

			Last Edited: 1/16/2013	
Vertex Generic PD Interface			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology	
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013
File: Vertex Generic PD Interface 1.SchDoc				Time: 1:46:27 PM
				Sheet 3 of 97

1 2 3 4 5 6

A

A

B

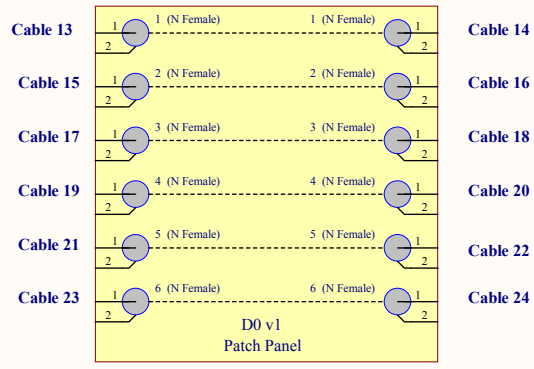
B

C

C

D

D



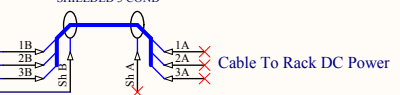
Last Edited: 1/16/2013

Vertex RF Patch Panel			<i>LIGO Laboratory</i> California Institute of Technology Massachusetts Institute of Technology		
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	Time: 1:46:27 PM
File: Vertex RF Patch Panel 1.SchDoc			Sheet 4 of 97		

1 2 3 4 5 6

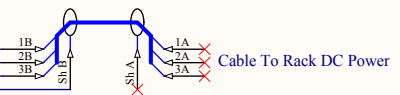
Power Cable 18

? Feet SHIELDED 3 COND



Power Cable 19

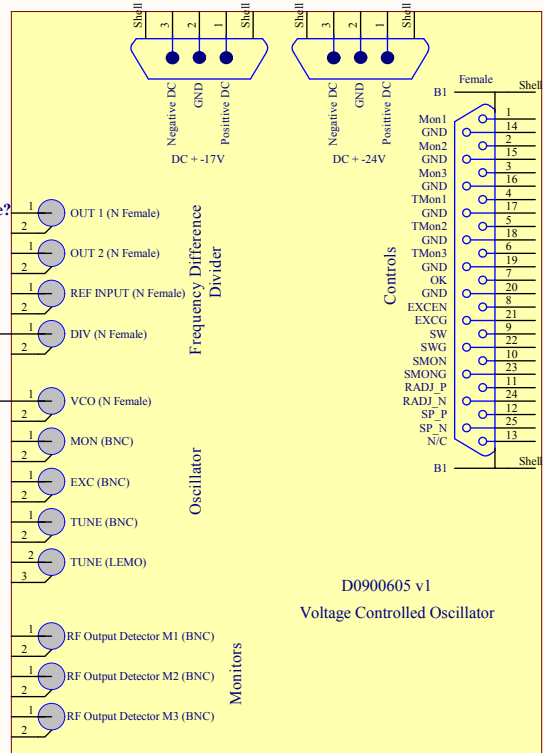
? Feet SHIELDED 3 COND



O/P VRF9-1 D0900605 AOM Driver to PSL/IO Table?

VCO (N) output requires a short jumper to the DIV (N) input

I/P VRF3-1 D0901781 CM Servo To D090605 Low Noise VCO using LF LEMO cable

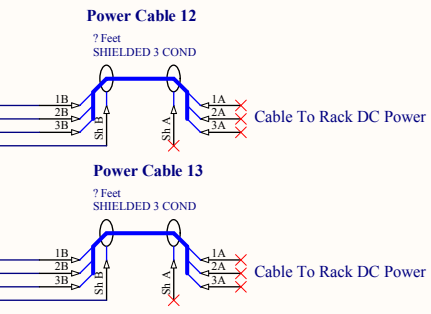
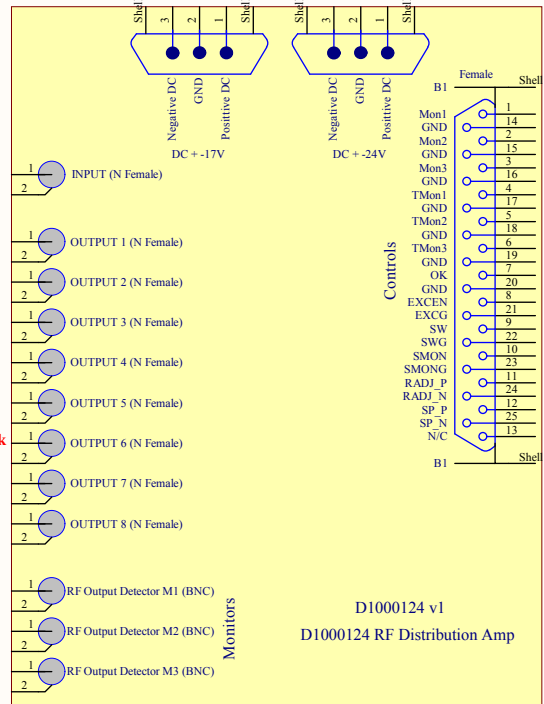


Last Edited: 1/16/2013

Vertex Low Noise Voltage Controlled Oscillator			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	
File: Vertex Low Noise VCO 1.SchDoc				Time: 1:46:28 PM	Sheet 5 of 97

I/P Cable RF14-1 D1000124 RF Distribution Amp To D080702-A RF Source 71 MHz

O/P RF14-2 D1000124 RF Distribution Amp To Patch Panel on Field Rack



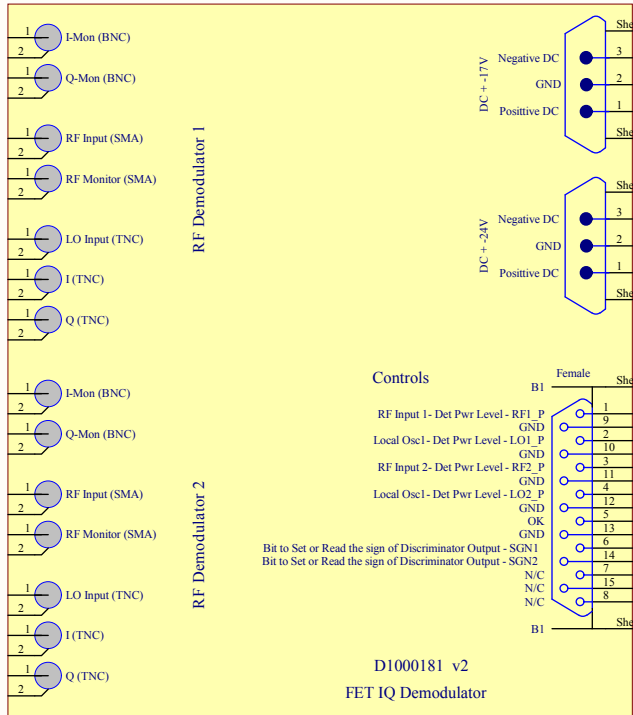
Last Edited: 1/16/2013

Vertex RF Distribution Amp			<small>LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology</small>		LIGO
			Size: B	DCC Number: D1200666	
File: Vertex RF Distribution Amp 1.SchDoc			Sheet 6 of 97		

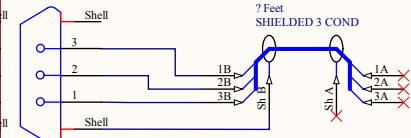
I/P VRF4-1 IO Table IMC_PDH To D1000181 Vertex FET IQ Demodulator 1?

O/P VRF6-1 D0900128 Delay Line Shifter To D1000181 FET IQ Demodulator

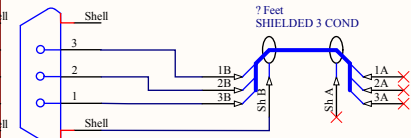
O/P VRF21-2 D1000181 FET IQ Demodulator To D0901781 CM Servo



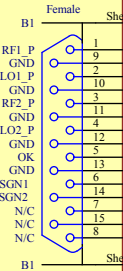
Power Cable 25



Power Cable 26

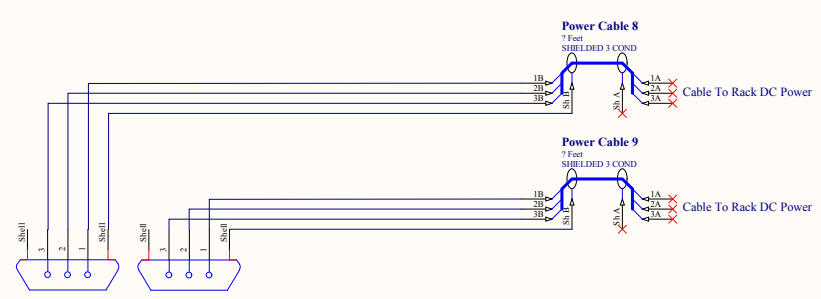


Cable 4



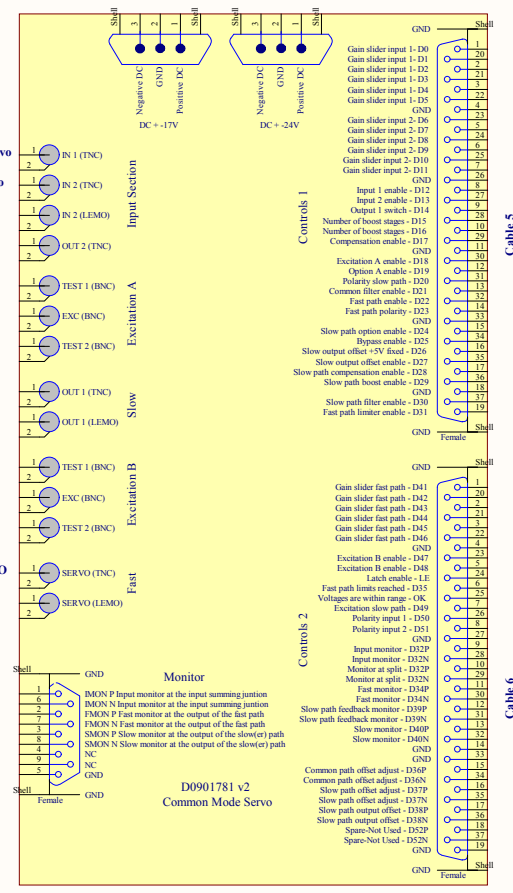
Last Edited: 1/16/2013

Vertex FET IQ Demodulator			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	Time: 1:46:28 PM
File: Vertex FET IQ Demodulator 1 SchDoc				Sheet 7 of 97	



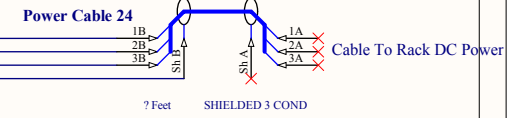
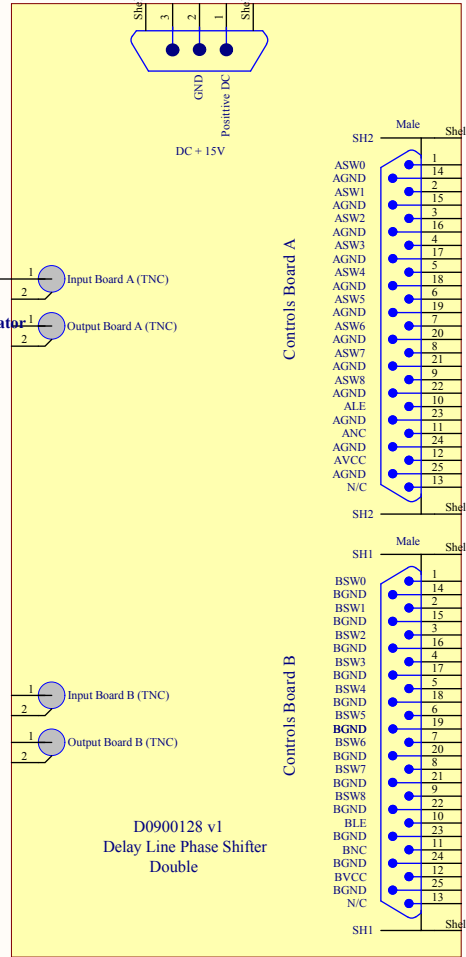
I/P VRF5-1 D1000181 FET IQ Demodulator To D0901781 CM Servo
 I/P VRF7-1 D0901781 CM Servo To D0901781 CM Servo

O/P VRF3-1 D0901781 CM Servo To D090605 Low Noise VCO



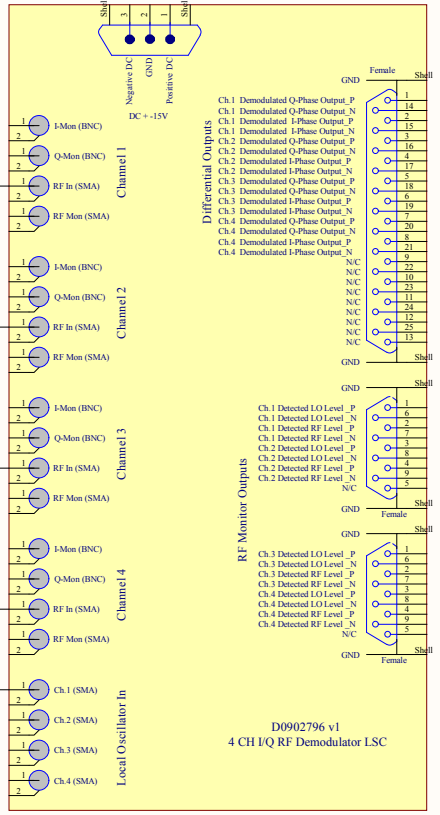
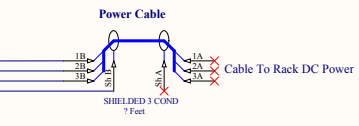
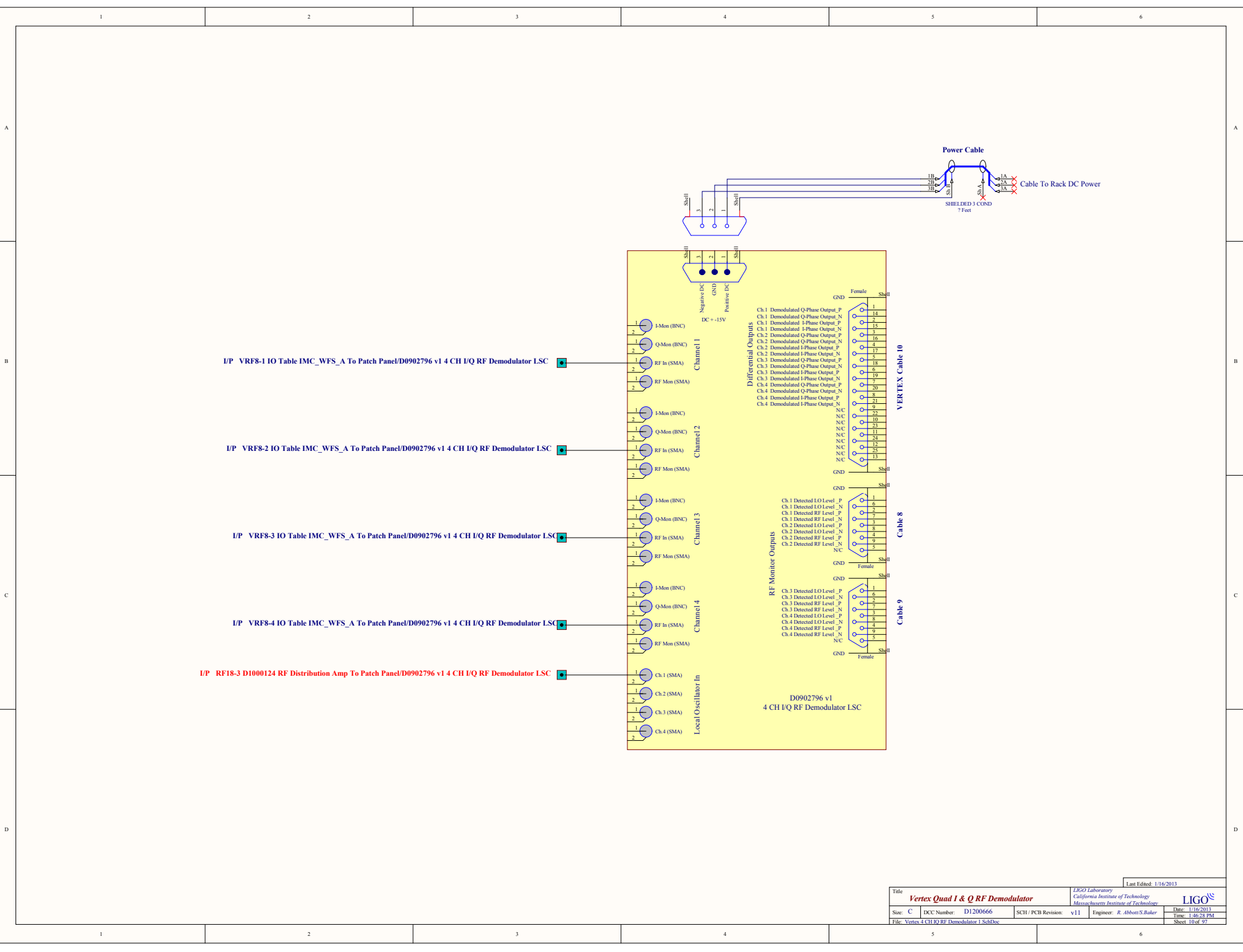
I/P RF18-4 D1000124 RF Distribution Amp To Patch Panel/D0900128 Delay Line Shif

O/P VRF6-1 D0900128 Delay Line Shifter To D1000181 FET IQ Demodulator



Vertex Delay Line Phase Shifter			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	Time: 1:46:28 PM
File: Vertex Delay Line Phase Shifter 1 SchDoc				Sheet 9 of 97	

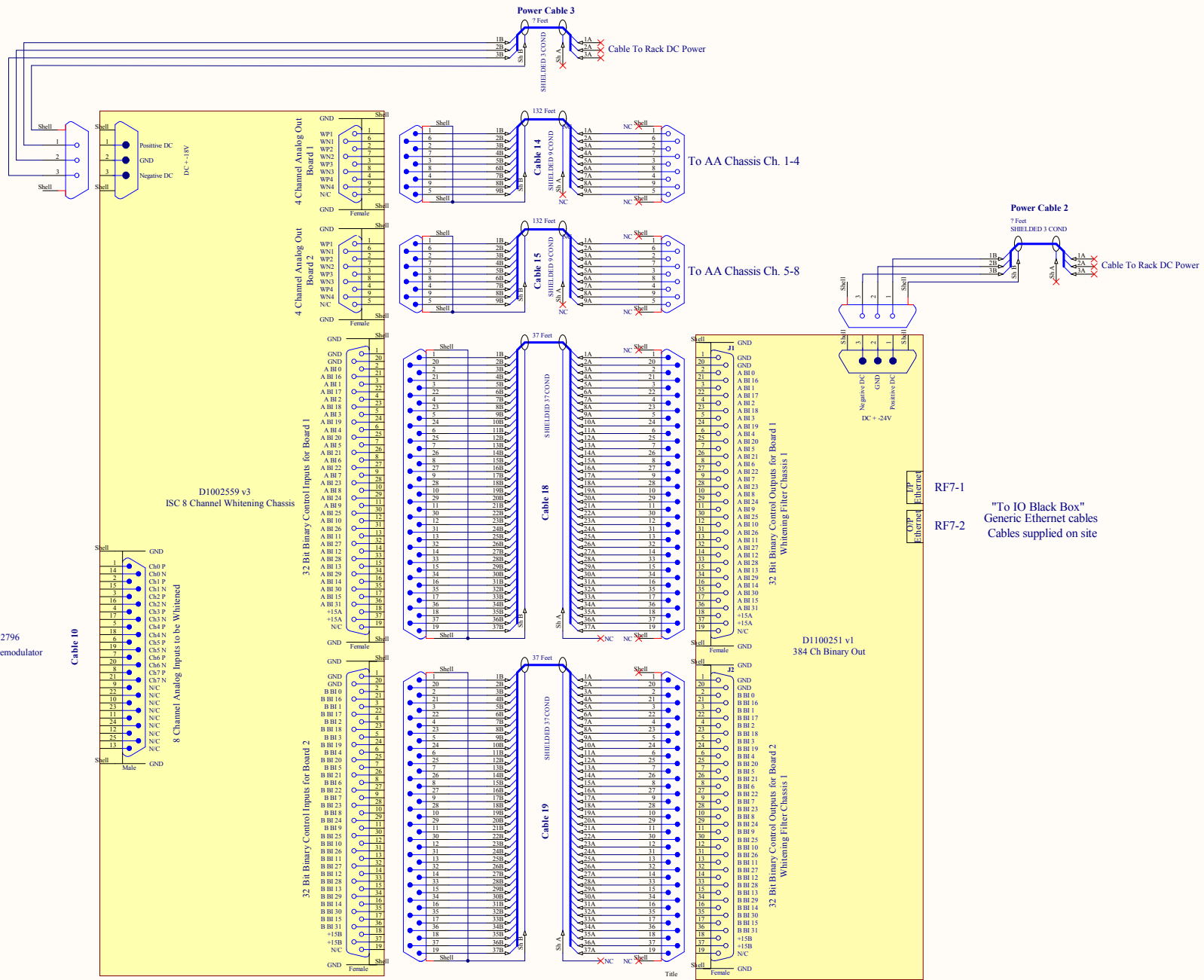
Last Edited: 1/16/2013



VERTEX Cable 10

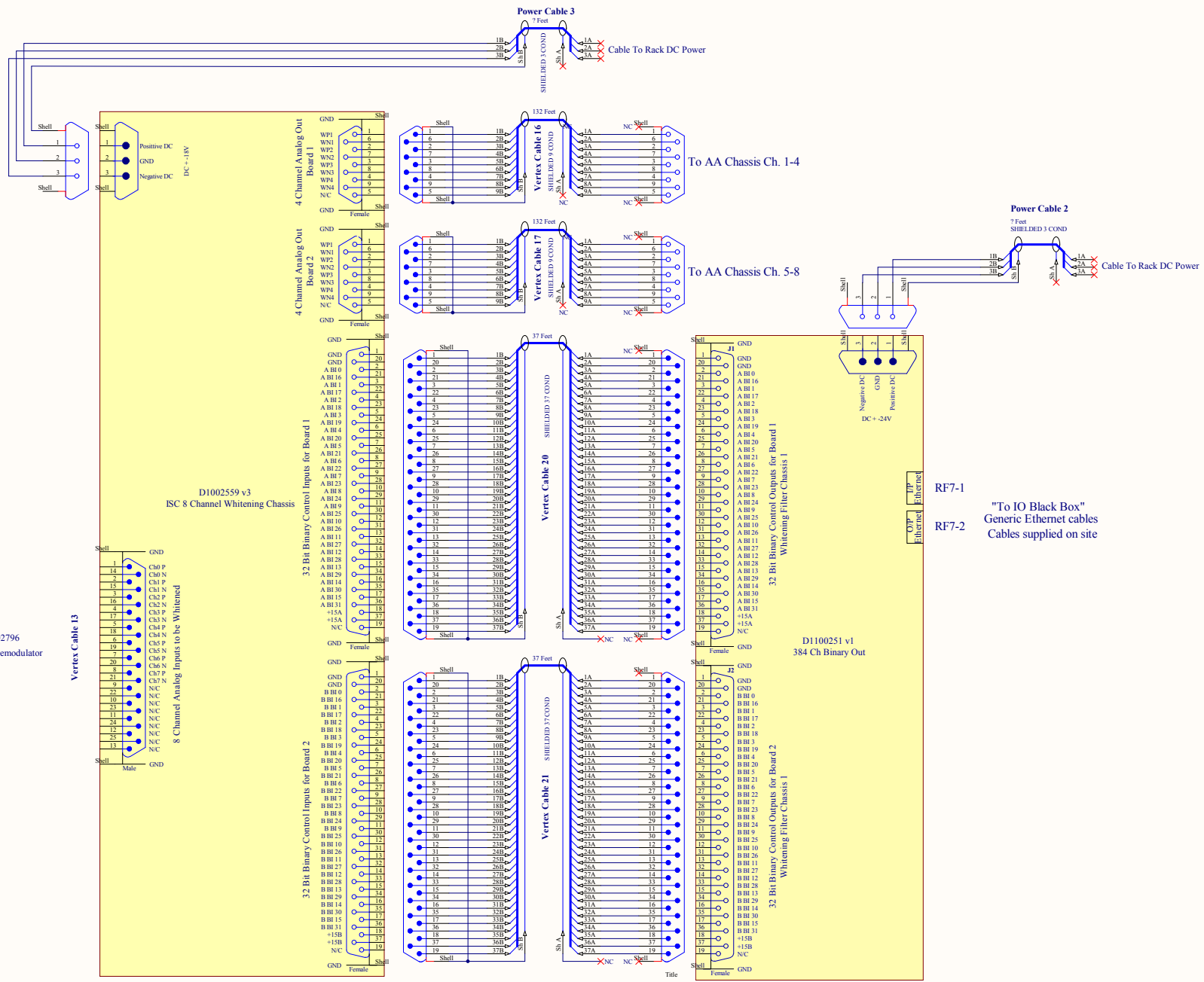
Cable 8

Cable 9



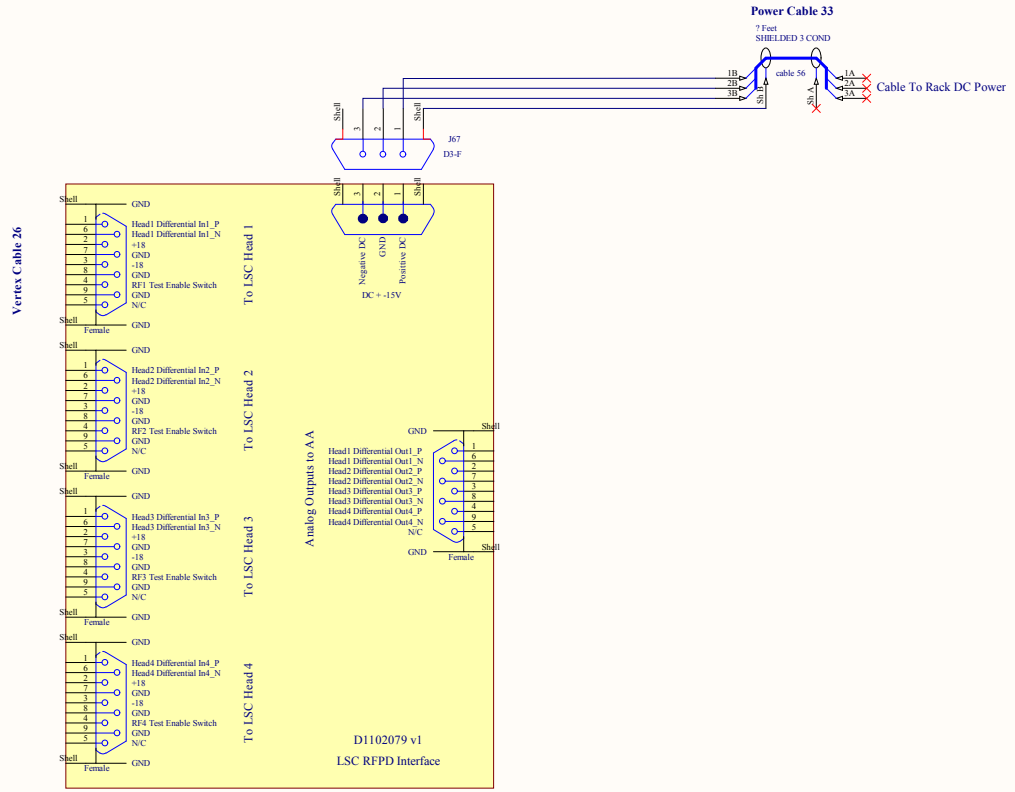
Field Rack

Remote Rack

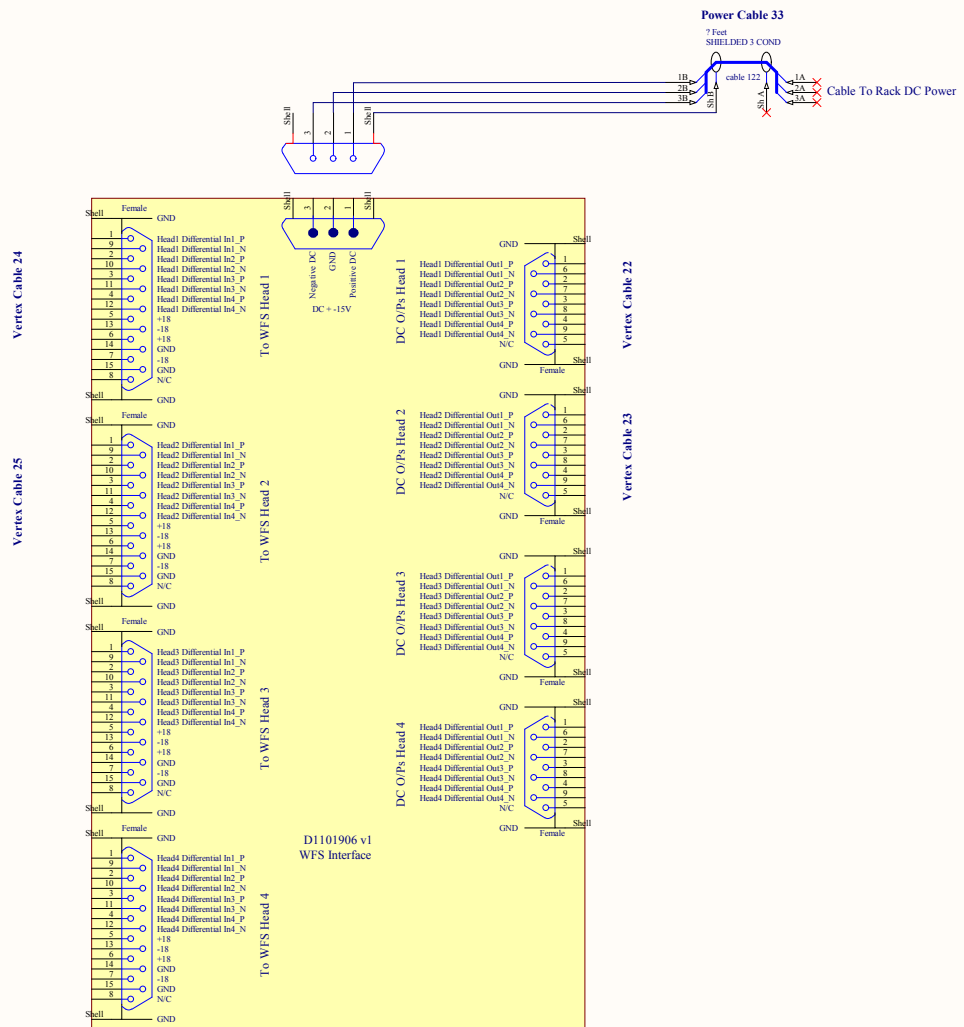


Field Rack

Remote Rack



Title Vertex LSC RFPD Interface		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		Last Edited: 1/16/2013	
Size: C	DOC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013	LIGO
File: Vertex LSC RFPD INTERFACE 1.SchDoc				Time: 1:46:29 PM	Sheet: 13 of 97



Title		Vertex WFS Interface Module		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		Last Edited: 1/16/2013	
Size: C	DCC Number: D1200666	SCH/ PCB Revision: V11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013		Time: 1:46:29 PM	
File: Vertex WFS Interface 1.SchDoc				Sheet: 14 of 97			

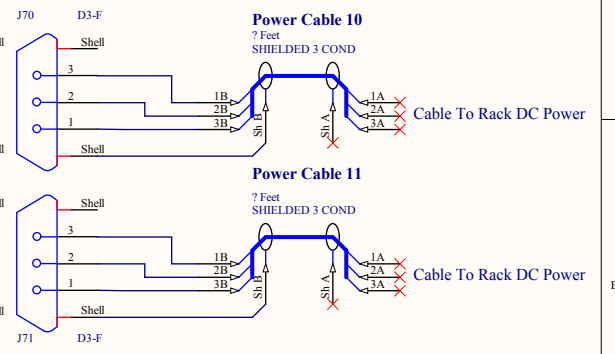
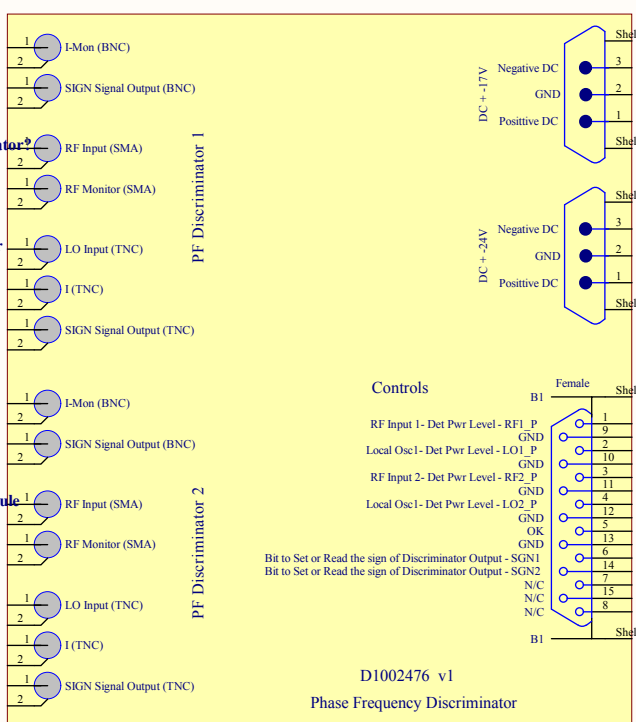
I/P VRF10-1 D090605 Low Noise VCO To D1002476 Vertex Phase Frequency Discriminator

I/P VRF13-2 ALS_DIFF To D1002476 2 CH Phase Frequency Discriminator

O/P Cable RF12-2 D1002476 2 CH Phase Frequency Discriminator To D0901781 CM Servo

O/P Cable VRF12-1 D1002476 2 CH Phase Frequency Discriminator To D00000 Vertex Summing Module

