SCHEIBER SA – BELLEVUE - 85120 SAINT PIERRE DU CHEMIN - FRANCE

Tel. France **02 51 51 73 21** Tel. international **+ 33 2 51 51 73 21**
Fax France **02 51 51 75 03** Fax international **+ 33 2 51 51 75 03**
E-mail Scheiber@wanadoo.fr Internet : http://www.scheiber.fr
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RAPIDO
Maestro
Le Randonneur

control panel

season 2003

Instructions produced by: Pascal ROY
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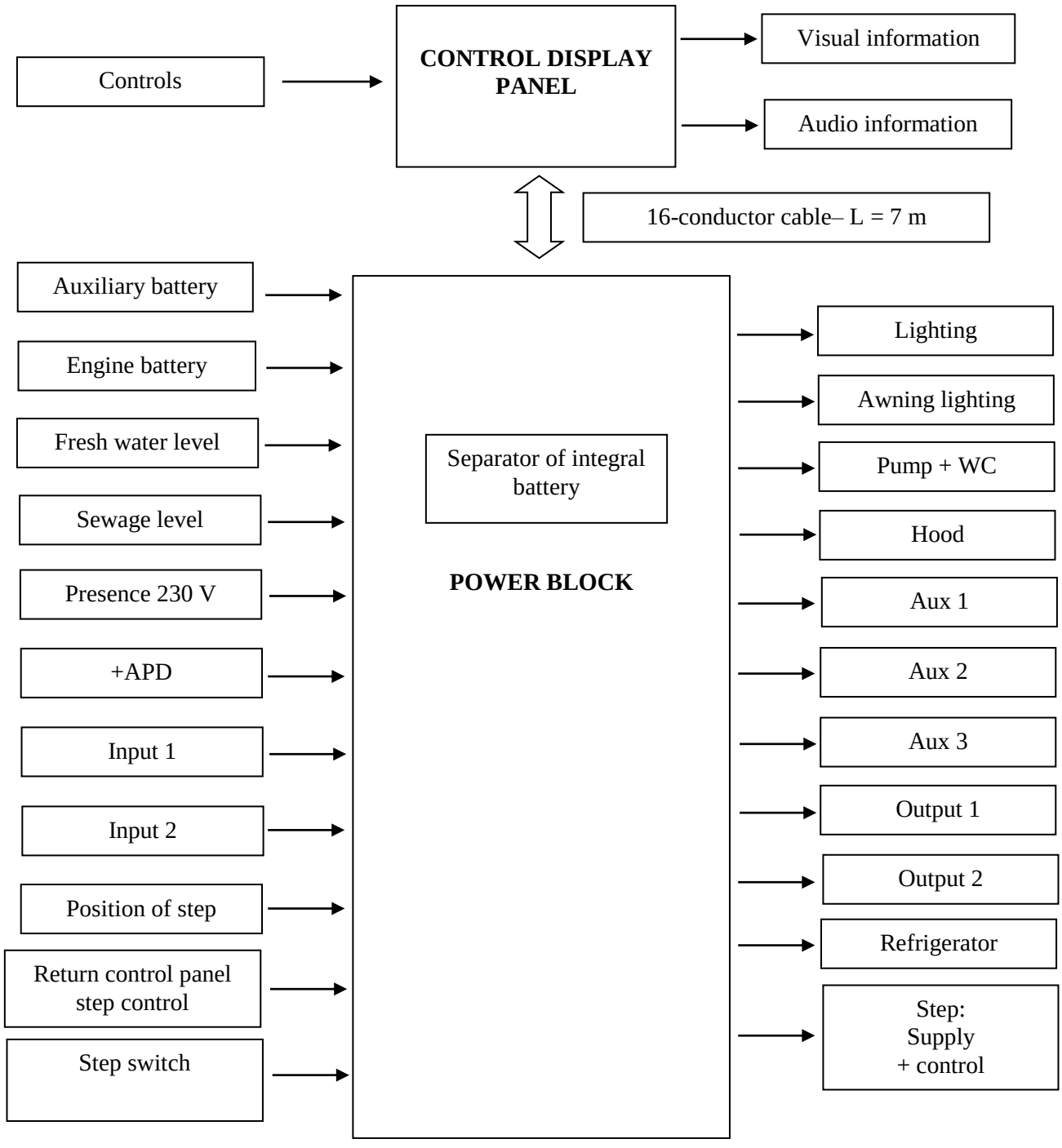
SOMMAIRE

This electronic unit for camping cars enables the vehicle's energy to be managed simply but accurately, thanks to monitoring of the voltages and currents of the batteries and of the water levels.

