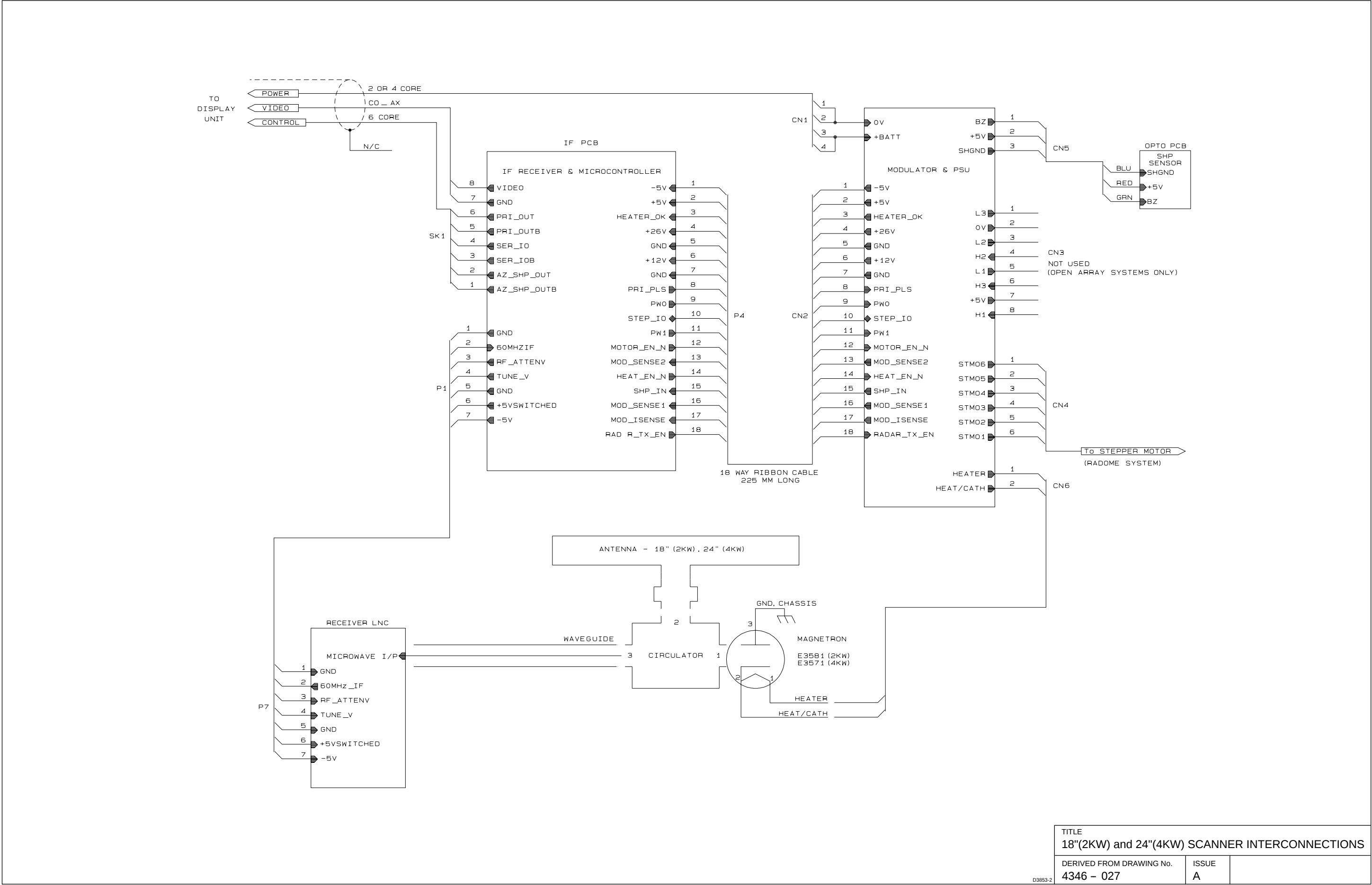


Chapter 8. Drawings

List of drawings

- 18" (2kW) and 24" (4kW) Scanner Interconnections 98
- 7" LCD Display Interconnections 99
- 7" LCD Display CPU – Top level 100
- 7" LCD Display CPU – PCB Layout 101
- 7" LCD Display – Upper and Lower keypads 102
- 7" LCD Display – Upper and Lower keypads PCB Layouts 103
- 7" LCD Power Supply Unit 104
- 7" LCD Power Supply Unit – PCB Layout 105
- Modulator/PSU Board – Top level 106
- Modulator/PSU Board – Low Voltage PSU 107
- Modulator/PSU Board – High Voltage PSU 108
- Modulator/PSU Board – Modulator 109
- Modulator/PSU Board - 3 Phase DC brushless motor drive 110
- Modulator/PSU Board – Stepper Motor Drive 111
- Modulator/PSU Board – PCB layout (2kW, stepper motor) 112
- Modulator/PSU Board – PCB layout (4kW, stepper motor) 113
- IF Receiver – Top level 114
- IF Receiver – PCB Layout 115

