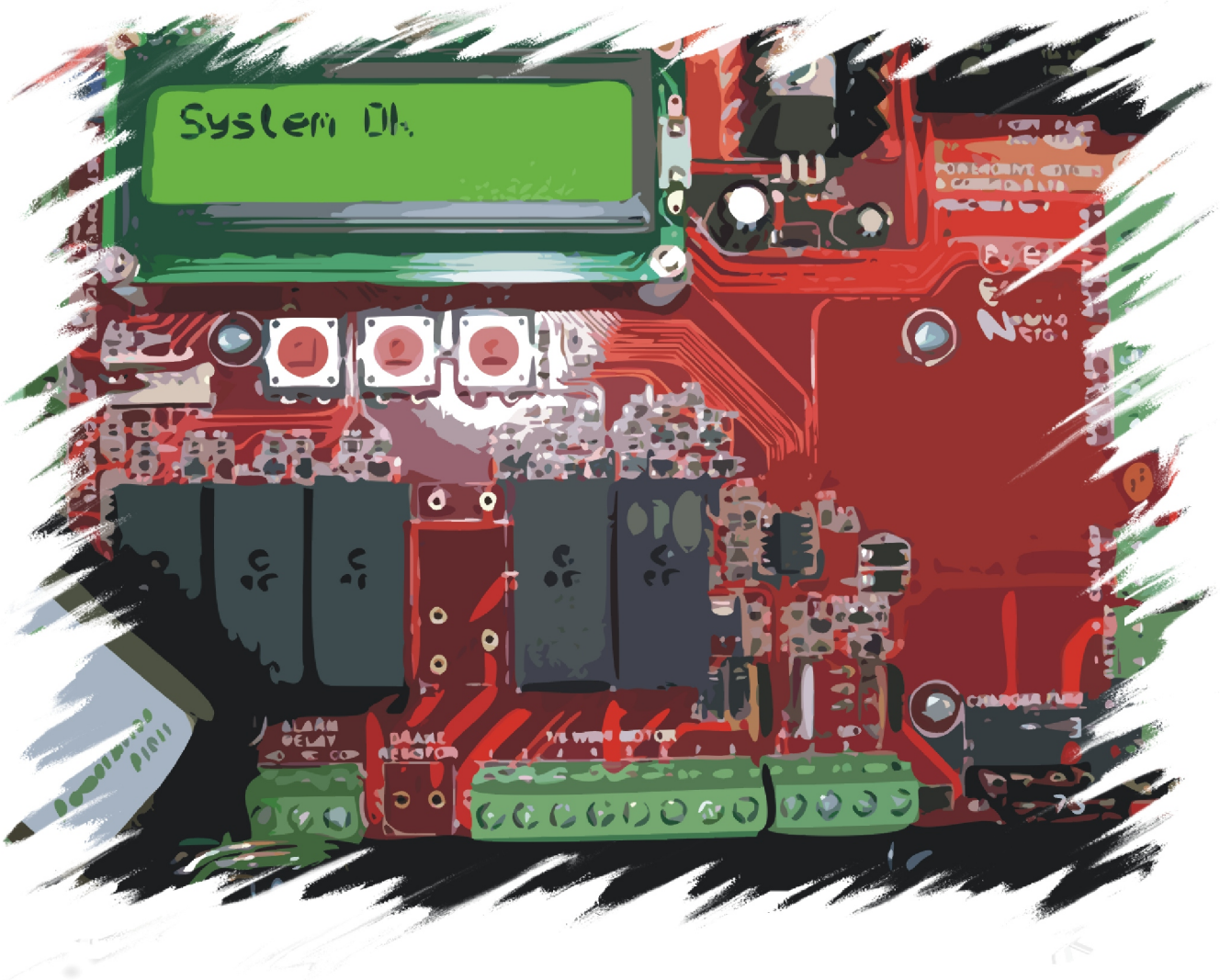
Certikin Aquatronic

Battery Backup DC Control System For Use with Swimming Pool Covers

Operating Instructions V2.4



Customer Name	
Order Reference	
Serial Number	
Date	
Notes	

Powerdrive

Powerdrive P100S

Introduction

Thank you for purchasing the Powerdrive P100S controller.

Your P100 controller is simple to use, with LCD screen instructions to guide you through programming and set up. To make the most from your P100 please take the time to read and understand all the instructions in this guide.

The P100 universal controller is a high-quality product with many features and advantages:

- Easy handling and multiple features
- Easy to connect
- Automatic detection of end limits
- Integrated radio receiver
- Defined button for OPEN, CLOSE and STOP
- 24V battery back up in event of a mains failure
- Group control facility
- Status relays
- Universal motor connections
- Safety device inputs
- Yard / Warning light output

Safety Information - Installer

Important safety instructions for the installer

Caution ! Failure to observe these instructions can lead to serious injuries.

Please comply with all relevant safety instructions including: EN 60 335-2-97:2000, EN 60 335-2-95:2004 & EN 60 335-2-103:2003

- Work on the electrical installation must always be performed by a qualified electrician.
- Ensure all work is carried out with the ac and dc power disconnected.
- During the operation of electrical or electronic equipment and units, certain components are subject to a hazardous electrical voltage. Physical injuries or damage to property can result in the event of unqualified interventions or failure to comply with the warning notices.
- All applicable standards and regulations for the electrical installation must be complied with.
- Only use spare parts, tools and additional devices which are authorised by Powerdrive
- The manufacturer or supplier accepts no liability for personal injuries, damage to property nor for consequential damage arising as a result of using non-authorised products from other manufacturers or from changes to accessories.
- Remove all packaging prior to installation
- Position control device within sight of the driven product at a height of 1.5M or higher
- Position the control panel in a dry location, max temperature 40C Humidity 5% - 80% Non condensing.
- Ensure that there is adequate distance between moving parts and adjacent objects.
- Crushing or shearing points must be avoided or protected
- Observe safety distances in accordance with DIN EN 294

Safety Information - User

Important safety instructions for the user

Caution ! Failure to observe these instructions can lead to serious injuries.

Work, including maintenance tasks, on the electrical installation must always be performed by an authorised and qualified electrician

Do not allow children or un-trained personnel to operate the equipment

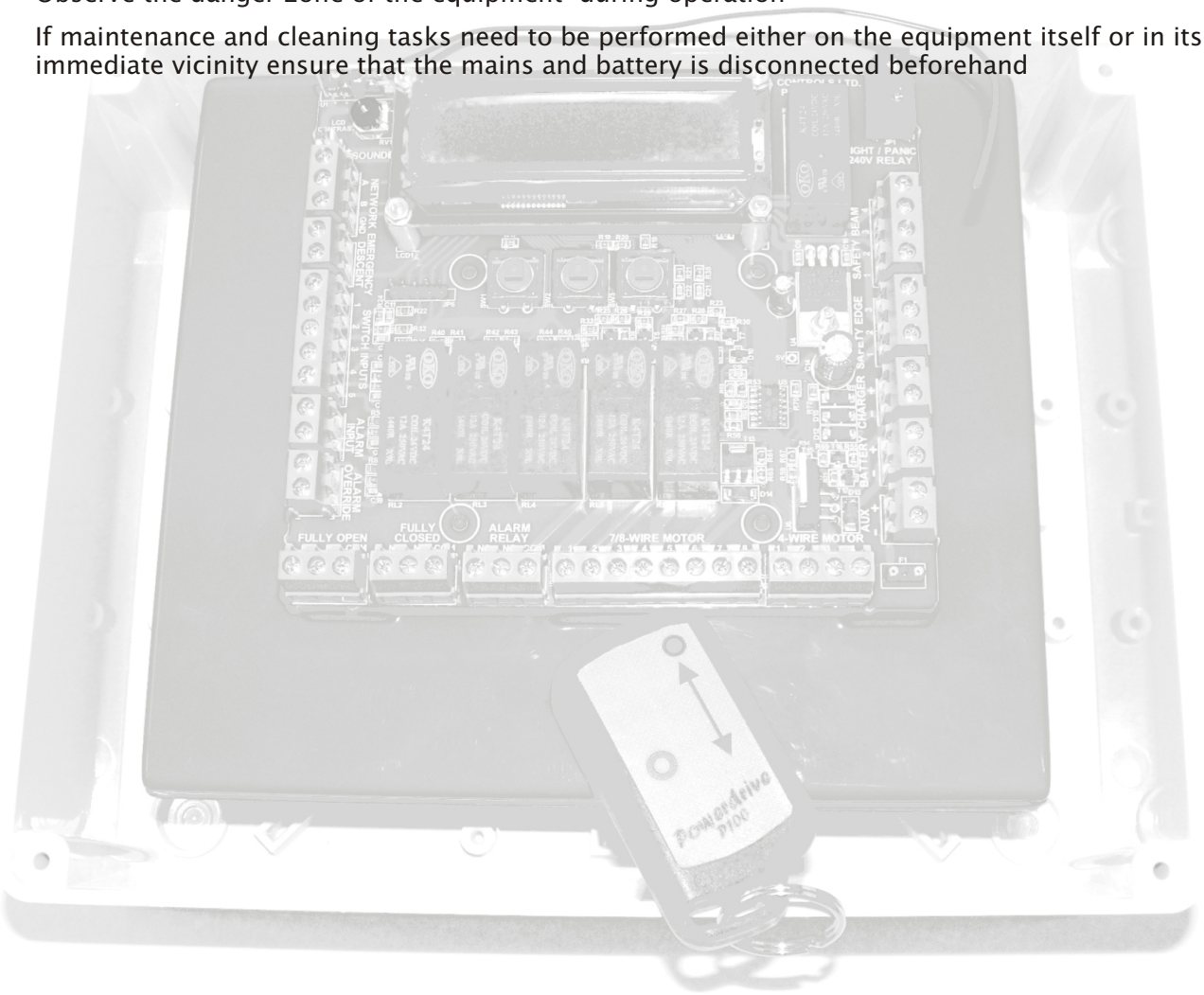
Check the equipment regularly for wear and damage

