










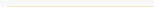
# Multiplex Integration Schematic

## 2020 Allegro Bus

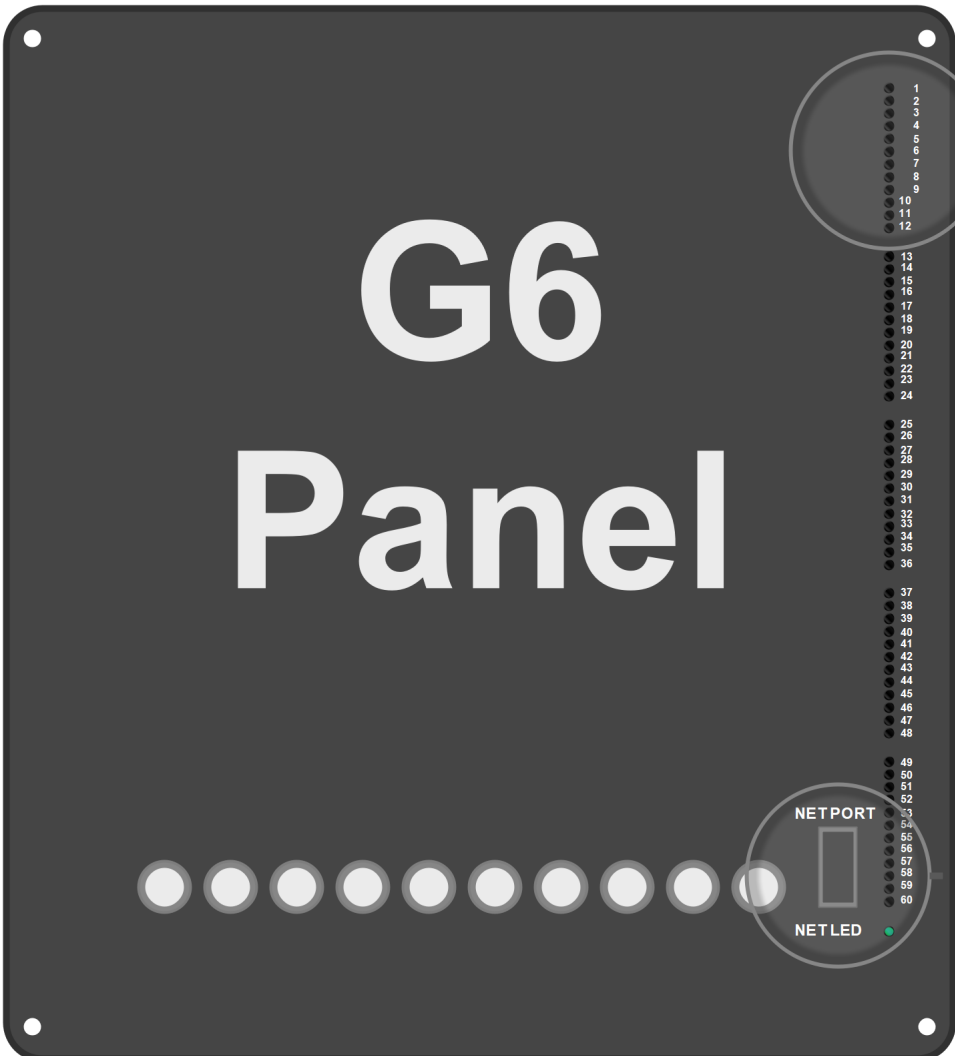
### Schematic Connections Legend

	Constant Ground		Reverse Polarity
	Constant 12V+		Signal
	Switched Ground		120 VAC Line
	Switched 12V+		


### Network Connections Legend

	Critical Network
	Switch / Screen
	Module Network


**2020 Tiffin Bus**  
 General Info & Support  
 (Components not to scale)



The CHANNEL LED corresponds with the circuit listed on the house or chassis G6A panels. The LED will turn on or off indicating whether the circuit is on or off. Please refer to the house or chassis panel pinouts for a complete channel list.










The NET PORT is a helpful diagnostic tool. If you are updating your coach with a programmer switch you will generally plug it in here. Spyder may also ask you to use this port to troubleshoot network issues. The NET LED reports the network status of the G6 panel. Please see the network status chart for more information.



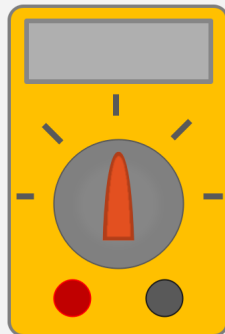
**Spyder Controls Website**  
 To access more information on your coach or to contact us by email please navigate to  
<http://spydercontrols.com/customer-login/>  
 OR  
 Scan the QR Code below with your smartphone camera. Enter the following into the username and password feilds.  
**Username: Tiffin**  
**Password: Motorhomes**






**NETWORK STATUS LED INDICATOR**

-  **SOLID GREEN** - Device is connected to network and communicating properly
-  **LED OFF** - Device has no power or has failed completley
-  **SOLID RED** - Device has gone offline and is not connected to the network
-  **FAST FLASHING GREEN (4 times / sec)** - Device is attempting to make intial connection and claim a network address
-  **SLOW FLASHING GREEN (1 times / sec)** - Device is online but has not seen a valid network message in 5 seconds
-  **ALTERNATING RED & ORANGE** - Device has gone offline and is attempting to re-connect (within 30 seconds)
-  **ALTERNATING GREEN & ORANGE** - Device is currentley online but has gone offline 2 or more times

**Helpful Tools to Keep on Hand**



**Multi-Meter**

-  **Robertson Head Screwdriver**
-  **Philips Head Screwdriver**
-  **Flat Head Screwdriver**

**G6A CONTROL PANEL LAYOUT**  
**TIFFIN PN: 5089756 | SPYDER PN: BENCZ52CT**  
**2020 BUS/PHTN - HOUSE - REV 0VA**  
**PINOUT DIAGRAM - REAR VIEW**  
**01.26.2021**

**CONNECTOR 1**

- 1-1 (G6 LED 1) MAIN O/H / LIV RM LTS
- 1-2 (G6 LED 2) ENTRY/FLOOR LTS
- 1-3 (G6 LED 3) PS CEILING LTS
- 1-4 (G6 LED 4) DS CEILING LTS

**CONNECTOR 2**

- 2-1 (G6 LED 5) HALL/DASH ACCENT LTS
- 2-2 (G6 LED 6) P/S SLIDE LTS
- 2-3 (G6 LED 7) SCONCE LTS
- 2-4 (G6 LED 8) D/S SLIDE LTS

**CONNECTOR 3**

- 3-1 (G6 LED 9) FR CRTSY LIGHTS
- 3-2 (G6 LED 10) RR CRTSY LTS
- 3-3 (G6 LED 11) BED SCONCE LTS
- 3-4 (G6 LED 12) BEDROOM LTS

**CONNECTOR 4**

- 4-1 (G6 LED 13) REAR BATH/MID SINK CEILING LTS
- 4-2 (G6 LED 14) TASK LTS
- 4-3 (G6 LED 15) MID BATH CEILING LTS
- 4-4 (G6 LED 16) MID BATH VANITY LTS

**CONNECTOR 5**

- 5-1 (G6 LED 17) REAR BATH/MID SINK VANITY LTS
- 5-2 (G6 LED 18) TV ACCENT LTS
- 5-3 (G6 LED 19) FR ACCENT LTS
- 5-4 (G6 LED 20) FR ACCENT LTS

**CONNECTOR 6**

- 6-1 (G6 LED 21) BED ACCENT LTS
- 6-2 (G6 LED 22) SPARE
- 6-3 (G6 LED 23) SPARE
- 6-4 (G6 LED 24) SPARE

**CONNECTOR 7**

- 7-1 (G6 LED 25) GALLEY FAN ON/OFF
- 7-2 (G6 LED 26) GALLEY FAN UP
- 7-3 (G6 LED 27) GALLEY FAN DN
- 7-4 (G6 LED 28) CLOSET LTS (Option)

**CONNECTOR 8**

- 8-1 (G6 LED 29) MID BATH FAN ON/OFF
- 8-2 (G6 LED 30) MID BATH FAN UP
- 8-3 (G6 LED 31) MID BATH FAN DN
- 8-4 (G6 LED 32) REAR BATH/MID SINK FAN ON/OFF

**CONNECTOR 9**

- 9-1 (G6 LED 33) REAR BATH/MID SINK FAN UP
- 9-2 (G6 LED 34) REAR BATH/MID SINK FAN DN
- 9-3 (G6 LED 35) CEILING FAN LO
- 9-4 (G6 LED 36) CEILING FAN HI

**CONNECTOR 10**

- 10-1 (G6 LED 37) FLR HT ZONE 1
- 10-2 (G6 LED 38) FLR HT ZONE 2
- 10-3 (G6 LED 39) SPARE
- 10-4 (G6 LED 40) SPARE

**CONNECTOR 11**

- 11-1 (G6 LED 41) BED LIFT UP
- 11-2 (G6 LED 42) BED LIFT DN
- 11-3 (G6 LED 43) FR TV LIFT UP - WHISPER RIDE
- 11-4 (G6 LED 44) FR TV LIFT UP - WHISPER RIDE

**CONNECTOR 12**

- 12-1 (G6 LED 45) BED TV LIFT UP
- 12-2 (G6 LED 46) BED TV LIFT DN
- 12-3 (G6 LED 47) FIREPLACE OVERRIDE
- 12-4 (G6 LED 48) SPARE

**CONNECTOR 13**

- 13-1 SPARE
- 13-2 GND (COMMON FOR TANK SENSORS)
- 13-3 GND (COMMON FOR TANK SENSORS)
- 13-4 LPG SENSOR INPUT
- 13-5 BLACK TANK SENSOR
- 13-6 GREY TANK SENSOR
- 13-7 FRESH TANK SENSOR
- 13-8 SPARE

**CONNECTOR 14 (12V+ INPUTS)**

- 14-1 WTR HTR STATUS
- 14-2 GEN FAULT STATUS
- 14-3 FAULT
- 14-4 BED LIFT PLUNGER
- 14-5 SPARE

**CONNECTOR 15 (GND INPUTS)**

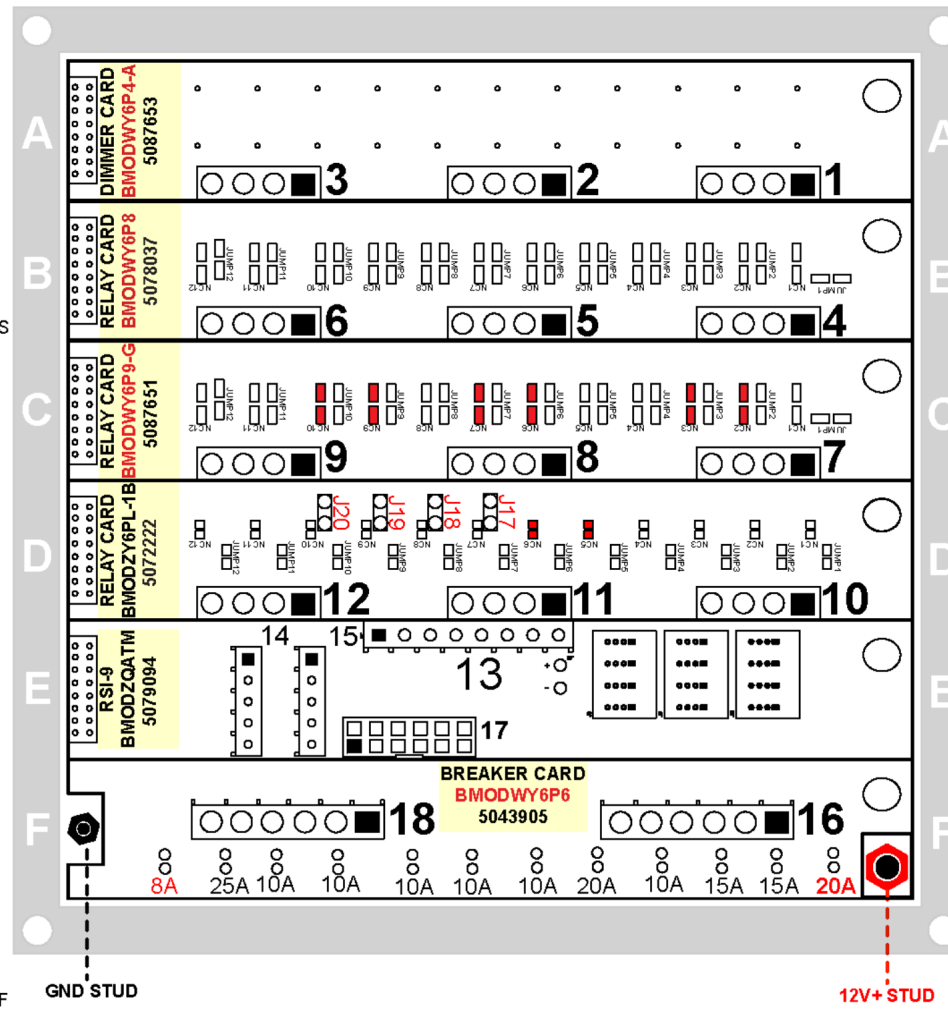
- 15-1 SPARE
- 15-2 BEDROOM LT SW
- 15-3 CLOSET LT SW
- 15-4 DASH ACNT LT ON
- 15-5 DASH ACNT LT OFF

**CONNECTOR 16**

- 16-1 BREAKER #61 - SPARE
- 16-2 BREAKER #62 - FR FURNACE
- 16-3 BREAKER #63 - RR FURNACE
- 16-4 BREAKER #64 - SWITCHER / LP/IR
- 16-5 BREAKER #65 - OUTSIDE TV
- 16-5 BREAKER #66 - SPARE

**CONNECTOR 18**

- 18-1 **BREAKER #67 - Moryde TV Lift (TV Lift Module)**
- 18-2 BREAKER #68 - SPARE
- 18-3 BREAKER #69 - SPARE
- 18-4 BREAKER #70 - BRKR TO RR SLIDE
- 18-5 BREAKER #71 - FRIDGE
- 18-5 **BREAKER #72 - Truma WTR HT (Phaeton Only)**



**WHISPER RIDE TV LIFTS ONLY**

- J17— FR TV LIFT COMMON
- J18— FR TV LIFT COMMON
- J19— RR TV LIFT COMMON
- J20— RR TV LIFT COMMON

**CONNECTOR 17**

- 17-6 SPARE
- 17-5 REAR AC TEMP SENSOR
- 17-4 MID AC TEMP SENSOR
- 17-3 FR AC TEMP SENSOR
- 17-2 RR FLOOR HEAT TEMP SENSOR
- 17-1 FR FLOOR HEAT TEMP SENSOR

NOTE: CONNECTORS ARE SHOWN HERE IN THE LOADED (REAR) VIEW.

