

***Guide to Paux System  
for Motor Caravans***

***2006-2007***

*Model AS PAUX v. 1.0*



**ArSilicii** s.r.l.

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## Introduction

This guide contains information about the distributed intelligence system developed by ArSilicii and it is structured as follows:

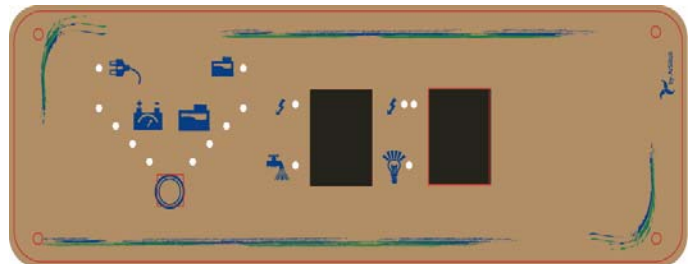
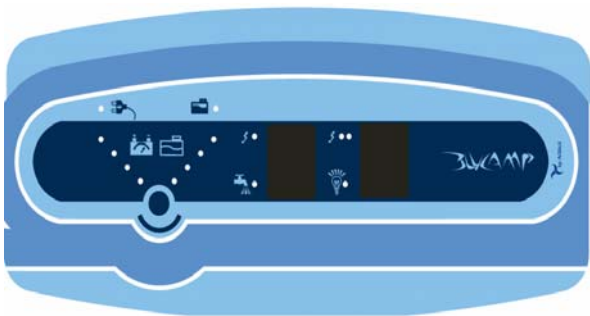
- Instructions for use of the control unit and basic principles. This section contains everything the user needs to obtain the benefits of this system.
- Detailed description of the system components and how they are connected, intended for the dealer or the more expert user for repairs or particular installations.
- Guide to solving the most frequent problems.

## Guide to the use of the As PauX system control unit

### Introduction

The Paux system control panel allows you to keep the main operating parameters of your motor caravan under control and use the controls for activating certain functions.

The control unit may differ slightly in appearance depending on the motor caravan model, but the operating features remain the same and are those described in detail on the pages that follow.



## **Description of the functions.**



### **LEVEL CONTROL BUTTON**

Pressing this button will activate the two sets of 4 leds each, which indicate the service battery charge and the water tank level at the side of the respective symbols.



For the battery indicator we have:

- 1st GREEN LED on for voltage over 12.5 Volts.
- 2nd GREEN LED on for voltage over 11.5.
- 3rd GREEN LED on for voltage over 10.5.
- 4th RED LED flashing for voltage below 9 Volts.



For the fresh water tank indicator:

- 1st GREEN LED Level over 75%.
- 2nd GREEN LED Level over 50%.
- 3rd GREEN LED Level over 25%.
- 4th RED LED flashing for level below 25%.



### **LIGHT SWITCH**

Pressing this button will activate the outputs that control the lines leading to the motor caravan ceiling.

Next to the button there are two warning lights, one at the bottom next to the function symbol, which stands for the status and one at the top with the lightning symbol, indicating any short circuits.

The status warning light associated with this button reflects the electrical condition of the ceiling lines: led on, outputs on, led off, outputs off.


**⚡** If the **warning light turns on** next to the lightning streak, this is a symptom of a short circuit on one of the outputs of the power supply unit that powers the light fittings or other services located near the motor caravan ceiling.



### **WATER PUMP SWITCH**

Pressing this button will activate the pump node output, which controls the operation of the pump. Next to the button there are two warning lights, one at the bottom next to the function symbol, which stands for the status and one at the top with the lightning symbol, indicating any short circuits.

The status warning light associated with this button reflects the electrical condition of the floor lines: led on, outputs on, led off, outputs off.

 If the **warning light turns on** next to the lightning symbol, this is a symptom of a short circuit on one of the outputs of the power supply unit that powers the light fittings or other services located near the motor caravan floor.



The warning light next to the symbol above turns on when the motor caravan is connected to the electricity mains.



The warning light next to the symbol above turns on when the motor caravan recovery tank is above the safety limit.

