shadow-caster™
LED LIGHTING

LIGHT COMMANDER

SCM-LC-N2K *NMEA 2000*
SCM-LC-N2K-PLUS *NMEA 2000 + Ethernet*
SCM-LC-N2K-PLUS-V2 + Wi-Fi

INSTALLATION & OPERATION MANUAL

NMEA 2000®

shadow-net™
TECHNOLOGY
E N A B L E D

TABLE OF CONTENTS

LIGHT COMMANDER BOX CONTENTS

- Light Commander Lighting Controller
- 4 x SS316 Pan Head #8 x 3⁄4" Mounting Screws
- Deutsch connector pigtail assemblies
- Standard Ethernet Cable (Plus & V2 Versions)

PRODUCT SERIAL NUMBER

You can add your product serial number here for warranty and product registration purposes.

The serial number is located on the back of the Light Commander housing and on the packaging.

My Serial Number:

LIGHT COMMANDER OVERVIEW

The Shadow-Caster™ Light Commander (SCM-LC) is available in three models:

SCM-LC-N2K
For connection directly to MFDs with built in NMEA 2000 lighting support, or as an expansion model to "Light Commander N2K PLUS" and "Light Commander N2K PLUS V2" installations.

SCM-LC-N2K-PLUS
Offers an integrated Ethernet interface along with an NMEA 2000 interface for network connections to Garmin, Simrad, Lowrance, B&G, Raymarine, Furuno and Humminbird.

SCM-LC-N2K-PLUS-V2
Offers all of the features of the SCM-LC-N2K-PLUS and a built in Wifi interface to use the available Shadow-Caster IOS and Android app.

This installation and operation manual covers the SCM-LC-N2K, SCM-LC-N2K-PLUS, & SCM-LC-N2K-PLUS-V2 models.
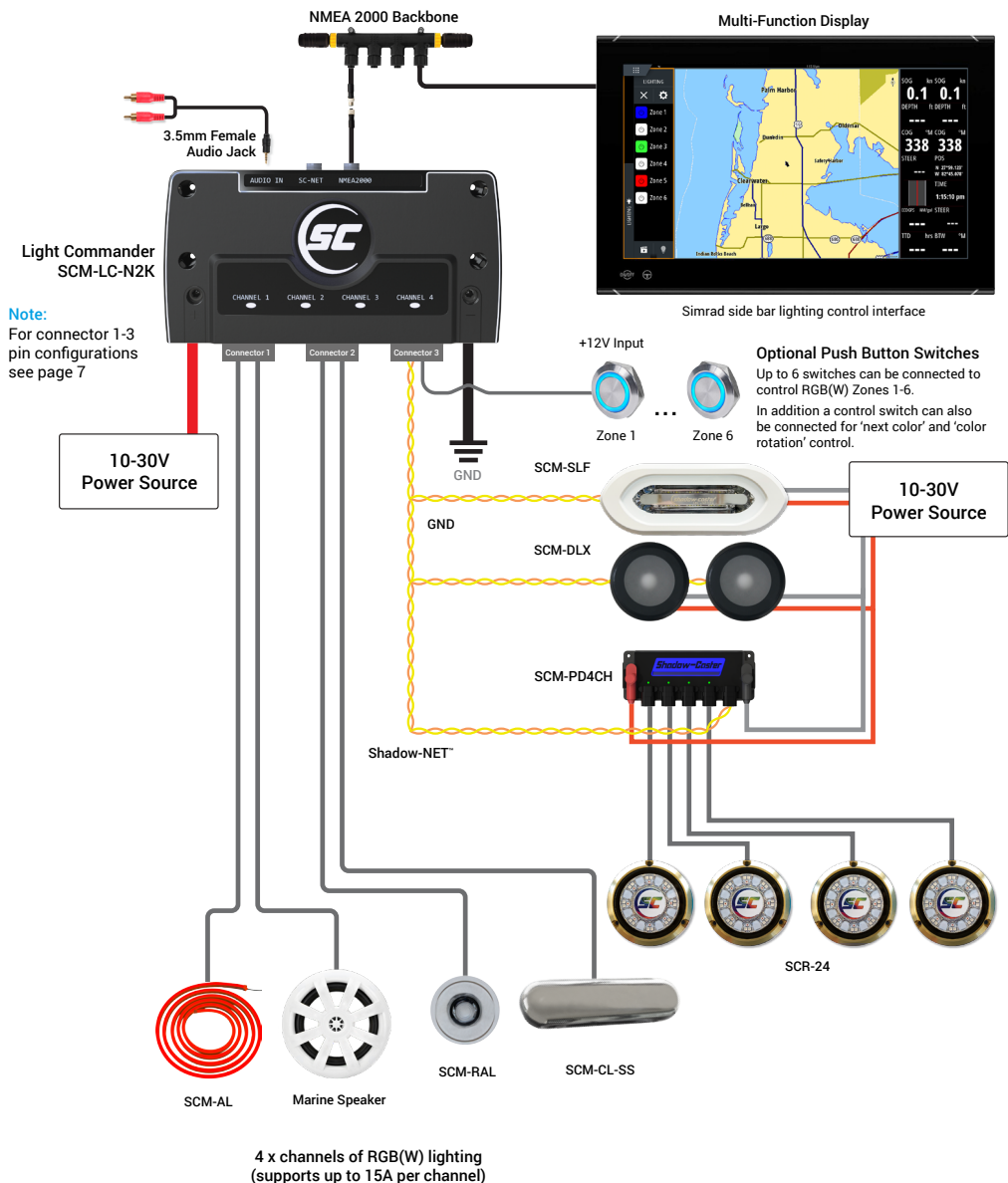
SCM-LC-N2K FEATURES

- Control up to 6 lighting zones (expandable to 12 or 18 by adding one or two SCM-LC-N2K for 6 additional channels each).
- IP67 housing with LED indicators for channels 1-4 and logo backlight.
- Full independent color, brightness and multiple lighting modes including music synchronization, fade, and custom color rotations.
- Built in support for 4 channels of RGBW lighting up to 15 amps each.
- Digital overcurrent protection.
- Auto-detect for selection of RGB or RGBW channel configurations.
- Store and recall virtually unlimited lighting scenes.
- Integrated push button switch support. Control ON/OFF and brightness for each of the 6 zones.
- Global momentary push button color control.
- Deutsch connectors for lighting connections and switch inputs.
- Direct music input via 3.5mm audio jack.

