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Purpose:

The purpose of this document is to describe the system that has been specifically designed for Blink Marine.

Description:

The sample system will be shipped with following items:

Description	Quantity
KB3-12V-10A	1
PKP-2500-SI	1
Sample document	1

General Operation:

When a button is pressed the circuit for that button will turn on. The indicators on all keypads for that circuit will light up to show the circuit is on. Any keypad can turn a circuit on or off.

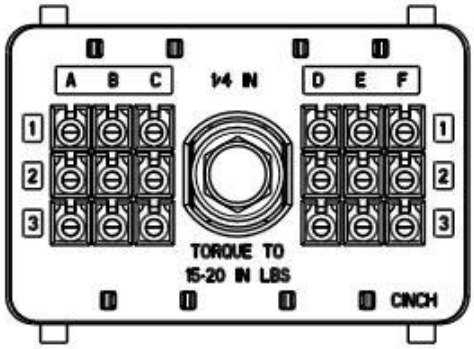
Each circuit of the Keybox is protected against overcurrent by a fuse. The indicator LED related to the circuit will light up blinking to indicate that the fuse has burnt.

Keybox configuration

Power supply	12V	
Panel header connector	18 pin	Cinch 5810118038
Enclosure	Cinch ME	Cinch 5810130065
Power supply connector	V_{BATT}	Amphenol SLPRA16CPSO or SLPRA25CPSO

V_{BATT} Supply Connector: Amphenol SLPPA16BSO or SLPPA25BSO:

Pin-out Table – CINCH Harness connector 5810118023:



Pin-out Table

Pin	Circuit	Fuse	Function	Key & LED
A1 (Ch6)	Anchor Light	FH6 = 10A	Scroll (2-1-0)	15 A (Green LED, Red LED)
A2 (Ch9)	Navigation Light	FH9 = 10A		
A3 (Ch10)	Deck Light	FH10 = 10A	Toggle On/Off	15 B (Green LED)
B1 (Ch5)	Lightbar	FH5 = 10A	Toggle On/Off	15 C (Green LED)
B2	RS485: TxRx- (Not Connected)	-	-	-
B3 (Ch1)	Graph	FH1 = 10A	Toggle On/Off	15 D (Green LED)
C1 (Ch4)	Bilge Pump	FH4 = 10A	Toggle / Autosense / Countdown (5 min)	15 E (Green LED, Red LED)
C2[1] (Ch12)	-	FH12 = nm	-	-
C3	RS485: TxRx+ (Not Connected)	-	-	-
D1[1] (Ch13)	Bus power	FH13 = 2A	Always on	-
D2[2]	CAN L	-	-	-
D3	Negative Battery	-	-	-
E1 (Ch2)	Livewell	FH2 = 10A	Toggle On/Off	15 F (Green LED)
E2[2]	CAN H	-	-	-
E3 (Ch7)	Areator	FH7 = 10A	Toggle On/Off	15 G (Green LED)
F1 (Ch3)	ACC	FH3 = 10A	Toggle On/Off	15 H (Green LED)
F2 (Ch11)	ACC 1	FH11 = 10A	Toggle On/Off	15 I (Green LED)
F3 (Ch8)	ACC 2	FH8 = 10A	Toggle On/Off	15 J (Green LED)
-	-	-	Backlight	Nav & Anch (Blue Colour)

Note 1: Mosfet output.

Note 2: 120Ω resistor is place between CAN-L and CAN-H to terminate the CAN bus.

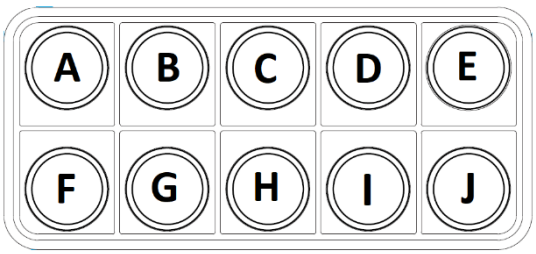
Keypads

Pin-out for 4-pin Keypad Deutsch Connector:

Pin	Function
1	CAN L
2	CAN H
3	Ground
4	Power (12V/24V)

Keypad: PKP2500SI (CANopen ID=15h)

Reference:



Keypad Inserts:

A	B	C	D	E
91Z6382-057	91Z6382-C285	91Z6382-D182	91Z6382-040	91Z6382-045
F	**G**	**H**	**I**	**J**
91Z6382-038	91Z6382-B265	91Z6382-003	91Z6382-004	91Z6382-005

Summary of functions:

Toggle On/Off:
The first press of the button turns the output ON and the LED as well. The next press turns the output OFF and the LED as well.

