



**Networked Control  
and Monitoring System**



**enter..digital**

**CZone™** is the latest innovation from BEP. At BEP we embrace technology to improve functionality. Our range of products is designed to provide innovative solutions to battery management on vessels and vehicles. We are part of the Marinco Electrical Group family of great electrical brands.





Bulletproof reliability. Scaleable. Easy to configure and install. Reduce wiring complexity and weight.

**CZone™** is what you want in a digital control system designed for manufacturers and installers of Marine, RV and Specialty Vehicles. It simplifies installation of electrical systems through the replacement of complicated, cumbersome wiring to switch and fuse panels, with state of the art, robust interfaces and light NMEA 2000 network cable. It also provides the the end user a sophisticated solution through the automation of complicated control and monitoring issues associated with today's on board systems

#### **INSTALLATION**

Builders recognize an immediate benefit with reductions in cable usage, harness weights and installation times. CZone™ also integrates many stand alone components into one intuitive system. Wiring is dramatically simplified, CZone™ is designed to remove complex switching clusters and wiring runs. Integrated diagnostics ensures fault finding is simple. CZone™ is the digital networking system that is both cost-effective and scalable. Modules can easily be added into the system to best suit the OEM and end-users' needs.

#### **INTEGRATION**

CZone™ is NMEA 2000 compliant and uses the standard Micro cables and connectors. Being NMEA 2000 compliant you can have trust in the network. This also allows a single network backbone to be installed for multiple systems (CZone™ and other NMEA 2000 devices). Additionally, CZone™ can share certain monitoring functions with other NMEA 2000 compliant screens.

#### **CONFIGURATION**

We provide the tools to help you determine the modules needed based on your specific requirements. Then, simply program with the CZone™ intuitive configuration tool.