I/P VRF13-1 ALS_DIFF To D1002476 2 CH Phase Frequency Discriminator



Vertex Cable 46

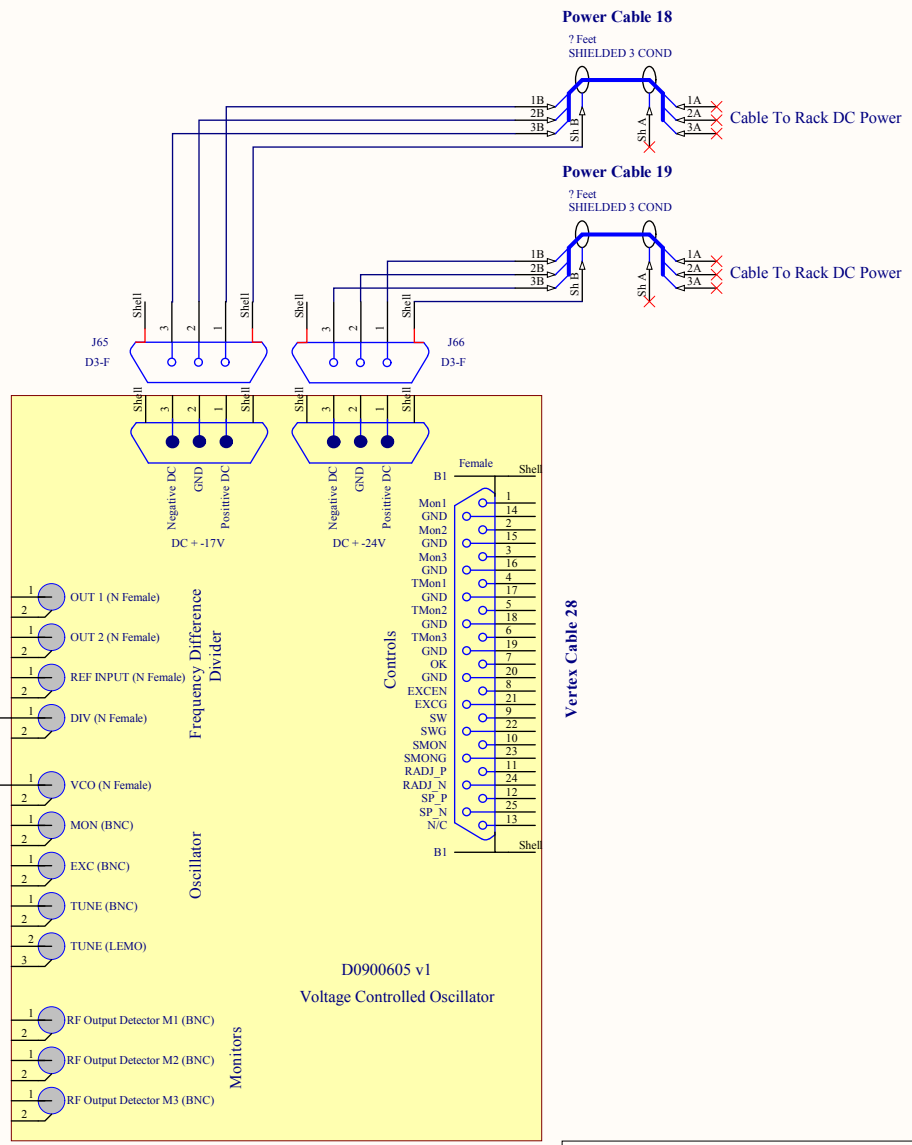
			Last Edited: 1/16/2013	
Vertex 2 CH Phase Frequency Discriminator			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology	
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013
File: Vertex Phase Frequency Discriminator SchDoc				Time: 1:46:29 PM
				Sheet 15 of 97

O/P RF17-1 D090605 Low Noise VCO To D1002182 Frequency Divide by 2

I/P RF14-2 Patch Panel on Field Rack/D1000124 RF Distribution Amp

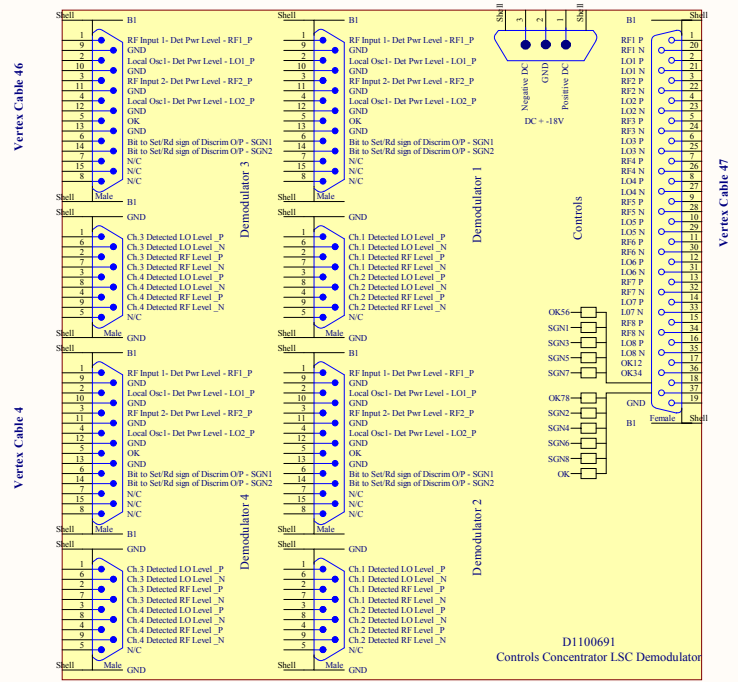
VCO (N) output requires a short jumper to the DIV (N) input

I/P RF17-2 D0901781 CM Servo To D090605 Low Noise VCO using LF LEMO cable

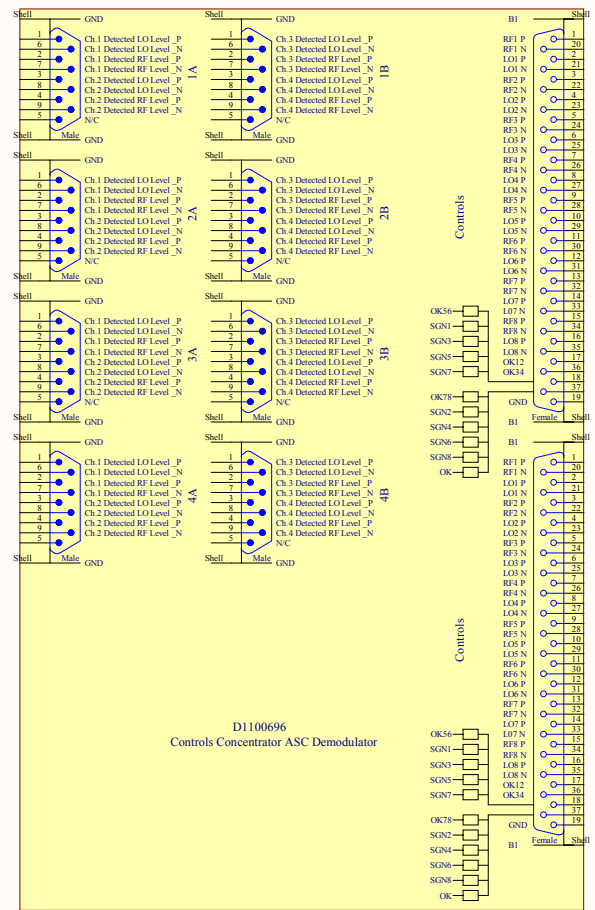


Last Edited: 1/16/2013

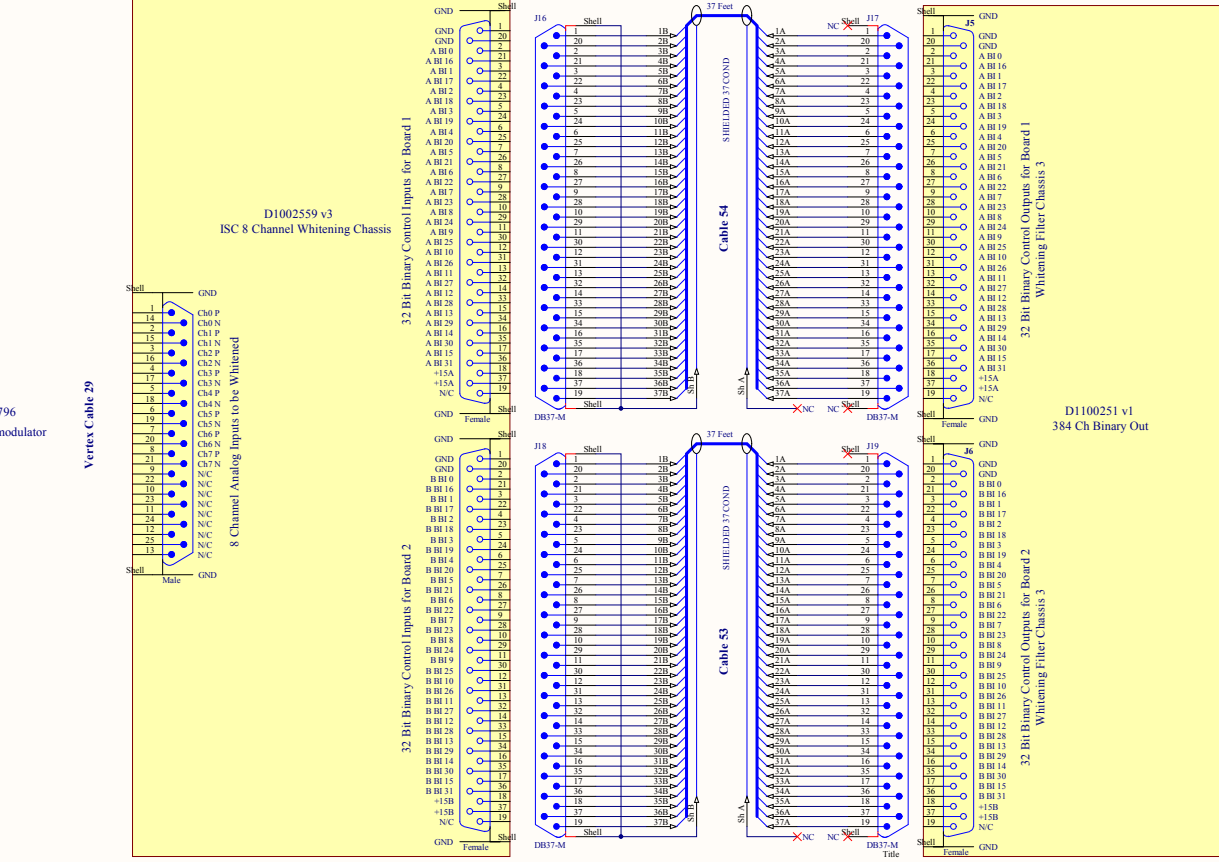
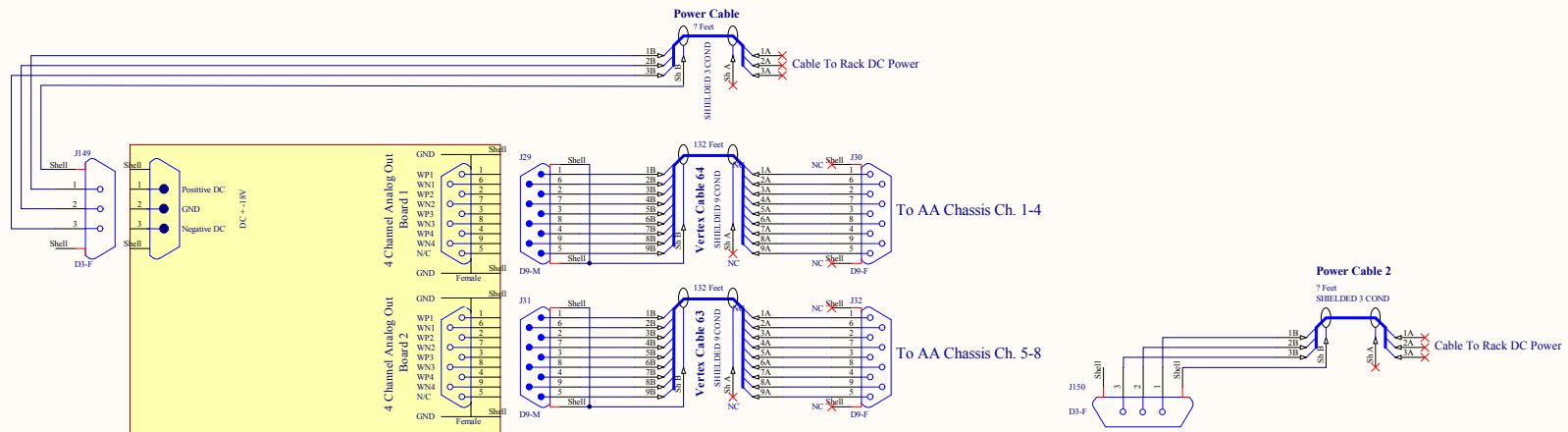
Vertex Low Noise Voltage Controlled Oscillator			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	Time: 1:46:29 PM
File: Vertex Low Noise VCO 3.SchDoc			Sheet 16 of 97		



Vertex Cable 8
Vertex Cable 9
Vertex Cable 11
Vertex Cable 12



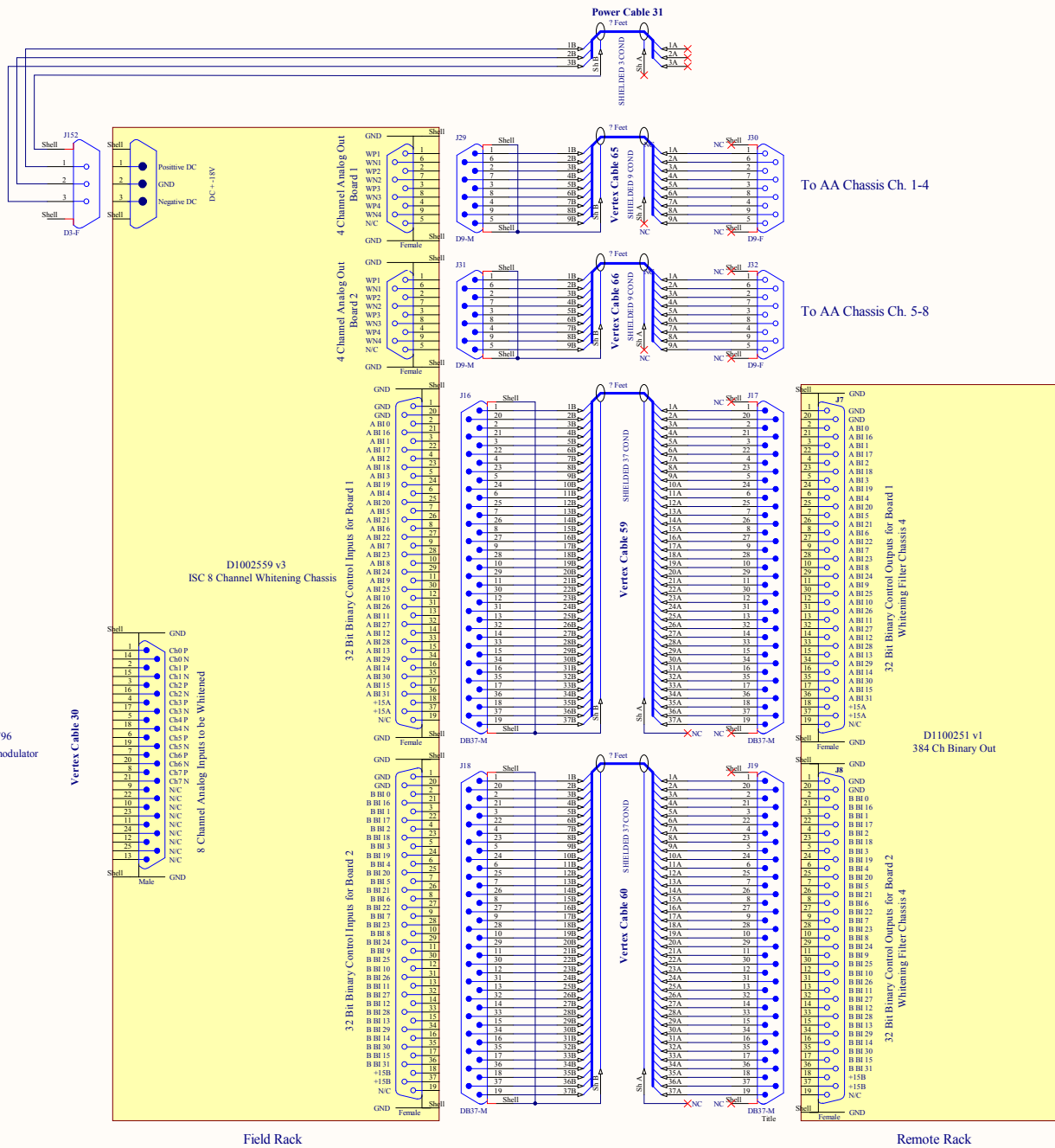
Last Edited: 1/16/2013



RF7-1
RF7-2
"to IO Black Box"
Generic Ethernet cables
Cables supplied on site

Field Rack

Remote Rack



Cable From D0902796
Vertex 4 CH IQ RF Demodulator

Field Rack

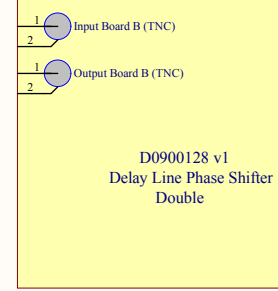
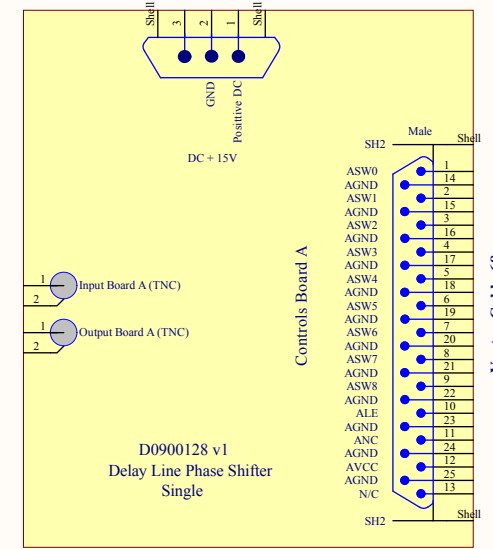
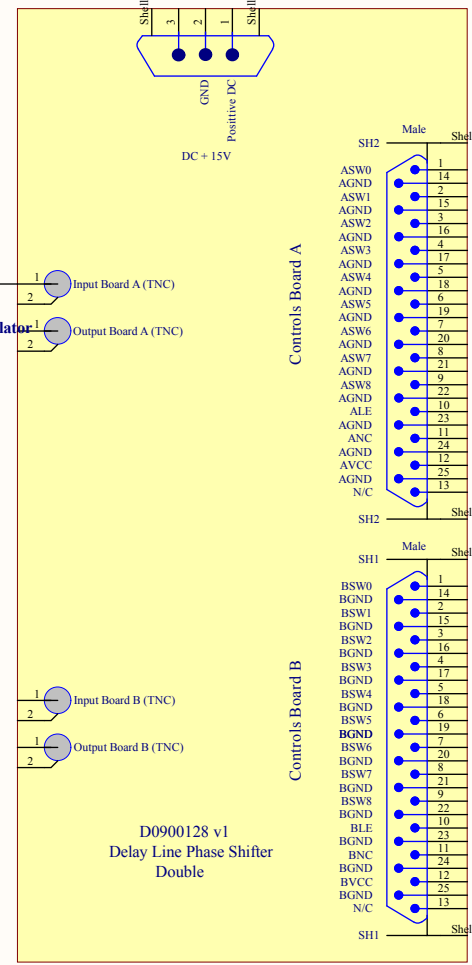
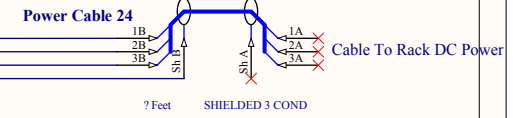
Remote Rack

Title Vertex Whiten to Binary Out		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: C	DCC Number: D1200666	SCH/PCB Revision: V11	Engineer: R. Abbott S. Baker	Date: 1/18/2013	Time: 1:46:30 PM
File: Vertex Whiten to Binary Out 1-4 SchDoc			Sheet: 20 of 97		

Last Edited: 1/16/2013

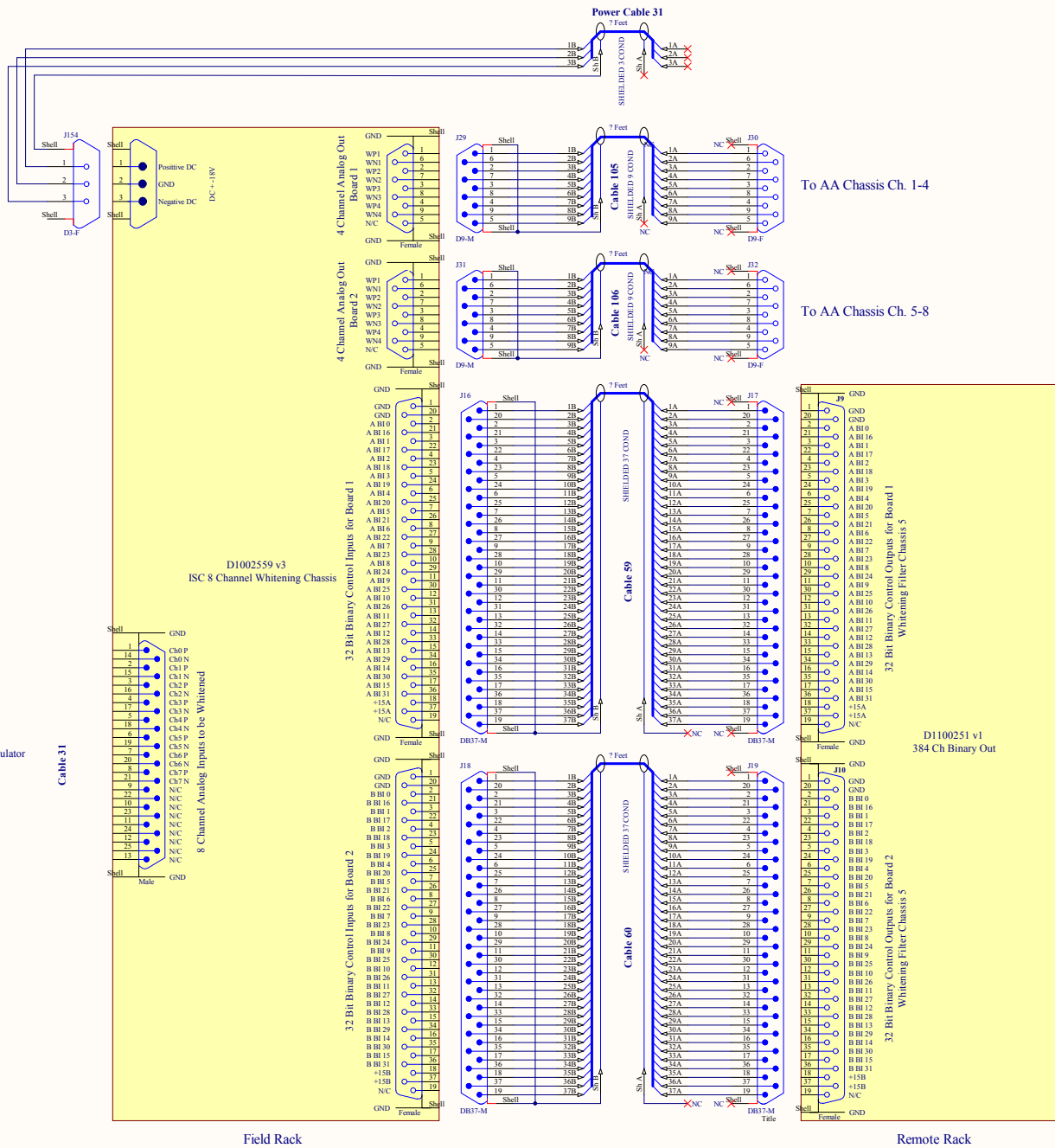
I/P RF18-4 D1000124 RF Distribution Amp To Patch Panel/D0900128 Delay Line Shif

O/P RF20-1 D0900128 Delay Line Shifter To D1000181 FET IQ Demodulator



Last Edited: 1/16/2013

Vertex Delay Line Phase Shifter			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013	
File: Vertex Delay Line Phase Shifter 2 SchDoc				Time: 1:46:30 PM	
				Sheet 21 of 97	



Cable From D0902796
Vertex 4 CH IQ RF Demodulator

Field Rack

Remote Rack

To AA Chassis Ch. 1-4

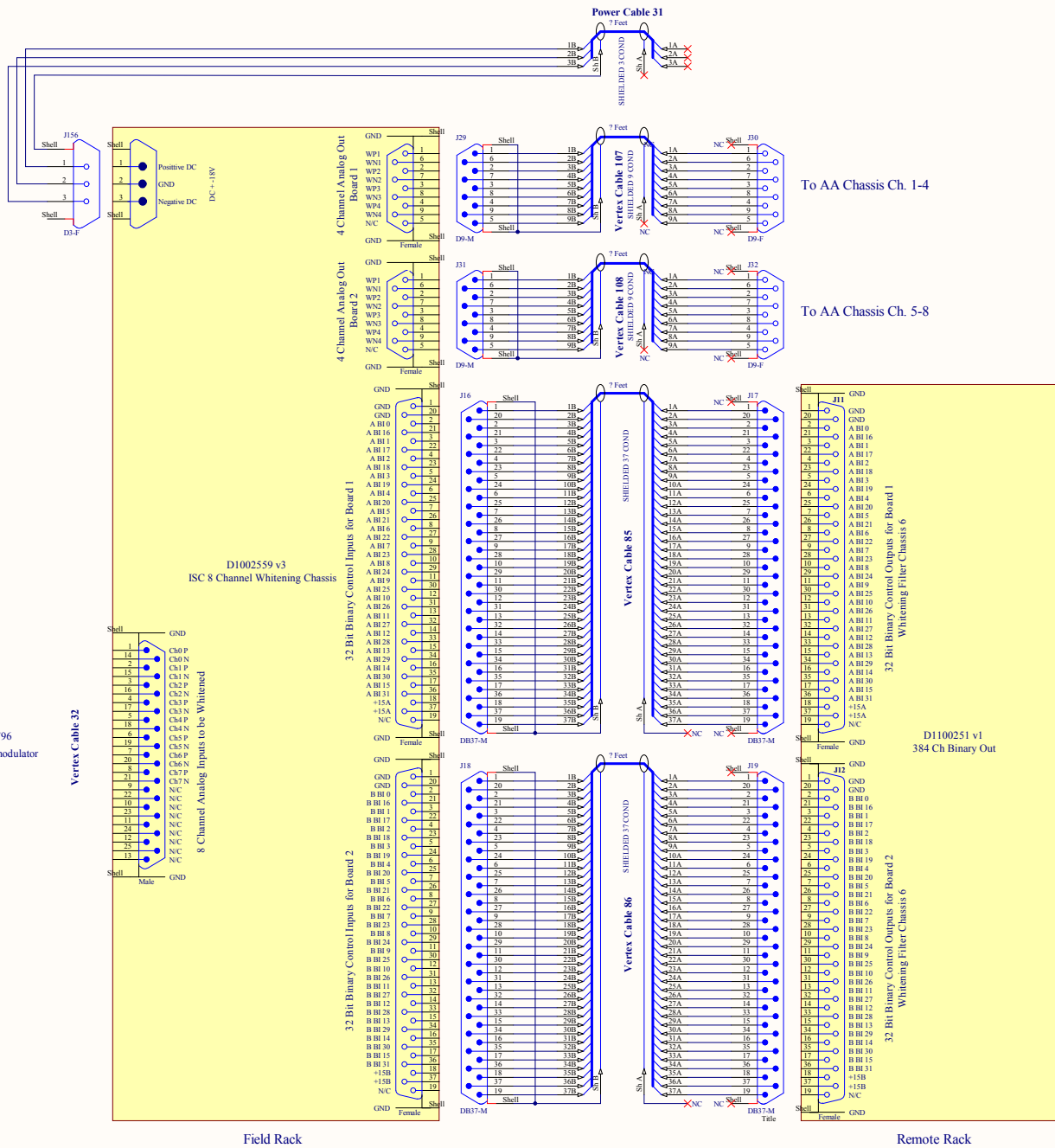
To AA Chassis Ch. 5-8

Whiting Filter Chassis 5

D1100251 v1
384 Ch Binary Out

Whiting Filter Chassis 5

Remote Rack



Cable From D0902796
Vertex 4 CH IQ RF Demodulator

D1002559 v3
ISC 8 Channel Whiting Chassis

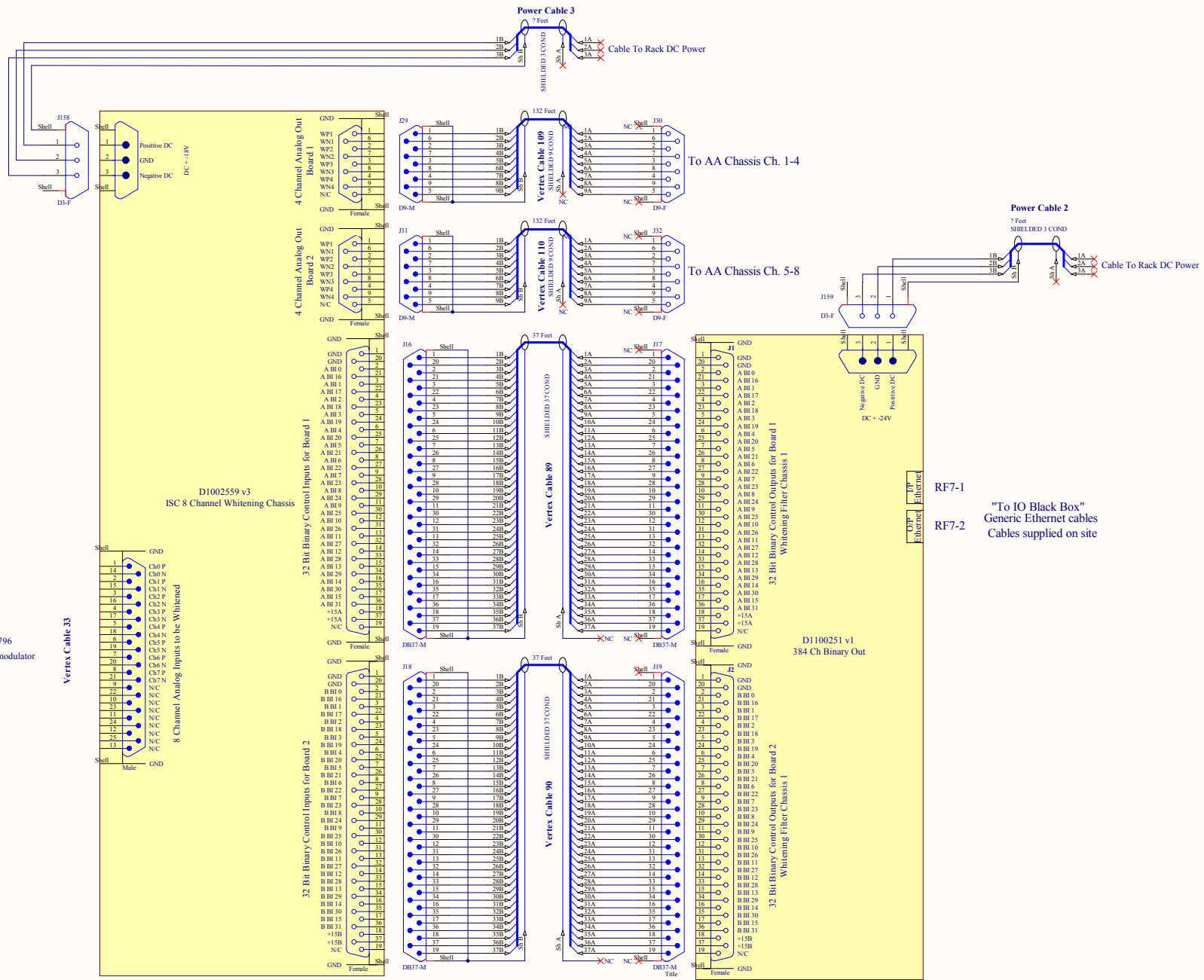
D1100251 v1
384 Ch Binary Out

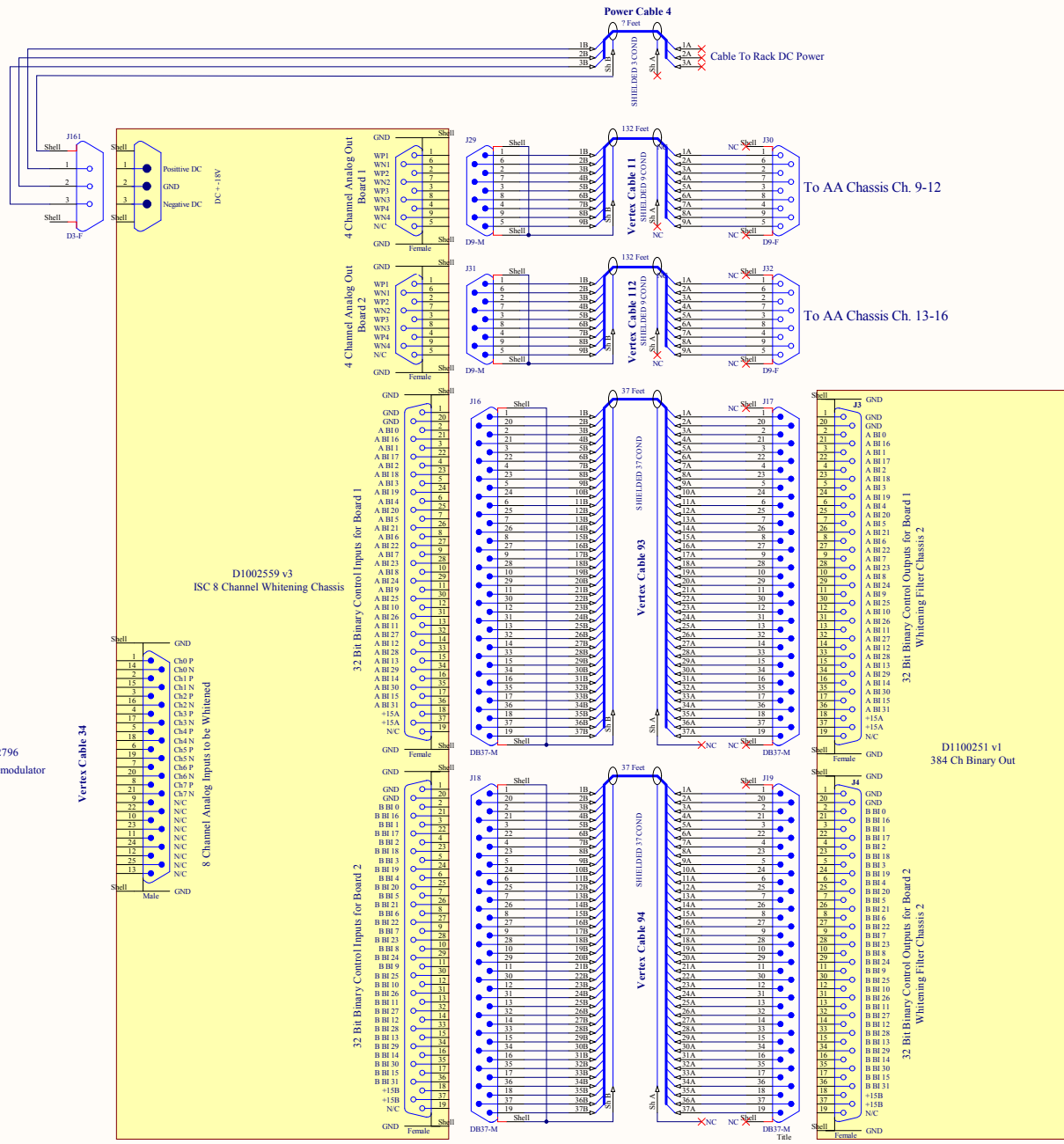
Field Rack

Remote Rack

Title Vertex Whiting to Binary Out		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: C	DCC Number: D1200666	SCH/ PCB Revision: V11	Engineer: R. Abbott/S.Baker	Date: 1/18/2013	Time: 1:46:31 PM
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Last Edited: 1/16/2013



