Safety and EMC Information

- The safety and EMC protection can be seriously impaired if the unit is not used in the manner specified.
- The installer must ensure the equipment is installed correctly.
- The installer must ensure the temperature sensor shield is used.
- The installer should not switch power off to the EPower controller.
- Do not connect AC supply to input voltage source or low level inputs and outputs.
- Voltage rating: The maximum continuous voltage applied between all of the following terminals must not exceed 230V ±15%.
- Relay output: Low voltages are applied to these outputs and the user should ensure that the appropriate safety measures are taken.
- Wiring connections: It is important to connect the wires according to the data sheet. Wiring must comply with all local wiring regulations, i.e., the ISF-2000 wiring regulations, VDE611 and VDE, NEC Class 1 wiring methods.

Caution: Use of this equipment shall be limited to applications in which all output changes occur at a rate of 1000 changes per minute or less. The user should ensure that the following conditions are met.

- All output changes must occur before the next input change.
- The input changes must occur at a rate of 1000 changes per minute or less.
- The output changes must occur at a rate of 1000 changes per minute or less.
- The output changes must occur before the next input change.

Installation and Category Grouping

- This equipment is designed to be used with EPower 2000H installation category 6 and pollution degree 2 as defined above.
- Installation Category Grouping (I/G) is the rating applied to equipment is nominal 230V supply is 250V.
- Pollution Degree 2: Normally no non-conductive pollution occurs. However, a temporary conductivity caused by condensation must be taken into account.
- Personnel: Installation must only be carried out by suitably qualified personnel.
- Enclosure of Outdoor Type: To prevent hands or metal tools touching parts that may be electrically live, the Remote Panel must be installed in an enclosure.

Recommended Minimum Spacing

- 10mm (0.4 inch)
- 32h8e (5.15 mm)
- 32h8e (Not to scale)

To Remove the Remote Indicator from its Sleeve

- Ease the latching wire 0 outward and pull the unit forward.
- When plugging back in ensure that the latching wire clicks into place to maintain the IP65 sealing.
Level 3 and Configuration Level
Level 3 makes all operating parameters available (if read-only), it is typically used when commissioning the indicator. Examples are Input Time constant, alarm delaying, alarm delay, etc.

Configuration Level will enable the fundamental characteristics of the indicator to be changed. This includes parameters in the Quick Configuration code plus others.

Operations at both levels is explained in the 3200 Engineering Handbook Part No. HA029006 which can be downloaded from www.eurotherm.com.

The sections on this page describe features which are additional to or differ from those available in the standard 3200i series indicators.

To Select Access Level 3
From any display press and hold for more than 5 seconds. LEU 3 will be displayed followed by 0.75. Press or to enter the parameter set - 3 by default for a new instrument.

To Select Configuration Level
When LEU 3 is displayed and setpoint 0.75 is displayed, press or to go to Conf. Press or to enter the parameter set - 4 by default for a new instrument. The parameter Conf will appear in the display.

To Return to Lower Levels
Press and hold until appears. Press or to select the required operating level. It is not necessary to enter a parameter when going from a higher level to a lower one.

Note: Eurotherm summary parameters are not available in Level 3 or Configuration Level.

PV Retransmission
An EPower unit will be generally be part of a wider system, and as such EPower parameters may be communicated to a Fieldbus Network Master in a MODBUS protocol, PLC or DCS system. The 32h8 is an independent polyclear module, and therefore, the process PV may also be communicated to the Fieldbus network master.

To this end, the 32h8 offers a 0.1 second settler to the EPower is Instrument Configuration parameter, which may be transmitted to the master device.

It should be noted that the PV retransmission is also provided as an analogue 0 to 4 volt output using the analogue output OPI. This may be used as a back-up to the digitised communication parameter in the event of a failure of the communications link.

HOMe Page Timeout
The 32h8 will display a/HOME Page timeout from the 32h8, this forces the display to return to the HOME page after a period of keypress inactivity.

However, in the 32h8, if the current focus is an EPower parameter then the HOME Page timeout will not be imposed. This will allow the user to display a specific EPower parameter indefinitely (auto-scrolling must be disabled).

Digital Alarm Outputs
In the 32h8 up to 8 source parameters can be logically ORed together to give a digital output state see Engineering Handbook Part No. HA029006. The list of source parameters has the following additions to 1SEC, 1SEC B, 1SEC C and 1SEC D:

- ALARM
- RECIPE
- EPower alarms

Note the RLI (All Alarms parameter) also includes the above EPower alarms as well as indicator alarms.

