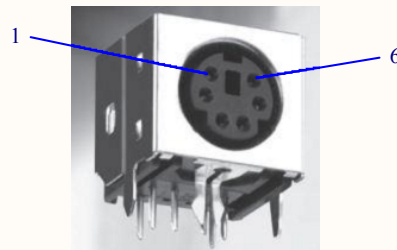
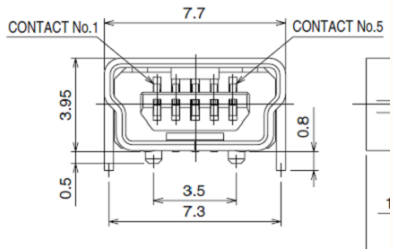
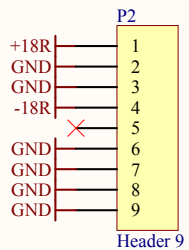


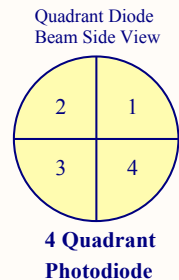
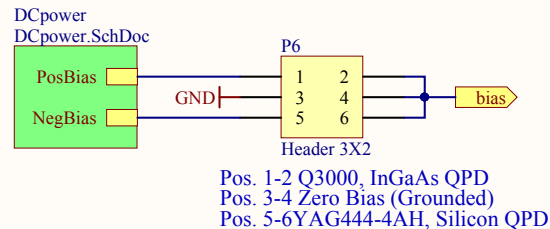
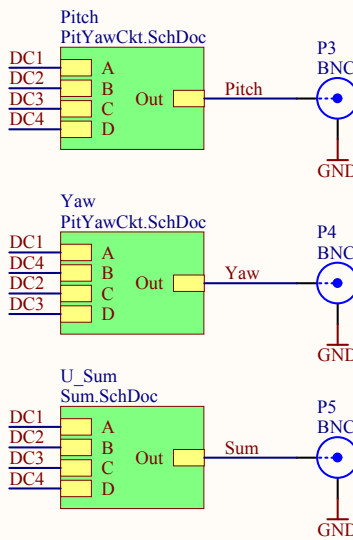
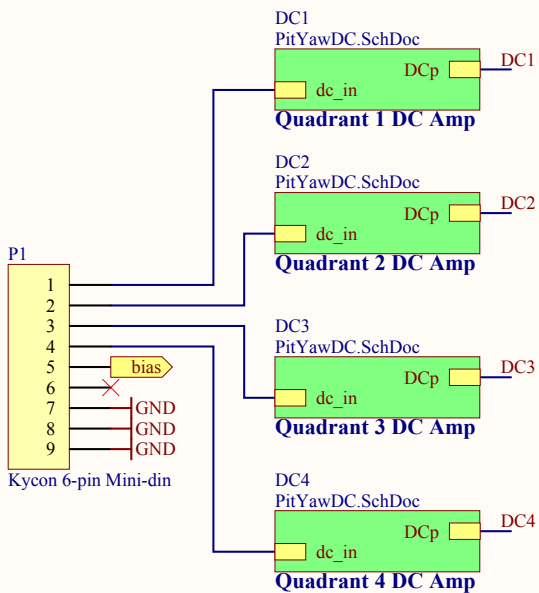
A 10 foot mating cable example would be Digikey Part Number Q368-ND

Mating Connector



Mouser Part #: 806-KMDLAX-6P
 Manufacturer Part #: KMDLAX-6P
 Manufacturer: Kycon

Part1
 BOM Only
 2-881545-2-ND



Revision History:

Last Edited: 2/10/2017

Title: Pitch/Yaw Photodetector Top Sheet

LIGO Laboratory
California Institute of Technology
Massachusetts Institute of Technology



