MFJ

Computer Controlled
Universal SO2R Switch.

Model MFJ-645

INSTRUCTION MANUAL

CAUTION: Read All Instructions Before Operating Equipment

MFJ ENTERPRISES, INC.

DISCLAIMER

Information in this manual is designed for **user purposes only** and is *not* intended to supersede information contained in customer regulations, technical manuals/documents, positional handbooks, or other official publications. The copy of this manual provided to the customer will *not* be updated to reflect current data.

Customers using this manual should report errors or omissions, recommendations for improvements, or other comments to MFJ Enterprises, 300 Industrial Park Road, Starkville, MS 39759. Phone: (662) 323-5869; FAX: (662) 323-6551. Business hours: M-F 8-4:30 CST.

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INTRODUCTION & FEATURES

INTRODUCTION:

The MFJ-645 *hamProAudio* **SO2R Accessory** is a quality Single Operator 2 Radio Switch. With the ability to switch the microphone audio between 2 radios and full control of the audio from both radios you will have the ultimate **SO2R** switch at a great value. With its universal computer interfacing it works with Computer Logging and SO2R Programs to make your SO2R operations effortless.

Full Interfacing: Interfaces to CT, NA, TRLog, WinEQF, and Writelog for SO2R operations.

hamProAudio Quality: Designed with the serious ham in mind. Choice of components and extensive RF filtering and bypassing allows for a unit that is designed to be used in a RF environment.

Designed for ease of use: Set the internal jumpers for the MFJ-393 Professional Boom-Mic Headphones, The Heil Pro Set series of Boom-Mic Headsets or even a Computer Boom-Mic Headset. Use any Mic that you want with any radio.

Instant visual indication of transmit and receive audio paths: With wide spaced LED indicators you instantly know which radio your audio is being passed to or from.

Choice of PTT function: Use you microphones PTT switch, a foot or hand switch and if connected to the MFJ-1275 or 1279 Sound Card Interface then your Digital mode can control the Key Line.

Full control of audio output: With Mix, Radio 1, Stereo or Radio 2 in the headphones you can instantly select how you want the audio in the headphones. Your choice of Main and Sub from both Radio 1 and Radio 2.

Full control of accessories: Additional inputs and dual outputs for your keyer and an aux lines to control anything you want. Need to switch an antenna between radios, key an amp. Whatever you want to use them for. Connect a MFJ-1275 or MFJ-1279 and you can control your Digital Modes.

Rugged Construction: Attractive all-metal cabinet, conservative component selection and extensive RF filtering ensure solid performance for years to come. Fully covered by MFJ's "No Matter What" one year limited warranty.

Before attempting to operate your MFJ-645, please read the manual thoroughly. It contains important detail about setting up your unit to obtain the best performance.

SYSTEM CONTROLS AND INDICATORS
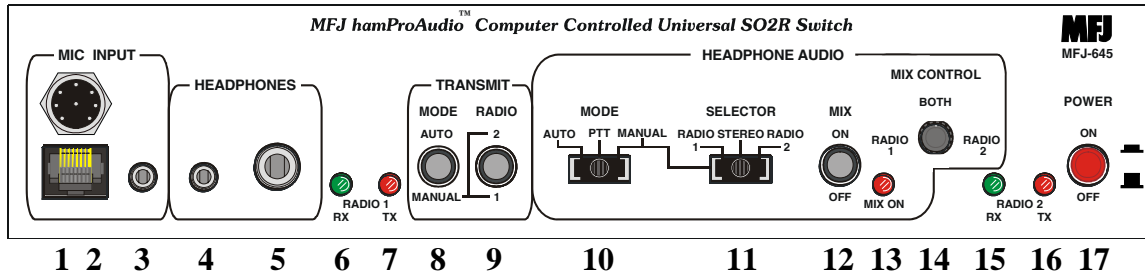
Front Panel Jack and Controls

Figure 1: MFJ-645 Front Panel Jacks and Controls

1. **8-Pin MICROPHONE INPUT Jack:** Accepts input from a standard 8 pin round microphone.
2. **RJ-45 MICROPHONE INPUT Jack:** Accepts input from a standard RJ-45 microphone.
3. **3.5 –mm MICROPHONE INPUT Jack:** Accepts input from a 3.5 mm microphone. Phantom voltage is also available on the either the tip or ring for your specific need.
4. **3.5 –mm Stereo HEADPHONES Output Jack:** Stereo jack to hook up a pair of quality stereo 3.5 –mm headphones.
5. **¼ Inch HEADPHONES Output Jack**: Stereo jack to hook up a standard set of ¼ inch stereo headphones.
6. **RADIO 1 RECEIVE Green LED:** This LED indicates the Receive audio is from Radio 1**.**
7. **RADIO 1TRANSMIT Red LED:** This LED indicates the Transmit audio is fed to Radio 1.
8. **TRANSMIT MODE Switch:** This switch places the transmit section in either AUTO, which is controlled by your computer software or MANUAL, which is controlled by the TRANSMIT RADIO Switch.
9. **TRANSMIT RADIO Switch:** This switch is used to select either Radio 1 or Radio 2 to be used as the transmit radio.
10. **HEADPHONE AUDIO MODE Switch:** This switch places the transmit section in either AUTO, which is controlled by your computer software, PTT, which senses from the radio and switches to the radio not in transmit, or MANUAL, which is controlled by the HEADPHONE AUDIO SELECTOR Switch.
11. **HEADPHONE AUDIO SELECTOR Switch:** This switch selects RADIO 1, STEREO, or RADIO 2 in the receive headphone audio.
12. **MIX Switch:** This switch turns on the MIX CONTROL of receive headphone audio.

