



Control X

User & Installation Manual

V1.2



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Important

BEP Marine strives to ensure all information is correct at the time of printing. However, the company reserves the right to change without notice any features and specifications of either its products or associated documentation.

Translations: In the event that there is a difference between a translation of this manual and the English version, the English version should be considered the official version.

It is the owner's sole responsibility to install and operate the device in a manner that will not cause accidents, personal injury or property damage.

Use of This Manual

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1 GENERAL INFORMATION

1.1 USE OF THIS MANUAL

Copyright © 2021 BEP Marine. All rights reserved. Reproduction, transfer, distribution or storage of part or all of the contents in this document in any form without the prior written permission of BEP Marine is prohibited. This manual serves as a guideline for the safe and effective operation, maintenance and possible correction of minor malfunctions of the Control X and Control X PLUS. Both models will be referred to as Control X in this manual unless specified.

This manual is valid for the following models:

<u>Description</u>	<u>Part number</u>
CZONE CONTROL X PLUS C/W CONNECTORS	80-911-0230-00
CZONE CONTROL X PLUS INTERFACE ONLY	80-911-0230-01
CZONE CONTROL X C/W CONNECTORS	80-911-0231-00
CZONE CONTROL X INTERFACE ONLY	80-911-0231-01

It is obligatory that every person who works on or with the Control X is completely familiar with the contents of this manual, and that he/she carefully follows the instructions contained herein.

Installation of, and work on the Control X, may be carried out only by qualified, authorized and trained personnel, consistent with the locally applicable standards and taking into consideration the safety guidelines and measures (chapter 2 of this manual). Please keep this manual in a secure place!

1.2 GUARANTEE SPECIFICATIONS

BEP Marine guarantees that this unit has been built according to the legally applicable standards and specifications. Should work take place which is not in accordance with the guidelines, instructions and specifications contained in this Installation manual, then damage may occur and/or the unit may not fulfil its specifications. All of these matters may mean that the guarantee becomes invalid.

1.3 QUALITY

During their production and prior to their delivery, all of our units are extensively tested and inspected. The standard guarantee period is two years.

1.4 VALIDITY OF THIS MANUAL

All of the specifications, provisions and instructions contained in this manual apply solely to standard versions of the Control X, delivered by BEP Marine.

1.5 LIABILITY

BEP can accept no liability for:

- Consequential damage due to use of the Control X. Possible errors in the manuals and the results thereof.

CAREFUL! Never remove the identification label.

Important technical information required for service and maintenance can be derived from the type number plate.

1.6 CHANGES TO THE CONTROL X

Changes to the Control X may be carried out only after obtaining the written permission of BEP.

2 SAFETY AND INSTALLATION PRECAUTIONS

2.1 WARNINGS AND SYMBOLS

Safety instructions and warnings are marked in this manual by the following pictograms:



CAUTION

Special data, restrictions and rules with regard to preventing damage.



WARNING

A WARNING refers to possible injury to the user or significant material damage to the Control X if the user does not (carefully) follow the procedures.



NOTE

A procedure, circumstance, etc, which deserves extra attention.

2.2 USE FOR INTENDED PURPOSE

1. The Control X is constructed as per the applicable safety-technical guidelines. ^[1]_[SEP]
2. Use the Control X only: ^[1]_[SEP]
 - In technically correct conditions
 - In a closed space, protected against rain, moisture, dust and condensation
 - Observing the instructions in the installation manual
3. Use of the Control X other than mentioned in point 2 is not considered to be consistent with the intended purpose. BEP Marine is not liable for any damage resulting from the above.

2.3 ORGANIZATIONAL MEASURES

The user must always:

- Have access to the user's manual and be familiar with the contents of this manual

2.4 MAINTENANCE AND REPAIR

- Switch off supply to the system ^[1]_[SEP]
- Be sure that third parties cannot reverse the measures taken ^[1]_[SEP]
- If maintenance and repairs are required, only use original spare parts

2.5 GENERAL SAFETY AND INSTALLATION PRECAUTIONS

- Connection and protection must be done in accordance with local standards
- Do not work on the Control X or system if it is still connected to a power source. Only allow changes in your electrical system to ^[1]_[SEP] be carried out by qualified electricians ^[1]_[SEP]
- Check the wiring at least once a year. Defects such as loose connections, burned cables, etc. must be corrected immediately ^[1]_[SEP]

3 OVERVIEW

3.1 DESCRIPTION

The Control X is CZone's most flexible digital switching module yet, offering configurable input and output channels allowing for multiple configuration options. The Control X features configurable software fusing, meaning no need to purchase and install physical fuses. Current is monitored on all circuits to provide the overcurrent protection and circuit bypass is available via the capacitive touch buttons on the module. The 45% smaller footprint than the COI/Control 1 has been achieved with an all-new electrical design and moulding the connector receptacles directly into the housing, and a new IPX7 enclosure allows for installation in all environments.

3.2 FEATURES

- Compact size ensures ease of installation on wide range of boats and RV's where space is limited.
 - IPX7 enclosure allows for installation in all environments.
 - 100% solid state switching provides improved reliability, silent operation & smaller footprint than traditional relays.
 - Current is monitored and displayed for each circuit and also provides overcurrent protection and low current/systems on detection.
 - Software fuse ratings entered in configuration file, no need to purchase and install physical fuses.
 - Configurable PWM Frequency.
 - Automatic bilge pump feedback monitoring.
 - Dual speed wiper motor controller with synchronization for up to 8 motors with 3 configurable intermittent timer settings and the Control X PLUS has a switch to ground brake option for compatible wiper motors.
 - RGB / RGBW lighting control with configurable zones for dimming, effects and sequences.
 - Support for multiplex switch inputs means multiple mechanical switches can be connected to a single input channel.
-

3.3 CONTROL X OVERVIEW

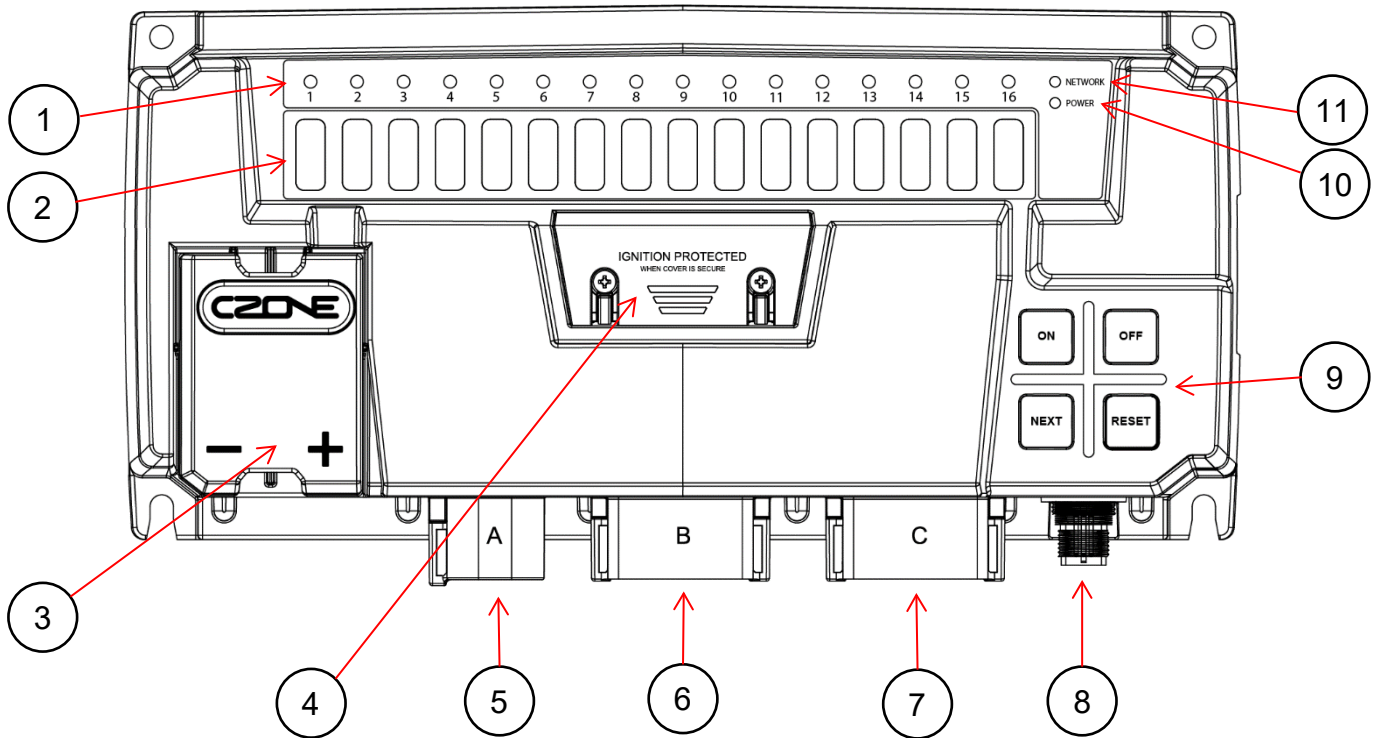


Figure 1. Product Overview

	Component
1.	Circuit Status Indication (Will vary between Control X and Control X PLUS specs)
2.	Circuit Label
3.	Main Supply Terminal Panel
4.	Dipswitch Cover
5.	Connector A - DTP06-4S
6.	Connector B - DT06-12SA
7.	Connector C - DT06-12SB
8.	NMEA2000 Micro C Connector
9.	Capacitive Touch Panel
10.	Module Power Indicator
11.	Network Power/Traffic Indicator