## **WHAT TO DO IF....**

### **The control unit fails to turn on when the button is pressed.**

- Check that the batteries are charged, i.e. that the inside lights switch on.
- Check that the led on the power supply unit is on, and that current reaches the power supply unit.
- Check that the connector behind the control unit is inserted correctly.
- Contact the competent personnel.

### **The 220V MAINS warning light fails to turn on.**

- Check if the outside socket is connected to the 220V mains.
- Check if the differential switch located in correspondence with the socket but inside the living quarters is on.
- Check that the power supply unit plug is inserted correctly in its socket.
- Contact the competent personnel.

### **Water tank level indicator always low.**

- Low water level.
- If the pump turns on and off normally but pressing the water tank level button the water is always low, try cleaning the level sensor rods, which might be dirty.
- Contact the competent personnel.

# Guide to wiring the As PauX System

## Introduction

These pages contain a guide for the wiring procedures to be followed for connecting the devices that form part of the AS PauX system. They are intended for personnel qualified for carrying out repairs, alterations and customisation of the system itself and for fitting new accessories.

### Services battery – Power Supply Unit connection wiring

Wiring of the Services Battery connection with the Power Supply Unit takes place as shown in Figure 8. The 50A delayed reed fuse is to be placed in series with the battery positive lead near the battery; the cross section of the two leads must be at least 6 mm<sup>2</sup><sup>1</sup>.

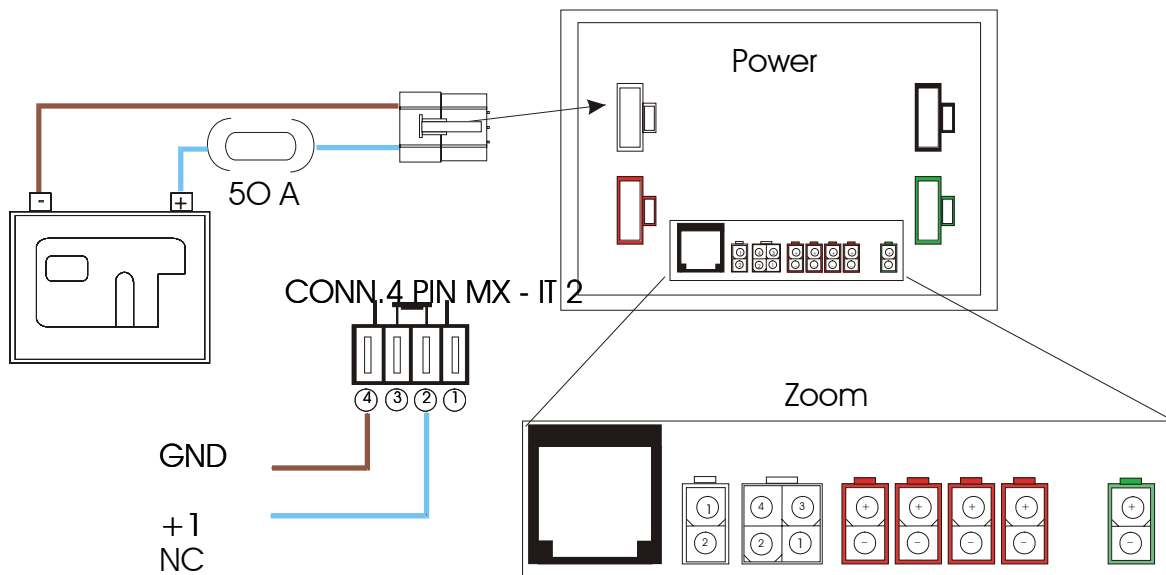


Figure 1 “Services Battery-Power Supply Unit Wiring”

The summary table details the type of heading of the extension (point-to-point connection) i.e. with which type of connector its ends are terminated, the cross section and colour of the leads and the position of the contacts inside the actual connector.

Connection: Services Battery – Power Supply Unit			
--	← Extension Heading →		No.2
Type	Cross section mm <sup>2</sup>	Colour	Position
+ 12V	6	LIGHT BLUE	2
GND (GROUND)	6	BROWN	4

<sup>1</sup> If the distance between the two objects is higher than the standard ones of a camper, it might be necessary to use cables with a larger cross section



## Engine Batteries – Power Supply Unit connection wiring

Wiring of the Engine Battery connection with the Power Supply Unit takes place as shown in Figure 2. The 50A delayed reed fuse is to be placed in series with the battery positive lead near the battery; the cross section of the two leads must be at least 6 mm<sup>2</sup>.