**G6A CONTROL PANEL LAYOUT**  
**Tiffin PN: 5093304 Spyder PN: BENCZ54CT**  
**2020 BUS/PHTN/ZEPHYR - CHASSIS Rev 1V0**  
**PINOUT DIAGRAM - 05/20/2019**

**Back View**

**MUST HAVE SIDE MOUNTING TABS ON G6 PANEL**

**Card Legend**

- R=RELAY CARD
- B=BREAKER CARD
- BR=BREAKER/RELAY CARD
- D=DIMMER CARD
- J=JUMPED

- CONNECTOR 4**
- 4-1 (LED 13) AWNING LIGHT
  - 4-2 (LED 14) HEADLIGHTS (INDICATION FLASH)
  - 4-3 (LED 15) DOOR / ASSIST HANDLE
  - 4-4 (LED 16) SPARE

- CONNECTOR 5**
- 5-1 (LED 17) SOFA DAY SHD UP
  - 5-2 (LED 18) SOFA DAY SHD DN
  - 5-3 (LED 19) SOFA NIGHT SHD UP
  - 5-4 (LED 20) SOFA NIGHT SHD DN

- CONNECTOR 6**
- 6-1 (LED 21) STEP EXT
  - 6-2 (LED 22) STEP RET
  - 6-3 (LED 23) GEN START
  - 6-4 (LED 24) GEN STOP

- CONNECTOR 7**
- 7-1 (LED 25) U-OOACHAONT (PARK)
  - 7-2 (LED 26) WINDSHLD ACNT LT
  - 7-3 (LED 27) MAP LT
  - 7-4 (LED 28) SPARE

- CONNECTOR 8**
- 8-1 (LED 29) PASSENGER FAN HI
  - 8-2 (LED 30) PASSENGER FAN LO
  - 8-3 (LED 31) ROAD LIGHT
  - 8-4 (LED 32) PORCH LIGHT

- CONNECTOR 9**
- 9-1 (LED 33) SPARE
  - 9-2 (LED 34) SPARE
  - 9-3 (LED 35) GLY NIGHT SHD UP
  - 9-4 (LED 36) GLY NIGHT SHD DN

- PARK BRAKE SIGNAL
- IGNITION SIGNAL

- CONNECTOR 13**
- 13-1 MAP LT / RADIO / FANS - BREAKER #49
  - 13-2 DASH USB POWER - BREAKER #50
  - 13-3 - BREAKER #51
  - 13-4 ENTRY STEP SWITCH - BREAKER #52
  - 13-5 ENTRY STEP POWER - BREAKER #53
  - 13-6 KEYLESS ENTRY POWER - BREAKER #54

- CONNECTOR 15**
- 15-1 POWER SEAT #1 - BREAKER #55
  - 15-2 CB - BREAKER #56
  - 15-3 ELEC STEP COVER - BREAKER #57
  - 15-4 SATELITE - BREAKER #58
  - 15-5 DASH SHADE MODULE - BREAKER #59
  - 15-6 POWER SEAT #2 - BREAKER #60

- CONNECTOR 0**
- 0-1 FRONT SLIDE MODULE
  - 0-2 VANITY SLIDE MODULE
  - 0-3 BED SLIDE MODULE

- CONNECTOR 1**
- 1-1 (LED 1) D/S FR SLIDE RET
  - 1-2 (LED 2) D/S FR SLIDE EXT
  - 1-3 (LED 3) P/S FR SLIDE RET
  - 1-4 (LED 4) P/S FR SLIDE EXT

- CONNECTOR 2**
- 2-1 (LED 5) D/S RR SLIDE RET
  - 2-2 (LED 6) D/S RR SLIDE EXT
  - 2-3 (LED 7) P/S RR SLIDE RET
  - 2-4 (LED 8) P/S RR SLIDE EXT

- CONNECTOR 3**
- 3-1 (LED 9) HYDRAULIC PMP - D/S SLIDE
  - 3-2 (LED 10) HYDRAULIC PMP - P/S SLIDE
  - 3-3 (LED 11) PORCH/DOOR AWNING CONST
  - 3-4 (LED 12) SPARE

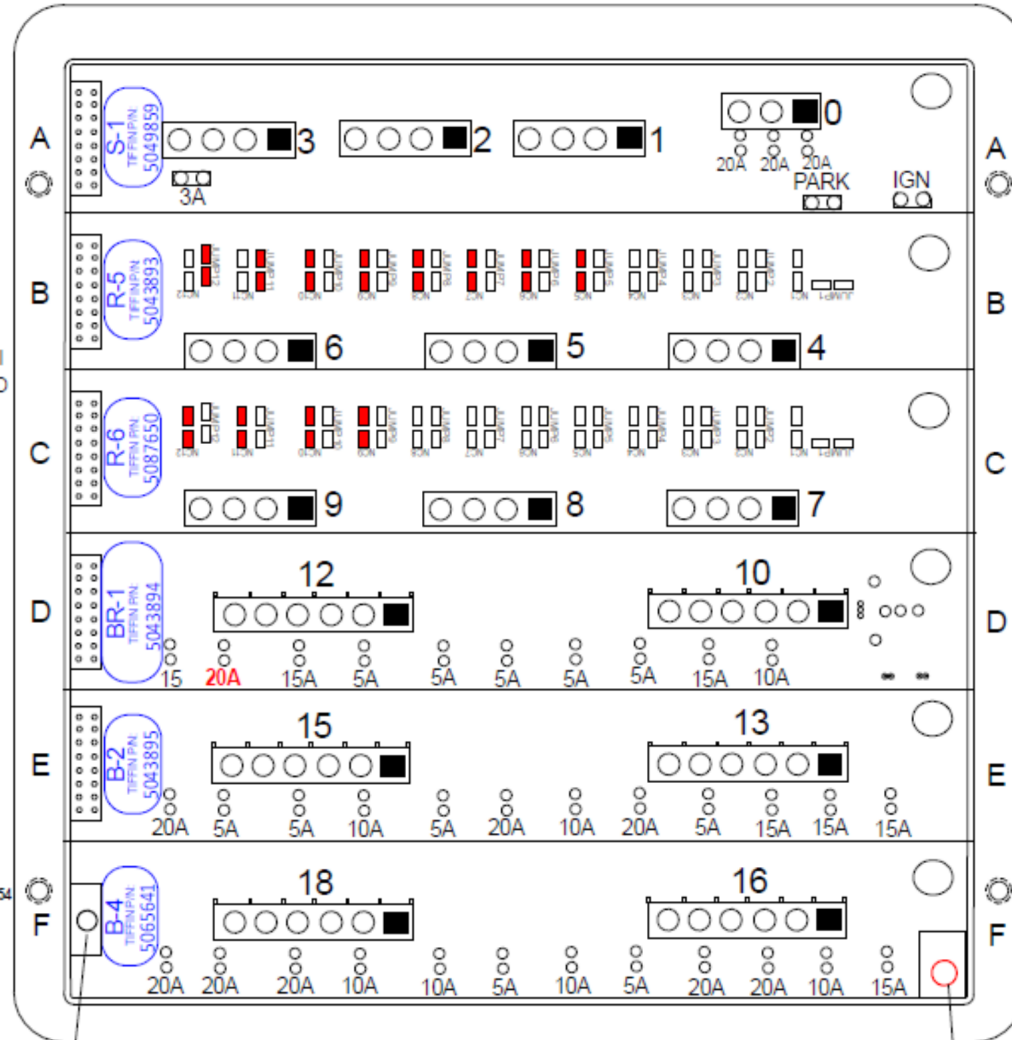
- CONNECTOR 3A**
- 3A-1

- CONNECTOR 10**
- 10-1 - BREAKER #37
  - 10-2 - BREAKER #38
  - 10-3 DENSO A/C PWR IGN(YLW) - BREAKER #39
  - 10-4 MIRRORS - BREAKER #40
  - 10-5 CAMERA IGN - BREAKER #41
  - 10-6 JACK BUZZER - BREAKER #42

- CONNECTOR 12**
- 12-1 PANEL LAMP/HEADLT LED - BREAKER #43
  - 12-2 FRIDGE - BREAKER #44
  - 12-3 ENTRY STEP IGN - BREAKER #45
  - 12-4 DOCK LIGHT - BREAKER #46
  - 12-5 - BREAKER #47
  - 12-6 POWER WINDOW OPTION - BREAKER #48

- CONNECTOR 16**
- 16-1 RADIO MEMORY / XM PWR - BREAKER #61
  - 16-2 DENSO A/C POWER - BREAKER #62
  - 16-3 12V+ OUTLET #1 - BREAKER #63
  - 16-4 12V+ OUTLET #2 - BREAKER #64
  - 16-5 ENGINE PREHEAT SWITCH - BREAKER #65
  - 16-6 PASS USB / TRIMARK HANDLE - BREAKER #66

- CONNECTOR 18**
- 18-1 - BREAKER #67
  - 18-2 - BREAKER #68
  - 18-3 - BREAKER #69
  - 18-4 - BREAKER #70
  - 18-5 - BREAKER #71
  - 18-6 - BREAKER #72



**OPERATIONAL GROUND PEM STUD**

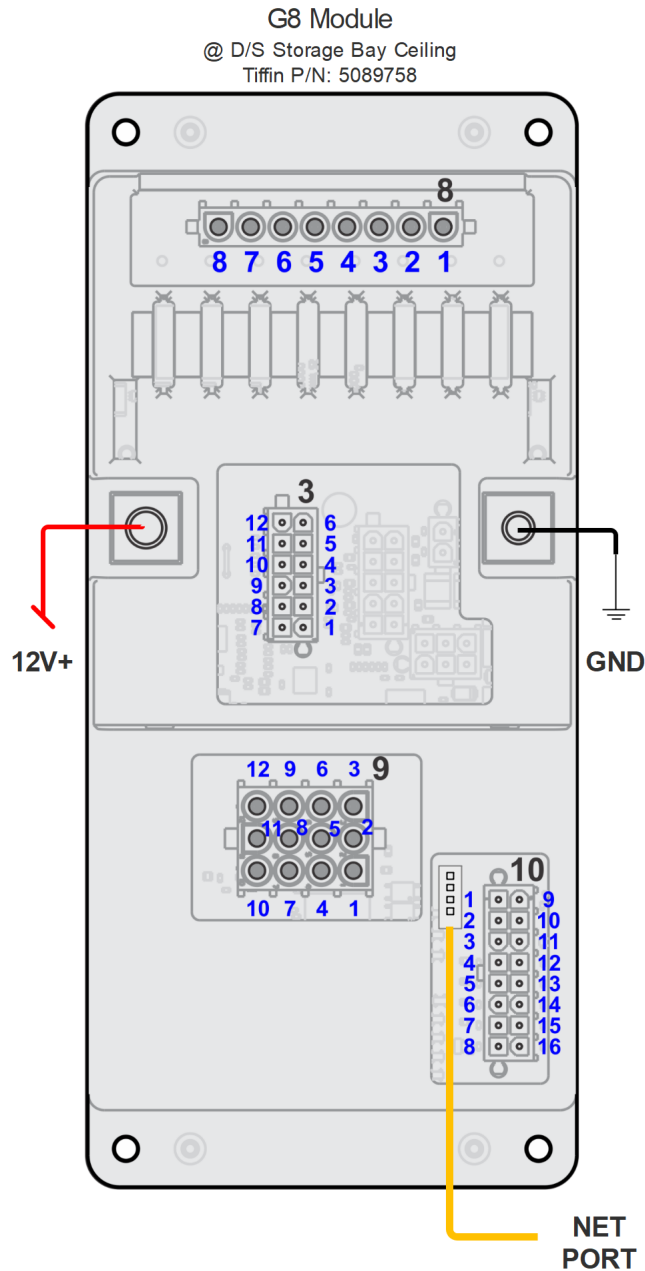
**12V Power Stud**

NOTE: CONNECTORS ARE SHOWN HERE IN THE LOADED (REAR) VIEW.

## 2020 Tiffin Bus G8 Module Pinout (Components not to scale)

<b>3</b>	
Bay Temp #1	Pin 1
Pin 2 EXT Temp #2	Pin 2
Spare #3	Pin 3
Spare #4	Pin 4
Spare #5	Pin 5
Spare #6	Pin 6
GND	Pin 7
GND	Pin 8
GND	Pin 9
GND	Pin 10
GND	Pin 11
GND	Pin 12

<b>9</b>	
Electric Water Heater #9	Pin 1
Spare #19	Pin 2
Spare #20	Pin 3
Diesel Water Heater #10	Pin 4
Spare #17	Pin 5
Spare #18	Pin 6
Engine Pre-Heat #11	Pin 7
Spare #15*	Pin 8
Spare #16	Pin 9
FR FURN./AQUAHOT #12	Pin 10
RR FURN./AQUAHOT #13	Pin 11
Door Bell Chime #14	Pin 12

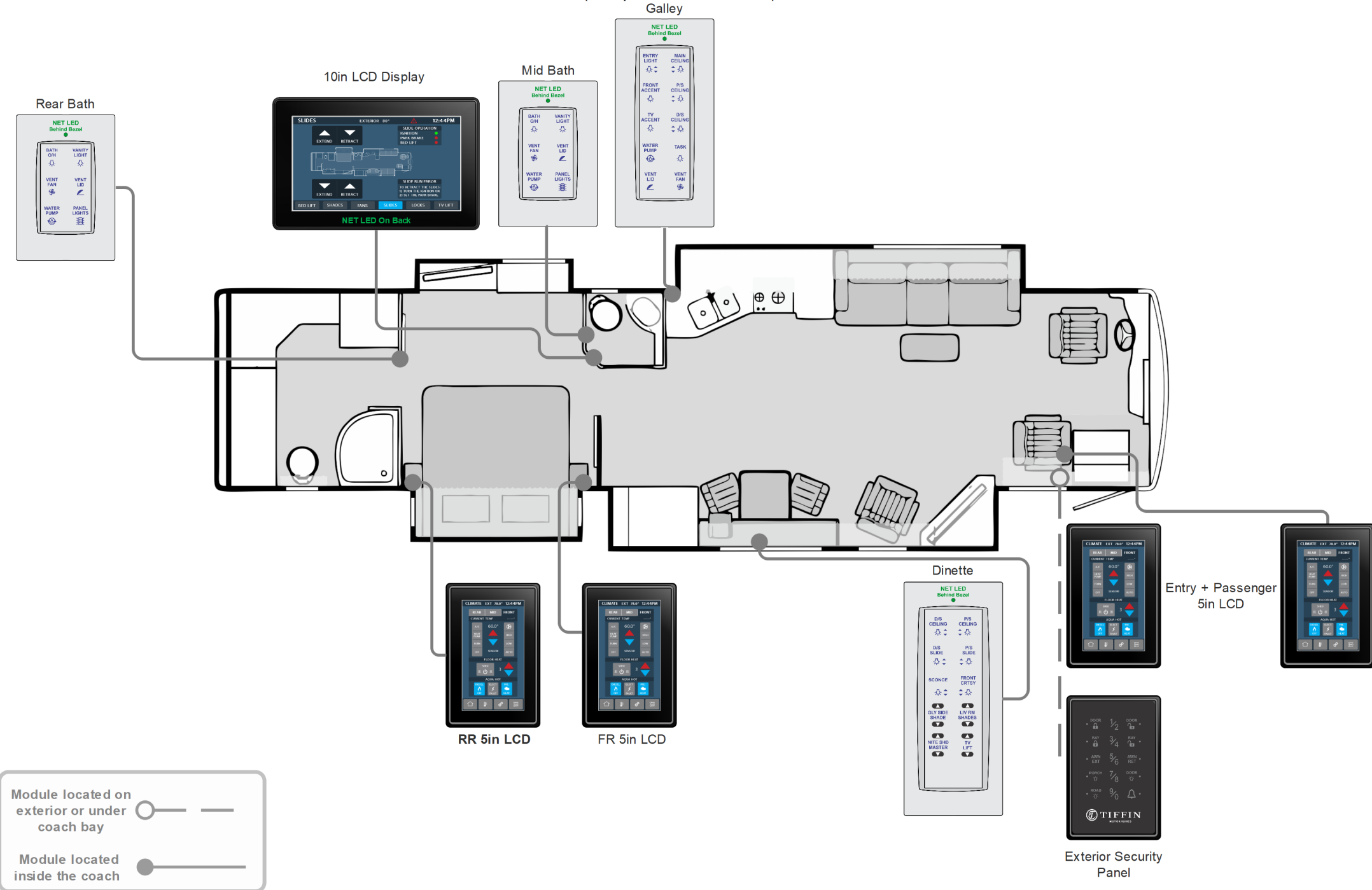


<b>8</b>	
Pin 1	Door Awning Extend
Pin 2	Door Awning Retract
Pin 3	Bay Doors Lock
Pin 4	Bay Doors Unlock
Pin 5	Water Pump
Pin 6	Spare (GND)
Pin 7	Entry Door Lock
Pin 8	Entry Door Unlock

<b>10</b>	
Pin 1	Generator (12V+)
Pin 2	Ignition (12V+)
Pin 3	Merge Output #23 *
Pin 4	Water Pump Switch (GND)
Pin 5	Park Brake (GND)
Pin 6	Spare (GND)
Pin 7	Door Pin Sw (Logic A) (GND)
Pin 8	Door Pin Sw (Logic B) (GND)
Pin 9	CHS Voltage (12V+)
Pin 10	House Disconnect Sense (12V+)
Pin 11	N/A
Pin 12	N/A
Pin 13	Spare (12V+)
Pin 14	Spare (12V+)
Pin 15	Spare (12V+)
Pin 16	Spare (12V+)


# 2020 Tiffin Bus Switch & Screen Location Diagram


(Components not to scale)