Size: A DCC Number: D1600273

Revision: V1

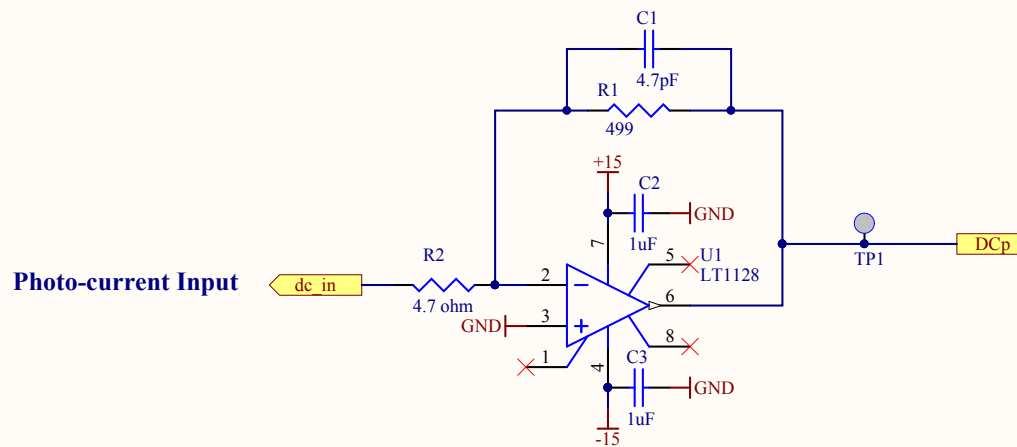
Engineer: R. Abbott

Date: 2/21/2017
Time: 10:48:59 AM

File: C:\Rich's Files\Mycadfiles\R and D\PitYawQpd\PitYawTop.SchDoc

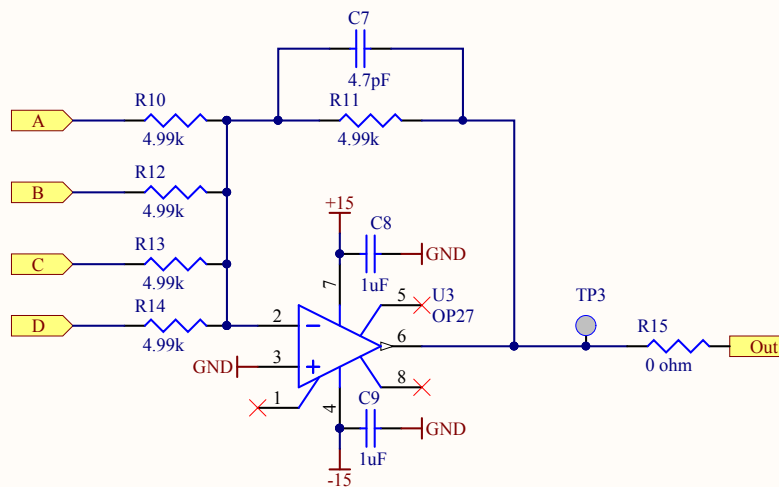
Sheet 1 of 5

**DC Transimpedance Amp
(10mA Maximum Photo-current)
Opamp and transimpedance chosen to fit application**




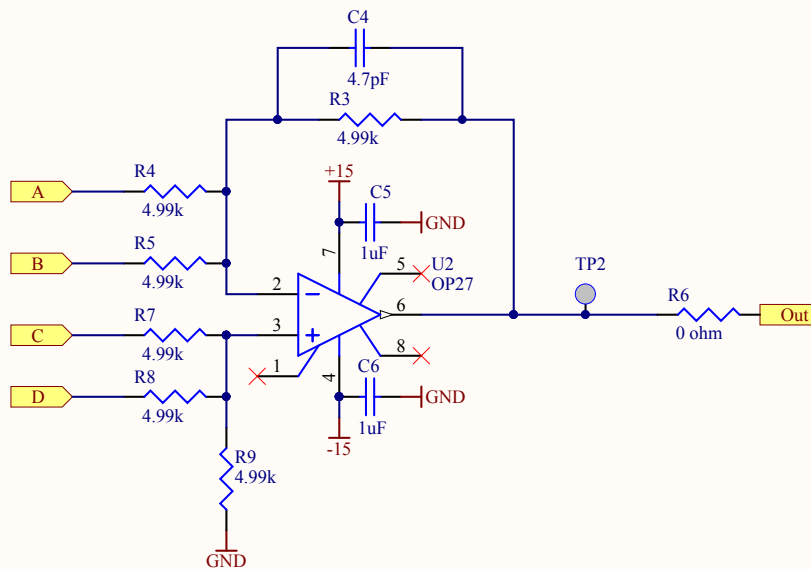