SYSTEM CONTROLS AND INDICATORS

13. **MIX ON LED:** This LED indicates the mixed mode of audio is selected.
14. **MIX CONTROL Knob:** Control the audio from either radio from Radio 1 only to Radio 2 only and everything in between when in the MIX switch is in the on position.
15. **RADIO 2 RECEIVE Green LED:** This LED indicates the Receive audio is from Radio 2**.**
16. **RADIO 2 TRANSMIT Red LED:** This LED indicates the Transmit audio is fed to Radio 2.
17. **POWER Switch:** Turns the unit on or off.
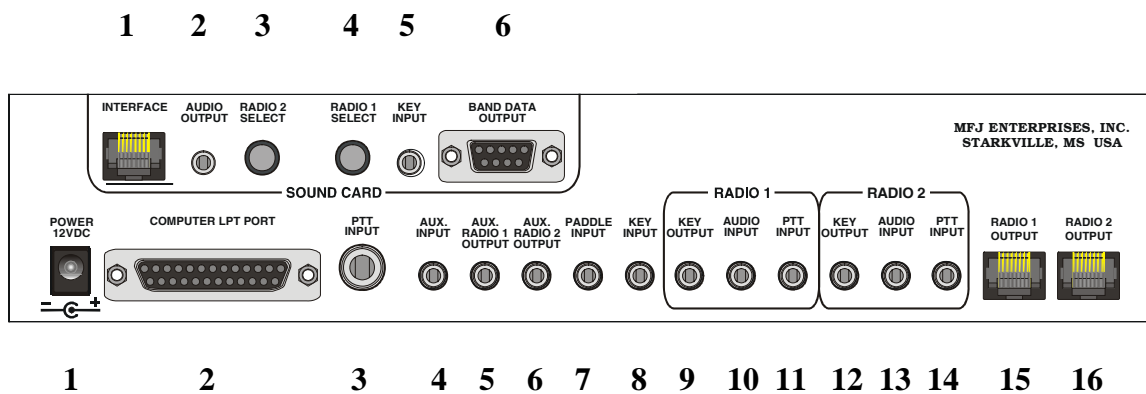
Rear Panel Jacks

Figure 2: MFJ-645 Rear Panel Jacks

Bottom Row

1. **POWER Jack:** Accepts 2.1 –mm plug to supply 12-15 Vdc to the MFJ-645.
2. **COMPUTER LPT PORT Connector:** This DB-25 connector goes to the computer LTP port.   The control signals are shown on page 21.
3. **¼ Inch PTT INPUT Jack:** This ¼ inch jack allows a foot or hand switch to be connected to the MFJ-645.
4. **3.5 –mm AUXILIARY INPUT Jack:** This stereo 3.5 –mm jack allows the tip on the jack to control devices.
5. **3.5 –mm AUXILIARY RADIO 1 OUTPUT Jack:** This stereo 3.5 –mm jack allows the line to be fed to radio 1 devices.
6. **3.5 –mm AUXILIARY RADIO 1 OUTPUT Jack:** This stereo 3.5 –mm jack allows the line to be fed to radio 2 devices.
7. **3.5 –mm PADDLE INPUT Jack:** This stereo 3.5 –mm jack allows a paddle to be fed to the computer for use with the NA and TR programs.
8. **3.5 –mm KEY INPUT Jack:** This 3.5 –mm jack allows a key or keyer to be fed into the unit. The tip is used to key the radio when used with other modes such as the Soundcard Interface.

SYSTEM CONTROLS AND INDICATORS

9. **3.5 –mm RADIO 1 KEY OUTPUT Jack:** This allows the Key or Keyer to be connected to Radio 1. It is also used for any mode that needs to key the radio.
10. **3.5 –mm RADIO 1 AUDIO INPUT Jack:** This 3.5 –mm jack allows audio to be fed from Radio 1. If dual outputs are available from the radio then you can use both. If only mono is available then wire the tip and ring in you cable so you can have the selected radio in both ears.
11. **3.5 –mm RADIO 1 PTT INPUT Jack:** This is where a PTT from the radio is fed to control the audio when in the PTT Mode.
12. **3.5 –mm RADIO 2 KEY OUTPUT Jack:** This allows the Key or Keyer to be connected to Radio 2. It is also used for any mode that needs to key the radio.
13. **3.5 –mm RADIO 2 AUDIO INPUT Jack:** This 3.5 –mm jack allows audio to be fed from Radio 2 in the same manner as Radio 1.
14. **RADIO 2 PTT INPUT Jack:** This is where a PTT from the radio is fed to control the audio when in the PTT Mode.
15. **RJ-45 RADIO 1 OUTPUT JACK:** This is where either a MFJ-5398 or MFJ-5397MX connects the unit to your radio 1.
16. **RJ-45 RADIO 2 OUTPUT JACK:** This is where either a MFJ-5398 or MFJ-5397MX connects the unit to your radio 2.

Top Row
1. **RJ-45 SOUND CARD INTERFACE Jack:** This is where either a MFJ-5398 or MFJ-5397MX connects to the MIC INPUT on your MFJ-1275 or MFJ-1279 Sound Card Interface.
2. **3.5 –mm SOUND CARD AUDIO OUTPUT Jack:** This 3.5 –mm jack passes audio from the MFJ-645 to the MFJ-1275 or MFJ-1279 Sound Card Interface RADIO FROM AUDIO OUT Jack.
3. **SOUND CARD RADIO 2 SELECT Switch:** When depressed allows the digital signals from the sound card to be passed to Radio 2 when Radio 2 is selected by the MFJ-645.
4. **SOUND CARD RADIO 1 SELECT Switch:** When depressed allows the digital signals from the sound card to be passed to Radio 1 when Radio 1 is selected by the MFJ-645.
   > **NOTE:** If both switches are selected then the audio is passed to and from the Sound Card Interface to the respective radio as selected by the MFJ-645.
5. **SOUND CARD KEY INPUT Jack:** This 3.5 –mm jack passes the signals from the MFJ-1275 or MFJ-1279 CW output to the radio selected by the MFJ-645.
6. **SOUND CARD BAND DATA OUTPUT Jack:** This DB-9 connector allows the 13.8 volts ground and the Band Data information to be passed from your computer program to a remote switch.

Pin 1: +13.8 Volts	**Pin 4:** Data D	**Pin 7:** Data A
Pin 2: Not Used	**Pin 5:** Data C	**Pin 8:** GND
Pin 3: GND	**Pin 6:** Data	**Pin 9:** Not Used

