IS-2

Interoperability Switch

Manual Revision: 2016-05-12

Covers Firmware Revisions:
2.20 & Higher

Covers Hardware Revisions:
7705G

TABLE OF CONTENTS

SPECIFICATIONS

Voltage/Current:	
External Power	13-18 VDC
Standby Current	138 mA
Radio Inputs/Outputs:	
Audio Input Level	
AGC Dynamic Range	30 db
Audio Output Level	Adjustable from 140 mVpp to 3 Vpp unloaded
Audio Output Impedance	1 K or 47 K Jumper Selectable
PTT Out:	Open-Collector – Logic Low
Mechanical:	
Dimensions:	1.45" H x 6.1” W x 7.0" L
Operating Temp:	-30° to +60° C

GENERAL INFORMATION

Midian's IS-2 is designed to permit interoperability between two radios of virtually any type or as a cross band repeater maker. The IS-2 can interoperate two radio systems from the following system types:

- Conventional VHF and UHF
- Trunking Systems
- HF radios
- APCO 25
- Motorola's MotoTRBO
- Kenwood's NEXEDGE
- Icom's IDAS
- TETRA

The IS-2 takes the receive audio from one radio "1" and feeds it into the opposite radio "2's" microphone circuit. When using portables the receive audio from radio "1" is detected by the IS-2's VOX circuit keying radio "2" which passes the above mentioned audio to radio "2".

When using mobile radios, the VOX is not used and instead the IS-2 converts the COR from radio "1" to a push to talk signal keying radio "2".

The IS-2 has trunking delay inputs with a voice buffer for use in trunking systems. For example if radio "1" is conventional and radio "2" is trunked, when someone on radio system "1" transmits and starts talking the IS-2 starts recording the audio (up to 4 seconds). Once a channel has been acquired by radio "2" the IS-2 will pass the buffered voice to radio "2" for transmitting along with the remainder of the message. The voice buffer can also be used for a key-up delay.

There is a monitor output jack that can be used for recording or monitoring audio with an earphone or speaker amplifier.

There is a DTMF decoder to activate and deactivate the unit from field radios using the keypad on the radio or an ANI sequence on a dedicated channel. The IS-2 will generate a medium tone followed by a high tone when activated and a medium tone followed by a low tone when deactivated.

HARDWARE INSTALLATION

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

Use the enclosed matching cables with RJ45 type connectors to plug into the IS-2. The other ends can be connected to the appropriate type of radio connector using the pin out and color codes show below. See connector pin out in the chart below.

Midian offers several pre-made cables for plug and play operation for certain radios. Contact sales for further information.

Radio 1 uses connector J3 with the following connections:

J3-1: Validate (Brown): Not Used.

J3-2: External Enable (Blue): This provides for an external enable/disable of the unit. When the input matches the active polarity that is programmed into the unit, the unit is enabled.

J3-3: Mic audio (White): Connect to the MIC-High in the base station radio.

J3-4: Ground (Black): Connect to ground in the base station radio.

J3-5: COR Input (Red): Connect to a point in the radio's squelch or CTCSS circuit that changes logic level when a carrier is detected. The unit defaults to active low.

J3-6: External Power (Green): Connect to a 12-18 VDC source in the base station radio. If power cannot be connected to the radio use the optional wall adaptor (12-18 VDC).

J3-7: PTT Output (Yellow): This open collector provides a ground during PTT. Connect this to the PTT of the base station radio.

J3-8: Speaker – (Violet): Connect to Speaker - of the base station radio.

J3-9: Speaker + or Single Ended Speaker High (Orange): Connect to Speaker + of the base station radio.

J3-10: LTR Delay (Gray): Connect this to a point in the base station that gives a change of state when a channel is acquired. The unit defaults to look for an active low.

Radio 2 uses connector J2 with the following connections:

J2-1: Validate or Squelch Noise Input (Brown): The Validate input is currently not used. The Squelch Noise Input is for Busy Channel Detect with HF radios. Connect this input to the radio's detector output. This input is for busy channel detect only, the RX voice audio still needs to be present at J2-9.

J2-2: External Enable (Blue): This provides for an external enable/disable of the unit. When the input matches the active polarity that is programmed into the unit, the unit is enabled.

J2-3: Mic audio (White): Connect to the MIC-High in the base station radio.

J2-4: Ground (Black): Connect to ground in the base station radio.

J2-5: COR Input (Red): Connect to a point in the radio's squelch or CTCSS circuit that changes logic level when a carrier is detected. The unit defaults to look for an active low.

J2-6: External Power (Green): Connect to a 12-18 VDC source in the base station radio. If power cannot be connected to the radio use the optional wall adaptor (12-18 VDC).

J2-7: PTT Output (Yellow): This open collector provides a ground during PTT. Connect this to the PTT of the base station radio.

J2-8: Speaker – (Violet): Connect to Speaker - of the base station radio.

J2-9: Speaker + or Single Ended Speaker High (Orange): Connect to Speaker + of the base station radio.

J2-10: LTR Delay (Gray): Connect this to a point in the base station that gives a change of state when a channel is acquired. The unit defaults to look for an active low.

HARDWARE ALIGNMENT

Jumper Settings:

The following table shows the default jumper settings and their function:

Jumper	Default	Description
JP1	Out	Not Used
JP2	Out	Future Use
JP3	1-2 Out – 2-3 In	POTS Option: If using the POTS option be sure that this jumper is not installed otherwise loading of the audio may occur.
JP4	Out	POTS Option: Receive Audio Steering.
JP5	Out	4 Wire Option: Receive Audio Steering.
JP6	Out	Radio 2 DTMF Decoding.
JP7	Out	IS-2 Option F PTT/M Lead output (1-2 relay – 2-3 open-collector transistor)
JP8	Out	IS-2 Option F Active low versus active high selection for PTT/M Lead Relay (1-2 Active High, 2-3 Active Low)
JP9	Out	Radio Output Audio Impedance (In = 1 K Ohm - Out = 47 K Ohm)
JP10	3-4 In	IS-2 Option E PTT Output Control (1-2 In = PTT only radio 2, 3-4 In = PTT either radio based on mode, 5-6 In = PTT only radio 1)
JP11	Out	Radio Output Audio Impedance (In = 1 K Ohm - Out = 47 K Ohm)
JP12	1-2 In	IS-2 Option E Speaker Audio Source (1-2 In = from both radios, 3-4 In = only from radio 1, 5-6 In = only from radio 2)
JP13	Out	POTS Option: Transmit Audio Steering
JP14	Out	M LEAD Relay Input
JP15	Out	M LEAD Relay Output
JP16	1-2	Radio 1/Radio 2 Voice Audio Notch Filter Steering
JP20	2-3	Radio 1 LTR DELAY (channel acquired) Polarity (1-2 Active High, 2-3 Active Low)
JP21	2-3	Radio 1 COR/COS (channel Busy) Polarity (1-2 Active High, 2-3 Active Low)
JP22	2-3	Radio 2 LTR DELAY (channel acquired) Polarity (1-2 Active High, 2-3 Active Low)
JP23	2-3	Radio 2 COR/COS (channel Busy) Polarity (1-2 Active High, 2-3 Active Low)

PRODUCT PROGRAMMING

Midian's IS-2 is programmed using Midian's KL-4F and KL-4F-PC1 programming cables and the MPS software. Please reference the KL-4F manual for programming cable and software setup.

