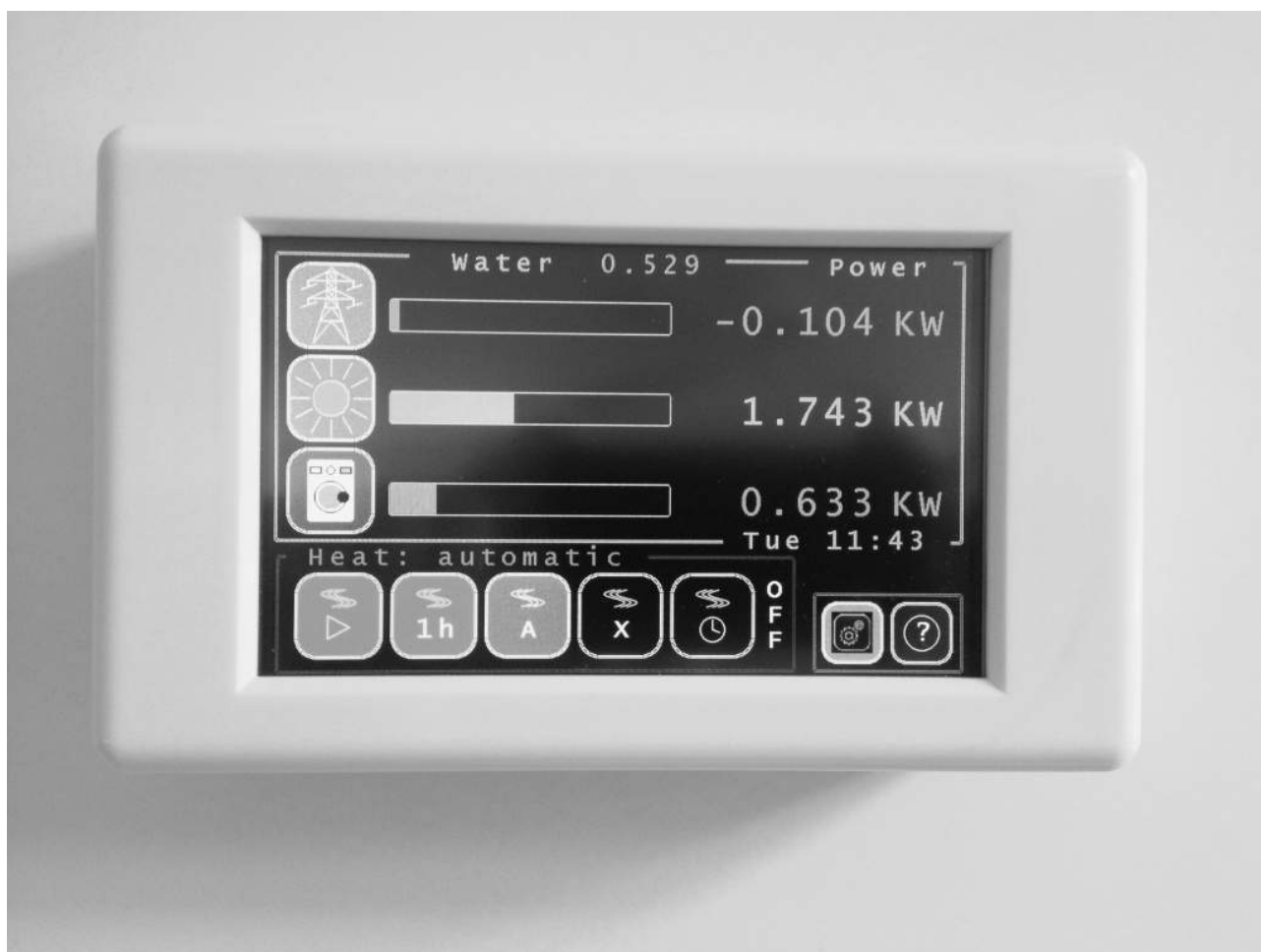




Installation Guide



The system should be installed only by a suitably qualified person

Solarcache *touch* is a sophisticated system which diverts surplus generated energy to one or more heaters or resistive loads. It is also a comprehensive energy monitor and recorder which provides the user with detailed up-to-the-minute information about power and energy usage, and historical information over the past 28 days. It is therefore important to discuss with the user where he or she wants the controller to be mounted. It should be at eye-level in a place where it can be read and operated easily. Failure to do this might result in a second visit to re-position the controller!

