



NATIONAL OPTICAL
ASTRONOMY
OBSERVATORY

MAJOR INSTRUMENTATION GROUP,
950 N. Cherry Ave.
P. O. Box 26732
Tucson, Arizona 85726-6732
(520) 318-8000 FAX: (520) 318-8303

MONSOON
Bill of Materials
Clock and Bias Board
CCD TYPE SN001, SN006-010

Dwg No.: MNSN-EL-04-4008-001 Rev: -3
Next Assembly: MNSN-EL-10-0300-001

Revision Table

Bill of Materials
 Clock Bias Board
 SN001, SN006-010

DWG #: MNSN-EL-04-4008-001
 4/21/2005

LTR	DESCRIPTION	ECR	DATE	BY	APPRVD
-1	change part number F1-F6, jtag connector key	ECO-MNSN-0101	13-Aug-04	dms	pcm/pjs
-2	add the tbd tab and all parts that go there		5-Apr-05	dms	mhunten
-3	component value changes	ECO-MNSN-0103	14-Apr-05	dms	pcm/pjs

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
1	8	OA_FBIAS	U93, U94, U102, U103, U193, U194, U196, U198		LT1357CS8	Linear Technology		IC, Op Amp 25MHz, 600V/us
2	32	OA_VCLK	U43, U44, U45, U46, U47, U48, U49, U50, U55, U56, U57, U58, U59, U60, U61, U62, U66, U67, U68, U69, U70, U71, U72, U73, U79, U80, U81, U82, U83, U84, U85, U86		LT1357CS8	Linear Technology		IC, Op Amp 25MHz, 600V/us
3	1	OPEN	R688		NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
4	1	OPEN	R693		NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
5	12	TBD1	R36, R37, R44, R45, R81, R88, R316, R318, R346, R353, R387, R396	10	ERJ-6ENF10R0V	Panasonic	P10.0CCT-ND	Resistor, 10 1% 1/10 Watt 0805
6	16	TBD10	R113, R118, R122, R127, R139, R145, R152, R158, R167, R174, R181, R188, R196, R202, R208, R214,	OPEN	NOT INSTALLED	N/A	N/A	Resistor, RC0603 OPEN
7	16	TBD10A	R434, R440, R446, R452, R462, R468, R474, R480, R490, R496, R502, R508, R519, R525, R531, R537,	OPEN	NOT INSTALLED	N/A	N/A	Resistor, RC0805 OPEN
8	32	TBD11	C160, C167, C174, C182, C188, C194, C199, C206, C230, C239, C245, C254, C260, C269, C275, C285, C292, C302, C317, C322, C337, C347, C353, C361, C367, C375, C381, C390, C394, C403	TBD	NOT INSTALLED	N/A	N/A	Cap, Cerc 0603 TBD
9	32	TBD12	C161, C166, C173, C179, C187, C192, C200, C205, C229, C236, C244, C251, C259, C266, C274, C281, C293, C298, C307, C313, C323, C328, C338, C343, C352, C358, C366, C372, C380, C386, C395, C400	TBD	NOT INSTALLED	N/A	N/A	Cap, Cerc 0603 TBD
10	32	TBD13	R115, R120, R124, R129, R141, R148, R155, R161, R171, R177, R184, R190, R199, R205, R211, R218, R435, R441, R447, R453, R463, R469, R475, R481, R491, R497, R503, R509, R520, R526, R532, R538	10	ERJ-6ENF10R0V	Panasonic	P10.0CCT-ND	Resistor, 10 1% 1/10 Watt 0805
11	32	TBD14	C721, C725, C730, C733, C737, C741, C745, C748, C769, C772, C776, C779, C783, C786, C790, C793, C813, C817, C821, C825, C829, C833, C836, C841, C856, C861, C866, C868, C873, C877, C879, C880	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
12	32	TBD15	R117, R126, R131, R142, R144, R147, R150, R151, R154, R157, R160, R163, R169, R170, R173, R176, R178, R180, R183, R185, R187, R191, R193, R198, R201, R204, R207, R210, R213, R216, R217, R219	10K	9C06031A1002FKHFT	Yageo	311-10.0KHCT-ND	Resistor, 10.0K 1/10W 1% 0603
13	32	TBD16	R114, R116, R119, R121, R123, R125, R128, R130, R140, R143, R146, R149, R153, R156, R159, R162, R168, R172, R175, R179, R182, R186, R189, R192, R197, R200, R203, R206, R209, R212, R215, R220	49.9K	9C06031A4992FKHFT	Yageo	311-49.9KHCT-ND	Resistor, 49.9K 1/10W 1% 0603