KL4-F USB PORT ASSIGNMENT and SOFTWARE INSTALLATION

Go to our website midians.com and under downloads> software download the latest MPS software version. If using the supplied CD-ROM insert it into the PC's CD-ROM drive. In the browser that will pop-up, install the MPS programming software. Be certain that the "Install KL-4 USB Driver" box is checked during the installation process.

Open Windows' Control Panel and go to Device Manager.

Open Ports (COM& LPT) to identify the port assignment issued by computer. Plug in the KL4 programmer to the USB port and the screen will flash and show the device location.

Open the software and choose product from product tree then set appropriate comport selection in the MPS software as needed

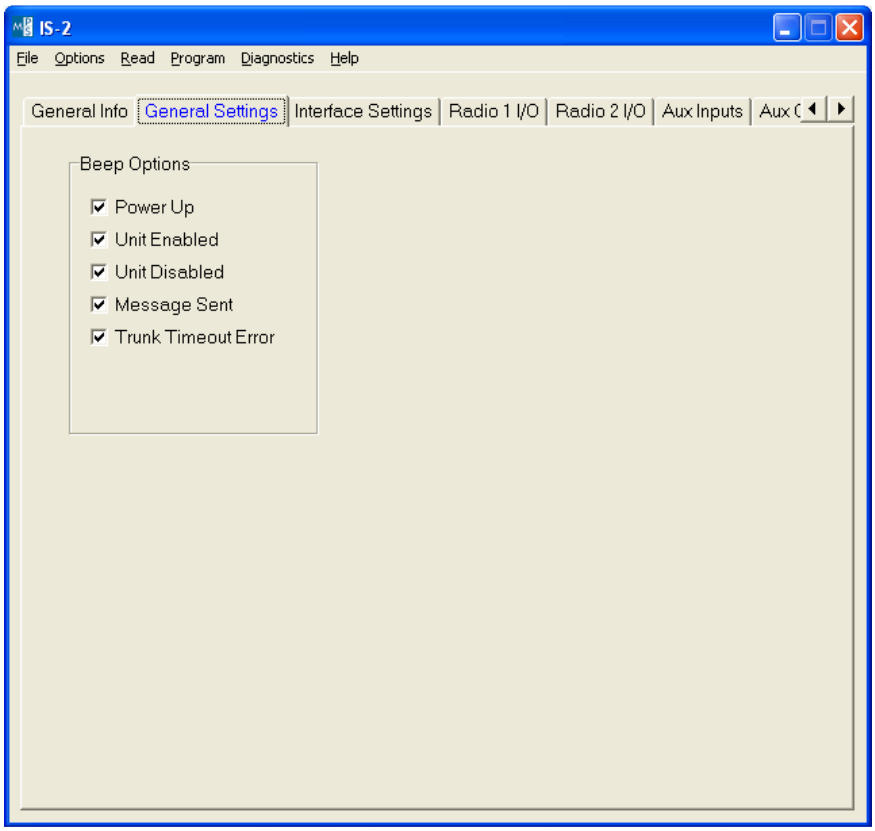
Set the parameters of the software to fit the application. If any clarifications on a feature are required, move the mouse cursor over the feature name until the question mark appears and right click, a definition of the feature will be shown.

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.

Plug the KL-4F-PC1 programming cable into the programming jack on the unit and into the P10 connector on the KL-4F. Insert the 3.5 mm stereo plug into the J8 connector on the IS-2.

To program the IS-2, apply power to the unit and within 15 seconds click "Program Unit" in the menu bar to send the file to the unit. Follow the same procedure to read the unit, but select "Read Unit" in the menu bar. Cycle power after programming.

General Settings Tab:



Beep Options > Power Up: This feature is only available with the IS Option E dispatch microphone or by plugging in a speaker amplifier into the front 3.5 mm jack. Upon power up the unit will generate a low tone followed by a high tone.

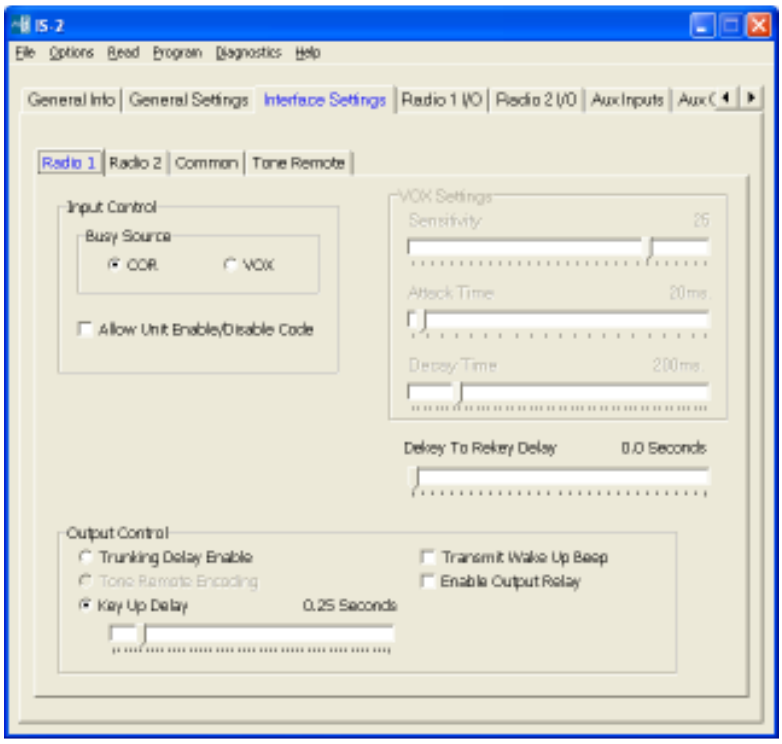
Beep Options > Unit Enabled: The IS-2 will generate a medium tone followed by a high tone when enabled.

Beep Options > Unit Disabled: The IS-2 will generate a medium tone followed by a low tone when disabled.

Beep Options > Message Sent: Once the voice message has been completely sent the IS-2 will generate a confirmation tone to both radios for transmission.

Beep Options > Trunk Timeout Error: If a channel is not acquired in the trunked system after 4 seconds the IS-2 will wait until the COR drops then key the radio that was attempting to transmit and generate four tones to indicate the transmission failed.

Radio 1 Tab:



Busy Source (COR or VOX): This selection tells the IS-2 whether to consider an active COR signal or VOX detection as a busy indication. If VOX is selected the VOX settings are enabled.

Allow Unit Enable/Disable Code: If selected the IS-2 will allow DTMF signaling from this radio to enable and disable the IS-2.

