
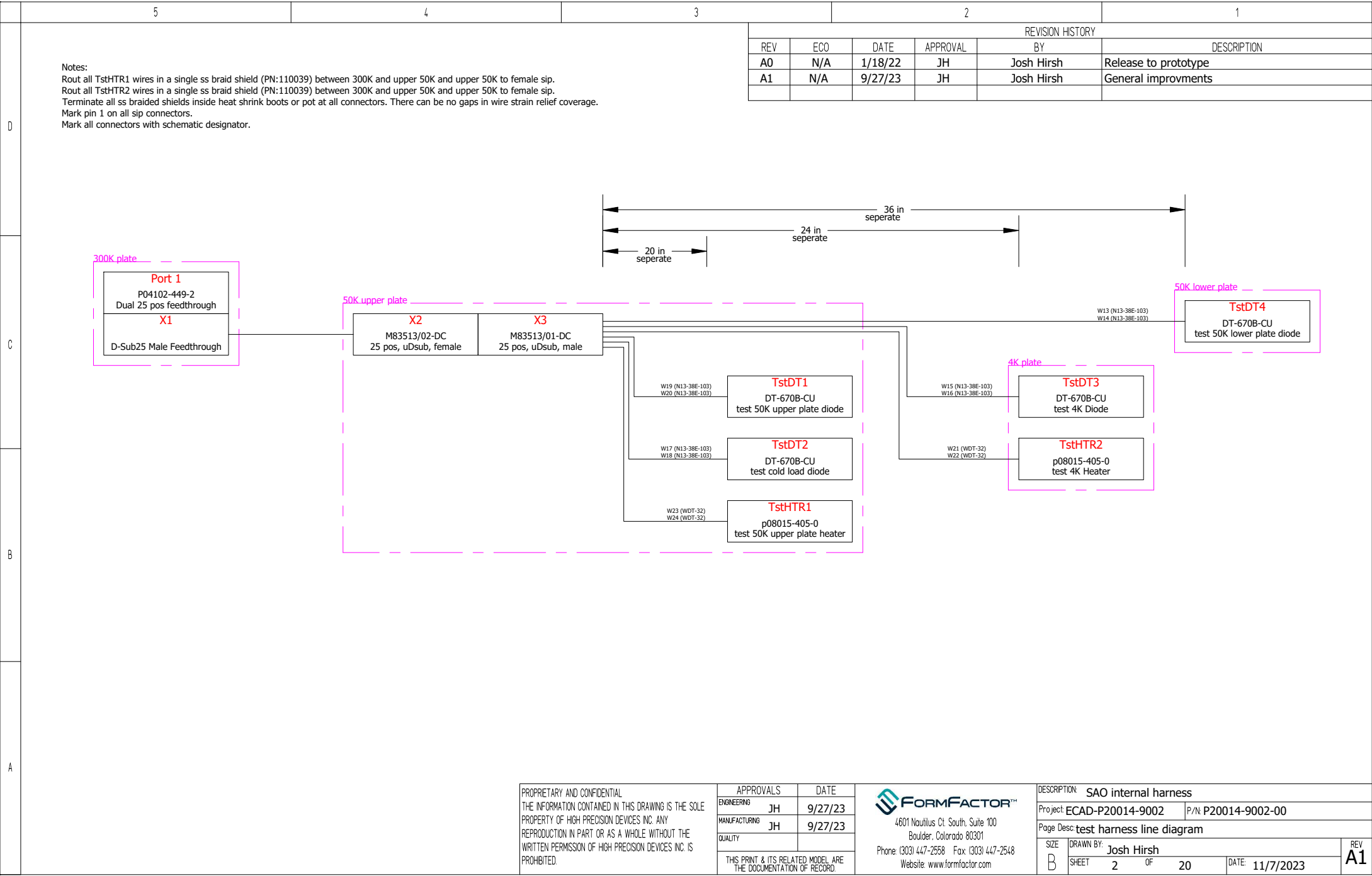
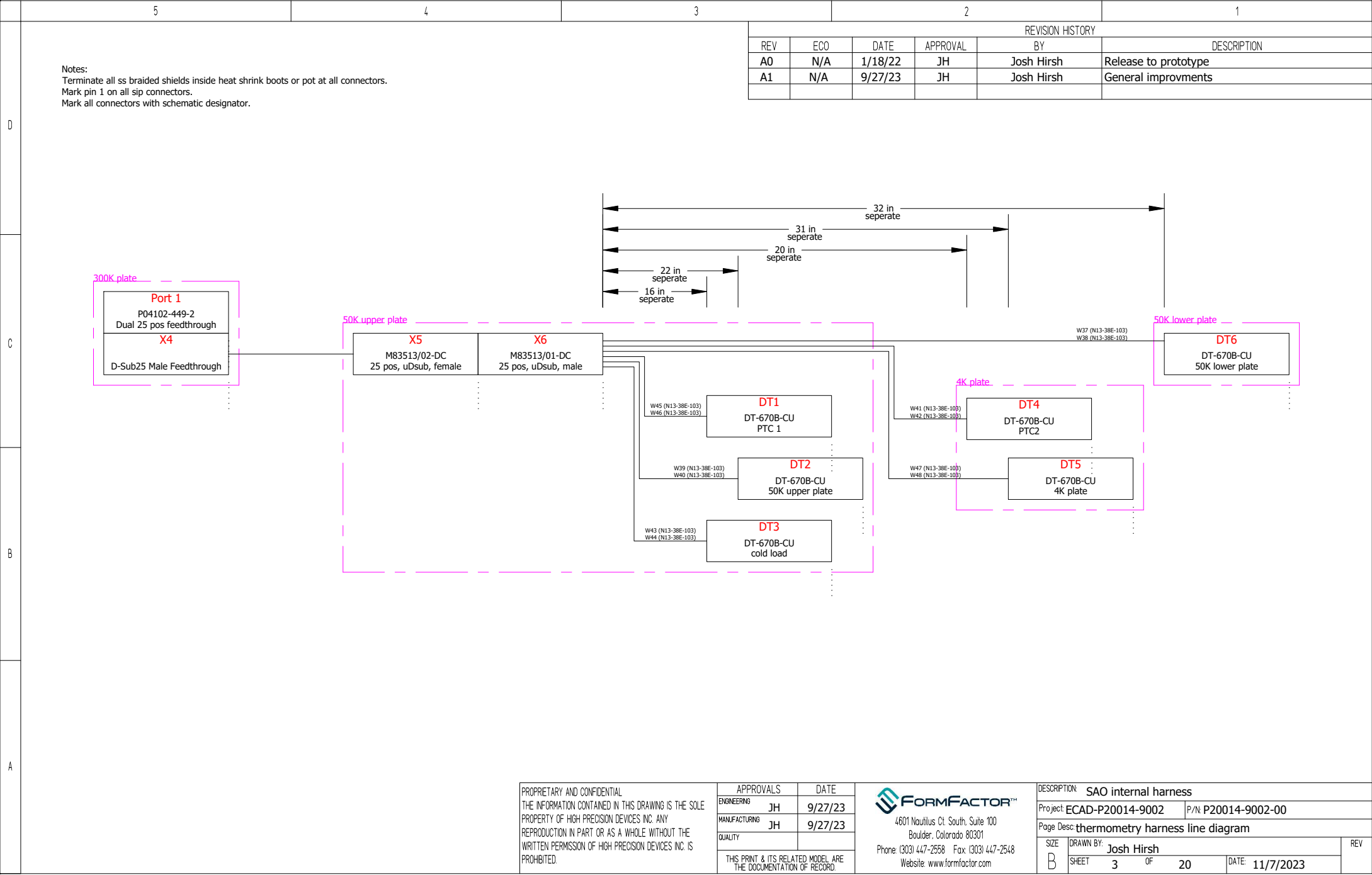
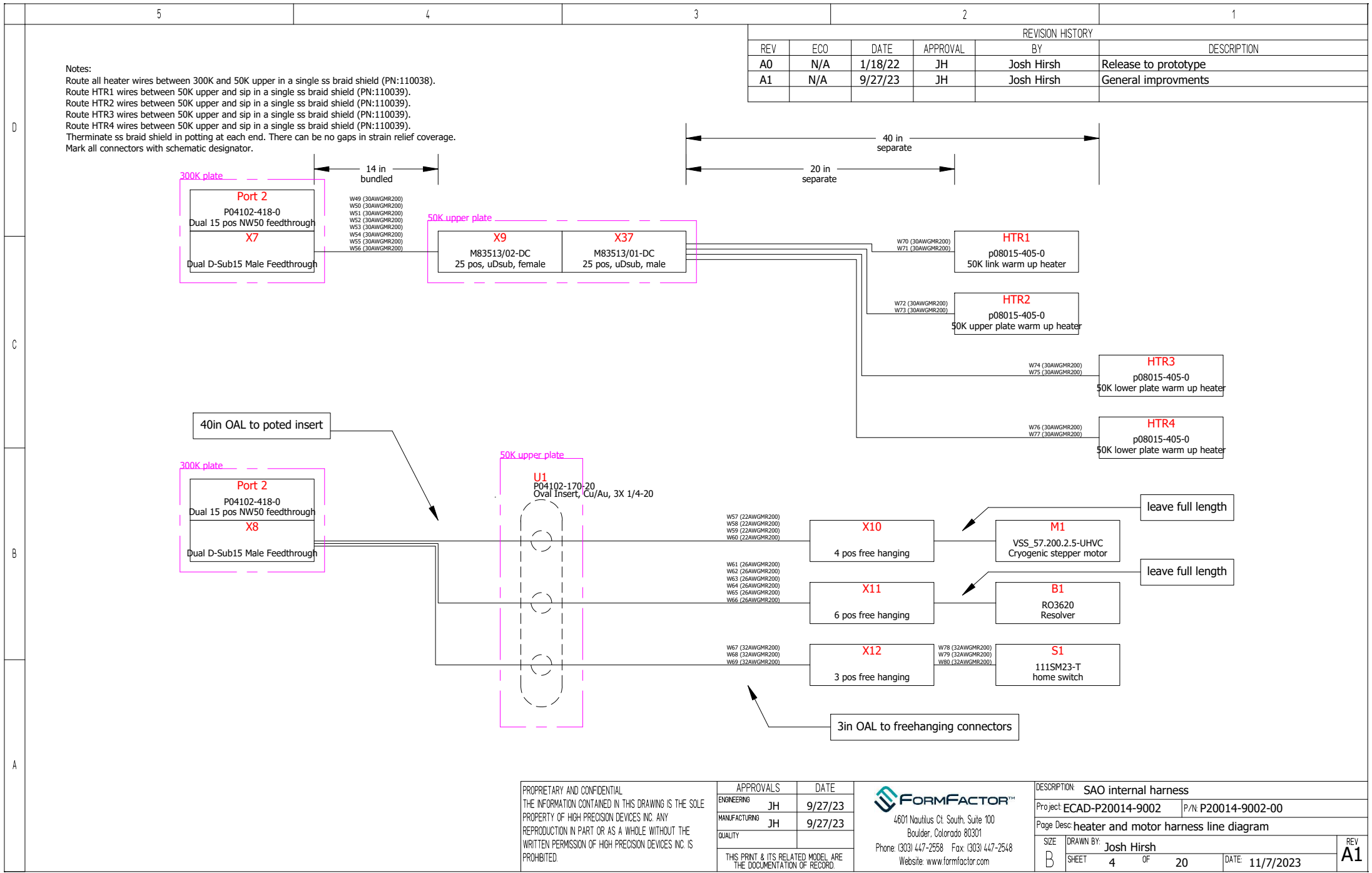


