1 Introduction

This section of the handbook will guide you through the operation of the electrical system.

Further technical details are contained later in this document or in the supporting technical manual available from www.sargentltd.co.uk

For the safe operation of all electrical equipment within your caravan it is important that you read and fully understand these instructions. If you are unsure of any point please contact your dealer / distributor for advice before use.

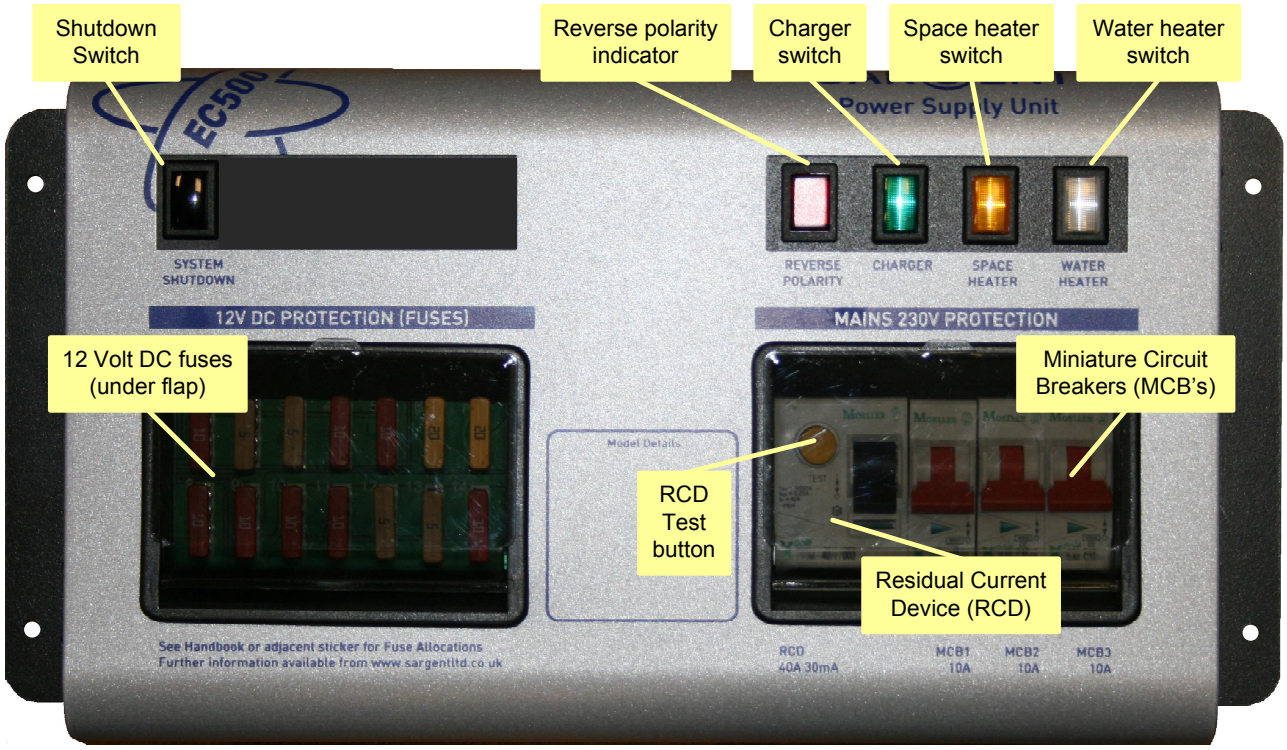
The system has a number of key components that you will need to be familiar with before attempting to use the system, these are:

- **The EC500 series Power Supply Unit (PSU)** - a combined mains 230V / 12V consumer unit and controller located in the front bed box.
- **The EC370 series Control Panel (CP)** - a remotely located user control panel used to turn circuits on and off and to display battery and water tank information.
- **The PX-300 Battery Charger / Power Converter** – a separate, air cooled 300 Watt multi-stage power converter unit that charges the batteries and provides 12V DC power.
- **The C44 Road Light Fuse Box** - This small unit is located near the PSU. The unit houses fuses for the road lighting circuits and supplies from the tow vehicle, and also has connectors for the Automatic Trailer Control (ATC) unit.

2 Using the System

The PSU is located in the front offside bed box.

2.1 EC500 Power Supply Unit – Component Layout



2.2 Activating the System

The EC500 system has a shutdown feature that should be used when the caravan is in storage or is not being used for long periods of time. This allows the leisure electronics to be turned off when not required to save battery power. When in the off state the alarm and tracking system supplies are still active, most other supplies are turned off.

Before using the system please ensure the system shutdown switch is in the on position (button in).

PSU – 12V Controls	
	The black system shutdown button is shown on the left. In is ON and out is OFF.