VOX Settings > Sensitivity: This is a threshold detection based on the energy level in the audio.

VOX Settings > Attack Time: This sets the minimum time before the IS-2 will detect VOX based on the sensitivity setting.

VOX Settings > Decay Time: This sets the time before the IS-2 will drop the VOX detection. Be certain to set this long enough so that you do not have drop outs between words or on brief pauses.

Dekey to Rekey Delay: This sets an amount of time the unit will wait from when it removes PTT until it will allow a rekey based on COR or VOX. This is to eliminate the “Ping-Pong Effect” when connecting two repeaters.

Trunking Delay Enable: If selected the attached radio will be identified as being a trunked radio and the IS-2 will look for a logic level from the radio indicating that a channel has been acquired.

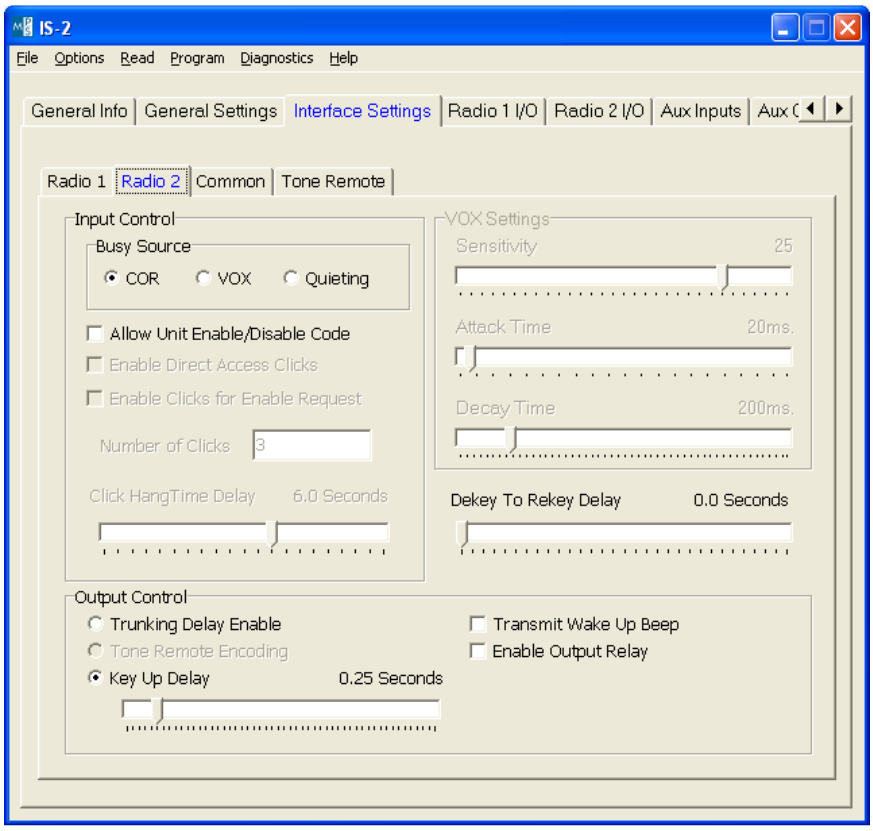
Tone Remote Encoding: The IS Option F (4-wire option) must be ordered to use this feature and the Enable Tone Remote box must be checked on the Tone Remote tab.

Key-Up Delay: This sets the amount of time from when the IS-2 keys the radio before the IS-2 will pass audio to the radio. If Trunking Delay Enable is selected this field is unavailable.

Key-Up Delay: This sets the amount of time from when the IS-2 keys the radio before the IS-2 will pass audio to the radio. During this time the voice buffer will store the audio received. If Trunking Delay Enable is selected this field is unavailable.

Enable Output Relay: The IS Option F (4-wire option) must be ordered to use this feature.

Radio 2 Tab:



Busy Source (COR, VOX or Quieting): This selection tells the IS-2 whether to consider an active COR signal, VOX detection or quieting from an HF radio as a busy indication. If VOX is selected the VOX settings are enabled.

Allow Unit Enable/Disable Code: If selected the IS-2 will allow DTMF signaling from this radio to enable and disable the IS-2.

Enable Direct Access Clicks: This is used for HF radios to enable the IS-2 using multiple presses of the PTT.

Enable Clicks for Enable Request: This is used for HF radio systems to be able to request (using PTT clicks) the other interoperated radio system to enable the IS-2 using the DTMF enable feature. The request to the receiving radio system is in the form of two sets of low to high beeps.

Number of Clicks: The number of click for access can be programmed for 1-9, though 3-4 clicks are recommended.

Click Hang Time Delay: This sets the amount of time the PTT presses must be completed within for the HF radio enable.

VOX Settings > Sensitivity: This is a threshold detection based on the energy level in the audio.

VOX Settings > Attack Time: This sets the minimum time before the IS-2 will detect VOX based on the sensitivity setting.

VOX Settings > Decay Time: This sets the time before the IS-2 will drop the VOX detection. Be certain to set this long enough so that you do not have drop outs between words or on brief pauses.

Dekey to Rekey Delay: This sets an amount of time the unit will wait from when it removes PTT until it will allow a rekey based on COR or VOX. This is to eliminate the “Ping-Pong Effect”.

Trunking Delay Enable: If selected the attached radio will be identified as being a trunked radio and the IS-2 will look for a logic level from the radio indicating that a channel has been acquired.

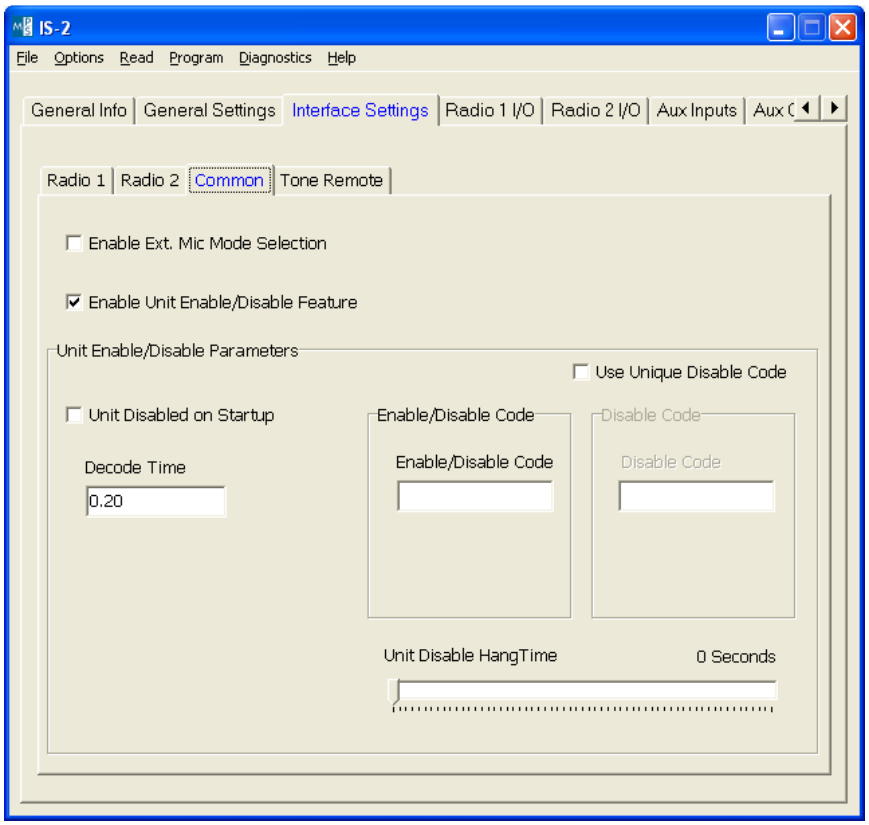
Tone Remote Encoding: The IS Option F (4-wire option) must be ordered to use this feature and the Enable Tone Remote box must be checked on the Tone Remote tab.