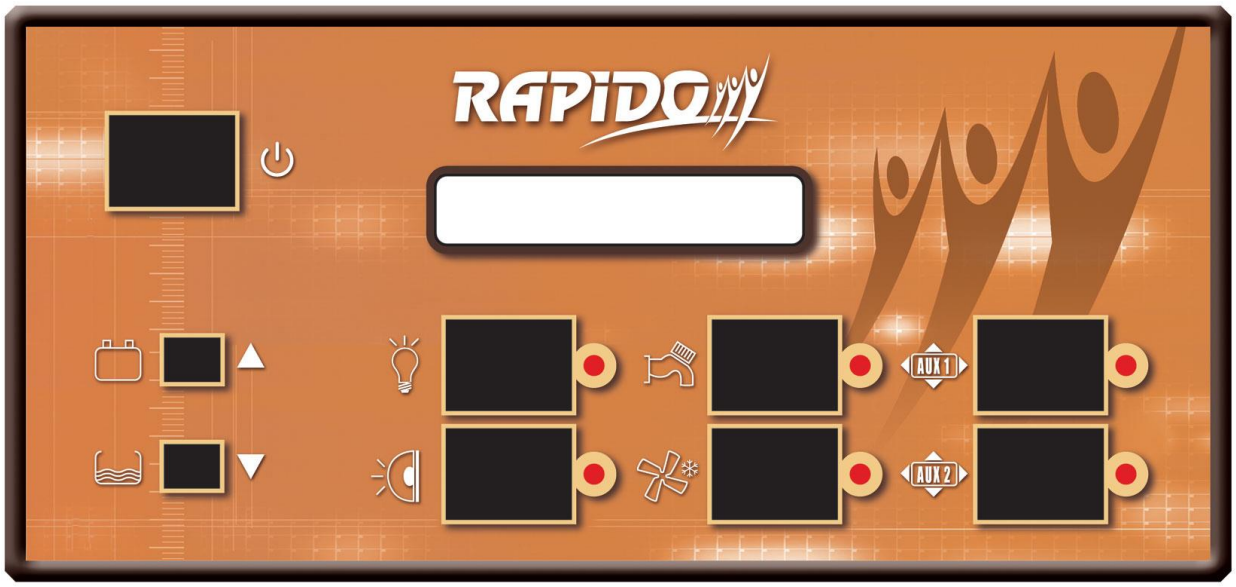
This unit can manage two batteries, a fresh water tank and a sewage tank.

1. Composition

The diagram below shows the composition of the unit.



2. The display panel



The following elements are found on it:

- 1 button “lower menu ”
- 1 button “upper menu “
- 1 buzzer
- 1 Display 2x16 segments
- 1 lighting control button
- 1 awning lighting control button
- 1 pump + WC control button
- 1 hood control button
- 1 auxiliary 1 control button
- 1 auxiliary 2 control button
- 1 button which controls the 6 control buttons listed above

2.1 Connection

The display panel is connected to the power block by a 16-conductor cable 7 m long. The cable is connected to the display panel and to the block by a MOLEX connector (series 90142). This connector possesses a locating pin, there is no risk of inversion in the connections. The connectors-+-cable unit makes possible the distribution of the energy necessary to the display panel and the communication between it and the power block. The display panel therefore has no other connector and no other connection point.

2.2 Fixation

The fixation of the display panel is by means of 4 screws.

2.3 Characteristics of the display panel

Dimensions	200 x 90 x 30 (mm)
Material	Polyester on 15/10 aluminium

2.4 Functions

Alimentation

The display panel supplied either by the voltage of the auxiliary battery or by the +APD :

- When the display panel is supplied by the voltage of the auxiliary battery and the engine is stopped (+APD=0), the master cutoff switch makes it possible to switch on and off the display and the switches of the 6 power outputs (= display panel in normal operation).

- When the display panel is supplied by the +APD, and the master cutoff switch is switched off, only the display is live, the switched of the 6 power outputs cannot be actuated. The information Presence 230V, Coupling of batteries, Position of step can be displayed. The alarms (fresh water, sewage and auxiliary battery voltage cannot be actuated. Only the alarm relating to the step can operate. Furthermore the measurement of the auxiliary battery is then no longer carried out (value displayed: 0V).
  If the master cutoff switch is then switched on, the display panel returns to normal operation (= all the alarms can be triggered including the step alarm, the measurement of the auxiliary battery is displayed, and the switches of the 6 power outputs can be actuated.

When neither of the 2 menu buttons is pressed and no alarm (fresh water, sewage and auxiliary battery voltage) and no information (presence of 230V, position of step and battery coupling) is displayed, the 1st line of the display shows the animated message "* * * RAPIDO * * *", and the 2nd line shows the auxiliary battery voltage : "Baux :12.8V ".

Reset

After each cut of the +12V supplied by the auxiliary battery at the level of the display panel (during a change or disconnection of the auxiliary battery , a disconnection of the display panel cable, etc.), a reset is carried out.

A reset can be carried out by the user by pressing the 2 menu button simultaneously for more then 3 seconds.

The software can also carry out resets itself.

After each reset, the message "* * * SCHEIBER * * *" is shown on the 1st line of the display and the le message "RAPIDO VER 1.02" on the 2nd line. These 2 messages are displayed for about 2 seconds if no menu button is pressed.