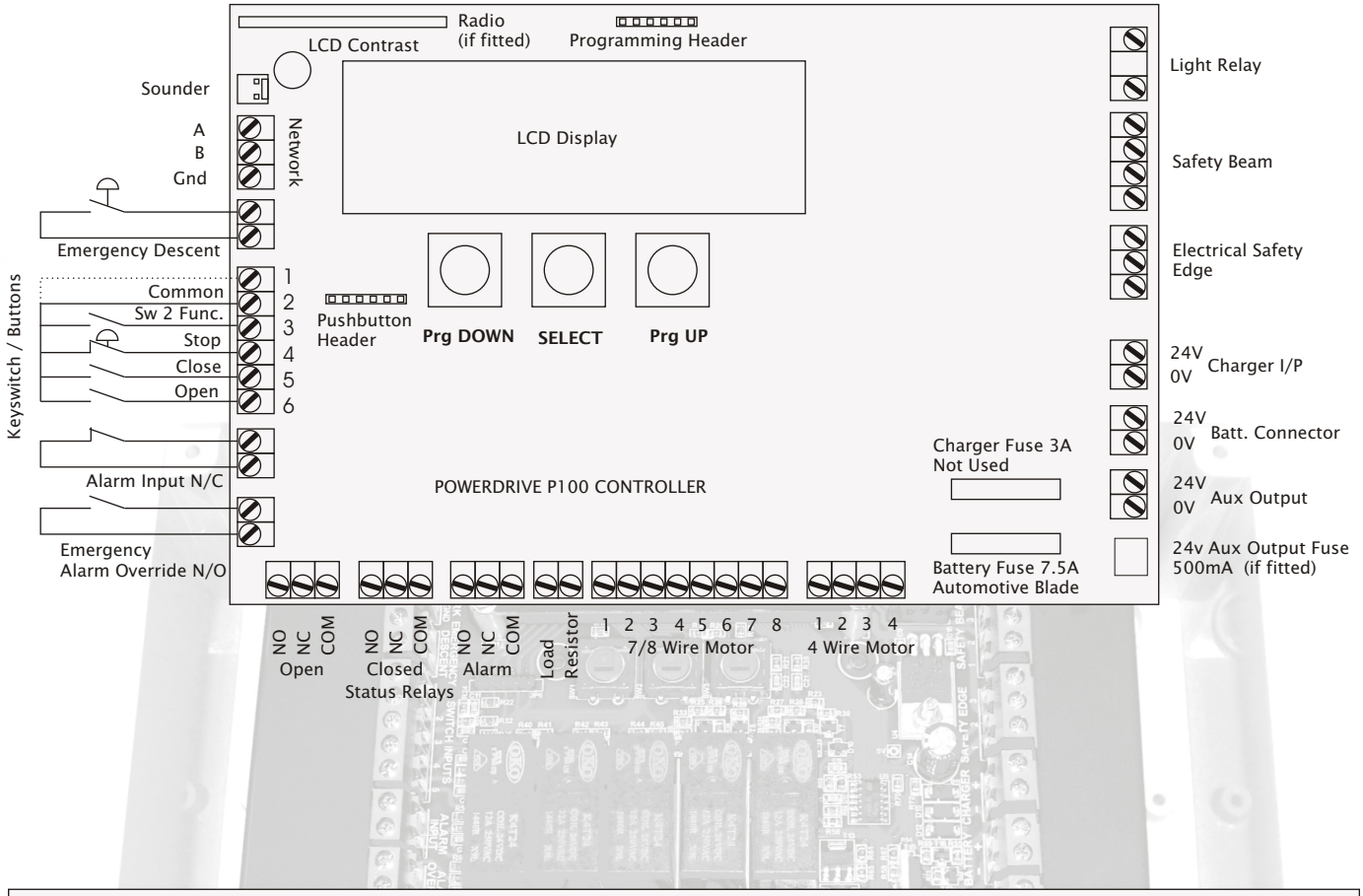
Damaged equipment must be switched off until it can be repaired

Do not operate cover if people or objects are within the danger zone

Observe the danger zone of the equipment during operation

If maintenance and cleaning tasks need to be performed either on the equipment itself or in its immediate vicinity ensure that the mains and battery is disconnected beforehand





Terminal Description

Network For connecting slave units to a master controller

Switch Inputs

1	Common
2	Common
3	Switch 3 Special Function
4	Stop (For multiple stop buttons ensure series connection)
5	Close
6	Open

To connect a 3 position keyswitch (Centre off) link out the **STOP** button terminals 2 and 4

Status Relays

NO	Normally Open
NC	Normally Closed
Com	Common

Light/Warning Relay Voltage free contact that closes (Oscillates) . Rated at 12A 250V ac

Charger Input Battery charger connection, Internal use only

Batt. Connector Battery connection, Internal use only

Aux. Output 24v dc supply (100mA fuse)