Last Edited: 05 February 2013

Title		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		
Transimpedance Amp				
Size: A	DCC Number: D1600273	Revision: V1	Engineer: R. Abbott	Date: 2/21/2017
File: C:\Rich's Files\Mycadfiles\R and D\PitYawQpd\PitYawDC.SchDoc				Time: 10:48:59 AM
				Sheet 2 of 5



Last Edited: 2/10/2017

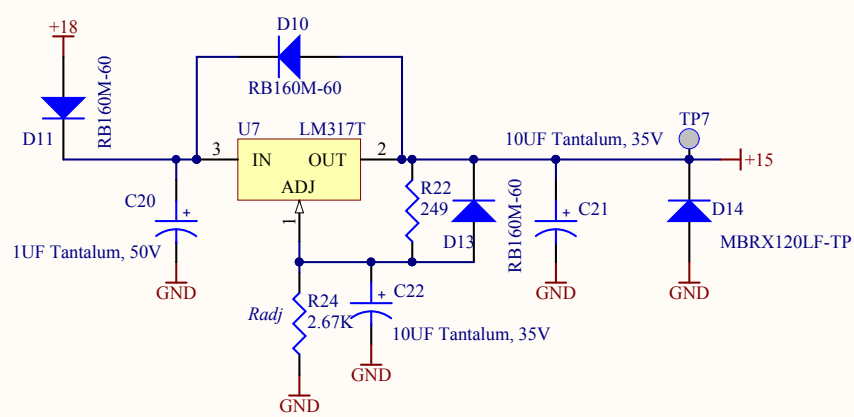
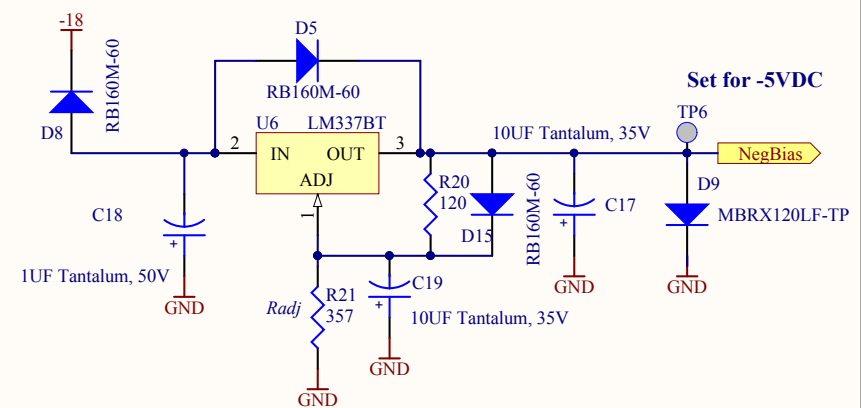