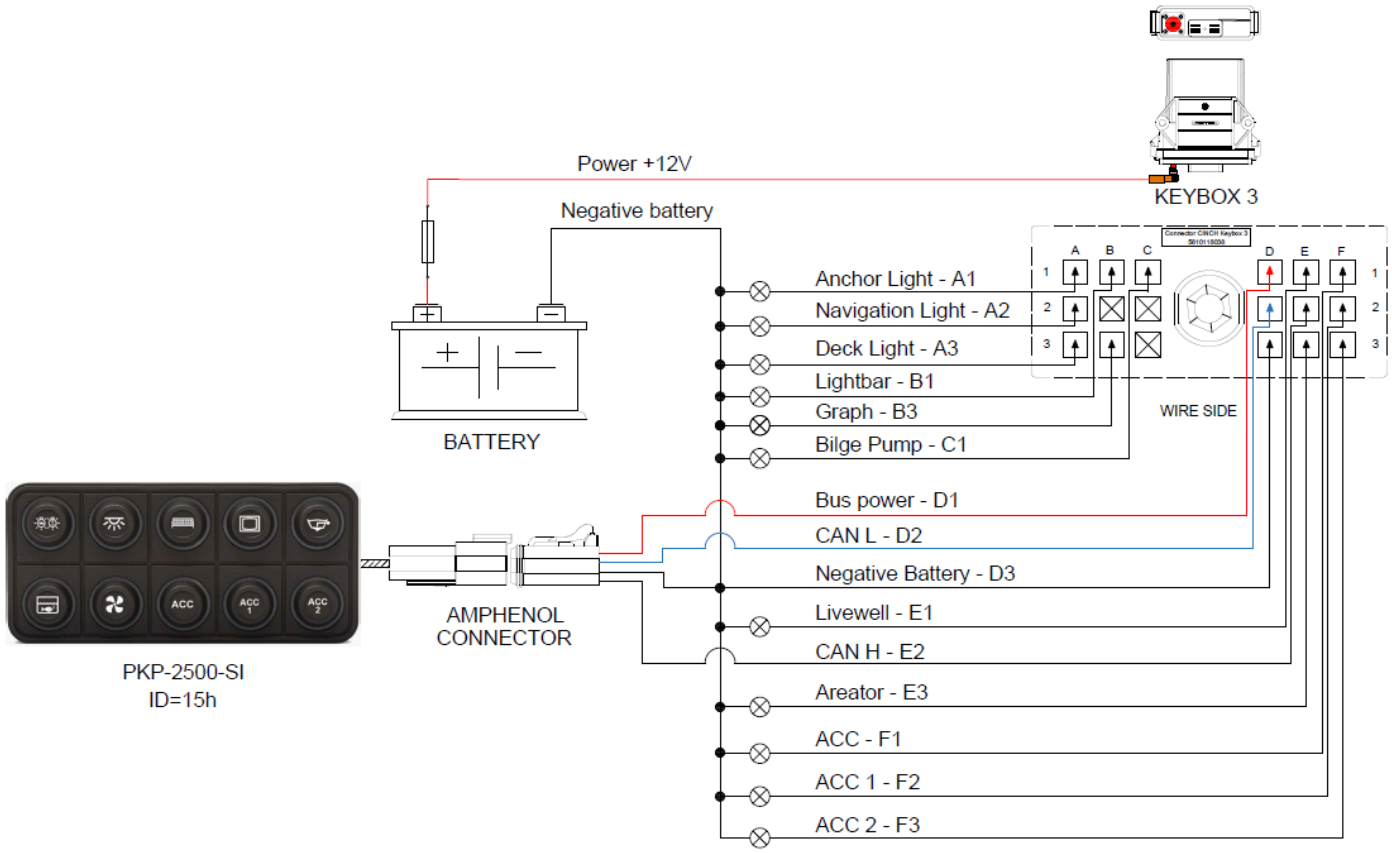
Always On:
The output is Always ON at battery voltage.

Scroll (2-1-0):
The first press of the button turns ON both circuits and the Green LED. The second press of the button turns Off the second circuit and only the first circuits is ON. The LED is Red. The third press turns OFF the second circuit and LED.

Toggle / Auto Sense / Countdown:
The first press of the button turns the circuit ON, Green LED (Manual) is ON, and the countdown begins. The next press turns the circuit and LED OFF or, after the countdown finishes, the circuit will be automatically turned OFF. If a float switch is connected, when the circuit is OFF, the circuit senses if the float switch turns ON the pump, and the Red LED (Auto) turns ON to show the pump is running. The float switch is wired directly to the battery via a fused wire.

