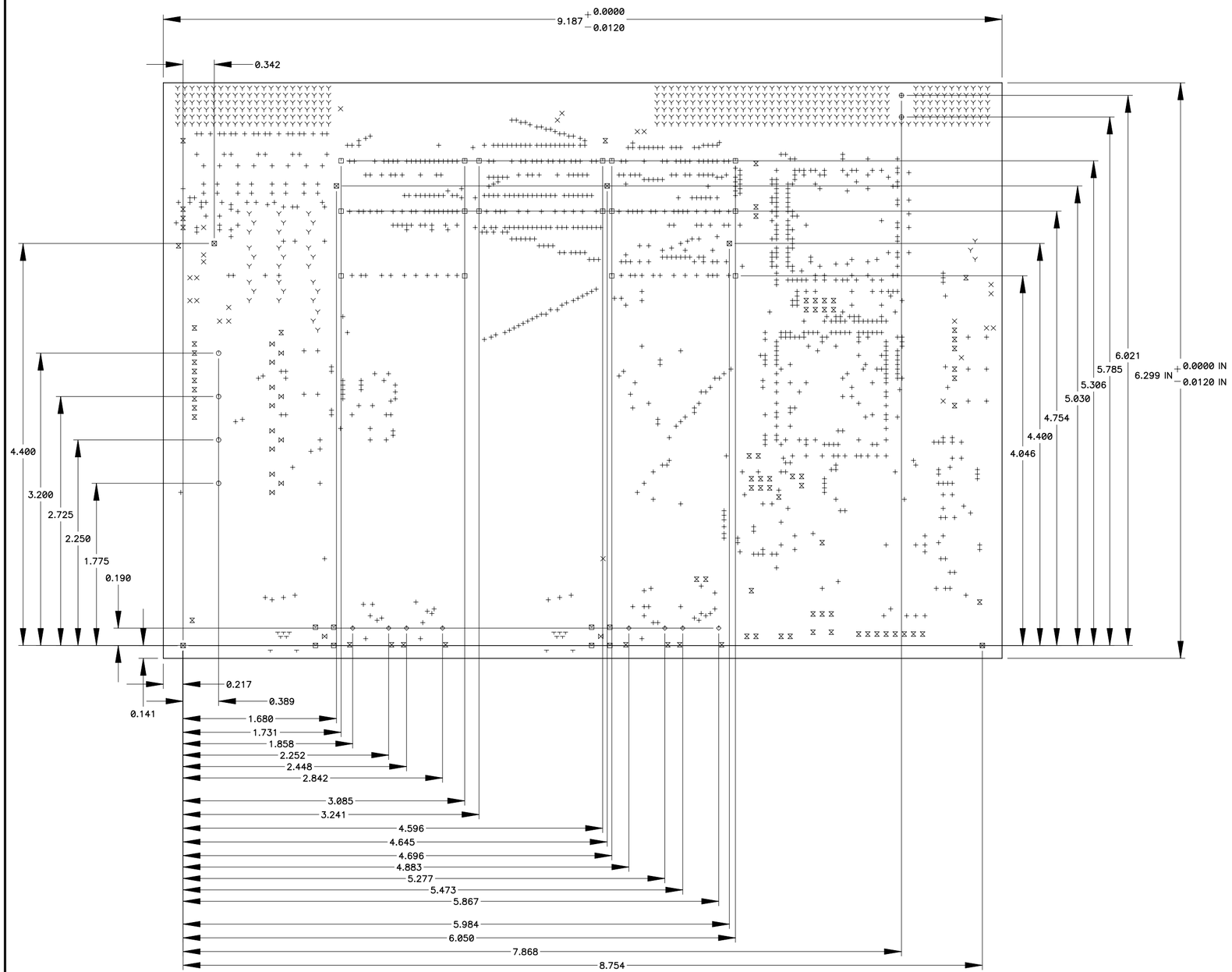
REVISIONS						
ZONE	LTR	REVISIONS	ECR	DATE	BY	APRV



NOTES: unless otherwise specified

1.0 Applicable documents
The following items are required:
PATTERN FILM DWG # MNSN−EL−04−3001
DETAIL DRAWING DWG # MNSN−EL−04−1001 THIS DOCUMENT

2.0 BASE MATERIAL
2.1 Laminate base material shall be natural color, FR−4 or equivalent. See Detail A−A for layer to layer specification and overall thickness.
2.2 B−Stage shall be selected at vendors discretion to meet over all board thickness and end item requirements.