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
14	32	TBD17	C171, C184, C197, C210, C234, C235, C242, C249, C250, C257, C264, C265, C272, C279, C280, C287, C297, C305, C312, C320, C327, C335, C342, C350, C357, C364, C371, C378, C385, C392, C399, C406,	2.0pF	C0603C209C5GACTU	Kemet	399-1047-1-ND	Cap, Cerc 2.0pF 50V +/-25pF COG/ NPO 0603
15	32	TBD18	R237, R239, R240, R243, R245, R246, R249, R251, R252, R255, R257, R258, R567, R569, R571, R573, R575, R577, R579, R581, R583, R585, R587, R589, R592, R594, R596, R598, R600, R603, R605, R607	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 1% 1/10 Watt 0805
16	32	TBD19	R236, R238, R241, R242, R244, R247, R248, R250, R253, R254, R256, R259, R566, R568, R570, R572, R574, R576, R578, R580, R582, R584, R586, R588, R591, R593, R595, R597, R599, R602, R604, R606	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
17	12	TBD1A	R10, R19, R52, R53, R61, R94, R321, R322, R329, R330, R360, R405	10	ERJ-6ENF10R0V	Panasonic	P10.0CCT-ND	Resistor, 10 1% 1/10 Watt 0805
18	12	TBD1B	R28, R62, R70, R71, R100, R106, R337, R338, R368, R376, R413, R421	10	ERJ-6ENF10R0V	Panasonic	P10.0CCT-ND	Resistor, 10 1% 1/10 Watt 0805
19	12	TBD2	R1, R4, R35, R43, R80, R87, R345, R352, R385, R386, R394, R395	1.02K	ERJ-6ENF1021V	Panasonic	P1.02KCCT-ND	Resistor, 1.02K 1% 1/10 Watt 0805
20	8	TBD20	R229, R234, R271, R277, R558, R562, R637, R644	499	9C08052A4990FKHFT	Yageo	311-499CCT-ND	Resistor, 499 1% 1/8 Watt 0805
21	8	TBD21	R227, R231, R267, R273, R560, R564, R641, R647	0	ERJ-6GEY0R00V	Panasonic	P0.0ATR-ND	Resistor, 0 ohm 5% 1/10 Watt 0805
22	8	TBD22	C454, C460, C465, C469, C906, C910, C929, C933	22pF	ECJ-2VC1H220J	Panasonic	PCC220CNCT-ND	Cap, Cerc 0805 22pF 50V 5% NPO
23	8	TBD23	R228, R232, R268, R274, R559, R563, R640, R646	499	9C08052A4990FKHFT	Yageo	311-499CCT-ND	Resistor, 499 1% 1/8 Watt 0805
24	8	TBD24	C436, C441, C466, C470, C881, C885, C928, C932	2.0pF	C0603C209C5GACTU	Kemet	399-1047-1-ND	Cap, Cerc 2.0pF 50V +/-25pF COG/ NPO 0603
25	8	TBD25	R230, R233, R270, R276, R557, R561, R638, R643	4.99K	9C08052A4991FKHFT	Yageo	311-4.99KCCT-ND	Resistor, 4.99K 1% 1/8 Watt 0805
26	2	TBD26	R290, R666	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0603
27	2	TBD27	R297, R679	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0603
28	2	TBD28	R195, R514	1.0K	ERJ-6ENF1001V	Panasonic	P1.00KCCT-ND	Resistor, 1.0K 1% 1/10 Watt 0805
29	2	TBD29	R194, R513	1.0K	ERJ-6ENF1001V	Panasonic	P1.00KCCT-ND	Resistor, 1.0K 1% 1/10 Watt 0805
30	12	TBD2A	R8, R9, R17, R18, R51, R93, R320, R328, R359, R367, R403, R404	1.02K	ERJ-6ENF1021V	Panasonic	P1.02KCCT-ND	Resistor, 1.02K 1% 1/10 Watt 0805
31	12	TBD2B	R26, R27, R60, R69, R99, R105, R336, R375, R411, R412, R419, R420	1.02K	ERJ-6ENF1021V	Panasonic	P1.02KCCT-ND	Resistor, 1.02K 1% 1/10 Watt 0805
32	12	TBD3	R2, R5, R38, R46, R82, R89, R347, R354, R388, R389, R397, R398	49.9K	ERJ-6ENF4992V	Panasonic	P49.9KCCT-ND	Resistor, 49.9K ohm 1% 1/10 Watt 0805
33	2	TBD30	R221, R545	1.0K	ERJ-6ENF1001V	Panasonic	P1.00KCCT-ND	Resistor, 1.0K 1% 1/10 Watt 0805
34	8	TBD31	R285, R287, R288, R656, R658, R660, R661, R665	1.0K	ERJ-6ENF1001V	Panasonic	P1.00KCCT-ND	Resistor, 1.0K 1% 1/10 Watt 0805
35	2	TBD32	R284, R655	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
36	2	TBD32A	R286, R657	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
37	2	TBD32B	R289, R659	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
38	2	TBD32C	R663, R664	0				
39	12	TBD3A	R11, R12, R20, R21, R54, R95, R323, R331, R361, R369, R406, R407	49.9K	ERJ-6ENF4992V	Panasonic	P49.9KCCT-ND	Resistor, 49.9K ohm 1% 1/10 Watt 0805
40	12	TBD3B	R29, R30, R63, R72, R101, R107, R339, R377, R414, R415, R422, R423	49.9K	ERJ-6ENF4992V	Panasonic	P49.9KCCT-ND	Resistor, 49.9K ohm 1% 1/10 Watt 0805
41	12	TBD4	C5, C14, C56, C66, C109, C118, C572, C582, C626, C635, C673, C681	.47uF	ECJ-3YB1E474K	Panasonic	PCC1891CT-ND	Cap, Cerc 1206 .47uF 25V 10% X7R
42	12	TBD4A	C22, C23, C34, C35, C76, C127, C531, C545, C592, C602, C644, C689	.47uF	ECJ-3YB1E474K	Panasonic	PCC1891CT-ND	Cap, Cerc 1206 .47uF 25V 10% X7R
43	12	TBD4B	C46, C47, C86, C96, C137, C146, C559, C612, C653, C662, C697, C707	.47uF	ECJ-3YB1E474K	Panasonic	PCC1891CT-ND	Cap, Cerc 1206 .47uF 25V 10% X7R
44	12	TBD5	R3, R7, R41, R48, R84, R92, R348, R358, R390, R392, R399, R401	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
45	12	TBD5A	R14, R15, R23, R24, R56, R98, R325, R333, R362, R363, R373, R408	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
46	12	TBD5B	R31, R34, R64, R73, R102, R108, R341, R370, R380, R382, R416, R424	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
47	12	TBD6	R6, R40, R42, R47, R86, R91, R349, R350, R355, R357, R393, R402	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
48	12	TBD6A	R16, R25, R55, R59, R65, R97, R324, R334, R364, R366, R371, R409	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
49	12	TBD6B	R32, R66, R74, R76, R104, R110, R340, R374, R379, R381, R417, R426	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
50	12	TBD7	R39, R49, R50, R83, R85, R90, R317, R319, R351, R356, R391, R400	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
51	12	TBD7A	R13, R22, R57, R58, R68, R96, R326, R327, R332, R335, R365, R410	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
52	12	TBD7B	R33, R67, R75, R77, R103, R109, R342, R343, R372, R378, R418, R425	10.0K	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
53	12	TBD8	C58, C68, C111, C120, C158, C178, C511, C522, C574, C584, C628, C637	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
54	12	TBD8A	C25, C37, C78, C88, C129, C130, C534, C535, C548, C549, C594, C646	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
55	12	TBD8B	C49, C98, C139, C148, C215, C226, C562, C563, C604, C614, C655, C664	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
56	12	TBD9	C59, C69, C112, C121, C162, C180, C512, C523, C575, C585, C629, C638	1uF	ECJ-2YB1A105K	Panasonic	PCC1807CT-ND	Cap, Cerc 0805 1uF 10V 10% X7R
57	12	TBD9A	C26, C38, C79, C89, C131, C201, C536, C537, C550, C551, C595, C647	1uF	ECJ-2YB1A105K	Panasonic	PCC1807CT-ND	Cap, Cerc 0805 1uF 10V 10% X7R
58	12	TBD9B	C50, C99, C140, C150, C216, C227, C564, C565, C605 C616, C656, C665	1uF	ECJ-2YB1A105K	Panasonic	PCC1807CT-ND	Cap, Cerc 0805 1uF 10V 10% X7R
59	1	TBDCR1	C899	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
60	1	TBDCR10A	C867	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
61	1	TBDCR10B	C418	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
62	1	TBDCR10C	C878	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
63	2	TBDCR11	C1045, C1046	TBD	NOT INSTALLED	N/A	N/A	Cap, Cerc 0603 TBD
64	1	TBDCR12	U100		MAX6143AASA25	Maxim		IC, Voltage reference, with temp sensor