Key-Up Delay: This sets the amount of time from when the IS-2 keys the radio before the IS-2 will pass audio to the radio. During this time the voice buffer will store the audio received. If Trunking Delay Enable is selected this field is unavailable.

Transmit Wake Up Beep: If selected, a double tone will be generated at each key-up to let the receiving party know the transmission is coming from the IS-2.

Enable Output Relay: The IS Option F (4-wire option) must be ordered to use this feature.

Common Tab:



Enable Ext. Mic Mode Selection: Check this box if the IS-2 is ordered with the IS Option E external speaker mic.

Enable Unit Enable/Disable Feature: If this is selected, the IS-2 can be enabled and disabled via DTMF equipped field radios by sending DTMF enable/disable codes as programmed below.

Unit Disabled on Startup: If selected, the IS-2 will be disabled when powered on and will require the enable code to be sent to interoperate.

Decode Time: This sets the time after the last digit is received that the IS-2 will decode the sequence. This is so that when manually entering DTMF the unit does not reset the processor and invalidate a sequence because of the longer gaps between tones when manually dialing. For manual dialing Midian recommends using 1 second. This time is also used so that if it receives extra digits after the sequence within this time it will see it as an invalid decode.

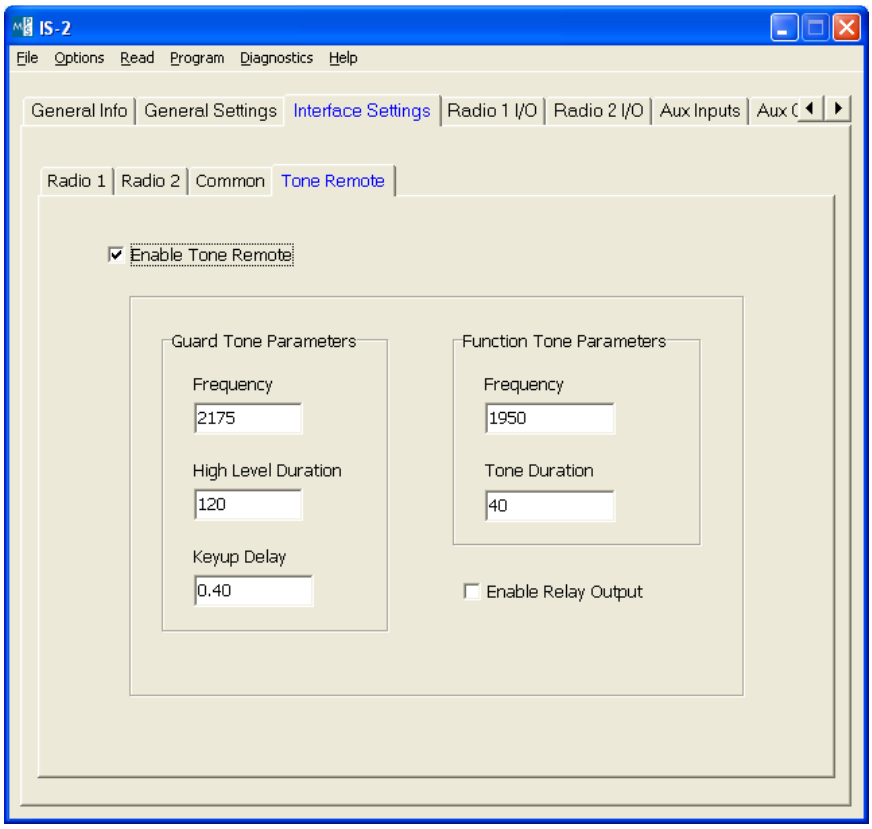
Use Unique Disable Code: If selected, the IS-2 will use a separate disable code from the enable code.

Enable/Disable Code: This field defines the DTMF sequence (1-8 digits) that must be decoded to enable the unit. The same code can be used to disable the unit or by using the Disable Code a separate DTMF sequence can be used for disable. Valid DTMF digits are 0-9, A-D, *, #.

Disable Code: This field defines the DTMF sequence (1-8 digits) that must be decoded to disable the unit if the Use Unique Disable Code field is enabled. Valid DTMF digits are 0-9, A-D, *, #.

Unit Disable Hang Time: If the unit is enabled via DTMF or PTT clicks, this sets the amount of time of inactivity before the unit will automatically disable itself.

Tone Remote Tab:



Enable Tone Remote: The IS-2 must be ordered with the IS Option F (4-wire option) in order to use this feature.

Frequency (Guard Tone): This sets the frequency in Hz of the tone remote guard tone. 2175 Hz is the EIA standard. This field is programmable from 500 Hz to 2900 Hz in one Hertz increments.

High Level Duration: This sets the time in milliseconds of the High Level Guard Tone. EIA standard is 120 milliseconds. This is programmable from 50 milliseconds to 2000 milliseconds in one millisecond increments.

Key-up Delay: This sets the time from when PTT output goes active until the High Level Guard Tone is activated. This is programmable from 0.00 to 2.00 seconds in 10 millisecond increments.

Frequency (Function Tone): This sets the frequency in Hz of the tone function tone. 1950 Hz is the EIA standard for the F1 function tone. This field is programmable from 550 Hz to 2750 Hz in one Hertz increments.

Tone Duration: This sets the time in milliseconds of the Function Tone. EIA standard is 40 milliseconds. This is programmable from 40 milliseconds to 2000 milliseconds in one millisecond increments.