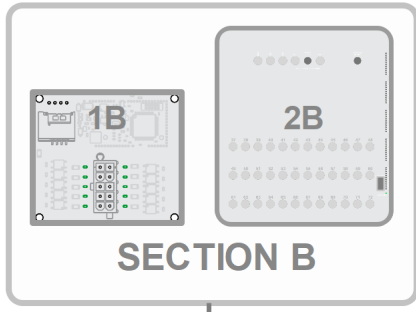
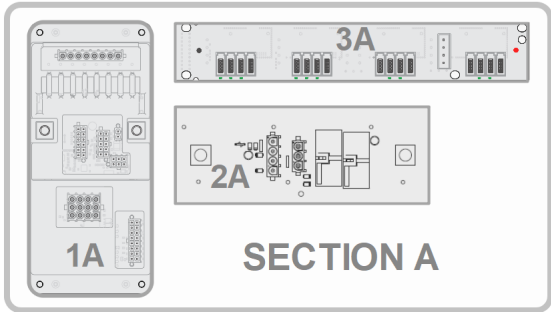


# 2020 Tiffin Bus Module Locations Diagram

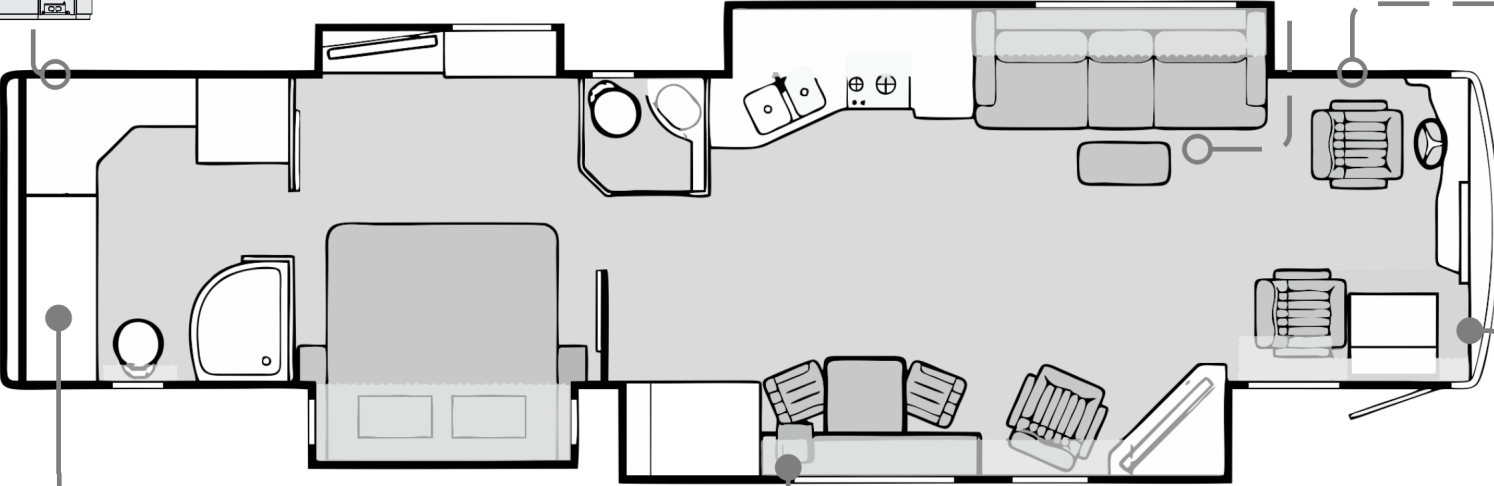
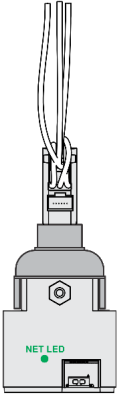
(Components not to scale)

Module located on exterior or under coach bay  —

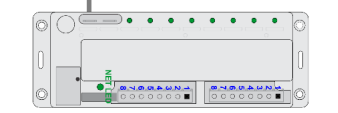
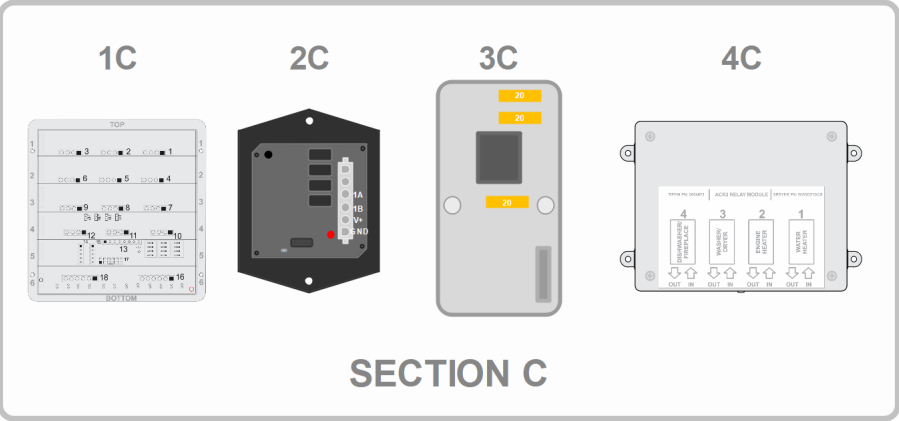
Module located inside the coach  —



AC Power Monitor  
@ Transfer Switch  
Tiffin P/N: 5064974



Cockpit G5  
Shade Module  
@ Cockpit -  
Overhead  
Cabinet by  
Entry Door



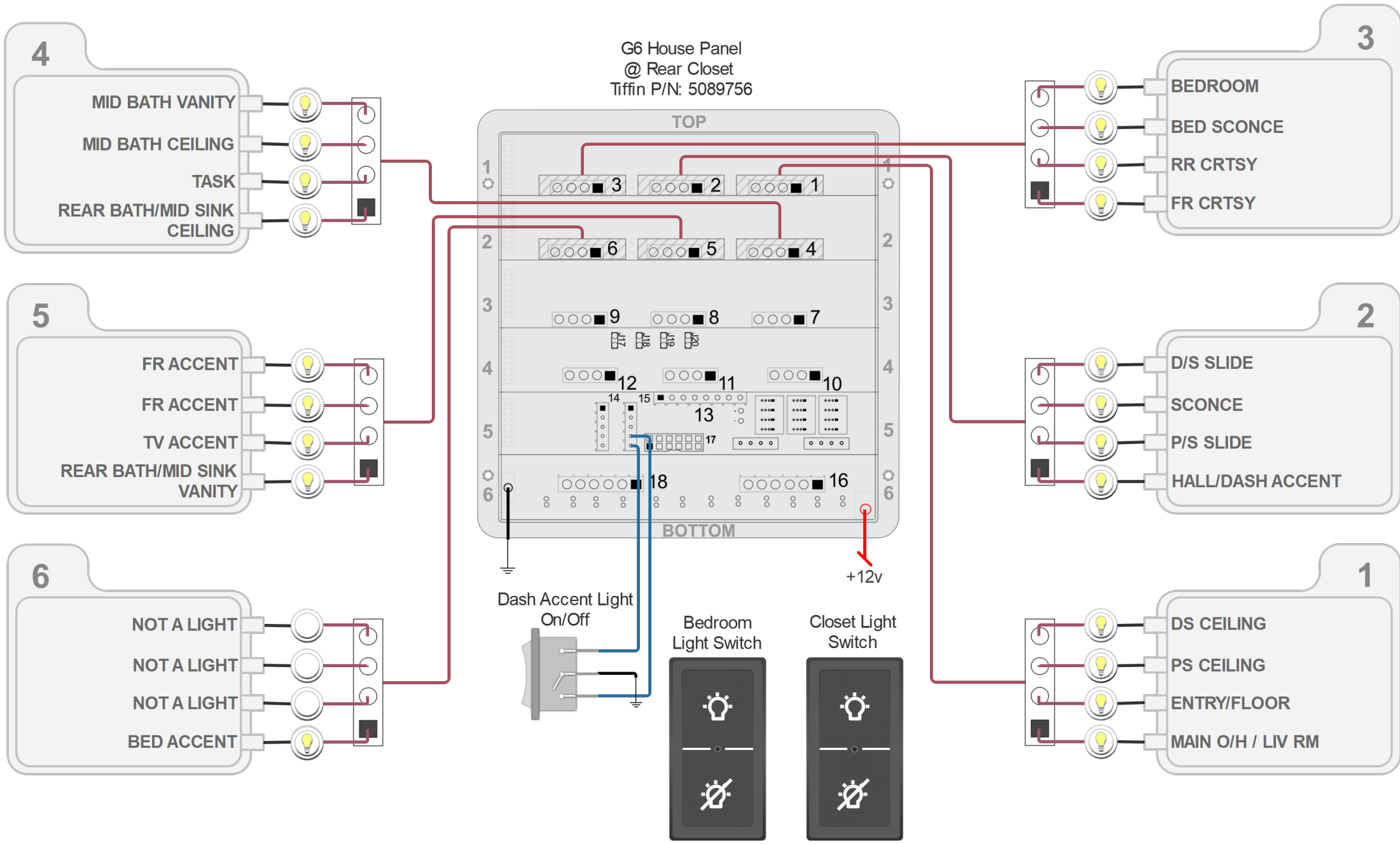
Main G5 Shade Module  
@ Slide opposite galley  
- Overhead Cabinet

**Legend**

- 1A - G8 Module Tiffin P/N: 5089758
- 2A - BDC2 Tiffin P/N: 5074515
- 3A - CAN Router Tiffin P/N: 5076945
- 1B - RSI-11 Tiffin P/N: 5067281
- 2B - G6 Chassis Panel Tiffin P/N: 5093304
- 1C - G6 House Panel Tiffin P/N: 5089756
- 2C - HCR15 / MoRyde Tiffin P/N: 5092297
- 3C - HCR12 Tiffin P/N: 5076028
- 4C - ACR3 Tiffin P/N: 5091113 (24") or 5091114 (60")

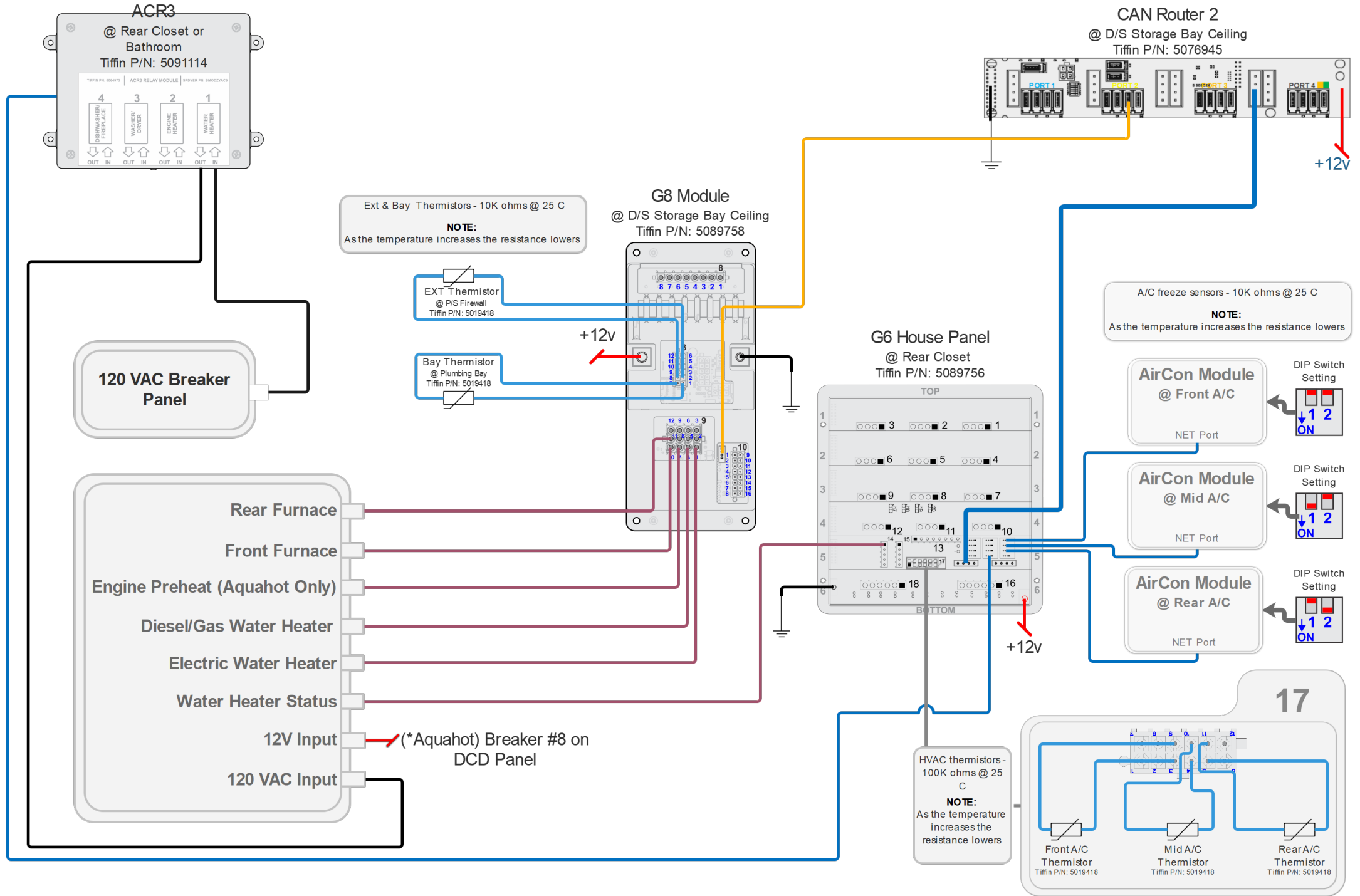
Module in this section can be grouped in the bathroom or in the rear closet of the bedroom depending on floorplan.