Terminal Description

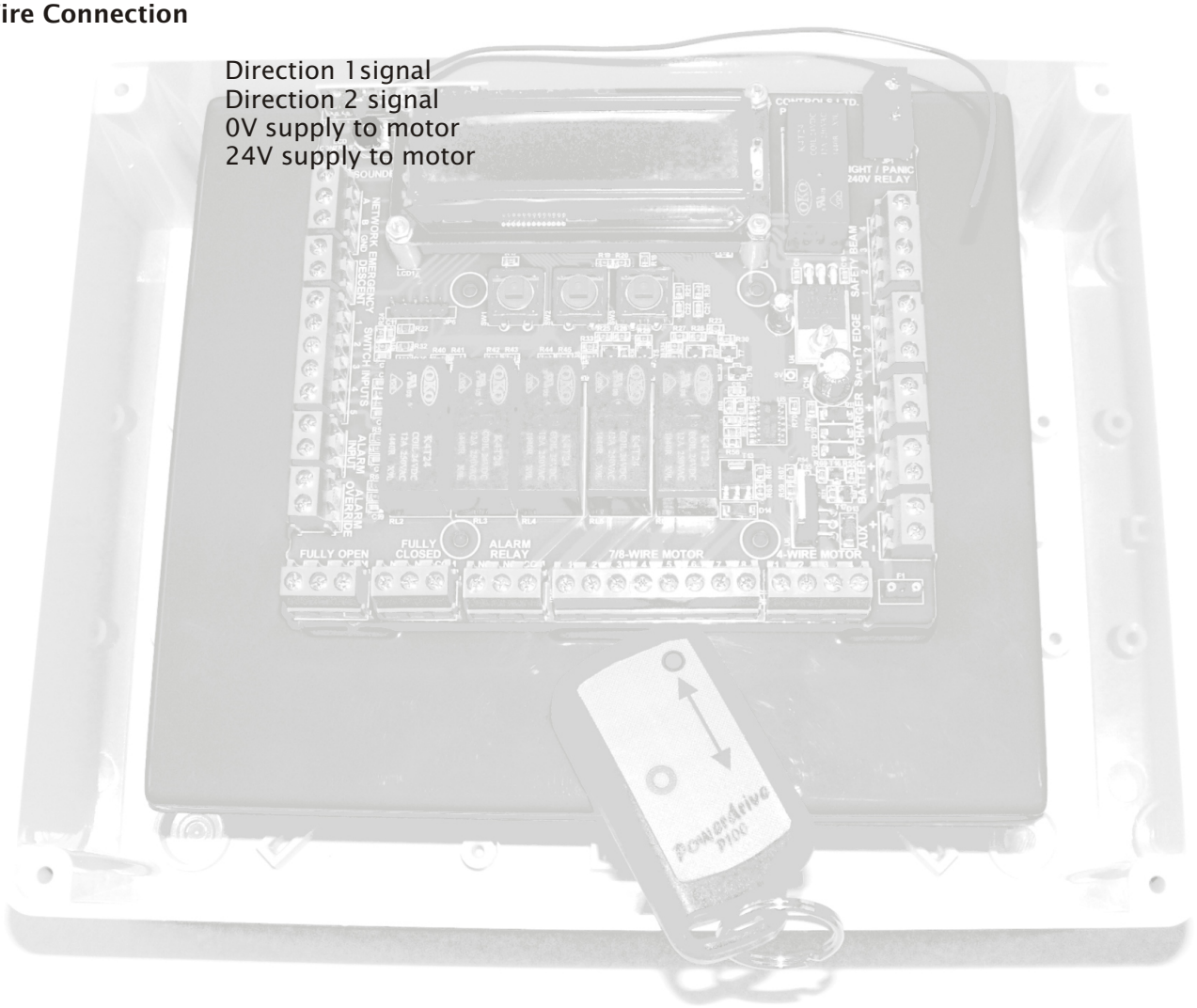
Motor Connections / Wire Designation

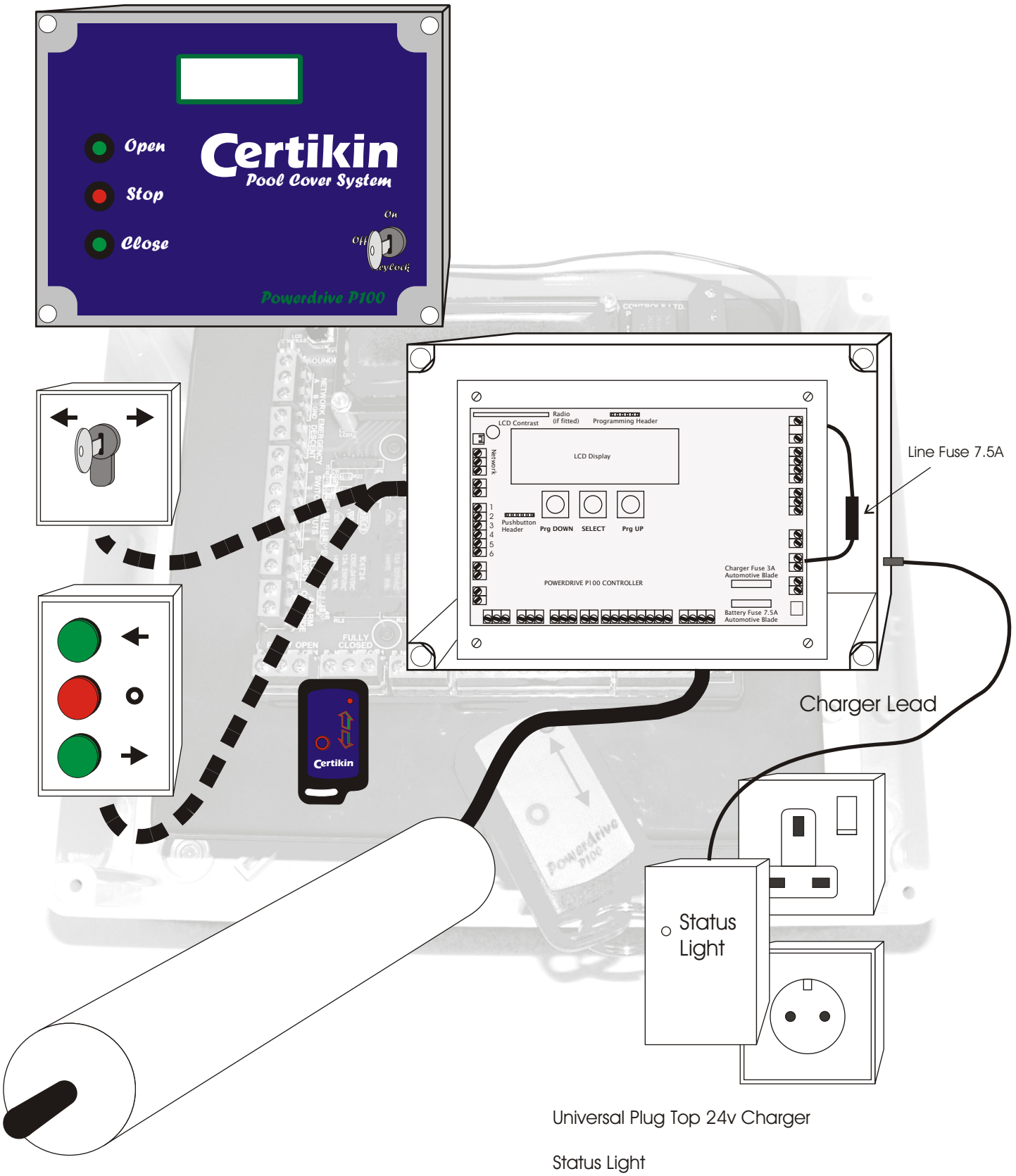
7/8 Wire Motor Connection

1	Limit
2	Limit
3	Armature
4	Armature
5	Brake
6	Brake
7	Common Limits (Limit on 8 wire)
8	(Limit on 8 wire)

4 Wire Connection

1	Direction 1signal
2	Direction 2 signal
3	0V supply to motor
4	24V supply to motor





Universal Plug Top 24v Charger

Status Light
Red Light - Charging at 0.5A 29.4V
Green Light - Fully Charged - Standby 27.4V

Installation Of The Powerdrive P100

Ensure that you have read and understood these instructions completely before installation begins.

Unscrew the lid of the panel

Remove all transit packaging from inside the enclosure

If the lid has pushbuttons fitted unplug the pushbutton lead from the panel noting its orientation. (Please note that if any additional stop buttons are added to the circuit they must be wired in series with the stop button on the lid)

Mount the control panel in a suitable location ensuring that the guidelines set out in " Safety Information - Installation" are followed

Connect the motor to the motor terminal block - matching wire number to terminal number

Connect the pushbutton / keyswitch to the switch inputs (If required)

Refit the Line fuse

Refit the pushbutton header (if fitted)

Check the running direction of the motor. If the direction is wrong change the orientation of the motor as set out in menu number 9

Adjust the motor limits by operating the cover

Plug in the external charger to the control panel. The message on the LCD should change from ***NOT CHARGING !*** To ***SYSTEM IDLE***

The system is now ready for use.

To optimise the control to suit the application it is possible to make alterations within the menu items as laid out in this instruction guide. To restore the panel to factory default settings follow menu item 1.

Menu Settings For Powerdrive P100

To enter the menu, press any of the three menu buttons. You can quit out of the menu at any time by pressing the "Stop" button on the panel, or by waiting for 30 seconds without pressing any of the menu buttons.
When the top line of the menu is highlighted, the bottom line shows the current setting for the highlighted menu item. Pressing the "**Prg DOWN**" and "**Prg UP**" buttons scroll through the available settings. Pressing the "**SELECT**" button stores the current highlighted setting and returns to the top line.
If the bottom line is highlighted but you dont want to make any changes to the setting, there are three ways in which you can cancel:
A) Set it back to the original value
B) Wait for the menu to time out (30 seconds): or
C) Press the "Stop" button on the panel to quit out of the menu.

Menus

Menu 1 - Restore Default Settings

Resets the control panel back to factory default settings

Menu 2 - Program New Radio Transmitter

This menu item allows a new keyfob transmitter to be learnt. A maximum of 8 transmitters can be used with the panel at any one time.

Menu 3 - Delete Radio Transmitters

This menu item allows all of the keyfob transmitters stored in the panels memory to be erased.
Note. Keyfob transmitters cannot be erased independently, they are all erased at the same time.

Menu 4 - Panel Operation - Push To Run or Latched *(Factory Default Push To Run)*

This menu item determines how the buttons on the controller and the keyfob transmitters operate.

Menu 5 - Delay Close - Pushbutton *(Factory Default 30s)*

This is the delay between the panel receiving a “Close” command from the pushbutton and the pool cover commencing the close cycle.

Menu 6 - Delay Close - Radio Transmitter *(Factory Default 0s)*

This is the delay between the panel receiving a “Close” command from the radio transmitter and the pool cover commencing the close cycle.

Menu 7 - Current Limit - Tension Relief *(Factory Default 2s)*

If the current limit is reached whilst the cover is opening i.e. the cover is snagged, the cover will stop and reverse for a set time - to release the tension before stopping. This is known as the release time.
Note. Setting this time to zero will cause an opening cover to stop without reversing when a current limit is reached.

Menu 8 - Charger Type

This menu selects the charger type used, i.e. plug top charger or solar panels

Menu 9 - Switch 3 - Special Function *(Factory Default Lockout)*

This menu item configures switch input number 3 to either extend the yard light time by an additional 2 minutes or to lock out the radio control and pushbuttons to prevent un-authorised operation.

Menu 10 - Alarm Status

This menu if set to charge status will indicate via a set of contacts loss of power in the control system

Menu 11 - Motor Orientation *(Factory Default Right)*

This menu item is used to set the orientation of the motor to either left or right hand side of the cover.

Menus

Menu 12 - Network *(Factory Default Slave)*

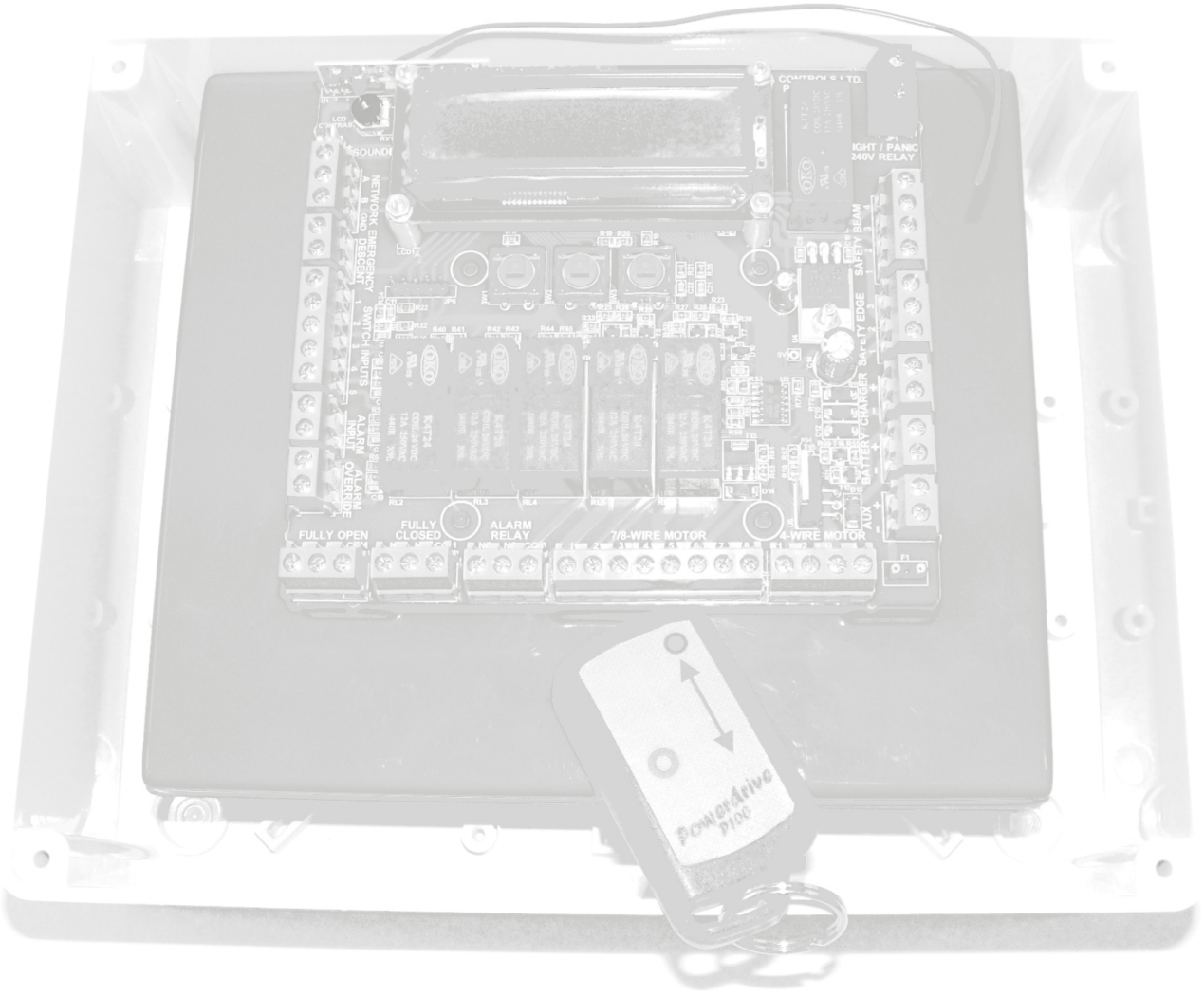
Group control of panels for multi operational applications..