Test of voltages and current of the batteries

The values are displayed in "VOLT" for the coltages and in "AMPERE" for the currents.

A press on the "upper menu" key => the display indicates on the 1st line the voltage of the engine battery, and on the 2nd line the voltage of and the current supplied by the auxiliary battery .

Test of the content of the fresh water tank

The values are shown in percentage on the display. Furthermore 4 rectangles De plus 4 rectangles (empty or filled) symbolize the level of the tank.

A press on the "lower menu" key => the display indicates the level of the tank.

Control of the power outputs

6 single-pole switches enable control of the 6 power outputs. A led, associated with each switch, shows the state of the output.

Led lit = output activated
Led dark = output not activated

Each output is protected by a fuse suitable for its amperage (the fuse is to be found in the power block).

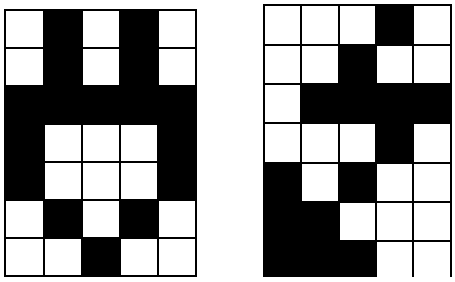
A general switch upstream of the 6 switches enables all these outputs to be cut off.

Display of information
Presence 230V, Battery coupling, Position of step:

Note on the display of these items of information:
The 3 items of information all appear on the 2nd line of the display. Since the start of this 2nd line is reserved for the permanent display of the auxiliary battery voltage, the 3 items of information listed above appear in the form of pictograms at the end of this 2nd line.

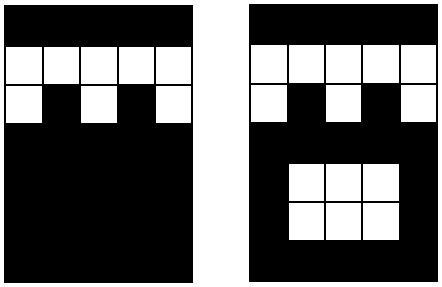
Presence 230V

The alternation of the display of the 2 pictograms shown below indicates that the vehicle is connected to the 230 V mains (information emanating from the block, sending an earth or a +12V depending on the make of the charger: see *3.4 Functions of the power block* for the configuration).



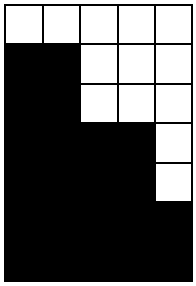
Battery coupling

The alternation of the display of the 2 pictograms shown below indicates that the engine and auxiliary batteries are coupled.



Information on the position of the step

The progressive display of the pictogram shown below indicates that the step is out.



Display of the alarms

Notes on the display of the alarms:

- The 4 alarm messages appear on the 1st line of the display, in alternation with the message "<<< ALARME >>>" ; the message "* * *RAPIDO * * *" is then displayed as soon as there is no longer an alarm to be indicated.
- On each acknowledgement there is display on the 1st line the message "* * *RAPIDO * * *", and on the 2nd line the message "ACK. ALARM!" These 2 messages are displayed for about 2 seconds if no menu button is pressed.
- The alarms are displayed in the following order of priority (from highest to lowest priority): Step, Sewage, Fresh water, Battery low.

Alarm and safety of tanks

The flashing of the back lighting of the display and the alternation of the messages "Sewage!" and "<<< ALARM >>>" on the 1st line of the display indicates that the sewage tank is full.

The flashing of the back lighting of the display and the alternation of the messages "Fresh water!" and "<<< ALARM >>>" on the 1st line of the display indicates that the fresh water tank is on reserve (does not call for a press on the fresh water test button).

A press on one of the 2 buttons "upper menu" or "lower menu " => The back lighting stops flashing but the alarm message continues to be displayed (= alternation on the 1st line of the messages "Sewage!" or "Fresh water!" and "<<< ALARM >>>").

Low voltage alarm

The flashing of the back lighting of the display, the buzzer giving a beep and the alternation of the messages "Battery low!" and "<<< ALARM >>>")on the 1st line of the display indicates that the auxiliary battery voltage has been less than 11V for more than 10 seconds.

A press on one of the 2 buttons "upper menu" or "lower menu " => The audio alarm is acknowledged, the back lighting stops flashing but the visual alarm continues to be displayed (=alternation of the messages "Battery low!" and "<<< ALARM >>>")on the 1st line).

The visual alarm disappears from the display as soon as the auxiliary battery voltage becomes more than 12V.

Step alarm

A beep is emitted for about 3 seconds when the vehicle starts to move if the step is retracted.

If the step is out after the vehicle starts to move, a visual and audio alarm is triggered (= back lighting of display permanently lit, alternation on the 1st line of the message "Step!" and "<<< ALARM >>>" and buzzer sounding continuously.