3.4 LED INDICATORS

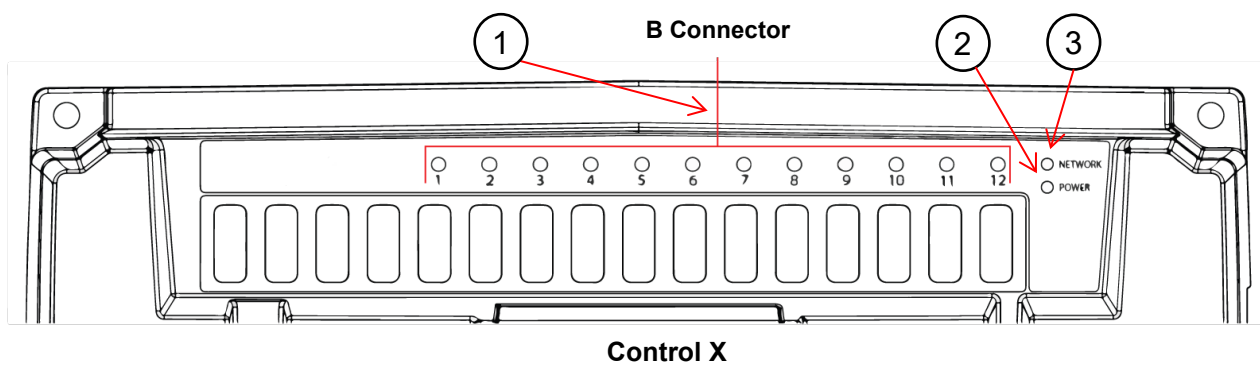
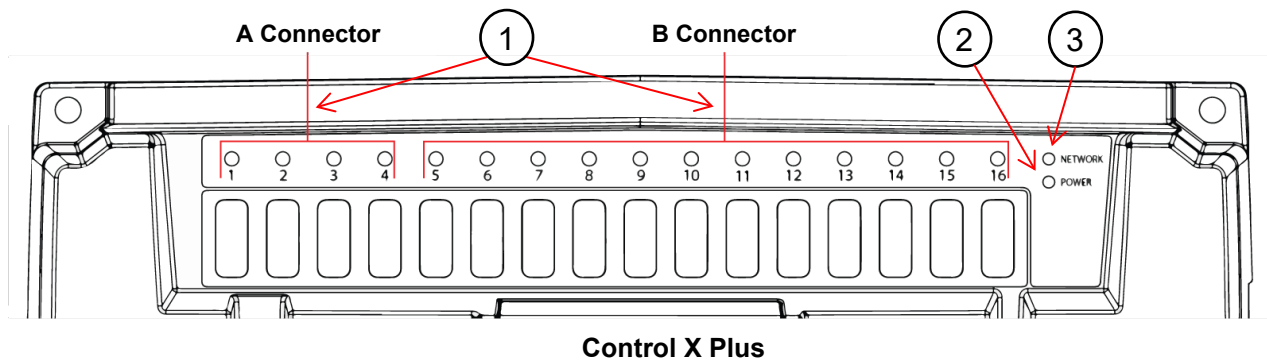


Figure 2. LED Indicators

1. Circuit Status LED's

<u>Colour</u>	<u>Description</u>
Off	Channel Off
Green Solid On	Channel On
1 Red Flash	Module Not Configured
2 Red Flash	Configuration Conflict
3 Red Flash	DIP Switch Conflict
5 Red Flash	No Modules Detected
7 Red Flash	Over Current
9 Red Flash	Missing Commander

2. Power LED

<u>Colour</u>	<u>Description</u>
Off	Power Disconnected
Green	Power Available (>12V for 12V System, >20V for 24V System)
Red	Low Volts (<12V for 12V System, <20V for 24V System)

3. Network Status LED

<u>Colour</u>	<u>Description</u>
Off	Network Power Disconnected
Green	Network Power Connected
Red Flash	Network traffic

3.5 CAPACITIVE TOUCH PANEL

The Control X has a capacitive touch panel for manual override of high-side output channels. Manual override will take priority over any commanded circuit state, from CZone or any other device on the NMEA2000 network. Manual override is available for the 16 high-side output channels, but not the 5A low-side output channels. Manually overridden states (ON or OFF) will persist until either manually reset or the Control X has been power cycled.



NOTE - A long (200ms) press is required for operation of the touch pad buttons.

NOTE - A Control X with any circuit forced ON via manual override will not be able to be put to sleep until the circuit has been reset. This is designed as a failsafe / get home state in case something on the network is forcing the system to sleep.

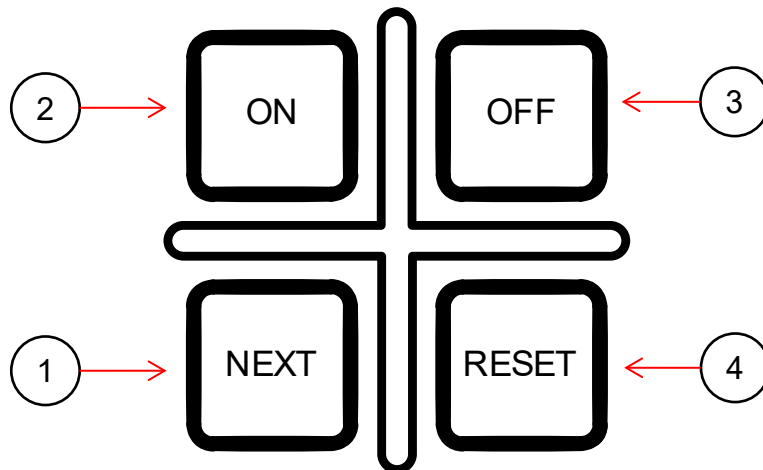
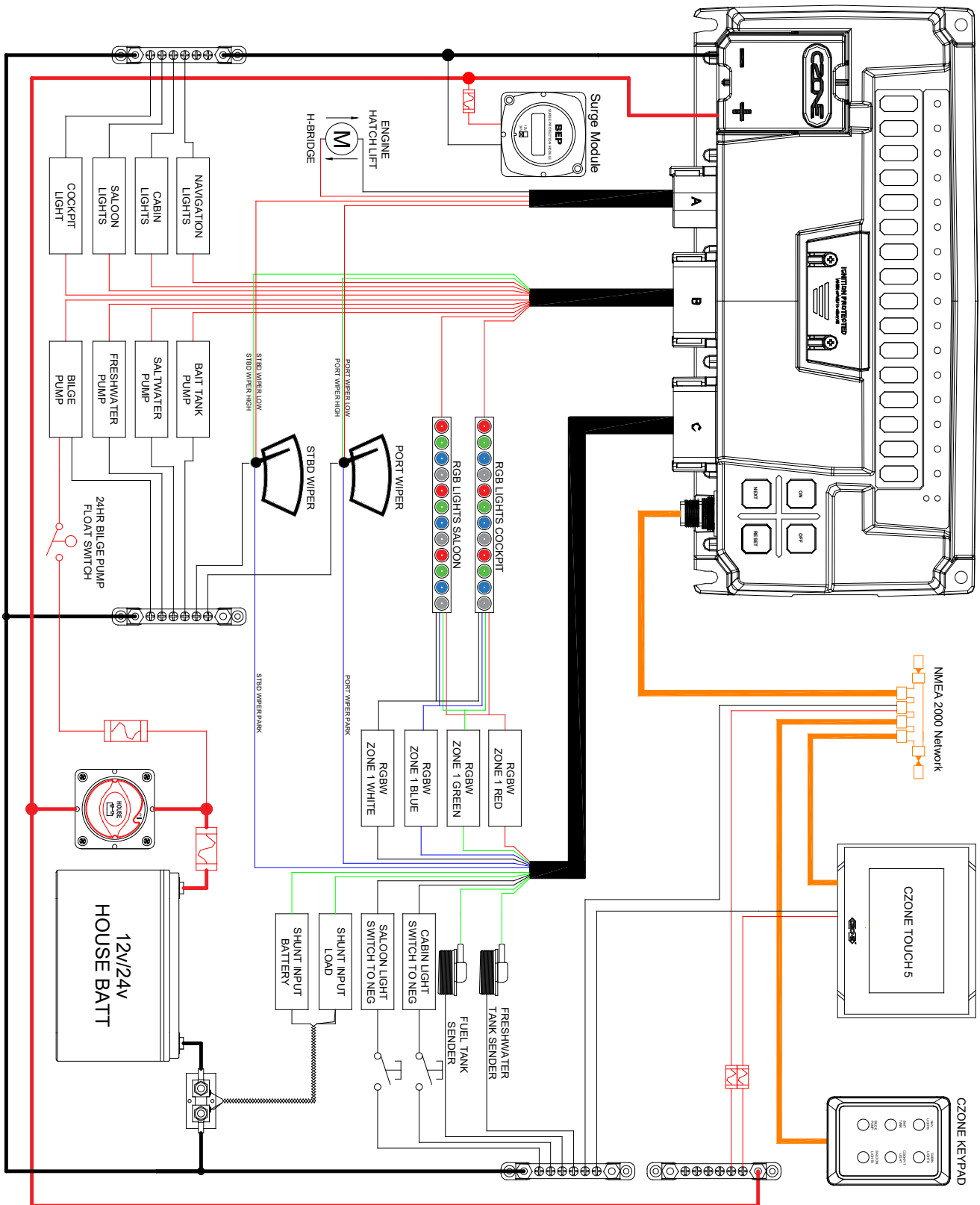


Figure 3. CZone Control X Capacitive Touch Panel

	<u>Label</u>	<u>Function</u>
1.	Next	Cycles through available output channels from left to right. The status output LED will rapidly flash indicating the selected channel.
2.	On	Forces selected channel to ON. If channel selected is the high side output of an H-Bridge, the low side channel will also be turned ON. H-Bridge channels are only momentarily turned on for safety incase motor is driving a hatch lift or similar.
3.	Off	Forces selected channel to OFF.
4.	Reset	Restores selected channel back to standard operation.

3.6 SYSTEM EXAMPLE



*Surge Protection Module recommended in 24v installations.

Figure 4. CZone Control X PLUS System Example

4 INSTALLATION

4.1 THINGS YOU NEED

- Control X Module
- Deutsch Connector Kit (80-911-0233-00 – Control X, 80-911-0232-00 – Control X PLUS)
- 4 x 10G (5mm) panhead self-tapping screws or bolts for mounting Control X to surface (not supplied)
- HDT-48-00 Deutsch crimp tool for crimping 0.5mm-4mm (20-12AWG) wire
- Duratool D03008 crimp tool or similar for crimping 6mm (10AWG) wire (optional)
- NMEA2000 drop cable and T-connector
- Screwdriver and drill bits
- Electrical Tools
- Silicone grease (lubricating connector seals)