Menu 13 - Status Relay Control *(Factory Default On)*

As a battery saving feature this menu item allows the fully Open & fully Closed status relays to be turned off or on.

Menu 14 - Current Limit

This menu item allows the current limit to be set on the control panel



Brief Overview Of Panel Operation - Swimming Pool Cover

The PMaC P100S control panel operates from either a 3 position keyswitch, a pushbutton station with Open - Stop - Close buttons or a 3 channel radio remote control (Open - Stop - Close)

Depending upon the configuration of the panel a brief description of the control operation is as follows.

The P100 Panel comes equipt with a **power switch** on the front of the panel. When activated this prevents un authorised use of the system via all control elements including remote control. If **Solar Charging** is required, this switch should be placed in the **Off** position when the system is left unused.

In Push to run mode, the keyswitch, pushbuttons and radio remote control require continuous activation to operate the cover. This means that as soon as the control signal is removed i.e the pushbutton is released the cover will stop. The delay timers will not function in push to run mode.

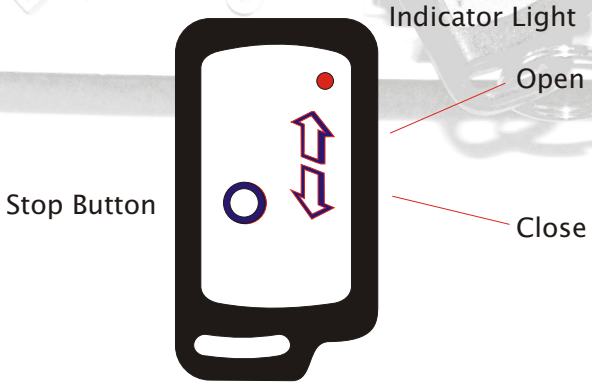
In Latched mode, the keyswitch, pushbuttons and radio remote control do not require continuous activation to operate the cover. This means that the cover will continue to operate to its end position without the need to keep the control device pressed. To stop the cover during its open or close cycle press the stop pushbutton on the control station or the stop button on the radio transmitter. With a 3 position keyswitch that does not have an additional stop button, briefly turn the key to the opposite position and the cover will stop.

The status relays (if configured) give feedback from the panel when the cover is fully open or fully closed. This feedback, via a voltage free change over contact, can be integrated into any pool management system.

The warning light contacts, normally open and voltage free, close for two minutes whenever the pool cover is operated. During movement of the cover or during the operation of the close time delay the relay contacts oscillate at 1hz. Connection of a light via these terminals produces a warning light that flashes whenever the cover is moving or is instructed to close via the set timer.

The Close Delay timer(latched mode only) should be set to allow sufficient time for the operator to position themselves correctly to help guide the cover onto the pool. The time period commences after the operation of the Keyswitch or Close pushbutton. The warning light (if fitted) now flashes to indicate that a movement of the cover is imminent.

The Keyfob Close Delay timer (latched mode only) should be set to allow sufficient time for the operator to position themselves correctly to help guide the cover onto the pool. The time period commences after the operation of the close button on the radio transmitter. The warning light (if fitted) now flashes to indicate that a movement of the cover is imminent.



Menu 1 - Load Defaults

This menu item allows the default parameters to be restored to the factory settings. Each panel is pre-loaded with the specific panel type prior to leaving the factory.

Restoring factory settings.

Briefly press the **SELECT** button

```
<Load Defaults>
```

Press the **SELECT** button briefly to put the P100 into programming mode

```
Load Defaults
<No          >
```

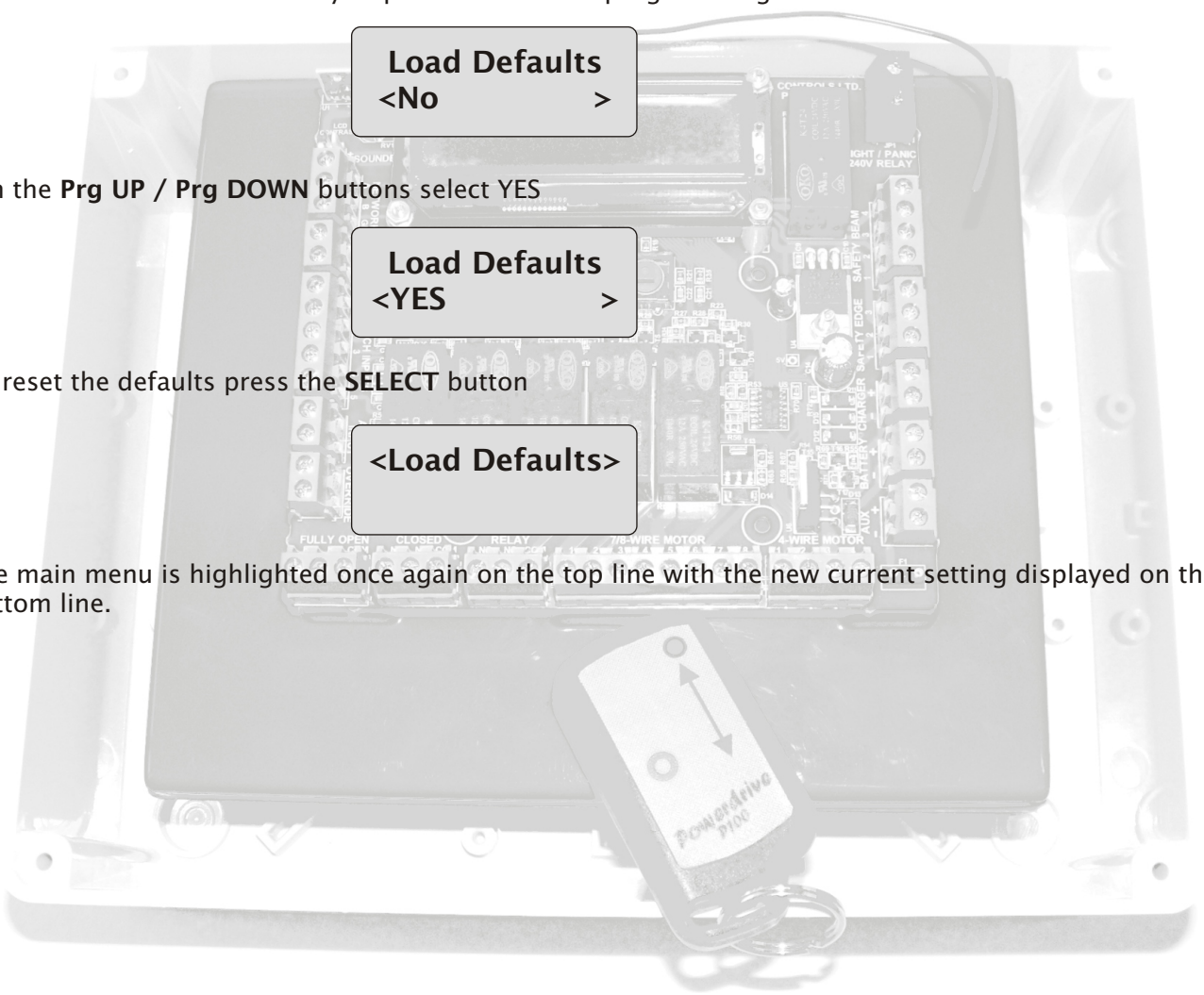
With the **Prg UP / Prg DOWN** buttons select YES

```
Load Defaults
<YES         >
```

To reset the defaults press the **SELECT** button

```
<Load Defaults>
```

The main menu is highlighted once again on the top line with the new current setting displayed on the bottom line.



Menu 2 - Keyfob Radio Transmitters - Learn Keyfob

This menu item allows a new keyfob transmitter to be learnt. A maximum of 8 transmitters can be used with the panel at any one time.

