eddi

microgeneration energy diverter

operation and installation manual

myenergi.uk

Model No: EDDI-16A1P01

Contents

Introduction

Thank you for choosing **eddi**. Of course, we think you have made an excellent choice and are sure you will be very happy with the features, benefits and quality of this **myenergi** product.

eddi is an automatic power controller for heaters. It 'tracks' available surplus power from a grid-tied PV or Wind turbine system and varies the power to the heater to match the surplus power, therefore ensuring all of the green energy is fully utilised.

These instructions will help you to familiarise yourself with the **eddi**, by reading the instructions, you will be sure to get the maximum benefit from this 'eco-smart' device.

varisine™ Technology

varisine™ is the proprietary power control technology used in the **eddi**. The technology enables the output voltage to be very smoothly adjusted in order to alter the power to the heater. The power to the heater is always a kept as sine wave, only the voltage amplitude is altered.

This control technology is more sophisticated than many other products on the market and the technology ensures trouble free operation with all inverters and compatibility with all import/export energy monitors and electric meters.

Safety

The device has been manufactured in accordance with the state of the art and the recognised safety standards. However, incorrect operation or misuse may result in:

(!) Injury or death to the operator or third parties

(!) Damage to the device and other property of the operator

(!) Inefficient operation of the device

All persons involved in commissioning, maintaining and servicing the device must:

(!) Be suitably qualified

(!) Have knowledge of and experience in dealing with electrical installations

(!) Read and follow these operating instructions carefully

(!) Always disconnect the device from the supply before removing the cover

The device is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the device by a person responsible for their safety.

(!) The heatsink (at the rear of the device) can at times reach high temperatures

Disposal

In accordance with European Directive 2002/96/EC on waste electrical and electronic equipment and its implementation in national law, used electrical devices must be collected separately and recycled in an environmentally responsible manner. Ensure that you return your used device to your dealer or obtain information regarding a local, authorised collection and disposal system. Failure to comply with this EU Directive may result in a negative impact on the environment.

Copyright

Copyright of these operating instructions remains with the manufacturer. Text and images correspond to the technical level at the time of going to press. We reserve the right to make changes. The content of the operating instructions shall not give rise to any claims on the part of the purchaser. We are grateful for any suggestions for improvement and notices of errors in the operating instructions.

Overview

Microgeneration systems such as Solar PV and small wind turbines are at their most efficient when the generated energy is consumed on-site rather than exporting it to the grid. This is what we call 'self-consumption'.

eddi is an energy management system for use with grid-tied PV or wind turbine systems. Excess energy from the microgenertation system is used to heat water or rooms rather than exporting it to the grid.

A grid current sensor (supplied) simply clips around the incoming supply cable. This sensor is used to monitor excess power and **eddi** automatically adjusts the voltage to the heater load, thereby consuming the surplus power. A self-powered wireless sensor (**harvi**) is available separately.

An internal expansion interface provides a means to install a Relay & Sensor Board to enable various functions such as auto switching from day-time and night-time supply, heat pump interfacing for Legionella control and temperature sensing.

eddi utilises **myenergi's** proprietary **varisine**™ technology to ensure compliance with worldwide power grid standards.

Feature Set

- 3.68KW / 16A max. heater load
- Supports two heaters (sequentially)
- Integral bypass switch
- **varisine**™ PWM technology
- Fan-less cooling
- Built-in programmable boost timers
- Energy savings data logging
- Graphical back-lit LCD screen for ease of use
- Overload and short-circuit protection
- Automatic Daylight Saving Time adjustment
- Relay & Sensor Board add-on option
- Wall mounting bracket for ease of installation
- Fully EMC and safety compliant (CE)
- 3-year warranty

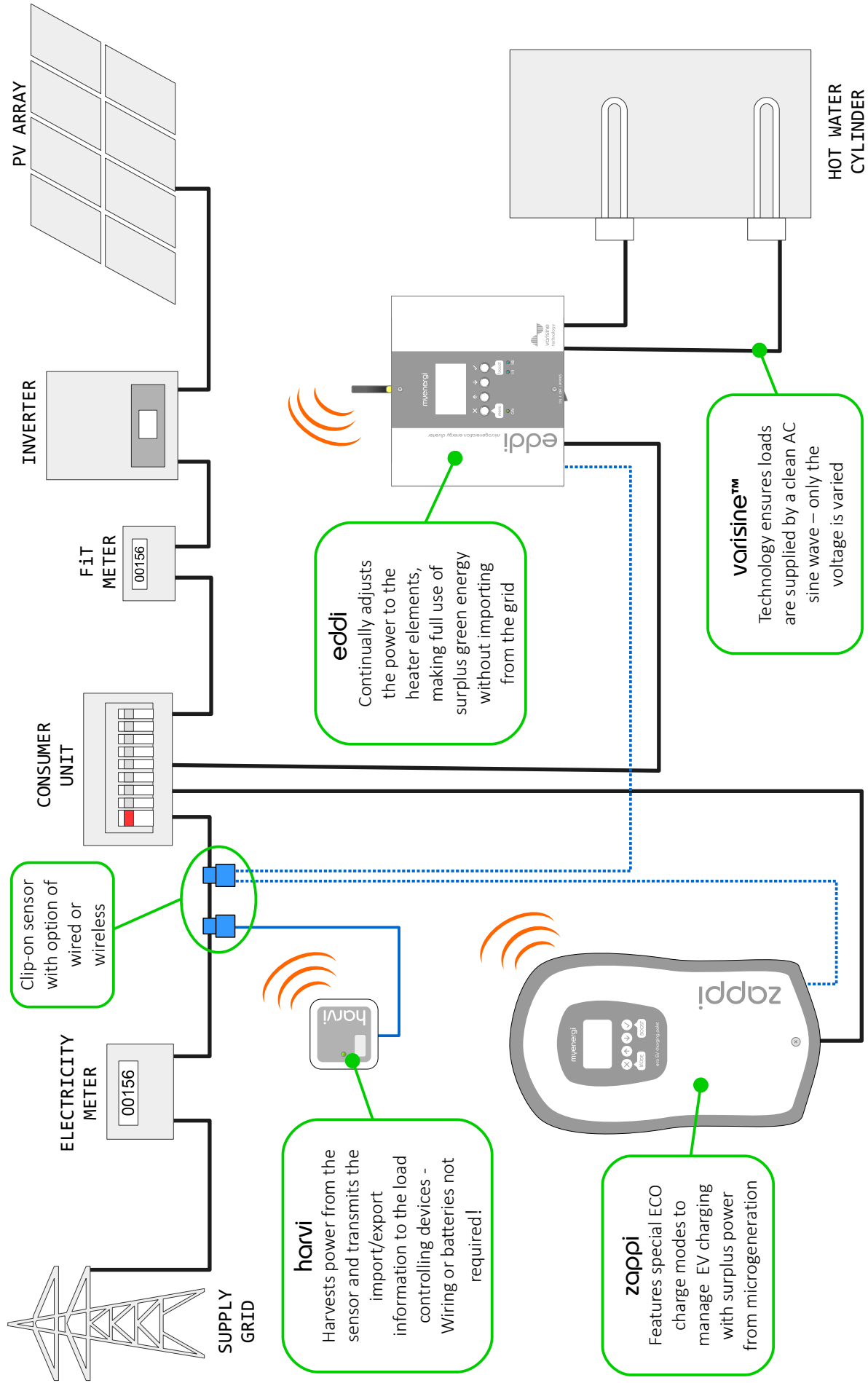### Overview Diagram

The diagram over the page, shows the **eddi** as part of a complete energy management system. Other **myenergi** products are shown and how they integrate with the grid connection and the microgeneration system.

Box Contents

- 1x eddi unit with mounting bracket attached
- 1x Current Transformer with 5m cable (Grid Sensor)
- 1x Antenna
- 1x Operation & Installation Manual

Overview Diagram

PV ARRAY

INVERTER

FiT METER

00156

CONSUMER UNIT

ELECTRICITY METER

00156

SUPPLY GRID

HOT WATER CYLINDER

eddi
Continually adjusts the power to the heater elements, making full use of surplus green energy without importing from the grid

varisine™
Technology ensures loads are supplied by a clean AC sine wave – only the voltage is varied

Clip-on sensor with option of wired or wireless

harvi
Harvests power from the sensor and transmits the import/export information to the load controlling devices - Wiring or batteries not required!

zappi
Features special ECO charge modes to manage EV charging with surplus power from microgeneration

Operation
Controls & Indicators

①	Display	Graphical LCD display with LED backlight

②	Power on indicator	Illuminates when:
		    Unit is connected to the mains supply and;
		    the BYPASS switch is in the ON position (I)

③	Control buttons	Four tactile buttons used to navigate the menus and alter settings:

⊗   Enter menu (from main screen)| Exit current menu

⬆   Move up a menu item | Increase value

⬇   Move down a menu item | Decrease value

✓   Boost | Select item | Confirm value and move to next setting

④	Heater output indicators (1 &2)	Illuminates when the respective heater output (1 or 2) is active The brightness will vary with the output voltage If both 1 & 2 are lit together, the heaters are at maximum temperature

|		

⑤	ON/OFF and BYPASS switch	This switch has three positions:
		  I ON - **eddi** is on (this is the normal position)
		  0 OFF - **eddi** is off (the power on indicator will be off)
		  II BYPASS - **eddi** is bypassed; the mains supply is directly connected to the Heater 1 output. In this position the Power indicator will be off and the Heater 1 indicator will be illuminated.

Display

①	Import / Export Power	The power being either imported or exported from or to the grid (kW). The direction of the arrows indicate if the property is currently importing power (left) or exporting power (right) The size of arrows is proportion to the level of power. When the property is neither importing or exporting power, the figure will be 0.0kW and there will no animated arrows. The property is then said to be 'in balance'
②	House Load Power	The power that the property is currently using in kW It does not include any surplus power being sent to the heater(s) *Note: This is displayed only when the Generation Sensor is installed (either connected to CT2 input or a harvi device)*
③	Operating Mode	The current operating mode is displayed here (see *Operating Modes* page 10)
④	Generation Power	The power being generated at this time in kW *Note: This is displayed only when the Generation Sensor is installed (either connected to CT2 input or a harvi device)*
⑤	Message Icon	When this icon is present there is a message from the myenergi server This only applies if you have the myenergi hub device
⑥	Date & Time	The current date and time
⑦	Status Icons	These icons indicate that the import limiting is active (house), a relay is on (R1 / R2) or the e-Sense input is live (e)
⑧	eddi Icon	This eddi unit. If there are wavy lines above the icon, the unit is thermally limiting (the output power will be temporarily reduced)
⑨	Energy Diverted Today	The accumulated energy that has been sent to heater(s) today Only the surplus energy is included
⑩	Temperature	If the optional Relay & Sensor Board (see page 28)is fitted and temperature probes are installed, the temperature of the active heater is displayed
⑪	Heater Icon	This icon represents the active heater, and next to it is the heater number
⑫	Power Diverting to Heater	When eddi is heating, arrows will show here along with the power in kW

Display Icons Key

|			
⌂	House Consumption – Not Importing	🗑	Heater – Top Immersion
⌂	House Consumption – Importing	🗑	Heater – Bottom Immersion
☼	Solar Generation Power	▥	Heater – Radiator
✳	Wind Generation Power	≋	Heater – Underfloor
⊞	Grid Power – Import / Export	⊞	Heater – Swimming Pool
⋯▶⋯▶⋯	Power Flow Direction – Small Amount	⌐∘ R1	Select Relay
⋯▶⋯▶⋯	Power Flow Direction – Medium Amount	✉	Message Available
⋯▶⋯▶⋯	Power Flow Direction – Large Amount	⊡	Import Power Limiting Active
‖	Waiting For Surplus Power	R1 R2	Relay 1 or 2 – On
↑	Maximum Heater Temperature Reached	E	Economy Tariff Electricity Available
eddi	eddi Device – Normal	1 2	Active Heater Number
eddi	eddi Device – Too Warm (output limited)	kW	Instantaneous Power
		kWh	Accumulated Energy Today

Operating Modes

Waiting for Surplus
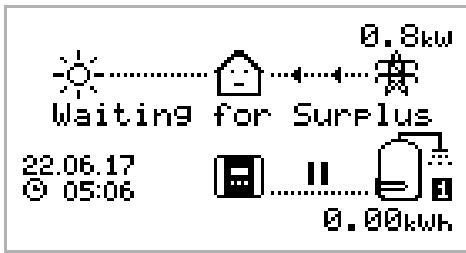
eddi is waiting for surplus power from the microgeneration system.

The house in the centre is straight faced as grid electricity is being used by the house (0.8kW is this example).

We can see that eddi hasn't started heating with surplus power yet today as there is no accumulated energy; the 0.00kWh under the water cylinder symbol.

Heating
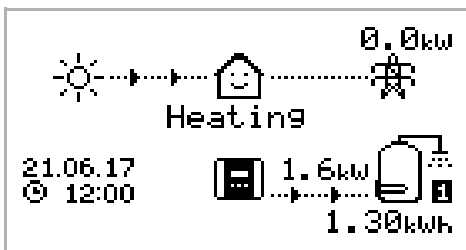
eddi is now diverting power to the heater.

The heater currently being heated is shown by the icon on the right and the small number (1 in this case) corresponds to the heater number.

The amount of power being diverted at any one moment is shown between the eddi icon and the heater icon (in this screenshot the diverted power is 1.6kW).

All of the surplus energy which has been set to the heater today is displayed under the heater icon (1.30kWh) in this example.

Now the house is smiling because there is no grid electricity being used.

Max Temp Reached
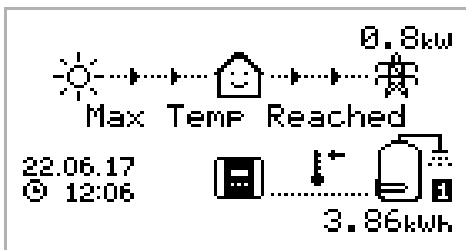
The heater is now at maximum temperature.

Now there are no arrows or power figures for the heater and a thermometer symbol is shown.

As eddi is no longer able to divert the surplus power to the heater and so this is now exported to the grid (0.8kW in this example).

If there is a second heater present (connected to Heater 2), eddi will switch over to start heating Heater 2.

Boosting
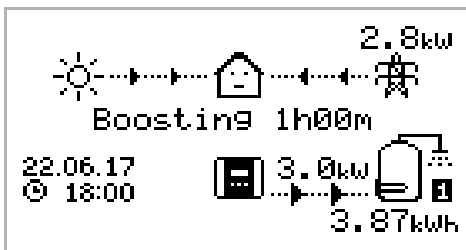
Boosting means eddi is giving maximum power to the heater, irrespective of available surplus power.

The arrows going to the heater are large and the power figure (3.0kW in the example screen) is the heaters' maximum power level.

During a boost , it is likely that there will be power imported from the grid (2.8kW here).

The timer starts at (1h00m) and will count down until the boost ends. The boost duration may be altered with the ⬆ or ⬇ buttons.

Manual Boost

A heater can be 'boosted' to full power for a short period regardless of the amount of available export power, this function is called Manual Boost and is activated from the main screen. Once the boost starts, the remaining boost period will be displayed, this will start with a duration of 1 hour, this can be adjusted during the boost. The boost can be cancelled at any time.

Activating Manual Boost

1. From the main screen, press ✓

    ```
                              0.8kW
    ☼ ---------- ⌂ ---◄-►--- ⚡
    Waiting for Surplus
    22.06.17      ▯  II  🛢
    ⏱ 12:06              🛢 ⊠
                            3.01kWh
    ```
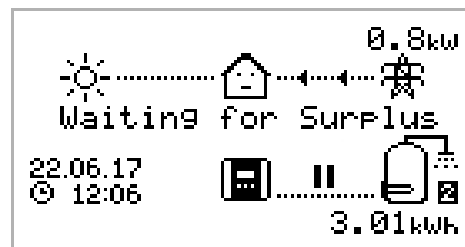
2. If there is more than one heater you may select which heater you wish to boost by pressing ⬆ or ⬇ to change heater. Press to ✓ start boost

    ```
        Manual Boost
        Select Heater:

        🛢1    🛢⊠
    ```
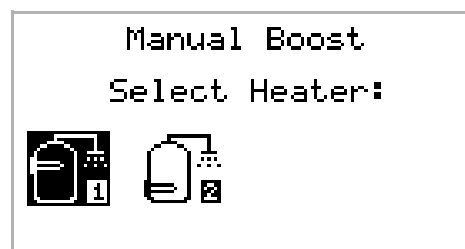
3. The boost duration may be altered by pressing ⬆ or ⬇ during the boost

    ```
                              2.0kW
    ☼ -►-►- ⌂ ---◄-►--- ⚡
    Boosting 1h00m
    22.06.17   ▯ 3.0kW 🛢
    ⏱ 12:06       ►      1
                            1.86kWh
    ```
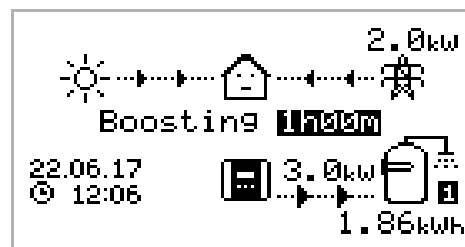
Cancelling Manual Boost

The boost can be cancelled at by pressing ✓ twice

```
                          2.0kW
☼ -►-►- ⌂ ---◄-►--- ⚡
    Cancel Boost
22.06.17   ▯ 3.0kW 🛢
⏱ 12:46       ►      1
                        4.08kWh
```
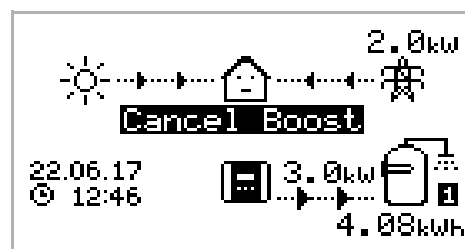
Boost Timer

eddi can be programmed to 'boost' the heating for each heater at certain times. Boost, means that the heater will be at full power regardless of the amount of available export power. This means that power may be drawn from the mains grid supply during boost times.

There are four editable time slots for each heater.

Setting the duration to `0h00` will make the boost inactive.

Programming Boost Times

1. From the main screen, press ✖ to enter `Main Menu`

2. Select `Boost Timer` by pressing ⬇ until the option is highlighted, then press ✔

3. Select the heater you wish to program the boost times for (e.g. `Heater 1`) and press ✔

4. The `BOOST TIMER` screen is then shown.

5. The boost can now be edited: Use ⬆ or ⬇ buttons to highlight the time slot you wish to change. The screen below shows the start hour being edited:

6. Alter the start hour with the ⬆ or ⬇ buttons and then press ✔ to move to minutes.

```
     BOOST TIMER
       Heater 1
 Start  Dur   Days
 07:30  1h30  MTWTF--
 08:00  0h15  MTWTF--
 12:00  0h00  -----SS
 17:00  0h00  -----SS
```

```
     BOOST TIMER
       Heater 1
 Start  Dur   Days
 07:30  1h30  MTWTF--
 08:00  0h15  MTWTF--
 12:00  0h00  -----SS
 17:00  0h00  -----SS
```

7. Edit the duration in the same way and then press ✔ again to edit the days of the week you want the boost to be active for; each day of the week and by toggled on/off with ⬆ or ⬇ buttons, press ✔ to go to the next day. Pressing ✔ on the last day (Sunday) will confirm the boost time slot and whole line will be highlighted again.