We recommend that you read right through this guide before you begin, but in summary:

1. Inspect the existing electrical wiring to ensure that it is suitable for the installation of solarcache *touch*.
2. Think about where to mount the power throttle, and discuss where to mount the controller with the user. The CT clips leads are terminated with standard audio phono plugs, and can be extended easily up to 10 m using standard audio extension leads. (DSM Energy Control Ltd. can supply these if required).
3. Make connections as shown below in Figures 1 to 6. Clip the current transformers either way around in their correct positions (see Figure 2).



Check the power throttle connections. The diagrams are for the standard 3 KW version.

4. Electrically test the circuits and then energize the system. Set up the parameters and carry out the auto-calibration step as described below. Remember to give the User Guide to the householder, and to demonstrate how the system works before leaving.

General information (see also the separate User Guide)

Solarcache *touch* measures how much power is flowing through the electricity meter using a *current transformer* (CT clip) which clips around the live wire of the feed from the Grid. When there are more than 50 Watts being exported, it brings up the immersion heater (water heater), always adjusting the exact level so as to maintain the exported power below about 200 Watts. Electric appliances can be turned on and off in the house and solarcache *touch* makes the appropriate adjustment. Solarcache *touch* also measure the amount of power being generated by the PV installation using a second clip-on current transformer. This information is displayed, but has no effect on the control of the water-heater.

What's in the box?

	solarcache <i>touch</i> Duo	solarcache <i>touch</i> Wi-Link
controller unit	1	1
wired power throttle	1	-
wireless power throttle	-	1
CT clips with phono plug terminations	2	2
control signal cable with phono plug	1	-
5-core cable	1.5 m	-
PVC cable glands	1	-
mounting screws for the controller	4	4
AC power supply	1	1

Please identify each of these components. Call 01223 440100 if there is a discrepancy.

You will also need fixings for the power throttle.

All components must be on the same phase of the electricity supply.

1 Inspect the wiring

Solarcache *touch* Duo: assess the existing immersion heater circuit to ensure that it is a dedicated radial circuit fed directly from the consumer unit. Any other equipment which is also connected to this circuit must be disconnected and re-wired.

Solarcache *touch* Wi-Link: the power throttle may be fitted next to the immersion heater in the airing cupboard, by-passing any spurs already connected to the circuit between the consumer unit and the immersion heater.

We recommend that the controller and associated AC circuitry is protected by a 30mA RCD. Our modular design allows the controller unit to be mounted away from the consumer unit in a more convenient position so that the display can be seen at a glance and operated with ease.

2 Mount the power throttle

Solarcache *touch* Duo: the power throttle should be installed near the property's main consumer unit and incoming electrical supply.

Solarcache *touch* Wi-Link: the power throttle can be installed next to the immersion heater in the airing cupboard, or connected anywhere between the immersion heater spur and immersion heater.

Please note that there are separate wiring diagrams and instructions for each version.



The power throttle may run hot at times! Mount the unit on a non-flammable **vertical** surface and make sure that air is free to run through the vents. If in doubt, we recommend spacing the power throttle from the wall surface by 10 mm. **Make sure that the power throttle cannot get buried underneath blankets, clothes etc. in the airing cupboard!**



Inspect the existing immersion heater integral thermostat to ensure that it complies with safety requirements and regulations to provide thermal overload protection where the hot-water system includes a plastic header tank. Replace the thermostat if necessary.