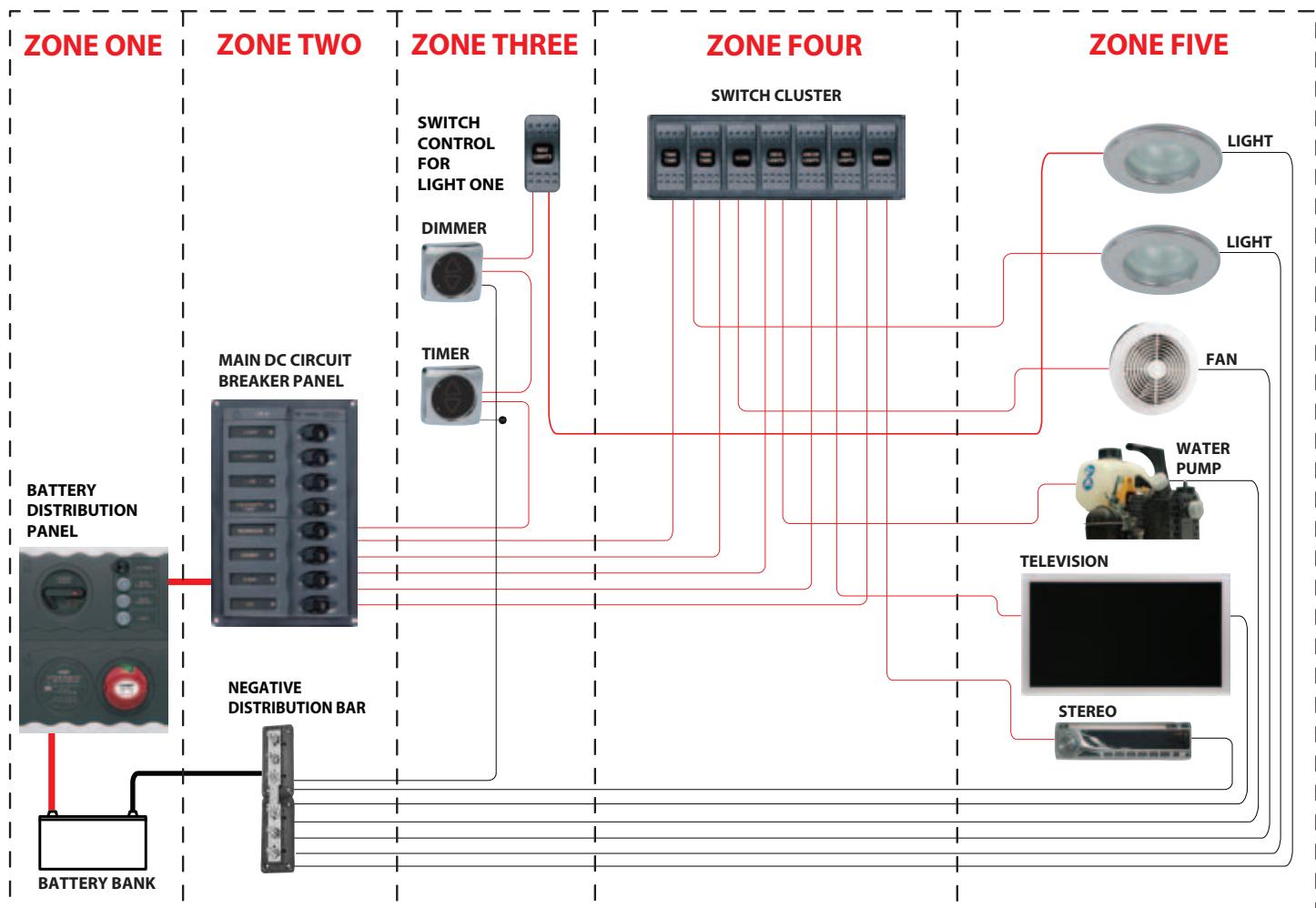
#### **VERSATILITY & SECURITY**

CZone™, designed for 9-32V systems, features built-in timers, dimmers (including support for halogen lighting), alarms, voltage reducers and load shedding. With safety in mind, CZone™ features a manual bypass. Our No-Single-Failure-Point technology ensures a plug-n-play system that is designed to handle mishaps. If a module is damaged, the system will automatically program the replacement module, when it is plugged in. This means any module can be replaced without using high tech service people. Our security features allow custom configurations that can be locked.