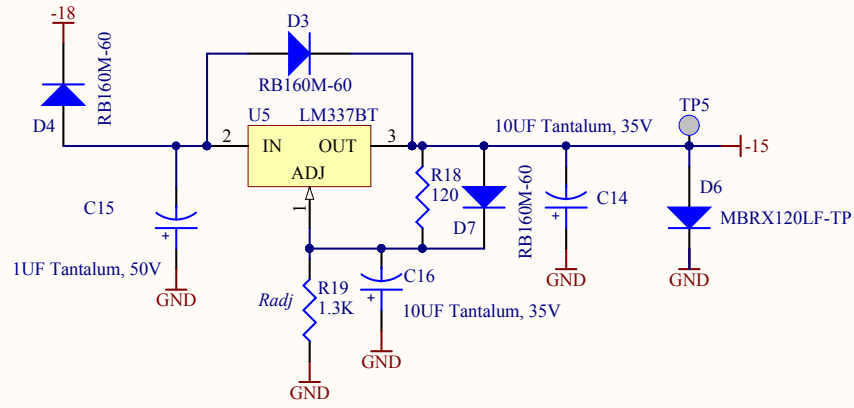
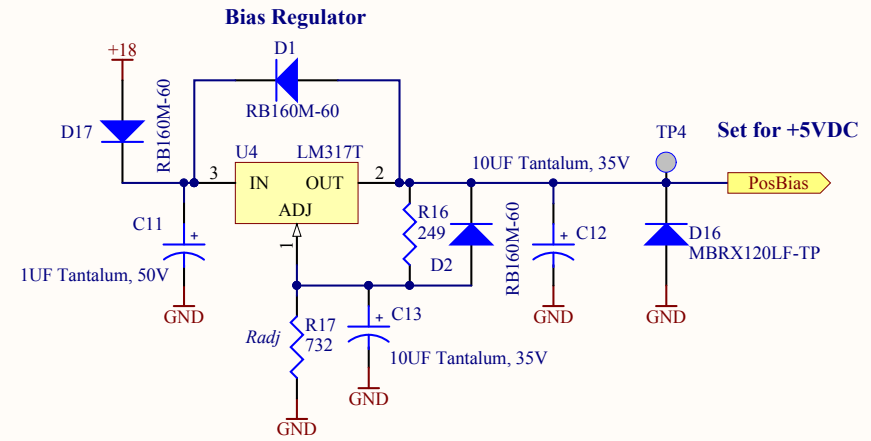
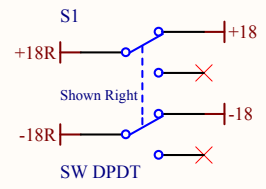
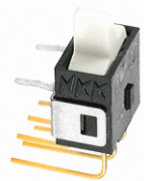
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Size: A		DCC Number: D1600273	Revision: V1	
File: C:\Rich's Files\Mycadfiles\R and D\PitYawQpd\Sum.SchDoc		Engineer: R. Abbott	Time: 10:48:59 AM	
				Sheet 3 of 5