SYSTEM SETUP

Internal Headers
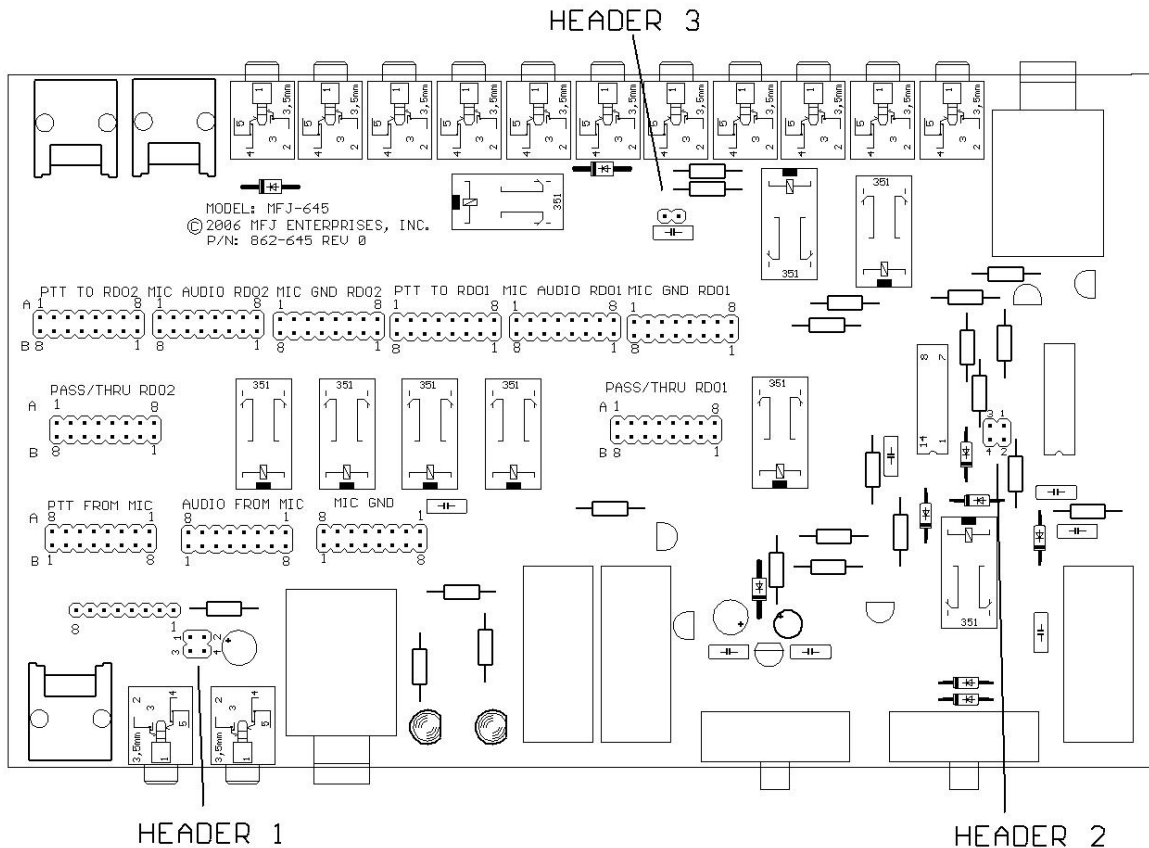
Figure 3: MFJ-645 Internal Headers

1. Header 1: This header allows the 5-volt phantom voltage to be passed to the ring or tip of the Auxiliary input jack. Pins 1-2 place the voltage on the tip. Pins 3-4 place the voltage on the ring. Default is off.

2. Header 2: This header is used with the additional features included with the NA program. If using NA short Pins 1-2 and 3-4.

3. Header 3: This Header must be shorted to pass the voltage from your radio to the microphone if using an electret microphone such as the Icom Microphones.

SYSTEM SETUP

JUMPER DIAGRAMS (MFJ-645)

The Jumper Installation diagrams within this instruction manual will help you in setting up your MFJ-645 to match your radio. If your radio is not listed with the diagram, it means that we have not verified your radio to use that diagram. You can try to install jumpers as indicated. If that does not work, please refer to the radio manual to identify the MIC pin assignment for you radio then follow the instructions given at the end of this section in the MFJ-645 instruction manual to install the jumpers. The diagrams assume that you are using 2 identical radios. If not than use the jumpers as required for the 2 different radios at radio1 and radio 2. If using a mic for a radio it was not designed for such as a Yaesu mic with a Kenwood radio do not use any of the pass/thru positions as damage could occur.
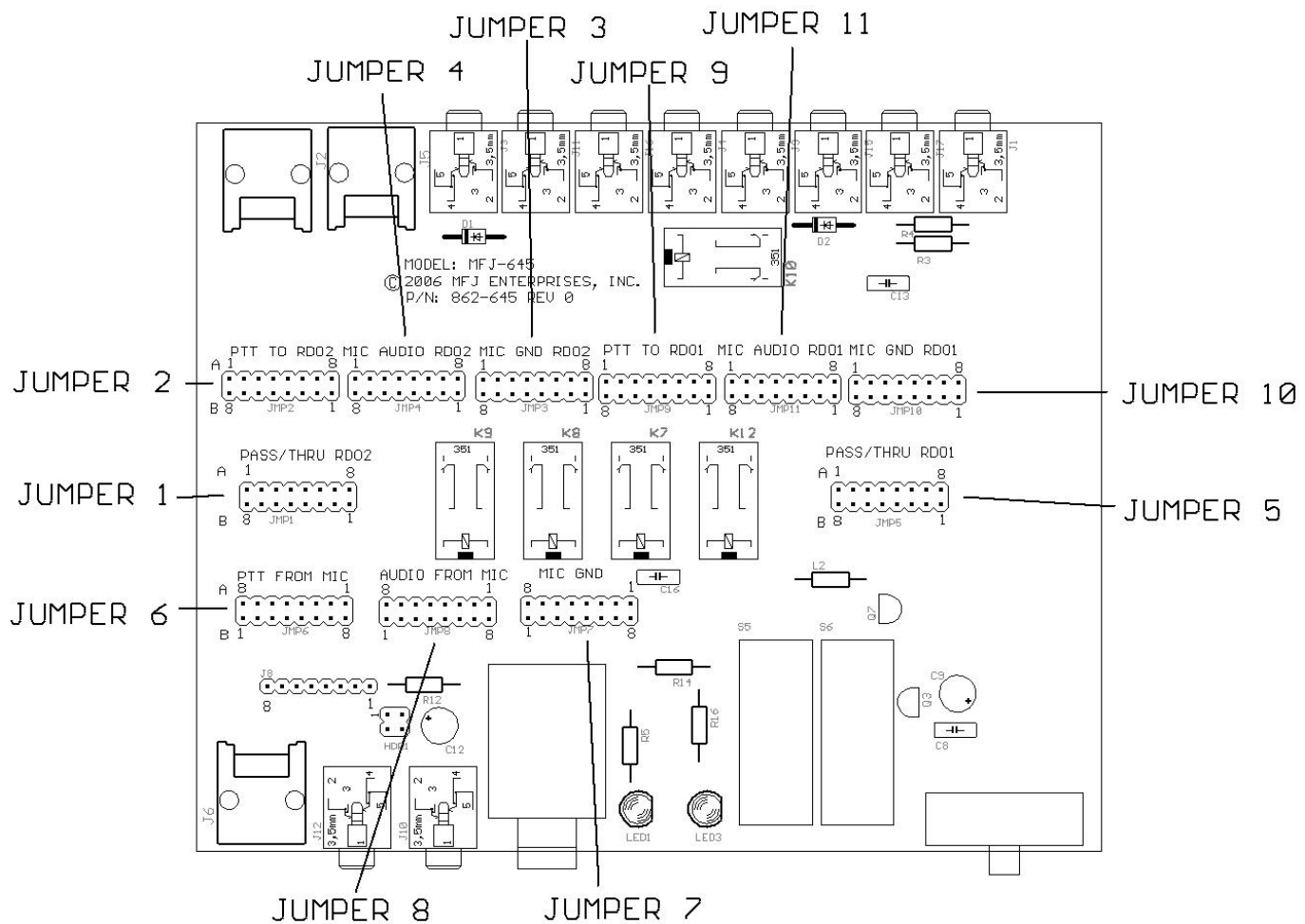
Internal Jumpers

Figure 4: MFJ-645 Internal Jumpers

SYSTEM SETUP

 Refer to Table 1 for common microphones. Consult your owner's manual to determine your specific microphone pinout.