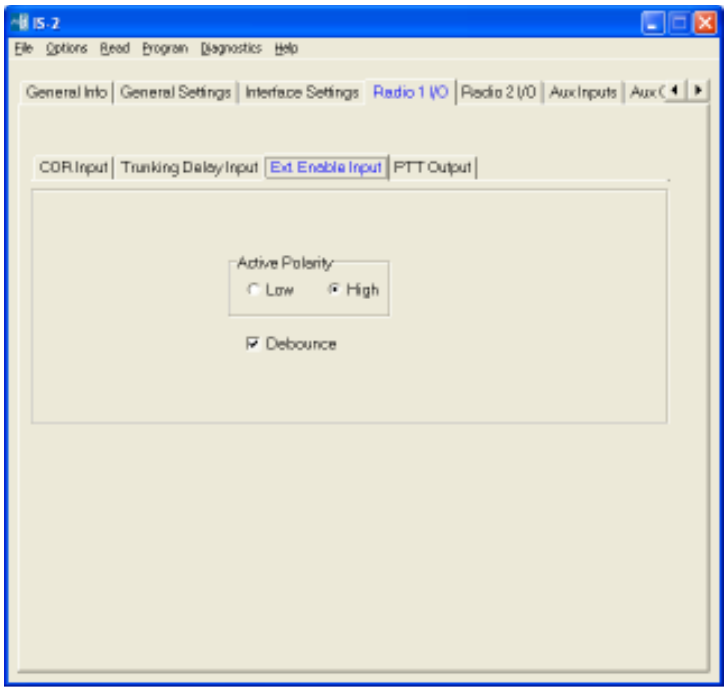
Enable Relay Output: If selected the relay output (J7:2) on J7 will be used instead of the open-collector transistor output (J7:8). For the relay, the JP7 jumper should have 1-2 installed. For the open-collector output, the JP7 jumper should be in the 2-3 position.

Radio 1 I/O and Radio 2 I/O Tabs:

COR > Active High: When checked this sets the IS-2 to look for an active high to key and pass the received audio to the second radio. If unchecked the IS-2 will look for an active low. Note: Jumpers JP-21 for radio 1 and JP-23 for radio 2, will also need to be set correctly. Position 1-2 for active high and 2-3 for active low
COR > Debounce: If checked the IS-2 will require a continuous active polarity for 40 msec before accepting the COR.

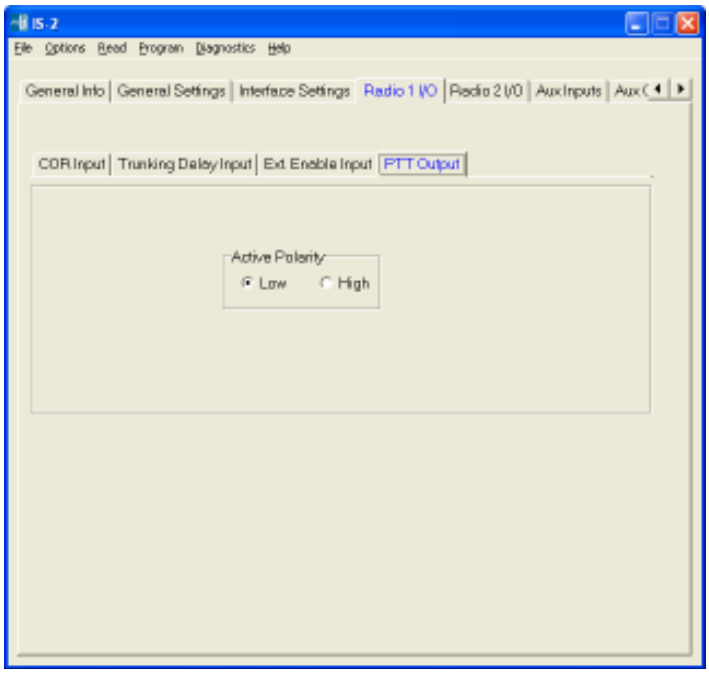
Trunking Delay Input > Active High: When checked this sets the IS-2 to look for an active high to confirm that a channel has been acquired on the trunking system. If unchecked the IS-2 will look for an active low.
Note: Jumpers JP-20 for radio 1 and JP-22 for radio 2, will also need to be set correctly. Position 1-2 for active high and 2-3 for active low.

Trunking Delay Input > Debounce: If checked the IS-2 will require a continuous active polarity for 40 msec before accepting the channel acquisition.



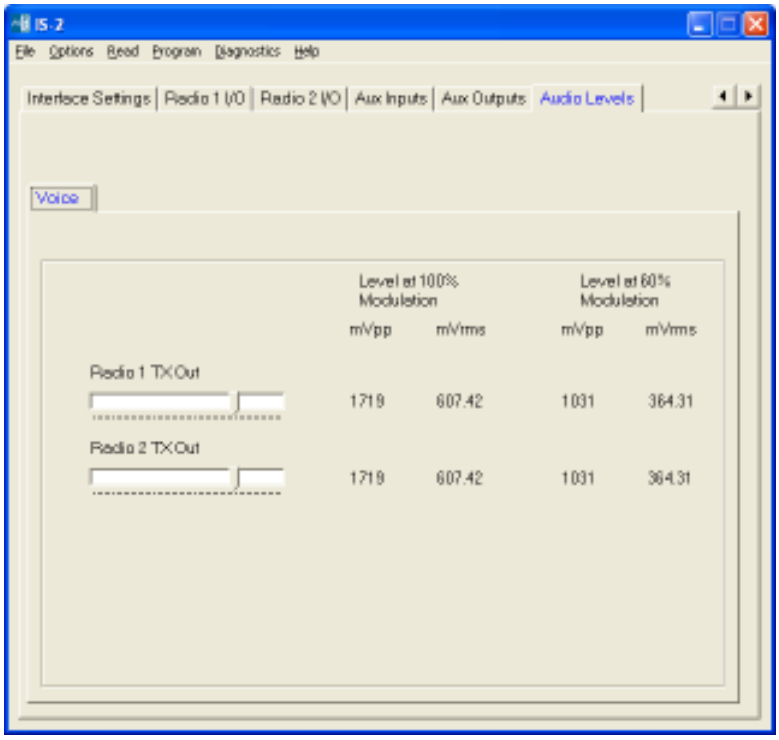
Ext Enable > Active Polarity: This sets whether the IS-2 looks for an active low or active high to confirm the IS-2 has been enabled. If this input is not used leave as a High polarity.

Ext Enable > Debounce: If checked the IS-2 will require a continuous active polarity for 40 msec before enabling the IS-2.



PTT Out > Active Polarity: This sets whether the IS-2 gives an active low or active high to PTT the destination radio.

Audio Levels Tab:



Voice > Radio 1 TX Out: This sets the transmit output audio level of the IS-2 to Radio 1.

Voice > Radio 2 TX Out: This sets the transmit output audio level of the IS-2 to Radio 2.

CONTROLS & INDICATORS

Power LED: This red LED indicates that power is applied to the unit and that the switch is on.

Radio 1 COR LED: This yellow LED indicates that the IS-2 is receiving COR from Radio 1.

Radio 1 PTT LED: This green LED indicates that the IS-2 is applying push to talk to Radio 1.

Radio 1 CH ACQ LED: This red LED indicates that the IS-2 has received a go-ahead from Radio 1 that a trunking channel has been acquired.

Radio 2 COR LED: This yellow LED indicates that the IS-2 is receiving COR from Radio 2.

Radio 2 PTT LED: This green LED indicates that the IS-2 is applying push to talk to Radio 2.

