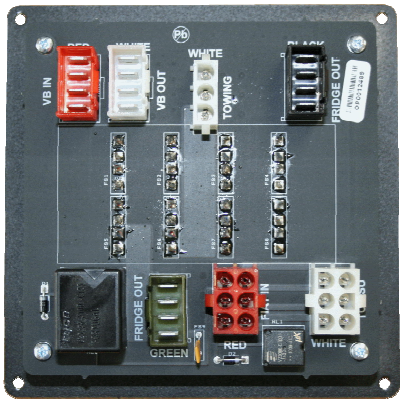
1 Introduction

This Technical guide is designed to provide the Dealer or Advanced User with extra information to enable customisation of the system and to help with any fault finding. This guide is a supplement to the EC500 user manual and should be read in conjunction with the manual.

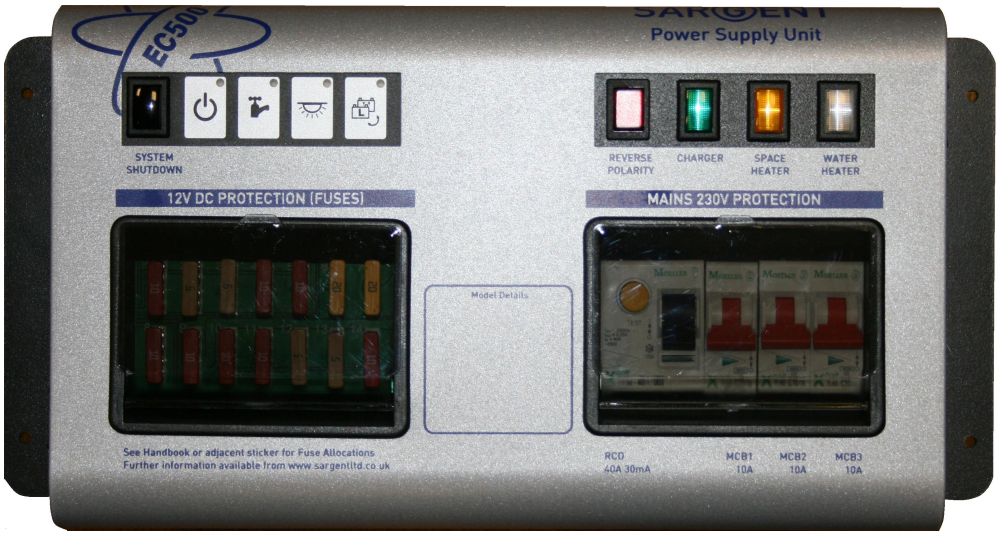
2 EM40 Interface Unit

The EM40 unit is used to interface to the Fiat X250 cab systems. The unit provides fused outputs to a number of circuits, provides switched supplies to the fridge and also has a connector for connection to a tow bar. See attachment for connection data.



3 EC500 Power Supply Unit (PSU)

The EC500 PSU controls a number of features. The 230V section contains an RCD and 3 x MCB protecting the 230V outputs. A number of these outputs are controlled via the double pole push buttons which are located above the RCD. The 12V section contains numerous fuses and relays controlling the various outputs. A number of sensor inputs provide information to the microprocessor which in turn communicates with the control panel (EC480 or EC300) via CAN-BUS data. The EC500 also has a pre wired solar panel regulator which is accessible from the rear of the unit. See attachment for connection data.



4 EC480 Control Panel

The EC480 provides a number of features. The colour LCD screen is used to display various pieces of system data in graphical form. The buttons on the left send signals to the PSU to turn relevant circuits on / off. The panel also has a built-in infrared receiver to allow remote control of some features. In addition to the features covered in the user manual, there are a number of dealer / advanced configuration settings as follows;

To access the advanced settings, on the home screen (the one with the company / brand logo), press and hold the up and down arrows together. Continue holding these buttons until the screen changes.

To scroll through the various settings use the up and down buttons. To change a setting press the select button (left arrow).

The battery current (amps) reading can be calibrated to the sensor output of the PSU. This is usually carried out at the factory during installation, but can also be carried out when the PSU or control panel are changed.