Backlight (Blue colour):
When “Navigation Light” and/or “Anchor Light” are ON, the Indicator LED’s will dim by approximately 50% and the backlight LED’s will come ON.

Connection diagram:



Installation:

The keypad and Keybox units should be inspected for physical damage before installation. Any cracked, broken or bent items on either unit should be reported to your shipping firm or to Blink Marine for proper disposition.

Ensure all power is off by disconnecting the battery(s) or de-energizing the battery switch.

Keypads must be mounted to a flat surface using a properly positioned cut out for the keypad mounting studs and connector pigtail. The keypad mounting studs should be secured through the panel using 10-32 UNF nut and lock-washer. Do not exceed torque ratings as this will crack or deform the keypad. The maximum torque applicable on the keypad studs should be below 0,8Nm.

The Keybox unit must be installed in a non-submerged and ventilated space in order to guarantee the correct environmental working conditions. The ambient temperature shall not exceed 70°C.

Connect the wire harness to the devices of the system. Wire harnesses are normally not provided by Blink Marine together with keypads and Keybox units. It is the customer's responsibility to ensure the harnesses are designed, manufactured, and installed to meet the design specifications and to comply the relevant standards related to the end user application.

To connect the Keybox, refer to the table *Pin-out table - CINCH Harness connector.*
Crimp the wires in the Cinch pins and insert the pins in the harness connector.
Once all the pins are insert, plug the Cinch harness connector into the panel header connector and screw the nut in the middle.

Crimp the positive battery voltage wire to the Amphenol SLPPA16BSO connector. The wire size shall be 16sqmm (AWG 4 or AWG 5). Connect the positive power side terminal to the Keybox. Take care to never reverse the terminal connections to the batteries.

To connect the Keypad, refer to the table *Pin out for 4-pin Keypad Deutsch Connector*.

When the wire harness is finished, the system is ready for power and operation.

Important: always switch off the system power supply (disconnect the battery) in case the Keybox needs to be removed for maintenance or replacement.

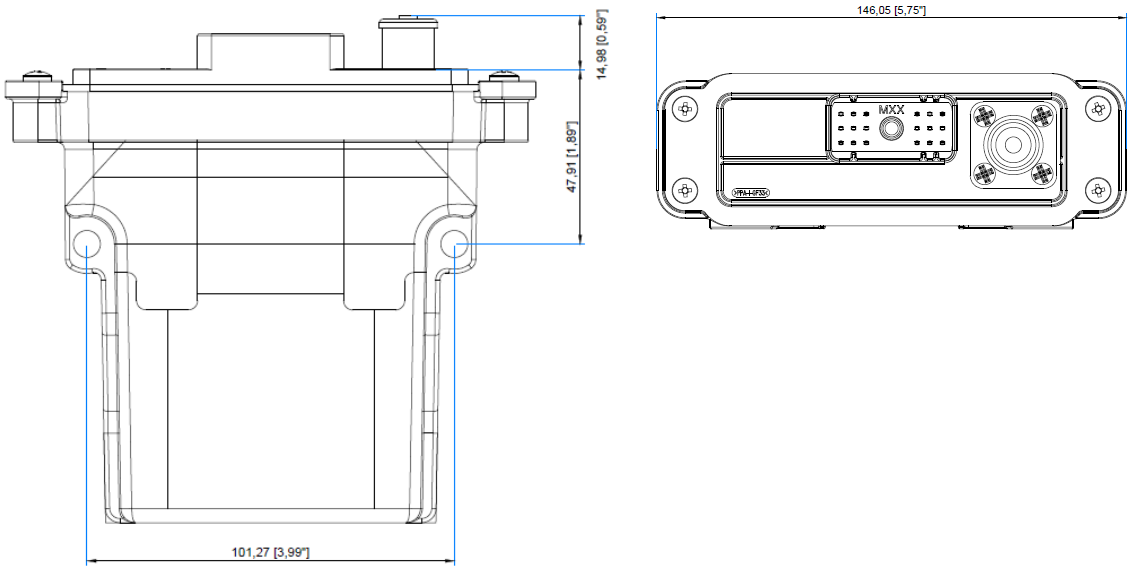
Mechanical and Environmental Specifications

Keybox Mechanical Features

The 18pin Cinch header Connector 5810118038 mates with Cinch 5810118023.
Crimp terminals are Cinch 4250000873.