SCM-LC-N2K-PLUS FEATURES

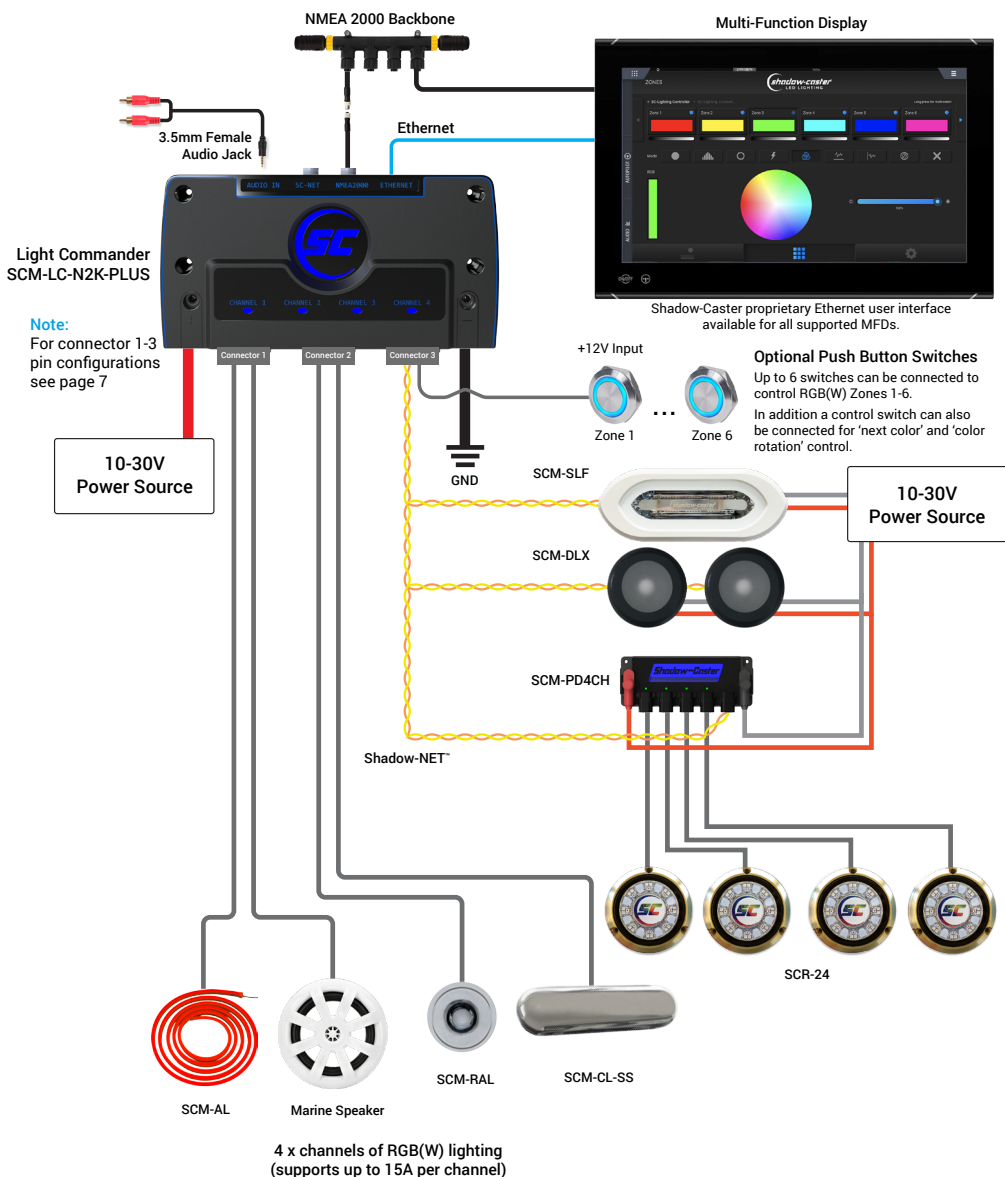All the features listed above for the SCM-LC-N2K, plus:

- Ethernet port for MFD Ethernet connection to use the Shadow-Caster™ full lighting control interface.
- USB-C port for software upgrades
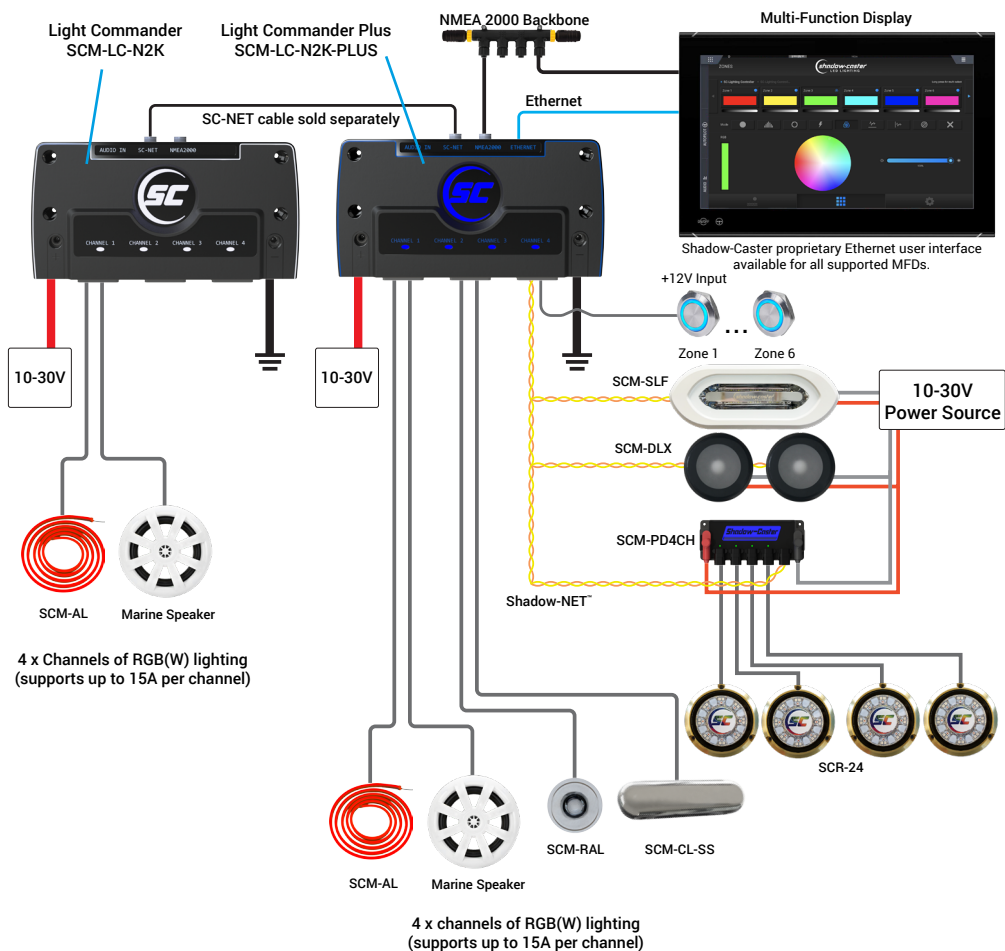- V2 Wi-Fi Support

SCM-LC-N2K TYPICAL WIRING DIAGRAM

NMEA 2000 Backbone

Multi-Function Display

3.5mm Female Audio Jack

Light Commander SCM-LC-N2K

Note:
For connector 1-3 pin configurations see page 7

Simrad side bar lighting control interface

10-30V Power Source

+12V Input

GND

Optional Push Button Switches
Up to 6 switches can be connected to control RGB(W) Zones 1-6.

