EPower™ is the Eurotherm® series of advanced power control units. Combining the advantages of the latest technologies and innovations to produce a truly impressive performance for your process.

**Ratings**

EPower current ratings cover the range from 50 Amps up to 630 Amps (nominal load 16A to 630A). Ratings are designed at 40°C, but operation can be defined up to 50°C with associated deratings. The voltage rating can go up to a maximum of 690 volts.

**Predictive Load Management (Patented)**

You can reduce your energy costs across your plant by using the Predictive Load Management functionality within EPower. This innovative feature provides a better distribution of energy across different loads in your installation by managing the priority and if necessary, load shedding.

**Multi Channel Unit**

EPower includes seven different power configurations within one unit, depending on the number of power modules fitted. From single phase configuration to two times two phase control, the unit is perfectly modular and configurable to your process requirements. Multiple zones can be controlled with one unit.

Many more features are available (Log file management, advanced alarm strategy, optional I/O…) to provide you with the best of the technology for your process.

**Display and Remote Display**

EPower is fitted with a 4 line x 10 character display with indication of the process values, and diagnostic information, along with an alarm and event message centre. Optionally, the EPower has a 32h8e remote display to allow for the process values and alarm information to be presented front of panel in a clear and unambiguous way. Secure access to the local setpoint is also provided to allow for local control when needed. The remote display, as an indicator, can also provide over temperature policeman functionality removing the need

- Fully software configurable
- Predictive Load Management
- Current rating 50A to 630A (nominal load 16A to 630A)
- Voltage up to 690V ac
- All types of firing modes
- Measurement accuracy <1%
- Large integral four row display
- Remote display option
- Multi-channel unit
- Event Log
- Optional I/O
- Modbus RTU comms
- Profibus DP comms
- DeviceNet® comms
- Ethernet (Modbus TCP) comms
- EtherNet/IP comms
- CC-Link comms
- Profinet IO comms
- Voltage, current and power control
- Complete diagnostics
- Energy counter
- Single phase Load Tap Changer
Communication
Eurotherm has an approach to open communications, offering standard fieldbus networks such as Modbus RTU, Profibus DP, DeviceNet®, Ethernet (Modbus TCP), EtherNet/IP, CC-Link and Profinet IO communications. The use of fieldbus makes integration into PLCs and other supervisory systems easy to accomplish. It allows an easier integration into PLCs and other supervisory systems by using the main protocols of the market.

Configuration
"Quick Start" HMI menus provide an easy and friendly way to quickly configure the unit. With the more complex configurations using the iTools software package.

General specification

General Standards
The product is designed and produced to comply with EN60947-4-3 (Low voltage switch gear and control gear). Other applicable standards are cited where appropriate.

Installation Categories
General installation category details for the driver and power units are summarised in the table below.

<table>
<thead>
<tr>
<th>Power module</th>
<th>Number of modules:</th>
<th>Up to four identical units per Driver Module</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage range:</td>
<td>100 to 600V ac (+10% - 15%) or 100 to 690V ac (+10% - 15%) as specified at time of order</td>
<td></td>
</tr>
<tr>
<td>Frequency range:</td>
<td>47 to 63Hz</td>
<td></td>
</tr>
<tr>
<td>Nominal current:</td>
<td>16 to 630A depending on power module</td>
<td></td>
</tr>
<tr>
<td>Power dissipation:</td>
<td>1.3W per Amp per phase</td>
<td></td>
</tr>
<tr>
<td>Rated short-circuit conditional current:</td>
<td>CE Rated. 92ka all modules except: 98kA for 500A modules; 105kA for 630A modules. Note: this is not a UL508A test</td>
<td></td>
</tr>
</tbody>
</table>

Cooling
Up to and including 100A: Natural convection
Above 100A: Fan cooling. Fans are connected in parallel to driver module connector
Fan supply voltage: 115 or 230V ac, as specified at time of order (see ‘Caution’ above)
Fan power requirement: 10W for 160A/250A modules; 15W for 400A, 500 and 630A modules

Protection
Thyristor drive: RC circuits and high-speed fuses
Pollution degree: Pollution degree 2 (EN60947-1)
Installation category
Power network: Installation category II up to 690V; Installation category III up to 690V
Auxiliary (fan) supply: Installation category II assuming nominal phase voltage with respect to earth ≤300V rms

Utilisation categories
AC51: non inductive or slightly inductive loads, resistance furnaces
AC56a: switching of transformers
Duty cycle: Uninterrupted duty/continuous operation
Form designation: Form 4
Short circuit protection: Type1 (fuses)
Load types: Single or multiphase control of resistive loads (low/high temperature coefficient and non-aging/aging types) and transformer secondaries. Load voltage/current feedback either internal (standard) or external (option for use with transformer secondaries for example)

Physical
Dimensions and fixing centres: See Fixing Details
Weight: See Table 2 (weights ± 50gm (2oz)

Power (at 40°C)

Caution
Although the driver module supply voltage range is 85 to 265V ac, the fans (if any) fitted to the power (thyristor) modules are specified for use at one of 115V ac or 230V ac as specified at time of order. Before plugging the fan harness into the driver module, ensure that the utility supply voltage is suitable for the fan(s). Otherwise, fan life may be shortened or the cooling effect may not be sufficient, either case presenting a possible hazard to the equipment or to the operator.

Driver module
Voltage range: 100 to 240V ac (+10% - 15%)
Frequency range: 47 to 63Hz
Power requirement: 60W + Power Module fans (15W each for 400A/500A/630A power modules; 10W each for 160A/250A modules)
Installation Category
Installation category II (category III for relays)

<table>
<thead>
<tr>
<th>Current</th>
<th>1 phase</th>
<th>2 phases</th>
<th>3 phases</th>
<th>4 phases</th>
</tr>
</thead>
<tbody>
<tr>
<td>50A/100A</td>
<td>6.5 (14.3)</td>
<td>11.0 (24.3)</td>
<td>15.5 (34.2)</td>
<td>20.0 (44.1)</td>
</tr>
<tr>
<td>160A</td>
<td>6.9 (15.2)</td>
<td>11.8 (26.0)</td>
<td>16.7 (36.8)</td>
<td>21.6 (47.6)</td>
</tr>
<tr>
<td>250A</td>
<td>7.8 (17.2)</td>
<td>13.6 (30.0)</td>
<td>19.4 (42.8)</td>
<td>25.2 (55.6)</td>
</tr>
<tr>
<td>400A</td>
<td>11.8 (26.0)</td>
<td>21.6 (47.6)</td>
<td>31.4 (69.2)</td>
<td>41.2 (90.8)</td>
</tr>
<tr>
<td>500A</td>
<td>14.0 (30.9)</td>
<td>26.0 (57.3)</td>
<td>38.0 (83.8)</td>
<td>50.0 (110.2)</td>
</tr>
<tr>
<td>630A</td>
<td>14.5 (32.0)</td>
<td>27.0 (59.5)</td>
<td>39.5 (87.1)</td>
<td>52.0 (114.6)</td>
</tr>
</tbody>
</table>