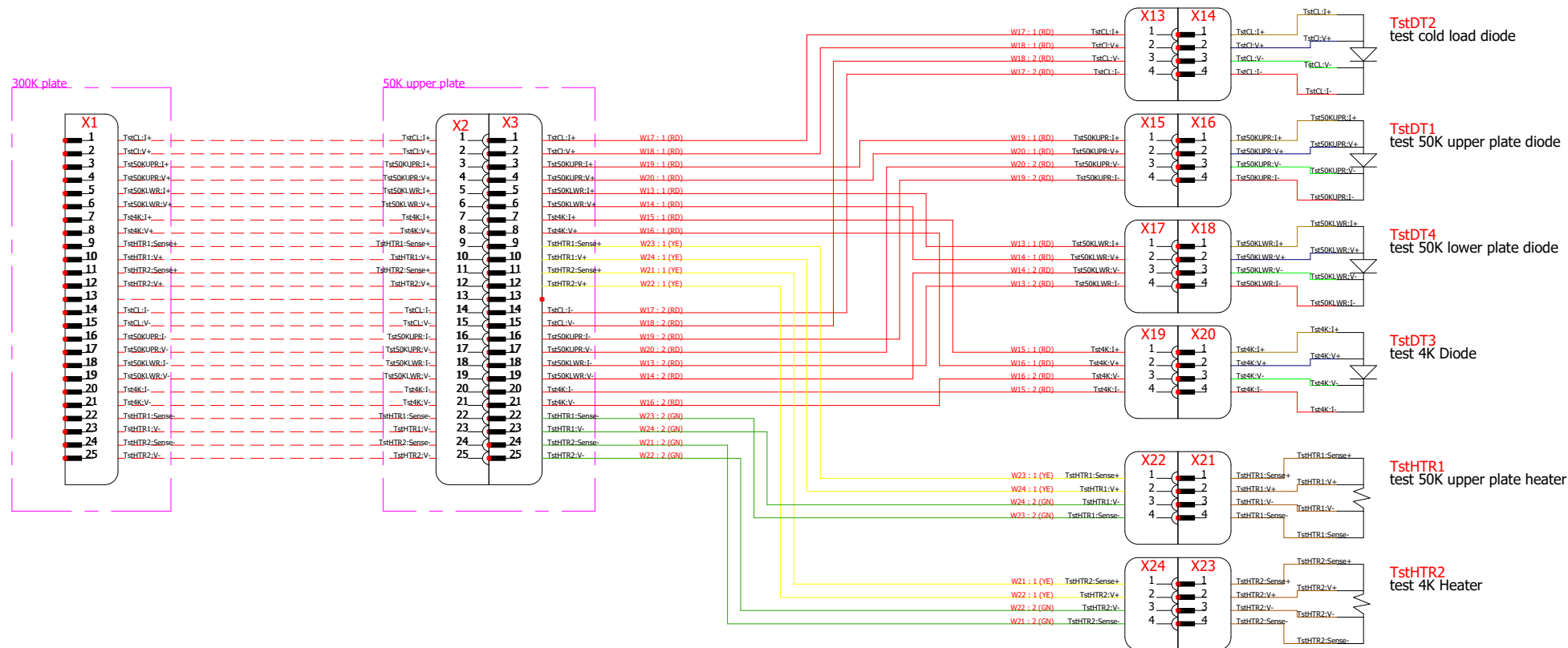
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D	P20014-9002-00 SAO internal harness	QA Testing: All pins must be checked for continuity and shorts against the design.	REVISION HISTORY					
			REV	ECO	DATE	APPROVAL	BY	DESCRIPTION
			A0	N/A	1/18/22	JH	Josh Hirsh	Release to prototype
C			A1	N/A	9/27/23	JH	Josh Hirsh	General improvments
	Drawing Index							
B	Drawing Name	Drawing Description						
	P20014-9002-00: 1	Cover Page						
	P20014-9002-00: 2	test harness line diagram						
	P20014-9002-00: 3	thermometry harness line diagram						
	P20014-9002-00: 4	heater and motor harness line diagr...						
	P20014-9002-00: 5	test harness schematic						
	P20014-9002-00: 6	thermometry harness schematic						
	P20014-9002-00: 7	warm up heaters schematic						
	P20014-9002-00: 8	selector wheel schematic						
	P20014-9002-00: 9	Build Report						
	P20014-9002-00: 10	Build Report						
	P20014-9002-00: 11	Build Report						
	P20014-9002-00: 12	Build Report						
	P20014-9002-00: 13	Build Report						
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	P20014-9002-00: 15	Build Report						
	P20014-9002-00: 16	Build Report						
	P20014-9002-00: 17	Build Report						
	P20014-9002-00: 18	Build Report						
	P20014-9002-00: 22	BOM						
	P20014-9002-00: 23	BOM						
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		SIZE B	DRAWN BY: SHEET 1 OF 20	DATE: 11/7/2023	REV A1			