3.0 COPPER PLATING
3.1 Copper plating shall have a minimum purity of 99.5 percent and a minimum thickness of .001 inch. This also applies to the plating in the holes.

4.0 SOLDERMASK
4.1 Apply LPI Green soldermask over bare copper according to the soldermask pattern file per IPC−SM−840.

5.0 FINISH
5.1 SMOBC, all exposed metal shall be coated in molten solder and hot air leveled, (HASL).

6.0 SILK SCREEN
6.1 Silk screen top (−1) and bottom (−6) side of board using yellow epoxy ink according to the −1ss pattern film and the −6ss pattern film. Ink shall not cover any exposed metal.

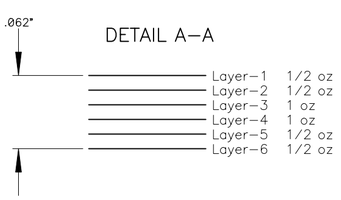
7.0 DIMENSIONS
7.1 All dimensions are in inches.
7.2 Unless otherwise specified all hole sizes apply after plating. Hole sizes are shown in the drill schedule.

8.0 TOLERANCES
8.1 Hole size tolerance +− .003 after plating unless otherwise specified.
8.2 Conductor widths and spacing shall be within 20% of the artwork originals.
8.3 Layer to layer registration shall be .007 inches of true position
8.4 Board dimensions shall meet the rquirements of the board drawing.
8.5 Warp and twist shall not exceed that defined in IPC−A−600.

9.0 APPEARANCE
9.1 All inside and outside corners shall have a maximum radius of .065
9.2 Remove all burrs and smooth sharp edges to .010 max.

VENDOR NOTE: NOTIFY US OF ANY CONFLICTING REQUIREMENTS OR IF BOARDS CANNOT BE MANUFACTURED TO MEET THE ABOVE REQUIREMENTS, DUE TO VENDORS PROCESS AND/OR TECHNIQUES OR BECAUSE PHOTO TOOLS AND/OR SPECIFICATIONS ARE INADEQUATE.

Drill Table			
Hole Dia (inch)	Symbol	Quantity	Plated
0.013	+	1074	Yes
0.018	×	23	Yes
0.027	Y	432	Yes
0.027	⊤	14	Yes
0.041	⧖	78	Yes
0.047	⋈	14	Yes
0.055	⧈	16	No
0.063	◈	8	No
0.067	⧉	8	Yes
0.080	⊕	2	No
0.110	⊠	6	No
0.125	⊙	4	No



QTY REQ'D	PART OR IDENTIFYING NO	ITEM DESCRIPTION		ITEM NO

TOLERANCES UNLESS OTHERWISE NOTED
.XX ± .03 ANGULAR
.XXX ± .010 ±.5°

THIRD ANGLE PROJECTION

NATIONAL OPTICAL ASTRONOMY OBSERVATORIES
OPERATED BY THE
ASSOCIATION OF UNIVERSITIES FOR RESEARCH IN ASTRONOMY
UNDER COOPERATIVE AGREEMENT WITH
NATIONAL SCIENCE FOUNDATION