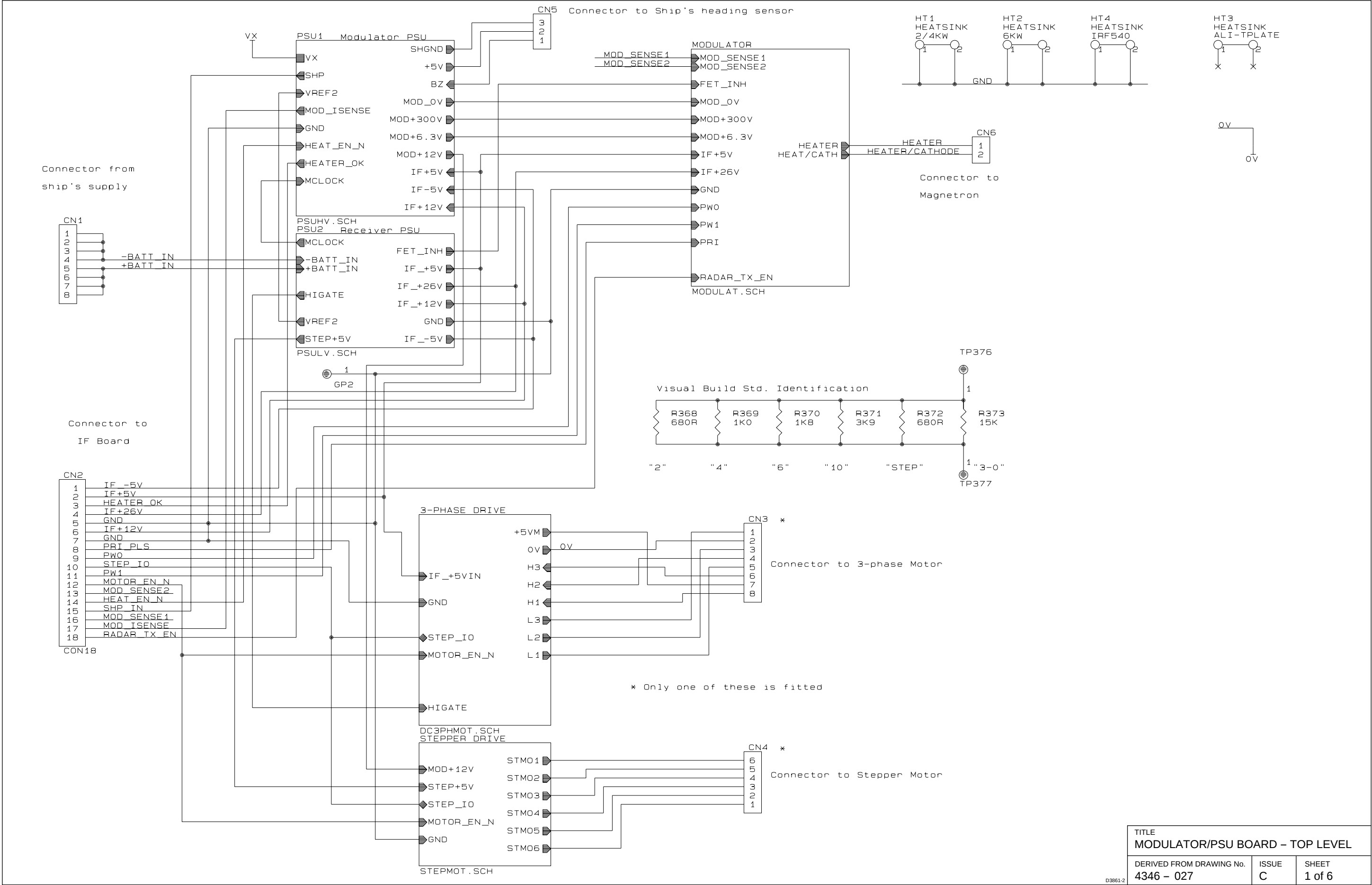
18" (2kW) and 24" (4kW) Scanner Interconnections