2.3 Connecting to the Mains 230V supply and Safety checks

For your safety it is IMPORTANT that you follow these connection instructions each time your caravan is connected to a mains supply. This section assumes that the system is complete and that a Leisure battery has been installed (see 3.3).

A) **Ensure suitability of the Mains Supply**. Your caravan should only be connected to an approved supply that meets the requirements of BS7671 or relevant harmonised standards. In most cases the site warden will hold information regarding suitability of supply. If using a generator you also need to comply with the requirements / instructions supplied with the generator. Please note that some electronic generators may not be compatible with your leisure system. Further generator operational information is contained in section 3.4.

B) **Switch the PSU internal Power Converter OFF**. Locate the green 'Charger' power switch on the PSU and ensure the switch is in the off position (button out) before connection to the mains supply.

C) **Connect the Hook-up Lead**. Firstly connect the supplied hook-up lead (orange cable with blue connectors) to the caravan and then connect to the mains supply.

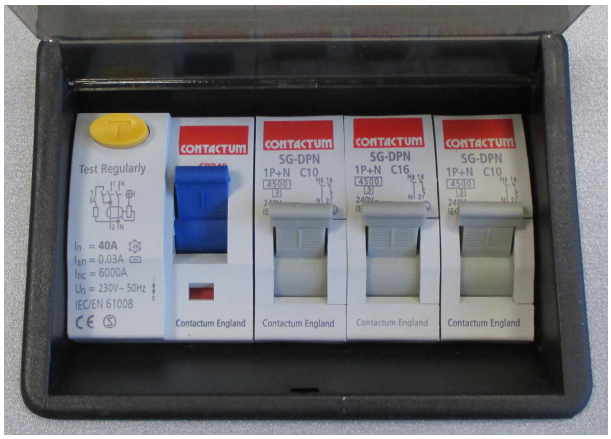
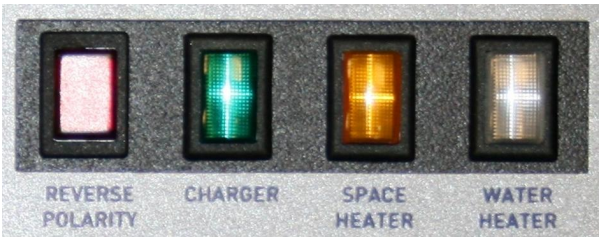
D) **Check Residual Current Device operation**. Locate the RCD within the PSU and ensure the RCD is switched on (lever in up position). Press the 'Test' button and confirm that the RCD turns off (lever in down position). Switch the RCD back to the on position (lever in up position). If the test button failed to operate the RCD see section 3.1 & 3.10.

E) **Check Miniature Circuit Breakers**. Locate the MCB's within the PSU (adjacent to the RCD) and ensure they are all in the on (up) position. If any MCB fails to 'latch' in the on position see section 3.1 & 3.10.

F) **Turn the PSU ON.** Locate the black 'Shutdown' button and ensure it is in the on position (press button to change, button in = on, button out = off). Locate the green 'Charger' switch on the PSU and turn to the on position (press button to change, button in = on, button out = off). The charger switch will illuminate when turned on.

G) **Check correct Polarity**. Locate the 'Reverse polarity' indicator on the PSU and ensure that the indicator is NOT illuminated. If the indicator is illuminated see section 3.10. Please note that this indicator works in conjunction with the charger switch, so will only operate when the charger is on.

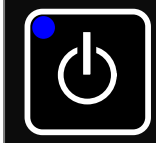
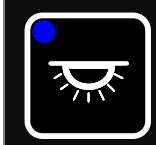
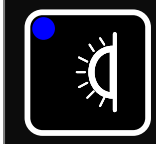
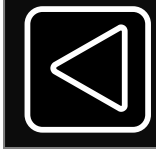
H) **Check operation of equipment**. It is now safe to operate the 12V and 230V equipment.

PSU – 230V Controls	
	Lever type switch, far left – Residual Current Device (RCD) and main 230V on / off switch.
	Push button, far left – RCD Test button.
	3 x lever switches, right – Miniature Circuit Breakers (MCB). Note the lever colour and MCB rating may vary. See the safety and rating sticker adjacent to the PSU for further details.
	Red indicator, far left – Reverse polarity warning indicator. This illuminates when the green charger switch is turned on (see below) and the 230V supply polarity is reversed (see 3.10).
	Green push switch – Charger switch, this switch turns the 12V battery charger on or off. In is ON out is OFF.
	Amber push switch – Space heater switch, this switch turns the 230V supply to the combination water heater / central heating system on or off. In is ON out is OFF.
	Clear push switch – Water heater switch, this switch is not used in this installation as the combination water heater is controlled by the Amber push switch.