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
65	1	TBDCR12A	U92		ADR420BR	Analog Devices	ADR420BR-ND	IC, Voltage reference, ultra precision, low noise
66	1	TBDCR1A	C865	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
67	1	TBDCR1B	C421	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
68	1	TBDCR1C	C875	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
69	1	TBDCR2	R608	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
70	1	TBDCR2A	R550	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
71	1	TBDCR2B	R223	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
72	1	TBDCR2C	R555	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
73	1	TBDCR3	U195		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
74	1	TBDCR3A	U191		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
75	1	TBDCR3B	U91		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
76	1	TBDCR3C	U192		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
77	1	TBDCR4	R610	3.01K	9C08052A3011FKHFT	Yageo	311-3.01KCCT-ND	Resistor, 3.01K 1% 1/8 Watt 0805
78	1	TBDCR4A	R549	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
79	1	TBDCR4B	R224	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
80	1	TBDCR4C	R554	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
81	1	TBDCR5	C900	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
82	1	TBDCR5A	C863	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
83	1	TBDCR5B	C424	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
84	1	TBDCR5C	C870	0.1uF	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
85	1	TBDCR6	C898	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
86	1	TBDCR6A	C858	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
87	1	TBDCR6B	C427	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
88	1	TBDCR6C	C869	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
89	1	TBDCR7	R609	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
90	1	TBDCR7A	R547	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
91	1	TBDCR7B	R226	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
92	1	TBDCR7C	R552	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
93	1	TBDCR8A	R548	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
94	1	TBDCR8B	R225	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
95	1	TBDCR8C	R553	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
96	1	TBDCR9A	R551	10	P1206E10R0BB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
97	1	TBDCR9B	R222	10	P1206E10R0BB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
98	1	TBDCR9C	R556	10	P1206E10R0BB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
99	1	TBDDR1	C290	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
100	1	TBDDR2	R164	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
101	1	TBDDR3	U52		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
102	1	TBDDR4	R137	3.01K	9C08052A3011FKHFT	Yageo	311-3.01KCCT-ND	Resistor, 3.01K 1% 1/8 Watt 0805
103	1	TBDDR5	C221	0.1uF	GRM188R71H104KA93D	Murata Electronics	490-1519-1-ND	Cap, Cerc 0603 0.1uF 50V 10% X7R
104	1	TBDDR6	C705	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
105	1	TBDDR7	R455	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
106	1	TBDDR8	C1048	OPEN	NOT INSTALLED	N/A	N/A	Cap, Cerc 0603 TBD
107	1	TBDDR9	U169		MAX6143AASA25	Maxim		IC, Voltage reference, with temp sensor