Keybox Environmental	
Operating Temperature:	-40°C to +85°C
Storage Temperature:	-40°C to +85°C
IP grade:	IP67

Enclosure dimensions:



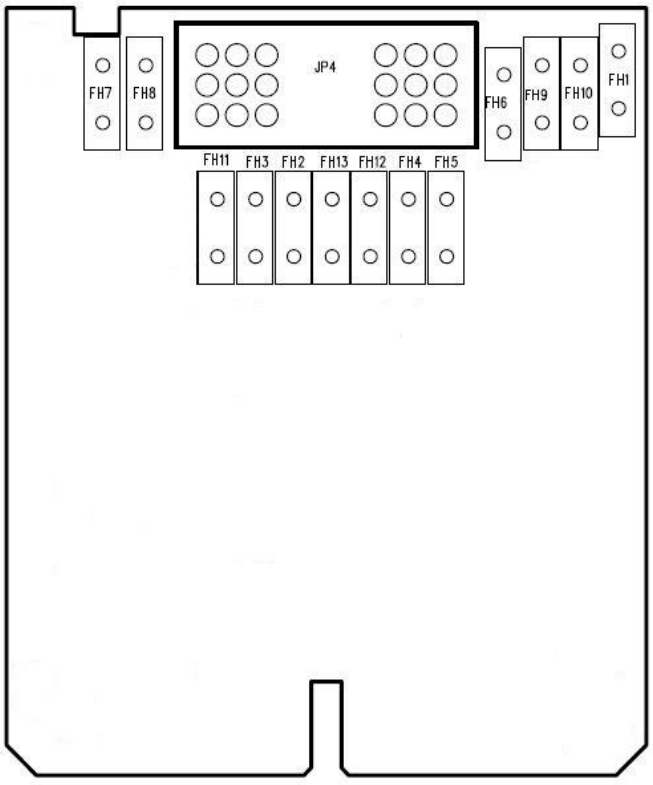
Keypad Environmental	
Operating Temperature:	-40°C to +85°C
Storage Temperature:	-40°C to +85°C
Humidity:	0 to 98% (No Condensation)
Salt Spray:	Per ASTMB117
UV Protection:	UV-B 400 Hrs
Keypad Connectors	Deutsch DT04-4P or equivalent

Keybox Troubleshooting Guide

Problem	Possible Causes	Troubleshooting Steps
No Power to Keypads **(No functions work and no lights turn on)**	1. Keypad not wired or connected properly 2. Low battery power 3. Improper wiring from Keybox to Keypad 4. Faulty Keypad	1. Verify Keypad is wired to the battery properly (refer to wiring diagram) 2. Verify battery is fully charged 3. Verify Keypad power, ground, CAN H and CAN L lines are connected to the correct Keybox pins. 4. Replace Keypad
LED Blinks and output circuit doesn't work	1. Faulty Fuse	1. Replace the Fuse (see fuse map), then press and hold the button for 5 seconds.
Single output device doesn't work but there are no buttons or LED assigned to the output	1. Faulty Fuse	1. Replace the Fuse (see fuse map), then press and hold the button for 5 seconds.
Single output device doesn't work but Indicator LED lights up when button is pressed	1. Improper wiring to device 2. Faulty device	1. Check for voltage at device. Check for voltage at Keybox pin. 2. Check device for operation
Single function doesn't work and indicator LED doesn't light up when button is pressed	1. Faulty Keypad 2. Faulty Keybox	1. Replace Keypad. 2. Replace Keybox.
Function Switch works but indicator LED doesn't light up	1. Low battery power 2. Faulty Keypad 3. Faulty Keybox	1. Verify system is at recommended voltage 2. Cycle power to the Keypad and watch for LED to light up. Replace the Keypad if LED still doesn't light up. 3. Replace Keybox.
Keypad powers up but no functions work	1. Improper wiring 2. Faulty Keypad 3. Fuse F14 blown 4. Faulty Keybox 5. Check termination resistor	1. Verify communication lines (CAN H and CAN L) are wired to appropriate Keybox pin #'s. 2. Cycle power to the Keypad and watch for LED to light up. Replace the Keypad if LED still doesn't light up. 3. Check/Replace fuse F14. 4. Replace Keybox.
Wrong output is activated when button is pressed	1. Improper wiring	1. Verify device is connected to appropriate Keybox output pin.
System Locks Up	1. Low battery power	1. Cycle power to the Keypad and Keybox. 2. Verify system is at recommended voltage.

Keybox fuse map

Fuse	Pin
FH1	Pin 1
FH2	Pin 2
FH3	Pin 3
FH4	Pin 4
FH5	Pin 5
FH6	Pin 6
FH7	Pin 7
FH8	Pin 8
FH9	Pin 9
FH10	Pin 10
FH11	Pin 11
FH12 (max 3A)	Pin 12
FH13 (max 3A)	Pin 13
FH14*	Logic circuit protection



*Note: FH14 (smd fuse): it is not shown in the fuse map.

Date	Revision	Comments	SW Version
16/04/2024	1.0	First release	1.0