2.4 Control Panel - Component Layout

EC370 Digital Control Panel (LCD graphic display)

2.5 Control Panel Operation

Button	Button Description
	**Power button**. Press the power button to turn the leisure power on. Press the button again to turn the power off. The adjacent LED will illuminate when the power is on, and also the voltage of the selected battery will be displayed on the screen. When the car engine is running this LED will flash to indicate the leisure battery is being charged.
	**Pump button**. With the power on, press the pump button to turn the water pump on. Press the button again to turn the pump off. The adjacent LED will illuminate when the pump is on, and also the level of the water tank will be displayed on the screen (if the optional onboard water tank is fitted). This LED may also flash during tank filling operations, see 3.6 for further details.
	**Light button.** With the power on, press the light button to turn the main internal lighting on. Press the button again to turn the lights off. The adjacent LED will illuminate when the lights are on. The lights will be turned on and off automatically each time the power button is operated.
	**Awning Light button**. With the power on, press the awning light button to turn the awning light on or off. The adjacent LED will illuminate when the light is on.
	**Levels / scroll button.** Use this button to scroll through the various levels screens / menu items or to cancel alarms / warnings. Note: The screen illumination / backlight will turn off after a period of time. Press the levels button or wave your hand in front of the illumination sensor to reactivate the illumination.
	**Select button.** Use this button to select options / items or to change settings.

	**Illumination sensor**. With the power turned on, the illumination sensor detects the presence of your hand when it is within 100mm of the sensor. The sensor is located at the top left of the control panel. Simply wave your hand in front of the sensor to activate the screen illumination.

2.6 Remote Control

Systems fitted with the EC370 Control Panel can also work with an infrared remote control. This optional control can be used to control some of the control panel functions, as follows;		
⏻		The power button works in the same manner as the control panel power button. Point the remote towards the control panel and press the button to turn the power on or off.
B		The 'B' button works the same as the control panel lights button. Press the button to turn the lights on or off.
A	C	The 'A' and 'C' button is used to turn on or off the dimmer circuit A or C lights. Press the button to turn the lights on or off.
▲ ▼		The left side up and down buttons are used to control the dimmer circuit A lights. The right side up and down buttons are used to control the dimmer circuit C lights. With the lights turned on, press the up button to increase the brightness, and press the down button to decrease the brightness.

2.7 Operation while driving

The EC500 system is designed to shutdown parts of the system whilst the car engine is running. This is to meet Electro Magnetic Compatibility (EMC) regulations and to ensure the safe operation of the system.

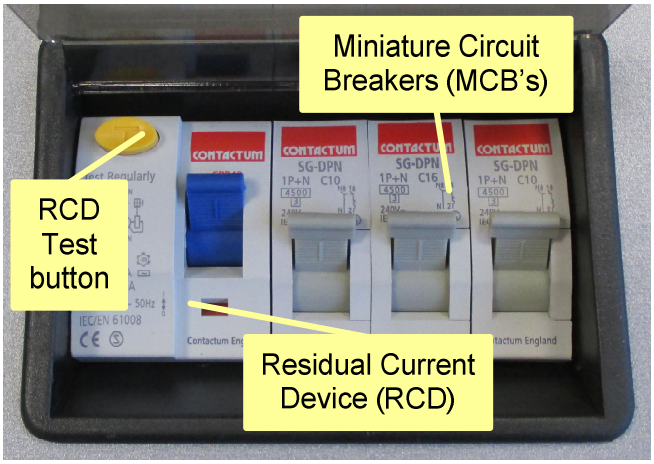
Please ensure the system shutdown switch on the PSU is in the "on" (button in) position before towing (see 2.2). This will ensure the electronic system is active and will therefore be able to control the charging process, supply the refrigerator and monitor other system circuits.

If you hear a warning buzzer when the engine is started, please see the control panel display for details and also refer to section 3.8.

3 System Technical Information

The following section provides further technical information relating to the electrical system.

3.1 Residual Current Device & Miniature Circuit Breakers



The Residual Current Device (RCD) is basically provided to protect the user from lethal electric shock. The RCD will turn off (trip) if the current flowing in the live conductor does not fully return down the neutral conductor, i.e. some current is passing through a person down to earth or through a faulty appliance.

To ensure the RCD is working correctly, the test button should be operated each time the caravan is connected to the mains supply (see section 2.3)

The Miniature Circuit Breakers (MCB's) operate in a similar way to traditional fuses and are provided to protect the wiring installation from overload or short circuit. If an overload occurs the MCB will switch off the supply. If this occurs you should investigate the cause of the fault before switching the MCB back on.

The following table shows the rating and circuit allocation for the three MCB's

MCB	Rating	Description (cable colour)
1	10 Amps	230V Sockets (white)
2	16 Amps	Combination water heater / central heating system (yellow) / Extra 230V Sockets (white)
3	10 Amps	Fridge (black) / 12V Charger (internally connected)

3.2 Battery Charger

The EC500 system incorporates an intelligent three-stage battery charger / power converter.

