFINET |
| CAT note | EtherCAT |

**8 OEM security**

| | |
|---|---|
| XXX | No OEM Security |
| OEM | OEM Security |

**9 Warranty**

| | |
|---|---|
| XXXXXX | Standard Warranty |
| WL005 | 5 Year Warranty |
| USWL3 | US Extended Warranty |

**10 Custom labelling**

| | |
|---|---|
| XXXXXX | Standard (Eurotherm) |
| FXXXX | Special Label |

**11 Graphical wiring**

| | |
|---|---|
| XXX | No Graphical Wiring Edition |
| GWE | Graphical Wiring Editor (standard) |

**12 Fuse**

| | |
|---|---|
| XXX | Without fuse |
| HSP | High speed fuse without microswitch |
| HSM | High speed fuse with microswitch |

**13 Configuration**

| | |
|---|---|
| XXXXXX | Default |
| LC | Long code |
| EEnnn | Customer clone number |

### Optional configuration

**14 Nominal load current**

| | |
|---|---|
| NNNA | 1 - Value field 1 |

**15 Nominal line voltage**

| | |
|---|---|
| 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 primary |

**17 Heater type**

| | |
|---|---|
| XX | Resistive |
| MOSI | Molybdenum |
| 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 | Fixed modulation period (default 2 seconds) |
| LGC | Logic mode |

**19 Analog input function**

| | |
|---|---|
| XX | None - setpoint via comms |
| SP | Setpoint |
| HR | Setpoint limit |
| IL | Current limit |
| TS | Current transfer span |

**20 Analog input type**

| | |
|---|---|
| 0V | 0-10 volts |
| 1V | 1-5 volts |
| 2V | 2-10 volts |
| 5V | 0-5 volts |
| 0A | 0-20 mA |
| 4A | 4-20mA |

**21 Digital input 2 function**

| | |
|---|---|
| XX | None |
| LG | Setpoint for logic mode |
| AK | Alarm acknowledgement |
| RS | Remote setpoint selection |
| FB | Fuse blown |
| SU | 10V supply |

**22 Reserved**

| | |
|---|---|
| XXX | Reserved |

note Hardware variant, not available as software upgrade option

# Specifications

## Software upgrade options

| EPACKUPG-1PH | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 |
|---|---|---|---|---|---|---|---|---|

| 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 |
| 80A-100A | Upgrade 80A to 100A |

| 3 | Control option |
|---|---|
| XXX | No change |
| V2-I2 | Upgrade $V^2$ to $I^2$ |
| V2-PWR | Upgrade $V^2$ to PWR |
| I2-PWR | Upgrade $I^2$ to PWR |

| 4 | Transfer option |
|---|---|
| XXX | No change |
| TFR | $I^2$ transfer |

| 5 | Energy option |
|---|---|
| XXX | No change |
| TFR | Energy measurement |

| 6 | Comms option |
|---|---|
| XXX | No change |
| IP | EtherNet/IP |
| PN | PROFINET |

| 7 | Graphical wiring |
|---|---|
| XXX | No change |
| GWE | Graphical wiring editor |

| 8 | OEM security |
|---|---|
| XXX | No change |
| OEM | OEM security |

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