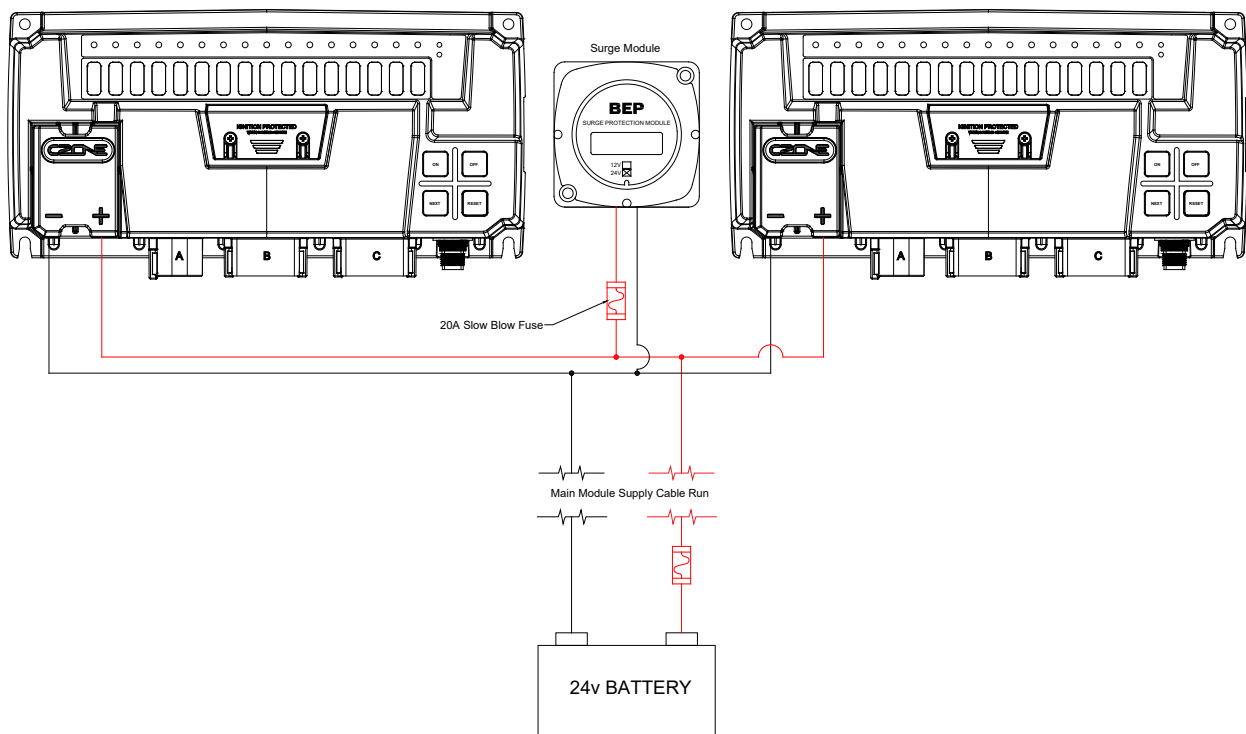


Figure 5. Deutsch HDT-48-00 Crimp Tool

4.2 24V SURGE PROTECTION REQUIREMENTS

To protect against a load dump and inductive voltage spikes caused by some loads in a 24v installation, a BEP Surge Protection module is required to be installed in the power supply to the Modules.

1. Only required in 24v installations. 24v Surge Protection Module part # – 80-707-0005-00.
2. One Surge Protection Module per cluster of Control X modules, within reasonable proximity:
 - A cluster is one or more Control-X modules installed within a 2m proximity of each other, supplied by a common supply circuit.
 - Reasonable proximity can be defined as modules installed within 2m of each other.
3. Larger installations may require more than one Surge Protection Module:
 - If another module or module cluster exists on its own power supply branch circuit.
 - If another module cluster exists on the same supply branch but is more than 2m from the surge module.



4.3 ENVIRONMENT

Obey the following stipulations during installation:

- Ensure the Control X is located in an easily accessible location for quick access to module
- Ensure indicator LEDs are visible for troubleshooting
- Ensure circuit labels are fitted and all channels labelled correctly
- The Control X must be mounted at least 50mm away from high current carrying conductors such as anchor winches, bow thruster cables, speakers, transformers and other high inductive loads.
- Ensure the bulkhead that the unit will be attached to is sufficiently strong to take the weight of the unit and attached cables.
- Ensure there is at least 10mm clearance around the sides and top of the Control X.
- All connectors must be installed to achieve IPX7 waterproof rating with unused channels blocked with Deutsch blocking pins (part # 114017-ZZ).

4.4 MOUNTING

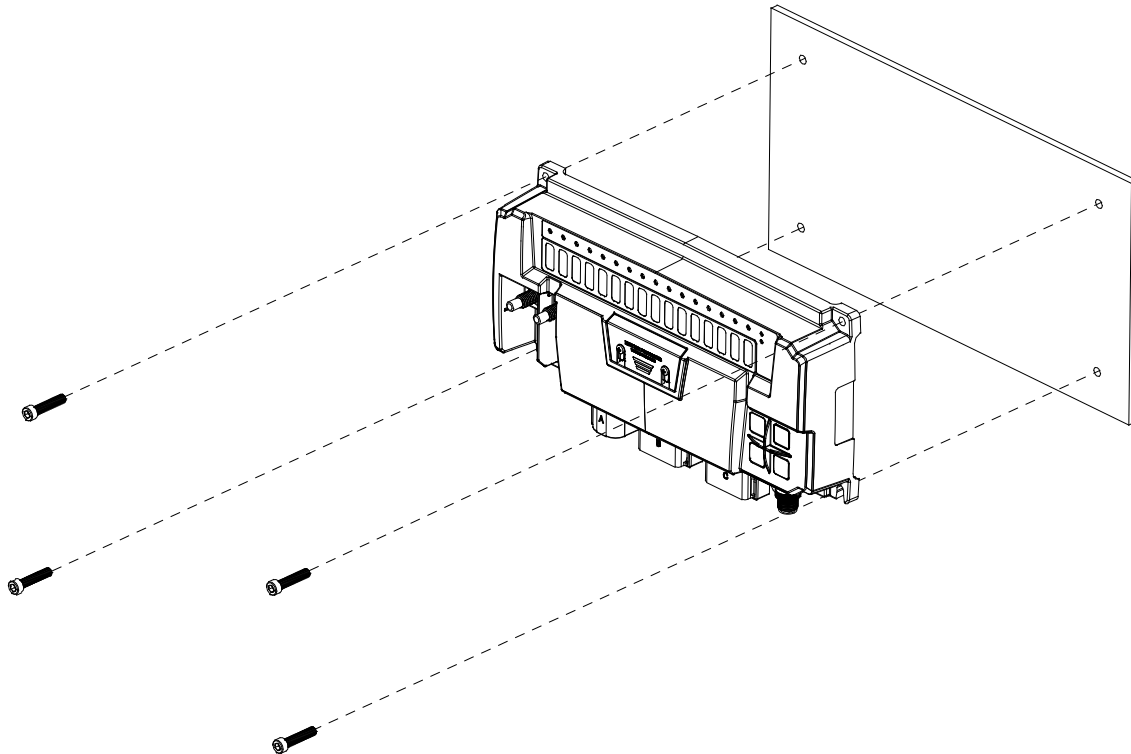


Figure 6. Mounting Screw Locations

1. Place Control X on a solid flat surface. Mark the lower screw locations.
2. Remove Control X and partially install lower screws using 10G (5mm) self-tapping screws or bolts.
3. Slot the Control X on to the bottom screws and install upper retaining screws.
4. Torque down each mounting screw, 6Nm max.
5. Ensure enough space is left below the Control X to easily install cable connectors and access for maintenance.

4.5 PLANNING

Make a list of all inputs and outputs to be wired to the Control X and take note of the output channel ratings and functions as shown in Figure 7 and Figure 8. Assign each input and output to a channel on the Control X ensuring loads are wired to the appropriate channel for the functionality required.

- All high-side output channels have the option to alarm on detection of external voltage, useful for circuits such as Bilge Pumps with an external or “automatic” supply from a float switch. This feature reduces wiring by allowing control and feedback from a single wire.
- H-Bridge channels require external fusing on each H-Bridge channel. See **Section 5** for more details.
- For loads with a continuous current exceeding max channel current, it is possible to parallel high-side or low-side output channels.
- Maximum module current must be taken into consideration:
 - Control X PLUS – 120A
 - Control X – 100A
- Maximum current for each connector must be taken into consideration:
 - Connector A – 50A (Control X PLUS Only)
 - Connector B – 80A
 - Connector C – 30A (Control X PLUS), 20A (Control X)

Control X Plus											
Connector Number	Max Current	Output High-Side	Output Low-Side	Signal Input	Bilge Sensing	Light Dimming	H Bridge	Parallel Circuits	RGB Zone	Channel Notes	
4x 15A High Side Outputs or 2x H-Bridge – 50A Connector Max											
A1	15A	✓	✗	✗	✓	✓	✓	✓	✗	H-Bridge channels can't be paralleled	
A2	15A	✓	✗	✗	✓	✓		✓	✗		
A3	15A	✓	✗	✗	✓	✓		✓	✗		
A4	15A	✓	✗	✗	✓	✓		✓	✗		
12x 10A High Side Outputs or 12x Full SI Inputs – 80A Connector Max											
B1	10A	✓	✗	✓	✓	✓	✗	✓	✗		
B2	10A	✓	✗	✓	✓	✓	✗	✓	✗		
B3	10A	✓	✗	✓	✓	✓	✗	✓	✗		
B4	10A	✓	✗	✓	✓	✓	✗	✓	✗		
B5	10A	✓	✗	✓	✓	✓	✗	✓	✗		
B6	10A	✓	✗	✓	✓	✓	✗	✓	✗		
B7	10A	✓	✗	✓	✓	✓	✗	✓	✗		
B8	10A	✓	✗	✓	✓	✓	✗	✓	✗		
B9	10A	✓	✗	✓	✓	✓	✗	✓	✗		
B10	10A	✓	✗	✓	✓	✓	✗	✓	✗		
B11	10A	✓	✗	✓	✓	✓	✗	✓	✗		
B12	10A	✓	✗	✓	✓	✓	✗	✓	✗		
8x 5A Low Side Outputs or 10x Full SI Inputs, Shunt Input – 30A Connector Max											
C1										Shunt Input (+)	
C2				✓							Full SI Only (Ignition Wake)
C3	5A	✗	✓	✓	✗	✓	✗	✓	✓	RGBW Z2 Red	
C4	5A	✗	✓	✓	✗	✓	✗	✓	✓	RGBW Z2 Green	
C5	5A	✗	✓	✓	✗	✓	✗	✓	✓	RGBW Z1 Red	
C6	5A	✗	✓	✓	✗	✓	✗	✓	✓	RGBW Z1 Green	
C7	5A	✗	✓	✓	✗	✓	✗	✓	✓	RGBW Z1 Blue	
C8	5A	✗	✓	✓	✗	✓	✗	✓	✓	RGBW Z1 White	
C9	5A	✗	✓	✓	✗	✓	✗	✓	✓	RGBW Z2 Blue	
C10	5A	✗	✓	✓	✗	✓	✗	✓	✓	RGBW Z2 White	
C11				✓							Full SI Only (Ignition Wake)
C12										Shunt Input (-)	

