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1013 Elroy Drive, Middlebury, Indiana 46540  (574) 825-4600

# Multiplex Lighting & Shade Control System

*The switch panels conveniently located throughout the living quarters of your coach allow you to turn your lighting on or off, as well as dim the lighting to any desired level with the touch of a button. They will also allow you to control the operation of the day and night shades individually or in specific areas of the coach. Each button is labeled to show the lights and shades that the buttons will operate.*

**The differences between SSP-13 and SSP-14 Switch Panels:**

1. The SSP-13 has separate "ON" and "OFF" buttons for each circuit. The SSP-14 has a single button which uses toggle commands for each circuit with two *(2)* micro switches to accommodate separate commands at one button location. *(Example: Shade controls have a separate "UP" and "DOWN" command at the same button location).*
2. The SSP-13 has separate "Green" LED's that indicate a circuit being "ON". The SSP-14 uses the backlighting for the circuit "ON" indication. Normal backlighting is white and if the circuit is "ON" it turns blue.
3. Basic troubleshooting is the same for both type switch panels.

**Operating the lights using the switch panels:**

1. **Turning the Light on or off** - Press the illuminated Light Bulb Icon button on the right side of the switch label and release it within 1 second in order to turn the lights on.
2. **Dimming a light** - Holding the button for more than 1 second will gradually ramp the light up and down until the button is released. The light will then remain at the dimmed level. If the light is turned off and then back on, it will remember the dimmed level.
3. **LED Indicator Feature** - Each individual light button has an LED mounted behind the label that illuminates when the button is pushed, indicating that this particular light circuit is on. The LED turns off when the "Off" button is pressed.
4. **Light Master Feature** - The Light Master button allows you to instantly turn on or off all lighting in the living area of your coach with the touch of one button. Pressing the Light Master "On" button and releasing it within 1 second will turn on only the lights that were on when the Light Mater "Off" was pressed. Holding the Light Master button "On" for more than 1 second will turn on all of the interior lighting in the living quarters. **PLEASE NOTE:** Pressing the Light Master "On" after the Light Master "Off" button has been pushed twice with result in no response.

**Panel Lights Feature** - "Panel Lights" refers to the back lighting that illuminates the switch labels on each panel. Pressing the Panel Lights "On" button and releasing it within 1 second will turn the Panel Lights on. Pressing the Panel Lights "Off" button will turn the Panel Lights off. Pressing the Panel Lights "On" button and holding it for more than 1 second will dim the Panel Lights to 50% back-lighting.

**Operating the shades using the switch panels:**

1. **Lowering or raising individual shades** Press and release the shade control "ARROW UP" button for the desired shade. The shade will run up until the top stop is reached. Press and release the "DOWN ARROW" button and the shade will run down until the bottom stop is reached.

2. **Stopping shades at desired positions** Press and release the shade control "UP ARROW", the shade will begin to run up. When the shade reaches the desired position push and release eh shade control "UP ARROW" again and the shade with stop. If the shade is in the up position, press and release the shade control "DOWN ARROW", the shade will begin to run down. When the shade reaches the desired position, press and release the shade control "DOWN ARROW" again and the shade will stop.

3. **Master Shade Switches** - Control more than one shade with the press of one button. The Master switches operate as described above.

4. **Day Master** - This button controls all the Day Shades in the entire coach.

5. **Night Master** - This button controls all the Night Shades in the entire coach.

6. **Dash/Living Room/Bedroom Day/Night Master** - Your coach may be equipped with area specific shade controls. The Master Shade switch will operate all shades in that particular area as described above.

7. **Bathroom/Toilet Shades** - Your coach may be equipped with day and/or night shade switches that have been programmed to lower those shades, but will not raise them. Bathroom/Toilet room shades may ONLY be raised from the Bathroom Toilet room shade switch located in those particular rooms.

8. **Ignition Lockout Feature** - While the ignition switch is in the on position, none of the dash area shades may be lowered by anyone but the driver. The driver has manual override switches for all shades in the dash area.

9. **Manual Override Switch Operation** - When the ignition switch is in the on position the driver may lower/raise the shades in the dash area for sun/glare blocking purposes. Push and hold the rocker switch of the desired shade and the shade will run up/down. When the shade reaches the desired position release the rocker switch and the shade will stop.

# SSP06 Switch Panel

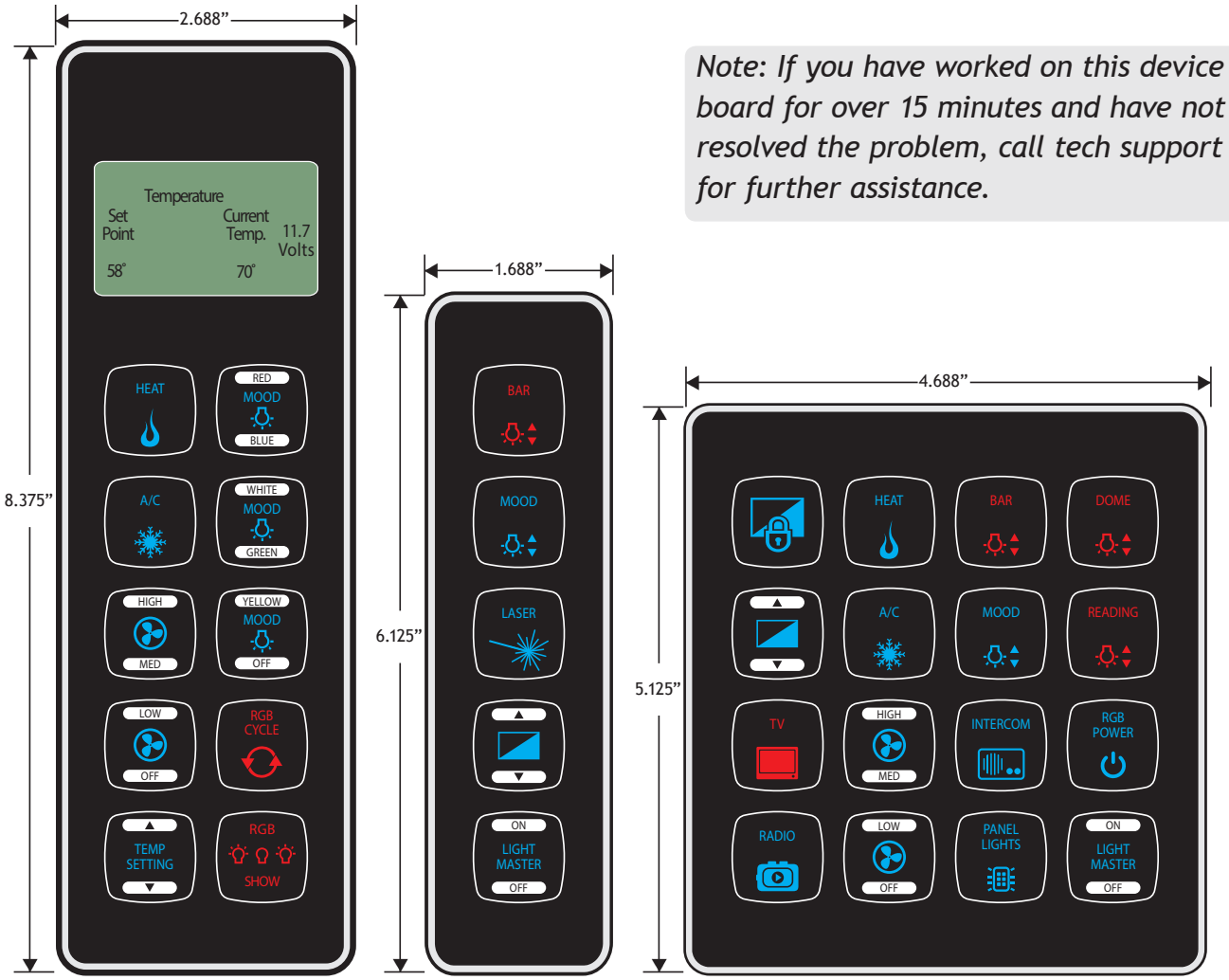
**Introduction:**

This material provides the technical details for the SSP06 switch series. The clear and brightly backlit labels and raised buttons with symbols make operation very intuitive. Built-in LED indications for each switch provided real-time status feedback for each switch based on load function. The SSP06 series provides solutions for applications that require elegance and high-end features.

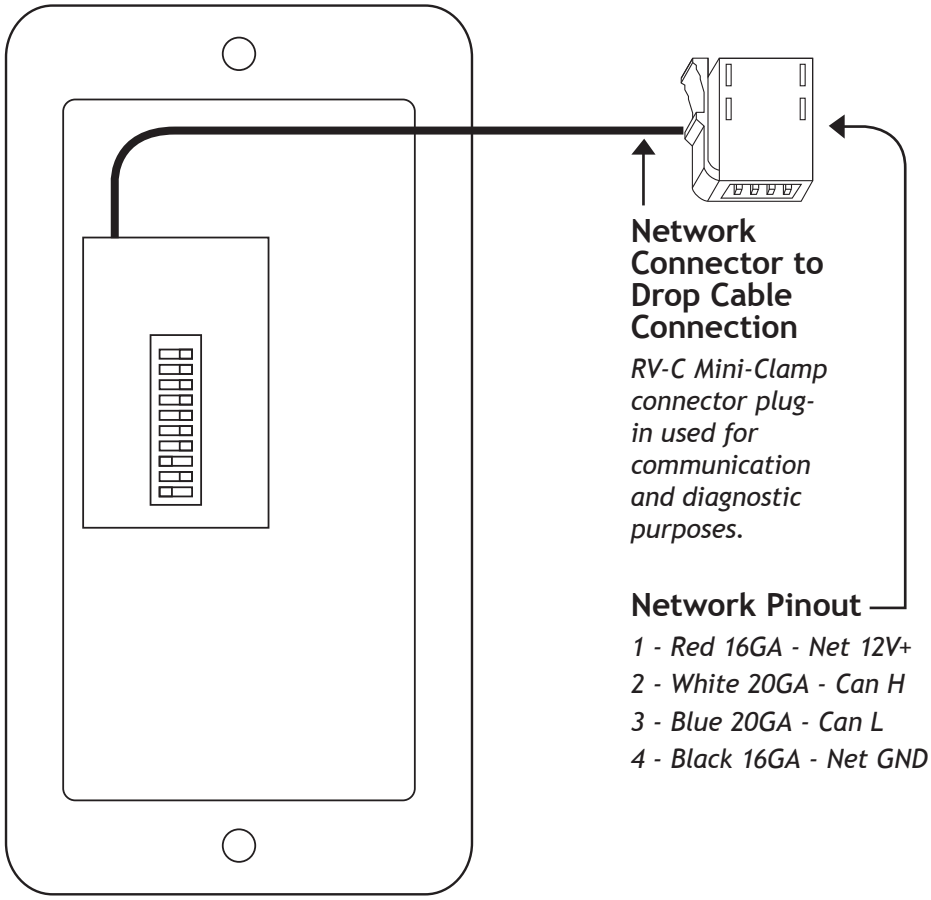
The most diverse line of switches, the SSP06 is available in 5-position, 6-position, 8-position, 10-position, 10-position with LCD screen, 12-position, or 16-position switch panels.

**Status Indicator:**

***NOTE:*** The blue and red status lights found on each switch will indicate if a load or output is on. In the case of shades, shade master, light master or panel lights function, the status backlighting will not change. This is normal.




*Note: If you have worked on this device board for over 15 minutes and have not resolved the problem, call tech support for further assistance.*



**Network Connector to Drop Cable Connection**

*RV-C Mini-Clamp connector plug-in used for communication and diagnostic purposes.*

**Network Pinout**

*1 - Red 16GA - Net 12V+*
*2 - White 20GA - Can H*
*3 - Blue 20GA - Can L*
*4 - Black 16GA - Net GND*

## Part Components

**6 Position Switch Panel Components**

| *Qty.* | *Manu. P/N* | *Description* | *Manufacturer* |
|---|---|---|---|
| 1 | BSSPZN600 | SSP06-06 Switch Panel | Spyder |
| 2 | 640586-1 | 8 POS Inline Mate-N-Lok Plug Housing | Tyco Electronics |
| 1 | 350550-1 | Mate-N-Lok Socket Contact 20-14AWG | Tyco Electronics |
| 1 | 37304-a 165-00E | Mini Clamp W/M SKT 4P Blue for EU | 3M |

## Product Specifications

| Specification | G5 Shade - Spyder Controls P/N |
|---|---|
| *General* | |
| Dimensions (H x W) | 4.13 x 2.69 in. (10.48 x 6.83 cm) |
| Cutout Dimensions (H x W) | 3.13 x 2.25 in. (7.94 x 5.72 cm) |
| Operating Temperature | -4 F to 140 F (-20 C to +60 C) |
| *Electrical* | |
| Input Voltage (Network Bus Supplied) | 9V+ to 16V+ DC |
| Minimum Current (No Outputs On) | 102 mA @ 12V+ DC |

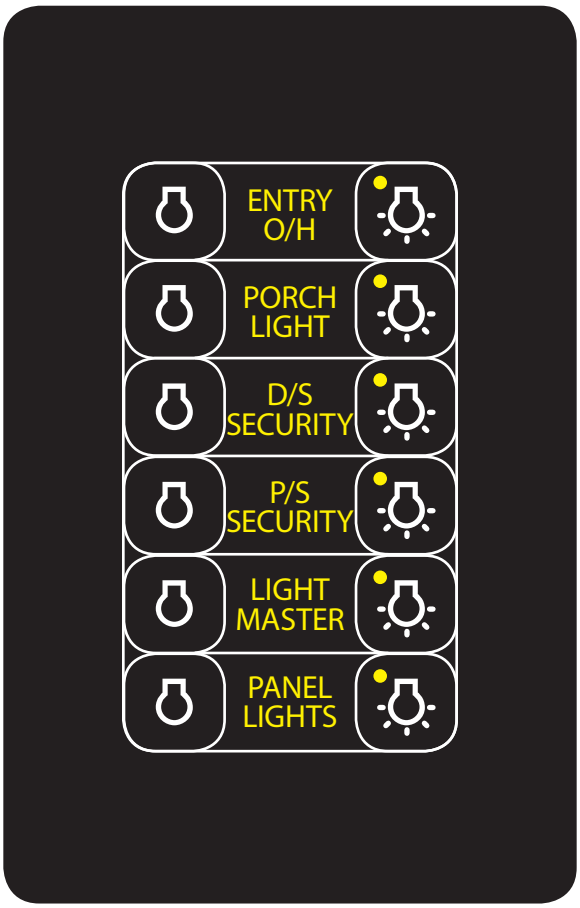
# SSP13-6POS Switch Panel

**Introduction:**

This material provides the technical details for the SSP13 switch series. The clear and brightly backlit labels and raised buttons with symbols make operation very intuitive. Built-in LED indications for each switch provided real-time status feedback for each switch group based on load function. The SSP13 series provides solutions for applications that require elegance and high-end features.

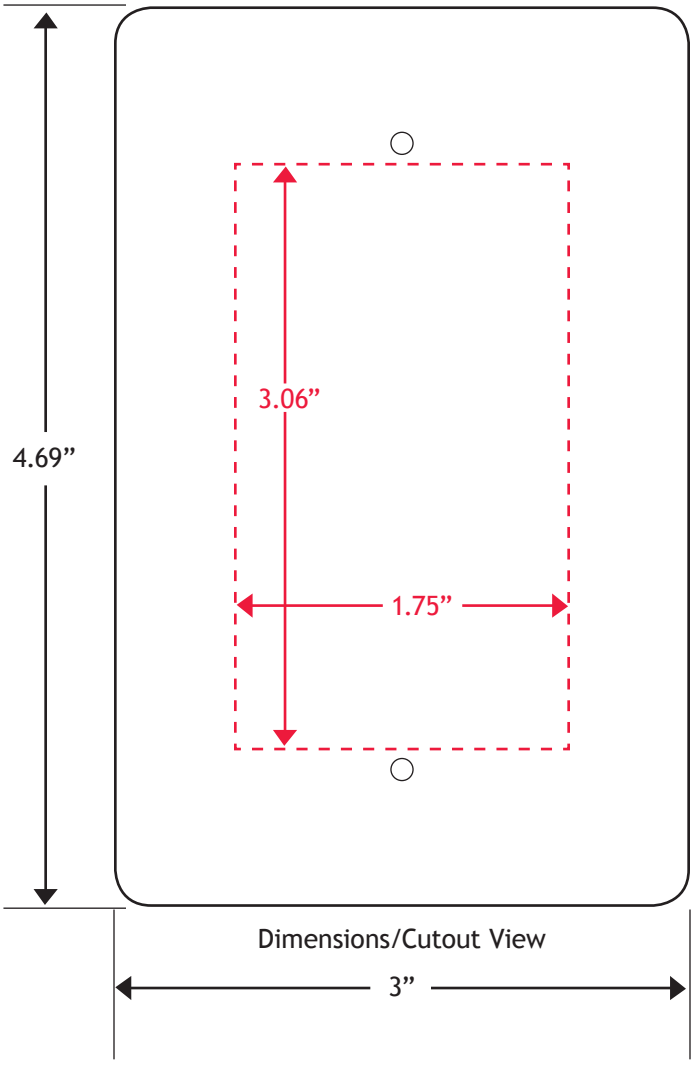
**Status Indicator:**

***NOTE:*** The green status indicators found on each switch will indicate if a load or output is on. In the case of shades, shade master, light master or panel lights function, this status will not activate. This is normal.