During stage 1 the battery voltage is increased gradually while the current is limited to start the charging process and protect the battery. At stage 2 the voltage rises to 14.4V to deliver the bulk charge to the battery. When the battery is charged, the voltage is decreased at stage 3 to 13.6V to deliver a float charge to maintain the battery in the fully charged state. The charger can be left switched on continuously as required, but if you are using your caravan as a permanent home please contact Sargent for advice.

The battery charger / power converter also provides power to the leisure equipment when the mains supply is connected. This module supplies DC to the leisure equipment up to a maximum of 25 Amps (300 Watts), therefore the available power is distributed between the leisure load and the battery, with the leisure load taking priority as per the following example:

Leisure load	Available power for battery charging
5A	20A
10A	15A
15A	10A
20A	5A

WARNING

Under heavy loads the Charger case may become hot. ALWAYS ensure any ventilation slots have a clear flow of air. Do not place combustible materials against / adjacent to the Charger

3.3 Leisure Battery

3.3.1 Type / Selection

For optimum performance and safety it is essential that only a proprietary brand LEISURE battery is used with a typical capacity of 75 to 120 Ah (Ampere / hours). A normal vehicle battery is NOT suitable. This battery should always be connected when the system is in use.

The PSU is configured to work with standard lead acid leisure batteries, and in most cases is also compatible with the latest range of Absorbed Glass Matt (AGM) batteries. Before fitting non-standard batteries please check that the charging profile described in 3.2 is suitable for the type of battery by referring to the battery documentation or battery manufacturer.

The battery feed is fitted with an inline fuse between the battery and the electrical harness, which is usually located immediately outside the battery compartment or within 500mm of the battery. The maximum rating of this fuse is 20A.

3.3.2 Installation & Removal

Always disconnect the 230V mains supply and turn the PSU green charger switch to the off position (button out) before removing or installing the battery.

When connecting the battery, ensure that the correct polarity is observed (black is negative [-] and red is positive [+]) and that the terminals are securely fastened. Crocodile clips must not be used.

WARNING

Explosive gases may be present at the battery. Take care to prevent flames and sparks in the vicinity of the battery and do not smoke.

3.3.3 Operation / Servicing

Under normal circumstances it should not be necessary to remove the battery other than for routine inspection of the terminals and "topping up" of the battery fluid where applicable. Please see instructions supplied with the battery.

Note: Do not over discharge the battery. One of the most common causes of battery failure is when the battery is discharged below the recommended level of approximately 11.5V. Discharging a battery below this figure can cause permanent damage to one or more of the cells within the battery.

To prevent over discharge, the EC500 system incorporates a battery protect circuit that warns the users and then disconnects the batteries when they fall below set values. See 3.8 below for details.

3.4 Generator Usage

Caution should be used before connecting a generator to your caravan or motorhome.

WARNING

Never start or stop the generator while electrical loads are connected and switched on. Start the engine, let it stabilise and then connect the electrical load. To stop the engine, disconnect the electrical load and let engine stabilise before switching off

Whilst some generators use electronic inverter technology, others use a more basic principle to generate the 230V supply. Preference should be to choose a generator which produces a consistent sinusoidal wave form with accurate voltage control.

The Reverse Polarity warning light on the PSU may illuminate when using a Generator. This is a normal side effect when using some types of generator. Instead of connecting the neutral conductor to earth, some generators centre tap the earth connection making both neutral and live conductors 110V above earth. This 110V difference causes the neon polarity indicator to illuminate.

In most cases it is safe to use a generator, but please consult the generator handbook for further information.

3.5 Solar Charge Information

The EC500 PSU incorporates a built-in solar charge monitor which will measure and display the current being generated by an attached solar panel (when fitted). For this display to work correctly the solar panel must be connected via a suitable solar regulator to the provided solar panel connection, and not connected direct to the battery.

3.6 Water System Operation – Optional Tank Fill Feature

With the optional onboard water tank installed the system may also include an automatic tank fill / refill feature which operates as follows;

3.6.1 One shot fill

With the water pump turned OFF, when the tank fill feature is turned on at the control panel (see 4.4) 12V power is supplied to the tank filling pump. At the same time a timer is started and counts up in seconds and the LED next to the pump switch starts to flash indicating that filling has started.

Water starts to flow from the water carrier (i.e. Aquaroll) into the internal tank.

If the 100% level is reached the filling pump is turned off, the timer is stopped and the tank fill feature is turned off (pump LED turns off).

If the tank filling pump runs continuous for 300 seconds (5 minutes) or more, then the tank filling pump is turned off and the timer is stopped (pump LED stops flashing). This is to protect the tank filling pump.

3.6.2 Continuous fill / refill

During this process you do need to monitor the water level in the water carrier.