In addition a control switch can also be connected for 'next color' and 'color rotation' control.

Zone 1 ... Zone 6

SCM-SLF

GND

SCM-DLX

10-30V Power Source

SCM-PD4CH

Shadow-NET™

SCR-24

SCM-AL

Marine Speaker

SCM-RAL

SCM-CL-SS

**4 x channels of RGB(W) lighting
(supports up to 15A per channel)**

SCM-LC-N2K-PLUS & SCM-LC-N2K-PLUS-V2 TYPICAL WIRING DIAGRAM

NMEA 2000 Backbone

Multi-Function Display

3.5mm Female Audio Jack

Ethernet

Light Commander SCM-LC-N2K-PLUS

Shadow-Caster proprietary Ethernet user interface available for all supported MFDs.

Note: For connector 1-3 pin configurations see page 7

Connector 1 Connector 2 Connector 3

+12V Input

Optional Push Button Switches
Up to 6 switches can be connected to control RGB(W) Zones 1-6.

In addition a control switch can also be connected for 'next color' and 'color rotation' control.

Zone 1 ... Zone 6

10-30V Power Source

GND

SCM-SLF

SCM-DLX

10-30V Power Source

SCM-PD4CH

Shadow-NET™

SCR-24

SCM-AL

Marine Speaker

SCM-RAL

SCM-CL-SS

4 x channels of RGB(W) lighting
(supports up to 15A per channel)

CONNECING TWO LIGHT COMMANDERS TYPICAL WIRING DIAGRAM

Light Commander
SCM-LC-N2K

Light Commander Plus
SCM-LC-N2K-PLUS

NMEA 2000 Backbone

Multi-Function Display

SC-NET cable sold separately

Ethernet

Shadow-Caster proprietary Ethernet user interface
available for all supported MFDs.

+12V Input

Zone 1   Zone 6

10-30V

10-30V

SCM-SLF

SCM-DLX

10-30V
Power Source

SCM-PD4CH

Shadow-NET™

SCM-AL   Marine Speaker

4 x Channels of RGB(W) lighting
(supports up to 15A per channel)

SCR-24

SCM-AL   Marine Speaker   SCM-RAL   SCM-CL-SS

4 x channels of RGB(W) lighting
(supports up to 15A per channel)

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DEUTSCH CONNECTORS FOR LIGHTING AND SWITCH INPUTS

CONNECTOR 1 & 2
Mating connector - DT06-12SA "A Key"
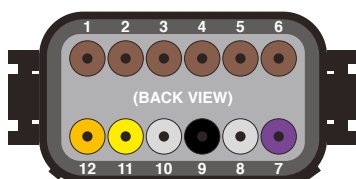
CONNECTOR 3
Mating connector - DT06-12SB "B Key"

Connector 1 Pin Outs		Wire Color
Pin	Description	
1	Red Channel 1	
2	Green Channel 1	
3	Blue Channel 1	
4	Red Channel 2	
5	Green Channel 2	
6	Blue Channel 2	
7	PWR + OUT Channel 2 (1 of 2)*	
8	PWR + OUT Channel 2 (2 of 2)*	
9	White Channel 2	
10	White Channel 1	
11	PWR + OUT Channel 1 (1 of 2)*	
12	PWR + OUT Channel 1 (2 of 2)*	

Connector 3 Pin Outs		Wire Color
Pin	Description	
1	+ Input SW Zone 1 (Button 1)	
2	+ Input SW Zone 2 (Button 2)	
3	+ Input SW Zone 3 (Button 3)	
4	+ Input SW Zone 4 (Button 4)	
5	+ Input SW Zone 5 (Button 5)	
6	+ Input SW Zone 6 (Button 6)	
7	Color Control Input (Button 7)	
8	Not used (Button 8)	N/A
9	Ground	
10	Not used	N/A
11	Shadow-NET CAN-H (Yellow)	
12	Shadow-NET CAN-L (Orange)	

* Combine these two outputs together when current exceeds 10A.

Connector 2 Pin Outs		Wire Color
Pin	Description	
1	Red Channel 3	
2	Green Channel 3	
3	Blue Channel 3	
4	Red Channel 4	
5	Green Channel 4	
6	Blue Channel 4	
7	PWR + OUT Channel 4 (1 of 2)*	
8	PWR + OUT Channel 4 (2 of 2)*	
9	White Channel 4	
10	White Channel 3	
11	PWR + OUT Channel 3 (1 of 2)*	
12	PWR + OUT Channel 3 (2 of 2)*	

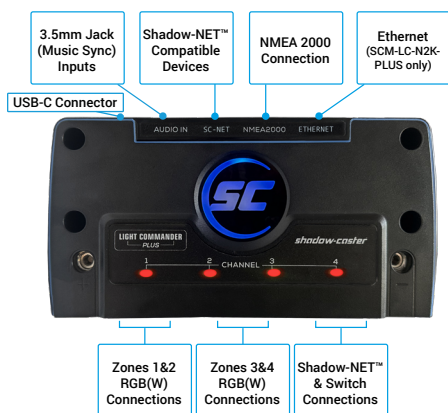* Combine these two outputs together when current exceeds 10A.

INSTALLATION

LIGHT COMMANDER INSTALLATION

Central mounting locations under the helm areas or in the bilges are acceptable.

1. The Light Commander should be mounted with Deutsch wire connectors facing down.
2. Use the included four 8 x 3⁄4″ SS pan head screws for mounting.

LIGHT COMMANDER CONNECTIONS

The Light Commander has four built in RGBW channels. By default these RGBW channels correspond to zones 1-4, identified in the device list as "LOCAL 1-4" (see Configure Devices screen shot on page 11). However, they are independent and can be assigned to any of the configured zones 1-6 supported by the controller.

The Light Commander will support 15 amps on each of the 4 RGB(W) channels, for a total of 60 amps in the entire Light Commander.

Note: Shadow-NET™ lighting devices communicate through the orange and yellow Shadow-NET™ interface on connector 3, and can be assigned to any zone 1-6. As Shadow-NET™ devices do not draw power through the controller, they do not contribute to the Light Commander's total load calculation.