REV	ECO	DATE	APPROVAL	BY	DESCRIPTION
A0	N/A	1/18/22	JH	Josh Hirsh	Release to prototype
A1	N/A	9/27/23	JH	Josh Hirsh	General improvements



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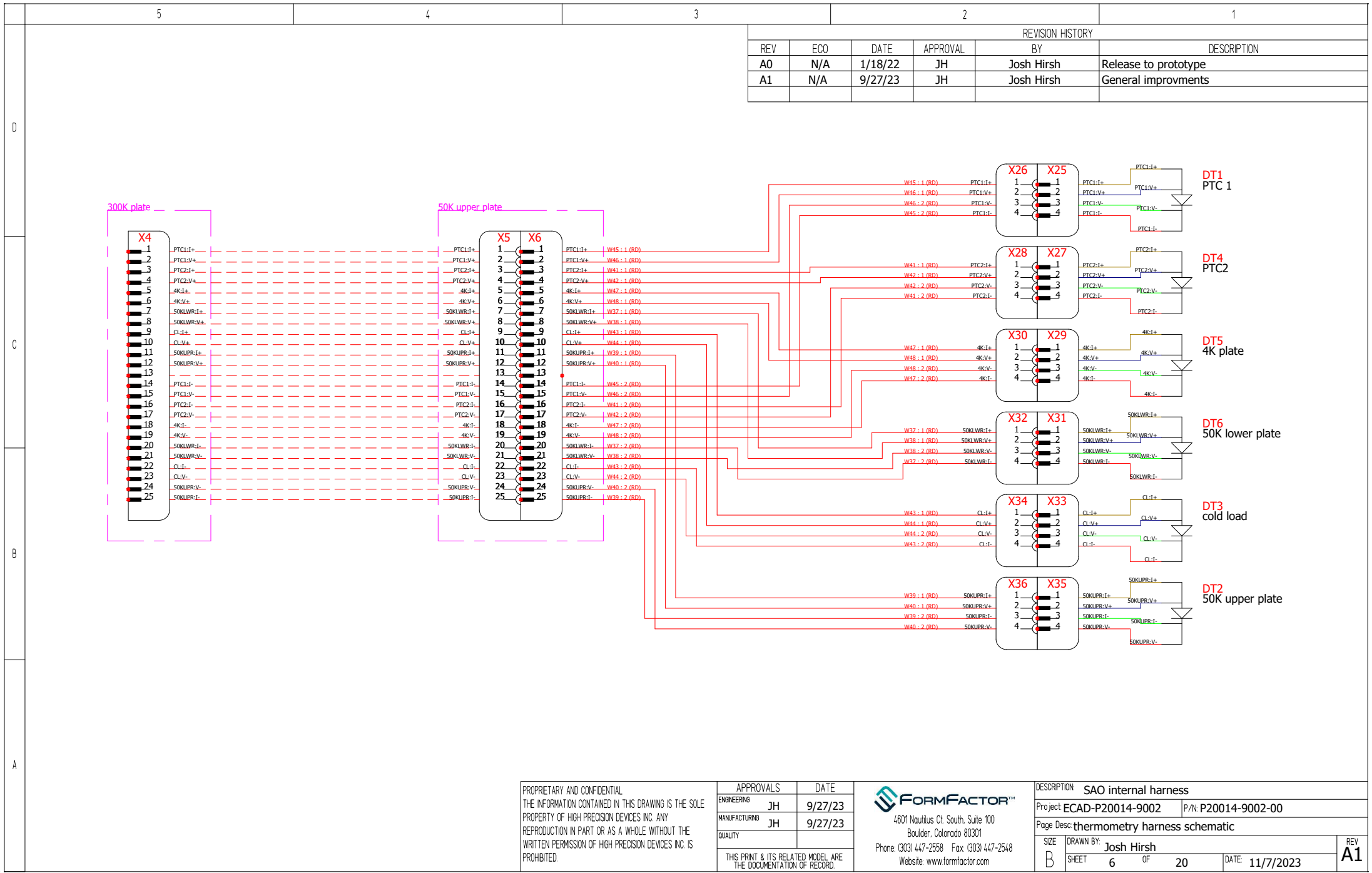
APPROVALS		DATE
ENGINEERING	JH	9/27/23
MANUFACTURING	JH	9/27/23
QUALITY		