Table 1 Installation category details

<table>
<thead>
<tr>
<th>Power</th>
<th>Weight (including 2kg (4.4lb) for driver module)</th>
</tr>
</thead>
<tbody>
<tr>
<td>50A/100A</td>
<td>0.1</td>
</tr>
<tr>
<td>160A</td>
<td>0.2</td>
</tr>
<tr>
<td>250A</td>
<td>0.3</td>
</tr>
<tr>
<td>400A</td>
<td>0.4</td>
</tr>
<tr>
<td>500A</td>
<td>0.5</td>
</tr>
<tr>
<td>630A</td>
<td>0.6</td>
</tr>
</tbody>
</table>

Environmental conditions
Temperature limits Operating: 0°C to 50°C (derate above 40°C as per accompanying curves)
Storage: 25°C to 70°C

Humidity limits: 5% to 95% RH (non-condensing)
Altitude (maximum): 1000 metres
Protection: IP10 (EN60529)
Atmosphere: Non-explosive, non-corrosive and non-conductive
External wiring: Must comply with IEC 364
Shock (EN60068-2-29): 10g Peak; 6ms duration; 100 bumps
Vibration (EN60068-2-6): 67-150Hz at 1g
**EMC**

**Standard:** EN60947-4-3 Emissions class A

This product has been designed for environment A (Industrial). Use of this product in environment B (domestic, commercial and light industrial) may cause unwanted electromagnetic disturbances in which cases the user may be required to take adequate mitigation measures.

**Immunity criteria:**

- Immunity criterion 1 (criterion 3 for voltage dips and short-time interruptions)
- After warm up. Ambient = 25°C

**Operator Interface**

- Display: 4 lines of up to 10 characters each. Display pages can be used to view process variable values and to view and edit the configuration of the unit. (Editing of the configuration is better carried out using configuration software (IoTools). In addition to the standard displays, up to four ‘custom’ pages can be defined which allow bargraph displays, text entry etc.
- Character format: 7 high x 5 wide yellow-green LCD dot matrix array
- Push buttons: 4 push buttons provide page and item entry and scroll facilities
- LED indicators (beacons): 3 indicators (PWR LOC and ALM) are supplied to indicate that power is applied, that Local Control is selected and that there is one or more active alarm respectively

**Standard Inputs/Outputs (SK1)**

<table>
<thead>
<tr>
<th>Type</th>
<th>No of analogue inputs</th>
<th>No of analogue outputs</th>
<th>No of digital inputs/outputs</th>
<th>10V (Potentiometer) supply</th>
<th>Update rate</th>
<th>Termination</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>1</td>
<td>2 (each configurable as an input or an output)</td>
<td></td>
<td>Twice the mains frequency applied to power module 1. Defaults to 83.2Hz (12ms) if no power applied to power module1 or if supply frequency lies outside the range 47 to 63Hz</td>
<td>Removable 10-way connector. (5.08 mm pitch)</td>
</tr>
</tbody>
</table>

**Analogue Inputs**

<table>
<thead>
<tr>
<th>Performance</th>
<th>See Tables 3 and 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input types</td>
<td>Each input is configurable as one of: 0 to 10V, 1 to 5V, 2 to 10V, 0 to 5V, 0 to 20mA, 4 to 20 mA</td>
</tr>
<tr>
<td>Absolute maxima + terminal</td>
<td>±16V or ±40mA</td>
</tr>
<tr>
<td>Absolute maxima - terminal</td>
<td>±1.5V or ±300mA</td>
</tr>
</tbody>
</table>

**Analogue outputs**

<table>
<thead>
<tr>
<th>Performance</th>
<th>See Tables 5 and 6</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output types</td>
<td>Each output is configurable as one of: 0 to 10V, 1 to 5V, 2 to 10V, 0 to 5V, 0 to 20mA, 4 to 20 mA</td>
</tr>
<tr>
<td>Absolute maxima + terminal</td>
<td>-0.7V or -300mA or +16V or +40mA</td>
</tr>
<tr>
<td>0V terminal</td>
<td>±2A</td>
</tr>
</tbody>
</table>

**Analogue input: Current input performance**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Typical</th>
<th>Max/Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total current working input span (Note 1)</td>
<td>12 bits</td>
<td>-1mA to +25mA</td>
</tr>
<tr>
<td>Resolution (noise free) (Note 2)</td>
<td>&lt;0.25%</td>
<td>&lt;0.5%</td>
</tr>
<tr>
<td>Calibration error (Notes 2 and 3)</td>
<td>±0.1%</td>
<td>±0.1%</td>
</tr>
<tr>
<td>Ambient temperature error (Note 2)</td>
<td>&lt;0.01%/°C</td>
<td>&lt;0.01%/°C</td>
</tr>
<tr>
<td>Input resistance (+ve to -ve terminal)</td>
<td>235Ω</td>
<td>150Ω</td>
</tr>
<tr>
<td>Input resistance (±ve terminal to 0V)</td>
<td>150Ω</td>
<td></td>
</tr>
<tr>
<td>Allowable voltage (+ve terminal to 0V)</td>
<td>+1V</td>
<td></td>
</tr>
<tr>
<td>Series mode rejection of mains interference</td>
<td>46dB</td>
<td>40dB</td>
</tr>
<tr>
<td>Common mode dc rejection</td>
<td>46dB</td>
<td>+40dB</td>
</tr>
<tr>
<td>Hardware response time</td>
<td>5ms</td>
<td></td>
</tr>
</tbody>
</table>

- Note 1: w.r.t. to the relevant -ve input
- Note 2: w.r.t. total working span
- Note 3: After warm up. Ambient = 25°C