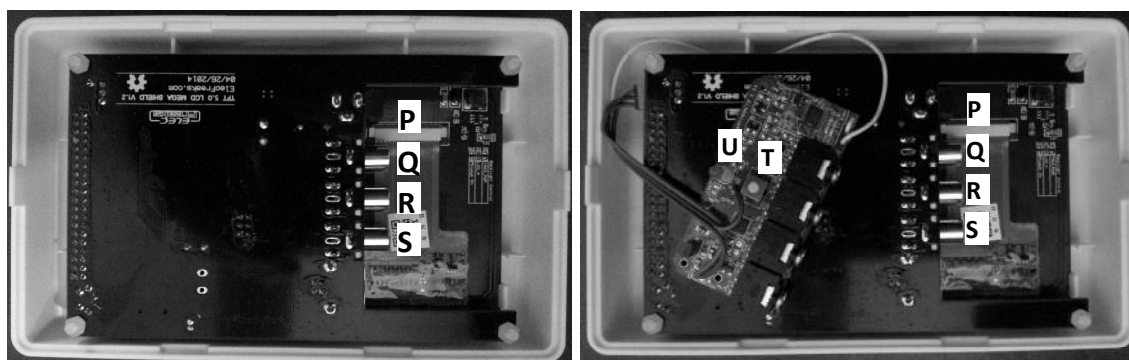
3 Mount the control unit

Remove the front housing by pressing in the centre of the left-hand side of the front housing. It will release from the left-hand side of the base, hinging at the right-hand side. Refit the front housing by aligning the locator at the right-hand side, gently pushing home on the left-hand side.

Mount the controller unit carefully on a flat surface so as not to distort the enclosure. Failure to do this may result in damage to the unit and poor fitting of the front housing. Please consult the user about where to mount the controller. Note that there is an SD card slot access on the bottom of the front housing which must be kept clear.

The cable entry slot in the base is designed to allow the power and phono cables to be threaded through from the rear or from the bottom. We recommend that you first prepare and loosely fix the base part to the wall, and then, before tightening the fixings, thread the plugs through the cable entry slot and insert them into their respective sockets, starting at the top and working down. There should be no need to make additional holes in the base.

Figure 1 showing the controller unit inside the front housing



Duo

Wi-Link

- P: controller low-voltage AC power supply input from the plug-in AC power supply
- Q: socket for either clip-on current transformer
- R: socket for either clip-on current transformer
- S: low-voltage control signal output to the power throttle (not usually used in the Wi-Link version)
- T: wireless transmitter pairing button (Wi-Link version only)
- U: transmitter signal LED (Wi-Link version only)

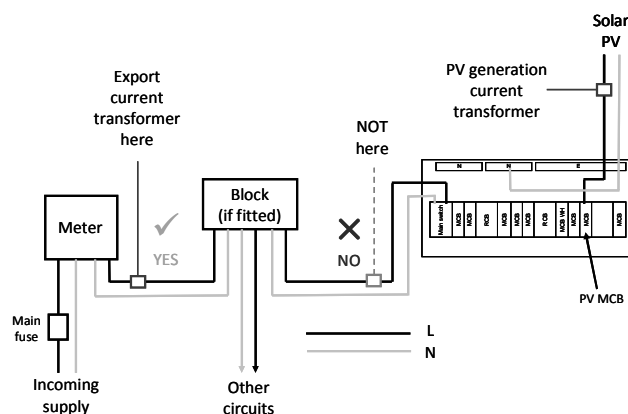
4 Wiring and connections

Solarcache *touch* Duo: A length of 5-core 1.5mm flex is provided together with a PVC cable gland. Use this between the consumer unit and the power throttle, intercepting the dedicated water heater circuit. Make the connections as shown in the four wiring diagrams, Figures 2, 3, 5 and 6.

Solarcache *touch* Wi-Link: Make the connections as shown in the three diagrams Figures 2, 4 and 5.