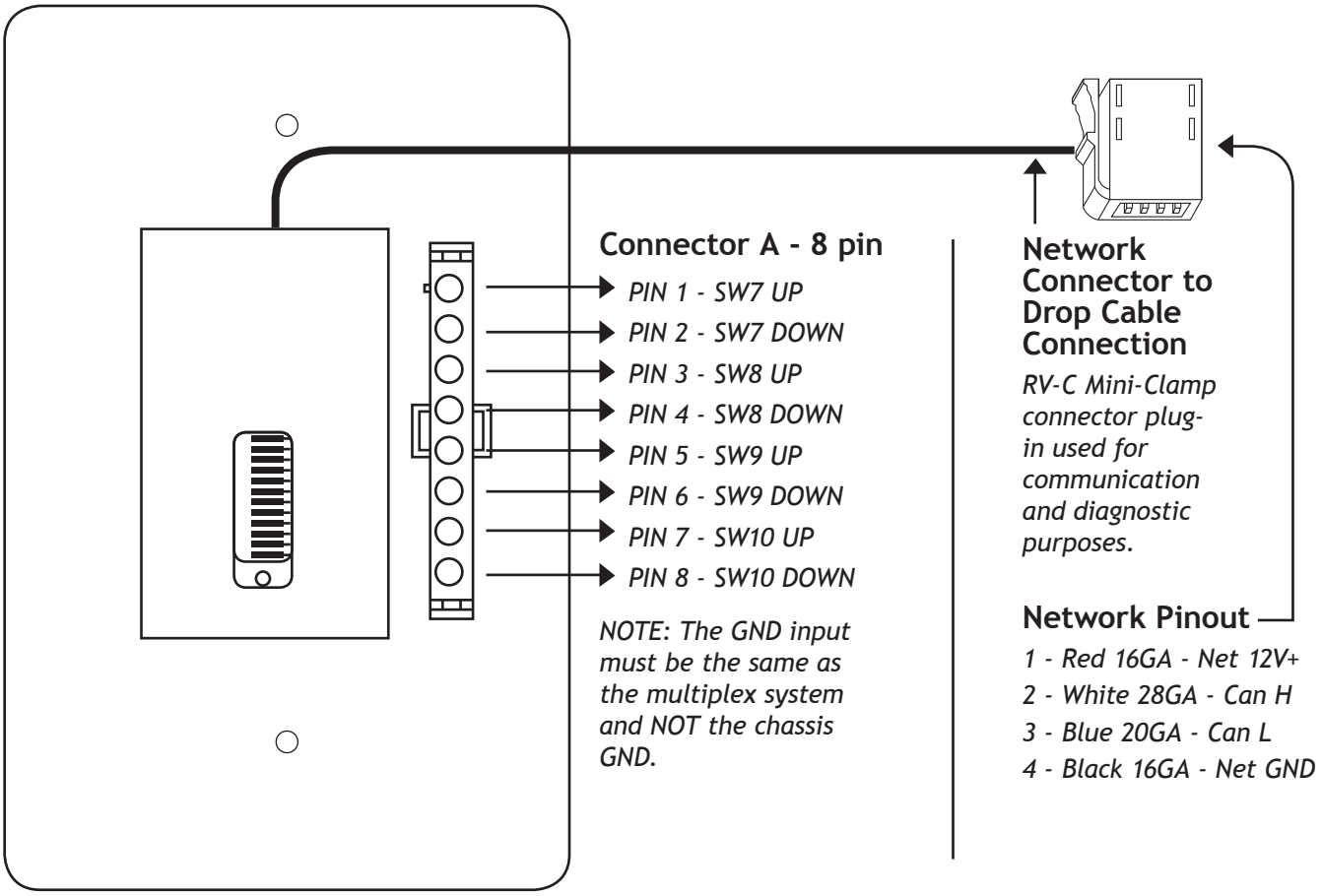

Front View Sample

*NOTE: The cover for each switch panel is removed through inserting a small screw driver or using a finger to gently pry off.*




Dimensions/Cutout View

# SSP13-6POS Switch Panel




## Part Components

**6 Position Switch Panel Components**

| *Qty.* | *Manu. P/N* | *Description* | *Manufacturer* |
|---|---|---|---|
| 1 | BSSPZT8E2A | SSP13-06 Switch Panel | Spyder |
| 2 | 640586-1 | 8 POS Inline Mate-N-Lok Plug Housing | Tyco Electronics |
| 1 | 350550-1 | Mate-N-Lok Socket Contact 20-14AWG | Tyco Electronics |
| 1 | 37304-a 165-00E | Mini Clamp W/M SKT 4P Blue for EU | 3M |

## Product Specifications

| Specification | G5 Shade - Spyder Controls P/N |
|---|---|
| *General* | |
| Dimensions (H x W x D) | 3.0 x 4.69 x .077 in. (7.62 x 11.91 x 1.94 cm) |
| Cutout Dimensions (H x W) | 1.75 x 3.06 in. (4.45 x 7.77 cm) |
| Mount Depth (from Mounting surface) | 0.77 or 1.5 in. with optional Mate-N-Lok connector (1.94 or 3.81 cm) |
| Operating Temperature | -4 F to 140 F (-20 C to +60 C) |
| *Electrical* | |
| Input Voltage (Network Bus Supplied) | 9V+ to 16V+ DC |
| Minimum Current (No Outputs On) | 102 mA @ 12V+ DC |

# SSP13 - 10 POS Switch Panel

## Introduction:

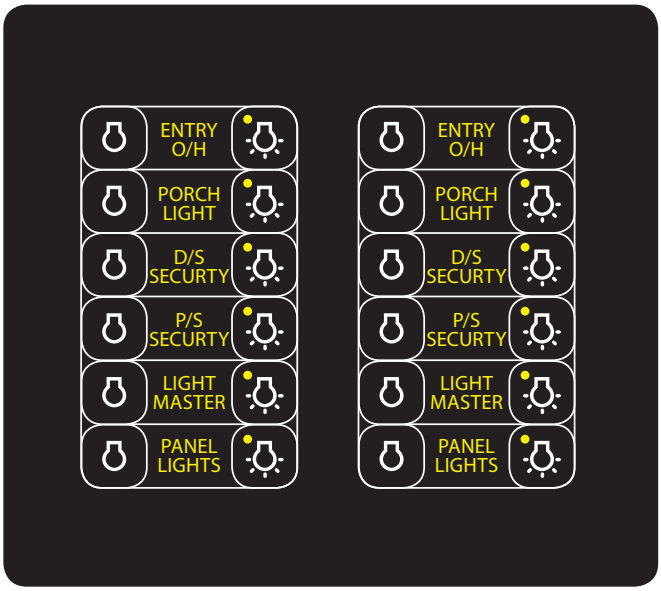
This material provides the technical details for the SSP13 switch series. The clear and brightly backlit labels and raised buttons with symbols make operation very intuitive. Built-in LED indications for each switch provided real-time status feedback for each switch group based on load function. The SSP13 series provides solutions for applications that require elegance and high-end features.

## Status Indicator:

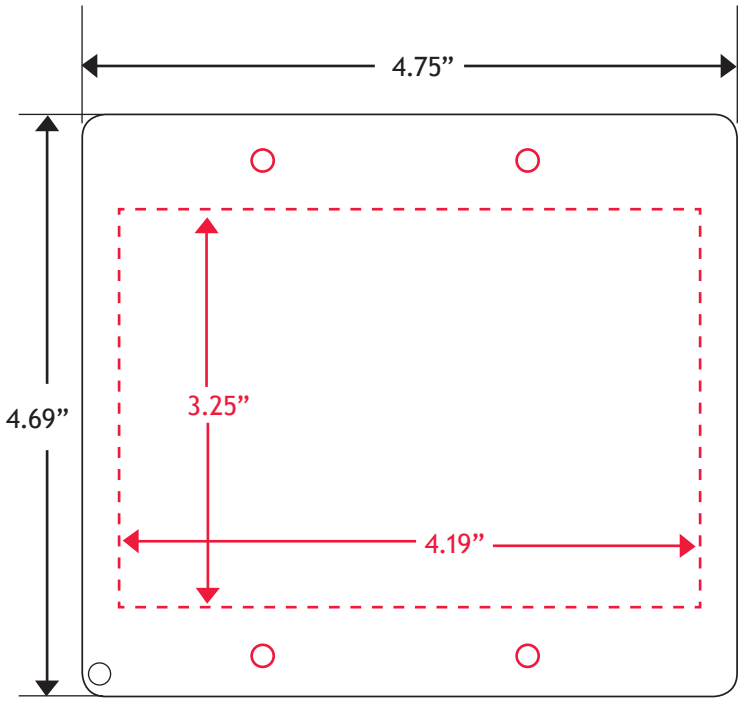
***NOTE:*** The green status indicators found on each switch will indicate if a load or output is on. In the case of shades, shade master, light master or panel lights function, this status will not activate. This is normal.

*Note: If you have worked on this device board for over 15 minutes and have not resolved the problem, call tech support for further assistance.*

Front View Sample

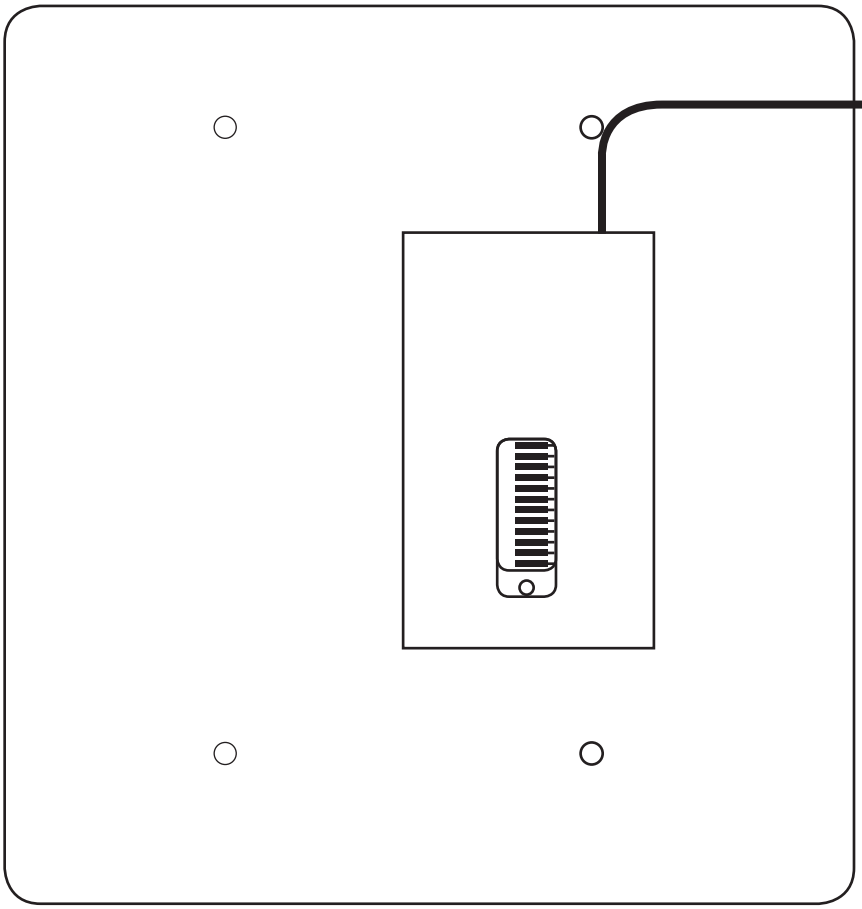



*NOTE: The cover for each switch panel is removed through inserting a small screw driver or using a finger to gently pry off.*




Dimensions/Cutout View

# SSP13 - 10 POS Switch Panel



**Network Connector to Drop Cable Connection**

*RV-C Mini-Clamp connector plug-in used for communication and diagnostic purposes.*

**Network Pinout**

*1 - Red 16GA - Net 12V+*
*2 - White 20GA - Can H*
*3 - Blue 20GA - Can L*
*4 - Black 16GA - Net GND*

## Part Components

**10 Position Switch Panel Components**

| *Qty.* | *Manu. P/N* | *Description* | *Manufacturer* |
|---|---|---|---|
| 1 | BSSPZU8E2 | SSP13-10 Switch Panel | Spyder |
| 1 | 37304-A165-00E | Mini Clamp W/M SKT 4P Blue for EU | 3M |

## Product Specifications

| Specification | SSP13 - Spyder Controls P/N |
|---|---|
| *General* | |
| Dimensions (H x W x D) | 4.75 x 4.69 x .077 in. (12.07 x 11.91 x 1.94 cm) |
| Cutout Dimensions (H x W) | 4.19 x 3.25 in. (10.64 x 8.26 cm) |
| Mount Depth (from Mounting surface) | 0.77 or 1.5 in. with optional Mate-N-Lok connector (1.94 or 3.81 cm) |
| Operating Temperature | -4 F to 140 F (-20 C to +60 C) |
| *Electrical* | |
| Input Voltage (Network Bus Supplied) | 9V+ to 16V+ DC |
| Minimum Current (No Outputs On) | 102 mA @ 12V+ DC |

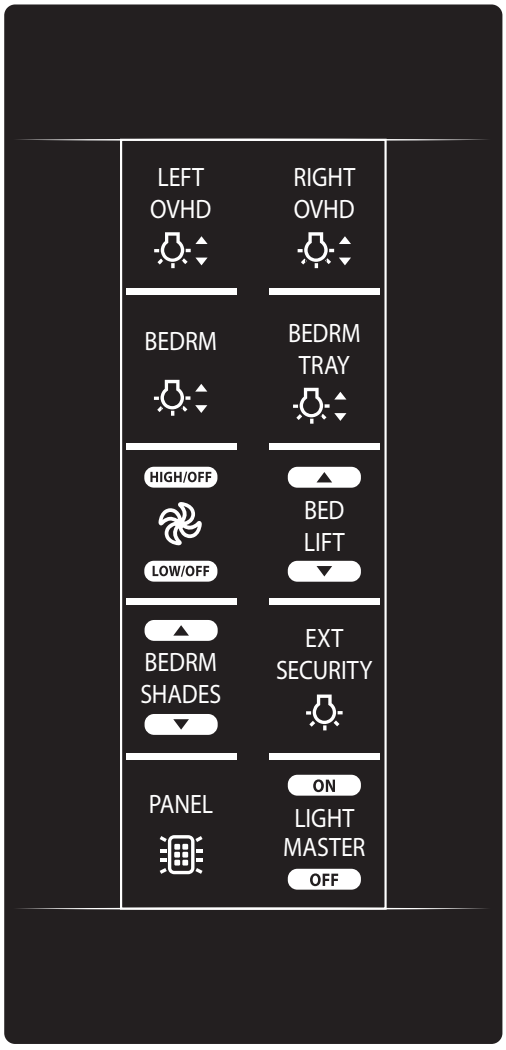
# SSP14-10POS Switch Panel

**Introduction:**

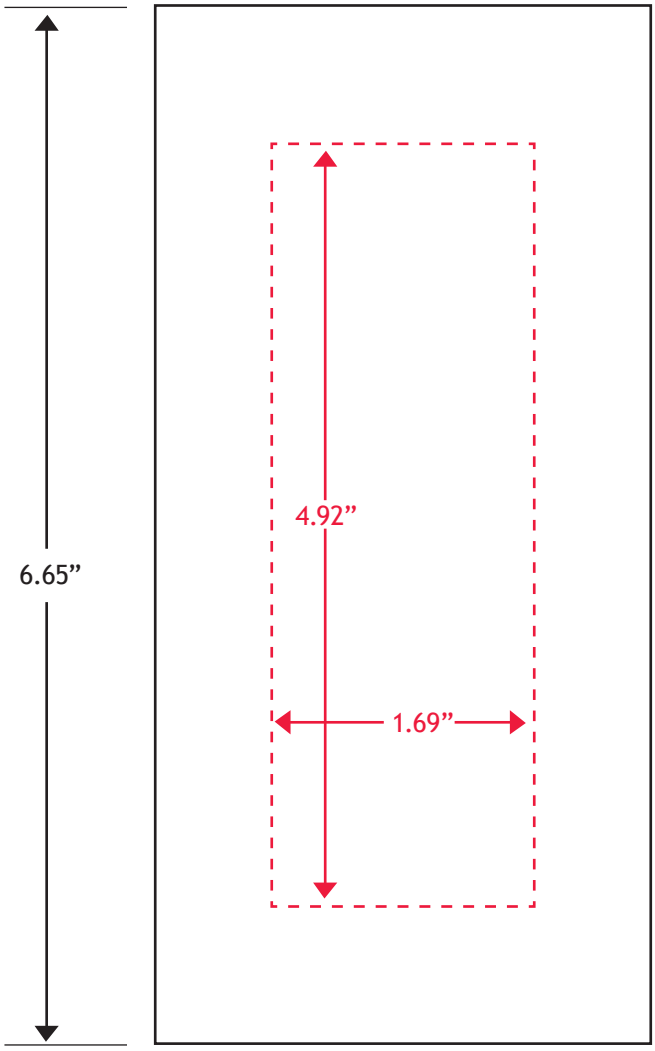
This material provides the technical details for the SSP14 switch series. The clear and brightly backlit labels and raised buttons with symbols make operation very intuitive. Built-in LED indications for each switch provided real-time status feedback for each switch group based on load function. The SSP14 series provides solutions for applications that require elegance and high-end features.