# 2020 Tiffin Bus Lighting System (Components not to scale)

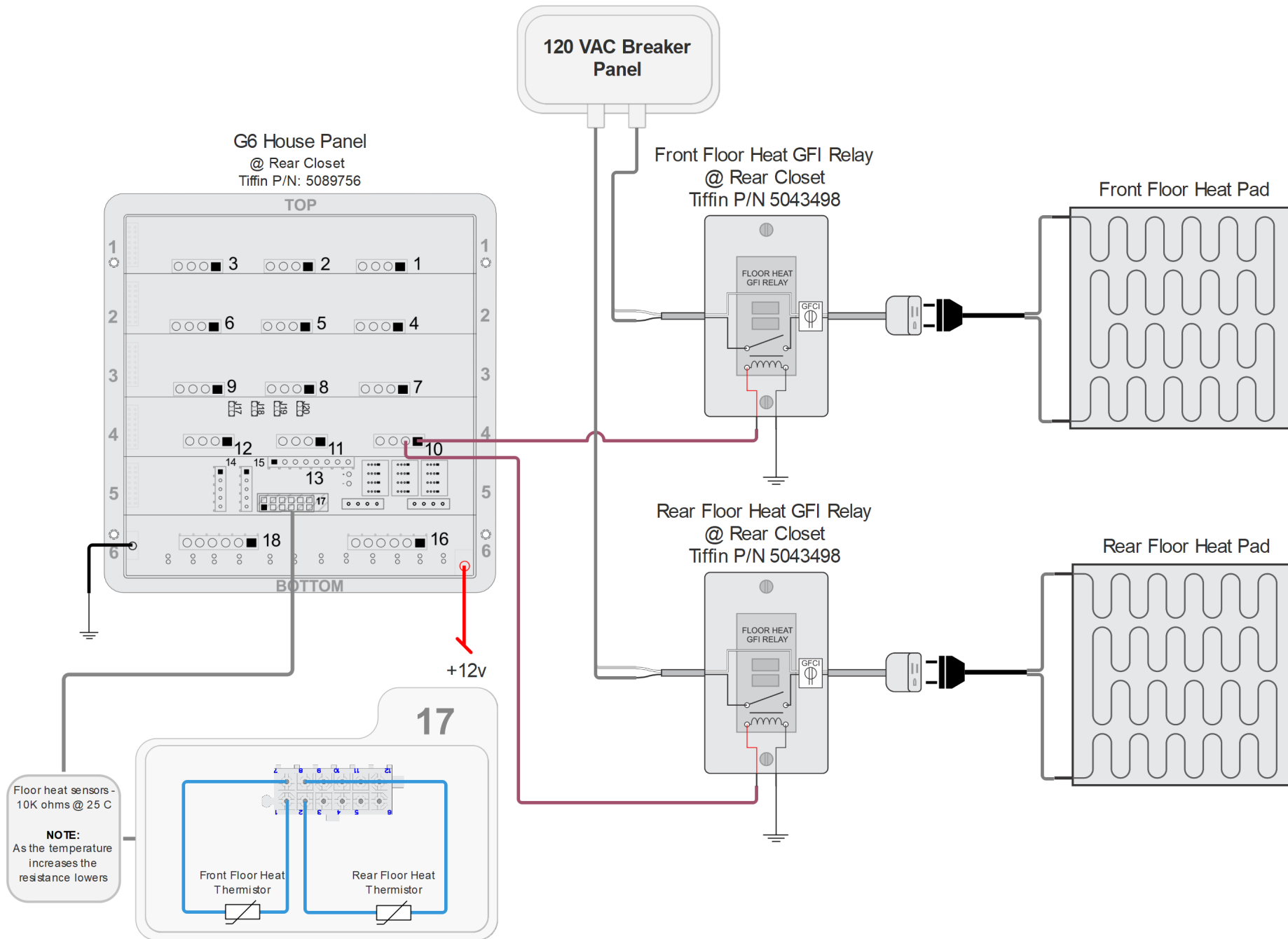


# 2020 Tiffin Bus HVAC System

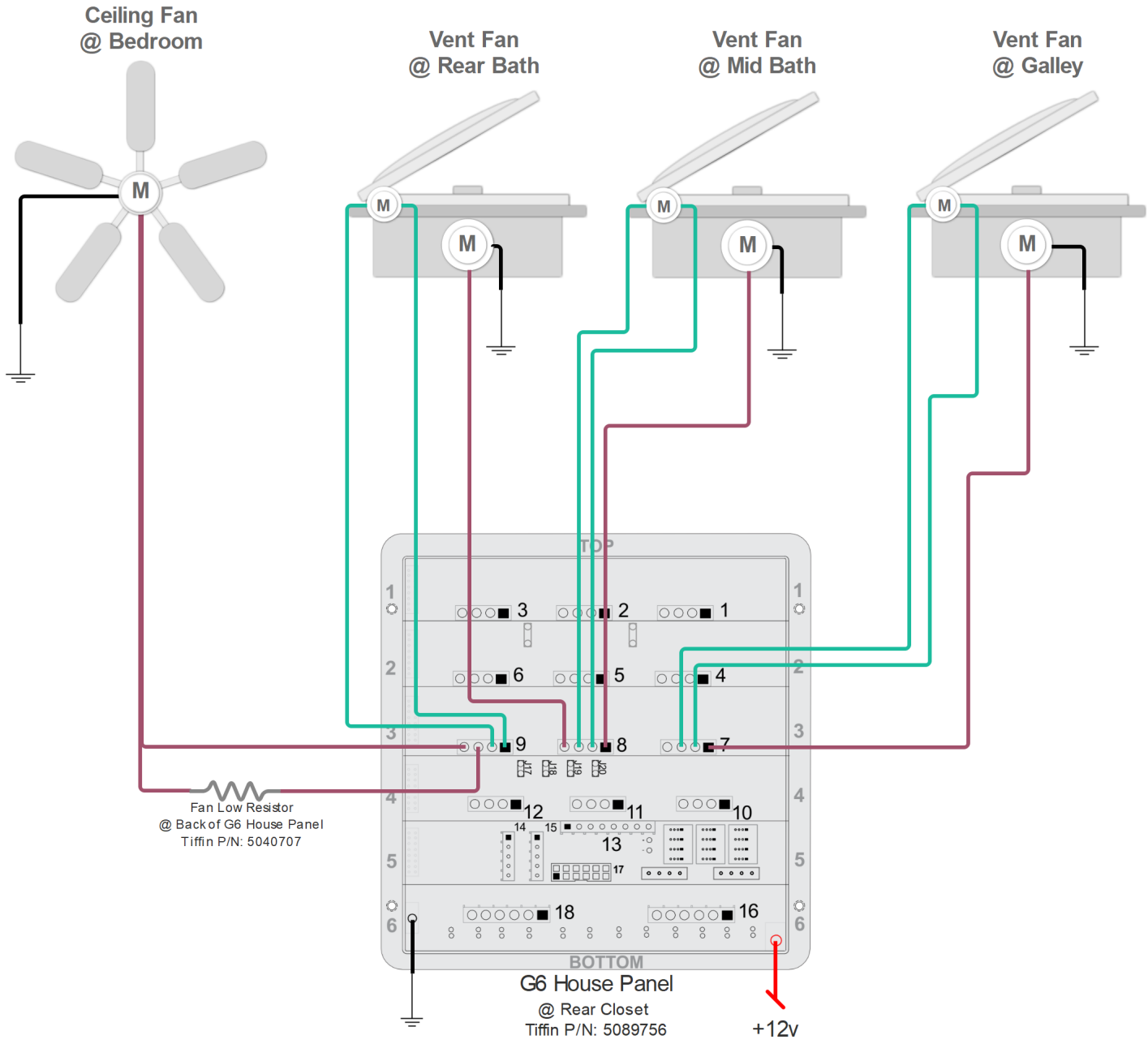
(Components not to scale)



# 2020 Tiffin Bus Floor Heat System (Components not to scale)

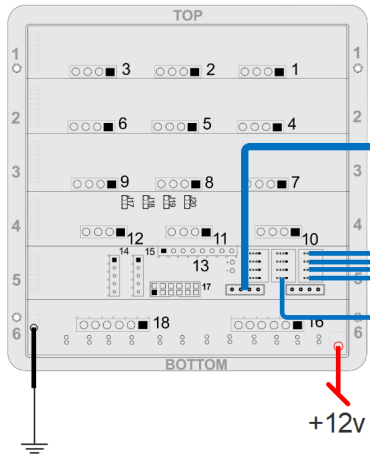


# 2020 Tiffin Bus Vent Fan & Ceiling Fan System (Components not to scale)

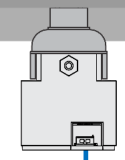
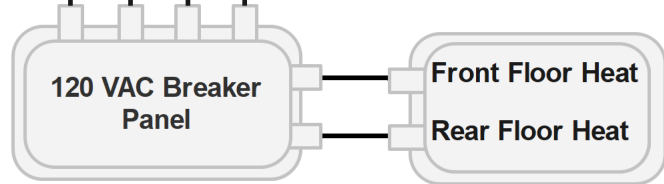
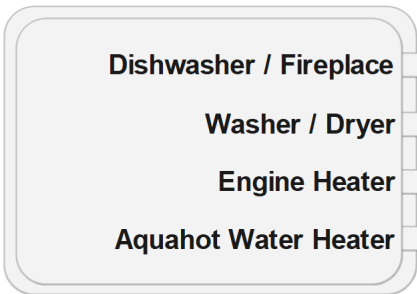
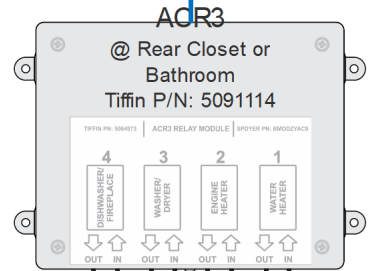
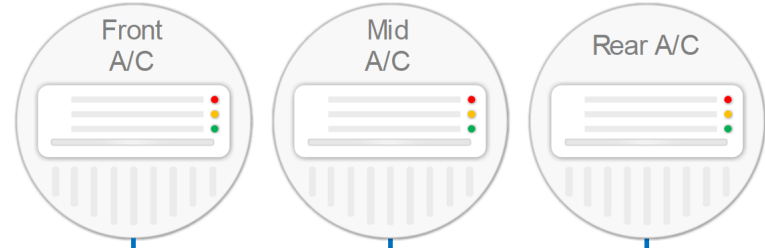
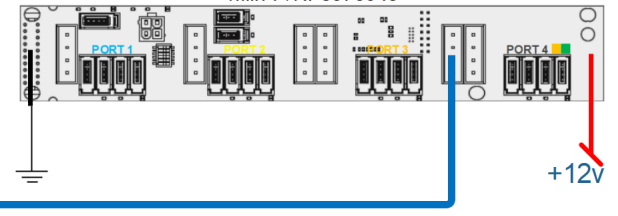


# 2020 Tiffin Bus EMS System (Components not to scale)

G6 House Panel  
@ Rear Closet  
Tiffin P/N: 5089756

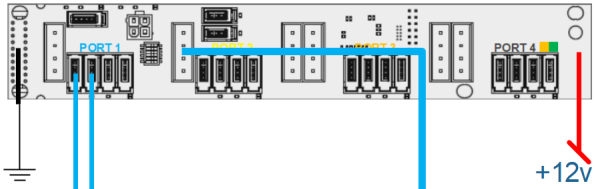


CAN Router 2  
@ D/S Storage Bay Ceiling  
Tiffin P/N: 5076945



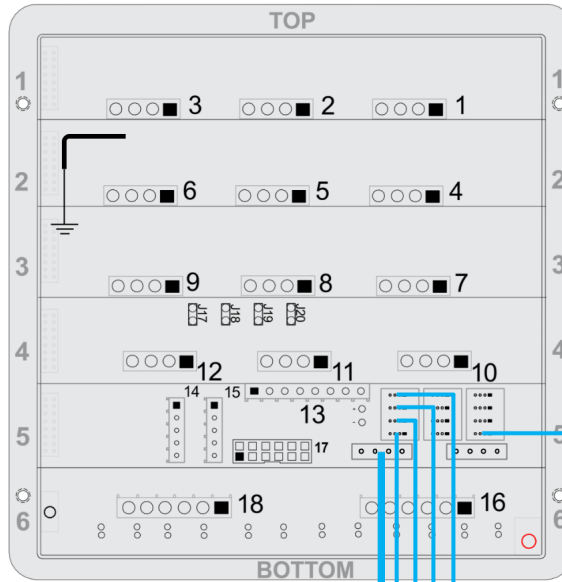
AC Power Monitor  
@ Transfer Switch  
Tiffin P/N: 5064974

**CAN Router 2**  
 @ D/S Storage Bay Ceiling  
 Tiffin P/N: 5076945

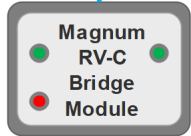


**2020 Tiffin Bus**  
 Blue Network  
 (Components not to scale)

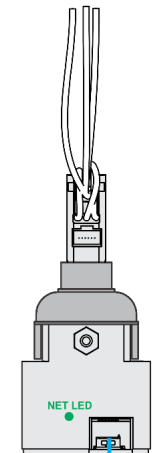
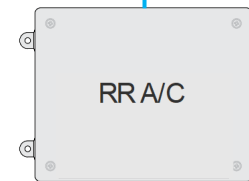
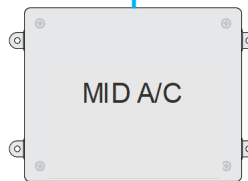
**G6 House Panel**  
 @ Rear Closet  
 Tiffin P/N: 5089756



10in LCD Display  
 Tiffin P/N: 5090546



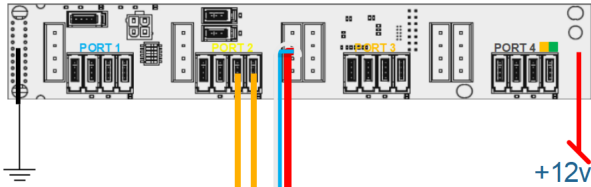
**ACR3**  
 @ Rear Closet or Bathroom  
 Tiffin P/N: 5091114



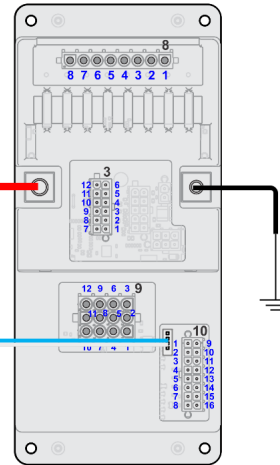
**AC Power Monitor**  
 @ Transfer Switch  
 Tiffin P/N: 5064974

# 2020 Tiffin Bus Yellow Network (Components not to scale)

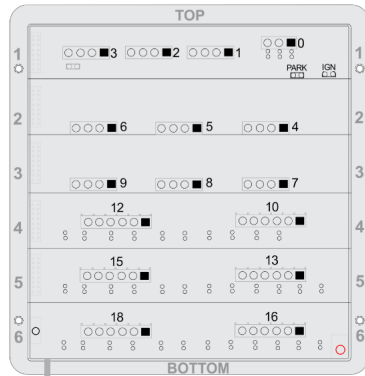
**CAN Router 2**  
@ D/S Storage Bay Ceiling  
Tiffin P/N: 5076945



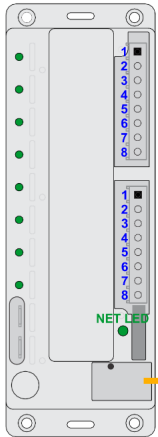
**G8 Module**  
@ D/S Storage Bay Ceiling  
Tiffin P/N: 5089758



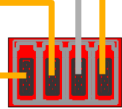
**G6 Chassis Panel**  
@ D/S Front Electrical Bay  
Tiffin P/N: 5093304



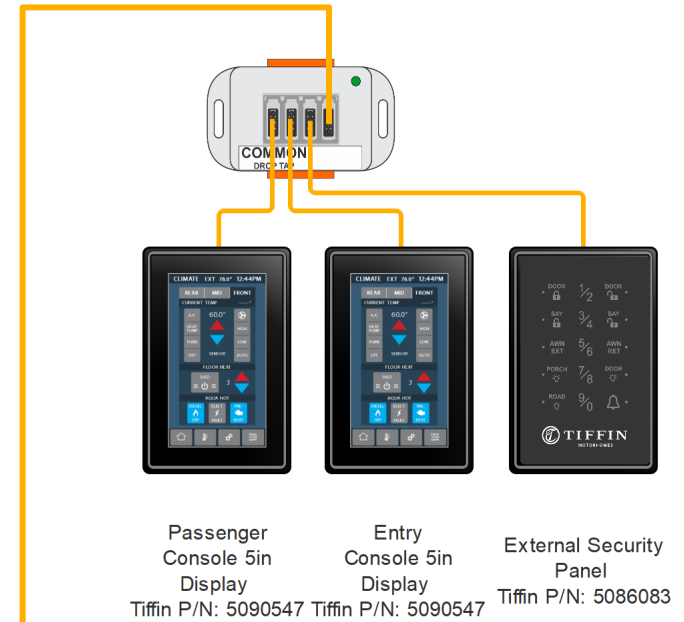
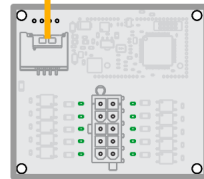
**Cockpit G5 Shade Module**  
@ Cockpit - Overhead  
Cabinet by Entry Door