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Website: www.formfactor.com

DESCRIPTION: SAO internal harness	
Project: ECAD-P20014-9002	P/N: P20014-9002-00
Page Desc: test harness schematic	

SIZE B	DRAWN BY: Josh Hirsh		REV A1
	SHEET 5 OF 20	DATE: 11/7/2023	

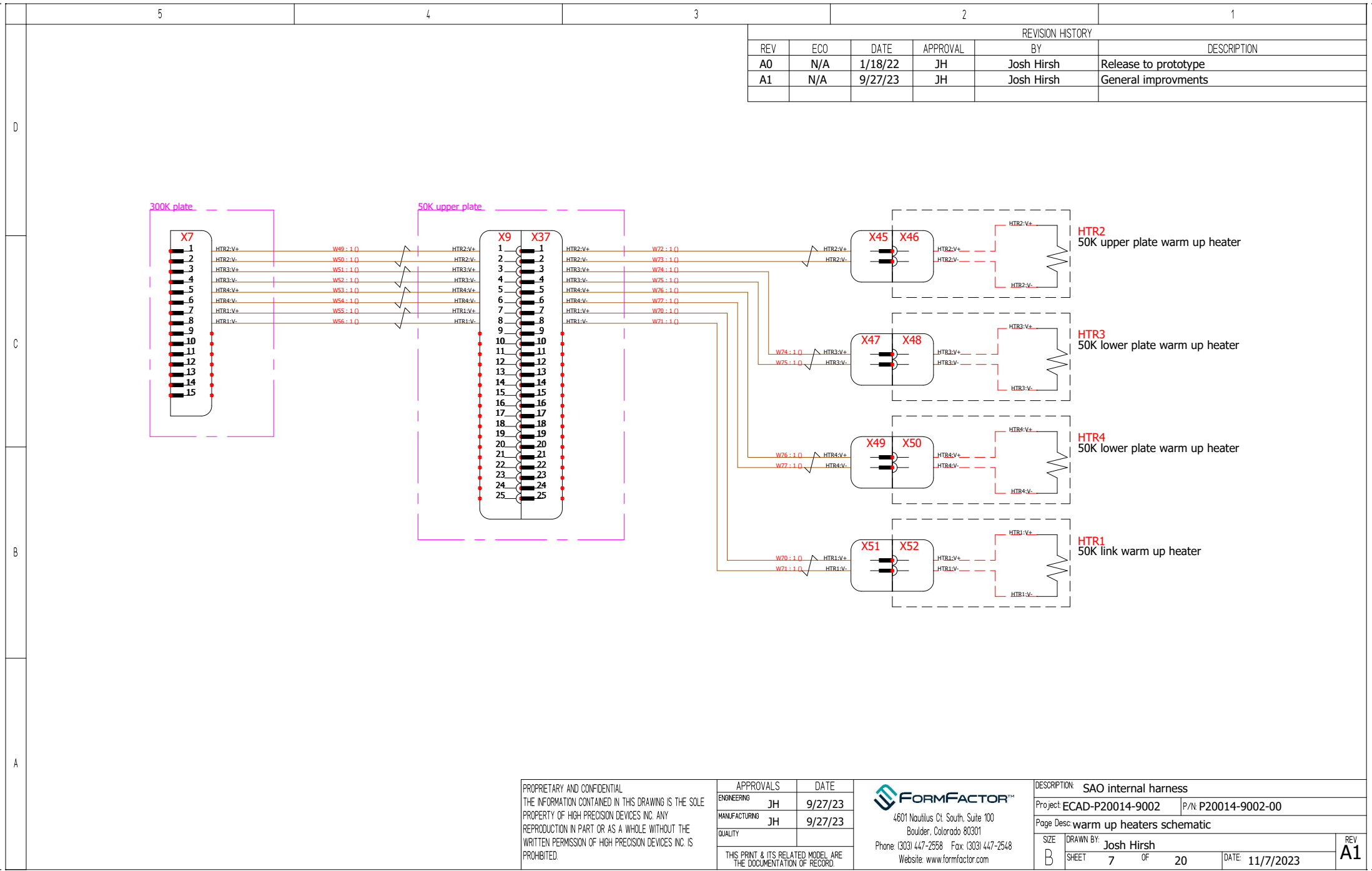


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DESCRIPTION: SAO internal harness				
Project: ECAD-P20014-9002		P/N: P20014-9002-00		
Page Desc: thermometry harness schematic				
SIZE	DRAWN BY: Josh Hirsh			REV: A1
B	SHEET 6 OF 20	DATE: 11/7/2023		