TITLE		
18"(2KW) and 24"(4KW) SCANNER INTERCONNECTIONS		
DERIVED FROM DRAWING No.	ISSUE	
4346 - 027	A	

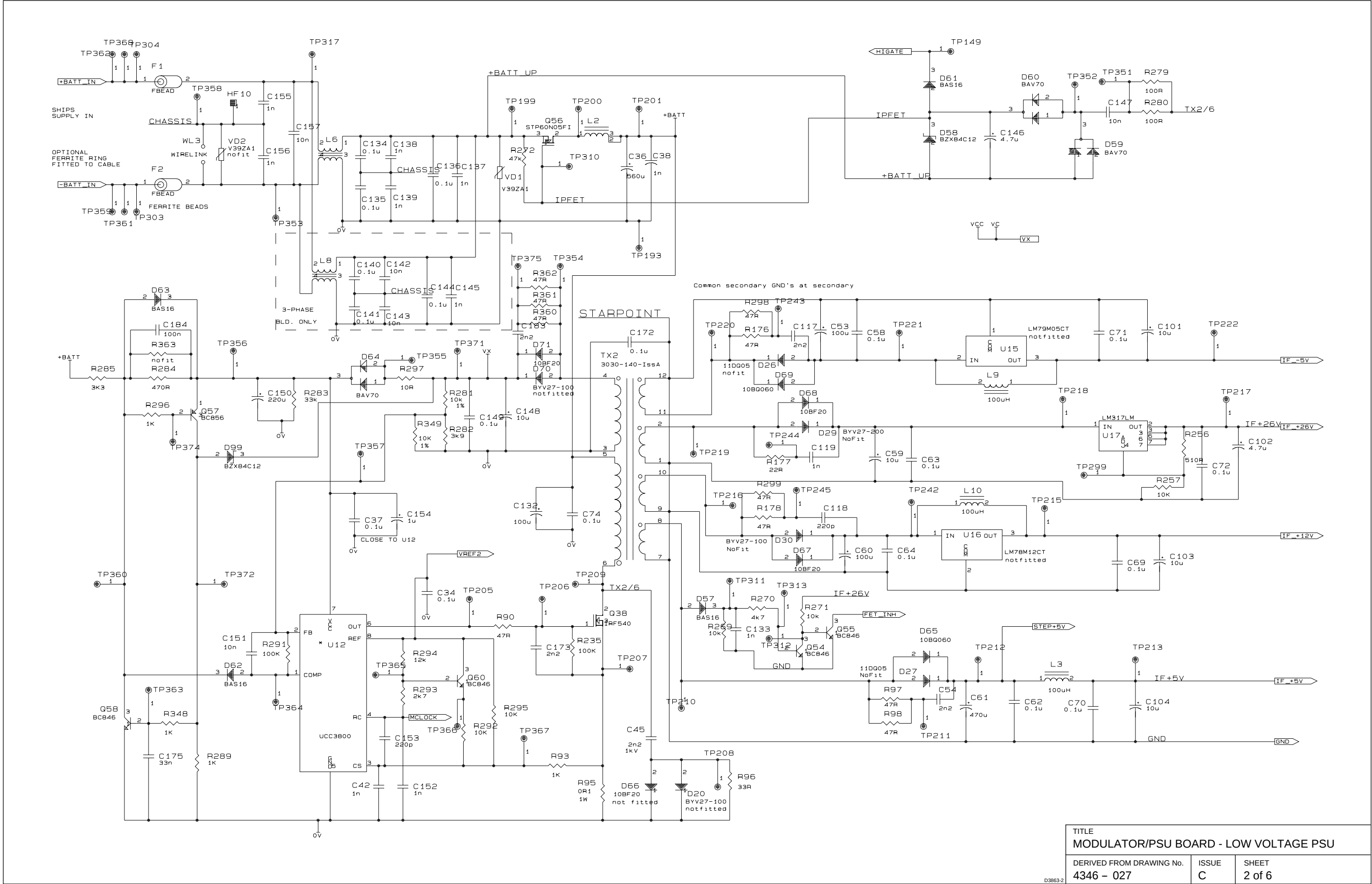
D3853-2

Modulator/PSU Board – Top level

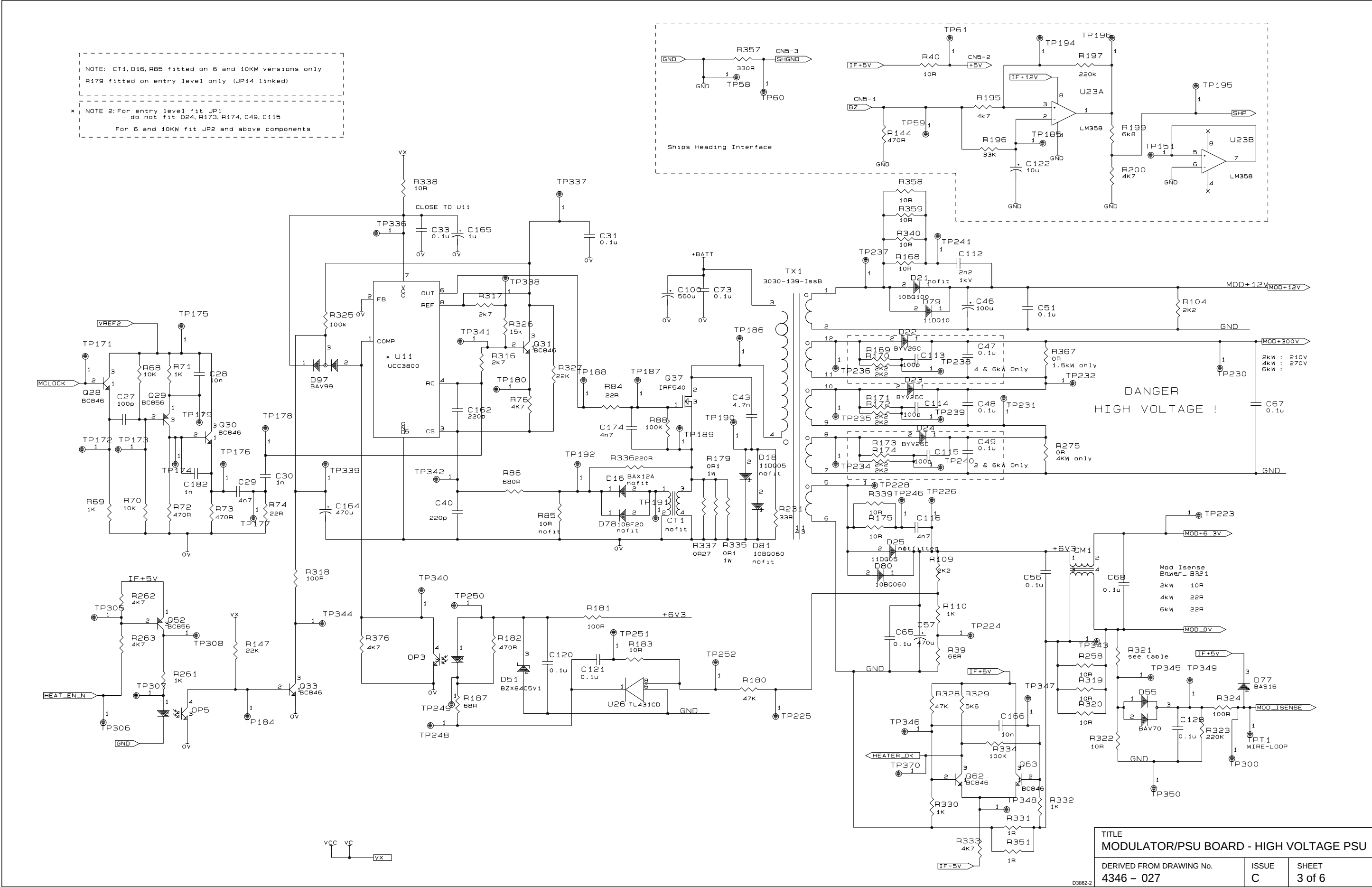


D3861-2

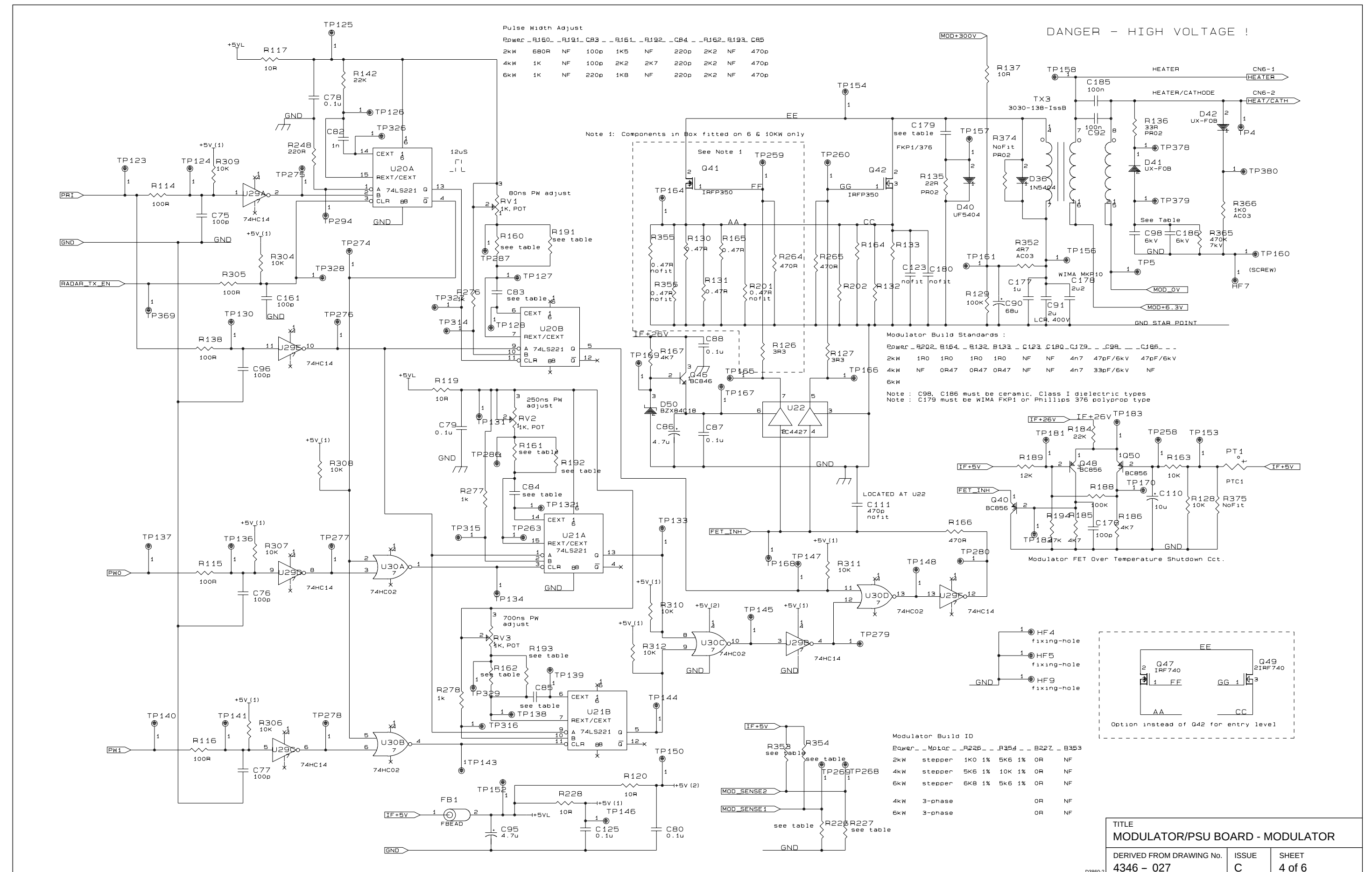
Modulator/PSU Board – Low Voltage PSU



Modulator/PSU Board – High Voltage PSU



Modulator/PSU Board – Modulator



Modulator/PSU Board - 3 Phase DC brushless motor drive

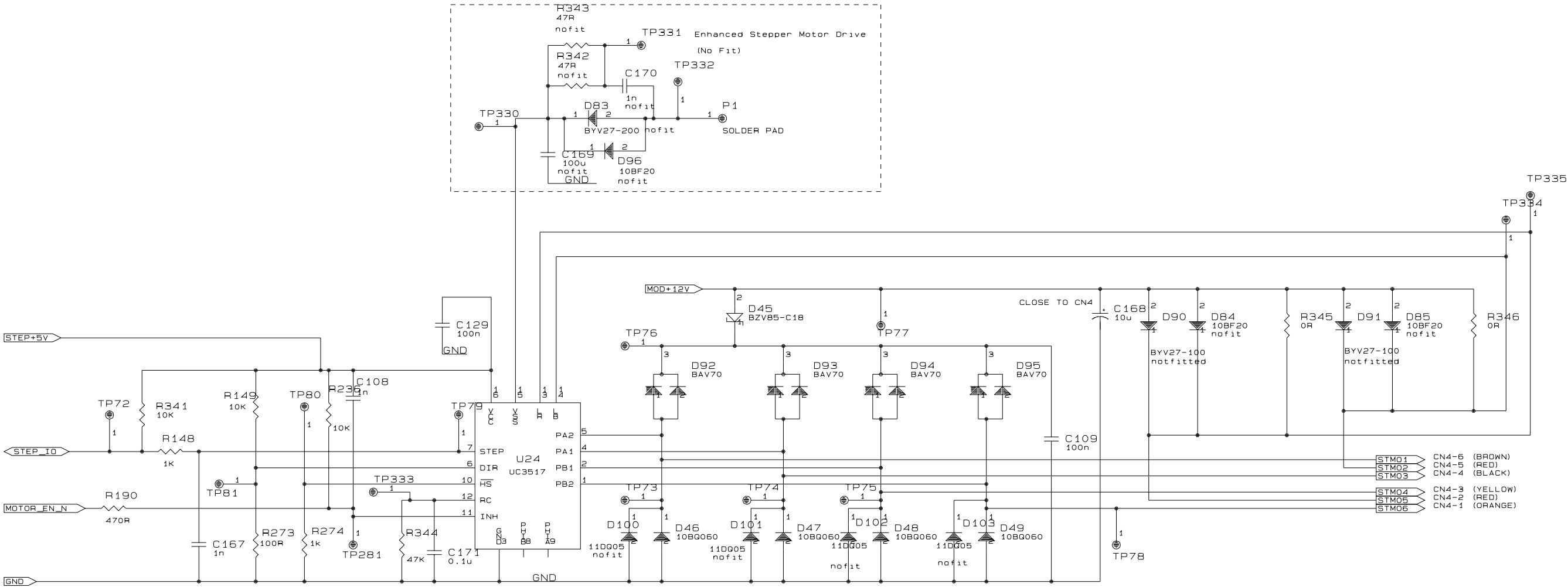
Not applicable
to SL72/74 Radars

TITLE MODULATOR/PSU BOARD - 3 PHASE DC BRUSHLESS MOTOR DRIVE		
DERIVED FROM DRAWING No. 4346 – 027	ISSUE C	SHEET 5 of 6

D3909-2

Modulator/PSU Board – Stepper Motor Drive

SL72/74&
Autohelm

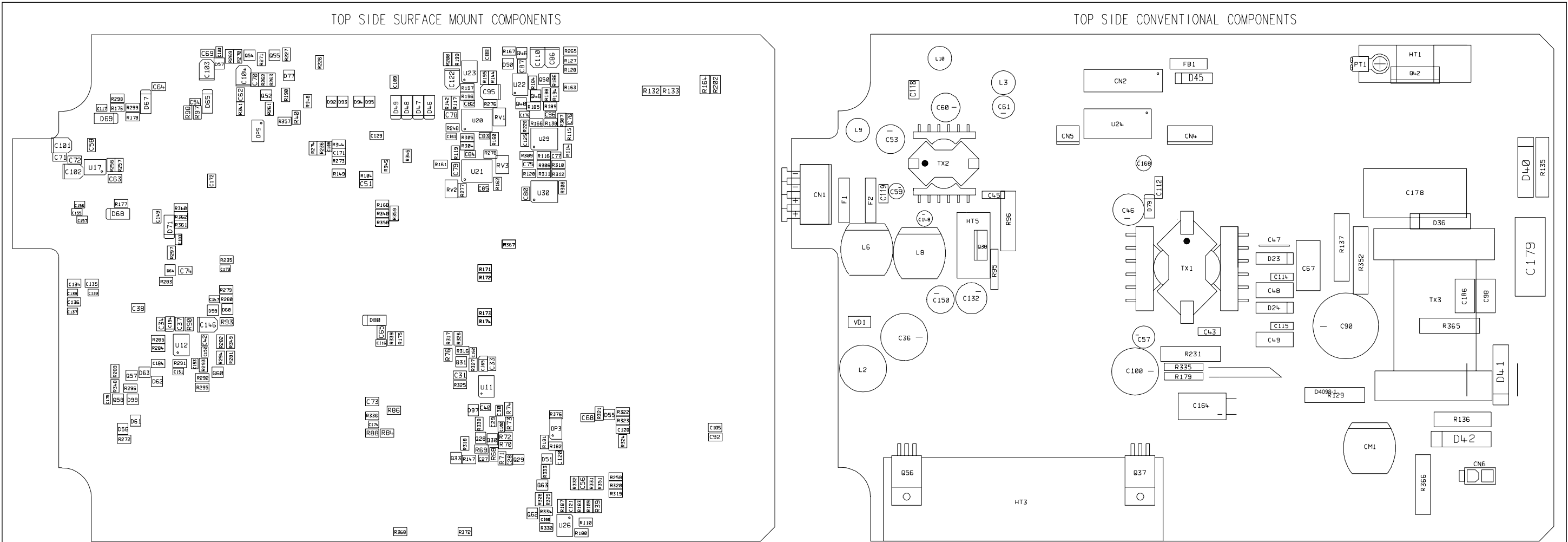


This circuit fitted for
stepper motor based system only

TITLE MODULATOR/PSU BOARD – STEPPER MOTOR DRIVE		
DERIVED FROM DRAWING No. 4346 – 027	ISSUE C	SHEET 6 of 6

D3864-2

Modulator/PSU Board – PCB layout (2kW, stepper motor)



TOP SIDE SURFACE MOUNT COMPONENTS			
1	P.C.B DETAIL	3015-127	31a
2	RESISTOR 1206 1K5 5% 0.125W	R161	32
3	RESISTOR 1206 1R0 5% 0.125W	R331,351	33
4	RESISTOR 1206 10R 1% 0.125W	R40,117,119,120,168,175,183,228,258,297,319,320-322,338-340,358,359	34
5	RESISTOR 1206 22R 5% 0.125W	R74,84,177	35
6	RESISTOR 1206 47R 5% 0.125W	R90,97,98,176,178,298,299,360-362	36
7	RESISTOR 1206 68R 5% 0.125W	R39,187	37
8	RESISTOR 1206 100R 1% 0.125W	R114-116,138,181,273,279,280,305,318,324	38