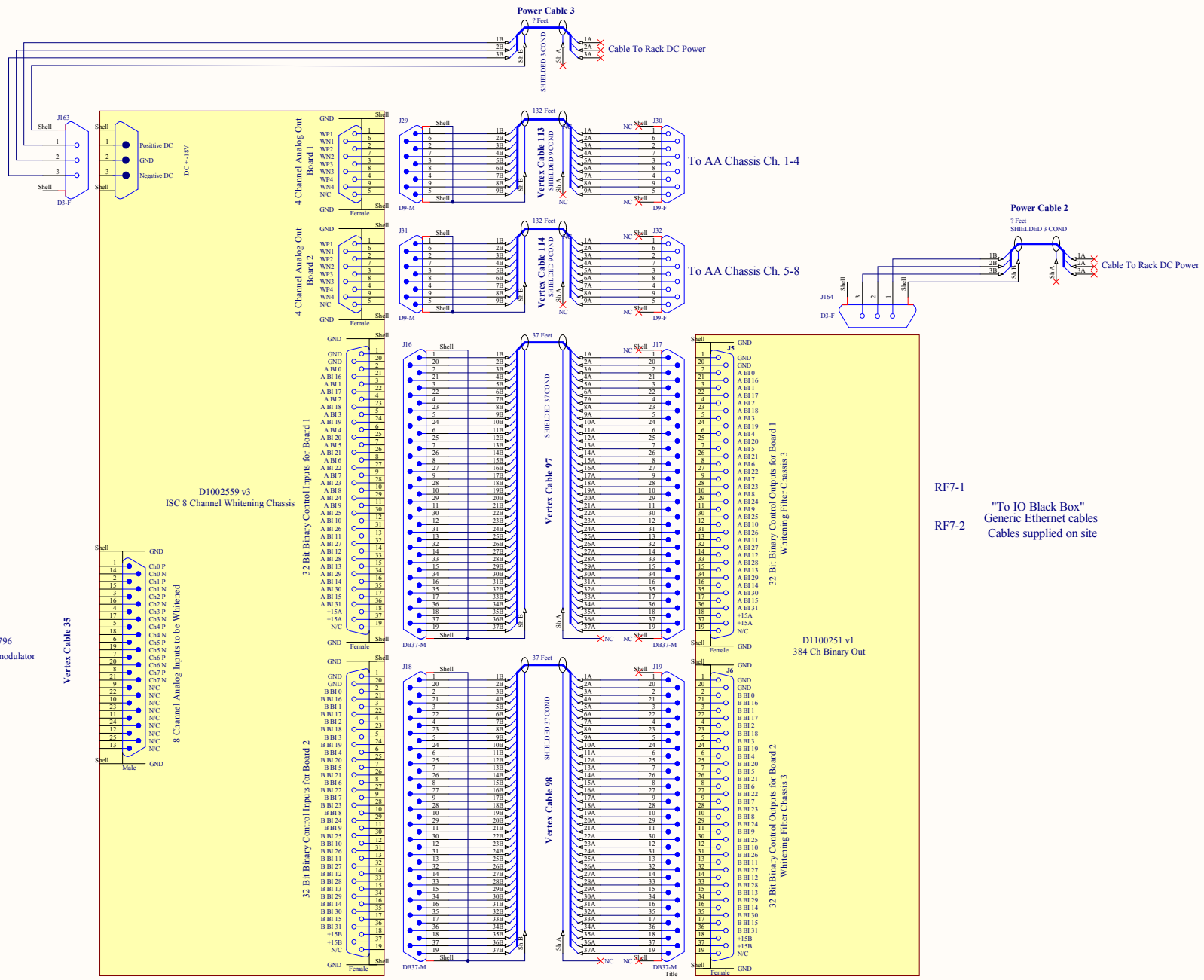


Field Rack

Remote Rack

Title		Vertex Whiting to Binary Out		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size	C	DCC Number	D1200666	SCH / PCB Revision	V11	Engineer	R. Abbott S. Baker
Date	1/18/2013	Time	1:46:31 PM	Sheet	25 of 97		

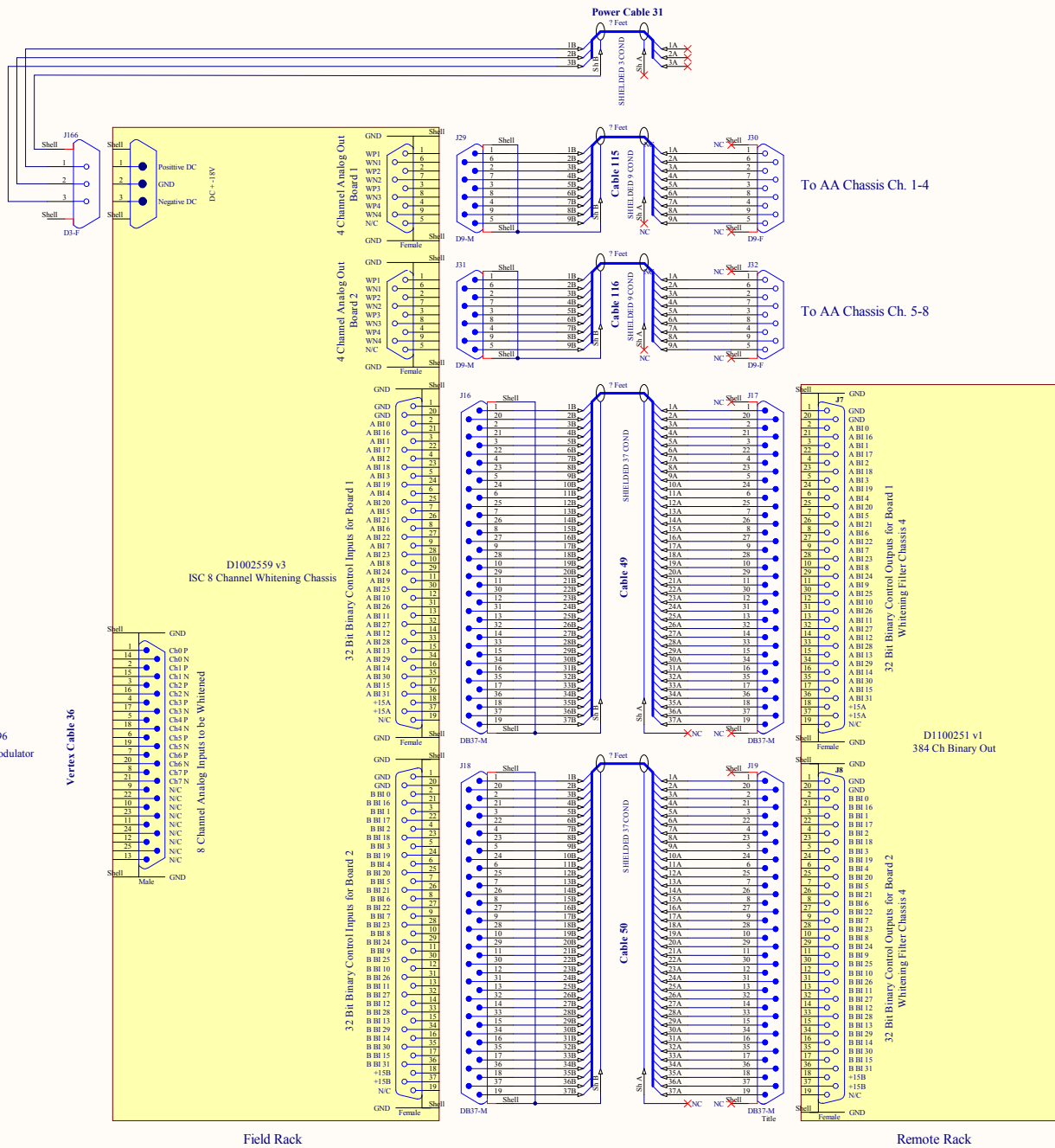
Last Edited: 1/16/2013



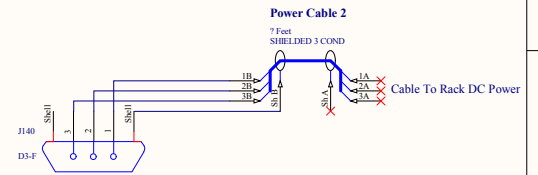
RF7-1
RF7-2
"To IO Black Box"
Generic Ethernet cables
Cables supplied on site

Field Rack

Remote Rack



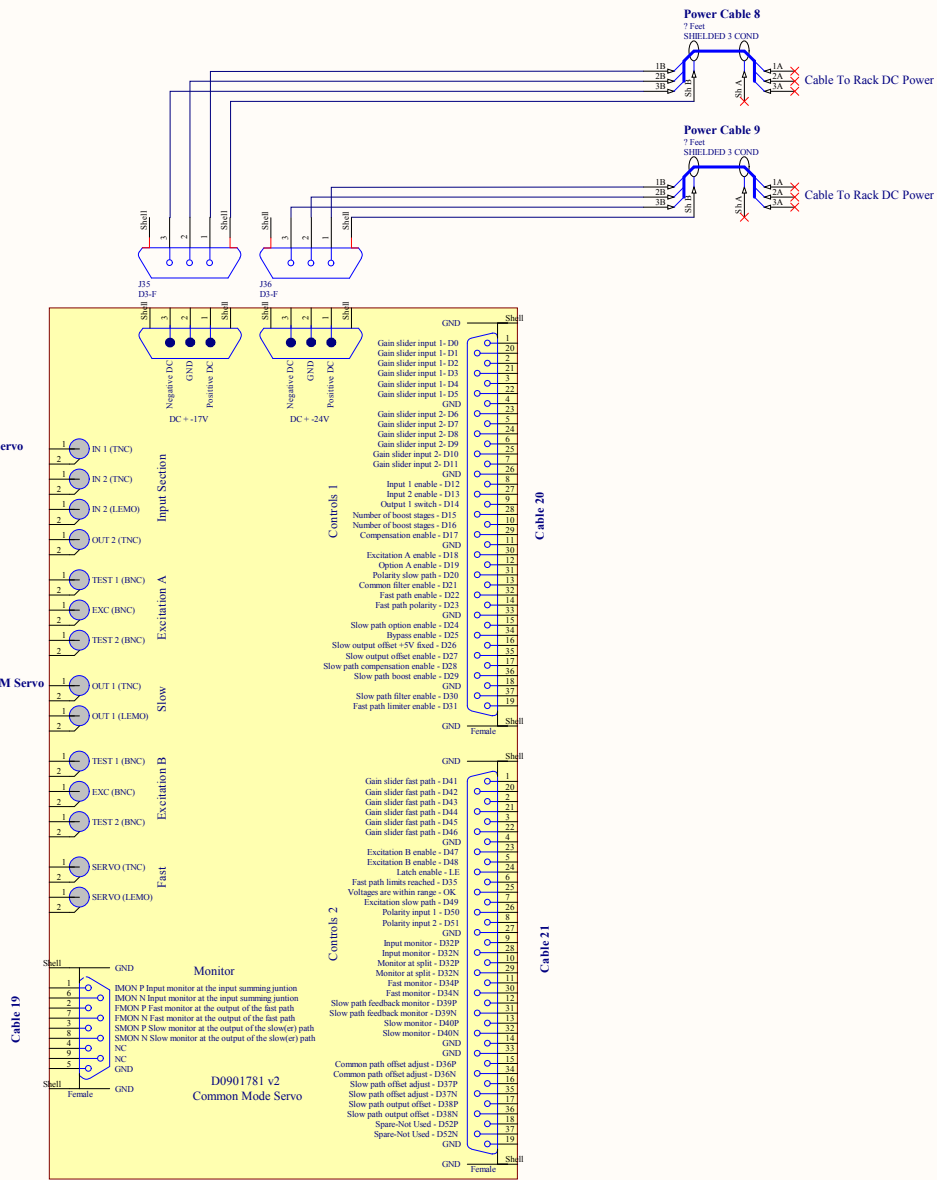
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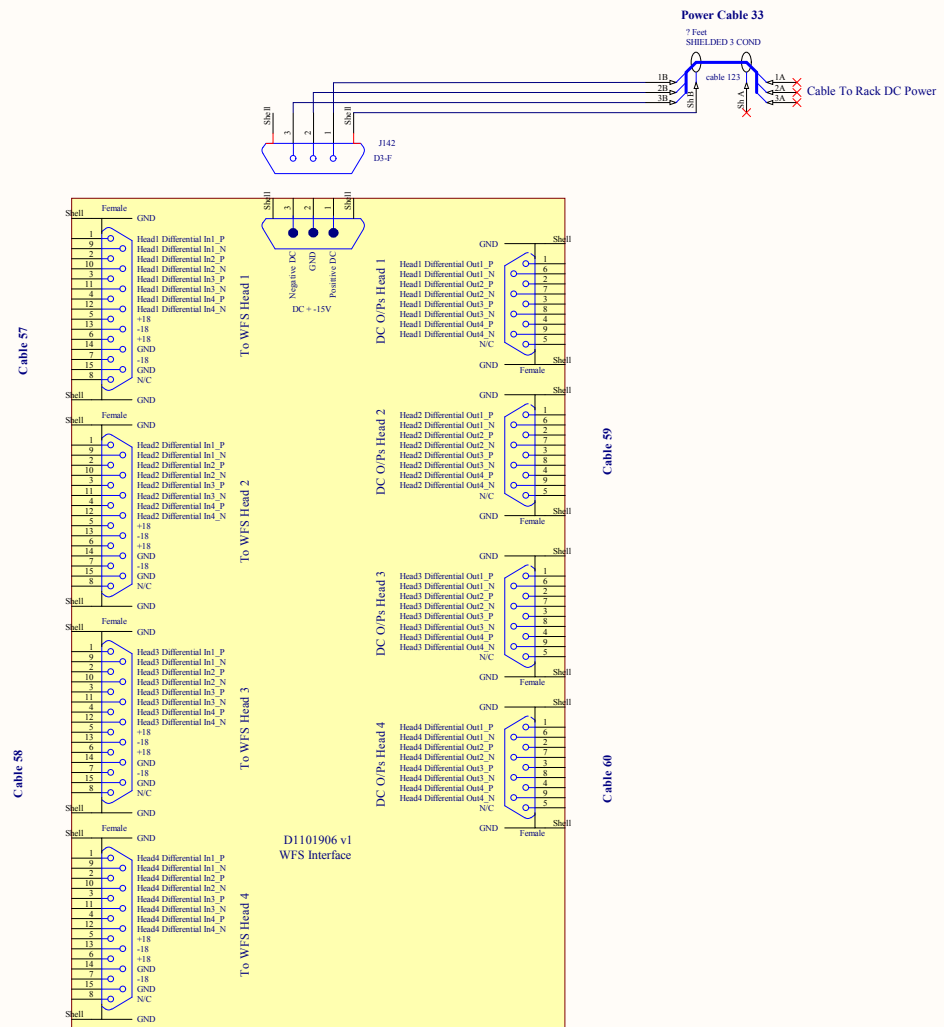


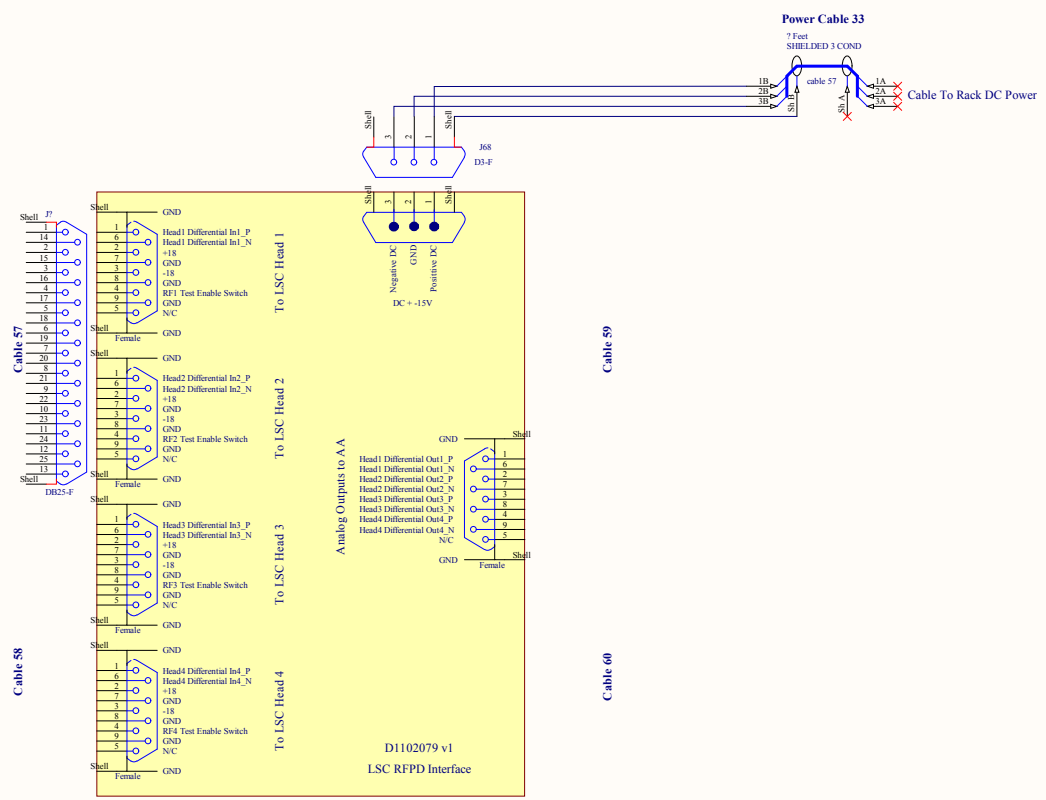
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Vertex Summing Module			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology	
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013
File: Vertex_Summing_Module_Sch1.Doc			Time: 1:46:32 PM	Sheet: 28 of 97

I/P Cable RF12-2 D1002476 2 CH Phase Frequency Discriminator To D0901781 CM Servo

O/P Cable RF12-1 PSL phase locking /Arm cavity locking Prometheus Laser To D0901781 CM Servo







Title Vertex LSC RFPD Interface		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		Last Edited: 1/16/2013	
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013	LIGO
File: Vertex LSC RFPD INTERFACE 3.SchDoc			Time: 1:46:32 PM	Sheet: 31 of 97	

A

A

B

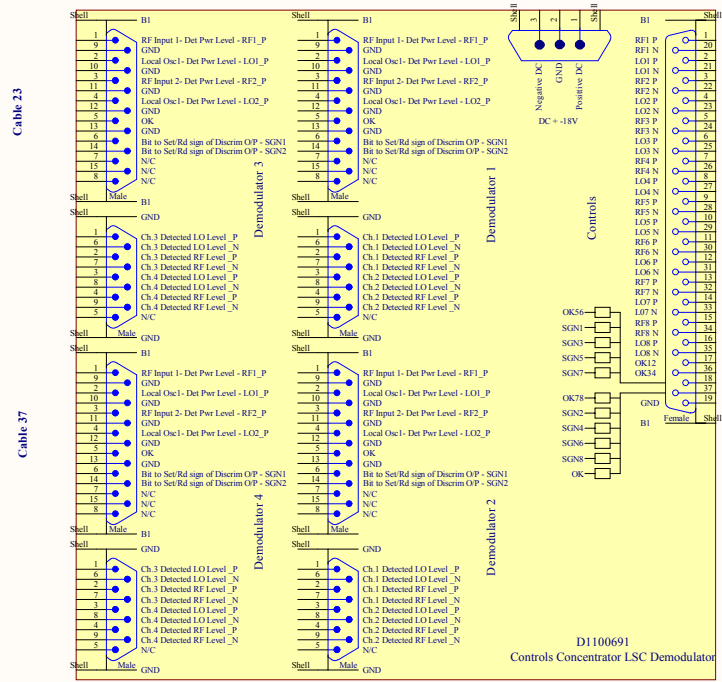
B

C

C

D

D



A

B

C

D

Cable 43

Cable 45

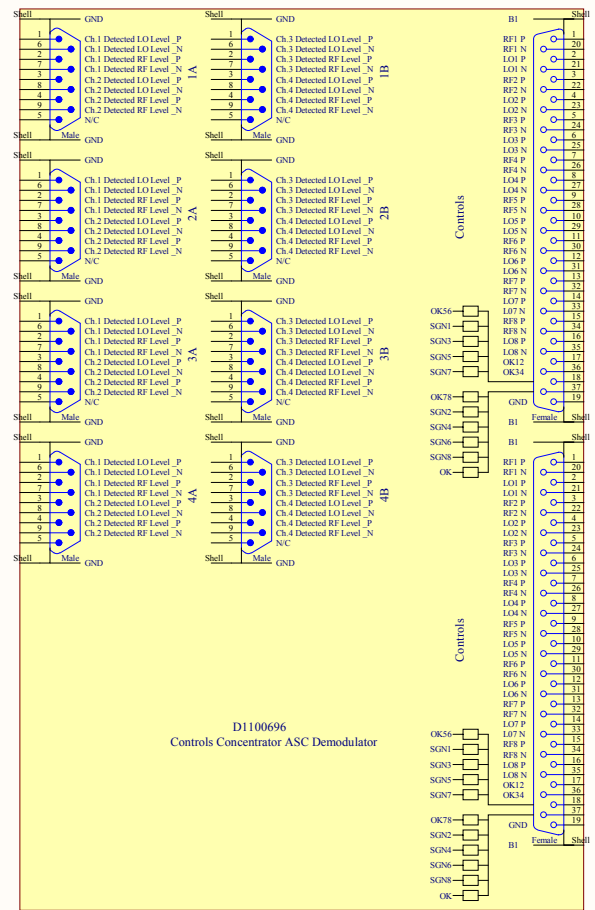
Cable 46

Cable 44

Cable 47

Cable 48

Cable 78



Last Edited: 1/16/2013

A

B

C

D

A

B

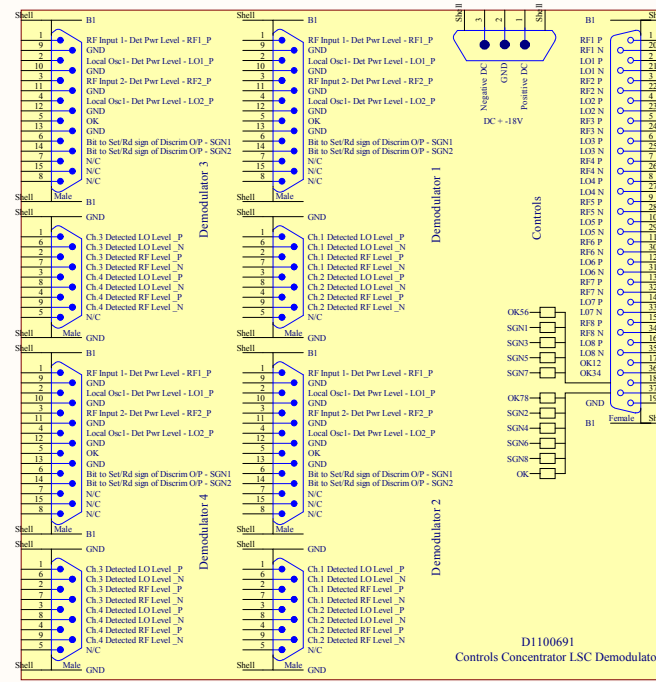
C

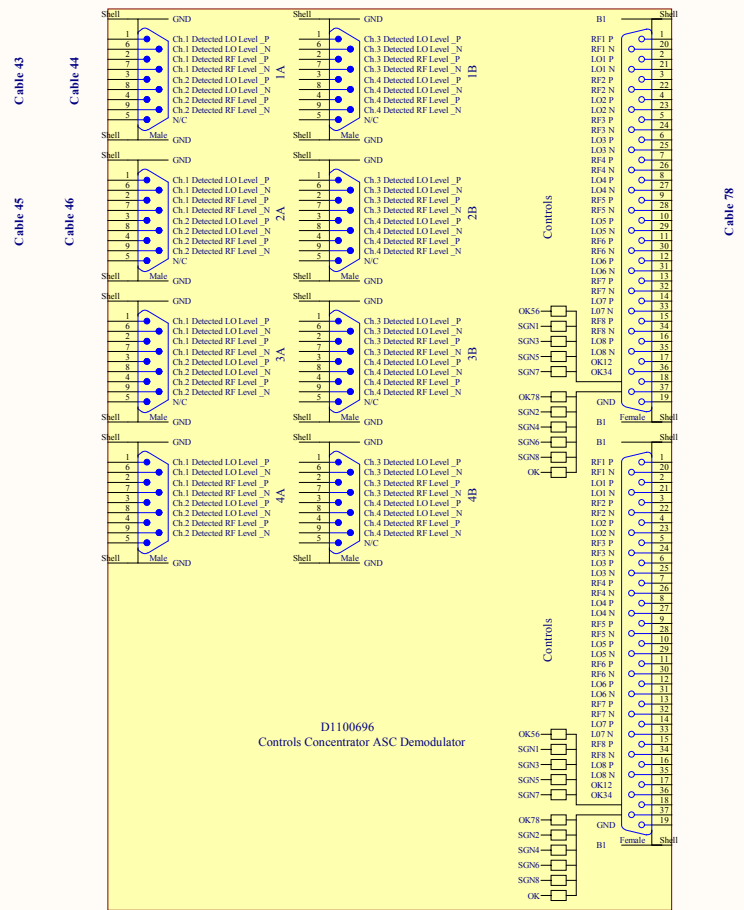
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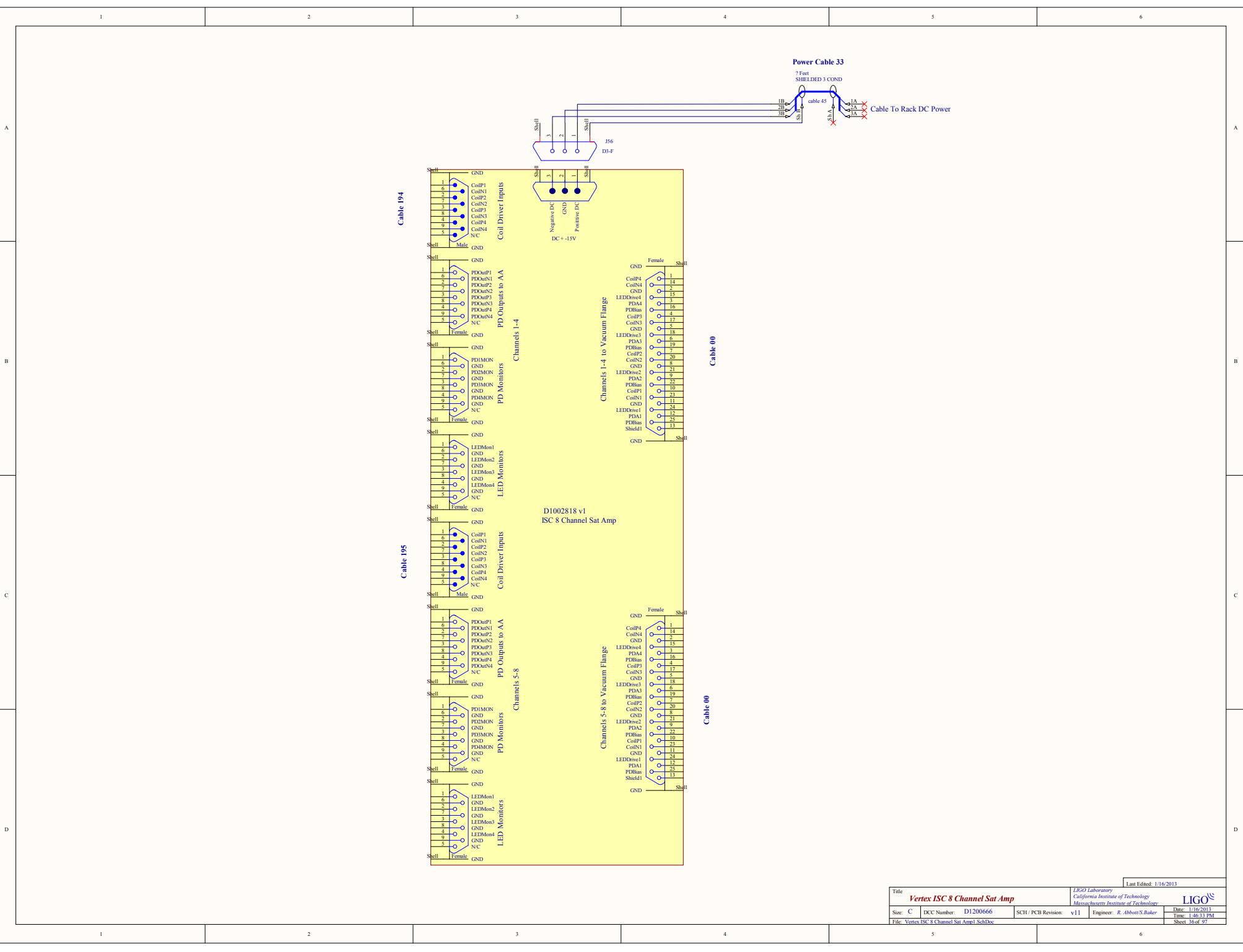
Cable 23

Cable 37

Cable 79



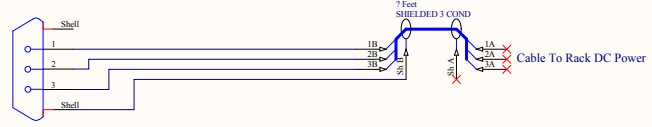
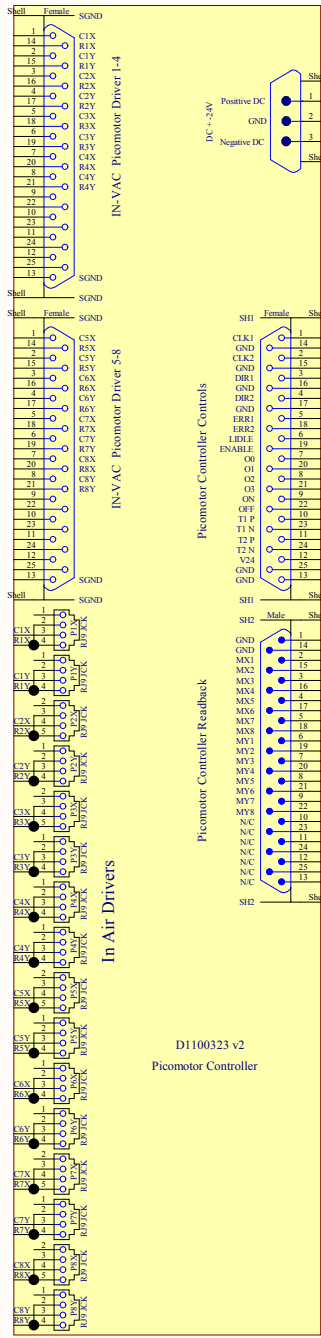
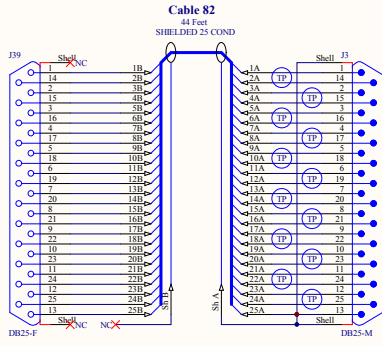




Title		Vertex ISC 8 Channel Sat Amp		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO		
Size	C	ICC Number	D1200666	SCH / PCB Revision	V11	Engineer	R. Abbott/S.Baker	
File	Vertex ISC 8 Channel Sat Amp_Sch.Dwg			Date	1/18/2013		Time	1:46:33 PM
							Sheet	3 of 97

Last Edited: 1/16/2013

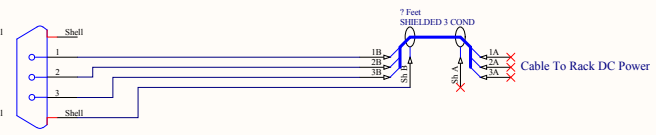
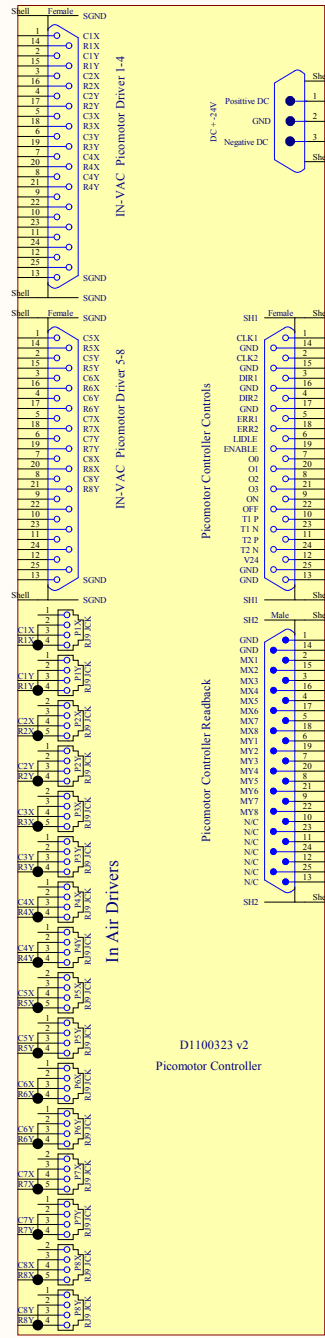
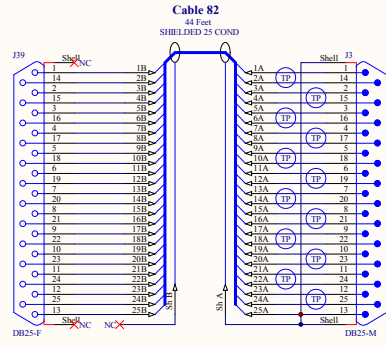
To Picomotor Pairs
1,2,3 & 4 IN-VAC



