

# The PowerBox menu.

This guide describes how the menu system works and it's menu items.

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## Menu navigation.

### SET

Enter a submenu or change a value. When changing a value, the UP and DOWN buttons select between values that the item supports. Press ESC to leave the menu or cancel item configuration.

### UP ARROW (Δ)

Move to the previous menu item or previous value.

### DOWN ARROW (∇)

Move to the next menu item or next value.

## ESC

Move to the menu above (parent menu) or abort current setting.

## Definitions.

### ACTIVITY TIMEOUT

Normally the PoxerBox will redisplay the greetings message after an activity timeout. The activity timeout is set to two (2) minutes.

### REFRESH TIMEOUT

A menu item marked as REFRESH, will display a fresh value every 0.5s.

### KEEP

Menu item ignore activity timeout. ESC button must always be used to leave the menu item.

### STORE

Menu item is stored in EEPROM.

### REFRESH

Menu item is refreshed.

### RESTART

A menu item marked as RESTART requires a restart of the PowerBox before the value set becomes active.

### SLEEP

The PowerBox will enter sleep mode if no outputs are active and there is no bus activity for aprox 20 seconds. This will ensure that the PowerBox consume as little power as possible.

## The Menu tree

The PowerBox menu is organized as a tree structure. The top-level menu item is a greeting item and displays the text SEA ZONE. Use the navigation buttons to traverse the menu. SET to enter the menu. Arrows to move up and down, and also select values. ESC will leave the current menu or value setting.

### BOX.##

Shows current PowerBox ID number. All Nodes (PowerBox and Panel etc) MUST have a unique id. This menu item allows for fast read of the id used.

### PAN.##

Each PowerBox has a corresponding main Panel. This is the current Panel configured for the PowerBox.

### POWER

*[keep,refresh]*

Power menu shows loads in Ampere. The first item shows the total (T) current summing each output channel. The items 1 to 8 show the power usage for each channel.

### CONFIG

The configuration menu is used to change the settings in the PowerBox.

#### CONFIG>ID

*[store,restart]*

Set the PowerBox ID number. This number MUST be unique on the Bus so make sure it is available. The new setting will take effect only after restarting the Box.

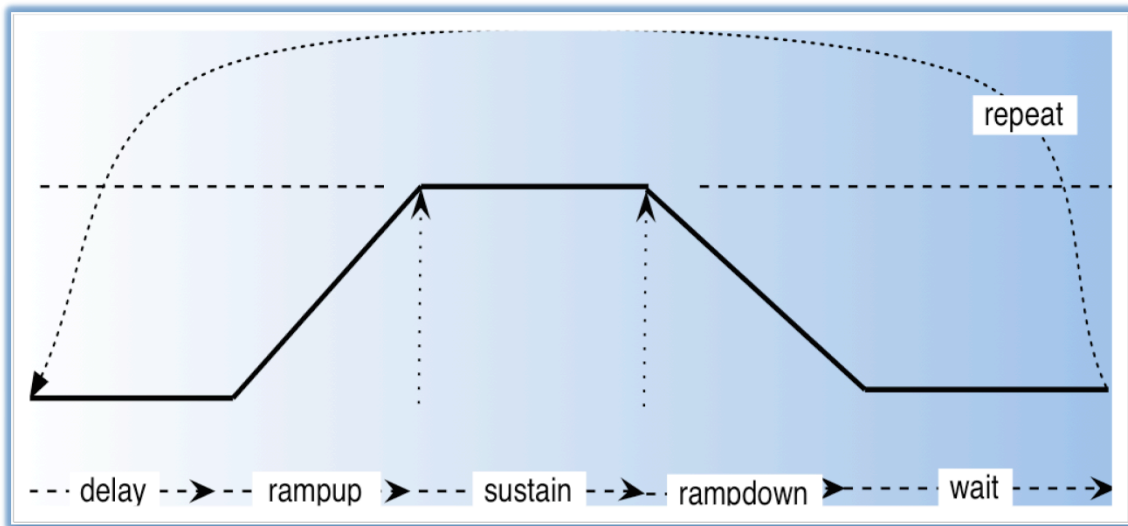
#### CONFIG>PANEL

*[store]*

Set the corresponding Panel used by the PowerBox.

#### CONFIG>OUTPUT

Change settings for the output channels.



Timer relations

#### CONFIG>OUTPUT>OUT-X>TYPE

*[store]*

Set the type of output channel. The types available are:

- DIMMER            Cabin lights, Motor speed control.

- LED Panel led, backlight and instrumentation.
- BACKLIGHT Panel backlight only.
- INTERVAL Wiper interval type.
- ONOFF Simple on-off function
- MOMENT Horn, Windshield cleaner
- PULSE General output functions

**CONFIG>OUTPUT>OUT-X>NORM-AMP***[store,refresh]*

Set the normal power usage for the output channel. This is done interactively by using SET and having a constant load running. This setting is needed to use under-current alarms (ALRM-LO).

**CONFIG>OUTPUT>OUT-X>ALRM-LO***[store]*

Set the deviation from the normal current in percent. The alarm generated if the current goes below this threshold will then signal broken equipment etc. The alarm will show as a green led flashing on the control Panel for this channel. Selectable levels are: 10%, 15%, 20%, 25% and 30%.