9	RESISTOR 1206 220R 5% 0.125W	R248,336	39
10	RESISTOR 1206 330R 5% 0.125W	R357	40
11	RESISTOR 1206 470R 5% 0.125W	R72,73,166,144,182,190,265,284	41
12	RESISTOR 1206 510R 1% 0.125W	R256	42
13	RESISTOR 1206 680R 5% 0.125W	R86,160,368,372	43
14	RESISTOR 1206 1K 1% 0.125W	R69,71,93,110,148,226,261,276-278,289,296,330,332,348	44
15	RESISTOR 1210 1R0 5% 0.5W	R132,133,164,202	45
16	RESISTOR 1206 2K2 5% 0.125W	R104,109,162,164,171-174	46
17	RESISTOR 1206 2K7 5% 0.125W	R293,316,317	47
18	RESISTOR 1206 3K3 5% 0.125W	R285	48
19	RESISTOR 1206 3K9 5% 0.125W	R282	49
20	RESISTOR 1206 4K7 5% 0.125W	R76,167,185,186,195,200,262,263,270,333,376	50
21	RESISTOR 1206 5K6 1% 0.125W	R329,354	51
22	RESISTOR 1206 6K8 1% 0.125W	R199	52
23	RESISTOR 1206 10K 1% 0.125W	R68,70,128,149,163,236,257,269,271,281,292,295,304,306-312,341,349	53
24	RESISTOR 1206 12K 5% 0.125W	R189,294	54
25	RESISTOR 1206 15K 5% 0.125W	R326	55
26	RESISTOR 1206 22K 5% 0.125W	R142,147,327,184	56
27	RESISTOR 1206 33K 1% 0.125W	R196,283	57
28	RESISTOR 1206 47K 5% 0.125W	R180,194,272,328,344	58
29	RESISTOR 1206 100K 5% 0.125W	R88,188,235,291,325,334	59
30	RESISTOR 1206 220K 5% 0.125W	R197,323	60
31	RESISTOR 1206 0R0 0.125W	R227,345,346,367	61
32	RESISTOR 1206 3R3 5% 0.125W	R127	62
33	RESISTOR VARIABLE 1K	RV1-3	63
34	CAPACITOR COG 0805 100pF 10% 50V	C27,75-77,83,96,161,176	64
35	CAPACITOR COG 0805 220pF 10% 50V	C40,84,153,162	65
36	CAPACITOR COG 0805 470pF 10% 50V	C85	66