Clip on the current transformers as show in Figure 2. Note that the connection block (labelled Block) is not always present. **Take care to ensure that the magnet surfaces are clean and engage properly.**

Figure 2: current transformer placement



British standard BS 7671: 2008 (amended 2011), regulation 537.3.2.1, allows the circuit-breaker in the consumer unit to act as 'the means of local isolation' for switching off the solarcache *touch* unit and associated circuits for maintenance purposes provided that you mount the power throttle near

by the consumer unit. However, if you are mounting the power throttle some way away from the circuit-breaker (for example, in another cupboard or in a room away from the consumer unit), you will need to provide a double-pole isolation switch next to the power throttle as 'the means of local isolation'. Alternatively, you can install a means of locking off the circuit-breaker.

You may need to install a 13 A socket near the power controller for the plug-in AC power supply if there isn't an existing socket available.

Figure 3: control unit and power throttle wiring (Duo version)

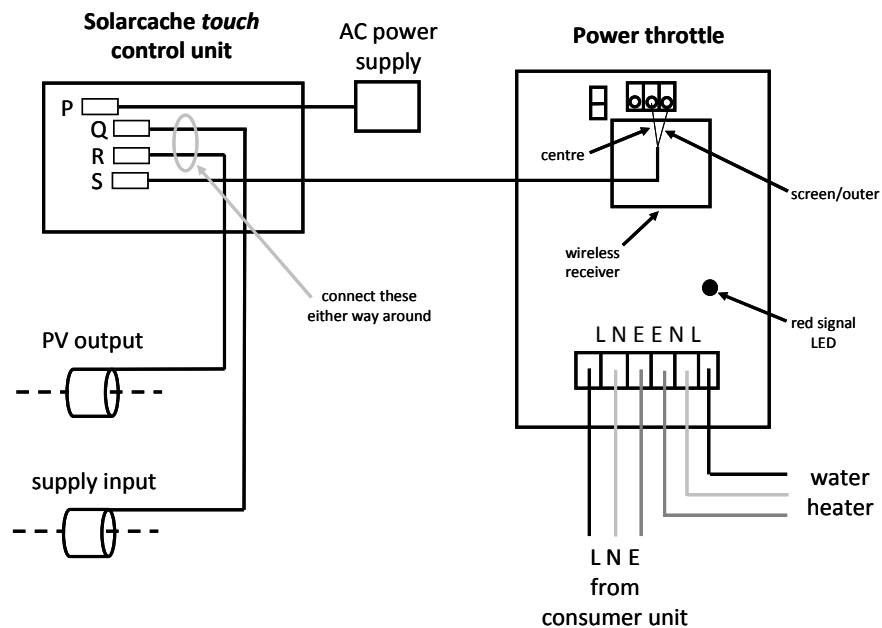


Figure 4: control unit and power throttle wiring (Wi-Link version)

