



SOFTWARE VERSION v2.x

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# GroundControl™ Multi

User Guide (rev.B Software 2.x)

**DRAFT**  
**6-12-25**



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GroundControl Multi User Guide  
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Production Resource Group  
Dallas Office  
3110 Roy Orr Blvd, Suite 200  
Grand Prairie, Texas 75050  
[www.prg.com](http://www.prg.com)



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## REVISION HISTORY

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## INTRODUCTION

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### About This Manual

This user manual provides necessary information regarding the operation of the GroundControl™ Multi software. This guide is provided to explain the features in the GroundControl™ Multi software in detail.

### Additional Documentation

For more information about DMX512 and sACN protocols, refer to the following documents available from the American National Standards Institute (ANSI) at [www.ansi.org](http://www.ansi.org):

- + ANSI E1.11 - 2008 (R2013): Entertainment Technology - USITT DMX512-A, Asynchronous Serial Digital Data Transmission Standard for Controlling Lighting Equipment and Accessories
- + ANSI E1.31 - 2009: Entertainment Technology - Lightweight streaming protocol for transport of DMX512 using ACN

The above documents are also available in electronic format free for PLASA members at [www.plasa.org](http://www.plasa.org)

For more information about Art-Net, refer to the following document available from Artistic Licence Engineering at [www.artisticlicence.com](http://www.artisticlicence.com):

- + Specification for the Art-Net ethernet Protocol

### Customer Service

For technical assistance, contact your nearest PRG office. Contact information for all PRG offices can be found on our website at: [www.prg.com](http://www.prg.com)

For additional resources and documentation, please visit our website at: [www.prg.com](http://www.prg.com)

## Notes

PRELIMINARY

## GENERAL OPERATION

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### About GroundControl™ Multi



GroundControl™ Multi enables up to 100 fixtures of any kind to be linked to an existing GroundControl™ system and follow a single target. Control over fixtures can be easily swapped between a lighting console and the GroundControl™ Multi system

### About Calibration

To link additional fixtures, GroundControl™ calibrates their location in 3D space using four custom Target Points.

Once the fixtures have been patched in the GroundControl™ Multi software, the system can take control to calibrate.

During calibration, each fixture is aimed at each of the Target Points, and the GroundControl™ Multi software stores and calculates their positions. This calibration can be completed from either a lighting console or the GroundControl™ controller itself.

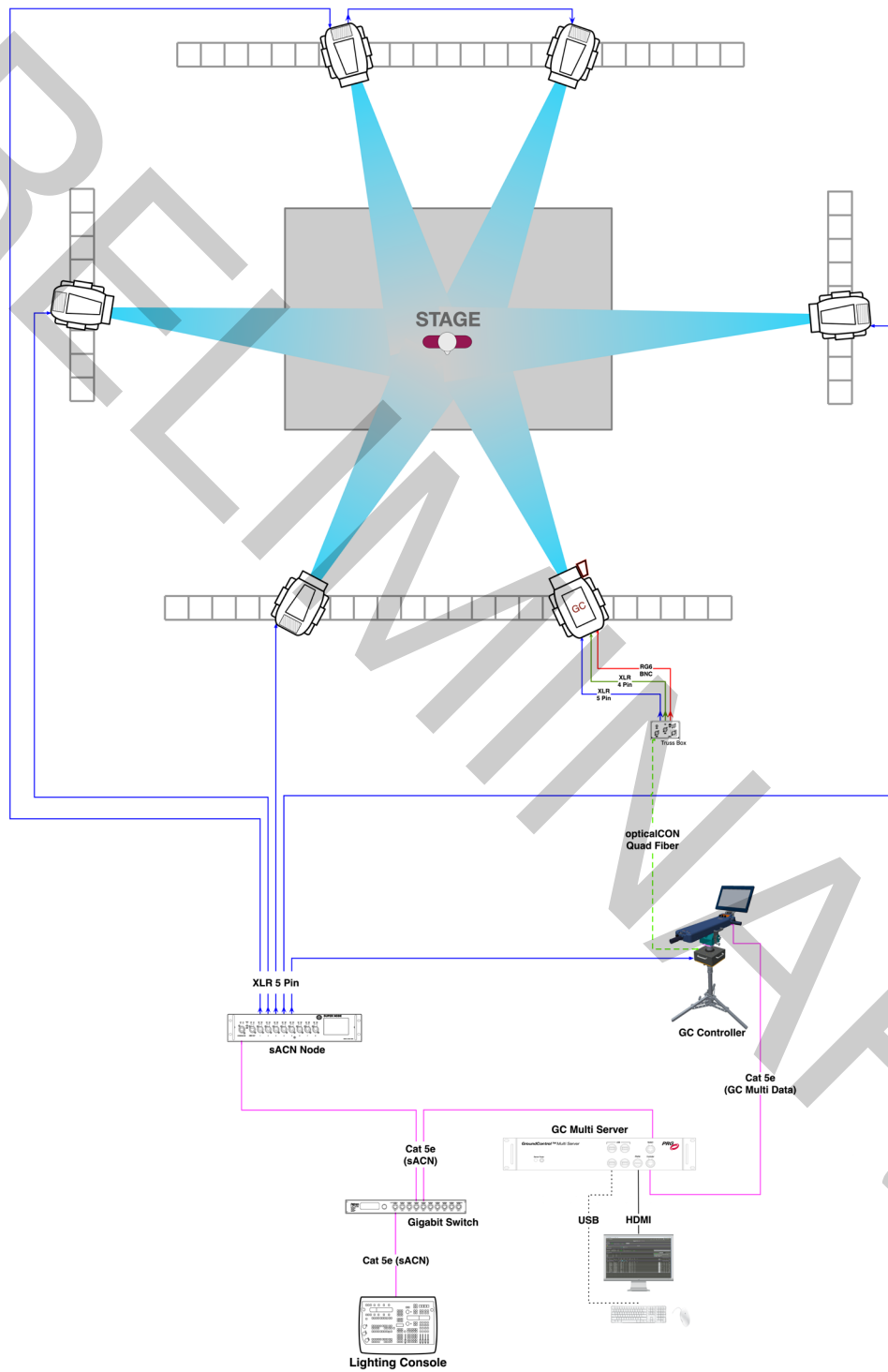
Once calibrated, these fixtures will follow wherever the primary GroundControl™ fixture is aimed.

### The GroundControl™ Multi System

A GroundControl™ Multi system contains:

- + Up to 24 GroundControl™ Controllers
- + A GroundControl™ Multi Server running GroundControl™ Multi Software 2.x
- + Up to 24 GroundControl™ camera fixtures
- + Up to 100 additional following fixtures of any kind on any sACN universe
- + Any lighting console

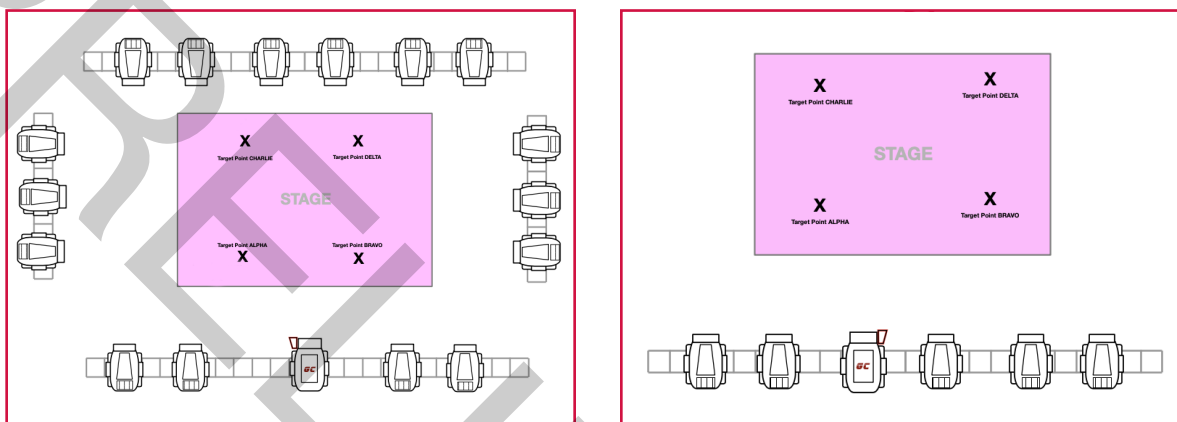
## Basic System Drawing



## Hanging Fixtures

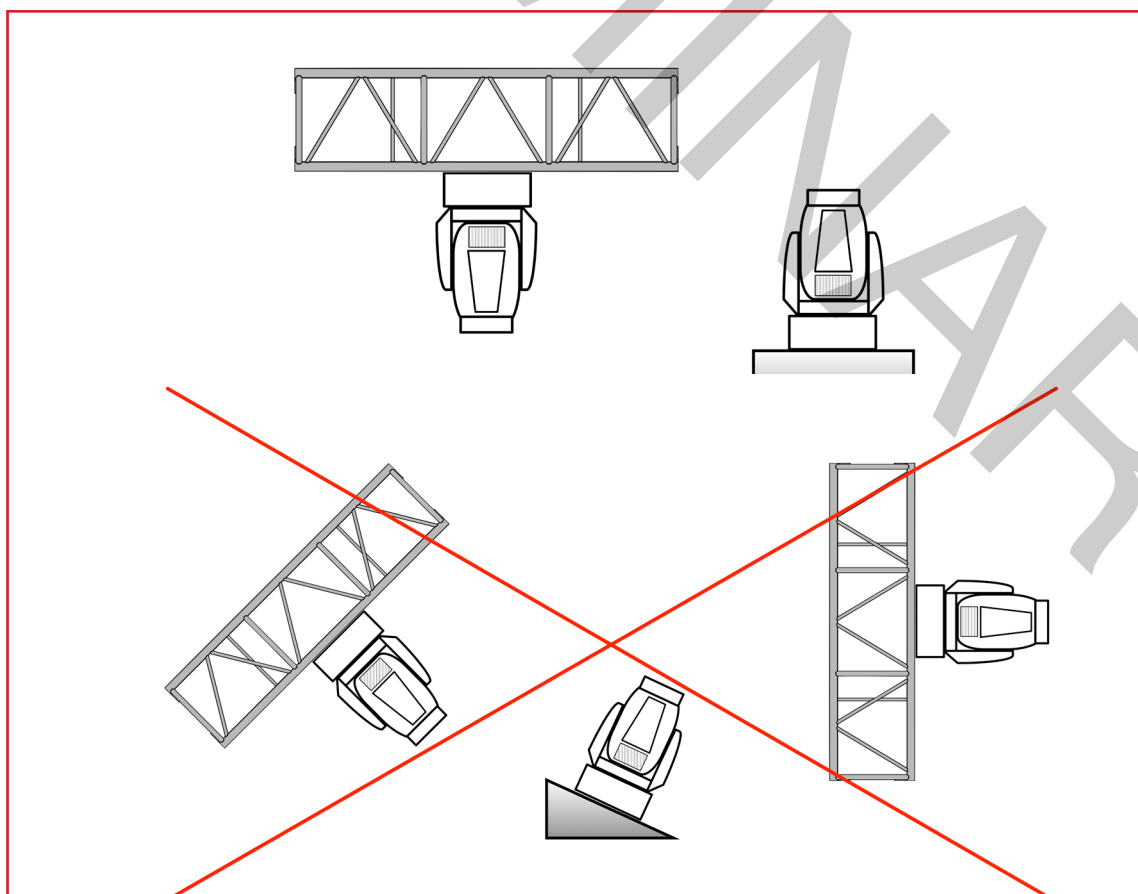
### Fixture Layout

Fixtures must be hung outside of Target Point boundaries. Focus points should not be directly in-line, horizontally or vertically, with fixtures.



### Fixture Orientation

Fixtures can only be hung conventionally, with the upper enclosure at the top, or sitting on its base. Fixtures on raked truss, base down on a slope, or yoked out will not work. The orientation of a fixture must be specified in the Patch section of the Configuration window.



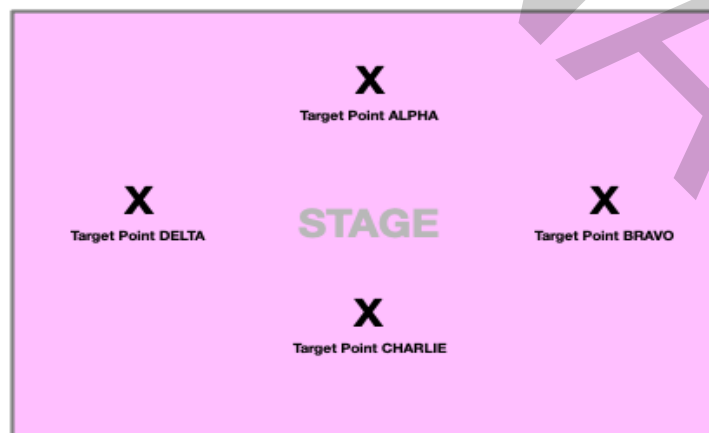
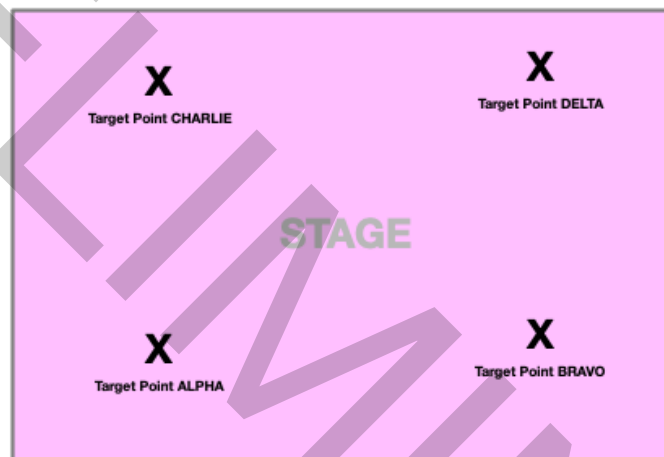
## Target Points

### What is a Target Point?

A target point is a measured point of reference within the performance area used by the GroundControl™ Multi application to calibrate the location of fixtures. GroundControl™ Multi uses four target points to calibrate.

### Correct Layouts

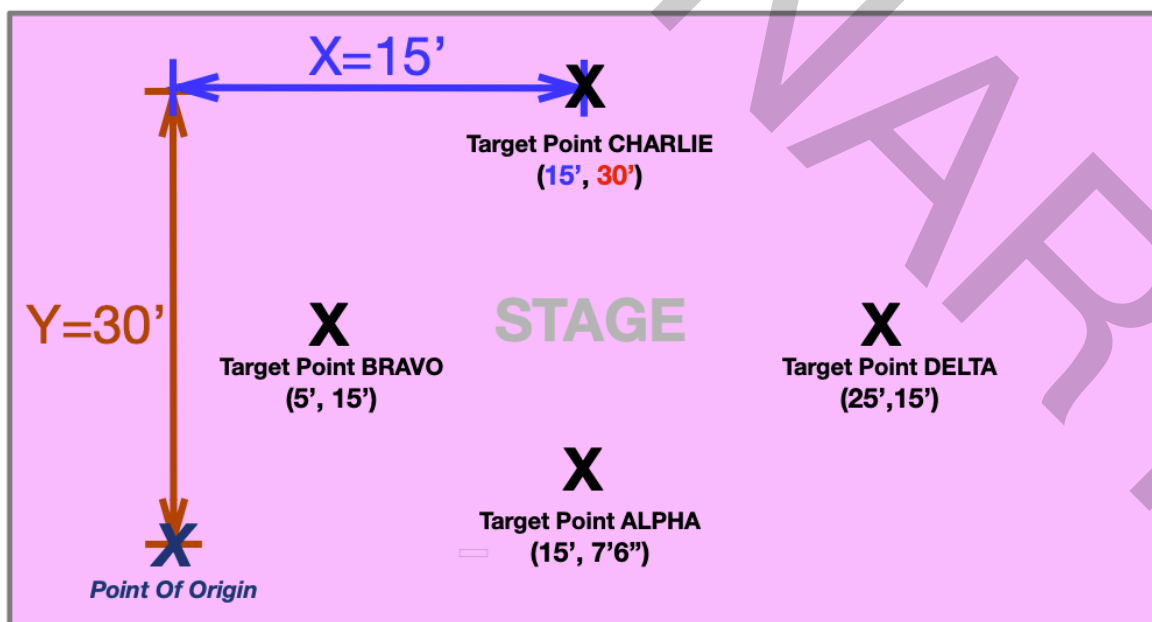
Target Points can be arranged anywhere within the boundaries of the GroundControl™ Multi Fixtures. Each Point must be assigned one of four labels: Alpha, Bravo, Charlie, or Delta. The labels' order is arbitrary and should be assigned based on the preferences of the system's operators.



## Measuring Target Points

The only measuring that needs to be done for GroundControl™ Multi is the measurements from an origin point to each of the target points. These measurements are expressed as a unique X and Y value for each target point. Follow these steps to measure out the X and Y coordinates for target point.

