

SMART SWITCH TECHNOLOGIES



NV-8000 Navigational Light Controller / Monitor

Installation Manual

Model NV-8000

Installation Manual

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Smart Switch Technologies Ltd
Po Box 272, Waikanae, New Zealand
Ph: 0064-4 293-4201 Fax: 0064-4 293-4201
Mobile: 0064-274-919-805
Email: info@smartswitch.co.nz Web: www.smartswitch.co.nz

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Installation Steps

Smart Switch Technologies Ltd recommends a Qualified Marine or Auto-Electrician installs this product.

Step 1:

Install and connect the Master Display Head Unit (NV-8000) [page 3](#).

Step 2:

Install and connect the Output Units (NV-100) [page 5](#).

Step 3:

Setup Rotary Switches [page 6](#).

Step 4:

Program the Display Unit (NV-8000) [page 7](#).

NV-8000 Nav Light Controller/ Monitor

Introduction

Thank you for purchasing the NV-8000 navigational light controller / monitor. Smart Switch Technologies is very proud to be able to provide this product to you. You have selected a capable system designed to provide years of reliable service under the most demanding conditions.

Smart Switch Technologies is a pioneer in the design and development of distributable intelligence controller systems for the marine industry. The NV-8000 is a versatile, compact, modern, stylish, user-friendly intelligent network system. Our Research and Development Team has developed this system specifically for the marine environment using proven techniques and materials, which will ensure a long life at sea.

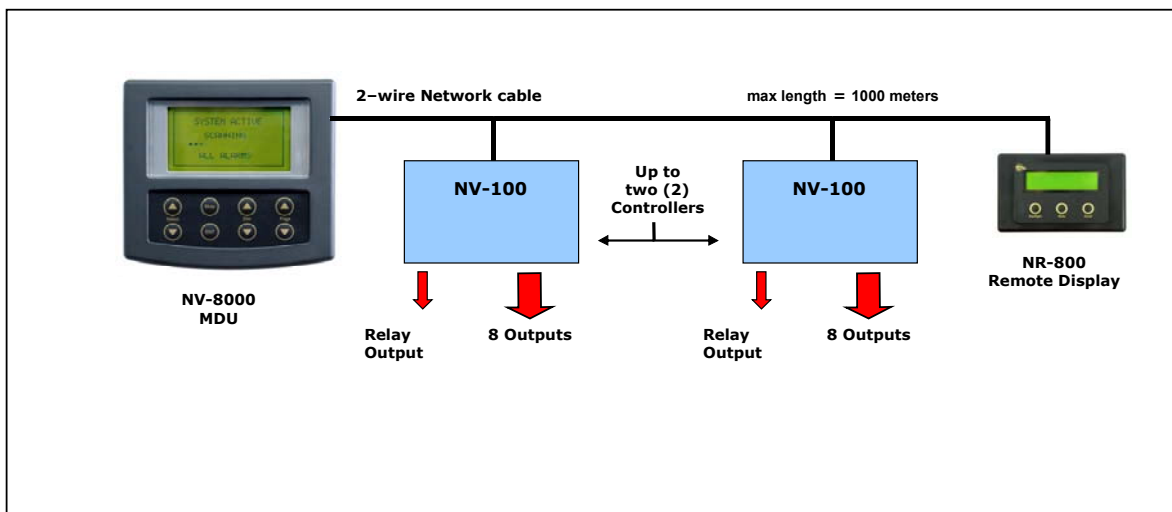
The NV-8000 provides features found only in expensive computer-based systems on mega-yachts, but does so for a fraction of the cost. It is an economical and capable alternative to simplistic monitoring systems. The NV-8000 allows builders and retrofitters to offer a system with maximum functionality thereby providing boat owners with excellent visibility into any alarm condition.

System Overview

The NV-8000 system has been developed to allow control and monitoring of up to 16 lights. It is a network system consisting of the NV-8000 Master Display Unit and up to 2 Output Units located anywhere on the vessel. In addition, one NR-800 Remote Display Unit may be added to provide an additional display throughout the vessel.

A 4-wire network cable similar to that used for telephone installations interconnects all devices. The Master Display Unit (MDU) controls communication with all attached I/O Units. System components may be located anywhere on the network cable and the cable may be up to 1000 meters in length.

These features, unique to the NV-8000, provide boat builders and retrofitters maximum flexibility in locating components onboard the vessel while minimizing wiring costs.