With the main water pump turned ON, when the tank fill feature is turned on at the control panel (see 4.4) 12V power is supplied to the tank filling pump. At the same time a timer is started and counts up in seconds and the LED next to the pump switch starts to flash fast indicating that filling has started.

Water starts to flow from the water carrier into the internal tank.

If the 100% level is reached the filling pump is turned off, the timer is stopped and then reset to zero. The pump LED stops flashing.

The process will restart if water is used from the internal tank causing the level to drop below 100%.

If the tank filling pump runs continuous for 300 seconds (5 minutes) or more, then the tank filling pump is turned off and the timer is stopped (pump LED stops flashing). This is to protect the tank filling pump.

The process can be restarted by turning the main pump off and then on again (after refilling the water carrier).

3.7 Awning Light Operation

The awning light is controlled by the control panel awning light button. The awning light is also linked to the optional alarm system to enable remote control with the alarm fob.

3.8 System Warnings

The system incorporates a number of warnings that are active at specific times. These are summarised below, and also covered by relevant sections of this manual.

Warning	When	Type
Fresh water level low	With pump turned on and fresh water level low (less than 25% full) Only available when an onboard tank is fitted	Message on screen and 30 second audible beep
Leisure battery voltage low	With control panel power on and leisure battery selected (as active battery) and the voltage level falls below 10V	Message on screen and 30 second audible beep.
	With control panel power on and leisure battery selected (as active battery) and the voltage level is below 9V	Message on screen and 30 second audible beep. If no action taken after 30 seconds then the system will switch the power of to prevent severe discharge of the battery
	Note: This is an emergency cut off level to protect the battery from severe damage. You should not rely on this cut off level during normal operation, but	

	manage your power consumption to a discharge level of 11.5V or above. This cut off only applies to power drawn from the battery by the leisure equipment that is controlled by the control panel power switch; it will not protect the battery from discharge by permanently connected equipment.	
Leisure battery voltage high	With control panel power on or off and leisure battery is selected (as active battery) and the voltage level rises above 15V	Message on screen and repeated beeps from the control panel. The beeping will not stop until the fault is cleared.
Vehicle battery warnings	If the vehicle battery is selected instead of the leisure battery, then the same warnings described above for the leisure battery are applied to the vehicle battery.	
Engine running	When the engine is started the system power will be turned off	Message on screen, Leisure & Vehicle battery symbols indicating both batteries are connected for charging. The leisure battery voltage is also shown on screen.
Mains lead (hook-up cable) still connected / plugged in	When the engine is started and the mains cable is still plugged in and the charger is switched on	Message on screen and repeated beeps from the control panel. The beeping will not stop until the hook-up lead is removed.

3.9 12 Volt DC Fuses

WARNING

When replacing fuses always replace a fuse with the correct value. NEVER replace with a higher value / rating as this could damage the wiring harness. If a replacement fuse 'blows' do not keep replacing the fuse as you could damage the wiring harness. Please investigate the fault and contact your dealer.

The following table shows the fuse allocation for the 15 fuses fitted to the PSU. Please note that fuses are dependant on PSU versions and installation, so not all fuses may be present or used.

Fuse	Rating	Fuse Colour	Description
1	10 Amps	Red	Toilet
2	5 Amps	Tan	Ignitions
3	10 Amps	Red	Motorhome only – Electric Step
4	10 Amps	Red	Water Pumps
5	10 Amps	Red	Permanent Supplies
6	20 Amps	Yellow	Leisure Battery
7	20 Amps	Yellow	Vehicle Battery
8	10 Amps	Red	Fans / Heater
9	10 Amps	Red	Power Circuits
10	10 Amps	Red	Lighting Circuit 1
11	10 Amps	Red	Lighting Circuit 2
12	10 Amps	Red	Motorhome only – En-route Circuits
13	10 Amps	Red	Motorhome only – Tank Heaters
14	10 Amps	Red	Tank fill Solenoid
15	25 Amps	White	Charger (note this fuse is fitted inside the PSU)

The following table shows details of the fuse(s) located at the Leisure battery.

Fuse	Rating	Fuse Colour	Description
Battery 1	20 Amps	Yellow	Fuse remotely located near battery

The following table shows details of the fuse(s) located at the Road Light fuse box

Fuse	Rating	Fuse Colour	Description
1	20 Amps	Yellow	Fridge Supply 12V
2	5 Amps	Tan	Left Hand Tail Lights
3	5 Amps	Tan	Right Hand Indicators
4	5 Amps	Tan	Fog Lights
5			Spare location
6	20 Amps	Yellow	Car Battery Supply 12V
7	5 Amps	Tan	Right Hand Tail Lights
8	5 Amps	Tan	Left Hand Indicators
9	7.5 Amps	Brown	Stop Lights
10	5 Amps	Tan	Reverse Lights