SELECTING RGB OR RGBW LIGHTING

The Light Commander is pre-configured for RGB output.

TO CONFIGURE FOR RGBW SCM-LC-N2K

Once the system is installed and connected, the Light Commander can be prompted to measure the load of each channel and check for the presence of a White Channel.

1. Press and hold buttons 1 and 2.
2. Apply main power to the controller - the white channels should immediately start flashing.
3. Once detected, release switch 1 & 2 and cycle power to resume normal operation.

Note: The minimum detection level is 100mA.

For Plus and V2 Versions: This step can be done as part of the onboarding process, and is available under Settings/Device Settings/Power Test.

LIGHT COMMANDER POWER REQUIREMENTS

See the Shadow-Caster™ wire AWG recommendations for detailed calculations. It is very important to have sufficient gauge wire feeds for RGB lighting. Typical installations use 8AWG or larger wire.

It is recommended to separate feeds for lighting and for sensitive stereo power feeds with direct runs to the battery or a heavy gauge distribution point.

The Light Commander uses digital current sensing to detect over current conditions. When this is detected, the Light Commander will disconnect RGBW channels from power and flash the backlit logo and channel lights red to indicate a fault condition.

The Light Commander will work in 12V or 24V systems. Please note that 12V or 24 compatible RGB(W) products should be used depending on the application.

RECOMMENDED WIRE GAUGES

Scan the QR Code or click **here** to view our recommended wire gauge chart.

The load calculations are driven by the max load of the lights on the system.

Example Chart:

• Zone 1 channel 1: 10 meter SCM-AL strip 1 amp/meter =10 amps

• Zone 2 channel 2: 4 SCM-CLX, 120mA x 4= .5 amps

• Zone 3 channel 3: 6 RGB speakers. 250mAea, 1.5 amps

• Zone 4 channel 4: Mini-Neon AL strips. 8 ft each. 2.5 amps X 4

Total 22 amps

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SWITCH INPUTS (OPTIONAL)

The Light Commander supports zone activation switches. This feature allows a lighting zone to be easily turned on, off and dimmed without using the control screen.

There are 6 zone switch inputs located on connector 3. The inputs are configured for momentary '+' inputs.

The first button press will turn the corresponding lighting zone on to white, the second press will turn the lights off.

Pressing and holding the input will toggle between dimming and stepping up brightness.
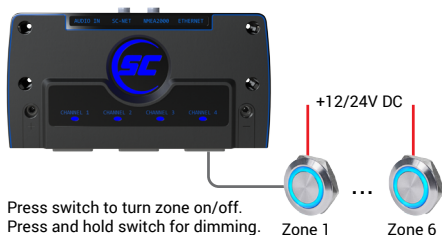
Press switch to turn zone on/off.
Press and hold switch for dimming.

+12/24V DC

Zone 1 ... Zone 6

There is one global control input, that will step between colors on subsequent presses.

Holding the control switch on for more than 1 second will start color rotation. Color rotation can be stopped by a subsequent button press.

COLOR INDEX CYCLE

START
Cool White
Neutral White
Warm White
Red
Yellow
Green
Blue
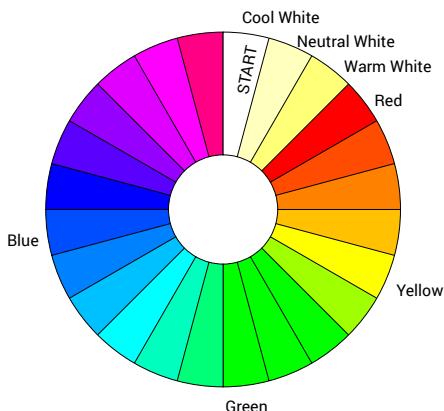
• Press to step to next color
• Press and hold to start color rotation

ADDING ADDITIONAL REMOTES AND MULTI-FUNCTION DISPLAYS

A SCM-ZC-REMOTE device can be added to the installation by connecting to the Shadow-NET™ cable.

Ethernet
MFD
Shadow-NET
SCM-ZC-REMOTE
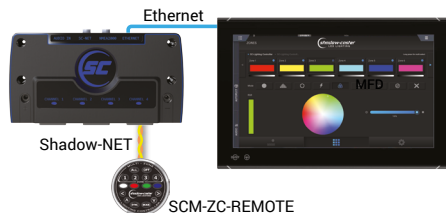
SHADOW-NET™ DEVICES

Connect Shadow-NET™ enabled devices to the orange and yellow Shadow-NET™ wires coming from the Light Commander.

As soon as the Light Commander receives power, multiple channels of digital messages start broadcasting on these wires. These messages allow Shadow-NET™ enabled devices to be connected without a switch. Initially these commands are for attached lights to turn off. As soon as a command is given to the Light Commander to go to a color, these attached devices will receive a message to go to the corresponding color and brightness.
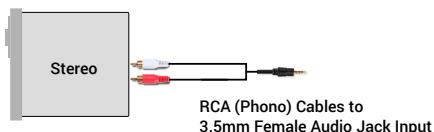
OPTIONAL PARTS

• **SCM-ZC-REMOTE** Additional Remote Control
• **SCM-MFD-BRIDGE** MFD Communications Bridge
• **SCM-SCNET-01** 1meter Cable
• **SCM-SCNET-02** 2 meter Cable
• **SCM-SCNET-04** 4 meter Cable
• **SCM-SCNET-Y** Y Cable

CONNECTING STEREO INPUT FOR STEREO MUSIC SYNC INPUT

Connecting a stereo and amplifier

Stereo

Amp

RCA (Phono)
Cables & Splitters

To 3.5mm
Female Audio
Jack Input

Connecting a stereo

Stereo

RCA (Phono) Cables to
3.5mm Female Audio Jack Input
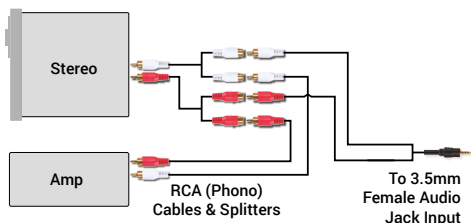
MUSIC SYNC

The music sync feature samples the music directly from a 3.5mm stereo analog input. There are several modes available for syncing to amplitude or frequency content in the music.

OPTIMIZING MUSIC SYNC

1. Turn music to typical listening volume, and press PAUSE on your stereo system. This will provide the lighting controller with an input signal representative of the audio system background noise.
2. Adjust the sensitivity up until the lights start blinking/flickering.
3. Play the music and adjust the sensitivity and rate. This adjusts how quickly the lights respond.