NV-8000 Master Display Unit:

Provides the following functions:

- Provides latched display for up to 16 lamp alarms
 - all names are user programmable
 - network communication fault
 - visual alarm with tone
 - 6 user groups
 - join any output to any group
 - all outputs belonging to a group if that group is selected

NR-800 Remote Display Unit Option:

Allows for remote display any where on the vessel.

NV-100 Input Unit:

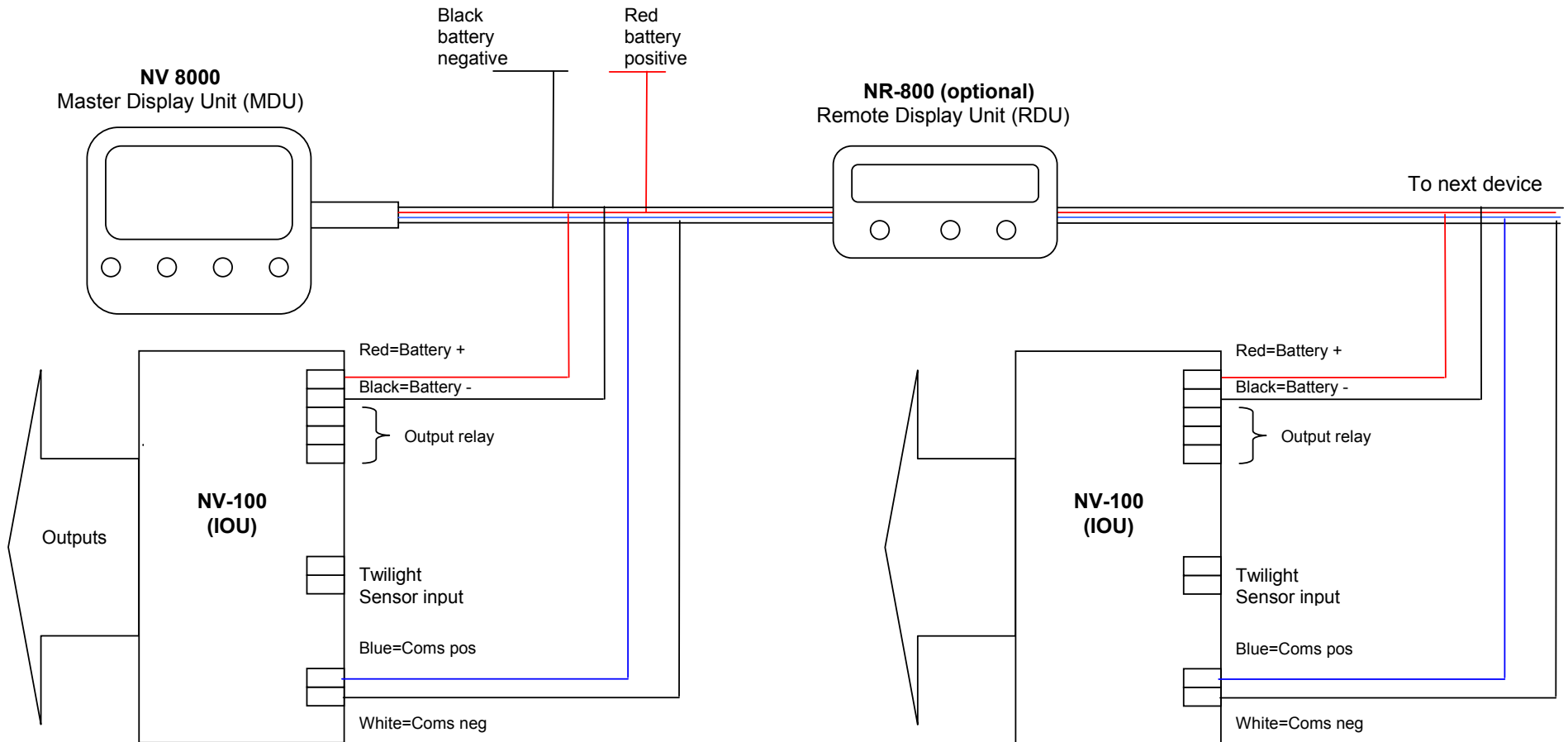
The NV-100 has 8 outputs and one output relay.