DO NOT SCALE DRAWING

NAME: DETAIL
MONSOON MASTER CONTROL

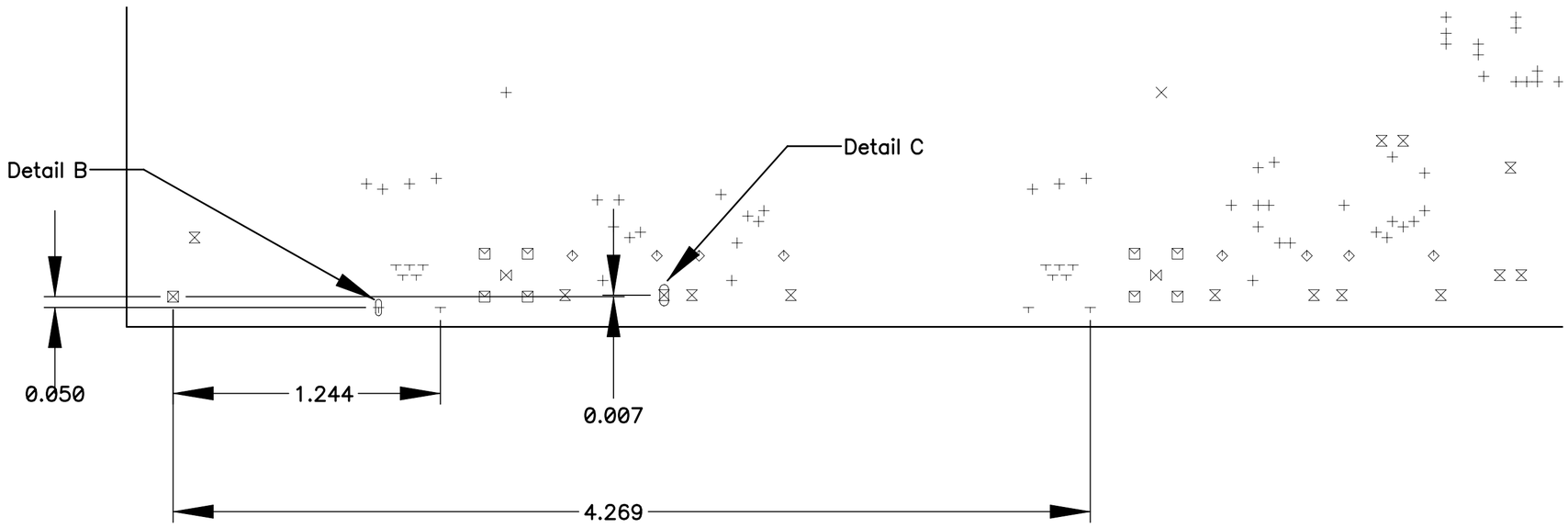
USED ON: MONSOON
REF:
DWG SIZE: C
REV: −−

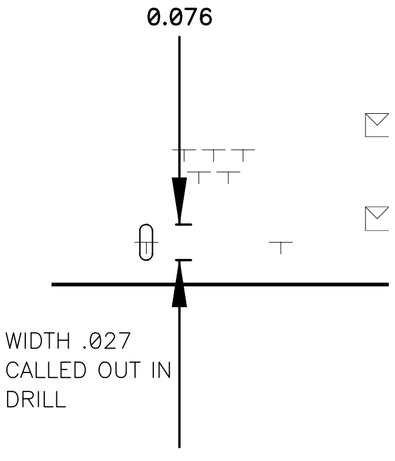
NEXT ASSEMBLY: MNSN−EL−04−0001
REFER TO SCHEMATIC: MNSN−EL−04−2001

SCALE:	DESIGNED BY	DATE	CHECKED BY	DATE	DWG NO
FULL	P.MOORE	JAN04			MNSN−EL−04−1001
DWG PRODUCED USING: PCAD2001	DRAWN BY: Dee Stover	DATE: 12FEB04	APPROVED BY	DATE	RELEASED

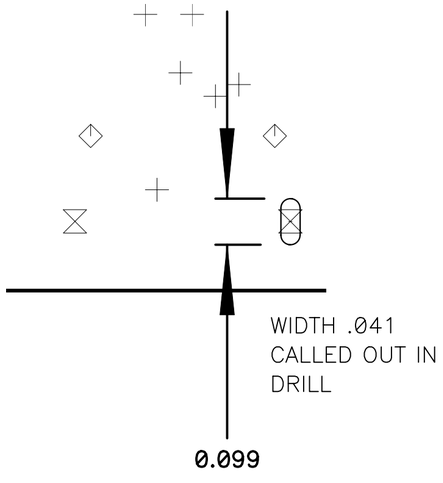
SHEET 1 OF 2

Wed Feb 25 2004





DETAIL B
4 PLACES



DETAIL C
8 PLACES

QTY REQ'D	PART OR IDENTIFYING NO	ITEM DESCRIPTION		ITEM NO

TOLERANCES UNLESS OTHERWISE NOTED
.XX ± .03
.XXX ± .010
ANGULAR ±.5°

THIRD ANGLE PROJECTION

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NATIONAL SCIENCE FOUNDATION

DO NOT SCALE DRAWING

NEXT ASSEMBLY: MNSN-EL-04-0001

REFER TO SCHEMATIC: MNSN-EL-04-2001

NAME: DETAIL
MONSOON MASTER CONTROL

USED ON: MONSOON

REF:

DWG SIZE: C

REV:

SCALE:	DESIGNED BY	DATE	CHECKED BY	DATE	DWG NO
FULL	P.MOORE	JAN04			MNSN-EL-04-1001
DWG PRODUCED USING: PCAD2001	DRAWN BY: Dee Stover	DATE: 12FEB04	APPROVED BY	DATE	RELEASED

SHEET 2 OF 2