37	CAPACITOR X7R 0805 1000pF 10% 50V	C30,42,82,108,133,137,138,139,152,155,156,167,182	67
38	CAPACITOR X7R 0805 2.2nF 10% 50V	C54,117,173,183	68
39	CAPACITOR X7R 0805 4.7nF 10% 50V	C29,116,174	69
40	CAPACITOR X7R 0805 10nF 10% 50V	C28,147,151,157,166	70
41	CAPACITOR X7R 0805 33nF 10% 50V	C175	71
42	CAPACITOR X7R 1206 100nF 20% 50V	C31,33,34,37,51,56,58,62-65,68-74,78-80,87,88,92,109,120,121,125,128,129,134-136,149,171,172,184,185	72
43	CAPACITOR TANTA 1uF 10% 16V	C154,165	73
44	CAPACITOR ELEC 4.7uF 20% 25V	C86,95,102,146	74
45	CAPACITOR ECE-VICA100SR 10uF 20% 16V	C101,103,104,110,122	75
46	CAPACITOR ECE-V0JA101SP 100uF 20% 6.3V	C163,164	76
47	CAPACITOR 1206 1nF	C38	77
48	DIODE SOT23 BAS16	D57,61-63,77	78
49	DIODE SOT23 BAV70	D55,59,60,64,92-95	79
50	DIODE SOT23 BAV99	D97	80
51	DIODE ZENER SOT23 BZX84C12	D58,99	81
52	DIODE ZENER SOT23 BZX84C18	D50	82
53	DIODE ZENER SOT23 BZX84CSV1	D51	83
54	DIODE SMB 10BQ060TR	D46-49,65,69,80	84
55	DIODE SMB 10BF10	D67,68,71	85
56	TRANSISTOR SOT23 BC846	Q28,30,31,33,46,54,55,58,60,62,63	86
57	TRANSISTOR SOT23 BC856	Q29,40,48,50,52,57	87
58	IC LOW POWER PWM UCC3800 S08	U11,12	88
59	IC ADJUSTABLE REGULATOR LM317 S08	U17	89
60	IC MONOSTABLE 74LS221 S014	U20,21	90
61	IC DUAL MOSFET DRIVER MIC4427CM S08	U22	91
62	IC DUAL OPAMP LM358M S08	U23	92
63	IC TL431CD S08	U26	93
64	IC HEX INVERTER MM74HC14M S014	U29	94
65	IC QUAD NOR GATE 74HC02 S014	U30	95
66	IC OPTO ISOLATOR PC357	OP3,5	96