It is not possible to acknowledge the step alarm by means of one of the buttons.

3. The power block

3.1 Connection

The MATE-N-LOK connectors allow simple, quick wiring. They have a locating pin and supply mechanical fixation.

The batteries and he earth are connected to the block by brass screws.

All the earths of the power outputs are grouped together on 2 MATE-N-LOK 9- and 12-channel connectors. Only the refrigerator earth, the inputs 1 and 2 and the earths of the Sewage and Fresh water sensors are separated from the other earths and can be grouped together on one other 4-channel MATE-N-LOK connector. The other MATE-N-LOK connectors therefore have no earth, but only 12V (or +APD) outputs, or inputs.

Note: The MATE-N-LOK connectors are designed to receive on each channel a maximum current of 15A.

See *4. Details of the connectors* for the connections.

3.2 Fixation

The fixation of the power block is possible with screws

3.3 Characteristics of the block

Number of protected power outputs	11
Integrated battery separator	OUI
Thresholds of separator	12.6V – 13.6V
Dimensions	190 x 150 x 65 (mm)
Material of case	PLASTIC

3.4 Functions

Supply

The block is supplied by two 12V batteries 12V : the auxiliary battery and the battery of the vehicle.

Batteries separator

The batteries separator allows the vehicle battery and the auxiliary battery to be put in parallel.

The coupling threshold is 13.6V, the uncoupling threshold is 12.6V (RAPIDO characteristics).

Refrigerator control

The 12V supplied by the refrigerator output is that supplied by the engine battery. The refrigerator starts automatically when the engine is started, and stops when the engine is stopped. Thus, the supply to the refrigerator is provided only by the alternator, which allows battery economy.

A 20A fuse protects the refrigerator supply circuit. In addition 2 outlets are available on the MATE-N-LOK connector, to ensure that there is not too much current on a single pin of the connector.

Outputs controlled from the display panel

6 power outputs are controlled by 6 switches on the display panel :

- lighting: output protected by a 20A fuse, 2 x 12V outlets
- hood: output protected by a 7.5A fuse, 1 x 12V outlet
- Awning lighting (controlled by the switch on the display panel only if the engine is stopped) : output protected by a 2A fuse, 1 x 12V outlet
- output protected by a 7.5A fuse, 2 x 12V outlets
- Aux1 : output protected by a 25A fuse (for 3 outlets) and by a 20 A fuse (for 3 outlets), 6 x 12V outlets
- Aux2 : output protected by a 20A fust, 2 x 12V outlets 1 +APD outlet

Al these outputs depend on the auxiliary battery , and are protected by a fuse to suit their amperages.

A general switch upstream of the 6 switches enables all these outputs to be cut off..

Outputs not controlled from the display panel

1 power output is directly connected to the auxiliary battery :

- Aux3 : 4 x 12V outlets and 1 +APD outlet

this output is protected by a 30A fuse.

2 power outputs are controlled from the +APD and from an Input:

- Ouput1 : 12V outlet available if the vehicle engine is stopped (+APD=0) and if the input Input1 is earthed.
- Output2 : 12V outlet available if the vehicle engine is in operation (+APD=1) and if the input Input2 is earthed.

These 2 outputs depend on the auxiliary battery, and each of these outputs is protected by a 10A fuse.

Step

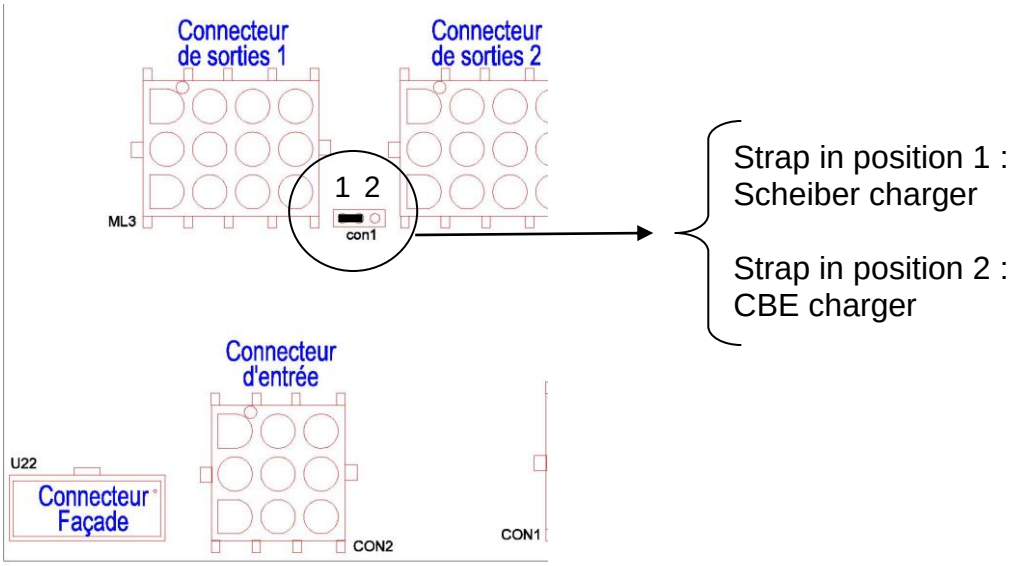
A step is controlled by the block:

- if the vehicle is put in motion and the step is retracted: a beep is emitted from the display panel for about 3 seconds when movement starts.
- If the vehicle is put in motion and the step is out: an alarm coming from the display panel is activated and the press-button return control panel enabling the step to be retracted can be activated.