**Status Indicator:**

***NOTE:*** The blue and white status lights found on each switch will indicate if a load or output is on. Normally, backlighting is white if the circuit is off and blue if the circuit is on. In the case of shades, shade master, light master or panel lights function, the status backlighting will not change. This is normal.



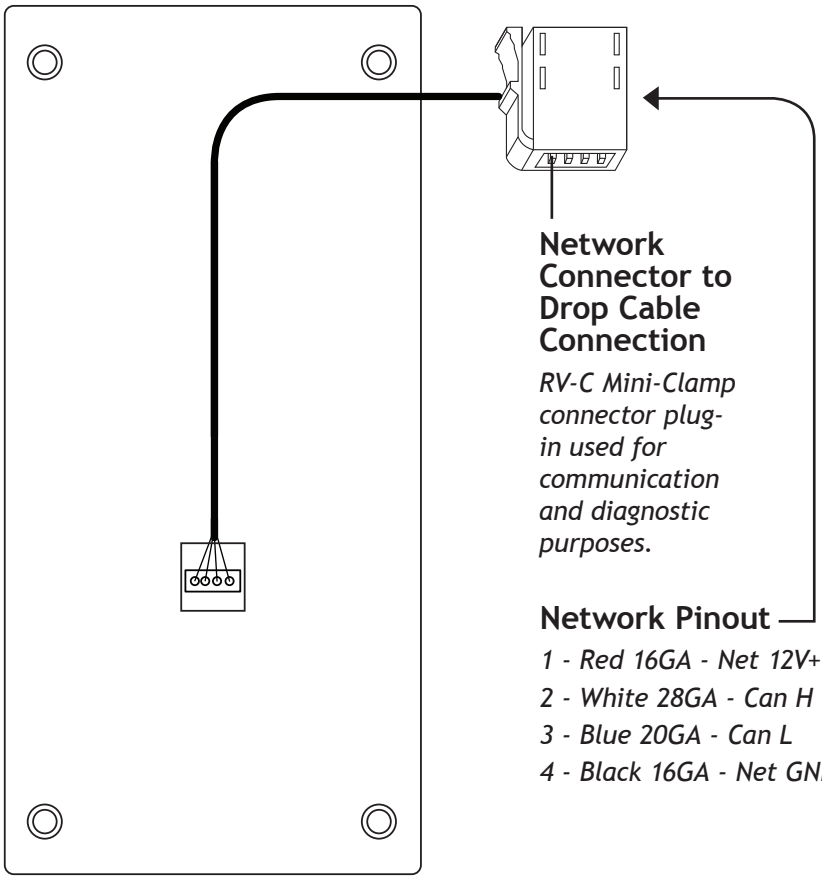

Front View Sample




Dimensions/Cutout View

*NOTE: The cover for each switch panel is removed through inserting a small screw driver or using a finger to gently pry off.*

# SSP14-10POS Switch Panel



**Network Connector to Drop Cable Connection**

*RV-C Mini-Clamp connector plug-in used for communication and diagnostic purposes.*

**Network Pinout**

*1 - Red 16GA - Net 12V+*
*2 - White 28GA - Can H*
*3 - Blue 20GA - Can L*
*4 - Black 16GA - Net GND*

*Note: If you have worked on this device board for over 15 minutes and have not resolved the problem, call tech support for further assistance.*

## Part Components

**10 Position Switch Panel Components**

| *Qty.* | *Manu. P/N* | *Description* | *Manufacturer* |
|---|---|---|---|
| 1 | BSSPZW400 | SSP14-10 Switch Panel | Spyder |
| 2 | 640586-1 | 8 POS Inline Mate-N-Lok Plug Housing | Tyco Electronics |
| 1 | 350550-1 | Mate-N-Lok Socket Contact 20-14AWG | Tyco Electronics |
| 1 | 37304-a 165-00E | Mini Clamp W/M SKT 4P Blue for EU | 3M |

## Product Specifications

| Specification | SSP14 - Spyder Controls P/N |
|---|---|
| ***General*** | |
| Dimensions (H x W) | 3.19 x 6.65. in. (8.10 x 16.89 cm) |
| Cutout Dimensions (H x W) | 1.69 x 4.92 in. (4.29 x 12.49 cm) |
| Mount Depth (from Mounting surface) | 0.77 or 1.5 in. with optional Mate-N-Lok connector (1.94 or 3.81 cm) |
| Operating Temperature | -4 F to 140 F (-20 C to +60 C) |
| ***Electrical*** | |
| Input Voltage (Network Bus Supplied) | 9V+ to 16V+ DC |
| Minimum Current (No Outputs On) | 102 mA @ 12V+ DC |

# SSP15 Switch Panel

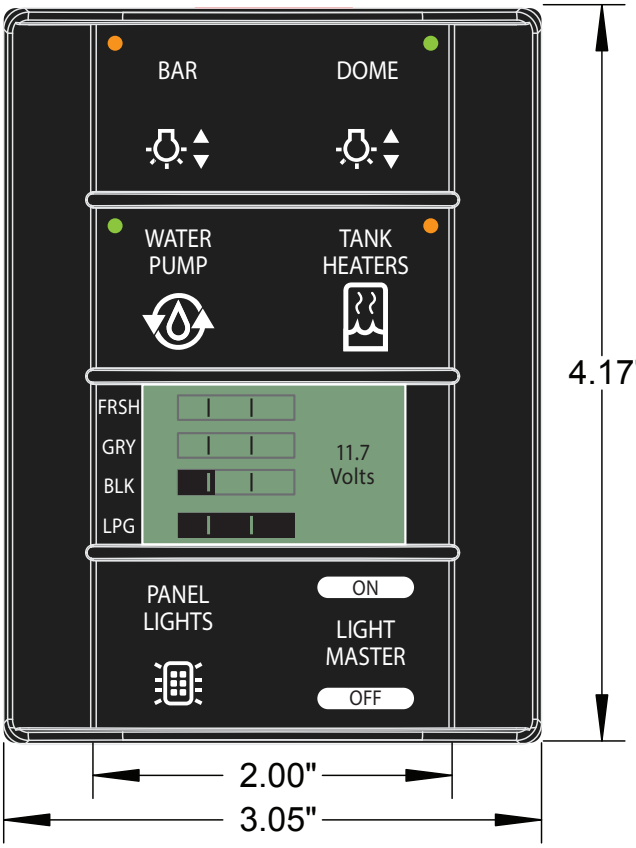
**Introduction:**

This material provides the technical details for the SSP15 switch series. The clear and brightly backlit labels and raised buttons with symbols make operation very intuitive. Built-in LED indications for each switch provided real-time status feedback for each switch group based on load function. The SSP14 series provides solutions for applications that require elegance and high-end features.

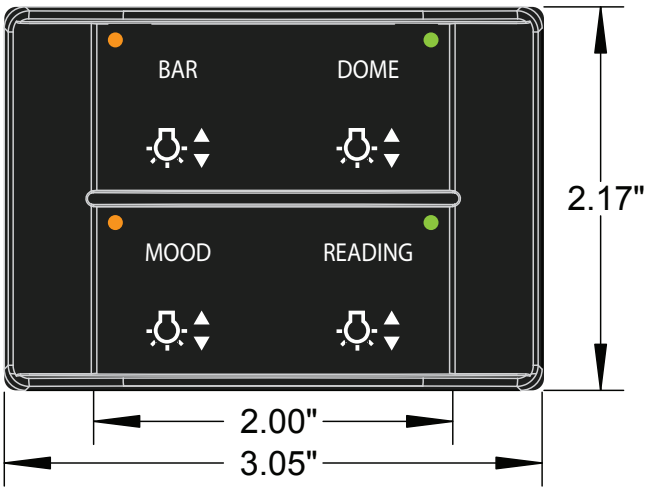
The SSP15 switches are available as 4-position, 6-position with LCD screen, 6-position with two rocker switches, or 8-position switch panels.

**Status Indicator:**

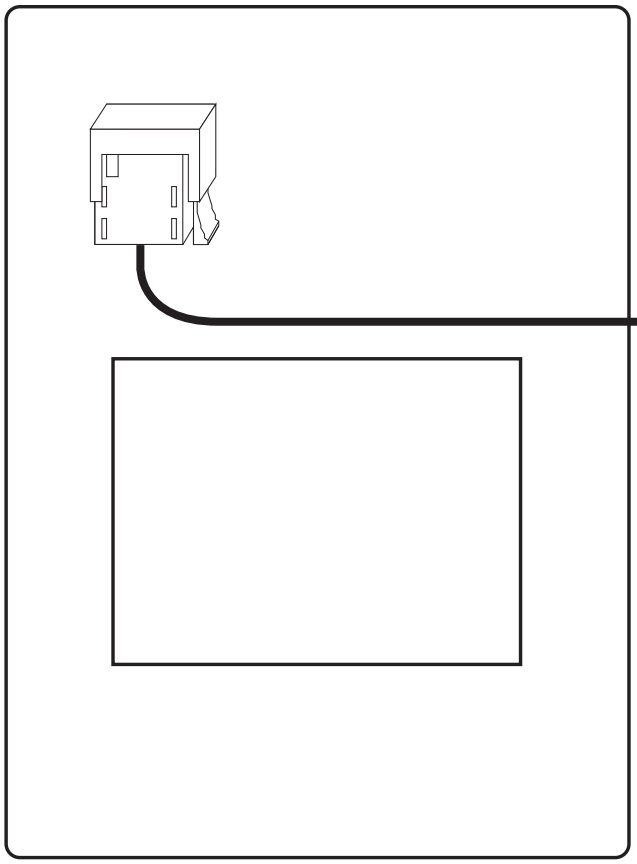
***NOTE:*** The orange and green status lights found on each switch will indicate if a load or output is on. Normally, backlighting is orange if the circuit is off and green if the circuit is on. In the case of shades, shade master, light master or panel lights function, the status backlighting will not change. This is normal.




*Note: If you have worked on this device board for over 15 minutes and have not resolved the problem, call tech support for further assistance.*



# SSP15-8POS Switch Panel




*RV-C Mini-Clamp connector plug-in used for communication and diagnostic purposes.*

*Note: If you have worked on this device board for over 15 minutes and have not resolved the problem, call tech support for further assistance.*

**Network Pinout**

*1 - Red 16GA - Net 12V+*
*2 - White 28GA - Can H*
*3 - Blue 20GA - Can L*
*4 - Black 16GA - Net GND*

## Part Components

**8 Position Switch Panel Components**

| *Qty.* | *Manu. P/N* | *Description* | *Manufacturer* |
|---|---|---|---|
| 1 | BSSPZY800 | SSP15-8 Switch Panel | Spyder |
| 2 | 640586-1 | 8 POS Inline Mate-N-Lok Plug Housing | Tyco Electronics |
| 1 | 350550-1 | Mate-N-Lok Socket Contact 20-14AWG | Tyco Electronics |
| 1 | 37304-a 165-00E | Mini Clamp W/M SKT 4P Blue for EU | 3M |

## Product Specifications

| Specification | SSP14 - Spyder Controls P/N |
|---|---|
| ***General*** | |
| Dimensions (H x W x D) | 3.05 x 4.17 x 0.53 in. (7.75 x 10.59 x 1.35 cm) |
| Cutout Dimensions (H x W) | 2.00 x 4.17 in. (5.08 x 10.59 cm) |
| Mount Depth (from Mounting surface) | 0.53 in. with optional Mate-N-Lok connector (1.35 cm) |
| Operating Temperature | -4 F to 140 F (-20 C to +60 C) |
| ***Electrical*** | |
| Input Voltage (Network Bus Supplied) | 9V+ to 16V+ DC |
| Minimum Current (No Outputs On) | 102 mA @ 12V+ DC |

# Switch Panel Issues

***NOTE:*** *The white switch panel backlight that illuminates the label text can be turned ON and OFF or DIMMED using the PANEL LIGHTS buttons located at the Passenger seat area and in the bedroom.*

***NOTE:*** *Buttons that are controlling circuits such as LIGHT MASTER, SHADES, and PANEL LIGHTS typically DO NOT use the green indicator LED.*

***NOTE:*** *The G5 Shade modules are only intended to be used with the shade motors that implement their own internal limits for the UP and DOWN directions of the shade travel.*

**A. Backlighting is OFF on ALL switch panels and cannot be turned ON**

1. Verify the voltage at the G5A control panel
2. Verify that the 5A network fuse on the G5A panel is good.
3. Press the ON button for PANEL LIGHTS *(there are typically at least 2 switch panels with this button - one near the passenger and one in the bedroom area)*

**B. Backlighting is always ON on ALL switch panels *(or a large percentage)* and cannot be turned OFF using the PANEL LIGHTS buttons.**

1. Press the PANEL LIGHTS buttons ON and OFF at all locations *(typically there are buttons located on switch panels in the Passenger seat area and in the bedroom)*
    i. If the PANEL LIGHTS button at a single location is the issue, proceed to step "E" below.
2. Cycle the 12V power by turning OFF/ON the 12V MASTER rocker switch at the passenger console and then re-try the PANEL LIGHTS buttons.
3. Check the network status LED's are RED or RED/ORANGE, proceed to NETWORK TROUBLESHOOTING page.

**C. Backlighting is always OFF on a specific switch panel and none of the buttons on the switch panel respond.**

1. Remove the switch panel and verify that the switch panel is plugged in to the network connector.
2. Unplug the switch panel and plug it into the NETWORK PORT on the front of the G5A Panel.
    i. If the switch panel does not light up and the Network Status LED on the back remains OFF, check the connector and pigtail wire on the switch panel.
        -Replace the switch panel if simple repairs cannot be made.
    ii. If the switch panel works properly when plugged in at the G5A panel location, refer to the Network Troubleshooting page *(issue with Drop Cable/Connector)*.

