MIDIAN ELECTRONICS INC.

ANI-F Maxon
Multi-Format ANI Encoder

Manual Revision: 04-08-25

Covers Software Revisions:
ANI-F: 1.0

SPECIFICATIONS

Operating Voltage	9.8 VDC
Operating Current	2.6 mA
Operating Temperature	-30 - +60 C
Frequency Range	280-3600 Hz
Audio Output Level	1 V (RMS)
Audio Output Impedance	22 KΩ
PTT Output Current	200 mA
Tone Distortion	<1%

ABOUT THE ANI-F

The ANI-F offers ANI & Emergency ANI encoding tone signaling formats such as Motorola's MDC-1200 & MDC-600, M/A-Com's G-Star, DTMF, 5-tone, 2-tone, ANI with Status, or Burst Tone. A special POCSAG paging version is also available. The ANI-F can be used with Midian's CAD or DDU Series products for monitoring ANI and ENI transmissions.

PRODUCT PROGRAMMING

Midian's ANI-F Maxon is programmed via Midian's KL-3 programmer. Please reference the KL-3 manual for setup instructions of the KL-3 software and hardware. From the product selection screen on the KL-3 UP software, select the appropriate product name from the list and click OK.

Set the parameters of the ANI-F Maxon software to fit the application. If any clarifications on a feature are required, move the mouse cursor over the feature name until the question mark appears and right click, a definition of the feature will be shown.

After entering the parameters, save the file by going to File - Save As. Enter the file name in the File Name block and click Save. Saving the file will allow for quick and easy reprogramming of units.

After plugging the board into the radio, but with the radio still open (see next section), connect the black lead of the KL-3 to a common ground, the yellow clip lead to Program Out pad, and the green clip lead to the Program In pad. Ground the PTT Input, apply power to the radio and click "Program Unit" in the KL-3 software. Follow the same procedure to read the unit, but select "Read Unit" in the menu bar.

HARDWARE INSTALLATION

Be certain to follow standard anti-static procedures when handling any of Midian's products.

SP-120/130/140/310/320/330/340/SL-55/55+: Open the radio, following the instructions detailed in the Maxon radio manual. The following table lists the factory settings of the radio links and how they should be configured for installation of the Midian board. Once the link positions are correct, plug the Midian board onto the options connector labeled CON404, and then reassemble the Maxon radio. For the SP-300 Series it will be necessary to keep LK14 out and insert LK19.

LK #	Factory	ANI-F
LK1	Out	Out
LK2	In	In
LK3	In	In
LK4	In	Out
LK5	In	In
LK6	Out	Out
LK7	In	In
LK8	Out	Out
LK9	Out	Out
LK12	In	In
LK14	Out	In
LK15	Out	Out
LK16	In	In
LK17	Out	Out
LK18	Out	Out
LK19	Out	Out
LK20	Out	Out
LK21	Out	In
LK22	Out	Out

SM-2000 Series & PM-100/160: Open the radio, following the instructions detailed in the Maxon radio manual. The following table lists the factory settings of the radio links and how they should be configured for installation of the Midian board. Once the link

positions are correct, plug the Midian board onto the options connector labeled CON404, and then reassemble the Maxon radio.

LK #	Factory	ANI-F
LK1	Out	Out
LK2	Out	Out
LK3	In	In
LK4	In	Out
LK5	In	In
LK6	Out	In
LK7	Out	Out
LK8	Out	Out
LK9	Out	Out
LK10	Out	Out
LK11	In	In
LK12	Out	Out
LK13	In	In
LK14	In	In
LK15	Out	Out
LK16	Out	Out
LK17	In	In
LK18	Out	Out
LK19	Out	Out

It will also be necessary to insert LK2 and remove LK4 in the front panel if using the auxiliary switch for Emergency ANI.

HARDWARE ALIGNMENT

For the TX Audio Output in a wide band system, set the ANI modulation pot R12 to 3.3 KHz (66% of 5 KHz) of deviation per EIA specifications. For the TX Audio Output in a narrow band system, set the ANI modulation pot R12 to 1.65 KHz (66% of 2.5 KHz) of deviation per EIA specifications.

RADIO PROGRAMMING

Other than the link positions noted under hardware installation, no special programming is necessary.

TECHNICAL NOTES

Portable Radio Emergency ANI: The transmission of the Emergency ANI is accomplished with the momentary options button, the bottom side button.