The output allowing control of the step is an output which depends on the engine battery and is protected by a 15A fuse.
The power block is thus connected to the step switch, to the step and the the button return control panel enabling the step to be retracted.

Configuration of input presence 230V

The power block can accept the Scheiber charger (sends an earth) or the CBE charger (sends a +12V). The selection of the type of charger connected to the block is made by means of a connecting strap:



Outputs connector 1 Outputs connector 2
Input connector

Display panel connector

4. Details of the power outputs

4.1 Details of the connectors

The power block has 3 x 12-channel MATE-N-LOK connectors, 3 x 9-channel MATE-N-LOK connectors and 1 x 4-channel MATE-N-LOK connector. All the 12V outlets are supplied by the auxiliary battery, except those for which the 12V is supplied by the engine battery; when this is so it is so stated.

- Two 12- and 9-channel MATE-N-LOK including in total 21 earths:
  - All these earths must be used for power outputs only, except for the refrigerator.

- One 4-channel MATE-N-LOK connector including 4 earths:
  These earths are connected directly to the earth screw of the block. They must be used for the earth of the, as well as for the earth of the Fresh water sensor, the earth of the Sewage sensor and the inputs Input1 and Input 2.

- One 12-channel MATE-N-LOK connector including:
  - *1 hood output:* output protected by a fuse F1=7.5A, 1 x 12V outlet controlled by the display panel
  - *1 lighting output:* output protected by a fuse F4=20A, 2 x 12V outlets controlled by the display panel
  - *1 awning lighting output:* output protected by a fuse F6=2A, 1 x 12V outlet controlled by the display panel when the vehicle engine is switched off
  - *1 pump + WC output:* output protected by a fuse F5=7.5A, 2 outlets 12V controlled by the display panel
  - *1 output aux1 :* output protected by a fuse F2=25A (for 3 outlets) and by a fuse F3=20A (for 3 outlets), 6 outlets controlled by the display panel

- One 12-channel MATE-N-LOK connector including:
  - *1 output to the 2:* output protected by a fuse F7=20A, 2 x 12V outlets controlled by the display panel and 1 outlet +APD
  - *1 refrigerator output:* output protected by a fuse F9=20A, 2 x 12V outlets (supplied by the engine battery) controlled by the +APD
  - *1 output to the 3:* output protected by a fuse F8=30A, 4 x 12V outlets not controlled and 1 outlet +APD
  - *1 output to output1 :* output protected by a fuse F10=10A, 1 x 12V outlet controlled by the +APD and the input Input1
  - *1 output to output2 :* output protected by a fuse F11=10A, 1 x 12V outlet controlled by the +APD and the input Input2

- One 9-channel MATE-N-LOCK connector including:
  - *1 input input1*
  - *1 input input2*
  - *1 input fresh water level ¼*
  - *1 input fresh water level ½*
  - *1 input fresh water level ¾*
  - *1 input fresh water level full*
  - *1 input sewage level*
  - *1 input presence 230V*
  - *1 input +APD*

- One 9-channel MATE-N-LOCK connector including:
  - *3 inputs for the step selector switch*
  - *2 inputs for the return control panel button*
  - *2 inputs step position sensor*
  - *2 outputs for the control of the step motor*