- each output can supply 8 amps and current sense down to 10mA
- one twilight sensor input

Output Relay

- 3 amp inductive
- closes on any fault

Wiring Block Diagram

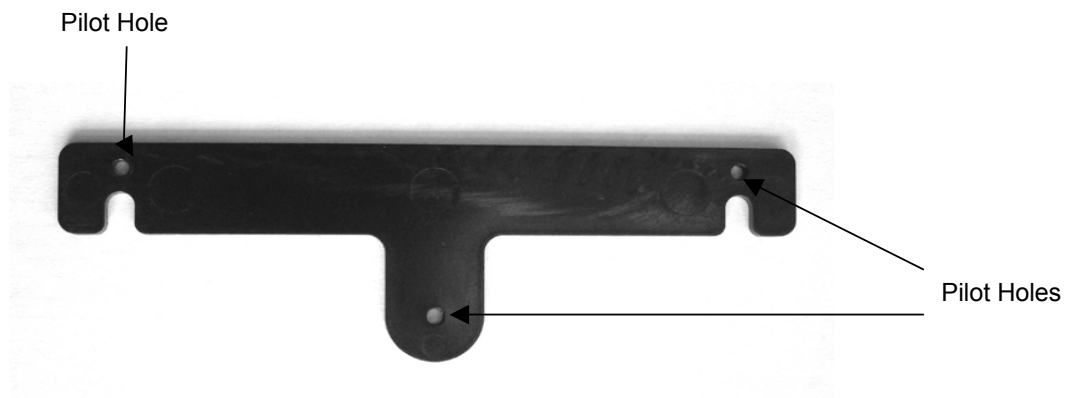


Mounting the NV-8000 Display Unit

Position the mounting template tool provided and mark all three pilot holes. Drill a 3mm hole on the two outside holes and fit the mounting screws provided. Place the template tool back over the screws and tighten the screws until the template tool can just slip on and off the tool (ensure the tool is not too loose).

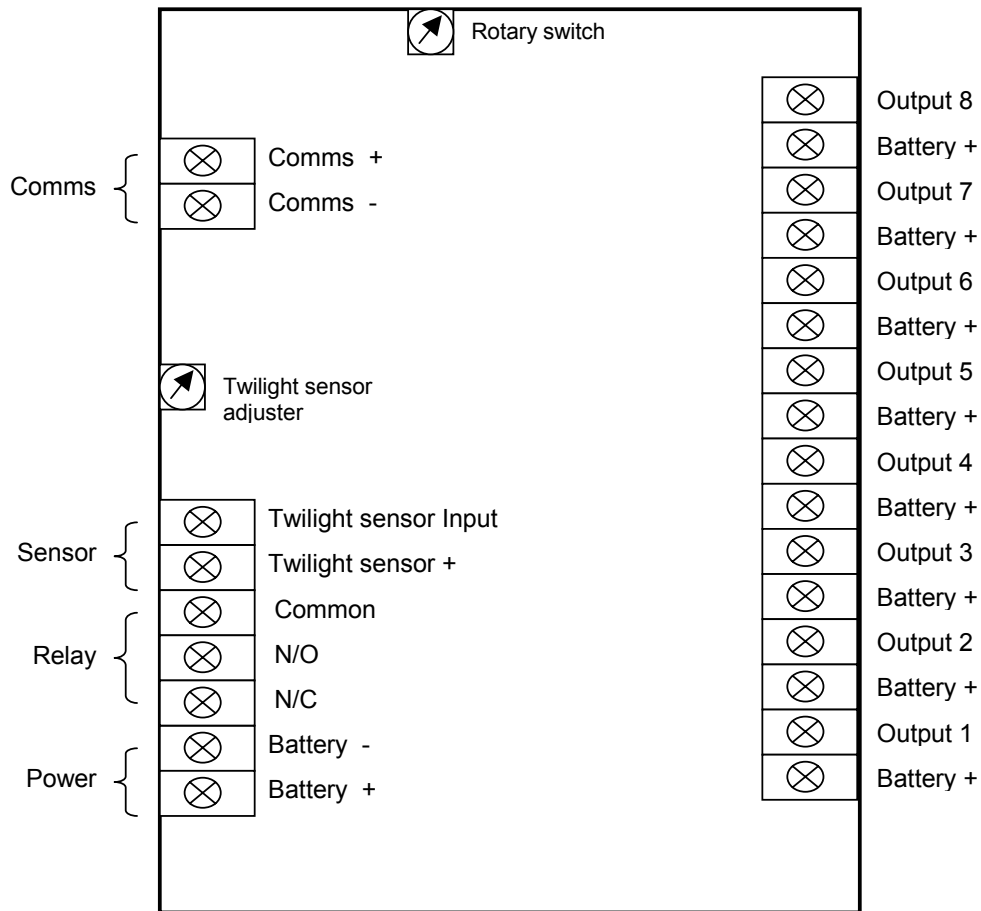
Drill the bottom hole to 12 mm (cable hole).