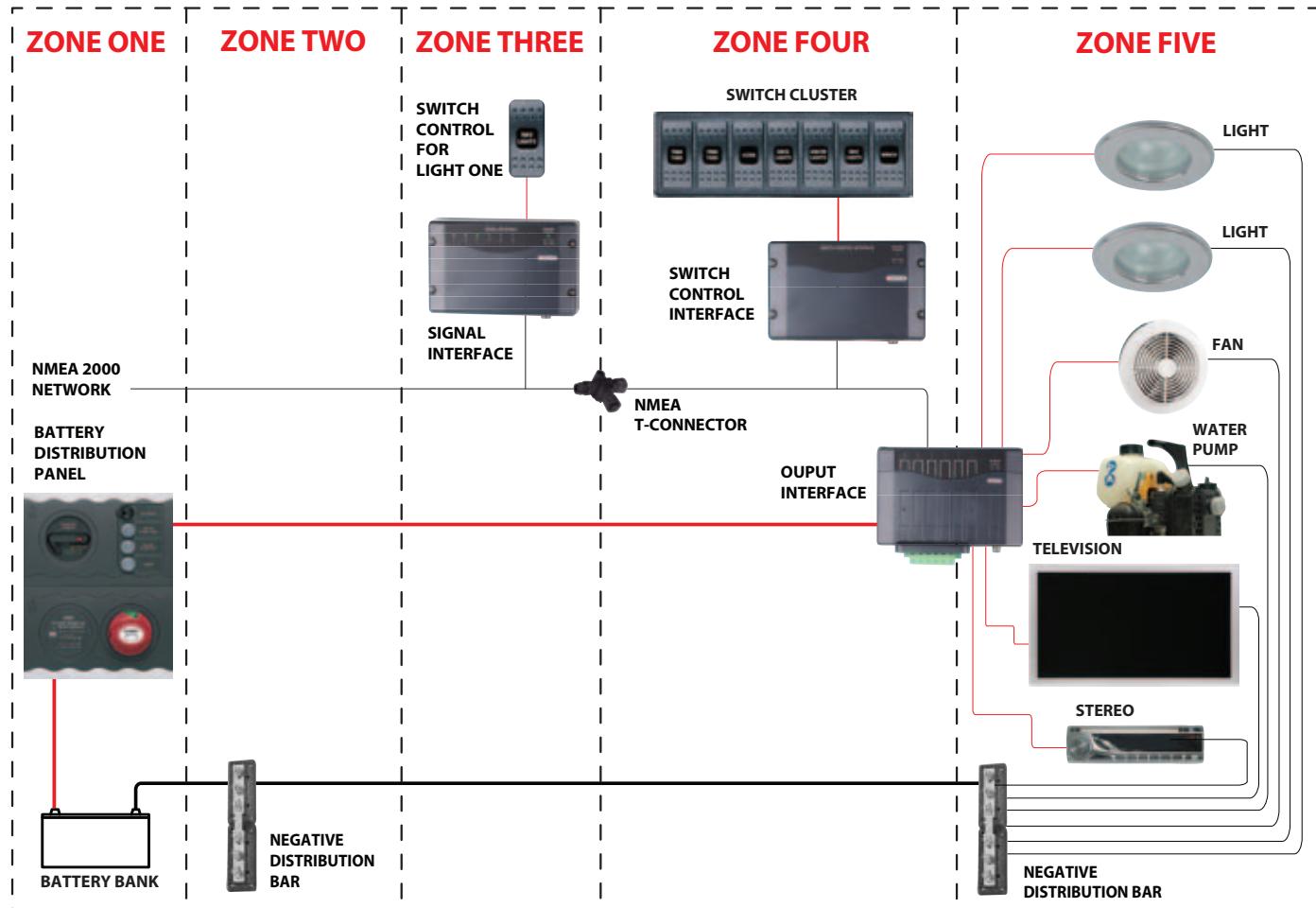
# TRADITIONAL ELECTRICAL DC WIRING

Wiring DC systems can be extremely complex and installation time can be extensive. The larger the system, the more wire is required, which creates weight and space concerns, not to mention increased cost and complexity of design and manufacturing. Basic maintenance and trouble shooting of traditional wiring systems can be difficult to manage.



- Switch panel wiring is complicated and extremely labor intensive to install
- Cable runs are long and have multiple conductors. Switching of common circuits is complex
- Long wire runs require larger cable, adding weight, increasing cost and reducing space

CZone™ decentralizes the DC power distribution system, locates circuit control and protection modules closer to loads to shorten cable runs and reduce the size of conductors, **significantly decreasing the cost and weight of the electrical wiring harness**. The system replaces complex wiring with a single data wire.



- Complex switch panel wiring removed, replaced with single data cable connection
- The grouping of multiple loads into common areas (Zones) with Output Interfaces is the key to the CZone™ system
- Heavy duty battery mains cable, replaced by multiple smaller conductors

# DISPLAY INTERFACE

The CZone™ Display Interface (DI) is the interface between the CZone™ network and the user. It offers full control of circuits as well as the ability to view important on board systems information such as tank levels and power levels (for both AC and DC supplies), it also provides audible and visual alarms with systems diagnostics. The DI is extremely intuitive to use with simple controls and a menu structure that is easy to follow. The “modes of operation” feature allows the control of multiple circuits with a single push of a button. For instance, “night running” mode turns pre-selected lights on to dim levels. These modes are all user configurable. The DI can be used to set CZone™ parameters for initial installation and future system maintenance.

## GENERAL SPECIFICATIONS:

- 3.5" Transflective QVGA LCD
- IPX7 water ingress Protection
- Rotary Knob for easy menu navigation
- Simple User Interface
- Power consumption @12V: 180mA (standby 130mA)
- H 105mm (4"3/32) x W165mm (6"7/16) x D 62mm (2"13/32)

## POWER CONTROL:

- Turn circuits on and off including timer and light dimming control (see opposite page for detail)

## MONITORING:

### DC POWER METER:

- Displays voltages of multiple battery banks, includes low and high voltage alarms
- Displays charge and discharge (amps) of multiple battery banks
- Displays battery capacity in ampere hours and % charge/discharge, includes low ampere hour alarm

### AC POWER METER:

- Displays multiple line voltages (230 and 110V), includes high and low voltage alarm
- Displays AC line frequencies, includes high and low frequency alarm and AC power consumption in kW