In this connection, there is a third wire with a cross section of 1.5 mm<sup>2</sup>, necessary for taking the engine ON signal to the Power Supply Unit.

From the point in which the signal is picked up, the insertion of a 3 A fuse is recommended. In addition, the D+ signal (engine on) must be picked up by the vehicle mechanical unit, taking into account that when the engine is on, the potential of this signal becomes GND (battery negative pole) and it absorbs about 220 mA.

The arrangement of the three wires in the connector is as shown in Figure 2. and in the following table.

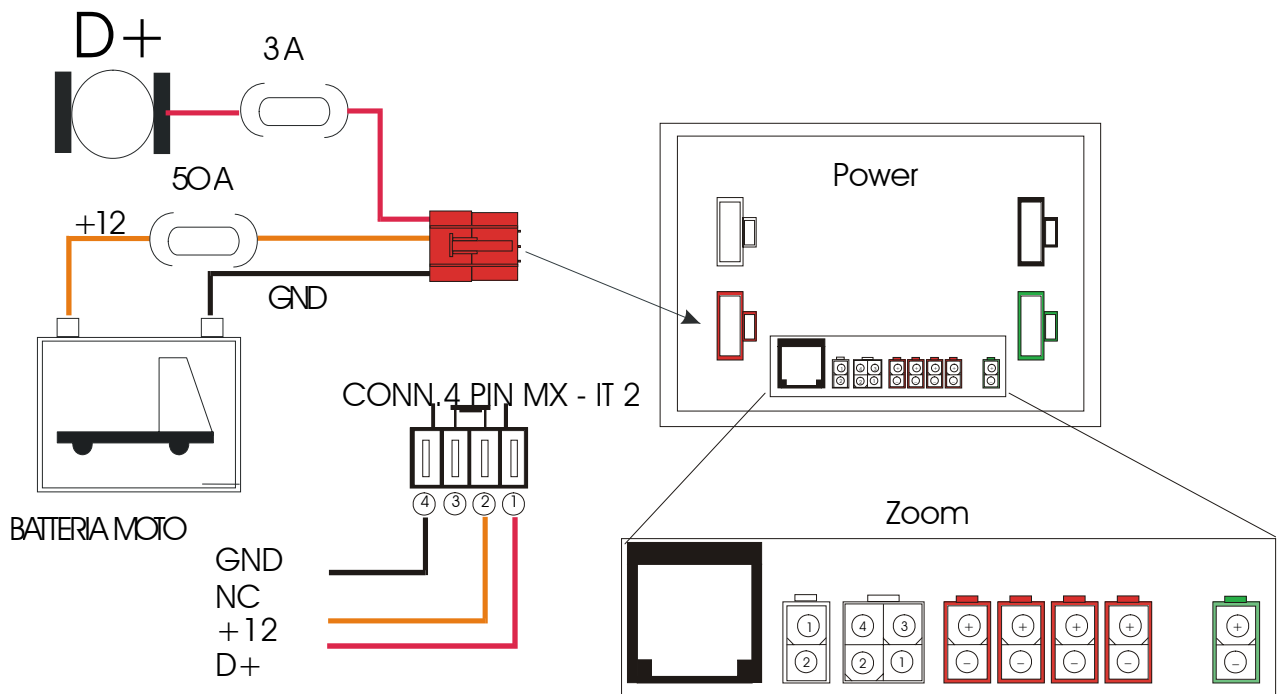


Figure 2 “Engine Battery and Alternator -Power Supply Unit Wiring”

For the above connection, the summary table details the type of heading of the extension (point-to-point connection) i.e. with which type of connector its ends are terminated, the cross section and colour of the various leads and the position of the contacts inside the actual connector (See section “Type of Connectors and their Description ”)

Connection: Engine battery – Power Supply Unit			
--	← Extension heading →		No.2
Type	Cross section mm <sup>2</sup>	Colour	Position
+ 12V	6	ORANGE	2

<sup>2</sup> See note 1

GND (GROUND)	6	BLACK	4
D+	1.5	RED	1
--	--	--	3

**Power Supply Unit – Standard Fridge connection Wiring**

The Fridge connection to the Power Supply Unit is made with a three-wire cable with a cross section of 6mm<sup>2</sup> (+12, GROUND, +12 D+) as shown in Figure 3. No external fuse is necessary as the Power Supply Unit has a provision for protecting this type of load with a thermal protection. The threshold of this protection is about 15 A.