Place the Display Unit keyholes over the two screws and gently pull down. If the screws have been tightened to the correct depth the Display will clip down and self tighten.

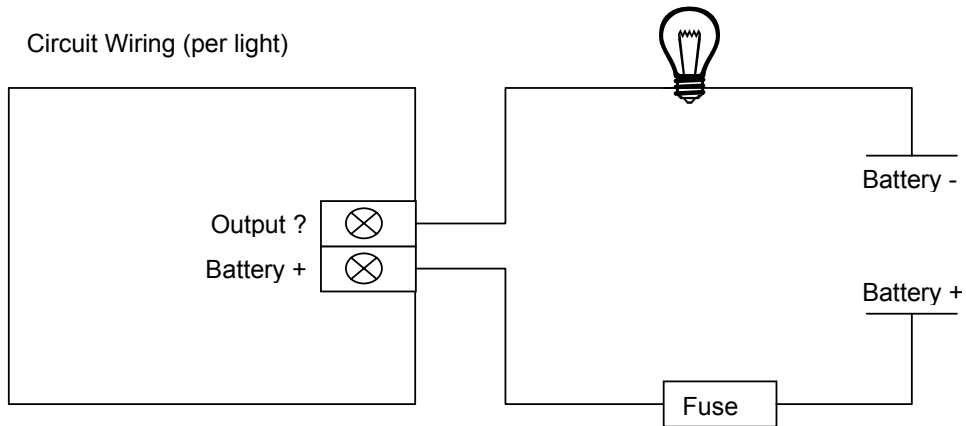


. See page 3 (Wiring Block Diagram) for wiring details.

Wiring Diagram for Model NV-100



Circuit Wiring (per light)



Adjusting the Twilight Sensor:

After installing and programming the system, connect the twilight sensor as per the wiring diagram above. During daylight, turn the twilight sensor adjuster until the system alarms with the " NO NAV LIGHTS ON " message displayed. Now turn the adjuster back slowly until the alarm stops and the displayed message disappears. To test cover the sensor to simulate twilight.

Setting Rotary Switch (Network Address)

To enable the MDU to remotely monitor, each I/O (NV-100) unit must have a unique network address. This is accomplished by setting the rotary switch inside the I/O unit to either switch position 2 OR 3 (ref to page 6).

Important: Each Input Unit NV-100 on the network must have the Rotary Switch set to a unique number. Two I/O units may NOT share the same Rotary Switch number. Each NV-100 installed must use the next switch number available. E.g. if two are installed then switch settings must be 2 and 3.

For ease of reference please use the chart provided below, as this will enable quick reference when programming the Display Unit.

NV-100 (IOU) Rotary Switch position 2

Switch Position 2 Output	Light
1	
2	
3	
4	
5	
6	
7	
8	

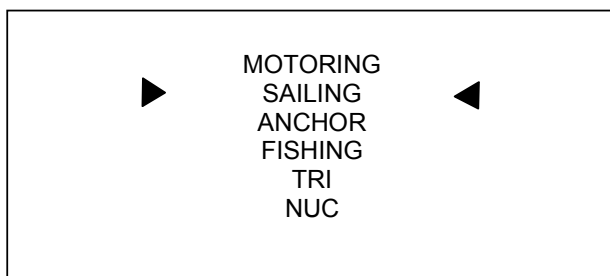
NV-100 (IOU) Rotary Switch position 3

Switch Position 3 Output	Light
1	
2	
3	
4	
5	
6	
7	
8	

Programming Instructions

Explanation of Groups:

There are SIX (6) groups. Any output and any number of outputs may be joined to any group. When a group is selected and the ENT key is pushed ALL LIGHTS that have been joined to the group will turn on, pushing the ENT key again will turn them off. E.g. Output 1, 2, 4 and 6 joined to the Motoring group will all be turned ON or OFF when that group is selected and the ENT key is pushed. All group name text can be changed (see step 7).