**Analogue output: Voltage output performance**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Typical</th>
<th>Max/Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total voltage working span (within ±20mA (typ.) current span)</td>
<td>-0.5V to +12.5V</td>
<td></td>
</tr>
<tr>
<td>Short circuit current</td>
<td>&lt;24mA</td>
<td></td>
</tr>
<tr>
<td>Resolution (noise free) (Note 1)</td>
<td>12.5 bits</td>
<td></td>
</tr>
<tr>
<td>Calibration error (Notes 2 and 3)</td>
<td>&lt;0.25%</td>
<td></td>
</tr>
<tr>
<td>Linearity error (Note 2)</td>
<td>&lt;0.1%</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature error (Note 2)</td>
<td>&lt;0.01%/°C</td>
<td></td>
</tr>
<tr>
<td>Minimum load resistance</td>
<td>&gt;800Ω</td>
<td></td>
</tr>
<tr>
<td>DC Output impedance</td>
<td>&lt;2Ω</td>
<td></td>
</tr>
<tr>
<td>Hardware response time (10% to 90%)</td>
<td>20ms</td>
<td></td>
</tr>
<tr>
<td>Maximum load resistance</td>
<td>&lt;550Ω</td>
<td></td>
</tr>
<tr>
<td>DC Output conductance</td>
<td>&lt;1μA/V</td>
<td></td>
</tr>
<tr>
<td>Hardware response time (10% to 90%)</td>
<td>25ms</td>
<td></td>
</tr>
</tbody>
</table>

- Note 1: w.r.t. total working span
- Note 2: % of effective range (0 to 20mA) |
- Note 3: After warm up. Ambient = 25°C

**Analogue output: Current output performance**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Typical</th>
<th>Max/Min</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total current working span (within ±0.3V to ±12.5V voltage span)</td>
<td>24mA to +24mA</td>
<td></td>
</tr>
<tr>
<td>Open circuit voltage</td>
<td>&lt;16V</td>
<td></td>
</tr>
<tr>
<td>Resolution (noise free) (Note 1)</td>
<td>12.5 bits</td>
<td></td>
</tr>
<tr>
<td>Calibration error (Notes 2 and 3)</td>
<td>&lt;0.25%</td>
<td></td>
</tr>
<tr>
<td>Linearity error (Note 2)</td>
<td>&lt;0.1%</td>
<td></td>
</tr>
<tr>
<td>Ambient temperature error (Note 2)</td>
<td>&lt;0.01%/°C</td>
<td></td>
</tr>
<tr>
<td>Maximum load resistance</td>
<td>&lt;550Ω</td>
<td></td>
</tr>
<tr>
<td>DC Output conductance</td>
<td>&lt;1μA/V</td>
<td></td>
</tr>
<tr>
<td>Hardware response time (10% to 90%)</td>
<td>20ms</td>
<td></td>
</tr>
</tbody>
</table>

- Note 1: w.r.t. total working span
- Note 2: % of effective range (0 to 20mA) |
- Note 3: After warm up. Ambient = 25°C

**10V supply (Potentiometer supply)**

- Output voltage: 10.0V ± 0.3V @ 5.5mA
- Short circuit o/p current: 15mA max.
- Ambient temperature drift: ± 0.012%/°C (typ); ± 0.04%/°C (max.)
- Absolute maxima Pin 1: (0.7V or -300mA) or (+16V or +40mA)

**Digital I/O**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Typical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Voltage inputs</td>
<td></td>
</tr>
<tr>
<td>Active level (high)</td>
<td>4.4V&lt;Vin&lt;30V</td>
</tr>
<tr>
<td>Non-active level (low)</td>
<td>-30V&lt;Vin&lt;+2.3V</td>
</tr>
<tr>
<td>Input impedance</td>
<td>10kΩ</td>
</tr>
<tr>
<td>Contact closure inputs</td>
<td></td>
</tr>
<tr>
<td>Source current</td>
<td>10mA min; 15mA max</td>
</tr>
<tr>
<td>Open contact (non active) resistance</td>
<td>&gt;500Ω</td>
</tr>
<tr>
<td>Closed contact (active) resistance</td>
<td>&gt;150Ω</td>
</tr>
<tr>
<td>Current source output</td>
<td></td>
</tr>
<tr>
<td>Source current</td>
<td>9mA=Isource&lt;14mA @ 14V</td>
</tr>
<tr>
<td>Open circuit voltage</td>
<td>&lt;14V</td>
</tr>
<tr>
<td>Internal pull-down resistance</td>
<td>10kΩ (to 0V)</td>
</tr>
<tr>
<td>Absolute maxima + terminal</td>
<td>±30V or ±25mA</td>
</tr>
<tr>
<td>0V terminal</td>
<td>±2A</td>
</tr>
</tbody>
</table>

**Notes:**

1. Absolute maximum ratings refer to externally applied signals
2. The 10V potentiometer supply is designed to supply two 5kΩ potentiometers connected in parallel with one another.
3. The maximum current for any 0V terminal is ±2A.
The relays associated with this product have gold plated contacts applicable to ‘dry circuit’ (low current) use.

- **Contact life**: Resistive loads: 100,000 operations (de-rate with inductive loads as per figure)
- **High power use Current**: <2A (resistive loads)
- **Low power use Voltage**: >1V
- **Contact configuration**: Single pole change-over (One set of Common, Normally Open and Normally Closed contacts)
- **Termination Relay 1 (standard)**: 3-way connector on underside of driver module
- **Watchdog relay (standard)**: 3-way connector on underside of driver module
- **Relays two to four (option)**: 12-way option module connector
- **Installation Category**: Installation category III, assuming that relays’ contacts is double isolation, in accordance with the installation category and phase to earth voltage specified above.

Absolute max switching capability: <2A at 240V RMS (resistive loads)

**Note**: Normally closed and normally open refer to the relay when the coil is not energised.

### Optional Input/Output Modules (SK3, SK4, SK5)

Up to three input/output modules can be fitted, each containing the inputs and outputs detailed below. Unless otherwise stated below, the specification for the optional I/O (including relays) is as given above for the standard I/O.

- **Termination**: Removable 12-way (5.08mm pitch) connector per module
- **Number of modules**: Up to 3
- **Number of inputs**: 1 analogue input and 2 digital inputs per module
- **Number of outputs**: 1 analogue output per module
- **Number of relays**: 1 set of common, normally open and normally closed contacts per module
- **10V potentiometer supply output voltage**: 10.0V ±0.3V at 5.5mA

### Mains Network Measurements

All network measurements are calculated over a full mains cycle, but internally updated every half-cycle. For this reason, power control, current limits and alarms all run at the mains half-cycle rate. The calculations are based on waveform samples taken at a rate of 20kHz. Measurements on each phase are synchronised to its own phase and if the line voltage cannot be detected, the measurements stop for that phase. It should be noted that, depending on the configuration, the phase voltage referred to is one of:

- a. the line voltage referenced to neutral in four star,
- b. the line voltage referenced to neutral at another phase for single phase networks or
- c. the line voltage referenced to the phase applied to the next adjacent power module for three phase star or delta networks.

The parameters below are directly derived from measurements for each phase.