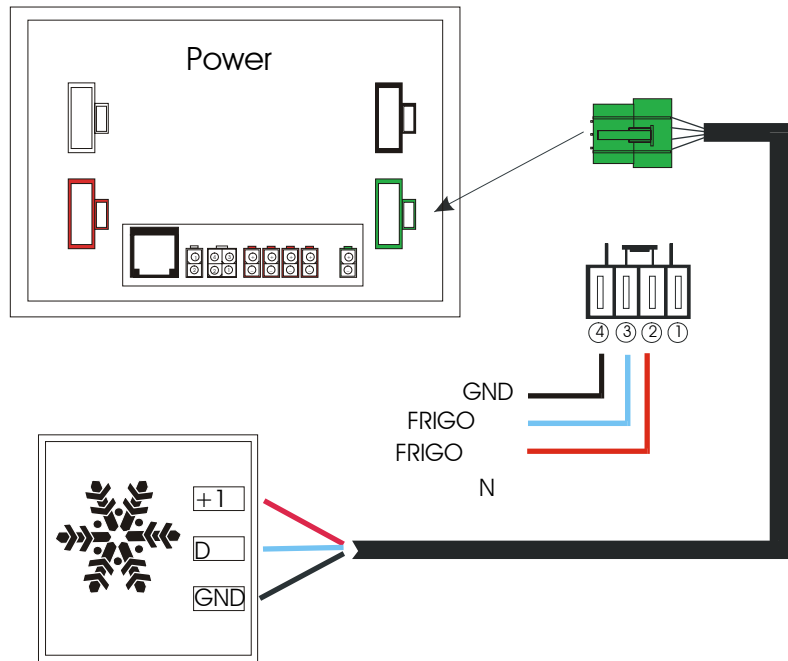


Figure 3 “Power Supply Unit – Standard Fridge Connection”

For the above connection, the summary table details the type of heading of the extension (point-to-point connection) i.e. with which type of connector its ends are terminated, the cross section and colour of the various leads and the position of the contacts inside the actual connector (See section “Type of Connectors and their Description ”)

<b>Connection: Power Supply Unit – AES type Fridge</b>			
--	<b>← Extension Heading →</b>		No.2
Type	Cross Section mm <sup>2</sup>	Colour	Position
GND (GROUND)	6	BLACK	4
+12_D+	6	LIGHT BLUE	3
+12	6	RED	2
--	--	--	1

## Floor-mounted Appliances Connection Wiring

Connection of the floor-mounted appliances (heater, boiler, etc.) is to be made as shown in Figure 4. Connector J1 must be connected to the pump positive and negative in the upper section (controlled by the control unit); all the other floor-mounted appliances are to be connected to connectors from J2 to J5.

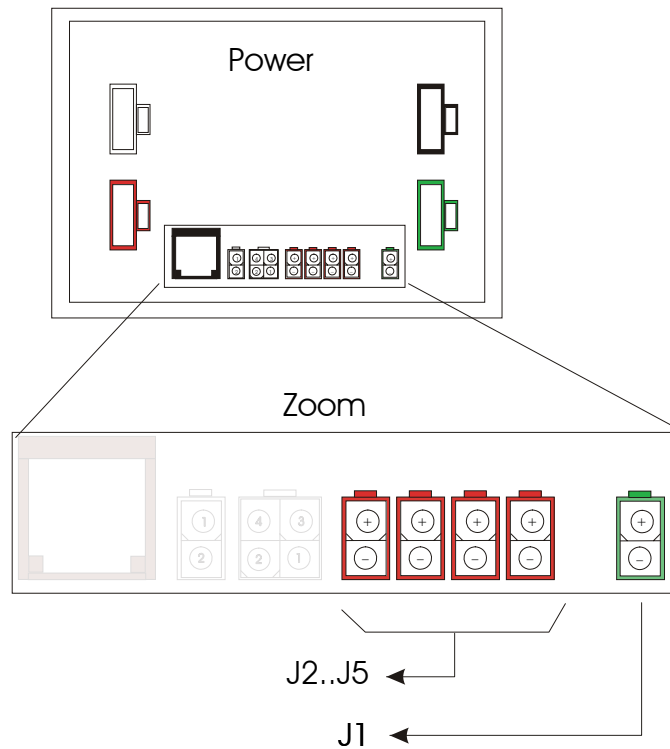


Figure 4 “Power Supply Unit – Floor-mounted Appliances Connection”

The connection cables must have a cross section of 1.5 mm<sup>2</sup>.