 1. **Jumper 1:** Pass/Thru Radio 2. This allows you to pass any other lines from the microphone for feature such as up/down/fast. Normally all lines that are not being used for the Mic Audio, Mic Ground and PTT line will be jumpered. . If using a non-standard mic such as a Kenwood with a Yaesu radio ensure that only lines that are compatible are connected.
2. **Jumper 2:** PTT to Radio 2. Place a jumper on the pin corresponding to the pin that your radio requires for PTT.
3. **Jumper 3:** Microphone Audio Ground to Radio 2. Place a jumper on the pin that corresponds to the pin that your radio requires for the shielded ground.
4. **Jumper 4:** Microphone Audio to Radio 2. Place a jumper on the pin that corresponds to the pin on your radio that feeds microphone audio to the radio.
5. **Jumper 5:** Pass/Thru Radio 1. This allows you to pass any other lines from the microphone for feature such as up/down/fast. Normally all lines that are not being used for the Mic Audio, Mic Ground and PTT line will be jumpered. If using a non-standard mic such as a Kenwood with a Yaesu radio ensure that only lines that are compatible are connected.
6. **Jumper 6:** PTT from the Microphone. Place a jumper on the pin number that corresponds to the pin of your microphone that supplies the PTT line to the radio.
7. **Jumper 7:** Microphone Audio Ground. Place a jumper on the pin number that corresponds to the pin that supplies the shielded ground from the microphone.
8. **Jumper 8:** Microphone Audio Input. Place a jumper on the pin number that corresponds to the pin that supplies microphone audio.
9. **Jumper 9:** PTT to Radio 1. Place a jumper on the pin corresponding to the pin that your radio requires for PTT
10. **Jumper 10:** Microphone Audio Ground to Radio 1. Place a jumper on the pin that corresponds to the pin that your radio requires for the shielded ground.
11. **Jumper 11:** Microphone Audio to Radio 1. Place a jumper on the pin that corresponds to the pin on your radio that feeds microphone audio to the radio.

SYSTEM SETUP
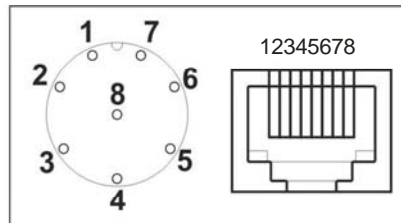
Refer to this drawing for the numbering of the headers from 1 to 8. The RJ-45 is numbered with the clip down. Note the position of the key for the 8 pin round connector this position may be different on your particular unit. The round connector follows the A row of jumper numbering. Also note the view of the RJ-45 jack. The RJ-45 connector follows the B row of Jumper numbering.   However, because some manufacturers may number their connectors different from that shown, you can use either the A or B row numbering as appropriate. Just to be sure, map the actual pin function – not the pin number – of your radio's mic connector to the numbered pins shown above so as to determine the correct jumper positions to use in the MFJ-645

INTERNAL JUMPER BLOCKS

The Jumper Installation diagrams within this instruction manual will help you in setting up your MFJ-645 to match your radio. If your radio is not listed with the diagram, it means that we have not verified your radio to use that diagram. **To be absolutely safe, please refer to your RADIO INSTRUCTION MANUAL to verify your microphone wiring.** You can damage your radio if you accidentally short the microphone voltage (available on many microphone connectors) to ground. Once you have identified the MIC pin assignment for your radio, then follow the instructions given at the end of this section to install the jumpers.