EPower SetProv Configurations
If EPower is configured via QuickStart and the functionality of the Analogue Input has been set to Setpoint then, in a multiple network configuration, the Quick Start will wire SetProv 1 to all of the network's associated Control/Man OP, allowing each Control Block to share the same local or remote setpoint.

This is shown in the Diagrams below which are taken from Quick configuration package.

Features Which Differ from Standard 3200i Indicators
32h8e does not include Strain Guage, 24VoltSupply, User Digital Communications.

The following features are unique to 32h8e.

To Turn On Auto-scrolling (I.SCRL)
In Configuration level, press until ACCES list. Press or (long message AUTO SCROLLING) is displayed. Press or to select 5, 10, 30 or 60. This sets the duration between scrolls in seconds.

To Hide the HOME Display (H.HOME)
In the ACCES list press or (long message HIDE HOMEDisplay) is displayed. Press or to select YES.

Control and Setpoint Display (I.TYP, SP)
Press or to select YES. See also Setpoint Section.

If set to YES the Control parameter (Current, Voltage, or Power) can be viewed in Operator level, simultaneously with its associated Setpoint. When displaying an EPower control parameter the bottom line of the display is used to display the working setpoint.

When set to No the bottom line of the display is used to display the parameter name and parameter description (as per other indicator display).

Setpoint Availability
Multiple Single Phase Configuration

With SetProv 1 supplying control blocks then only the setpoint for network 1 is available and

With no SetProv function blocks enabled then the setpoints for network 1 and 2 are available and

With no SetProv 1 function blocks enabled then the setpoints for network 1 are available and

With each network being wired from its own SetProv then the setpoints for network 1 and network 2 are available and

Inverter

Restriction of Hazardous Substances (RoHS)

Manufacturing Address
U.K. WORTHING
Eurotherm Ltd
T(+44) 1903 268500

www.eurotherm.co.uk

© Copyright Eurotherm Ltd 2014

Eurotherm (Eurotherm, Eurotherm Ltd, Eurotherm Instruments, Eurotherm Controls, Eurotherm Heating, Eurotherm Sensors, Eurotherm Temperature Control, Eurotherm Temperature Controls, Eurotherm Temperature Controllers, Eurotherm Temperature Control Systems, Eurotherm Instruments Ltd, Eurotherm Instruments UK and Eurotherm Ltd) and other Eurotherm trademarks are the trademarks of their respective owners.

All other brands may be trademarks of others. Eurotherm accepts no liability for any loss arising from errors in this document.

Should you require any further information, please contact Eurotherm Ltd. Eurotherm Ltd will accept no responsibility for any losses arising from errors in this document.
Switch On
A brief start up sequence consists of all segments of the display being illuminated followed by the firmware version number and the instrument type.

Initial Configuration
If it has not previously been configured (i.e. a new instrument) it will start up showing the ‘Quick Configuration’ codes.

This consists of two SETS of codes and the upper section of the display shows the selected lower section shows the five digits which make up the set.

Incorrect configuration can result in damage to the process and/or personal injury. Instrument configuration must be carried out by a competent person authorised to do so. It is the responsibility of the person commissioning the Remote Panel to ensure the configuration is correct.

Adjust characters as follows:-
1. Press any button. The first character will change to a flashing.
2. Press ▲ or ▼ to change the flashing character to the required code shown in the quick config tables, next section. Note: ▼ indicates the option is not fitted.
3. Press  to scroll to the next character or character to the first character. When all five characters have been configured the display will change to Range High and Range Low to test 2.

When flash digit has been entered press , again, the display will show 3.
Press  or  the unit will then automatically start in operator level 1.

SET 1

Input Type | Display units | Decimal point | Alarm
---|---|---|---
A | °C | 2, | ±
B | % | 2, | ±
C | %<br>bar | 2, | ±
D | %<br>°H | 2, | ±
E | °C<br>V | 2, | ±
F | °C<br>mA | 2, | ±
G | °C<br>V | 2, | ±
H | °C<br>mA | 2, | ±
I | °C<br>mA | 2, | ±
J | °C<br>V | 2, | ±
K | °C<br>mA | 2, | ±
L | °C<br>mA | 2, | ±
M | °C<br>mA | 2, | ±
N | °C<br>mA | 2, | ±
O | °C<br>mA | 2, | ±

- Quick Codes. In the example here it is configured as 1.

Notes:-
1. If N, A, 1 or 2 is chosen in SET 1 of the Quick Configuration Codes the HOME display will show process (e.g. furnace) related parameters.
2. If V, F or C is chosen then the HOME display will show EPower parameters. The HOME display shown here appears if V is chosen in the Quick Configuration.
3. If A is chosen in the Quick Configuration then the HOME display will show EPower parameters. The HOME display shown here appears if A is chosen in the Quick Configuration.