**G4 Terminator Drop Tap**  
Tiffin P/N: 5051936



**RSI-11**  
@ D/S Front Electrical Bay  
Tiffin P/N: 5067281

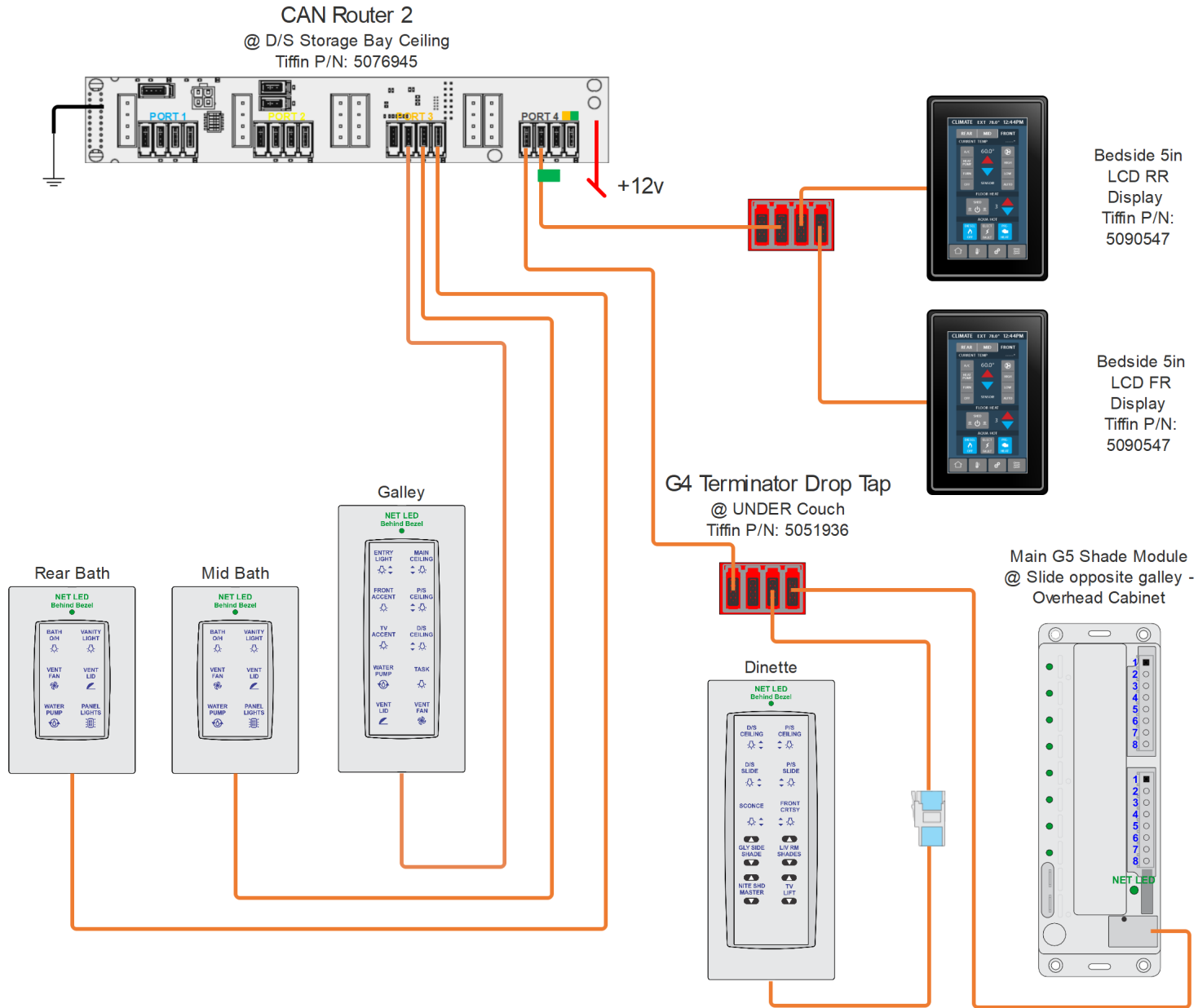


**Passenger Console 5in Display**  
Tiffin P/N: 5090547

**Entry Console 5in Display**  
Tiffin P/N: 5090547

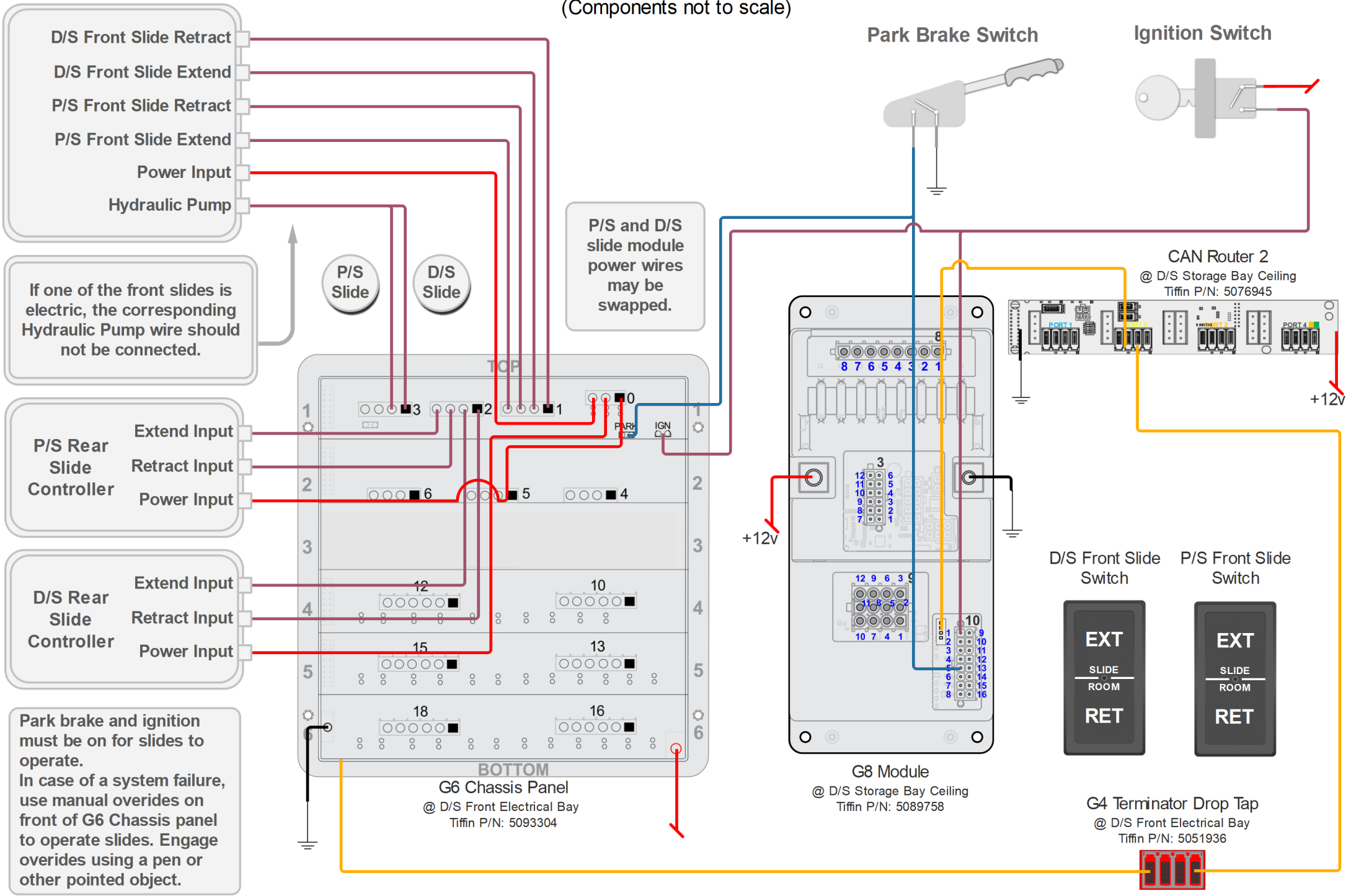
**External Security Panel**  
Tiffin P/N: 5086083

# 2020 Tiffin Bus Orange Network (Components not to scale)



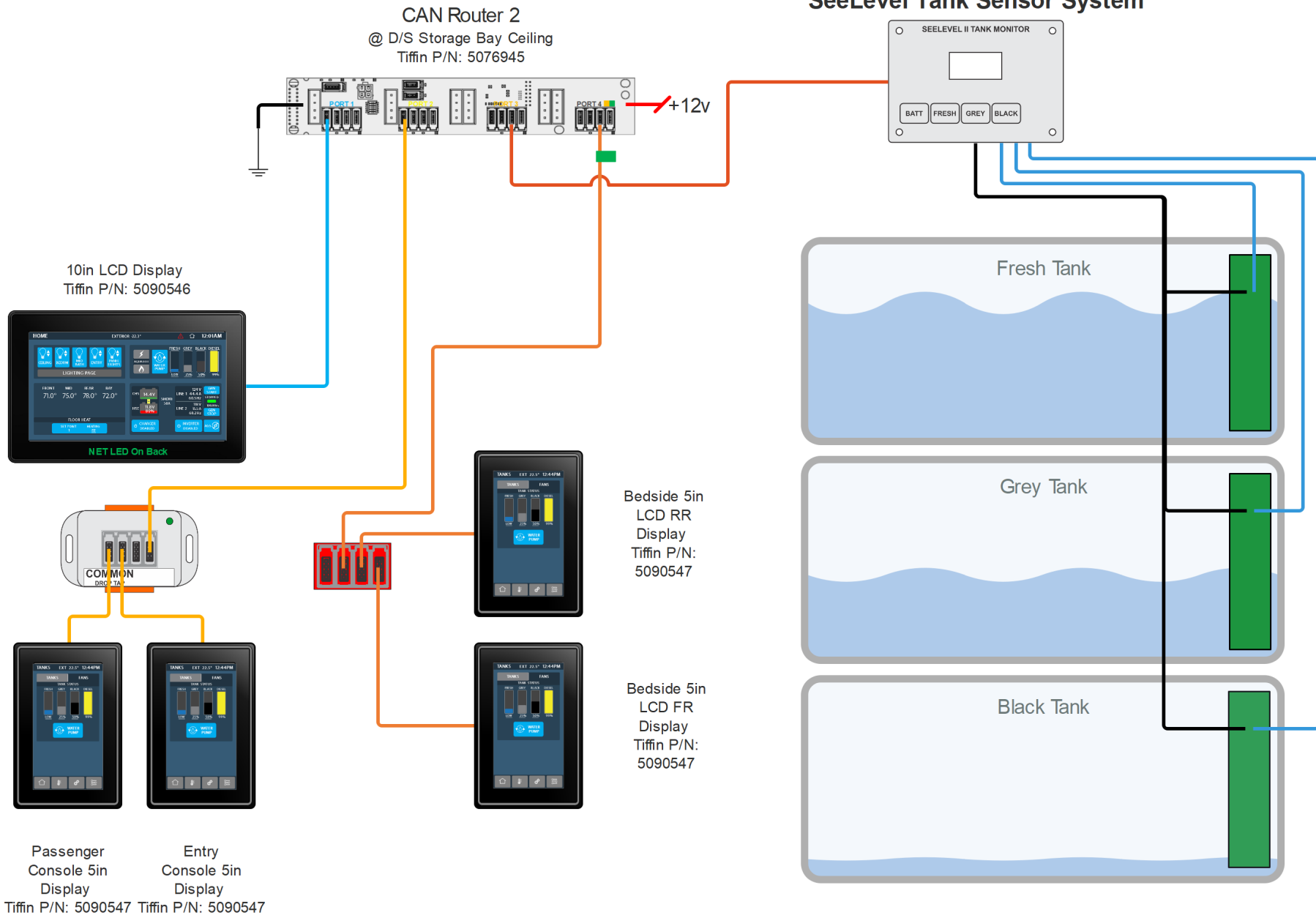
# 2020 Tiffin Bus Slide System

(Components not to scale)



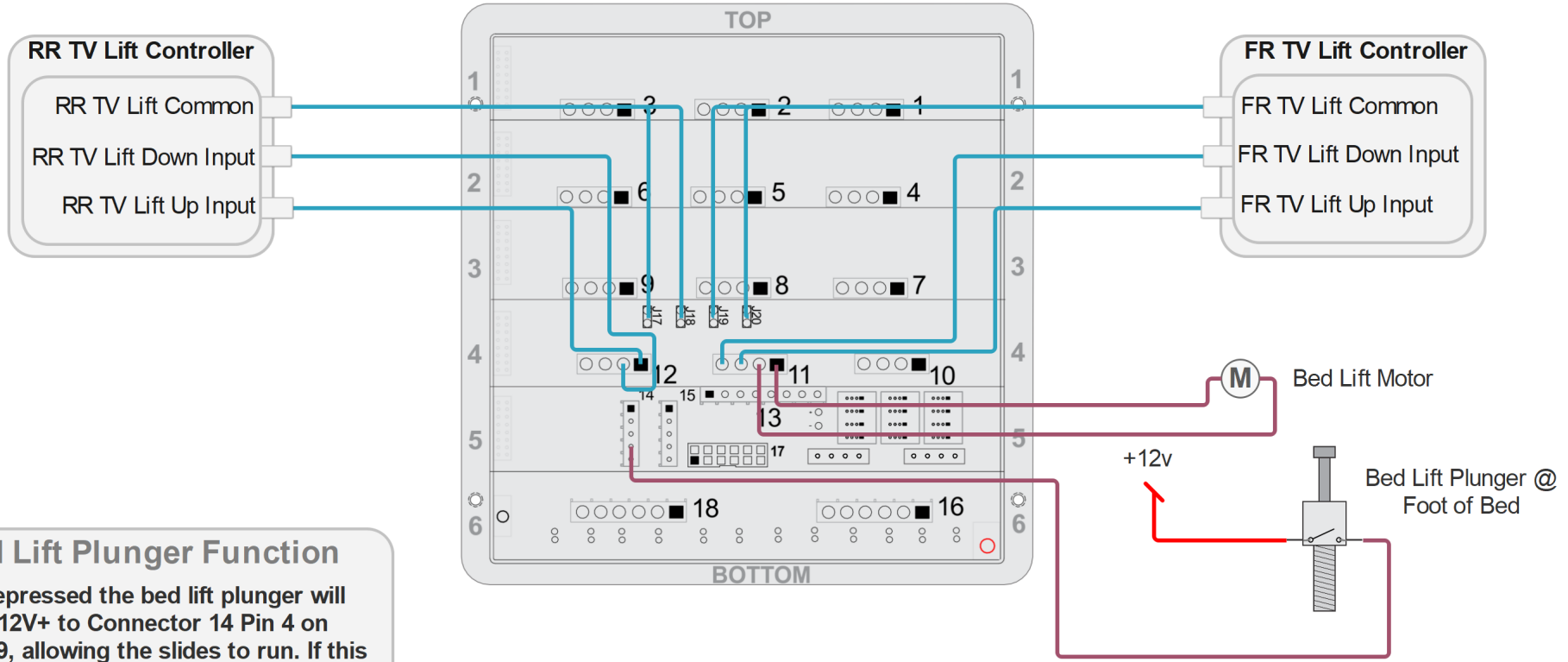
# 2020 Tiffin Bus Tank Level System (Components not to scale)

## SeeLevel Tank Sensor System



# 2020 Tiffin Bus Bed Lift & TV Lift System (If Applicable) (Components not to scale)

G6 House Panel  
@ Rear Closet  
Tiffin P/N: 5089756



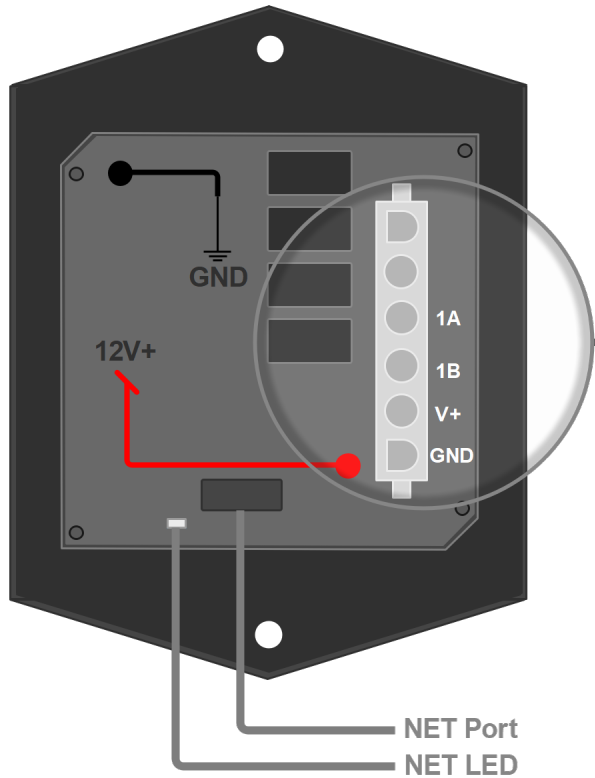
## Bed Lift Plunger Function

When depressed the bed lift plunger will provide 12V+ to Connector 14 Pin 4 on the RSI-9, allowing the slides to run. If this pin is not depressed and no 12V+ signal is being received at the RSI-9 input, the slides will not run.

Normal operation of any TV lift will be as follows:

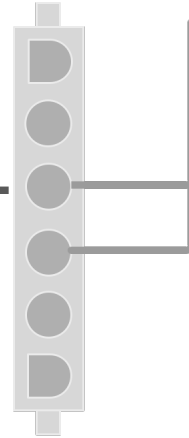
- Press the control to raise the TV lift.
- Press and hold the control to lower the TV lift.

