Appendix A: control settings

Suggested settings for *SolarCache+* and water heating controls
Legend: *SolarCache+Mono* (*M*); *SolarCache+Duo Plus* (*DP*); *SolarCache+WiLink* (*W*)

Customer Requirement	Existing hot water system	*SolarCache+* settings	Boiler hot water settings	Comments
Full tank of hot water first thing every morning	Fuel fired boiler system	**Heat: automatic** The water will be heated using surplus generated power during the day (*M, DP, W*)	Set to come on 2 hours in the morning before hot water is required	Ensure that the boiler controls do not request the boiler to reheat the water once it has been used first thing in the morning
Full tank of hot water first thing every morning	Economy 7 or E10 off-peak electricity tariffs	**Heat: auto/boost** The water will be heated using surplus generated power during the day and also at night during the settable boost periods to benefit from the off-peak cheaper electricity rates (*DP, W*)		Use the **Heat: 1-hr boost** or **Heat: continuous** override functions to top up the hot water temperature at any time (*M, DP, W*)
No requirement for full tank of hot water first thing every morning Full tank of hot water required at the end of the day	Fuel fired boiler system	**Heat: automatic** The water will be heated using surplus generated power during the day (*M, DP, W*)	Set to come on at the end of the day 1 hour before the hot water is required to top-up the water temperature	Ensure that the boiler controls do not request the boiler to reheat the water once it has been used
No requirement for full tank of hot water first thing every morning Full tank of hot water required at the end of the day	Economy 7 or E10 off-peak electricity tariffs	**Heat: automatic** The water will be heated using surplus generated power during the day (*M, DP, W*)		Use the **Heat: 1-hr boost** or **Heat: continuous** override functions to top up the hot water temperature at any time (*M, DP, W*)
Full tank of hot water first thing every morning and full tank of hot water at the end of the day	Fuel fired boiler system	**Heat: automatic** The water will be heated using surplus generated power during the day (*M, DP, W*)	Set to come on 2 hours in the morning before hot water is required and again at the end of the day 1 hour before the hot water is required to top-up the water temperature	Ensure that the boiler controls do not request the boiler to reheat the water once it has been used first thing in the morning
Full tank of hot water first thing every morning and full tank of hot water at the end of the day	Economy 7 or E10 off-peak electricity tariffs	**Heat: auto/boost** The water will be heated using surplus generated power during the day and also at night during the settable boost periods to benefit from the off-peak cheaper electricity rates (*DP, W*)		Use the **Heat: 1-hr boost** or **Heat: continuous** override functions to top up the hot water temperature at any time (*M, DP, W*)

Please contact our technical support team at DSM Energy Control Ltd., if you have any questions regarding the installation or operation of the *SolarCache+* systems. The email address is support@solarcache.co.uk or you can call the telephone number 01223 440100 or 07979 953359.

Appendix B: trouble-shooting guide

A guide to assist with commissioning and to understand the proper correct operation of *SolarCache+*

Legend: *SolarCache+Mono* (*M*); *SolarCache+Duo Plus* (*DP*); *SolarCache+Wi-Link* (*W*)

Problem	Possible Cause	Action	Test and comments
The **Sun:** value displays zero even though the PV plant is generating power, or you see the warning message **Solar PV CT is REVERSED** (*DP, W*)	The PV Generation current transformer is fitted the wrong way around	Remove the PV generation current transformer, rotate it by 180 degrees and re-fit. Ensure that the poles are clear of dust or debris and that the latch is properly secured	Compare the generation value from the PV plant with the value shown on the *SolarCache+* display. These should be within 10% of each other
The **Net:** display value increases in red when the PV system is generating surplus power (*M, DP, W*)	The export/import current transformer is fitted the wrong way around	Remove the export/import current transformer, rotate it by 180 degrees and re-fit. Ensure that the poles are clear of dust or debris and that the latch is properly secured	Make a note of the **Net:** value shown on the *SolarCache+* display and then turn on a high-power appliance, such as an electric kettle. The **Net:** figure should increase, i.e. become more positive.
The general power consumption has increased since *SolarCache+* was fitted (*M, DP, W*)	The export/import current transformer is fitted the wrong way around	Remove the export/import current transformer, rotate it by 180 degrees and re-fit. Ensure that the poles are clear of dust or debris and that the latch is properly secured	Make a note of the **Net:** value shown on the *SolarCache+* display and then turn on a high-power appliance, such as an electric kettle. The **Net:** figure should increase, i.e. become more positive.
The value of either **Net:** or **Sun:** appear to be incorrect	One or both current transformers are poorly fitted	Re-fit the offending current transformer ensuring that the poles are clear of dust or debris and that the latch is properly secured	Check the display and compare the values.
The water is not hot enough	The Sun has not been shining enough!	Use the **Heat: 1-hr boost** or **Heat: continuous** override functions to top up the hot water temperature at any time (*M, DP, W*)	Remember to reselect the previous function when the water is hot enough
The water is not hot enough	The immersion heater integral thermostat is set too low	Adjust the integral immersion heater thermostat to the desired setting	 Always select a safe temperature setting to avoid the risk of scolding
The *SolarCache+* display is blank (no illumination)	Power failure to *SolarCache+*	Check the MCB supplying the power throttle is switched on. Use an AC mains voltage tester to measure the voltage across the L & N input terminals of the power throttle. Use an AC low voltage tester to measure the voltage across the 9V AC screw terminals.	Expect 230 – 250 VAC rms Expect 8.5 – 12 VAC rms
The *SolarCache+* display is blank (no illumination)	The *SolarCache+* computer needs re-starting	Switch off the supply MCB for 10 seconds and then turn it back on again. If that fails, re-boot *SolarCache+* by pressing the black button located on the back circuit board, to the right of blue LED, then unplug the low voltage power plug from socket P within the *SolarCache+* controller case and re-insert after 10 seconds.	Check the display to confirm that the re-start has been successful. Check the display to confirm that the re-start has been successful.

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Appendix C: the *SolarCache+* display

A description of the information shown on the controller display screen

Display	Example	Units	Description
Net:	-0.500	Kilowatts	Export value: surplus generated power is being exported to the grid
Net:	0.500	Kilowatts	Import value: power is being imported from the grid
Sun:	1.500	Kilowatts	Generation value: the power being generated by the PV plant
Gen:	5.500	Kilowatt hours	The total energy generated by the PV plant so far since middnight
Use:	1.500	Kilowatts	Use value: the total power being consumed within the property, including the immersion heater
Control:	66%	Percentage	The percentage of the total power being delivered to the immersion heater (approximately)
Saved:	5.500	Kilowatt hours	Saved energy: the energy delivered to your hot water tank so far since middnight
Heat: automatic			The automatic function has been selected. The function switch on *SolarCache+* has been set to the central position to provide automatic operation delivering surplus power to the load
Heat: 1-hr boost			The 1-hour boost function has been selected. The function switch on *SolarCache+* has been moved to the left position and then back to central position to provide full power to the load for 1 hour. See the User Guide for information about how to set this function
Heat: continuous			The continuous heat function has been selected. The function switch on *SolarCache+* has been moved to the left position. The load is operating at full power
Heat: auto/boost			Automatic and economy tariff function has been selected. The function switch on *SolarCache+* has been set to the right position to provide automatic operation of *SolarCache+* system delivering surplus power to load whenever available and full power to the load between the times set for boosting. See the User Guide for information about how to set this function
Max/Temp/Off			Max: the immersion heater (load) is operating at full power Temp: the hot water is up to temperature Off: the immersion heater (load) is not consuming any power

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