To calibrate the panel, turn the charger off on the PSU, turn the power off on the control panel. At the control panel, scroll to the active battery screen and ensure the leisure battery is selected (if not press the battery select button to change). Now press and hold the select button (left arrow) until the 'calibrating please wait….' message is shown. Now release the select button. The procedure is complete.

Item	*Setting*
Water Alarms	**ON** – This turns the water level alarm system on, which is the default setting. This system will warn the customer if the onboard water tank water level falls below 25% or if the onboard waste tank reached 100% **OFF** – This turns the water level alarm system off. This setting can be used if a customer finds the alarm system a nuisance. A visual warning will still be displayed.
Key Beep	**ON** – This turns the control panel key beep on, which is the default setting. **OFF** – This turns the control panel key beep off. This setting can be used if a customer does not require the keys on the control panel to beep when pressed.
Backlight Time	This is the time the backlighting for the LCD display will remain illuminated. The setting can be adjusted in 5 second increments from 0 through to 60 seconds. This setting will be applied when the system is running from batteries. When a mains supply is present and the charger unit is turned on the backlight time is increased by a factor of 4. So the default setting of 30 seconds will give a time of 2 minutes with the mains on
Step Automation	**NONE** – This turns the electric entry step automation feature off. **LOCK** – This setting will cause the electric step to be retracted when the vehicle doors are locked (by the remote key or the button on the dashboard). **UNLOCK** – This setting will cause the electric step to be extended when the vehicle doors are unlocked. **BOTH** – This setting will cause the electric step to be retracted when the vehicle doors are locked and extended when the doors are unlocked. This is the default setting.

Step Run Time	This setting will adjust the run time of the electric step motor (in internal time counts). This setting is provided to adjust the run time for different types of step. A longer time will be required for double or triple steps, a shorter time will be required for cassette style steps. The default setting is 30 counts.
Awning Light Op	**NONE** – This turns the awning light automation feature off. **LOCK** – This setting will cause the awning & entry light to be switched on (for the period of time set as Awning Run Time) when the vehicle doors are locked (by the remote key or the button on the dashboard). **UNLOCK** – This setting will cause the awning & entry light to be switched on when the vehicle doors are unlocked. **BOTH** – This setting will cause the awning & entry light to be switched on when the vehicle doors are locked or unlocked. This is the default setting.
Awning Run Time	This setting will adjust the on time of the awning & entry light. This setting is provided to adjust the illumination time for the awning light automation feature. The time can be set from 0 to 60 seconds, but will only be applied depending on the Awing Light Op setting above.
Solar Charging	**SMART** – This turns on the solar smart charging feature. When a solar panel is fitted the energy from the panel is automatically directed to the vehicle or leisure battery according to the charge state of each battery and the operation of the mains battery charger. **SMART** is the default setting. **LEISURE** – This setting will cause the energy from the solar panel to be directed to the Leisure battery only. **VEHICLE** – This setting will cause the energy from the solar panel to be directed to the Vehicle battery only.
Charging Mode	**SMART** – This turns on the smart charging feature. The energy from the intelligent charger is automatically directed to the vehicle or leisure battery according charge state of each battery. **SMART** is the default setting. **NORMAL** – This setting will cause the energy from the intelligent battery charger to be directed to the battery selected manually on the control panel by the battery select button.
Battery Size	This setting is used to set the capacity of the leisure battery. It is used by the Amp Hour calculation routine to show the percentage of charge in the battery. Please adjust the setting to match the battery capacity installed. The setting ranges from 50 to 250 Ah. The default setting is 110 Ah.
Pump Select	This setting is used to determine which water pump output will be controlled by the pump button on the control panel. **INTERNAL** – The internal (onboard) water pump will be controlled by the pump button. This is the default setting. **EXTERNAL** – The external (filler) water pump supply will be controlled by the pump button. Please note that the wiring for this pump is not present in Auto-Trail wiring installations. However, the connections are available at the rear of the PSU. **BOTH** – Both water pumps will be controlled by the pump button.
Waste Levels	This setting adjusts the number of waste water tank level readings. This allows the level count to be changed to match the number of probes or switches fitted to the tank. The default setting is 4.
Ext Temp Locatn	This setting defines where the external temperature probe is connected. **PSU** – The external temperature probe is plugged into the PSU. The system will use the reading from this location. **C-PNL** – The external temperature probe is plugged into the connector at the rear of the control panel. The system will use the reading from this location.
Exit Advanced	**<EXIT>** Press the select button to exit the advanced settings menu.
Settings Reset	**GO….** Press the select button to reset the advanced settings to the default values.
MH Vehicle Type	This setting is used to change the system from the standard Fiat configuration to one tailored to meet the requirements of Peugeot. When set at **Fiat** the vehicle battery voltage cut-off is set at 10.9V, a usable yet safe level approved by Fiat. When set at Peugeot the vehicle battery voltage cut-off is set at 12.4V, a level stipulated by