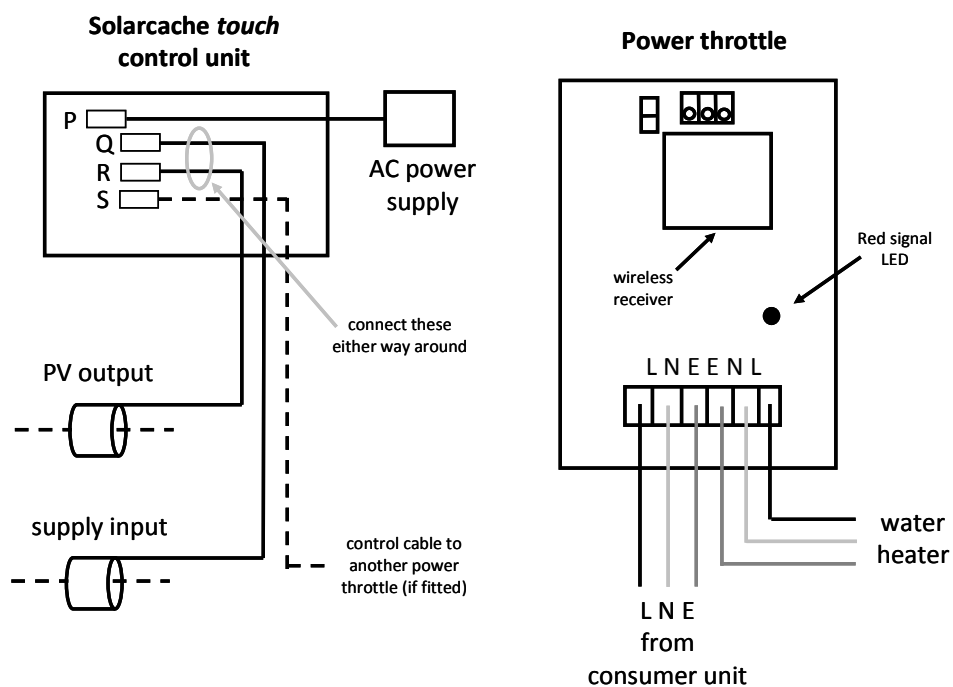


Figure 5: connections in the power throttle

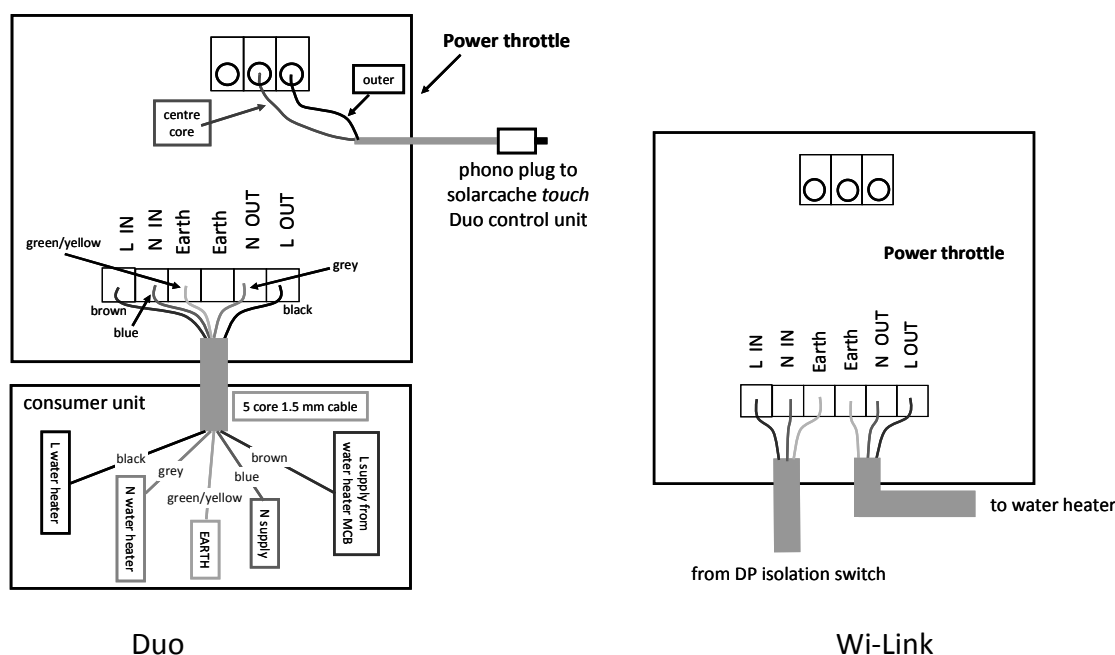
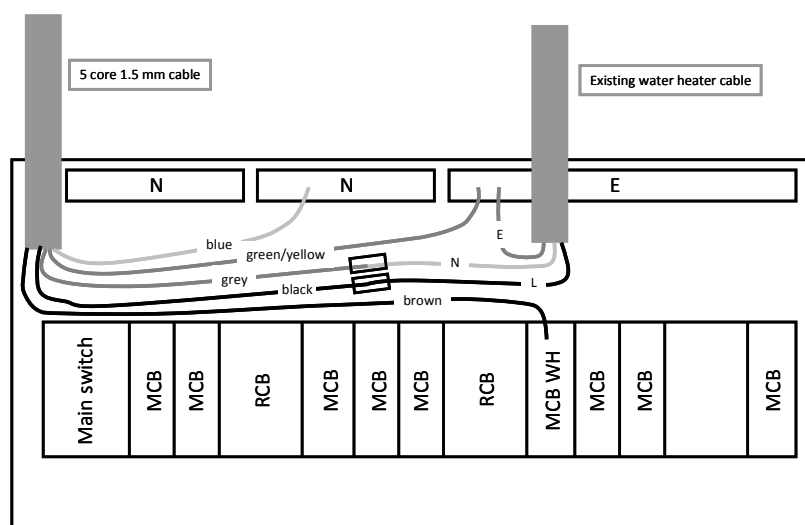