8. Press ✖ to exit the `BOOST TIMER` screen.
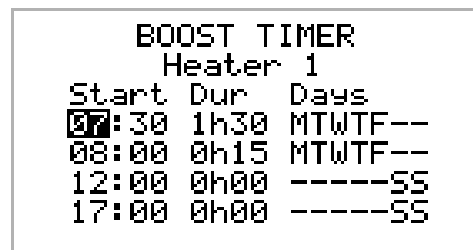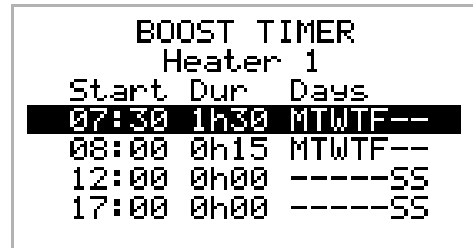
Economy Tariff Boosting

Boosting only when economy rate electricity is available can be achieved in one of three ways:

1. By setting the boost timer to coincide with the economy tariff times. This option should be used only if the electricity meter is a dual-rate meter (modern meters usually are).

2. Boost only at set times if economy rate electric is available.

3. Automatically boost whenever the economy tariff rate electricity is available, regardless of boost times.

Options 2 and 3 are available only when using the eSense input on the Relay & Sensor Board.

For option 1, the `eSense Input` in the `Relay & Sensors` menu option should be set to the appropriate `Boost Enable` setting.

With the `Boost Enable` function set, the `BOOST TIMER` screen will include an extra column (see screenshot). The **e** can be toggled on/off, if **e** is present, the boost will activate only when the boost times are valid and the economy rate tariff is available.

```
     BOOST TIMER
       Heater 1
 Start  Dur   Days
e 07:30 1h30  MTWTF--
- 08:00 0h15  MTWTF--
- 12:00 0h00  -----SS
- 17:00 0h00  -----SS
```
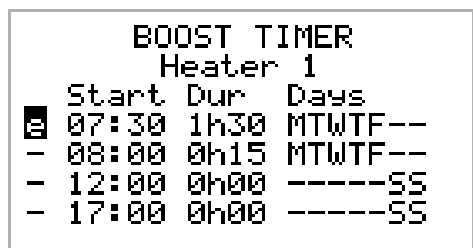
Alternatively the eSense input can be used to active the boost whenever the economy tariff rate electricity is available, regardless of boost times (option 2). To do this, the `eSense Input` in the `Relays & Sensors` menu should be set to `Boost 1`, `Boost 2` or `Boost 1&2.` When using this option, the Boost Timer is not needed.

Boost Time Conflicts

Both heaters cannot be active at the same time and so if the boost times are conflicting, the higher priority heater will take precedence. (See *Priority* on page 19).

If one or more boost times conflict for one heater, the boost will follow the latest time or longest duration.

Cancelling Boost

The boost can be cancelled by pressing twice during a boost.

Menus

Main Menu

Main Menu Options			Description
Savings…	Today:		Energy savings in kWhs over the relevant period. Only surplus diverted energy is included.
	Yesterday:		ALL = Total kWhs of surplus energy diverted to the heaters since installation
	This Week:		
	This Month:		
	This Year:		
	ALL:		
Readings…	READINGS 1/3	Status:	Current status of the unit
		Exporting: Importing:	Power being imported or exported, from or to the grid respectively
		Output [1]:	Power level in Watts currently being supplied to the heater output and the active heater number
		Output (PWM):	Pulse Width Modulation % - this equates to the output voltage; 100% = output voltage is same as supply voltage
		Output Current:	AC current going to the heater
		Heatsink Temp:	Temperature of the integral heat sink
	READINGS 2/3	Voltage:	Supply voltage to the unit
		Voltage Max:	Maximum supply voltage since switch-on
		Voltage Min:	Minimum supply voltage since switch-on
		Frequency:	Grid frequency
		Exporting: Importing:	Power being imported or exported, from or to the grid respectively
		Grid Current:	AC current at grid connection point, including reactive currents
	READINGS 3/3	Exporting: Importing:	Power being imported or exported, from or to the grid respectively
		Generation:	Power from the generator (if available)
		Consumption:	Power consumed by the house (if available)
		Diverting:	Total diverted power (inc. all devices)
		Output [1]:	Current power to the respective heater
Information…	INFORMATION 1/2	Status:	Status of the unit
		Serial No:	Serial number of the unit
		Firmware:	Firmware version installed in the unit
		Cal Date:	Factory calibration date
		Power Fail:	Time and date of last supply failure
	INFORMATION 2/2	Grid Sensor:	Grid current sensor source
		Last Fault:	Last recorded fault code
		Fault Date:	Date and time of last recorded fault code
	INFORMATION 3/3	Network ID:	Network information for this device when linked to other devices using RF network
		Device Address:	(Only shows if connected to other devices)
		Master Address:	
		Channel:	
		EUI:	
Linked Devices Info…			Status information from all linked devices
			See *Linking Devices* page 21 for details

operation and installation manual

Main Menu Options				Description
`Boost Timer…`	`Heater 1…`			Programmable boost times for heaters
	`Heater 2…`			
	`Relay 1…`			Programmable boost times for relays
	`Relay 2…`			These options are available only if the optional Relay & Sensor Board is installed
`Settings…`	`Time & Date…`	`Time:`		Set current time in 24 hour format
		`Date:`		Set date in Format (see below)
		`Format:`		Sets the date format
		`Auto DST:`		Automatic Daylight Saving Time adjustment
		`DST Zone:`		Set zone for Daylight Saving Time
	`Display…`	`Language…`		Set language for the main screen and menus
		`Icons…`	`Heater 1:`	Heater icon be be selected from several heater types
			`Heater 2:`	
			`Generation:`	Generation icon can be sun or wind
		`Backlight…`		Set the duration the display backlight remains on after a button press
		`Contrast…`		Set the display contrast
	`Priority…`	`Heater 1`		Sets which heater will be heated as a priority, the other heater will be heated only when the priority heater has reached maximum temperature
		`Heater 2`		
		`Check Period:`		When heating the lower priority heater, this is how often the priority heater is checked to see if it can store any more heat
	`Advanced…`			Advanced menu and settings (passcode protected) Default passcode: 0 0 0 0

Advanced Menu

Advanced Menu Options			Description
`Supply Grid…`	`Phase:`		Set the supply phase to use for this device – see *Advanced Settings* page 20 for more information
	`Exp Threshold:`		Level of export which must be seen before the eddi will start diverting power to the heater – see *Advanced Settings* page 20 for more information
	`Response Delay:`		Time before the eddi starts diverting after Export Threshold is exceeded – see *Advanced Settings* page 20 for more information
	`Export Margin:`		Minimum level of export power which is maintained when eddi is diverting surplus power – see *Advanced Settings* page 20 for more information
	`Grid Limit:`		Maximum grid import power limit. Output to heater is reduced to keep import below this level. This also applies when boosting – see *Advanced Settings* page 20 for more information
`Linked Devices…`	`Devices…`		Other myenergi devices can be wirelessly linked to eddi, this shows connected devices and their priorities. Settings for some devices are made here - See *Linking Devices* (page 21)
	`Pairing Mode…`		Puts this eddi in pairing mode so it can be linked to another device - See *Linking Devices* (page 21)
	`Add Device…`		Add a myenergi device to the 'network'. See See *Linking Devices* (page 21)
	`Channel…`	`RF Channel:`	Sets the radio frequency channel number used when linking other devices - See *Linking Devices* (page 21)

Menus

Advanced Menu Options			Description
	Reset Settings…		Clear all linked device settings. See *Linking Devices* (page 21)
CT Inputs…	CT 1:		Set the function of CT1 input **Note**: This must be set to 'Disabled' if the Grid Sensor is connected to Harvi
	CT 2:		Set the function of CT2 input
Test…	Heater 1…		Test Heater 1 is connected and working
	Heater 2…		Test Heater 2 is connected and working
	Grid Sensor (CT1)…		Test Grid Sensor for installation errors
	Generation Sensor (CT2)…		Test signal from Generation Sensor
Passcode…			The code required to access the Advanced menu
Restore Settings…	Restore Yesterday		Restore the configuration from the previous day
	Clear Data		Clear all savings data from memory
	Factory Reset		Restore configuration to factory defaults (savings data are unaffected unless Clear Data is also selected)
	Confirm		Confirm restore options and re-boot device

Relay & Sensor Menu

Relay & Sensor Board Menu (if installed)			Description
Relays & Sensors…	Temperatures…	Set Limit:	The target temperature for when using a PT1000 temperature probe connected to PT1/PT2 PT1 corresponds to Heater 1, PT2 is for Heater 2
		Hysteresis:	Sets the temperature drop required from Set Limit, before heating resumes
		Readings:	Current temperature readings of the probes
	Relay 1…	Disabled	Disable Relay 1 control (relay is always off)
		Export…	On Threshold:	When export power exceeds this threshold, the relay will operate
			Off Threshold:	When the export power is under this threshold the relay is switched off
			Inc Diverted:	Surplus power currently being diverted to the heater will be included as export for the thresholds above
			Min On Time:	When the On Threshold is exceeded and the Relay switches on, it will remain on for at least this time after the export drops below the Off Threshold
			Min Off Time:	When the export power exceeds the On Threshold the relay will operate only if it has been off for this amount of time
		Import…	On Threshold:	When import power exceeds this threshold, Relay 1 on the Relay & Sensor Board will operate
			Off Threshold:	When the import power is under this threshold the relay is switched off
			Min On Time:	When the On Threshold is exceeded and the Relay switches on, it will remain on for at least this time after the import drops below the Off Threshold
			Min Off Time:	When the import power exceeds the On Threshold the relay will operate only if it has been off for this amount of time
		Heating…	Heating 1	Operates Relay 1 when Heater 1 output is live
			Heating 2	Operates Relay 1 when Heater 2 output is live
			Heating 1&2:	Operates the relay when either Heater 1 or Heater 2 output is live

Relay & Sensor Board Menu (if installed)			Description
		Destrat 1	De-stratification pump control for Heater 1; the Relay 2 operates when **eddi** is trying to heat Heater 1 and the heater is at maximum temperature. After Check Period the relay will deactivate
		Destrat 2	De-stratification pump control for Heater 2; the Relay 2 operates when **eddi** is trying to heat Heater 2 and the heater is at maximum temperature. After Check Period the relay will deactivate
	Boost Timer		Relay 1 will operate as a programmable timed relay. There will be an extra Boost Timer option in the Boost Timer menu
	Fault Signal		Will de-activate the relay if a fault occurs
Relay 2…	Disabled		Disable Relay 2 control (relay is always off)
	Export…	On Threshold:	When export power exceeds this threshold, the relay will operate
		Off Threshold:	When the export power is under this threshold the relay is switched off
		Inc Diverted:	Surplus power currently being diverted to the heater will be included as export for the thresholds above
		Min On Time:	When the On Threshold is exceeded and the Relay switches on, it will remain on for at least this time after the export drops below the Off Threshold
		Min Off Time:	When the export power exceeds the On Threshold the relay will operate only if it has been off for this amount of time
	Import…	On Threshold:	When import power exceeds this threshold, Relay 2 will operate
		Off Threshold:	When the import power is under this threshold the relay is switched off
		Min On Time:	When the On Threshold is exceeded and the Relay switches on, it will remain on for at least this time after the import drops below the Off Threshold
		Min Off Time:	When the import power exceeds the On Threshold the relay will operate only if it has been off for this amount of time
	Heating…	Heating 1	Activates the Relay 2 when Heater 1 output is live
		Heating 2	Activates Relay 2 when Heater 2 output is live
		Heating 1&2	Operates Relay 2 when either Heater 1 or Heater 2 output is live
		Destrat 1	De-stratification pump control for Heater 1; the Relay 2 operates when **eddi** is trying to heat Heater 1 and the heater is at maximum temperature. After 5 mins the relay will deactivate
		Destrat 2	De-stratification pump control for Heater 2; the Relay 2 operates when **eddi** is trying to heat Heater 2 and the heater is at maximum temperature. After 5 mins the relay will deactivate
	Boost Timer		Relay 2 will operate as a programmable timed relay. There will be an extra Boost Timer option in the Boost Timer menu
	Follow Relay 1		Relay 2 will always be the same state as Relay 1
eSense Input…	Disabled		The eSense Input is disabled
	Boost…	Boost 1	If a voltage is present on the eSense Input, Heater 1 will be boosted. The boost will end when there is no longer a voltage present
		Boost 2	If a voltage is present on the eSense Input, Heater 2

Relay & Sensor Board Menu (if installed)				Description
18				will be boosted. The boost will end when there is no longer a voltage present
			Boost 1&2	If a voltage is present on the eSense Input, the highest priority heater will be boosted. If the eSense Input still has a voltage present after the heater reaches maximum temperature, the other heater will be boosted. The boost will end when there is no longer a voltage present on eSense Input
		Heater Enable…	Heater 1	The eSense input will act as an thermostat for Heater 1; the heater will only be able to be heated when eSense has a voltage present
			Heater 2	The eSense input will act as an thermostat for Heater 2; the heater will only be able to be heated when eSense has a voltage present
			Heater 1&2	The eSense input will act as an thermostat for both Heater 1 and Heater 2; the heaters will only be able to be heated when eSense has a voltage present
		Boost Enable…	Boost Enable 1	The eSense input will act as an enable for the Boost Timer for Heater 1. The Boost Timer has an additional parameter 'e', when this option is set See *Boost Timer* page 12
			Boost Enable 2	The eSense input will act as an enable for the Boost Timer for Heater 2. The Boost Timer has an additional parameter 'e', when this option is set See *Boost Timer* section for more details
			Boost Enable 1&2	The eSense input will act as an enable for the Boost Timer for Heater 1 and 2. The Boost Timer has an additional parameter 'e', when this option is set See *Boost Timer* page 12

Configuration

Settings

All settings are described in the *Main Menu* section, however, the more commonly altered settings are described in more detail below.

Time & Date

The date and time are used for the Boost Timer and the savings calculations and therefore should be set correctly.

In the event of a power-cut, **eddi** will still keep track of the time and date for a few days, so when power is restored the clock will not need to be reset.

Time is always in 24-hour format but the date format can be changed.

eddi will automatically adjust the clock for Daylight Savings Time (DST) as long as `Auto DST` is enabled and the correct time zone is selected.

Priority

The priority for heater outputs can be set to `Heater 1` or `Heater 2`. The priority heater will be heated first with the surplus power and only when fully heated will **eddi** start to divert power to the lower priority heater.

eddi will switch back to the priority heater if it has cooled and the thermostat for the heater is closed.

When heating the lower priority heater, the `Check Period` sets how often the priority heater is checked to see if it can store any more heat.

If the Relay & Sensor Board is installed and temperature probes are used, **eddi** will immediately switch back to the priority heater if the temperature drops by more than the set `Hysteresis`. The `Hysteresis` can be set in the `Temperatures` menu of the `Relays & Sensors` menu option.

Icons

The heater icons shown on the main screen can be individually set for both heater outputs. This gives an installation specific, graphical representation which heater is active. For example; Heater 1 could be a hot water cylinder and Heater 2 could be a radiator.

As well as being able to customise the heater icons, it's also possible to change the generation type from solar to wind.

Advanced Settings

Supply Grid - Phase

The `Phase` setting is only used on 3-phase systems.

It should be set to match the phase number that the **eddi** is wired to so that the power measurements are correct and that the **eddi** responds to the correct phase when using the **harvi** wireless sensor.

An alternative setting is `ALL`, this tells the **eddi** to consider export power as available surplus irrespective of which phase the export power is actually on. This setting should be used only if you are sure the electricity meter is measuring the combined net power across the three phases.

Supply Grid – Exp Threshold

This is the amount of export that must be exceeded before **eddi** starts diverting power to the heater loads. Once diverting starts all the surplus power, less the `Export Margin` (see below) will be diverted to the heater load.

Supply Grid – Response Delay

This setting gives a delay before **eddi** starts to divert power (after the `Export Threshold` is exceeded).

The default setting is `0s` (zero seconds), however, if there is an AC-side battery storage system installed at the property, this may need to be increased. For example, the storage system will be trying to charge the batteries with the surplus power, but because **eddi** is very fast, the surplus power would have already been taken-up by **eddi**. This may be undesirable as it would usually make more economic sense to store the energy in the batteries as priority. By introducing a small `Response Delay` (say 5 seconds), the battery system is given chance to respond before **eddi** does.

Supply Grid – Export Margin

This sets a minimum level of export power which is maintained when **eddi** is diverting surplus power to the heaters. Normally `Export Margin` would be set to `0W` (zero Watts) and all of the available surplus will be diverted to the heaters, however, it is sometimes desired to have a minimum export level at all times.

Supply Grid – Grid Limit

Ordinarily the Grid Limit would be set to `OFF`, in some cases however, limiting of the grid import level can be an advantage.

For example a property may have a grid supply limit of 12kW and several appliances are on and the property is consuming 10kW by other appliances and the user wants to boost the water heating. If the water heater is rated at 3kW, the total consumption would exceed the allowed import. However, with a `Grid Limit` setting of `12kW`, **eddi** would limit the power to the heater to 2kW and the maximum allowed import power will not be exceeded.

CT Inputs

The CT1 and CT2 inputs are configured depending on the connected sensors.

CT1	Description
Disabled	CT1 is not connected this settings is used if the Grid Sensor is wired to a harvi device or if the **eddi** is acting a a slave unit
Grid	CT1 input is wired to the Grid Sensor

CT2	Description
Disabled	CT2 is not connected
Generation	CT2 input is wired to a Generation Sensor
Battery	CT2 is monitoring a battery storage system
Load	CT2 is monitoring a load

Linking Devices

Up to six **myenergi** devices can be wirelessly linked to together. By linking more devices, you can use more of your own energy or have more control and visibility. Devices available now or soon to be available are:

zappi – An eco-smart electric vehicle charge point that can use surplus power to charge the car
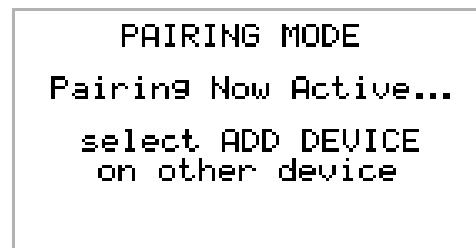
harvi – An self-powered wireless sensor that can be used along with **myenergi** load controlling devices such as **eddi** and **zappi** and is able to report the grid or generation power information to the other devices wirelessly, this can greatly simplify installation.

hub – The link between your **myenegi** devices and the internet, allowing remote monitoring and control

Adding Devices

Adding a device is simple, it involves putting one device in `Pairing Mode` and selecting `Add Device` on another unit.

1. Navigate to the `Linked Devices` menu by selecting `Settings`, then `Advanced` and then `Linked Devices`.

2. The device you want to add needs to be in Pairing Mode. This is done by either pressing the pair button or by selecting `Pair Mode` on the screen (depending on the actual device).

3. On the already installed load controlling device such as the **eddi** or **zappi**, select `Add Device` in the `Linked Devices` menu which is found the `Advanced Settings` menu.

4. You will now see the `ADD DEVICE` screen and **eddi** will be searching for other devices which are on the same channel and are in Pairing Mode. Any devices found are listed along with their unique serial numbers.