OPTIMIZING MUSIC SYNC FROM SWITCHES

1. Press and hold buttons 1 and 3 before applying power to the unit. The unit will blink red and green to indicate that music adjustment mode is activated.
2. Set music to desired volume, then hit pause on the music so that only the background signal is detected.
3. Click button 3 until lights blink and flicker. Click button one to to decrease sensitivity by one step at a time until lights stop flickering.
4. Press button 5 to store settings. Lights will flash green to indicate this is good.

FREQUENCY MODE

Frequency mode is the recommended sync mode as it offers the largest array of color options.

The lighting controller uses a digital signal processor to extract the relative intensities of low, mid and high frequency content.

The music mode defaults to an RGB color sequence. In this case, red corresponds to low frequencies, green to mid range frequencies, and blue to high frequencies. If no signal is present or below the threshold, the color will default to the last color in the sequence or a fourth.

Low Frequencies	Mid Range Frequencies	High Frequencies	Default Background Color

BEST PRACTICES FOR MITIGATING NOISE ISSUES

Noise interference is common in systems with RGB lighting controls and amplified stereo systems. The advanced circuitry in the lighting controller does everything possible to protect from this.

Utilizing installation best practices will further mitigate these issues.

1. Make sure to supply ample gauge power and separate distribution points from stereo power.
2. Run RGB power wires as far as possible from the speaker feeds for the stereo. Run separate bundles where possible.

CONNECTING TO THE NETWORK:

When connecting to the network port, please check with the manufacturer of your device for required adapters.
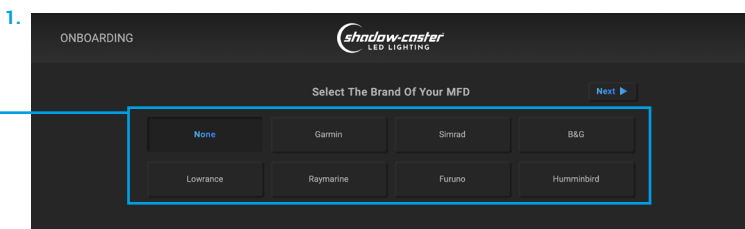
Reference also available here

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BASIC OPERATIONS FOR SHADOW-CASTER MFD USER INTERFACE

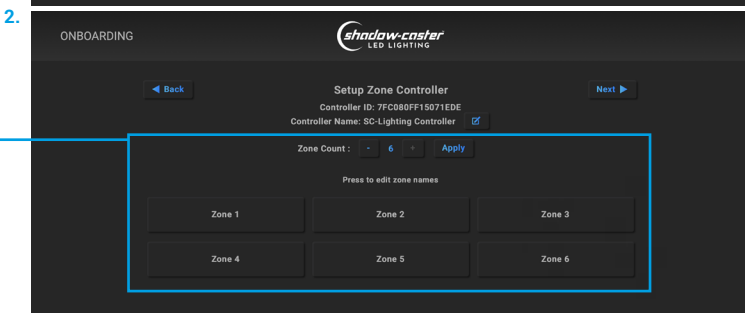The first time a unit is connected, it will walk the user through onboarding.

ONBOARDING

1.

Select the make of your MFD

2.

Setup Zone Controller

Set the number and names of required zones.
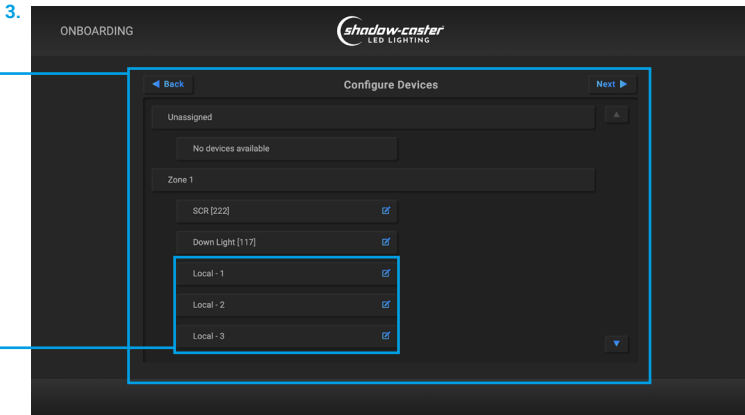
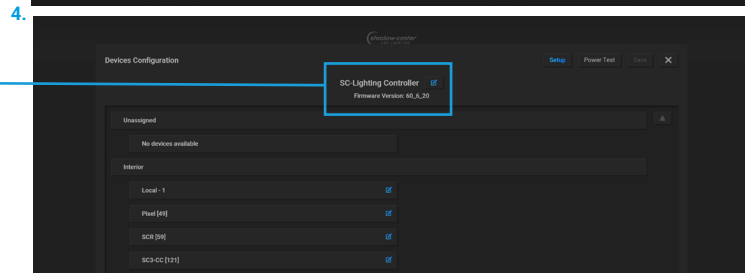(Can be adjusted in Settings/Zone config after setup)

3.

Configure Devices

Identify all of the lighting devices and then assign them to the desired zone.

(Can be adjusted in Settings/Devices after setup)

"Local" refers to built in RGB channels

4.

Move to right after device configuration

INTERACTIVE INTERFACE

ZONE & SCENE CONTROL

Hold to change color and lighting modes

Switch the zones easily ON/OFF

Customizable scene menu
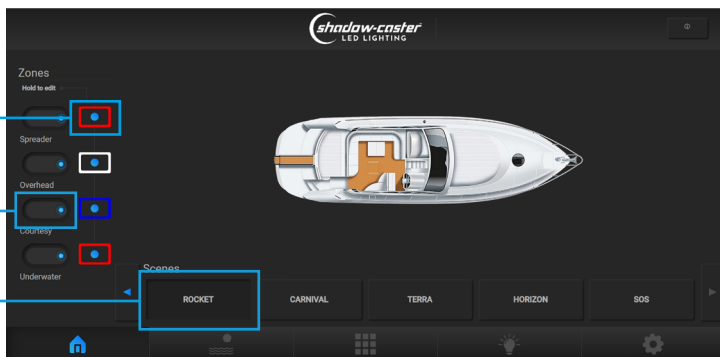
OPTIONS CONFIGURATION

Set a Powerup Scene or a Startup Scene

Simple UI can also be turned ON/OFF

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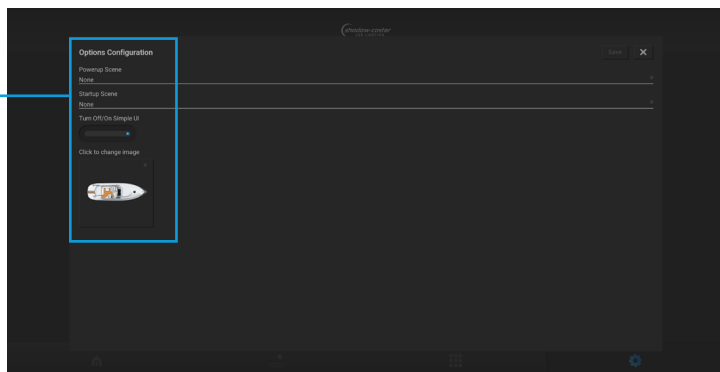
The interface will start up to this home screen.