To learn a new keyfob …

Using the **Prg UP / Prg DOWN** button scroll to the Learn Keyfob Menu

<Learn Keyfob>
0 of 8 Used

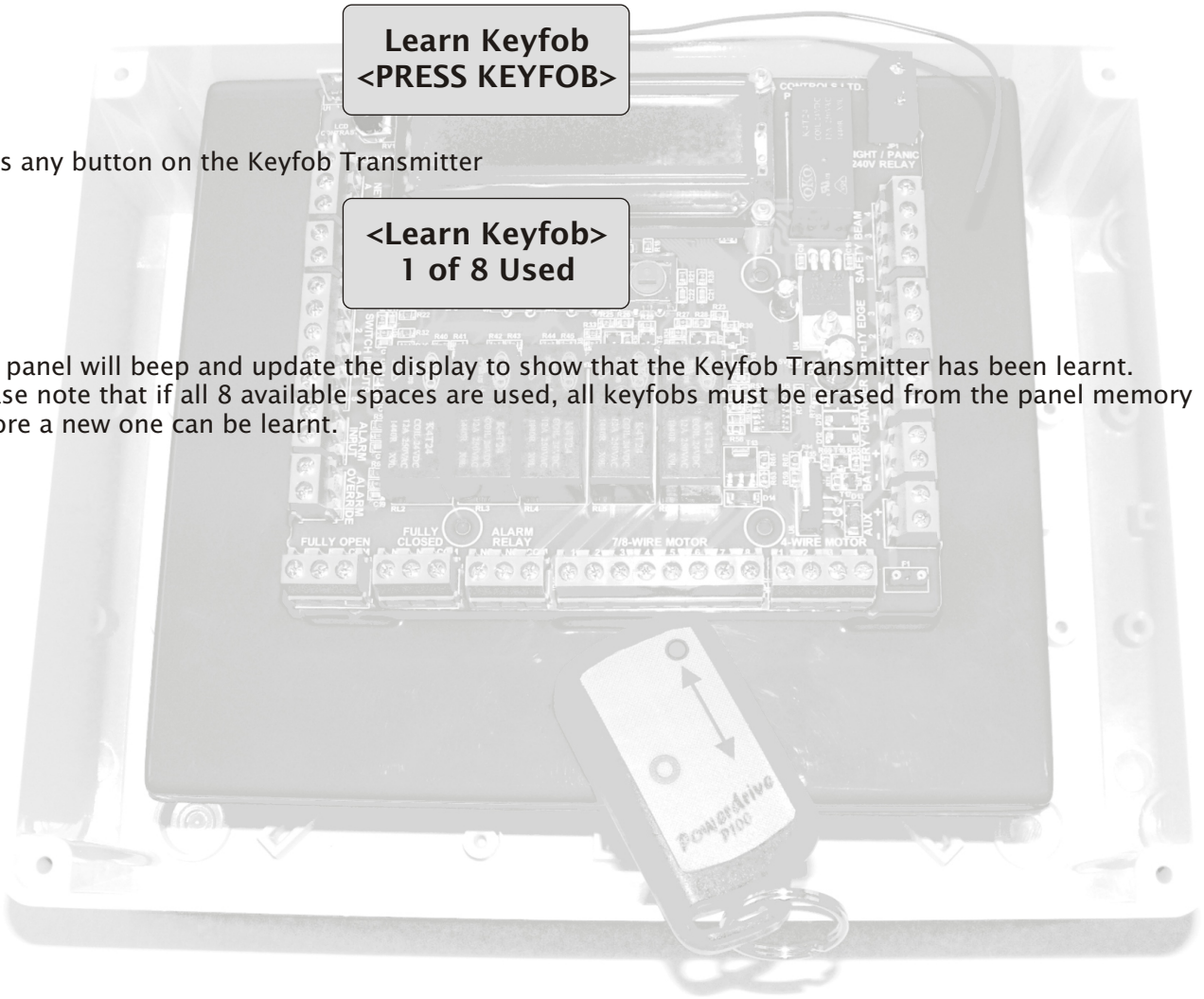
Press the **SELECT** button briefly to put the P100 into programming mode

Learn Keyfob
<PRESS KEYFOB>

Press any button on the Keyfob Transmitter

<Learn Keyfob>
1 of 8 Used

The panel will beep and update the display to show that the Keyfob Transmitter has been learnt. Please note that if all 8 available spaces are used, all keyfobs must be erased from the panel memory before a new one can be learnt.



Menu 3 - Keyfob Radio Transmitters - Erase Keyfobs

This menu item allows all of the keyfob transmitters stored in the panel's memory to be erased. Note that keyfob transmitters cannot be erased one-by-one, they are all erased at the same time. This menu item has two options:

Cancel - Allows the user to cancel should they decide not to erase all of the keyfobs

Erase All - Erases all of the Keyfob Transmitters stored in the panel's memory

To delete all keyfob transmitters …

Using the **Prg UP / Prg DOWN** button scroll to the Erase Keyfobs Menu

<Erase Keyfobs>

Press the **SELECT** button briefly to put the P100 into programming mode

Erase Keyfobs
<CANCEL>

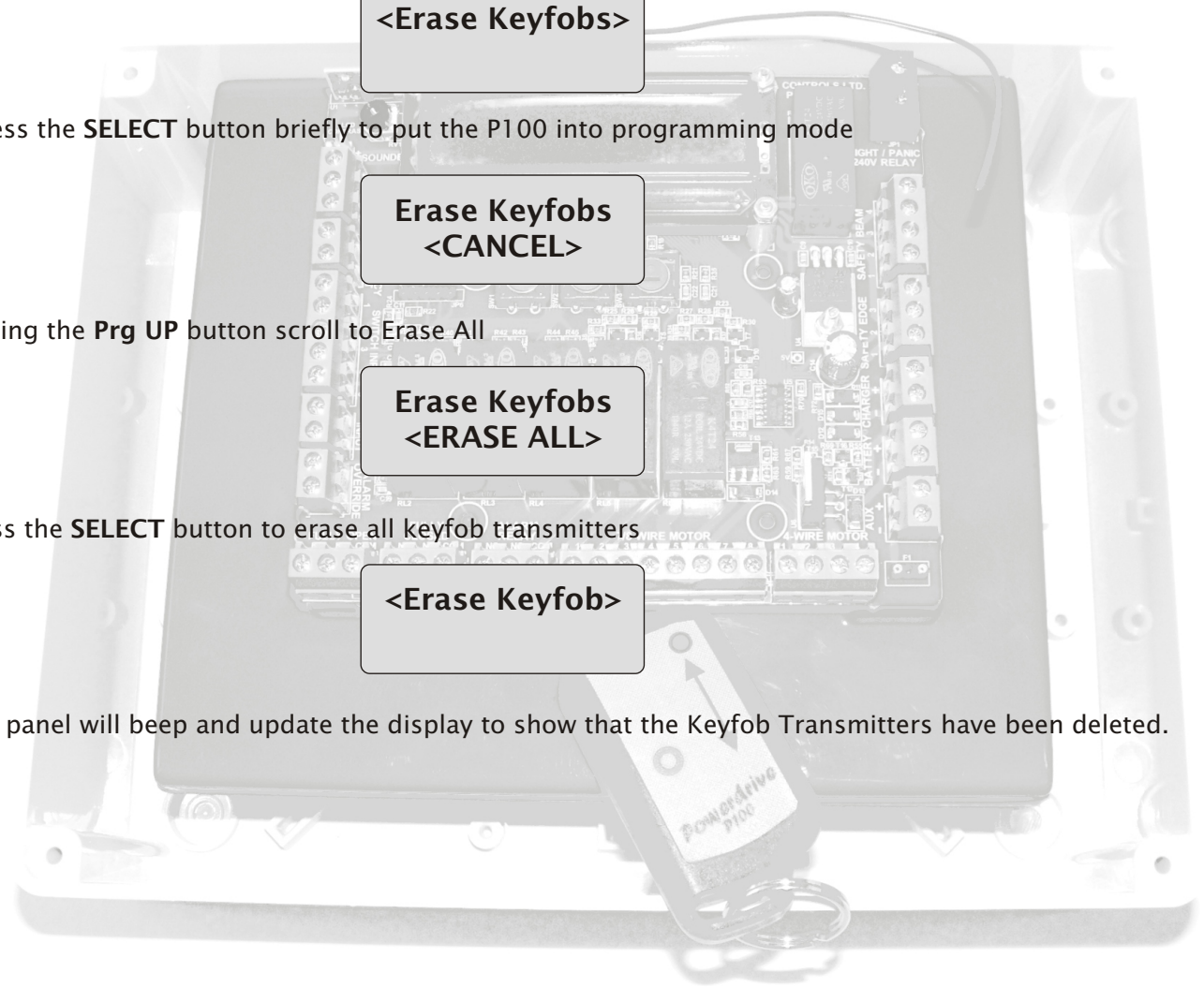
Using the **Prg UP** button scroll to Erase All

Erase Keyfobs
<ERASE ALL>

Press the **SELECT** button to erase all keyfob transmitters

<Erase Keyfob>

The panel will beep and update the display to show that the Keyfob Transmitters have been deleted.



Menu 4 - Operation

This menu item determines how the buttons on the controller and the keyfob transmitters operate.

Latched - Single press of the button will operate the controls

Hold To Run - The user must maintain pressure on the switch to operate

Note not all functions are available in Hold To Run operation, i.e. Time delay on close.