3.10 Common Fault Table

Fault	Possible Cause	Proposed Fix
No 230 volt output from PSU	Connecting lead between the site and Leisure Vehicle not connected	Check and connect lead as per 2.3C
	RCD switched off	Reset RCD as per 2.3D
	RCD not operating correctly	Check supply polarity; if the RCD continues to fail contact your Dealer as there is probably an equipment or wiring fault.
	MCB switched off	Reset MCB by switching OFF (down position) then back ON (up position), if the MCB continues to fail contact your Dealer as there is probably an equipment or wiring fault.
	No or deficient supply from site	Contact site Warden for assistance.
	Other fault	Contact your Dealer.
Reverse Polarity light is illuminated on PSU	Mains Supply reversed?	The reverse polarity light is designed to illuminate when the Live and Neutral supply has been reversed / crossed over. If the light illuminates there is a problem with the site supply or the cable connecting the supply to your vehicle. The light is designed to work on UK electrical supplies (where the neutral conductor is connected to earth at the sub station). If you are using your vehicle outside the UK this light may illuminate when no fault exists. In these cases consult the site warden for advice.
	Generator being used	'The Reverse Polarity warning light is on when using my Generator'. This is a normal side effect when using some types of generator. Instead of connecting the neutral conductor to earth, some generators centre tap the earth connection making both neutral and live conductors 110v above earth. This 110v difference causes the neon polarity indicator to illuminate. In most cases it is still safe to use the generator, but please consult the generator handbook for further information.

Fault	Possible Cause	Proposed Fix
Control Panel Problems	Control Panel has no display	Backlight / illumination may have switched off. Press the levels button to reactivate the backlight. Check batteries and fuses, turn PSU shutdown switch and charger switch on and ensure mains supply is connected. Check control panel connecting lead at PSU and behind Control Panel. Contact your Dealer.
	12v Power turns off	Battery protect feature has operated to protect the Vehicle battery and or the Leisure battery. See 3.8 Engine has been started, all equipment has been disconnected to meet EMC requirements. See 2.7
	Control Panel locked / erratic function	Observe control panel handling instructions Control panel software may have crashed. Reboot control panel by turning off the PSU isolate switch. Wait 30 seconds then turn the switch back on.
No 12 volt output from PSU	No 230v supply	Check all above.
	Charger not switched on	Turn charger switch on, switch will illuminate.
	Battery not connected and / or charged	Install charged battery as per 3.3
	Power button on control panel not switched to on	Turn power on at control panel.
	Battery flat / Battery fuse blown	Recharge battery, check fuses, check charging voltage is present at battery.
	Fuse blown	Check all fuses are intact and the correct value fuse is installed as per fuse table.
	Equipment switched off / unplugged	Check equipment is switched on and connected to the 12v supply.
	PSU overheated / auto shutdown operated	Reduce load on system. Allow PSU to cool down. PSU will automatically restart when cool.
	Other fault	Contact your Dealer.
Pump not working	Fuse blown	Replace fuse with correct value as per fuse table.
	Pump turned off	Turn pump on by pressing the pump button at the control panel.
	Setting incorrect	Both the internal and external pump feeds are controlled from the control panel. To alter the setting of the pump switch see your dealer. Ensure the setting matches your desired requirement.

3.11 Contact details

Sargent Electrical Services Limited, provide a technical help line during office hours. Please contact 01482 678981 if you require technical help. For out of hour support please refer to the tech support section of the Sargent web site www.sargentltd.co.uk

4 EC370 Control Panel

In addition to the information contained in section 2.5 (Control Panel Operation), the following section provides further detail information.

4.1 Screen Illumination Operation

The screen illumination (backlight) is turned on and off automatically. Pressing the levels button or waving your hand in front of the illumination sensor will reactivate the illumination.

4.2 Header Area

The header area of the screen shows the following information;

	Tank fill turned on. This symbol indicates that the tank fill feature is switched on. This is only available when the optional onboard water tank is fitted.
	Mains power on. This symbol indicates that the mains supply is connected and the 12V charger is turned on.
	Leisure battery selected. This symbol indicates that the leisure battery is selected as the battery to use or to charge. This is the default setting.
	Clock display. This show the current time in a 24 hour format.
	Vehicle battery selected. This symbol indicates that the vehicle battery is selected as the battery to use or to charge. This is only available when the car is connected and the vehicle battery has been manually selected.
	Solar power. This symbol is displayed when the optional solar panel is supplying power to the leisure battery.
	This symbol is not used.