To D1100682 v1 Ethercat End 2

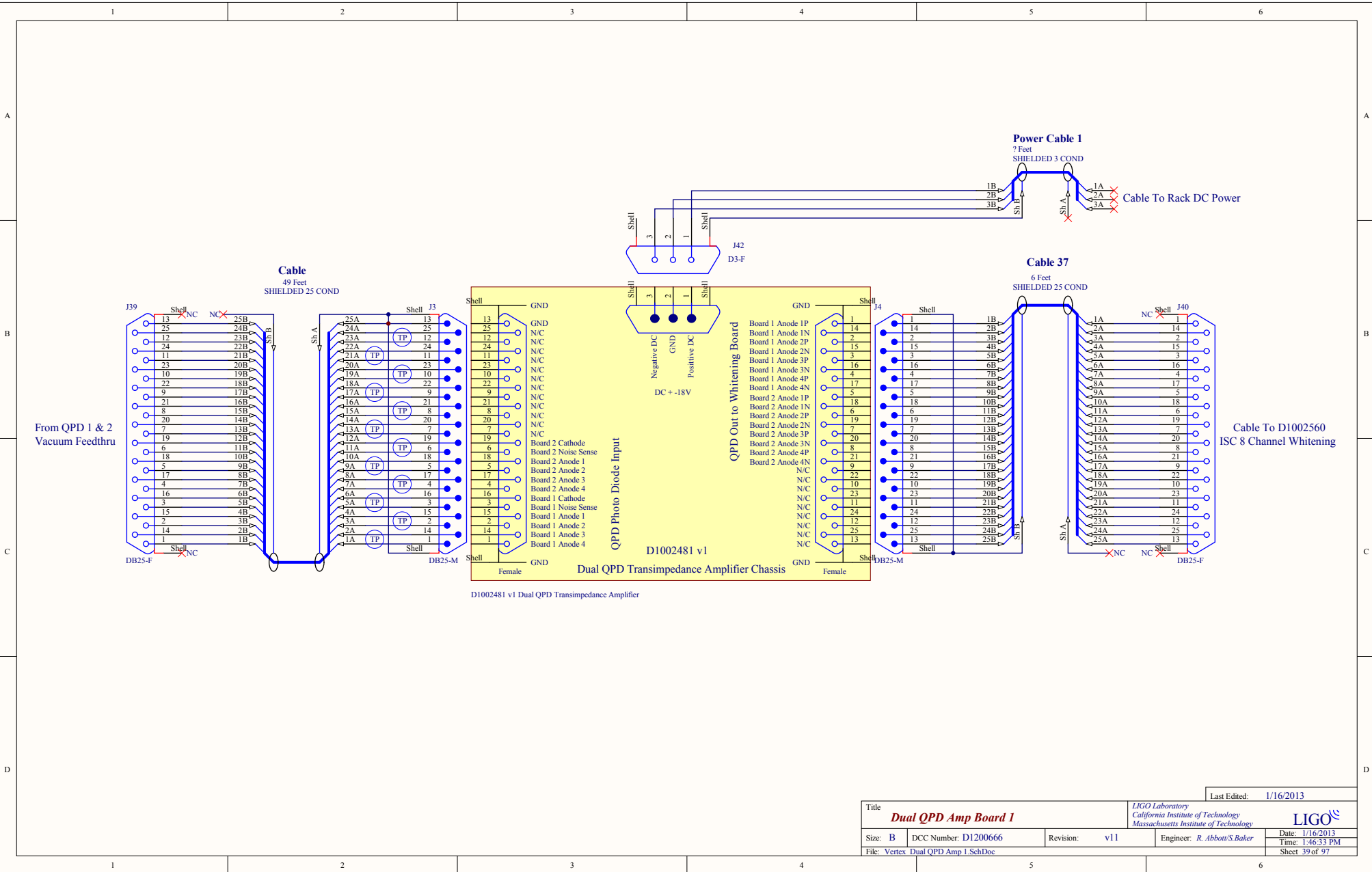
To D1100682 v1 Ethercat End 2

To Picomotor Pairs
1,2,3 & 4 IN-VAC



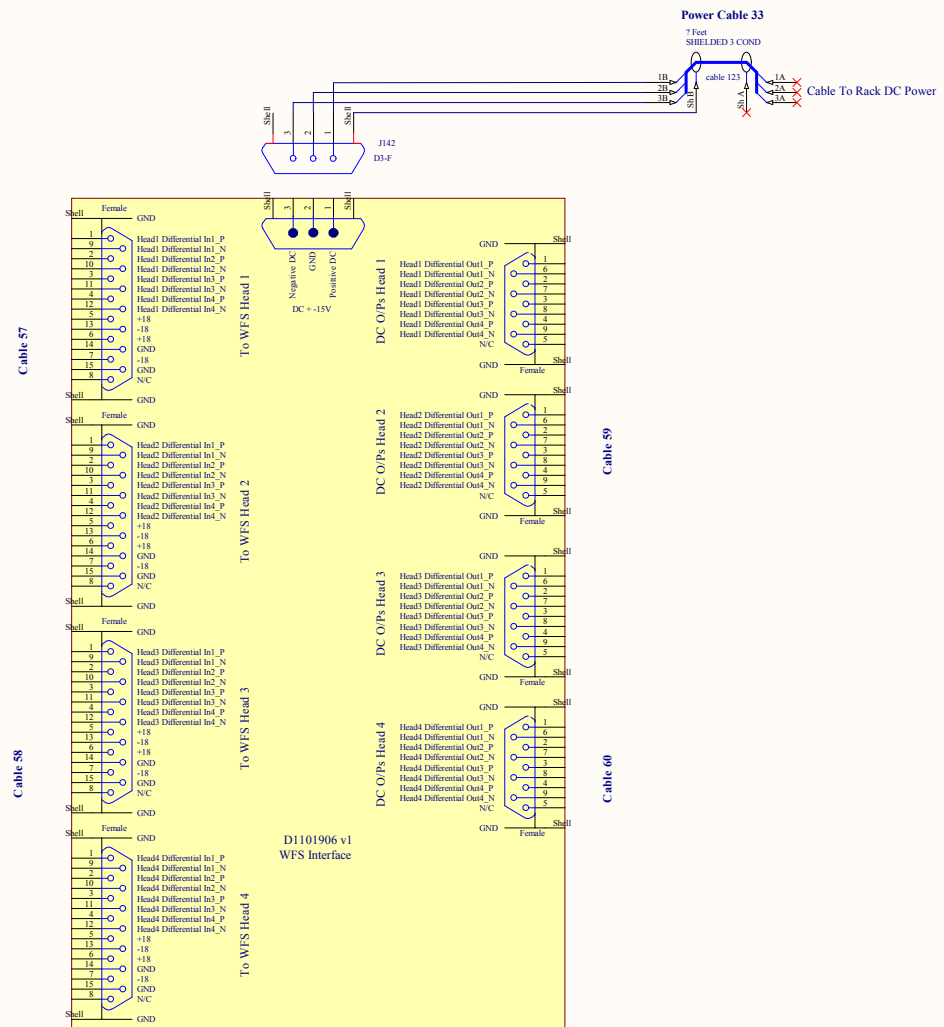
To D1100682 v1 Ethercat End 2

To D1100682 v1 Ethercat End 2



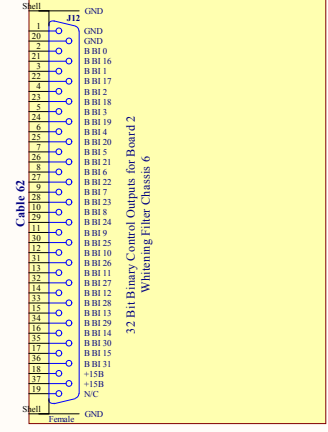
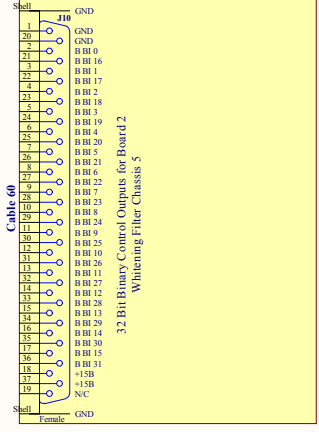
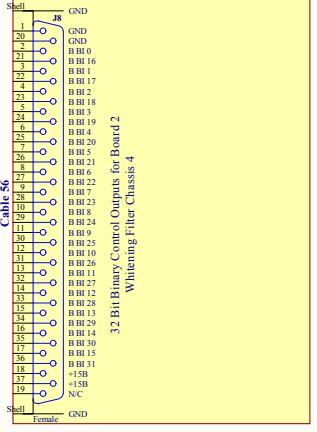
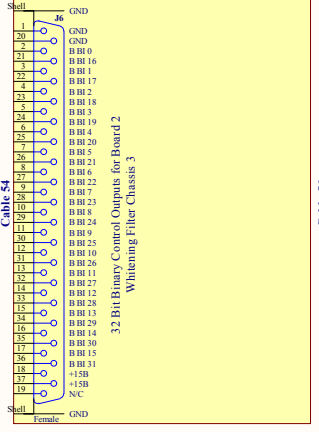
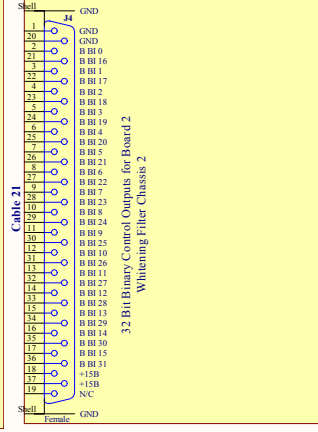
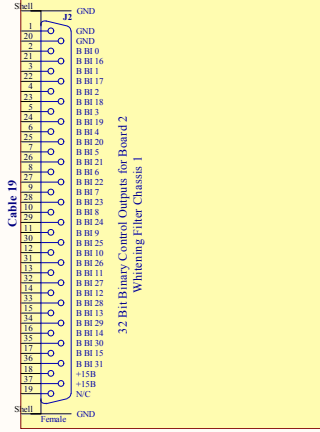
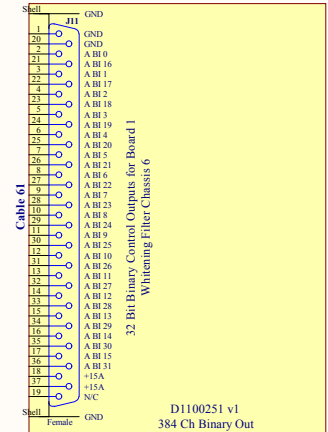
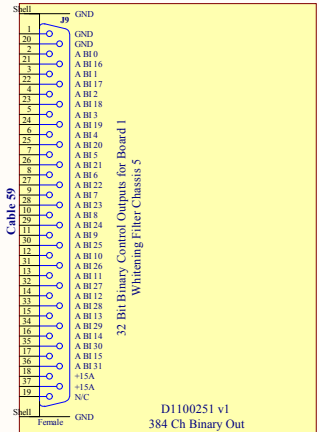
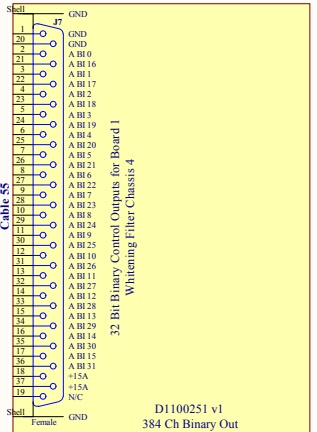
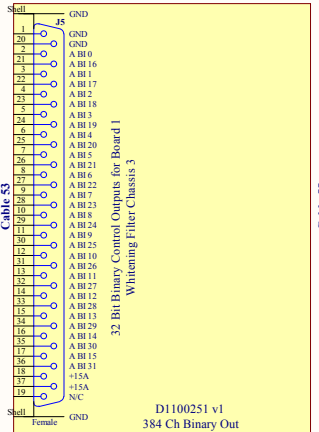
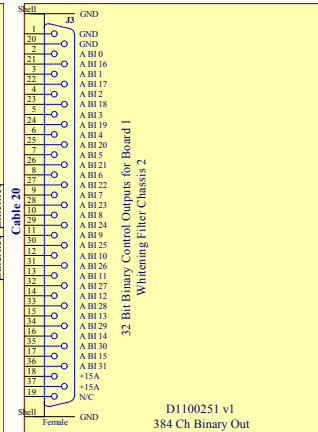
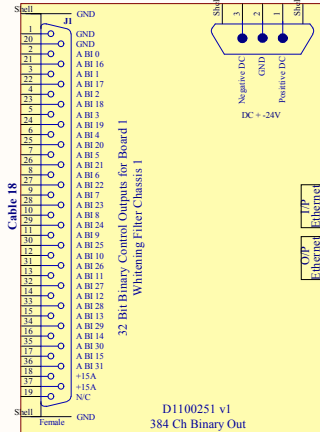
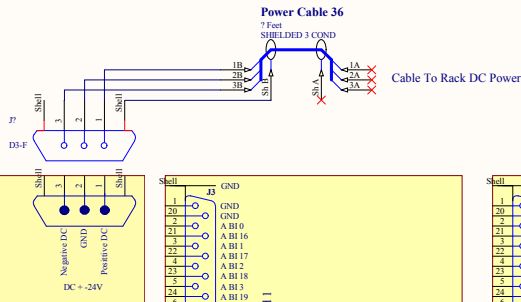
Last Edited: 1/16/2013

Title Dual QPD Amp Board 1		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	Time: 1:46:33 PM
File: Vertex Dual QPD Amp 1.Sch.Doc			Sheet 39 of 97		

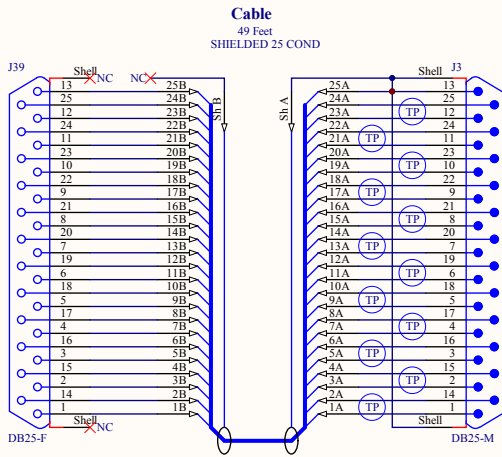


Last Edited: 1/16/2013

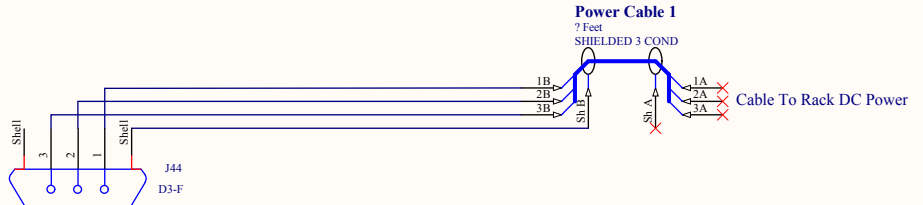
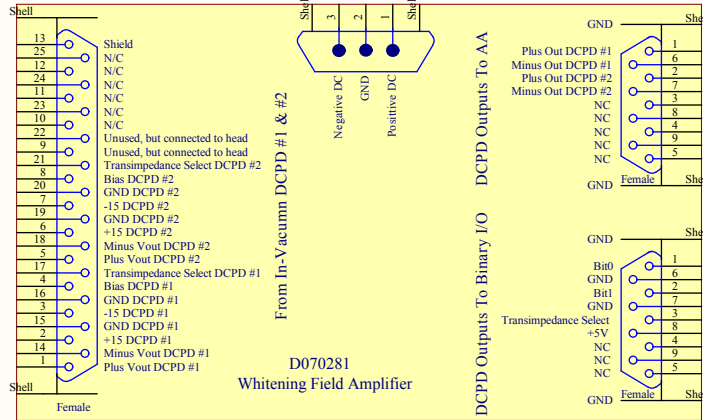
Title		Vertex WFS Interface Module		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott/S. Baker	Date: 1/18/2013			
File: Vertex WFS Interface 3.SchDoc				Time: 1:46:34 PM	Sheet: 40 of 97		



From QPD 1 & 2
Vacuum Feedthru

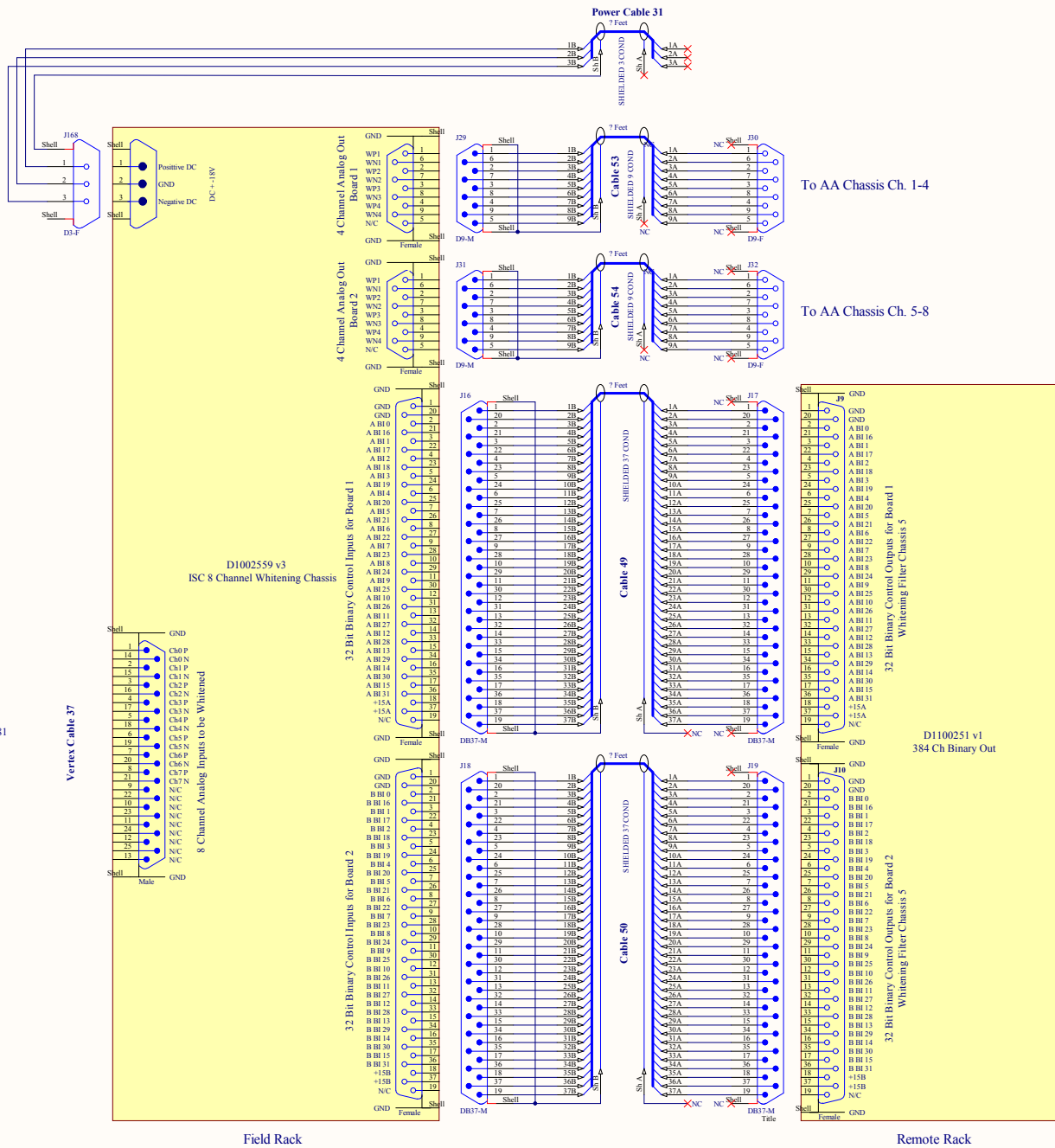


Cable
49 Feet
SHIELDED 25 COND



Title DCPD Whitening Field Amp		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013	Time: 1:46:34 PM
File: Vertex DCPD Whitening Field Amplifier 1.SchDoc				Sheet 42 of 97	

Last Edited: 1/16/2013



Cable From D1002481
Dual QPD Amp

D1002559 v3
ISC 8 Channel Whiting Chassis

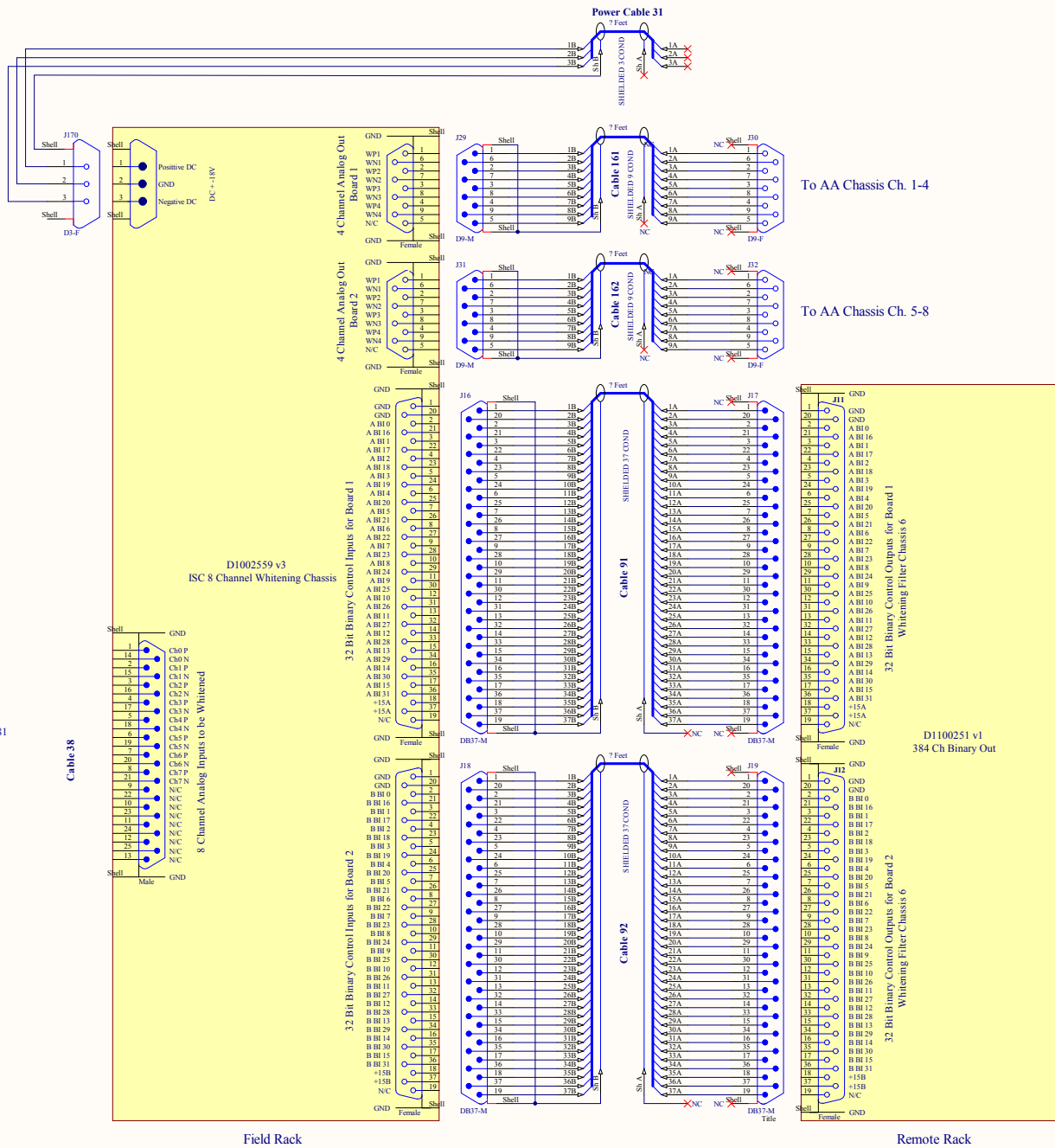
Field Rack

To AA Chassis Ch. 1-4

To AA Chassis Ch. 5-8

D1100251 v1
384 Ch Binary Out

Remote Rack



Cable From D1002481
Dual QPD Amp

D1002559 v3
ISC 8 Channel Whiting Chassis

Field Rack

To AA Chassis Ch. 1-4

To AA Chassis Ch. 5-8

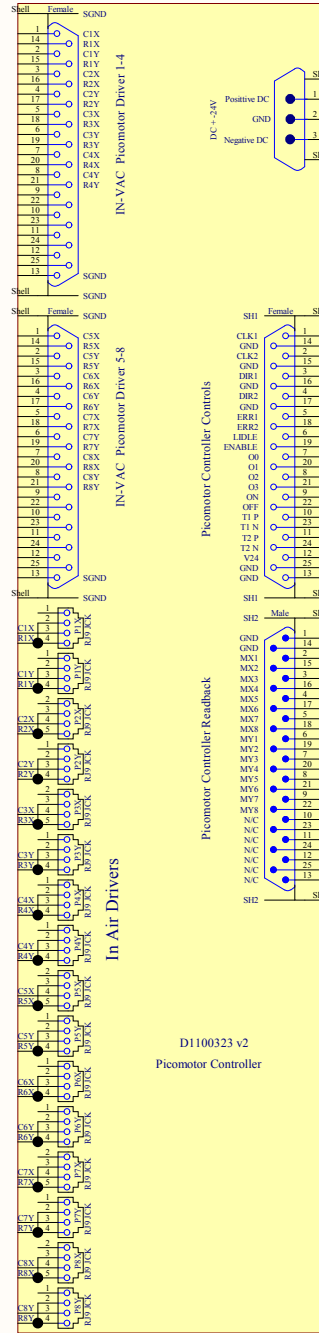
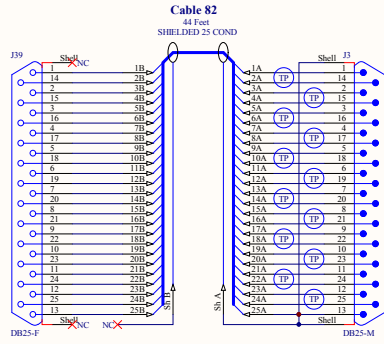
D1100251 v1
384 Ch Binary Out

Remote Rack

Title Vertex Whiting to Binary Out		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: C	DCC Number: D1200666	SCH/PCB Revision: V11	Engineer: R. Abbott/S.Baker	Date: 1/18/2013	Time: 1:46:35 PM
File: Vertex Whiting to Binary Out 2-6.SchDoc			Sheet: 44 of 97		

Last Edited: 1/16/2013

To Picomotor Pairs
1,2,3 & 4 IN-VAC

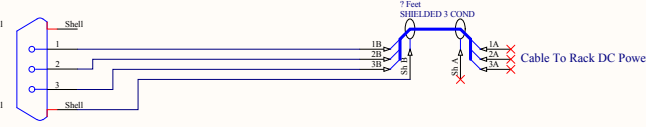


Picomotor Controller Controls

Picomotor Controller Readback

In Air Drivers

D1100323 v2
Picomotor Controller



To D1100682 v1 Ethercat End 2

To D1100682 v1 Ethercat End 2

Generic cables

A

B

C

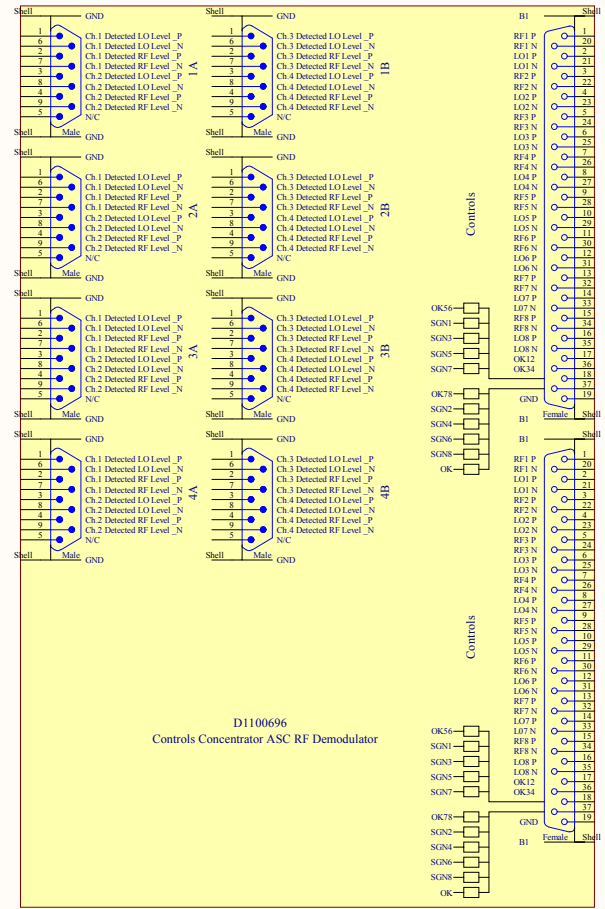
D

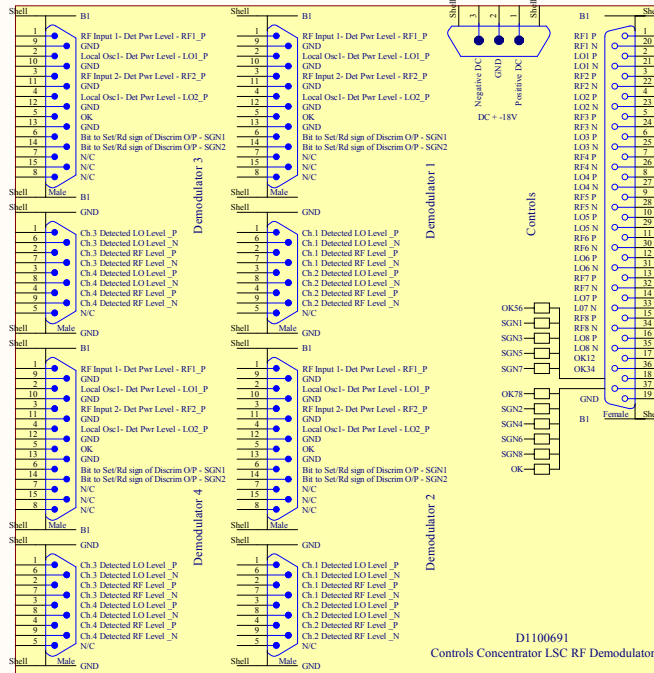
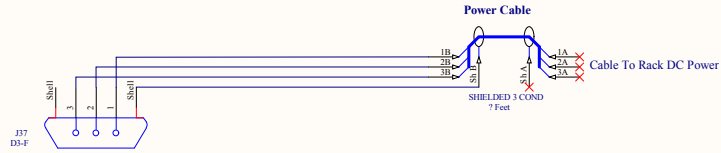
A