TOP SIDE CONVENTIONAL COMPONENTS			
65	RESISTOR 0.1R 1W PRO1 SERIES	R95,179,335	89
66	RESISTOR WIREWOUND 4R7 2.5W +/-10%	R352	90
67	RESISTOR WIREWOUND 10R 2.5W +/-5%	R137	91
68	RESISTOR 470K 1W 20% 7kV	R365	92
69	RESISTOR 33R 2W PRO2 SERIES	R96,136,231	93
70	RESISTOR 100K 2W PRO2	R129	94
70a	RESISTOR 22R 2W PRO2	R135	95
70b	RESISTOR 1K 2.5W 5%	R366	96
71	CAPACITOR RADIAL 47pF 6KV	C98,186	97
72	CAPACITOR CERAMIC DISC 100pF 1kV	C114,115	98
73	CAPACITOR CERAMIC 220pF 100V 2.54mm PITCH	C118	99
74	CAPACITOR CERAMIC 1nF 1kV +/-10%	C119	100
75	CAPACITOR RADIAL 4.7nF 400V 10mm PITCH	C43	101
75a	CAPACITOR POLYPROPYLENE RADIAL 4.7nF 2kV	C179	102
76	CAPACITOR CERAMIC DISC 2.2nF 1kV	C45,112	103
77	CAPACITOR POLYESTER 100nF 250V +/-10%	C48,49	104
78	CAPACITOR POLYESTER 100nF 400V +/-10%	C67	105
79	CAPACITOR MKP10 1uF 400V	C178	106
80	CAPACITOR ELECTROLYTIC 10uF 60V +80-20%	C59,148,168	107
81	CAPACITOR ELECTROLYTIC 68uF 400V +/-20%	C90	108
82	CAPACITOR ELECTROLYTIC 100uF 35V	C46,53,60,132	109
83	CAPACITOR ELECTROLYTIC 220uF 25V +/-20% 3.5mm PITCH	C150	110
84	CAPACITOR ELECTROLYTIC 470uF 10V +/-20%	C57,61,164	111
85	CAPACITOR ELECTROLYTIC 560uF 35V +/-10%	C36,100	112
86	DIODE RECTIFIER 11DQ10 100V 1.1A	D79	113
87	DIODE BYV26C	D23,24	114
88	DIODE UF5404	D40	115
88a	DIODE POWER 1N5404	D36	116
88b	DIODE ZENER BZVCI8	D45	117
88c	DIODE HIGH VOLTAGE SANKEN UX-F08	D41,42	
89	TRANSISTOR POWER 'ISOLATED' MOSFET 1RF1540N	Q37,38	
90	TRANSISTOR POWER MOSFET 'HEXFET' 1RFP350	Q42	
91	TRANSISTOR ISOWATT MOSFET STP60N05F1	Q56	
92	IC STEPPER MOTOR DRIVE UC3517N DIL16	U24	
93	CHOKE 10uH 10A	L2	
94	CHOKE 100uH 5mm PITCH	L3,9,10	
95	INDUCTOR FERRITE BEAD BLO1RN1A62	FB1,F1,2	
96	TRANSFORMER T300V (REV. B)	TX1	
97	TRANSFORMER LOW VOLT SUPPLY	TX2	
98	TRANSFORMER MODULATOR PULSE (REV. B)	TX3	
99	CONNECTOR CLAMP 4WAY WAGO	CN1	
100	HEADER 18WAY MOLEX 'PICOFLEX'	CN2	
101	HEADER 6WAY MOLEX 'KK' VERTICLE 0.1" PITCH	CN4	
102	HEADER 3WAY MOLEX 'KK' VERTICLE 0.1" PITCH	CN5	
103	HEADER 2WAY MOLEX-MINI	CN6	
104	INDUCTOR RN112-4/02	CM1,L6	
105	THERMISTOR PTH9M04BC222TS2	PT1	
106	SCREW PAD HEAD STAINLESS STEEL 4x1/2" P021	SC1	
107	WASHER M3 SINGLE COIL	W1	
108	SLEEVING SILICONE RUBBER 1mm DIA, BLK 2x25mm LONG	SL1,2	
109	WIRE LINK	C47,WL1	
110	WIRE LOOP	TP11	
111	SIL PAD 19x25		
112	HEATSINK FET	HT3	
113	HEATSINK SW25-4	HT1	
114	HEATSINK REDPOINT PTF750	HT5	
115	HEATSINK RETAINER CLIP 5901	HC1	
116	VARIABLE METAL OXIDE V392A1	VD1	
117	VARNISH ANTI TAMPER RED		