**CONFIG>OUTPUT>OUT-X>ALRM-HI***[store]*

To protect the equipment (and the fuse) from breaking because of overload situation this configurable will set the high current threshold. Values are in range from 0.5 Ampere up to 10.0 Ampere in increments of 0.5. When the load on this output passes this threshold, the power will be cut off and a red led will be flashing on the control Panel and a buzzer tone will be heard. Press the button on the control Panel to acknowledge the alarm and stop the noise.

**CONFIG>OUTPUT>OUT-X>DELAY***[store]*

Configure a delay before activating the output. Vale range is 0.0-30.0 in steps of 0.1 seconds. [ONOFF, LED, DIMMER, MOMENT, PULSE]

**CONFIG>OUTPUT>OUT-X>RAMPUP***[store]*

Set the time for the output to reach maximum power going from low to high. [ONOFF, LED, DIMMER, MOMENT, PULSE]

**CONFIG>OUTPUT>OUT-X>SUSTAIN**

Set the amount of time the output is high. [INTERVAL, PULSE]

**CONFIG>OUTPUT>OUT-X>RAMPDOWN***[store]*

Set the time for the output to reach minimum power going from low to high. [ONOFF, LED, DIMMER, MOMENT, PULSE]

**CONFIG>OUTPUT>OUT-X>WAIT***[store]*

Set the time before output can be active again. [INTERVAL, PULSE]

CONFIG>OUTPUT>OUT-X>DONE

[store]

Sets the action when a pulse is done [PULSE] the values are: STOP, RESTART, REPEAT, START-1 ... START-8. Default is STOP.

CONFIG>OUTPUT>OUT-X>REPEAT

[store]

Sets the repeat count used when DONE is set to REPEAT. Value range is 0-100. The default is 0, e.g. no repeat.

CONFIG>OUTPUT>OUT-X>WAITMAX

[store]

Maximum number of jogger steps to include in calculating the time to wait. Value range for WAITMAX is 0-254.

CONFIG>OUTPUT>OUT-X>WAITMULT

[store]

Multiplier to multiply the jogger step number with, to get the wait time. The wait time is given by the equation:  $wait(j) = WAIT + j * WAITMULT$ . Value range for WAITMULT is -30.0 to 30.0 in steps of 0.1 seconds.

CONFIG>PWM

Change PWM frequencies for the PWM groups.

CONFIG>PWM>OUT 1-4

[store]

Set PWM Frequency for output channel 1 to 4. Value range is 125Hz, 250Hz, 500Hz, 1kHz, 5kHz, 10kHz, 15kHz.

CONFIG>PWM>OUT 5-7

[store]

Set PWM Frequency for output 5 to 7. Value range is 125Hz, 250Hz, 500Hz, 1kHz, 2kHz, 3kHz, 4kHz.

CONFIG>PWM>OUT 8

[store]

The PWM frequency for output 8, because of hardware restriction this locked locked to 1kHz. (*Not true any more!*)

CONFIG>POWDOWN

Set the power save mode on or off. When ON, the PowerBox will go to sleep if no activity is on going for 20s. The default is OFF.

## CONFIG>LOCK

To prevent accidental changes of configuration a lock may be turned on. To turn the lock off, the sequence OFF, ON, OFF, ON, OFF followed by SET is needed.

## CONFIG>REMOTE

Remote is used to set an ID number on the corresponding Panel. Before using this menu command make sure there is only ONE Panel attached.

## CONFIG>FACTORY

Resets the box to factory settings. This means all settings are changed into the default settings. The PowerBox ID and the Panel ID will however be kept as is. The PowerBox ID will default to 1 and the Panel will default to 14 at first.

## CALIB

Some components in the PowerBox may vary slightly for each channel, which is true for many electronic components in general. The calibration menu is used to set the internal reference levels for 1 Ampere and 10 Ampere. These levels are used for power calculations and alarm handling. To do the power calibration a high precision load is needed.

### CALIB>OUTPUT

Calibration of outputs.

#### CALIB>OUTPUT>OUT-X>1A

*[store,keep,refresh]*

Calibrate the 1-Ampere level.

#### CALIB>OUTPUT>OUT-X>10A

*[store,keep,refresh]*

Calibrate the 10-Ampere level.

## STATUS

Show system alarm status, temperature and voltage levels.

### STATUS>OUTPUT

The first item shows the overall system status. An OK means all channels are ok, in case of an alarm this item will show ERR . Use the DOWN button to check which channel having a problem and why. The possible alarm causes are:

- OK                   no problem.
- FUSE                 the fuse is broken.
- SHORT               short circuit detected.
- HIGH                 overload alarm status.
- LOW                  under load alarm status.

## INFO

Show information about serial number, product id and product date.

Using the arrow keys INFO menu items are in order: Serial number, Product ID and Product Date.

## **RESTART**

Restart the PowerBox, This is needed after configuration of the items marked as RESTART. This includes the items:

- CONFIG>ID
- CONFIG>PANEL
- CONFIG>OUTPUT>OUT-X>TYPE

OK? press SET to restart the PowerBox.