- **Accuracy (20 to 25°C)**
  - **Line RMS voltage (Vline)**: ±0.5% of Nominal Vline
  - **Load RMS voltage (VL)**: ±0.3% of Nominal V for voltage readings >1% of Nominal V
  - **Unspecified for readings lower than 1%Vnom
  - **Thyristor RMS current (Irms)**: ±0.5% of Nominal Irms for current readings >3.3% of Nominal I
  - **Unspecified for readings = 3.3% Nominal I

  **Note**: For external current feedback the above specification does not include errors associated with external current transformers.

- **Load RMS voltage squared (Vsq)**: ±1% of (Nominal V)^2
- **Thyristor RMS current squared (Isq)**: ±1% of (Nominal I)^2
- **True load power (P)**: 0.1Hz
- **Frequency resolution**: 11 bits of Nominal value (noise free)
- **Meas. drift with ambient temp**: <0.02% of reading /°C

Further parameters (S, PF, Q, Z, Iavg, IsqBurst, IsqMax, Vavg, Vsq Burst, VsqMax and FBurst) are derived from the above, for each network (if relevant). See EPower User Guide Section (Meas submenu) for further details.

### External Current Transformer

- **Ratio**: Chosen such that the full scale output from the current transformer is 5 Amps

### Communications

- **CC-Link**: Protocol: CC-Link version 1.1
  - **Connector**: 5-way
  - **Indicators**: RUN and ERR
- **DeviceNet**: Protocol: DeviceNet
  - **Connector**: 5-way
  - **Indicators**: Network status and Module status
- **EtherNet**: Type: 10baseT (IEEE801)
  - **Connector**: Modbus TCP
  - **Indicators**: Tx activity (green) and communications activity (yellow)
- **EtherNet/IP**: Protocol: EtherNet/IP
  - **Connector**: RJ45
  - **Indicators**: NS (Network status), MS (Module status) and LINK (Link status)
- **Modbus RTU**: Protocol: Modbus RTU slave
  - **Transmission standard**: 3-wire EA48S
  - **Connector**: Twin, parallel-wired RJ45
  - **Indicators**: Tx activity (green) and Rx activity (yellow)
- **Isolation (EN60947-4-3)**: Installation category II, Pollution degree 2
  - **Terminals to ground**: 50V RMS or dc to ground (double isolation)
- **Profibus**: Protocol: DPV1
  - **Connector**: 9-way D-type
  - **Indicators**: Mode and Status
- **Profinet**: Protocol: Profinet IO
  - **Connector**: R J45
  - **Indicators**: NS (Network status), MS (Module status) and LINK (Link status)

---

Eurotherm Part No. HA029669 Issue 5 June 10 4 EPower Specification Sheet
### Communications

#### DeviceNet Connector Pinout

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>V (negative bus supply voltage)</td>
</tr>
<tr>
<td>2</td>
<td>CAN_L</td>
</tr>
<tr>
<td>3</td>
<td>Cable shield</td>
</tr>
<tr>
<td>4</td>
<td>CAN_H</td>
</tr>
<tr>
<td>5</td>
<td>+5V (positive bus supply voltage)</td>
</tr>
</tbody>
</table>

#### Profibus Connector Pinout

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/C</td>
</tr>
<tr>
<td>2</td>
<td>A (6Ω±1Ω)</td>
</tr>
<tr>
<td>3</td>
<td>N/C</td>
</tr>
<tr>
<td>4</td>
<td>+5V  (1)</td>
</tr>
</tbody>
</table>

#### CC-Link Connector Pinout

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DA (Rx+/Tx-)-110Ω, 1/2W, 5% across first and last connectors</td>
</tr>
<tr>
<td>2</td>
<td>DB - (Rx-/+)-5% across first and last connectors</td>
</tr>
<tr>
<td>3</td>
<td>SLD (Cable shield) - SLD and FG</td>
</tr>
<tr>
<td>4</td>
<td>FG (Protective Ground) - connected internally</td>
</tr>
</tbody>
</table>

#### EtherNet/IP Connector Pinout

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Tx+</td>
</tr>
<tr>
<td>2</td>
<td>Tx-</td>
</tr>
<tr>
<td>3</td>
<td>Rx+</td>
</tr>
<tr>
<td>4</td>
<td>Rx-</td>
</tr>
</tbody>
</table>

#### Modbus TCP (Ethernet 10baseT) Pinout

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>N/C</td>
</tr>
<tr>
<td>7</td>
<td>Rx–</td>
</tr>
<tr>
<td>6</td>
<td>N/C</td>
</tr>
</tbody>
</table>

### Modbus RTU Pinout

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>6</td>
<td>N/C</td>
</tr>
<tr>
<td>5</td>
<td>N/C</td>
</tr>
<tr>
<td>4</td>
<td>Isolated 0V</td>
</tr>
<tr>
<td>3</td>
<td>N/C</td>
</tr>
<tr>
<td>2</td>
<td>Isolated ground</td>
</tr>
</tbody>
</table>

### Profinet IO Connector Pinout

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>N/C</td>
</tr>
<tr>
<td>2</td>
<td>N/C</td>
</tr>
<tr>
<td>3</td>
<td>N/C</td>
</tr>
<tr>
<td>4</td>
<td>N/C</td>
</tr>
</tbody>
</table>

### EtherSpec & Networks

- **Modbus RTU** Pinout
  - Green = Tx activity
  - Yellow = Rx activity
  - Connectors in parallel

- **Modbus TCP** Pinout
  - Yellow = Rx activity

### Status LED Indication

#### LED state | Interpretation
--- | ---
Off | No power or no address
Steady yellow | No faults detected
Flickering green | Recoverable fault

#### Module Status LED Indication

#### LED state | Interpretation
--- | ---
ON | Not initialised
Steady green | Initializing
Flashing green | Diagnostic event present
Steady red | Exception error

#### Network Status LED Indication

#### LED state | Interpretation
--- | ---
OFF | Off-line or no power
Steady green | On-line, data exchange enabled
Flashing green | On-line, no connections enabled
Steady red | Critical link failure
Flashing red | More than one connections timed out

#### Network Status LED Indication

#### LED state | Interpretation
--- | ---
ON | On-line, clear
Steady green | No faults detected
Flashing green | Recoverable fault
Steady red | Unrecoverable fault
Flashing red | Critical link failure

#### Module Status LED Indication

#### LED state | Interpretation
--- | ---
OFF | No power or no address
Steady green | On-line, one or more connections established (Modbus/TCP class 1 or 3)
Flashing green | On-line, one or more connections established (Modbus/TCP class 1 or 3)
Steady red | Critical Link Failure
Flashing red | More than one connections timed out (Modbus/TCP class 1 or 3)

#### Modbus TCP (Ethernet 10baseT) Pinout

<table>
<thead>
<tr>
<th>Pin</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>N/C</td>
</tr>
<tr>
<td>7</td>
<td>N/C</td>
</tr>
<tr>
<td>6</td>
<td>Rx–</td>
</tr>
<tr>
<td>5</td>
<td>N/C</td>
</tr>
<tr>
<td>4</td>
<td>N/C</td>
</tr>
<tr>
<td>3</td>
<td>Isolated ground</td>
</tr>
<tr>
<td>2</td>
<td>Isolated ground</td>
</tr>
<tr>
<td>1</td>
<td>Yellow</td>
</tr>
<tr>
<td></td>
<td>Green</td>
</tr>
</tbody>
</table>

#### Profibus Connector Pinout

- **Notes:**
  - 1. Isolated 5 Volts for termination purposes. Any current drawn from this terminal affects the total power consumption.
  - 2. The cable screen should be terminated to the connector housing.