ITEM	QTY	TBD des	REFDES	VALUE	P/N	MFR	P/N DIGIKEY	DESCRIPTION
108	1	TBDFR1	C620	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
109	1	TBDFR10	C668	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
110	1	TBDFR2	R429	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
111	1	TBDFR3	U151		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
112	1	TBDFR4	R384	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
113	1	TBDFR5	C618	0.1uF	GRM188R71H104KA93D	Murata Electronics	490-1519-1-ND	Cap, Cerc 0603 0.1uF 50V 10% X7R
114	1	TBDFR6	C619	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
115	1	TBDFR7	R383	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
116	1	TBDFR8	R344	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
117	1	TBDFR9	R428	10	P1206E10R0BB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
118	1	TBDR01	C217	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
119	1	TBDR010	U168		ADR420BR	Analog Devices	ADR420BR-ND	IC, Voltage reference, ultra precision, low noise
120	1	TBDR011	R132	10	P1206E10R0BB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
121	1	TBDR012	C212	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
122	1	TBDR02	R133	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
123	1	TBDR03	U51		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
124	1	TBDR04	R134	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
125	1	TBDR05	C218	0.1uF	GRM188R71H104KA93D	Murata Electronics	490-1519-1-ND	Cap, Cerc 0603 0.1uF 50V 10% X7R
126	1	TBDR06	C220	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
127	1	TBDR07	R135	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
128	1	TBDR08	R136	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
129	1	TBDR09	C1047	OPEN	NOT INSTALLED	N/A	N/A	Cap, Cerc 0603 TBD
130	1	TBDR11	C154	4.7uF	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5
131	1	TBDR112	C102	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
132	1	TBDR12	R79	1.00K	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
133	1	TBDR13	U31		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
134	1	TBDR14	R112	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
135	1	TBDR15	C152	0.1uF	GRM188R71H104KA93D	Murata Electronics	490-1519-1-ND	Cap, Cerc 0603 0.1uF 50V 10% X7R
136	1	TBDR16	C153	4.7uF	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
137	1	TBDR17	R427	OPEN	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
138	1	TBDR18	R111	100	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
139	1	TBDR19	R78	10	P1206E10R0BB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
140	6	TBDRN1	RN1, RN2, RN3, RN4, RN5, RN6	OPEN	NOT INSTALLED	N/A	N/A	Resistor, network bussed 8 resistors (not installed)
141	6	TBDRN2	R485, R543, R565, R618, R649, R671	10K	766163103G	CTS	766-163-R10K-ND	Resistor network, 8 isolated 10.0K 5% SO16NB
142	12	TBD33	U6, U21, U22, U24, U33, U35, U123, U127, U142, U144, U153, U155		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
143	12	TBD33A	U9, U10, U13, U14, U26, U37, U131, U132, U135, U136, U146, U157		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
144	12	TBD33B	U17, U18, U28, U30, U39, U41, U139, U140, U148, U150, U159, U161		OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
1	1		REFERENCE	MNSN-EL-04-1008			PCB BLANK, MONSOON Clock and Bias Board
2	7		JP1, JP2, JP3, JP4, ,JP5, JP6, JP9	4-103185-0	Amp/ Tyco	A26513-ND	Jumper, header strip 3 x 1 .1 center .025 sq posts (break to size)
3	2		J1, J4	064176	ERNI	N/A	Con, right angle female cPCI 110 pin J1, J4 position
4	1		J3	064784	ERNI		Con, right angle female cPCI 95 pins J3 position
5	2		J2, J5	064785	ERNI	n/a	Con, right angle female cPCI 110 pin J2, J5 position
6	1		J6	4-103325-0	Amp/ Tyco	A26516-ND	Header, right angle 8 position single row (break to size)
7	2		JP10, JP11	4-103185-0	Amp/ Tyco	A26513-ND	Jumper, header strip 2 x 1 .1 center .025 sq posts (break to size)
8	2		P1, P2	903-373J-51A	Amphenol Corp	ARF1243-ND	Con, SMB 50 ohm PCB receptacles
9	40	2.0pF	C171, C184, C197, C210, C234, C235, C242, C249, C250, C257, C264, C265, C272, C279, C280, C287, C297, C305, C312, C320, C327, C335, C342, C350, C357, C364, C371, C378, C385, C392, C399, C406, C436, C441, C466, C470, C881, C885, C928, C932	C0603C209C5GACTU	Kemet	399-1047-1-ND	Cap, Cerc 2.0pF 50V +/- .25pF COG/ NPO 0603
10	64	0.01uF	C163, C168, C176, C181, C189, C195, C202, C207, C231, C232, C237, C240, C246, C247, C252, C255, C261, C262, C267, C270, C276, C277, C282, C284, C294, C295, C299, C300, C303, C309, C310, C314, C315, C318, C324, C325, C329, C330, C333, C339, C340, C344, C345, C348, C354, C355, C359, C362, C368, C369, C373, C376, C382, C383, C387, C389, C396, C397, C401, C404, C413, C416, C420, C428	ECJ-1VB1H103K	Panasonic	PCC1784CT-ND	Cap, Cerc 0603 0.01uF 50V 10% X7R
11	26	0.1uF	C101, C151, C152, C214, C218, C221, C223, C288, C478, C482, C483, C489, C493, C494, C617, C618, C667, C700, C702, C708, C957, C961, C962, C989, C993, C994	GRM188R71H104KA93D	Murata Electronics	490-1519-1-ND	Cap, Cerc 0603 0.1uF 50V 10% X7R
12	8	10pF	C480, C481, C491, C492, C959, C960, C991, C992	ECJ-1VC1H100D	Panasonic	PCC100CVCT-ND	Cap, Cerc 0603 10pF 50V +/- .5pF NPO
13							
14	88	0.01uF	C4, C13, C19, C20, C24, C31, C32, C36, C43, C44, C48, C54, C57, C64, C67, C74, C77, C84, C87, C94, C97, C107, C110, C116, C119, C125, C128, C135, C138, C144, C147, C157, C175, C193, C211, C225, C433, C435, C438, C439, C455, C461, C463, C468, C510, C519, C528, C532, C533, C542, C546, C547, C556, C560, C561, C570, C573, C580, C583, C590, C593, C600, C603, C610, C613, C624, C627, C633, C636, C642, C645, C651, C654, C660, C663, C672, C680, C687, C696, C706, C883, C884, C887, C888, C908, C912, C930, C934	ECJ-2VB1H103K	Panasonic	PCC103BCT-ND	Cap, Cerc 0805 0.01uF 50V 10% X7R
15	8	22pF	C454, C460, C465, C469, C906, C910, C929, C933	ECJ-2VC1H220J	Panasonic	PCC220CNCT-ND	Cap, Cerc 0805 22pF 50V 5% NPO