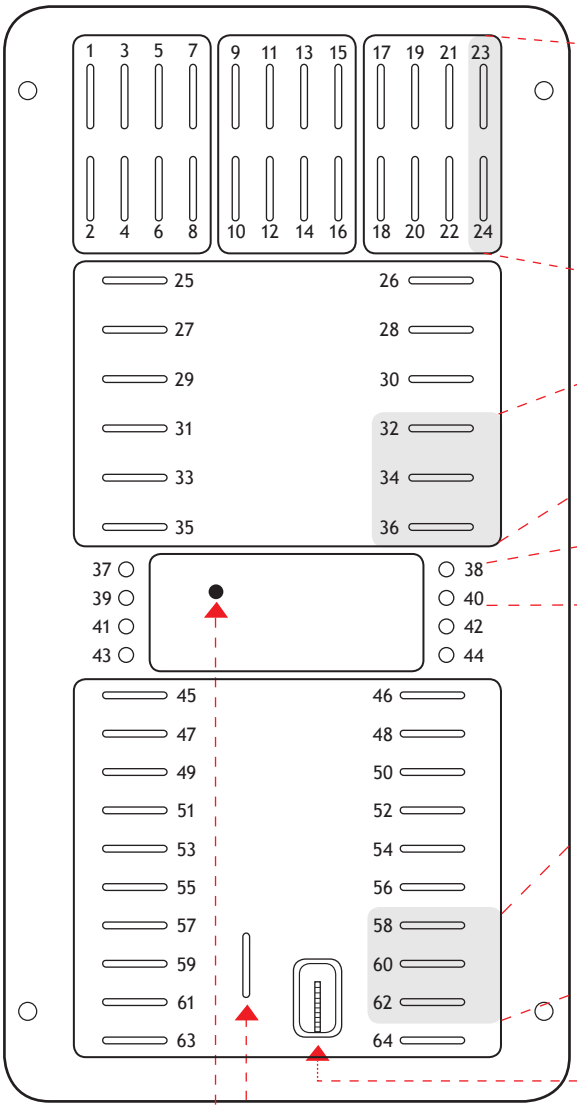
D. **Backlighting is ON on a specific switch panel, but NONE of the switches respond and NONE of the green indicator LED's come on.**

1. Remove the switch panel and check the network status LED on the back side:
    i. If the status LED is RED or RED/ORANGE, proceed to NETWORK TROUBLESHOOTING page.
    ii. If the status LED of GREEN or GREEN/ORANGE, verify the correct DIP switch setting on the rear of the switch panel.
    iii. If the status LED is FLASHING GREEN, verify the switch panel pigtail and connector and the refer to the Network Troubleshooting page.
2. If the status LED is solid green, the DIP switch setting is correct and the switches still do not respond, replace the switch panel.

E. **A specific button on a switch panel does NOT respond when pressed *(all other buttons on the switch panel function properly)***

1. Attempt to locate a button on a different switch panel that controls the same light or shade and see if they work from that different location *(ie - Another SALON LIGHTS button)*
    i. If the light or shade DOES NOT work from a different location either, proceed to the Control Panel issue or the Shade Control Issue Troubleshooting Guide.
    ii. If the light or shade works from the second location, replace the switch panel with the button that is not working.
2. If there is only one button in the whole coach that controls that specific light or shade, locate the appropriate LIGHT MASTER or SHADE MASTER button to see if the light or shade turns ON or OFF from that location.
    i. If the light or shade DOES NOT work from a MASTER button either, proceed to the Control Panel issue or the Shade Control Issue Troubleshooting Guide.
    ii. If the light or shade works from the MASTER button, replace the switch panel with the button that is not working.

# G5A Load Center

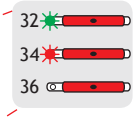



***Channels 1-24 Unswitched/Fused Outputs***


RED Indicator On = Fuse Blown
RED Indicator Off = Fuse good or no active load connected.

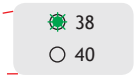
Replacement Fuse - Mini-Blind Type
*(Littlefuse 257 series or Bussman ATM series)*
15A Max Fuse - Channels 1-8 & 17-24
30A Max Fuse - Channels 9-18

***Channels 25-36 Dimming Outputs***



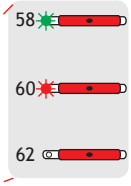

GREEN Indicator = Channel On, Fuse Good
RED Indicator = Channel On, Fuse Blown
No Indicator = Channel Off

***Channels 37-44 AUX Relay Outputs***




GREEN Indicator = Channel On
No Indicator = Channel Off
*NOTE: A built-in 3A auto-reset PTC fuse for each channel provides over-current protection. The indicator DOES NOT show when this fuse is open or in short-circuit condition.*

***Channels 45-64 Relay Outputs***




GREEN Indicator = Channel On, Fuse Good
RED Indicator = Channel On, Fuse Blown
No Indicator = Channel Off

Replacement Fuse - Mini-Blind Type
*(Littlefuse 257 series or Bussman ATM series)*

**Net Port -** RV-C Mini-Clamp connector plug-in used for upload and diagnostic purposes. *(Firefly Integrations/Spyder Controls USB-CAN adapter and software required)*

**Net Fuse 5A Max -** RV-C network power. This fuse provides power to the network powered devices ONLY *(typically all switch panels). NOTE: This fuse does not have an indicator light for fuse status.*

*Note: If you have worked on the main distribution board for over 30 minutes and have not resolved the problem, call tech support for further assistance.*

**Panel Network Status Indicator**

✸ / ○ Fast flashing Green Light (4 times/sec.) - Device is attempting to make initial connection and claim a Network address.

✸ / ○ Slow Flashing Green Light (1 time/sec.) - Device was online but has not seen a valid network address for 5 seconds.

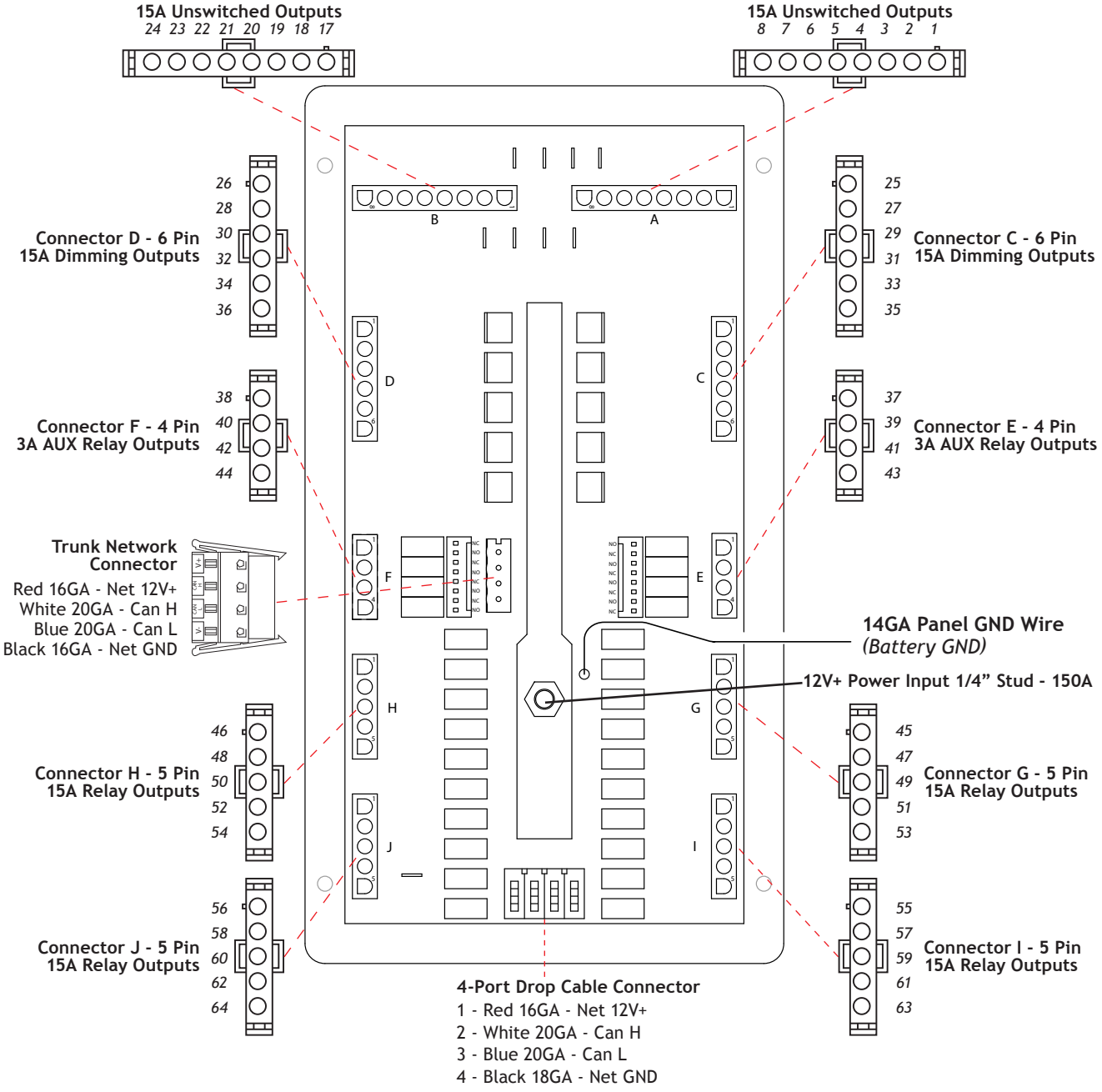
✸ Solid Green - Device is connected to network and communicating properly

✸ Solid Red - Device has gone offline and is not connected to a network.

✸ / ✸ Alternating Red & Orange - Device has gone offline and is attempting to re-connect (within 30 seconds)

✸ / ✸ Alternation Green & Orange - Device is currently online but has gone offline 2 or more times.

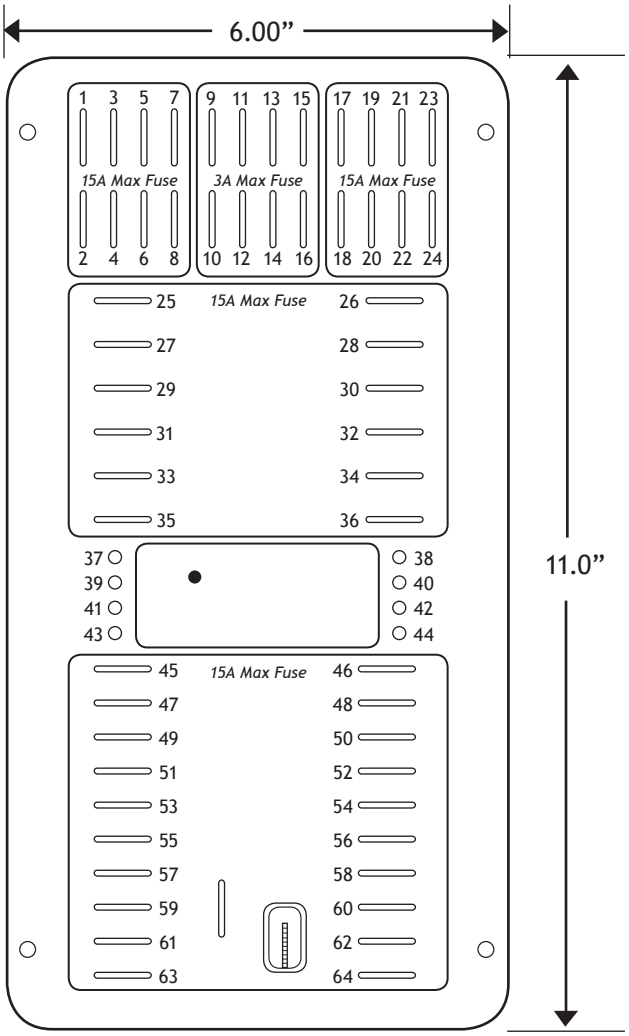
# G5A Load Center




## G5 DC Load Panel Components

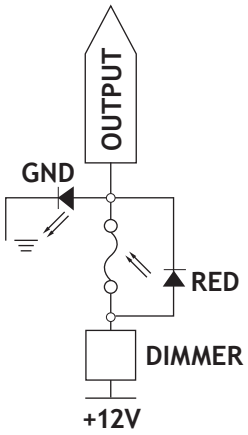
| Qty. | Manu. P/N | Description | Manufacturer |
|---|---|---|---|
| 1 | BENCZC200 | G5 DC Load Center | Spyder |
| 3 | 640586-1 | 8 POS Inline Mate-N-Lok Plug Housing | Tyco Electronics |
| 2 | 640585-1 | 6 POS Inline Mate-N-Lok Plug Housing | Tyco Electronics |
| 4 | 1-480763-0 | 5 POS Inline Mate-N-Lok Plug Housing | Tyco Electronics |
| 48 | 350550-1 | Mate-N-Lok Plug Housing | Tyco Electronics |
| 8 | MISC | .250" Female Spade Terminals | Misc |
| 1 | 231-304/037-000 | 4CKT 5.08MM Fem Conn Rohs | Wago |
| 1 | 37304-A165-000E | Mini Clamp W/M SKT 4P Blue For EU | 3M |

# G5A Load Center

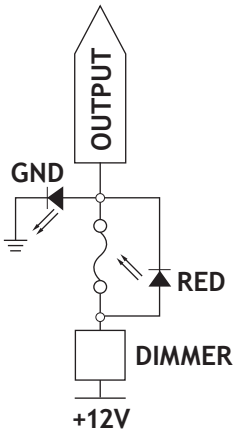



## LOAD CENTER OUTPUT SCHEMATICS

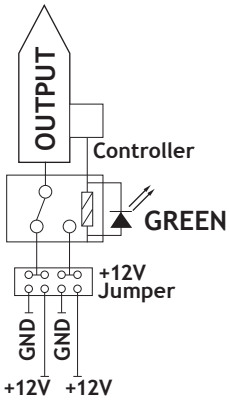
### Switched Dimmer



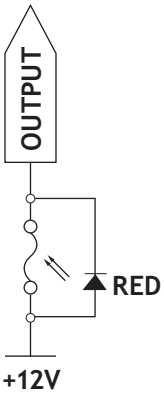

### Switched Relay




### Switched AUX Relay




### Unswitched Fused Output




| G5A Load Center - Firefly Integrations / Spyder Controls P/N | |
|---|---|
| **Specifications** | |
| ***General*** | |
| Dimensions (H x W x D) | 11.0 x 6.0 x 2.0 in. (27.94 x 15.24 x 5.08 cm) |
| Cutout Dimensions (H x W) | 10.0 x 5.0 in. (25.4 x 12.7 cm) |
| Mount Depth (from Mounting surface) | 2.0 in. Minimum with Mate-N-Lok Connectors in place (5.08 Cm.) |
| Operating Temperature | -4 F to 140 F (-20 C to +60 C) |
| ***Electrical*** | |
| Input Voltage (Network Bus Supplied) | 9V+ to 16V+ DC |
| Minimum Current (No Outputs On) | 102 mA @ 12V+ DC |
| Unswitched connection channels (Max) | 16 @ 15A/Channel, 8 @ 30A |
| Dimmer connection channels (Max) | 12 @ 10A/Channel |
| AUX Relay Channels (Max) | 8 @ 3A/Channel |
| High Current Relay Channels (Max) | 20 @ 10A/Channel |
| Module Maximum Current Rating | 150A |

# Troubleshooting G5A Panel

**A. A light circuit/channel stays ON constantly and cannot be turned off by the switch panel**

1. At the G5A control panel, check to see if the GREEN indicator LED for that circuit is constantly ON - even when the assigned switch is turned ON and OFF?:
    i. If LED is ALWAYS ON - cycle the 12V Master power OFF then ON (switch located at the passenger console).
    *Note: Before pressing ANY Firefly Integrations/Spyder Controls buttons, return to the G5A panel and check the state of the GREEN indicator LED for the circuit in question.*
        a. If LED is still ON, unplug the assigned connector on the rear of the G5A for the circuit/channel in question and test the voltage on the output.
            - If the GREEN LED is still on an the output is still ON, replace the G5A panel.
            - If the GREEN LED is now OFF and there is no output voltage present, check the load or the wiring between the G5A panel output and the load.
        b. If the LED is now OFF, return to the switch panel/button for the circuit in question and verify if it is now working.
    ii. If the GREEN indicator LED turns ON and OFF, verify the wiring to the load or the load itself.