### TANK LEVELS:

- View tank level information for multiple tanks and fluid types

### DATA:

- Displays standard NMEA 2000 information

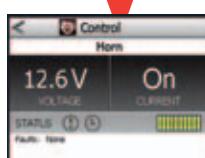
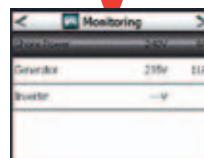
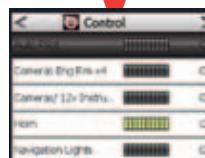
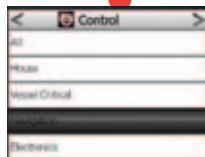
### ALARMS/DIAGNOSTICS

- CZONE network status reporting
- Presents alarms for on board faults in audible and Visual form (bilge pump running, smoke alarm)

### SET MODES OF OPERATION

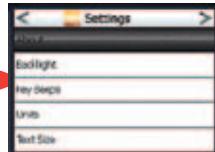
**CONTROL:** Breaks down the circuits into easy to identify groups for quick control, ie., to turn on fresh water pump open “pumps” group. User can open pumps group and select fresh water pump. This screen also allows the user to monitor the status of the circuit ie on, off, fault and current draw.

**MONITORING:** Allows user to easily monitor AC and DC power, tanks, data, alarms, and circuit status.

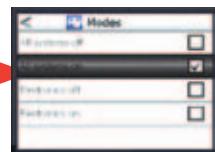


# DISPLAY INTERFACE

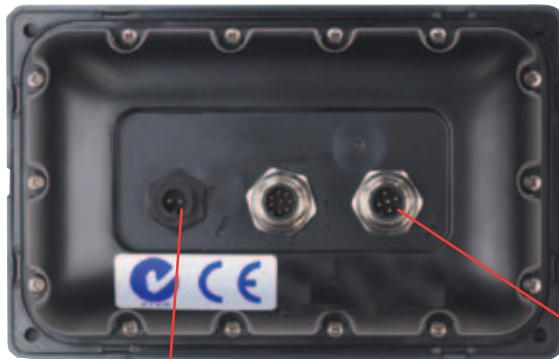
The Display Interface is designed with both the manufacturer and end-user in mind. The easy to use display screen puts the control of all components directly at your fingertips. Multiple Display Interfaces can be used in the same system. The scroll and click interface is simple to use in the roughest of seas or bumpiest of roads. Installation is simple, bringing all the power of the DI to an area with the simple addition of a power and network cable.



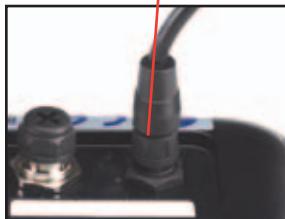
**SETTINGS:** Allows OEM or technician access to the configuration (via password) of a system. No need for computer to set or change configuration settings such as circuit labels, circuit breaker sizes, etc.



**MODES:** Key to the ease of operation. With one key press, user can turn on a group of circuits, without having to scroll, search for, and turn on the individual circuits that they need for operation of their vessel/vehicle. When leaving vessel or vehicle, simply press "systems off" to turn off all non-essential circuits. Entertainment mode allows preset activation of salon lights, music etc... All functions can be controlled remotely with CZone™ remote.



<b>PART#</b>	<b>DESCRIPTION</b>
80-911-0001-00	Display Interface, w/power cable, black bezel
80-911-0002-00	Display Interface, w/power cable, grey bezel
80-911-0003-00	Display Interface only, black
80-911-0004-00	Display Interface only, grey



2-pin Power Connector



NMEA 2000 Connector

# SWITCH CONTROL INTERFACE

The Switch Control Interface (SCI) provides an interface between the CZone™ network and traditional mechanical switches that manufacturers and users are familiar with. This interface converts the signal from those switches into the Control Area Network (CAN) signal needed across a digital network. No need to change existing designs.

Diagnostics are important. Fault codes are provided to quickly identify issues with the network or switches. Information is provided on the Switch Control Interface as well as sent to the CZone™ Display Interface.

The SCI simplifies your wiring, supports your existing choice of switches, protects against failures and allows for expanding installation options.

Backlighting and systems in operation lights are dimmable to ensure your night vision is not impaired by bright lights on your control area, level control of these can be linked to the backlighting level of any Display Interfaces in close proximity of the SCI.