SYSTEM SETUP

ICOM 8-Pin Round Microphone Setup:
IC-255, 288, 28, 290, 38A, 375, 707, 718, 725, 726, 728, 729, 730, 735, 737, 745, 746, 746PRO, 751, IC-756, 756PRO, 756PROII, 775DSP, 761, 78, 781, 910H
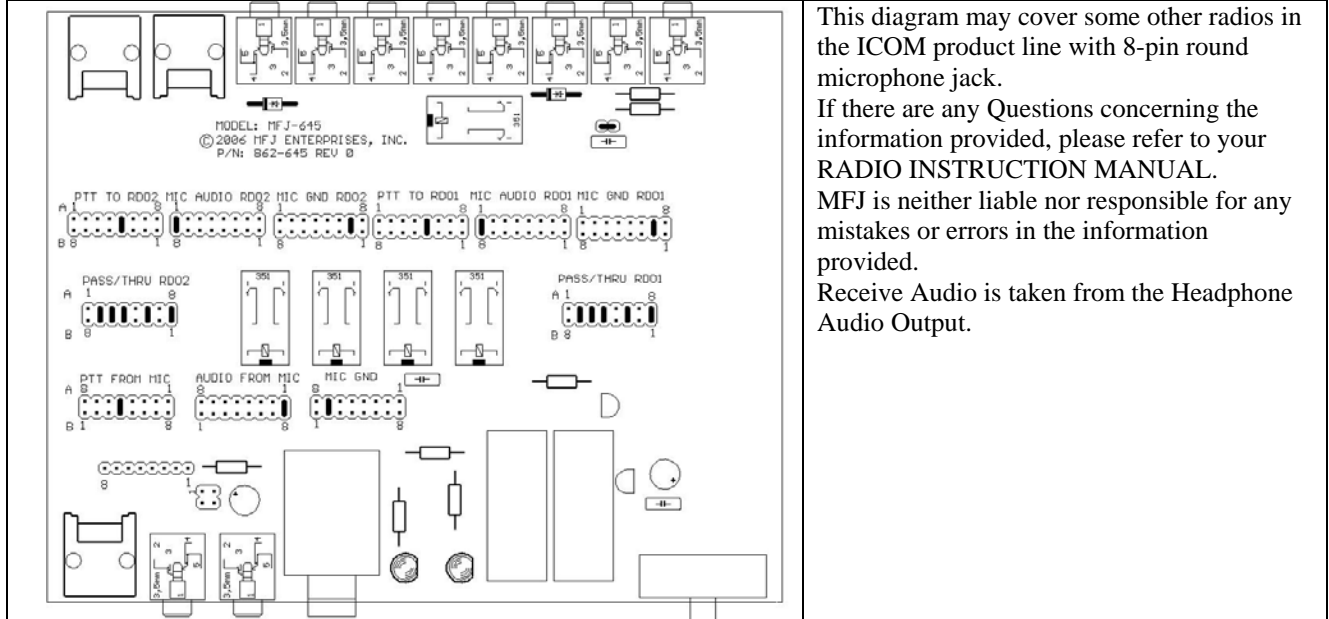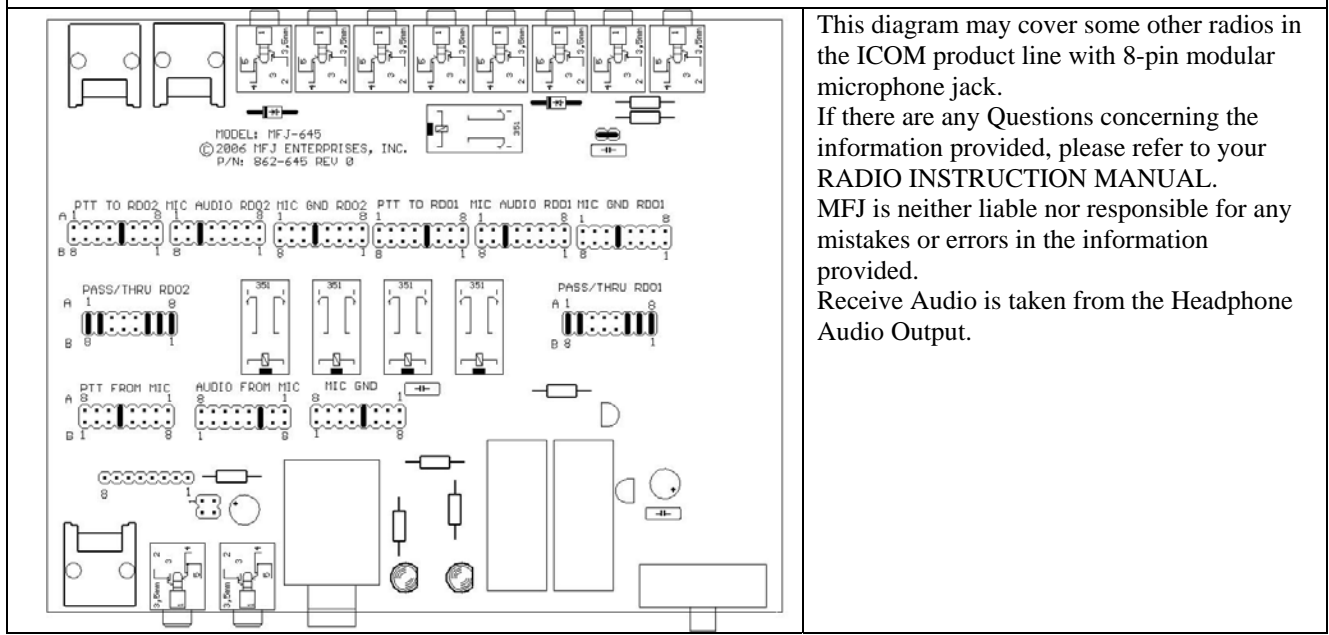

This diagram may cover some other radios in the ICOM product line with 8-pin round microphone jack.
If there are any Questions concerning the information provided, please refer to your RADIO INSTRUCTION MANUAL.
MFJ is neither liable nor responsible for any mistakes or errors in the information provided.
Receive Audio is taken from the Headphone Audio Output.

Figure 5: ICOM 8-Pin Round Microphone Setup

ICOM 8-Pin Modular Microphone Setup:
IC-207H, 2800H, 703, 706, 706MKII, 706 MKIIG, V8000

This diagram may cover some other radios in the ICOM product line with 8-pin modular microphone jack.
If there are any Questions concerning the information provided, please refer to your RADIO INSTRUCTION MANUAL.
MFJ is neither liable nor responsible for any mistakes or errors in the information provided.
Receive Audio is taken from the Headphone Audio Output.

Figure 6: ICOM Modular Microphone Setup

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SYSTEM SETUP

Yaesu 8-Pin Round Microphone Setup:
Yaesu FT-650, 707, 712, 726, 736, 756, 767, 790II, 700, 840, 890, 990, 1000D

This diagram may cover some other radios in the Yaesu product line with 8-pin Round microphone jack.
If there are any Questions concerning the information provided, please refer to your RADIO INSTRUCTION MANUAL.
MFJ is neither liable nor responsible for any mistakes or errors in the information provided.
Receive Audio is taken from the Headphone Audio Output.

Figure 7: YAESU 8-pin Round Microphone Setup

YAESU 8-Pin Modular Microphone Setup:
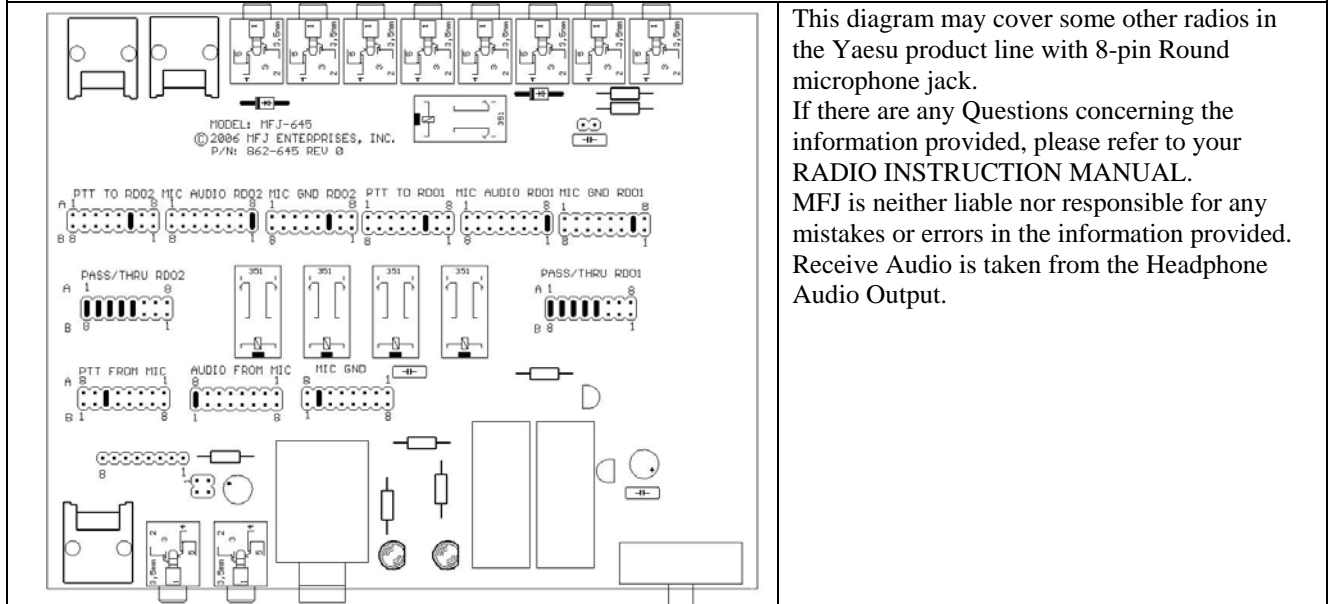**YAESU FT-817, 857, 897**