- a. Select a Point of Origin anywhere within your Performance Area.
  - A Point of Origin is an arbitrary reference point used by the GroundControl™ Multi Application to calibrate the 3D position of fixtures in the GroundControl™ Multi System. Examples might be the downstage corner of a touring deck, an upstage wall, a corner of the proscenium arch, the edge of a stage, or even using Target Point Alpha as an origin point.
- b. Select four Target Points within the boundaries of your Performance Area.
  - Make sure all the target points are at the same height on the stage.
  - It is recommended that the target points are spaced as far apart from each other as possible but still within the stage space.
  - Ensure your Target Points are clearly marked.
  - Assign each Target Point a label: 'Alpha,' 'Bravo,' 'Charlie,' or 'Delta.'
- c. Measure the X and Y distances from each Target Point to the Point of Origin.
  - A simple tape measure is more than adequate to measure with.
  - When you measure, make sure that your Y is perpendicular/square to your X and not slanted. Otherwise your measurements will be off. Look for construction details like platform seams on a touring deck, concrete seams on an arena floor, or even wood strips and seams on a stage floor to help you measure and stay square. If it is available, a laser level may be helpful.

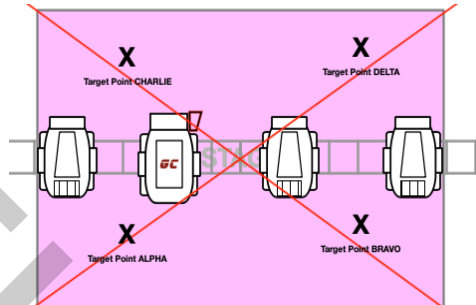




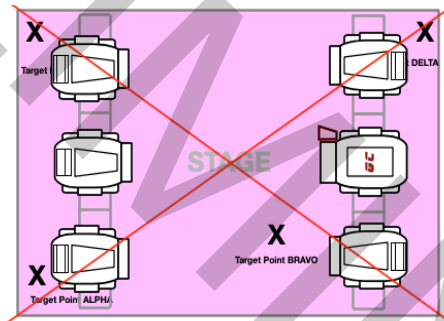
## Incorrect Layouts

The layouts shown below are examples of improper Target Point layouts that will result in fixtures flipping uncontrolled during operation as well as possible failed calibrations.

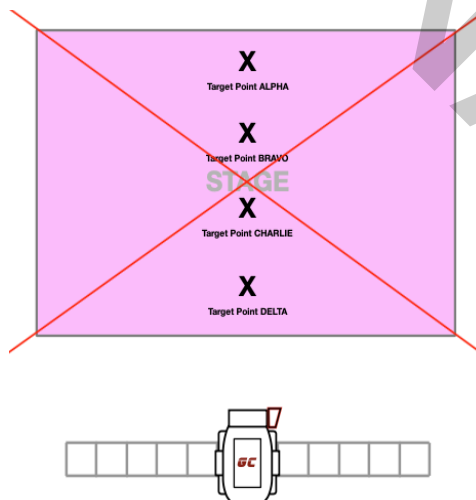
Please note that GroundControl™ Multi Fixtures must pan at least 1° between Target Points in order to avoid a failed calibration.



In this example, Focus Points are placed on either side of a truss with Fixtures. Focus points must only be on a single side of each truss.



In this example, Focus Points are placed on both the outside and inside of these trusses. Focus points must only be on a single side of each truss.



In this example, multiple Focus Points are placed directly in line with a GroundControl™ Fixture. No pan data can be recognized by the GroundControl™ Multi application, resulting in a failed calibration.

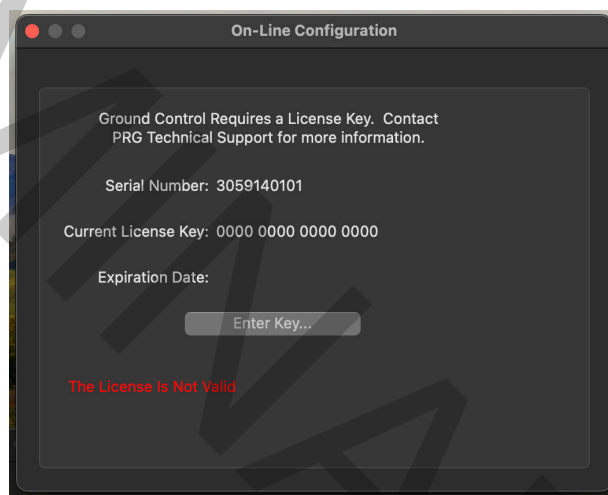
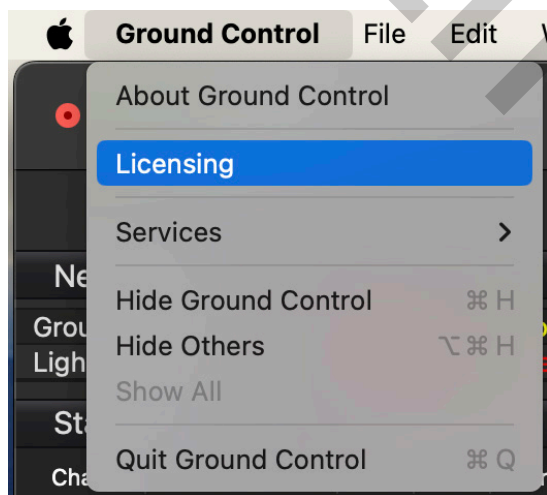


## CONFIGURATION

### Configuring the GroundControl™ Multi Application

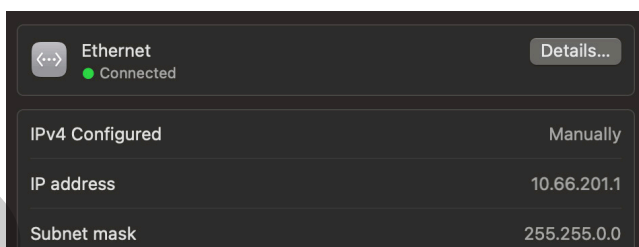
Please follow the steps below to configure your GroundControl™ Multi application and prepare for calibration.

- Step 1. Set up a standard GroundControl™ Remote Followspot System. See the [User Manual](#) for more in-depth instructions.
- Step 2. Load GroundControl™ Multi Firmware Version 2.x onto your GroundControl™ Controller. See the [User Manual](#) for more in-depth instructions.
- Step 3. Install the GroundControl™ Multi application onto the GroundControl™ Multi Server.
- Step 4. Open the GroundControl™ Multi application.
- Step 5. License your GroundControl™ Multi application.
  - a. Enter a Valid License Key in the “Licensing” Window.
    - Please [contact PRG](#) if you are in need of a Valid License Key.

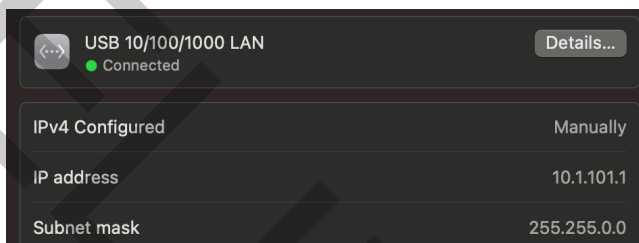


- Step 6. Connect your GroundControl™ Multi Server to the Lighting System and the GroundControl™ Controller
  - a. Use an Ethernet Cable to connect the GroundControl™ Multi Server from the System Port on the server to your Lighting System.
  - b. Use an Ethernet Cable to connect the GroundControl™ Multi Server from the Controller Port on the server to your GroundControl™ Controller. Open System Settings on your MacOS computer.

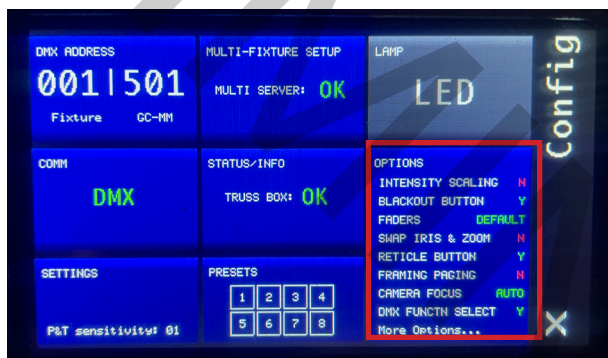
Step 7. Manually configure the connection to your Lighting System as shown below.



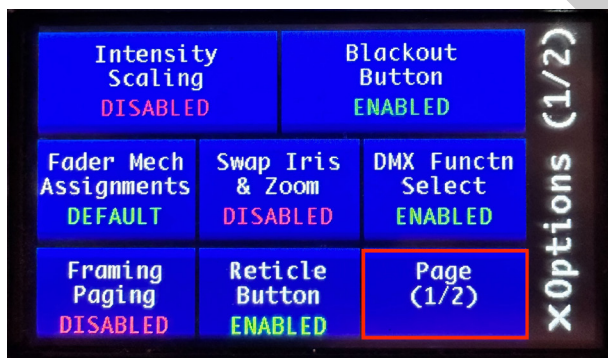
Step 8. Manually configure the connection to your GroundControl™ Controller as shown below.



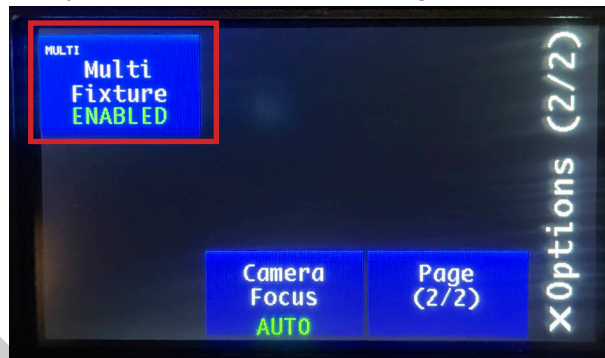
Step 9. Using the display of your GroundControl™ Controller, open the “Options” menu in the “Configuration” window.



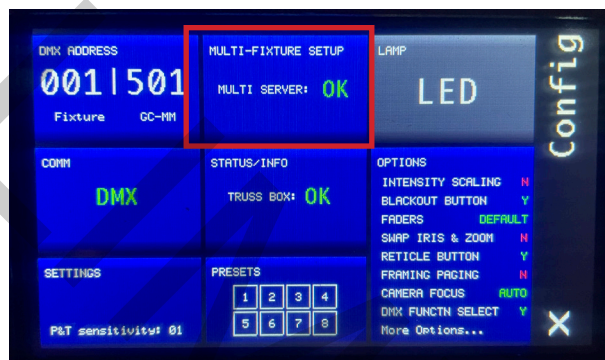
a. Navigate to the second page.



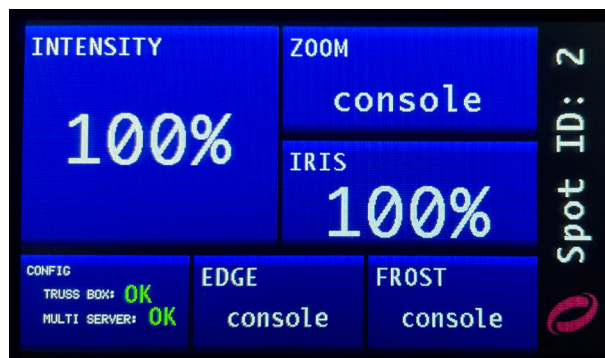
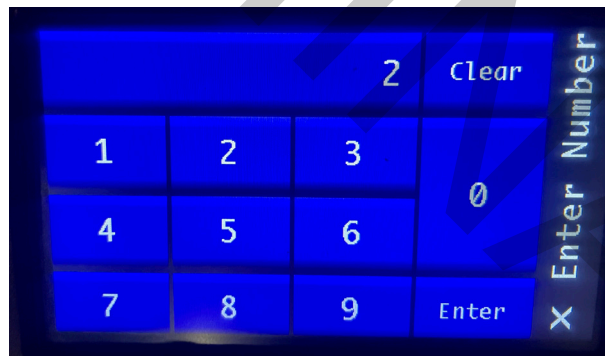
- b. Enable the “Multi Fixture” option and return to the “Configuration” window.



- c. Enter the “Multi-Fixture Setup” menu.

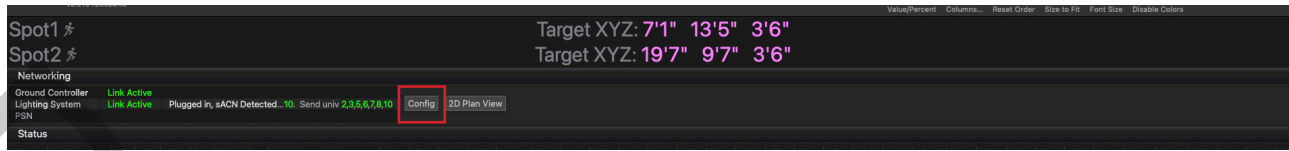


- d. Set the “Set Spot ID” to which ever Followspot Number (1-24) that the controller is driving and return to the Home Screen.

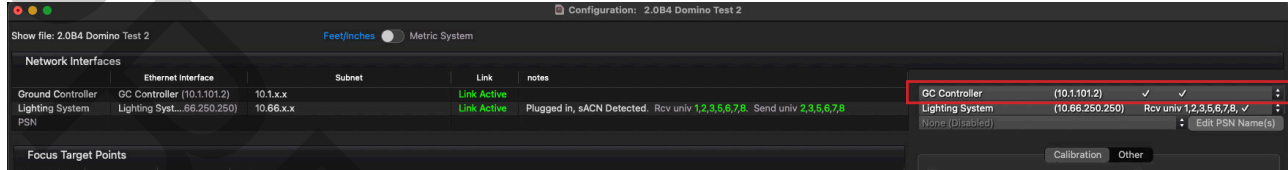


Step 10. Configure the Network Interfaces in the GroundControl™ Multi Application.

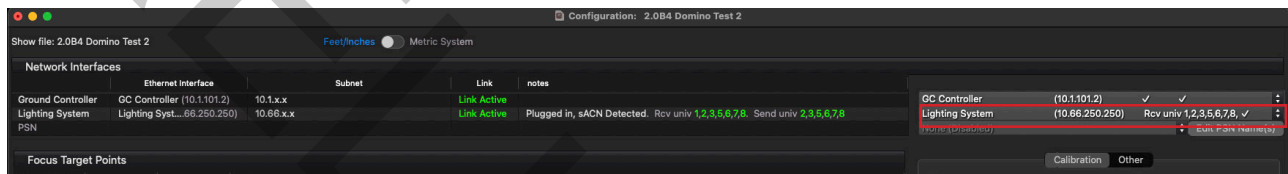
- Open the “Configuration” window found on the main Status Screen of your GroundControl™ Multi Application.



- Set the “Ground Controller” network connection to your USB-C Interface (10.1.101.1).

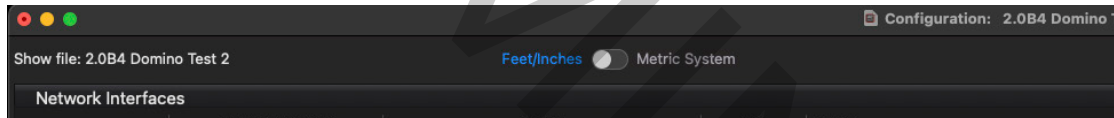


- Set the “Lighting System” network connection to the native Ethernet port (10.66.201.1).



Step 11. Configure Target Points in the GroundControl™ Multi Application.

- Use the Measurement Toggle at the top of the “Configuration” window to specify if you will be using Imperial or Metric measurement dimensions.

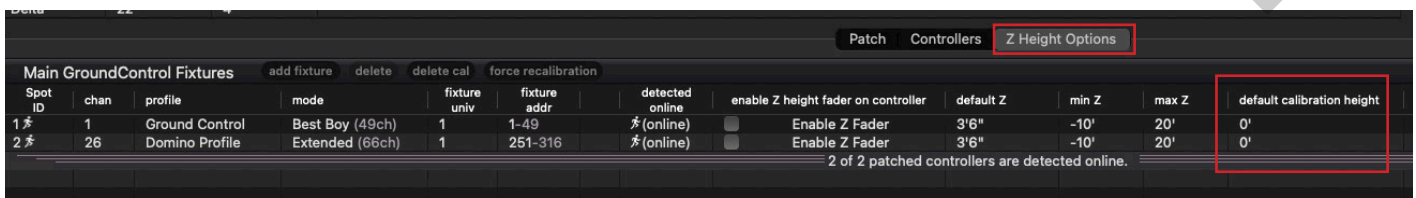


- Enter the X and Y coordinates of each of the four Target Points in the “Focus Target Point” section of the “Configuration” window.

Focus Target Points			
Target Points	x	y	notes
Alpha	15'	7'6"	Downstage Center
Bravo	5'	15'	Midstage Right
Charlie	25'	15'	Midstage Left
Delta	15'	30'	Upstage Center

- The “Default Calibration Height” in the Z Height Options menu of the “Configuration” window is the height of your Target Points from the floor of the Performance Area. This defaults to “0”

- If you can not see the floor and need to focus on something other than the floor, like a raised a mic stand, then change the “Default Calibration Height” to what ever the distance is from the floor to the height of the Target Points.
- All Target Points must be at the same height.





## Configuring Lighting Console Control

The following section only applies if control of the GroundControl™ Multi system is to be shared with a lighting console.