## GENERAL SPECIFICATIONS:

- Single switch position can control multiple OI channels
- Attaches to switch panels via custom SCI cable
- Multiple SCI switches can control single OI channel
- Output for backlighting of switch labels (dimmable)
- Outputs systems on and function/ fault codes to systems on LED of switches (dimmable)
- H 100mm (3"29/32) x W156mm (6"3/32) x D 42mm (1"5/8)
- IPX5 water ingress protection
- Programmable switch types
- 8 inputs per module (16 individual controls)
- Sequential button press functionality



<u>PART#</u>	<u>DESCRIPTION</u>
80-911-0011-00	Switch Control Interface w/seal
80-911-0012-00	Switch Control Interface only



**8-Way Connector Bank for SCI  
Cable Assembly to Switches**



**Waterproof Cable Seal**



**NMEA 2000 Connector**

# SIGNAL INTERFACE

The Signal Interface (SI) connects CZone™ to your external sensors, alarms and switching devices. The SI allows intelligent, automated operation of circuits depending on the state of the input. For example, the SI can be easily programmed to allow a fluid transfer pump and an alarm to turn on simultaneously when the SI detects that a low tank level has been reached.

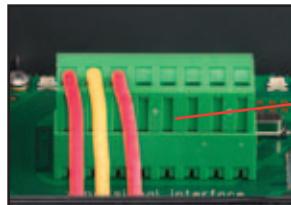
Connect standard switches to the SI to allow control of CZone™ outputs. The module provides LED status indications for each input. This allows fast diagnostics while providing information back to CZone™'s Display Interface.



<u>PART#</u>	<u>DESCRIPTION</u>
80-911-0013-00	Signal Interface w/seals, connector
80-911-0014-00	Signal Interface only

## GENERAL SPECIFICATIONS:

- Accepts inputs from traditional switch types being used to control outputs
- Accepts inputs from switches to trigger alarm i.e. high water float switch
- Accepts inputs from industry standard tank senders (0-5V, 10-180Ohm, 240-330Ohm)"
- Accepts inputs from general voltaic or resistive signals can be used for controlling outputs or to display a physical position i.e. show a hatch is partially open
- LED status indicators for each input
- H 100mm (3"29/32) x W156mm (6"3/32) x D 42mm (1"5/8)
- IPX5 water ingress protection



Terminal Block



Waterproof Cable Seal



NMEA 2000 Connector

# METER INTERFACE

The Meter Interface (MI) accepts inputs from external AC and DC power metering sensors. It then processes and converts the analog signals into digital strings that can then be presented, by the display, to the user, as one of several, easy-to-understand formats such as:

AC and DC voltage and amps

AC Kilowatts

DC battery capacity in amp hours and % remaining

All with user definable high and low alarms

Intelligence is built into CZone™. The MI can calculate the battery capacity as ampere hours and/or percentage of charge remaining. Since CZone™ provides both monitoring and control for DC systems, it can be configured to turn off non-essential circuits in the event that the battery is discharged to a low level. This helps to ensure that there is enough charge left in the battery to power safety critical circuits.



PART#	DESCRIPTION
80-911-0005-00	Meter Interface, w/seal & plug
80-911-0006-00	Meter Interface only

## GENERAL SPECIFICATIONS:

### AC

- 3 x AC voltage inputs (multi voltage)
- 2 x AC current inputs
- Calculates true RMS power
- Ignition protected