	Peugeot to meet type approval. This basically makes the vehicle battery unusable because as current is drawn the voltage drops and the cut-off is triggered. We recommend that all system are operated on the Fiat setting.
IR Remote test	**0 0 0** Use this menu item to test the infrared remote control. The figures on screen will change depending on which button is being pressed on the remote control. Remember to point the remote control towards the control panel.
AH Start Point	This setting is used to set the Amp Hour start point for the Ah meter in the control panel. This can be used to set the estimated battery capacity. If the battery is known to be fully charged set to 100%. If the battery is estimated at half charge then set to 50%. The default setting for new systems is 50%. Please note this setting was added at control panel version CP121, earlier versions do not have this feature.

5 EC300 Control Panel

The EC300 provides a number of features. The 2 x 16 character screen is used to display various pieces of system data in text form. The buttons on the left send signals to the PSU to turn relevant circuits on / off. In addition to the features covered in the user manual, there are a number of dealer / advanced configuration settings as follows;

To access the advanced settings, on the home 'EC300' screen, press and hold the up and down arrows together. Continue holding these buttons until the screen changes.

To scroll through the various settings use the up and down buttons. To change a setting press the select button (left arrow).

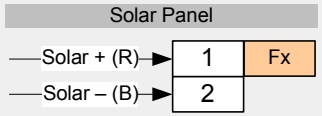
The battery current (amps) reading can be calibrated to the sensor output of the PSU. This is usually carried out at the factory during installation, but can also be carried out when the PSU or control panel are changed.

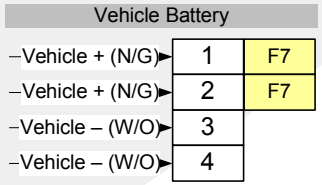
To calibrate the panel, turn the charger off on the PSU, turn the power off on the control panel. At the control panel, scroll to the Battery Current screen and ensure the leisure battery is selected (if not press the battery select button to change). Now press and hold the select button (left arrow) until the 'calibrating….. please wait' message is shown. Now release the select button. The procedure is complete.

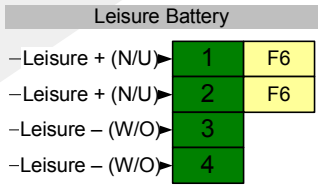
Item	*Setting*
Water Alarms	**ON** – This turns the water level alarm system on, which is the default setting. This system will warn the customer if the onboard water tank water level falls below 25% or if the onboard waste tank reached 100% **OFF** – This turns the water level alarm system off. This setting can be used if a customer finds the alarm system a nuisance. A visual warning will still be displayed.
Key Beep	**ON** – This turns the control panel key beep on, which is the default setting. **OFF** – This turns the control panel key beep off. This setting can be used if a customer does not require the keys on the control panel to beep when pressed.
Backlight Time	This is the time the backlighting for the LCD display will remain illuminated. The setting can be adjusted in 5 second increments from 0 through to 60 seconds. This setting will be applied when the system is running from batteries. When a mains supply is present and the charger unit is turned on the backlight time is increased by a factor of 4. So the default setting of 30 seconds will give a time of 2 minutes with the mains on
Step Automation	**NONE** – This turns the electric entry step automation feature off. **LOCK** – This setting will cause the electric step to be retracted when the vehicle doors are locked (by the remote key or the button on the dashboard). **UNLOCK** – This setting will cause the electric step to be extended when the vehicle doors are unlocked. **BOTH** – This setting will cause the electric step to be retracted when the vehicle doors are locked and extended when the doors are unlocked. This is the default setting.
Step Run Time	This setting will adjust the run time of the electric step motor (in internal time counts). This setting is provided to adjust the run time for different types of step. A longer time will be