### Patching Your Lighting Console

Please follow the following steps to ensure full functionality of joint system control.

- Step 1. Patch your GroundControl™ Camera Fixture into your Lighting Console.
- Patch the fixture using its standard profile.
  - Assign the fixture a secondary channel number, and patch it as a 'GC Multi v2 Main' fixture.
    - Use the DMX Maps below to create the GC-MM Profile.
    - The GC-MM must be patched on the same universe as the Camera Fixture
    - The GC-MM must be patched sequentially after the camera fixture.

### GroundControl Multi v2 Main DMX Map

Channel	Function	Description	8-Bit	16-Bit	DMX Percent
1	CONTROLLER CONFIGURATION	Controller mechanism selection	Home: 0		0%
		Refer to "GroundControl Controller Mechanism"	0-255		
2	CAMERA EXPOSURE	Camera exposure control	Home: 0		0%
		No change			
3	CAMERA ZOOM	Camera zoom control	Home: 0		0%
		No change	0		
		Wide	1		
		Narrow	255		
4	CAMERA WB + RETICLE	Camera white balance + reticle	Home: 0		0%
		No Change	0		0%
		Automatic	1		1%
		3200K	2		1%
		5800K	3		2%
		ATW	4		2%
		One-Push WB	5		2%
		Reticle Off	127		49%
		Reticle On	128		50%
5	CONTROL SELECTION	Console or GC control selection	home: 0		0%
		Idle	0		0%
		Console Control	1		1%
		GC Control	10		3%
6	STORE TARGET POINTS	Target point storing	home: 0		0%
		Idle	0		0%
		Store Target Point Alpha	56		21%
		Store Target Point Bravo	58		22%
		Store Target Point Charlie	60		23%
		Store Target Point Delta	62		24%
7	RESERVED		home: 0		0%

## GC Multi v2 Main DMX Map

### Followspot Controller Mechanism Selection

The “Controller Mechanism Select” channel allows Remote Followspot Controller mechanisms to be selected as follows:

DMX Range	Mech 1	Mech 2	Mech 3	Mech 4	Mech 5
0	No Change (leave mechanisms as they are)				
1-5 (default)	Intensity	Iris	Edge	Zoom	Frost
6-10	Intensity	Iris	Edge	Zoom	
11-15	Intensity	Iris	Edge		
16-20	Intensity	Iris		Zoom	Frost
21-25	Intensity	Iris		Zoom	
26-30	Intensity	Iris			Frost
31-35	Intensity	Iris			
36-40	Intensity				
41-45	Intensity		Edge	Zoom	Frost
46-50	Intensity		Edge	Zoom	
51-55	Intensity		Edge		
56-60	Intensity			Zoom	Frost
61-65	Intensity			Zoom	
66-70	Intensity				Frost
71-75		Iris	Edge	Zoom	Frost
76-80		Iris	Edge	Zoom	
81-85		Iris	Edge		
86-90		Iris		Zoom	Frost
91-95		Iris		Zoom	
96-100		Iris			Frost
101-105		Iris			
106-110			Edge	Zoom	Frost
111-115			Edge	Zoom	
116-120			Edge		
121-125				Zoom	Frost
126-130				Zoom	
131-135					Frost
136-140	Console controls all FSC mechanisms EXCEPT Pan & Tilt				

Step 2. Patch all additional Following Fixtures into your Lighting Console.

- Patch each fixture onto an individual channel using its standard profile.
- Assign each fixture a secondary channel number, and patch it as a ‘GC-MT’ fixture.
  - GC-MT is short for ‘Ground Control-Multi Toggle’ (or ‘Ground Control-Major Tom’).
  - Use the DMX Map below to create the GC-MT Profile.
  - GC-MT Profiles enable your console to control the GroundControl® Multi application in the following three ways:

1. Enables a user to toggle control of each fixture between the lighting console and each GroundControl™ Controller (Spots 1-24) .
2. Enables a user to focus to the Target Points and then calibrate the GroundControl® Multi system from any lighting console. GC-MT Fixtures can be patched in any sACN Universe, regardless of its corresponding fixture's Patch.
3. Applies Pan & Tilt Timing to the Control Selection. If a time is selected, Pan & Tilt will execute in the that time when going from one Spot to another Spot, from one Spot to Console Control, and from Console Control to a Spot.

## GroundControl Multi v2 Toggle DMX Map

Channel	Function	Description	8-Bit	16-Bit	DMX Percent
1	CONTROL SELECTION	Console or GC control selection	home: 0		0%
		Idle	0		0%
		Console Control	1		1%
		Spot 1 Control	10		4%
		Spot 2 Control	20		8%
		Spot 3 Control	30		12%
		Spot 4 Control	40		16%
		Spot 5 Control	50		20%
		Spot 6 Control	60		24%
		Spot 7 Control	70		27%
		Spot 8 Control	80		31%
		Spot 9 Control	90		35%
		Spot 10 Control	100		39%
		Spot 11 Control	110		43%
		Spot 12 Control	120		47%
		Spot 13 Control	130		51%
		Spot 14 Control	140		55%
		Spot 15 Control	150		59%
		Spot 16 Control	160		63%
		Spot 17 Control	170		67%
		Spot 18 Control	180		71%
		Spot 19 Control	190		75%
		Spot 20 Control	200		78%
		Spot 21 Control	210		82%
		Spot 22 Control	220		86%
		Spot 23 Control	230		90%
		Spot 24 Control	240		94%
		Spot 25 Control	250		98%
2	STORE TARGET POINTS	Target point storing	home: 0		0%
		Idle	0		0%
		Store Target Point Alpha	56		21%
		Store Target Point Bravo	58		22%
		Store Target Point Charlie	60		23%
		Store Target Point Delta	62		24%
3	CROSSFADE TIMING	Timing of crossfade between Control Selections. Refer to "Crossfade Timing Channel" on page 2	home: 0		0%

## GC Multi v2 Toggle DMX Map

### Crossfade Timing Channel

This channel applies timing to the crossfade when switching between console and/or different spot control selections. This timing only applies to pan and tilt. All other parameters will snap to the values being sent by the new control selection.

% Value	DMX	= Seconds
	0	Default
	1	0
	2	0.25
1	3	0.5
	4	0.75
2	5	1
	6	1.25
	7	1.5
3	8	1.75
	9	2
4	10	2.25
	11	2.5
	12	2.75
5	13	3
	14	3.25
6	15	3.5
	16	3.75
	17	4
7	18	4.25
	19	4.5
8	20	4.75
	21	5
	22	5.25
9	23	5.5
	24	5.75
10	25	6
	26	6.25
	27	6.5
11	28	6.75
	29	7
	30	7.25
12	31	7.5
	32	7.75
13	33	8
	34	8.25
	35	8.5
14	36	8.75
	37	9
15	38	9.25
	39	9.5
	40	9.75
16	41	10
	42	10.25
17	43	10.5
	44	10.75
	45	11
18	46	11.25
	47	11.5

% Value	DMX	= Seconds
19	48	11.75
	49	12
	50	12.25
20	51	12.5
	52	12.75
	53	13
21	54	13.25
	55	13.5
22	56	13.75
	57	14
	58	14.25
23	59	14.5
	60	14.75
24	61	15
	62	15.25
	63	15.5
25	64	15.75
	65	16
26	66	16.25
	67	16.5
	68	16.75
27	69	17
	70	17.25
28	71	17.5
	72	17.75
	73	18
29	74	18.25
	75	18.5
30	76	18.75
	77	19
	78	19.25
31	79	19.5
	80	19.75
	81	20
32	82	20.25
	83	20.5
33	84	20.75
	85	21
	86	21.25
34	87	21.5
	88	21.75
35	89	22
	90	22.25
	91	22.5
36	92	22.75
	93	23
37	94	23.25
	95	23.5



## GC Multi v2 Toggle DMX Map

Timing Channel (Continued)

% Value	DMX	= Seconds
	96	23.75
38	97	24
	98	24.25
39	99	24.5
	100	24.75
	101	25
40	102	25.25
	103	25.5
	104	25.75
41	105	26
	106	26.25
42	107	26.5
	108	26.75
	109	27
43	110	27.25
	111	27.5
44	112	27.75
	113	28
	114	28.25
45	115	28.5
	116	28.75
46	117	29
	118	29.25
	119	29.5
47	120	29.75
	121	30
48	122	30.25
	123	30.5
	124	30.75
49	125	31
	126	31.25
	127	31.5
50	128	31.75
	129	32
51	130	32.25
	131	32.5
	132	32.75
52	133	33
	134	33.25
53	135	33.5
	136	33.75
	137	34
54	138	34.25
	139	34.5
55	140	34.75
	141	35
	142	35.25
56	143	35.5
	144	35.75
57	145	36
	146	36.25
	147	36.5
58	148	36.75

Timing Channel (Continued)

% Value	DMX	= Seconds
	149	37
59	150	37.25
	151	37.5
	152	37.75
60	153	38
	154	38.25
	155	38.5
61	156	38.75
	157	39
62	158	39.25
	159	39.5
	160	39.75
63	161	40
	162	40.25
64	163	40.5
	164	40.75
	165	41
65	166	41.25
	167	41.5
66	168	41.75
	169	42
	170	42.25
67	171	42.5
	172	42.75
68	173	43
	174	43.25
	175	43.5
69	176	43.75
	177	44
	178	44.25
70	179	44.5
	180	44.75
71	181	45
	182	45.25
	183	45.5
72	184	45.75
	185	46
73	186	46.25
	187	46.5
	188	46.75
74	189	47
	190	47.25
75	191	47.5
	192	47.75
	193	48
76	194	48.25
	195	48.5
77	196	48.75
	197	49
	198	49.25
78	199	49.5
	200	49.75
79	201	50

## GC Multi v2 Toggle DMX Map

Timing Channel (Continued)

% Value	DMX	= Seconds
	202	50.25
	203	50.5
80	204	50.75
	205	51
81	206	51.25
	207	51.5
	208	51.75
82	209	52
	210	52.25
	211	52.5
83	212	52.75
	213	53
84	214	53.25
	215	53.5
	216	53.75
85	217	54
	218	54.25
86	219	54.5
	220	54.75
	221	55
87	222	55.25
	223	55.5
88	224	55.75
	225	56
	226	56.25
89	227	56.5
	228	56.75
	229	57
90	230	57.25
	231	57.5
91	232	57.75
	233	58
	234	58.25
92	235	58.5
	236	58.75
93	237	59
	238	59.25
	239	59.5
94	240	59.75
	241	60
95	242	60.25
	243	60.5
	244	60.75
96	245	61
	246	61.25
97	247	61.5
	248	61.75
	249	62
98	250	62.25
	251	62.5
99	252	62.75
	253	63
	254	63.25
100	255	63.5

## Fixture Configuration

Moving lights often have different internal modes and speeds for different applications. When using any moving light, either as a Camera Fixture or as a Following Fixture, ensure that the fixtures are configured as follows:

### Tilt Calibration

Check that the fixtures truly calibrate straight up and down with no DMX present. Many fixtures have the ability to adjust the Tilt Calibration via the fixture's on board service menu. If the fixture's Tilt is NOT perfectly straight up and down and the fixture DOES have the ability to adjust Tilt Calibration then it must be adjusted and corrected before initial use.

### Pan and Tilt Speed

For follow spot work the fixture's Pan and Tilt Speed MUST be set to the fastest available. There is no industry standard on how to denote Pan and Tilt Speeds so some fixtures may have multiple options for Pan and Tilt like "Medium/Fast/Slow/FS Mode" or just list speeds like "Speeds 1-4." Many fixtures may also have a dedicated Follow Spot or FS mode where the fixture's Pan and Tilt is much more reactive and sensitive, or it may actually just disable Pan and Tilt when that mode is selected. Regardless of the fixture type or mode options, for the best performance possible when using GC Multi, set the Pan and Tilt Speed of any fixture being used to follow a performer to the fastest and most reactive settings possible. Failure to do this can cause the fixtures to lag behind the camera fixture and or just not be responsive enough.

### Pan Degree Range

Many fixtures have an option to select the Pan Degree Range. If you are using a fixture that has an adjustable Pan Degree Range it MUST be set to 540 Degrees for GC Multi to work properly.

## Using Multiple Fixture Types- CAUTION & WARNINGS

When using multiple different fixture types keep in mind the following warnings:

### Pan & Tilt

Pan and Tilt performance will NOT match between different fixture types due to differences in the fixture's size, Pan and Tilt drive mechanics, and or control options. GC Multi can not compensate for these differences which may manifest themselves during operation as the fixtures lagging behind other fixtures under GC Multi Control or simply just not being as responsive as other fixtures.

### Optics

Optical performance will NOT match between different fixture types due to differences in intensity sources, zoom ranges, iris mechanics, zoom mechanics, and or control options. GC Multi can not compensate for these differences which may manifest themselves during operation as differences in intensity and or beam sizes not matching across different fixture types.

## Patching the GroundControl Multi Software

Please follow the following steps regardless of whether or not a Lighting Console is being used for control.

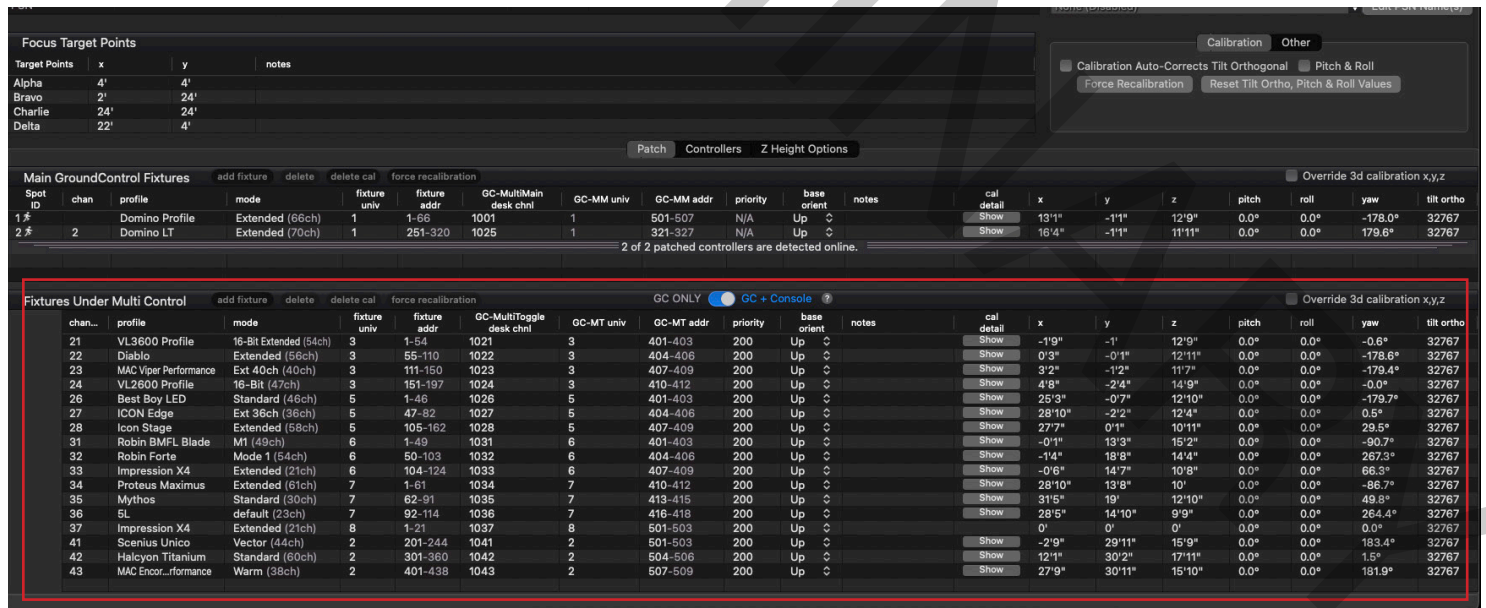
Step 1. Patch your GroundControl™ Camera Fixture to match your Lighting Console.

- Enter the Channel number.
- Select and choose the Fixture Profile.
- Select the Fixture Control Mode.
- Enter the Fixture's sACN Universe.
- Enter the Fixture's Starting Address.
- Enter the GC Multi Main Channel number,
- Enter the sACN Universe
- Enter Starting Address.
- Enter Notes as required.



Step 2. Patch all additional following fixtures to match your Lighting Console.

- Repeat all steps above for each additional fixture, patching each Lighting Fixture with its corresponding GC-MT Fixture.



Step 3. SAVE THE FILE in the GroundControl Multi application. This is a required step to store all settings.

# CALIBRATION

## Calibration From Your Lighting Console

The following section only applies if control of the GroundControl™ Multi System is to be shared with a lighting console.

Please follow the following steps to calibrate your Lighting Fixtures 3D Positions.

Step 1. Calibrate the Main GroundControl™ Camera Fixture.