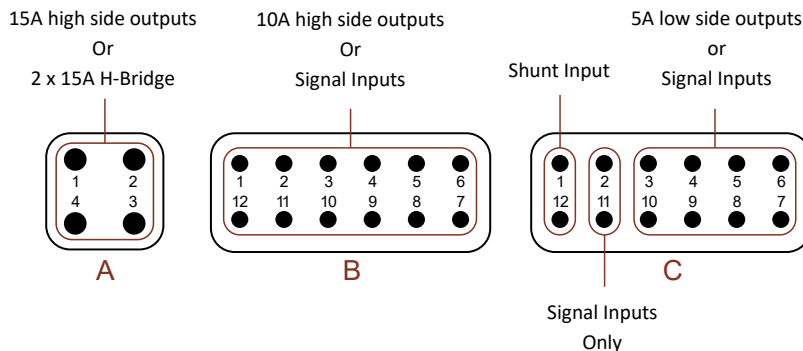


Figure 7. Control X PLUS Channel Specifications

Control X											
Channel Pinout	Max Current	Output High-Side	Output Low-Side	Signal Input	Bilge Sensing	Light Dimming	H Bridge	Parallel Circuits	RGB Zone	Channel Notes	
12x 10A High Side Outputs – 80A Connector Max											
B1	10A	✓	✗	✗	✓	✓	✗	✓	✗		
B2	10A	✓	✗	✗	✓	✓	✗	✓	✗		
B3	10A	✓	✗	✗	✓	✓	✗	✓	✗		
B4	10A	✓	✗	✗	✓	✓	✗	✓	✗		
B5	10A	✓	✗	✗	✓	✓	✗	✓	✗		
B6	10A	✓	✗	✗	✓	✓	✗	✓	✗		
B7	10A	✓	✗	✗	✓	✓	✗	✓	✗		
B8	10A	✓	✗	✗	✓	✓	✗	✓	✗		
B9	10A	✓	✗	✗	✓	✓	✗	✓	✗		
B10	10A	✓	✗	✗	✓	✓	✗	✓	✗		
B11	10A	✓	✗	✗	✓	✓	✗	✓	✗		
B12	10A	✓	✗	✗	✓	✓	✗	✓	✗		
4x 5A Low Side Outputs or 10x Full SI Inputs, Shunt Input – 20A Connector Max											
C1										Shunt Input (+)	
C2				✓							Full SI Only (Ignition Wake)
C3				✓							Full SI Only
C4				✓							Full SI Only
C5	5A	✗	✓	✓	✗	✓	✗	✓	✓	RGBW Z1 Red	
C6	5A	✗	✓	✓	✗	✓	✗	✓	✓	RGBW Z1 Green	
C7	5A	✗	✓	✓	✗	✓	✗	✓	✓	RGBW Z1 Blue	
C8	5A	✗	✓	✓	✗	✓	✗	✓	✓	RGBW Z1 White	
C9				✓							Full SI Only
C10				✓							Full SI Only
C11				✓							Full SI Only (Ignition Wake)
C12										Shunt Input (-)	

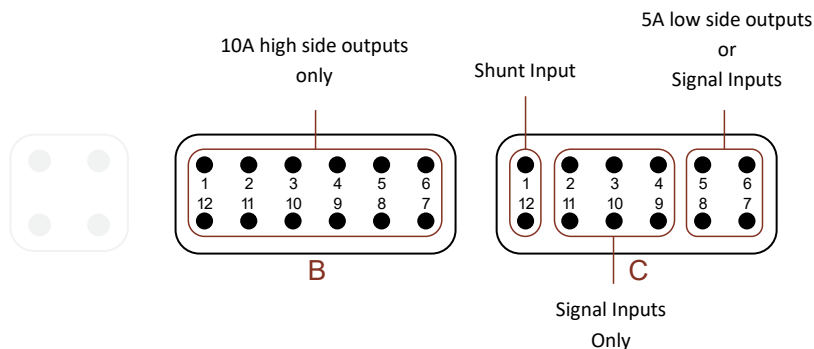


Figure 8. Control X Channel Specifications

4.6 CONNECTIONS

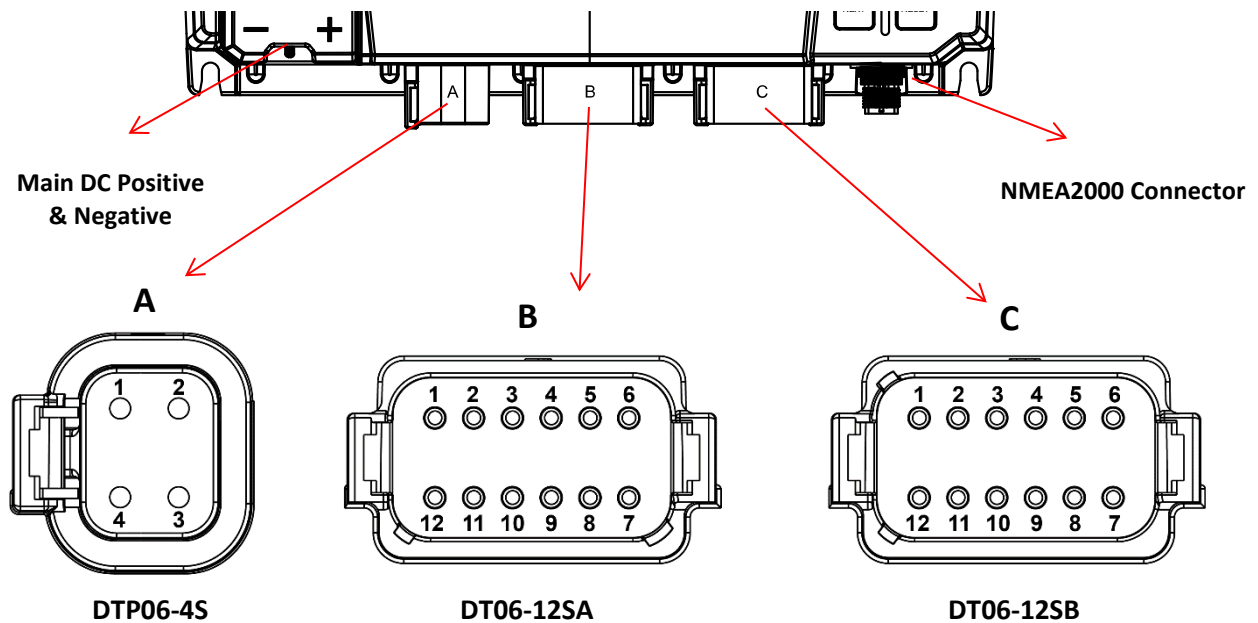
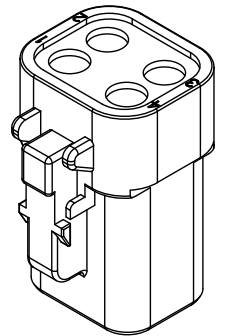


Figure 9. Control X Connections

1. Connector A (Control X PLUS Only)

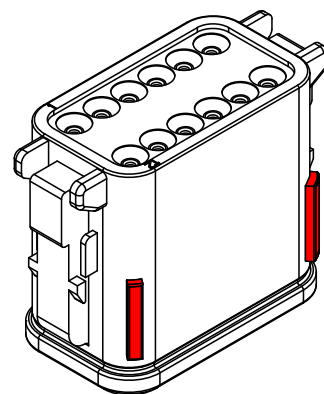
1. Referring to the load list, strip and crimp the High Current or H-Bridge cables with the appropriate Deutsch contact and crimp tool.
2. Insert the contacts into the DTP06-4S plug following the plugs position numbers and secure using the locking wedge.
3. Any unused pins in the connector should be plugged with sealing plugs to maintain the IPX7 rating. (Deutsch part # 114017-ZZ).
4. Before inserting the connector it's highly recommended to apply a small amount of silicone grease along the sealing surfaces/gasket. This will make assembly/disassembly easier.
5. Insert the connector into the Control X PLUS until it clicks into place.
6. Secure and neaten up the cables against the bulkhead to reduce the strain on the connectors.



NOTE – Connector A on the Control X will be sealed from the factory. No blanking plug will be required.

2. Connector B

1. Referring to the load and signal input list, strip and crimp the cables with the appropriate Deutsch contact and crimp tool.
2. Insert the contacts into the DT06-12SA plug following the plugs position numbers and secure using the locking wedge.
3. Any unused pins in the connector should be plugged with sealing plugs to maintain the IPX7 rating. (Deutsch part # 114017-ZZ).
4. Before inserting the connector it's highly recommended to apply a small amount of silicone grease along the sealing surfaces/gasket. This will make assembly/disassembly easier.
5. Insert the connector into the Control X until it clicks into place.
6. Secure and neaten up the cables against the bulkhead to reduce the strain on the connectors.



3. Connector C

1. Connector C has a number of different inputs and outputs available. Check tables (figure 7 & 8) above to ensure your circuit channel is adequate for the function required. Referring to the circuit list, strip and crimp the input/output cables with the appropriate Deutsch contact and crimp tool.

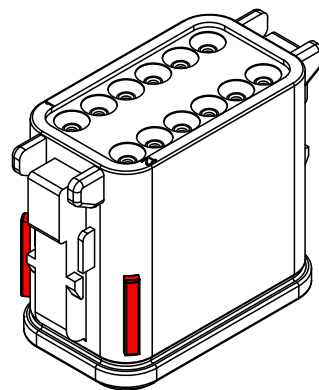


NOTE – Pins 1 and 12 are dedicated shunt input pins only. The shunt must be connected to the same battery as the module input studs and must be connected to the battery negative.



NOTE – Connector C output channels are negative switching only.

2. Insert the contacts into the DT06-12SB plug following the plugs position numbers and secure using the locking wedge.
3. Any unused pins in the connector should be plugged with sealing plugs to maintain the IPX7 rating. (Deutsch part # 114017-ZZ).
4. Before inserting the connector it's highly recommended to apply a small amount of silicone grease along the sealing surfaces/gasket. This will make assembly/disassembly easier.
5. Insert the connector into the Control X until it clicks into place.
6. Secure and neaten up the cables against the bulkhead to reduce the strain on the connectors.



4. Connect NMEA2000 network

1. Connect a NMEA2000 drop cable from the Control X to a NMEA2000 backbone.
2. Ensure the NMEA2000 network is properly terminated and connected to a 12V power source (Do not power up network yet).

5. Connect DC Negative

1. Connect an appropriately sized cable from the battery negative terminal or main negative bus to the Control X's M8 negative stud.
2. The Negative cable must be of sufficient size to carry the maximum current of all low side outputs and H-Bridge circuits connected to the Control X, volt drop should be kept to a minimum.
3. Maximum recommended cable size is 50mm² (1/0 AWG). Cables larger than 50mm² (1/0 AWG) should be connected to a joiner stud first with a link to the Control X.
4. Ensure supplied spring washer is installed and M8 nut is torqued to 10Nm max.