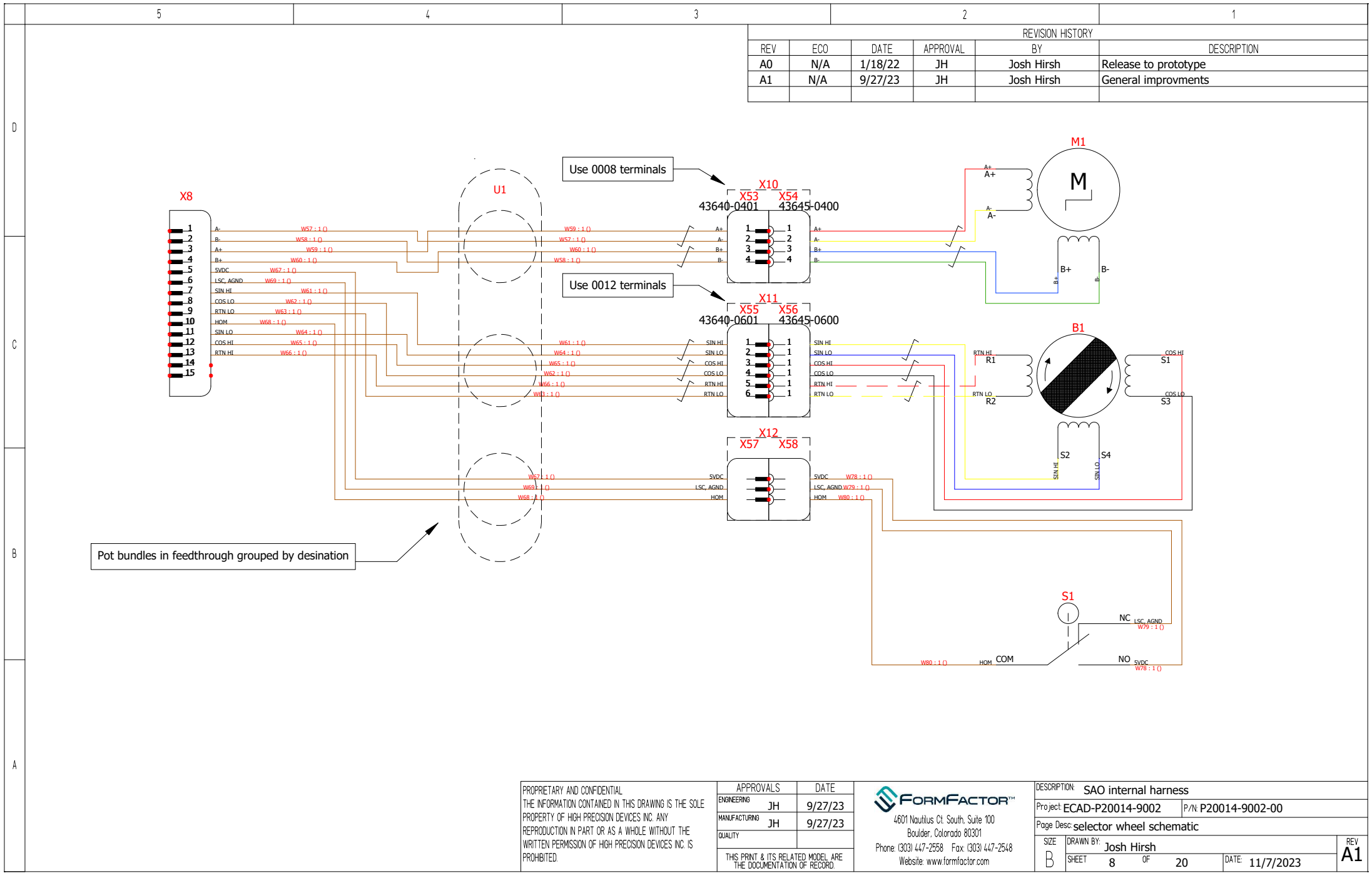


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Website: www.formfactor.com

DESCRIPTION: SAO internal harness			
Project: ECAD-P20014-9002		P/N: P20014-9002-00	
Page Desc: warm up heaters schematic			
SIZE: B	DRAWN BY: Josh Hirsh		REV: A1
SHEET: 7	OF: 20	DATE: 11/7/2023	




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Website: www.formfactor.com

DESCRIPTION: SAO internal harness	
Project: ECAD-P20014-9002	P/N: P20014-9002-00
Page Desc: selector wheel schematic	
SIZE B	DRAWN BY: Josh Hirsh
SHEET 8	OF 20
DATE: 11/7/2023	REV A1


		5	4	3	2	1							
D						REVISION HISTORY							
						REV	ECO	DATE	APPROVAL	BY	DESCRIPTION		
						A0	N/A	1/18/22	JH	Josh Hirsh	Release to prototype		
						A1	N/A	9/27/23	JH	Josh Hirsh	General improvements		
C		B1											
		Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal		
		B1 : R1	Resolver					-	X56 : 1	RCPT	RTN HI		
		B1 : R2	Resolver					-	X56 : 1	RCPT	RTN LO		
		B1 : S1	Resolver					-	X56 : 1	RCPT	COS HI		
		B1 : S2	Resolver					-	X56 : 1	RCPT	SIN HI		
		B1 : S3	Resolver					-	X56 : 1	RCPT	COS LO		
B1 : S4	Resolver					-	X56 : 1	RCPT	SIN LO				
B		DT1											
		Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal		
		DT1 : I-	PTC 1					3.0 (in)	X25	4 pos, sip, male	PTC1:I-		
		DT1 : I+	PTC 1					3.0 (in)	X25	4 pos, sip, male	PTC1:I+		
		DT1 : V-	PTC 1					3.0 (in)	X25	4 pos, sip, male	PTC1:V-		
DT1 : V+	PTC 1					3.0 (in)	X25	4 pos, sip, male	PTC1:V+				
A		DT2											
		Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal		
		DT2 : I-	50K upper plate					3.0 (in)	X35	4 pos, sip, male	50KUPR:V-		
		DT2 : I+	50K upper plate					3.0 (in)	X35	4 pos, sip, male	50KUPR:I+		
		DT2 : V-	50K upper plate					3.0 (in)	X35	4 pos, sip, male	50KUPR:I-		
DT2 : V+	50K upper plate					3.0 (in)	X35	4 pos, sip, male	50KUPR:V+				
		DT3											
		Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal		
		DT3 : I-	cold load					3.0 (in)	X33	4 pos, sip, male	CL:I-		
		DT3 : I+	cold load					3.0 (in)	X33	4 pos, sip, male	CL:I+		
		DT3 : V-	cold load					3.0 (in)	X33	4 pos, sip, male	CL:V-		
DT3 : V+	cold load					3.0 (in)	X33	4 pos, sip, male	CL:V+				
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[illegible]

	5	4	3	2	1						
D					REVISION HISTORY						
					REV	ECO	DATE	APPROVAL	BY	DESCRIPTION	
					A0	N/A	1/18/22	JH	Josh Hirsh	Release to prototype	
					A1	N/A	9/27/23	JH	Josh Hirsh	General improvements	
S1	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	S1 : NO	home switch	32AWGMR200	W78	1		20.0 (in)	X58	3 pos sip rcpt	5VDC	
	S1 : NC	home switch	32AWGMR200	W79	1		20.0 (in)	X58	3 pos sip rcpt	LSC, AGND	
	S1 : COM	home switch	32AWGMR200	W80	1		20.0 (in)	X58	3 pos sip rcpt	HOM	
C	TstDT1										
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	TstDT1	test 50K upper plate diode					-	X16	4 pos, sip, male	Tst50KUPR:I+	
	TstDT1	test 50K upper plate diode					-	X16	4 pos, sip, male	Tst50KUPR:V+	
	TstDT1	test 50K upper plate diode					-	X16	4 pos, sip, male	Tst50KUPR:V-	
	TstDT1	test 50K upper plate diode					-	X16	4 pos, sip, male	Tst50KUPR:I-	
B	TstDT2										
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	TstDT2	test cold load diode					-	X14	4 pos, sip, male	TstCL:I+	
	TstDT2	test cold load diode					-	X14	4 pos, sip, male	TstCL:V+	
	TstDT2	test cold load diode					-	X14	4 pos, sip, male	TstCL:V-	
	TstDT2	test cold load diode					-	X14	4 pos, sip, male	TstCL:I-	
A	TstDT3										
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	TstDT3	test 4K Diode					-	X20	4 pos, sip, male	Tst4K:I+	
	TstDT3	test 4K Diode					-	X20	4 pos, sip, male	Tst4K:V+	
	TstDT3	test 4K Diode					-	X20	4 pos, sip, male	Tst4K:V-	
	TstDT3	test 4K Diode					-	X20	4 pos, sip, male	Tst4K:I-	
TstDT4											
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	TstDT4	test 50K lower plate diode					-	X18	4 pos, sip, male	Tst50KLWR:I+	
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				THIS PRINT & ITS RELATED MODEL ARE THE DOCUMENTATION OF RECORD.		SIZE B		DRAWN BY: Josh Hirsh SHEET 11 OF 20		DATE: 11/7/2023 REV A1	