Figure 6: connections in the consumer unit



5 Commissioning

Check that all AC electrical connections are complete and ready for energizing. Carry out appropriate electrical tests of your wiring, according to BS7671:2008 (amended 2011). Switch on the immersion heater MCB in the consumer unit and the power throttle DP isolation switch (if fitted) to energize the system. Switch on the AC power supply.

The screen is touch-sensitive. Use the end of a pencil or something similar to operate the buttons on the screen.

If you are fitting the Wi-Link version, check that the power throttle is receiving the signal from the controller as follows. The red led inside the controller (labelled U in Figure 1) should flash regularly once per second, with a double flash every six seconds. The signal LED inside the power throttle will

flash on and off every 2 seconds for the first 90 seconds after switching on, or until it has received a pairing message from the controller. When the flashing has stopped, touch the red button in the bottom left-hand corner of the controller screen. The legend “Heat: continuous” should appear in red above it. Now look at the red signal LED in the power throttle noted on Figure 3. This should be lit continuously. Touch the black button labelled “X”. The legend “Heat: OFF” should appear in white above it. The red signal LED in the power throttle should now be off. Touch the green button labelled “A”. The legend “Heat: automatic” should appear in green above it. This is the default setting of the unit.

Touch the “settings” button (cog-wheels), and go through the screens, setting the date, time, day of the week, load type connected on the wireless link (“Not connected” if Duo), load type connected on the wired link (“Not connected” if Wi-Link, unless fitting more than one power throttle), and the heater priority (if fitting both wireless and wired power throttles). You can skip the boost period setting screens for now by touching the button marked “C” in the top right-hand corner of the first boost-setting screen.

Make sure that the PV system is switched on and generating at least 100 W of power. Make sure that the load(s) connected to the power throttle(s) is (are) turned on and able to absorb power. You may need to run off some hot water if the immersion tank is already up to temperature. The calibration process takes less than one minute to complete. **During this time, it is very important that the house base load remains constant.** Ensure that all domestic appliances, washing machine, dishwasher, electric kettle etc. remain off. Touch the red button to start the calibration process. The controller first checks the current transformers for polarity and connection. If all is well, the polarity (+1 or -1) and the power in Watts measured by the net power and solar power clips are displayed. Otherwise, an error message appears and you will be asked to check the current transformers. You will need to ensure that they are correctly positioned (see Figure 2), and properly tightened. Check also that they are plugged in to the unit correctly (in positions Q and R – see Figure 1). Reset the controller by switching off the plug-in power supply, then switching it on again. All the parameters, including the date and time etc., will have been preserved, so you can skip through the setting screens quickly. Perform another calibration. Call DSM Energy Control (details at the end) if the error message keeps on appearing.