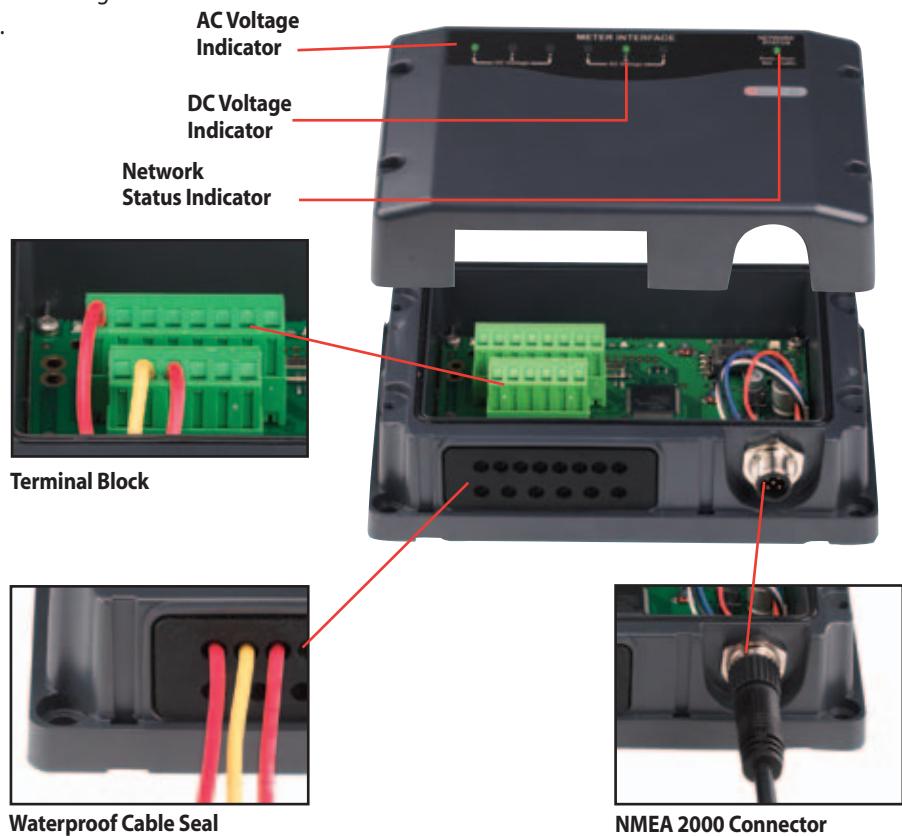
### DC

- 3 x DC voltage inputs (multi voltage)
- 2 x DC current inputs
- Calculates battery capacity as Ampere hours and percentage charge remaining
- Resolution for current metering down to 0.1A

### GENERAL

- H 100mm (3"29/32) x W156mm (6"3/32) x D 42mm (1"5/8)
- IPX5 water ingress protection

Note: High and low alarm levels can be set for all inputs



# OUTPUT INTERFACE

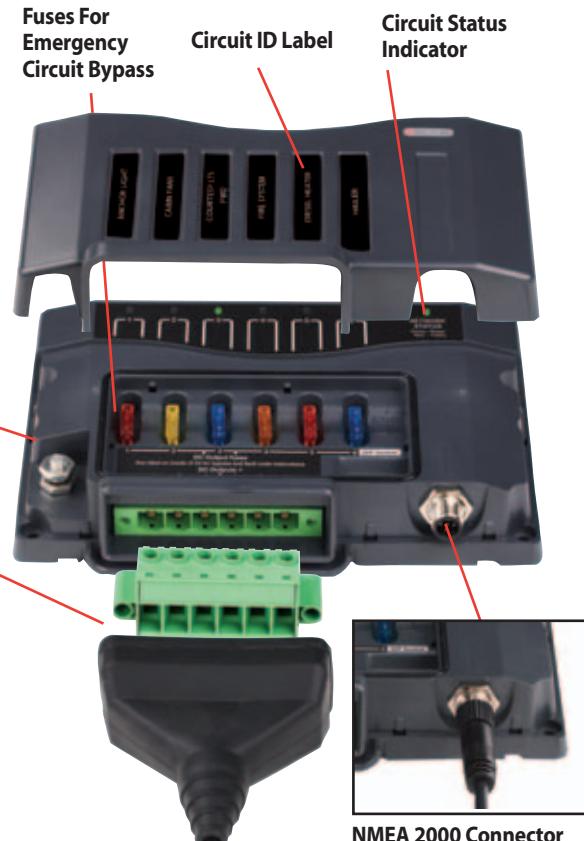
The Output Interface (OI) provides an intelligent replacement for traditional circuit breaker and fuse panels. It has 6x high power, robust output channels which provide the power supply, control and fusing for a circuit as well as integrating many other built in features such as timers and dimmers.

The OI is behind the CZone™ concept of decentralising the power distribution, compared to a traditional electrical layouts which are typically based around a large, centralised circuit breaker or fuse panel. The OI's allow the installer to move the circuit control and protection closer to the loads which significantly shortens cable runs and reduces the size of the conductors. This equates to a reduction in the cost and weight of the electrical wiring harness, ie. less copper.

Connection to the unit is simple: a large 6 way plug allows connections to cables of up to 16mm<sup>2</sup> (6AWG) in size, or multiple smaller conductors. No need for specialised crimp terminals and expensive crimp tools to be carried for terminations to CZone™, just a blade screwdriver. A protective flexible boot offers protection to the connections from harsh environment conditions.