6. Connect DC Positive

1. Connect an appropriately sized and fused cable from the battery positive terminal to the Control X's M8 positive stud.
2. The positive cable must be of sufficient size to carry the maximum current of all loads connected to the Control X and have a fuse/circuit breaker rated to protect the cable, volt drop should be kept to a minimum.
3. Maximum recommended cable size is 50mm² (1/0 AWG). Cables larger than 50mm² (1/0 AWG) should be connected to a joiner stud first with a link to the Control X.
4. Ensure supplied spring washer is installed and M8 nut is torqued to 10Nm max.
5. Install stud cover over studs.

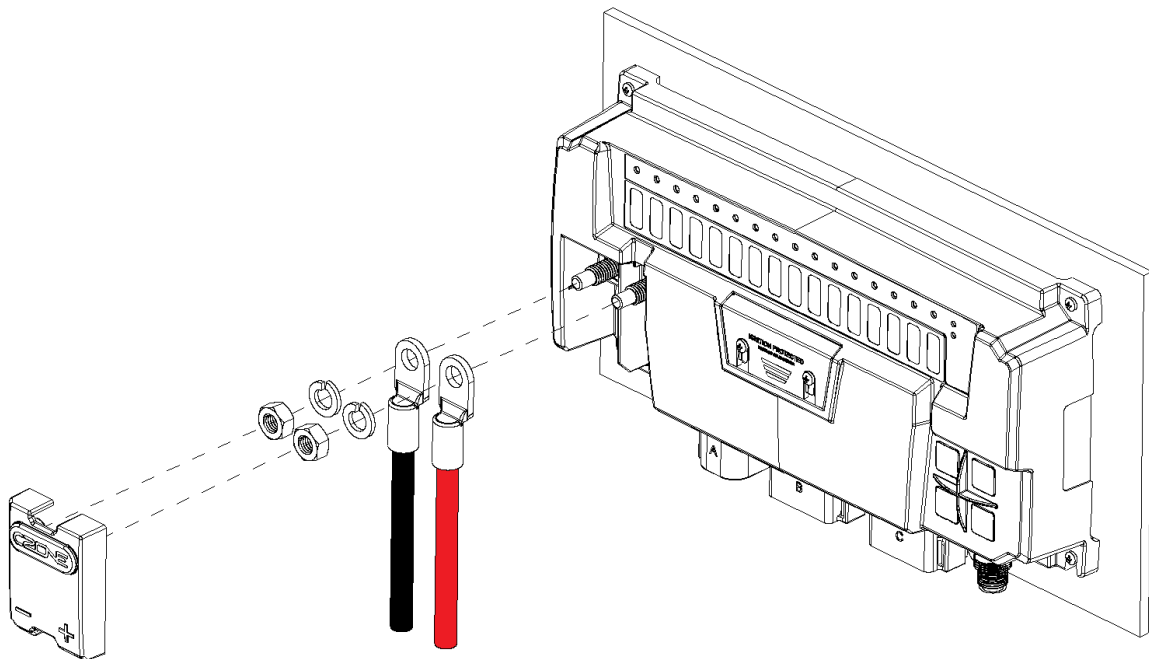


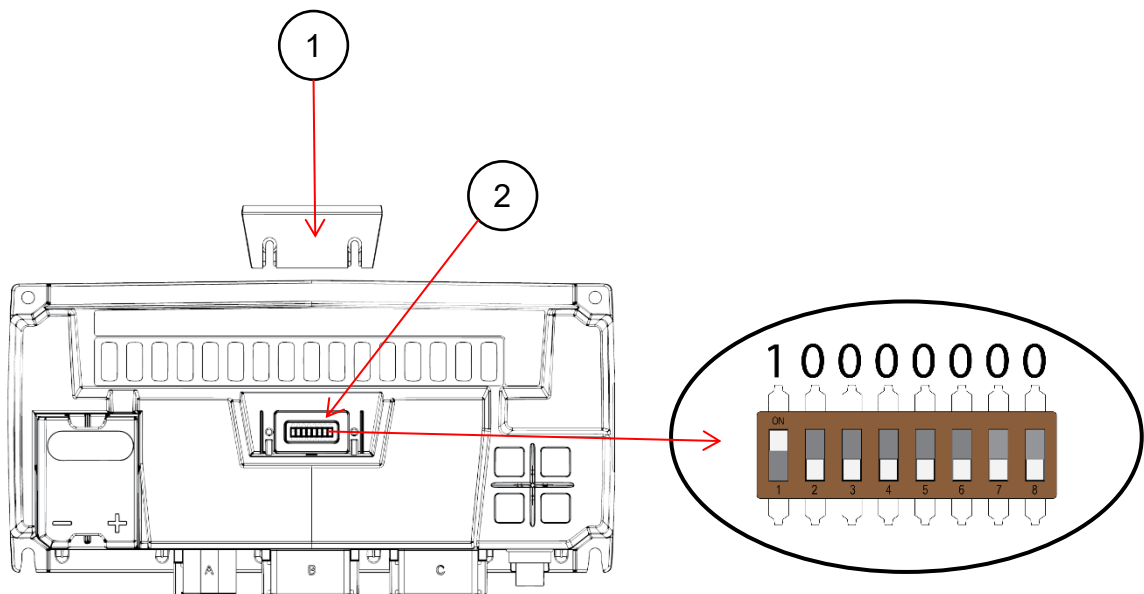
Figure 10. Control X Main Supply Wiring

4.7 SET DIPSWITCH

1. With a screwdriver, remove the dipswitch cover from the Control X.
2. Using a small screwdriver, carefully set the dipswitch to the required setting. The dipswitch number must be unique for all modules on the CZone network and must match the dipswitch setting in the configuration to function correctly.
3. Replace dipswitch cover once correct dipswitch setting has been configured, ensuring not to overtighten screws.



NOTE – Control X is only Ingress Protected and Ignition Protected when dipswitch cover is fitted correctly.



The example shows a dipswitch number of 10000000 where 0 = Off and 1 = On.

Figure 11. Setting Dipswitch

4.8 INITIAL POWER UP

1. Check all plugs are securely seated and power connections are tight.
2. Check dipswitch setting of Control X to match with new configuration.
3. Turn the switch/circuit breaker on supplying the Control X's main positive stud.
4. Check that the Power indicator LED is green.
5. Power up the NMEA2000 network.
6. Check that the NMEA2000 Network LED lights up. It may also be flashing if other devices are present and transmitting data.
7. Check the circuit's status LEDs for each individual circuit. Refer to LED codes to diagnose any faults which need to be rectified.
8. Check the software version of all modules on the network, including the Control X, with the CZone Configuration Tool and update if necessary.
9. Write configuration file to the Control X and the rest of the CZone modules on the system (Refer to the CZone Configuration Tool Instructions for details on how to configure the Control X).
10. Test all inputs and outputs for configured functionality.

4.9 CIRCUIT LABELING

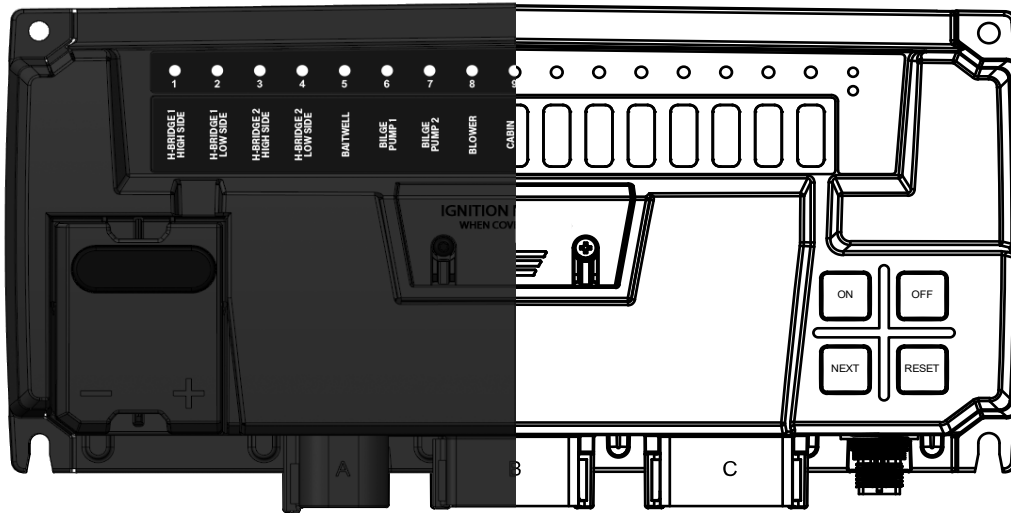


Figure 12. CZone Control X Labeling

Label the Circuits

- The Control X is supplied with labels to fit into the indentations under each circuit LED indicator.
- Custom label sets can be ordered for a more complete finish in OEM installations.

5 H-Bridge Motor Control

2 x 15A H-Bridge channels are included on the Control X PLUS allowing reversing motors to be connected directly to the module. The channels are available on Plug A. A combination of 1x H-Bridge output and 2x single channel outputs, or 2x H-Bridge outputs can be configured.

Motor polarity for each of the H-Bridge outputs for forward and reverse is shown below:

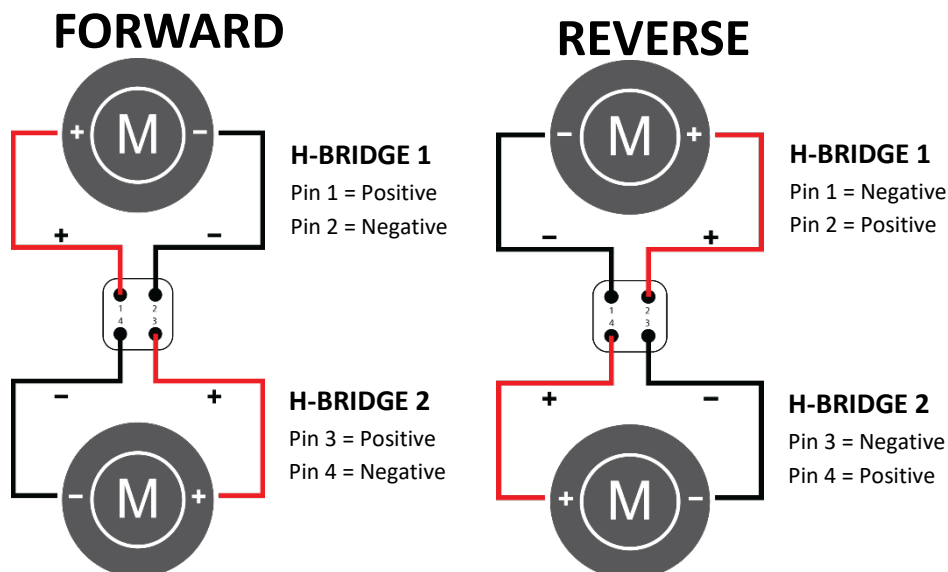


Figure 13. H-Bridge Direction Polarity Diagram



External Protection of the H-Bridge Channels is required. 15amp inline fuses can be added to each channel or alternatively an Inline Fuse Harness is available as a plug-in option, in single and twin motor versions.