TITLE		
MODULATOR/PSU BOARD - PCB LAYOUT (2KW, STEPPER MOTOR)		
DERIVED FROM DRAWING No. 4346 - 017	ISSUE M	SHEET 1 of 2

D4098-2

SL72/74 & Autohelm

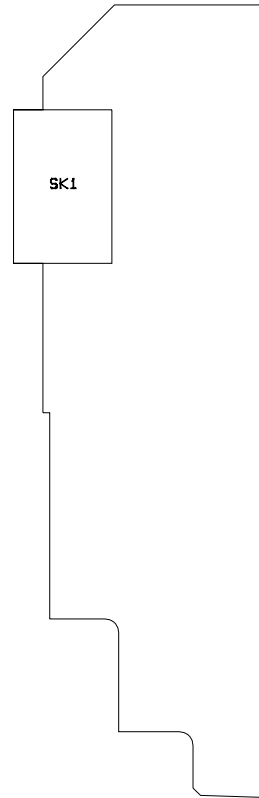




IF Receiver – PCB Layout

TOP SIDE SURFACE MOUNT COMPONENTS									
P.C.B. DETAIL									3015-129
1	RESISTOR	1206	27K	1%	0.125W				R146
2	RESISTOR	1206	1K	1%	0.125W	R1-4,13,20,33,34,63,64,87, 101,104,113-115,122,134,142,143,145,202,322			
3	RESISTOR	1206	68K	1%	0.125W				R49
4	RESISTOR	1206	5K6	1%	0.125W				R212
5	RESISTOR	1206	10R	1%	0.125W			R210,332,338	
6	RESISTOR	1206	33K	1%	0.125W				R162,331
7	RESISTOR	1206	560R	1%	0.125W	R24,59,105,125,201,218,310			
8	RESISTOR	1206	6K8	1%	0.125W				R136
9	RESISTOR	1206	100R	1%	0.125W	R79,97,103,(157),216,319-321			
10	RESISTOR	1206	1K5	5%	0.125W			R9,138,220,302	
11	RESISTOR	1206	0R0		0.125W	R56-58,62,66-(68,69,335),337			
12	RESISTOR	1206	220K	5%	0.125W				R140
13	RESISTOR	1206	22K	5%	0.125W			R123,124,213,214	
14	RESISTOR	1206	4K7	5%	0.125W			R71,78,90,309,311	
15	RESISTOR	1206	68R	5%	0.125W				R23,29
16	RESISTOR	1206	2K2	5%	0.125W	R5,15,35,52,65,139,206			
17	RESISTOR	1206	100K	5%	0.125W			R9,300,324,326	
18	RESISTOR	1206	10K	1%	0.125W	R22,32,36,41,42,44-48,75, 137,163,209,301,312,314,316-318,327,330			
19	RESISTOR	1206	15K	5%	0.125W			R91,94,98,303,306	
20	RESISTOR	1206	330R	5%	0.125W			R7,30,73,144,211	
21	RESISTOR	1206	180R	5%	0.125W				R17,155
22	RESISTOR	1206	220R	5%	0.125W				R31,334
23	RESISTOR	1206	330K	5%	0.125W				R37,50,119
24	RESISTOR	1206	680R	5%	0.125W	R18,89,93,106,141,217,307,308			
25	RESISTOR	1206	1K8	5%	0.125W			R11,51,53,55,60,74,96,215	
26	RESISTOR	1206	470R	5%	0.125W	R6,12,26-28,70,72,131,203			
27	RESISTOR	1206	3K9	5%	0.125W				R100,136
28	RESISTOR	1206	120R	5%	0.125W				R102
29	RESISTOR	1206	22R	5%	0.125W	R111,112,116,126,127,129			
30	RESISTOR	1206	47K	5%	0.125W			R128,304,305,328,329	
31	RESISTOR	1206	470K	5%	0.125W				(R161)
32	RESISTOR	1206	390R	5%	0.25W			R25,118,130,208	
33	RESISTOR	1206	47R	5%	0.125W				R14,21
34	RESISTOR	1206	3K3	1%	0.25W	R8,10,54,76,117,315,219			
34a	RESISTOR	1206	2K7	5%	0.125W				R16
35	CAPACITOR	X7R	0805	1000pF	10%	50V	C4,21,22,47,52,71,82, 88,89,103,104,209,210,215,217,218		
36	CAPACITOR	COG	0805	1.5pF	5%	50V			C67
37	-	-	-	-	-	-	-	-	-
38	CAPACITOR	COG	0805	12pF	5%	50V			C1,90
39	CAPACITOR	ECE-VICA100SR	100uF	20%	16V	C3,9,18-20,24,46, 51,81,102,110,128,212,213			
40	CAPACITOR	ECE-VOJA101SP	100uF	20%	6.3V	C16,111,114,225			
41	CAPACITOR	X7R	1206	100nF	20%	50V	C5,7,12,29,39,73,112, 113,(122),125,129,200-203,224,(226,227)		
42	CAPACITOR	X7R	0805	10nF	10%	50V	C25,38,42,69,75,208		
43	CAPACITOR	COG	0805	100pF	10%	50V	C23,43,85,95,219,221		
44	CAPACITOR	COG	0805	220pF	10%	50V			C44
45	CAPACITOR	COG	0805	22pF	5%	50V	C45,48,50,53,55,74,80, 92,94,119,120		
46	CAPACITOR	COG	0805	27pF	5%	50V			C56,65,97
47	CAPACITOR	COG	0805	18pF	5%	50V			C2,83
48	CAPACITOR	COG	0805	15pF	5%	50V			C63,64,220
49	CAPACITOR	COG	0805	470pF	10%	50V			C8,40
49a	CAPACITOR	1206	1000pF				C6,13,15,17,32,87,93, 123,204-207,211,214,223,228		
50	DIODE	SOT23	BA516			D1,3,5,11,12,16,18,22,26-28			
51	DIODE	SOT23	BAV99						D19
52	DIODE	SOT23	H5MP-3830	T31					D17
53	DIODE	SOT23	BAV70						D7,8
54	DIODE	ZENER	SOT23	BZX84C12V					(D32)
55	DIODE	VARACTOR	SOD123	BB512					D4
56	DIODE	MOSFET	SOT23	BF999					Q31,32,34,35
57	TRANSISTOR	SOT23	FMMT3906	CTR-ND	SC-59	Q2,8,11,12,15,16, 19,23,33,38			
58	TRANSISTOR	SOT23	FMMT3904	CTR-ND	ZETEX	Q1,3-7,9,10,13, 14,18,21,22,36,37,43			
59	TRANSISTOR	POWER MOSFET	2SK2103						Q39,41
59a	TRANSISTOR	BC107							Q40,42
60	IC	DIGITAL/ANALOGUE	CONVERTER	8-BIT	20PIN	SSOP			U1
61	IC	AMPLIFIER	SL1613	CMPTC	S08				U2-5
62	IC	OPAMP	QUAD	TL084	CD	S014			U6-8,11,21
63	IC	AMPLIFIER	IF	MC1500	S08				U9,10
64	IC	QUAD TRI-STATE	DIFF. LINE DRIVER	DS34C87	S016				U12
65	IC	MICROPROCESSOR	uPD78P054	GC-389	FP80				U13
66	IC	RS485/422	TRANSCEIVER	DS75176	S08				U17