Front Panel layout
From the HOME display shown in the previous section, press  to view the process parameters.

Operator Buttons (Level 1)

- 2-5 are related to different set headings. These are:-
  - Process related parameters, for example furnace temperature, alarm settings, etc.
  - Network related parameters (EPower Summary Parameters) for example, voltage, current, etc.
  - A parameter is shown if the configured parameter has not been re-configured or Configuration access level is 1.
  - Press  or  to select the next networks V, I or P parameter (one or average depending upon the network configuration).

Notes:-
1. Process related parameters are only available if the Energy Counter feature is enabled in the connected EPower instrument.

Energy parameters and with the Process Indicator refer to the Global Energy Counter which is the EPower instrument.

SET 2

| Setpoint | Local | Remote | Remote up | Remote down | Keylock | Beacons | Message Centre | Select Parameter | Energy parameters are only available if the Energy Counter feature is enabled in the connected EPower instrument.
---|---|---|---|---|---|---|---|---|---
1 | | | | | | | | | Press  to select between list headings.
2 | | | | | | | | | Press  to move the setpoint or parameter.
3 | | | | | | | | | Press  to move the setpoint or parameter.
4 | | | | | | | | | Process Value (e.g. Voltage). See next panel.
5 | | | | | | | | | Process Value (e.g. Temperature). See next panel.

Subsequent Starts
The unit will briefly show the quick code during start up, then proceed to Operation 1.

You will see a display similar to those shown - called the HOME display.

FIN, A or 2 is shown in SET 1 if the Quick Configuration Codes the HOME display will show process (e.g. furnace) related parameters.

If V, F or C is shown then the HOME display will show EPower parameters. The HOME display shown here appears if V is shown in the Quick Configuration.

Notes:-
- Deeper access levels are available under the protection of passwords - see following sections. If the Quick Codes do not appear do not press  or  as the process that has been re-configured or Configuration access level 1.

- The Quick Codes may not be available and therefore not shown.

The HOME display can be hidden in Configuration level - see back page (To hide the HOME Display).

- The colour of the upper display can be set in the Quick Codes to be green or red or on alarm.

- To re-enter Quick Code Mode
- If you need to re-enter the ‘Quick Configuration’ mode this can always be done by powering down the unit.
- Then press button down and press the unit up again. Keep the button pressed and you are entered to a passcode.
- Enter the passcode in the format  or  in a new unit the passcode defaults to 0. If an incorrect passcode is entered you must repeat the whole procedure.

Navination Operator Level 1 (1 to 4 Single Phase Networks)

Press  to manually select between different list headings. These are:-

- Process related parameters, for example furnace temperature, alarm settings, etc.
- Network related parameters (EPower Summary Parameters) for example, voltage, current, etc.
- A parameter is shown if the configured parameter has not been re-configured or Configuration access level is 1.
- Press  or  to step through the list of parameters shown in the message centre.
- The value of the chosen parameter is shown in the upper display.
- When the ‘Process heading’ is shown a scrolling description of the parameter mnemonic always appears once, 5 seconds after the parameter is first selected if a Network heading is shown the scrolling message appears only if there are no alarms or events present.
- Note - The first parameter shown in list may be Current, Voltage, Energy depending on how it was configured using the Quick Start Code. The example diagram shows Current.
- Lists of all possible parameters are shown in following sections.
- Energy parameters with the Process Indicator refer to the Global Energy Counter which is the EPower instrument.
- Energy parameters are only available if the Energy Counter feature is enabled in the connected EPower instrument.

Working Setpoint
This is displayed on a network list as ‘DP’ (depending upon configuration). In the working setpoint currently being used by the EPower unit and may be the Local Setpoint or the Remote Setpoint derived from an analogue input or via digital communications.

Setpoint Editing
For versions 1 to 1.20 onwards include a choice of how setpoint editing is presented. This is shown in Configuration Level using the parameters C1, C2, C3, C4, C5, C6, C7, C8, C9. See Network Display, Voltage, Power or Energy is displayed, the setpoint is shown as changed as shown below.-

These examples are shown for network 2.

www.example.com
**Auto Scrolling**

Auto Scrolling is active if it has been configured in Configuration level - see last page ('To Turn On Auto Scrolling'). If EPower has one single phase, one 2Leg network or a 3Phase network then auto scrolling will perform horizontally as the 'scroll' key has been pressed as seen in the diagram below.

![Auto Scrolling Diagram](image)

If EPower has multiple Networks then auto scrolling will be performed vertically, changing the Network and keeping the focus on the parameter type as seen in the diagram below.