5. Select the device you want to add by highlighting the appropriate device using the ⬆ and ⬇ buttons and then pressing ✅ The device will then be added and the screen will return to the previous menu.

```
   PAIRING MODE
Pairing Now Active...

  select ADD DEVICE
    on other device
```

```
   ADD DEVICE    o●o
harvi...    12345678
zappi...    24680246
```

Channels

On rare occasions it is possible that there are other appliances operating on the same frequency which could cause interference. If it is not possible to link devices or the connection seems poor, changing the RF Channel may help. To do this make sure all devices are removed from the network by selecting `Reset Settings` in the `Linked Devices` menu and then select a different channel with the `Channel` menu option. Be sure to change the channel on the other devices before attempting to link them.

Removing Devices

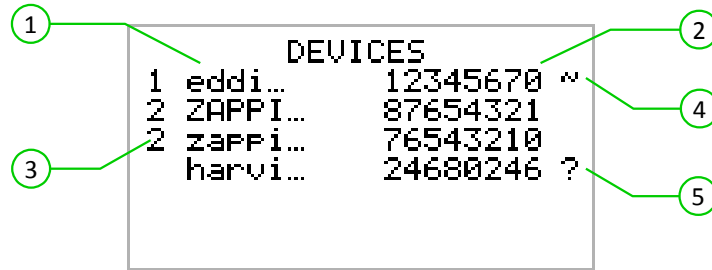A device can be removed by selecting it from the `Devices` menu and then selecting `Remove Device`.

Device Settings

Most device types have settings which can only be changed via the `Linked Devices` menu. For example, **eddi** and **zappi** have a settings for priority and **harvi** has settings to configure its CT inputs (see *Device Priorities* page 22).

The device settings are accessed through the `Linked Devices` menu; select `Devices` then select the appropriate device and press ✅ to bring up the devices' settings screen. Refer to the relevant devices' instruction document for more information regarding the actual device settings.

Configuration

Device Priorities

The priority of each, load controlling linked device, can be set from any device with a display. This enables control of how the surplus energy is shared between them. The example below shows one **eddi** device, two **zappi** devices and one **harvi** on the same 'network'.

```
        DEVICES
1 eddi…      12345670 ~
2 ZAPPI…     87654321
2 zappi…     76543210
  harvi…     24680246 ?
```

All linked devices (1) are listed in the **DEVICES** screen, the device shown in CAPITAL letters is the device currently being viewed. The serial number of each device is shown on the right (2)
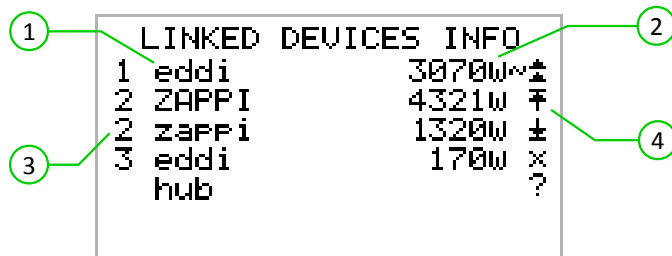
The priority is shown on the left of each load controlling device (3) with 1 being the highest priority. If two or more devices have equal priority, the available surplus (for that priority level) is shared equally between them.

The **~** symbol (4) indicates which device is the 'master' device which has the Grid Sensor connected to it.

If the **?** symbol (5) is shown along side a device, it indicates that communication has been lost from the device.

Linked Devices Information

The current status of all linked devices, can be viewed together in the **LINKED DEVICES INFO** screen which can be found from the **Main Menu**.

```
  LINKED DEVICES INFO
1 eddi       3070W~±
2 ZAPPI      4321W  ∓
2 zappi      1320W  ±
3 eddi        170W  ✕
  hub               ?
```

This screen lists all the linked devices (1) and the priority setting for each device (3) The current device is shown in CAPITAL letters. To the right of each device is the real-time output power level (2) The right side of the screen has symbols to show the status of each device (4) Refer to the table below for the meaning each symbol.

|	
ℕ	Master device – the controlling device in the linked system
♦	Boost – the device is currently boosting
∓	Max – the device is at maximum output power
±	Min – the device is at minimum controllable output power
✕	No Load – the device is not able to use surplus power as there is no load
?	Communication problem – there is no response from the device

Installation

Mounting

- **eddi** is NOT suitable for installation outdoors.

- Ensure the device always has adequate ventilation; do not block the vents or obstruct the airflow at the back of the unit.

- **eddi** must be fixed to a vertical surface

The **eddi** needs to be securely mounted to a wall using the dedicated mounting bracket which comes attached to the unit.

1. With the unit on its back on a flat surface, remove the front cover by unscrewing the two screws 1 and lifting it off.
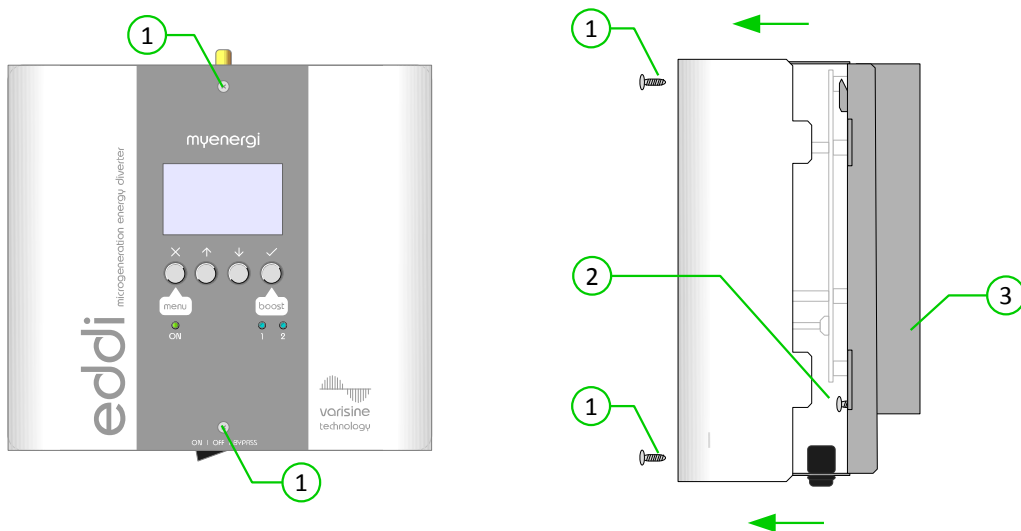
2. Loosen the two mounting bracket securing screws 2 and separate the bracket 3 from the **eddi**.

3. Offer the bracket up to the wall and mark the holes for drilling. If fixing to a timber stud wall, you can use the two central vertically aligned fixing points to screw the bracket directly into the timber.

Clearances

Installation
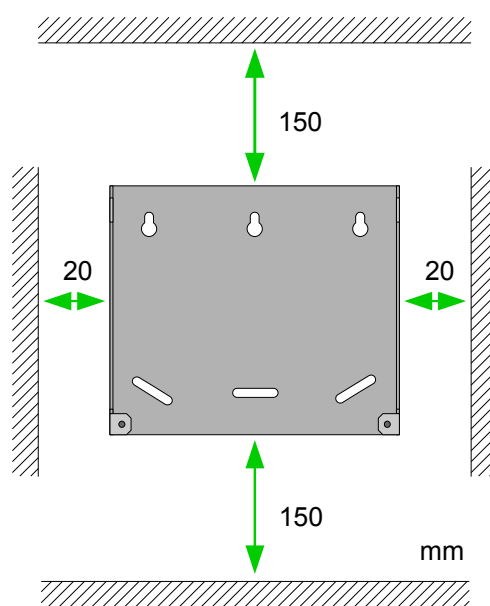
Wiring

Warnings

⊘ WARNING! An electric shock can be fatal; electrical connection work may only be carried out by a competent person

⊘ The earth conductor must be correctly installed and reliably connected

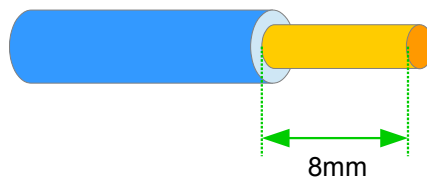⊘ This device must be equipped with an over-current protection device of maximum 16 Amps (B16)

⊘ Only purely resistive loads must be connected to the Heater output terminals

Strip Length

8mm

Overview Diagram

The diagram on the following page gives an overview of the basic wiring with respect to the grid supply and the microgeneration system.

Also refer to the *Application Examples* (page 31) for full wiring schematics.

Supply

The **eddi** device should be connected to a single-phase 230V or 240V nominal AC supply. The supply should be from a dedicated 16A circuit breaker, or it can be from a hard-wired 13A fused spur outlet if the heater load is less than 3kW.

Heater Loads

Most purely resistive heaters can be used with eddi, examples include immersion heaters, storage heaters, convection heaters and underfloor heating mats. Refer to the Application and Examples section for wiring diagrams using different heater types. Whichever heater type is used, the following criteria must always be observed:

- One or two purely resistive loads may be connected (Note: only one is live at any one time)
- Maximum rating of each load is 3.68kW
- Minimum heater rating is 150W
- Resistive loads only
- Heater Neutral conductor must be connected to heater output N terminal
- No electronic controls to be connected to Heater terminals; mechanical thermostats only
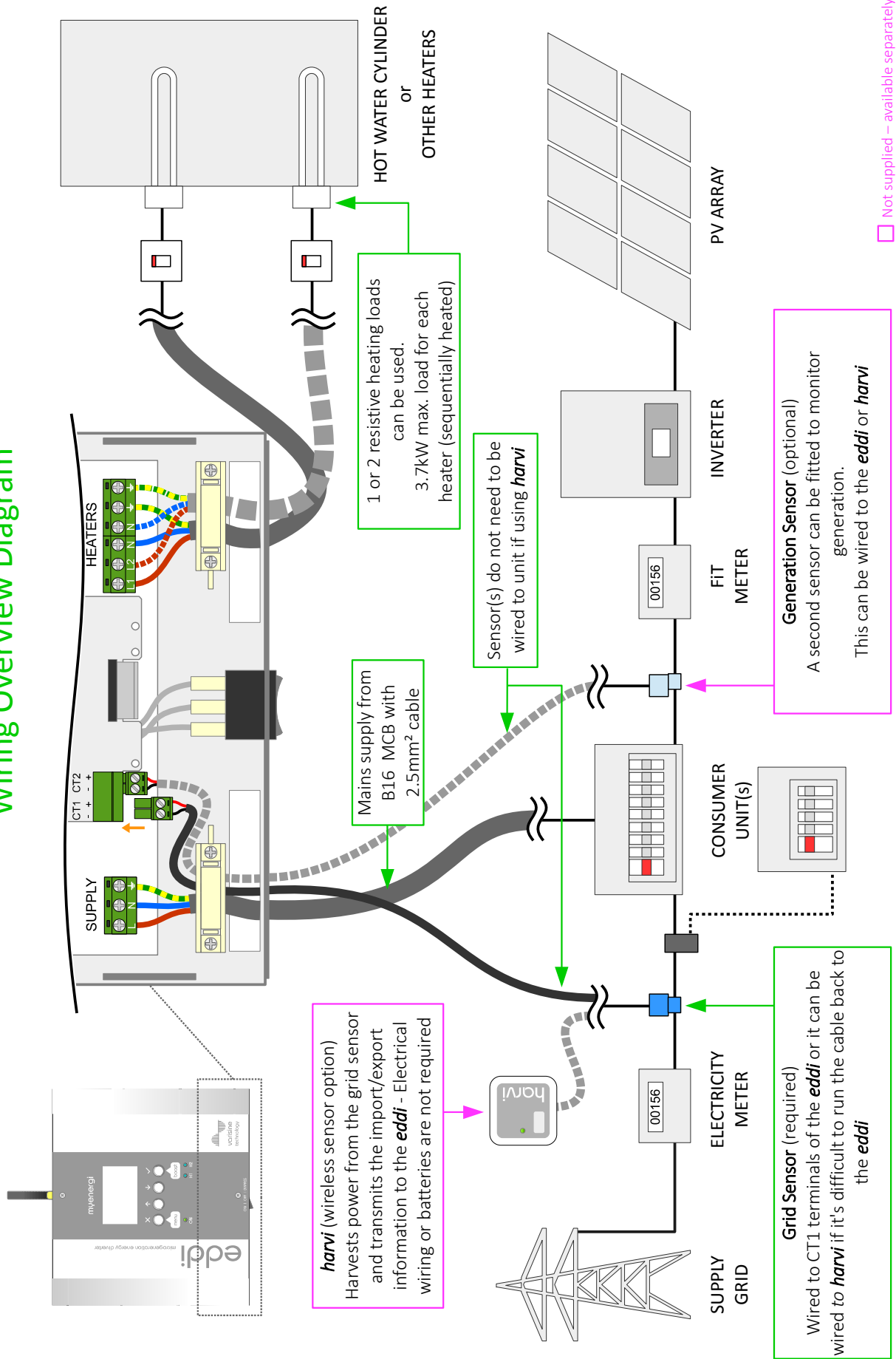- No timers to be connected to Heater terminals, including mechanical timers

Cable Clamps

If using flexible cables or cables not secured by other means, the cable clamps must be used to secure the supply and heater cables.

Wiring Overview Diagram

The diagram on the following page gives an overview of the wiring required for a standard installation with the **eddi** connected to one or two heaters.

Wiring Overview Diagram

HOT WATER CYLINDER
or
OTHER HEATERS

PV ARRAY

Not supplied – available separately

HEATERS

1 or 2 resistive heating loads can be used.
3.7kW max. load for each heater (sequentially heated)

INVERTER

Generation Sensor (optional)
A second sensor can be fitted to monitor generation.
This can be wired to the *eddi* or *harvi*

Sensor(s) do not need to be wired to unit if using *harvi*

FiT METER

00156

CT1 CT2

Mains supply from B16 MCB with 2.5mm² cable

SUPPLY

CONSUMER UNIT(s)

harvi (wireless sensor option)
Harvests power from the grid sensor and transmits the import/export information to the *eddi* - Electrical wiring or batteries are not required

harvi

00156

ELECTRICITY METER

Grid Sensor (required)
Wired to CT1 terminals of the *eddi* or it can be wired *to harvi* if it's difficult to run the cable back to the *eddi*

SUPPLY GRID

myenergi

eddi
microgeneration energy diverter

Installation

Sensor Installation

Grid Sensor Installation

The grid sensor (supplied) needs to be clipped around the either the Live or Neutral meter tail of the electricity supply meter. If using the Neutral conductor, reverse the direction on the sensor.

The positioning of the sensor is crucial, take note of the following when deciding where best to install the sensor:

- ✔ Can be connected to either the **eddi** (wired sensor) or **harvi** (wireless sensor)

- ✔ ALL of the import and exported power must be 'seen' by the sensor – be sure to install it upstream of ANY junction box or 'Henley Block' (if can fitted inside the consumer unit)

- ✔ The arrow on the bottom of the sensor must be pointing towards the consumer unit

- ✔ Ensure the sensor is fully closed and clicks shut

- ✔ Wire to the **CT1** connector of the **eddi**; black [–] and red [+]
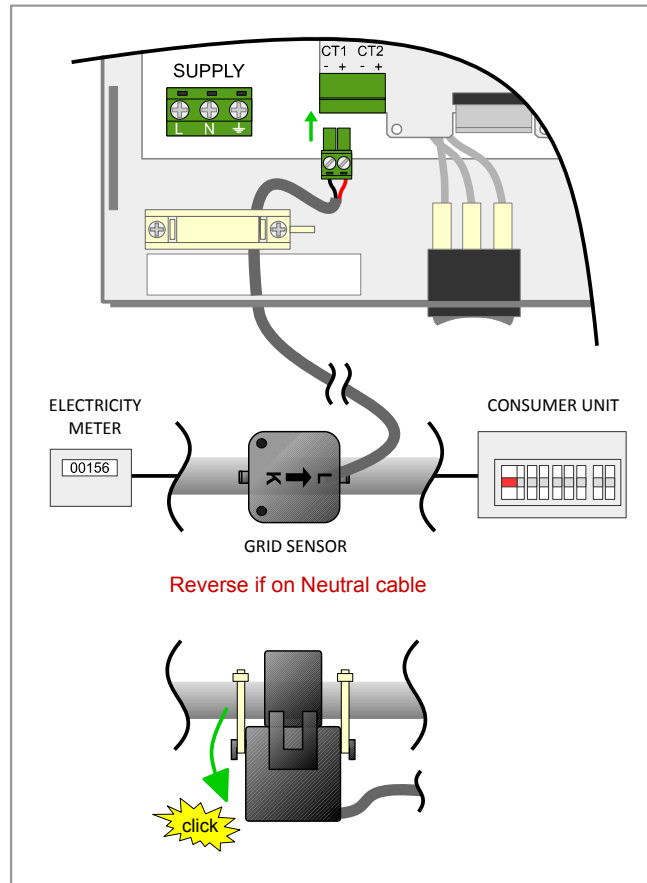
Extending the sensor cable

If there is a need to extend the sensor cable, twisted-pair cable like CAT5 or telephone cable must be used. DO NOT use mains cable, bell wire or speaker cable. It is important to use only twisted-pair cable to maintain signal integrity. The cable can be extended up to 100m.

Three-Phase Systems

If the supply is three-phase, the **eddi** device and its Grid Sensor must be on the same phase.

If the generation is also three-phase and it is desired to consume surplus power on each phase, 3 eddi units can be installed provided there are suitable loads. Note: it is usually possible to split a 3-phase heating element into 3 individual elements by removing the links.

It is possible to net the export power across phases if using the **harvi** with three Grid Sensors. This allows the eddi to use surplus power from any phase and not just the phase which the **eddi** is installed on. However, you must be sure that the electricity is metered in such a way as to allow this.

Voltage Optimisers

If there is a voltage optimiser (VO) installed at the site, the sensor and the **eddi** must both be on the same side of the VO; either the incoming grid supply or the optimised supply.

Battery Storage Systems

Where there is an AC-side battery battery storage system, there can be a conflict as both the storage system and the **eddi** are effectively competing to consume the surplus energy. Whilst this is not necessarily an issue, the results can be somewhat unpredictable.

There is the option to add an additional sensor to monitor the battery storage; this will give control as to which device has priority. This additional sensor should be wired to CT2 terminals of the **eddi** or a **harvi** device if wireless is required. And it should be clipped around the live or neutral cable from battery inverter. (See page 27) . During the setup process it will be necessary to change the setting for CT2; refer to *CT Inputs* on page 20 for details of the available settings.
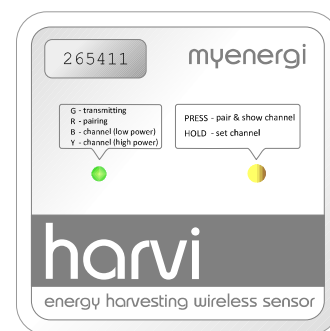
Wireless Sensor Installation (optional accessory)

In some cases it can be difficult or impractical to install a wired sensor. For example it may be the case that the **eddi** unit needs to be connected to a sub-board, rather than main consumer unit and two consumer units are in different buildings.

The solution to is to install **harvi** – a clever little device that enables the **zappi** and **eddi** products to be installed without using wired sensors for measuring the grid and or generation power; instead the sensor is connected to **harvi**. No power source is needed for **harvi** – the energy from the sensor is harvested and used to transmit the measurement signal to the **zappi** or **eddi**. This means batteries or electrical wiring are eliminated!