This diagram may cover some other radios in the YAESU product line with 8-pin modular microphone jack.
If there are any Questions concerning the information provided, please refer to your RADIO INSTRUCTION MANUAL.
MFJ is neither liable nor responsible for any mistakes or errors in the information provided.
Receive Audio is taken from the Headphone Audio Output.

Figure 8: YAESU 8-pin Modular Microphone Setup

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SYSTEM SETUP

KENWOOD 8-Pin Round Microphone Setup:

TS-50, 60, 140, 430, 440, 450, 570, 660, 670, 680, 690, 711, 780, 811, 850, 870, 930, 940, 950
TM-201A, 201B, 211, 221, 231, 241, 321, 331, 401A, 401B, 421, 431, 441, 521, 531, 541, 621
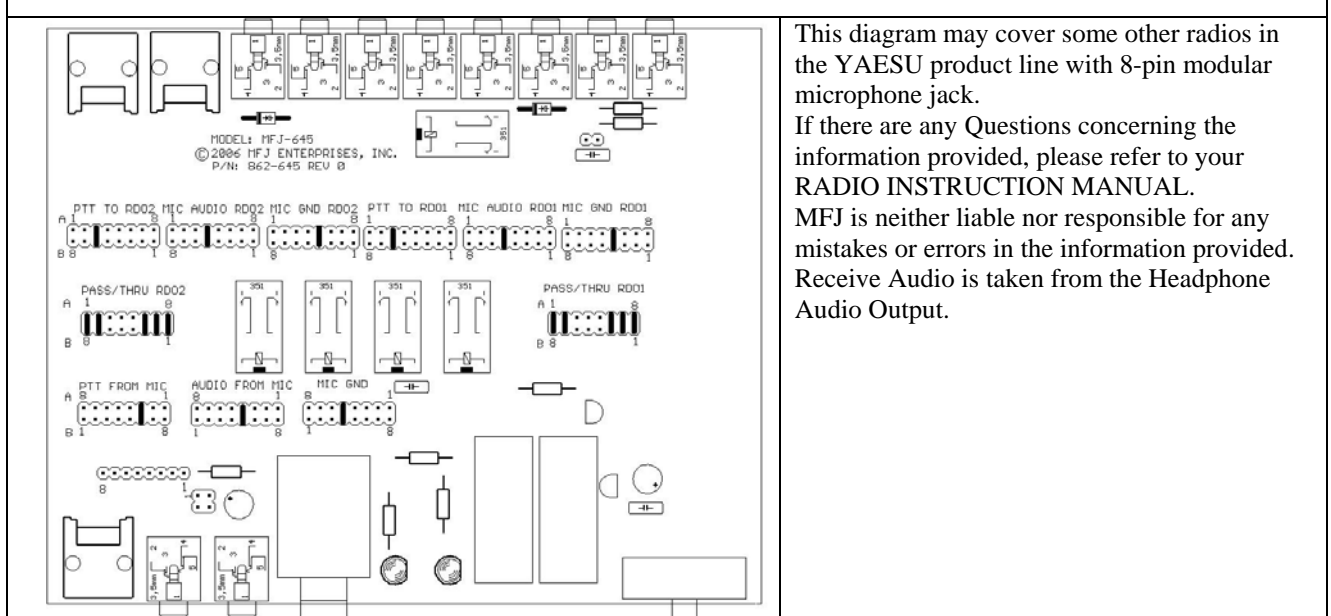**TM-631, 701, 721, 731, 2530, 2550, 2570, TR-50, 751, 851, TW-4000, 4100**

This diagram may cover some other radios in the Kenwood product line with 8-pin round microphone jack.
If there are any Questions concerning the information provided, please refer to your RADIO INSTRUCTION MANUAL.
MFJ is neither liable nor responsible for any mistakes or errors in the information provided.
Receive Audio is taken from the Headphone Audio Output .

Figure 9: KENWOOD 8-pin Round Microphone Setup

KENWOOD 8-Pin Modular Microphone Setup:

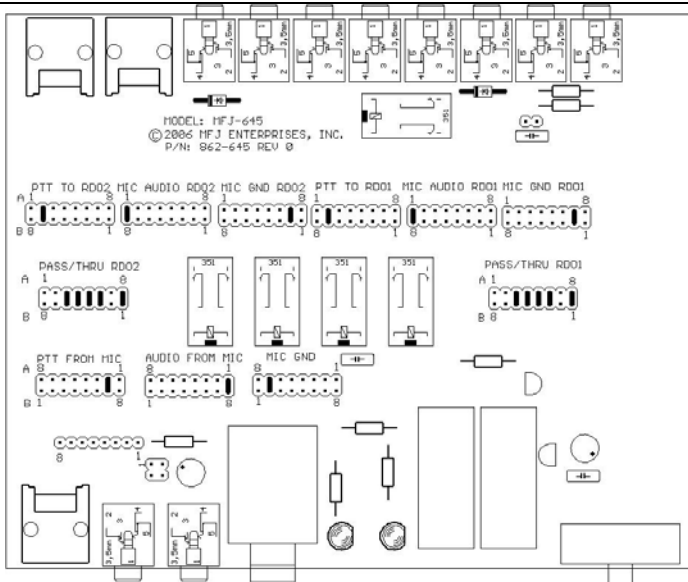**TM-251, 255, 261, 451, 461, 641, 642, 732, 733, 741, 742, 941, 942, G707, V7A**