The outputs are protected by thermal protections. The threshold of these protections is about 4 A for connector J1 and about 5 A for the group of connectors J2..J5.

For the above connection the summary table details the type of heading of the extension (point-to-point connection) i.e. with which type of connector its ends are terminated, the cross section and colour of the various leads and the position of the contacts inside the actual connector (See section “Type of Connectors and their Description ”).

<b>Connection: Power Supply Unit – Floor-mounted Appliances</b>			
No.5	<b>← Extension Heading →</b>		No.5
<b>Type</b>	<b>Cross section mm<sup>2</sup></b>	<b>Colour</b>	<b>Position</b>
+ 12V	1.5	RED	1
GND (GROUND)	1.5	BLACK	2

### Connection Wiring for Fresh water and Drain Level Sensors

The Sensor<sup>3</sup> for the Fresh Water levels must be connected to connector J7 with a four-lead extension, arranged as follows:

<b>Connection: Power Supply Unit – Floor-mounted Appliances</b>			
<b>sensor</b>	<b>← Extension Heading →</b>		<b>No.4</b>
<b>Type</b>	<b>Cross section mm<sup>2</sup></b>	<b>Colour</b>	<b>Position</b>
Long Rod A	0.75	BROWN	4
Long Rod B	0.75	WHITE	1
Medium Rod	0.75	GREEN	2
Short Rod	0.75	YELLOW	3

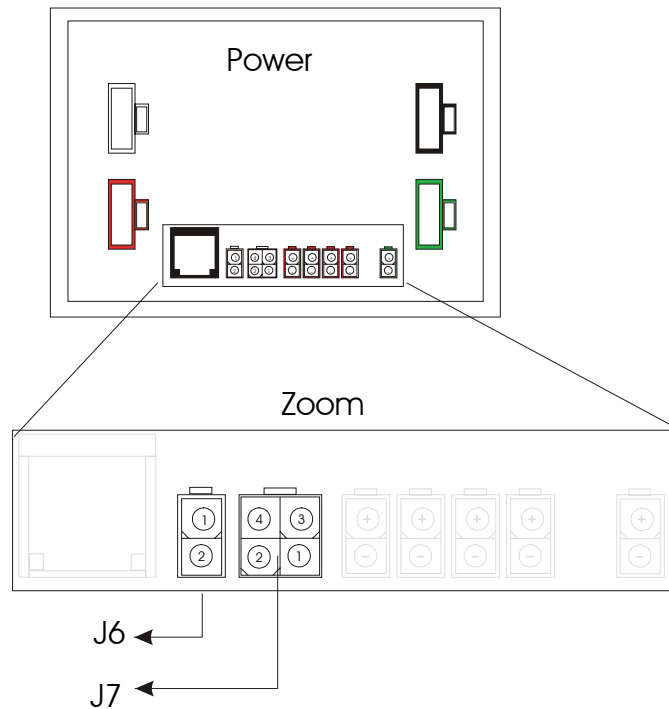


Figure 5”Power Supply Unit – Level Sensors Wiring”

The overflow sensor of any recovery tank must be connected to connector J6 of Figure 5, in accordance with the following table.