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
16	50	1uF	C26, C38, C50, C59, C69, C79, C89, C99, C112, C121, C131, C140, C150, C162, C180, C201, C216, C227, C429, C450, C512, C523, C536, C537, C550, C551, C564, C565, C575, C585, C595, C605, C616, C629, C638, C647, C656, C665, C698, C703, C709, C751, C754, C920, C922, C924, C926, C927, C953, C1000	ECJ-2YB1A105K	Panasonic	PCC1807CT-ND	Cap, Cerc 0805 1uF 10V 10% X7R
17	347	0.1uF	C1, C2, C6, C7, C8, C9, C10, C12, C15, C16, C25, C27, C28, C37, C39, C40, C49, C51, C52, C58, C60, C61, C62, C68, C70, C71, C72, C78, C80, C81, C82, C88, C90, C91, C92, C98, C103, C104, C105, C111, C113, C114, C120, C122, C123, C129, C130, C132, C133, C139, C141, C142, C148, C155, C158, C165, C178, C185, C204, C215, C219, C226, C407, C411, C412, C414, C422, C424, C426, C430, C437, C445, C446, C447, C448, C451, C458, C459, C471, C472, C473, C474, C475, C476, C487, C488, C500, C504, C505, C506, C508, C509, C511, C513, C514, C515, C516, C517, C520, C521, C522, C524, C525, C526, C534, C535, C538, C539, C540, C548, C549, C552, C553, C554, C562, C563, C566, C567, C568, C574, C576, C577, C578, C584, C586, C587, C588, C594, C596, C597, C598, C604, C606, C607, C608, C614, C621, C622, C628, C630, C631, C637, C639, C640, C646, C648, C649, C655, C657, C658, C664, C669, C670, C674, C677, C683, C688, C693, C710, C711, C712, C713, C714, C715, C716, C717, C718, C721, C722, C725, C729, C730, C733, C737, C738, C741, C744, C745, C748, C750, C753, C757, C758, C759, C760, C761, C762, C763, C764, C765, C768, C769, C772, C775, C776, C779, C782, C783, C786, C789, C790, C793, C795, C796, C798, C799, C801, C802, C803, C805, C806, C807, C808, C809, C812, C813, C817, C820, C821, C825, C828, C829, C833, C836, C837, C841, C843, C844, C846, C847, C848, C850, C851, C852, C853, C854, C856, C860, C861, C863, C864, C866, C868, C870, C871, C873, C874, C877, C879, C880, C889, C890, C891, C892, C897, C900, C901, C903, C905, C914, C916, C917, C919, C921, C923, C925, C936, C937, C938, C939, C940, C941, C942, C943, C944, C946, C947, C949, C951, C954, C956, C967, C969, C970, C971, C972, C973, C974, C975, C976, C977, C978, C979, C980, C981, C982, C983, C984, C985, C987, C988, C998, C999, C1001, C1002, C1003, C1004, C1005, C1006, C1007, C1008, C1009, C1010, C1011, C1012, C1013, C1014, C1015, C1016, C1017, C1018, C1019, C1020, C1021, C1022, C1023, C1024, C1025, C1026, C1027, C1028, C1029, C1030, C1031, C1032, C1033, C1034, C1035, C1036, C1037, C1038, C1039, C1040, C1041, C1042, C1043, C1044	ECJ-2YB1H104K	Panasonic	PCC1840CT-ND	Cap, Cerc 0805 0.1uF 50V 10% X7R
18	36	.47uF	C5, C14, C22, C23, C34, C35, C46, C47, C56, C66, C76, C86, C96, C109, C118, C127, C137, C146, C531, C545, C559, C572, C582, C592, C602, C612, C626, C635, C644, C653, C662, C673, C681, C689, C697, C707	ECJ-3YB1E474K	Panasonic	PCC1891CT-ND	Cap, Cerc 1206 .47uF 25V 10% X7R

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
19	72	4.7uF	C154, C217, C290, C421, C620, C675, C676, C679, C682, C684, C685, C690, C691, C692, C695, C719, C720, C723, C724, C726, C727, C728, C731, C732, C734, C735, C736, C739, C740, C742, C743, C746, C747, C766, C767, C770, C771, C773, C774, C777, C778, C780, C781, C784, C785, C787, C788, C791, C792, C810, C811, C814, C815, C816, C818, C819, C822, C823, C824, C826, C827, C830, C831, C832, C834, C835, C838, C839, C840, C865, C875, C899	ECJ-3YB1E475M	Panasonic	PCC2241CT-ND	Cap, Cerc 1206 4.7uF 25V +20% X5R
20	2	22uF	C855, C857	ECJ-4YB1A226M	Panasonic	PCC2228CT-ND	Cap, Cerc 1210 22uF 10V 20%
21	7	47uF	C408, C409, C498, C499, C501, C502, C503	ECS-T1AD476R	Panasonic	PCS2476CT-ND	Cap, Tant 47uF 10V 20% SMT7343
22	68	4.7uF	C100, C102, C149, C153, C212, C213, C220, C224, C289, C418, C419, C425, C427, C431, C449, C452, C477, C479, C484, C490, C495, C615, C619, C666, C668, C699, C701, C705, C749, C752, C755, C756, C794, C797, C800, C804, C842, C845, C849, C858, C859, C862, C867, C869, C872, C876, C878, C893, C894, C895, C896, C898, C902, C904, C915, C918, C945, C948, C950, C952, C955, C958, C963, C966, C968, C986, C990, C995	ECS-T1DY475R	Panasonic	P11322CT-ND	Cap, Tant 4.7uF 20V 20% SMT3216
23	4	22uF	C410, C442, C443, C444	ECS-T1ED226R	Panasonic	PCS5226CT-ND	Cap, Tant 22uF 25V 20% SMT7343
24	152	1.0uF	C3, C11, C17, C18, C21, C29, C30, C33, C41, C42, C45, C53, C55, C63, C65, C73, C75, C83, C85, C93, C95, C106, C108, C115, C117, C124, C126, C134, C136, C143, C145, C156, C159, C164, C169, C170, C172, C177, C183, C186, C190, C191, C196, C198, C203, C208, C209, C222, C228, C233, C238, C241, C243, C248, C253, C256, C258, C263, C268, C271, C273, C278, C283, C286, C291, C296, C301, C304, C306, C311, C316, C319, C321, C326, C331, C334, C336, C341, C346, C349, C351, C356, C360, C363, C365, C370, C374, C377, C379, C384, C388, C391, C393, C398, C402, C405, C415, C417, C423, C432, C434, C440, C453, C456, C457, C462, C464, C467, C507, C518, C527, C529, C530, C541, C543, C544, C555, C557, C558, C569, C571, C579, C581, C589, C591, C599, C601, C609, C611, C623, C625, C632, C634, C641, C643, C650, C652, C659, C661, C671, C678, C686, C694, C704, C882, C886, C907, C909, C911, C913, C931, C935	ECS-T1VY105R	Panasonic	P11332CT-ND	Cap, Tant 1.0uF 35V 20% SMT3216
25	1		SW1	EP12SD1ABE	ITT Cannon	CKN4008-ND	Switch, SPDT momentary push button right angle
26	17	10	R263, R264, R278, R279, R295, R302, R303, R305, R312, R619, R650, R651, R674, R675, R686, R691, R692	742C163 100 J	CTS	742C163100JCT-ND	Resistor, Concave chip Array 8 iso 10 ohm 5% 1/16 W
27	6	OPEN	RN1, RN2, RN3, RN4, RN5, RN6	NOT INSTALLED	N/A	N/A	Resistor, network bussed 8 resistors (not installed)
28	6	10K	R485, R543, R565, R618, R649, R671	766163103G	CTS	766-163-R10K-ND	Resistor network, 8 isolated 10.0K 5% SO16NB
29	8	2.0K	R291, R292, R298, R299, R667, R668, R680, R681	ERJ-3EKF2001V	Panasonic	P2.00KHCT-ND	Resistor, 2.0K 1/16W 1% 0603
30							