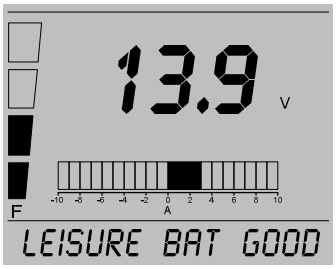
4.3 Footer Area

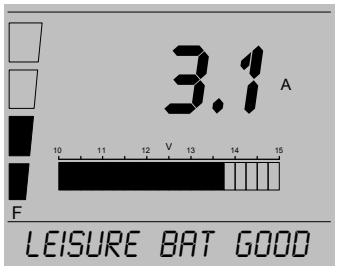
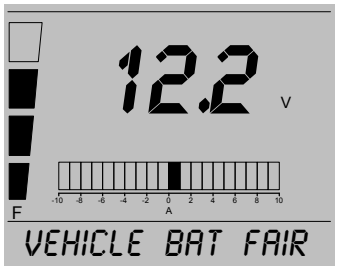
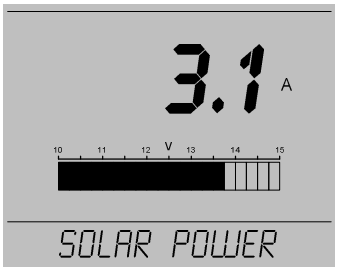
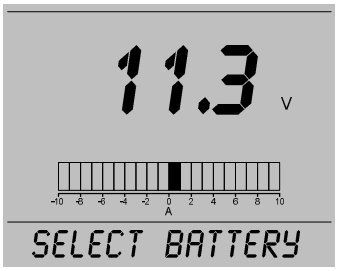
The footer area of the screen shows details of the current information screen, and can also show additional information and settings / options.

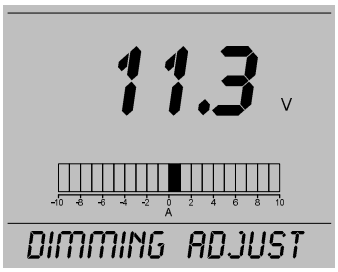
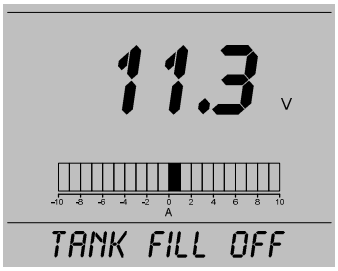
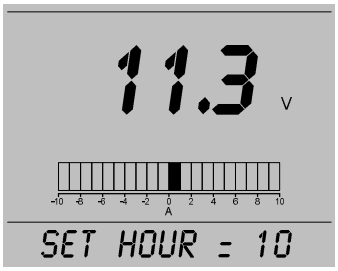
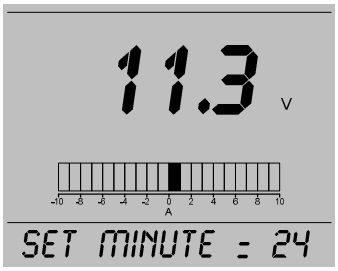
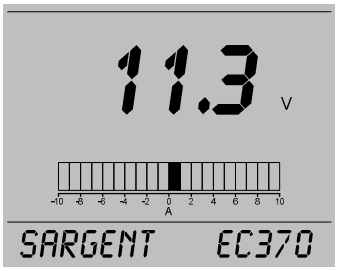
4.4 Information Area

The main information area can display a variety of system information screens. These have been designed to present the information in a clear and concise form, while retaining technical detail for the more advanced users.

The selected screen can be changed by using the levels / scroll button, and work on a continuous loop basis (when the last screen is reached the scrolling returns to the first). The selected screen may be changed automatically by the system depending on the action being performed.

<table>
<tr>
<td>Screen 1 – Leisure Battery</td>
<td> 


</td>
<td>Here leisure battery information is shown.
The digit display shows the battery voltage.
The bar display shows the battery current in Amps. A positive value shows the battery being charged, and a negative value shows the battery being discharged.
If the optional onboard water tank is fitted the display also shows the fresh water level on the left side. This level display is continuously refreshed if the water pump is turned on.
The footer area shows a guide to the battery charge condition (i.e POOR, FAIR, GOOD, CHARGING).
Pressing the select button will swap the display elements so that the digit display shows the battery current and the bar shows battery voltage.
Pressing the levels button to move to the next screen.</td>
</tr>
<tr>
<td>2 – Vehicle Battery</td>
<td> 
</td>
<td>Here, if the tow car is connected, the vehicle battery information is shown similar to the leisure battery (see above).
Again, pressing the select button will swap the display elements.
Pressing the levels button to move to the next screen.</td>
</tr>
<tr>
<td>3 – Solar Power</td>
<td> 
</td>
<td>The 3rd screen shows information relating to the solar panel (when fitted).
The digit display shows the current being generated by the solar panel (measured in Amps). The bar display shows the battery voltage.
When the solar panel is generating current the sun logo is also displayed in the header area.
Pressing the select button will swap the display elements.
Pressing the levels button to move to the next screen.</td>
</tr>
<tr>
<td>4 - Select Battery</td>
<td> 
</td>
<td>Here you can select which battery to use or charge.
By default the leisure battery is automatically selected. If the mains supply is connected and the charger turned on, this battery will also be charged.
If you need to select the vehicle battery, and the tow car is connected, press the select button to change the selected battery from leisure to vehicle (or vice versa).
The relevant symbol or will be shown in the header area.
Information relating to the selected battery is shown on the screen.
Pressing the levels button to move to the next screen.</td>
</tr>
</table>