	5		4		3		2		1							
							REVISION HISTORY									
							REV	ECO	DATE	APPROVAL	BY	DESCRIPTION				
							A0	N/A	1/18/22	JH	Josh Hirsh	Release to prototype				
							A1	N/A	9/27/23	JH	Josh Hirsh	General improvments				
-> TstDT4																
D	Origin Connector : Pin		Origin Description		Cable		Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin		Destination Description		Signal	
	TstDT4		test 50K lower plate diode							-	X18		4 pos, sip, male		Tst50KLWR:V+	
	TstDT4		test 50K lower plate diode							-	X18		4 pos, sip, male		Tst50KLWR:V-	
	TstDT4		test 50K lower plate diode							-	X18		4 pos, sip, male		Tst50KLWR:I-	
TstHTR2																
C	Origin Connector : Pin		Origin Description		Cable		Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin		Destination Description		Signal	
	TstHTR2		test 4K Heater							-	X23		4 pos, sip, male		TstHTR2:Sense+	
	TstHTR2		test 4K Heater							-	X23		4 pos, sip, male		TstHTR2:V+	
	TstHTR2		test 4K Heater							-	X23		4 pos, sip, male		TstHTR2:V-	
	TstHTR2		test 4K Heater							-	X23		4 pos, sip, male		TstHTR2:Sense-	
X6																
B	Origin Connector : Pin		Origin Description		Cable		Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin		Destination Description		Signal	
	X6 : 3		25 pos, uDsub, male		EW/N13-38E-103		W41	1	RD	20.0 (in)	X28		4 pos, sip, female		PTC2:I+	
	X6 : 16		25 pos, uDsub, male		EW/N13-38E-103		W41	2	RD	20.0 (in)	X28		4 pos, sip, female		PTC2:I-	
	X6 : 4		25 pos, uDsub, male		EW/N13-38E-103		W42	1	RD	20.0 (in)	X28		4 pos, sip, female		PTC2:V+	
	X6 : 17		25 pos, uDsub, male		EW/N13-38E-103		W42	2	RD	20.0 (in)	X28		4 pos, sip, female		PTC2:V-	
	X6 : 1		25 pos, uDsub, male		EW/N13-38E-103		W45	1	RD	16.0 (in)	X26		4 pos, sip, female		PTC1:I+	
	X6 : 14		25 pos, uDsub, male		EW/N13-38E-103		W45	2	RD	16.0 (in)	X26		4 pos, sip, female		PTC1:I-	
	X6 : 2		25 pos, uDsub, male		EW/N13-38E-103		W46	1	RD	16.0 (in)	X26		4 pos, sip, female		PTC1:V+	
	X6 : 15		25 pos, uDsub, male		EW/N13-38E-103		W46	2	RD	16.0 (in)	X26		4 pos, sip, female		PTC1:V-	
	X6 : 5		25 pos, uDsub, male		EW/N13-38E-103		W47	1	RD	31.0 (in)	X30		4 pos, sip, female		4K:I+	
	X6 : 18		25 pos, uDsub, male		EW/N13-38E-103		W47	2	RD	31.0 (in)	X30		4 pos, sip, female		4K:I-	
	X6 : 6		25 pos, uDsub, male		EW/N13-38E-103		W48	1	RD	31.0 (in)	X30		4 pos, sip, female		4K:V+	
	X6 : 19		25 pos, uDsub, male		EW/N13-38E-103		W48	2	RD	31.0 (in)	X30		4 pos, sip, female		4K:V-	
A																

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		ENGINEERING	JH	9/27/23	
		MANUFACTURING	JH	9/27/23	
		QUALITY			
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 4601 Nautilus Ct. South, Suite 100 Boulder, Colorado 80301 Phone: (303) 447-2558 Fax: (303) 447-2548 Website: www.formfactor.com		DESCRIPTION: SAO internal harness	
		Project: ECAD-P20014-9002 P/N: P20014-9002-00	
Page Desc: Build Report			
SIZE	DRAWN BY: Josh Hirsh	REV A1	
B	SHEET 12 OF 20		
		DATE: 11/7/2023	


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Website: www.formfactor.com

DESCRIPTION: SAO internal harness				
Project: ECAD-P20014-9002		P/N: P20014-9002-00		
Page Desc: Build Report				
SIZE	DRAWN BY: Josh Hirsh			REV
B	SHEET 12 OF 20			A1
	DATE: 11/7/2023			