Radio 2 CH ACQ LED: This red LED indicates that the IS-2 has received a go-ahead from Radio 2 that a trunking channel has been acquired.

Relay LED: IS Option F (4-wire option).

Hook LED: POTS Option.

Ring LED: POTS Option.

DTMF LED: This red LED lights momentarily when a DTMF digit is decoded.

On-Off Power Switch: The power switch is a 2 position switch, with the down position being off.

OPERATION

The IS-2 is connected between 2 radios. When the IS-2 receives COR or VOX from Radio 1, for example, the IS-2 will light the Radio 1 COR LED then assert the PTT Output to key Radio 2, light the Radio 2 PTT LED and pass the audio received from Radio 1 to Radio 2 to be retransmitted. When using trunked radios or using the key up delay, the IS-2 will buffer the incoming audio until a channel is acquired or the key up delay has expired.

DTMF Enable: Entering the 1-8 digit DTMF sequence on a two-way radio with a DTMF keypad will enable the IS-2 for interoperability if using the DTMF Enable/Disable feature.

DTMF Disable: Entering the 1-8 digit DTMF sequence on a two-way radio with a DTMF keypad will disable the IS-2 for interoperability if using the DTMF Enable/Disable feature.

Using CTCSS or DCS: If it is not desired to have the IS-2 repeat all activity (and DTMF enable/disable is not feasible) Midian recommends using a different channel with the same frequency set for a different CTCSS/DCS decode (IS-2) and encode (field radio). When the field radios wish to interoperate switching to the second channel will cause the IS-2 to interoperate. The field units on the receiving system will need to switch to the second channel on their radios to respond. In this application COR needs to be programmed as Talk Group or TOR (depending on the radio).

PTT Clicks Enable: This feature is only available on Radio 2 as this feature is designed for use with HF radios and the quieting circuit is only available on Radio 2. However, this feature could be used with VHF or UHF radios as well. The radio user desiring to enable the IS-2 must press and release the PTT button on the radio for the programmed number of times within the programmed number of seconds in the Hang Timer. If the Request to Enable feature is being used then tones will be generated to the other radio system to indicate the Radio 2 system is requesting Radio 1 system to use DTMF to enable the switch. If the Unit Disable Hang Time is set to any time other than zero, the unit will disable itself automatically after X number of seconds of inactivity, based on this Hang Time.

IS-2 OPTION E: DISPATCH SPEAKER MICROPHONE

Installation:

The cable for the speaker microphone has two RJ-45 connectors. The RJ-45 with the strain relief rubber boot plugs into the speaker mic. Push the male connector into the female connector on the speaker microphone until you hear a click. Then push the strain relief rubber boot onto the speaker microphone. Plug the other RJ-45 male connector into the J4 RJ-45 connector on the IS-2 until you hear it click.

Operation:

Radio Selection: The speaker microphone has three buttons. The top larger oblong button is for PTT. The smaller round button with one dot immediately under the PTT is for radio selection control (Mode Button). The smaller round button with two dots at the bottom is not currently used.

When the mic is plugged in and power is on to the IS-2, pressing the PTT button will cause radios 1 and 2 to transmit. In this state, if the mode button is pressed, a high tone followed by a low tone will be emitted by the speaker, and the PTT and speaker are inactive. Pressing the mode button again a single tone will be heard. In this state, only radio 1 will be keyed if the PTT is pressed. Pressing the mode button again a double tone will be heard. In this state, only radio 2 will be keyed if the PTT is pressed. Pressing the mode button again a triple tone will be heard and the unit is returned to the original state of both radios' PTT being controlled. Note: The speaker will always play the receive audio from both radios 1 and 2, except when in the inactive state.

Receive: The speaker on the speaker microphone will always play the receive audio from BOTH radios regardless if radio 1, radio 2 or both radios are selected. When the speaker microphone/IS-2 are in the inactive state the speaker microphone will not play any audio. Note: When the IS-2 is programmed with the speaker microphone connected, a beep will be heard when programming is completed.

Transmit: After the desired radio or radios are selected in the step above, pressing the PTT on the speaker microphone will cause the IS-2 to PTT the selected radio. The dispatcher, with the PTT button still pressed, can then talk into the speaker microphone and the voice will go out over the selected radio.

IS-2 OPTION F: 4-WIRE

Note: When using the 4-wire option you lose the ability to use the radio 2 port.

Installation:

J7:2: Wiper (Blue): This is the M Lead relay common wiper that is normally grounded via J8 pins 2 and 3. This wire is normally not used or could be connected to the ground of the microwave/satellite equipment.

J7:3: M Lead (White): Connect this wire to the M Lead on the microwave/satellite equipment.

J7:4: TX Out B (Black): This output is one side of the balanced TX audio half for a 4-wire port from the microwave or satellite.

J7:5: Line In B (Red): This input is one side of the balanced RX audio half for a 4-wire port from the microwave or satellite.

J7:6: Line In A (Green): This input is one side of the balanced RX audio half for a 4-wire port from the microwave or satellite.

J7:7: TX Out A (Yellow): This output is one side of the balanced TX audio half for a 4-wire port from the microwave or satellite.

J7:8: PTT Open Collector (Violet): Normally not used.

J7:9: E Lead (Orange): This E Lead provides a ground to the IS-2 from the microwave/satellite equipment. Be sure to connect J7:10 for a common ground.

J7:10: Ground (Gray): Connect to a common ground.

Voice Notch Filter: If using the 2175 Hz tone remote keying feature of the 4-wire option. The notch filter will remove 2175 Hz tones in your voice, so that they do not mix with the 2175 Hz keying tone. This comes pre-set at the factory. If you find it necessary to adjust the notch then feed a 2175 Hz tone into Pin 2 of JP16 and adjust RP2 for peak level of 2175 while monitoring pin 14 U12-4. To adjust the depth of the notch, adjust RP3 for a minimum signal while monitoring TP32 with an oscilloscope. It may be necessary to adjust RP2 and RP3 back and forth slightly to get a minimum signal at TP32.

Operation:

Transmit: There are two ways to key the microwave or satellite. The first method employs standard M Lead, which will activate the E Lead at the distant end. The second method is the IS-2 can generate 2175 Hz tone remote keying tones to pass over the microwave or satellite to the distant end to activate a tone remote adaptor at the base station.

Receive: The E Lead received from the microwave or satellite receiver is applied to the COR input of radio 2 on the IS-2. This in turn causes radio 1 to issue a PTT command to the attached radio. The balanced RX audio from the microwave or satellite is applied to receive audio line of radio 2 on the IS-2.

Applications:

Microwave

Satellite

Motorola Canopy

TECHNICAL NOTES

VOX Detect: When using VOX detect go ahead beeps must be disabled in the connected radios.

HF Radios: If using the IS-2 with an HF radio, the radio must have a carrier detect circuit which will provide a reliable COR indication to the IS-2. If COR is unavailable from the radio, the IS-2 has a quieting filter, which will provide a busy channel detect when connected to the discriminator output of the radio. To use the quieting filter in the IS-2, J2-1 must be connected to the discriminator output. J2-1 is for busy channel detect only, normal RX audio must still be connected to J2-9.