Up to 3 sensors may be used with **harvi** so one device can be used with Grid and Generation Sensors, it also supports 3-phase systems if three sensors are connected.

Refer to the harvi installation guide for details on installing and configuring **harvi** for your system.

Generation Sensor Installation (optional accessory)

There is an option to add an additional sensor (available separately) for monitoring the generation. When this sensor is installed the main screen will detail the generated power and the total power consumption of the all the other appliances in the property.

The positioning of the sensor is crucial, take note of the following when deciding where best to install the sensor:

✔ Can be connected to either the **eddi** (wired sensor) or **harvi** (wireless sensor)

✔ The arrow on the bottom of the sensor must be pointing towards the consumer unit

✔ Ensure the sensor is fully closed and clicks shut

✔ Wire to the **CT2** connector of the **eddi**; black [−] and red [+]
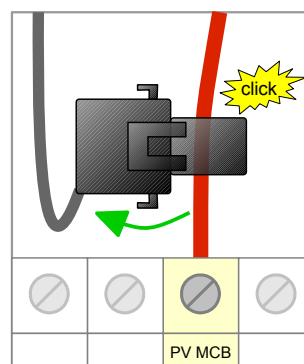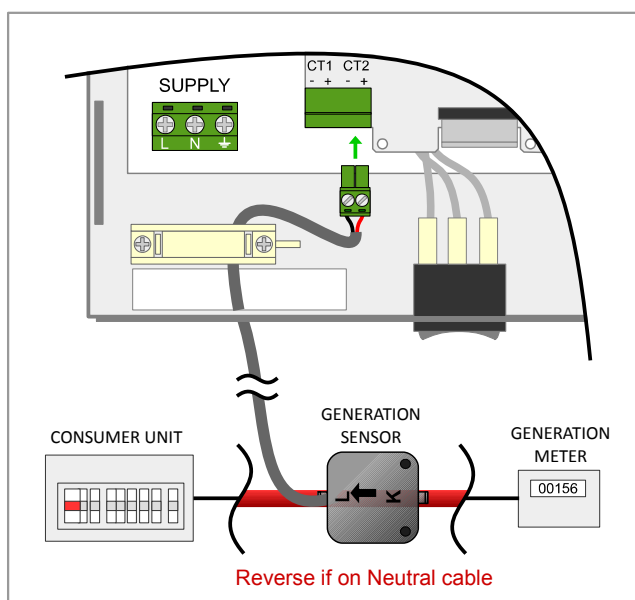
Relay & Sensor Board

eddi has the option to install a Relay & Sensor Board (available separately), this allows for many different wiring configurations and includes the following features:

- Two independent multifunction relays (16 Amp)

- eSense input (isolated 230V detection for low tariff etc.)

- Two temperature sensor inputs (PT1000)

The two relays can be independently set to for several different functions, or they can be set to operate as a pair. The relay functions include:

- Export Threshold

- Import Threshold

- Operate when heating

- De-stratification pump control

- Timed operation

- Fault signal for BMS systems

Refer to *Application Examples* in this guide and *Relays & Sensors Menu* for practical examples and function descriptions.

Relay & Sensor Board Installation
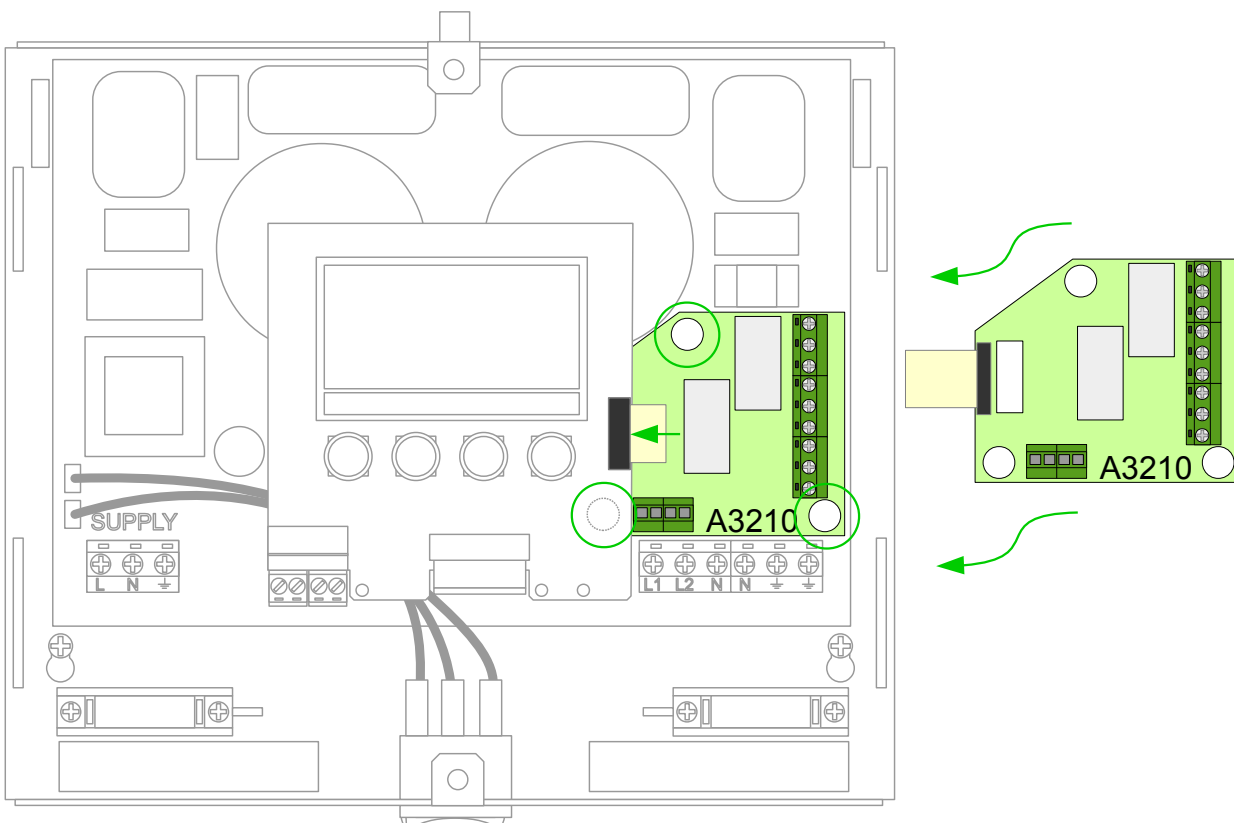
The Relay & Sensor Board is installed by plugging it into the **eddi** main circuit board using the three plastic spacers included with the Relay & Sensor Board.

The flexible ribbon cable is then pushed into to black connector to the left side of the display on the top **eddi** circuit board.

Fitting the Cover

Refit the cover and secure with the two M3x12 screws (2). Ensure the locating tabs (1) are correctly positioned inside the slots on the chassis before the cover is screwed on.

Fitting the Cover

Installation
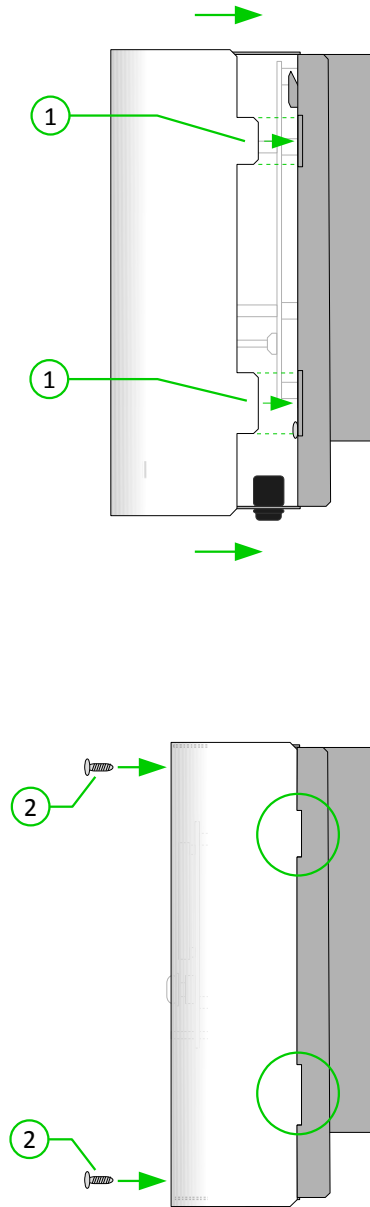
Setup

Switching On

After completing and checking the wiring of the supply, the heater(s) and the sensor(s), switch on the **eddi** via the circuit breaker or fused spur.

If it's not already on – switch the Bypass Switch (underneath the **eddi**) to the ON position.

eddi will start-up and will prompt for the language and time and date to be set. Refer to the *Configuration* section on page 19 for further guidance.

The main screen will then be presented and **eddi** will be set to operate as in *Application Examples 1: Single Element Water Heater* (page 31) If the application differs, refer to the specific application example for details of settings that may need to be changed.

If **eddi** has been installed alongside another **eddi** unit or another **myenergi** device, refer to *Linking Devices* (page 21) for guidance on pairing devices. Also refer to the instruction documentation for the other devices.

Testing

Before leaving site, it is wise to perform a few checks to ensure that the sensors and heaters have been correctly installed and are functional.

1. Test the heaters by trying a manual boost (see page 11), and check the power reading on the screen for heater corresponds to the heater rating.

2. Cancel the boost by pressing the ✓ button twice during the boost.

3. When eddi is diverting surplus power to the heater, the grid power figure (above the pylon symbol) should be `0.0kW`). *Note; however, if the surplus power exceeds the rating of the heater then this cannot be achieved and some export power will be observed.*

   If power is being imported from the grid when the eddi is in `Heating` mode, it is likely that the Grid Sensor is improperly installed - see *Grid Sensor Installation* on page 26.

4. If a Generation Sensor has been installed, the generated power will show at the top left of the main screen.

   If the generation reading is missing, the most likely cause is the **CT2** input is not enabled – see *CT Inputs* on page 20. Or, if the Grid Sensor is instead wired to a **harvi** ensure the device settings are correct – see *Device Settings* on page 21.

Application Examples

The following wiring diagrams show some suggested applications and are examples only; there are many more possibilities.

Please refer to the *Safety* section (page 4) and be sure to read all of the installation sections before attempting to install the eddi.

A good level of electrical competence and a reasonable understanding of domestic plumbing systems is assumed for studying these application examples.

Contact your technical support if in any doubt.

1: Single Element Water Heater

operation and installation manual
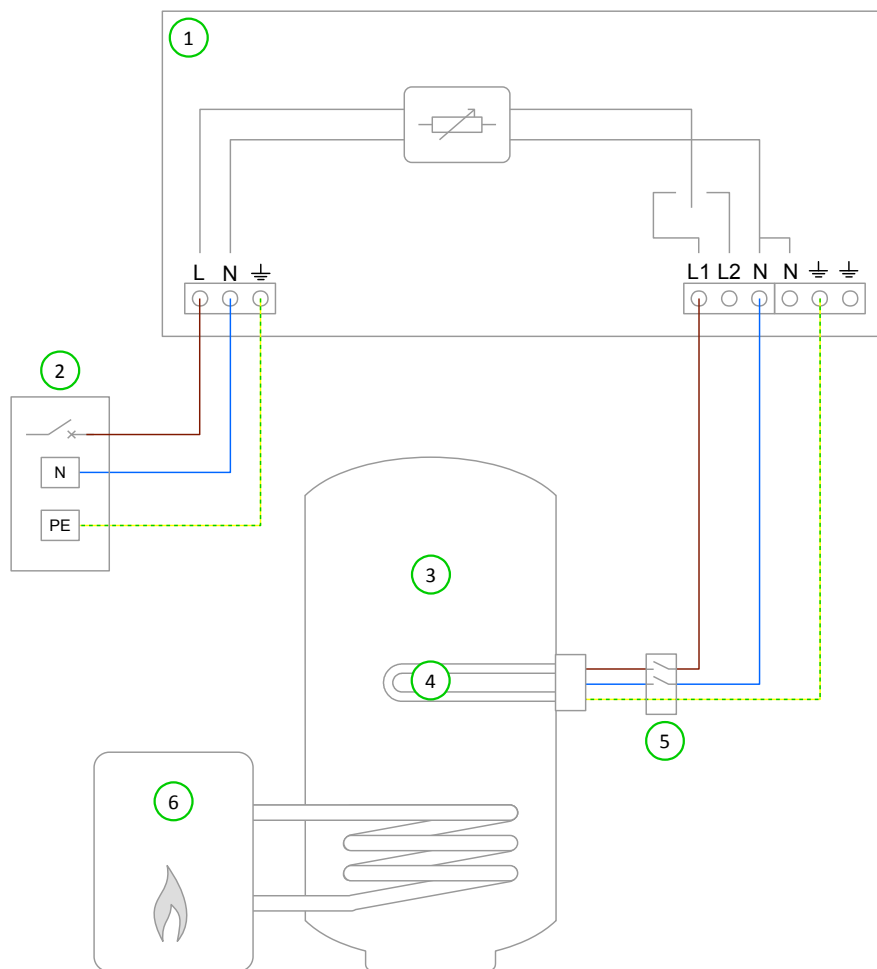
Key for Wiring Diagram 1

(1) eddi device

(2) Mains supply (230V AC from B16 circuit breaker or 13A fused spur)

(3) Hot water cylinder

(4) Heating element 1 (max. 3.7kW)

(5) Isolator (20A double pole)

(6) Auxiliary water heating boiler

Functional Description

This is the most simple installation and the most common.

A single heater is wired to the Heater 1 output.

The water in the cylinder (3) is heated with only surplus power until the thermostat has opened, the eddi will display `Max Temp Reached` and the surplus power will then be exported until the water cools, heating will then resume.

An auxiliary heat source (e.g. a gas boiler) is set to heat the water either early in the morning or later in the evening, depending on the home owners' lifestyle. Heating the water during times of generation (e.g. daylight hours) is best avoided to allow maximum capacity for the surplus energy.

This is the default configuration for eddi; the settings do not need to be altered for this application.

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Water Top / Water Bottom
				Heater 2:	None
		Priority…			Heater 1

Application Examples

2: Dual Element Water Heater
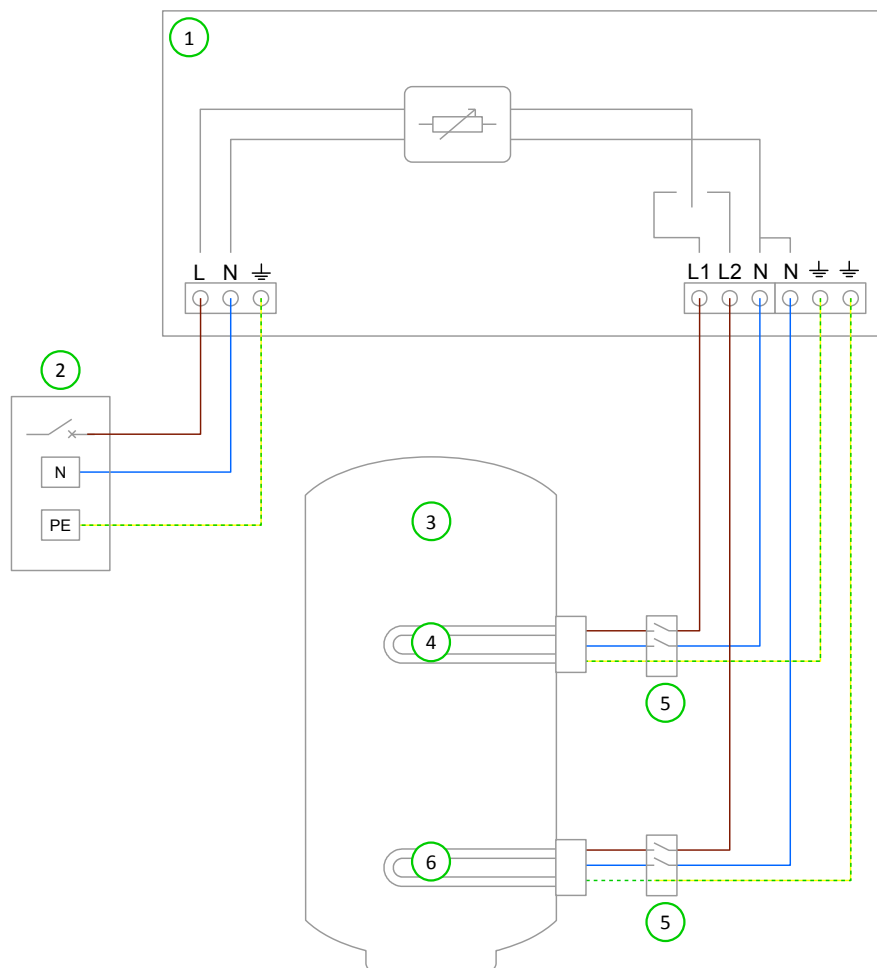
Key for Wiring Diagram 2

① eddi device

② Mains supply (230V AC from B16 circuit breaker or 13A fused spur)

③ Hot water cylinder

④ Heating element 1 (max. 3.7kW)

⑤ Isolator (20A double pole)

⑥ Heating element 2 (max. 3.7kW)

Functional Description

Electric only households tend to have a hot water cylinder with two immersion heaters, this is perfect for **eddi** as it can support heating two heaters sequentially.

Heater 1 (the top immersion heater) (4) is heated with surplus power until the water at the top of the cylinder is hot and the thermostat opens, then **eddi** will immediately switch over to Heater 2 (6); heating the bottom of the cylinder. This makes the most of surplus energy as sometimes there will not be enough to heat the whole volume of the cylinder; it's best to heat a smaller proportion (i.e. the top) first so there is some usable hot water, rather than a larger volume of warm water.

During heating of the lower priority heater (Heater 2), **eddi** will switch back to the higher priority heater (Heater 1) every 15 mins to check if it can store any more heat.

When the water is fully heated, any surplus power will be exported, **eddi** will switch back the priority heater and check the lower priory heater every 15 mins.

The heating priority can be changed in the `Main Menu` (`Priority`).