	5	4	3	2	1																								
D	<div>REVISION HISTORY</div> <table><tr><td>REV</td><td>ECO</td><td>DATE</td><td>APPROVAL</td><td>BY</td><td>DESCRIPTION</td></tr><tr><td>A0</td><td>N/A</td><td>1/18/22</td><td>JH</td><td>Josh Hirsh</td><td>Release to prototype</td></tr><tr><td>A1</td><td>N/A</td><td>9/27/23</td><td>JH</td><td>Josh Hirsh</td><td>General improvements</td></tr><tr><td></td><td></td><td></td><td></td><td></td><td></td></tr></table>					REV	ECO	DATE	APPROVAL	BY	DESCRIPTION	A0	N/A	1/18/22	JH	Josh Hirsh	Release to prototype	A1	N/A	9/27/23	JH	Josh Hirsh	General improvements						
						REV	ECO	DATE	APPROVAL	BY	DESCRIPTION																		
						A0	N/A	1/18/22	JH	Josh Hirsh	Release to prototype																		
						A1	N/A	9/27/23	JH	Josh Hirsh	General improvements																		
C	X9																												
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal																			
	X9 : 1	25 pos, uDsub, female	30AWGMR200	W49	1		14.0 (in)	X7 : 1	Dual D-Sub15 Male Feedthrough	HTR2:V+																			
	X9 : 2	25 pos, uDsub, female	30AWGMR200	W50	1		14.0 (in)	X7 : 2	Dual D-Sub15 Male Feedthrough	HTR2:V-																			
	X9 : 3	25 pos, uDsub, female	30AWGMR200	W51	1		14.0 (in)	X7 : 3	Dual D-Sub15 Male Feedthrough	HTR3:V+																			
	X9 : 4	25 pos, uDsub, female	30AWGMR200	W52	1		14.0 (in)	X7 : 4	Dual D-Sub15 Male Feedthrough	HTR3:V-																			
	X9 : 5	25 pos, uDsub, female	30AWGMR200	W53	1		14.0 (in)	X7 : 5	Dual D-Sub15 Male Feedthrough	HTR4:V+																			
	X9 : 6	25 pos, uDsub, female	30AWGMR200	W54	1		14.0 (in)	X7 : 6	Dual D-Sub15 Male Feedthrough	HTR4:V-																			
B	X9 : 7	25 pos, uDsub, female	30AWGMR200	W55	1		14.0 (in)	X7 : 7	Dual D-Sub15 Male Feedthrough	HTR1:V+																			
	X9 : 8	25 pos, uDsub, female	30AWGMR200	W56	1		14.0 (in)	X7 : 8	Dual D-Sub15 Male Feedthrough	HTR1:V-																			
A	X13																												
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal																			
	X13	4 pos, sip, female	EW/N13-38E-103	W17	2	RD	20.0 (in)	X3 : 14	25 pos, uDsub, male	TstCL:I-																			
	X13	4 pos, sip, female	EW/N13-38E-103	W17	1	RD	20.0 (in)	X3 : 1	25 pos, uDsub, male	TstCL:I+																			
	X13	4 pos, sip, female	EW/N13-38E-103	W18	2	RD	20.0 (in)	X3 : 15	25 pos, uDsub, male	TstCL:V-																			
	X13	4 pos, sip, female	EW/N13-38E-103	W18	1	RD	20.0 (in)	X3 : 2	25 pos, uDsub, male	TstCL:V+																			
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D				REVISION HISTORY							
				REV	ECO	DATE	APPROVAL	BY	DESCRIPTION		
				A0	N/A	1/18/22	JH	Josh Hirsh	Release to prototype		
				A1	N/A	9/27/23	JH	Josh Hirsh	General improvments		
X15											
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X15	4 pos, sip, female	EW/N13-38E-103	W19	2	RD	20.0 (in)	X3 : 16	25 pos, uDsub, male	Tst50KUPR:I-	
	X15	4 pos, sip, female	EW/N13-38E-103	W19	1	RD	20.0 (in)	X3 : 3	25 pos, uDsub, male	Tst50KUPR:I+	
	X15	4 pos, sip, female	EW/N13-38E-103	W20	2	RD	20.0 (in)	X3 : 17	25 pos, uDsub, male	Tst50KUPR:V-	
	X15	4 pos, sip, female	EW/N13-38E-103	W20	1	RD	20.0 (in)	X3 : 4	25 pos, uDsub, male	Tst50KUPR:V+	
C	X17										
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X17	4 pos, sip, female	EW/N13-38E-103	W13	2	RD	36.0 (in)	X3 : 18	25 pos, uDsub, male	Tst50KLWR:I-	
	X17	4 pos, sip, female	EW/N13-38E-103	W13	1	RD	36.0 (in)	X3 : 5	25 pos, uDsub, male	Tst50KLWR:I+	
	X17	4 pos, sip, female	EW/N13-38E-103	W14	1	RD	36.0 (in)	X3 : 6	25 pos, uDsub, male	Tst50KLWR:V+	
	X17	4 pos, sip, female	EW/N13-38E-103	W14	2	RD	36.0 (in)	X3 : 19	25 pos, uDsub, male	Tst50KLWR:V-	
B	X19										
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X19	4 pos, sip, female	EW/N13-38E-103	W15	2	RD	24.0 (in)	X3 : 20	25 pos, uDsub, male	Tst4K:I-	
	X19	4 pos, sip, female	EW/N13-38E-103	W15	1	RD	24.0 (in)	X3 : 7	25 pos, uDsub, male	Tst4K:I+	
	X19	4 pos, sip, female	EW/N13-38E-103	W16	2	RD	24.0 (in)	X3 : 21	25 pos, uDsub, male	Tst4K:V-	
	X19	4 pos, sip, female	EW/N13-38E-103	W16	1	RD	24.0 (in)	X3 : 8	25 pos, uDsub, male	Tst4K:V+	
A	X21										
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X21	4 pos, sip, male					-	TstHTR1	test 50K upper plate heater	TstHTR1:Sense+	
	X21	4 pos, sip, male					-	TstHTR1	test 50K upper plate heater	TstHTR1:V+	
	X21	4 pos, sip, male					-	TstHTR1	test 50K upper plate heater	TstHTR1:V-	
	X21	4 pos, sip, male					-	TstHTR1	test 50K upper plate heater	TstHTR1:Sense-	
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D				REVISION HISTORY							
				REV	ECO	DATE	APPROVAL	BY	DESCRIPTION		
				A0	N/A	1/18/22	JH	Josh Hirsh	Release to prototype		
				A1	N/A	9/27/23	JH	Josh Hirsh	General improvments		
X36											
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X36	4 pos, sip, female	EW/N13-38E-103	W39	2	RD	22.0 (in)	X6 : 25	25 pos, uDsub, male	50KUPR:I-	
	X36	4 pos, sip, female	EW/N13-38E-103	W39	1	RD	22.0 (in)	X6 : 11	25 pos, uDsub, male	50KUPR:I+	
	X36	4 pos, sip, female	EW/N13-38E-103	W40	2	RD	22.0 (in)	X6 : 24	25 pos, uDsub, male	50KUPR:V-	
	X36	4 pos, sip, female	EW/N13-38E-103	W40	1	RD	22.0 (in)	X6 : 12	25 pos, uDsub, male	50KUPR:V+	
C	X45										
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X45	2 Pos SIP, PLUG	30AWGMR200	W72	1		20.0 (in)	X37 : 1	25 pos, uDsub, male	HTR2:V+	
	X45	2 Pos SIP, PLUG	30AWGMR200	W73	1		20.0 (in)	X37 : 2	25 pos, uDsub, male	HTR2:V-	
	X47										
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X47	2 Pos SIP, PLUG	30AWGMR200	W74	1		-	X37 : 3	25 pos, uDsub, male	HTR3:V+	
	X47	2 Pos SIP, PLUG	30AWGMR200	W75	1		-	X37 : 4	25 pos, uDsub, male	HTR3:V-	
B	X49										
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X49	2 Pos SIP, PLUG	30AWGMR200	W76	1		-	X37 : 5	25 pos, uDsub, male	HTR4:V+	
	X49	2 Pos SIP, PLUG	30AWGMR200	W77	1		-	X37 : 6	25 pos, uDsub, male	HTR4:V-	
	X51										
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X51	2 Pos SIP, PLUG	30AWGMR200	W70	1		20.0 (in)	X37 : 7	25 pos, uDsub, male	HTR1:V+	
	X51	2 Pos SIP, PLUG	30AWGMR200	W71	1		20.0 (in)	X37 : 8	25 pos, uDsub, male	HTR1:V-	
A	X53										
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X53 : 2	PLUG		W57	1		43.0 (in)	X8 : 1	Dual D-Sub15 Male Feedthrough	A-	
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SIZE B		DRAWN BY: Josh Hirsh		SHEET 16		OF 20		DATE: 11/7/2023		REV A1	