HCR-15 Single Motor Control  
Tiffin P/N: 5092297 @ Rear

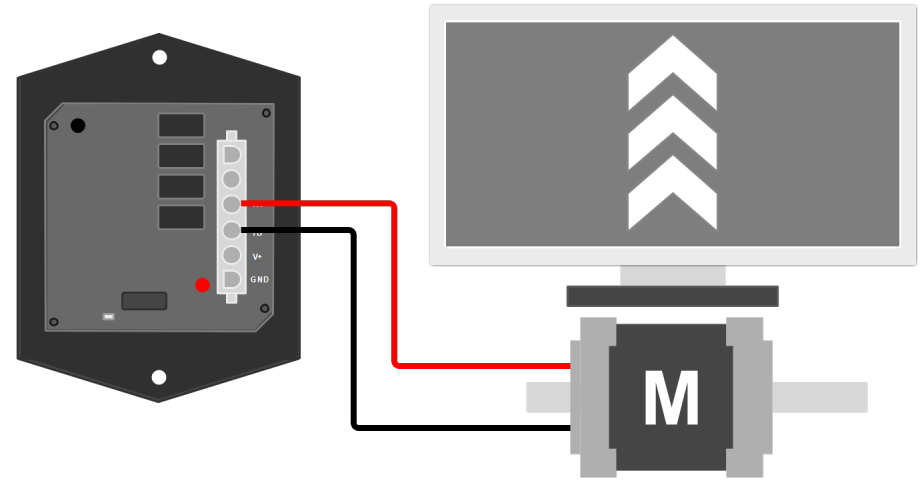


2020 Tiffin Bus  
MoRyde TV Lift - If Applicable  
@ Rear Closet or Bathroom

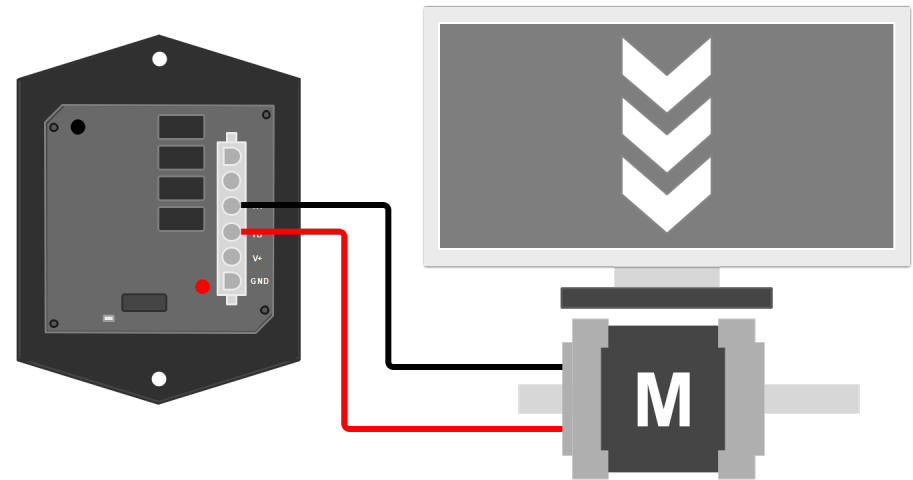
Reverse  
Polarity  
Outputs



## Up Operation



## Down Operation



## Trouble Shooting

The information is only applicable to coaches with a MoRyde TV Lift. The module above is a HCR-15 and is responsible for providing reverse polarity output to the MoRyde TV Lift Motor.

If the TV lift is not raising or lowering check to ensure the NET LED on the HCR-15 is on solid green. If it is flashing or off completely there is an issue with network connectivity. If the module is online (solid green LED) and the TV lift still fails to work, use a multimeter to probe the connector.

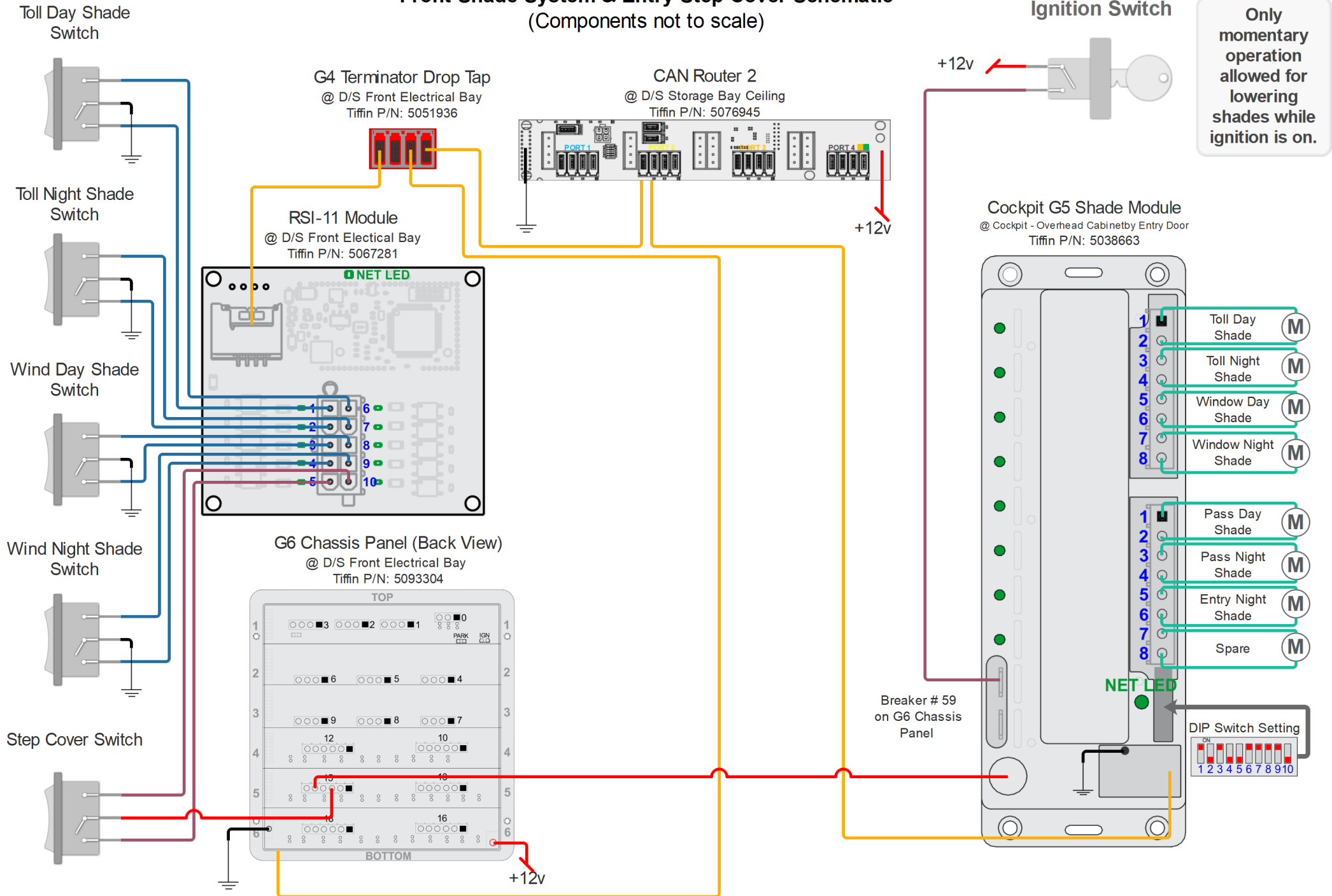
Remove the white 6 position header and insert one probe into 1A and the other probe into 1B. Correct function would have the module output 12V+ one direction and ground the other direction. If this is not occurring please call Spyder Controls.

## Note

Please note there is only one HCR-15 per TV Lift, above is only an illustration of how the reverse polarity controls the TV Lift motor. For any questions please contact Spyder Controls.

# 2020 Tiffin Bus

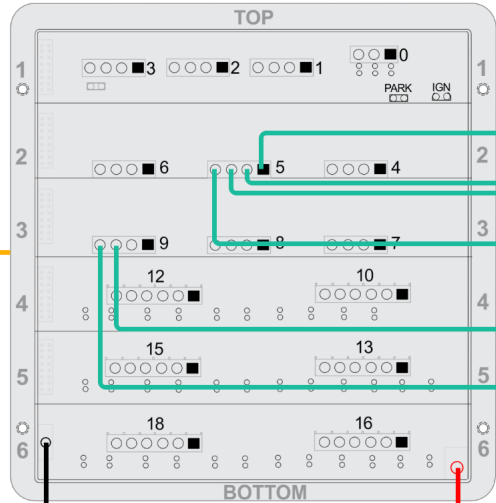
## Front Shade System & Entry Step Cover Schematic (Components not to scale)



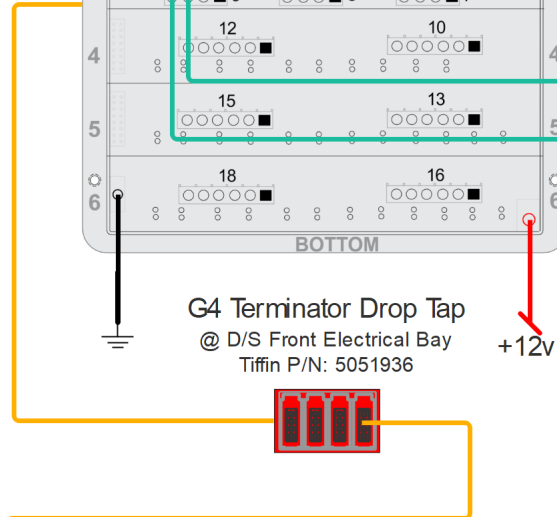
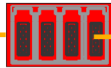
# 2020 Tiffin Bus House Shade System Schematic (Components not to scale)

**G6 Chassis Panel (Back View)**

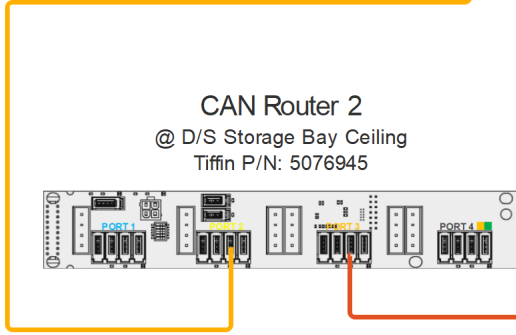
@ D/S Front Electrical Bay  
Tiffin P/N: 5093304



**G4 Terminator Drop Tap**  
@ D/S Front Electrical Bay  
Tiffin P/N: 5051936

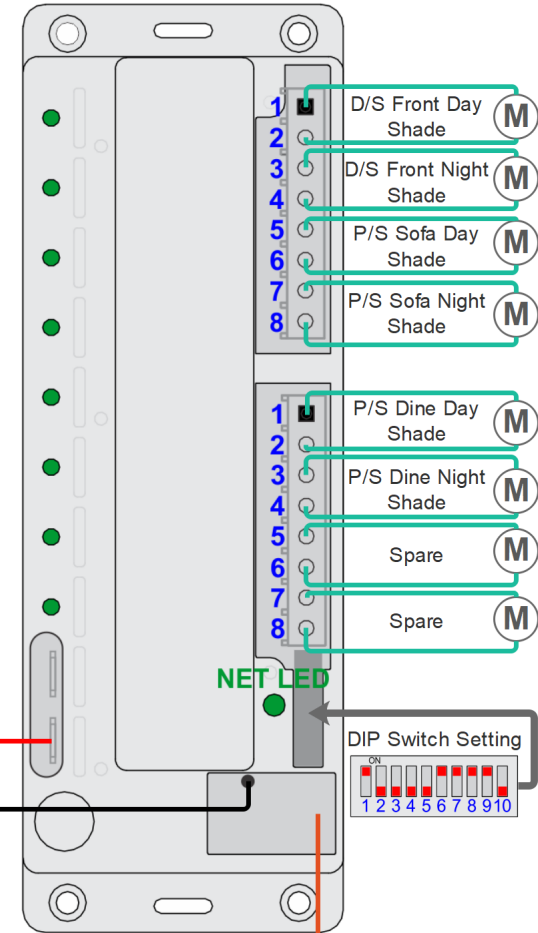


**CAN Router 2**  
@ D/S Storage Bay Ceiling  
Tiffin P/N: 5076945



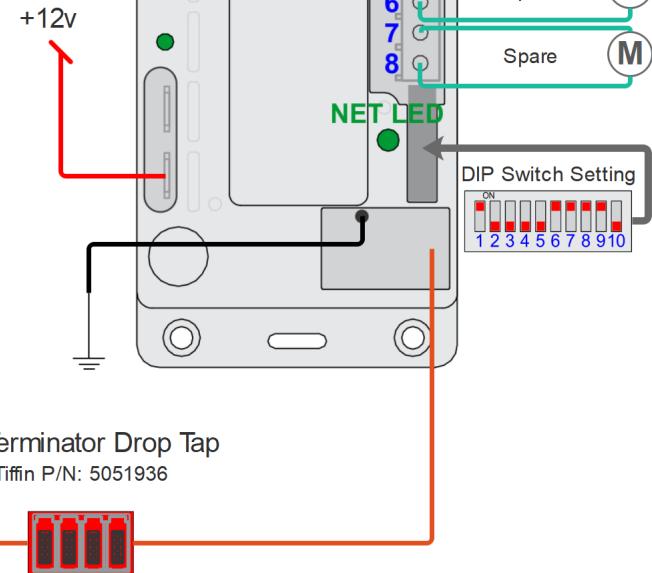
**Main G5 Shade Module**

@ Slide opposite galley - Overhead Cabinet  
Tiffin P/N: 5038663



+12v

**G4 Terminator Drop Tap**  
Tiffin P/N: 5051936

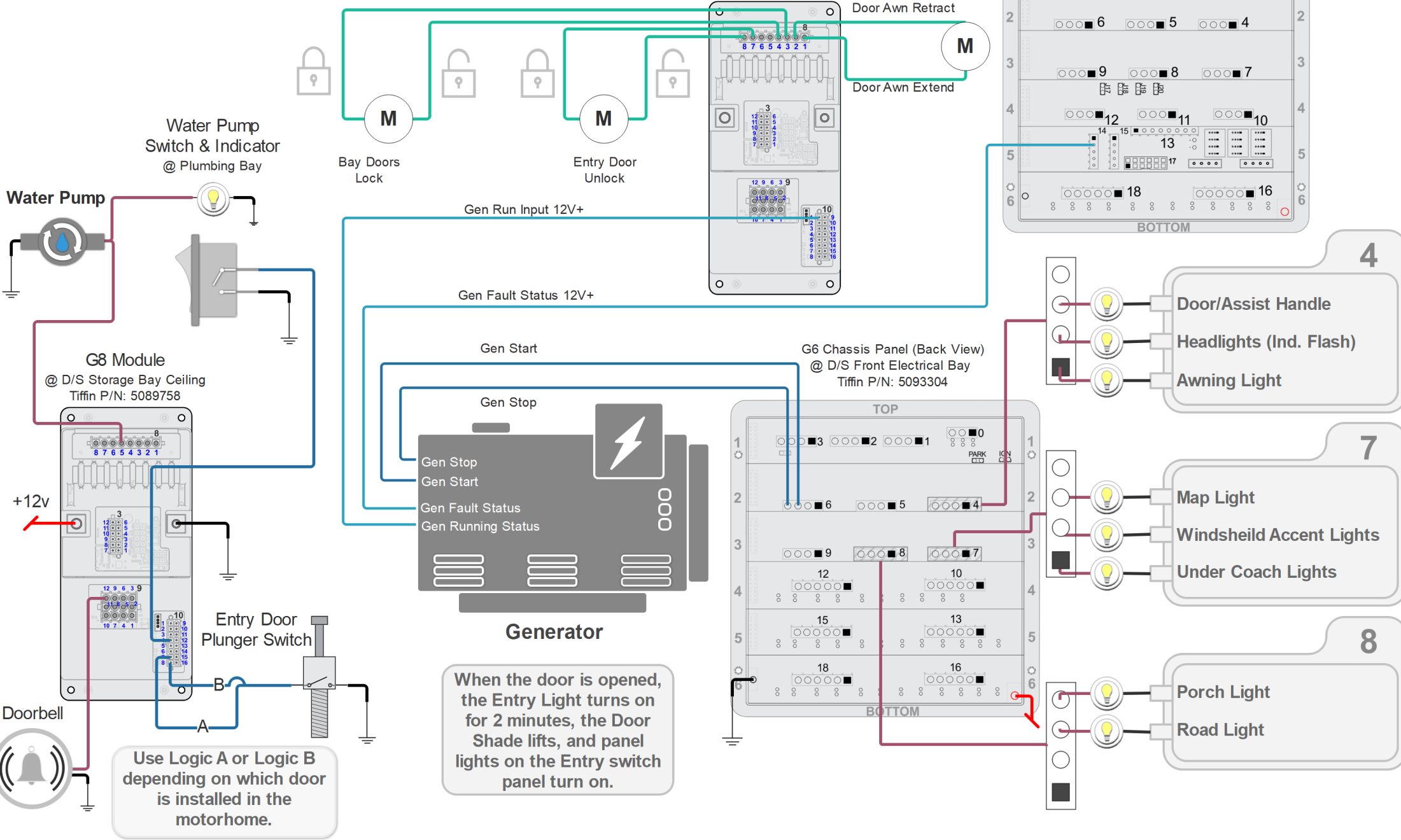


# 2020 Tiffin Bus Miscellaneous (Components not to scale)

G6 House Panel  
@ Rear Closet  
Tiffin P/N: 5089756

G8 Module  
@ D/S Storage Bay Ceiling  
Tiffin P/N: 5089758

G6 Chassis Panel (Back View)  
@ D/S Front Electrical Bay  
Tiffin P/N: 5093304



Use Logic A or Logic B depending on which door is installed in the motorhome.