**Single Network**

**Network 1**

**Level 1**

**Single Phase**

**Level 1 & 2**

**3 Phase 1 & 2**

**Level 2**

**3 Phase 3**

**Network 2**

**Level 2**

**3 Phase 4**

**Network 3**

**Level 3**

**Network 4**

**2 Leg Network**

If the display is configured for red alarm (Quick Code C) the Pw will also flash when an alarm occurs.

**Alarm Indication**

Up to four alarms can be configured (in configuration level). Each alarm may configured as High, Low, Rising or Falling Rate of Change. If an alarm is in the list and the alarm condition is met, any output attached to the alarm will operate and a scrolling text message will describe the source of the alarm, for example: **EPower H.R.**

**Auto scrolling**

If multiple Networks then auto scrolling will be performed horizontally, changing the Network and keeping the focus on the parameter type as seen in the diagram below.

**Multiple Single Phase Networks**

**Network 1**

**Network 2**

**Network 3**

**Network 4**

**2 Leg Network**

**Network 1**

**Network 2**

**Network 3**

**Network 4**

**2 Leg Network**

**Network 1**

**Network 2**

**Network 3**

**Network 4**

**2 Leg Network**

If an alarm is configured as auto-scrolling, it will always be displayed.

**Auto scrolling**

The duration between scrolls can be configured as OFF, 5, 10, 30 seconds. See 'To Turn On Auto-scrolling'.

**Alarm acknowledgement**

Press [D] and [E] together.

A global acknowledgement of EPower alarms takes place when either the display HOME page is selected or when the EPower HOME page/Network 1 is too long/RF then RF is indicated in the bottom.

The action of this button depends on the source of the alarm, as follows:

**EPower Alarm**

The alarm indication in the EPower controller only is acknowledged - it still indicates in 32k.

**Temperature (Process) Alarm**

The alarm beacon and flashing display become steady. Any output attached to the alarm remains active.

**EPower Plus Temperature (Process) Alarm**

The alarm beacon and flashing display become steady. Any output attached to the alarm remains active.

However, if the temperature display disappears and the EPower alarm is still active then the 32k display resumes flashing.

**Sensor Break Indicator**

An alarm condition of Sensor Break is indicated if the sensor or the wire between sensor and indicator becomes open circuit or open range.

For a DPT output, sensor break is indicated if any of the three are broken.

For an input sensor break will not be detected due to the load master connected across the input terminals.

For input sensor break may not be detected due to the potential divider network connected across the input terminals.

**Operator Level 2**

Level 2 provides access to additional parameters. It is protected by a security code (2 by default).

To Enter Level 2

1. From any display press and hold [3].
2. After a few seconds the display will display [3].
3. Release [3] (this button is pressed for 45 seconds the display returns to the HOME display).


4. After 2 seconds the display will display [L].
5. Press [E] or [D] to enter the pass code. Default = ‘PASS’.

If an incorrect code is entered the indicator resets to Level 1.

To Return to Level 1


This controller will return to the Level 1 HOME display. Note: A pass code is not required when going from a higher level to a lower level.

**Level 2 Parameters**

The HOME display, press [2] to step through the list of parameters, as in Level 1. The numeracy of the parameter is shown in the message centre and after five seconds a scrolling text description appears. Hold [2] to continue scrolling.

The value of the parameter is shown in the upper display. Press [A] or [D] to adjust the value. If the value is read only ‘-’ will be displayed.

If a scroll for 30 seconds the indicator returns to the HOME display.

Backspace is achieved when you are in the last entry by repeatedly pressing [A] while holding down [2].

To return to the HOME display at any time press [3].

The table below shows list of parameters available in the Process List is Level 2.

**Individual RMS values in a 3Phase Configuration**

These RMS values are available in Network 1 (3 Phase and 2 Leg) and Network 2 (2Leg) in Level 1 and Level 2 and will be part of the normal navigation as shown below.

**EPower Event/Alarm Messages**


These messages are generated in EPower and are available in the Remote Panel as a fixed set of scrolling messages as follows:

**Message Description**

An alarm condition exists to the relevant module(s) active

**Error**

A fatal short circuit leads to current flowing everywhere.

**Low SP**

High phase difference and/or fast or slow mode.

**Alarm**

The load is over the setpoint and will reset at setpoint value and continue.

**AlarmSP**

The load is over the setpoint and will reset at setpoint value and continue.

**PF**

High frequency out of phase or in quadrature.

**HP**

Firing stops and will not start until the alarm is acknowledged or will restart after 100msec on how it is configured in EPower. The threshold is set at between 105% and 110% of the nominal load current.