SCENES (DEFAULT HOME SCREEN)

Name and save scenes

Select lighting scenes

Simplified home screen if enabled

Scenes

Editor
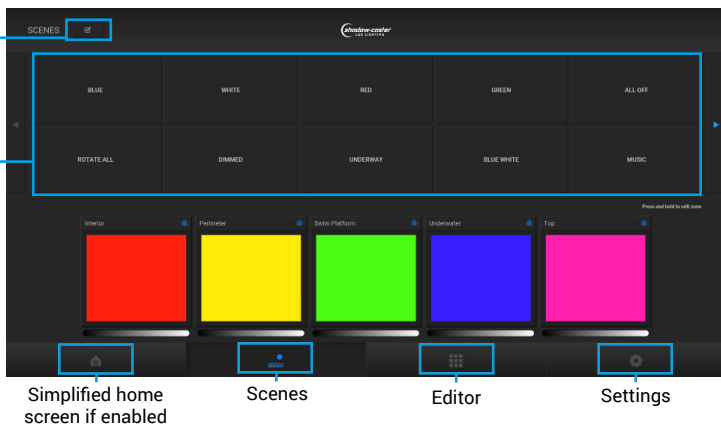
Settings

ZONES

Select zones, lighting mode, and zone color
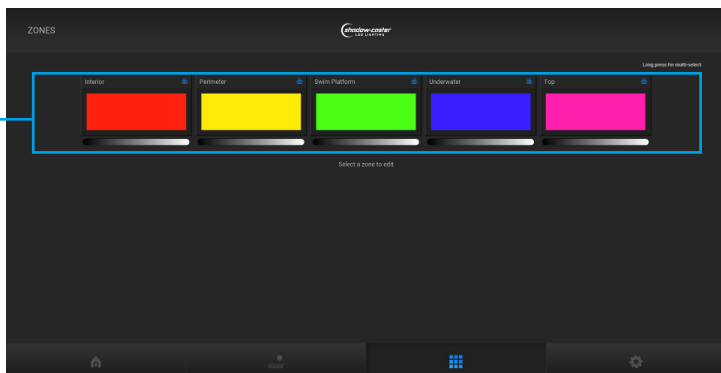
Zone mode indication

Zone brightness indication

Select RGB mode to use color wheel selector. See Page 14 for mode functionailty specifics.

Edit mode parameters
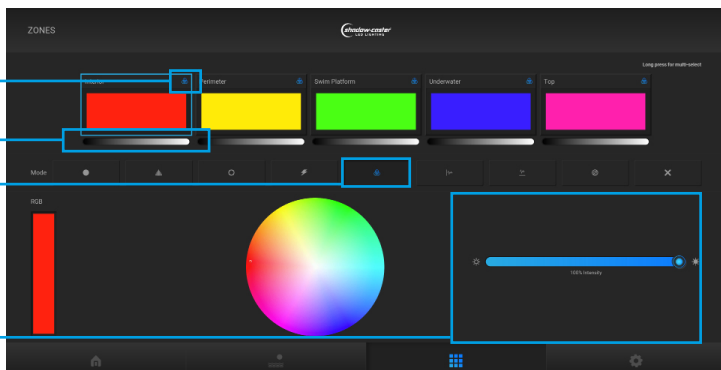
SETTINGS

Edit general settings, reset and configure devices and update firmware.
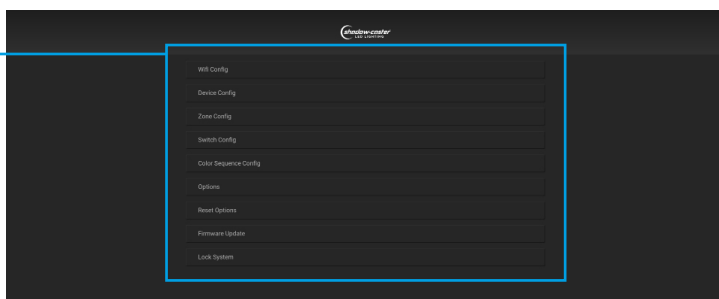
Easily configure Wi-Fi on your Light Commander in the settings
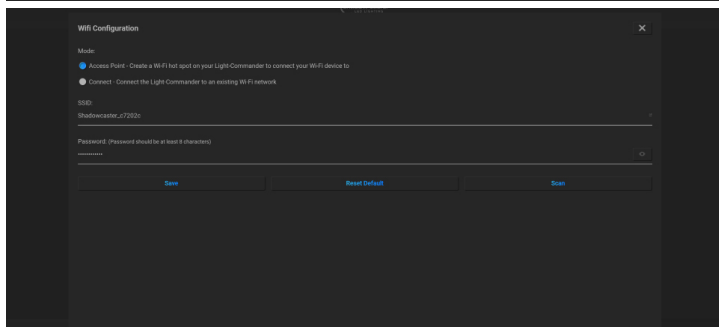
COLOR SEQUENCE CONFIGURATION

The Light Commander can store 60 custom colors or color sequences.

The first 30 of these are reserved for default colors and built-in sequences.

To add a single color or custom sequence simply select the color and hit "Add Color".

Up to 21 colors can be used in any given sequence.

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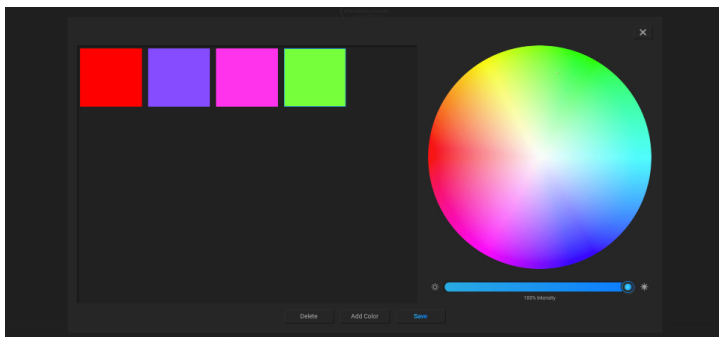
BASIC OPERATIONS FOR SHADOW-CASTER MFD USER INTERFACE

LIGHTING MODES

SOLID COLOR
Easily recall colors and color sequences. If selecting a sequence, a rate will be applied to changing these.

COLOR FADE
Rotates colors with the overall brightness going up and down.