PART#	DESCRIPTION
80-911-0009-00	Output interface w/connector,boot
80-911-0010-00	Output interface only



## GENERAL SPECIFICATIONS:

- 4 levels of backup fusing including manual override (as required by ABYC)
- 6 x 20 amp circuits
- Programmable software "fuse" sizes
- Multiple channels can be bridged together to offer higher current switching
- Small, non metallic, easy to install case
- IPX5 water ingress protection
- Dimensions: H 128mm (5") x W200mm (7"29/32) x D 45mm (1"3/4)
- Power consumption @12V:85mA (standby 60mA)

# MOTOR OUTPUT INTERFACE

The Motor Output Interface (MOI) has an output pair for controlling DC motors which require a reversal of polarity to change the direction of their mechanical operation. For example, a DC motor for an electric window mechanism will move the window up or down depending on the polarity of the feed to the motor.

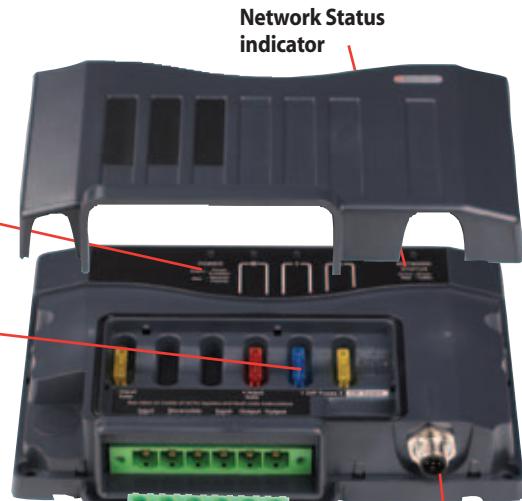
Historically the wiring and control circuitry for such installations is complicated and requires a number of individual components, often controls for these devices are mounted remotely to the motor so wiring runs can be long. the MOI replaces all of these devices with one simple solution that can be mounted close to the motor further reducing cable runs.

The MOI can be configured to deliver a "soft start" so that motor driven devices don't start with a sudden and abrupt motion.

The MOI also incorporates two standard output channels such as is found on the OI.



PART#	DESCRIPTION
80-911-0007-00	Motor Output Interface w/connector, boot
80-911-0008-00	Motor Output Interface only



Connector & Protective Boot



NMEA 2000 Connector

## GENERAL SPECIFICATIONS:

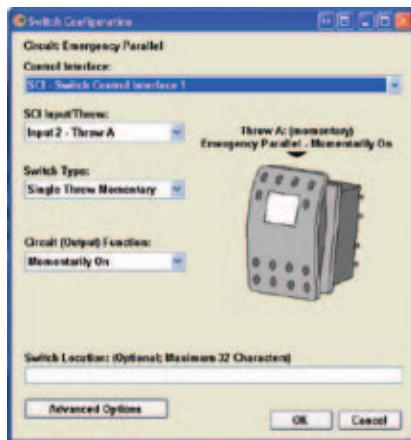
- Single motor control and two normal channels per unit, 20A per output
- Built In circuit protection
- IPX5 water ingress protection
- Dimensions: H 128mm (5") x W200mm (7"29/32) x D 45mm (1"3/4)

# CONFIGURATION MADE EASY

Historically, generating a configuration for and programming a system is a chore that requires a significant amount of training. The CZone™'s configuration tool offers simple, straightforward programming that is easy to learn and to use.

The CZone™ Configuration Tool allows the manufacturer to set up programming parameters on a standard PC, (use USB CAN Adapter# 80-911-0044-00) upload a saved configuration into the CZone™ network and simultaneously program every interface on-board.

Changes and customizations can also be made from the Display Interface and downloaded back to the PC overriding the master configuration. The master template file is now ready to go and can be used on multiple vessels or vehicles during manufacturing.