This diagram may cover some other radios in the Kenwood product line with 8-pin modular microphone jack.
If there are any Questions concerning the information provided, please refer to your RADIO INSTRUCTION MANUAL.
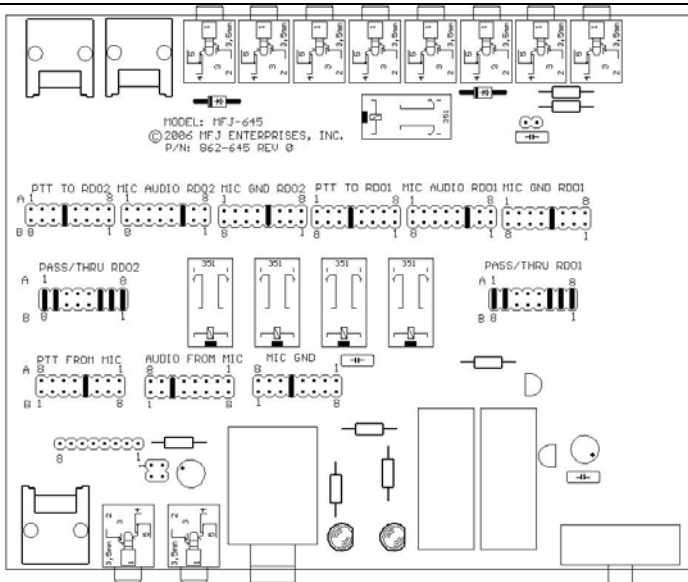MFJ is neither liable nor responsible for any mistakes or errors in the information provided.
Receive Audio is taken from the Headphone Audio Output .

Figure 10: KENWOOD 8-pin Modular Microphone Setup

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CUSTOMIZING INTERNAL JUMPERS (MFJ-645)

If your radio is not listed above, you can create a custom jumper position table.
Begin by removing the screws from the sides of the cabinet. Lift the cover off. Look from the front view and notice the group of pins and black jumpers on the left side behind the microphone connector and in front of the microphone output jack. Fill in a custom table like the following:

Table 1. Yaesu FT-1000 series

Pin	JP10 rad mic gnd	JP7 mic gnd	JP5 pass	JP8 mic audio	JP9 rad ptt	JP6 mic ptt	JP11 rad audio
1			X				
2			X				
2			X				
4			X				
5			X				
6					X	X	
7	X	X	X				
8				X			X

To make a jumper table for an unlisted radio, you must look at the radio manual. Find the page that shows the microphone wiring. This is a sample of a Yaesu-style wiring diagram that was used above:

SYSTEM SETUP
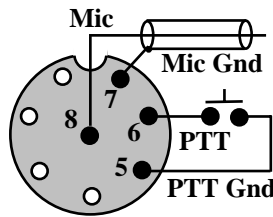
Yaesu Mic Jack Pin-out, Front View
Figure 12: Yaesu Mic Jack Pin-out, Front View

If you compare table 1 to this connector diagram, you will see how it is laid out. Notice an "X" was placed at the appropriate PTT and MIC pins according to the rules below.

Look at the microphone-wiring diagram in your radio manual, fill in a table, and connect the leads as we have done in our example

1.) **Jumper 4, 8 and 11 should copy each other, and use the same jumper pin number for the center MIC wire.**

2.) **Jumper 2,6 and 9 also jointly share the same pin numbers as the PTT pin.**

3.) **The MIC GND, Jumper, should connect to the same pin as the outer MIC lead and only that pin.**

4.) **Be sure to place a pass-through connection jumper on every lead EXCEPT numbers used for the audio, ground and PTT Lines.**

Table 2:

Radio	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8
Alinco	MIC AUDIO	PTT	DOWN	UP	5 VOLTS	AF OUT	MIC GND	GND
Icom	MIC AUDIO	+8 VOLTS	UP/DOWN	SQL	PTT	PTT GND	MIC GND	
Kenwood	MIC AUDIO	PTT	DOWN	UP	8 VOLTS	NC	MIC GND	PTT GND
Yaesu FT1000 FT847	UP	GND	DOWN	FAST	GND	PTT	MIC GND	MIC AUDIO
Yaesu FT-990 FT-1000MP	UP	+5 VOLTS	DOWN	FAST	GND	PTT	MIC GND	MIC AUDIO

SYSTEM SETUP

Cables

Simply connect your microphone to the appropriate input and use either a MFJ-5398 for 8 pin Round or MFJ-5397MX for 8 pin Modular connector to the output on the rear of the unit and attach to your radios .

Connect the audio from your radio's headphone jack to the 3.5-mm jack on the MFJ-645. If your radio outputs mono, then simply wire the tip and the ring of the cable to provide audio to both sides of the headphones..

Connect a Foot Switch or Hand Switch to the PTT jack located on the rear of the unit.

Power

The MFJ-645 will operate with any well-filtered 10-14 VDC power supply capable of at least 100 mA. The required power connector is a 2.1 -mm ID, 5.5 -mm OD coaxial power plug.   As this is a quality audio unit use of an unregulated wall power supply transformer is not recommended as the unloaded voltages can easily exceed 15 volts and the lack of filtration and regulation can introduce hum and other components into your signal. Wire (+) voltage to center and (-) to common.

Headphones

Use stereo headphones rated at 8-40 Ohms impedance. Jacks for either ¼ inch or 3.5 –mm headphones are included on the front of the unit. Use of quality phones will aid in the reproduction of the audio from your radios.

Radio Audio

Feed the audio from radio 1 into the jack labeled Radio 1 on the rear of the unit. Feed the audio from radio 2 into the jack labeled Radio 2 on the rear of the unit.

SYSTEM SETUP

THEORY OF OPERATION

1. Manual Mode: In the manual mode of operation the audio to the radio is selected by the use of S6 the Radio 1 or Radio 2 select switch. The receive audio is passed to the headphones depending on the position of S2 the Radio 1, Both or Radio 2 select switch. If Radio 1 is selected then the audio is dependant upon what is obtained from the Radio. If your Radio has Stereo Output for a Main and a Sub Receiver in different ears then that is what will be in the headphones. Otherwise if you have Mono output from the radio you will need to tie the tip and ring of the cable to obtain Radio 1 audio in both ears. Radio 2 would function the same way. In the Both mode then Radio 1 will be in the Left ear and Radio 2 will be in the Right ear. This audio is taken from the Tip of the 3.5 –mm jack so ensure that you wire the proper signal from your radios to the tip. In the Both Mode you also have the choice of selecting the Mix Mode. In this mode you have full adjustment from Radio 1 in both ears to Radio 2 in both ears and fully variable in between.

2. PTT Mode: This mode only is affects the receive audio. If a signal is passed from the radio from a PTT output such as is used to key an amplifier then the audio from both radios will be fed into the headphone in their respective ear. But if 1 radio is keyed then the audio from that radio will be muted and the audio from the other radio will be fed into both ears.

3. Automatic Mode: In this mode everything is controlled from the Computer Program that you are using for logging and/or SO2R operation. Refer to the instructions for you particular program as each has different features for Automatic Operation.