**Alarm**

This alarm detects a static increase in load impedance over a mains cycle in phase angle firing mode and over the load limit for total and individual firing. These messages are generated in EPower to detect two or up to six parallel load elements are open circuit. (All elements must have the same characteristics and impedance values).

**Alarm**

The load is over the setpoint and will reset at setpoint value and continue.

**Fault**

Current is again supplied by the EPower.

**Error**

If the control loop cannot achieve stability despite the load demanding 100% or 0% power. This normally due to an external component in the load.

**Event**

Same as Display short circuit alarm in EPower. Indicates a short circuit is detected in the output circuit. Firing is stopped.

**Errors**

There are several additional errors that are indicated.

These are:

**Communication Errors**

Modbus master transactions between EPower and the kWh 500 T/R/T.

There are at least one fatal error, Config Error or Standby Error has been reported by the EPower instrument.

These errors are indicated by the way of a blinking message on the top display when on the HOME page or on an EPower page. The messages for the above errors respectively are: Cass = EP/CF = SP 6.

**Recipes**

It is possible to store operating values in up to five different recipes by taking a snapshot of the current settings and storing these in a recipe number. Examples of typical operating parameters may be alarm setpoint values. A particular recipe number may then be recalled for a particular process.

**To Store a Value in a Recipe**

1. In the list of parameters, press [7] to select [SP].
2. Select a recipe number from 1 to 5 in which to store the current settings. The indicator will show [SP] 1 to [SP] 5 in the display.
3. All values which have been stored in this recipe are own.

**To Recall a Recipe**

1. In the list of parameters, press [7] to select [SP].
2. Select a recipe number from 1 to 5 in which the settings have been stored. The values will automatically loaded from the recipe. If no values have been stored in this recipe [SP] 1 to [SP] 5 will be indicated.

**Level 2 Parameter List – Network Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network 1</strong></td>
<td>Level 1 &amp; 2</td>
</tr>
<tr>
<td><strong>Network 2</strong></td>
<td>Level 1 &amp; 2</td>
</tr>
<tr>
<td><strong>Network 3</strong></td>
<td>Level 1 &amp; 2</td>
</tr>
<tr>
<td><strong>Network 4</strong></td>
<td>Level 1 &amp; 2</td>
</tr>
</tbody>
</table>

**Level 2 Parameter List – Network Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Network 1</strong></td>
<td>Level 1 &amp; 2</td>
</tr>
<tr>
<td><strong>Network 2</strong></td>
<td>Level 1 &amp; 2</td>
</tr>
<tr>
<td><strong>Network 3</strong></td>
<td>Level 1 &amp; 2</td>
</tr>
<tr>
<td><strong>Network 4</strong></td>
<td>Level 1 &amp; 2</td>
</tr>
</tbody>
</table>

**Level 2 Parameter List – Process Parameters**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Process Display and description</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Current RMS</strong></td>
<td>Either an active or stored current reading depending upon network type. Units: Amps.</td>
</tr>
<tr>
<td><strong>Volts RMS</strong></td>
<td>Either an active or stored voltage reading depending upon network type. Units: Volts.</td>
</tr>
<tr>
<td><strong>True Power</strong></td>
<td>Either an active or stored reading depending upon reading of the network. Units: Watts or KW.</td>
</tr>
<tr>
<td><strong>Energy</strong></td>
<td>Either an active or stored reading depending upon reading of the network. Units: J, KWh or MWh.</td>
</tr>
<tr>
<td><strong>Select Error</strong></td>
<td>Current is again supplied by the EPower.</td>
</tr>
<tr>
<td><strong>Select Error</strong></td>
<td>If the control loop cannot achieve stability despite the load demanding 100% or 0% power. This normally due to an external component in the load.</td>
</tr>
<tr>
<td><strong>Event</strong></td>
<td>Indicates a short circuit is detected in the output circuit. Firing is stopped.</td>
</tr>
<tr>
<td><strong>Average current</strong></td>
<td>Either an active or stored reading depending upon network type. Units: A.</td>
</tr>
<tr>
<td><strong>Average voltage</strong></td>
<td>Either an active or stored reading depending upon network type. Units: V.</td>
</tr>
</tbody>
</table>

**Notes:**

- The scrolling help messages for the currently displayed parameter is only shown if these alarm elements are active.
- Select a recipe number from 1 to 5 in which the settings have been stored. The values will automatically loaded from the recipe. If no values have been stored in this recipe [SP] 1 to [SP] 5 will be indicated.
- The table below shows list of parameters available in the Process List is Level 2.