When the door is opened, the Entry Light turns on for 2 minutes, the Door Shade lifts, and panel lights on the Entry switch panel turn on.

# 2018-2020 Allegro Bus / Phaeton / Zephyr Battery Merge Logic

## Case 1 – CHASSIS CHARGING HOUSE batteries

The merge solenoid will engage if the following conditions are present:

- Ignition signal present for 30 seconds; AND
- Chassis voltage is above 13.3V (charging)

The merge solenoid will dis-engage if under the following conditions:

- Generator starts – unmerge and lockout all merge functionality until the generator running signal is removed (or until the ignition signal is removed); OR
- Ignition signal is removed; OR
- Chassis voltage drops below 12.6V for more than 30 seconds, unmerge until the ignition signal is cycled

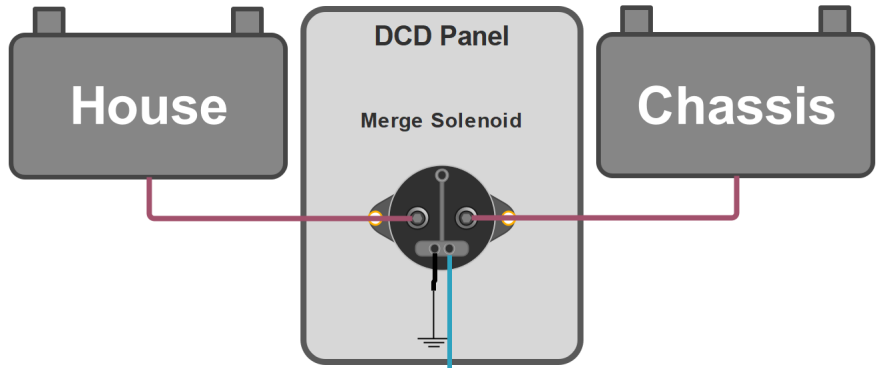
## Case 2 – HOUSE CHARGING CHASSIS batteries

The merge solenoid will engage if the following conditions are present:

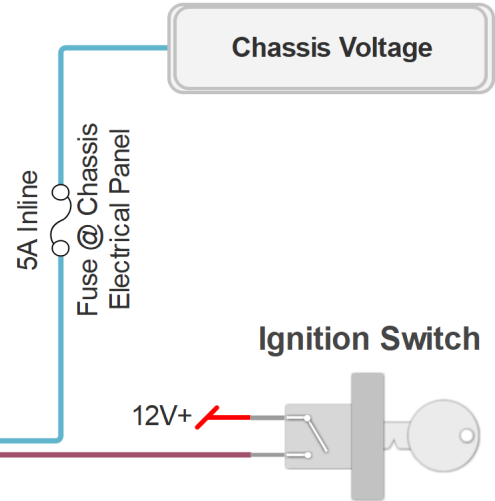
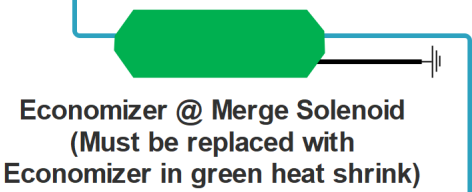
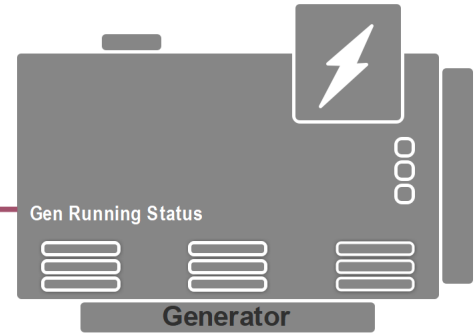
- House voltage is above 12.5V (charging); AND
- Chassis voltage is below 12.4V (low battery voltage) for 30 seconds AND
- **The Magnum Charger is charging**

The merge solenoid will dis-engage if under the following conditions:

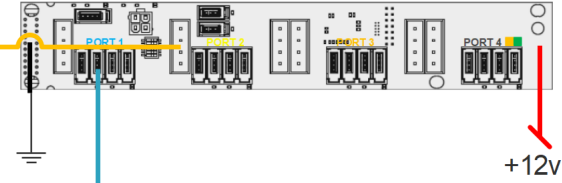
- House voltage drops below 12.2V for more than 30 seconds; OR
- 60 minutes timed battery merge period expires – re-merge will occur again if the merge conditions are still present
- **The Magnum Charger stops charging**



**2020 Tiffin Bus  
Battery Merge System  
(Components not to scale)**



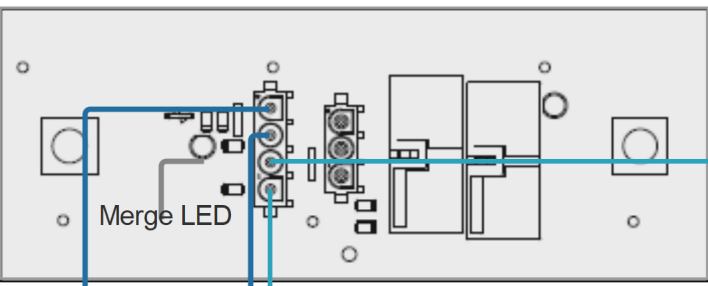
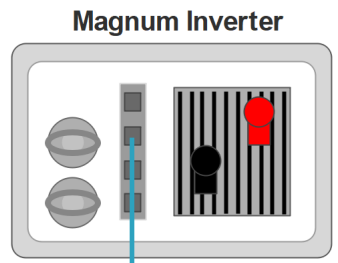
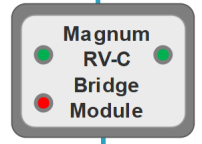
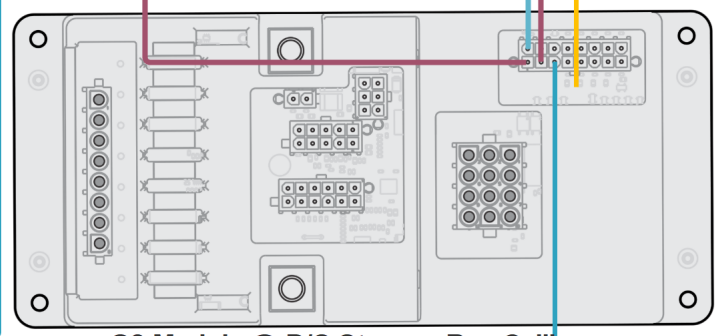
**CAN Router @ D/S Storage Bay Ceiling  
(2020 Tiffin PN: 5076945)**



**!!!!CAUTION!!!!**  
The correct solenoid must be used when replacing a merge solenoid.  
TE solenoids are grey Gigavac solenoids are black.

(TE merge solenoid)  
Spdyer PN: RLY411718

(Gigavac merge solenoid)  
Spdyer PN: RLY411718-G



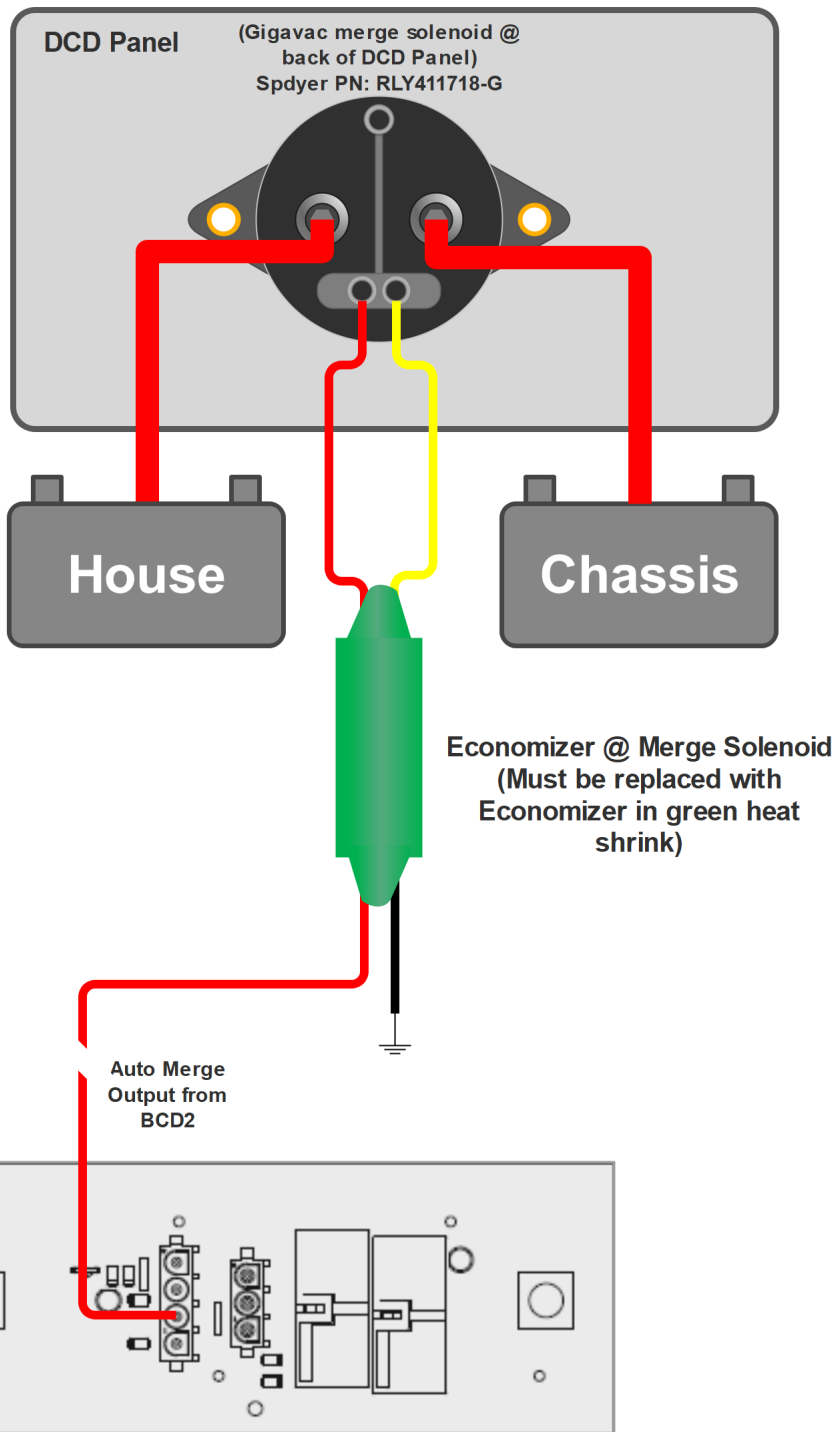
Auto Merge  
Output from  
BCD2

Auto Merge Output from G8

Manual Merge  
Override Switch  
Located @ Dash

To read the conditions that must be met to merge or unmerge the batteries please refer to the Merge Logic and Troubleshooting Page

**2020 Tiffin Bus  
Economizer**  
(Components not to scale)



**Important Information for Replacement**

**BEFORE BEGGINING ANY SERVICE  
DISCONNECT THE HOUSE BATTERY /  
CHASSIS BATTERY AND SHORE  
POWER. FAILURE TO DO SO MAY  
RESULT IN INJURY OR DEATH.**

The economizer must be replaced with the newest  
revision to ensure proper function. If the economizer  
currently installed in the coach is wrapped in any color  
of heat shrink besides green, it must be replaced.

Economizer Tiffin PN: 5087305



Only green heat-  
shrink indicates the  
proper version of  
Economizer

# Auto Merge Troubleshooting

Check the battery readings on your LCD panel.

NO

Start Here

Using the Merge Logic provided on the previous page, put the system in a merge condition. Does a yellow line appear between the House and Chassis batteries indicating a merge?

YES

Does the G8 emit 12V+ from J10 Pin 3?

NO

Call Spyder Controls

YES

Is 12V+ present at the BDC2 J2 Pin 4?

NO

Inspect the wiring between the G8 and BDC2

YES

Is 12V+ being emitted from the BDC2 J2 Pin 3?

NO

Replace the BDC2

YES

Check the merge solenoid. Does it have 12V+ and a good ground?

NO

Inspect and repair the wiring as necessary.

YES

Replace the merge solenoid.

Dashes are being shown on both house and chassis voltage.

Check the network cable at the G8 module. Is it plugged in at both ends and free from damage?

NO

Insure the cable is plugged in securely at both ends. If any wiring issues are present repair as necessary.

YES

Call Spyder Controls

The house or the chassis voltage is reading inaccurately. E.g. 6V+ or 24V+

Replace the G8

The house voltage is accurate but the chassis is reading 0V+

Check the wiring harness pin that connects to G8 J10 Pin 9. Does the voltage being emitted from the pin match the voltage at the chassis batteries?