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Water Top
				Heater 2:	Water Bottom
		Priority…			Heater 1

3: Economy Tariff with Dual Rate Meter
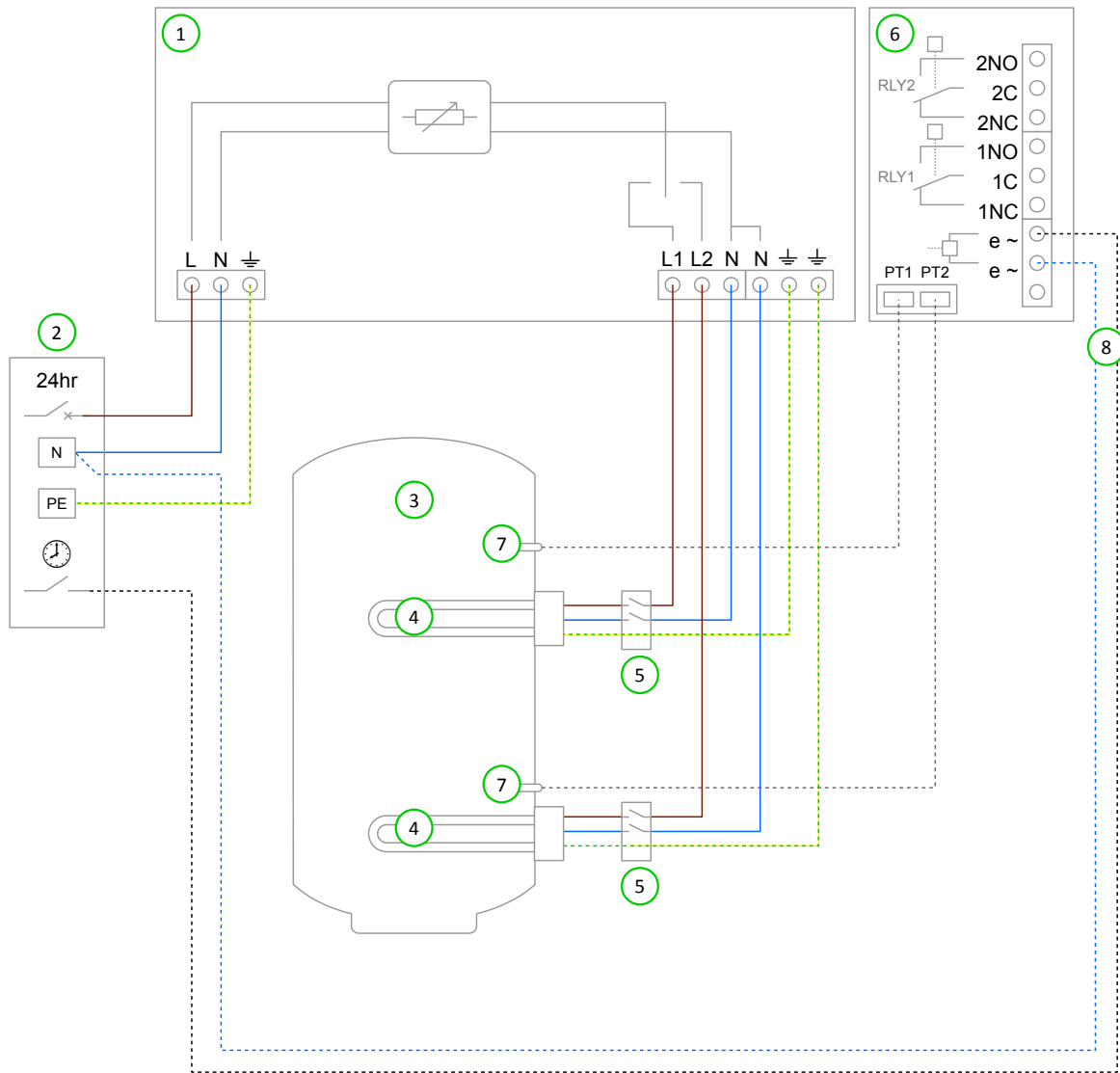
Key for Wiring Diagram 3

① eddi device

② Mains supply (230V AC from B16 circuit breaker or 13A fused spur)

③ Hot water cylinder

④ Heating element (max. 3.7kW)

⑤ Isolator (20A double pole)

⑥ Relay & Sensor Board (optional add-on for eddi)

⑦ Temperature probe (type PT1000) (optional)

⑧ Economy rate electric sense wiring (live only when economy rate is available)

Functional Description

It is common for electric only households to employ dual tariff billing. This application enables automatic heating of water when the economy tariff is available whilst also using any surplus generated power to heat the water.

The economy rate electricity can be time based or random, in either case, eddi be be set to heat the water at the economy rate whenever possible, or at the economy rate only during certain times.

Heater 1 (the top immersion heater) (4) is heated with surplus power until the water at the top of the cylinder is hot and the thermostat opens, then eddi will immediately switch over to Heater 2 (6); heating the bottom of the cylinder. This makes the most of surplus energy as sometimes there will not be enough to heat the whole volume of the cylinder; it's best to heat a smaller proportion (i.e. the top) first so there is some usable hot water, rather than a larger volume of warm water.

During heating of Heater 2, eddi will switch back to Heater 1 every 15 minutes to check if it can store any more heat.

When the water is fully heated, any surplus power will be exported, eddi will switch back the priority heater and check the lower priory heater every 15 minutes.

If `eSense Input` is set to `Boost Enable 1&2`, the BOOST TIMER screen for either heater will include an option to enable the boost timer only when the eSense input is live. In the BOOST TIMER, the **e** can be toggled on/off, if **e** is present, the boost will activate only when the boost times are valid and the economy rate tariff is available.

Alternatively the eSense input can be used to active the boost whenever the economy tariff rate electricity is available, regardless of boost times. To do this, `eSense Input` should be set to `Boost 1&2`. When using this option, the Boost Timer is not needed.

If automatic sensing of economy rate times is not needed, the boost timer can be simply set to coincide with the economy tariff times. In this case the Relay & Sensor Board (6) and the eSense wiring (8) are not required.

Installation of the temperature probes (7) is optional; the heaters' mechanical thermostat is used by eddi if temperature readings are not required.

The eddi device should be labelled with a "dual supply" warning.

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Top Immersion
				Heater 2:	Bottom Immersion
		Priority…			Heater 1
Advanced Menu…	Relays & Sensors…	Temperatures…			Set Temperatures as required if using temperature probes
		eSense Input…	Boost…		Boost Enable 1&2/ Boost 1&2

4: Economy Tariff with Separate Meters (Heater 1)
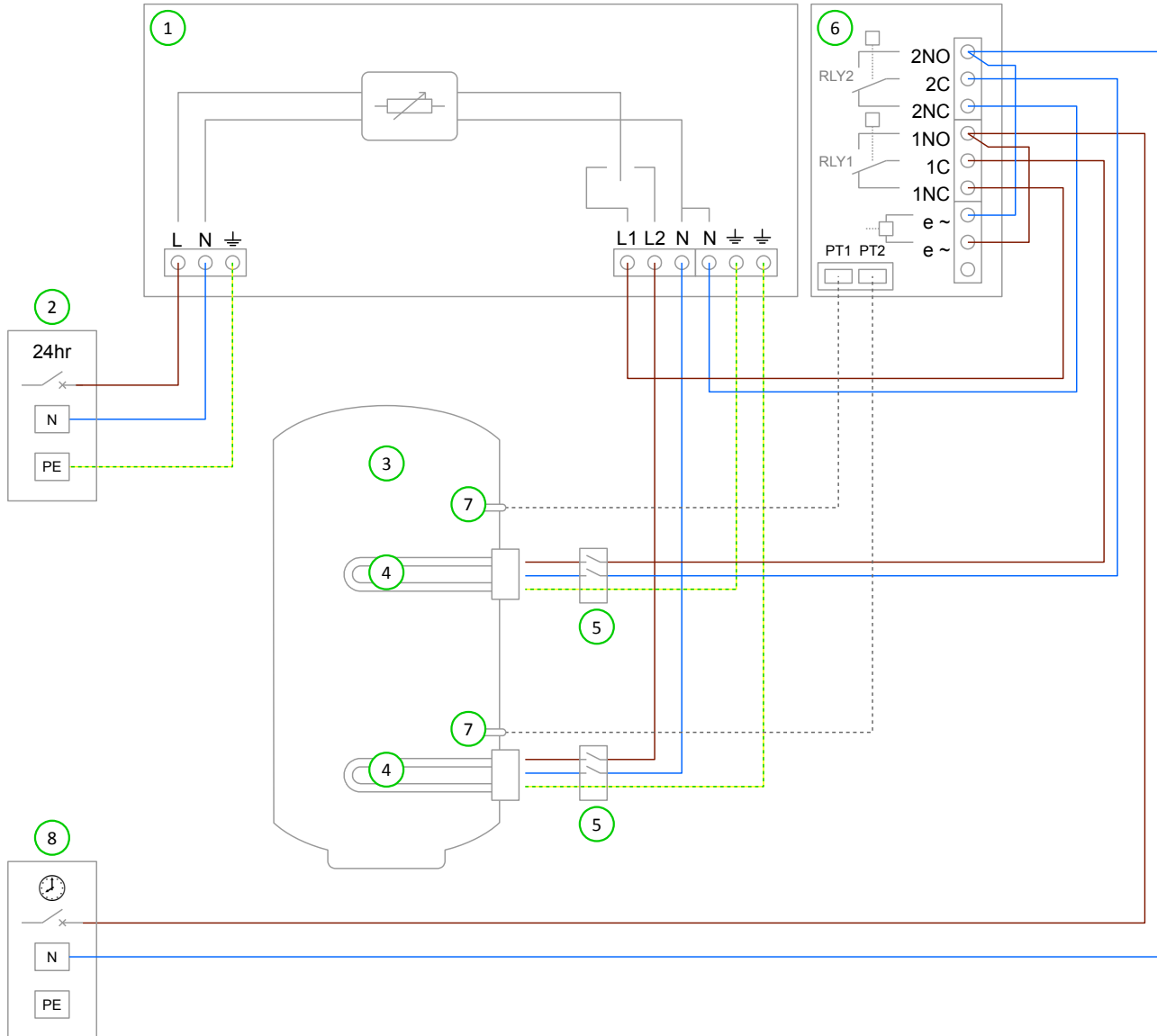
Key for Wiring Diagram 4

① eddi device

② Mains supply (24hr) (230V AC from B16 circuit breaker or 13A fused spur)

③ Hot water cylinder

④ Heating element (max. 3.7kW)

⑤ Isolator (20A double pole)

⑥ Relay & Sensor Board (optional add-on for eddi)

⑦ Temperature probe (type PT1000) (optional)

⑧ Mains supply (off-peak timed) (230V AC from B16 circuit breaker or 13A fused spur)

Functional Description

Some electric only households that employ dual tariff billing use two separate electricity meters; one is live for 24 hours and the other is off-peak timed and bills at the economy rate. Only some appliances are connected to the off-peak supply (usually water heaters and storage heaters).

This application enables automatic boosting of water heating when the economy tariff is available whilst also using any surplus generated power to heat the water. Both the top and bottom immersion heaters can use surplus power and be boosted with peak rate electricity. However, only Heater 1 can be boosted with off-peak electricity (See page 40 if it desired to have Heater 2 boost using off-peak power).

eddi is powered from the 24-hour supply and the bottom immersion heater is wired directly to Heater 2 output. During the economy tariff times, power needs to be drawn from the off-peak tariff meter, to achieve this the top immersion heater is switched from the eddi Heater 1 output and the off-peak supply using both relays of the Relay & Sensor Board (6).

Heater 1 (the top immersion heater) is heated with surplus power until the water at the top of the cylinder is hot and the thermostat opens, then eddi will immediately switch over to Heater 2; heating the bottom of the cylinder. This makes the most of surplus energy as sometimes there will not be enough to heat the whole volume of the cylinder; it's best to heat a smaller proportion (i.e. the top) first so there is some usable hot water, rather than a larger volume of warm water.

During heating of Heater 2, eddi will switch back to Heater 1 every 15 minutes to check if it can store any more heat.

When the water is fully heated, any surplus power will be exported, eddi will switch back the priority heater and check the lower priory heater every 15 minutes.

If eSense Input is set to Boost Enable 1, the BOOST TIMER screen for Heater 1 will include an option to enable the boost timer only when the eSense input is live. In the BOOST TIMER, the e can be toggled on/off, if e is present, the boost will activate only when the boost times are valid and the economy rate tariff is available.

Alternatively the eSense input can be used to active the boost whenever the economy tariff rate electricity is available, regardless of boost times. To do this, eSense Input should be set to Boost 1. When using this option, the Boost Timer is not needed.

Installation of the temperature probes (7) is optional; the heaters' mechanical thermostat is used by eddi if temperature readings are not required.

The eddi device should be labelled with a "dual supply" warning.

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Top Immersion
				Heater 2:	Bottom Immersion
		Priority…			Heater 1
Advanced Menu…	Relays & Sensors…	Temperatures…			Set Temperatures as required if using temperature probes
		eSense Input…	Boost…		Boost Enable 1 / Boost 1

Application Examples

5: Economy Tariff with Separate Meters (Heater 2)
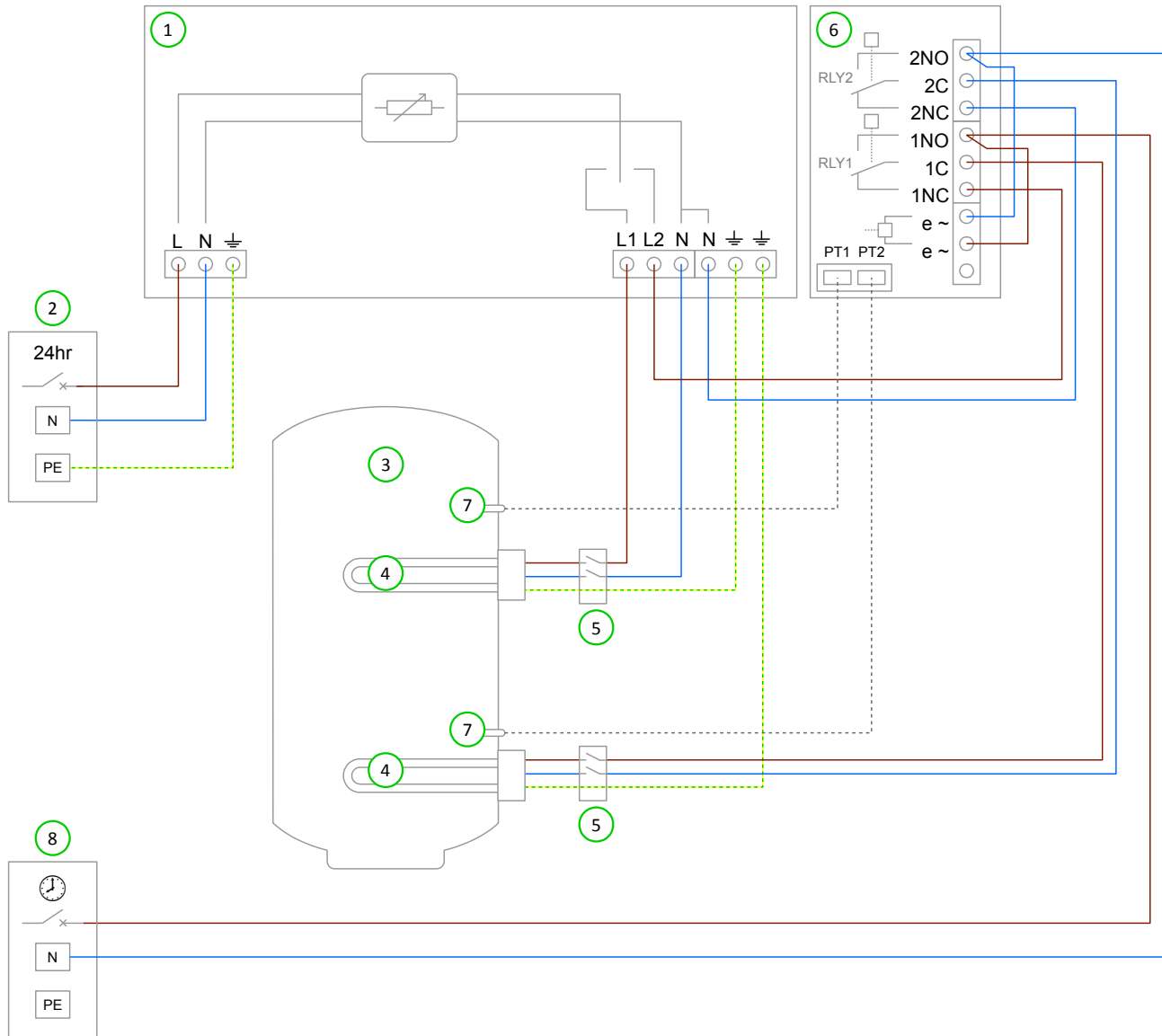
Key for Wiring Diagram 5

(1) eddi device

(2) Mains supply (230V AC from B16 circuit breaker or 13A fused spur)

(3) Hot water cylinder

(4) Heating element (max. 3.7kW)

(5) Isolator (20A double pole)

(6) Relay & Sensor Board (optional add-on for eddi)

(7) Temperature probe (type PT1000) (optional)

(8) Mains supply (off-peak timed) (230V AC from B16 circuit breaker or 13A fused spur)

Functional Description

Some electric only households that employ dual tariff billing use two separate electricity meters; one is live for 24 hours and the other is off-peak timed and bills at the economy rate. Only some appliances are connected to the off-peak supply (usually water heaters and storage heaters).

This application enables automatic boosting of water heating when the economy tariff is available whilst also using any surplus generated power to heat the water. Both the top and bottom immersion heaters can use surplus power and be boosted with peak rate electricity. However, only Heater 2 can be boosted with off-peak electricity (See page 38 if it desired to have Heater 1 boost using off-peak power).

eddi is powered from the 24-hour supply and the bottom immersion heater is wired directly to Heater 1 output. During the economy tariff times, power needs to be drawn from the off-peak tariff meter, to achieve this the top immersion heater is switched from the eddi Heater 2 output and the off-peak supply using both relays of the Relay & Sensor Board (6).

Heater 1 (the top immersion heater) is heated with surplus power until the water at the top of the cylinder is hot and the thermostat opens, then eddi will immediately switch over to Heater 2; heating the bottom of the cylinder. This makes the most of surplus energy as sometimes there will not be enough to heat the whole volume of the cylinder; it's best to heat a smaller proportion (i.e. the top) first so there is some usable hot water, rather than a larger volume of warm water.

During heating of Heater 2, eddi will switch back to Heater 1 every 15 minutes to check if it can store any more heat.

When the water is fully heated, any surplus power will be exported, eddi will switch back the priority heater and check the lower priory heater every 15 minutes.

If eSense Input is set to Boost Enable 2, the BOOST TIMER screen for Heater 2 will include an option to enable the boost timer only when the eSense input is live. In the BOOST TIMER, the e can be toggled on/off, if e is present, the boost will activate only when the boost times are valid and the economy rate tariff is available.

Alternatively the eSense input can be used to active the boost whenever the economy tariff rate electricity is available, regardless of boost times. To do this, eSense Input should be set to Boost 2. When using this option, the Boost Timer is not needed.

Installation of the temperature probes (7) is optional; the heaters' mechanical thermostat is used by eddi if temperature readings are not required.

The eddi device should be labelled with a "dual supply" warning.