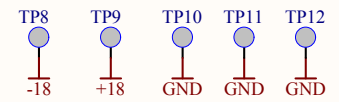
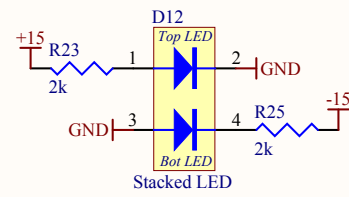
Last Edited: 2/10/2017

Title		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Pitch/Yaw Detail				
Size: A	DCC Number: D1600273	Revision: V1	Engineer: R. Abbott	Date: 2/21/2017
				Time: 10:48:59 AM
File: C:\Rich's Files\Mycadfiles\R and D\PitYawQpd\PitYawCkt.SchDoc				Sheet 4 of 5

Nominal Power Supply Current
+18 = xxx amps
-18 = xxx amps
Voltage Regulator Equations
LM337 $V_o = -1.25(1 + \text{Radj}/120) + (50\mu\text{A} * \text{Radj})$
LM317 $V_o = 1.25(1 + \text{Radj}/249) + (100\mu\text{A} * \text{Radj})$

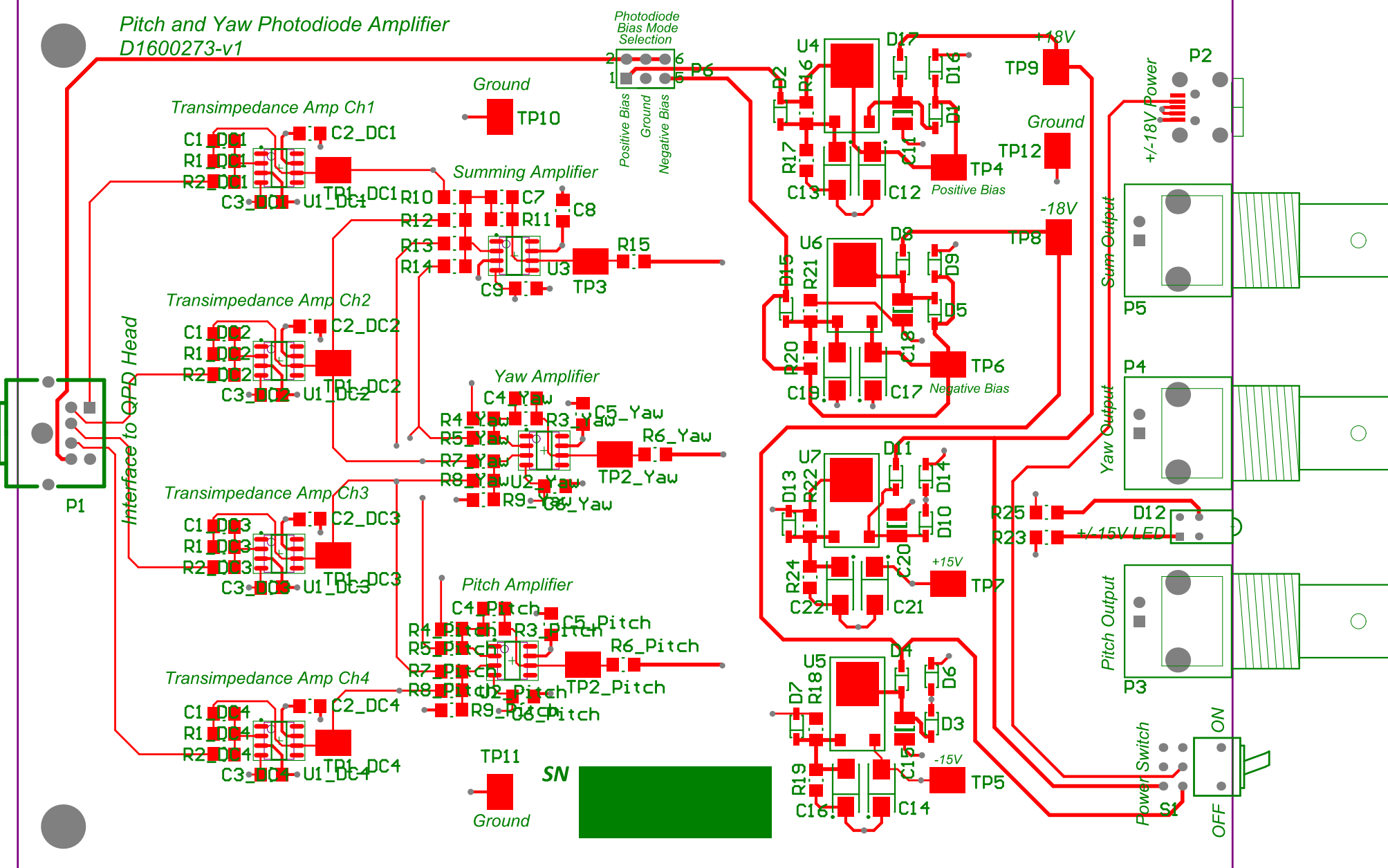


15VDC Power LED



Title Test Schematic		Last Edited: 2/10/2017	
Size: A	DCC Number: *	Revision: V1	Engineer: R. Abbott
Date: 2/21/2017		Time: 10:48:59 AM	
Sheet 5 of 5			