COLOR CHANGE
Transitions between colors and sequences but keeps overall brightness the same.

FLASH STROBE
Flashes single colors or sequences with changeable rate.

RGB COLOR WHEEL
Quickly select any color and brightness.

FREQUENCY MUSIC SYNC
Uses full spectrum digital signal processing to go with the music.

AMPLITUDE MUSIC SYNC
Sets the music to go with the beat of the music. Picks up on the volume peaks in the music, can use a single color or rotate through a sequence.

NO CHANGE
If you want to create a scene that does not affect other lights, Setting a zone to "No change" will leave them unaffected.

OFF
Simply sets a zone to off.

BASIC OPERATIONS FOR SIMRAD NMEA 2000 LIGHTING INTERFACE

ZONE CONTROL

Zone names can be customized

Zone color indicates current zone color or function

Press to slide out lighting interface

Select between zones or scene selection
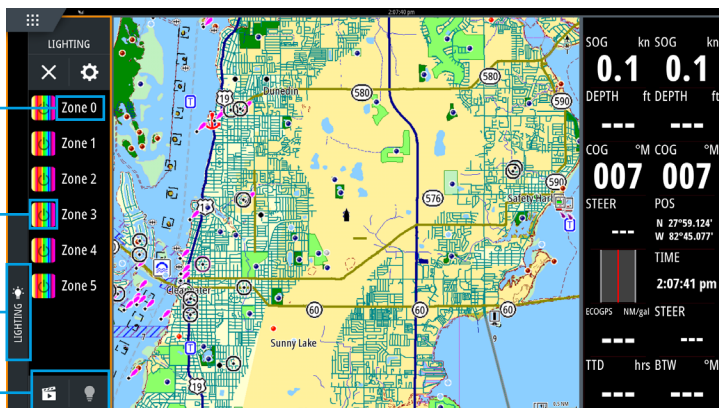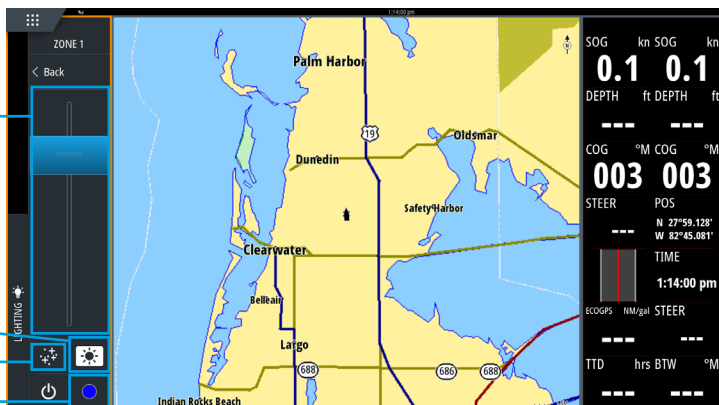

SCENE SELECTION

Customizable scene menu
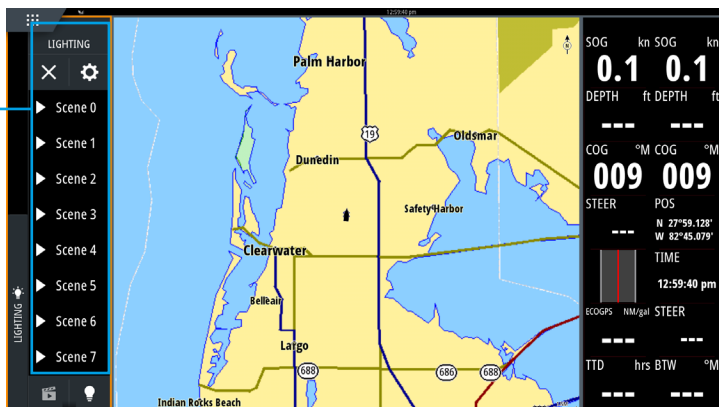
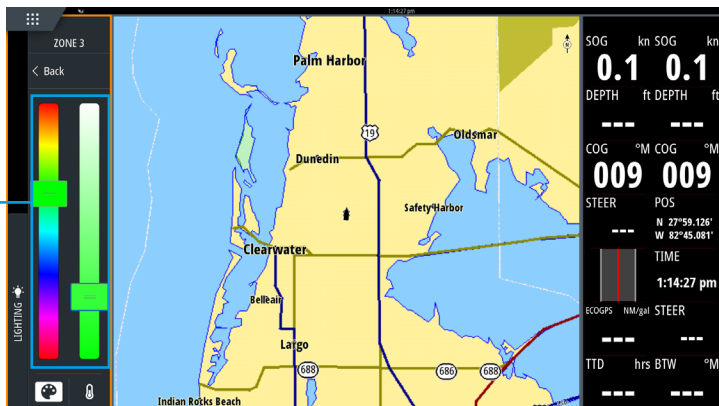**BRIGHTNESS ADJUSTMENT SCREEN**

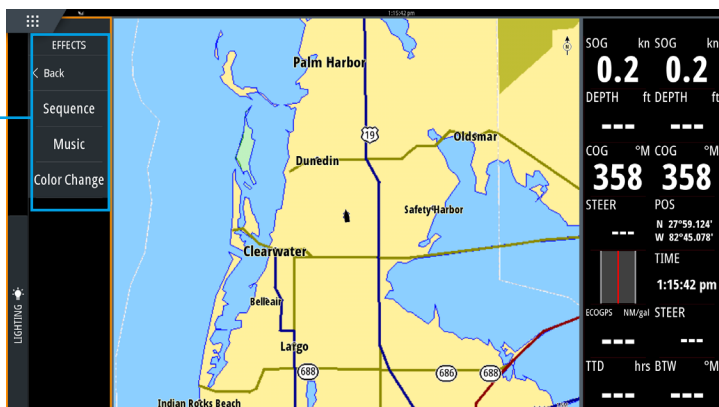Adjust brightness

Brightness

Lighting effects

Color selection
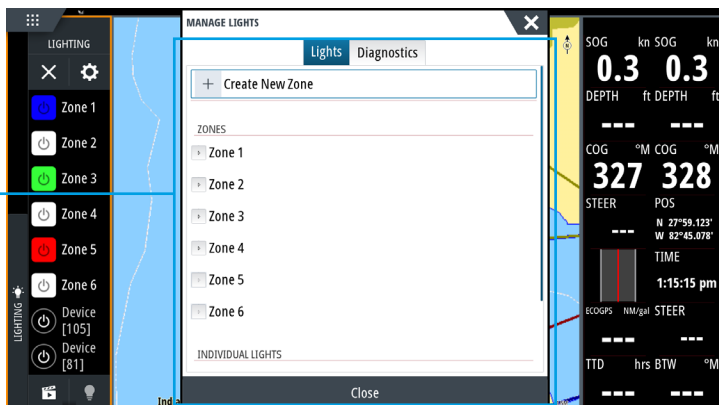
SINGLE COLOR ADJUSTMENT SCREEN

Adjust color and hue

DYNAMIC LIGHTING EFFECTS SCREEN

Dynamic function selection

ZONE CONFIGURATION & LIGHT ASSIGNMENT SCREENS

Zone configuration and light assignment

Zone light assignment

LIGHT COMMANDER APP CONNECTION & CONFIGURATION

The Light Commander V2 supports Wi-Fi interface for communicating with the Shadow-Caster Lighting's App. Available on IOS and Android.