Explanation of Backup:

A backup light system is two lights e.g. two port light, two stb lights, two stern lights. One light is called the primary light and the other is the secondary light.

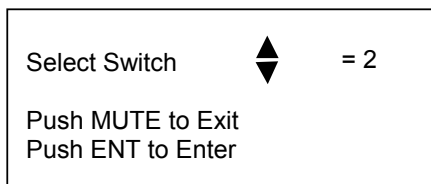
The primary lights are connected to The NV-100 (switch position 2) and the secondary (backup) lights are connected to The NV-100 (switch position 3). If a fault occurs on any of the primary lights the fault is reported on the display unit and the secondary light will automatically turn on. When the primary light is fixed the secondary light will automatically turn off.

Step 1: Placing the unit in Program Mode

Press and hold down the Mute & Select Up keys together for three seconds. This will place the unit in program mode.

Step 2: Selecting Which NV-100 to program (Rotary Switch see page 6)

The display will now show

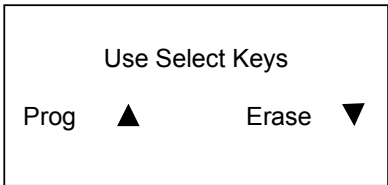


Use the Select Up or Down keys to change the switch number, which corresponds to the I/O unit being programmed (refer to page 6) for switch numbers.

Once the switch number has been selected push the "ENT" key to accept.

Step 3: Program or Erase

The display will now show

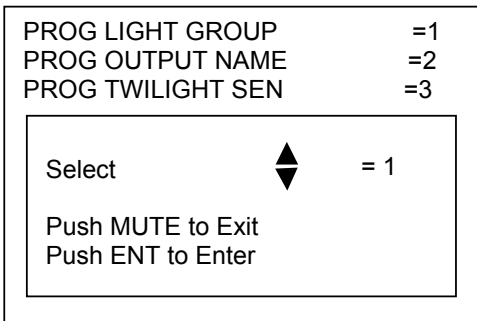


Use the Select Up key to program or the Select Down key to erase. If Select Up is pushed go to step 4 if Select Down is pushed see Step 12.

Step 4: Output Name (Option 2)

If the rotary switch position 3 is being programmed and backup is required go to Step 10. If rotary switch position 2 or (3 with no backup) is being programmed the display will now show:

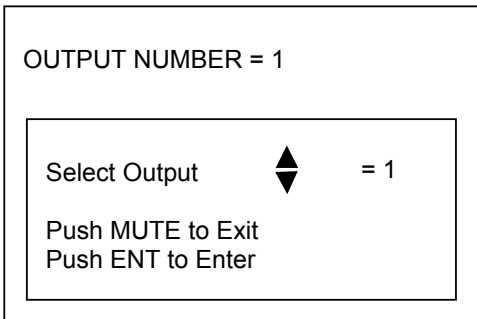
Push the MUTE key to Exit from program mode.



For first time setup please select option 2 (OUTPUT NAME) as each Output needs to have a name associated to it. This is the name that will be displayed should a fault occur on that output circuit.

Step 5: Select Output

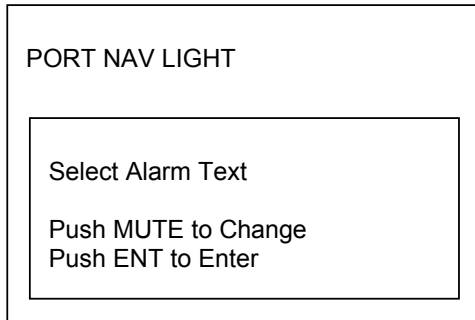
The display will now show:



Use the Select Up or Down keys to change the output number, which corresponds to the output being programmed. Once the output number has been selected push the "ENT" key to accept.

Step 6: Selecting /Creating Output Names

The display will now show:



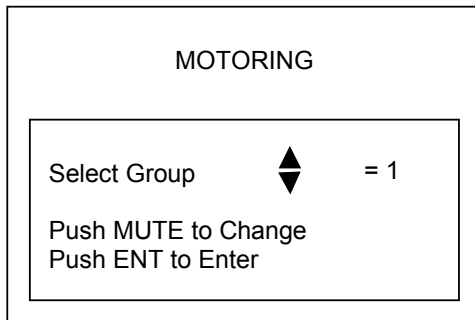
Use the Select Up or Down key to scroll through the pre-named Alarms. Once you have found the one required push the “ENT” key.