Mobile Radio Emergency ANI: The transmission of the Emergency ANI is accomplished with the latched auxiliary button. Since it is a latched button,

it will be necessary to push the auxiliary button again to ready the button for another emergency.

Common/Non-Common PTT: If Common PTT is to be used, it will be necessary to insert LK4 and program the ANI-F for common PTT.

SP-300 Alert Tone: In the SP-300 Series, it may be necessary to install a wire from the ANI-F Maxon's Pin 7 (Alert Tone) to the radio's + speaker terminal.
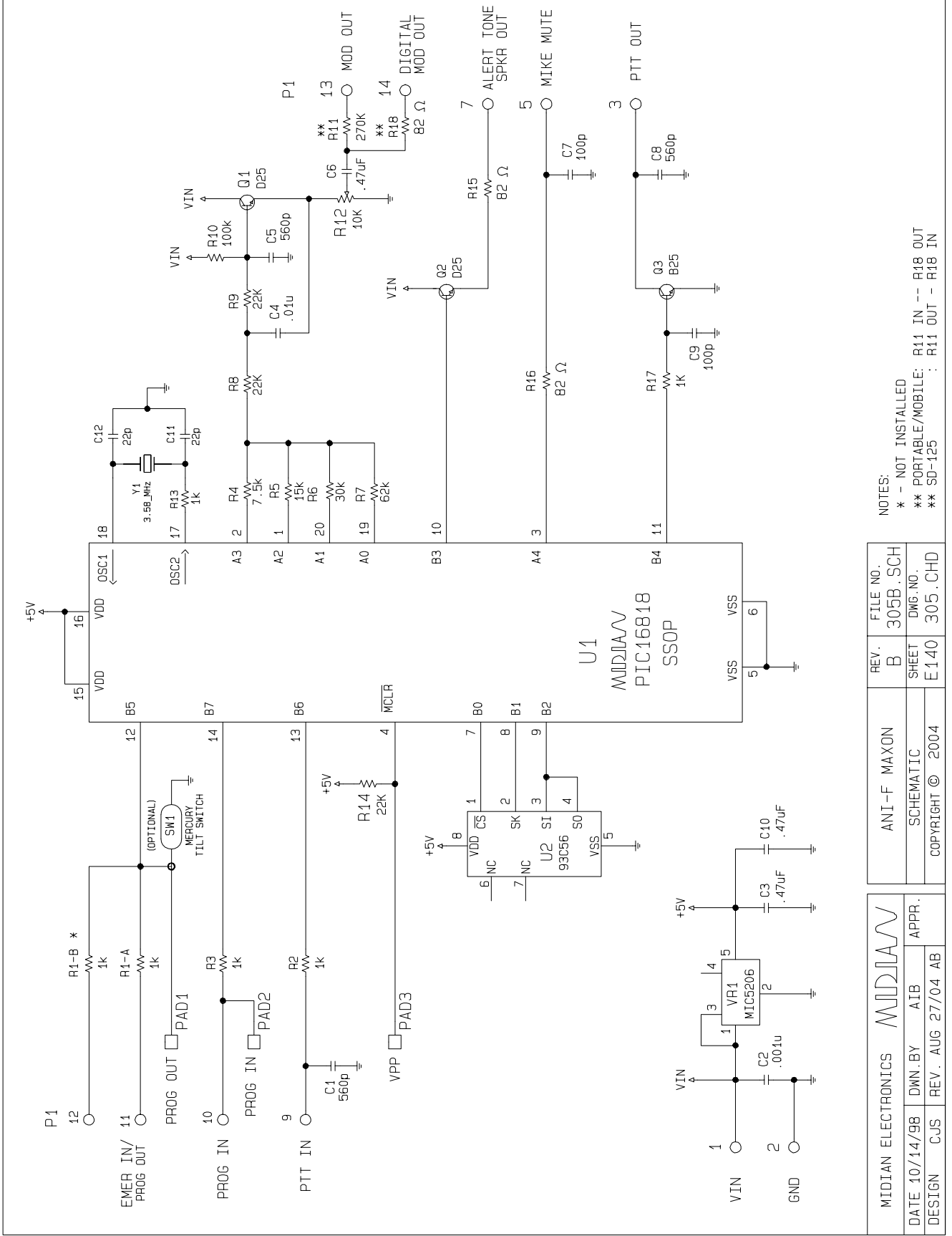
OPERATION

ANI Encode: When the PTT Input is grounded, the unit will assert the PTT Output and send the programmed ANI tones out the TX Tone Output.