<b>Connection: Power Supply Unit – Drain Water</b>			
<b>Drain Tank</b>	<b>← Extension Heading →</b>		<b>No.5</b>
<b>Type</b>	<b>Cross section mm<sup>2</sup></b>	<b>Colour</b>	<b>Position</b>
Wire A	0.75	BLACK	1
Wire B	0.75	BLACK	2

<sup>3</sup> provision for four-level sensor

### Power Supply Unit – Control Unit Connection Wiring

The Connection of the Power Supply Unit with the Control Unit takes place through two connections as shown in Figure 6. The connection from connector J8 of the Power Supply Unit to the similar connector on the back of the Control Unit panel takes place with a standard RJ45 cable, the other connection is shown in the following table:

<b>Connection: Power Supply Unit – Control Unit</b>			
No.2	<b>← Extension Heading →</b>		No.2
<b>Type</b>	<b>Cross section mm<sup>2</sup></b>	<b>Colour</b>	<b>Position</b>
+ 12V	4	RED	2
GND (GROUND)	4	BLACK	4
+ P	0.75	ORANGE	1
+P	0.75	GREY	3

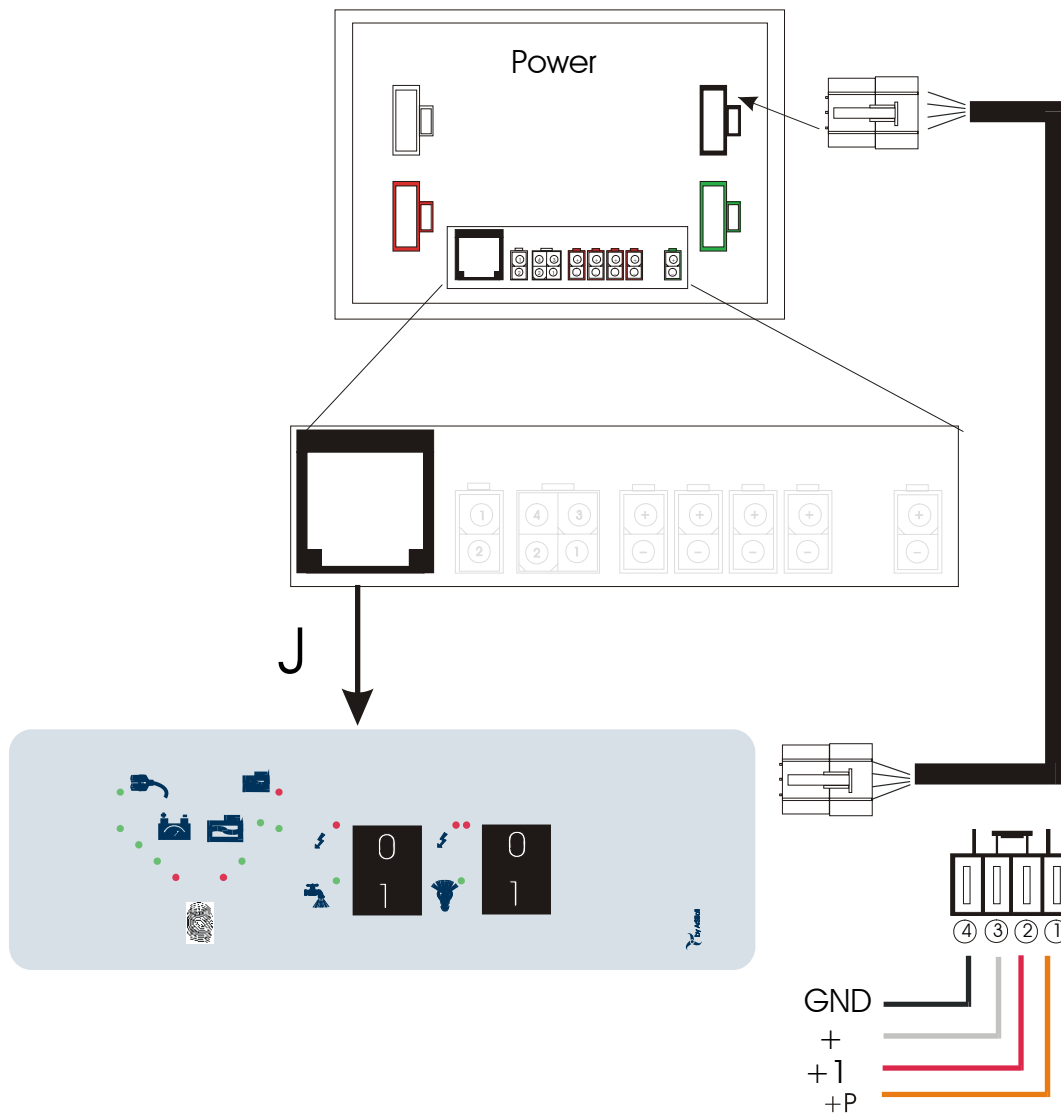


Figure 6 “Power Supply Unit – Control Unit Wiring”