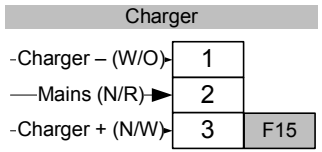
	required for double or triple steps, a shorter time will be required for cassette style steps. The default setting is 30 counts.
Awning Light Op	**NONE** – This turns the awning light automation feature off. **LOCK** – This setting will cause the awning & entry light to be switched on (for the period of time set as Awning Run Time) when the vehicle doors are locked (by the remote key or the button on the dashboard). **UNLOCK** – This setting will cause the awning & entry light to be switched on when the vehicle doors are unlocked. **BOTH** – This setting will cause the awning & entry light to be switched on when the vehicle doors are locked or unlocked. This is the default setting.
Awning Run Time	This setting will adjust the on time of the awning & entry light. This setting is provided to adjust the illumination time for the awning light automation feature. The time can be set from 0 to 60 seconds, but will only be applied depending on the Awing Light Op setting above.
Solar Charge To	**SMART** – This turns on the solar smart charging feature. When a solar panel is fitted the energy from the panel is automatically directed to the vehicle or leisure battery according to the charge state of each battery and the operation of the mains battery charger. **SMART** is the default setting. **LEISURE** – This setting will cause the energy from the solar panel to be directed to the Leisure battery only. **VEHICLE** – This setting will cause the energy from the solar panel to be directed to the Vehicle battery only.
Charging Mode	**SMART** – This turns on the smart charging feature. The energy from the intelligent charger is automatically directed to the vehicle or leisure battery according charge state of each battery. **SMART** is the default setting. **NORMAL** – This setting will cause the energy from the intelligent battery charger to be directed to the battery selected manually on the control panel by the battery select button.
Ext Temp Locat'n	This setting defines where the external temperature probe is connected. **PSU** – The external temperature probe is plugged into the PSU. The system will use the reading from this location. **C-PNL** – The external temperature probe is plugged into the connector at the rear of the control panel. The system will use the reading from this location.
Pump Control	This setting is used to determine which water pump output will be controlled by the pump button on the control panel. **INTERNAL** – The internal (onboard) water pump will be controlled by the pump button. This is the default setting. **EXTERNAL** – The external (filler) water pump supply will be controlled by the pump button. Please note that the wiring for this pump is not present in Auto-Trail wiring installations. However, the connections are available at the rear of the PSU. **BOTH** – Both water pumps will be controlled by the pump button.
Waste Levels	This setting adjusts the number of waste water tank level readings. This allows the level count to be changed to match the number of probes or switches fitted to the tank. The default setting is 4.
PSU Version No	This item is used to display the PSU software version. No adjustment is made on this item, it is for information only.
Exit Advanced	**<EXIT>** Press the select button to exit the advanced settings menu.
Settings Reset	**GO….** Press the select button to reset the advanced settings to the default values.

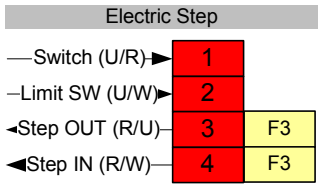
12V Connections to EC500 Power Supply Unit