ENI Encode: When the Emergency Input is grounded, the unit will assert the PTT Output and send the programmed Emergency ANI tones out the TX Tone Output.

MIDIAN CONTACT INFORMATION

Midian Electronics Inc.
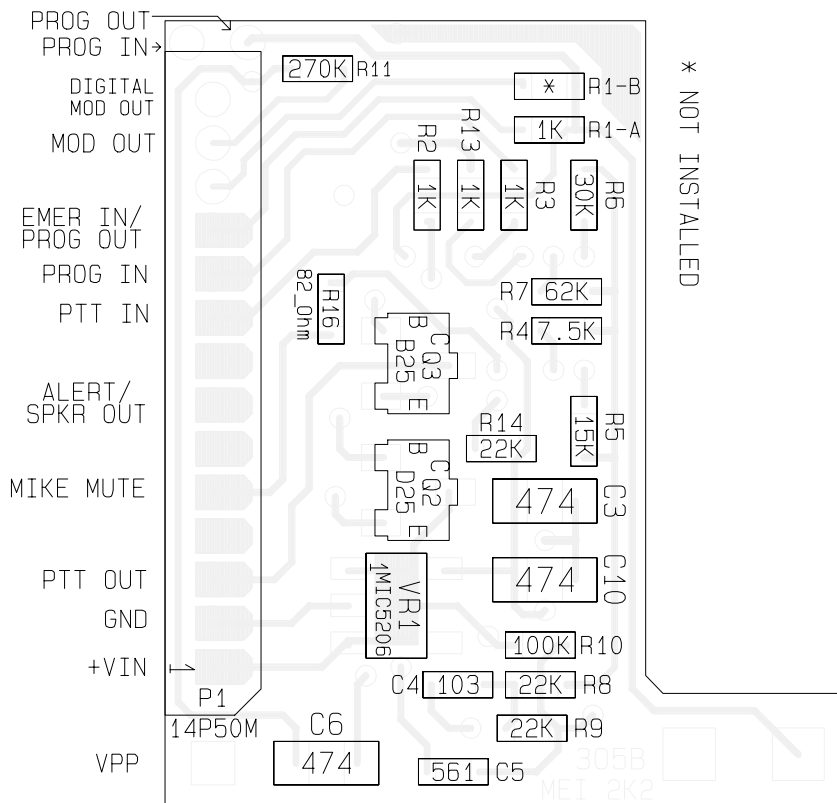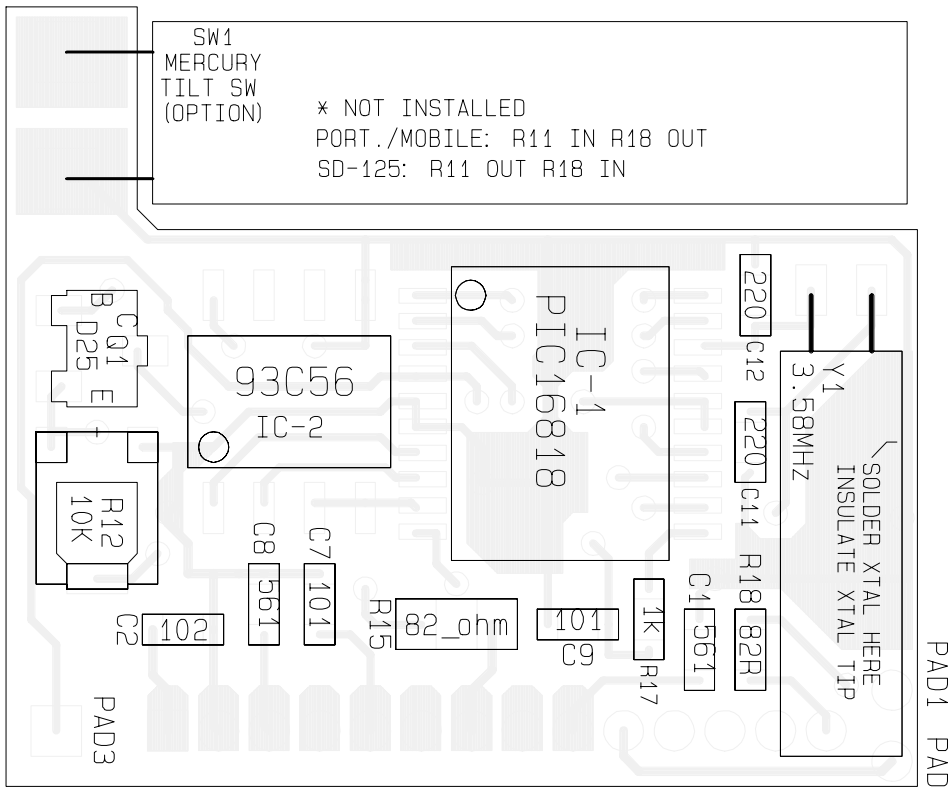2302 East 22nd Street
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NOTES:
* – NOT INSTALLED
** – PORTABLE/MOBILE: R11 IN -- R18 OUT
** SD-125   : R11 OUT – R18 IN