5 – Dimming Adjust		Here you can adjust the dimming level of the dimmable lights. Press and release the select button to toggle the light level from 100% (full) to 0% (off). Press and hold the select button to alter the light level on 10% steps. Release the button when the desired level is reached. This level will be remembered while the system is powered up. It is reset to 100% when the system is shutdown. Pressing the levels button to move to the next screen.
6 – Tank Fill		This screen is only available when the optional onboard water tank is fitted. Press and release the select button to toggle the setting on or off. When turned on the automatic tank fill feature will operate (see 3.6). Pressing the levels button to move to the next screen.
7 – Adjust Hour		Here you can adjust the hour display. Press the select button to increase the value by 1. Press and hold the button to rapidly increase the value. Pressing the levels button to move to the next screen.
8 – Adjust Minute		Here you can adjust the minute display. Press the select button to increase the value by 1. Press and hold the button to rapidly increase the value. Pressing the levels button to move to the next screen.
9 – System Info		Here you can view the control panel model number (i.e. *EC370*). Press the select button to show the system software version. (i.e *SOFTWARE 176C126*). Pressing the levels button to move to the first screen.

The system can display a number of warnings. The control panel will beep and display the appropriate message. Press the levels button to cancel the warning. See 3.8 for further details.

5 Technical Data & Approvals

5.1 Outline specification - EC500PSU & EC370 Control Panel

INPUT 230v	230 Volts / 0 to 16 Amps	+ / - 10%
OUTPUT 230v	RCD protected, 3 x MCB outputs of 1x16A and 2x10A Separate switched channels for water heater, space heater and charger	
INPUT 12v	2 x 20A battery inputs via 2 x 4 way connectors	
SOLAR INPUT	1 x Dedicated solar panel input (20 to 100W panel) via a 2 way connector (require separate regulator)	
OUTPUT 12v	25A total output via multiple switched channels protected by 14 fused outputs	
PX300 CHARGER	Input 220-240 Volts AC +/- 10%, Frequency 50 Hz +/- 6%, Current 3A max. DC Output 13.6 to 14.4 Volts nominal, Current 25 Amps max (300 Watts). Overall size (HxWxD) 50 x 250 x 135mm	Fixing centres 128*128mm 1.2kg
Signal INPUT	4 x Fresh water level, 1 x Engine running, plus multiple optional vehicle connections	Fresh water negative sensed
Data IN / OUT	CANBUS Data communication and power to Control Panel via 6 way connector	
IP rating	IP31	
Operating temperature	Ambient 0 to 35° Centigrade PSU case temperature with full load 65° C Max	Automatic shutdown and restart if overheated / overloaded
EC500 PSU	Overall size (HxWxD) 315 x 195 x 150mm Clearances 75mm above, 50mm left & right	Weight 2.9 Kg
EC370 Control Panel	Overall size (HxWxD) 95 x 200 x 25mm Cut-out size (HxW) 82 x 178mm	Fixing centres 190mm Weight 180 g

5.2 Approvals

System: BSEN 1648-1, BSEN1648-2 compliant, BS7671: 2008 compliant
Residual Current Device: RCD 40A 30mA trip to BS EN 61008
Miniature Circuit Breakers: MCB's type C 6000A breaking capacity to BSEN 60898
Electro Magnetic Compatibility (EMC) directive 2004/108/EC Certificate CE20071224-1
Integrated Charger: BS EN 60335-1/2.29, 2006/95EC, IEC61000-3.2/3:1995, 1.
Low Voltage Directive: 2006/95EC TUV-014900-A1, EN55022, Class B, EN55024/ Level 2

5.3 Declaration of Conformity

Equipment: Leisure Power Control System *Model name:* EC500, EC370, PX300

I hereby declare that the equipment named above has been designed to comply with the relevant sections of the above referenced approvals. The unit complies with all essential requirements of the Directives.

Signed:	*Name:*	*Position:*	*Manufacturer:*
	I L Sargent	Technical Director	Sargent Electrical Services Ltd Unit 39, Tokenspire Business Park Woodmansey, Beverley East Yorkshire, United Kingdom
Date:			

Whilst every effort has been made to ensure the accuracy and completeness of this document, no guarantee is given against errors or omissions. This document may be updated / improved over time therefore please check with your dealer / supplier for update information or visit www.sargentltd.co.uk