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Top Immersion
				Heater 2:	Bottom Immersion
		Priority…			Heater 1
Advanced Menu…	Relays & Sensors…	Temperatures…			Set Temperatures as required if using temperature probes
		eSense Input…	Boost…		Boost Enable 2 / Boost 2

Application Examples

6: Radiator and Water Heating
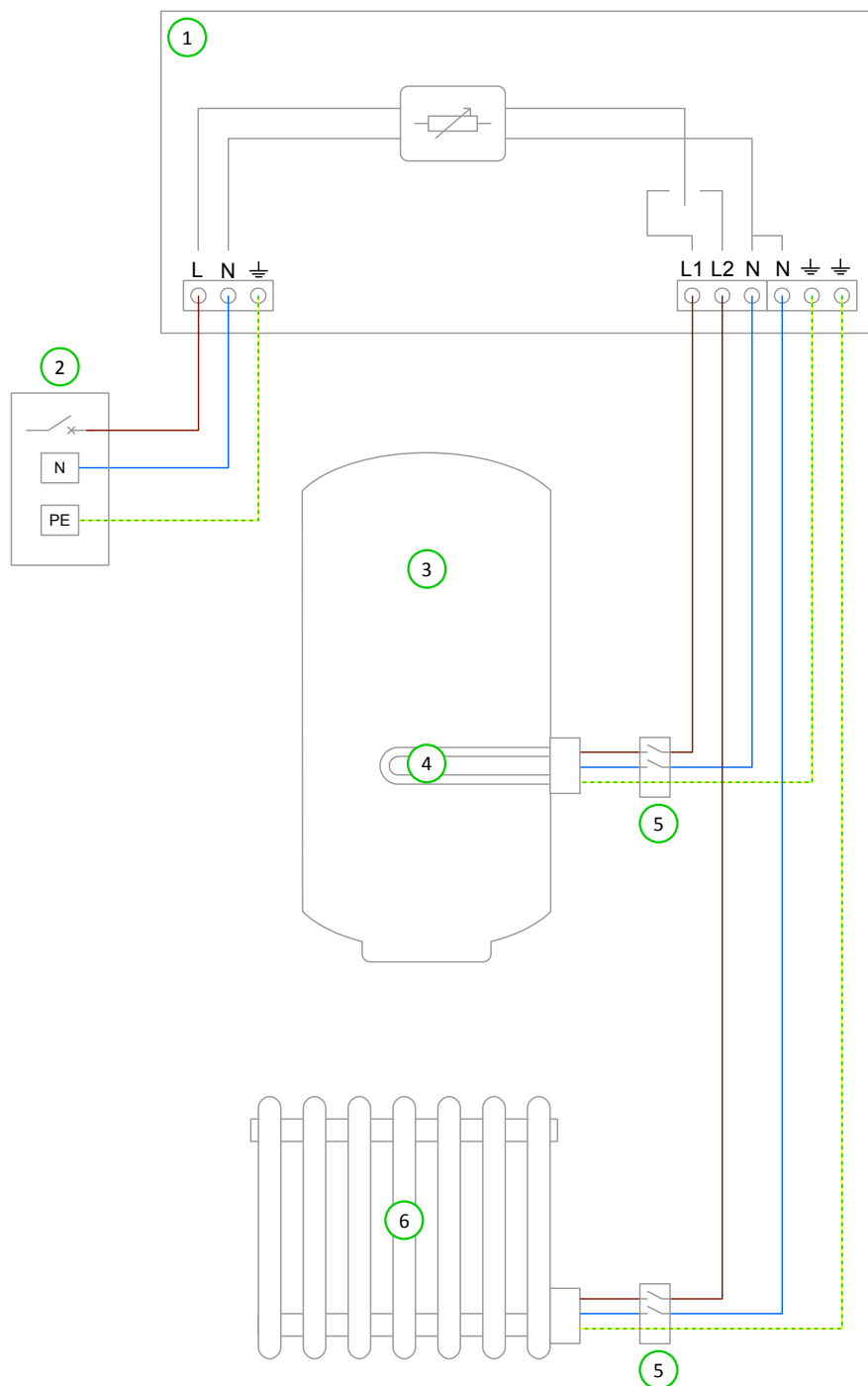
Key for Wiring Diagram 6

(1) eddi device

(2) Mains supply (230V AC from B16 circuit breaker or 13A fused spur)

(3) Hot water cylinder

(4) Heating element (max. 3.7kW)

(5) Isolator (20A double pole)

(6) Electric radiator (150W min. 3.7kW max.)

Functional Description

To maximise self-consumption of surplus power, an electric radiator can be heated once the hot water cylinder is up-to temperature, **eddi** can support heating two heaters sequentially and so is perfect for this application.

Heater 1 (the immersion heater in the hot water cylinder) is heated with surplus power until the water is hot and the thermostat opens, then **eddi** will immediately switch over to Heater 2 to heat the radiator (6) with surplus power.

During heating of the lower priority heater (Heater 2), **eddi** will switch back to the higher priority heater (Heater 1) every 15 mins to check if it can store any more heat.

The heating priority can be changed in the `Main Menu` (`Priority`).

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Top Immersion / Bottom Immersion
				Heater 2:	Radiator
		Priority…			Heater 1

7: Underfloor Heating Mat and Water Heating

Key for Wiring Diagram 7

(1) eddi device

(2) Mains supply (230V AC from B16 circuit breaker or 13A fused spur)

(3) Hot water cylinder

(4) Water heating element (max. 3.7kW)

(5) Isolator (20A double pole)

(6) Relay & Sensor Board (optional add-on for eddi)

(7) Temperature probe (type PT1000) (optional)

(8) Mains supply for underfloor heating controller

(9) Underfloor heating mat (max. 3.7kW)

(10) Underfloor heating controller or thermostat

Functional Description

As well as water heating, eddi can be used with electric underfloor heating mats. In this application the water is heated as priority and when fully heated, the surplus power is instead diverted to the underfloor heating mat.

Heater 1 (the immersion heater in the hot water cylinder) is heated with surplus power until the water is hot and the thermostat opens, then eddi will immediately switch over to Heater 2 (the underfloor heating mat) (9) and continue diverting the surplus power.
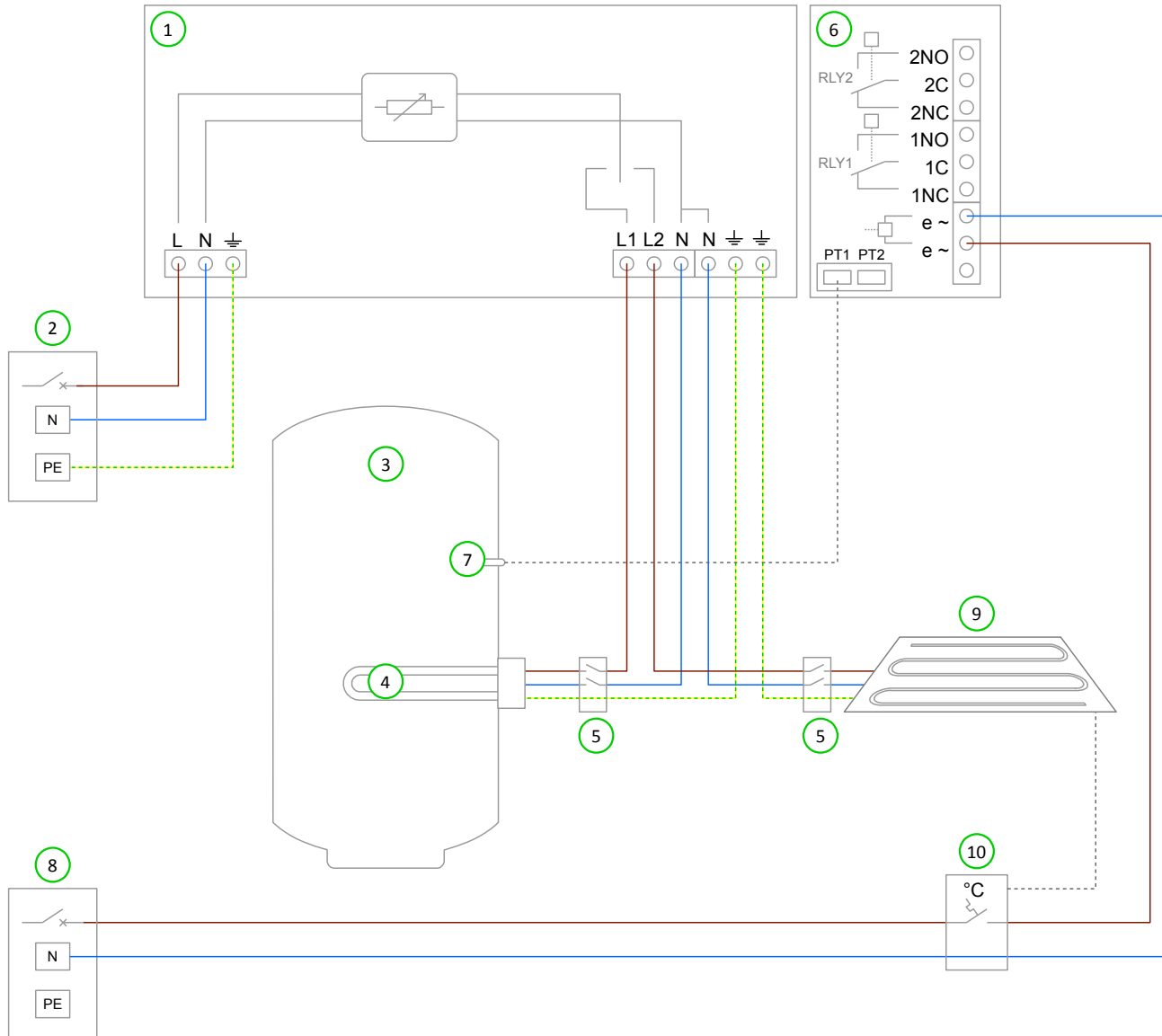
During heating of the lower priority heater (Heater 2), eddi will switch back to the higher priority heater (Heater 1) every 15 mins to check if it can store any more heat.

The heating priority can be changed in the `Main Menu` (`Priority`).

The underfloor heating controller or thermostat (10) is wired to the eSense input of the Relay & Sensor Board (6). The `eSense Input` setting is set to `Heater Enable 2` so only when the thermostat is calling for heat will eddi apply power to the mat. When the underfloor heating thermostat is open eddi will display `Max Temp Reached`.

Installation of the temperature probe (7) is optional; the immersion heaters' mechanical thermostat is used by eddi if water temperature reading is not required.

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Top Immersion / Bottom Immersion
				Heater 2:	Underfloor
		Priority…			Heater 1
Advanced Menu…	Relays & Sensors…	Temperatures…			Set Temperatures as required if using temperature probes
		eSense Input…	Heater Enable…		Heater 2

Application Examples

8: Water Heater with De-stratification Pump
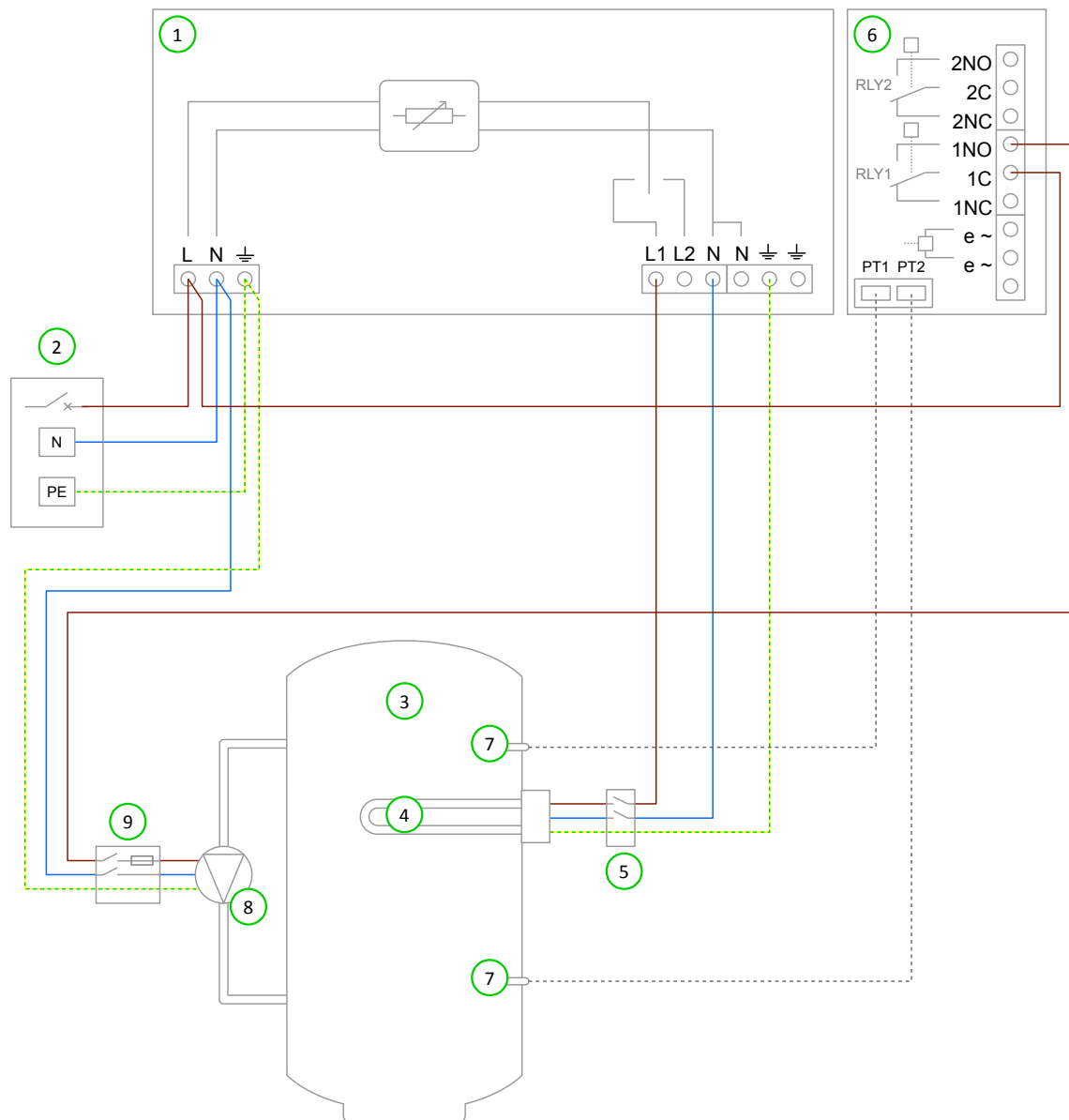
Key for Wiring Diagram 8

(1) eddi device

(2) Mains supply (230V AC from B16 circuit breaker or 13A fused spur)

(3) Hot water cylinder

(4) Water heating element (max. 3.7kW)

(5) Isolator (20A double pole)

(6) Relay & Sensor Board (optional add-on for eddi)

(7) Temperature probe (type PT1000) (optional)

(8) De-stratification pump

(9) Switched fused spur for pump (5A)

Functional Description

Hot water cylinders that are normally heated by a gas or oil boiler often have an immersion heater installed in the top half of the cylinder. This means only about half of the water can be heated with electric. With the addition of a de-stratification pump, almost the entire volume of the hot water cylinder can be fully heated.

The water in the cylinder (3) is heated via the immersion heater (4) with surplus power until the thermostat has opened, then eddi will run the pump (8). This pushes some of the hot water from the top of the cylinder (3), down to the bottom, thus pulling the cooler water up to the region that can be heated via the immersion heater (4). As the cooler water is drawn up, the thermostat will close again and eddi is able to resume heating the water.

When the immersion heater thermostat closes, the pump will run until the thermostat closes again or until 5 minutes has passed (whichever is sooner).

An auxiliary heat source (e.g. a gas boiler) is set to heat the water either early in the morning or later in the evening, depending on the home owners' lifestyle. Heating the water during times of generation (e.g. daylight hours) is best avoided to allow maximum capacity for the surplus energy.

Installation of the temperature probes (7) is optional; the immersion heaters' mechanical thermostat is used by eddi if water temperature reading is not required.

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Top Immersion
				Heater 2:	None
Advanced Menu…	Relays & Sensors…	Relay 1…	Heating…		Destrat 1

9: Water Heater with Auxiliary Boiler Control – Y Plan
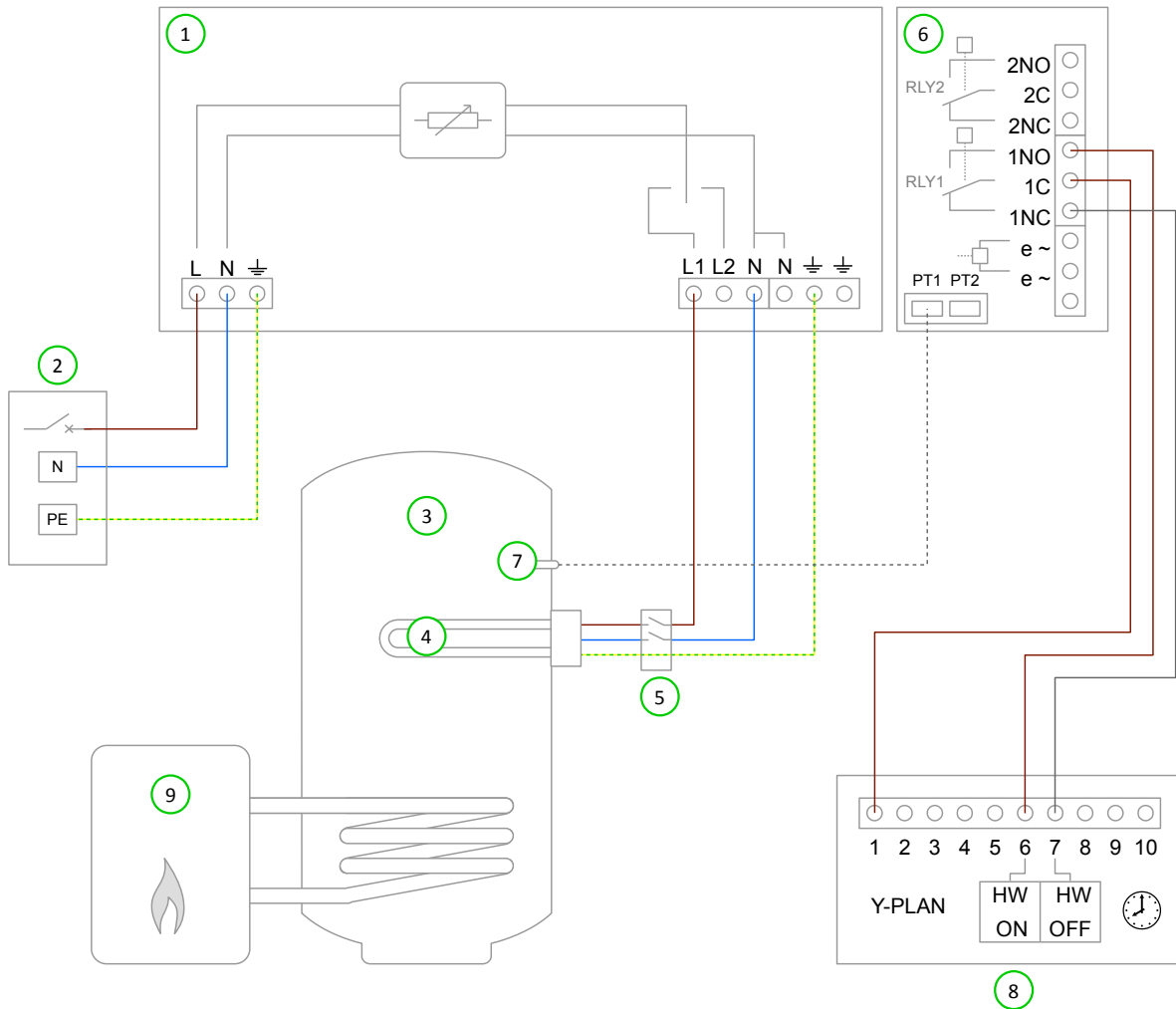
Key for Wiring Diagram 9

① eddi device

② Mains supply (230V AC from B16 circuit breaker or 13A fused spur)

③ Hot water cylinder

④ Water heating element (max. 3.7kW)

⑤ Isolator (20A double pole)

⑥ Relay & Sensor Board (optional add-on for eddi)

⑦ Temperature probe (type PT1000) (optional)

⑧ Y-Plan control water and heating junction box

⑨ Auxiliary water heating boiler

Functional Description

As eddi is predominately a water heating control device, it can be used to manage all of the water heating, even if an auxiliary heat source is used to heat the water. With this application the homeowner will be able to program auxiliary boiler boost times with eddi.