If you have not performed a calibration within 5 minutes from switching on the unit, an error message will appear. You will need to turn the controller off, then on, to clear the message and get another five-minute window.

6 Handover

Please remember to give the householder the User Guide, and show that the system is operating correctly. You will also need to demonstrate how it works, particularly the parameter setting pages.

7 Technical support

SolarCache *touch* is sold for professional use and installation. Please contact our technical support team at DSM Energy Control Ltd., if you have any questions regarding the installation or operation of the system. Email support@solarcache.co.uk or call a telephone number given below.

DSM Energy Control Ltd. (Company No. 08044291)
38 Cheddars Lane,
Cambridge CB5 8LD
Telephone: 01223 440100 or technical 07979 953359



SolarCache <i>touch</i> technical data	
Controller	
Screen	5-inch TFT LCD colour, touch sensitive
Manual controls	Graphical buttons on touch-sensitive screen Icons indicate functions Help screens displayed on touching icons
Screen timeout	User settable up to 1 hr, or permanently on
Manual heater functions	Continuous – heater continuously on 1 hr boost – heater on for 1 hour Automatic – heater controlled by SolarCache Off – heater is turned off Timed boost on/off override
Timed heater functions	Up to 7 separate timed boost periods Each boost period can be set to activate on Sun, Mon, Tue, Wed, Thu, Fri, Sat, Mon-Fri, Sat-Sun, or Mon-Sun Each boost period can be directed to the wireless or wired channel, or both
Main screen	Powers shown by bar graphs and numbers (KW) Display of power flow at the main meter in green (export) or red (import) Display of the solar PV generation Display of the surplus power available for use in the house Display of the power being diverted into the currently-connected load
Energy screen 1	Energies shown by bar graphs and numbers (KWh) Display of energy bought from the grid since midnight Display of energy generated by the PV panels since midnight Display of energy consumed in the house since midnight
Energy screen 2	Display of energy diverted to the hot-water tank since midnight Display of energy diverted to a second load since midnight
Resilience to power cut	All settings, historical energy data, and time of day preserved through a power failure, and restored when power re-appears
Historical data	Daily data for the last 28 days and accumulated totals since installation can be displayed on screen: <ul style="list-style-type: none"> - energy bought from the grid - energy generated by PV array - energy used in the house - energy diverted to the wireless channel - energy diverted to the wired channel
Modular system	The controller and the power throttles are separate units, allowing the controller to be placed in a convenient position for the user, and the power throttle(s) to be placed near the load(s)
Installation	Fully automatic sensing of directions and placements of current transformers Auto-calibration of power throttles and loads connected to each channel, taking under 1 minute to complete Improved accuracy through auto-calibration
Channels	Up to two independent channels: one wireless and one wired Any number of wireless power throttles can be connected to the wireless channel Up to five wired power throttles can be connected to the wired channel
Prioritisation	Excess power can be diverted first to either channel, or to both
Response time	Under 1 second
SD card	Data can be recorded every six seconds for later detailed analysis off-line
Wattson display	The wireless version will send data to the Wattson display
Housing	White plastic box matches most decors Size: 161 x 97 x 50 mm external dimensions
Weight	330 g
Power supply	9V AC from plug-in power module
Power diverted	Power is diverted to the load(s) whenever the exported power exceeds 50W
Power throttle	
Power supply	220-240 VAC, 50 Hz
Connection to controller	Wireless version has no physical connection to the controller, and can, for example, be mounted in the airing cupboard near the hot-water cylinder The wired version uses a standard screened (audio) cable for connection
Power	The standard version will control a 3 KW load 4 KW and 6 KW versions are available
Cable connections	Screw terminals for the power cables Push-in connections for signal cable (wired version only)
Cooling fan	No
EMI filters	Yes – on both input and output sides
Housing (3 KW version)	White sheet metal case with ventilation grills Size: 175 x 197 x 65 mm overall external dimensions
Weight (3 KW version)	1430 g