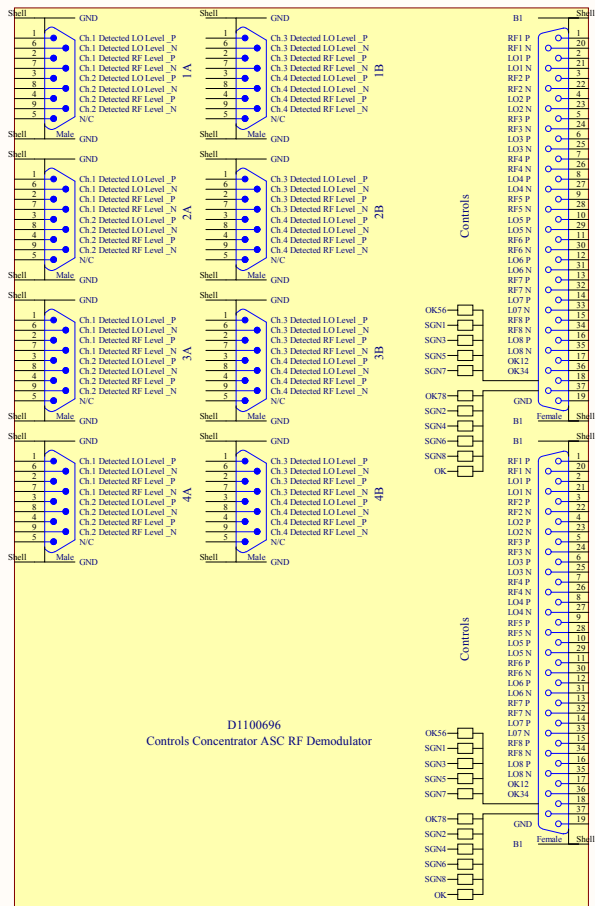
B

C

D







A

B

C

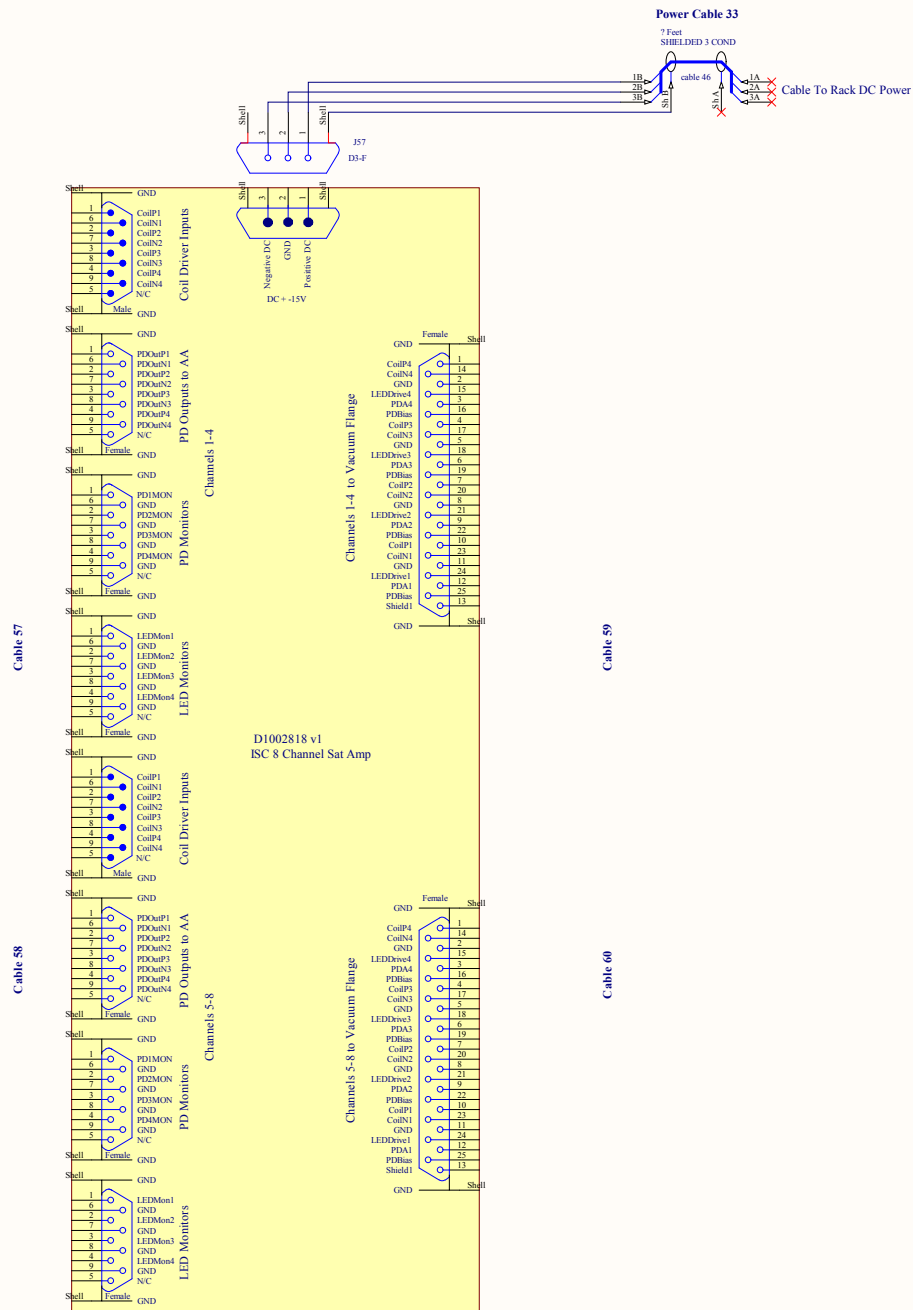
D

A

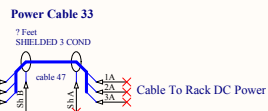
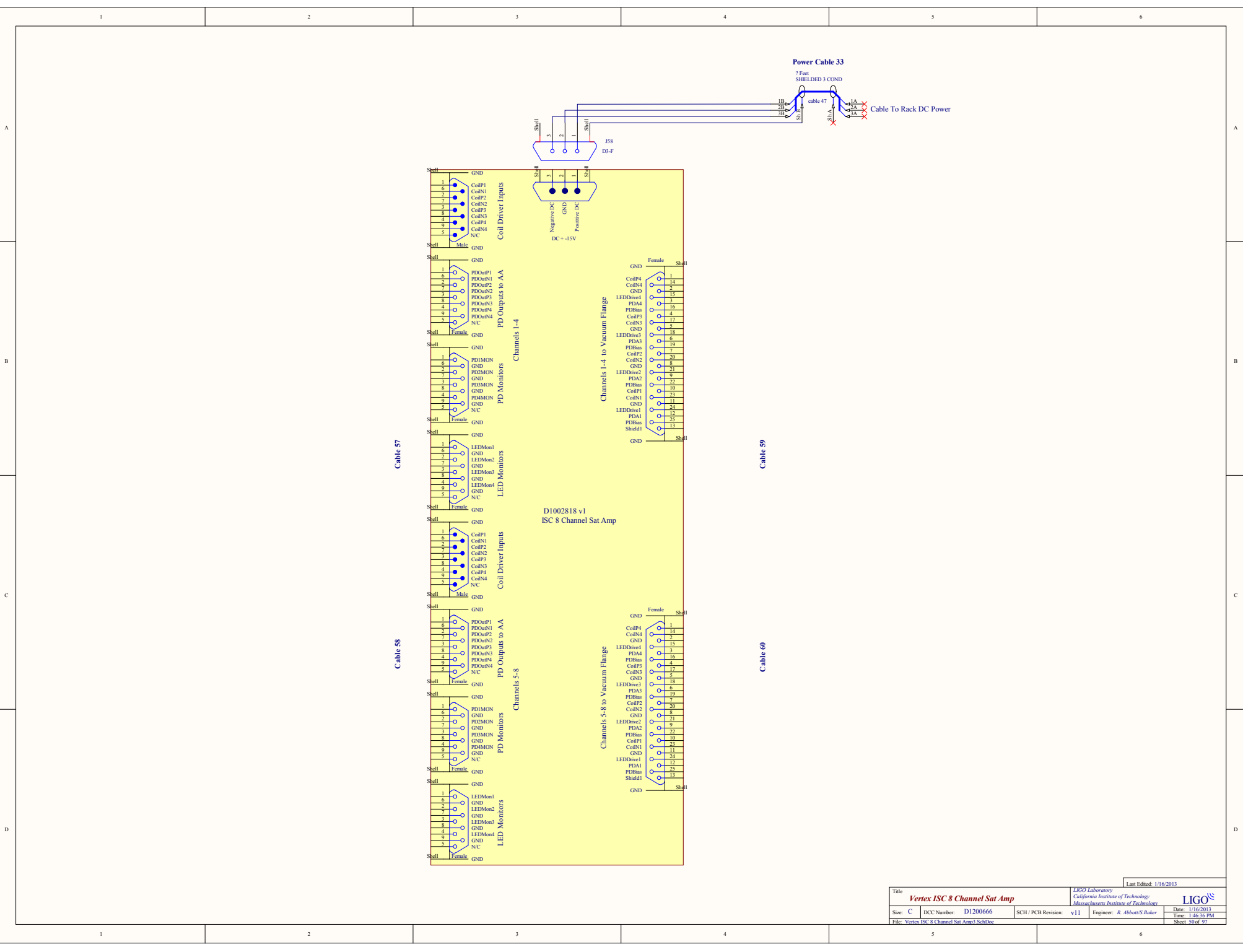
B

C

D



Title		Vertex ISC 8 Channel Sat Amp		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		Last Edited: 1/16/2013	
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott/S.Baker	LIGO		Date: 1/16/2013	
File: Vertex ISC 8 Channel Sat Amp2.SchDoc				Time: 1:46:36 PM		Sheet: 49 of 97	



Cable 57

Cable 58

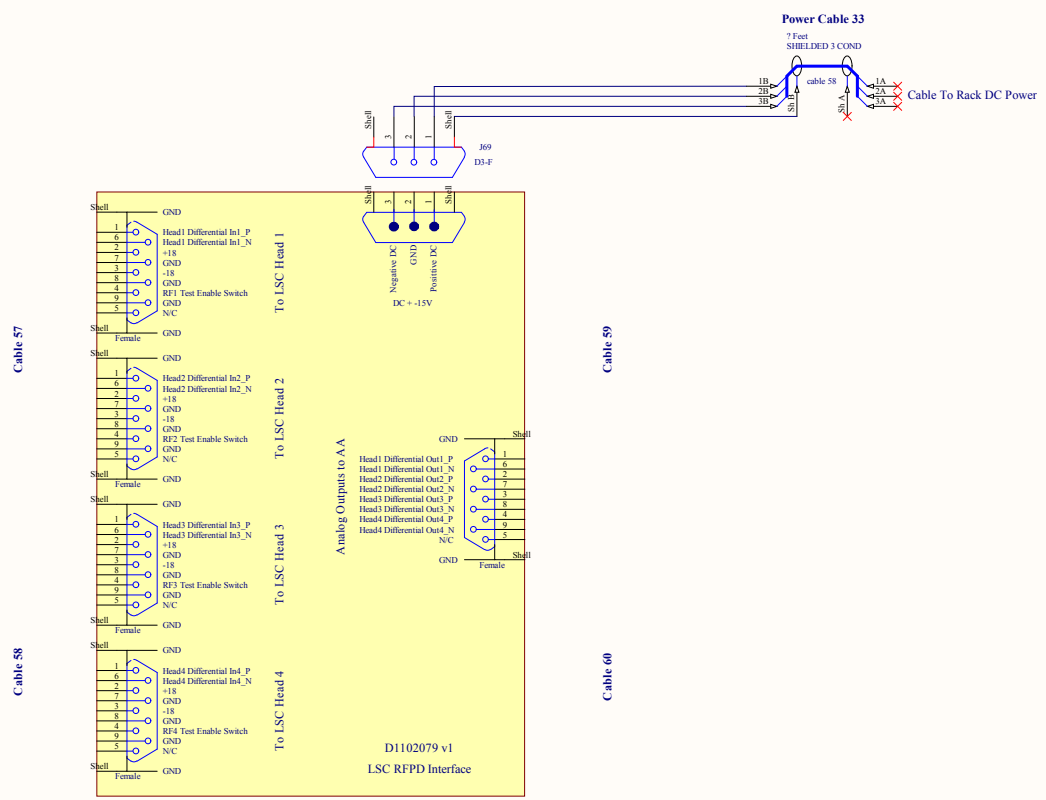
Cable 59

Cable 60

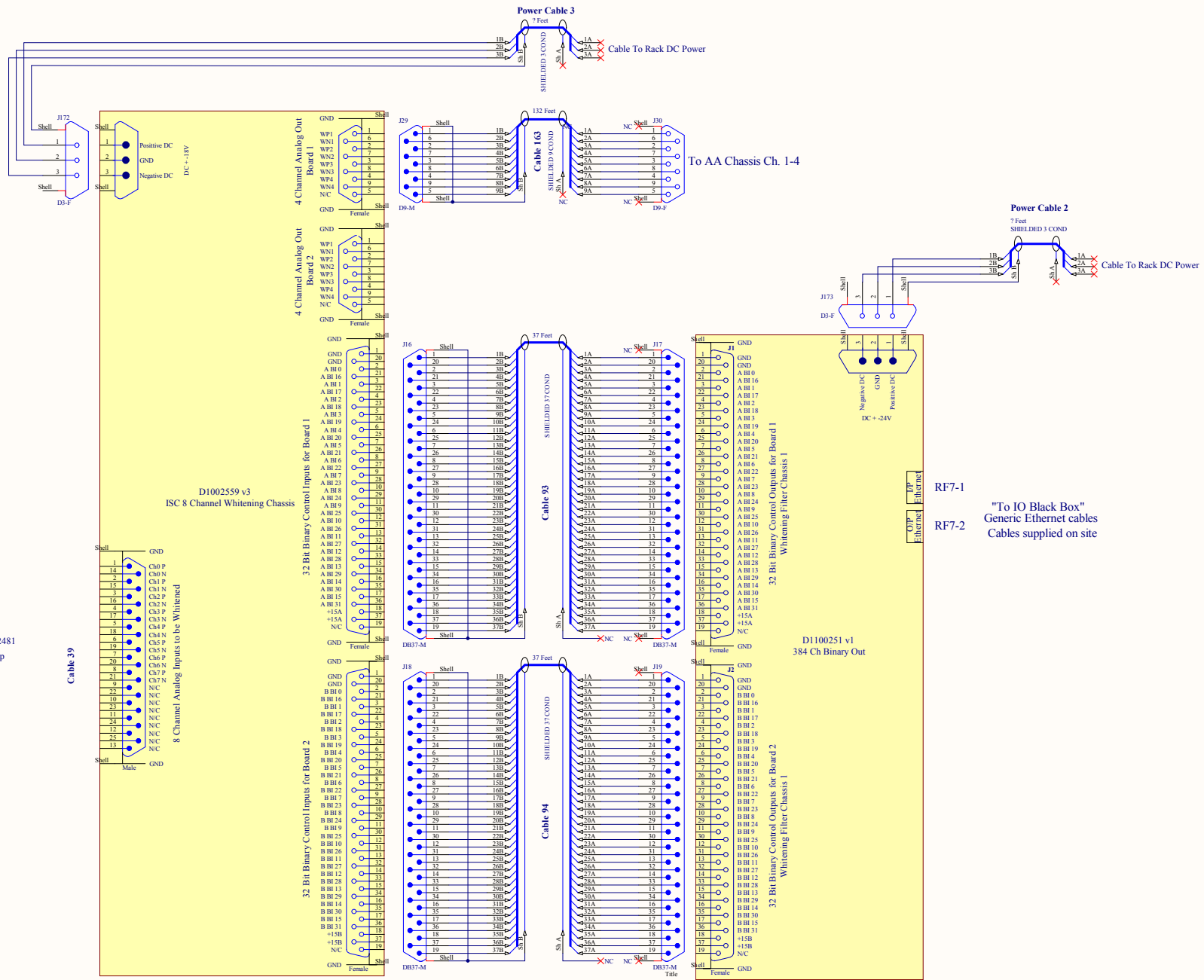
D1002818 v1
 ISC 8 Channel Sat Amp

Title		Vertex ISC 8 Channel Sat Amp		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO		
Size	C	ICC Number	D1200666	SCH / PCB Revision	V11	Engineer	R. Abbott/S.Baker	
File	Vertex ISC 8 Channel Sat Amp_Sch.Dwg			Date	1/18/2013		Time	1:46:36 PM
							Sheet	5 of 97

Last Edited: 1/16/2013



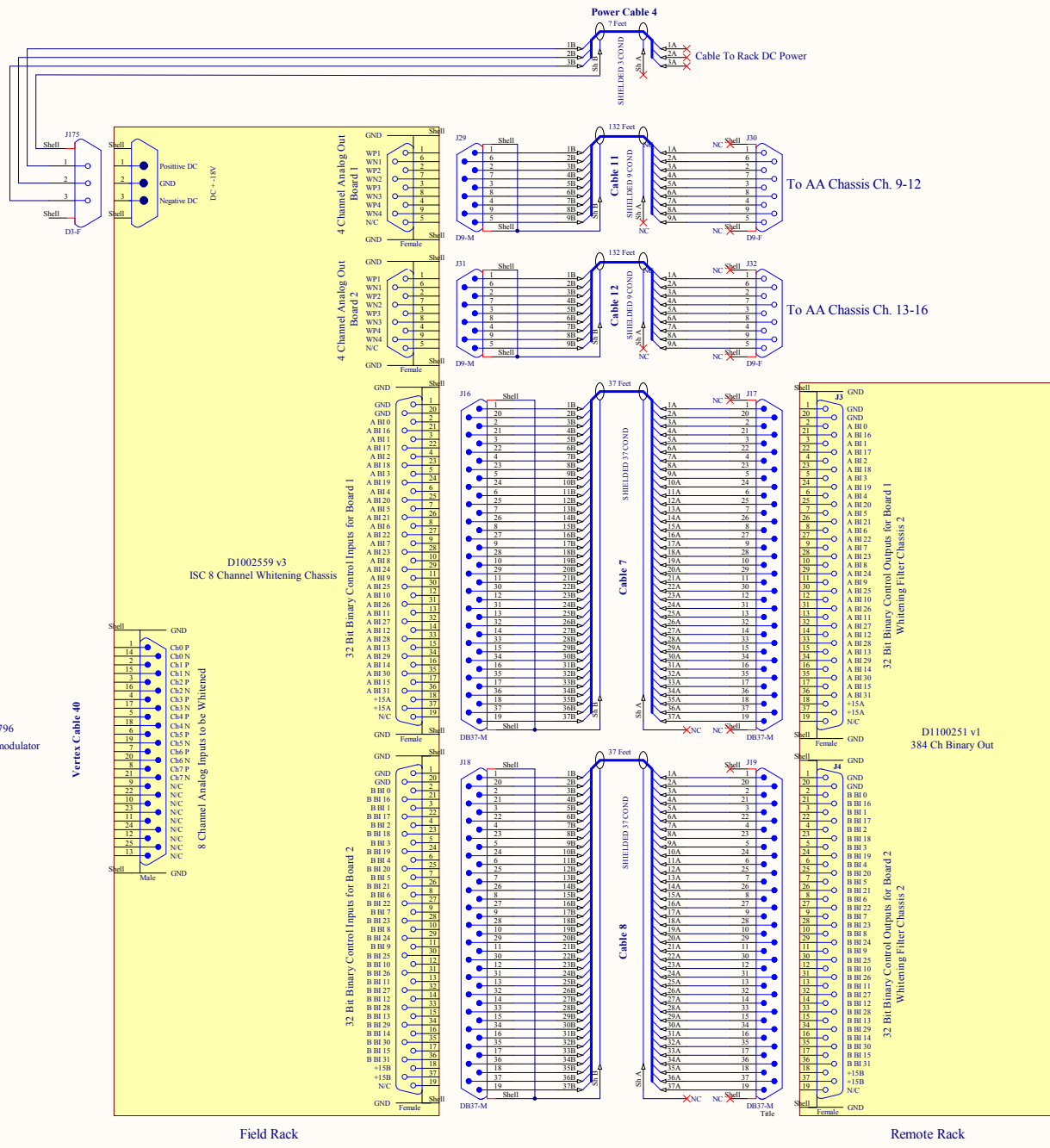
Title		Vertex LSC RFPD Interface		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		Last Edited: 1/16/2013	
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott S. Baker	Date: 1/16/2013		Time: 1:46:36 PM	
File: Vertex LSC RFPD INTERFACE 1.SchDoc				Sheet: 51 of 97			

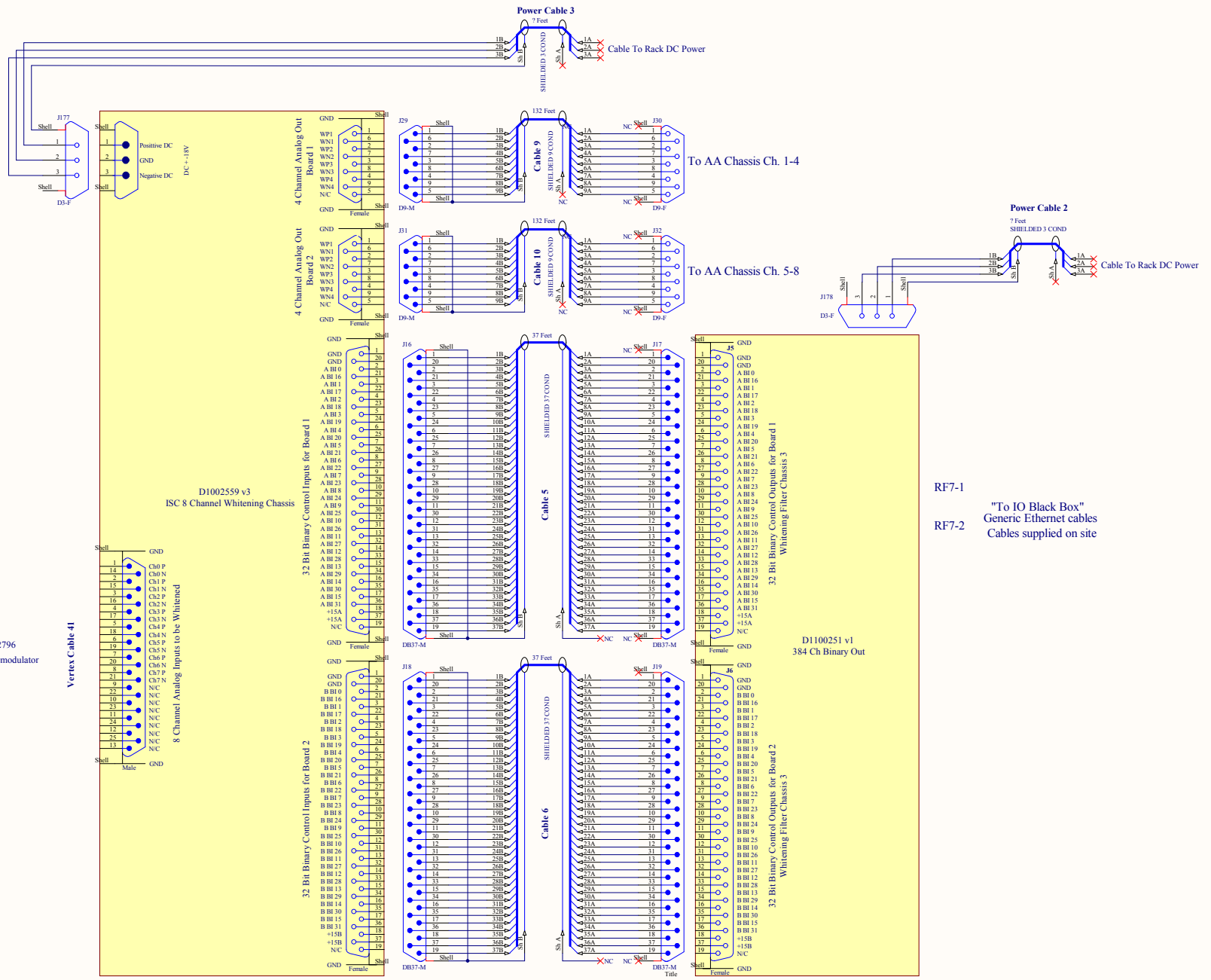


Field Rack

Remote Rack

RF7-1
RF7-2
"To IO Black Box"
Generic Ethernet cables
supplied on site



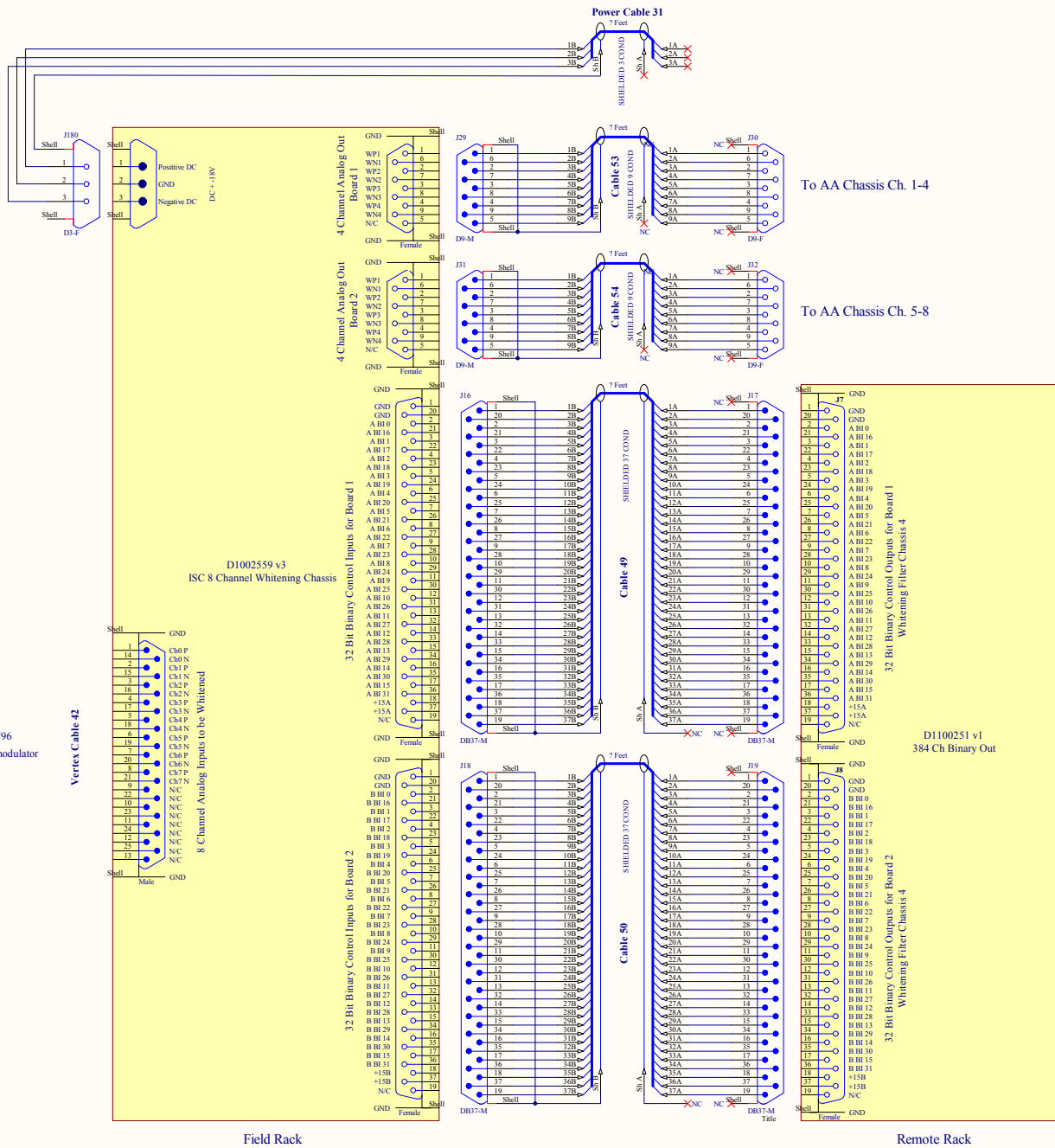


RF7-1
RF7-2
"To IO Black Box"
Generic Ethernet cables
Cables supplied on site

Field Rack

Remote Rack

Last Edited: 1/16/2013



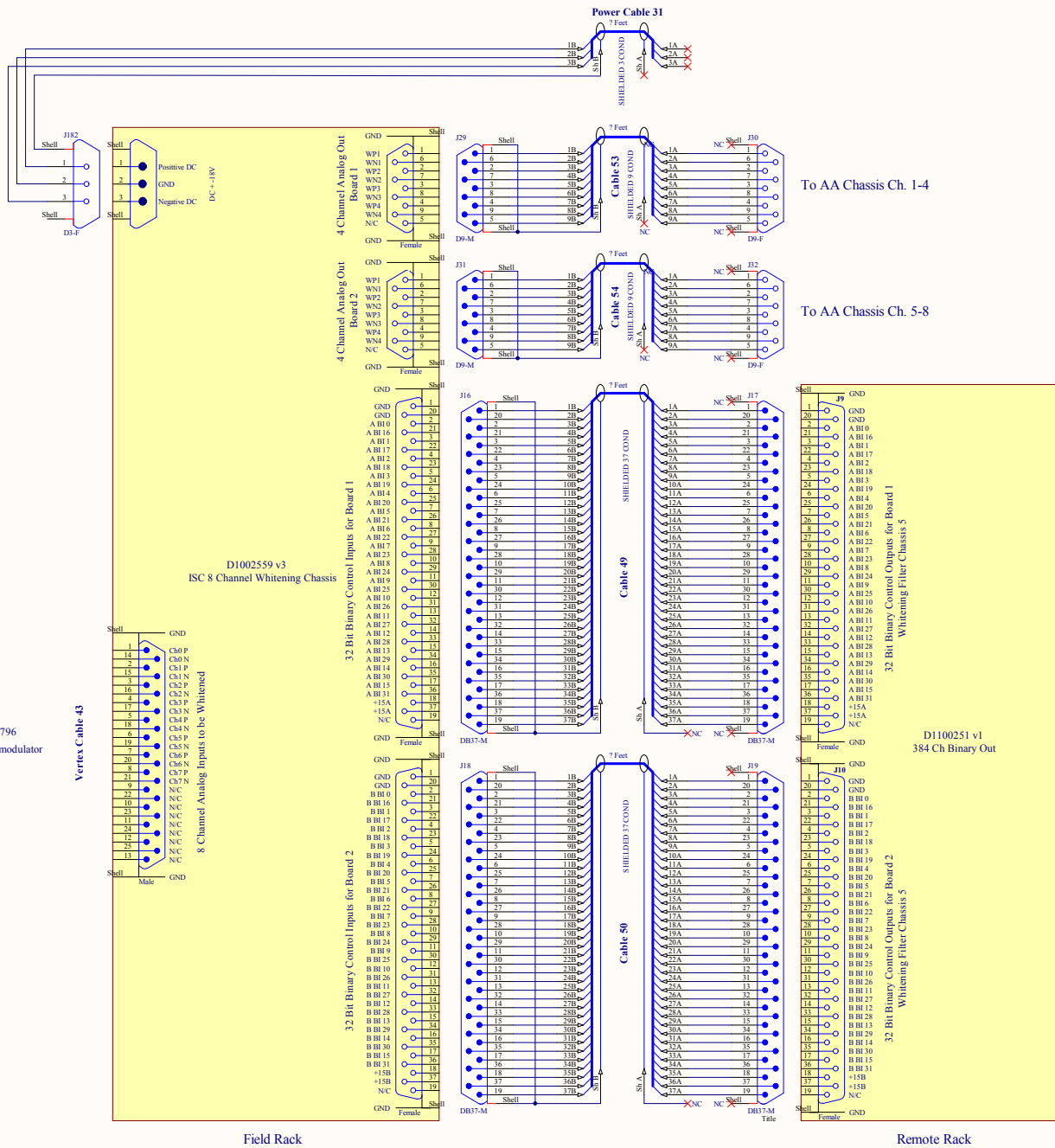
Cable From D0902796
Vertex 4 CH IQ RF Demodulator

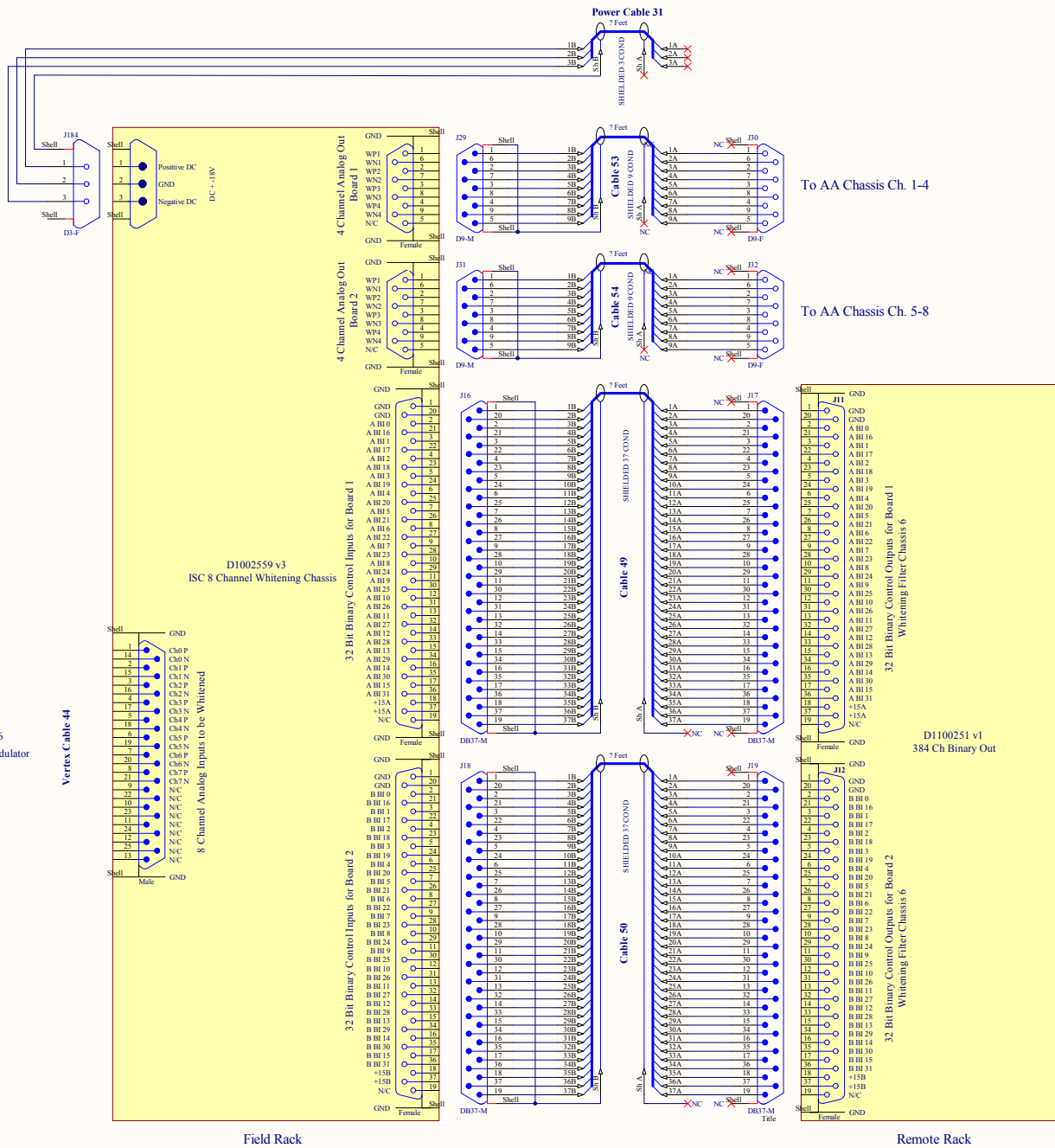
Field Rack

Remote Rack

Title Vertex Whiting to Binary Out		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: C	DCC Number: D1200666	SCH/PCB Revision: V11	Engineer: R. Abbott S. Baker	Date: 1/18/2013	Time: 1:46:37 PM
File: Vertex Whiting to Binary Out 3-4 Sch.Doc			Sheet: 55 of 97		