Using the **Prg UP / Prg DOWN** buttons scroll to the Door Operation menu

<Operation>
HOLD TO RUN

Press the **SELECT** button briefly to put the P100 into programming mode

Operation
<HOLD TO RUN>

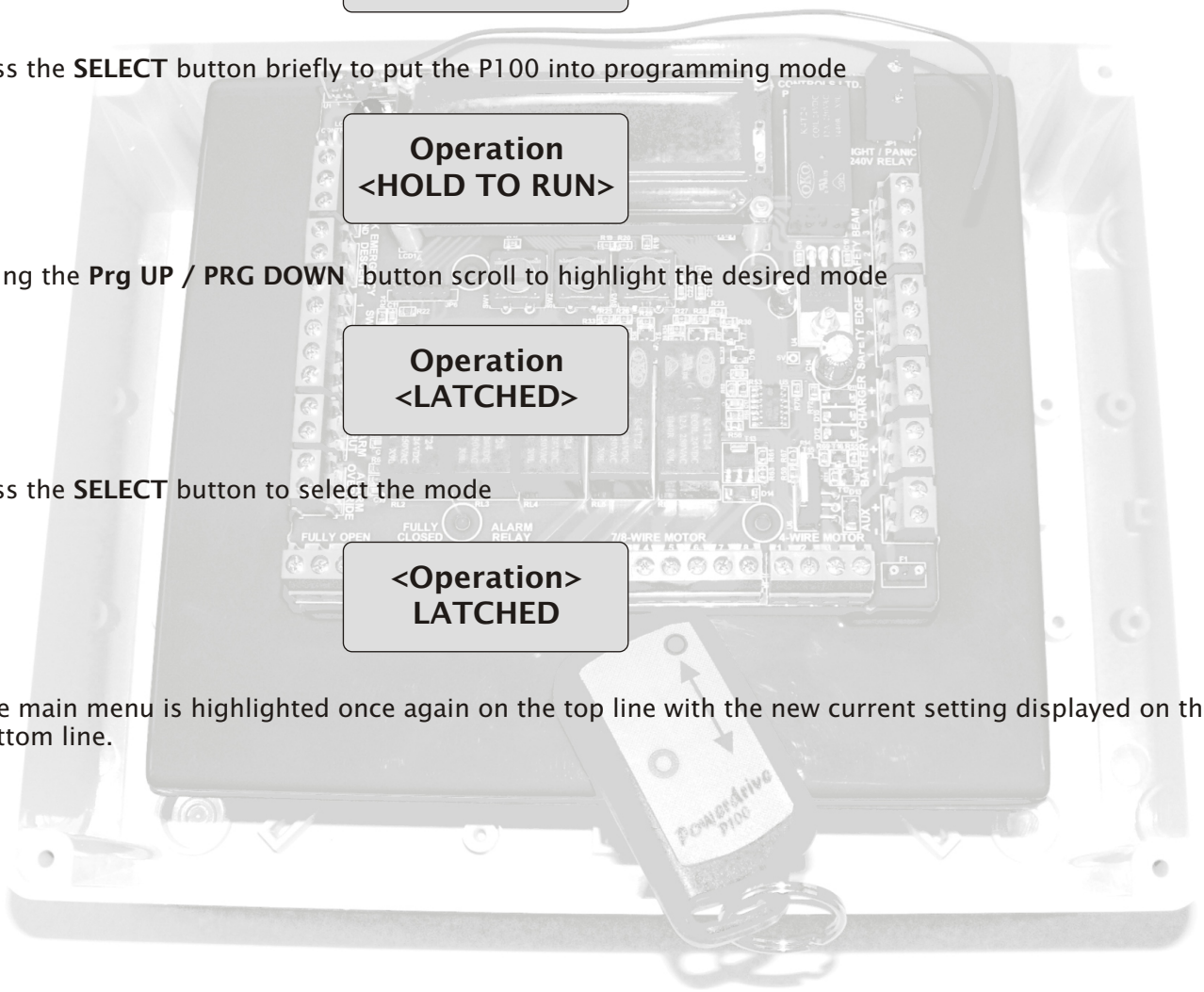
Using the **Prg UP / PRG DOWN** button scroll to highlight the desired mode

Operation
<LATCHED>

Press the **SELECT** button to select the mode

<Operation>
LATCHED

The main menu is highlighted once again on the top line with the new current setting displayed on the bottom line.



Menu 5 - Delay Close Time

This is the delay between the panel receiving a “Close” command from the pushbutton and the pool cover commencing the close cycle. This delay can be disabled by setting the time to zero.

Minimum time:	0 seconds
Maximum time:	1 minute
Increment in steps of:	5 seconds

To adjust the delay close time

Using the **Prg UP / Prg DOWN** button scroll to the Delay Close Menu

<Delay Close>
Time 0m:00s

Press the **SELECT** button briefly to put the P100 into programming mode

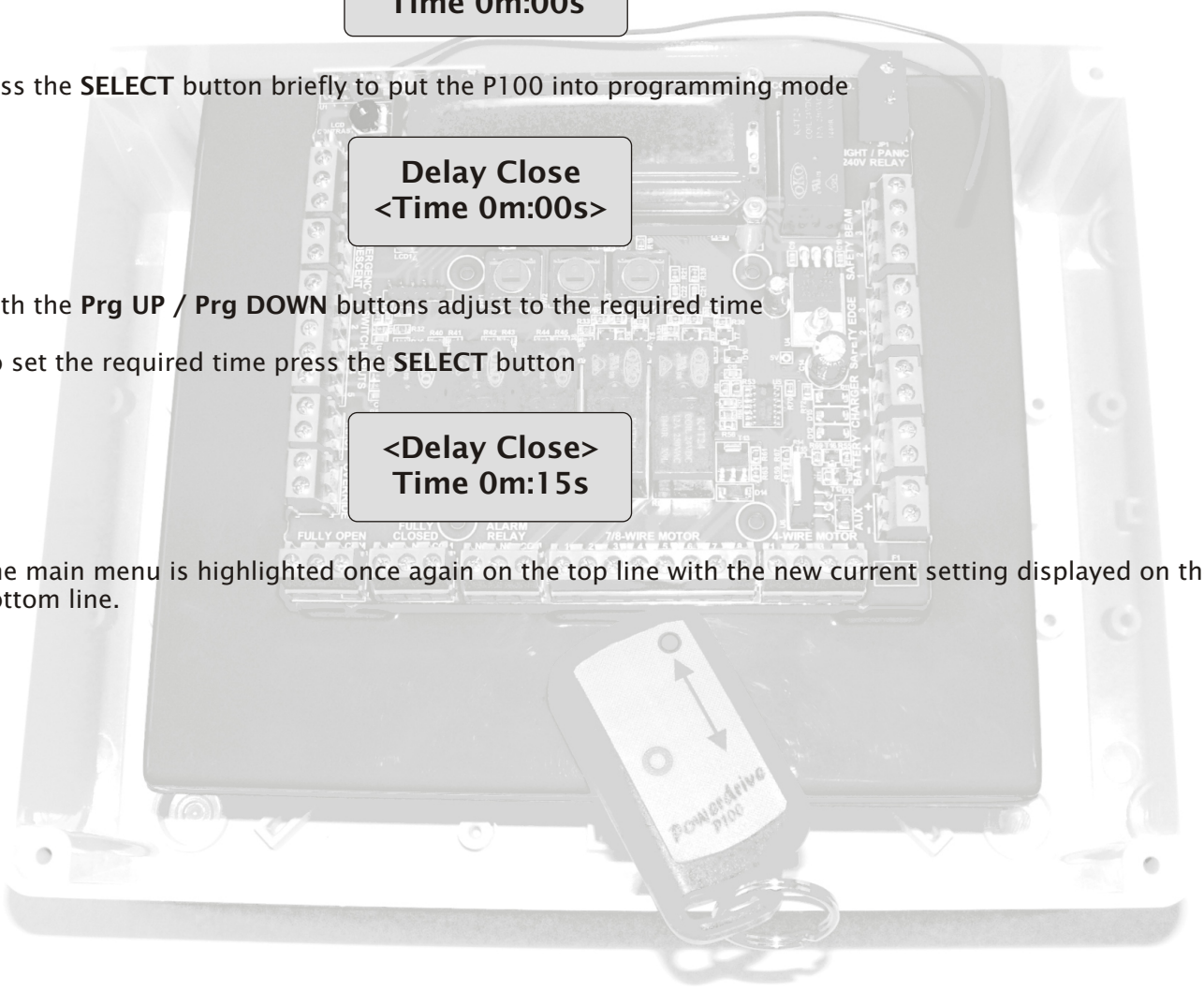
Delay Close
<Time 0m:00s>

With the **Prg UP / Prg DOWN** buttons adjust to the required time

To set the required time press the **SELECT** button

<Delay Close>
Time 0m:15s

The main menu is highlighted once again on the top line with the new current setting displayed on the bottom line.



Menu 6 - Keyfob Close

This is the delay between the panel receiving a “Close” command from the transmitter and the pool cover commencing the close cycle. This delay can be disabled by setting the time to zero.

Minimum time:	0 seconds
Maximum time:	20 seconds
Increment in steps of:	1 second

To adjust the keyfob close time

Using the **Prg UP / Prg DOWN** button scroll to the Keyfob Close Menu

<Keyfob Close>
Time 0m:00s

Press the **SELECT** button briefly to put the P100 into programming mode

Keyfob Close
<Time 0m:00s>

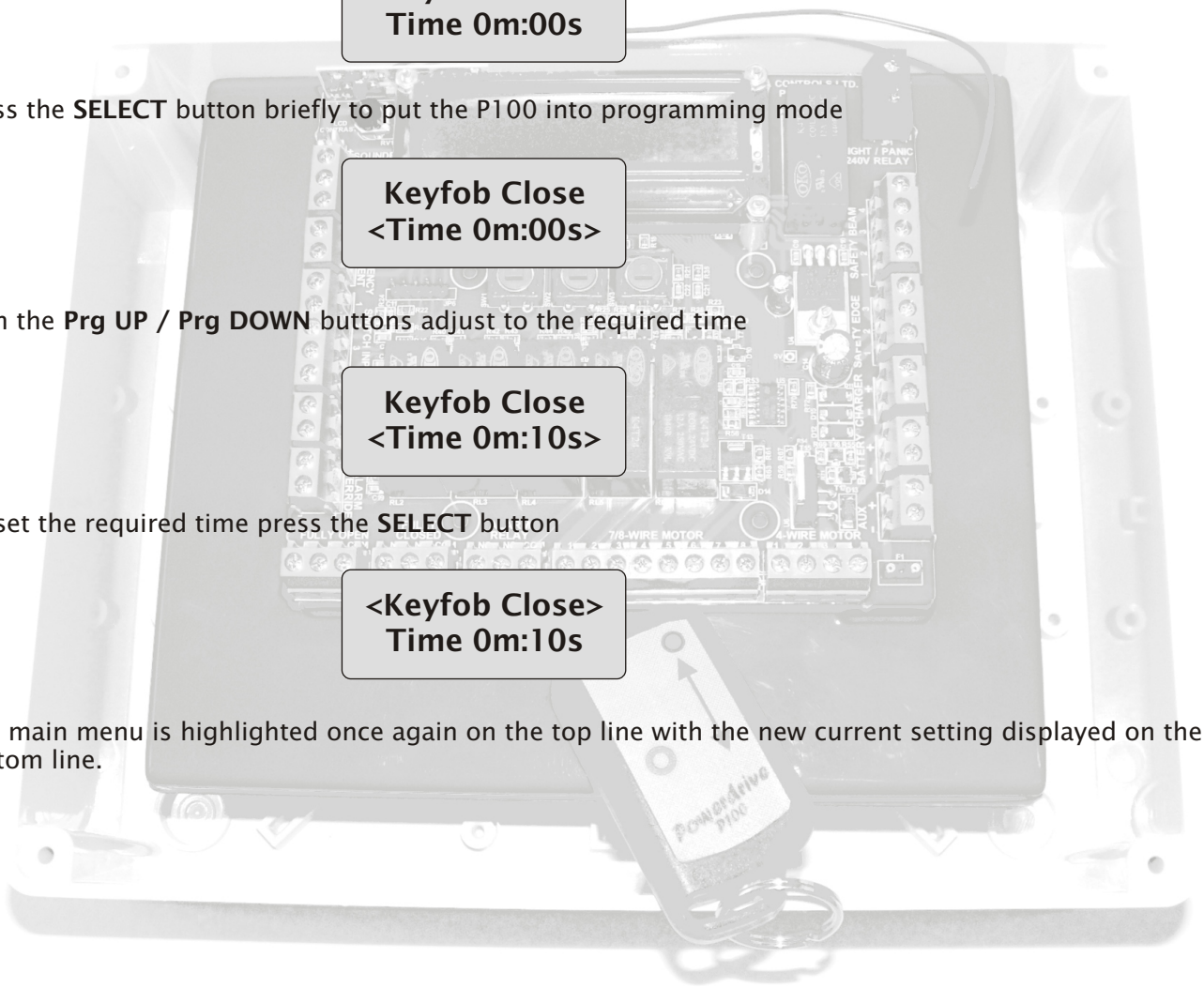
With the **Prg UP / Prg DOWN** buttons adjust to the required time