Protection is not need if channels are used as a High-side output only.

<u>Part number</u>	<u>Description</u>
80-911-0236-00	CZONE H-BRIDGE SINGLE MOTOR FUSE HARNESS
80-911-0237-00	CZONE H-BRIDGE TWIN MOTOR FUSE HARNESS

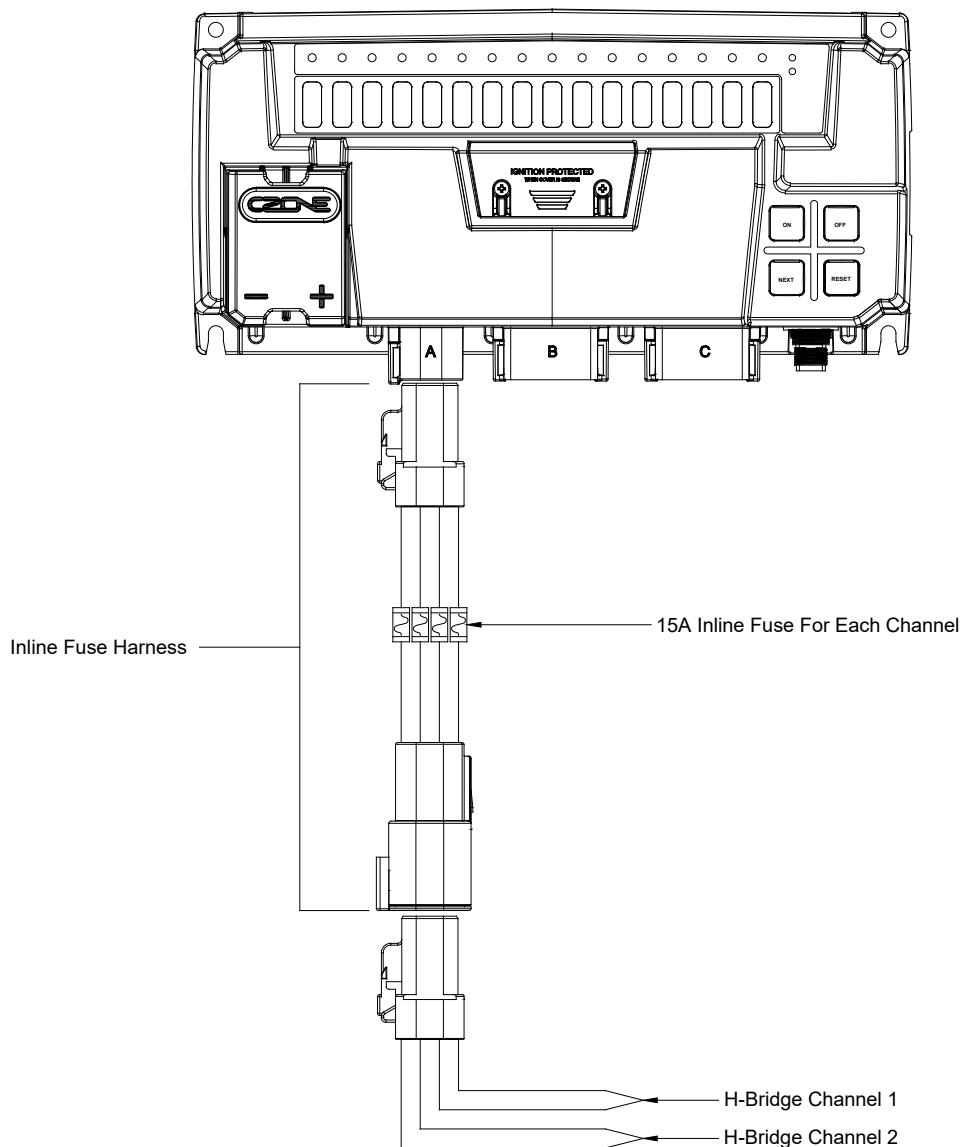


Figure 14. H-Bridge External Fusing

6 Bilge Pump Monitoring

The Control X has advanced bilge pump functionality on all high side output channels, (Connector A and configured Connector B circuits). This allows pump control and external (automatic) voltage detection from a single wire. CZone status indicators will illuminate if an external voltage is detected from automatic float switches or CZone can trigger system alarms to notify owners of automatic bilge pump operation, and optionally use this run signal to turn on other circuits, like additional pumps. You can track total run time of pumps and display the information on CZone Display Interfaces. Delays can be configured to the 'External Systems On Alarm' to stop nuisance alarm tripping from a float switch.

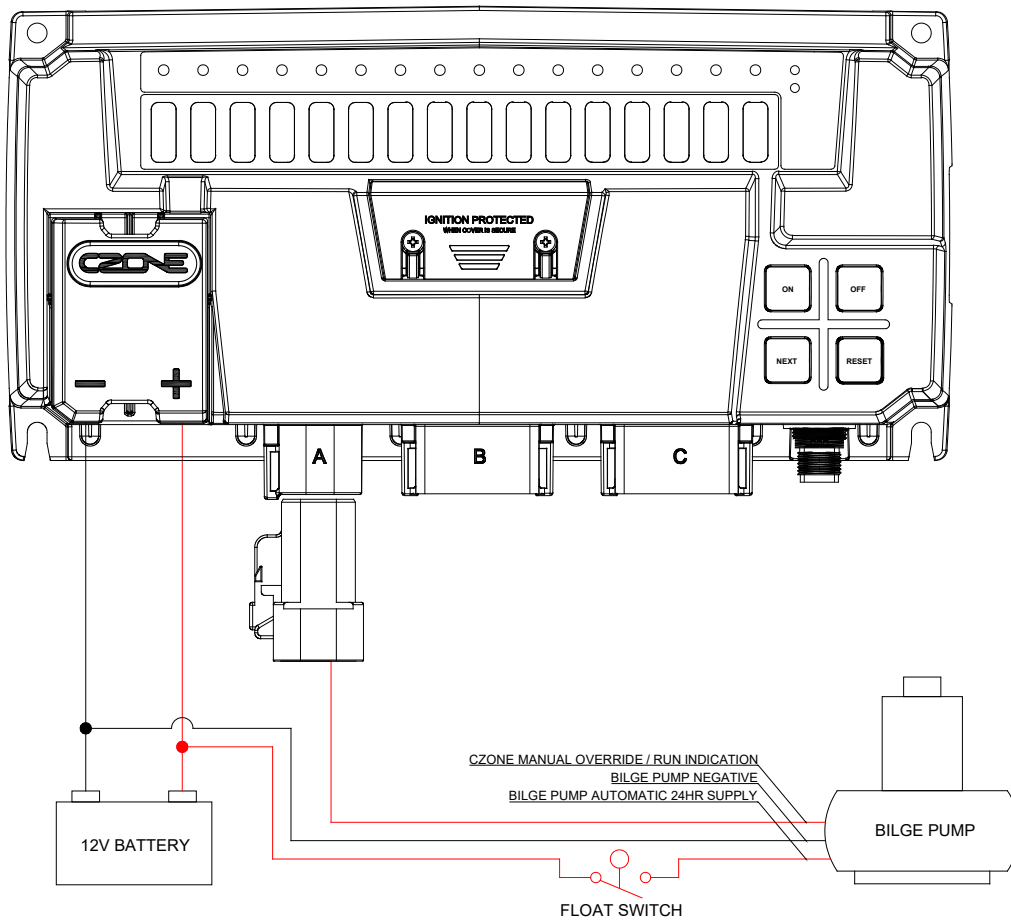


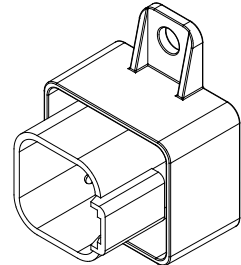
Figure 15. Bilge Pump Monitoring

7 CZone Switch Input Resistor Module (CZone MUX)

Support for multiplex switch inputs means multiple mechanical switches can be connected to a single input channel. When combined with CZONE sequential button types you can achieve ultimate control through minimal inputs.

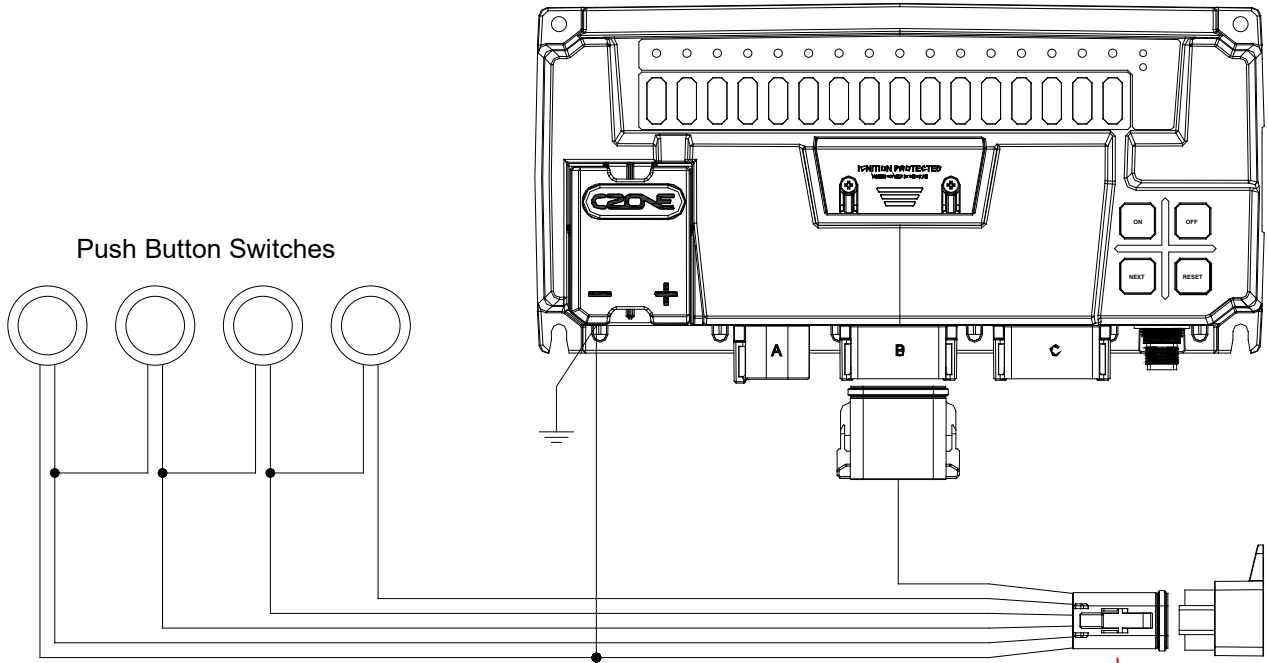
The Switch Input Resistor Module allows up to 4 switches to be connected to a single input channel. You can connect any combination of momentary and latching switches, and unlike other multiplex switching modules, multiple switches can be pressed at the same time.