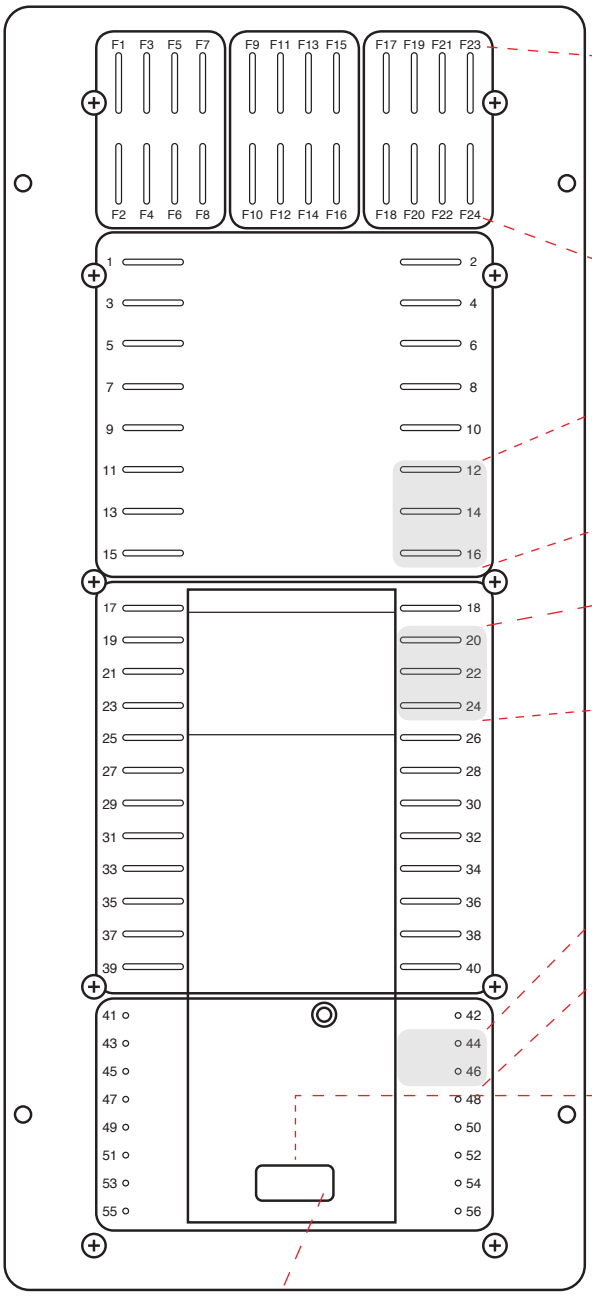
**B. A light circuit/channel stays OFF constantly and cannot be turned on by the switch panel**

1. Press the ON button on the switch panel that controls the circuit in question. Does the status LED on that button turn ON?
    i. If YES - Proceed to the G5A control panel and check the status of the indicator LED for that specific fuse or circuit. What color is it?
        a. RED - Replace the fuse and verify if the circuit now works properly
        b. GREEN - Check the voltage for the assigned pin/wire coming out of the assigned output connector on the rear of the G5A panel
            - If there is voltage, check the wiring between the G5A panel and the load or the load itself
            - If there is NO voltage, check for a loose or damaged fuse or fuse holder.
        c. NO LED illuminated - Re-Verify the switch panel button LED is still ON and verify that you are looking at the correct circuit on the G5A panel. If this checks out, replace the G5A
    ii. If NO - Verify that the switch panel and G5A panel is online by looking at the status of the Network LED
        i. Network LED is RED or RED/ORANGE - Proceed to Network troubleshooting guide
        ii. Network LED's are all SOLID GREEN - Remove the switch panel and plug it directly into the front of the G5A panel NETWORK PORT
            - If the LED indicator on the switch panel button DOES turn ON when the ON button is pressed, proceed to the Network Wiring Troubleshooting guide.
            - If the LED indicator on the switch panel button still does not turn ON when the ON button is pressed, replace the switch panel.

**C. A DIMMING light circuit/channel is always on dimly**

1. Press and HOLD the ON button to see if the light gets brighter and then HOLD the OFF button to see if the light gets dimmer. Then press the OFF button to see if the light turns OFF.
    i. If lights are working as described above, everything is working properly.
    ii. If the lights dim up and down but do not turn OFF, proceed to step #2 below.
2. At the G5A control panel, check to see if the GREEN indicator LED for that circuit/channel is constantly ON - even when the assigned switch is turned ON and OFF?
    i. If LED is ALWAYS ON - Cycle the 12V Master power OFF then ON *(switch located at the passenger console)*. BEFORE pressing ANY Firefly Integrations/Spyder Controls buttons, return to the G5A panel and check the state of the GREEN indicator LED for the circuit in question.
        a. If LED is still ON, unplug the connector on the rear of the G5A for the circuit/channel in question and test the voltage on the output.
            - If the GREEN LED is still on and the output is still ON, replace the G5A panel.
            - If the GREEN LED is now OFF and there is no output voltage present, check the load or the wiring between the G5A panel output and the load.
        b. If the LED is now OFF, return to the switch panel/button for the circuit in question and verify if it is now working.
    ii. If the GREEN indicator LED turns ON and OFF, verify the wiring to the load or the load itself.

# G5D Load Center

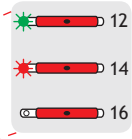



***Channels F1-F24 Unswitched/Fused Outputs***


RED Indicator On = Fuse Blown
RED Indicator Off = Fuse good or no active load connected.

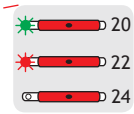
Replacement Fuse - Mini-Blind Type
*(Littlefuse 257 series or Bussman ATM series)*
15A Max Fuse - Channels F1-F8 & F17-F24
30A Max Fuse - Channels F9-F18

***Channels 1-16 Dimming Outputs***




GREEN Indicator = Channel On, Fuse Good
RED Indicator = Channel On, Fuse Blown
ORANGE Indicator = Channel On, No Fuse in Place
No Indicator = Channel Off

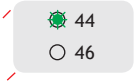
***Channels 17-40 Relay Outputs***




GREEN Indicator = Channel On, Fuse Good
RED Indicator = Channel On, Fuse Blown
ORANGE Indicator = Channel On, No Fuse in Place
No Indicator = Channel Off

Replacement Fuse - Mini-Blind Type
*(Littlefuse 257 series or Bussman ATM series)*

***Channels 41-56 AUX Relay Outputs***




GREEN Indicator = Channel On
No Indicator = Channel Off
*NOTE: A built-in 3A auto-reset PTC fuse for each channel provides over-current protection. The indicator DOES NOT show when this fuse is open or in short-circuit condition.*

**Net Port -** RV-C Mini-Clamp connector plug-in used for upload and diagnostic purposes. *(Firefly Integrations/Spyder Controls USB-CAN adapter and software required)*

*Note: If you have worked on the main distribution board for over 30 minutes and have not resolved the problem, call tech support for further assistance.*

**Panel Network Status Indicator**

✸ / ○ Fast flashing Green Light (4 times/sec.) - Device is attempting to make initial connection and claim a Network address.

✸ / ○ Slow Flashing Green Light (1 time/sec.) - Device was online but has not seen a valid network address for 5 seconds.

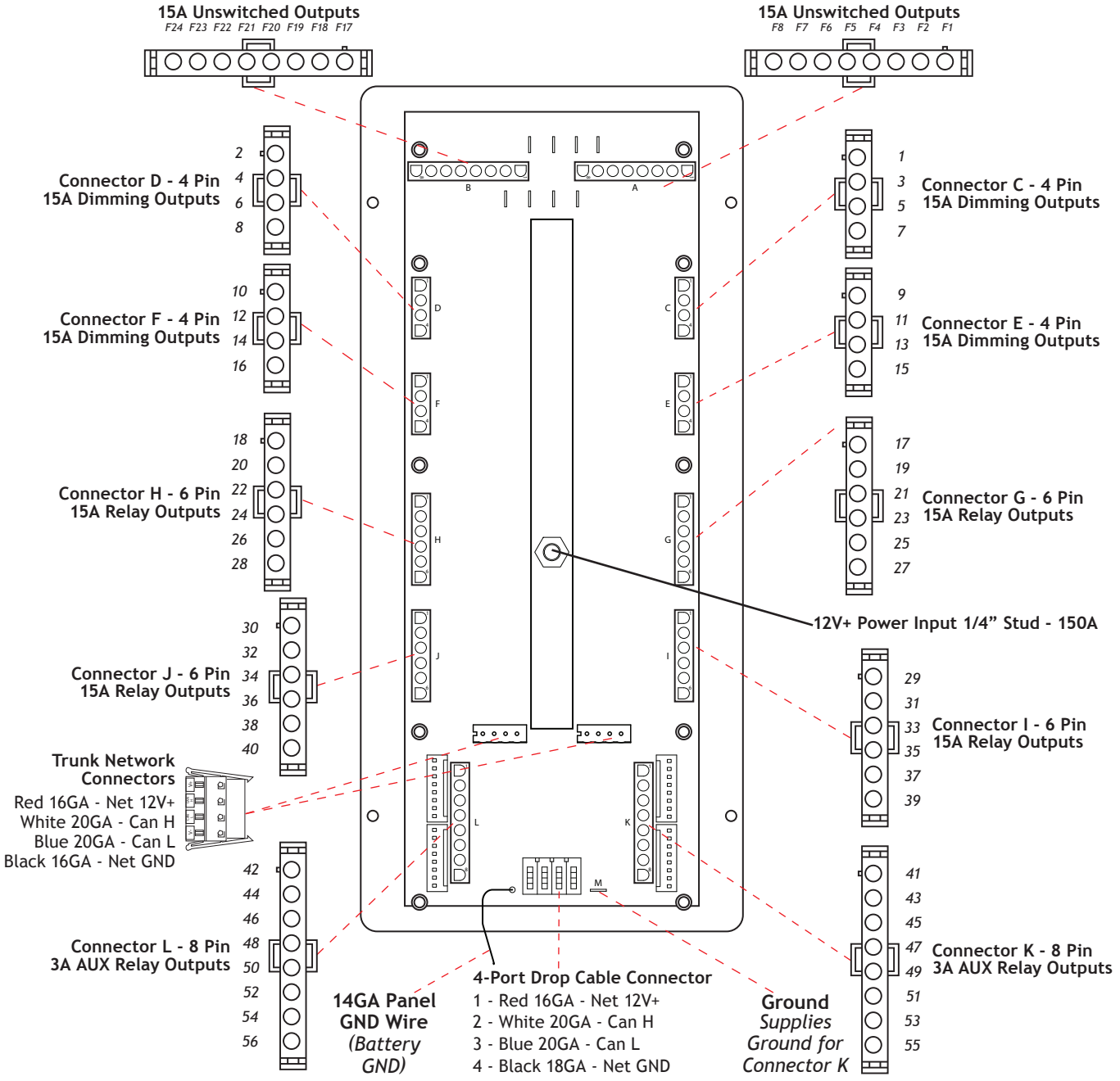
✸ Solid Green - Device is connected to network and communicating properly

✸ Solid Red - Device has gone offline and is not connected to a network.

✸ / ✸ Alternating Red & Orange - Device has gone offline and is attempting to re-connect (within 30 seconds)

✸ / ✸ Alternation Green & Orange - Device is currently online but has gone offline 2 or more times.

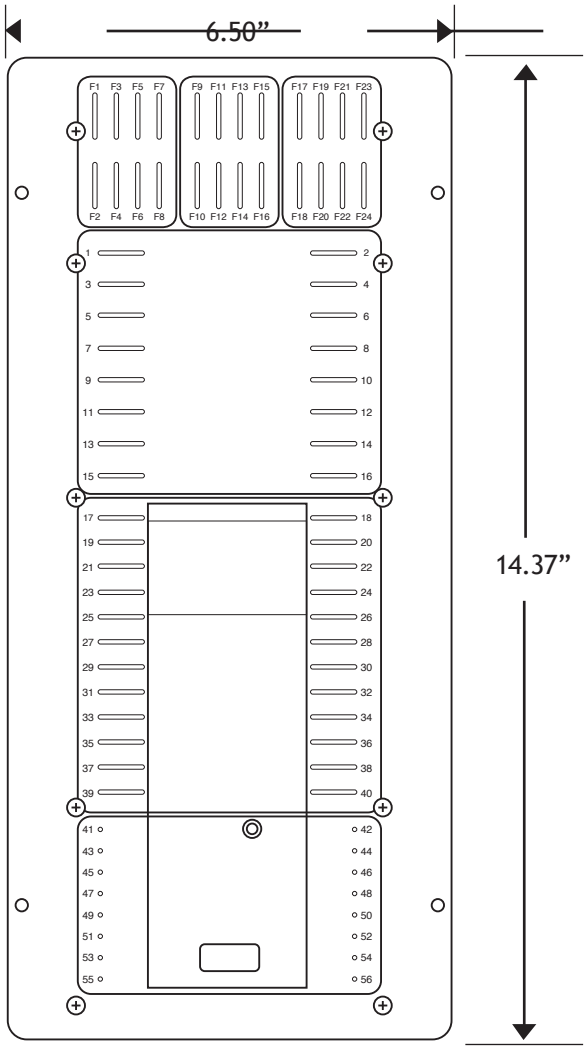
# G5D Load Center




## G5D DC Load Panel Components

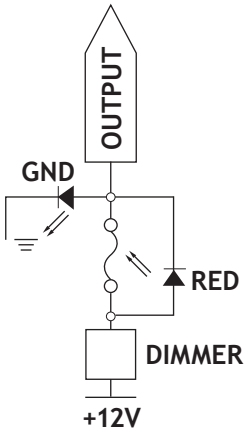
| Qty. | Manu. P/N | Description | Manufacturer |
|---|---|---|---|
| 1 | BENCZC700 | G5D DC Load Center | Spyder |
| 3 | 640586-1 | 8 POS Inline Mate-N-Lok Plug Housing | Tyco Electronics |
| 2 | 640585-1 | 6 POS Inline Mate-N-Lok Plug Housing | Tyco Electronics |
| 4 | 1-480763-0 | 5 POS Inline Mate-N-Lok Plug Housing | Tyco Electronics |
| 48 | 350550-1 | Mate-N-Lok Plug Housing | Tyco Electronics |
| 8 | MISC | .250" Female Spade Terminals | Misc |
| 1 | 231-304/037-000 | 4CKT 5.08MM Fem Conn Rohs | Wago |
| 1 | 37304-A165-000E | Mini Clamp W/M SKT 4P Blue For EU | 3M |

# G5D Load Center

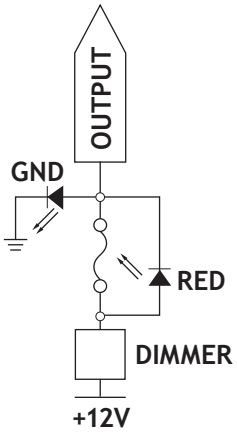



## LOAD CENTER OUTPUT SCHEMATICS

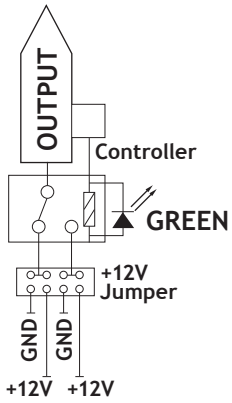
### Switched Dimmer



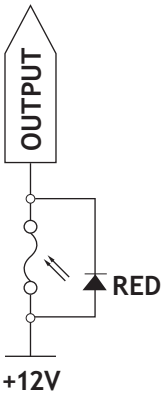

### Switched Relay




### Switched AUX Relay




### Unswitched Fused Output




| G5D Load Center - Firefly Integrations / Spyder Controls P/N | |
|---|---|
| **Specifications** | |
| ***General*** | |
| Dimensions (H x W) | 14.37 x 6.5 in. (36.50 x 16.51 cm) |
| Cutout Dimensions (H x W) | 13.0 x 5.0 in. (33.0 x 12.7 cm) |
| Mount Depth (from Mounting surface) | 2.0 in. Minimum with Mate-N-Lok Connectors in place (5.08 Cm.) |
| Operating Temperature | -4 F to 140 F (-20 C to +60 C) |
| ***Electrical*** | |
| Input Voltage (Network Bus Supplied) | 9V+ to 16V+ DC |
| Minimum Current (No Outputs On) | 102 mA @ 12V+ DC |
| Unswitched connection channels (Max) | 16 @ 15A/Channel, 8 @ 30A |
| Dimmer connection channels (Max) | 12 @ 10A/Channel |
| AUX Relay Channels (Max) | 8 @ 3A/Channel |
| High Current Relay Channels (Max) | 20 @ 10A/Channel |
| Module Maximum Current Rating | 150A |

# G6A Panel

Every G6 can hold up to six cards.