- Make sure the GroundControl™ Multi Application Control Toggle is set to “GC + Console.”

delete cal	force recalibration	GC ONLY <input type="checkbox"/> GC + Console <input checked="" type="checkbox"/> ?					
fixture univ	fixture addr	GC-MultiToggle desk chnl	GC-MT univ	GC-MT addr	priority	base orient	
3	1-54	1021	3	401-403	200	Up ↕	
3	55-110	1022	3	404-406	200	Up ↕	

- On your console, select the GroundControl™ Camera Fixture and its corresponding GC Multi Main Fixture.
- Set the GC Multi Main Fixture to “Console Control” Mode.
- Focus the GroundControl™ Camera Fixture directly on Target Point ‘Alpha.’ Make sure the fixture is zoomed in and irised in as tight as possible on the target point.
- On the GC Multi Main fixture, select Store point ‘Alpha,’ wait for at least 1.5 seconds, and toggle back to ‘Idle.’

Saved Fixture 'Main' Target Point 'Alpha' (4.00,24.00) pan 35310 tilt 15548.			
Networking			
Ground Controller	Link Active		
Lighting System	Link Active	Plugged in, sACN Detected...univ 2,3,4. Send univ 2,3,4.	Configuration

- Repeat steps “d” and “e,” focusing to and storing data for Target Points ‘Bravo,’ ‘Charlie,’ and ‘Delta.’
- A successful calibration will result in the message shown below on the “Status” screen and the population of XYZ dimensions into the Patch on the ‘Configuration’ Screen .

Fixture 'Main' cal 14,-110 XYZ			
Networking			
Ground Controller	Link Active		
Lighting System	Link Active	Plugged in, sACN Detected...univ 2,3,4. Send univ 2,3,4.	Configuration

Controller (10.1.101.2) 10.1.x.x

Lighting System (10.66.250.250) 10.66.x.x

Link Active

Link Active

Plugged in, sACN Detected. Rcv univ 1,2,3,5,6,7,8. Send univ 2,3,5,6,7,8

GC Controller (10.1.101.2) 10.1.x.x

Lighting System (10.66.250.250) 10.66.x.x

Link Active

Link Active

Plugged in, sACN Detected. Rcv univ 1,2,3,5,6,7,8. Send univ 2,3,5,6,7,8

None (Disabled)

Edit PSN Name(s)

Calibration

Other

Calibration Auto-Corrects Tilt Orthogonal

Pitch & Roll

Force Recalibration

Reset Tilt Ortho, Pitch & Roll Values

Patch

Controllers

Z Height Options

Override 3d calibration x,y,z

chan	profile	mode	fixture univ	fixture addr	GC-MultiMain desk chnl	GC-MM univ	GC-MM addr	priority	base orient	notes	cal detail
2	Domino Profile	Extended (66ch)	1	1-66	1001	1	501-507	N/A	Up ↕		Show
	Domino LT	Extended (70ch)	1	251-320	1025	1	321-327	N/A	Up ↕		Show

2 of 2 patched controllers are detected online.

Override 3d calibration x,y,z

x	y	z	pitch	roll	yaw	tilt ortho
13.1°	-1.1°	12.9°	0.0°	0.0°	-178.0°	32767
16.4°	-1.1°	11.11°	0.0°	0.0°	179.6°	32767

GC ONLY

GC + Console

Override 3d calibration x,y,z

chan...	profile	mode	fixture univ	fixture addr	GC-MultiToggle desk chnl	GC-MT univ	GC-MT addr	priority	base orient	notes	cal detail	x	y	z	pitch	roll	yaw	tilt ortho
21	VL3600 Profile	16-Bit Extended (54ch)	3	1-54	1021	3	401-403	200	Up ↕		Show	-1.9°	-1°	12.9°	0.0°	0.0°	-0.6°	32767
22	Diablo	Extended (56ch)	3	55-110	1022	3	404-406	200	Up ↕		Show	0°	-0.1°	12.11°	0.0°	0.0°	-178.6°	32767
23	MAC Viper Performance	Ext 40ch (40ch)	3	111-150	1023	3	407-409	200	Up ↕		Show	3.2°	-1.2°	11.7°	0.0°	0.0°	-179.4°	32767
24	VL2600 Profile	16-Bit (47ch)	3	151-197	1024	3	410-412	200	Up ↕		Show	4.8°	-2.4°	14.9°	0.0°	0.0°	-0.0°	32767
26	Best Boy LED	Standard (46ch)	5	1-46	1026	5	401-403	200	Up ↕		Show	25.3°	-4.7°	12.0°	0.0°	0.0°	-179.7°	32767
27	ICON Edge	Ext 36ch (36ch)	5	47-82	1027	5	404-406	200	Up ↕		Show	28.6°	0.7°	10.0°	0.0°	0.0°	-180.0°	32767



Step 2. Calibrate all additional following fixtures.

- a. Repeat all steps from Main GroundControl™ Camera Fixture calibration, selecting each Fixture and corresponding GC-MT Fixture you wish to calibrate.
  - Fixtures can be calibrated individually or as a group.
  - A successful calibration will result in the population of XYZ dimensions into the Patch controls.

Focus Target Points

Target Points	x	y	notes
Alpha	4'	4'	
Bravo	2'	24'	
Charlie	24'	24'	
Delta	22'	4'	

Calibration

Other

Calibration Auto-Corrects Tilt Orthogonal

Pitch & Roll

Force Recalibration

Reset Tilt Ortho, Pitch & Roll Values

Patch

Controllers

Z Height Options

Main GroundControl Fixtures

add fixture

delete

delete cal

force recalibration

Spot ID

chan

profile

mode

fixture univ

fixture addr

GC-MultiMain desk chnl

GC-MM univ

GC-MM addr

priority

base orient

notes

cal detail

x

y

z

pitch

roll

yaw

tilt ortho

1 #

2

Domino Profile

Extended (86ch)

1

1-66

1001

1

501-507

N/A

Up

↕

Show

13'1"

-1'1"

12'9"

0.0°

0.0°

-178.0°

32767

2 #

Domino LT

Extended (70ch)

1

251-320

1025

1

321-327

N/A

Up

↕

Show

16'4"

-1'1"

11'11"

0.0°

0.0°

179.6°

32767

2 of 2 patched controllers are detected online.

Fixtures Under Multi Control

add fixture

delete

delete cal

force recalibration

chan...

profile

mode

fixture univ

fixture addr

GC-MultiToggle desk chnl

GC-MT univ

GC-MT addr

priority

base orient

notes

cal detail

x

y

z

pitch

roll

yaw

tilt ortho

21

VL3600 Profile

16-Bit Extended (54ch)

3

1-54

1021

3

401-403

200

Up

↕

Show

-1'9"

-1'

12'9"

0.0°

0.0°

-0.6°

32767

22

Diablo

Extended (56ch)

3

55-110

1022

3

404-406

200

Up

↕

Show

0'3"

-0'1"

12'11"

0.0°

0.0°

-178.6°

32767

23

MAC Viper Performance

Ext 40ch (40ch)

3

111-150

1023

3

407-409

200

Up

↕

Show

3'2"

-1'2"

11'7"

0.0°

0.0°

-179.4°

32767

24

VL2600 Profile

16-Bit (47ch)

3

151-197

1024

3

410-412

200

Up

↕

Show

4'8"

-2'4"

14'9"

0.0°

0.0°

-0.0°

32767

26

Best Boy LED

Standard (46ch)

5

1-46

1026

5

401-403

200

Up

↕

Show

25'3"

-0'7"

12'10"

0.0°

0.0°

-179.7°

32767

27

ICON Edge

Ext 36ch (36ch)

5

47-82

1027

5

404-406

200

Up

↕

Show

28'10"

-2'2"

12'4"

0.0°

0.0°

0.5°

32767

28

Icon Stage

Extended (58ch)

5

105-162

1028

5

407-409

200

Up

↕

Show

27'7"

0'1"

10'11"

0.0°

0.0°

28.5°

32767

31

Robin BMFL Blade

MT (49ch)

6

1-49

1031

6

401-403

200

Up

↕

Show

-0'1"

13'3"

15'2"

0.0°

0.0°

-90.7°

32767

32

Robin Forte

Mode 1 (54ch)

6

50-103

1032

6

404-406

200

Up

↕

Show

-1'4"

18'8"

14'4"

0.0°

0.0°

267.3°

32767

33

Impression X4

Extended (21ch)

6

104-124

1033

6

407-409

200

Up

↕

Show

-0'6"

14'7"

10'8"

0.0°

0.0°

66.3°

32767

34

Proteus Maximus

Extended (61ch)

7

1-61

1034

7

410-412

200

Up

↕

Show

28'10"

13'8"

10'

0.0°

0.0°

-86.7°

32767

35

Mythos

Standard (30ch)

7

62-91

1035

7

413-415

200

Up

↕

Show

31'5"

19'

12'10"

0.0°

0.0°

49.8°

32767

36

5L

default (23ch)

7

92-114

1036

7

416-418

200

Up

↕

Show

28'5"

14'10"

9'9"

0.0°

0.0°

264.4°

32767

37

Impression X4

Extended (21ch)

8

1-21

1037

8

501-503

200

Up

↕

Show

0'

0'

0'

0.0°

0.0°

0.0°

32767

41

Scenius Unico

Vector (44ch)

2

201-244

1041

2

501-503

200

Up

↕

Show

-2'9"

29'11"

15'9"

0.0°

0.0°

183.4°

32767

42

Halcyon Titanium

Standard (60ch)

2

301-360

1042

2

504-506

200

Up

↕

Show

12'1"

30'2"

17'11"

0.0°

0.0°

15°

32767

43

MAC Encore...formance

Warm (38ch)

2

401-438

1043

2

507-509

200

Up

↕

Show

27'9"

30'11"

15'10"

0.0°

0.0°

181.9°

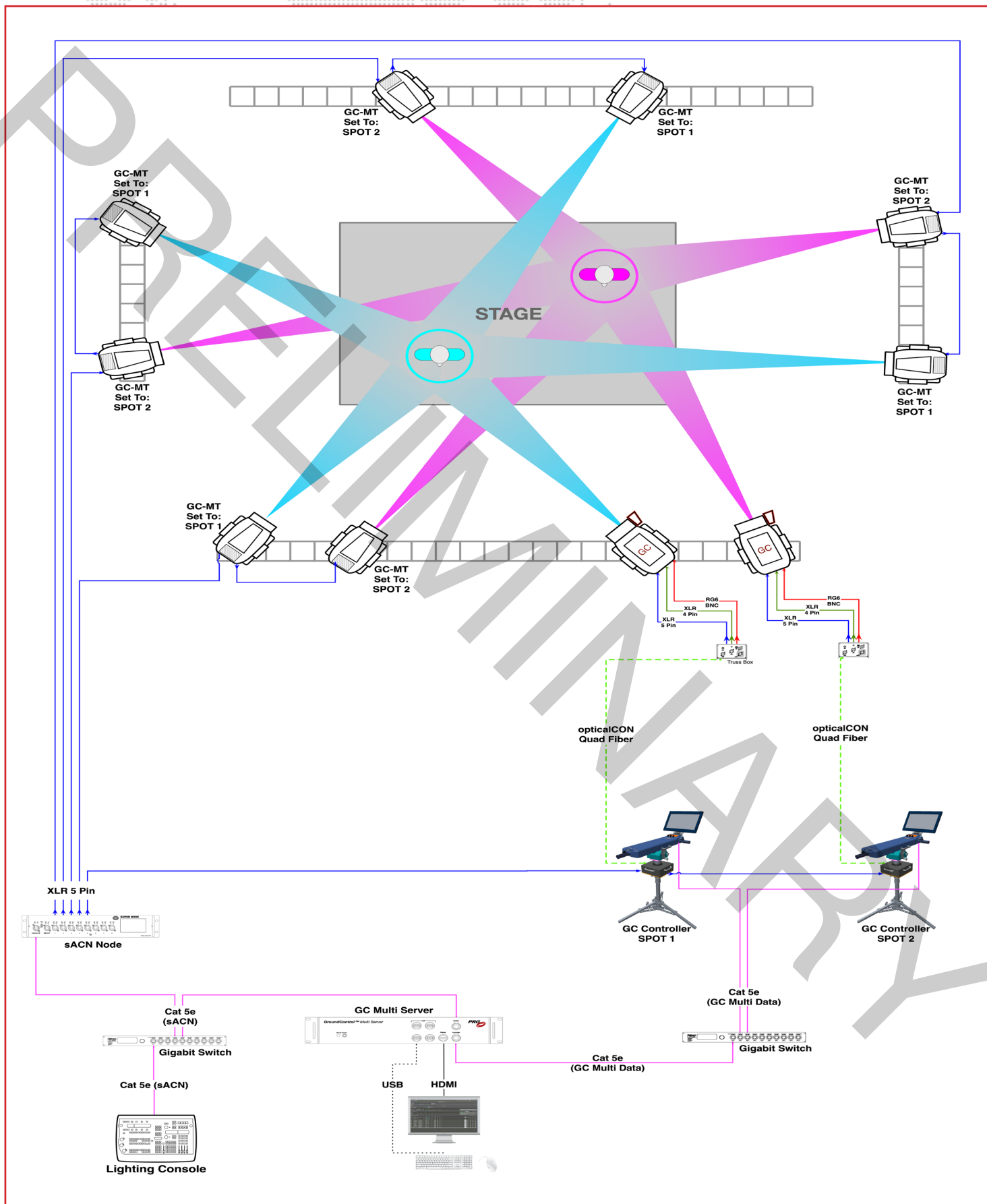
32767

Step 3. SAVE THE FILE in the GroundControl™ Multi application. This is a required step to store all settings.

Congratulations! The system is now calibrated.

On your console, set the GC-MT Fixtures to SPOT 1 CONTROL". The fixtures will now follow the Main GroundControl® Fixture!

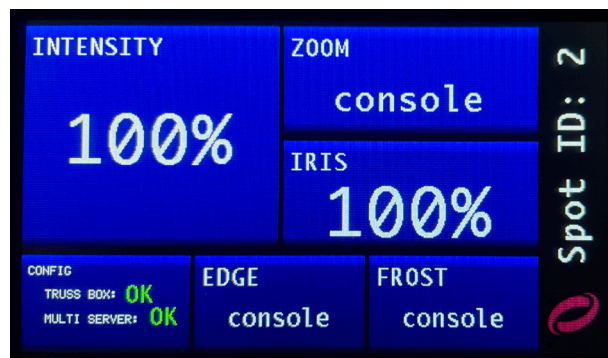
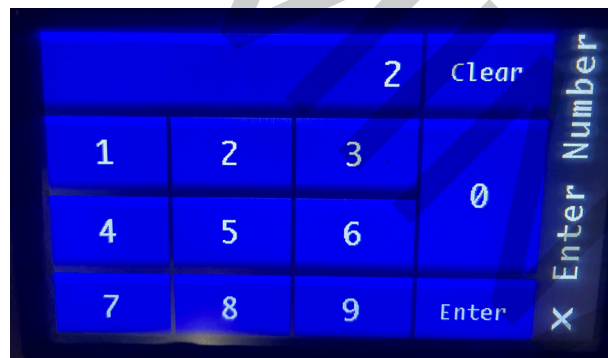
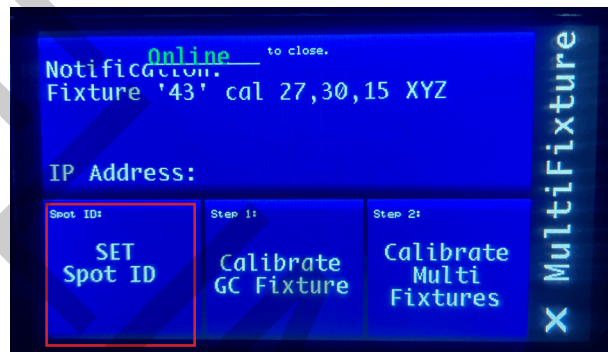
## Advanced System Drawing- Multiple Controllers



## ADVANCED SYSTEM CONFIGURATION WITH MULTIPLE CONTROLLERS

The setup, configuration, patch, calibration, and operation for an Advanced GroundControl™ Multi System with multiple Controllers is almost identical to the basic setup with several key differences which are noted below.

1. A GC Multi Server only has one port to connect to controllers. Therefore a Gigabit Ethernet switch is needed to connect to multiple GroundControl™ Controllers. (See drawing above)
2. Each GroundControl™ Controller must have a Unique Spot ID, 1-25.
3. Spot ID is set from the MultiFixture Menu on the Controller





4. Truss Boxes are now paired to the Controllers. For this reason, ALL CONTROLLERS must be powered up, configured, addressed, connected to Camera Fixtures, and fully working BEFORE connecting to the GC Multi Server! If a Truss Box accidentally pairs to the wrong Controller, see TRUSS BOX PAIRING in the Troubleshooting Section on how to reset the pairing.

The screenshot displays the configuration window for the 2.0B23 Dolly EOS 2 system. It includes sections for Network Interfaces, Focus Target Points, and a detailed view of detected controllers.