Part number	Description
80-911-0234-0	CZONE Switch Input Resistor Module
Mating Connector Part Numbers Available In Section 9, Ordering Information	



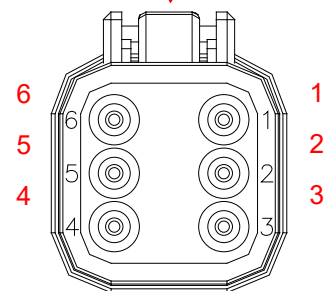
Notes:

- GND for the CZone MUX must return to the same module the Resistor Module is connected to.
- The total wire resistance (signal wire and the GND wire) must be kept under ~10 ohms.



Deutsch C-DT06-6S Pinout

Pin No.	Function	Pin No.	Function
1.	Signal Input	4.	Switch Input 3
2.	Switch Input 1	5.	Switch Input 4
3.	Switch Input 2	6.	GND



Plug Rear View

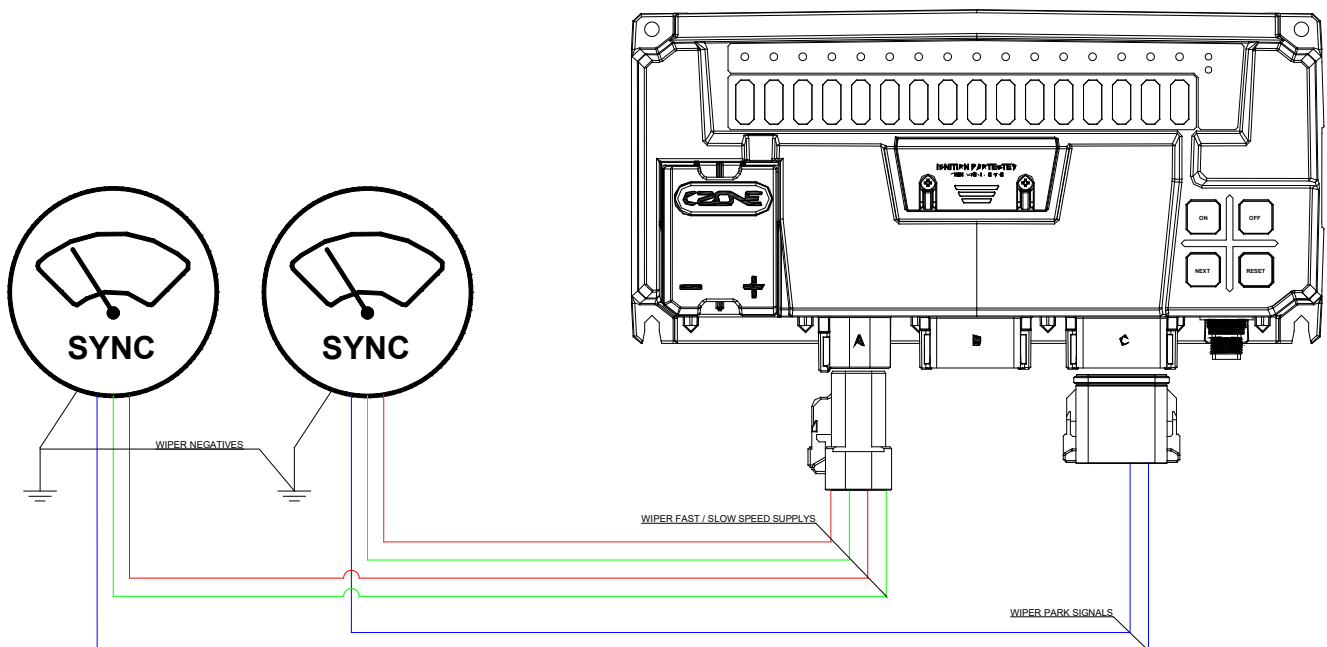
Figure 16. CZONE Multiplex Switch Input Wiring

8 Control X Advanced Features

The Control X has some advanced features. Further instructions for each of these features can be found at <https://downloads.czone.net/>. If you haven't already, register for the CZone Portal and login to find detailed feature instructions.

8.1 WIPER SYNCHRONIZATION

The Control X has an internal wiper motor controller for single and dual speed wiper motors. Up to 8 motors can be synchronized on the same module. The wiper motor control has fast and slow speed options as well as 3 configurable intermittent timer settings. Wiper motor park signals are monitored by the Control X to give an accurate park position and assist in the synchronization of multiple wipers. Wiper motors connected to the H-Bridge channel outputs also have the optional setting of braking the wiper motor to assist with accurate parking of the wiper arms. Braking is achieved by momentarily pulsing the wiper motor channel to ground, this should only be used on compatible wiper motors.



Note – Wiper make, and model must be of similar specifications for wiper features to function correctly.



Note – Synchronization of multiple wipers requires each wiper to be connected to the same Control X module.



Warning – If using dual speed wiper motors, the slow speed will be required to be on a 15amp High Current Output Channel of Connector A. This is to protect the Control X against back EMF from the fast speed winding of the wiper. Alternatively, if the 15amp channels are unavailable, the 10amp low current outputs of Connector B can be used but a blocking diode is required to protect the Control X. Using low current outputs on slow speeds will not allow for braking of wipers.



Warning – In a Type 1 24v wiper installation the park signals must be on Connector C input channels.

8.2 RGBW LED LIGHTING CONTROL

The Control X introduces an RGBW light controller built into the module for simplified installation and seamless lighting control as part of the CZone system. The Control X has a single RGBW lighting zone, and the Control X PLUS has two independent RGBW lighting zones.

Each zone allows independent color selection, brightness level and lighting effects. Additionally, you can independently dim each light circuit on the same zone allowing complete control of the system.

High side dimming will allow dimming of each light circuit connected to the RGBW Zone. Low side dimming will dim the entire RGBW zone dimming all connected circuits to the zone together.

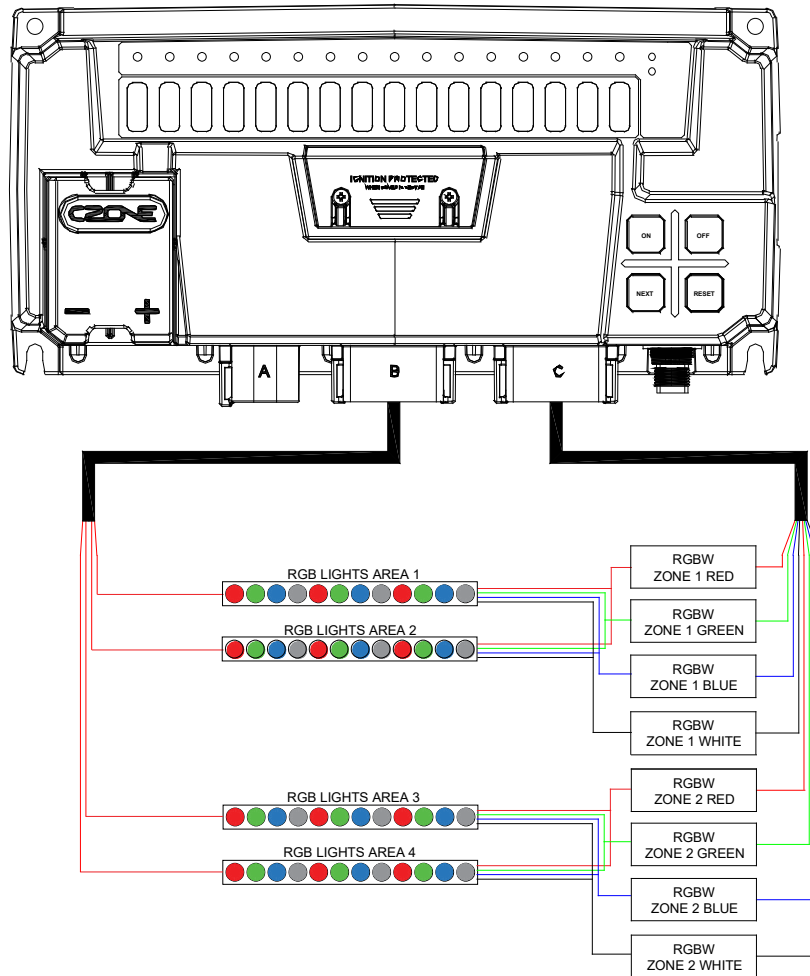
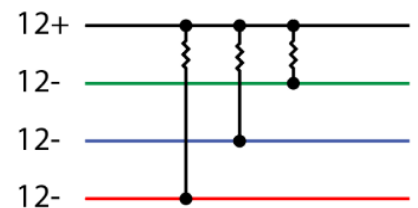


Figure 17. RGB Control Example



Note – In an installation where the high-side of the RGB or RGBW LED is permanently powered and switching of the lights is done via the low-side outputs, resistors will be required between each color to the positive high-side. Without the resistors a small amount of light ‘bleed’ is visible with the LEDs off.