Last Edited: 1/16/2013





To AA Chassis Ch. 1-4

To AA Chassis Ch. 5-8

Whitening Filter Chassis 6

Whitening Filter Chassis 6

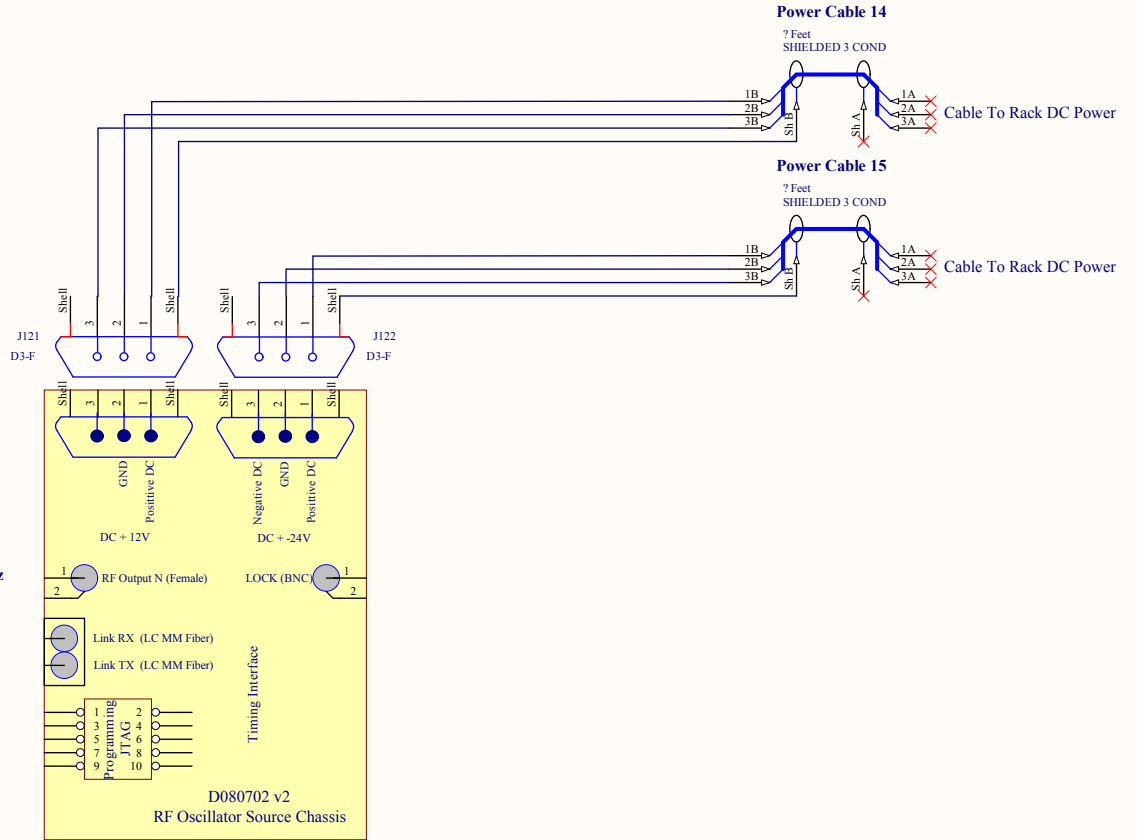
Whitening Filter Chassis 6

Whitening Filter Chassis 6

Field Rack

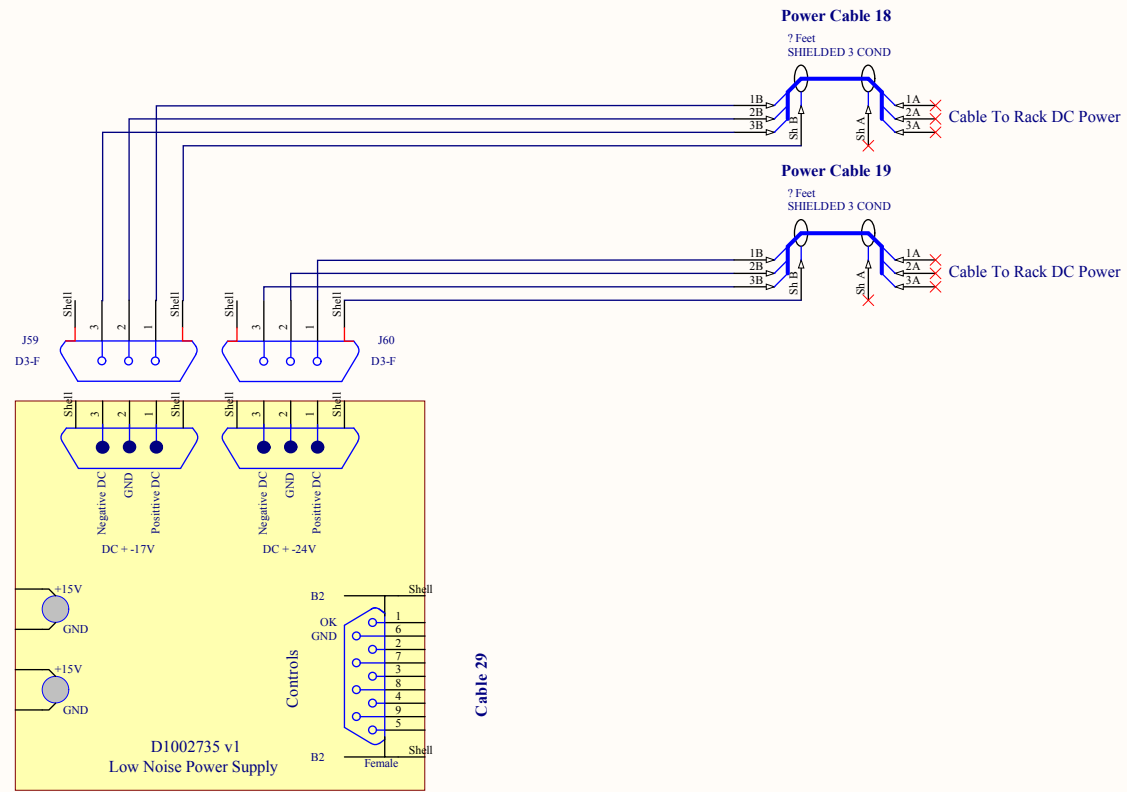
Remote Rack

O/P Cable RF14-1 D1000124 RF Distribution Amp To D080702-A RF Source 71 MHz



Last Edited: 1/16/2013

Vertex RF Oscillator Source			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	Time: 1:46:38 PM
File: Vertex RF Oscillator Source 1.SchDoc				Sheet 58 of 97	



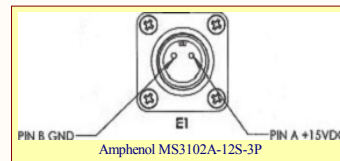
Cable 31 Cable 30

Cable 29

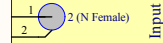
Last Edited: 1/16/2013

Vertex Low Noise Voltage Controlled Oscillator			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013	Time: 1:46:38 PM
File: Vertex Low Noise Power Supply D1002735.SchDoc				Sheet 59 of 97	

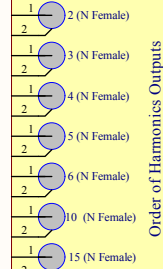
MS3102A power cable already exists, Daniel Sigg 8-22-2011



Cable 27



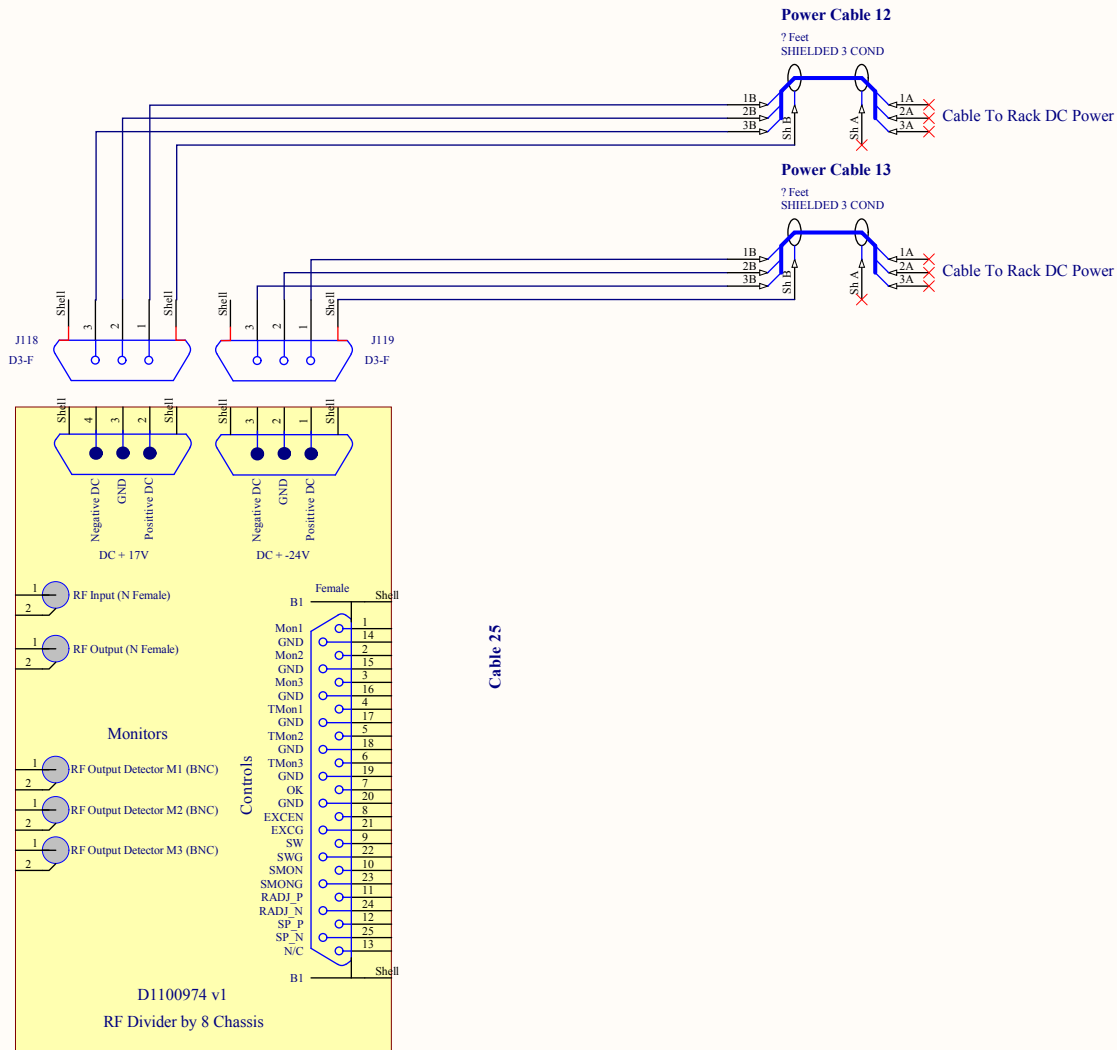
Cable 26



96269 v1
Spectrum Mwave Harmonic Generator

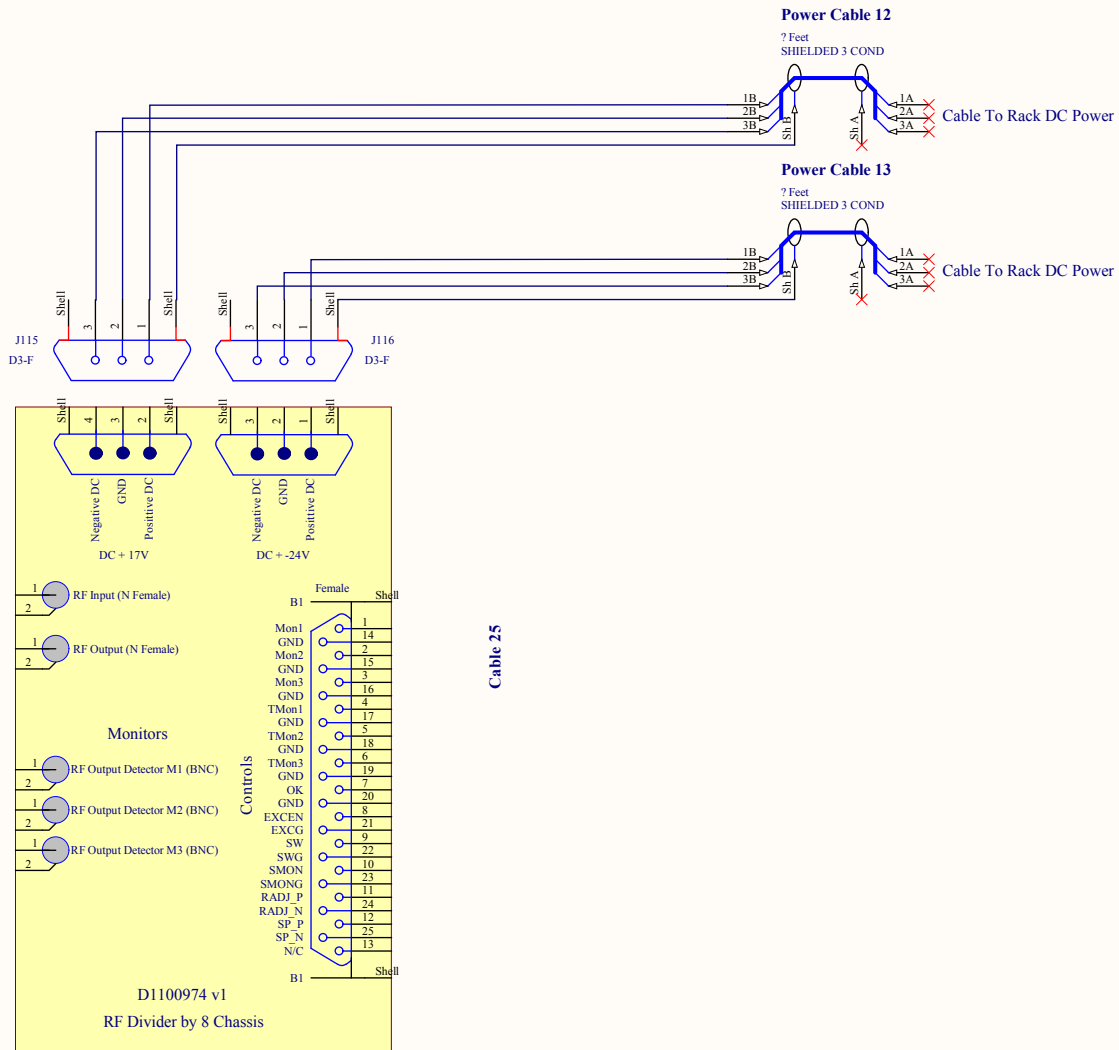
Last Edited: 1/16/2013

Vertex Harmonic Generator Spectrum Mwave 96269		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	Time: 1:46:38 PM
File: Vertex Harmonic Generator Spectrum Mwave 96269 Sch.Doc				Sheet60 of 97	



Last Edited: 1/16/2013

RF Divider by 8		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013	Time: 1:46:38 PM
File: Vertex RF Divider by 2 1.SchDoc				Sheet 61 of 97	



Last Edited: 1/16/2013

Vertex RF Divider-by-8		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013
File: Vertex RF Divider-by-8 1.SchDoc				Time: 1:46:38 PM
				Sheet 62 of 97

A

B

C

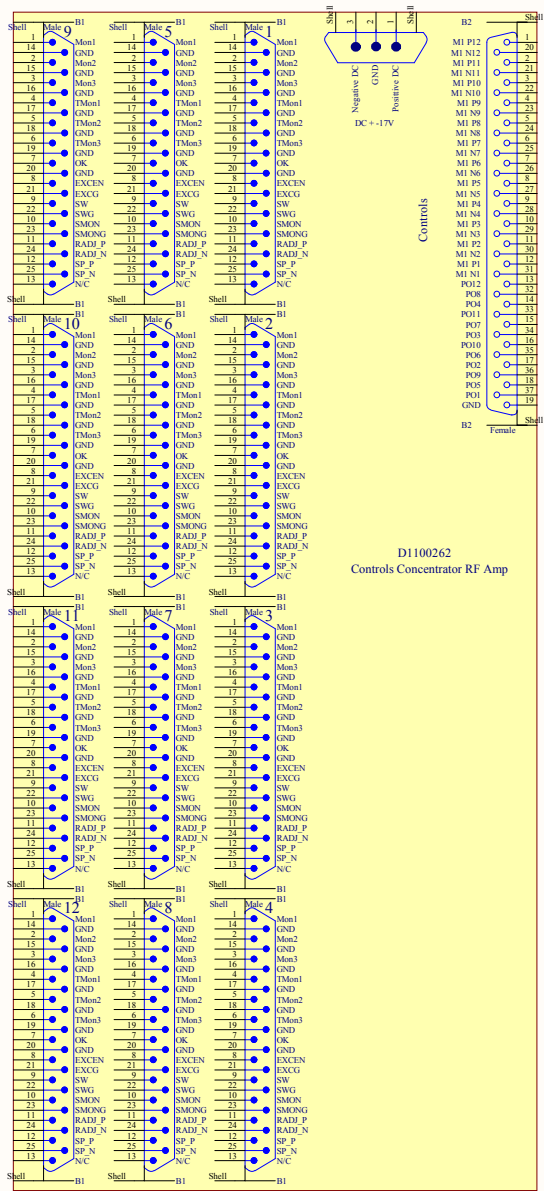
D

A

B

C

D



Cable ??

Cable ??

Cable ??

Cable ??

Cable ??

Cable ??

Cable ??

Cable ??

Cable ??

Cable ??

Cable ??

Cable ??

A

B

C

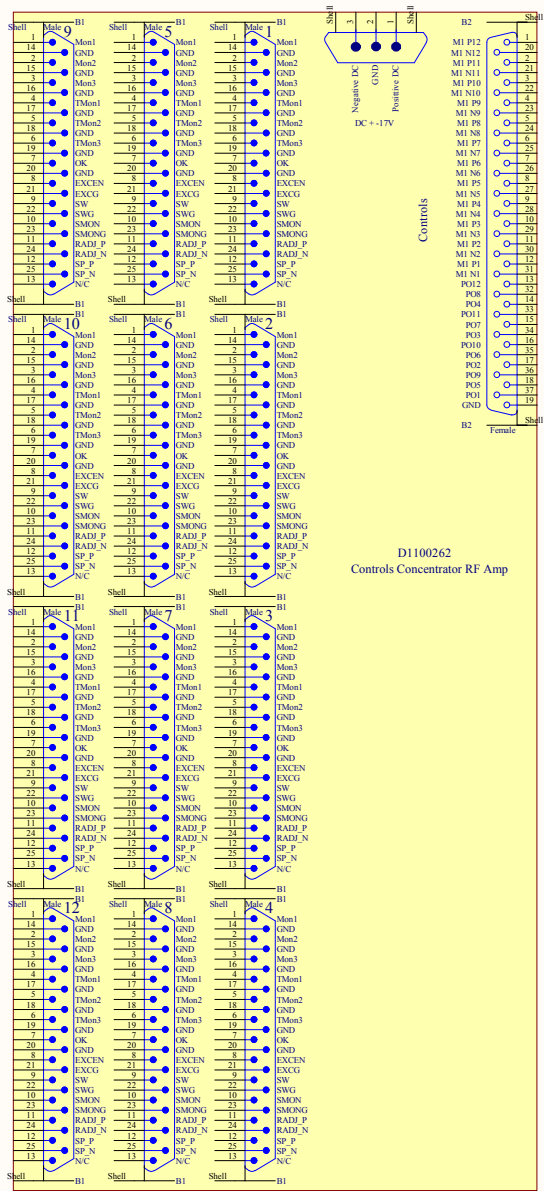
D

A

B

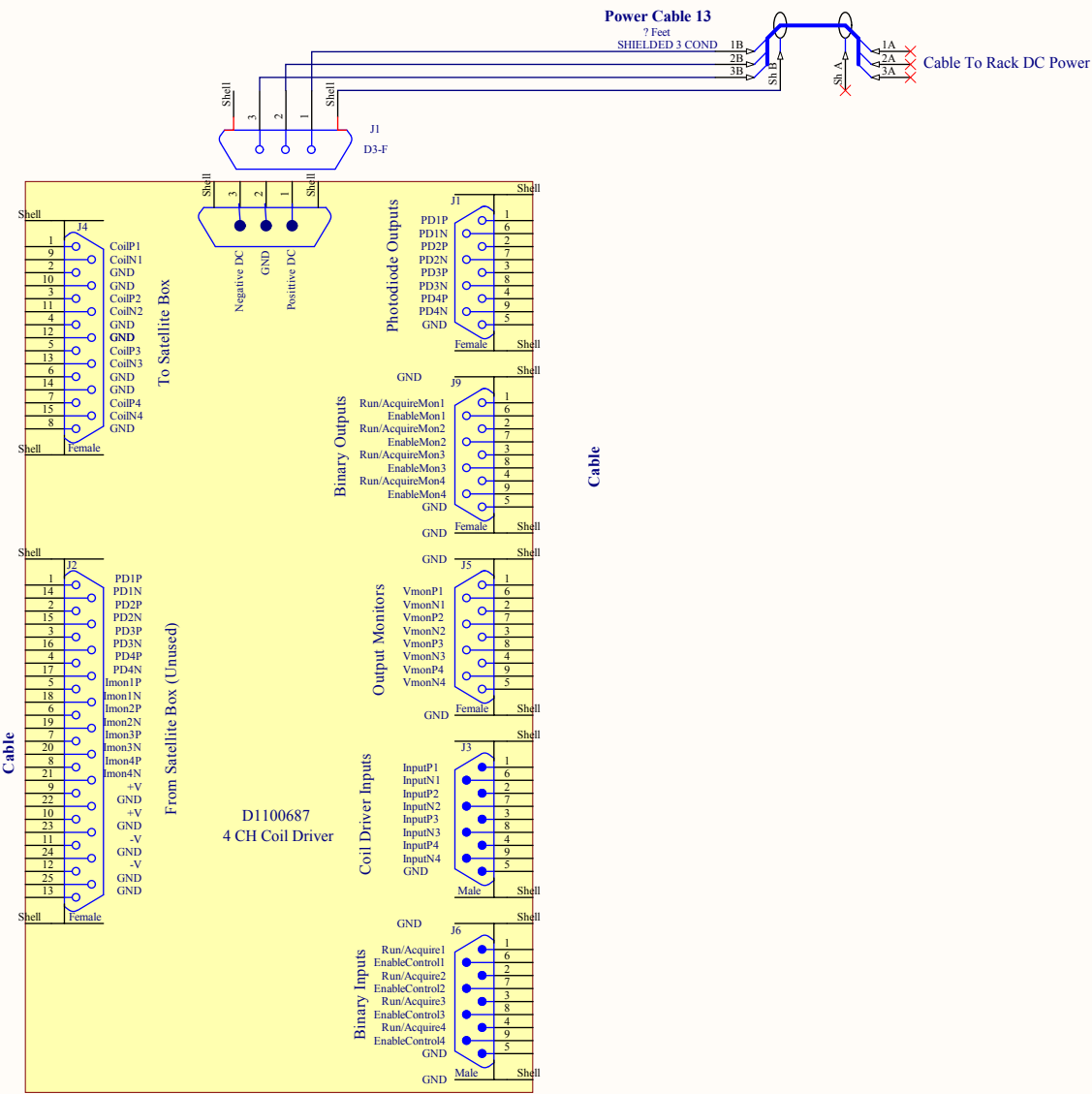
C

D



D1100262
Controls Concentrator RF Amp

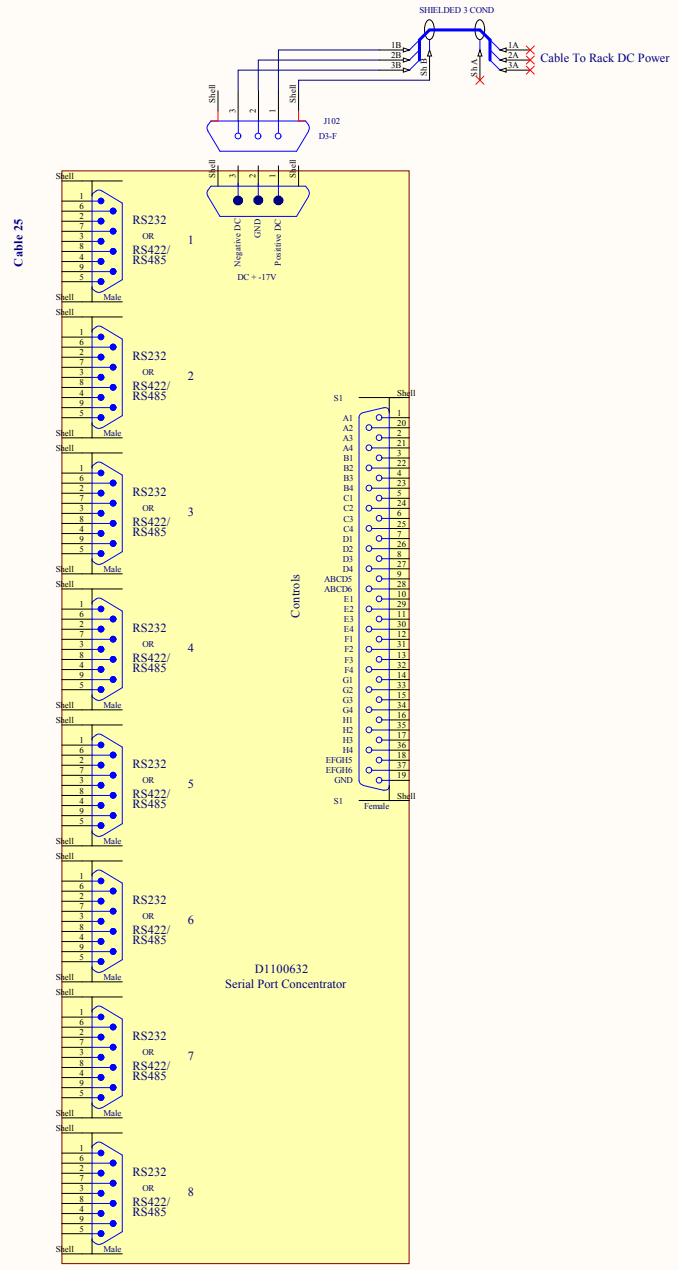
Last Edited: 1/16/2013



U1
D1100687 4 CH Coil Driver

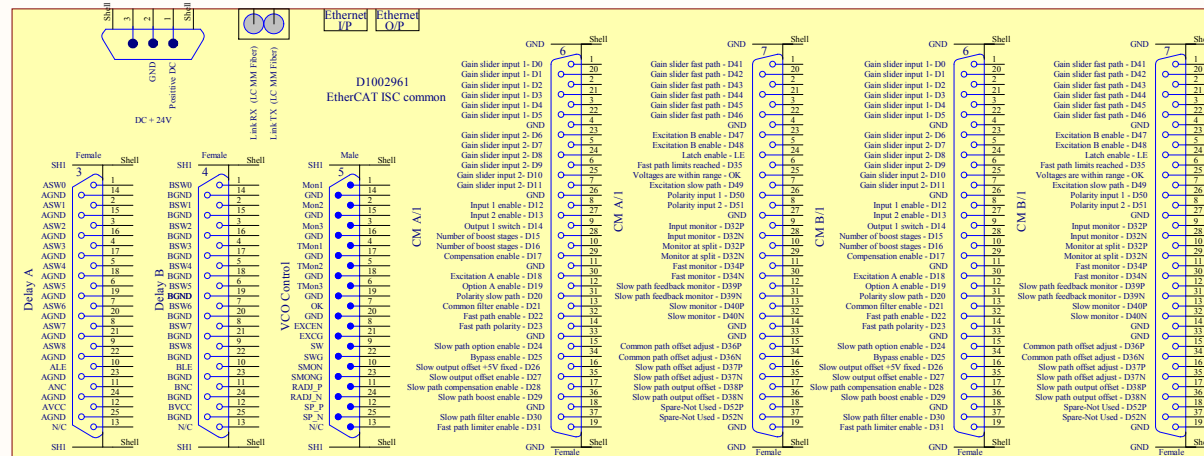
Last Edited: 1/16/2013

Vertex 4 CH Coil Driver		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
					Date: 1/16/2013
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	File: Vertex 4 CH Coil Driver 1.SchDoc	Sheet 65 of 97



Last Edited: 1/16/2013

Title Vertex Serial Port Concentrator		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott S. Baker	Date: 1/16/2013	Time: 1:46:39 PM
File: Vertex Serial Port Concentrator 1.SchDoc			Sheet: 6 of 97		



Cable 7

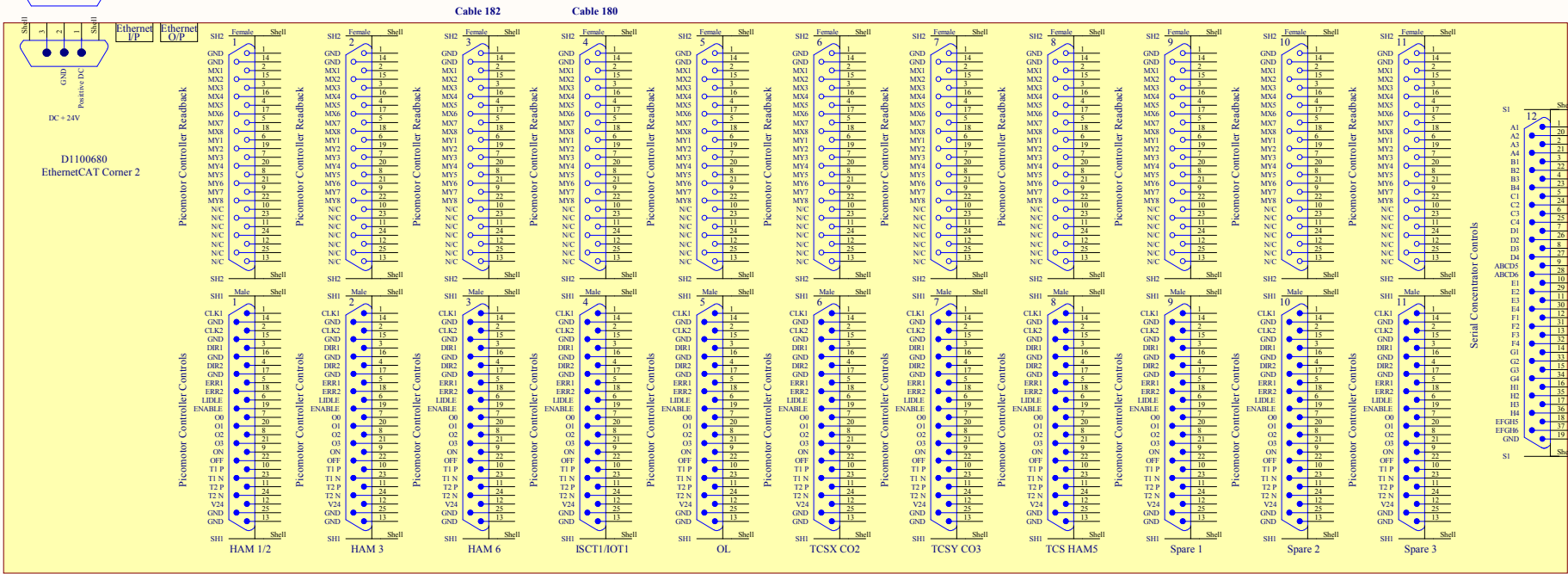
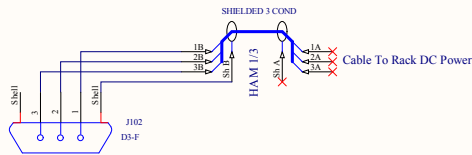
Cable 2

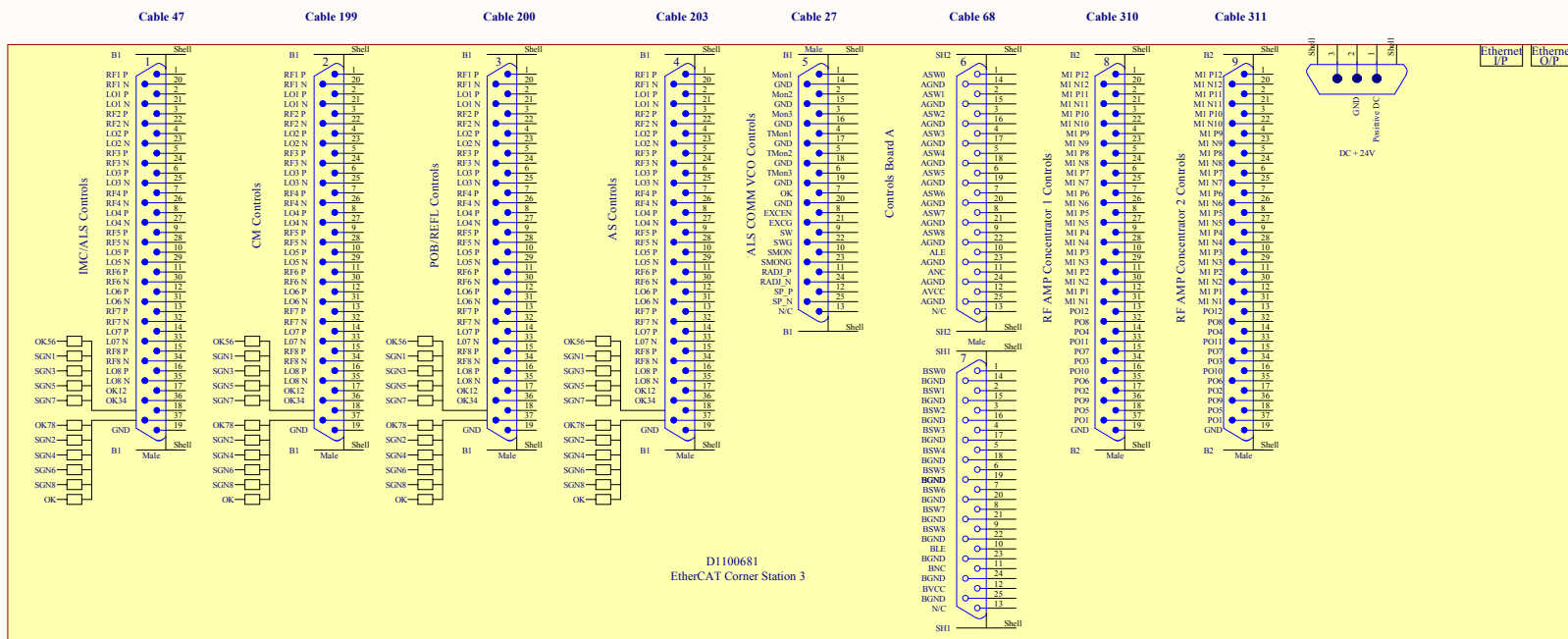
Cable 5

Cable 6

Cable 121

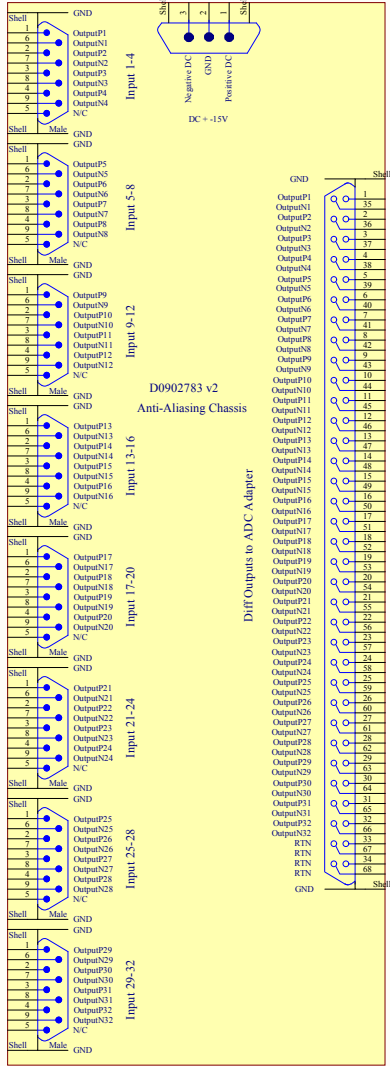
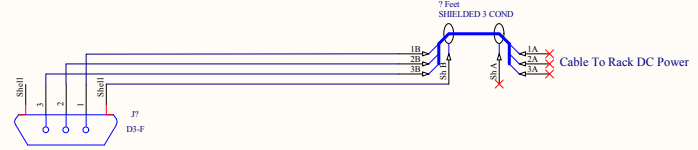
Cable 122





Cable ??