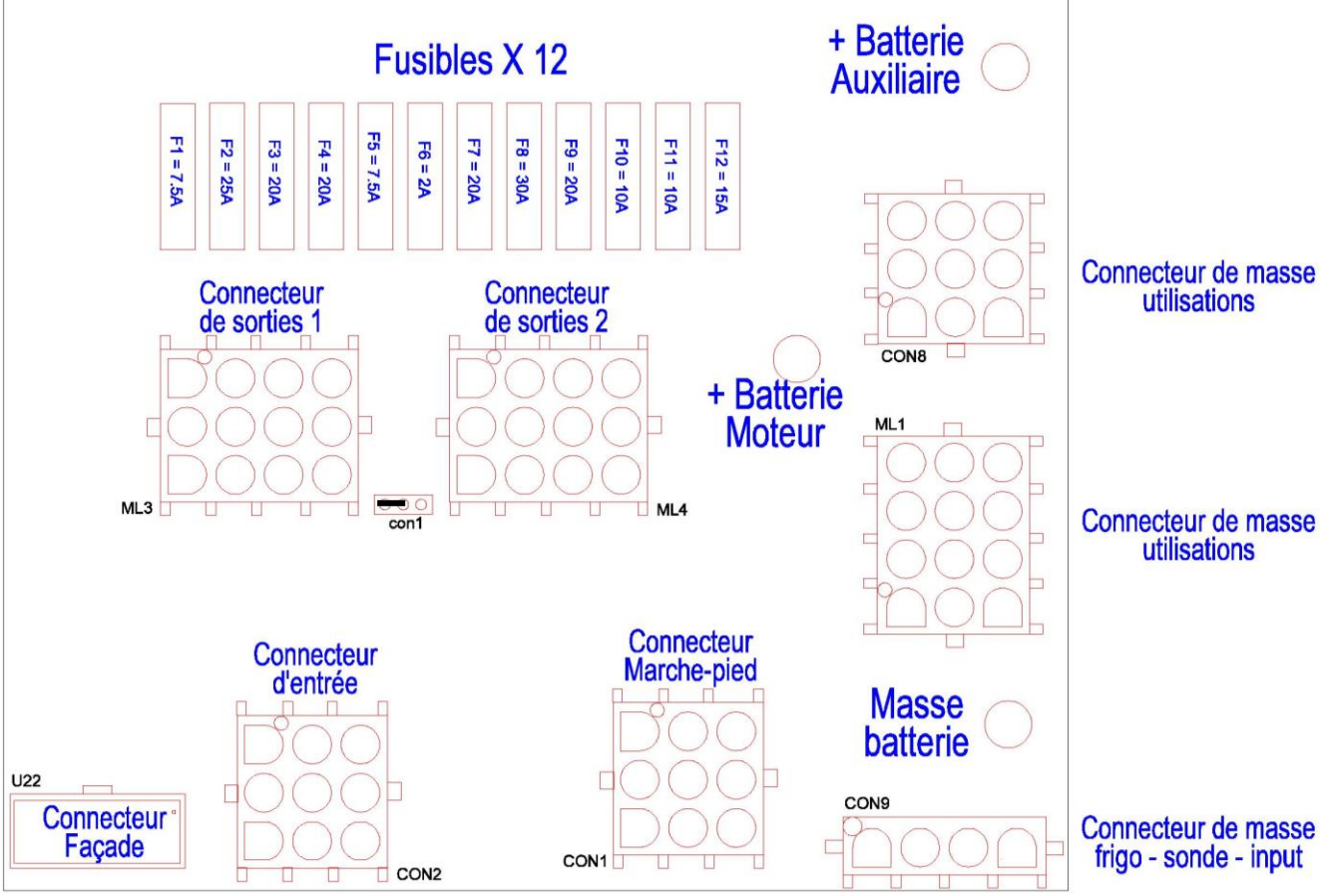
  The supply to the step motor is by means of a 12V voltage (supplied by the engine battery) and is protected by a fuse F12=15A.

4.2 Details of fuses

- F1=7.5 A : Hood
- F2=25A : aux1
- F3=20A : aux1
- F4=20A : lighting
- F5=7.5A : pump +WC
- F6=2A : awning
- F7=20A : aux2
- F8=30A : aux3
- F9=20A : refrigerator
- F10=10A : output1
- F11=10A : output2
- F12=15A : step