#### EtherNet/IP Connector Pinout

- **Notes:**
  - 1. A 110 Ohm (±5%, 1/2 watt) terminating resistor should be connected across pins 1 and 2 of each connector at each end of the transmission line.
  - 2. The cable screen should be connected to pin 4 of each CC-Link connector.
  - 3. The shield and Protective earth terminals (pins 4 and 5) are internally connected.

---

Eurotherm Part No. HA029669 Issue 5 June 10

EPower Specification Sheet
Caution
1. Neutral/phase reference connections (if applicable) must be located between any isolating device and the relevant Power Module.
2. For single phase configurations, all Neutral reference connections must be individually fused.

General diagrams

Single Phase Control

Up to Four Single Phase Control with Independent Loads

Two Phase Control with Load Coupled in Delta or Star

Two times Two Phase Control with Loads Coupled in Delta or Star

Three Phase Control with Load Coupling in Delta or Star

Three Phase Control with Load Coupled in Open Delta

Three Phase Control with Load Coupled in Star with Neutral
### 50A/100A (drawing on the right)

**160A/250A (drawings next page)**

**Fixing Details**

**Note:** Units are shown with individual mounting brackets. Multi-phase units come supplied with 2, 3 or 4 phase brackets as appropriate. See table below for details.

**Dimension mm (inches)**

<table>
<thead>
<tr>
<th>Overall Widths</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>50/100/160/250Amps</td>
<td>149.5 (5.89)</td>
<td>224.5 (8.84)</td>
<td>319.5 (12.58)</td>
<td>404.5 (15.93)</td>
</tr>
</tbody>
</table>

**FRONT VIEW**

<table>
<thead>
<tr>
<th>2-phase</th>
<th>Use A &amp; B</th>
<th>Use E &amp; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-phase</td>
<td>Use A, B &amp; C</td>
<td>Use E, F &amp; G</td>
</tr>
<tr>
<td>4-phase</td>
<td>Use A, B, C &amp; D</td>
<td>Use E, F, G &amp; H</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>VIEW ON UNDERSIDE</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Overall Widths</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>400/500/630Amps</td>
<td>400.0 (15.75)</td>
<td>575.0 (22.68)</td>
<td>750.0 (29.53)</td>
<td>925.0 (36.42)</td>
</tr>
</tbody>
</table>

**Fixing Details**

**Note:** Units are shown with individual mounting brackets. Multi-phase units come supplied with 2, 3 or 4 phase brackets as appropriate. See table below for details.

**Dimension mm (inches)**

<table>
<thead>
<tr>
<th>Overall Widths</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>400/500/630Amps</td>
<td>400.0 (15.75)</td>
<td>575.0 (22.68)</td>
<td>750.0 (29.53)</td>
<td>925.0 (36.42)</td>
</tr>
</tbody>
</table>

**FRONT VIEW**

<table>
<thead>
<tr>
<th>2-phase</th>
<th>Use A &amp; B</th>
<th>Use E &amp; F</th>
</tr>
</thead>
<tbody>
<tr>
<td>3-phase</td>
<td>Use A, B &amp; C</td>
<td>Use E, F &amp; G</td>
</tr>
<tr>
<td>4-phase</td>
<td>Use A, B, C &amp; D</td>
<td>Use E, F, G &amp; H</td>
</tr>
</tbody>
</table>

| VIEW ON UNDERSIDE | 2.5 (0.10) | 3.0 (0.12) | 3.5 (0.14) | 4.0 (0.16) |

**Safety earth (M8):**

Recommended tightening torque = 5 Nm

Safety earth (M8): Recommended tightening torque = 15 Nm

**Recommended fixing bolt size = M6**

**Recommended fixing bolt size = M8**

**Communications**

| Insert 5/8 in. screwdriver here, and pull down to release door |

**Door**

| Open |

**Eurotherm Part No. HA029669 Issue 5 June 10**

**EPower Specification Sheet**
Safety earth (M6) Recommended tightening torque = 5 Nm (3.7 ft lb)

Recommended fixing bolt size = M6

Recommended tightening torque = 12.5 Nm (9.2 ft lb)

Recommended fixing bolt size = M8

Recommended tightening torque = 25 Nm (18.4 ft lb)

Recommended fixing bolt size = M12

Recommended tightening torque = 38 Nm (28.4 ft lb)

Recommended tightening torque = 62 Nm (45.7 ft lb)

Recommended fixing bolt size = M12

Recommended tightening torque = 85 Nm (63.2 ft lb)

Recommended fixing bolt size = M12

Recommended tightening torque = 107.5 Nm (80.6 ft lb)

Recommended fixing bolt size = M12

Recommended tightening torque = 125 Nm (92.4 ft lb)

Recommended fixing bolt size = M12

Recommended tightening torque = 150 Nm (112.9 ft lb)

Recommended fixing bolt size = M12

Recommended tightening torque = 175 Nm (132.4 ft lb)

Recommended fixing bolt size = M12

Recommended tightening torque = 200 Nm (148.1 ft lb)

Recommended fixing bolt size = M12

Recommended tightening torque = 250 Nm (185.1 ft lb)

Recommended fixing bolt size = M12

Recommended tightening torque = 334 Nm (247.2 ft lb)

Recommended fixing bolt size = M12

Recommended tightening torque = 500 Nm (371.6 ft lb)
**QuickStart** which is intended to configure the unit for maximum 60 to 80% of the application (single unit in 1, 2 or 3 legs configuration).

Optional hardware and software functions.

The code is divided into three sections:
1. Hardware, which defines the type, number and size of the unit and/or the modules.
2. Option fields, which can include additional hardware options.
3. QuickStart, which is an optional function that configures the unit for quick start.