How to Use the System:
1. Connect to the Wi-Fi
2. Open the app, and select the controller
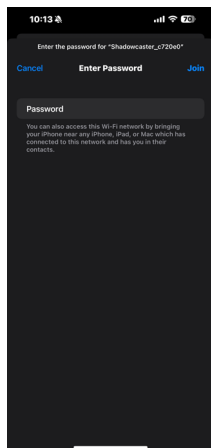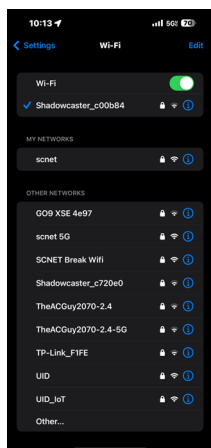3. Easily create and recall lighting scenes.

[Click to Download for IOS](#)

[Click to Download for Android](#)

To Connect:
The Light Commander will broadcast an SSID by default typically "**Shadowcaster_XXXX**"
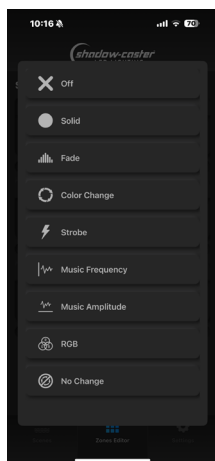
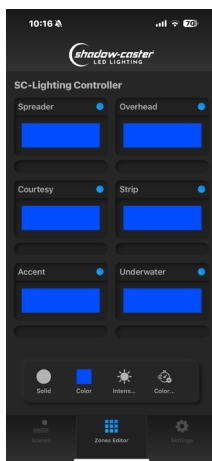**Default Password: "shadowcaster"**
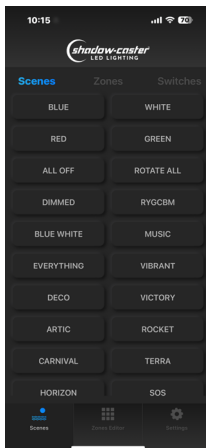
Open iPhone/Android Settings & Connect to Wi-Fi

Open Shadow-Caster App & Connect Light Commander

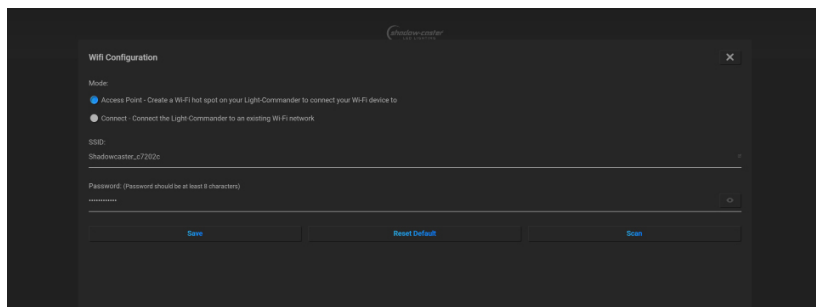## LIGHT COMMANDER APP CONNECTION & CONFIGURATION CONTINUED

Pick a Lighting Mode

Select a Zone and Control the Color

Configuring Wi-Fi Connection Through MFD/HTML Interface.

The following page can be accessed through the MFD interface, or by opening a connected browser and going to the URL "Lightcommander\"

Modes:

Access point: (Default) For connecting directly to the Light Commander without a router.

Connect: Used when an additional router is present. (When using this mode, click scan to provide a list of locally available networks)

The systems SSID and password can also be adjusted from this page.

Troubleshooting Tips: If the Lighting Controller is not immediately detected, please check to make sure that the device is connected to the same network as the Light Commander, or connected directly to it. It may be necessary to restart the app if connection is lost.

TROUBLESHOOTING

MUSIC SYNC NOT WORKING

Verify that an appropriate 3.5mm stereo jack is being used and that there is a usable signal.

If a separate output zone is used, verify that the output is enabled and the output is set to a usable volume.

It is not recommended to use a subwoofer output, as certain sync modes require the full audio range.

SHADOW-NET™ LIGHTS WILL OCCASIONALLY LOCK UP AND STOP RECEIVING MESSAGES

This indicates that there is a noise issue on the Shadow-NET™ communication lines. Typically this is caused by insufficient gauge wire feeding one or more Shadow-NET™ connected lights.

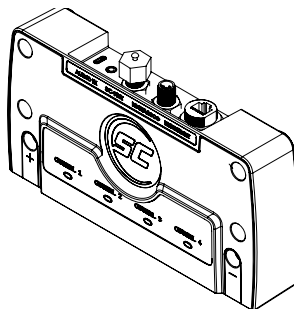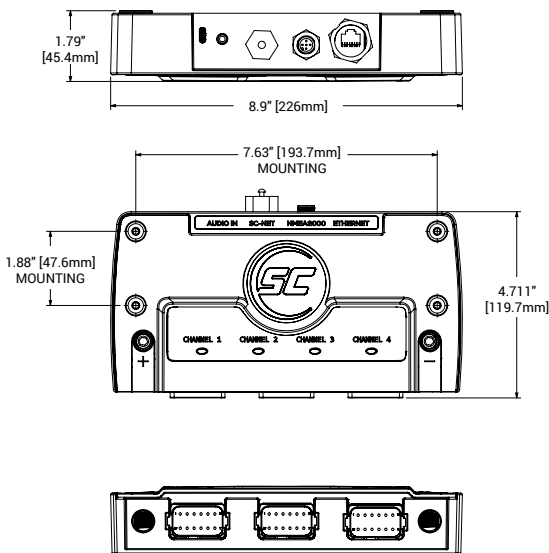### SHADOW-NET™ LIGHTS STAY ON

If the connected Shadow-NET™ lights are not turning off at initial power up then there is a challenge with the Shadow-NET™ connection.

Check the orange and yellow wire connections are not reversed and are fully connected.

FACTORY RESET

Press and hold buttons 1 and 7 at start up.

DIMENSIONS

AUG24

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