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Main: 520-884-7981
E-mail: sales@midians.com
Web: www.midians.com

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NORMAL H-PASS NOISE SQUELCH FILTER
OPTIONAL BANDPASS/LO-PASS FILTER

OPTIONAL UED-1 2 TONE/5 TONE DECODER

REMOVE JP6 WHEN USING HF SQUELCH NOISE IN

DTMF DECODER

SPEAKER MIC OPTION

4-WIRE OPTION - RX IN

FOR PARTI ONLY UNBALANCED OUT

POTS OPTION

IN SYSTEM SERIAL PROGR.

SELECT REPEAT MODE

OPTIONAL 4-WIRE TX LINE DRIVER/NOTCH FILTER
NOTCH FILTER REMOVES 2175Hz FROM VOICE

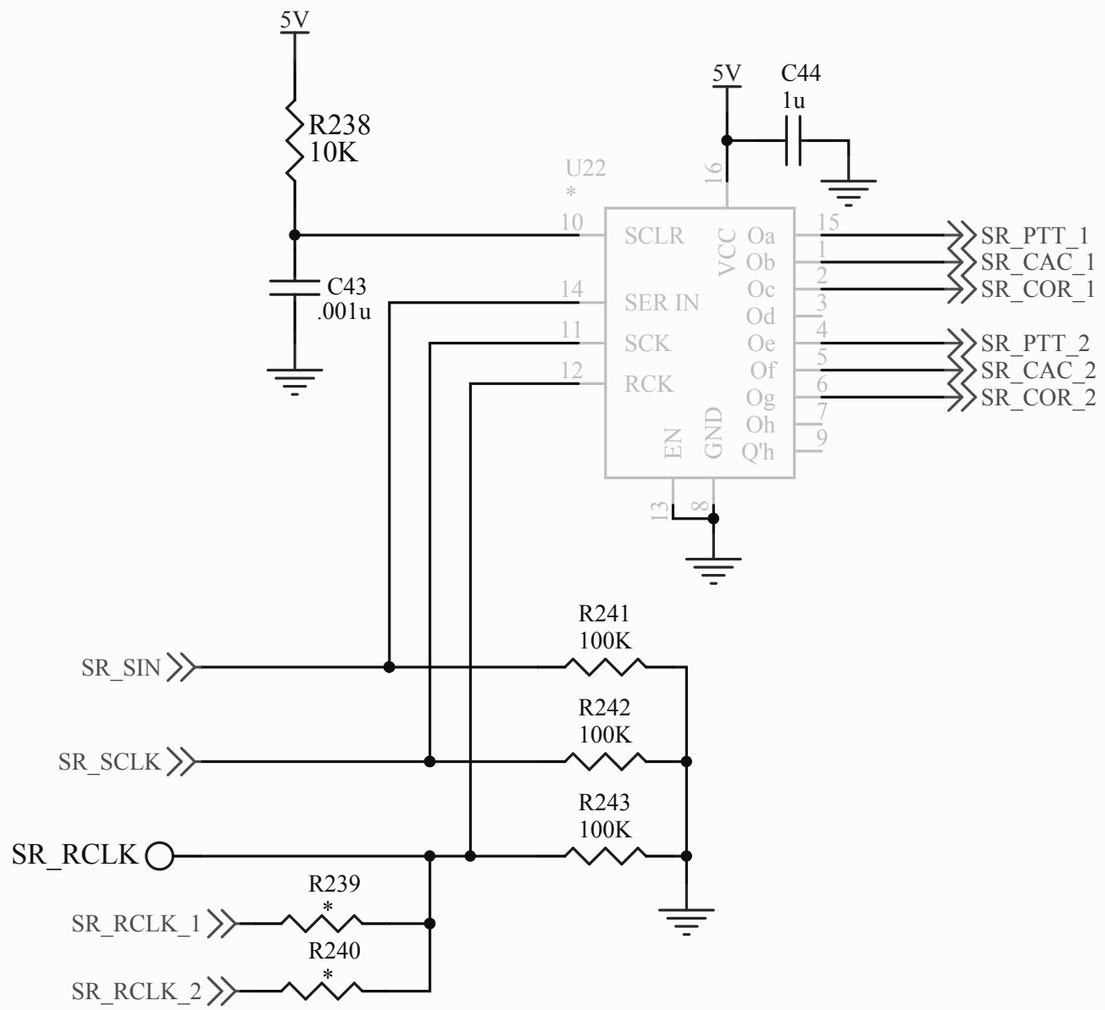
M LEAD RELAY

RADIO 1
RJ45-10

RADIO 2
RJ45-10

NOTE:
J3:1 -
PR-10 : VALIDATE INPUT
VAE-10 : ALARM INPUT
IS-2 : NOT CONNECTED

MIDIAN ELECTRONICS, INC.		IS-2	REV G-2	DOCUMENT NAME AP
DATE: 2010-04-26	UPD BY: AWS	APPR	SCHEMATIC	SHEET 1 of 1
DESIGN: CJS	REV:2016-04-22		Copyright © 2016	PROJECT NUMBER 7705



VO3
Variant Solder Bottom

VO4
Variant Solder Top

VO7
Midian Logo 1500X250

VO6
Board House Info

MIDIAN ELECTRONICS, INC.			IS-2	REV G-2	DOCUMENT NAME AP
DATE: 2010-04-26	UPD BY: AWS	APPR	SCHEMATIC	SHEET 1 of 1	PROJECT NUMBER 7705
DESIGN: CJS	REV: 2016-04-22		Copyright © 2016		