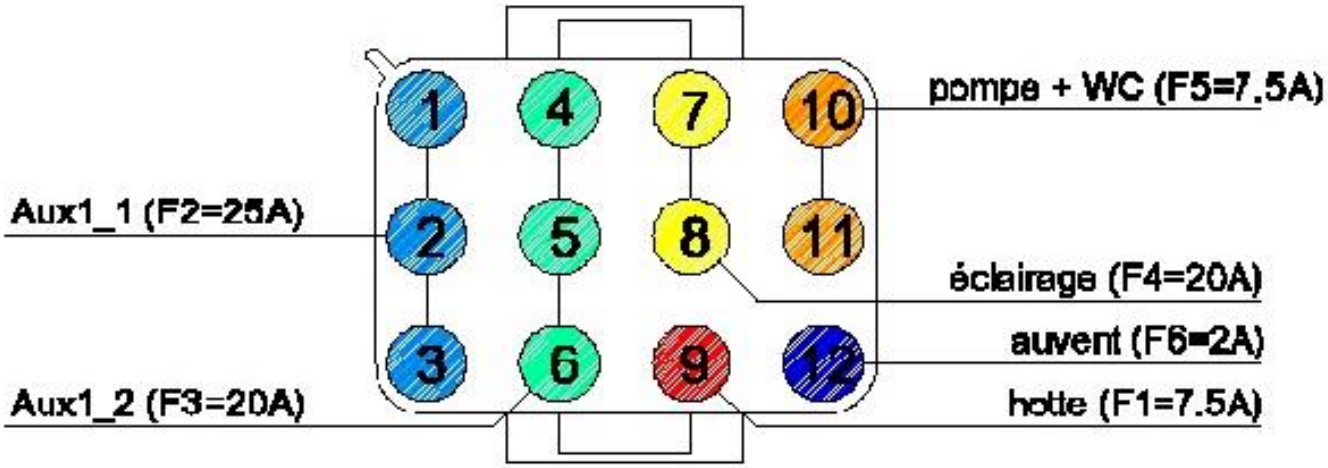
4.3 Layout of connectors/power outputs

Fusibles x 12 : Fuses x12
+ Batterie auxiliaire : + Auxiliary battery
Connecteur de sorties : Outputs connector
+ Batterie moteur : + Engine battery
Connecteur de masse utilisations : Uses earth connector
Connecteur façade : Display panel connector
Connecteur d'entrée : Input connector
Connecteur Marche-pied : Step connector
Masse batterie : Battery earth
Connecteur de masse frigo-sonde-input : Earth connector refrigerator-sensor-input



- **+ Auxiliary battery:**
  Minimum cross-section of cable: 10 mm²
- **+Engine battery:**
  Minimum cross-section of cable: 10 mm²
- **Earth Auxiliary battery:**
  Minimum cross-section of cable: 10 mm²
- **Earth Engine battery:**
  Minimum cross-section of cable: 10 mm²

➢ Outputs connector 1 :



pump + WC (F5=7.5A)
lighting (F4=20A)
awning (F6=2A)
hood (F1=7.5A)

Minimum cross-section of wires:

- Aux1_1 (F2=25A) :
  - Pin 1 = Socket 12V (10A max) : 2.5 mm²
  - Pin 2 = Socket 12V (10A max) : 2.5 mm²
  - Pin 3 = Amplifier TV (5A max) : 2.5 mm²

- Aux1_2 (F3=20A) :
  - Pin 4 = Heating (5.6A max) : 2.5 mm²
  - Pin 5 = Triomatic (0.5A max) : 2.5 mm²
  - Pin 6 = 1 output (10A max) : 2.5 mm²

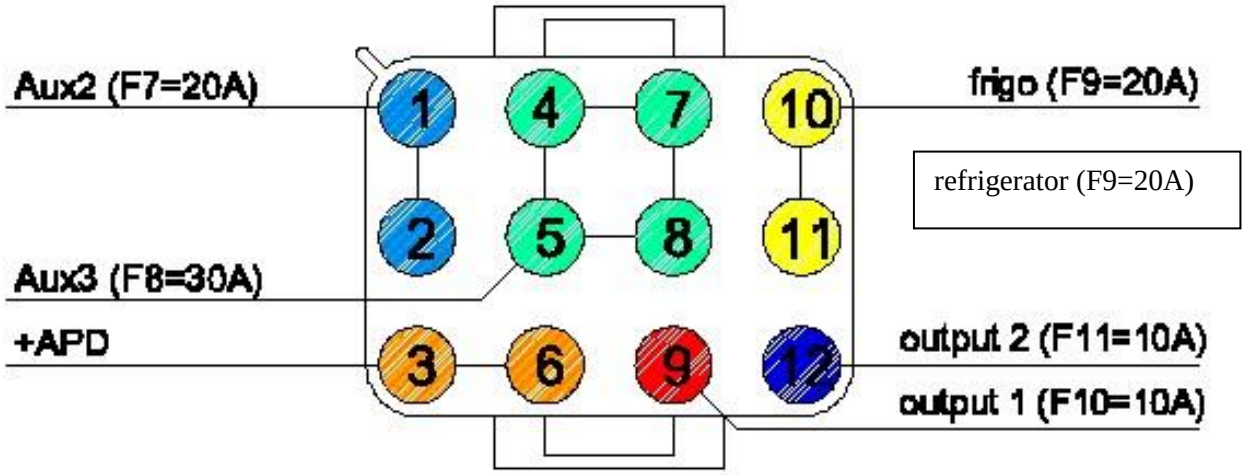
- Lighting (F4=20A) :
  - Pin 7 = 8 spotlights (8A max) : 2.5 mm²
  - Pin 8 = 7 spotlights (7A max) : 2.5 mm²

- Hood (F1=7.5A) :
  - Pin 9 = 1.5 mm²

- Pump + WC (F5=7.5A) :
  - Pin 10 = WC (1A) : 1.5 mm²
  - Pin 11 = pump (5A) : 1.5 mm²

- Awning (F6=2A) :
  - Pin 12 = 0.5 mm²

➢ Outputs connector 2 :



Minimum cross-section of wires:

- Aux2 (F7=20A) :
  - Pin 1 = concessionaire output: 2.5 mm²
  - Pin 2 = concessionaire output: 2.5 mm² (Pins 1 and 2 must be used)