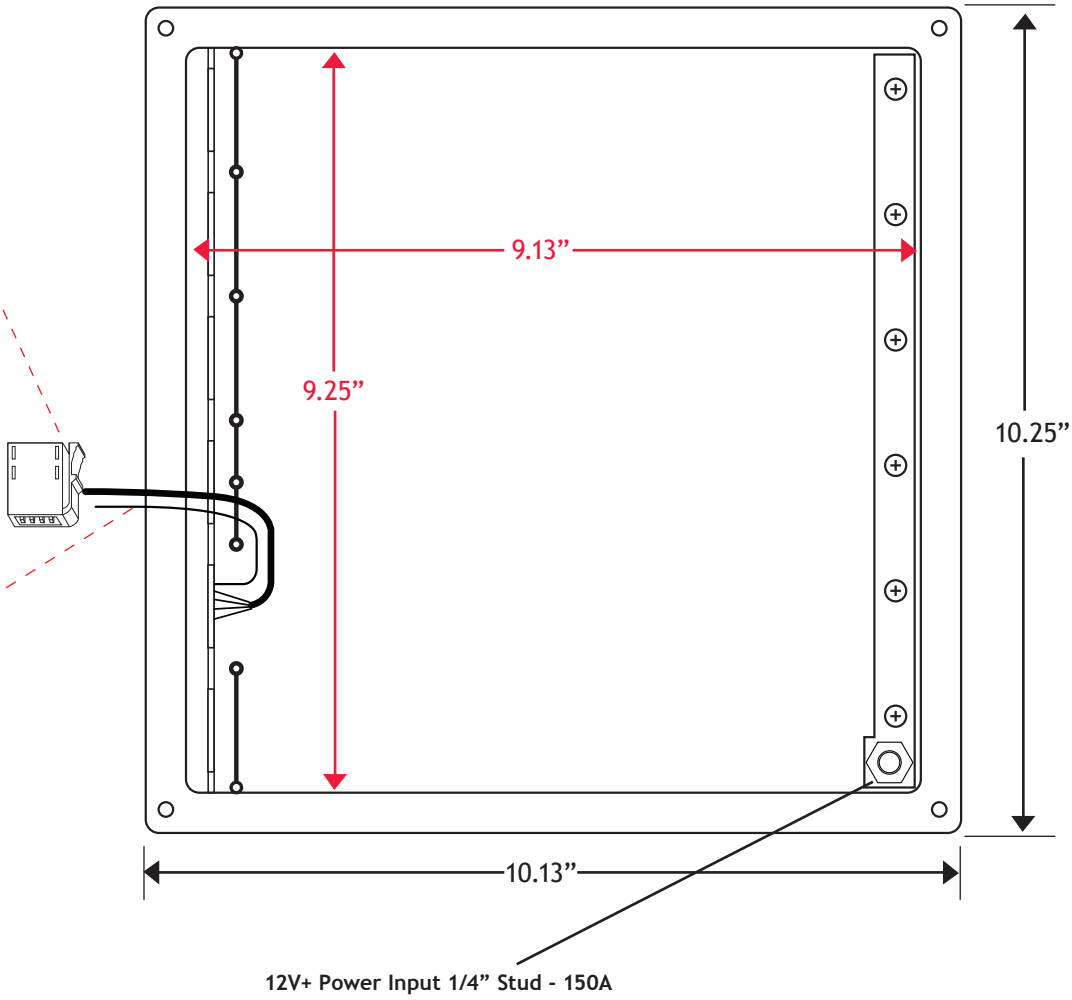
***Network Connector To Drop Cable Connection***

RV-C Mini-Clamp connector plug-in used for communication and diagnostic purposes.

Note: If RSI-8 is used, the network connection is plugged directly into the RSI-8.

**14GA Panel GND Wire** *(Battery GND)*

*Note: If you have worked on the main distribution board for over 30 minutes and have not resolved the problem, call tech support for further assistance.*




## G6A Panel Components

| *Qty.* | *Manu. P/N* | *Description* | *Manufacturer* |
|---|---|---|---|
| 1 | BENCZ5000 | G6A Panel | Spyder |

## G6A Panel - Firefly Integrations / Spyder Controls P/N

### Specifications

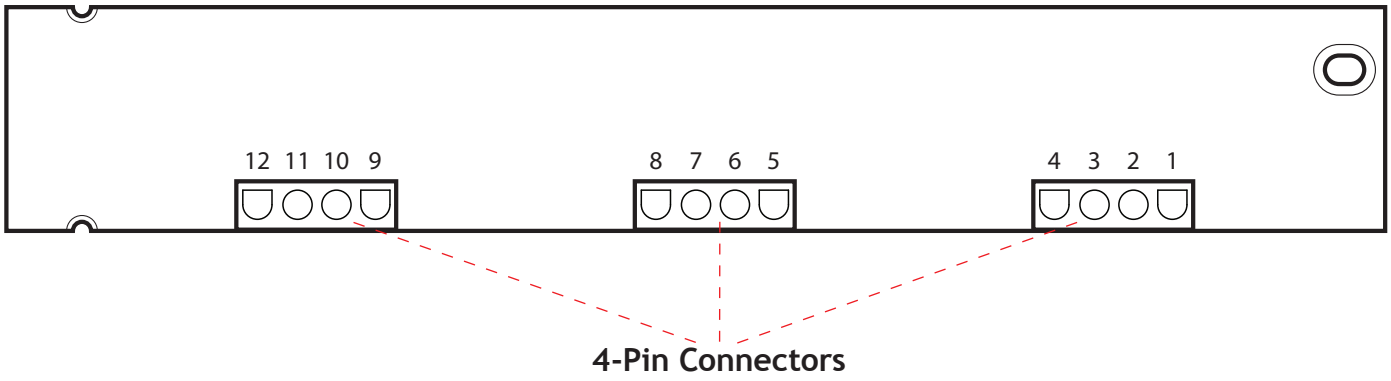
| | |
|---|---|
| ***General*** | |
| Dimensions (H x W x D) | 10.13 x 10.25 x 1.50 in. (25.73 x 26.04 x 3.81 cm) |
| Cutout Dimensions (H x W) | 9.13 x 9.25 in. (23.19 x 23.50 cm) |
| Mount Depth (from Mounting surface) | 2.0 in. Minimum with Mate-N-Lok Connectors in place (5.08 Cm.) |
| Operating Temperature | -4 F to 140 F (-20 C to +60 C) |
| ***Electrical*** | |
| Input Voltage (Network Bus Supplied) | 9V+ to 16V+ DC |
| Minimum Current (No Outputs On) | 102 mA @ 12V+ DC |

# G6A Panel

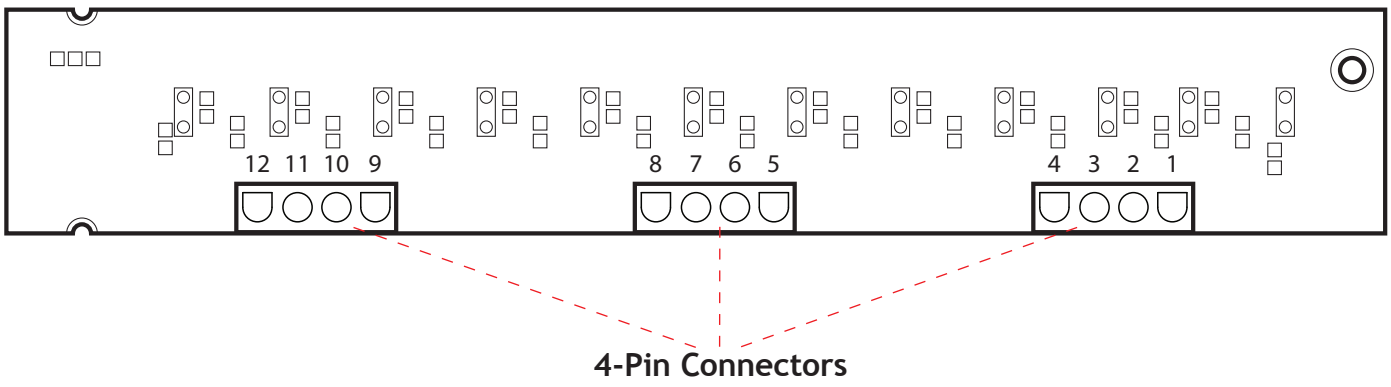
*Note: If you have worked on any of these cards for over 15 minutes and have not resolved the problem, call tech support for further assistance.*

## 5A Dimmer Card:

Circuits on a dimmer card can be adjusted to different brightness levels.



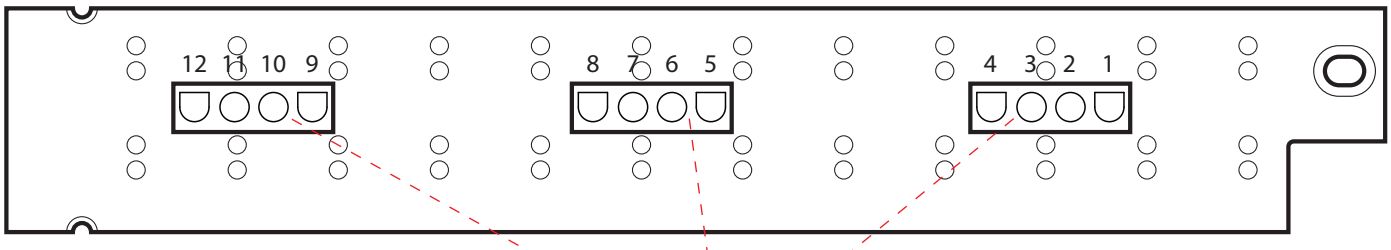

## High Current Relay Card:




Available Outputs: 12V, Ground, or Reverse Polarity.

High Current Relay Card is available in amperages of 5A, 7A, or 10A.

## Breaker Relay Card:

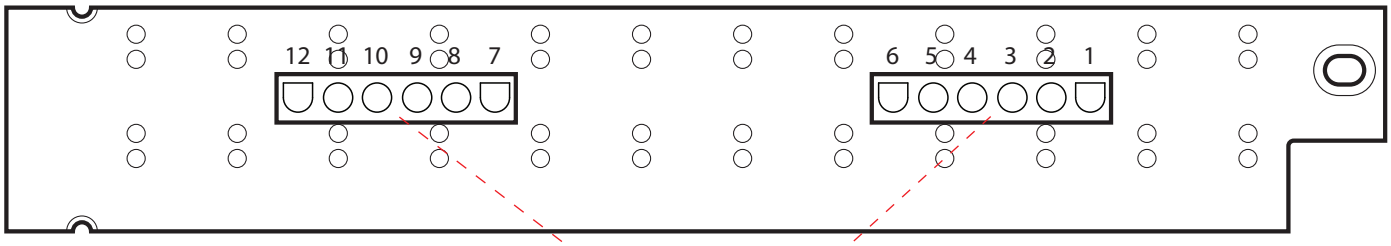



**4-Pin Connectors**

Available Outputs: 12V or Reverse Polarity.

Breaker Relay Card is available in amperages of 5A, 10A, 15A, 20A, or 25A.

## Breaker Card:

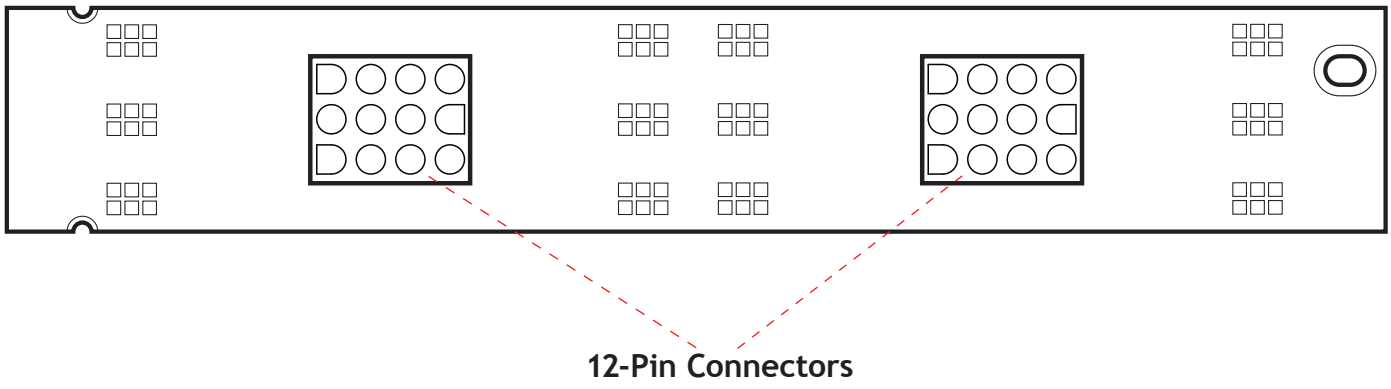



**6-Pin Connectors**

Breakers are constant 12V Outputs.

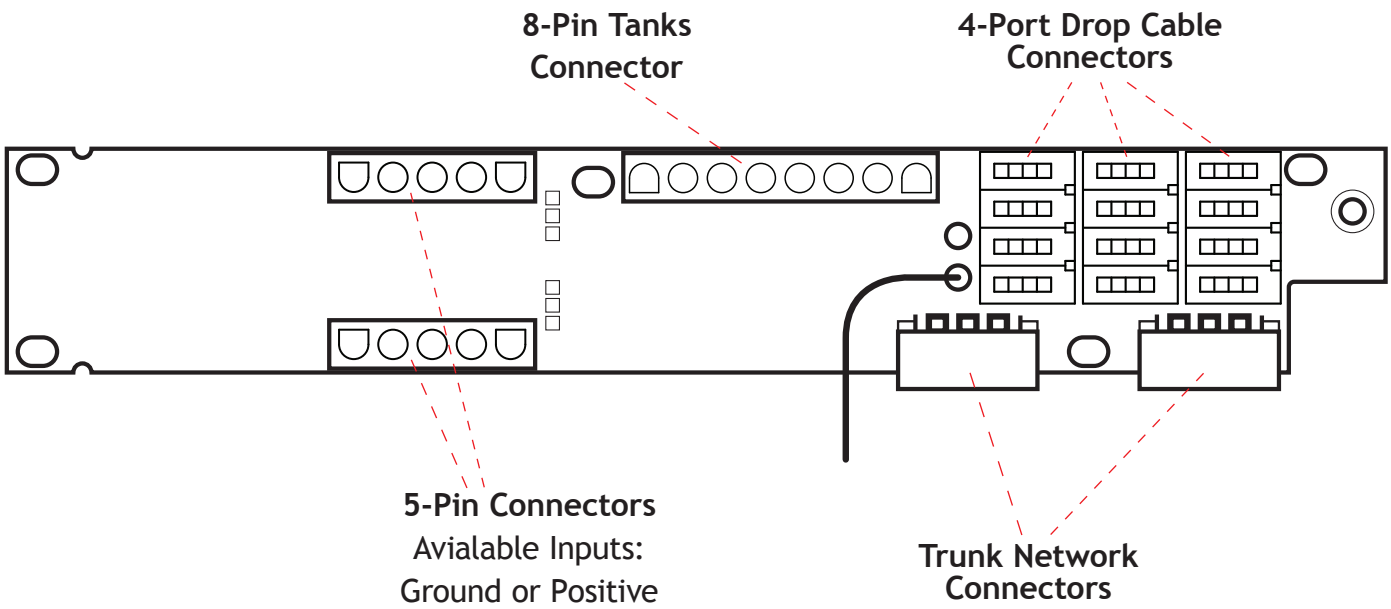
Breaker Card is available in amperages of 5A, 10A, 15A, 20A, or 25A.

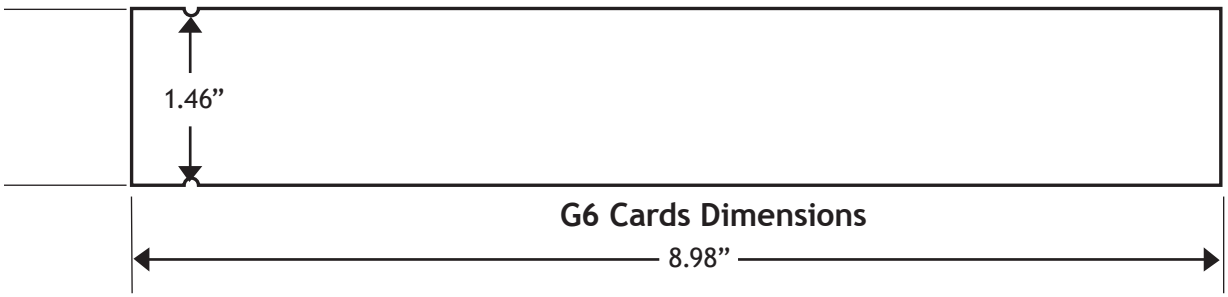
## 5A Auxiliary Relay Card:




Available Outputs: 12V, Ground,
Contact Closure, or Reverse Polarity.