Keyfob Close
<Time 0m:10s>

To set the required time press the **SELECT** button

<Keyfob Close>
Time 0m:10s

The main menu is highlighted once again on the top line with the new current setting displayed on the bottom line.



Menu 7 - Release Time

If the current limit is reached whilst the cover is opening, the cover will stop and reverse for a set time, then stop. This is known as the release time. Note that setting this time to zero will cause an opening cover to stop without reversing when current limit is reached.

Minimum time:	0 seconds
Maximum time:	5 seconds
Increment in steps of:	1 second

To set the Release Time

Using the **Prg UP / Prg DOWN** button scroll to the Release Menu

<Release>
Time 0m:02s

Press the **SELECT** button briefly to put the P100 into programming mode

Release
<Time 0m:02s>

With the **Prg UP / Prg DOWN** buttons adjust to the required time

Release
<Time 0m:03s>

To set the required time press the **SELECT** button

<Release>
Time 0m:03s

The main menu is highlighted once again on the top line with the new current setting displayed on the bottom line.

Menu 8 - Charger Type

This menu item selects which type of charger is being used and has two options.

MAINS CHARGER - When used with a mains plug top charger.
SOLAR CHARGER - When used with a solar panels.

To select the correct charger.

Using the **Prg UP / Prg DOWN** button scroll to the Charger Type. Menu

<Charger Type>
Mains Charger

Press the **SELECT** button briefly to put the P100 into programming mode

Charger Type
<Mains Charger>

With the **Prg UP / Prg DOWN** buttons select the required mode

Charger Type
<Solar Charger>

To set the required mode press the **SELECT** button

<Charger Type>
Solar Charger

The main menu is highlighted once again on the top line with the new current setting displayed on the bottom line.

Menu 9 - Switch 3 Func.

This menu item configures switch input number 3 and has two options.

LIGHT SWITCH - When used with a momentary switch this input turns on the light relay for two minutes. If the button is pressed again within the two minute timer period the light relay will be turned off.

LOCKOUT - When used with a 2 position keyswitch this input will lock out the radio control and pushbuttons to prevent un-authorised operation. Please note that the alarm input will still be active.

To select the function of Switch Input 3.

<Switch 3 Func.>
LIGHT SWITCH

Press the **SELECT** button briefly to put the P100 into programming mode

Switch 3 Func.
<LIGHT SWITCH>

With the **Prg UP / Prg DOWN** buttons select the required mode

Switch 3 Func.
<LOCKOUT>

To set the required mode press the **SELECT** button

<Switch 3 Func.>
LOCKOUT

The main menu is highlighted once again on the top line with the new current setting displayed on the bottom line.

Menu 10 - Alarm Relay (Configuration)

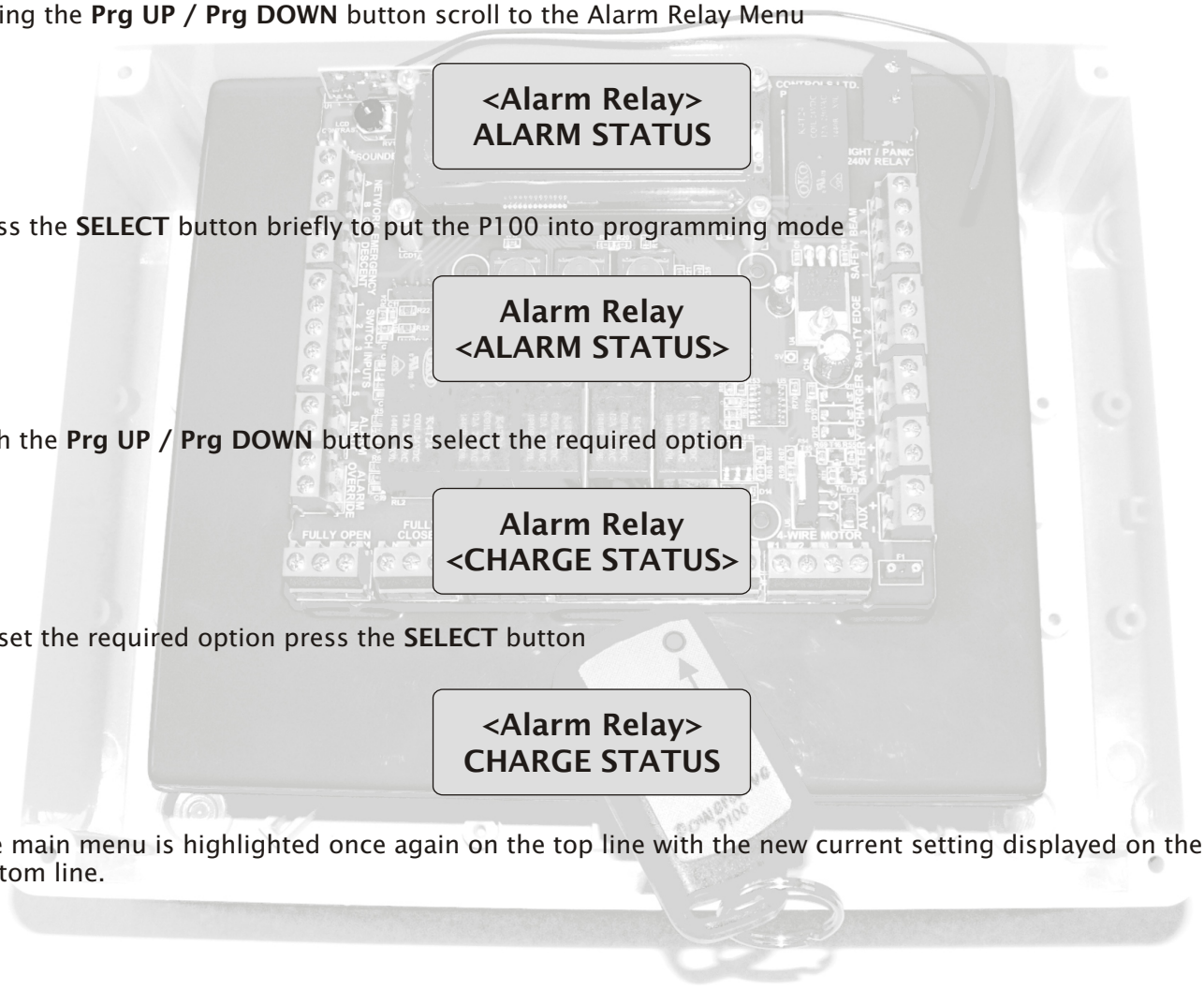
This menu item configures the alarm relay. There are two options for the alarm function:

ALARM STATUS - When the normally closed alarm signal becomes open circuit, the voltage free contacts of the alarm relay change state. This state is maintained until the alarm signal is removed from the panel.

CHARGE STATUS - The Alarm relay is energised all of the time. If the charger voltage is removed i.e in the event of a mains power failure or the charger is disconnected the relay “drops out” Alternatively if the battery voltage is removed i.e the main fuse blows the alarm relay also drops out to indicate a fault situation. The c/o contacts, rated at 12A 230V AC, can be used to interface with a building management system to indicate a fault situation.

To configure the Alarm Relay Function

Using the **Prg UP / Prg DOWN** button scroll to the Alarm Relay Menu



<Alarm Relay>
ALARM STATUS

Press the **SELECT** button briefly to put the P100 into programming mode

Alarm Relay
<ALARM STATUS>

With the **Prg UP / Prg DOWN** buttons select the required option

Alarm Relay
<CHARGE STATUS>

To set the required option press the **SELECT** button

<Alarm Relay>
CHARGE STATUS

The main menu is highlighted once again on the top line with the new current setting displayed on the bottom line.

Menu 11 - Orientation

This menu item is used to set the orientation of the motor. There are two options:

Left - The motor is mounted in the left hand side of the door / curtain / cover

Right - The motor is mounted in the right hand side of the door / curtain / cover

Firstly check the running direction. If the running direction is incorrect the orientation setting for the motor requires changing.

To set the Orientation

Using the **Prg UP / Prg DOWN** button scroll to the Orientation menu

<Orientation>
RIGHT

Press the **SELECT** button briefly to put the P100 into programming mode

Orientation
<RIGHT>

With the **Prg UP / Prg DOWN** buttons select the required option

Orientation
<LEFT>

To set the required time press the **SELECT** button

<Orientation>
LEFT

The main menu is highlighted once again on the top line with the new current setting displayed on the bottom line.

Menu 12 - Network

For multi operational applications it is possible to link up to 32 panels together. There is one panel configured as the master panel with each additional panel configured as slaves. Each slave will receive and act up commands from the master whilst maintaining local controls as normal. For example if the master is told to complete a close operation all of the slave panels will follow suit.