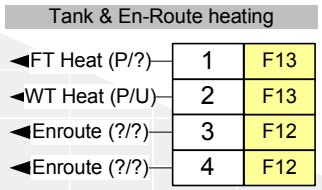


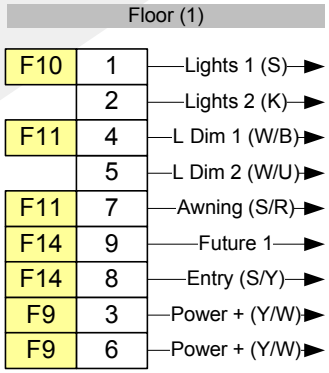


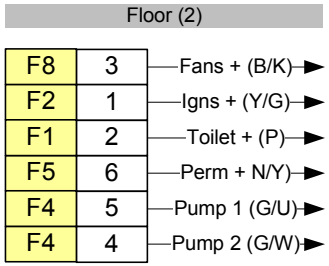


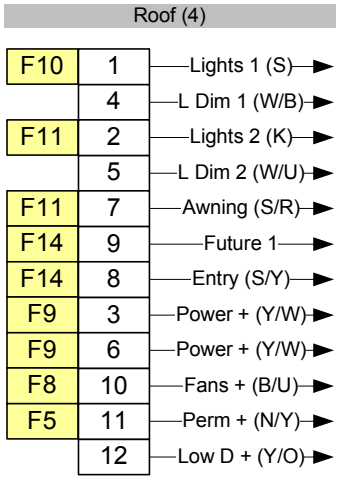


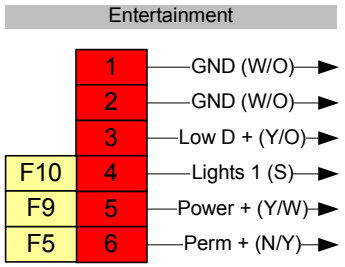






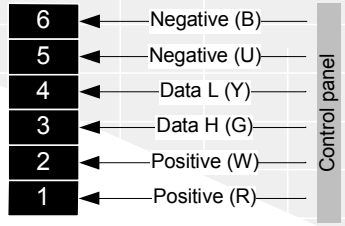


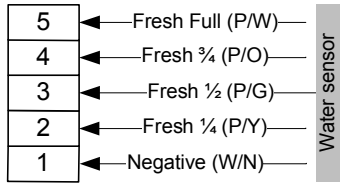


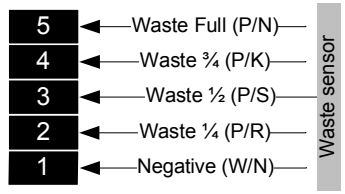


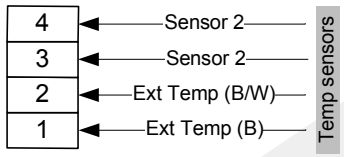
EC500 Power Connections

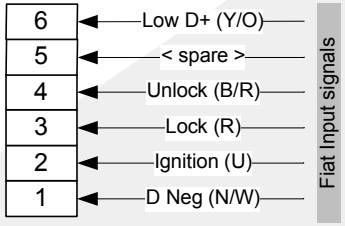
(Connectors on front large PCB)