## RSI8:



# G5 - Shade Module

This stand-alone module operates up to 8 independent window shade motors in a very compact form factor. Built-in H-bridge configuration, over-current protection and ignition/park brake disable inputs are standard features. The G5 Shade Control module can also be used to operate other medium-current motor loads that require reverse polarity type outputs.

***Network Connector To Drop Cable Connection***

RV-C Mini-Clamp connector plug-in used for communication and diagnostic purposes.

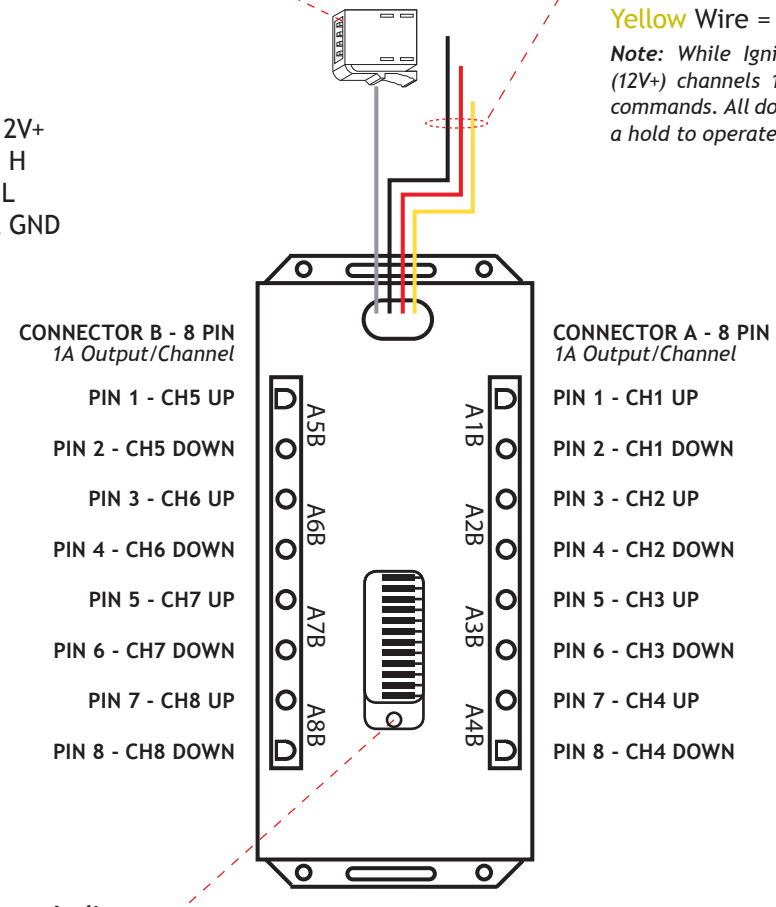
***Network Pinout***

1 - Red 16GA-Net 12V+
2- White 20GA-Can H
3 - Blue 20GA-Can L
4 - Black 18GA-Net GND

***Input Connection Wires***

**Black** Wire = Battery Ground
Red Wire = 12V+ Power Input
Yellow Wire = Ignition/Parking Brake Input

***Note:*** *While Ignition/Parking Brake input is active (12V+) channels 1-4 will not respond to any master commands. All down commands (channels 1-4) require a hold to operate and the command is momentary.*




*Note: If you have worked on this device board for over 15 minutes and have not resolved the problem, call tech support for further assistance.*

**Panel Network Status Indicator**

✷ / ○ Fast flashing Green Light (4 times/sec.) - Device is attempting to make initial connection and claim a network address.

✷ / ○ Slow Flashing Green Light (1 time/sec.) - Device was online but has not seen a valid network address for 5 seconds.

✷ Solid Green - Device is connected to network and communicating properly

✷ Solid Red - Device has gone offline and is not connected to a network.

✷ / ✷ Alternating Red & Orange - Device has gone offline and is attempting to re-connect (within 30 seconds)

✷ / ✷ Alternation Green & Orange - Device is currently online but has gone offline 2 or more times.

# G5 - Shade Module

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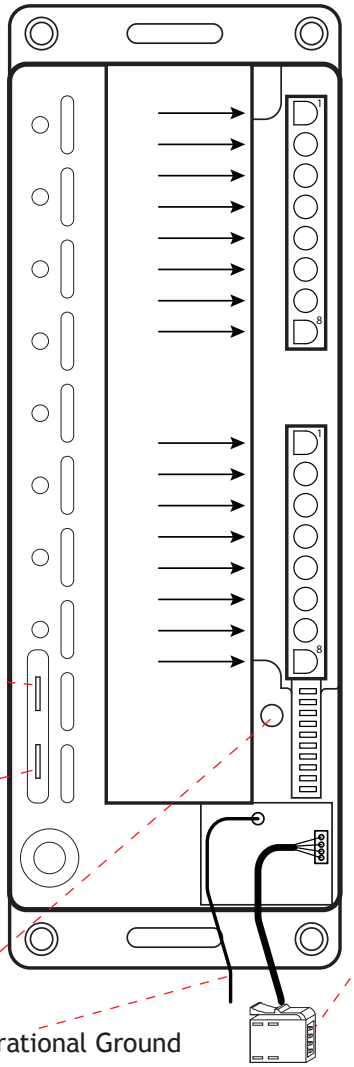
*Note: If you have worked on this device board for over 15 minutes and have not resolved the problem, call tech support for further assistance.*



**CONNECTOR A - 8 PIN**
*1A Output/Channel*

**PIN 1 - 1A TOLL DAY DWN**
**PIN 2 - 1B TOLL DAY UP**
**PIN 3 - 2A DS WS DWN**
**PIN 4 - 2B DS WS UP**
**PIN 5 - 3A PS WS DWN**
**PIN 6 - 3B PS WS UP**
**PIN 7 - 4A ENTRY DAY DWN**
**PIN 8 - 4B ENTRY DAY UP**

**CONNECTOR B - 8 PIN**
*1A Output/Channel*

**PIN 1 - 5A TOLL NT DWN**
**PIN 2 - 5B TOLL NT UP**
**PIN 3 - 6A ENTRY NT DWN**
**PIN 4 - 6B ENTRY NT UP**
**PIN 5 - 7A DS WS NT DWN**
**PIN 6 - 7B DS WS NT UP**
**PIN 7 - 8A PS WS NT DWN**
**PIN 8 - 8B PS WS NT UP**

***Network Pinout***

1 - Red 16GA-Net 12V+
2- White 20GA-Can H
3 - Blue 20GA-Can L
4 - Black 18GA-Net GND

12V Ignition/Parking Brake Input
***Note:*** *While Ignition/Parking Brake input is active (12V+) channels 1-4 will not respond to any master commands. All down commands (channels 1-4) require a hold to operate and the command is momentary.*

12V+ Power Input

***Network Connector To Drop Cable Connection***
RV-C Mini-Clamp connector plug-in used for communication and diagnostic purposes.

Operational Ground

**Panel Network Status Indicator**

- ○ Fast flashing Green Light (4 times/sec.) - Device is attempting to make initial connection and claim a network address.
- ○ Slow Flashing Green Light (1 time/sec.) - Device was online but has not seen a valid network address for 5 seconds.
- ✷ Solid Green - Device is connected to network and communicating properly
- ✷ Solid Red - Device has gone offline and is not connected to a network.
- ✷ Alternating Red & Orange - Device has gone offline and is attempting to re-connect (within 30 seconds)
- ✷ Alternation Green & Orange - Device is currently online but has gone offline 2 or more times.

# Troubleshooting G5 Shade Modules

***NOTE**: The G5 Shade Modules utilize and internal H-bridge relay configuration to provide reversing polarity to the shade motors. EACH OUTPUT IS GROUNDED WHEN THE SHADE CHANNELS ARE IN THE OFF POSITION.*

***NOTE**: When troubleshooting an individual shade issue, it is often a good idea to verify that the shade successfully functions independently from the G5 shade module.*

***NOTE**: The G5 shade modules are only intended to be used with shade motors that implement their own internal limits for the UP and DOWN directions of that shade travel.*

**A. MULTIPLE shades on a module do NOT go UP or DOWN when a button is pressed.**

1. Locate the appropriate G5 shade module and verify if the Network Status LED is Illuminated and what color/state it is in:
    - i. If LED is NOT illuminated, verify that the power/voltage to the G5 shade module is above 11VDC
      *Note: Measure voltage on the RED and BLACK input wires on the G5 shade module.*
        - a. If the power AND GROUND to the G5 shade module has been verified 100% and the Network Status LED on the top of the G5 shade module is NOT illuminated, replace the module.
    - ii. If the LED is SOLID GREEN, proceed to step #2 below.
    - iii. RED or RED/ORANGE, FLASHING GREEN or GREEN/ORANGE refer to the Network Issue Troubleshooting guide.
2. Unplug the G5 shade module output connectors and test for voltage on the output connectors.
    - i. There should be grounded (OV) output on each of the channels when they are not active *(keeping in mind that a channel will remain ON for approx. 30 seconds each time a button is pressed)*.
    - ii. There should be 11-16VDC output when one of the channels are turned ON *(should only remain on for 30 seconds and then default back to ground or 0V)*
        - a. If the above tests are positive, check into the wiring between the G5 shade module and the shade motor.
        - b. If the above tests are negative, replace the G5 shade module.
3. Verify that all of the switch panels in the network are online.

**B. A SINGLE shade does NOT go UP or DOWN *(all other shades are working)***

1. Does the shade operate when the appropriate SHADE MASTER button is pressed UP and DOWN?
    - i. If YES - Verify that the shade wires are connected to the right channel on the G5 shade module *(based of the G5 shade channel that the switch is programmed to operate)*
    - ii. If NO - Disconnect the shade wires for the channel in question at the G5 shade module and test the outputs for that specific channel.
        - a. There should be a grounded (0V) output on each of the channels when they are not active *(a channel will remain ON for approx. 30 seconds each time a button is pressed)*.
        - b. There should be 11-16VDC output when one of the channels are turned ON *(should only remain on for 30 seconds and then default back to ground or 0V)*
            - If the above tests are positive, check into the wiring between the G5 shade module and the shade motor (try operating the shade directly from a constant 12V+ and ground
            - If the above tests are negative, replace the G5 shade module.

**C. The shade in the dash area operate erratically when operated by the “rocker” type switches**

1. Do the dash area shades operate correctly when controlled by the appropriate SHADE MASTER buttons?
    - i. If YES, replace the common GROUND wire going to the rocker switches with a ground source that is the same as the Network ground source *(as opposed to a chassis ground, etc.)*
    - ii. If NO, verify the Network Status LED for the shade module dedicated to the dash area shades.

# G5 Shade Module Issues

***NOTE:*** *The G5 Shade Modules utilize an internal H-bridge relay configuration to provide reversing polarity to the shade motors. EACH OUTPUT IS GROUNDED WHEN THE SHADE CHANNELS ARE IN THE OFF POSITION.*

***NOTE:*** *When troubleshooting an individual shade issues, it is often a good idea to verify that the shade successfully functions independently from the G5 shade module (using a constant 12V and ground).*

***NOTE:*** *The G5 Shade modules are only intended to be used with shade motors that implement their own internal limits for the UP and DOWN directions of the shade travel.*

**A. NONE of the shades connected to a shade module go up or down**

1. Check the status of the Network Status LED on the top of the G5 shade module.
    - i. If the LED is NOT illuminated, verify that the power/voltage to the shade module is above 11VDC

    ***NOTE:*** *Measure voltage on the RED and BLACK power input wires.*

        - a. If the power AND GROUND to the G5 Shade module have been verified 100% and the Network Status LED on the top of the G5 Shade Module is not illuminated, replace the module.
2. Verify that all of the switch panels in the network are online

**B. A light circuit/channel stays OFF constantly and cannot be turned on by the switch panel**

1. Press the ON button on the switch panel that controls the circuit in question. Does the status LED on that button turn ON?
    - i. If YES, proceed to the G5A control panel and check the status of the indicator LED for that specific fuse or circuit. What color is it?
        - a. RED - Replace the fuse and verify if the circuit now works properly
        - b. GREEN - Check the voltage for the assigned PIN/wire coming out of the assigned output connector on the rear of the G5A panel.
            - If there is voltage, check the wiring between the G5A panel and the load or the load itself.
            - If there is NO voltage, check for a loose or damaged fuse or fuse holder.
        - c. NO LED illuminated - Re-Verify the switch panel button LED is still ON and verify that you are looking at the correct circuit.
    - ii. If NO, verify that the switch panel and G5A panel are online by looking at the status of the Network LED.
        - a. Network LED is RED or RED/ORANGE - Proceed to Network Troubleshooting Guide
        - b. Network LED's are all SOLID GREEN - Remove the switch panel and plug it directly into the front of the G5A panel NETWORK PORT.
            - If the LED indicator on the switch panel button DOES turn ON when the ON button is pressed, proceed to the Network Wiring Troubleshooting Guide.

**C. A DIMMING light circuit/channel is always on dimly.**

1. Press and HOLD the ON button to see if the light gets brighter and then HOLD the OFF button to see if the light gets dimmer. Then press the OFF button to see if the light turns OFF.
2. At the G5A control panel, check to see if the GREEN indicator LED for that circuit/channel is constantly ON - even when the assigned switch is turned ON and OFF?
    - i. If LED is ALWAYS ON, cycle the 12V Master power OFF then ON *(switch located at the passenger console).*
        - a. If LED is still ON, unplug the connector on the rear of the G5A for the circuit/channel in question and test the voltage on the output.
            - If the GREEN LED is still on and the output is still ON, replace the G5A panel.
            - If the GREEN LED is now OFF and there is no output voltage present, check the load or the wiring.
        - b. If the LED is now OFF, return to the switch panel/button for the circuit in question and verify if it is now working.
    - ii. If the GREEN indicator LED turns ON and OFF, verify the wiring to the load or the load itself.

**D. All lights or circuits turn OFF automatically *(on their own, without pressing any OFF buttons)***

1. Verify the battery voltage to ALL devices (G5A panel, Shade Modules and Switch Panels) are above 11VDC at ALL times.

***NOTE:*** *If this symptom occurs INSTANTLY when the LIGHT MASTER ON button is pressed (or held), it is likely that there is a battery/cable/power supply issue that cannot keep up with the power demand when ALL lights are turned on simultaneously.*

2. Check the NETWORK STATUS LED's for each device in the network.
    i. If RED or RED/ORANGE, FLASHING GREEN or GREEN/ORANGE refer to the Network Issue Troubleshooting Guide
    ii. If SOLID GREEN, attempt to observe the devices when they automatically turn OFF
        - If the Network status LED on multiple devices cycles OFF momentarily during this condition, check the voltage supply to the devices/network.

**E. ALL lights or circuits are always OFF and cannot be turned on**

1. Check the status of the Network Status LED on the front of the G5A panel.
    i. If LED is NOT illuminated, verify that the power/voltage to the G5A panel is above 11VDC
    ii. If the LED is SOLID GREEN, proceed to step #2 below
    iii. RED or RED/ORANGE, FLASHING GREEN or GREEN/ORANGE refer to the Network Issue Troubleshooting Guide
2. Check the 5A network fuse on the front of the G5A panel
3. Verify that all of the switch panels in the network are online

**F. One of the AUX Relay Channels have no output even though the indicator light shows it is ON.**

***NOTE:*** *The (8) AUX Relay channels do not use replaceable mini-fuses, but rather built-in PTC 3A auto-rest fuses. As these are multi-polarity output channels, the GREEN status LED does NOT indicate fuse status, but rather the relay coil status (ON or OFF).*

1. Press the ON button on the switch panel that controls the circuit in question. Does the status LED on the button turn ON?
    i. If YES, proceed to the G5A control panel and check the status of the indicator LED for that specific fuse or circuit. Is the GREEN LED ON for that circuit in question?
        a. If GREEN, check the voltage and polarity for the assigned PIN/wire coming out of the assigned output connector on the rear of the G5A panel.
            - If there is voltage, check the wiring between the G5A panel and the load or the load itself.
            - If there is NO voltage, verify the polarity select solder jumper.
        b. No LED illuminated - Re-verify the switch panel button LED is still ON and verify that you are looking at the correct circuit on the G5A panel. If this checks out, replace the G5A panel.
    ii. If NO, verify that the switch panel and the G5A panel are online by looking at the status of the Network LED
        a. Network LED is RED or RED/ORANGE - Proceed to Network Troubleshooting Guide
        b. Network LED's are all SOLID GREEN - Remove the switch panel and plug it directly into the front of the G5A panel NETWORK PORT.
            - If the LED indicator on the switch panel button DOES turn ON when the ON button is pressed, proceed to the Network.
            - If the LED indicator on the switch panel button still does not turn ON when the ON button is pressed, replace the switch panel.