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D				REVISION HISTORY							
				REV	ECO	DATE	APPROVAL	BY	DESCRIPTION		
				A0	N/A	1/18/22	JH	Josh Hirsh	Release to prototype		
				A1	N/A	9/27/23	JH	Josh Hirsh	General improvements		
-> X53											
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X53 : 4	PLUG		W58	1		43.0 (in)	X8 : 2	Dual D-Sub15 Male Feedthrough	B-	
	X53 : 1	PLUG		W59	1		43.0 (in)	X8 : 3	Dual D-Sub15 Male Feedthrough	A+	
	X53 : 3	PLUG		W60	1		43.0 (in)	X8 : 4	Dual D-Sub15 Male Feedthrough	B+	
X55											
C	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X55 : 1	PLUG	26AWGMR200	W61	1		43.0 (in)	X8 : 7	Dual D-Sub15 Male Feedthrough	SIN HI	
	X55 : 4	PLUG	26AWGMR200	W62	1		43.0 (in)	X8 : 8	Dual D-Sub15 Male Feedthrough	COS LO	
	X55 : 6	PLUG	26AWGMR200	W63	1		43.0 (in)	X8 : 9	Dual D-Sub15 Male Feedthrough	RTN LO	
	X55 : 2	PLUG	26AWGMR200	W64	1		43.0 (in)	X8 : 11	Dual D-Sub15 Male Feedthrough	SIN LO	
B	X55 : 3	PLUG	26AWGMR200	W65	1		43.0 (in)	X8 : 12	Dual D-Sub15 Male Feedthrough	COS HI	
	X55 : 5	PLUG	26AWGMR200	W66	1		43.0 (in)	X8 : 13	Dual D-Sub15 Male Feedthrough	RTN HI	
X57											
	Origin Connector : Pin	Origin Description	Cable	Cable Number	Core #	Core Color	Core Length	Destination Connector : Pin	Destination Description	Signal	
	X57	3 pos sip plug	32AWGMR200	W67	1		43.0 (in)	X8 : 5	Dual D-Sub15 Male Feedthrough	5VDC	
A											
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		<div>P20014-9002-00 - SAO internal harness</div> <table><tr><td></td><td>Tag</td><td>Manufacturer</td><td>Part Number</td><td>Qty</td><td>Description</td></tr><tr><td>1</td><td>DT4, DT6, TstDT3</td><td>Lake Shore Cryotronics</td><td>DT-670B-CU</td><td>3</td><td>Silicon diode temperature sensor</td></tr><tr><td>2</td><td>TstHTR2, HTR1, HTR3, HTR4</td><td>High Precision Devices</td><td>p08015-405-0</td><td>4</td><td>Heater, 50 W</td></tr><tr><td>3</td><td>TstDT4</td><td>Lake Shore Cryotronics</td><td>DT-670B-CU</td><td>1</td><td>Silicon diode temperature sensor</td></tr><tr><td>4</td><td>B1</td><td>Admotec</td><td>RO3620</td><td>1</td><td>Size 15 solid-rotor resolver</td></tr><tr><td>5</td><td>DT1, DT2, DT3, DT5</td><td>Lake Shore Cryotronics</td><td>DT-670B-CU</td><td>4</td><td>Silicon diode temperature sensor</td></tr><tr><td>6</td><td>HTR2</td><td>High Precision Devices</td><td>p08015-405-0</td><td>1</td><td>Heater, 50 W</td></tr><tr><td>7</td><td>M1</td><td>Phytron</td><td>VSS_57.200.2.5-UHVC</td><td>1</td><td>Cryogenic stepper motor</td></tr><tr><td>8</td><td>S1</td><td>Honeywell</td><td>111SM23-T</td><td>1</td><td>Pressure switch</td></tr><tr><td>9</td><td>TstDT1, TstDT2</td><td>Lake Shore Cryotronics</td><td>DT-670B-CU</td><td>2</td><td>Silicon diode temperature sensor</td></tr><tr><td>10</td><td>TstHTR1</td><td>High Precision Devices</td><td>p08015-405-0</td><td>1</td><td>Heater, 50 W</td></tr><tr><td>11</td><td>U1</td><td>High Precision Devices</td><td>P04102-170-20</td><td>1</td><td>Oval Insert, Cu/Au, 3X 1/4-20</td></tr><tr><td>12</td><td>X2</td><td>Glenair</td><td>M83513/02-DC</td><td>1</td><td>25s u-D, Female</td></tr><tr><td>13</td><td>X3</td><td>Glenair</td><td>M83513/01-DC</td><td>1</td><td>25p u-D, Male</td></tr><tr><td>14</td><td>X5</td><td>Glenair</td><td>M83513/02-DC</td><td>1</td><td>25s u-D, Female</td></tr><tr><td>15</td><td>X6</td><td>Glenair</td><td>M83513/01-DC</td><td>1</td><td>25p u-D, Male</td></tr><tr><td>16</td><td>X9</td><td>Glenair</td><td>M83513/02-DC</td><td>1</td><td>25s u-D, Female</td></tr></table>									Tag	Manufacturer	Part Number	Qty	Description	1	DT4, DT6, TstDT3	Lake Shore Cryotronics	DT-670B-CU	3	Silicon diode temperature sensor	2	TstHTR2, HTR1, HTR3, HTR4	High Precision Devices	p08015-405-0	4	Heater, 50 W	3	TstDT4	Lake Shore Cryotronics	DT-670B-CU	1	Silicon diode temperature sensor	4	B1	Admotec	RO3620	1	Size 15 solid-rotor resolver	5	DT1, DT2, DT3, DT5	Lake Shore Cryotronics	DT-670B-CU	4	Silicon diode temperature sensor	6	HTR2	High Precision Devices	p08015-405-0	1	Heater, 50 W	7	M1	Phytron	VSS_57.200.2.5-UHVC	1	Cryogenic stepper motor	8	S1	Honeywell	111SM23-T	1	Pressure switch	9	TstDT1, TstDT2	Lake Shore Cryotronics	DT-670B-CU	2	Silicon diode temperature sensor	10	TstHTR1	High Precision Devices	p08015-405-0	1	Heater, 50 W	11	U1	High Precision Devices	P04102-170-20	1	Oval Insert, Cu/Au, 3X 1/4-20	12	X2	Glenair	M83513/02-DC	1	25s u-D, Female	13	X3	Glenair	M83513/01-DC	1	25p u-D, Male	14	X5	Glenair	M83513/02-DC	1	25s u-D, Female	15	X6	Glenair	M83513/01-DC	1	25p u-D, Male	16	X9	Glenair	M83513/02-DC	1	25s u-D, Female	REVISION HISTORY			
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15	X6	Glenair	M83513/01-DC	1	25p u-D, Male																																																																																																														
16	X9	Glenair	M83513/02-DC	1	25s u-D, Female																																																																																																														
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Release to prototype

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Josh Hirsh

General improvments

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