### Control Unit – Ceiling-mounted Appliances Connection Wiring

In general all the Ceiling-mounted appliances, mainly including the neon or incandescent lights or fans are connected to the Control Unit panel. It is possible to connect up to a maximum of eight loads; the connection between the generic load (generally set of bulbs) is made with a point-to-point connection (extension) as shown in Figure 7. The extension is headed from both ends with the same connector, the cables are arranged as shown in the following table<sup>4</sup>

The thermal protections on the Control Unit panel have a rating of about 10 A per set of lights (2 sets of 4 Outputs)

<sup>4</sup> please be reminded that for incandescent light connections there is no need to respect the positive and negative arrangement while it is important for fans and certain neon lights.

<b>Connection: Power Supply Unit – Floor-mounted Appliances</b>			
No.5	<b>← Extension Heading →</b>		No.5
Type	Cross section mm <sup>2</sup>	Colour	Position
+ 12V	1.5	RED	1
GND (GROUND)	1.5	BLACK	2

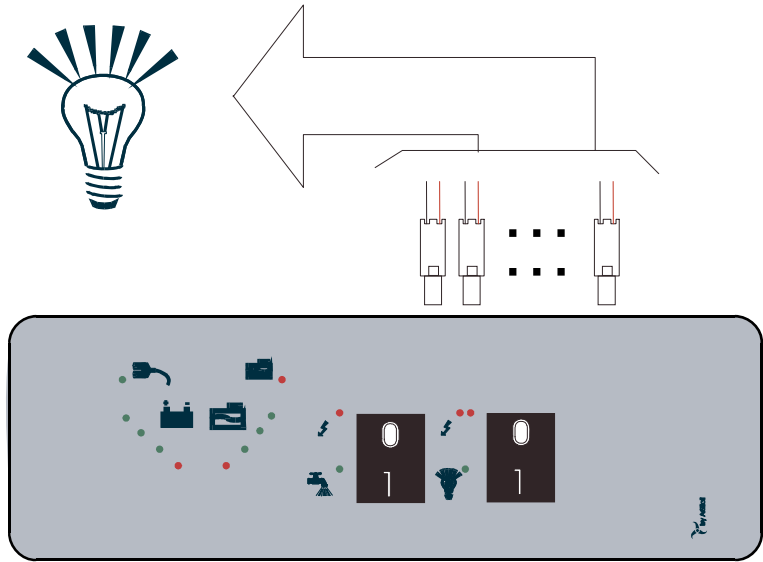





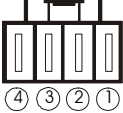




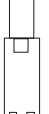
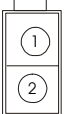
Figure 7”Ceiling Power Hub – Ceiling Appliances ”

For the above connection, the summary table details the type of heading of the extension (point-to-point connection) i.e. with which type of connector its ends are terminated, the cross section and colour of the various leads and the position of the contacts inside the actual connector (See section “Type of Connectors and their Description ”)

**For any other installation that differs from the ones described in this guide, you are advised to follow the specifications of EN Std. 1648-2, in particular, reference should be made to Annex A of this Std. for the sizing of the leads.**

### ***Type of Connectors and their Description***

**NB. The view of the arrangement of the contacts is from the back of the connector, namely where the contacts are inserted.**

	Connector Symbol	Arrangement of contacts (Back view)	Description	
No.1			Name:	Molex Caimano MX - IT – 3
			Contacts	Male
			Contact holder:	Male holder
No.2			Name:	Molex Caimano MX - IT – 2
			Contacts	Female
			Contact holder:	Female holder
No.3			Name:	Molex MXJ – 1 5559A
			Contacts	Male
			Contact holder:	Male holder
No.4			Name:	Molex MX - IT – 4 5557
			Contacts	Female
			Contact holder:	Female holder
No.5			Name:	Molex MiniFit 2
			Contacts	Female
			Contact holder:	Female holder