The code can then be either “Short” and include only the main hardware fields or “medium” and combine the hardware + the optional fields, or finally “long” with the additional quick start code at the end.

### Order codes

<table>
<thead>
<tr>
<th>Basic Product</th>
<th>4 Warranty</th>
<th>5 Internal Use</th>
<th>6 Internal Use</th>
<th>7 Option</th>
<th>8 Communications Protocol</th>
<th>9 Module 1</th>
<th>10 Module 2</th>
<th>11 Module 3</th>
<th>12 Predictive Load Management</th>
<th>13 External Feedback</th>
<th>14 Remote Panel</th>
<th>15 Software Option 1</th>
<th>16 Software Option 2</th>
<th>17 Not Used</th>
<th>18 Quick Start</th>
</tr>
</thead>
<tbody>
<tr>
<td>EPOWER Power Controller</td>
<td>XXX Standard</td>
<td>XXX None</td>
<td>XXX None</td>
<td>None - End of Code</td>
<td>No fieldbus communication</td>
<td>XXX None</td>
<td>XXX None</td>
<td>None</td>
<td>None</td>
<td>XXX None</td>
<td>XXX None</td>
<td>XXX None</td>
<td>XXX None</td>
<td>XXX None</td>
<td>None</td>
</tr>
<tr>
<td>1 Phase/Amps</td>
<td>WL005 USW3 US Extended</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>Y2</td>
<td>EMS Energy Measurement</td>
<td>EMS Energy Measurement</td>
<td>Default</td>
<td>EMS Energy Measurement</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>180V</td>
<td>1000V to 600V</td>
<td>5 Year</td>
<td>US</td>
<td>PLM</td>
<td>Predictive Load Management</td>
<td>PLM</td>
<td>Predictive Load Management</td>
<td>Default</td>
<td>Predictive Load Management</td>
<td>None</td>
<td>None</td>
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<td>None</td>
<td>None</td>
<td>None</td>
</tr>
<tr>
<td>280V</td>
<td>2000V</td>
<td>US</td>
<td>US</td>
<td>PLM</td>
<td>Predictive Load Management</td>
<td>PLM</td>
<td>Predictive Load Management</td>
<td>Default</td>
<td>Predictive Load Management</td>
<td>None</td>
<td>None</td>
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<td>None</td>
</tr>
<tr>
<td>380V</td>
<td>3000V</td>
<td>US</td>
<td>US</td>
<td>PLM</td>
<td>Predictive Load Management</td>
<td>PLM</td>
<td>Predictive Load Management</td>
<td>Default</td>
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<td>None</td>
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</tr>
<tr>
<td>480V</td>
<td>4000V</td>
<td>US</td>
<td>US</td>
<td>PLM</td>
<td>Predictive Load Management</td>
<td>PLM</td>
<td>Predictive Load Management</td>
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<td>None</td>
</tr>
<tr>
<td>500V</td>
<td>5000V</td>
<td>US</td>
<td>US</td>
<td>PLM</td>
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<td>PLM</td>
<td>Predictive Load Management</td>
<td>Default</td>
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<td>None</td>
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### Languages

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>English</td>
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<tr>
<td>French</td>
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<tr>
<td>German</td>
<td>GER</td>
</tr>
<tr>
<td>Italian</td>
<td>ITA</td>
</tr>
<tr>
<td>Spanish</td>
<td>SPA</td>
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### Load Current (nominal)

<table>
<thead>
<tr>
<th>Load Current (nominal)</th>
<th>20</th>
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</thead>
<tbody>
<tr>
<td>16A</td>
<td>16 Amps</td>
</tr>
<tr>
<td>25A</td>
<td>25 Amps</td>
</tr>
<tr>
<td>40A</td>
<td>40 Amps</td>
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<tr>
<td>50A</td>
<td>50 Amps</td>
</tr>
<tr>
<td>63A</td>
<td>63 Amps</td>
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<tr>
<td>80A</td>
<td>80 Amps</td>
</tr>
<tr>
<td>100A</td>
<td>100 Amps</td>
</tr>
<tr>
<td>125A</td>
<td>125 Amps (Note 1)</td>
</tr>
<tr>
<td>160A</td>
<td>160 Amps (Note 1)</td>
</tr>
<tr>
<td>200A</td>
<td>200 Amps (Note 1)</td>
</tr>
<tr>
<td>250A</td>
<td>250 Amps (Note 1)</td>
</tr>
<tr>
<td>315A</td>
<td>315 Amps (Note 1)</td>
</tr>
<tr>
<td>400A</td>
<td>400 Amps (Note 1)</td>
</tr>
<tr>
<td>500A</td>
<td>500 Amps (Note 1)</td>
</tr>
<tr>
<td>630A</td>
<td>630 Amps (Note 1)</td>
</tr>
</tbody>
</table>

### Load Voltage (nominal)

<table>
<thead>
<tr>
<th>Load Voltage (nominal)</th>
<th>21</th>
</tr>
</thead>
<tbody>
<tr>
<td>100V</td>
<td>100 Volts</td>
</tr>
<tr>
<td>110V</td>
<td>110 Volts</td>
</tr>
<tr>
<td>115V</td>
<td>115 Volts</td>
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<tr>
<td>120V</td>
<td>120 Volts</td>
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<tr>
<td>127V</td>
<td>127 Volts</td>
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<td>200V</td>
<td>200 Volts</td>
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<td>208V</td>
<td>208 Volts</td>
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<td>220V</td>
<td>220 Volts</td>
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<td>230V</td>
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<td>240V</td>
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<td>277V</td>
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<td>380V</td>
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<td>400V</td>
<td>400 Volts</td>
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<tr>
<td>415V</td>
<td>415 Volts</td>
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<tr>
<td>440V</td>
<td>440 Volts</td>
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<tr>
<td>460V</td>
<td>460 Volts</td>
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<td>480V</td>
<td>480 Volts</td>
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<tr>
<td>500V</td>
<td>500 Volts</td>
</tr>
<tr>
<td>575V</td>
<td>575 Volts</td>
</tr>
<tr>
<td>600V</td>
<td>600 Volts</td>
</tr>
<tr>
<td>640V</td>
<td>640 Volts (Note 2)</td>
</tr>
<tr>
<td>690V</td>
<td>690 Volts (Note 2)</td>
</tr>
</tbody>
</table>
1P  Single phase  
2P  Two phase control  
3P  Three phase control  

Load Configuration (Note 4)  
1P  Single phase  
3S  Star  
3D  Delta  
4S  Star with neutral  
6D  Open delta  