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
31	32	49.9K	R114, R116, R119, R121, R123, R125, R128, R130, R140, R143, R146, R149, R153, R156, R159, R162, R168, R172, R175, R179, R182, R186, R189, R192, R197, R200, R203, R206, R209, R212, R215, R220	9C06031A4992FKHFT	Yageo	311-49.9KHCT-ND	Resistor, 49.9K 1/10W 1% 0603
32	32	10.0K	R117, R126, R131, R142, R144, R147, R150, R151, R154, R157, R160, R163, R169, R170, R173, R176, R178, R180, R183, R185, R187, R191, R193, R198, R201, R204, R207, R210, R213, R216, R217, R219	9C06031A1002FKHFT	Yageo	311-10.0KHCT-ND	Resistor, 10.0K 1/10W 1% 0603
33	8	1.00K	R79, R133, R164, R223, R429, R550, R555, R608	RR1220P-102-B	Susumu Co Ltd	RR12P1.0KBCT-ND	Resistor, 1.0K 0.1% 25 ppm 1/10 Watt 0805
34	65	1.0K	R430, R431, R432, R433, R436, R437, R438, R439, R442, R443, R444, R445, R448, R449, R450, R451, R458, R459, R460, R461, R464, R465, R466, R467, R470, R471, R472, R473, R476, R477, R478, R479, R486, R487, R488, RR89, R492, R493, R494, R495, R498, R499, R500, R501, R504, R505, R506, R507, R515, R516, R517, R518, R521, R522, R523, R524, R527, R528, R529, R530, R533, R534, R535, R536, R709	ERJ-3EKF1001V	Panasonic	P1.00KHCT-ND	Resistor, 1.0K 1/16W 1% 0603
35	8	100	R111, R136, R226, R344, R455, R547, R552, R609	RR1220P-101-B	Susumu Co Ltd	RR12P100BCT-ND	Resistor, 100 0.1% 25ppm 1/10 Watt 0805
36	8	499	R229, R234, R271, R277, R558, R562, R637, R644	9C08052A4990FKHFT	Yageo	311-499CCT-ND	Resistor, 499 1% 1/8 Watt 0805
37	29	1.0K	R194, R195, R221, R265, R306, R510, R511, R512, R513, R514, R539, R540, R541, R542, R544, R545, R546, R590, R601, R611, R617, R620, R622, R662, R672, R676, R677, R678, R684	ERJ-6ENF1001V	Panasonic	P1.00KCCT-ND	Resistor, 1.0K 1% 1/10 Watt 0805
38	117	10.0K	R6, R13, R16, R22, R25, R32, R33, R39, R40, R42, R47, R49, R50, R55, R57, R58, R59, R65, R66, R67, R68, R74, R75, R76, R77, R83, R85, R86, R90, R91, R96, R97, R103, R104, R109, R110, R236, R238, R241, R242, R244, R247, R248, R250, R253, R254, R256, R259, R284, R286, R289, R304, R308, R309, R310, R311, R317, R319, R324, R326, R327, R332, R334, R335, R340, R342, R343, R349, R350, R351, R355, R356, R357, R364, R365, R366, R371, R372, R374, R378, R379, R381, R391, R393, R400, R402, R409, R410, R417, R418, R425, R426, R566, R568, R570, R572, R574, R576, R578, R580, R582, R584, R586, R588, R591, R593, R595, R597, R599, R602, R604, R606, R655, R657, R659, R685, R689	ERJ-6ENF1002V	Panasonic	P10.0KCTR-ND	Resistor, 10.0K 1% 1/10 Watt 0805
39	36	1.02K	R1, R4, R8, R9, R17, R18, R26, R27, R35, R43, R51, R60, R69, R80, R87, R93, R99, R105, R320, R328, R336, R345, R352, R359, R367, R375, R385, R386, R394, R395, R403, R404, R411, R412, R419, R420	ERJ-6ENF1021V	Panasonic	P1.02KCCT-ND	Resistor, 1.02K 1% 1/10 Watt 0805
40	71	10	R10, R19, R28, R36, R37, R44, R45, R52, R53, R61, R62, R70, R71, R81, R88, R94, R100, R106, R115, R120, R124, R129, R141, R148, R155, R161, R171, R177, R184, R190, R199, R205, R211, R218, R282, R296, R316, R318, R321, R322, R329, R330, R337, R338, R346, R353, R360, R368, R376, R387, R396, R405, R413, R421, R435, R441, R447, R453, R463, R469, R475, R481, R491, R497, R503, R509, R520, R526, R532, R538, R694	ERJ-6ENF10R0V	Panasonic	P10.0CCT-ND	Resistor, 10 1% 1/10 Watt 0805