- +APD :
  - Pin 3 : 0.5 mm²
  - Pin 6 : 0.5 mm²

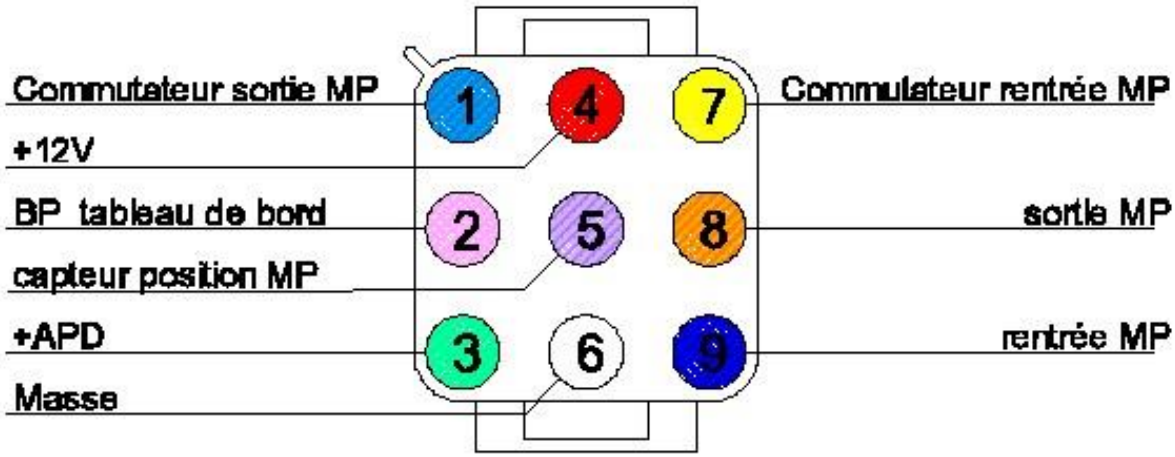
- Aux3 (F8=30A) :
  - Pin 4 = Refrigerator AES : 2.5 mm²
  - Pin 5 = Refrigerator AES : 2.5 mm² (Pins 4 and 5 must be used)
  - Pin 7 = supplementary output (10A max) : 2.5 mm²
  - Pin 8 = TRUMA solenoid valve (1A) : 2.5 mm²

- Refrigerator (F9=20A) :
  - Pin 10 : 2.5 mm²
  - Pin 11 : 2.5 mm² (Pins 10 and 11 must be used)

- Output 1 (F10=10A) :
  - Pin 9 = 2.5 mm²

- Output 2 (F11=10A) :
  - Pin 12 = 2.5 mm²

➢ **Step connector:**

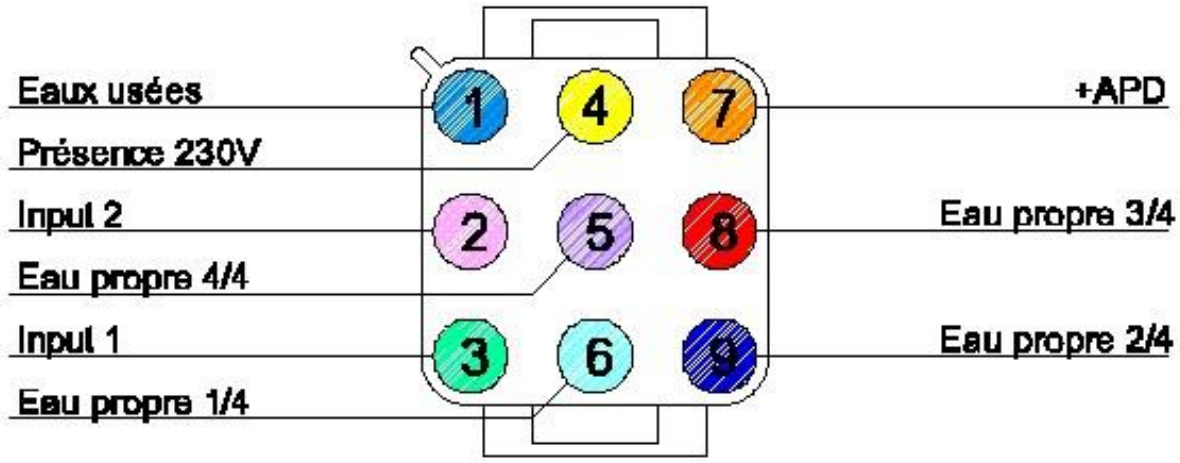


Selector switch extend step +12V Control panel press button Step position sensor + APD Earth	Selector switch retract step extend step retract step

Minimum cross-section of wires::

- Retract step :
  - Pin 9 : 5 mm²
- Extend step :
  - Pin 8 : 5 mm²
- For the rest of the pins:
  - Pin 1 to 7 : 5 mm²

➢ **Inputs connectorC:**



Sewage Presence 230V Input 2 Fresh water 4/4 Input 1 Fresh water 1/4	+APD Fresh water 3/4 Fresh water 2/4

Minimum cross-section of wires::

- For all pins:
  - Pin 1 to 9 : 0.5 mm²