**Network Interfaces**

	Ethernet interface	Subnet	Link	notes
Ground Controller	GC Controller (10.1.101.24)	10.1.x.x	Link Active	
Lighting System	Lighting Syst...0.66.201.24)	10.66.x.x	Link Active	Plugged in, sACN Detected. Rcv univ 1,2,3,5,6,7,8,10,11,12. Send univ 5,6,7,8,11,12

**Focus Target Points**

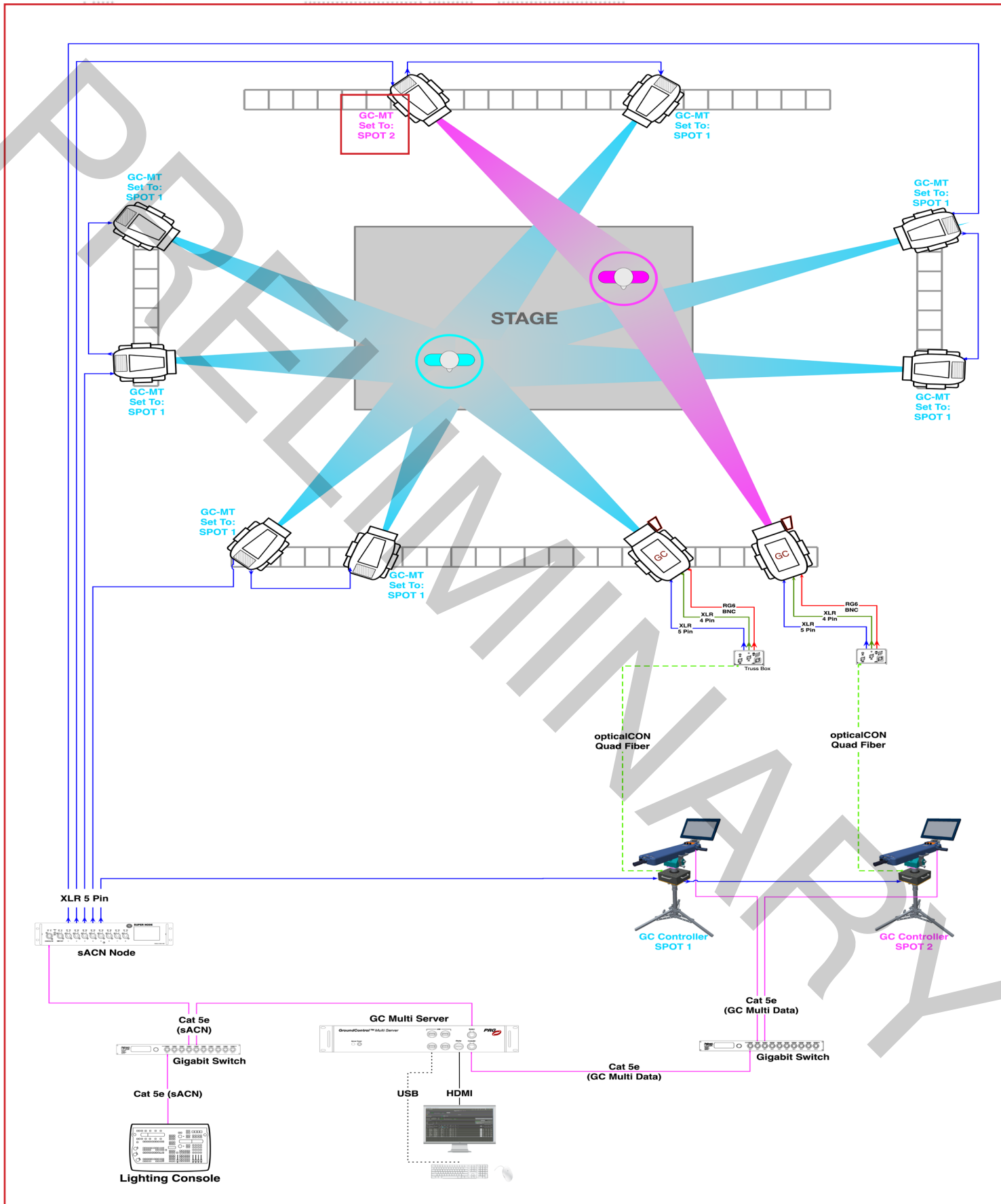
Target Points	x	y	notes
Alpha	4'	4'	
Bravo	2'	24'	
Charlie	24'	24'	
Delta	22'	4'	

**Detected Controller Info**

patched info							detected controller info				
online status	spot id	detected spot id	channel	fixture univ	fixture addr	profile	mode	detected DMX addr	detected profile	detected IP addr	detected truss box ID
* (online)	1 *	1		1	1-66	Domino Profile	Extended (66ch)	1	Ayrton-Domino Profile-Extended	10.1.193.239	0xA00120E5
* (online)	2 *	2		2	1-66	Domino Profile	Extended (66ch)	1	Ayrton-Domino Profile-Extended	10.1.197.198	0xA004213D
* (online)	3 *	3		3	1-49	Ground Control	Best Boy (49ch)	1	PRG Lighting-Ground Control-Best Boy	10.1.91.165	0xA0042210

When there are multiple controllers, pairing is done automatically, so that each controller is paired with a patched Main fixture that has a matching Spot ID.

5. Patch in the Multi application must match which fixtures are connected to each Controller with the correct addressing and Spot ID as displayed in the “Controller” Tab in the “Config Screen.”
6. Camera Fixtures can be calibrated together but should always be calibrated before Following fixtures are calibrated
7. Once calibrated Following fixtures can be switched between controllers via the GC-MT channel by selecting which SPOT the are following on the “CONTROL SELECTION” Channel



## Calibration Adjustments

The following section references the “Calibration” tab on the “Config” page

**Focus Target Points**

Target Points	x	y	notes
Alpha	4'	4'	
Bravo	2'	24'	
Charlie	24'	24'	
Delta	22'	4'	

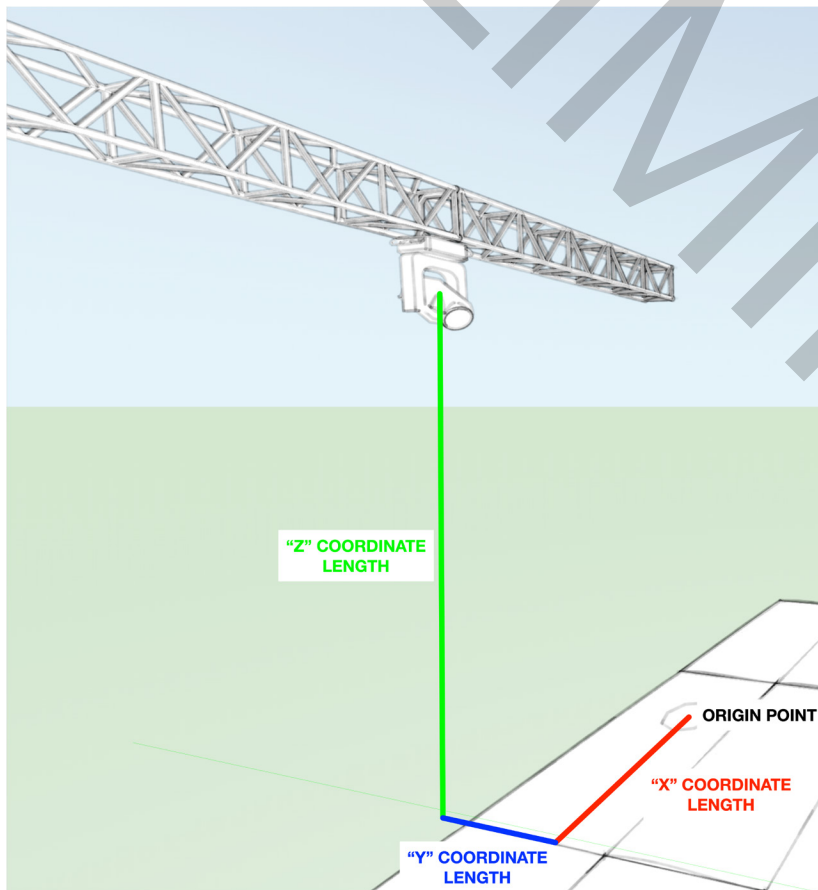
**Main GroundControl Fixtures**

Spot ID	chan	profile	mode	fixture univ	fixture addr	GC-MultiMain desk chnl	GC-MM univ	GC-MM addr	priority	base orient	notes	cal detail	x	y	z	pitch	roll	yaw	tilt ortho
1 #	2	Domino Profile	Extended (66ch)	1	1-66	1001	1	501-507	N/A	Up		Show	13°1'	-1°1'	12°9"	0.0°	0.0°	-178.0°	32767
2 #	2	Domino LT	Extended (70ch)	1	251-320	1025	1	321-327	N/A	Up		Show	16°4'	-1°1'	11°11"	0.0°	0.0°	179.6°	32767

**Fixtures Under Multi Control**

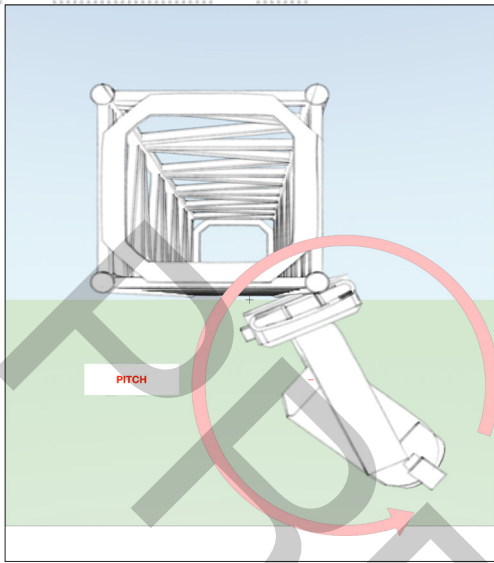
chan...	profile	mode	fixture univ	fixture addr	GC-MultiToggle desk chnl	GC-MT univ	GC-MT addr	priority	base orient	notes	cal detail	x	y	z	pitch	roll	yaw	tilt ortho
21	VL3600 Profile	16-Bit Extended (54ch)	3	1-54	1021	3	401-403	200	Up		Show	-1°9"	-1°	12°9"	0.0°	0.0°	-0.6°	32767
22	Diablo	Extended (56ch)	3	55-110	1022	3	404-406	200	Up		Show	0°3'	-0°1'	12°11"	0.0°	0.0°	-178.6°	32767
23	MAC Viper Performance	Ext 40ch (40ch)	3	111-150	1023	3	407-409	200	Up		Show	3°2'	-1°2'	11°7"	0.0°	0.0°	-179.4°	32767
24	VL2600 Profile	16-Bit (47ch)	3	151-197	1024	3	410-412	200	Up		Show	4°8"	-2°4'	14°9"	0.0°	0.0°	-0.0°	32767
26	Best Boy LED	Standard (48ch)	5	1-49	1026	5	401-403	200	Up		Show	25°3'	-0°7'	12°10"	0.0°	0.0°	-178.7°	32767
27	ICON Edge	Ext 36ch (36ch)	5	47-82	1027	5	404-406	200	Up		Show	28°10"	-2°2'	12°4"	0.0°	0.0°	0.5°	32767
28	Icon Stage	Extended (58ch)	5	105-162	1028	5	407-409	200	Up		Show	27°7'	0°1'	10°11"	0.0°	0.0°	29.5°	32767
31	Robin BMFL Blade	MT (48ch)	6	1-49	1031	6	401-403	200	Up		Show	-0°1'	13°3'	15°2"	0.0°	0.0°	-90.7°	32767
32	Robin Forte	Mode 1 (54ch)	6	50-103	1032	6	404-406	200	Up		Show	-1°4'	18°8'	14°4"	0.0°	0.0°	267.3°	32767
33	Impression X4	Extended (21ch)	6	104-124	1033	6	407-409	200	Up		Show	-0°6'	14°7"	10°8"	0.0°	0.0°	66.3°	32767
34	Proteus Maximus	Extended (61ch)	7	1-61	1034	7	410-412	200	Up		Show	28°10"	13°8'	10°	0.0°	0.0°	-86.7°	32767
35	Mythos	Standard (30ch)	7	82-91	1035	7	413-415	200	Up		Show	31°5'	19°	12°10"	0.0°	0.0°	49.8°	32767
36	SL	default (23ch)	7	92-114	1036	7	416-418	200	Up		Show	28°5'	14°10"	9°9"	0.0°	0.0°	264.4°	32767
37	Impression X4	Extended (21ch)	8	1-21	1037	8	501-503	200	Up		Show	0°	0°	0°	0.0°	0.0°	0.0°	32767

To understand what the functions on the “Calibration” tab do, a basic understanding is needed of what the X, Y, Z, Pitch, Roll, Yaw, and Tilt Ortho coordinates mean.



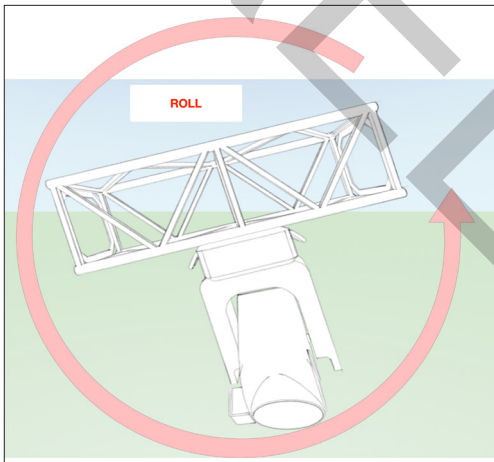
### X, Y, Z

The three measurements from the “Origin Point” on stage to where the fixture is located. Depending on where the fixture is, in relation to the “Origin Point,” these numbers could either be positive or negative numbers.



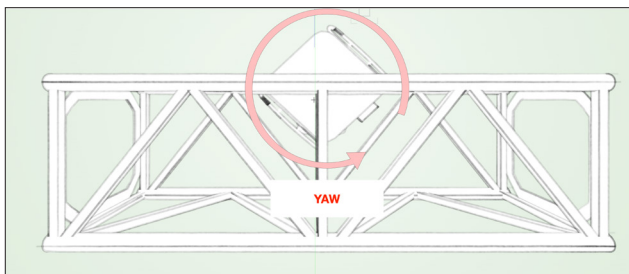
### PITCH

The amount of degrees that the entire fixture is either tilted forward or backwards on the truss. This number could potentially be a positive or negative number.



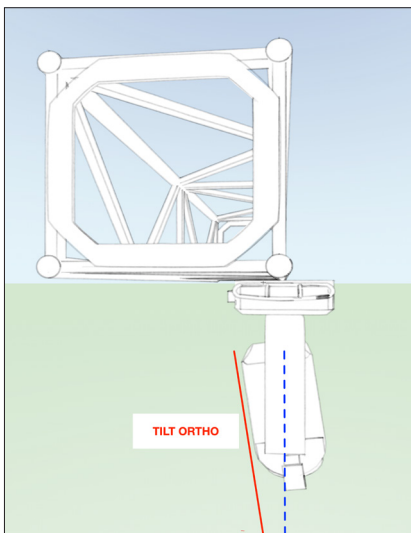
### ROLL

The amount of degrees that the entire fixture and truss are out of level. This number could potentially be a positive or negative number.



### YAW

The amount of degrees that the entire fixture is spun/rotated. This number could potentially be a positive or negative number.



### TILT ORTHO

The 16-bit DMX value for the fixture's Tilt if it does not initially calibrate perfectly straight up and down on power up. Although GC Multi has some math to identify and correct this issue, it is recommended to check and adjust this on the fixture side if the fixture has the ability to adjust the Tilt Calibration via an board service menu.



## FORCE RECALIBRATION

When pressed GC Multi will recalculate the calibration for XYZ, Pitch, Roll, Yaw, and Tilt Ortho on EVERY fixture. This is used when the XYZ, Pitch, Roll, Yaw, and Tilt Ortho numbers look slightly off and or if the following fixtures are not quite tracking the main camera fixture correctly. Pressing it multiple times in a row can gradually improve the numbers. This will only improve an initial GOOD calibration. It can not fix an initial BAD calibration.

## CALIBRATION AUTO-CORRECTS

When checked, and Force Calibration is pressed this will correct the “Tilt Ortho” for any fixture whose Tilt is not calibrating straight up and down. Use this if you suspect that a fixtures tilt is out of alignment.

## PITCH & ROLL

When checked, and Force Calibration is pressed this will correct “Pitch & Roll” values for any fixtures who may be hung slightly out of level and or are tilted slightly forward or backwards. Use this if the following fixtures are not tracking correctly and you suspect that they are not hung correctly. This will NOT correct for truss that is massively racked.

## RESET TILT ORTHO, PITCH & ROLL

When pressed this will reset the Tilt Ortho, Pitch & Roll Values BACK to their initial calibration state.

## DELETE CAL & FORCE RECALIBRATION

Calibration for individual fixtures ONLY can either be deleted, via the “delete cal” buttons or forcibly re-calibrated via the “force recalibration” buttons located just above the fixture patch. To use, just select the fixtures you want and press the button.