22 Control Type (Note 3)  
1P  Single phase  
4P  Four phase control  

23 Load Configuration (Note 4)  
1P  Single phase  
3S  Star  
3D  Delta  
4S  Star with neutral  
6D  Open delta  

24 Load Type  
XX  None  
1V  1-5 Volt  
2V  2-10 Volt  
5V  0-5 Volt  
0A  0-20 mA  
4A  4-20 mA  

25 Firing Mode (Note 5)  
PA  Phase angle  
BF  Burst firing  
FX  Fix modulation period  
LG  Logic mode  

26 Feedback  
V2  RMS load voltage squared  
I2  RMS load current squared  
TP  True power  
VR  RMS load voltage  
IR  RMS load current  
OL  Open loop  

27 Current Transfer Mode (Linear Current Limit) (Note 6)  
XX  None  
X  Voltage  
V  Current  
P  Power  
R  Impedance  

28 Analogue Input 1 Function (Note 6)  
XX  None  
SP  Setpoint  
HR  Setpoint limit  
IL  Current limit  
VL  Voltage limit  
PL  Power limit  
TS  Current transfer span  

29 Analogue Input 1 Type  
XX  None  
1V  1.5 Volt  
2V  2.10 Volt  
5V  0.5 Volt  
0A  0.20 mA  
4A  4.20 mA  

30 Analogue Input 2 Function (Note 6)  
XX  None  
SP  Setpoint  
HR  Setpoint limit  
IL  Current limit  
VL  Voltage limit  
PL  Power limit  
TS  Current transfer span  

31 Analogue Input 2 Type  
XX  None  
0V  0-10 Volt  
1V  1.5 Volt  
2V  2.10 Volt  
5V  0-5 Volt  
0A  0.20 mA  
4A  4.20 mA  

32 Analogue Output Function  
XX  None  
X  None  
V  Voltage  
I  Current  
P  Power  
R  Impedance  

33 Analogue Output Type  
XX  None  
0V  0-10 Volt  
1V  1.5 Volt  
2V  2.10 Volt  
5V  0-5 Volt  
0A  0.20 mA  
4A  4.20 mA  

34 Digital Input 2 Function  
XX  None  
AA  Any alarm  
PA  Process alarms  
FB  Fuse blown  

35 Digital Input 2 Type  
XX  None  
AK  Alarm acknowledgement  
RS  Remote setpoint selection  

36 Digital Input 2 Function  
XX  None  
AK  Alarm acknowledgement  
RS  Remote setpoint selection  

37 Predictive Load Management Address  
XX  Predictive Load Management address (00 to 63)  
Default address 00  

SPARE FUSE FOR POWER MODULES  
Current rating  
amps  Fuse number  
50A  CS179139U315  
100A  CS179139U315  
160A  CS179139U315  
250A  CS179139U350  
400A  CS179439U630  
500A  CS029859U630  
630A  CS029960U900  

Notes  
1. The maximum nominal current selectable is the current rating selected in Field 1.  
2. Only available if 690V selected in Field 2.  
3. Selection dependent on number of Phases selected in Field 1.  
4. Selection dependent on number of Phases selected in Field 1.  
5. PA not selectable if 2P selected in Field 22.  
6. Except XX the selection in Fields 28 and 30 cannot be the same.
Model number 32h8e is a horizontal 1/8DIN indicator and alarm unit that performs the dual function of remote display for EPower and independent ‘policeman’. The latter is intended to disconnect should an overtemperature (or other excess process condition) occur.

32h8e communicates with EPower using Modbus protocol via the EIA485 RJ45 connector located on the underside of the EPower controller.

The remote panel is normally ordered as an option with EPower units. It is a fixed hardware build consisting of a relay output in OP1 and an analogue output in OP3. There are no user communications since this is used to communicate with EPower and the supply is high voltage only (100-240Vac). The unit is configured using ‘QuickStart’ code on initial start up.

The 32h8e is based on a 32h8i indicator and has the same and additional features as this instrument. For features not covered please refer to HA029005.

The 32h8e displays EPower Current, Voltage, Power and Setpoint parameters for each EPower Network. The Setpoint of the EPower networks can be adjusted via the 32h8e HMI. Indication of selected setpoint is included: local or remote.

**Wire sizes**

The screw terminals accept wire sizes from 0.5 to 1.5mm (16 to 22AWG). Hinged covers prevent hands or metal making accidental contact with live wires. The rear screws should be tightened to 0.4Nm (3.3lb in).

⚠ Ensure that the supply to the unit does not exceed 240V ac +10%

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**Mechanical Details**

Panel cut-out 45 (1.77)(+0.0 -0.6) x 92 (3.62)(-0.0 +0.8)

**Recommended minimum spacing**

If more than one unit is mounted in the same panel they should be spaced to allow sufficient air flow between them.

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**Rear Terminals**

- **Digital Comms**
  - **Dig in A**
  - **COMA (+) B (–)+–**

- **PV Retransmission**
  - **V/mA mA**

- **Pt100 Sensor Input**
  - **2.49**

- **Output 1 (OP1)**
  - **Changeover Relay**
  - **90 (3.54) 10 (0.39) 96 (3.78) 38 (1.50) 10 (0.39)**

- **Output 3 (OP3)**
  - **100 to 240V ac 50/60Hz Neutral Line PV Retransmission VinmA**

- **Local ground**

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**Example Wiring Diagram**

![Example Wiring Diagram](image)

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**General notes about relays and Inductive Loads**

When switching inductive loads such as contactors or solenoid valves, wire the 22nF/100 ‘snubber’ supplied across normally open relay terminals.

This will prolong contact life and reduce interference.

⚠ Snubbers pass 0.6mA at 110V and 1.2mA at 230V ac, which may sufficient to hold on high impedance loads.
Specification - 32h8e Remote display

General

Environmental performance

Temperature limits: 0 to 55°C
Humidity limits: 5 to 85% RH non-condensing
Panel sealing: IP65, Nema 4X
Shock: BS EN61010
Vibration: 2g peak, 10 to 150Hz
Altitude: <2000 metres
Atmospheres: Not suitable for use in explosive or corrosive atmosphere

Electromagnetic compatibility (EMC)

Emissions and immunity: BS EN61326

Electrical safety

(53x45) Eurotherm Part No. HA03296695 Issue 5 June 10 13 EPower Specification Sheet

Isolation: 264V ac double insulation from the PSU
Sample rate: 9Hz (110ms)
Calibration accuracy: <±0.25% of reading ±1LSD (Note 1)

Process variable input

Current, voltage and power displayed as 3 phase or as several times single
match the EPower display - for example RMS values or average values for
QuickStart code for the standard indicator functions, and the process values
Modbus addresses. Power up the display for the first time, configure the
The 32h8e has Modbus Master RS485 Comms with a fixed set of EPower
Transmission standard: EIA485 (2 wire)
Isolation: 264V ac, double insulated
Protocol: Modbus RTU Master
Serial communications option