Power Cable 34



Last Edited: 1/16/2013

Title Vertex Anti-Aliasing Chassis		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott S. Baker	Date: 1/16/2013	Time: 1:46:40 PM
File: Vertex Anti-Aliasing Chassis 1.SchDoc			Sheet 70 of 97		

A

B

C

D

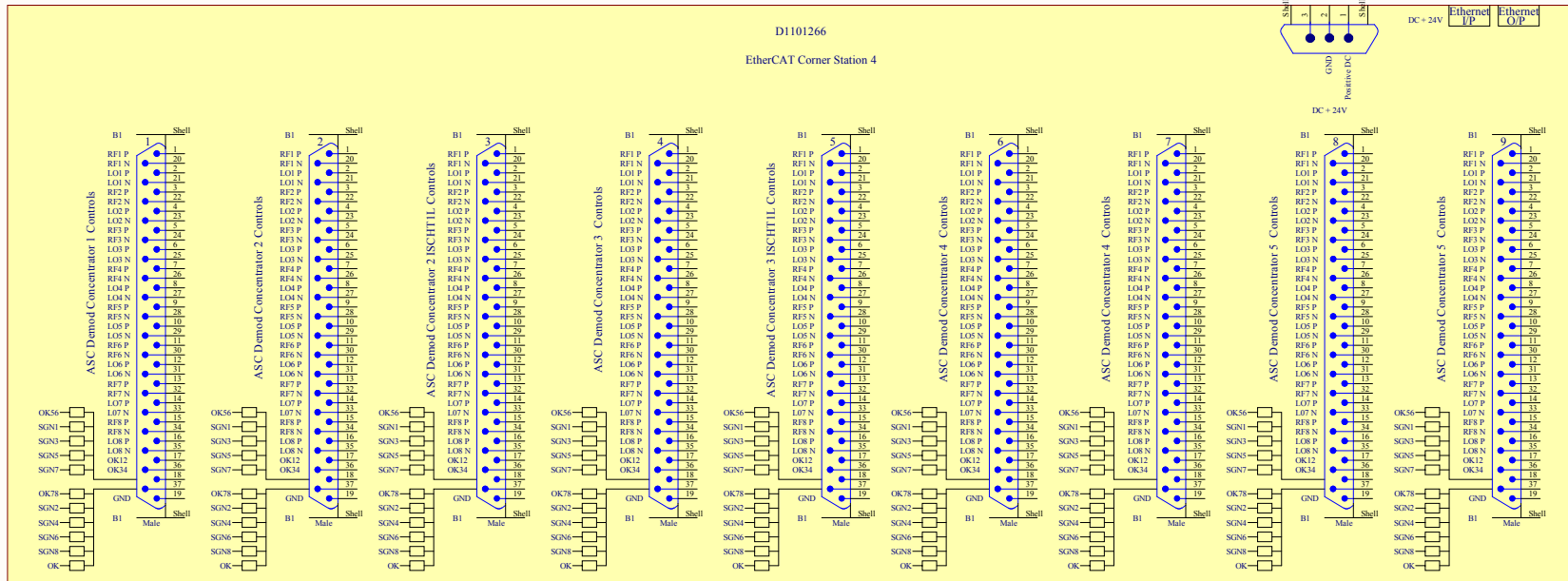
A

B

C

 + 24V

D



Cable 48

Cable 201

Cable 312

Cable 202

Cable 313

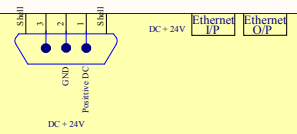
Cable 204

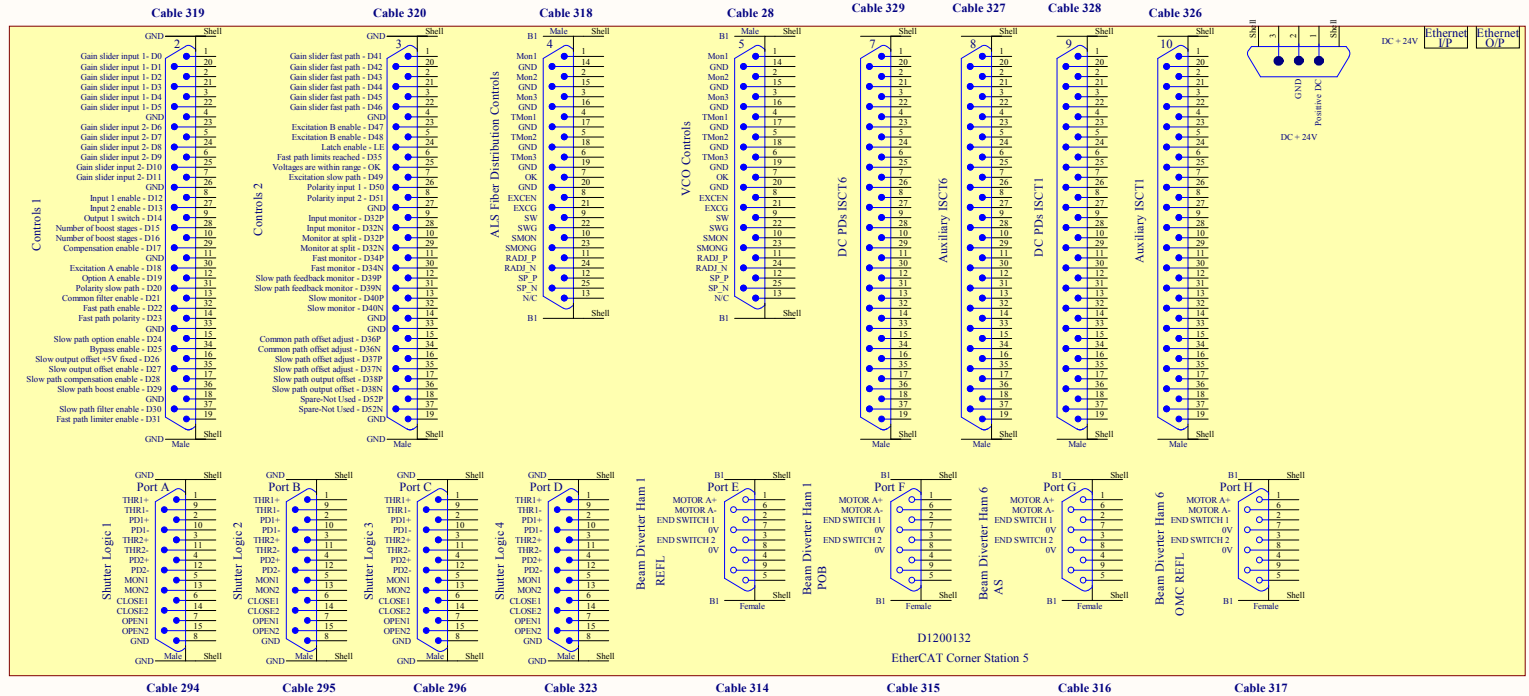
Cable 207

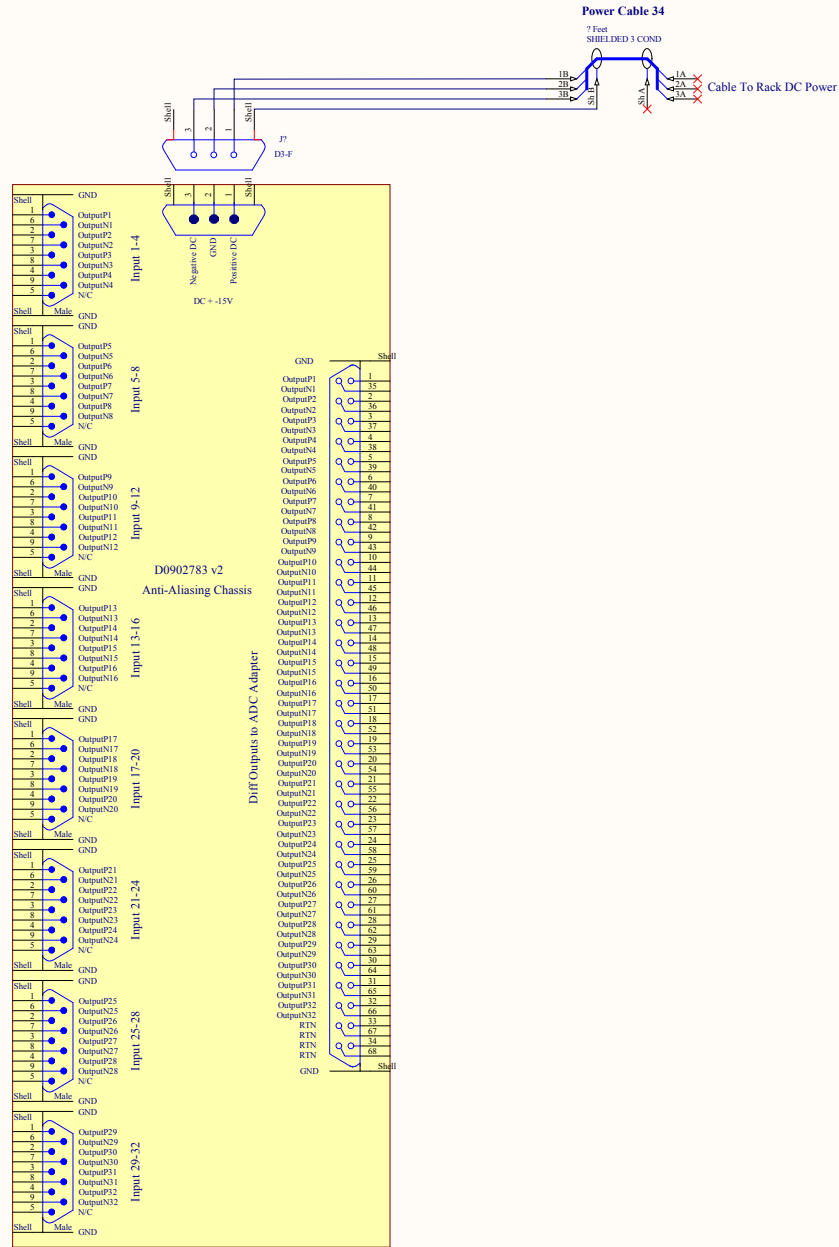
Cable 205

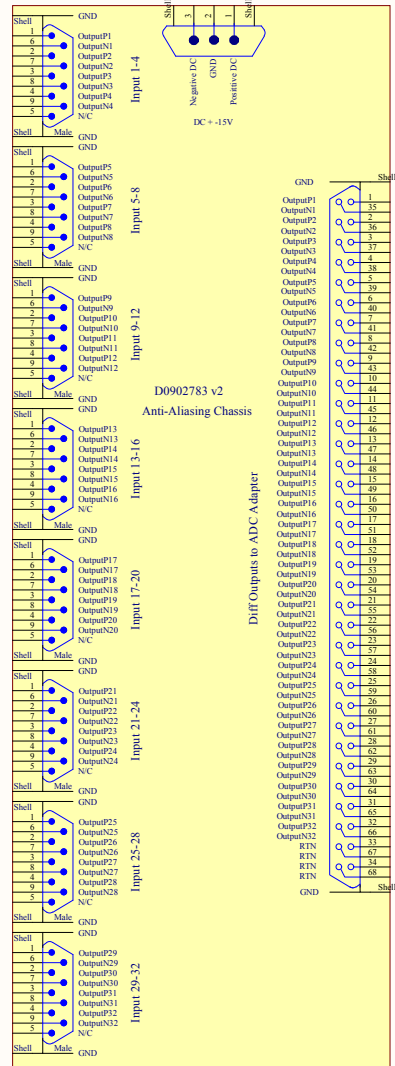
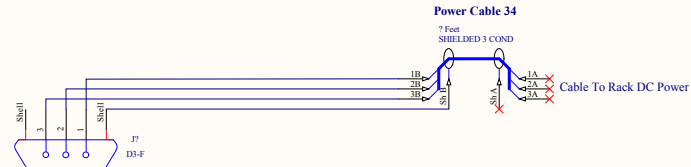
Cable 210

D1101266
EtherCAT Corner Station 4









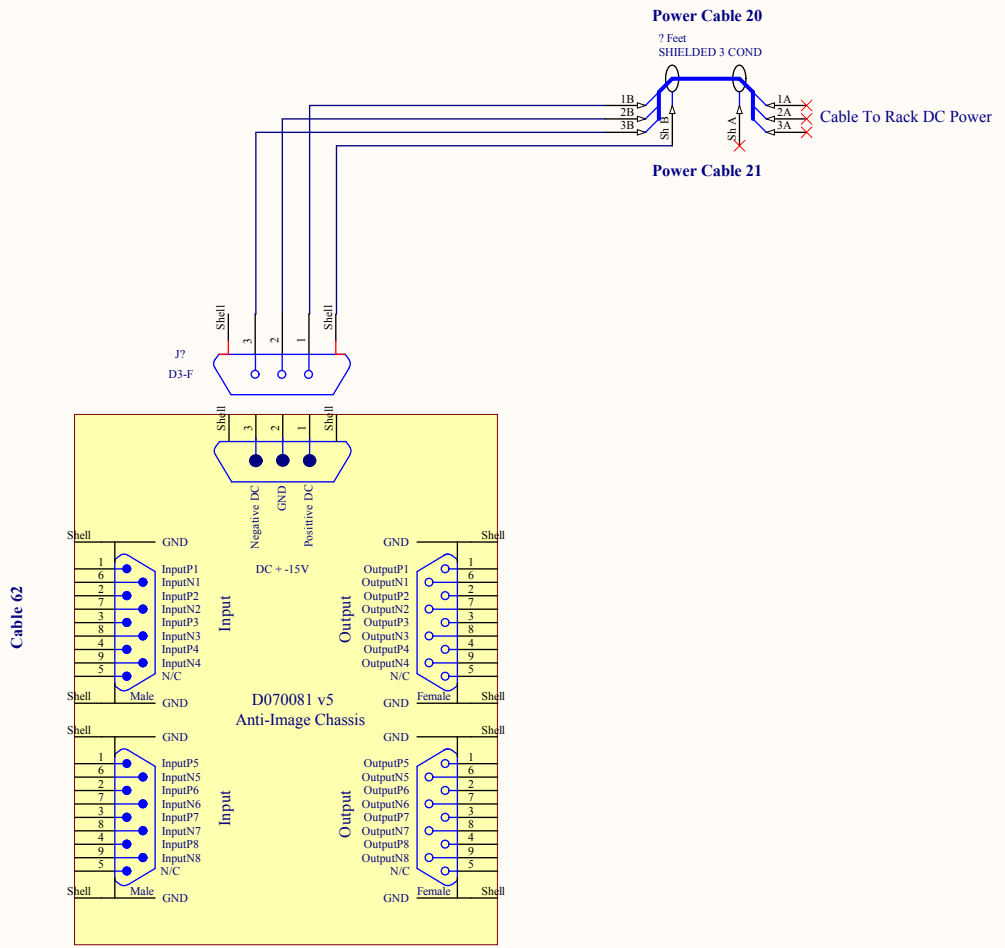
Power Cable 34

7 Feet SHIELDED 3 COND

Cable To Rack DC Power

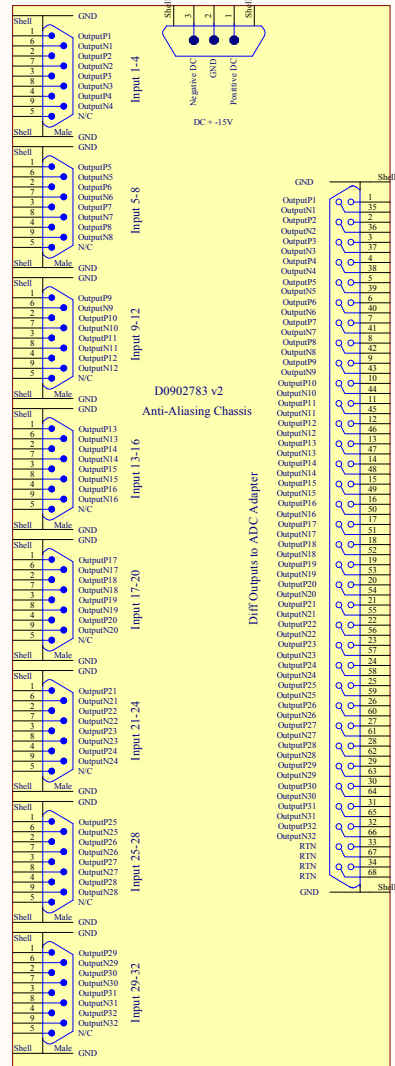
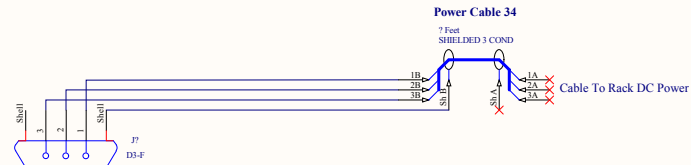
D0902783 v2
Anti-Aliasing Chassis

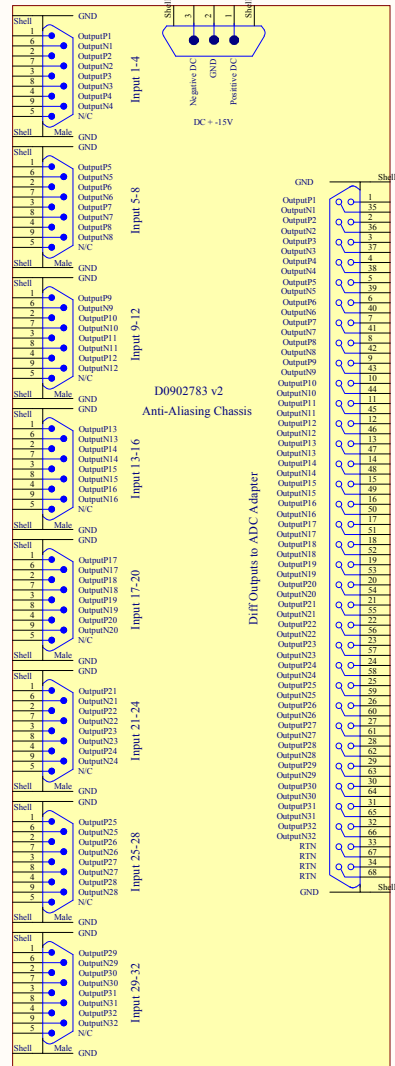
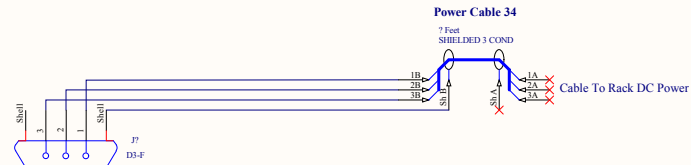
DIFF Outputs to ADC Adapter

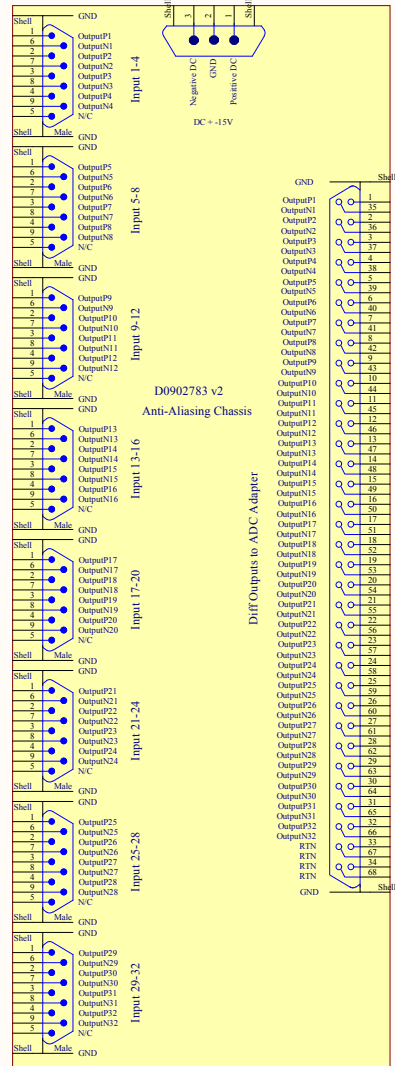
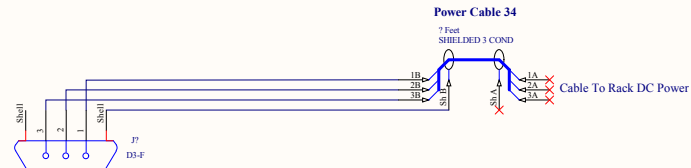


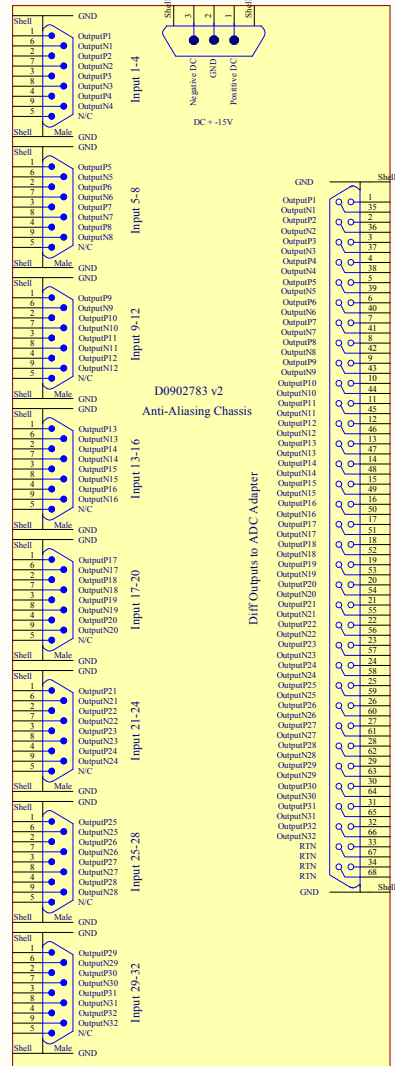
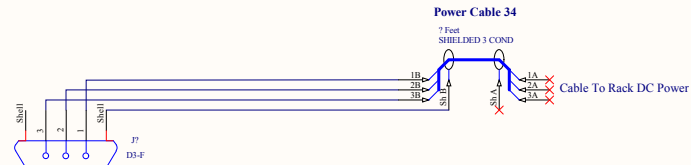
Last Edited: 1/16/2013

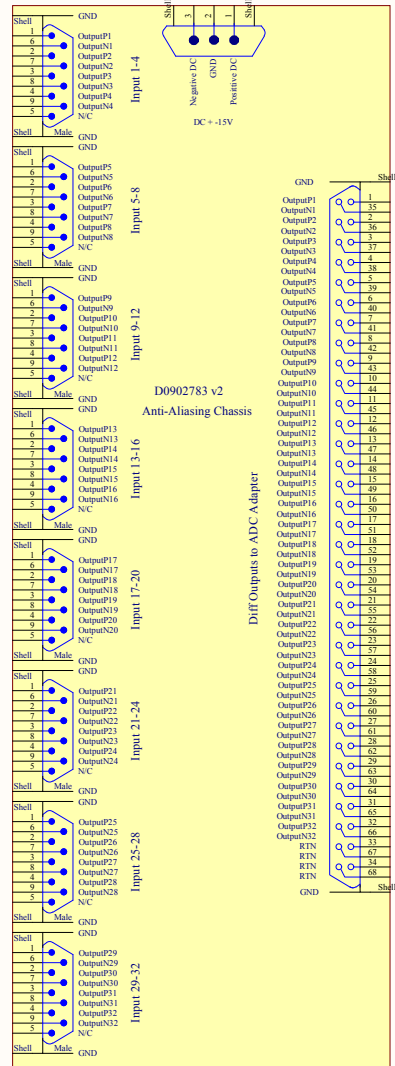
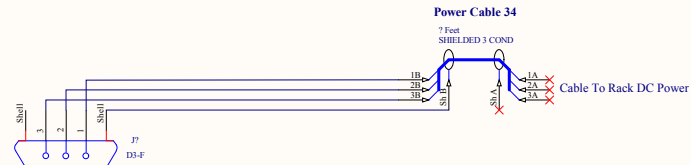
Vertex Anti-Image Chassis			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	
File: Vertex Anti-Image Chassis 1.SchDoc				Time: 1:46:41 PM	Sheet 75 of 97











Power Cable 34

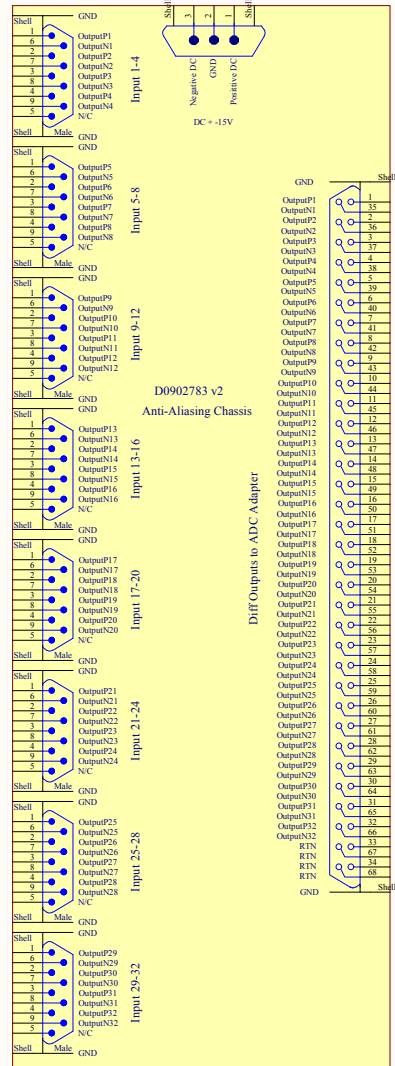
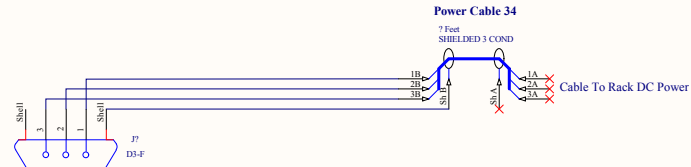
7 Feet SHIELDED 3 COND

Cable To Rack DC Power

D0902783 v2
Anti-Aliasing Chassis

DIFF Outputs to ADC Adapter

Title		Vertex Anti-Aliasing Chassis		Last Edited: 1/16/2013	
Site: C		DCC Number: D1200666		SCH / PCB Revision: V11	
File: Vertex Anti-Aliasing Chassis 3.SchDoc		Engineer: R. Abbott S. Baker		Date: 1/16/2013 Time: 1:46:41 PM Sheet: 80 of 97	



Power Cable 34

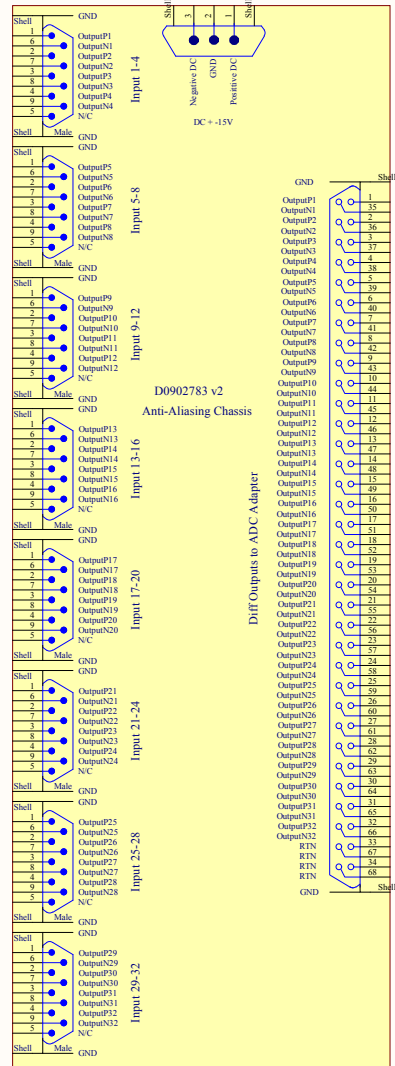
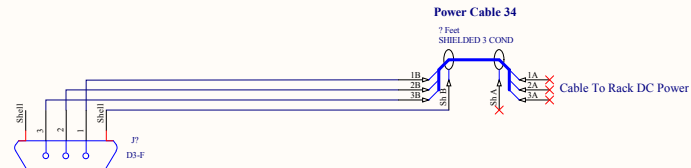
7 Feet SHIELDED 3 COND

Cable To Rack DC Power

D0902783 v2
Anti-Aliasing Chassis

Diff Outputs to ADC Adapter

Title		Vertex Anti-Aliasing Chassis		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		Last Edited: 1/16/2013	
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott S. Baker	LIGO		Date: 1/16/2013	Time: 1:46:41 PM
File: Vertex Anti-Aliasing Chassis 3.SchDoc						Sheet: 81 of 97	



Power Cable 34

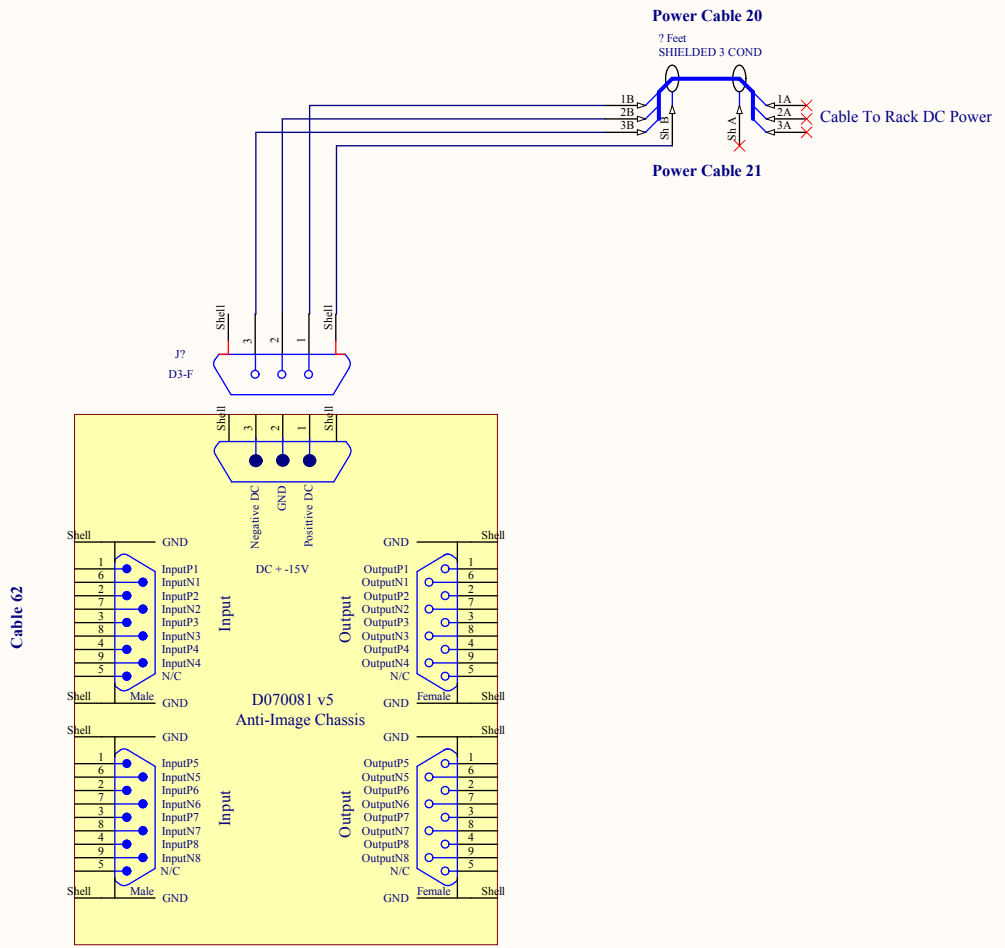
7 Feet SHIELDED 3 COND

Cable To Rack DC Power

D0902783 v2
Anti-Aliasing Chassis

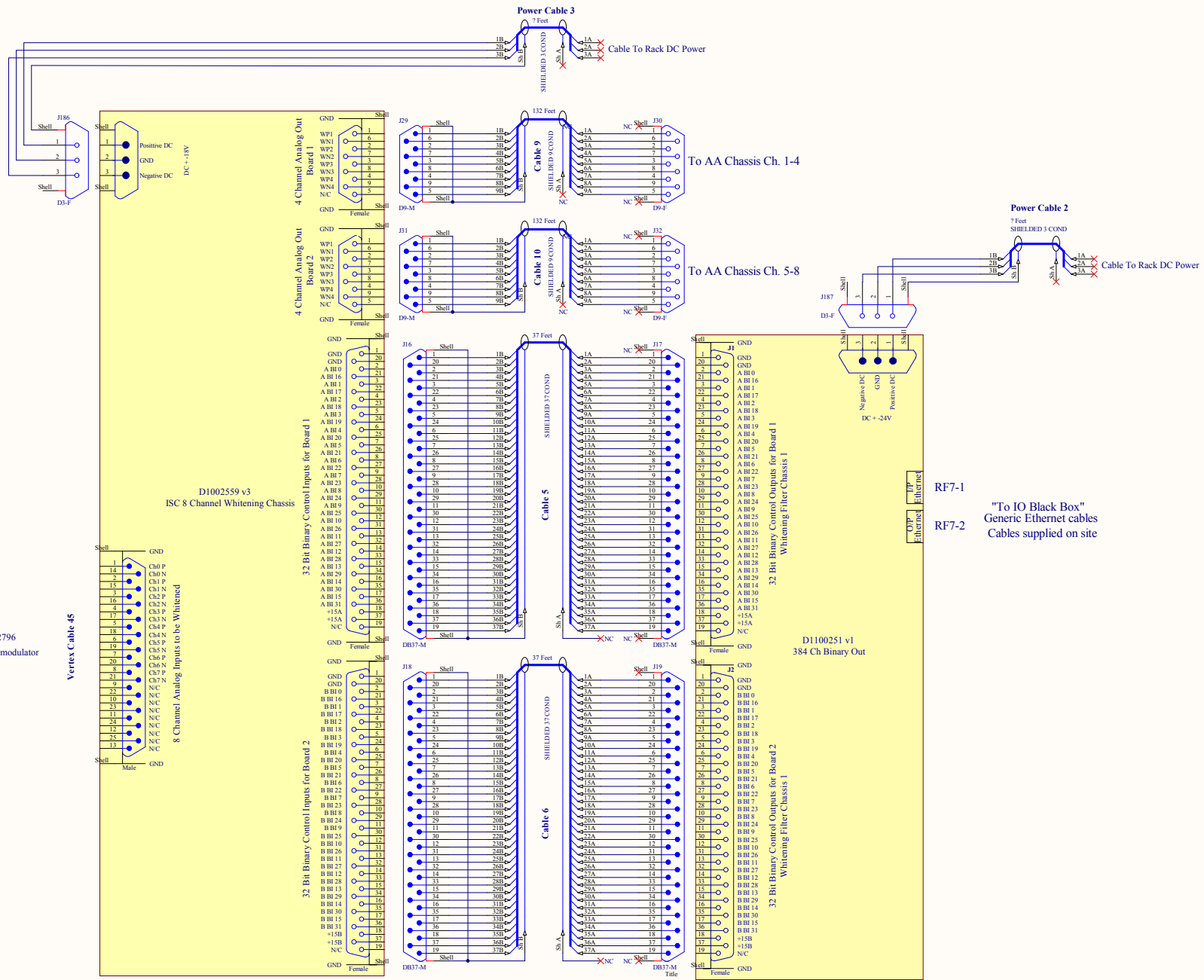
DIFF Outputs to ADC Adapter

Title		Vertex Anti-Aliasing Chassis		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		Last Edited: 1/16/2013	
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott S. Baker	LIGO		Date: 1/16/2013	Time: 1:46:42 PM
File: Vertex Anti-Aliasing Chassis 10.SchDoc						Sheet: 82 of 97	