Ground Controller (10.1.101.2) 10.1.x.x Link Active  
Lighting System (10.66.250.250) 10.66.x.x Link Active  
Plugged in, sACN Detected. Rcv univ 1,2,3,5,6,7,8,10. Send univ 2,3,5,6,7,8,10

GC Controller (10.1.101.2) ✓  
Lighting System (10.66.250.250) Rcv univ 1,2,3,5,6,7,8,10, ✓  
None (Disabled) Edit PSN Name(s)

Calibration Auto-Corrects Tilt Orthogonal Pitch & Roll  
Force Recalibration Reset Tilt Ortho, Pitch & Roll Values

Focus Target Points

Target Points	x	y	notes
Alpha	4'	4'	
Bravo	2'	24'	
Charlie	24'	24'	
Delta	22'	4'	

Patch Controllers Z Height Options

Main GroundControl Fixtures

Spot ID	chan	profile	mode	fixture univ	fixture addr	GC-MultiMain desk chnl	GC-MM univ	GC-MM addr	priority	base orient	notes	cal detail	x	y	z	pitch	roll	yaw	tilt ortho
1 #	1	Ground Control	Best Boy (49ch)	1	1-49	1001	1	50-56	N/A	Up	⌵	Show	10°3'	-0°9'	11°10'	0.0°	0.0°	-180.8°	32767
2 #	26	Domino Profile	Extended (66ch)	1	251-316	1026	1	321-327	N/A	Up	⌵	Show	13°	-0°11'	12°11'	0.0°	0.0°	-178.4°	32767

2 of 2 patched controllers are detected online.

Fixtures Under Multi Control

chan...	profile	mode	fixture univ	fixture addr	GC-MultiToggle desk chnl	GC-MT univ	GC-MT addr	priority	base orient	notes	cal detail	x	y	z	pitch	roll	yaw	tilt ortho
21	VL3600 Profile	16-Bit Extended (54ch)	3	1-64	1021	3	401-403	200	Up	⌵	Show	1°10'	-1°	13°	0.0°	0.0°	-0.6°	32767
22	Diablo	Extended (56ch)	3	55-110	1022	3	404-406	200	Up	⌵	Show	0°3'	-0°11'	12°11'	0.0°	0.0°	-178.6°	32767
23	MAC Viper Performance	Ext 40ch (40ch)	3	111-150	1023	3	407-409	200	Up	⌵	Show	3°2'	-1°2'	11°7'	0.0°	0.0°	-190.4°	32767
24	VL2600 Profile	16-Bit (47ch)	3	151-197	1024	3	410-412	200	Up	⌵	Show	4°8'	-2°4'	14°9'	0.0°	0.0°	-0.0°	32767
25	VL3600 Profile	16-Bit Extended (54ch)	3	201-254	1025	3	413-415	200	Up	⌵	Show	8°1'	-0°11'	10°7'	0.0°	0.0°	-358.3°	32767
27	Best Boy LED	Standard (46ch)	5	1-46	1026	5	401-403	200	Up	⌵	Show	25°3'	-0°7'	12°10'	0.0°	0.0°	-179.7°	32767
28	ICON Edge	Ext 36ch (36ch)	5	47-82	1027	5	404-406	200	Up	⌵	Show	28°10'	-2°2'	12°4'	0.0°	0.0°	0.5°	32767
29	Icon Stage	Extended (58ch)	5	105-162	1028	5	407-409	200	Up	⌵	Show	27°7'	0°1'	10°11'	0.0°	0.0°	28.5°	32767
31	Robin BMFL Blade	M1 (49ch)	6	1-49	1031	6	401-403	200	Up	⌵	Show	-0°1'	13°3'	15°2'	0.0°	0.0°	-90.7°	32767
32	Robin Forte	Mode 1 (54ch)	6	50-103	1032	6	404-406	200	Up	⌵	Show	-1°4'	18°8'	14°4'	0.0°	0.0°	267.3°	32767
33	Impression X4	Extended (21ch)	6	104-124	1033	6	407-409	200	Up	⌵	Show	-0°6'	14°7'	10°8'	0.0°	0.0°	66.3°	32767
34	Proteus Maximus	Extended (61ch)	7	1-61	1034	7	410-412	200	Up	⌵	Show	28°10'	13°8'	10°	0.0°	0.0°	-86.7°	32767
35	Mythos	Standard (30ch)	7	62-91	1035	7	413-415	200	Up	⌵	Show	31°5'	19°	12°10'	0.0°	0.0°	48.8°	32767
36	SL	default (23ch)	7	92-114	1036	7	416-418	200	Up	⌵	Show	28°10'	14°10'	9°9'	0.0°	0.0°	264.4°	32767
37	Impression X4	Extended (21ch)	8	1-21	1037	8	501-503	200	Up	⌵	Show	13°	15°7'	10°11'	0.0°	0.0°	54.1°	32767
41	Scenius Unico	Vector (44ch)	2	201-244	1041	2	501-503	200	Up	⌵	Show	-2°9'	29°11'	15°9'	0.0°	0.0°	183.4°	32767

Override 3d calibration x,y,z

## OVERRIDE 3D CALIBRATION X,Y,Z

To override and manually enter calibration coordinates, select the “Override 3d calibration x,y,z” check box. Once selected, click on any of the individual coordinates and manually enter in the data. Use this if you want to override the calibration because you know what some of the values may be, for instance z height (Truss trim height).

## OTHER OPTIONS

Ground Controller (10.1.101.24) 10.1.x.x Link Active  
Lighting System (10.66.201.24) 10.66.x.x Link Active  
Plugged in, sACN Detected. Rcv univ 1,2,3,5,6,7,8,10,11,12. Send univ 5,6,7,8,11,12

GC Controller (10.1.101.24) ✓  
Lighting System (10.66.201.24) Rcv univ 1,2,3,5,6,7,8,10,11,12, ✓  
None (Disabled) Edit PSN Name(s)

Calibration Auto-Corrects Tilt Orthogonal Pitch & Roll  
Auto Iris  
sACN per-channel priority  
Allow all (intensity/pan/tilt/iris/zoom/edge/frost)

Focus Target Points

Target Points	x	y	notes
Alpha	4'	4'	
Bravo	2'	24'	
Charlie	24'	24'	
Delta	22'	4'	

Patch Controllers Z Height Options

Main GroundControl Fixtures

Spot ID	chan	profile	mode	fixture univ	fixture addr	GC-MultiMain desk chnl	GC-MM univ	GC-MM addr	priority	base orient	notes	cal detail	x	y	z	pitch	roll	yaw	tilt ortho
1 #	1	Domino Profile	Extended (66ch)	1	1-66	1001	1	141-147	N/A	Up	⌵	Show	13°11'	-0°11'	13°11'	0.0°	0.0°	-178.5°	32767
2 #	2	Domino Profile	Extended (66ch)	2	1-66	1002	2	141-147	N/A	Up	⌵	Show	18°11'	-1°2'	10°10'	0.0°	0.0°	-179.5°	32767
3 #	3	Ground Control	Best Boy (49ch)	3	1-49	1003	3	50-56	N/A	Up	⌵	Show	10°4'	-0°8'	11°10'	0.0°	0.0°	-180.8°	32767

3 of 3 patched controllers are detected online.

Fixtures Under Multi Control

chan...	profile	mode	fixture univ	fixture addr	GC-MultiToggle desk chnl	GC-MT univ	GC-MT addr	priority	base orient	notes	cal detail	x	y	z	pitch	roll	yaw	tilt ortho
21	VL3600 Profile	16-Bit Extended (54ch)	11	1-64	1021	10	401-403	200	Up	⌵	Show	-1°1'	-0°3'	12°4'	0.0°	0.0°	-0.3°	32767
22	Diablo	Extended (56ch)	11	55-110	1022	10	404-406	200	Up	⌵	Show	-0°1'	0°	12°7'	0.0°	0.0°	-0.3°	32767
23	MAC Viper Performance	Ext 40ch (40ch)	11	111-150	1023	10	407-409	200	Up	⌵	Show	2°11'	-1°4'	11°7'	0.0°	0.0°	-179.3°	32767
24	VL2600 Profile	16-Bit (47ch)	11	151-197	1024	10	410-412	200	Up	⌵	Show	5°1'	-0°11'	13°1'	0.0°	0.0°	-2.7°	32767
25	VL3600 Profile	16-Bit Extended (54ch)	11	201-254	1025	10	413-415	200	Up	⌵	Show	8°2'	-1°	11°2'	0.0°	0.0°	0.4°	32767
27	Best Boy LED	Standard (46ch)	5	1-46	1026	5	401-403	200	Up	⌵	Show	25°2'	-0°3'	12°5'	0.0°	0.0°	-178.4°	32767
28	ICON Edge	Ext 36ch (36ch)	5	47-82	1027	5	404-406	200	Up	⌵	Show	27°2'	-0°8'	11°	0.0°	0.0°	0.2°	32767
29	Icon Stage	Extended (58ch)	5	105-162	1028	5	407-409	200	Up	⌵	Show	27°9'	0°2'	11°1'	0.0°	0.0°	29.8°	32767
31	Robin BMFL Blade	M1 (49ch)	6	1-49	1031	6	401-403	200	Up	⌵	Show	-0°1'	13°10'	15°3'	0.0°	0.0°	-92.6°	32767
32	Robin Forte	Mode 1 (54ch)	6	50-103	1032	6	404-406	200	Up	⌵	Show	-0°8'	18°1'	13°6'	0.0°	0.0°	-92.1°	32767
33	Impression X4	Extended (21ch)	6	104-124	1033	6	407-409	200	Up	⌵	Show	-0°3'	14°6'	9°3'	0.0°	0.0°	66.7°	32767
34	Proteus Maximus	Extended (61ch)	7	1-61	1034	7	410-412	200	Up	⌵	Show	28°11'	13°2'	9°7'	0.0°	0.0°	-87.9°	32767
35	Mythos	Standard (30ch)	7	62-91	1035	7	413-415	200	Up	⌵	Show	32°2'	17°11'	12°9'	0.0°	0.0°	46.6°	32767
36	SL	default (23ch)	7	92-114	1036	7	416-418	200	Up	⌵	Show	29°	14°6'	11°	0.0°	0.0°	263.8°	32767

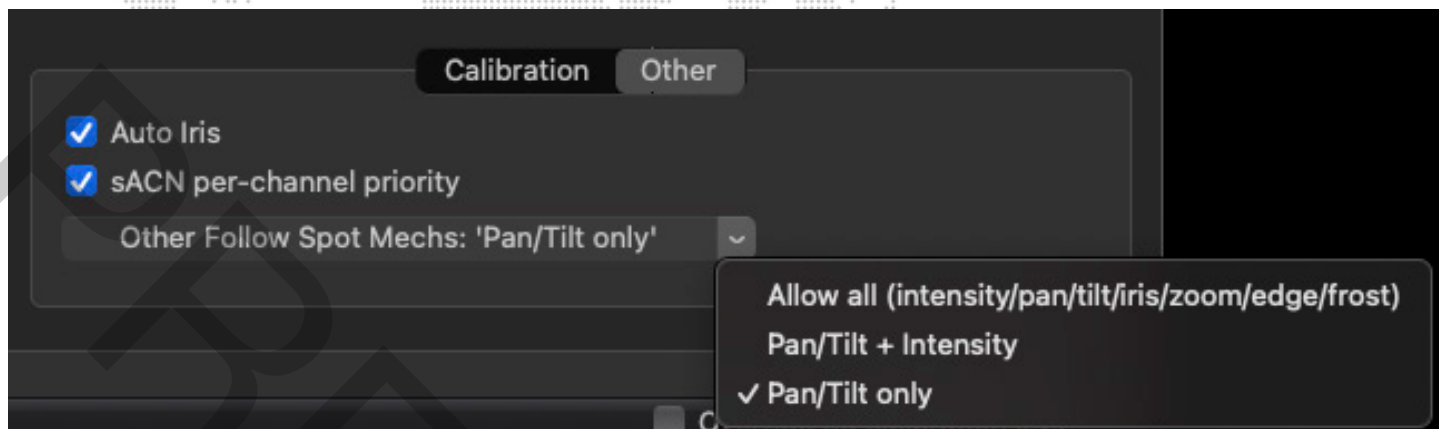
Override 3d calibration x,y,z

## AUTO IRIS

GroundControl™ Multi can automatically maintain the iris size of a fixture based on what you set the iris to regardless of where on a performance space the fixture is focused. Some designers may prefer that the fixtures do NOT automatically iris up and down as the fixture is moved. To turn this feature off, un-check the “Auto-iris” check box.

## sACN PER-CHANNEL PRIORITY

When the “sACN per-channel priority” check box is checked it will output sACN priority data ONLY for channels that are patched with in the DMX Universe that the fixtures are patched to. If the box is un-checked it will output sACN priority data for the ENTIRE DMX Universe that the fixtures are patched to, including un patched DMX channels. One thing to note here is that per-channel priority will only work if the “sACN per-channel priority” check box is checked AND the Node that is converting sACN data to DMX can handle per-channel sACN Priority. Not all nodes have this capability.



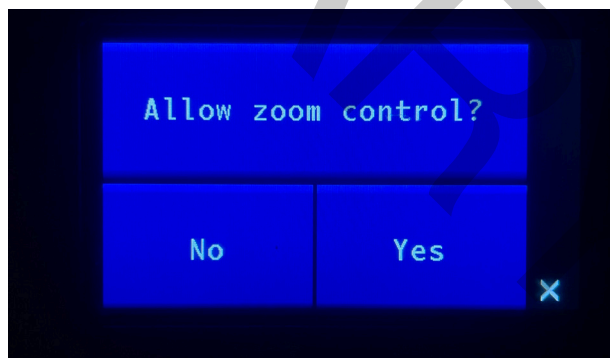
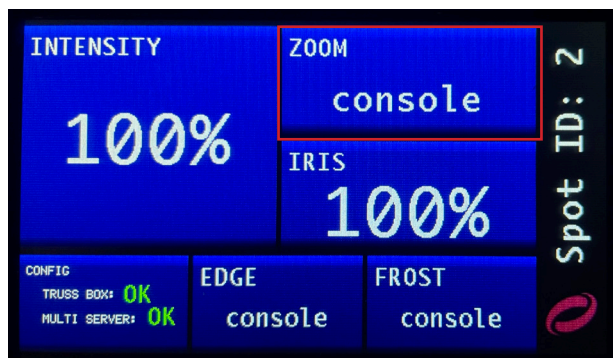
### OTHER FOLLOW SPOT MECHS:

In its default configuration the Controller has direct control of intensity, pan, tilt, iris, zoom, edge, and frost on both the Camera Fixture and on any Following Fixtures assigned to the Controller. There are times when the operator of the Controller may want to have local control of intensity, pan, tilt, iris, zoom, edge and frost on the Camera Fixture but NOT on any of the Following Fixtures, preferring to have those functions on the Following Fixtures to be handled by the lighting console. This feature can be toggled via the drop down menu under “Other Follow Spot Mechs:” on the “Other Options” Tab. There are three choices on the drop down menu:

1. Allow all (intensity/pan/tilt/iris/zoom/edge/frost) [default selection]
2. Pan/Tilt + Intensity
3. Pan/Tilt only

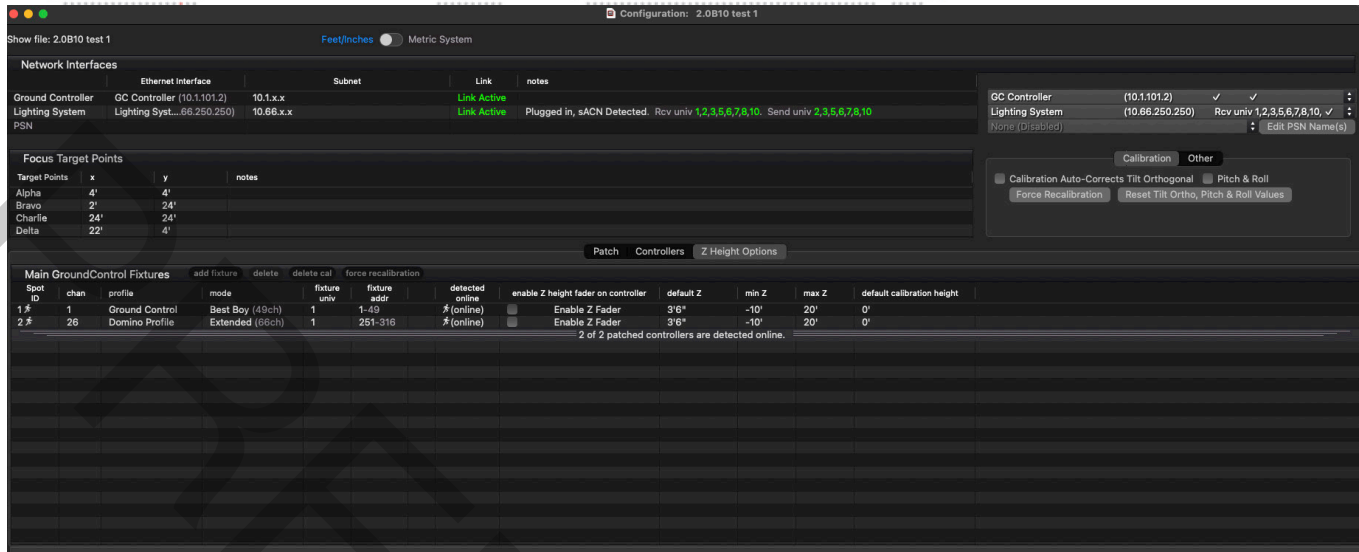
When any one of these three options are selected, the Controller will only be able drive, on the Following Fixtures, what is specified in the selection and all other fixture parameters will be driven by the lighting console. This is a GLOBAL setting so it affects ALL Following Fixtures on ALL Controllers.