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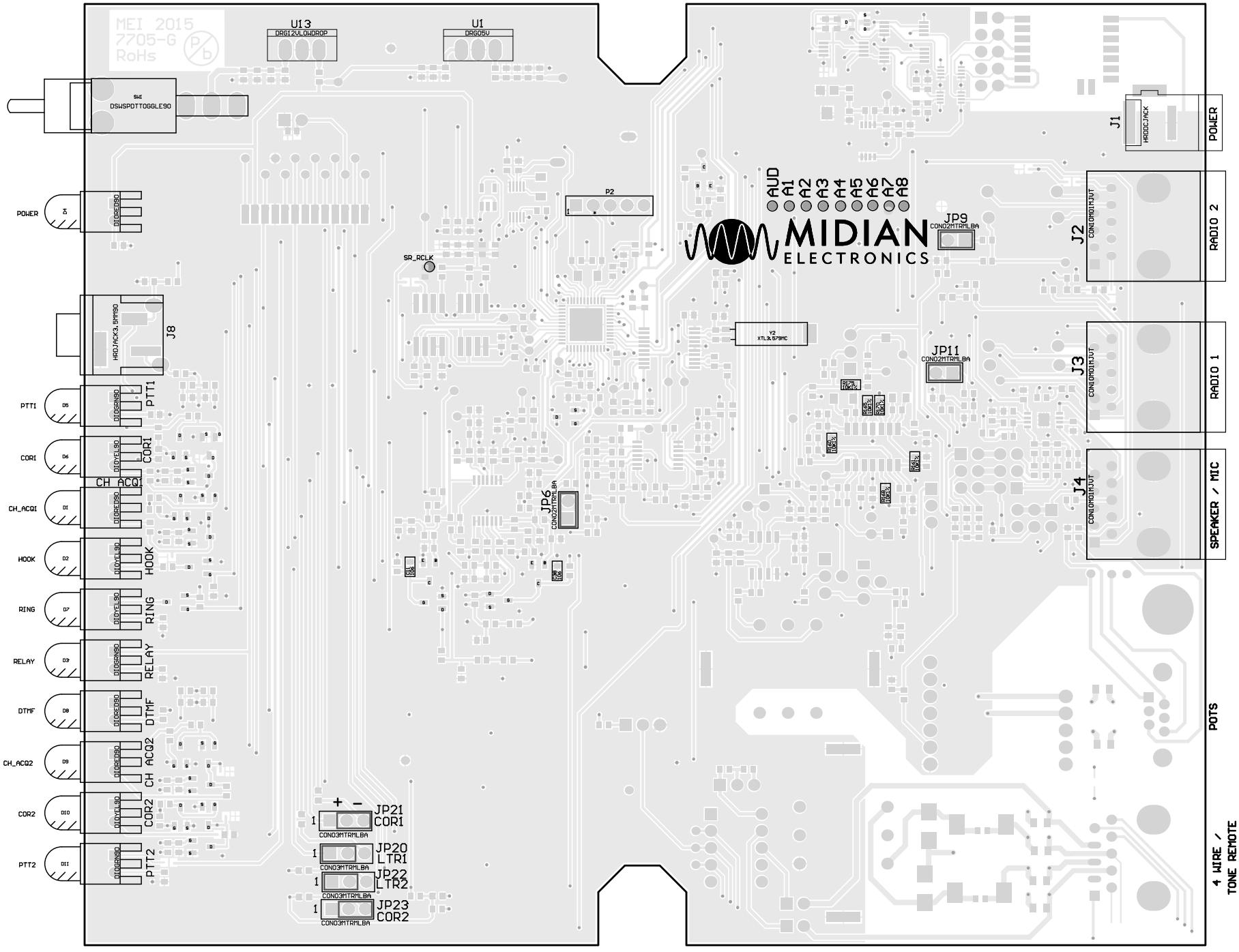
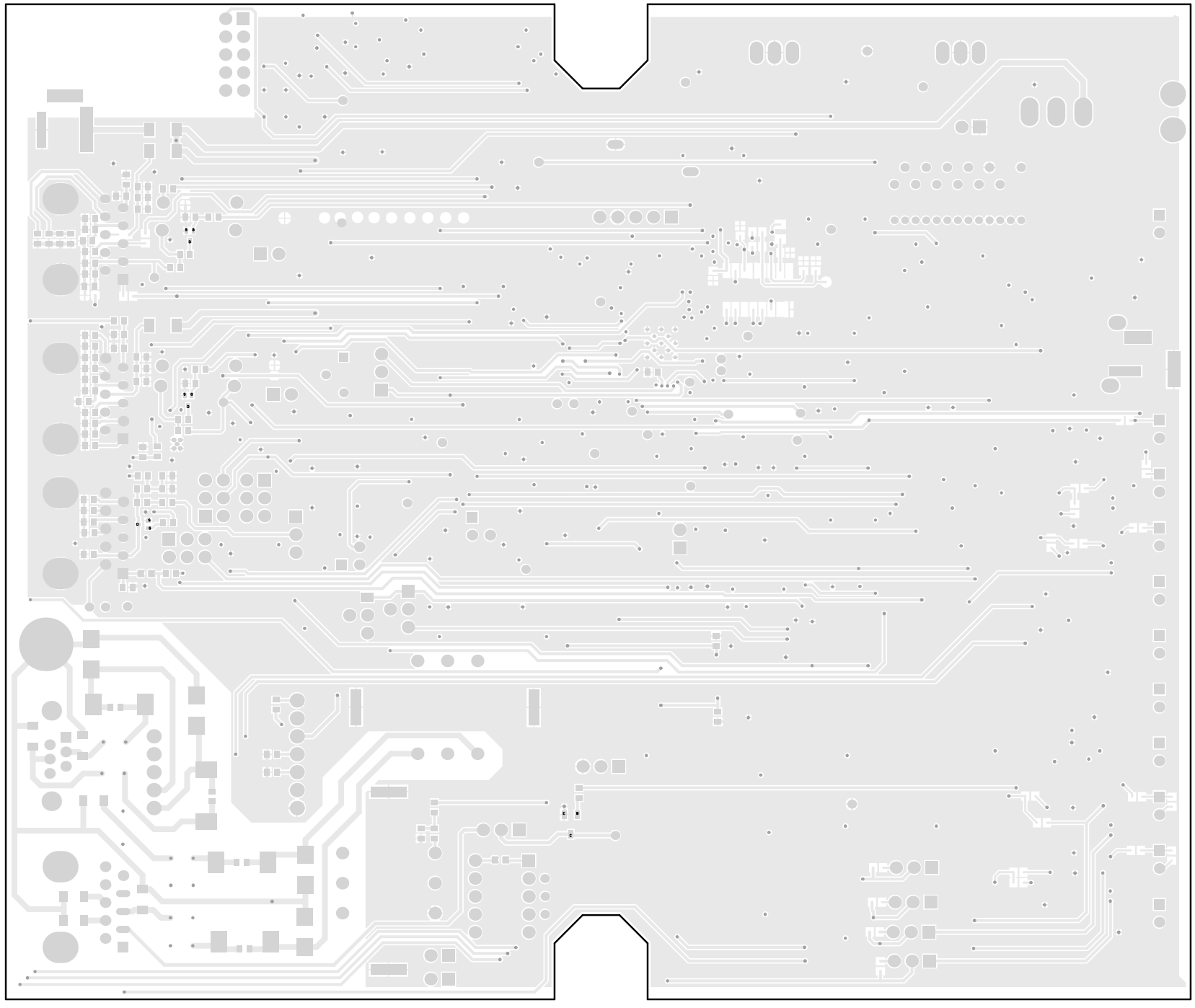


*=NOT INSTALLED

MIDIAN ELECTRONICS, INC.		
DATE:2010-04-26	DWG BY: AWS	APPR
DESIGN: CJS	REV: 2016-04-22	

IS-2-Add2BB	REV G-2	DOCUMENT NAME AP
TOP	SHEET 1 of 1	PROJECT NUMBER 7705



*=NOT INSTALLED

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DATE: 2010-04-26	DWG BY: AWS	APPR
DESIGN: CJS	REV: 2016-04-22	

IS-2-Add2BB	REV G-2	DOCUMENT NAME AP
BOTTOM	SHEET 2 of 2	PROJECT NUMBER 7705