Last Edited: 1/16/2013

Vertex Anti-Image Chassis			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	
File: Vertex Anti-Image Chassis 2.SchDoc				Time: 1:46:42 PM	
				Sheet 83 of 97	



"To IO Black Box"
Generic Ethernet cables
supplied on site

RF7-1
RF7-2

OP Ethernet
IP Ethernet

Cable From D0902796
Vertex 4 CH IQ RF Demodulator

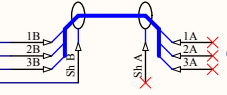
Field Rack

Remote Rack

Last Edited: 1/16/2013

Power Cable 20

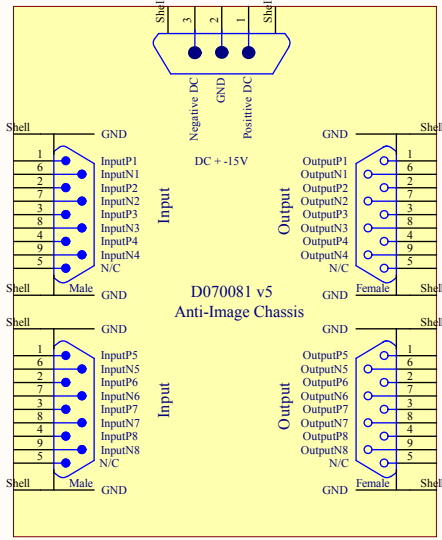
? Feet
SHIELDED 3 COND



Cable To Rack DC Power

Power Cable 21

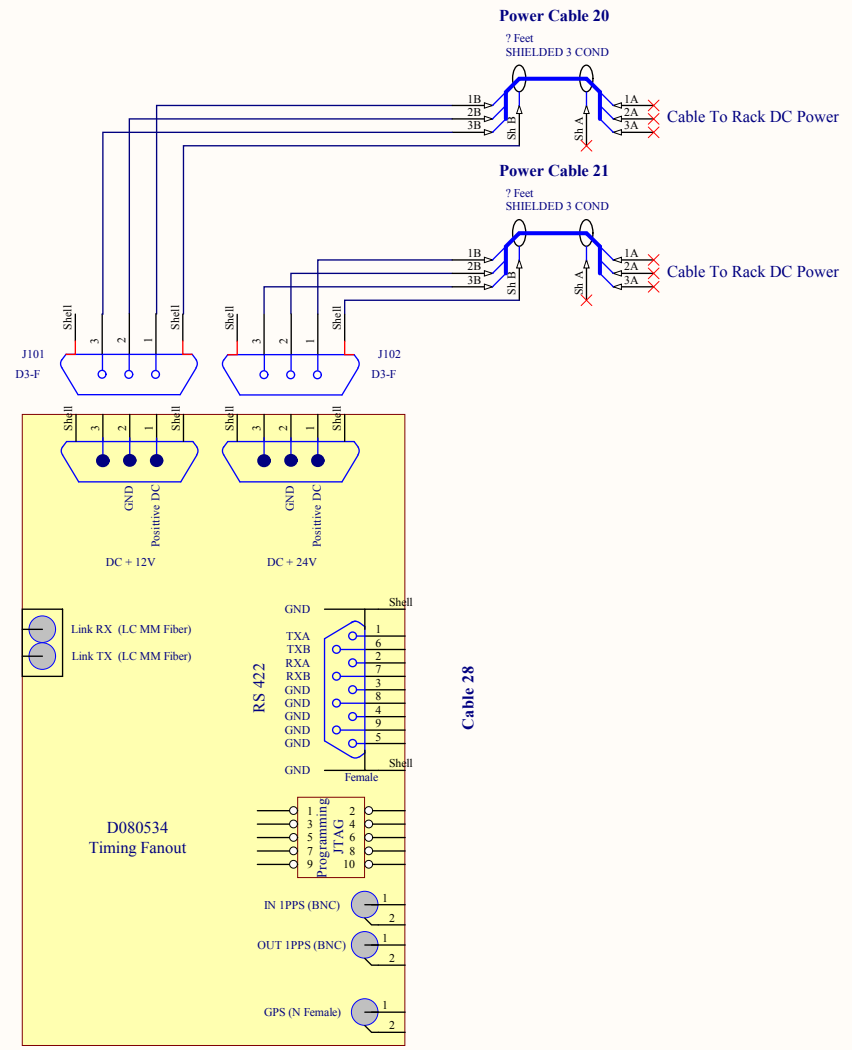
J?
D3-F



Cable 62

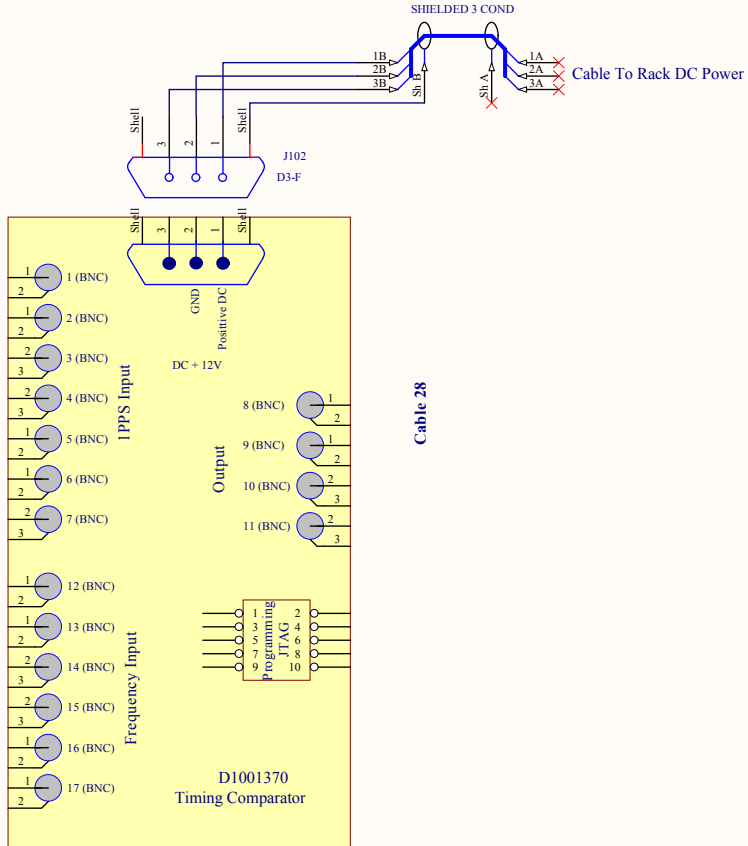
Last Edited: 1/16/2013

Vertex Anti-Image Chassis			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	
File: Vertex Anti-Image Chassis 3.SchDoc				Time: 1:46:42 PM	Sheet 85 of 97



Last Edited: 1/16/2013

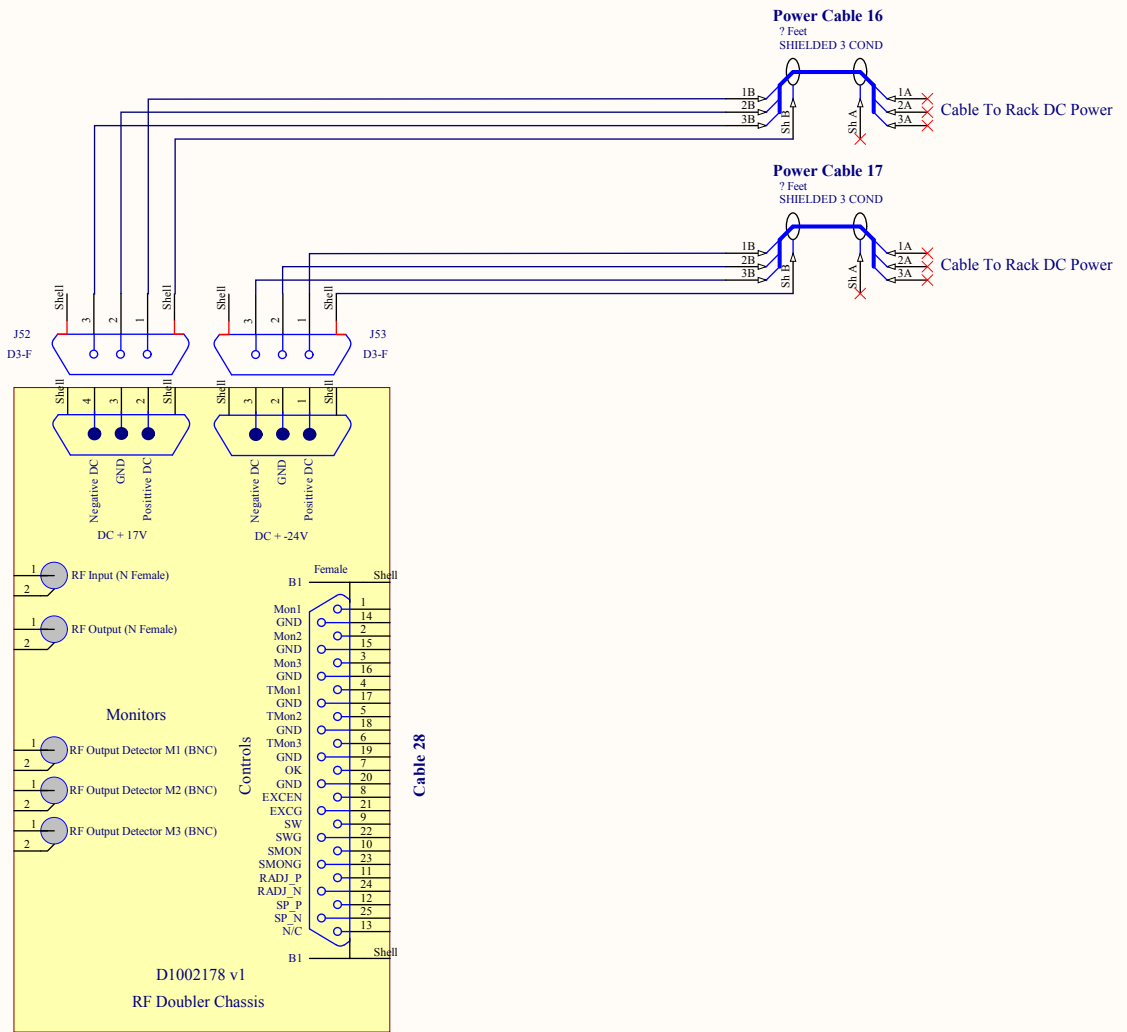
Vertex Timing Fanout			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013	
File: Vertex Timing Fanout I.SchDoc				Time: 1:46:42 PM	Sheet 86 of 97



Last Edited: 1/16/2013

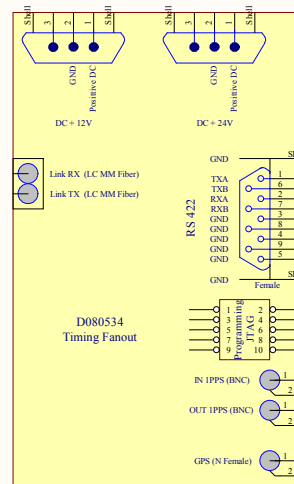
Vertex Timing Comparator			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	
File: Vertex Timing Comparator 1.SchDoc				Time: 1:46:42 PM	Sheet 87 of 97

VRF2-1 D0900605 AOM Driver to D0900760 Vertex Low Noise VCO



Last Edited: 1/16/2013

Vertex RF Frequency Divider			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013	Time: 1:46:42 PM
File: Vertex Frequency Doubler 1 SchDoc				Sheet 88 of 97	



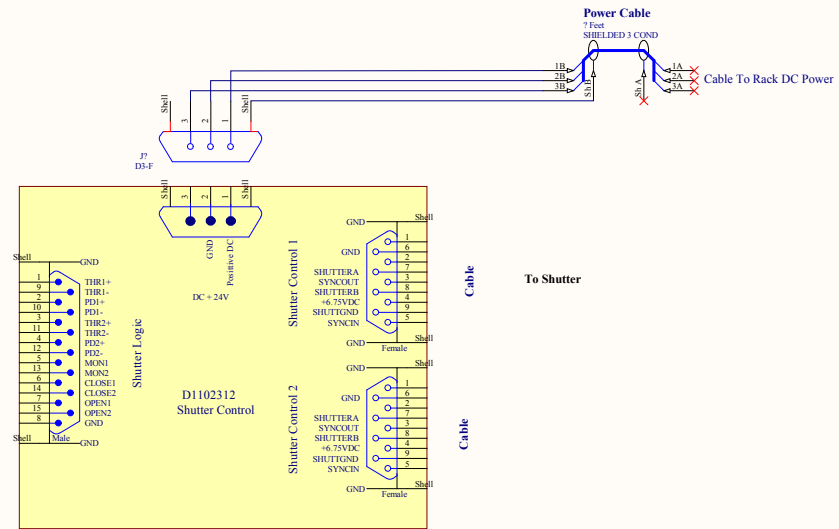
Cable 28

Last Edited: 1/16/2013

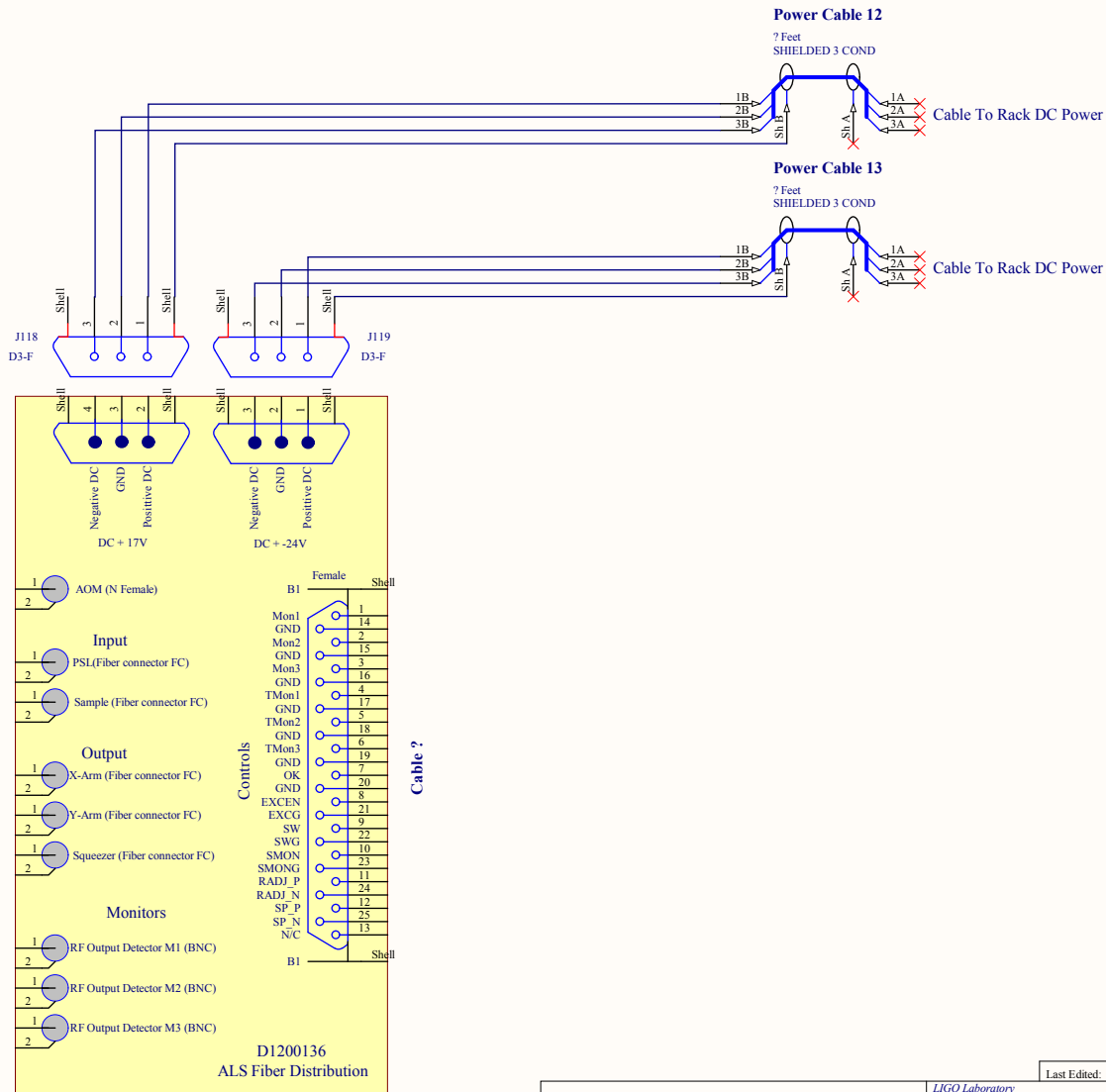
Title Vertex Controls Timing Fanout		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	Time: 1:46:43 PM
File: Vertex Controls Timing Fanout 1.SchDoc				Sheet: 9	of 97

To LSC Photodiode Interface

Cable 83

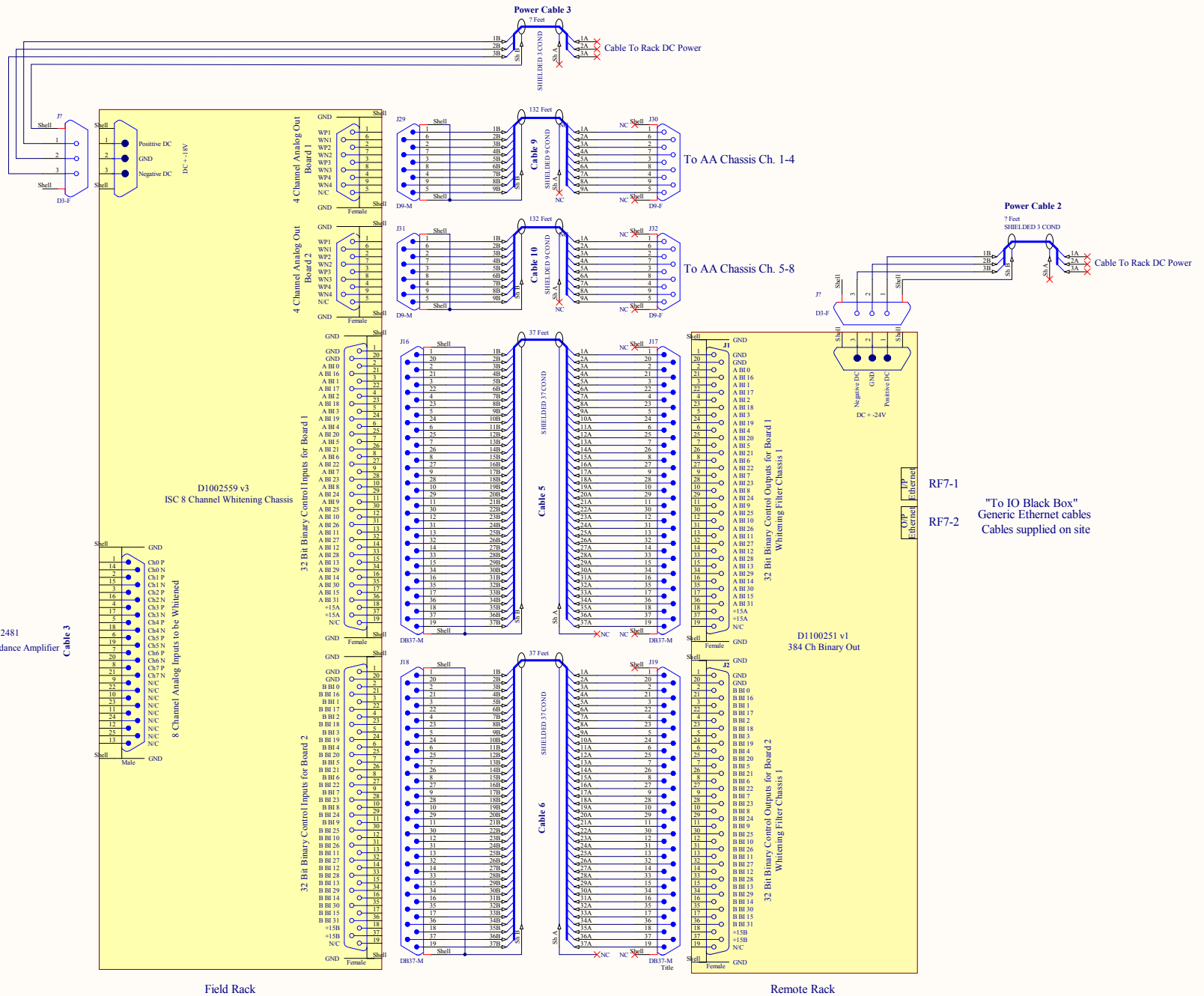


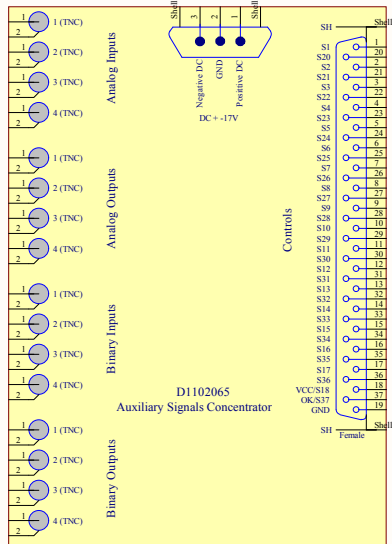
Title		Vertex Shutter Controller		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		Last Edited: 1/16/2013	
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013	LIGO		
File: Vertex Shutter Controller1.SchDoc				Time: 1:46:43 PM	Sheet 09 of 97		



Last Edited: 1/16/2013

ALS Fiber Distribution		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013
File: Vertex ALS Fiber Distribution 1.SchDoc				Time: 1:46:43 PM
				Sheet91 of 97





Last Edited: 1/16/2013

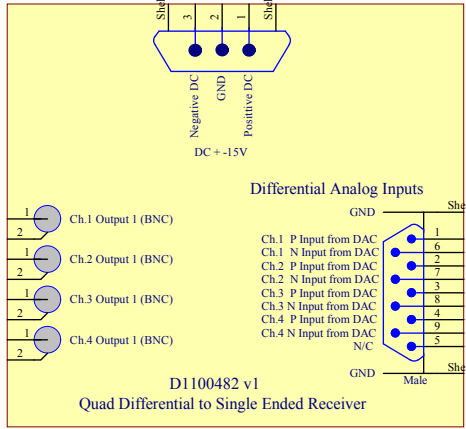
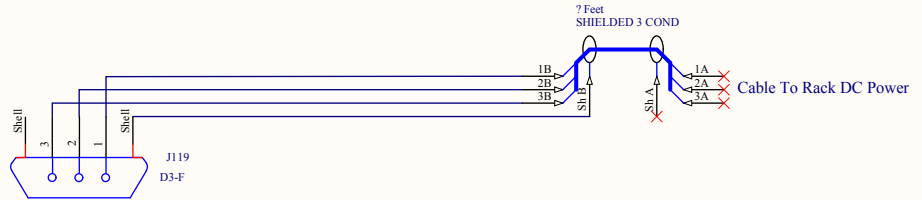
Title Vertex EtherCAT ISC common		LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO	
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013	Time: 1:40:43 PM
File: Vertex Auxiliary Signals Concentrator 1.SchDoc				Sheet 03 of 97	

Last Edited: 1/16/2013

Title		LIGO Laboratory		Last Edited: 1/16/2013	
Vertex Auxiliary Signals Concentrator 3		California Institute of Technology		LIGO	
Massachusetts Institute of Technology					
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013	Time: 1:40:43 PM
File: Vertex_Auxiliary_Signals_Concentrator_3_Sch1.Dwg				Sheet: 94 of 97	

Last Edited: 1/16/2013

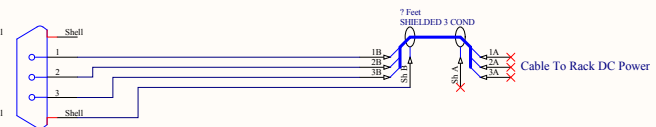
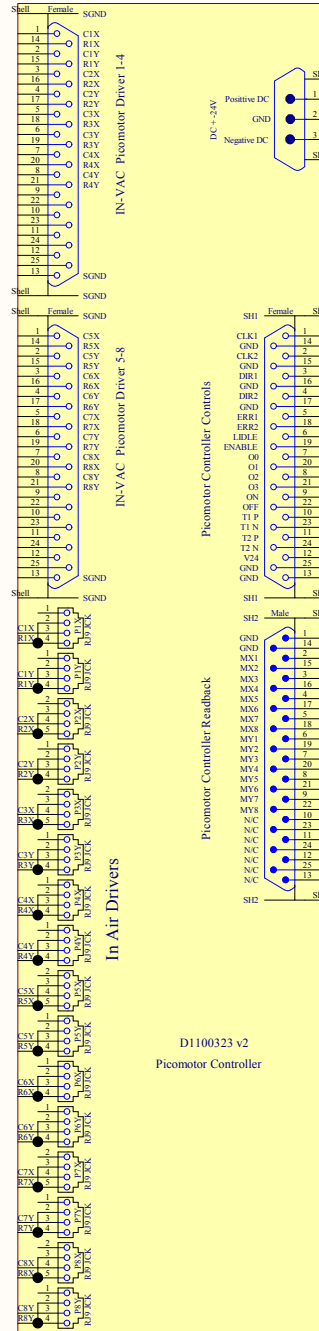
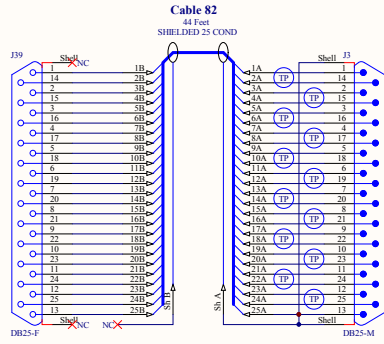
Title		LIGO Laboratory		Last Edited: 1/16/2013	
Vertex Auxiliary Signals Concentrator 4		California Institute of Technology		LIGO	
		Massachusetts Institute of Technology			
Size: C	DCC Number: D1200666	SCH / PCB Revision: V11	Engineer: R. Abbott/S. Baker	Date: 1/16/2013	Time: 1:40:43 PM
File: Vertex_Auxiliary_Signals_Concentrator_4_Sch1.Dwg				Sheet: 95 of 97	



Last Edited: 1/16/2013

Vertex Differential to Single Ended Converter			LIGO Laboratory California Institute of Technology Massachusetts Institute of Technology		LIGO
Size: B	DCC Number: D1200666	Revision: v11	Engineer: R. Abbott/S.Baker	Date: 1/16/2013	
File: Vertex Differential to Single Ended Converter 1.SchDoc				Time: 1:46:44 PM	Sheet96 of 97

To Picomotor Pairs
1,2,3 & 4 IN-VAC



To D1100682 v1 Ethercat End 2

To D1100682 v1 Ethercat End 2

Generic cables

Bill of Materials For Project [Veritas ISC electronics Wiring copy 8-24-12.Pptx] [No Pt]

Source Data From: Veritas ISC electronics Wiring copy 8-24-12.Pptx
 Project: Veritas ISC electronics Wiring copy 8-24-12.Pptx
 Variant: None

Creation Date: 1/26/2011 1:48:35 PM
 Print Date: 4/22/2012

Reqnum	Comment	Label	Designator	Description	Quantity
	SHIELDED 25 CABLE	SHIELDED 25 CABLE	SHIELDED 25	Cable 1, cable 2	25
	SHIELDED 3 CABLE	SHIELDED 3 CABLE	SHIELDED 3	Cable 3, cable 12, cable 22, cable 23, cable 24, cable 25, cable 26, cable 27, cable 28, cable 29, cable 30, cable 31, cable 32, cable 33, cable 34, cable 35, cable 36, cable 37, cable 38, cable 39, cable 40, cable 41, cable 42, cable 43, cable 44, cable 45, cable 46, cable 47, cable 48, cable 49, cable 50, cable 51, cable 52, cable 53, cable	25
	SHIELDED 37 CABLE	SHIELDED 37 CABLE	SHIELDED 37	Cable 9, cable 10	27
	SHIELDED 9 CONN	SHIELDED 9 CONN	SHIELDED 9	Cable 9, cable 10	27
	CONN	CONN	CONN	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 51, 52, 53, 54, 55, 56, 57, 58, 59, 60, 61, 62, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90, 91, 92, 93, 94, 95, 96, 97, 98, 99, 100, 101, 102, 103, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150	25
	325-M	325-M-Shd	325-M	25 Pin Male Cable End, D-Sub with Backshell	2
	327-M	327-M-Shd	327-M	27 Pin Male Cable End, D-Sub with Backshell	4
	01100201 v1 3M Channel Binary Out	01100201 v1 3M Channel Binary Out	01100201 v1	01100201 v1 3M Channel Binary Out	1
	328-M	328-M-Shd	328-M	28 Pin Male Cable End, D-Sub with Backshell	2
	329	329 v1-Shd	329 v1	29 Pin Female Cable End, D-Sub with Backshell	2
	329 v1	329 v1-Shd	329 v1	29 Pin Female Cable End, D-Sub with Backshell	2
	01100241 v1 Dual GPO Thermoplastic Amplifier	01100241 v1 Dual GPO Thermoplastic Amplifier	01100241 v1	01100241 v1 Dual GPO Thermoplastic Amplifier	1
	01100219 v1 RF Doubler	01100219 v1 RF Doubler	01100219 v1	01100219 v1 RF Doubler	1
	01100254 v1 RF Divider by 8	01100254 v1 RF Divider by 8	01100254 v1	01100254 v1 RF Divider by 8	1
	01100272 v1 RF Detector Source	01100272 v1 RF Detector Source	01100272 v1	01100272 v1 RF Detector Source	1
	01100209 v1 S-C Channel Whitening Channel	01100209 v1 S-C Channel Whitening Channel	01100209 v1	01100209 v1 S-C Channel Whitening Channel	10
	01100273 v1 Anti-Aliasing Channel	01100273 v1 Anti-Aliasing Channel	01100273 v1	01100273 v1 Anti-Aliasing Channel	10
	01100209 v1 S-C Channel Whitening Channel	01100209 v1 S-C Channel Whitening Channel	01100209 v1	01100209 v1 S-C Channel Whitening Channel	10
	01100273 v1 Anti-Aliasing Channel	01100273 v1 Anti-Aliasing Channel	01100273 v1	01100273 v1 Anti-Aliasing Channel	10
	01100287 v1 CH Cable Driver	01100287 v1 CH Cable Driver	01100287 v1	01100287 v1 CH Cable Driver	4
	01100798 v1 4 CH IQ RF Demodulator LSC	01100798 v1 4 CH IQ RF Demodulator LSC	01100798 v1	01100798 v1 4 CH IQ RF Demodulator LSC	4
	01100805 v1 Pulch Controlled Detector	01100805 v1 Pulch Controlled Detector	01100805 v1	01100805 v1 Voltage Controlled Oscillator	4
	00001781 Common Mode Sense	00001781 Common Mode Sense	00001781	00001781 Common Mode Sense	4
	01100501 Controls Demodulator LSC	01100501 Controls Demodulator LSC	01100501	01100501 Controls Concentrator RF Demodulator	3
	01100506 Controls Concentrator ASC	01100506 Controls Concentrator ASC	01100506	01100506 Controls Concentrator ASC Demodulator	3
	01100506 Controls Concentrator ASC RF	01100506 Controls Concentrator ASC RF	01100506	01100506 Controls Concentrator ASC RF Demodulator	2
	01100501 Controls Demodulator LSC RF	01100501 Controls Demodulator LSC RF	01100501	01100501 Controls Concentrator LSC RF Demodulator	1
	0000128 v1 Delay Line Phase Shifter	0000128 v1 Delay Line Phase Shifter	0000128 v1	0000128 v1 Delay Line Phase Shifter	3
	01000101 v1 FET ID Demodulator	01000101 v1 FET ID Demodulator	01000101 v1	01000101 v1 FET ID Demodulator	1
	01000202 v1 Generic Interface for S-C Tables	01000202 v1 Generic Interface for S-C Tables	01000202 v1	01000202 v1 Generic Interface for S-C Tables	1
	0200 v1 Spectrum Measure Harmonic	0200 v1 Spectrum Measure Harmonic	0200 v1	0200 v1 Spectrum Measure Harmonic Generator	1
	01000730 Low Noise Power Supply	01000730 Low Noise Power Supply	01000730	01000730 Low Noise Power Supply	1
	01100270 v1 Legacy WFS Interface Module	01100270 v1 Legacy WFS Interface Module	01100270 v1	01100270 v1 LSC WFS Interface	1
	01002476 v1 Phase Frequency Discriminator	01002476 v1 Phase Frequency Discriminator	01002476 v1	01002476 v1 Phase Frequency Discriminator	1
	01100232 v1 Pilot Distribution Amp	01100232 v1 Pilot Distribution Amp	01100232 v1	01100232 v1 Pilot Distribution Amp	1
	01101006 v1 WFS Interface	01101006 v1 WFS Interface	01101006 v1	01101006 v1 WFS Interface	1
	01000138 v1 Whitening Filter Amplifier	01000138 v1 Whitening Filter Amplifier	01000138 v1	01000138 v1 Whitening Filter Amplifier	1
	01000138 v1 Whitening Filter Amplifier	01000138 v1 Whitening Filter Amplifier	01000138 v1	01000138 v1 Whitening Filter Amplifier	1
	01100081 EthernetCAT Corner Station 3	01100081 EthernetCAT Corner Station 3	01100081	01100081 EthernetCAT Corner Station 3	1
	01101006 EthernetCAT Corner Station 4	01101006 EthernetCAT Corner Station 4	01101006	01101006 EthernetCAT Corner Station 4	1
	01100205 Auxiliary Signals Concentrator	01100205 Auxiliary Signals Concentrator	01100205	01100205 Auxiliary Signals Concentrator	1
	01100212 Shifter Control	01100212 Shifter Control	01100212	01100212 Shifter Control	1
	01100212 EthernetCAT Corner Station 5	01100212 EthernetCAT Corner Station 5	01100212	01100212 EthernetCAT Corner Station 5	1
	01200136 ALS Filter Distribution	01200136 ALS Filter Distribution	01200136 ALS	01200136 ALS Filter Distribution	1
	01100205 EthernetCAT Corner Station 5	01100205 EthernetCAT Corner Station 5	01100205	01100205 EthernetCAT common	1
	01100282 Controls Concentrator RF Amp	01100282 Controls Concentrator RF Amp	01100282	01100282 Controls Concentrator RF Amp	1
	01100482 v1 Dual Differential to Single Ended Receiver	01100482 v1 Dual Differential to Single Ended Receiver	01100482 v1	01100482 v1 Dual Differential to Single Ended Receiver	1
	01100080 EthernetCAT Corner 2	01100080 EthernetCAT Corner 2	01100080	01100080 EthernetCAT End 2	1

Approved: _____ Notes: _____