# *iPad Control System Theory of Operation*

***Note: This information is current for iPad systems pre-2012. For newer iPads, please see separate iPad manual.***

The Firefly Integrations iPad Control System is an application based system. The application is called, "uTouch." It utilizes a Local Area Network which is programmed with specific gateway and device addresses. These addresses are used by the application and all of the modules (gateways) linked to the system. Each individual module also has its own unique address within the system, as does each individual light, shade or television.

When the iPad is turned on it automatically looks for and logs onto the distinct router address that it is programmed with. Once the iPad has logged onto the router toe operator then selects the uTouch application icon on the desktop. uTouch will then use the router gateway address and identify all of the sub-gateways that are present. The sub-gateways are the IP2SL and the four WIFI2IR modules. Each of these gateways has certain devices assigned to them. The uTouch application knows from the device table in its programming where all of the devices are located and which gateway they are assigned to. uTouch starts the operator at the home page, which is a system overview. From the home page the operator may select the type of devices they wish to control. Once a selection has been made, uTouch will then open the operation page for that specific device or group of devices.

***Example of an operational Command***

Turning on the living room television can easily be done from the uTouch home page by touching the living room TV power button. When this is done the TV power command is sent wirelessly through the router to the correct gateway. In this case, WIFI2IR1, which is sent wirelessly through the router to the correct gateway. In this case, WIFI2IR1, which is located in the entertainment center cabinet. WIFI2IR1 receives the wireless command and converts it into an IR receiver on the front of the TV. The TV will now turn on. Although the commands and the gateway modules used will change according to what command is given, all operational commands follow this example.

Unpacking the System: What you should have in front of you:

1 - Apple iPad unit
1 - AC wall charger with 3' USB Cable
1 - AC wall charger with 6' USB Cable
1 - Car charger
1 - Wall mount with mounting hardware
1 - Wireless Router with IP cable and AC power supply
1 - RS-232/CAN Converter with AC power supplies
2 - Data Cables, 5' each
1 - IP2SL Module (Blue Front) with AC power supply
4 - WIFI2IR Module (Red Front) with AC power supplies
2 - Dual IR Emitter cables
2 - Single IR Emitter cables
1 - G4 Common Tab (P/N 70974)
1 - Male 4-Pin Mini Plug (P/N 70090)

***Note:*** *These kits normally come with the IP and data cables connected between the correct units. The Dual and Single IR Emitters are also connected to channel 1 on each module.*

*Items you will need that are not supplied with this kit:*

1. Drill motor and 1/2" Hole Saw
2. Side Cutters
3. Wire Ties
4. Velcro
5. 120VAC Power Strip with 4 Outlets

***Operational Checks:***

1. Turn on the Apple iPad by pushing the power button on the bottom right edge.
2. When the desktop appears select the "Settings" icon.
3. On the settings page select the Wi-Fi tab.
4. Check that the iPad is now connected to the Coach LAN network (Coach #)
5. Push the "Tab" button located left of the screen to exit back to the desktop
6. On the desktop select the "uTouch" icon. It will open at the Home pages.
7. All Lighting and Shade commands route through the IP2SL module, meaning that each time a lighting or shade button is pushed the IP2SL channel 1 output LED will blink and the desired device should activate. Check all commands.
8. All TV and Home Theater commands are routed through each areas corresponding WIFI2IR module. The Living Room WIFI2IR module controls the TV and Home Theater in that area, thus the Bedroom, Dash TV and Bay TV area's all have their own WIFI2IR modules. Each time a TV or Home Theater command button is pushed, the WIFI2IR modules channel 1 output should blink and the desired command should be carried out.
9. These TV and Home Theater commands have been proven to be correct from a programming standpoint. Therefore, it is only necessary to check a few commands on each TV and Home Theater to ensure that the signal is getting to the device.

***A. Living Room TV and Home Theater***

1. Find an adequate area near the living room TV and home theater to install the equipment. Usually inside the entertainment center cabinet. The identity and location of the equipment used can be found on the Firefly Integrations label attached to each item.
2. Install a 120VAC power strip in the back of the compartment and connect it to an existing 120VAC outlet.
3. Install the Wireless Router, IP2SL module (Blue Front), WIFI2IR1 module (Red Front), and the RS-232/CAN Converter in this area. Make all wiring connections as shown in the diagram.
4. TURN OFF SPYDER SYSTEM POWER and remove the existing Entertainment Center Lighting switch panel (SW4) from the wall. Carefully pull the connecting wiring from the wall until you have access to the connectors. Disconnect SW4 from the G5 panel feed wire and remove the existing female socket, replace it with the supplied male plug, being careful to observe the color code.
5. Find a clear area inside the entertainment cabinet on the outside wall nearest to SW4. Drill a 1/2" hole to gain access to the inside of the wall. Feed the data cable from the RS-232/CAN converter with the 4-Pin male plug through the hole and up to the opening in the wall where SW4 is located.

6. Find the supplied G4 Common Tap and connect the G5 feed cable, RS-232/CAN converter data cable and the SW4 connector. Feed the G4 common Tap back into the SW4 wall opening and reinstall SW4 on the wall.
7. Find the Dual IR Emitter. It should be connected to IR channel 1 on WIFI2IR1. Separate the dual emitters by pulling the split wiring apart until there is enough for one to attach to the front of the Home Theater at the IR Receiver location and the other to attach to the front of the TV IR receiver location.
8. Find the IR Receiver location on the front of the Home Theater unit. Route the IR Emitter to the location and attach it by peeling and sticking it to the location.

   Route the other IR Emitter through the access opening at the back of the cabinet and exit behind the TV. Find the location of the IR Receiver on the front of the TV and attach it by peeling and sticking it to the location.

***B. Bedroom TV and Home Theater***

1. Find an adequate area near the bedroom TV and Home Theater to install the WIFI2IR2 module. Usually on top of the Home Theater unit which is located in the compartment behind the bedroom TV.
2. After installing the WIFI2IR2 module, connect the 120VAC power to a nearby outlet inside the compartment. (See diagram 2)
3. Find the Single IR Emitter and connect it to IR Out channel 1 (Far left) on the WIFI2IR2 module. Route the IR Emitter end between the TV and the mounting bracket to the front of the TV. It will be necessary to loosen the front TV bezel to get IR Emitter in place. You also will have to notch the bezel so as not to pinch the IR Emitter wire when the bezel is tightened. Find the IR Receiver location on front of the TV and attach the IR Emitter by peeling and sticking it to the location.
4. Tighten the TV bezel making sure not to pinch the IR Emitter wire.

***C. Dash TV***

1. Open the compartment directly to the left of the Dash TV. You will see an existing 120VAC outlet where you will plug in the 120VAC power adapter for the WIFI2IR3 module. Install the WIFI2IR3 module directly under the outlet.
2. On the right side wall of the compartment you will find a suitable area to install the iPad wall mount. Install the wall mount with the supplied screws and with the charging port for the iPad pointed in the down direction

3. Connect the Single IR Emitter to IR Out channel 1 (Far Left) on the WIFI2IR3 module. Route the IR Emitter and through the access hole at the back of the right side compartment wall into the TV compartment. (See diagram 3)
4. Loosen the Dash TV bezel to route the IR Emitter to the IR Receiver location on the front of the Dash TV. Remember to notch the bezel so as not to pinch the IR Emitter wire when it is tightened.
5. Find the IR Receiver location on the front of the TV and attach the IR Emitter by peeling and sticking it to the location.
6. Tighten the TV bezel making sure not to pinch the IR Emitter wire.

***Operational Checks:***

1. Install the WIFI2IR4 module in the bottom left corner of the Bay TV compartment, directly under the 120VAC outlet.
2. Install the 120VAC power adapter in the 120VAC outlet and connect it to the WIFI2IR4 module.
3. Connect the Single IR Emitter to IR Out channel 1 (Far Left) on the WIFI2IR4.
4. Find the IR Receiver location on the front of the TV and attach the IR Emitter by peeling and sticking it to the location. (See diagram 4)

***Power Checks:***

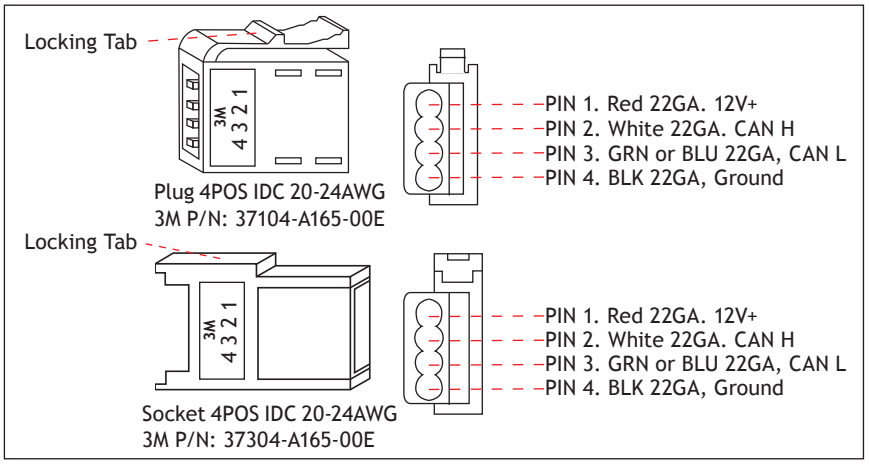
1. Return power to the Firefly Integrations/Spyder Control system.
2. Ensure that the AC Inverters and the entertainment center power strip are on.
3. Check that the Wireless Router power on the indicator is illuminated.
4. Check that the IP2SL and WIFI2IR modules power on indicators are illuminated and within 1 minute should begin to slowly blink as they all connect to the router.
5. Check that the RS-232/CAN converter has power.
6. Check that the Network active LED (located in the middle of the G5 panel under the Entegra emblem) is green and on steady. This indicates that the connector change and addition of the G4 Common Tap made at SW4 was installed correctly.

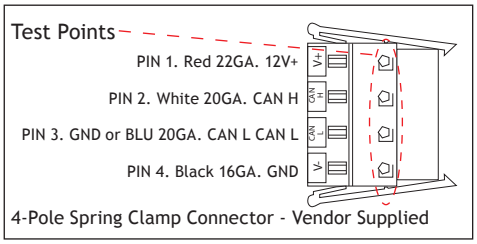
# Network Troubleshooting

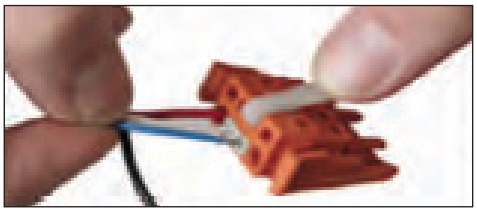
CAN Network Measurements: A list if the CAN network voltage measurements are as follows:

1. Network Power - 10.5VDC min. to 16VDC max. (Red wire = 12V+, black wire = ground
2. CAN H (white wire) - 2.4 to 2.9 VDC (when referenced to the black ground wire)
3. CAN L (blue or green wire) - 2.4 to 2.9 VDC (when referenced to the black ground wire)
4. CAN Termination Resistance - 60 ohms consisting of (2) 120 ohm terminator resistors installed between the blue and white CAN wires at the furthest opposite ends of the network.

CAN Connector Pinout/Wire Order:



Network Status LED Legend: Each Firefly Integrations/Spyder Controls device is equipped with a bi-color network status LED (red and green). Below is the legend that indicates what each LED color is communication:

***Network Status Indicator***

- ✷ / ○ Fast flashing Green Light (4 times/sec.) - Device is attempting to make initial connection and claim a network address.
- ✷ / ○ Slow Flashing Green Light (1 time/sec.) - Device was online but has not seen a valid network address for 5 seconds.
- ✷ Solid Green - Device is connected to network and communicating properly
- ✷ Solid Red - Device has gone offline and is not connected to a network.
- ✷ / ✷ Alternating Red & Orange - Device has gone offline and is attempting to re-connect (within 30 seconds)
- ✷ / ✷ Alternation Green & Orange - Device is currently online but has gone offline 2 or more times.

***NOTE**: Each device will attempt to connect to the network upon power-up indicated by a very quick red/green flash, then FAST FLASHING GREEN until it establishes network connection at which point it will turn SOLID GREEN. If the device encounters a network fault condition, it will likely go offline indicated by a SOLID RED and will then attempt to re-connect every 30 seconds indicated by an alternating RED AND ORANGE. If the device was online but has simply lost connection (due to loose wiring connection, etc.), this will be indicated by a SLOW FLASHING GREEN. If the device is currently online, but has gone offline or lost connection more than twice, it will be indicated by an alternating GREEN AND ORANGE (this will be cleared each time power is reset to the device).*

# *Network Troubleshooting*

***NOTE:*** *It is very helpful to have an accurate Network Wiring diagram to follow during troubleshooting network wiring issues. These are available from Firefly Integrations.*

**A. All devices (switch panels and control panels/modules) instantly go offline (SOLID RED) as soon as the network is powered up**

1. Verify all CAN network measurements (as outlined above) at various points throughout the network.
    i. CAN H or CAN L voltage measurements out of range
        a. This is usually caused by a short to 12V, ground or between CAN H and CAN L. Begin isolating parts of the trunk and drop cable to locate the issue
        b. Various devices on the network can also be unplugged to follow the process of elimination to determine if there is a specific device causing the problem.
2. Carefully check each of the connectors at every drop tap and device to verify the proper wire order/pinout as listed above.
    i. A pair of CAN H and CAN L wire in the wrong order on the connector will cause devices to go offline even though the network measurements will be in the proper range.

**B. Multiple devices go offline over a period of time or when there is significant network activity (ie - Light Master or Shades Master buttons are pressed)**

1. Intermittent network performance is typically caused by one or more of the following:
    i. Drop cables that exceed the 20ft drop length from the main trunk line.
    ii. Improper installation or location of the network terminators
    iii. Poor grounds on devices that are not network powered located throughout the coach (not using the same ground as the Network powered components - Switch Panel - are using)
    iv. Use of non-CAN specification network cable
    v. Voltage loss at the ends of the network due to poor connections, improper power supply, low battery voltage or excessive trunk or drop cable lengths.

**C. A single device does not connect or goes offline in the installed location, but works when plugged directly into the NETWORK PORT on the front of the G5A panel.**

1. Verify the drop cable connector/termination for that specific location using the connector diagrams and network measurements shown above.
2. Check for a damaged or shorted drop cable or damaged drop tap for that location.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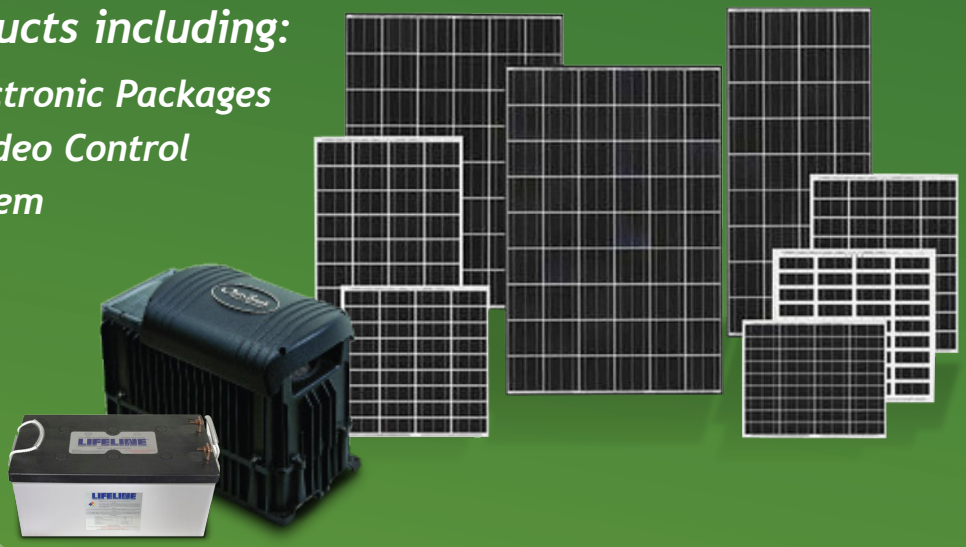
- *Batteries*
- *Inverters*

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