Physical

Panel mounting: 1/8 DIN, horizontal
Dimensions and weight: 96mm (3.78") W x 48mm (1.89") H x 90mm (3.54 inches) D, 350g (0.77lbs)
Panel cut-out dimensions: 92mm (1.77 inches W x 45mm (3.62 inches) H

Operator interface

Type: LCD TN with backlight
Main PV display: 5 digits, green or red
Lower display: 9 character starburst, green
Status beacons: Units, outputs, alarms

Power requirements

Voltage: 100 to 240V ac, –15%, +10%, max 9W
Frequency: 48 to 62Hz

Approvals

CE, cUL listed (file E57766)

Communications

Serial communications option
Protocol: Modbus RTU Master
Isolation: 264V ac, double insulated
Transmission standard: EIA485 (2 wire)

The 32h8e has Modbus Master RS485 Comms with a fixed set of EPower Modbus addresses. Power up the display for the first time, configure the QuickStart code for the standard indicator functions, and the process values and alarm messages are immediately displayed, automatically configured to match the EPower display - for example RMS values or average values for current, voltage and power displayed as 3 phase or as several times single phase as defined by the EPower configuration.

32h8e Terminal HD HE HF
RJ45 Pin Number Common 3

32h8e Terminal HD HE HF
RJ45 Pin Number 1 2 1

Process variable input

Calibration accuracy: <±0.25% of reading ±1LSD (Note 1)
Sample rate: 9Hz (110ms)
Isolation: 264V ac double insulation from the PSU and communication
Resolution (μV): <0.5μV with 1.6s filter (mV range)<0.25mV with 1.6s filter (Volts range)
Resolution (effective bits): >17 bits
Linearisation accuracy: < 0.1% of reading
Drift with temperature: <50ppm (typical) <100ppm (worst case)
Common mode rejection: 48-62Hz, >120db
Series mode rejection: 48-62Hz, >93dB
Input impedance: 100Ω (200Ω on volts range C)
Cold junction compensation: >30/1 rejection of ambient change
External cold junction: Reference of 0°C

Cold junction accuracy: <1°C at 25°C ambient
Linear (process) input range: -10 to 80mV, 0 to 10V
(2)

Resistance thermometer types: 3-wire Pt100 DIN 43760
Bulb current: 0.2mA
Lead compensation: No error for 22 ohms in all leads
Input filter: OR to 100s
Zero offset: User adjustable over full range
User calibration: 2-point gain & offset

Notes

(1) Calibration accuracy quoted over full ambient operating range and for all input linearisation types
(2) Contact Eurotherm for details of availability of custom downloads for alternative sensors

OP 1

Type: Form C (changeover)
Rating: Mn 100mA @12V dc, max 2A@240V ac resistive
Functions: Alarms, events

OP 3

Isolation: 264V ac double insulated
Current output
Rating: 0-20mA into <500Ω
Accuracy: ±(<0.25% of Reading + <50μA)
Resolution: 13.6 bits

Voltage output
Rating: 0-10V into >5000
Accuracy: ±(<0.25% of Reading +<25mV)
Resolution: 13.6 bits

Software features

Alarms
Number: 4
Type: Absolute high & low, Rate of change (rising or falling)
Latching: Auto or manual latching, non-latching, event only
Output assignment: Up to four conditions can be assigned to one output
The pre-set alarms have a fixed medium priority enables indicator alarms to be configured as lower, the same or higher priority.
EPower alarms can be globally acknowledged via the 32h8e HMI.

Other status outputs
Functions: Including sensor break, power fail, new alarm, pre-alarm
Output assignment: Up to four conditions can be assigned to one output

Custom messages
Number: 15 scrolling text messages
No of characters: 127 characters per message max
Languages: English, German, French, Spanish, Italian
Selection: Active on any parameter status using conditional command

Recipes
Number: 5 recipes with 19 parameters
Selection: HMI interface, communications or conditional command

Other features
Display colour: Upper display selectable green or red or scrolling text: Parameter help, custom messages
Display filter: Off to zero last 2 digits
Peak monitor: Stores high and low values

Altitude: <2000 metres
Vibration: 2g peak, 10 to 150Hz
Panel sealing: IP65, Nema 4X
Humidity limits: 5 to 85% RH non-condensing
32h8e Initial configuration

At first switch on, after the start-up sequence, the initial configuration page is displayed.

Note: the following 'quickstart' description apples only to new (not previously configured) instruments. If the instrument has previously been configured (either at the factory or subsequently) the instruments starts up showing the relevant process value.

The initial display shows 'Set1' on the top line, with a coded display below with its first item flashing. The lower line is decoded as shown in table.

The ‘mode’ (up/down arrows) are used to scroll through the available choices for each item. Once the required value is displayed, the scroll key is used to select the next character for editing. Once all five characters have been edited, further operations of the scroll key call the range high display (allowing the high range value to be edited using the mode keys), then the range low display (allowing the low range value to be edited). A further operation calls the Set2 display, which is decoded in the table below.

After Set2 parameters have been edited, a further operation of the scroll key invites the user to Exit. Operating the scroll key returns to the Set1 display; operating a mode key to display 'yes' quits the quickstart menuand causes the unit to enter operating mode.

Set1 Display

Display units

Decimal places

Display top line (PV) colour

Home display

Profile: Linear

Set2 parameter coding

Relay output (OP1)

Analogue output (OP3)

Digital input A

Digital input B

Input type

Operation of the scroll key invites the user to Exit.

Mode keys

I, V and P is network 1. The 'page key' is used to access the parameter for other networks.

NOT: the following 'quickstart' description apples only to new (not previously configured) instruments. If the instrument has previously been configured (either at the factory or subsequently) the instruments starts up showing the relevant process value.

The initial display shows 'Set1' on the top line, with a coded display below with its first item flashing. The lower line is decoded as shown in table.

The ‘mode’ (up/down arrows) are used to scroll through the available choices for each item. Once the required value is displayed, the scroll key is used to select the next character for editing. Once all five characters have been edited, further operations of the scroll key call the range high display (allowing the high range value to be edited using the mode keys), then the range low display (allowing the low range value to be edited). A further operation calls the Set2 display, which is decoded in the table below.

After Set2 parameters have been edited, a further operation of the scroll key invites the user to Exit. Operating the scroll key returns to the Set1 display; operating a mode key to display 'yes' quits the quickstart menu and causes the unit to enter operating mode.

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Eurotherm Part No. HA029669 Issue 5 June 10

EPower Specification Sheet