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
41	3	15	R307, R313, R673	ERJ-6ENF15R0V	Panasonic	P15.0CCT-ND	Resistor, 15.0 1% 1/10 Watt 0805
42							
43	8	4.99K	R230, R233, R270, R276, R557, R561, R638, R643	9C08052A4991FKHFT	Yageo	311-4.99KCCT-ND	Resistor, 4.99K 1% 1/8 Watt 0805
44	1	2.74K	R690	ERJ-6ENF2741V	Panasonic	P2.74KCCT-ND	Resistor, 2.74K 1% 1/10 Watt 0805
45	1	301	R281	ERJ-6ENF3010V	Panasonic	P301CCT-ND	Resistor, 301 1% 1/10 Watt 0805
46	2	4.75K	R280, R283	ERJ-6ENF4751V	Panasonic	P4.75KCCT-ND	Resistor, 4.75K 1% 1/10 Watt 0805
47	8	499	R228, R232, R268, R274, R559, R563, R640, R646	9C08052A4990FKHFT	Yageo	311-499CCT-ND	Resistor, 499 1% 1/8 Watt 0805
48	36	49.9K	R2, R5, R11, R12, R20, R21, R29, R30, R38, R46, R54, R63, R72, R82, R89, R95, R101, R107, R323, R331, R339, R347, R354, R361, R369, R377, R388, R389, R397, R398, R406, R407, R414, R415, R422, R423	ERJ-6ENF4992V	Panasonic	P49.9KCCT-ND	Resistor, 49.9K ohm 1% 1/10 Watt 0805
49	16	49.9	R235, R260, R261, R262, R266, R269, R272, R275, R612, R613, R614, R615, R639, R642, R645, R648	ERJ-6ENF49R9V	Panasonic	P49.9CCT-ND	Resistor, 49.9 1% 1/10 Watt 0805
50	29	0	R138, R165, R227, R231, R267, R273, R454, R456, R482, R484, R560, R564, R621, R623, R625, R627, R628, R630, R631, R632, R634, R636, R641, R647, R652, R653, R663, R664, R687	ERJ-6GEY0R00V	Panasonic	P0.0ATR-ND	Resistor, 0 ohm 5% 1/10 Watt 0805
51	6	10	R78, R132, R222, R428, R551, R556	P1206E10R0BB	Vishay		Resistor, 10 0.1% 25 ppm 1/3 Watt 1206
52	6	SHORT	L1, L2, L3, L4, L5, L6	wire 18-20 awg			wire short across pads
53	36		U4, U7, U8, U11, U12, U15, U16, U19, U20, U23, U25, U27, U29, U32, U34, U36, U38, U40, U120, U125, U129, U130, U133, U134, U137, U138, U141, U143, U145, U147, U149, U152, U154, U156, U158, U160	INA118UB	Burr Brown	{PN Digikey}	IC, Precision low pwr instrumentation amplifier
54	19		U1, U2, U3, U5, U121, U122, U124, U126, U128, U162, U163, U170, U171, U176, U177, U182, U183, U188, U197	MAX313LESE cross DG412CY	Maxim	{PN Digikey}	IC, quad +3V Analog Switch
55	2		U100, U169	MAX6143AASA25	Maxim		IC, Voltage reference, with temp sensor
56	1		U199	AD7814ART	Analog Devices		IC, 10 bit digital temp sensor
57							
58	9		U53, U63, U64, U105, U106, U107, U108, U109, U111	AD8802AR	Analog Devices		IC, 12 channel, 8 bit trimDAC's with pwr
59	4		U113, U117, U201, U202	AD9709AST	Analog Devices	{PN Digikey}	IC, D/A Converter 8 bit, 125 MSPS Dual TxDAC+
60	1		U110	DS2401	Dallas	DS2401-ND	IC, Silicon serial number
61	2		U90, U189	LT1227CS8	Linear Technology	LT1227CS8-ND	IC, 140M Hz Video current feedback amplifier
62	17		U74, U75, U76, U77, U87, U88, U89, U95, U96, U97, U98, U99, U101, U104, U112, U114, U115	MAX1270BCAI	Maxim		IC, multirange, 8 ch serial 12-bit ADC
63	4		U42, U54, U65, U78	MAX306EWI	Maxim	{PN Digikey}	IC, Precision, 16 CH high performance CMOS Analog Multiplexer
64	16		U164, U165, U166, U167, U172, U173, U174, U175, U178, U179, U180, U181, U184, U185, U186, U187	MAX4653ESE	Maxim	{PN Digikey}	IC, low Voltage 4 ohm, quad SPST CMOS Analog Switches
65	45		U6, U9, U10, U13, U14, U17, U18, U21, U22, U24, U26, U28, U30, U31, U33, U35, U37, U39, U41, U51, U52, U91, U123, U127, U131, U132, U135, U136, U139, U140, U142, U144, U146, U148, U150, U151, U153, U155, U157, U159, U161, U191, U192, U195, U205	OP1177AR	Analog Devices	{PN Digikey}	IC, Precision low noise & input bias current op amp
66	1		U204	TPS75218QPWP	TI	{PN Digikey}	IC, Voltage regulator, 2A low dropout, fast transient