- 10K resistors recommended
- 1/10W rated



9 Ordering Information

PARTS AND ACCESSORIES

<u>Part Number</u>	<u>Description</u>
80-911-0230-00	CZONE CONTROL X PLUS C/W CONNECTORS
80-911-0230-01	CZONE CONTROL X PLUS INTERFACE ONLY
80-911-0231-00	CZONE CONTROL X C/W CONNECTORS
80-911-0231-01	CZONE CONTROL X INTERFACE ONLY
80-911-0232-00	CZONE CONTROL X PLUS CONNECTOR KIT
80-911-0233-00	CZONE CONTROL X CONNECTOR KIT
80-707-0005-00	24V SURGE PROTECTION MODULE
80-911-0236-00	CZONE H-BRIDGE SINGLE MOTOR FUSE HARNESS
80-911-0237-00	CZONE H-BRIDGE TWIN MOTOR FUSE HARNESS

CZONE MUX PARTS

<u>Part Number</u>	<u>Description</u>	<u>Quantities Required</u>
80-911-0234-00	CZONE SWITCH INPUT RESISTOR MODULE	1x
DT06-6S	DEUTSCH MALE SOCKET 6POS	1x
DTW6S	DEUTSCH LOCKING WEDGE FOR DT06-6S	1x
DT0462-201	DEUTSCH SOCKET CONTACT 20AWG	6x (Depending On Wire Gauge)
DT0462-209	DEUTSCH SOCKET CONTACT 14 - 16AWG	

10 Specifications

10.1 TECHNICAL SPECIFICATIONS

Specifications	
Circuit protection	Software Fusing (Configurable using CZone Configuration Tool)
NMEA2000 connectivity	1 x CAN Micro-C port, 1 LEN
Output wire range	0.5 - 6mm (24AWG – 8AWG)
Maximum current	120A Total Module Current
Power consumption max	200mA
Power consumption sleep	<5mA
Reverse Motor Control	Control X:0 Control X PLUS: 2
RGBW Zones	Control X:1 Control X PLUS: 2
Circuit Current Monitoring	All Output Channels
Bilge Pump Running Detection	All High Side Output Channels
Addition Inputs	Shunt/State Of Charge, Multiplex Switch Inputs
Power supply	M6 (1/4") Positive Terminal (9-32V)
Network Supply voltage	9-16V via NMEA2000
Circuit bypass	Electronic via Capacitive Touch Panel
Ingress protection	IPx7 (mounted vertical on bulkhead and flat)
Compliance	Ignition protected, CE, RCM, NMEA2000, UK-CA (with connectors, connector plugs and dipswitch cover fitted)
Warranty period	2 years
Operating temperature range	-15C to +55C (-5F to +131F)
Storage temperature range	-40C to +85C (-40F to +185F)
Dimensions W x H x D	246.5mm x 137.4mm x 54.0mm
Weight	Control X:792g, Control X PLUS: 810g

10.2 NMEA 2000 PGN'S

NMEA 2000 PGN's sent from the Control X

PGN Number	Description	Fields
127508	Battery Status	Battery Voltage, Battery Current
127506	DC Detailed Status	State of Charge, Time Remaining, DC Type
127505	Fluid Level	Fluid Level
130312	Temperature	Actual Temperature
130314	Pressure	Pressure
130316	Temperature, Extended Range	Actual Temperature

10.1 DIMENSIONS

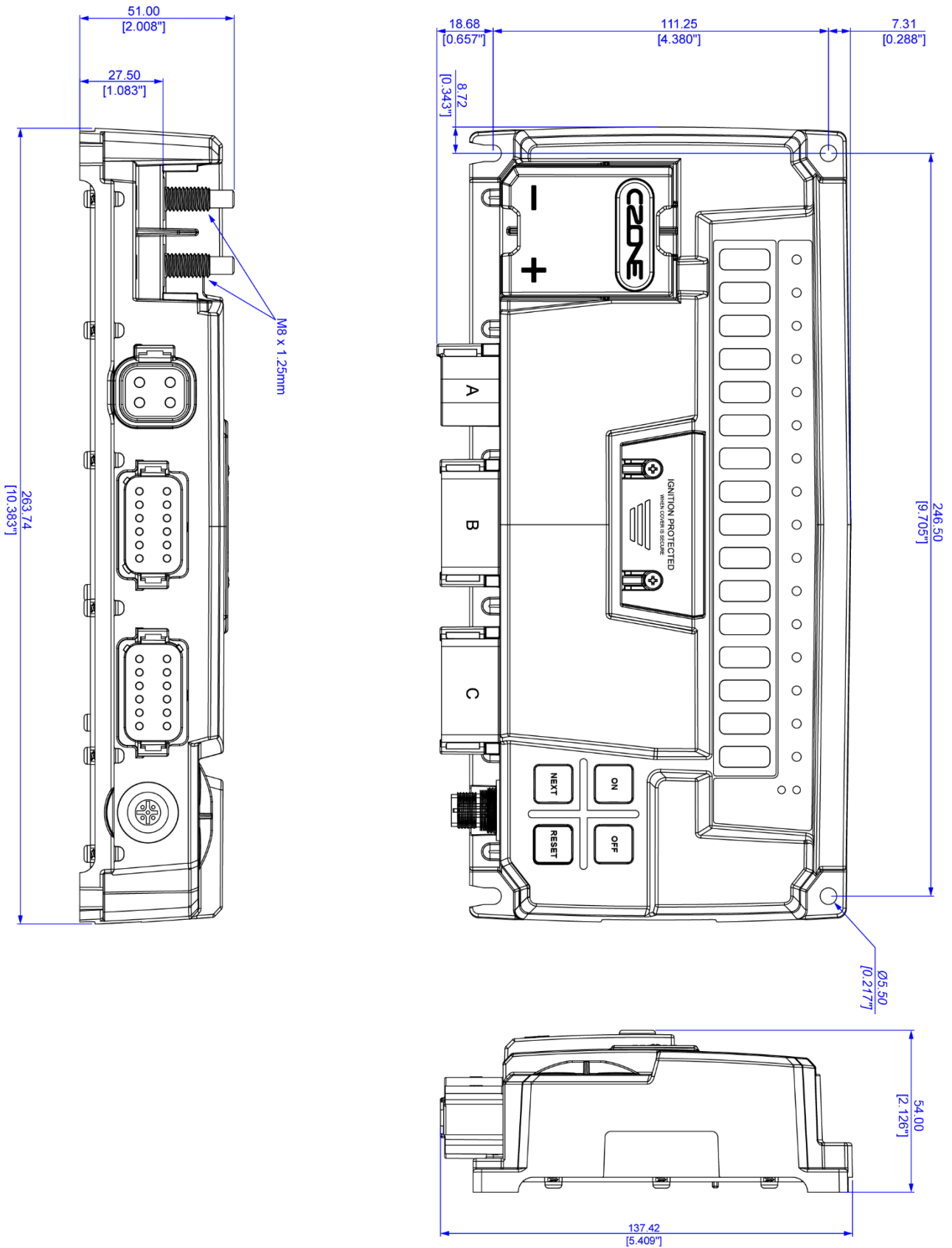


Figure 18. CZone Control X Dimensions

11 COMPLIANCE

EU declaration of conformity

EU-conformiteitsverklaring
 EU-Konformitätserklärung
 Déclaration UE de conformité
 Declaración UE de conformidad
 Dichiarazione di conformità UE



Location of Technical File:
 New Zealand, Auckland 0632

Name and address of the manufacturer:	ASG New Zealand
Naam en adres van de fabrikant:	BEP Marine Ltd
Name und Anschrift des Herstellers:	42 Apollo Drive
Nom et adresse du fabricant:	Auckland 0632
Nombre y dirección del fabricante:	PO Box 101739 NSMC
Nome e indirizzo del fabbricante	New Zealand

This declaration of conformity is issued under the sole responsibility of the manufacturer.
 Deze conformiteitsverklaring wordt verstrekt onder volledige verantwoordelijkheid van de fabrikant.
 Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.
 La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.
 La presente declaración de conformidad se expide bajo la exclusiva responsabilidad del fabricante.
 La presente dichiarazione di conformità è rilasciata sotto la responsabilità esclusiva del fabbricante

Name and address of the authorized Representative:	Advanced Systems Group EMEA BV
Naam en adres van de gemachtigde:	Snijdersbergweg 93,
Name und Anschrift des bevollmächtigten Vertreters:	1105 AN Amsterdam, NL
Nom et adresse du représentant autorisé :	
Nombre y dirección del representante autorizado:	
Nome e indirizzo del rappresentante autorizzato:	

Object of the declaration:	CZone Control-X
Voorwerp van de verklaring:	CZone Control-X Plus
Gegenstand der Erklärung:	
Objet de la déclaration :	
Objeto de la declaración	
Oggetto della dichiarazione:	

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:
 Het hierboven beschreven voorwerp is in overeenstemming met de desbetreffende harmonisatiewetgeving van de Unie:
 Der oben beschriebene Gegenstand der Erklärung erfüllt die einschlägigen Harmonisierungsrechtsvorschriften der Union:
 L'objet de la déclaration décrit ci-dessus est conforme à la législation d'harmonisation de l'Union applicable :
 El objeto de la declaración descrita anteriormente es conforme con la legislación de armonización pertinente de la Unión:
 L'oggetto della dichiarazione di cui sopra è conforme alla pertinente normativa di armonizzazione dell'Unione:

- 2014/30/EU **EMC Directive**
- 2013/53/EU **Recreational Craft Directive**
- 2011/65/EU and amendment (EU) 2015/863 **RoHS directive**

References to the relevant harmonised standards used or references to the other technical specifications in relation to which conformity is declared:
 Vermelding van de toegepaste relevante geharmoniseerde normen of van de overige technische specificaties waarop de conformiteitsverklaring betrekking heeft:

Angabe der einschlägigen harmonisierten Normen, die zugrunde gelegt wurden, oder Angabe der anderen technischen Spezifikationen, in Bezug auf die die Konformität erklärt wird:
 Références des normes harmonisées pertinentes appliquées ou des autres spécifications techniques par rapport auxquelles la conformité est déclarée:
 Referencias a las normas armonizadas pertinentes utilizadas, o referencias a las otras especificaciones técnicas respecto a las cuales se declara la conformidad:
 Riferimento alle pertinenti norme armonizzate utilizzate o riferimenti alle altre specifiche tecniche in relazione alle quali è dichiarata la conformità:

EN 60945:2002 Maritime navigation and radiocommunication equipment and systems

ISO 8846:2017 Small craft – Electrical devices – Protection against ignition of surrounding flammable gasses (ISO 8846:1990)
 EU Type Examination certificate # HPiVS-iR1217-011-I-01-00

26 August 2021

Mark Griffith
 Engineering Director, Advanced Systems Group APAC

UK declaration of conformity

Location of Technical File: New Zealand, Auckland 0632

Name and address of the manufacturer: **ASG New Zealand
BEP Marine Ltd
42 Apollo Drive
Auckland 0632
PO Box 101739 NSMC
New Zealand**

This declaration of conformity is issued under the sole responsibility of the manufacturer.

Object of the declaration: **CZone Control-X
CZone Control-X PLUS**

The object of the declaration described above is in conformity with the relevant UK legislation:

- SI 2017 No 737 **Recreational Craft Regulations 2017**
- SI 2016 No 1091 **EMC Regulations 2016**
- SI 2012 No 3032 **RoHS Regulations 2012**

References to the relevant designated standards used or references to the other technical specifications in relation to which conformity is declared:

EN 60945:2002	Maritime navigation and radiocommunication equipment and systems
ISO 8846:2017	Small craft – electrical devices – Protection against ignition of surrounding flammable gasses (ISO 8846:1990). EU Type Examination certificate # HPiVS-iR1217-011-I-01-00

26th August 2021

Mark Griffith
Engineering Director, ASG New Zealand (BEP Marine LTD)