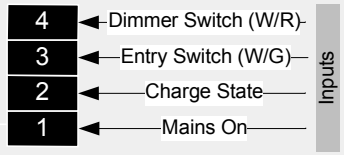








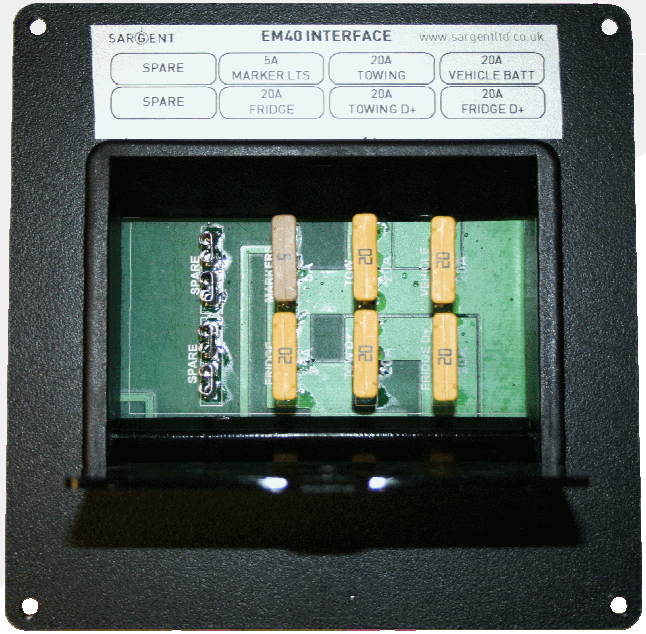


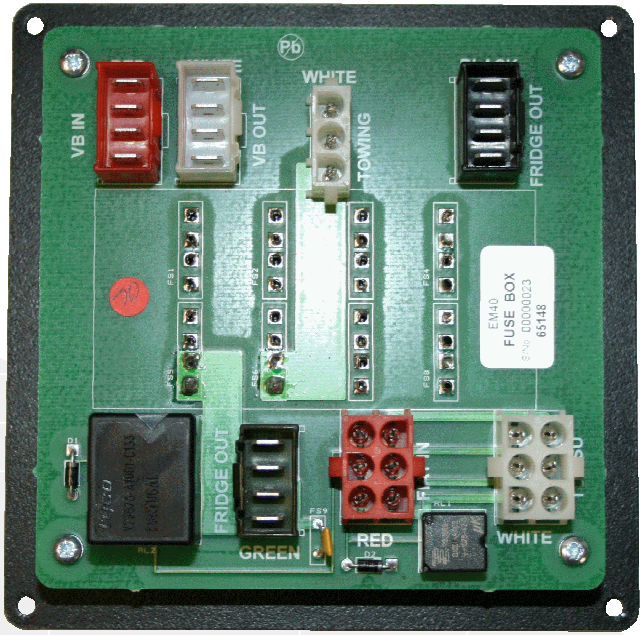


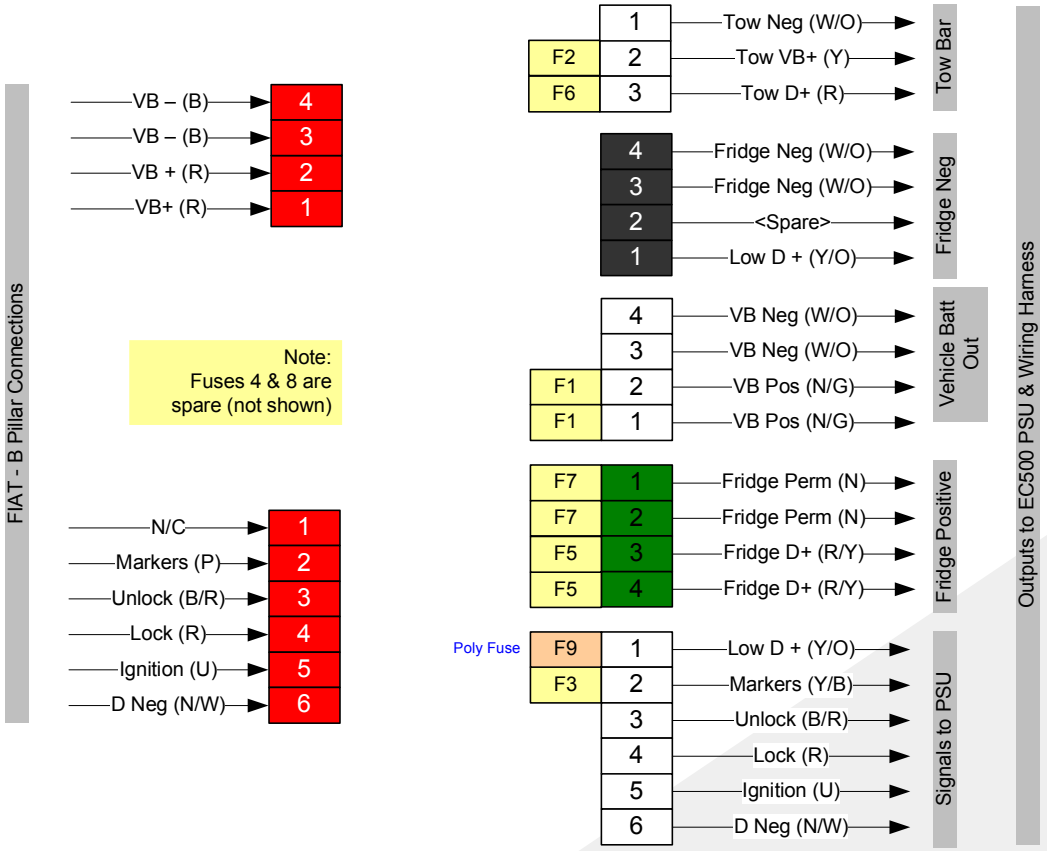
EC500 Signal Connections

(Connectors on side small PCB)

12V Connections to EM40 Interface Unit







EM40 Interface Connections