To configure the system into a network link -

Network Terminal A from the master to each of the Slave panels
Network Terminal B from the master to each of the Slave panels
Network Terminal GND from the master to each of the slave panels

This menu item is used to set how the panel operates on the RS485 network. There are two options:

Slave - The panel only responds to network commands. It does not send them.

Master - The panel will respond to network commands and also send commands to slave controllers.

To set the Network

Using the **Prg UP / Prg DOWN** button scroll to the Network menu

<Network>
SLAVE

Press the **SELECT** button briefly to put the P100 into programming mode

Network
<SLAVE>

With the **Prg UP / Prg DOWN** buttons select the required option

Network
<MASTER>

To set the required time press the **SELECT** button

<Network>
MASTER

The main menu is highlighted once again on the top line with the new current setting displayed on the bottom line.

Menu 13- Status Relays

This menu item allows the fully Open & fully Closed status relays to be turned off or on.

Turning off the status relays will prolong the standby time of the panel when in a battery backup situation (no mains power)

To select the function of the status relays

Using the **Prg UP / Prg DOWN** button scroll to the Status Relays. Menu

<Status Relays>
ENABLED

Press the **SELECT** button briefly to put the P100 into programming mode

Status Relays.
<ENABLED>

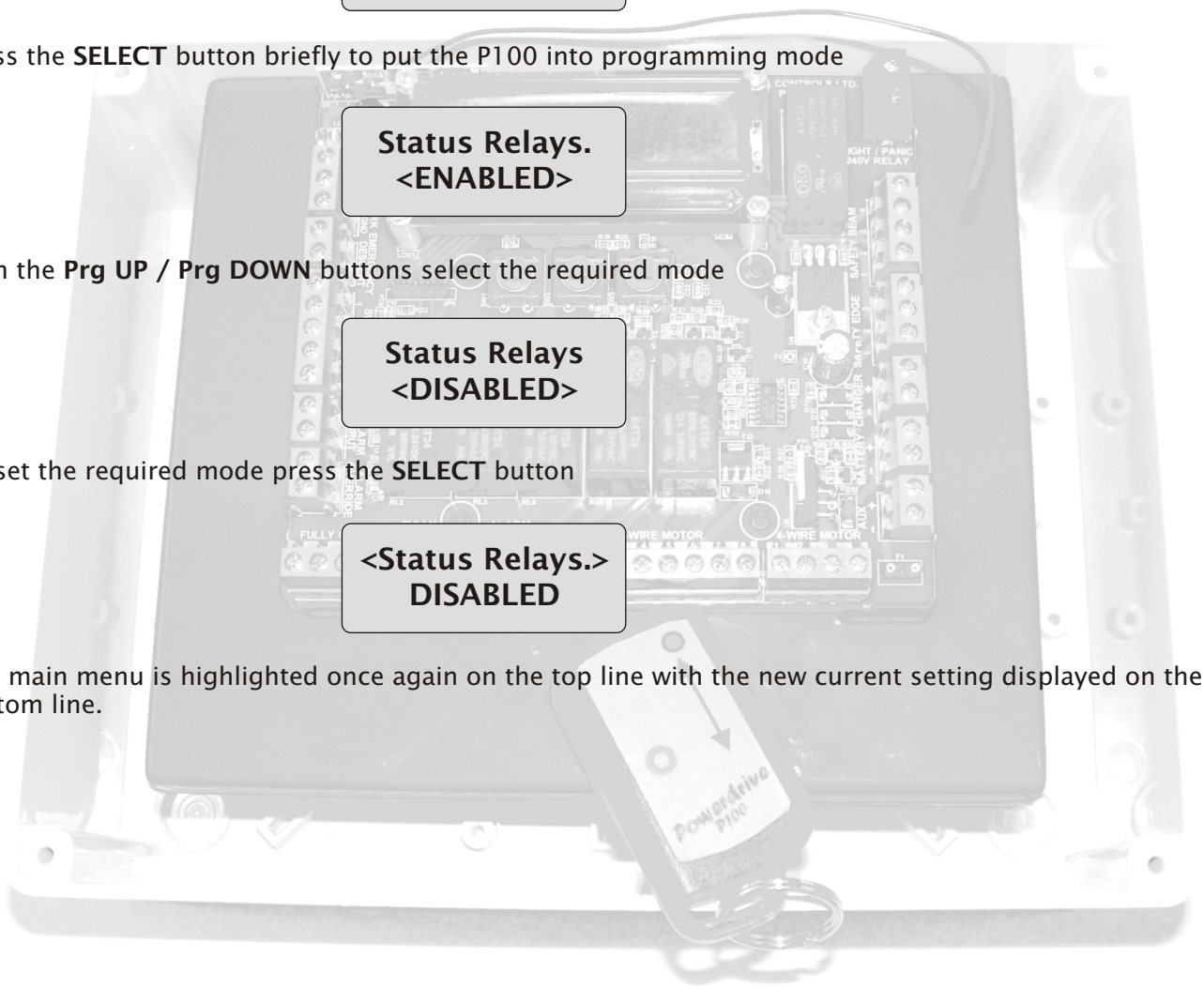
With the **Prg UP / Prg DOWN** buttons select the required mode

Status Relays
<DISABLED>

To set the required mode press the **SELECT** button

<Status Relays.>
DISABLED

The main menu is highlighted once again on the top line with the new current setting displayed on the bottom line.



Menu 14- Current Limit

This menu item allows the current limit of the panel to be adjusted.
The current is adjusted in levels ranging from 2 to 31. Each current level represents 0.25A, for example level 20 is equal to a current limit of 5A. When the current limit is hit in the Open direction the panel will turn off the power to the motor and the motor reversed for the time set in Menu 7. By fine adjustment of the current limit it is possible to open the curtain as far as a physical stop instead of a fully open limit. In this scenario is adopted the Open limit will need to be set higher than the physical stop position..

To adjust the Current Limit

Using the **Prg UP / Prg DOWN** button scroll to the Current Limit. Menu

<Current Limit>
Setting: 25

Press the **SELECT** button briefly to put the P100 into programming mode

Current Limit
<Setting 25>

With the **Prg UP / Prg DOWN** buttons select the required level

Current Limit
<Setting 30>

To set the required level press the **SELECT** button

<Current Limit>
Setting 30

The main menu is highlighted once again on the top line with the new current setting displayed on the bottom line.

(Setting the current limit without special current measuring equipment is done by trial and error. As a rule of thumb, adjust the current level down until the panel starts to indicate current limit when the curtain is driven Open. Then increase the level by 5 settings)

Problem Solving...

Symptom	Possible Cause	Rectification
The LCD is blank	Main fuse not fitted or blown Batteries flat	Fit main fuse 7.5A Automotive Blade Type Connect charger and re-charge panel
The LCD displays "**Not Charging**" For a prolonged period of time *The batteries are not charging*	The batteries are fully charged The charger is not connected The main fuse is blown The charger fuse is blown	No action required Connect the charger Fit main fuse Fit charger fuse 3A Automotive Blade Fuse
The motor will not operate	The motor is incorrectly connected The limits are activated	Check motor connection Re-set the limits
The LCD Displays **"Safety Stop"** *The safety edge or beam is / has been activated*	1) Obstacle in the path of the curtain 2) Broken cable on safety edge 3) Beam miss aligned 4) Missing terminal resistor	Check for obstacle Check for broken cable Check beam alignment Check 8K2 Resistor Is Fitted
The LCD Displays **"Thermal Trip"** *The motor run time of 6 minutes has been exceeded*	The motor has been run for longer than 6 minutes in any 24 minute period	Allow the motor to cool down before re-starting. 24 minutes cooling = 6 mins run 12 mins cooling = 3 mins run (Note the display will not change until the stop button is pressed)
The curtain control descends (Standard & Gravity Failsafe Motors) *The battery charger disconnected and or low battery descent option is activated.*	The battery charger has been disconnected for 24hrs The battery voltage is too low to sustain the panel functions	Re-connect the charger Re-charge the panel
The curtain control descends (Standard & Gravity Failsafe Motors) *The battery charger disconnected and or low battery descent option is activated.*	As above but including .... Battery power depleted Damaged motor cable Main fuse blown	Re-charge the control panel Re-place the motor Re-place the main fuse (7.5A)
The LCD Displays **"Battery Low"** *The battery voltage is too low*	The charger has been disconnected for a prolonged period of time The charger fuse is blown The Stop Circuit is Open	Re-connect the charger Replace the charger fuse (3A)

Problem Solving...

Symptom	Possible Cause	Rectification
The LCD displays **"Sleeping"** *The battery voltage is so low that the panel can no longer operate correctly*	Charger not connected Charger supply missing Charge fuse blown	Connect charger and re-charge panel Check supply Fit charger fuse 3.5A Automotive Blade Type
The LCD Displays **"Battery Fault"** *The battery voltage is too low to operate the motor*	The charger has been disconnected for a prolonged period of time The charger fuse is blown The main fuse is blown The Stop Circuit Is Open	Re-connect the charger Replace the charger fuse (3.5A) Replace the main fuse (7.5A)

Useful Information ....

Enclosure

Dimensions	255x200x100mm
IP Rating	IP65 (Downgraded to IP50 due to addition of switches and DC inlet) Enclosure to be sited in dry location
Material	ABS

Supply Voltage

Panel Voltage	24V
Panel Batteries	2 x 12v 2.1 AH or equivalent
Charger	Universal 100 -240V ac 50-60Hz input / 27.4V - 29.4V dc output
Adaptors	UK 3 Pin, Europlug

Radio Control

Frequency	433.92Mhz
Modulation	AM
Range	Up to 100m
Transmitter Type	3 Channel Miniature Keyfob 66x34x16mm
Battery Type	12V GP23A
Licence	None Required

Test Specification

EN 61000-6-2 : 2001
EN 61000-6-3 : 2002
A11 : 2004