Pitch and Yaw Photodiode Amplifier D1600273-v1



LIGO Bill of Materials

Source Data From: PitYawQpd_v1.PrjPCB
 Board Designed By: R. Abbott
 Board D-number: D1600273
 Board Revision: V1
 Variant: None

Creation Date: 2/21/2017 10:49:05 AM
 Print Date: 21-Feb-17 10:49:08 AM

Designator	Comment	Description	Digikey Part Number	Manufacturers Part Number	Quantity
C1_DC1, C1_DC2, C1_DC3, C1_DC4, C4_Pitch, C4_Yaw, C7	4.7pF		478-1464-1-ND	KMDGX-6S-BS	7
C2_DC1, C2_DC2, C2_DC3, C2_DC4, C3_DC1, C3_DC2, C3_DC3, C3_DC4, C5_Pitch, C5_Yaw, C6_Pitch, C6_Yaw, C8, C9	1uF		490-6527-1-ND		14
C11, C15, C18, C20	1UF Tantalum, 50V	Polarized Cap	478-3075-1-ND		4
C12, C13, C14, C16, C17, C19, C21, C22	10UF Tantalum, 35V	Polarized Cap	478-4973-1-ND		8
D1, D2, D3, D4, D5, D6, D7, D8, D9, D10, D11, D13, D14, D15, D16, D17	MBRX120LF-TP, RB160M-60	High Conductance Fast Diode, Schottky Diode	RB160MM-60CT-ND		16
D12	Stacked LED	Dual Green LED	67-1321-ND		1
P1	Kycon 6-pin Mini-din	Header, 9-Pin			1
P2	Header 9	Header, 9-Pin	H2960CT-ND		1
P3, P4, P5	BNC	BNC Elbow Connector	A32244-ND		3
P6	Header 3X2	Header, 3-Pin, Dual row	609-3234-ND		1
Part1	BOM Only	Jumper	2-881545-2-ND		1
R1_DC1, R1_DC2, R1_DC3, R1_DC4	499		RNCP1206FTD499RCT-ND		4
R2_DC1, R2_DC2, R2_DC3, R2_DC4	4.7 ohm	Resistor	RNCP1206FTD4R70CT-ND		4
R3_Pitch, R3_Yaw, R4_Pitch, R4_Yaw, R5_Pitch, R5_Yaw, R7_Pitch, R7_Yaw, R8_Pitch, R8_Yaw, R9_Pitch, R9_Yaw, R10, R11, R12, R13, R14	4.99k		YAG2056CT-ND		17
R6_Pitch, R6_Yaw, R15	0 ohm		P0.0ECT-ND		3
R16, R22	249		RNCP1206FTD249RCT-ND		2
R17	732		P732BCCT-ND		1
R18, R20	120		311-2959-1-ND		2
R19	1.3K		P1.3KBCCT-ND		1
R21	357		YAG2040CT-ND		1
R23, R25	2k	RES 2.00K OHM 1/4W 0.1% 1206	RNCP1206FTD2K00CT-ND		2
R24	2.67K		P2.67KBCCT-ND		1
S1	SW DPDT	Switch	GW22LBH-ND		1
TP1_DC1, TP1_DC2, TP1_DC3, TP1_DC4, TP2_Pitch, TP2_Yaw, TP3, TP4, TP5, TP6, TP7, TP8, TP9, TP10, TP11, TP12	TESTPT	PCB Testpoint	36-5016CT-ND		16
U1_DC1, U1_DC2, U1_DC3, U1_DC4	LT1128	Low-Noise, Precision Operational Amplifier	LT1128CS8#PBF-ND	4	
U2_Pitch, U2_Yaw, U3	OP27	Low-Noise, Precision Operational Amplifier	OP27GSZ-ND	3	
U4, U7	LM317T	Three-Terminal Adjustable Output Positive Voltage Regulator	LM317MBDTRKGOSCT-ND	2	
U5, U6	LM337BT	3-Terminal Adjustable Negative Voltage Regulator	296-21578-1-ND	2	