In the UK a popular plumbing and wiring scheme used by central heating systems is referred to as 'Y-Plan'. This scheme has a standard junction box which eddi can be wired to enable programming of water heating times with the BOOST TIMER feature of the eddi.

The water heating element (4) is wired to the Heater 1 output and Relay 1 of the Relay & Sensor Board (6) is wired to the Y-Plan control junction box (8). Any existing water heating control is removed or disconnected.

The water in the cylinder (3) is heated with only surplus power until the thermostat has opened, the eddi will display Max Temp Reached and the surplus power will then be exported until the water cools, heating will then resume.

The BOOST TIMER (RELAY 1) in the eddi is used to program the auxiliary heat source (e.g. a gas boiler) to heat the water either early in the morning or later in the evening, depending on the home owners' lifestyle. Heating the water during times of generation (e.g. daylight hours) is best avoided to allow maximum capacity for the surplus energy.

Whenever the boost for is active, Relay 1 will operate and the Y-plan heating system will respond, heating the water via the auxiliary boiler.

The BOOST TIMER (HEATER 1) can be used if it desired to boost water heating with the immersion heater. In addition, it can be used at the time as the Relay 1 boost if extra fast water heating is needed.

Installation of the temperature probe (7) is optional; the immersion heaters' mechanical thermostat is used by eddi if water temperature reading is not required.

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Water Top
				Heater 2:	None
Advanced Menu…	Relays & Sensors…	Temperatures…			Set Temperatures as required if using temperature probes
		Relay 1…			Boost Timer

10: Water Heater with Auxiliary Boiler Control – S Plan
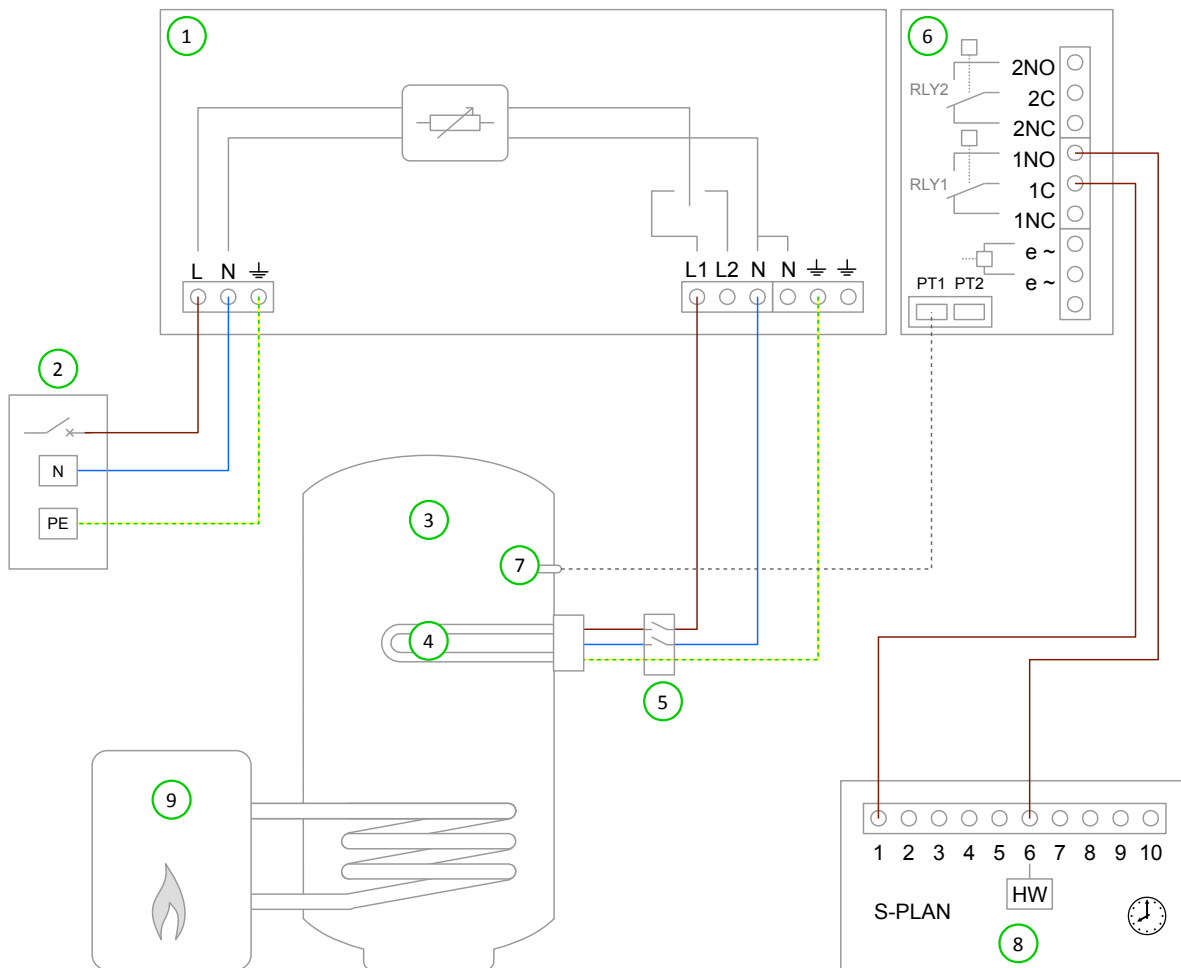
Key for Wiring Diagram 10

1. eddi device
2. Mains supply (230V AC from B16 circuit breaker or 13A fused spur)
3. Hot water cylinder
4. Heating element (max. 3.7kW)

5. Isolator (20A double pole)
6. Relay & Sensor Board (optional add-on for eddi)
7. Temperature probe (type PT1000) (optional)
8. Heat Pump (with immersion heater output)
9. Auxiliary water heating boiler

Functional Description

As eddi is predominately a water heating control device, it can be used to manage all of the water heating, even if an auxiliary heat source is used to heat the water. With this application the homeowner will be able to program auxiliary boiler boost times with eddi.

In the UK a popular plumbing and wiring scheme used by central heating systems is referred to as 'S-Plan'. This scheme usually has a standard junction box which eddi can be wired to enable programming of water heating times with the BOOST TIMER feature of the eddi.

The water heating element (4) is wired to the Heater 1 output and Relay 1 of the Relay & Sensor Board (6) is wired to the Y-Plan control junction box (8). Any existing water heating control is removed or disconnected.

The water in the cylinder (3) is heated with only surplus power until the thermostat has opened, the eddi will display Max Temp Reached and the surplus power will then be exported until the water cools, heating will then resume.

The BOOST TIMER (RELAY 1) in the eddi is used to program the auxiliary heat source (e.g. a gas boiler) to heat the water either early in the morning or later in the evening, depending on the home owners' lifestyle. Heating the water during times of generation (e.g. daylight hours) is best avoided to allow maximum capacity for the surplus energy.

Whenever the boost for is active, Relay 1 will operate and the Y-plan heating system will respond, heating the water via the auxiliary boiler.

The BOOST TIMER (HEATER 1) can be used if it desired to boost water heating with the immersion heater. In addition, it can be used at the time as the Relay 1 boost if extra fast water heating is needed.

Installation of the temperature probe (7) is optional; the immersion heaters' mechanical thermostat is used by eddi if water temperature reading is not required.

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Water Top
				Heater 2:	None
Advanced Menu…	Relays & Sensors…	Temperatures…			Set Temperatures as required if using temperature probes
		Relay 1…			Boost Timer

11: Heat Pump with Water Heating
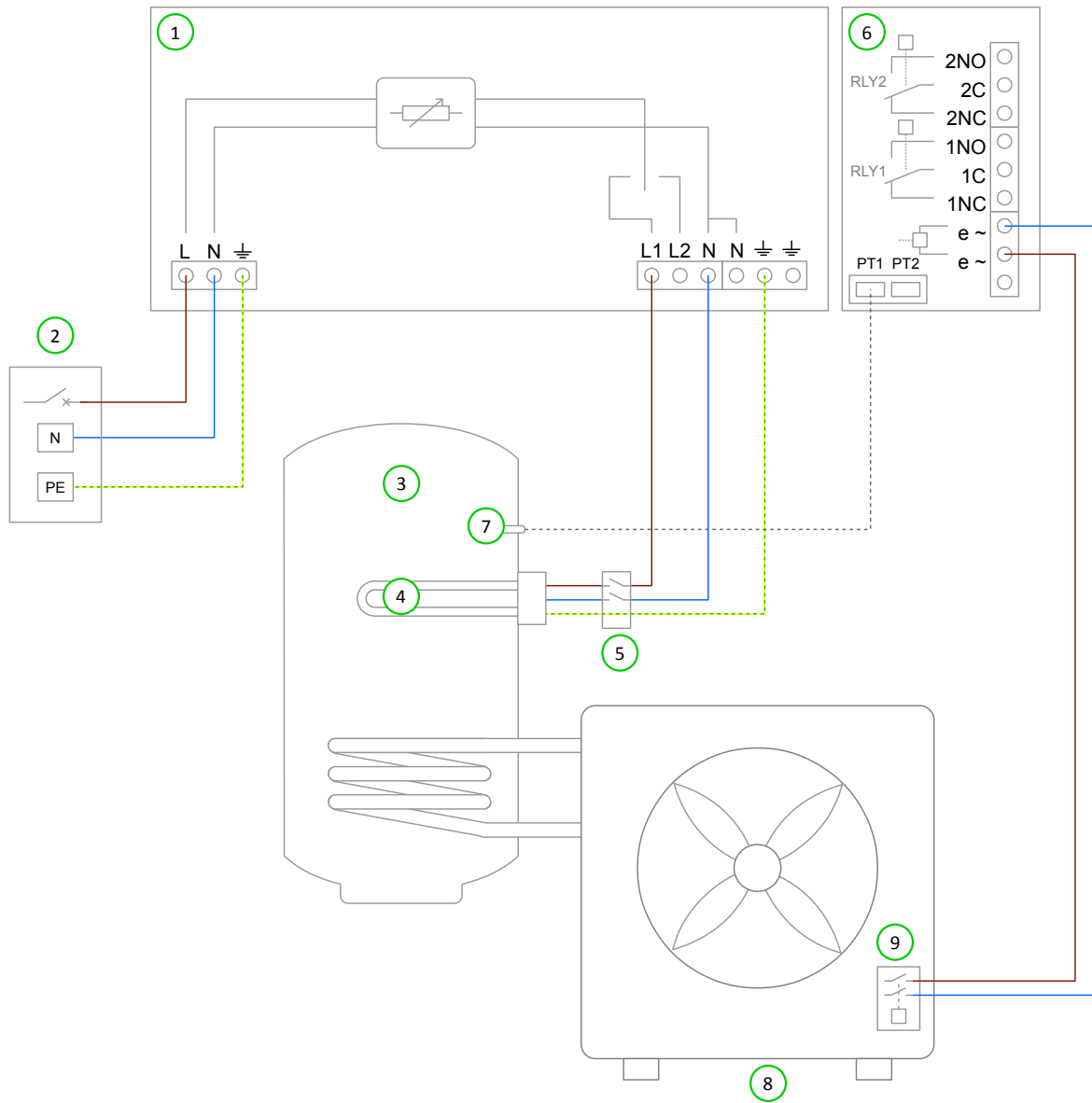
Key for Wiring Diagram 11

(1) eddi device

(2) Mains supply (230V AC from B16 circuit breaker or 13A fused spur)

(3) Hot water cylinder

(4) Heating element (max. 3.7kW)

(5) Isolator (20A double pole)

(6) Relay & Sensor Board (optional add-on for eddi)

(7) Temperature probe (type PT1000) (optional)

(8) Heat Pump (with immersion heater output)

(9) Heat pump immersion heater relay

Functional Description

Most heat pumps require control of the immersion heater in the hot water cylinder, this is to periodically heat the water to a higher temperature in order to kill any Legionella bacteria that may have built up in the stored water. This application enables the heat pump to effectively control the immersion heater when required whilst the heater is actually connected only to the eddi.

eddi uses the Grid Sensor to monitor any surplus power that would otherwise be exported to the gird and diverts the same amount of power to the heater loads, thereby reducing the surplus power down to zero.
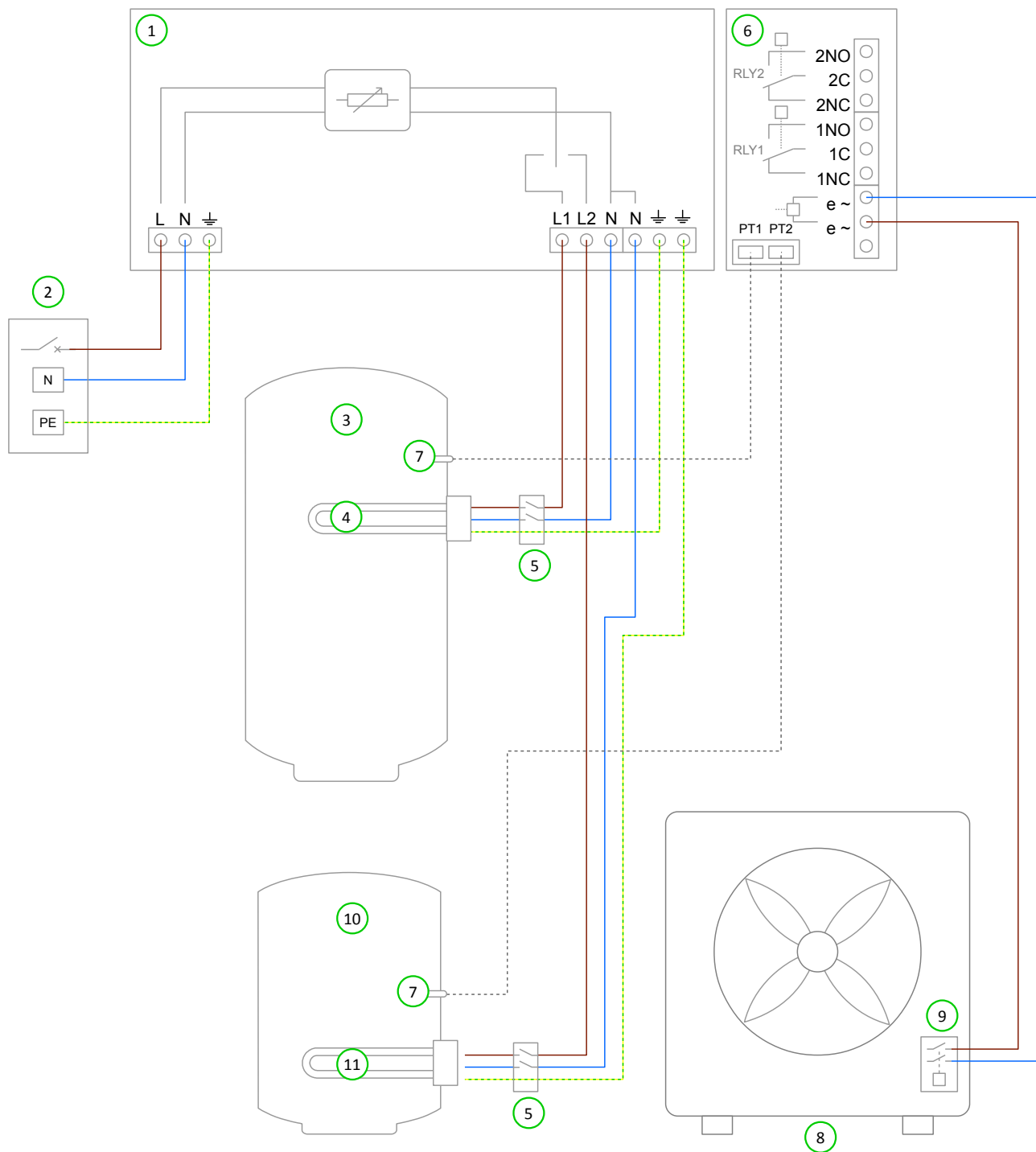
It is not permissible to 'back-feed' the eddi device (i.e. a voltage supply must not be connected to the heater outputs). Because of this, the heat pump immersion heater relay (9) needs to be connected to the eSense input of the Relay & Sensor Board (6) instead of the immersion heater element (4). In this application, the eddi is configured to respond to the eSense signal by fully switching on Heater 1 output regardless of available surplus.

Installation of the temperature probe (7) is optional; the heaters' mechanical thermostat can be used instead if water temperature reading is not required.

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Top Immersion / Bottom Immersion
				Heater 2:	None
Advanced Menu…	Relays & Sensors…	Temperatures…	PT1 Set Point:		Set Temperature as required if using temperature probe
		eSense Input…	Boost…		Heater 1

12: Heat Pump with Water Heating and Buffer Tank

Key for Wiring Diagram 12

① eddi device

② Mains supply (230V AC from B16 circuit breaker or 13A fused spur)

③ Hot water cylinder

④ Heating element 1 (max. 3.7kW)

⑤ Isolator (20A double pole)

⑥ Relay & Sensor Board (optional add-on for eddi)

⑦ Temperature probe (type PT1000) (optional)

⑧ Heat Pump (with immersion heater output)

⑨ Heat pump immersion heater relay

⑩ Buffer cylinder

⑪ Heating element 2 (max. 3.7kW)

Functional Description

Some heat pump heating systems have a buffer tank for the heating circuit as well as a hot water cylinder.

eddi can be used to make good use of any surplus generation by fully heating the water first and then heating the buffer, allowing the maximum amount of surplus energy to be stored.

eddi uses the Grid Sensor to monitor any surplus power that would otherwise be exported to the gird and diverts the same amount of power to the heater loads, thereby reducing the surplus power down to zero.

For this application two heating elements are wired to the eddi; the water immersion heater (4) is connected to Heater 1 output and the buffer tank immersion heater (11) is connected to Heater 2 output. Priority is given to the water heating and only when fully heated does the eddi switch to heating the buffer tank.

Most heat pumps require control of the immersion heater in the hot water cylinder, this is to periodically heat the water to a higher temperature in order to kill any Legionella bacteria that may have built up in the stored water. Remember it is not permissible to 'back-feed' the eddi device; a voltage supply must not be connected to the heater outputs. Because of this, the heat pump immersion heater relay (9) needs to be connected to the eSense input of the Relay & Sensor Board (6) instead of the immersion heater element (4). In this application, the eddi is configured to respond to the eSense signal by fully switching on Heater 1 output regardless of available surplus.

Installation of the temperature probes (7) is optional; the heaters' mechanical thermostat can be used instead if temperature readings are not required.