If you would like to create your own name push the “MUTE” key. Use the Select up or down key to scroll through the alphabet and the Dim up or down keys to change to the next character. When finished push the “ENT” key. (max 21 characters)

REPEAT THIS STEP FOR ALL OUTPUTS.

Step 7: Select Group (Option 1)

The display will now show:



Use the Select Up or Down keys to change the Group number, which corresponds to the Group being programmed.

Once the Group number has been selected push the “ENT” key to accept.

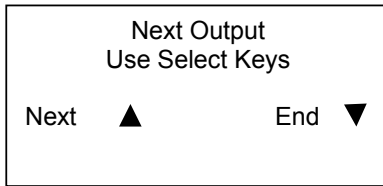
Changing Group Name:

If you would like to create your own name push the “MUTE” key. Use the Select up or down key to scroll through the alphabet and the Dim up or down keys to change to the next character. . When finished push the “ENT” key. (max 10 characters)

Now you have selected the Group you want to program you must now add all outputs you want to belong to the group. When this group is selected in operation mode ALL outputs that have been joined to the group will turn ON or OFF when the group is selected.

Step 8: Next Output in the Group or End the Group

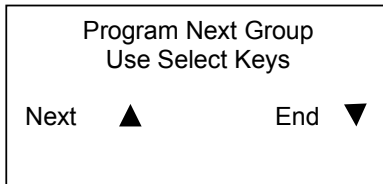
The display will now show:



Push the Select Up key to set the next output for the group or Select Down key to exit from the group you are programming. If End is selected go to step 9.

Step 9: Next Group to program or End

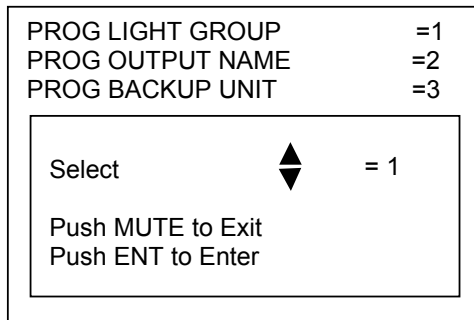
The display will now show:



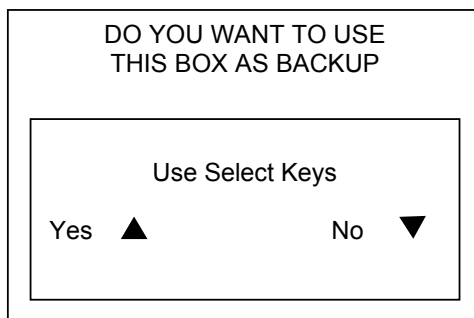
Push the Select Up key to set-up the next Group or Select Down key to exit from programming. If Next is selected this will take you back to step 7 if End is selected this will take you back to step 4.

Step 10: Program Backup Unit (Option 3) (I/O Box switch position 3).

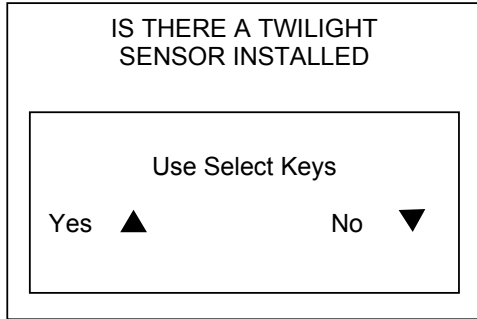
Option 2 will need to be programmed as per the instructions above.
We suggest the output names be the same but with (for example) a 2 added.
E.g. Primary light name = Stern, Secondary name = Stern 2



If option 3 is selected the display will now show.



Step 11: Twilight Sensor (Option 3) (I/O Box switch position 2).

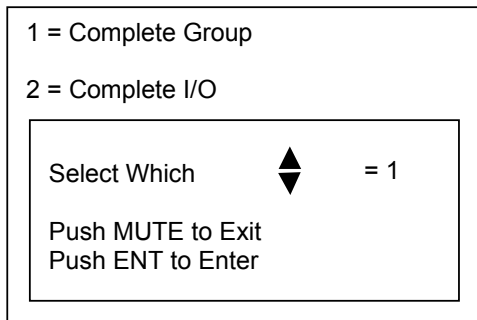


Step 12: Erase

Selecting Erase will erase all settings associated with the AL-100 (IOU).