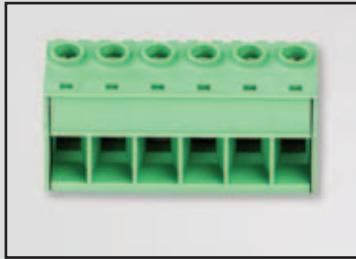


# ACCESSORIES



## **NMEA 2000 Ext. Cable**

# 80-911-0024-00	15 ft	4.57 meters
# 80-911-0025-00	25 ft	7.62 meters
# 80-911-0026-00	2 ft	.61 meters
# 80-911-0027-00	6 ft	1.82 meters



## **Terminal Block for MI, 6 Way**

# 80-911-0042-00



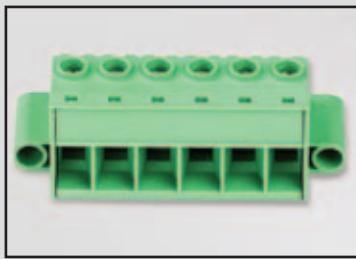
## **Cable Gland for SCI Blk Silicon**

# 80-911-0035-00



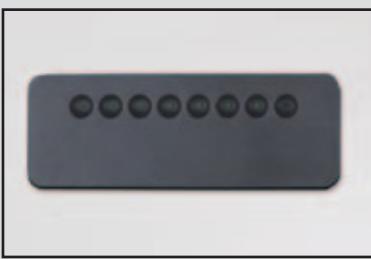
## **NMEA 2000 Power Cable**

# 80-911-0028-00 3.2 ft 1 meter



## **Terminal Block, OI/MOI, 6W**

# 80-911-0041-00



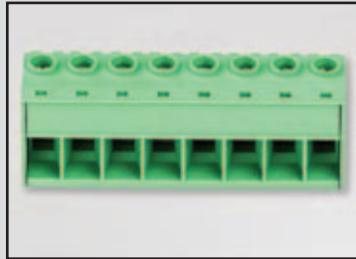
## **Cable Gland, SI Blk Silicon**

# 80-911-0036-00



## **Power Cable for Display Interface, 2 Pin, 2 meters**

# 80-911-0032-00 6.5 ft 2 meters



## **Terminal Block, SI/MI 8W**

# 80-911-0043-00



## **Cable Gland, MI Blk Silicon**

# 80-911-0033-00

# ACCESSORIES



## USB CAN Adapter

# 80-911-0044-00

- Connects PC to the CZONE network for configuration and system set up



## NMEA 2000 T-Piece

# 80-911-0029-00



## CZone™ Wireless Remote Kit

#80-911-0045-00

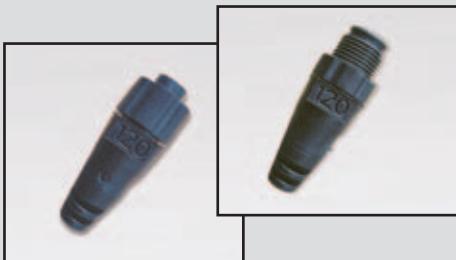
- A simple to set up, wireless remote control
- Configure the buttons to operate individual circuits or to control multiple circuits through a mode of operation



## Seal Boot for OI/MOI

### 6-Wire, Blk Silicon

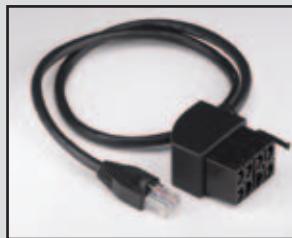
# 80-911-0034-00



## NMEA 2000 Resistors

# 80-911-0030-00 Female

# 80-911-0031-00 Male



## Cable Assembly, SCI to suit Switches below

# 80-911-0018-00 .5 meter

# 80-911-0019-00 1 meter

# 80-911-0020-00 2 meter

# 80-911-0021-00 3 meter

# 80-911-0022-00 4 meter

# 80-911-0023-00 5 meter



## Hole Plugs, Blk

# 80-911-0016-00 3.2mm

# 80-911-0017-00 5 mm

3.2mm for MI and SI cable glands

5mm for SCI cable glands



## Custom Switches

# 80-911-0037-00 ON/OFF

# 80-911-0038-00 mom ON/OFF

# 80-911-0039-00 ON/OFF/ON

# 80-911-0040-00 mom ON/OFF/mom ON

# **Marinco**

---

## **ELECTRICAL GROUP**

North/ South America

Web site: [www.marinco.com](http://www.marinco.com)

New Zealand/Australia/Europe/Asia

Web site: [www.bepmarine.com](http://www.bepmarine.com)