+5V

+10V

DCBOOSTG$1

VOUT+		4
VIN+		2
VOUT-		3
VIN-		1

C2
.1uF

GND

RM-0512S

GND

J1_USB

USB

P
1
3
2
4

AMPHENOL-8720-TYPE1

GND

C1
10uF

C3
100uF

GND

R9
24.9K

R12
24.9K

U1

VDD 1

SCL 10
SDA 9

SCL
SDA

RST 4

URX 5
UTX 6

D+ 13
D- 12

GP0 2
GP1 3
GP2 7
GP3 8

INTERLOCKON
YINVERT
XINVERT

VUSB 11

VSS

C7
.33uF

MCP2221-I/P 14

GND

+5V

DAC-Y

1	VDD	VOUT	4	YSIG
2	VREF	V(SENSE)	3	
5	A0			
7	SDA			
6	SCL			
8	GND			

SDA
SCL

C5
.1uF

GND

DAC8571IDGK

DAC-X

1	VDD	VOUT	4	XSIG
2	VREF	V(SENSE)	3	
5	A0			
7	SDA			
6	SCL			
8	GND			

SDA
SCL
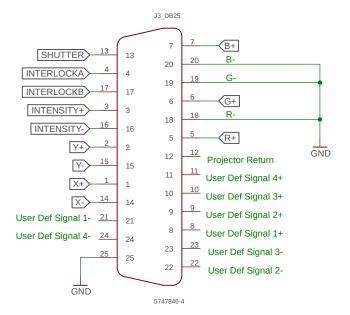
C4
.1uF

GND

DAC8571IDGK

Date: 6/7/2018

TITLE: XY DACs   Sheet: 2/5

+5V

C6
.1uF

GND

SCL
SDA

DAC-RGBS

1 VDD
2 SCL
3 SDA   VOUTA 6
5 RDY/*BSY   VOUTB 7
4 *LDAC   VOUTC 8
10 VSS   VOUTD 9

GND

MCP4728-E/UN

R+
G+
B+
SHUTTER

3K
R1

+10V

U2_2XOPAMP

GND R3 3K
     R2 5K
     R4 5K
GND R5 3K

2 INA-   V+ 8
3 INA+   OUTA 1
5 INB+   OUTB 7
6 INB-   V- 4

OPA1688 GND

Y+
Y-

3K
R6

U$1

16 VCC   1Y0 12
11 S1   1Y1 13
10 S2   2Y0 2
9 S3   2Y1 1
6 E   3Y0 5
7 VEE   3Y1 3
8 GND   1Z 14
              2Z 15
              3Z 4

GND

74HC4053

INTERLOCKON
YINVERT
XINVERT

INTERLOCKB
INTERLOCKA

XSIG
YSIG

3K
R7

+10V

U4_2XOPAMP

GND R10 3K
     R8   5K
     R11 5K
GND R21 3K

2 INA-   V+ 8
3 INA+   OUTA 1
5 INB+   OUTB 7
6 INB-   V- 4

OPA1688 GND

X+
X-

3K
R22

J3_DB25

SHUTTER	13	B+ 7
INTERLOCKA	4	B- 20
INTERLOCKB	17	G- 19
INTENSITY+	3	G+ 6
INTENSITY-	16	R- 18
Y+	2	R+ 5
Y-	15	Projector Return 12
X+	1	User Def Signal 4+ 11
X-	14	User Def Signal 3+ 10
User Def Signal 1-	21	User Def Signal 2+ 9
User Def Signal 4-	24	User Def Signal 1+ 8
	25	User Def Signal 3- 23
		User Def Signal 2- 22

GND

GND

5747846-4

Alpha Version Notes:

Setup is proven against PRO-1600RGB from Laserworld, but DOES NOT adhere to ILDA specifcation.

Improvements From Alpha:*

ILDA Standard Conformance

74HC4503 is deprecated and must be replaced

PCB must be finalized and tested for conformance
(Alpha was in a breadboard)

Move to External Power and regulation (USB fluctuates due to loads)

Changes Needed For ILDA Conformance**

+/- Signals need to be differential not ground referenced

Separate Power supply to account for lax current spec
(USB cannot meet the maximum circumstance)

* List is non-exhaustive and seeks to use proven ICs from the Alpha version

** See ILDA standards to confirm. These are the most glaring issues.
  Other non-important conformance may be additional IO connections on the DB-25 Connector, etc.

Date: 6/7/2018

TITLE: RGB & Shutter Voltage   Sheet: 5/5