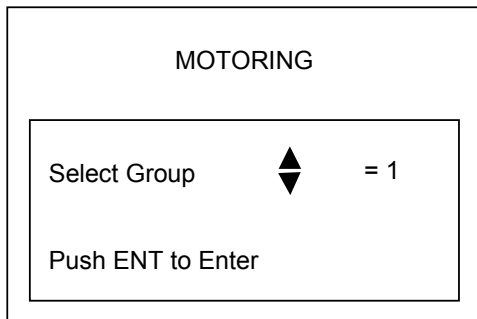
If a mistake is made on any input a complete erase is not required just reprogram the input.

The display will now show:



If Complete Group (1) is selected.

The display will now show:

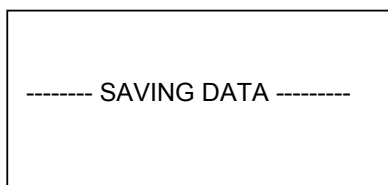


Use the Select Up or Down keys to change the Group number, which corresponds to the Group being YOU WANT TO ERASE.

Once the Group number has been selected push the “ENT” key to accept. The system will now exit program mode as below.

If Complete I/O (2) is selected.

The display will now show:



Operating Instructions

Keyboard:

- Select Up or Down** – Scroll up and down the groups (also used in program mode)
- Mute** - Mutes the alarm (also used in program mode)
- Ent** – Turns lights On and Off (also used in program mode)
- Dim Up and Down** - adjusts the display contrast.
- Page Up or Down** – used for scrolling up or down a page if more than 8 alarms exist at once.

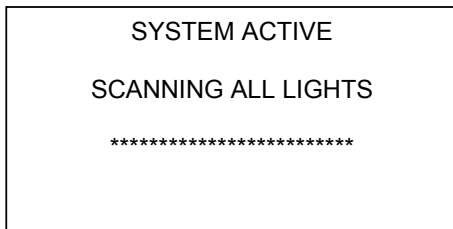
Alarms:

Should any lamp fail due to either a faulty bulb or cable fault the alarm text will flash on the display and the audible alarm will sound.

Pushing the mute button will mute all alarms. If the fault condition is still present the alarm text will stop flashing and stay on, should another fault occur the alarm would start again. If the fault condition has gone the fault text will disappear from the screen.

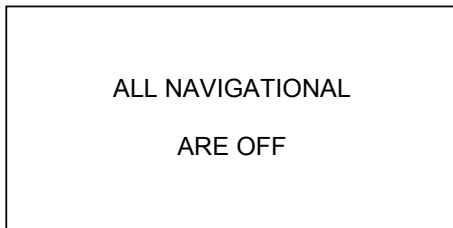
If a twilight sensor has been fitted and no navigational lights have been turned on a dusk the alarm is sound and the following text will be display: NO NAV LIGHTS ON

Normal operation screen if any lights ON



SYSTEM ACTIVE
SCANNING ALL LIGHTS

Normal operation screen all lights OFF



ALL NAVIGATIONAL
ARE OFF

Twilight Sensor:

Anchor Light:

**If a twilight sensor is fitted and turned ON and the Anchor group has been selected:
The anchor light will turn ON automatically at twilight and OFF at sunrise. This will continue day after day until the anchor group or sensor has been turned off.**

If a twilight sensor is fitted and turned ON:

At twilight if there are NO navigational lights on, the alarm will sound and the display will show “NO NAV LIGHTS ON”

Interrogating the System:

Press and hold the "MUTE" key for three seconds (you will hear the a bleep every second) the system will now display each group and the associated outputs.
E.g.

MOTORING Output 1 PORT NAV LIGHT Output 2 STB NAV LIGHT

Electrical Specifications NV-8000

Supply Voltage	12 to 32 Volts DC (Auto-sensing)
Quiescent Current	0.028 Amps (backlight off)
Data Retention	50 years (without power)

Electrical Specifications NR-800

Supply Voltage	12 to 32 Volts DC (Auto-sensing)
Quiescent Current	0.03 Amps
Data Retention	50 years (without power)

Electrical Specifications NV-100

Supply Voltage	12 to 32 Volts DC (Auto-sensing)
Quiescent Current	0.024 Amps
Input Voltage (max)	30 vdc
High Relay Load	3 amps Inductive
Data Retention	50 years (without power)

Network Cable

The cable connecting the Display Unit to the Input/Output Units is referred to as the network cable and may run up to 1000 meters in total length.