NO

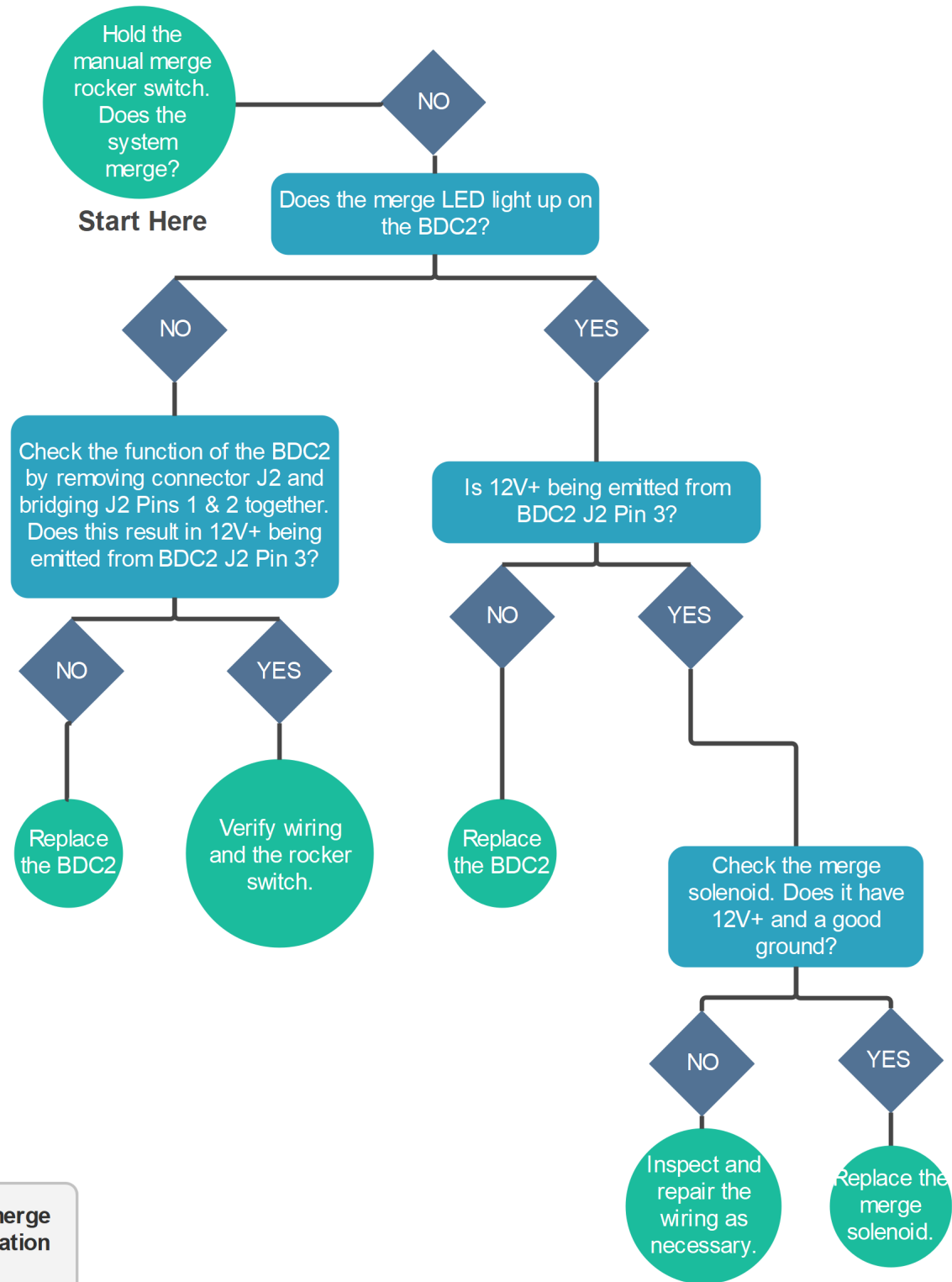
Check the wiring and 5 A inline fuse

YES

Replace the G8

The information above only covers the auto merge system. Please see the next page for information on manual merge & the manual merge rocker switch

# Manual Merge Troubleshooting



The information above only covers the manual merge system. Please see the previous page for information on auto merge system.

**2020 Tiffin Bus**  
Inverter Assist  
(Components not to scale)

Inverter assist is a state in which power is temporarily drawn from the batteries to keep EMS loads from shedding.

**INVERTER ASSIST WILL ACTIVATE IF THE FOLLOWING CONDITIONS ARE TRUE**

**1**

SHORE OR GENERATOR POWER IS AVAILABLE

**3**

THE CHARGE RATE HAS BEEN REDUCED

**2**

THE CHARGER IS IN FLOAT MODE  
(BATTERIES ARE CLOSE TO FULL CHARGE)

**4**

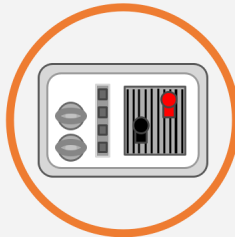
A NON-EMS INVERTED LOAD IS ACTIVATED,  
SUCH AS THE MICROWAVE



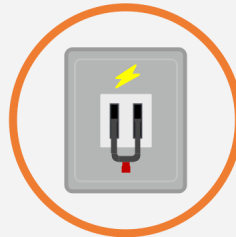
Batteries close to full



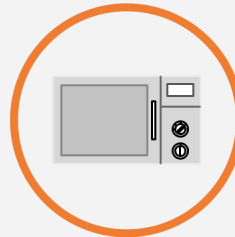
Connected to Shore Power or Gen Charging



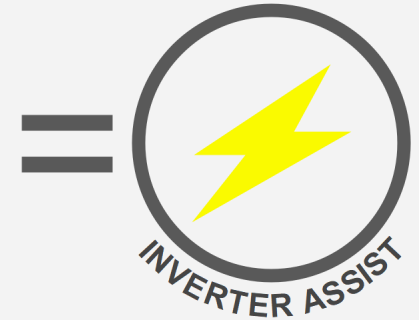
Charger in Float



Close to Shore / Gen Breaker Max



Non-EMS Inverted Load Activated



**!**

If the conditions above are true. To keep any EMS load from shedding the inverter will go from passthrough to inverting to temporarily invert for 5 minutes.

**!**

Please note inverter assist can only occur once every charge cycle. Therefore the coach will not frequently be in inverter assist mode.

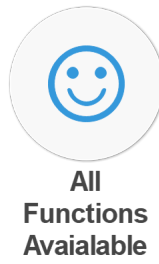
**!**

Please note inverter assist will temporarily decrease your battery voltage. This is normal the voltage will stabilize relatively quickly once the inverter assist period has expired.

**!**

Please contact Spyder Controls Corp for further info.

# SSP-22 Quick Guide



Once the keypad is unlocked the two outermost columns will illuminate. These buttons provide quick access to all features shown on the label. Please note pressing door unlock will unlock the entry door and turn on the door light for 30 seconds. Pressing door lock will lock entry door and keypad simultaneously.

Please note the keypad has an auto-lock feature. If you do not interact with the keypad for 5 minutes the keypad will lock.

Parking brake must be engaged to use awnings.

When the park brake is enabled the center column of numbers will be illuminated white, if the center column is not illuminated simply press any button on the keypad for 1 second. Once the center column is illuminated white you may enter your pin. If you wish to set or reset your pin please refer to # in this manual.

As you enter the pin green LED's will light up on the left side of the switch panel. If the pin is accepted the outer two columns will illuminate blue. If the pin is rejected the panel will flash and discard your input, you must enter your pin again. If the wrong pin is entered to many times your keypad will lock for 15 minutes.

The doorbell may be rung even if the keypad is locked. If your doorbell does not work please check to insure you have it enabled on your main LCD panel.



Access to settings related to the exterior keypad can be found on the main Spyder screen. Navigate to settings > screen settings. (Fig.3)

Once on this page various actions can be performed such as enabling or disabling your door bell, setting or resetting your exterior keypad pin and pairing your key fobs.

Instructions are provided on screen for setting or resetting your pin and pairing your key fobs.

Fig.3

## To Replace The Battery

If the wireless rocker switch stops communicating it may be due to a low battery. To ensure the switch panel has a low battery navigate to the settings > switch settings page on your main LCD panel. The wireless rocker switches will display "LOW BATTERY" in the right-hand column. If this is the case you will need to replace the battery.

To replace the battery firmly grasp the outside edge of the wireless rocker switch.

Pull to the left or right until the switch snaps off the wall. Use a pen or other thin object to push the coin cell out of the retaining clip. Insert new battery with the + symbol facing upwards, ensure battery is seated into retaining clip all the way.

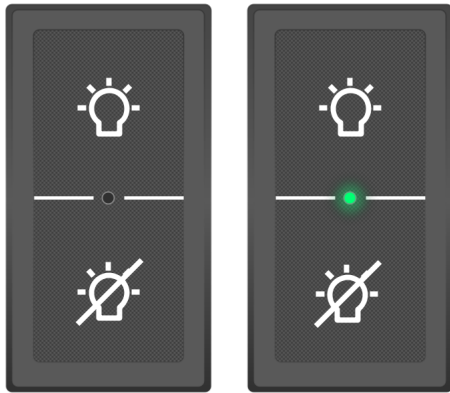
Use the up arrows on the back of the switch panel to orientate placement back onto the mounting bracket. Snap the wireless rocker switch back into place.

Test the switch and dispose of the old battery responsibly.

## Wireless Rocker Switch Quick Guide and Battery Replacment

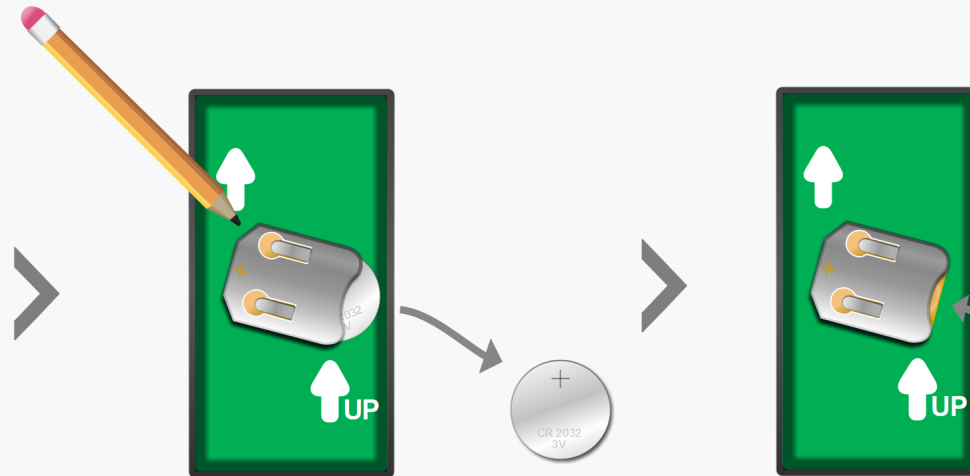
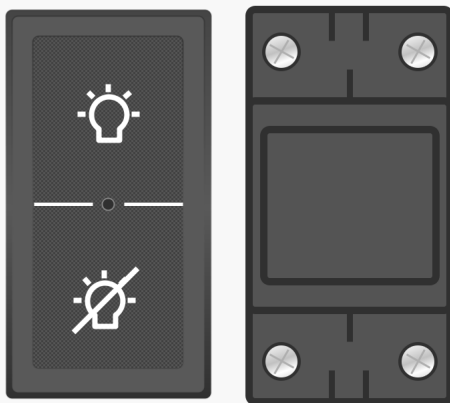


Not Transmitting      Transmitting

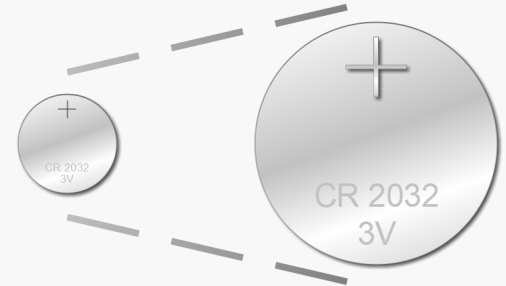


A green LED will turn on when a button is pressed. This is the transmit LED and confirms that the switch panel is transmitting information. This LED will flash occasionally, this indicates the switch panel is transmitting it's battery status.

Snaps on and off wall bracket



NOTE: ONLY REPLACE THE COIN CELL BATTERY WITH A CR 2032. DOING OTHERWISE WILL VOID THE PANEL WARRANTY AND COULD DAMAGE THE PANEL

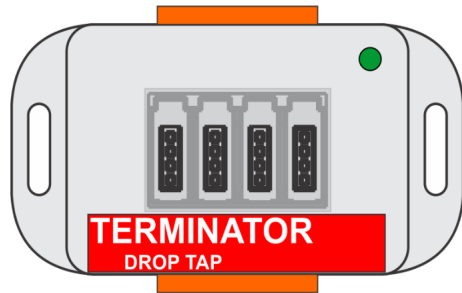


# 2020 Tiffin Bus

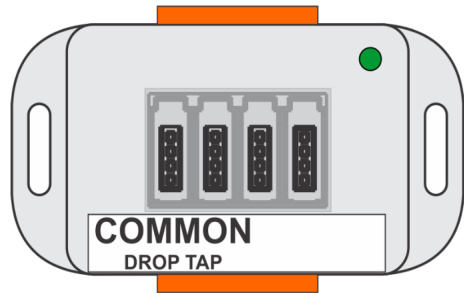
## Network Connectors and Related Parts

(Components not to scale)

G3 Terminator Tap  
Tiffin P/N: 5051935



G3 Common Tap  
Tiffin P/N: 5027834



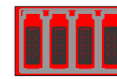
G4 Common Drop Tap  
Tiffin P/N: 5016592



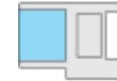
Mini-Clamp Plug  
Tiffin P/N: 5066157  
3M P/N: 37104-2165-000 FL 100



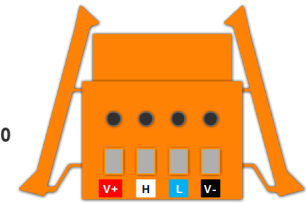
G4 Terminator Drop Tap  
Tiffin P/N: 5051936



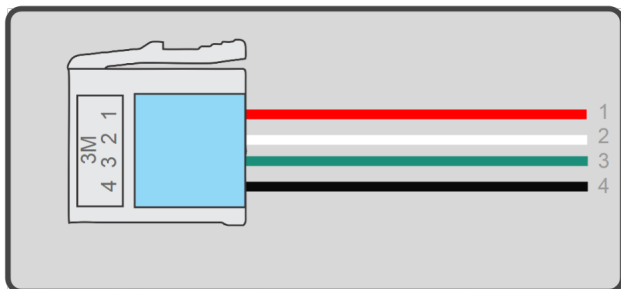
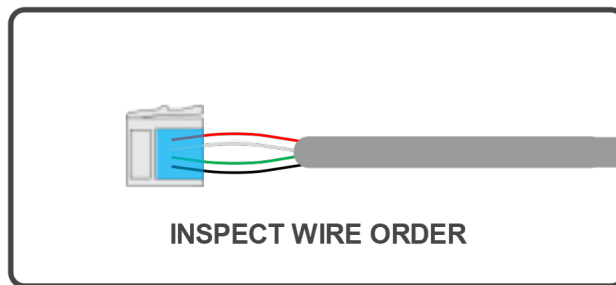
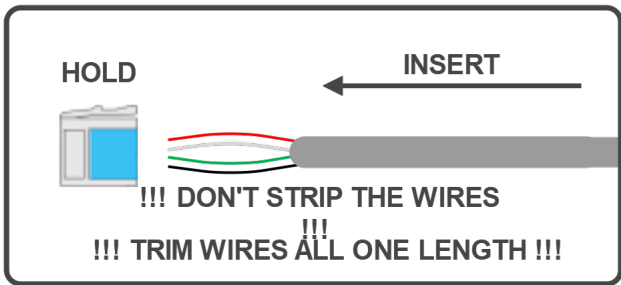
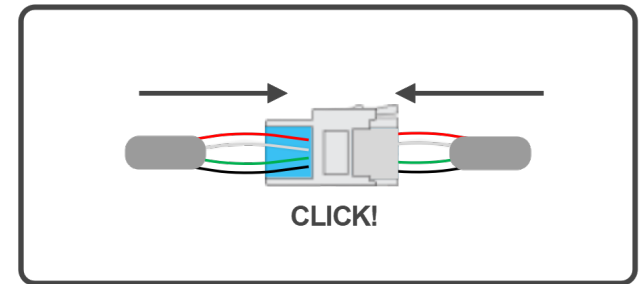
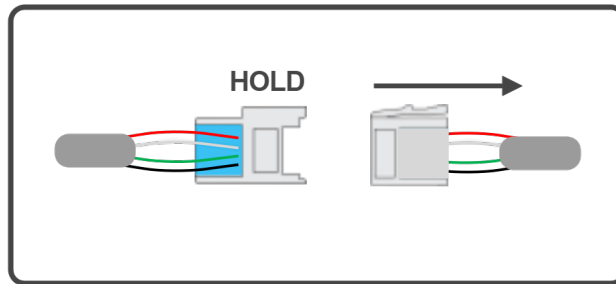
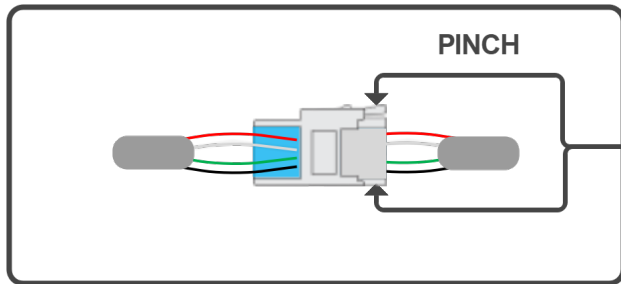
Mini-Clamp Socket  
Tiffin P/N: 5066158  
3M P/N: 37304-2165-000 FL 100



4 Pos Wago Connector  
Tiffin P/N: 5015508



Wago Hook Tool  
Wago P/N: 231-131



### Mate-N-Lok Pin Extractors



Mate-N-Lok Pin Extractor  
TE P/N: 305183



Mini Mate-N-Lok Pin Extractor  
TE P/N: 189727-1