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Top Immersion
				Heater 2:	Radiator / Underfloor Heating
		Priority…			Heater 1
Advanced Menu…	Relays & Sensors…	Temperatures…			Set Temperatures as required if using temperature probes
		eSense Input…	Boost…		Boost 1

13: Heat Pump with Water Heating and Priority Control
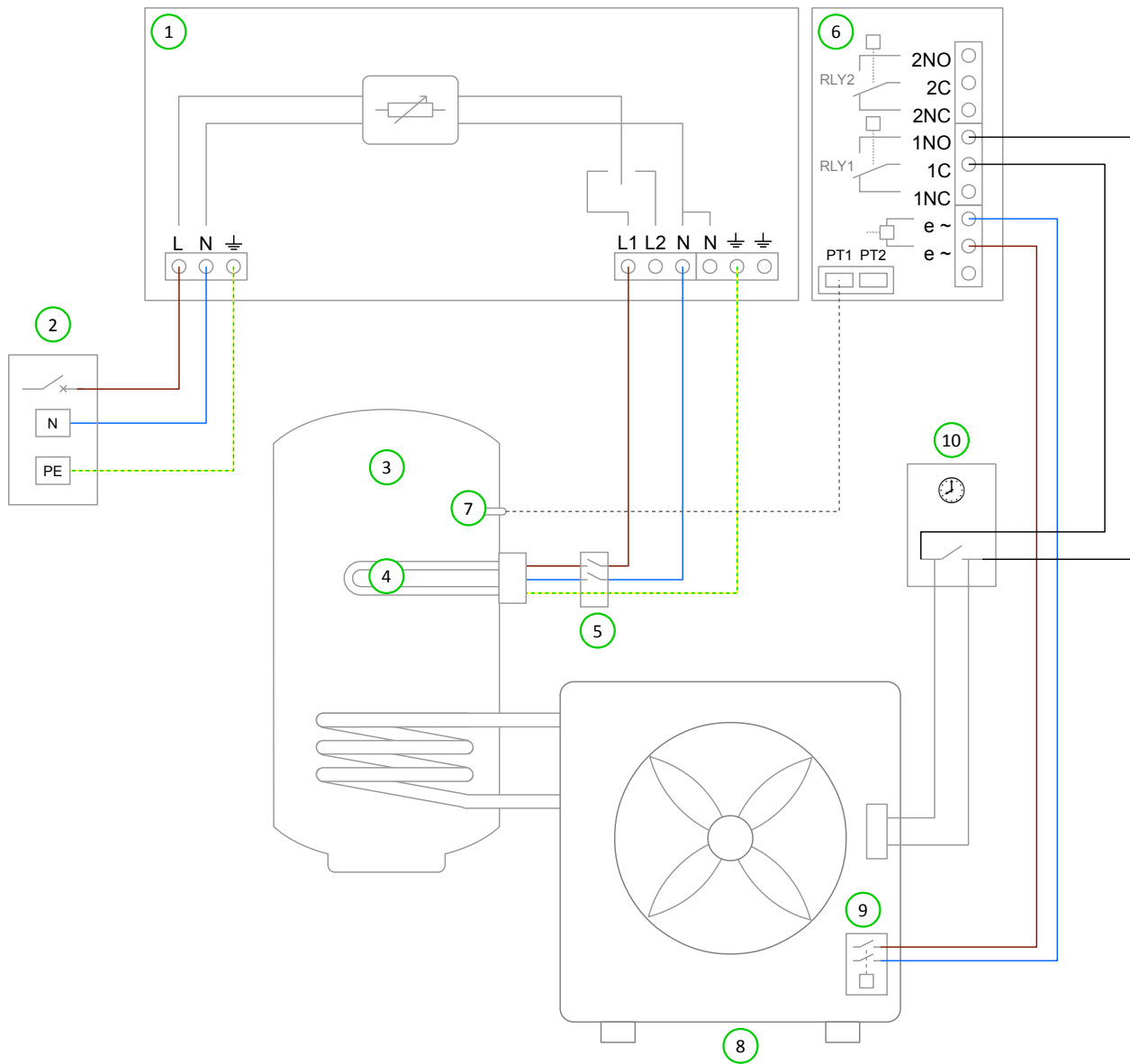
Key for Wiring Diagram 13

① eddi device		⑥ Relay & Sensor Board (optional add-on for eddi)	
② Mains supply (230V AC from B16 circuit breaker or 13A fused spur)		⑦ Temperature probe (type PT1000) (optional)	
③ Hot water cylinder		⑧ Heat pump (with immersion heater output)	
④ Heating element (max. 3.7kW)		⑨ Heat pump immersion heater relay	
⑤ Isolator (20A double pole)		⑩ Heat pump hot water timer	

Functional Description

In this application the water is heated by eddi with the immersion heater when there is a relativity small amount of surplus power (e.g. < 1kW). But when there is enough surplus the heat pump is used to heat the water instead. This configuration takes advantage of the higher efficiency of the heat pump compared with the immersion heater, whilst ensuring no surplus power is wasted.

For this application the water heating element (4) is wired to the eddi Heater 1 output. The water heating timer control (10) for the heat pump (8) is connected to the Relay 1 normally open contacts of the Rely & Sensor Board (6).

Most heat pumps require control of the immersion heater in the hot water cylinder, this is to periodically heat the water to a higher temperature in order to kill any Legionella bacteria that may have built up in the stored water. Remember it is not permissible to 'back-feed' the eddi device; a voltage supply must not be connected to the heater outputs. Because of this, the heat pump immersion heater relay (9) needs to be connected to the eSense input of the Relay & Sensor Board (6) instead of the immersion heater element (4). In this application, the eddi is configured to respond to the eSense signal by fully switching on Heater 1 output regardless of available surplus.

Installation of the temperature probe (7) is optional; the heaters' mechanical thermostat can be used instead if temperature reading is not required.

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Top Immersion
				Heater 2:	None
		Priority…			Heater 1
Advanced Menu…	Relays & Sensors…	Temperatures…	PT1 Set Point:		If PT1 temperature probe is used, set temperatures as desired for water heating e.g. 60°C
		Relay 1…	Export…	On Threshold:	Should be set to power level required for efficient heap pump operation e.g. 1kW
				Off Threshold:	50% of On Threshold e.g. 500W
				Inc Diverted:	YES
				Min On Time:	Set this to reduce cycling of heat pump e.g. 15m
				Min Off Time:	Set this to reduce cycling of heat pump e.g. 5m
		eSense Input…	Boost…		Heater 1

14: Pool and Water Heating
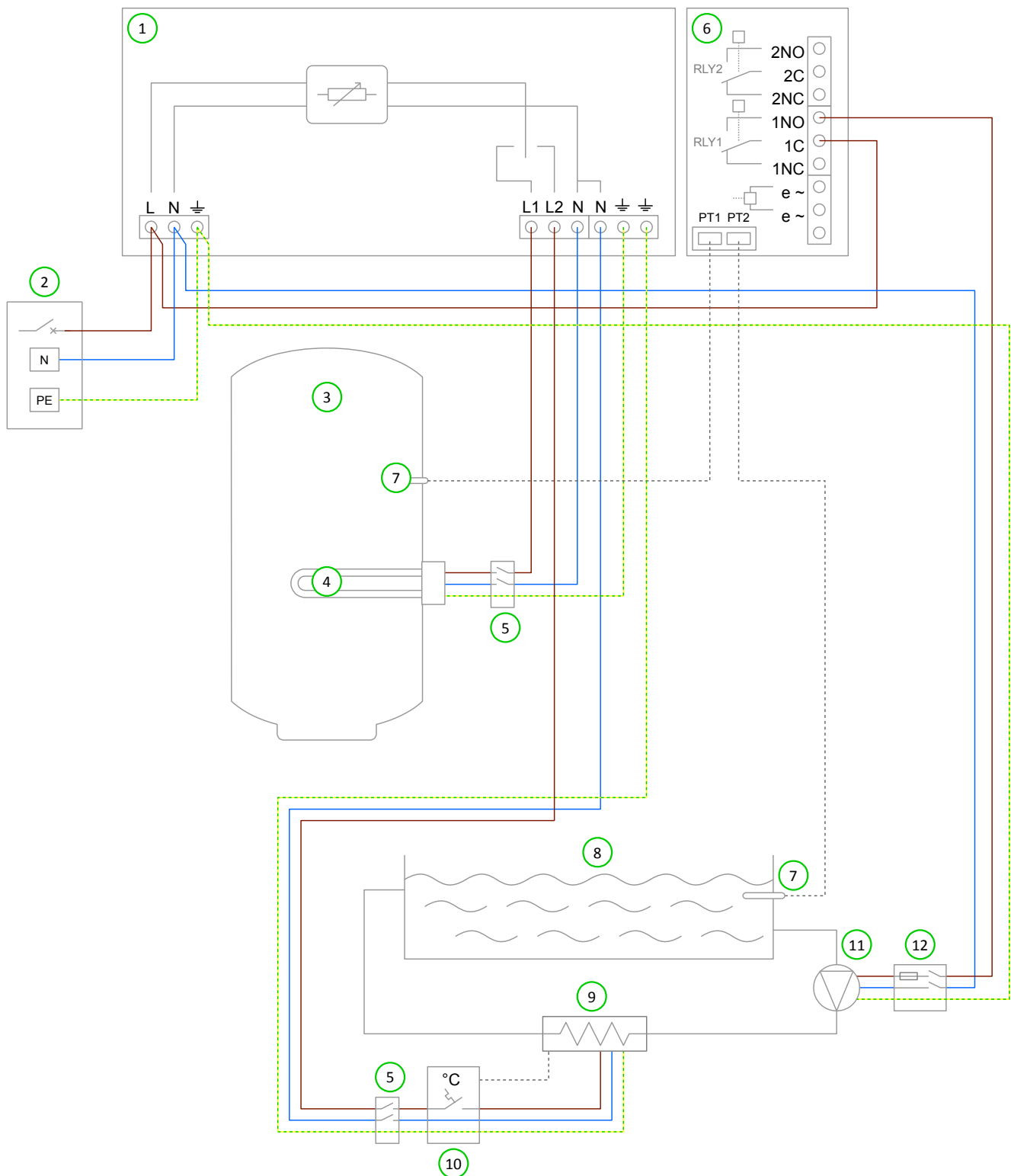
Key for Wiring Diagram 14

1. eddi device
2. Mains supply (230V AC from B16 circuit breaker or 13A fused spur)
3. Hot water cylinder
4. Water heating element (max. 3.7kW)
5. Isolator (20A double pole)
6. Relay & Sensor Board (optional add-on for eddi)

7. Temperature probe (type PT1000) (optional)
8. Swimming pool
9. In-line electric pool heater (max. 3.7kW)
10. Pool heater thermostat (16A rated)
11. Pool circulation pump
12. Pool circulation pump fused spur

Functional Description

In properties that benefit from a swimming pool, eddi can be use to maximise self-consumption of surplus power, by first heating the domestic water before switching to divert the surplus power to contribute to pool heating.

Heater 1 (the immersion heater in the hot water cylinder) (4) is heated with surplus power until the domestic water is hot and the thermostat opens, then eddi will immediately switch over to Heater 2 to heat the pool (8) with surplus power.

During heating of the pool (Heater 2), eddi will briefly switch back to the domestic water heater (Heater 1) every 15 mins to check if it can store any more heat.

When Heater 2 is active (i.e. eddi is heating the pool), Relay 1 of the Relay & Sensor Board (6) will be on and so the pool circulation pump (11) will run thus transferring heat from the pool heater (9) to the swimming pool.

Installation of the temperature probes (7) is optional; the heaters' mechanical thermostats are used by eddi if temperature readings are not required.

Settings Required

Menu Option					Settings
Main Menu	Settings…	Display…	Icons…	Heater 1:	Top Immersion / Bottom Immersion
				Heater 2:	Pool
		Priority…			Heater 1
Advanced Menu…	Relays & Sensors…	Temperatures…			Set Temperatures as required if using temperature probes
		Relay 1…	Heating…		Heater 1

Troubleshooting

Symptom	Cause	Solution
Display is blank and power-on (green) indicator is NOT illuminated	- The bypass switch is in the off position - There is no power to the unit	- Switch the bypass switch (at the bottom of the unit) to the ON position - Check for correct supply voltage at the supply screw terminals (220 - 260V AC)
Display is blank, the power-on indicator (green) is NOT illuminated and Heater 1 indicator (blue) is lit	- The unit is in bypass mode	- Switch the bypass switch (at the bottom of the unit) to the on position
Display is blank and power-on indicator (green) is illuminated	- Possible faulty unit	- Contact your local Technical Support In the meantime, the bypass switch can be used to operate heater if needed
Heater not getting hot, yet display shows `Max Temp Reached` and the heater output indicator (blue) is lit	- Heater thermostat is open - Heater isolation switch is off - Heater element is faulty	- Check heater thermostat is closed - i.e. run off some hot water - Use the bypass switch to test the heater
Not using any surplus power and the display is always showing `Waiting for Surplus` and the export power is 0W	- Gird Sensor incorrectly installed - Faulty Grid Sensor - No signal from harvi (if used)	- Check the grid sensor is connected to CT1 terminals of the eddi or harvi - Check the Grid Sensor is installed on the correct cable (see *Grid Sensor Installation* page 26) - Check resistance of the sensor - it should be around 200 Ώ when not connected (remove the sensor from the cable before testing resistance) - If using harvi, check that the CT input has been set to `Grid` in the harvi settings (under `Devices` in the eddi menu)
Not using any surplus power and display is always showing `Waiting for Surplus`, yet the export power is displayed correctly	- `Export Margin` set too high	- Check `Export Margin` setting (default is 0W)
The power diverted to the heater is less than expected	- Heater has a lower rating than expected - The unit is too warm and is thermal limiting the output, (indicated by three wavy lines above the eddi icon)	- Check heater rating - Ensure the unit has adequate ventilation
The savings are less than expected (the diverted energy is low)	- Uncontrolled thermal input from other sources (e.g. gas boiler)	- Install or adjust controls for the auxiliary heat source
RCD tripping	- Live and neutral currents to heater are out of balance	- Ensure the heater neutral conductor is connected to "N" terminal of the "Heaters" screw terminal block in the eddi; do not use any other neutral
MCB tripped or supply fuse blown	- Possible faulty unit	- Contact your local Technical Support In the meantime, the bypass switch can be used to operate heater if needed

Fault Codes

Fault Code	Displayed Message	Description	Check
1	`Output Overload!`	Load is drawing too much current (>16A)	Check the power rating of connected heaters, the maximum rating is 3.7kW for each heater output
2	`Overheat!`	The device is too hot	Check ventilation slots are not blocked and the unit has sufficient space around it (see *Clearances on* page 23)
3	`No Signal!`	Signal lost from *harvi* device	Check *harvi* LED is blinking; if not, check sensors are securely clamped around the cable and properly connected to the terminals in the *harvi* **Note:** *harvi* will stop working if there is no power in the cable being monitored, however *eddi* will show this message only if there is no signal from *harvi* for more than 24hrs
4	`Grid Sensor Error!`	Grid Sensor incorrectly installed	Check the sensor is securely installed on the correct cable and is wired to the CT terminals with the correct polarity Refer to the *Grid Sensor Installation* section (page 26) for details of correct installation
5	`Back-Feed Voltage!`	Unexpected voltage at heater output	The heater output terminals must never be connected to a supply voltage Check heater wiring
6	`Over Voltage!`	Supply voltage too high	The AC supply voltage must be less than 260V Check the AC voltage at SUPPLY terminals
7	`Under Voltage!`	Supply voltage too low	The AC supply voltage must be more than 190V Check the AC voltage at SUPPLY terminals
8	`Load Fault!`	Load is faulty	Check the power rating of connected heaters, the maximum rating is 3.7kW for each heater output Isolate the unit from the supply and check the resistant between L1 and N and between L2 and N at the HEATER terminals; the resistance should be between about 15Ω and 350Ω

Warranty

Subject to the provisions described below, this product is protected for three (3) years from the date of purchase against defects in material and workmanship.

Prior to returning any defective product to myenergi, the end customer must report the faulty product to **myenergi** by either emailing **myenergi** at **support@myenergi.uk** or calling **myenergi** on 01472 398838. If **myenergi** agrees that the product should be returned, it will issue a Return Merchandise Authorisation (RMA) number, the RMA must be clearly marked on the packaging of the product to be returned. **myenergi** may arrange collection at its discretion, otherwise the customer should return the product at their own cost.

Should the product fail to perform as described within the relevant warranted period as set out above, it will be repaired or replaced with the same or functionally equivalent product by **myenergi**, at its discretion, free of charge provided the end customer: (1) returns the failed product to **myenergi** with shipping charge prepaid, and (2) provides **myenergi** with proof of the original date of purchase. Returned or replacement products will be returned to the end customer with shipping charges prepaid.

Replacement products may be refurbished or contain refurbished materials. If **myenergi**, by its sole determination, is unable to repair or replace the defective product, it will refund the depreciated purchase price of the product.

The warranty does not apply if, in the judgement of **myenergi**, the product fails due to damage from shipment, handling, storage, incorrect installation, accident, inappropriate use or cleaning of the product, relocation of the product after its first installation, abuse, misuse, or if it has been used or maintained in a manner not conforming to product manual instructions, has been modified in any way, or has had any serial number or other identification markings removed or defaced.

Repair by anyone other than **myenergi** or an approved agent will void this warranty.

All defective products should be returned to **myenergi** with shipping charges prepaid, unless **myenergi** have arranged collection at its own cost.

Nothing in this agreement will affect the end customer's statutory rights or limit or exclude **myenergi's** liability for (1) death or personal injury caused by its negligence, or the negligence of its employees, agents or subcontractors (as applicable), (2) fraud or fraudulent misrepresentation; (3) defective products under the Consumer Protection Act 1987;or (4) any matter in respect of which it would be unlawful for **myenergi** to exclude or restrict liability.

The maximum liability of **myenergi** under this warranty is limited to the purchase price of the product covered by the warranty.

myenergi only supply products for resale for domestic and private use. **myenergi** accept no liability for any commercial, business or re-sale purpose by the end customer, and **myenergi** accept no liability to the end customer for any loss of profit, loss of business, business interruption, or loss of business opportunity.

Technical Specifications

Performance

Power Control Technology	varisine™ pure sine wave PWM (Pulse Width Modulation)
Outputs	2 (sequential operation with selectable priority)
Bypass Switch	Integral On/Off/Bypass switch
Cooling	Rear mounted passive cooled heatsink
Indicators	LED indication: Supply On, Heater 1 and Heater 2 active
Display	Graphical LCD with LED backlight (shows heating status and savings data)
PWM Resolution	0.1%
Measurement Accuracy	+/- 1% (typical)
Power Conversion Efficiency	97.5% (typical)
Compliance	LVD 2014/35/EU, EMC 2014/30/EU EN60335-1:2012, EN55014-1:2006, EN55014-2:1997 +A1:2001+A2:2008, EN61000-3-2:2006 +A1:2009+A2:2009, EN61000-3-3:2008, EN300220:2013
Warranty	3 Years

Electrical Specifications

Rated Input Power	3.68kW
Rated Supply Voltage	230V AC Single Phase (+/- 10%)
Supply Frequency	50Hz / 60Hz
Rated Current	16A max. (determined by load)
Standby Power Consumption	3W
Generator Size Supported	No limit (subject to 100A per-phase grid supply)
Heater Load Size	100W min. 3.68kW max.
Economy Tariff Sense Input	230V AC sensing (2.5kV isolated)
Wireless Interface	868 MHz (proprietary protocol) for wireless sensor and remote monitoring options
Grid Current Sensor	100A max. primary current, 16mm max. cable diameter
Supply Cable Entry	Rear, bottom, or side option

Mechanical Specifications

Dimensions	220 x 205 x 87mm (excluding wall bracket)
Weight	4.3kg (excluding wall bracket)
Protection Degree	IP20
Enclosure Material	Painted Zintec steel
Operating Temperature	-20°C to +40°C
Mounting Method	Wall mounting bracket

Designed to permit installations compliant with IET Wiring Regulations BS7671:2008+A3 2015 and the Electricity Safety, Quality, and Continuity Regulations 2002 and BS 8300:2009+A1:2010.

myenergi.uk

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