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
67	2		U190, U203	TPS75233QPWP	TI	296-2682-5-ND	IC, Voltage regulator, 2A low dropout, fast transient
68	1		U200	XC18V02VQ44I	Xilinx		IC, Configuration Prom w/ in sys programming 2M capacity
69	2		U118, U119	XCR3384XL-7-PQ208C	Xilinx		IC, 256 macrocell CPLD
70	1		U116	XCV300E-6PQ240C	Xilinx		IC, FPGA Virtex 1.8V
71	4	2A	F1, F2, F3, F4	R451 002	Littelfuse	F1145CT-ND	Fuse, fast acting 2A nano SMF
72	2		D3, D4	SMCJ5.0CA-13	Diodes, Inc.	SMCJ5.0CADICT-ND	Diode, TVS 1500W SMC 5V Bi-directional
73	2		D2, D5	SML-LXT0805IW-TR	Lumex	67-1552-1-ND	LED, Thin 635nm Red Diff 0805 SMD
74	1		D1	SSF-LXH4RAID	Lumex	67-1303-ND	LED, T-1 Red right angle mount
75	9	GND	TP1, TP2, TP3, TP4, TP7, TP10, TP34, TP49, TP50	TP-105-xx-00	Components Corp		Test point, black .1 center wire form loop
76	4		TP5, TP6, TP9, TP11	TP-105-xx-02	Components Corp		Test point, red .1 center wire form loop
77	44		TP8, TP12, TP13, TP14, TP15, TP16, TP17, TP18, TP19, TP20, TP21, TP22, TP23, TP24, TP25, TP26, TP27, TP28, TP29, TP30, TP31, TP32, TP33, TP35, TP36, TP37, TP38, TP39, TP40, TP41, TP42, TP43, TP44, TP45, TP46, TP47, TP48, TP51, TP52, TP53, TP54, TP55, TP56, TP57	TP-105-XX-04	Components Corp		Test point, yellow .1 center wire form loop
78	40	OA_VCLK OA_FBIAS	U43, U44, U45, U46, U47, U48, U49, U50, U55, U56, U57, U58, U59, U60, U61, U62, U66, U67, U68, U69, U70, U71, U72, U73, U79, U80, U81, U82, U83, U84, U85, U86, U93, U94, U102, U103, U193, U194, U196, U198	LT1357CS8	Linear Technology		IC, Op Amp 25MHz, 600V/us
79	1		Y1 (NOT INSTALLED)	EP13 00 HS ET TS 40.000M	Ecliptek		Oscillator, half size 40.0Mhz with tri state
80	1		JP7	wire 18-20 awg			SEE ASSEMBLY DRAWING
81	1		JP8	wire 18-20 awg			SEE ASSEMBLY DRAWING
82	20	OPEN	R113, R118, R122, R127, R139, R145, R152, R158, R167, R174, R181, R188, R196, R202, R208, R214, R290, R297, R666, R679	NOT INSTALLED	{MFR}	N/A	Resistor, 0603
83	128	OPEN	R3, R7, R14, R15, R23, R24, R31, R34, R41, R48, R56, R64, R73, R84, R92, R98, R102, R108, R112, R134, R135, R166, R224, R225, R237, R239, R240, R243, R245, R246, R249, R251, R252, R255, R257, R258, R285, R287, R288, R314, R315, R325, R333, R341 R348, R358, R362, R363, R370, R373, R380, R382, R383, R384, R390, R392, R399, R401, R408, R416, R424, R427, R434, R440, R446, R452, R457, R462, R468, R474, R480, R483, R490, R496, R502, R508, R519, R525, R531, R537, R548, R549, R553, R554, R567, R569, R571, R573, R575, R577, R579, R581, R583, R585, R587, R589, R592, R594, R596, R598, R600, R603, R605, R607, R616, R624, R626, R629, R633, R635, R654, R656, R658, R660, R661, R665, R688, R693, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704	NOT INSTALLED	N/A	N/A	Resistor, 0805 OPEN
84	76	TBD	C160, C161, C166, C167, C173, C174, C179, C182, C187, C188, C192, C194, C199, C200, C205, C206, C229, C230, C236, C239, C244, C245, C251, C254, C259, C260, C266, C269, C274, C275, C281, C285, C292, C293, C298, C302, C307, C308, C313, C317, C322, C323, C328, C332, C337, C338, C343, C347, C352, C353, C358, C361, C366, C367, C372, C375, C380, C381, C386, C390, C394, C395, C400, C403, C485, C486, C496, C497, C964, C965, C996, C997, C1045, C1046, C1047, C1048	NOT INSTALLED	TBD		Cap, Cerc 0603 TBD

ITEM	Count	Value	RefDes	Part Number	MFR	PN Digikey	Description
85	0.13		(Y1)	714-93-120-31-007	Mill Max		Jack pins, fit .040 dia hole .018 dia pin (break to size)
86	12	0	R293, R294, R300, R301, R669, R670, R682, R683, R705, R706, R707, R708	9C06031A0R00JLHFT	Yageo	311-0.0GCT-ND	Resistor, 0 ohm 1/16W 5% 0603
87	1	9.09K	R710	9C06031A9091FKHFT	Yageo	311-9.09KHCT-ND	Resistor, 9.09K 1/10W 1% 0603
88	2	5A	F5, F6	R451 005	Littelfuse	F1149CT-ND	Fuse, fast acting 5A nano SMF
89	2	TBD12A TBDR010	U92, U168	ADR420BR	Analog Devices	ADR420BR-ND	IC, Voltage reference, ultra precision, low noise
90	1	3.01K	R137, R610	9C08052A3011FKHFT	Yageo	311-3.01KCCT-ND	Resistor, 3.01K 1% 1/8 Watt 0805