One additional note, Controller configuration can be set via DMX using the “Control Selection” channel on the GC-Multi Main Fixture. It can also be set locally on the Controller by tapping on the function displayed on the home screen and then selecting “Yes” or “No” to either enable or disable it.





## Z Height Options



### DEFAULT Z

The “Default Z” is the height at which all fixtures intersect on the performer. It defaults to 3’6” which is center mass on a typical person. This can be adjusted by clicking in the field and entering a new value. An example of a possible use case for changing this would be when a system is calibrated on an arena floor and then a 6’ stage is rolled into place. “Default Z” is then changed to 9’6” (3’6” + 6”) to account for the stage height that the performers will be at.

### ENABLE Z HEIGHT FADER ON CONTROLLER

If there is a change in elevation across the stage the “Z Height” of the following fixtures will need to be dynamically adjusted by the Controller Operator. To do this, “Z Height” adjustment can be mapped to the “Zoom Fader” on the Controller. To enable this feature click on the check box and enter the minimum height in the “min Z” field and the maximum height in the “max Z” field. Once enabled the fader will move between the min and max heights. Three things to note here:

1. If Zoom is enabled, it will move to one of the top Encoders.
2. The Controller Display will change and show the height that the fader is set to
3. This WILL require practice for the Controller Operator to use effectively

### DEFAULT CALIBRATION HEIGHT

The “Default Calibration Height” is the height at which the Target Points are located, which is normally “0” otherwise known as floor level. There are circumstances where a console operator may not be able to clearly see whether the fixtures are properly focused on the Target Points located on the floor. To remedy this, console operators might use something like a mic stand to raise the Target Point up off the floor to make it more visible. If this done “Default Calibration Height” will need to be updated. To change the “Default Calibration Height” height, click on the field and enter the new height of the Target Points. Two things to note here:

1. This setting is global for ALL Target Points.
2. All Target Points MUST be at the same height for calibration purposes!!

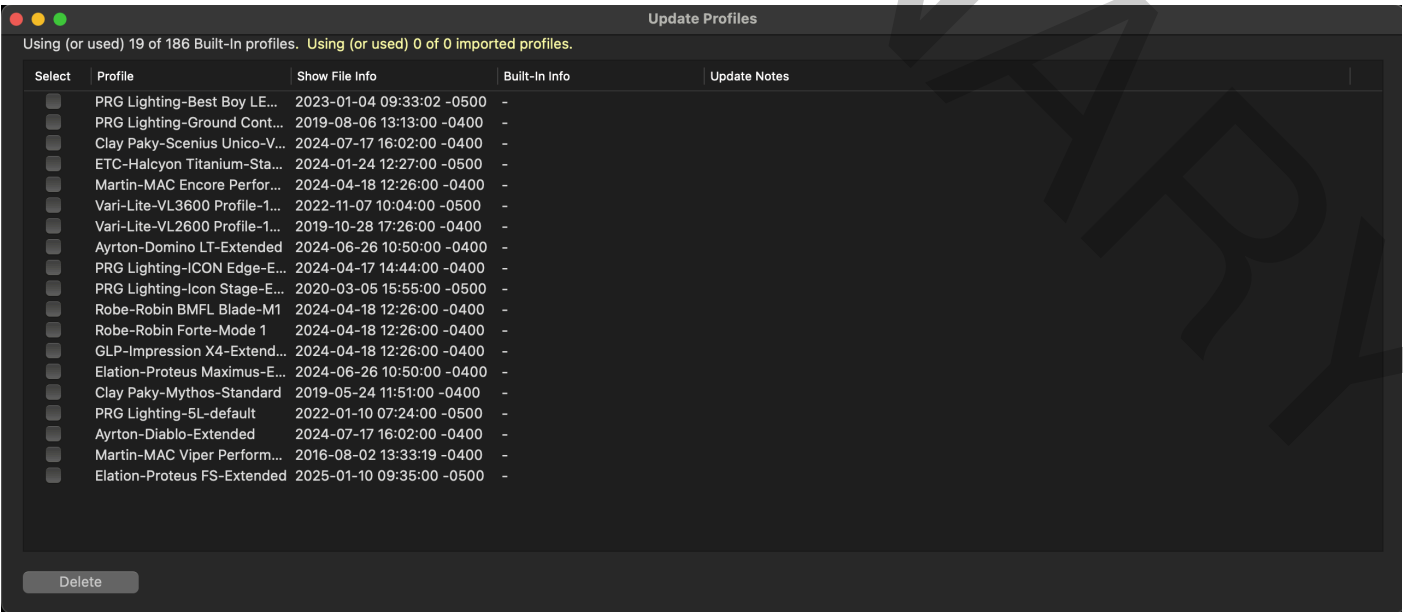


## Importing Profiles

If a fixture profile does not exist for a fixture that you have, contact PRG to get one made. The profile will be emailed in a zipped file. Once received, unzip the file, and then go to the “Import Profiles” in the File menu. Select the profile to import.



The Update Profiles box will pop up displaying all of the active profiles in the current show file. One note of Caution, Profiles are show file specific.



## TROUBLE SHOOTING

This section covers issues and various error states.

### Patch Mismatch

The following “Config Window” and the “Controllers Tab” Windows show an error where a fixture that was patched does not match the fixture what is actually connected to the Controller. This could be anyone or more of the following things.

1. The Connected fixture does not match what was patched in the software.
2. The addresses for the fixture do not match what was patched in the software.
3. The Spot Id does not match what was patched in the software.

To fix this, verify that you have the correct profile patched for the fixture that is connected and that all the addressing matches as well.

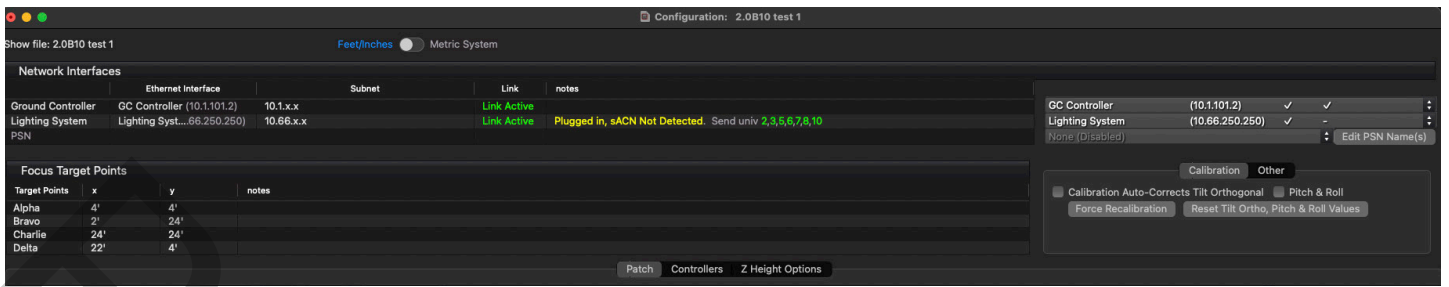
The screenshot displays the PRG GroundControl software interface. The 'Network Interfaces' section shows the 'Ground Controller' and 'Lighting System' connected. The 'Focus Target Points' section lists Alpha, Bravo, Charlie, and Delta. The 'Main GroundControl Fixtures' table shows two fixtures: 'Best Boy (49ch)' and 'Domino LT'. The 'Controllers' tab is active, showing a message: '2 of 2 patched controllers are detected online.' The 'GC-MM univ' column shows '501' for the first fixture and '321-327' for the second. The 'GC-MM addr' column shows 'N/A' for the first fixture and 'N/A' for the second. The 'base orient' column shows 'Up' for the first fixture and 'Up' for the second. The 'notes' column shows 'Plugged in, sACN Detected. Rcv univ 1,2,3,5,6,7,8,10. Send univ 2,3,5,6,7,8' for the first fixture and 'Plugged in, sACN Detected. Rcv univ 1,2,3,5,6,7,8,10. Send univ 2,3,5,6,7,8' for the second.

Spot ID	chan	profile	mode	fixture univ	fixture addr	GC-MultiMain desk chnl	GC-MM univ	GC-MM addr	priority	base orient	notes	cal detail	x	y	z	pitch	roll	yaw	tilt ortho
1 #	1	Ground Control	Best Boy (49ch)	1	1-49	1001	1	501	N/A	Up		Show	12°11'	0°4'	12°8'	0.0°	0.0°	-178.3°	32767
2 #	2	Domino LT	Extended (70ch)	1	251-320	1025	1	321-327	N/A	Up		Show	10°4'	-1°1'	11°10'	0.0°	0.0°	179.6°	32767

The screenshot displays the PRG GroundControl software interface. The 'Network Interfaces' section shows the 'Ground Controller' and 'Lighting System' connected. The 'Focus Target Points' section lists Alpha, Bravo, Charlie, and Delta. The 'Controllers' tab is active, showing a message: '2 of 2 patched controllers are detected online.' The 'Show More Detail' section is expanded, showing a table with detected controller information.

online status	Spot ID	detected Spot ID	channel	fixture univ	fixture addr	profile	mode	detected DMX addr	detected profile
1 (online)	1 #	1	1	1	1-49	Ground Control	Best Boy (49ch)	1	PRG Lighting-Ground Control-Best Boy
2 (online)	2 #	2	2	1	251-320	Domino LT	Extended (70ch)	251	Ayrton-Domino Profile-Extended

## No sACN Detected



This is indicating that the software is NOT receiving sACN. It is saying that it has a valid Ethernet link though.

1. Check that the console is sending sACN
2. Check that the IP address for the "Lighting System" on the GC Multi Server is correct, does not overlap with any other IP address in you system, and is in the correct range.
3. Double check that the GC Multi Application is enabled in the MAC Security Settings.
4. Once all these have been close the application and restart the computer and application.
5. One additional TIP. Every GC Multi Server comes with S400 Tools Software that can be used to interdependently verify that there is sACN on the network.

## sACN Loss

2.0B10 test 1

v2.010 f28ebad8

Spot1

Spot2

Networking

Ground Controller

Lighting System

PSN

Link Active

Link Down

Disabled / Unplugged

Config

2D Plan View

Status

Chan...	Device	Univ	Addr	Prior...	Console Control	MT-DMX	Inten	Pan	Tilt	Cyan	Yellow	Magen...	Wheel	Beam	Edge	Frost	Zoom	Strobe	Gobo	R Go...	Effect	Prism	Index	E Ind...	P Ind...	Wheel...	Color...	Colo...	Misc1	Misc2	Misc3	Spee...	Spee...	Spee...	Color...	Bea...	Edge2	F G
1	Best GC	1	1	200	Spot ID 1	0/0	0	34174	17554	0	0	0	0	246	32768	32768	0	0	0	0	0	146	0	0	24575	0	50	0	0	0	0	0	0	0	0	0	0	
26	Domino	1	251	200	Spot ID 2	0/0	255	28715	19625	0	0	0	0	0	32768	0	32767	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
21	VL3600P	3	1	200	Spot 1	0/0	0	29009	47683	0	0	0	0	31	32768	0	32768	0	0	0	0	0	0	32768	32768	32768	0	0	0	0	0	0	0	0	0	0	0	
22	Diablo	3	55	200	Spot 1	0/0	0	29498	18330	0	0	0	0	0	32768	0	32768	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
23	ViperPrl	3	111	200	Spot 1	0/0	0	34660	17646	0	0	0	0	0	32768	0	32767	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
24	VL2600P	3	151	200	Spot 1	0/0	0	31726	46088	0	0	0	0	0	32768	0	32768	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
25	VL3600P	3	201	200	Spot 1	0/0	0	33367	47915	0	0	0	0	0	32768	0	32768	0	0	0	0	0	0	32768	32768	32768	0	0	0	0	0	0	0	0	0	0		
27	BestBoyLED	5	1	200	Spot 1	0/0	0	38289	15681	0	0	0	0	149	32768	32768	0	0	0	0	0	146	24576	24576	24576	0	0	0	0	0	0	0	0	0	0	0		
28	ICON Ed	5	47	200	Spot 1	0/0	0	26264	50172	0	0	0	0	0	32768	0	32768	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
29	Istige	5	105	200	Spot 1	0/0	0	25859	50499	0	0	0	0	20290	32768	0	32768	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	255	0		
31	Blade	6	1	200	Spot 1	0/0	0	33029	40527	0	0	0	0	0	32768	0	32767	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
32	Forté	6	50	200	Spot 1	0/0	0	29280	43081	0	0	0	0	0	32768	0	32767	48	0	0	0	0	128	0	0	128	0	0	0	0	0	0	0	0	128	0		
33	ImpX4hr	6	104	200	Spot 1	0/0	0	22382	44648	65535	65535	65535	0	0	0	0	127	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
34	ProteusMax	7	1	200	Spot 1	0/0	0	32442	14991	0	0	0	0	9744	32768	0	32768	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
35	Mythos	7	62	200	Spot 1	0/0	0	31601	50834	0	0	0	0	0	32768	0	128	106	0	0	0	0	0	127	0	0	0	0	0	0	0	0	0	0	0	0		
36	5L	7	92	200	Spot 1	0/0	0	50856	50599	65535	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
37	ImpX4hr	8	1	200	Spot 1	0/0	0	44245	42859	65535	65535	65535	0	0	0	0	127	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
41	Scenius	2	201	200	Spot 1	0/0	0	29401	46926	0	0	0	0	131	32768	0	128	106	0	0	0	0	127	0	0	0	0	0	0	0	0	0	0	0	0	0		
42	HicynTnm	2	201	200	Spot 1	0/0	0	30554	19992	255	255	255	0	265	32768	0	32768	255	0	0	0	0	0	0	0	255	0	0	0	0	0	0	0	0	0			
43	MACEncorepe	2	401	200	Spot ONLY	0/0	0	39035	48749	0	0	0	0	112	32768	0	32767	34	0	0	0	128	32768	0	0	0	0	0	0	0	0	0	0	0	0	0		
121	MS4 Wash	10	201	200	Console ONLY	0/0	0	32767	32767	0	0	0	0	0	32767	0	32767	6	0	0	0	0	38036	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

This is indicating that the software was receiving sACN but it has since gone away and that the Ethernet link has failed

1. Check that the Ethernet connection to the server.
2. Check the Ethernet switch is powered up and working correctly
3. Check that the console is sending sACN

## Bad Calibration

Configuration: 2.0B10 test 1

Show file: 2.0B10 test 1    Feet/Inches    Metric System

### Network Interfaces

	Ethernet Interface	Subnet	Link	notes
Ground Controller	GC Controller (10.1.101.2)	10.1.x.x	Link Active	
Lighting System	Lighting Syst...66.250.250)	10.66.x.x	Link Active	Plugged in, sACN Detected. Rcv univ 1,2,3,5,6,7,8,10. Send univ 2,3,5,6,7,8,10
PSN				

GC Controller (10.1.101.2) ✓ ✓  
Lighting System (10.66.250.250) Rcv univ 1,2,3,5,6,7,8,10, ✓  
None (Disabled) : Edit PSN Name(s)

Calibration    Other  
☐ Calibration Auto-Corrects Tilt Orthogonal    ☐ Pitch & Roll

### Focus Target Points

Target Points	x	y	notes
Alpha	4'	4'	
Bravo	2'	24'	
Charlie	24'	24'	
Delta	22'	4'	

Patch    Controllers    Z Height Options

### Main GroundControl Fixtures

add fixture    delete    delete cal    force recalibration

Spot ID	chan	profile	mode	fixture univ	fixture addr	GC-MultiMain desk chnl	GC-MM univ	GC-MM addr	priority	base orient	notes	cal detail	x	y	z	pitch	roll	yaw	tilt ortho
1#	1	Ground Control	Best Boy (49ch)	1	1-49	1001	1	50-56	N/A	Up	⬇	Show	10'3"	-0'9"	11'10"	0.0°	0.0°	-180.8°	32767
2#	26	Domino Profile	Extended (66ch)	1	251-316	1026	1	321-327	N/A	Up	⬇	Show	13'	-0'11"	12'11"	0.0°	0.0°	-178.4°	32767

2 of 2 patched controllers are detected online.