MOD OUT
DIGITAL
MOD OUT
ALERT TONE
SPKR OUT
MIKE MUTE
PTT OUT

P1

13 ** R11 270K
14 ** R18 82 Ω
C6 .47uF
Q1 D25
R10 100k
C5 560p
VIN
VIN
R12 10K
R9 22K
C4 .01u
R8 22K
7 R15 82 Ω
5 R16 82 Ω
C7 100p
3 R17 1K
C8 560p
C9 100p
Q2 D25
VIN
Q3 B25

C12 22p
C11 22p
Y1 3.58_MHz
R13 1k
R4 7.5k
R5 15k
R6 30k
R7 62k

18 OSC1
17 OSC2
2   A3
1   A2
20 A1
19 A0
10 B3
3   A4
11 B4

U1
MIDIAN
PIC16818
SSOP

16 VDD
15 VDD
VSS 6
VSS 5

+5V

12 B5
14 B7
13 B6
4   MCLR
7   B0
8   B1
9   B2

P1
12 EMER IN/ PROG OUT
11 R1-B * 1k   R1-A 1k
10 PROG OUT PAD1
    PROG IN PAD2
    R3 1k
    R2 1k
9   PTT IN
C1 560p

(OPTIONAL)
SW1 MERCURY TILT SWITCH
+5V
R14 22K
VPP PAD3

+5V
8 VDD CS 1
   SK 2
U2 SI 3
93C56 SO 4
6 NC VSS 5
7 NC

C10 .47uF
C3 .47uF
+5V
VIN
C2 .001u

4 5
VR1
MIC5206
3
1 2

MIDIAN ELECTRONICS MIDIAN
ANI-F MAXON
SCHEMATIC
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REV. B
FILE NO. 305B.SCH
DWG. NO. 305.CHD
SHEET E140

DATE 10/14/98 DWN.BY AIB APPR.
DESIGN CJS REV. AUG 27/04 AB

VIN 1
GND 2

SW1
MERCURY
TILT SW
(OPTION)   * NOT INSTALLED
              PORT./MOBILE: R11 IN R18 OUT
              SD-125: R11 OUT R18 IN

Q1
B   C
D25
E

93C56
IC-2

R12
10K

C2 [102]

C8 561
C7 101

R15 [82_ohm]

IC-1
PIC16818

[220] C12

[220] C11

C1 561
R18 82R

Y1
3.58MHz

SOLDER XTAL HERE
INSULATE XTAL TIP

[101]
C9

1K
R17

PAD3

PAD1 PAD2

PROG OUT
PROG IN →

DIGITAL
MOD OUT

MOD OUT

EMER IN/
PROG OUT

PROG IN

PTT IN

ALERT/
SPKR OUT

MIKE MUTE

PTT OUT

GND

+VIN →

P1
14P50M

VPP

[270K] R11

[*] R1-B

[1K] R1-A

R2 R13 R3 R6
[1K][1K][1K][30K]

* NOT INSTALLED

R16
[82_Ohm]

R7 [62K]

R4 [7.5K]

Q3
B
B25
E

R14
[22K]

R5
[15K]

Q2
B
D25
E

[474] C3

[474] C10

VR1
MIC5206

100K R10

C4 [103] [22K] R8

[22K] R9

C6
[474]

[561] C5