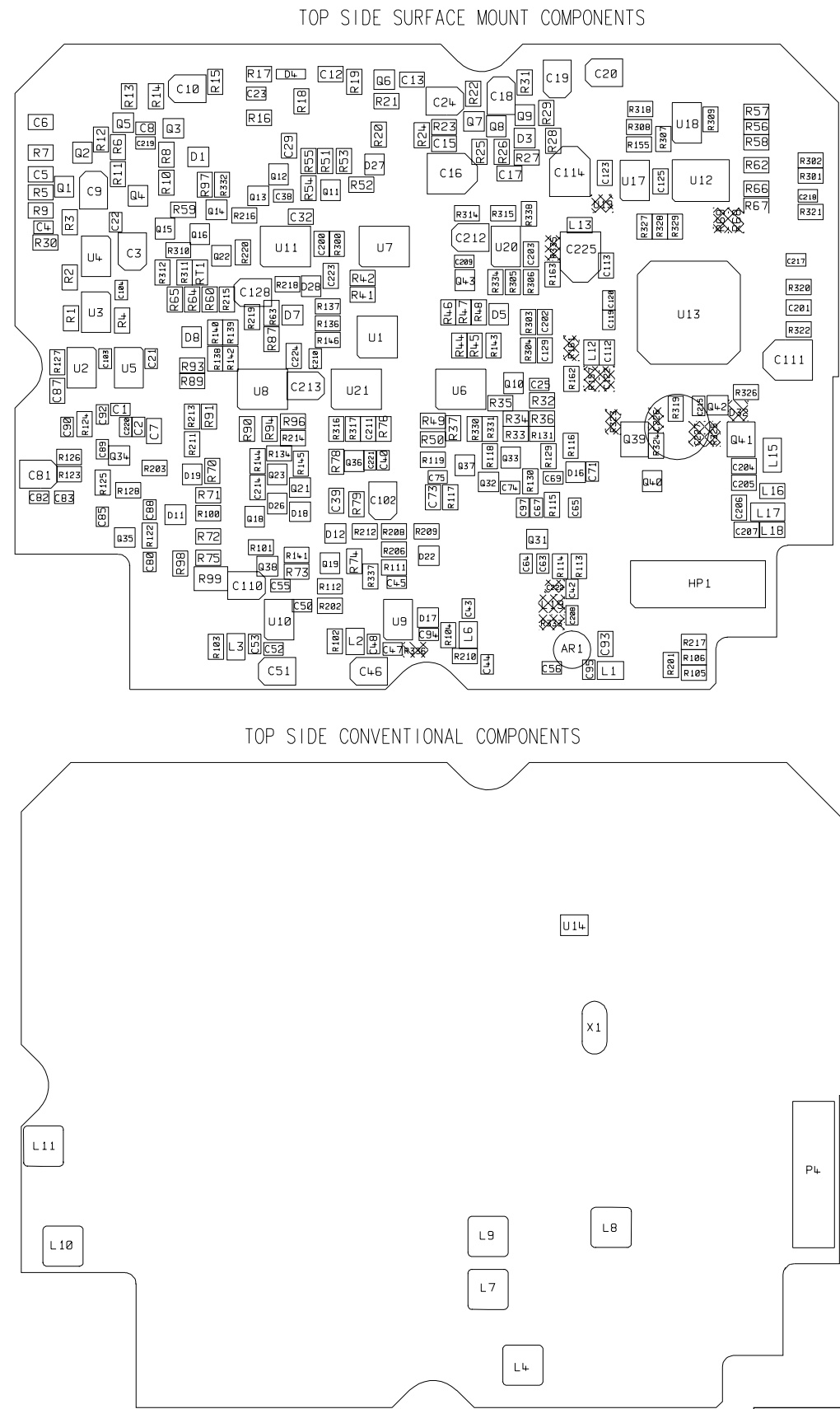
BOTTOM SIDE CONVENTIONAL COMPONENTS



TOP SIDE SURFACE MOUNT COMPONENTS (CONTINUED)		
67	1C EEPROM ST24C01A S08	U18
68	1C MAX823 SOT23-5	(U19)
69	1C TL431CD S08	U20
70	CHIP INDUCTOR 1210 10uH ELJ-FA100KF2	L1,6
71	CHIP INDUCTOR 1210 220nH ELJ-FAR22MF2	L2,3
72	SOLID CHIP INDUCTOR 1206 10uH BLM32A07	L12,13,16,18
73	CHIP INDUCTOR 1210 3.3uH NLC322522T-3R3M	L15,17
74	TRANSISTOR BIPOLAR MSA-1105	AR1
75	CONNECTOR 2WAY CLH-110-F-D-DV-TR	P1
76	THERMISTOR 1206 2K5 10%	RT1
77	RESISTOR TRIMMER 1K	R99

TOP SIDE CONVENTIONAL COMPONENTS		
78	INDUCTOR TOKO7KMM 220nH	L4,7-11
79	-	
80	HEADER MOLEX 18WAY LOW PROFILE	P4
81	IC RESET CHIP DS1233 5V	U14
82	CRYSTAL 4.9152MHz HC49/4	X1

BOTTOM SIDE CONVENTIONAL COMPONENTS		
83	HEADER MOLEX 8WAY RIGHT-ANGLED	SK1



TITLE IF RECEIVER - PCB LAYOUT		
DERIVED FROM DRAWING No. 4346 - 007	ISSUE H	SHEET 1 of 1