### Fixtures Under Multi Control

add fixture    delete    delete cal    force recalibration

GC ONLY    GC + Console

chan...	profile	mode	fixture univ	fixture addr	GC-MultiToggle desk chnl	GC-MT univ	GC-MT addr	priority	base orient	notes	cal detail	x	y	z	pitch	roll	yaw	tilt ortho
21	VL3600 Profile	16-Bit Extended (54ch)	3	1-54	1021	3	401-403	200	Up	⬇	Show	-19°	-1'	12'9"	0.0°	0.0°	-0.6°	32767
22	Diablo	Extended (66ch)	3	55-110	1022	3	404-406	200	Up	⬇	Show	0'3"	-0'1"	12'11"	0.0°	0.0°	-178.6°	32767
23	MAC Viper Performance	Ext 40ch (40ch)	3	111-150	1023	3	407-409	200	Up	⬇	Show	3'2"	-1'2"	11'7"	0.0°	0.0°	-179.4°	32767
24	VL2600 Profile	16-Bit (47ch)	3	151-197	1024	3	410-412	200	Up	⬇	Show	4'8"	-2'4"	14'9"	0.0°	0.0°	-0.0°	32767
25	VL3600 Profile	16-Bit Extended (54ch)	3	201-254	1025	3	413-415	200	Up	⬇	Show	8'1"	-0'1"	10'7"	0.0°	0.0°	359.0°	32767
27	Best Boy LED	Standard (46ch)	5	1-46	1026	5	401-403	200	Up	⬇	Show	25'3"	-0'7"	12'10"	0.0°	0.0°	-179.7°	32767
28	ICON Edge	Ext 36ch (36ch)	5	47-82	1027	5	404-406	200	Up	⬇	Show	28'10"	-2'2"	12'4"	0.0°	0.0°	0.5°	32767
29	Icon Stage	Extended (58ch)	5	105-162	1028	5	407-409	200	Up	⬇	Show	27'7"	0'1"	10'11"	0.0°	0.0°	29.5°	32767
31	Robin BMFL Blade	M1 (49ch)	6	1-49	1031	6	401-403	200	Up	⬇	Show	-0'1"	13'3"	15'2"	0.0°	0.0°	-90.7°	32767
32	Robin Forte	Mode 1 (54ch)	6	50-103	1032	6	404-406	200	Up	⬇	Show	-1'4"	18'8"	14'4"	0.0°	0.0°	267.3°	32767
33	Impression X4	Extended (21ch)	6	104-124	1033	6	407-409	200	Up	⬇	Show	-0'6"	14'7"	10'8"	0.0°	0.0°	68.3°	32767
34	Proteus Maximus	Extended (61ch)	7	1-61	1034	7	410-412	200	Up	⬇	Show	28'10"	13'8"	10'	0.0°	0.0°	-86.7°	32767
35	Mythos	Standard (30ch)	7	62-91	1035	7	413-415	200	Up	⬇	Show	31'5"	19'	12'10"	0.0°	0.0°	49.8°	32767
36	SL	default (23ch)	7	92-114	1036	7	416-418	200	Up	⬇	Show	28'5"	14'10"	9'9"	0.0°	0.0°	264.4°	32767
37	Impression X4	Extended (21ch)	8	1-21	1037	8	501-503	200	Up	⬇	Show	13'	15'7"	10'11"	0.0°	0.0°	54.1°	32767
41	Scenius Unico	Vector (44ch)	2	201-244	1041	2	501-503	200	Up	⬇	Show	-2'8"	29'11"	15'9"	0.0°	0.0°	183.4°	32767
42	Haleyon Titanium	Standard (60ch)	2	301-360	1042	2	504-506	200	Up	⬇	Show	12'1"	30'2"	17'11"	0.0°	0.0°	1.9°	32767
43	MAC Encor...formance	Warm (38ch)	2	401-438	1043	2	507-509	200	Up	⬇	Show	27'9"	30'11"	15'10"	0.0°	0.0°	181.9°	32767
121	Maverik SL-4 SoloWash	46 Ch (46ch)	10	201-246	1121	10	501-503	200	Up	⬇	Show	14'1"	33'8"	29'	0.0°	0.0°	9.7°	32767

This is indicating that a fixture may not have received a good calibration. Further details can be viewed by pressing the “Show” Button in the “Cal Details” Column. To fix this try refocusing the fixture on the target points. The fixture needs to be zoomed in and irised in as tight as possible and centered on each target point. Sometimes slightly adjusting the Pan and Tilt focus is enough to improve the calibration.

121' ch19 Chauvet-Maverik Storm 4 SoloWash-46 Ch, univ.addr 10.201    Fixture '121' 3D patch location: (14'1", 33'8", 29'), orientation 9.74° 0.00° 0.00°

===== LAST SUCCESSFUL CALIBRATION =====

Only 1 of 4 3D calibration computations were valid.  
This reduces the confidence in the 3D position of the light.  
Typically this can happen when there is a SMALL PAN DIFFERENCE between Focus Target Points.  
If this is the case, try adjusting your Focus Target Points so that each point has sufficient Pan difference..

last successful cal Apr 21, 2025 11:17:54. pan range 17978 to 39822, tilt 10922 to 32768

Calibration Summary: average error is ~ 7'1" per Focus Target Point. Max Error 14'6" @ Focus Point 'Bravo'

Calibration Details:

All tilt values in same hemisphere, so OK to use raw pan/tilt: f1 (41615, 19005), f2 (37224, 15793), f3 (31883, 16875) f4 (31654, 27360)

Calibration success. Fixture '121' points 'ABC'

ERROR: 121 failed cal: circle 1 wrong side

NOTE: 1 (4.0,4.0) adj p 41615 t 19005

NOTE: 2 (2.0,24.0) adj p 37224 t 15793

NOTE: 3 (24.0,24.0) adj p 31883 t 16875

NOTE: 4 (22.0,4.0) adj p 31654 t 27360

Calibration failed. Fixture '121' points 'ABD'

ERROR: 121 failed cal: circle 1 wrong side

NOTE: 1 (4.0,4.0) adj p 41615 t 19005

NOTE: 2 (2.0,24.0) adj p 37224 t 15793

NOTE: 3 (24.0,24.0) adj p 31883 t 16875

NOTE: 4 (22.0,4.0) adj p 31654 t 27360

Calibration failed. Fixture '121' points 'ACD'

Calibration success. Fixture '121' points 'BCD'

Focus Points have changed.

Virtuoso Cal could not find valid pitch/roll. Limiting pitch/roll total to 1 degree

Virtuoso Calibration lx 9.91 ly 14.26 lz 5.00 a1 4.63° a2 180.99° a3 -0.01° fit 425.98  
down (0.02, -0.00, -1.00, cable (-0.08, -1.00, 0.00))

Warning: pos (7.13, 33.74, 4.50) Z less than 5 feet. Resetting Z calibration position to 5.00.  
Cal ERROR: Fixture '121' could not find conv. pos (1.22, 21.87, 10.33), 87.19° 0.00° 0.00°, conv. totalErr 57.10 origErr 167.28 r0

GC pitch 0.00° roll 0.00° vs. Virtuoso pitch -0.01° roll 0.99°

Focus Points have changed.

Virtuoso Calibration lx 21.36 ly -0.55 lz 12.05 a1 -91.18° a2 178.48° a3 0.11° fit 0.02  
down (-0.00, -0.03, -1.00, cable (1.00, 0.02, -0.00))

Warning: pos (7.13, 33.74, 4.50) Z less than 5 feet. Resetting Z calibration position to 5.00.  
Cal ERROR: Fixture '121' could not find conv. pos (1.22, 21.87, 10.33), 87.19° 0.00° 0.00°, conv. totalErr 57.10 origErr 167.28 r1 (attempt toggle reverse\_pan)



## Truss Box Pairing



Truss Boxes are now paired to the Controller. The pairing occurs automatically on the initial power up. It is for this reason that the Fixture, Truss Box, and Controller must be powered up and working BEFORE being plugged into the GC Multi Server for the first time. If a Controller accidentally pairs to the wrong Truss Box, or a Truss Box needs to be swapped, the pairing will need to be Reset. Use the following steps to Reset the pairing:

1. Disconnect the Controller from the GC Multi Server
2. Connect the new Truss Box
3. Press “Reset Pair” in the software window on the Controller
4. The Truss Box should now be Paired to the Controller that is plugged into. The Controller can now be plugged back into the GC Multi Server.

Once paired, a Server, multiple Controllers, and Truss Boxes can be powered up together while connected.

## Collect Logs

Configuration: 2.0B23 Dolly EOS 2

Show file: 2.0B23 Dolly EOS 2    Feet/Inches    Metric System

**Network Interfaces**

	Ethernet Interface	Subnet	Link	notes
Ground Controller	GC Controller (10.1.101.24)	10.1.x.x	Link Active	
Lighting System	Lighting Syst...0.66.201.24)	10.66.x.x	Link Active	Plugged in, sACN Detected. Rcv univ 1,2,3,5,6,7,8,10,11,12. Send univ 5,6,7,8,11,12

PSN

**Focus Target Points**

Target Points	x	y	notes
Alpha	4'	4'	
Bravo	2'	24'	
Charlie	24'	24'	
Delta	22'	4'	

**Detected Controllers**

3 of 3 patched controllers are detected online.

spot id				patched info				detected controller info			
online status	Spot ID	detected Spot ID	channel	fixture univ	fixture addr	profile	mode	detected DMX addr	detected profile	detected IP addr	detected truss box ID
✱ (online)	1 ✱	1		1	1-66	Domino Profile	Extended (66ch)	1	Ayrton-Domino Profile-Extended	10.1.193.239	0xA00120E5
✱ (online)	2 ✱	2		2	1-66	Domino Profile	Extended (66ch)	1	Ayrton-Domino Profile-Extended	10.1.197.198	0xA004213D
✱ (online)	3 ✱	3		3	1-49	Ground Control	Best Boy (49ch)	1	PRG Lighting-Ground Control-Best Boy	10.1.91.165	0xA0042210

When there are multiple controllers, pairing is done automatically, so that each controller is paired with a patched Main fixture that has a matching Spot ID.

The “Collect Logs” button on the “Controllers” Tab collates and condenses into a single file all of the system logs in the Controller, GC Multi Application, and the Mac Computer. Once condensed the File will be highlighted and will be available to be copied onto a USB Stick so that it can be emailed to PRG so as to help with troubleshooting.

## Calibration From the GroundControl™ Controller

The following section only applies if the GroundControl™ Multi System is to be operated without a Lighting Console.

Please follow the following steps to calibrate your Lighting Fixtures 3D Positions.

Step 1. Prepare to Calibrate Fixtures.

- Make sure the GroundControl™ Multi Application Control Toggle is set to “GC Only.”
- Lamp On Arc Fixtures.
  - The “Start Lamp” button can be found on the main Status Screen of the GroundControl™ Multi Application.

Networking

Ground Controller  
Lighting System  
PSN

Link Active  
Link Active

Plugged in, sACN Detected...10. Send uni 2,3,5,6,7,8,10

Config

2D Plan View

Status

Chan...	Device	Unlv	Addr	Prior...	Console Control	MT-DMX	Inten	Par	Tilt	Cyan	Yellow	Magen...	Wheel	Beam	Edge	Frost	Zoom	Strobe	Gobo	R Go...	Effect	Priam	Index	E Ind...	P Ind...	Wheel...	Color...	Colo...	Misc1	Misc2	Misc3	Spee...	Spee...	Spee...	Color...	Bea...	Edge2	F G		
1	Best GC	1	1	200	Spot ID 1	0/0	0	34174	17554	0	0	0	0	248	32768	0	32768	0	0	0	0	0	0	146	0	0	24575	0	50	0	0	0	0	0	0	0	0	0		
26	Domino	1	251	200	Spot ID 2	0/0	255	28715	19625	0	0	0	0	0	32768	0	32767	15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0			
21	VL3600P	3	1	200	Spot 1	0/0	0	29009	47683	0	0	0	0	31	32768	0	32768	0	0	0	0	0	0	0	0	0	32768	32768	32768	0	0	0	0	0	0	0	0	0		
22	Diablo	3	55	200	Spot 1	0/0	0	29498	18330	0	0	0	0	0	32768	0	32768	15	0	0	0	0	0	0	0	0	32768	32768	32768	0	0	0	0	0	0	0	0	0		
23	ViperPrf	3	111	200	Spot 1	0/0	0	34660	17646	0	0	0	0	0	32768	0	32767	34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
24	VL2600P	3	151	200	Spot 1	0/0	0	31726	46088	0	0	0	0	0	32768	0	32768	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
25	VL3600P	3	201	200	Spot 1	0/0	0	33367	47915	0	0	0	0	0	32768	0	32768	0	0	0	0	0	0	0	0	0	32768	32768	32768	0	0	0	0	0	0	0	0	0		
27	BestBoyLED	5	1	200	Spot 1	0/0	0	36289	15681	0	0	0	0	149	32768	0	32768	0	0	0	0	0	0	0	146	24576	24576	24576	0	0	0	0	0	0	0	0	0	0		
28	ICON Ed	5	47	200	Spot 1	0/0	0	26284	50172	0	0	0	0	0	32768	0	32768	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
29	Intage	5	105	200	Spot 1	0/0	0	25859	50499	0	0	0	0	20290	32768	0	32768	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	255			
31	Blade	6	1	200	Spot 2	20/0	255	31567	47294	0	0	0	0	9143	32768	0	32768	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
32	Forté	6	50	200	Spot 2	20/0	255	30261	48436	0	0	0	0	13538	32768	0	32768	48	0	0	0	0	0	0	128	0	0	0	0	0	0	0	0	0	0	0	128			
33	ImpX4tr	6	104	200	Spot 2	20/0	255	21826	50612	65535	65535	65535	0	0	0	0	0	128	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
34	ProteusMax	7	1	200	Spot 2	20/0	255	35269	18909	0	0	0	0	0	32768	0	32767	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
35	Mythos	7	62	200	Spot 2	20/0	255	27875	47935	0	0	0	0	0	32768	0	32768	0	127	106	0	0	0	0	127	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
36	SL	7	92	200	Spot 2	20/0	255	55800	46932	65535	65535	65535	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
37	ImpX4tr	8	1	200	Spot 1	0/0	0	44245	42859	65535	65535	65535	0	0	0	0	0	127	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
41	Scenius	2	201	200	Spot 2	20/0	255	27385	49501	0	0	0	0	76	32768	0	32768	0	127	106	0	0	0	0	127	0	0	0	0	0	0	0	0	0	0	0	0	0		
42	HicynTnm	2	201	200	Spot 2	20/0	255	35007	18409	255	255	255	0	224	32768	0	32767	255	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		
43	MACEncorepe	2	401	200	Spot 2	20/0	255	35538	47809	0	0	0	0	112	32768	0	32768	34	0	0	0	0	0	128	32768	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
121	MSA Wash	10	201	200	Console ONLY	0/0	0	32767	32767	0	0	0	0	0	32767	0	32767	6	0	0	0	0	0	38036	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Start Lamp

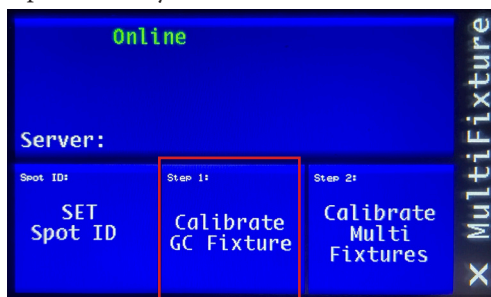
House Lamp

Home/Reset

Step 2. Calibrate the Main GroundControl™ Camera Fixture.

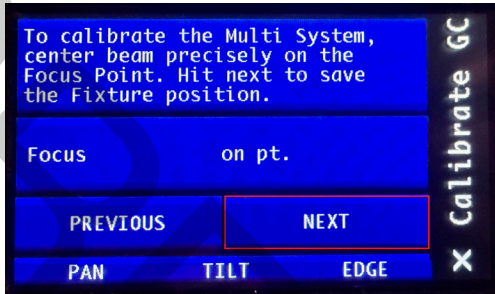


- Enter the “Multi-Fixture Setup” menu on your GroundControl™ Controller





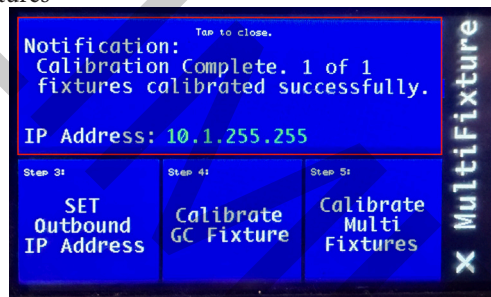
- b. Select “Calibrate GC Fixture”
- c. Using the Controller’s Pan and Tilt, focus the Main GroundControl™ Camera Fixture on Target Point ‘Alpha.’
- d. Either select “Next” on the Controller Display or press the “Blackout” button.
- e. Repeat steps “c” and “d,” focusing to and storing data for Target Points ‘Bravo,’ ‘Charlie,’ and ‘Delta.’



- A successful calibration will result the message shown below in the “Multi-Fixture Setup” menu.

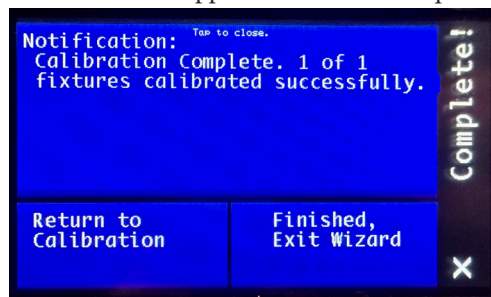
Step 3. Calibrate all additional GroundControl™ Multi system fixtures.

- a. Select “Calibrate Multi Fixtures”



- b. Repeat all steps from Main GroundControl™ Camera Fixture calibration, using the Controller’s encoders to manipulate Pan and Tilt.
  - After Target Point ‘Delta’ has been calibrated, the application will advance to the next fixture automatically.
- c. Repeat this process for each fixture patched in the GroundControl™ Multi application.
- d. Select “Return to Calibration” in the event of any errors, or else select “Finished, Exit Wizard”.

Step 4. SAVE THE FILE in the GroundControl™ Multi application. This is a required step to store all settings.



Congratulations! The system is now calibrated. The fixtures will now follow the Main GroundControl® Fixture!

PRELIMINARY