EASY START INSTRUCTIONS
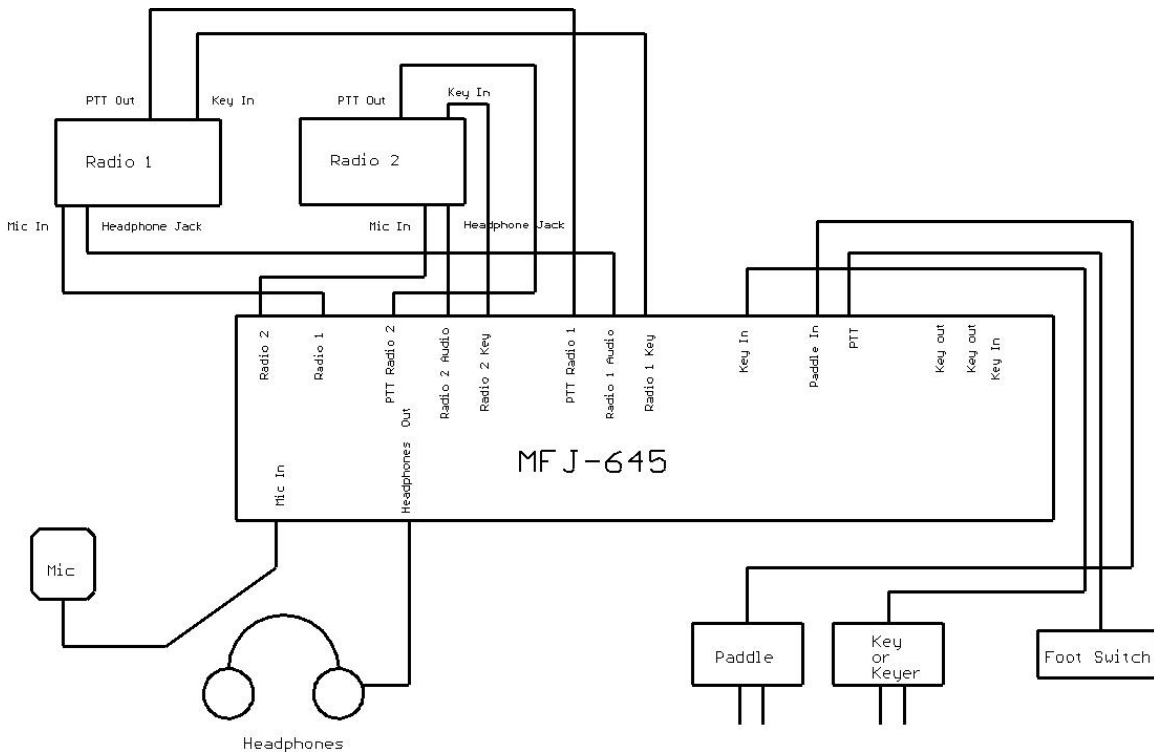
Figure 13: Connection Diagram

Plug your microphone into the 3.5 –mm jack on the front of the unit. If using the MFJ-393, short header 1 pins 1-2. If using a Computer boom mic, short header 1 pins 3-4.

Plug your headphones into the appropriate jack on the front panel.

Adjusting the audio levels:

Place the switch in the Radio 1 position and turn on Radio 1. Set the volume to a comfortable level.

Place the switch in the Radio 2 position and turn on Radio 2. Set the volume to a comfortable level.

EASY START INSTRUCTIONS

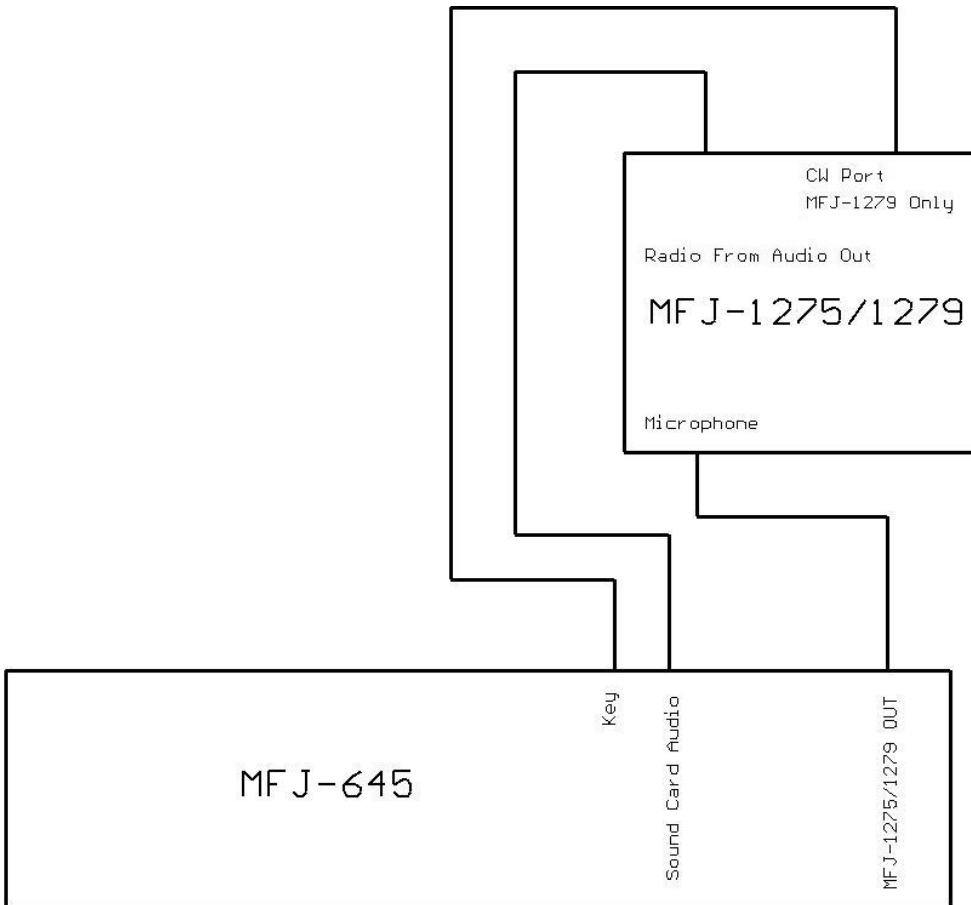<u>**MFJ-1275 and MFJ-1279 Interfacing**</u>

Figure 14: MFJ-1275/1279 Interfacing Diagram

EASY START INSTRUCTIONS

Microphone Cable: Plug a MFJ-5398 or MFJ-5397MX cable into the MFJ-1275/1279 and plug the other end into the MFJ-645. Set the jumpers inside the MFJ-1275/1279 or MFJ-1275M/1279M as shown below.
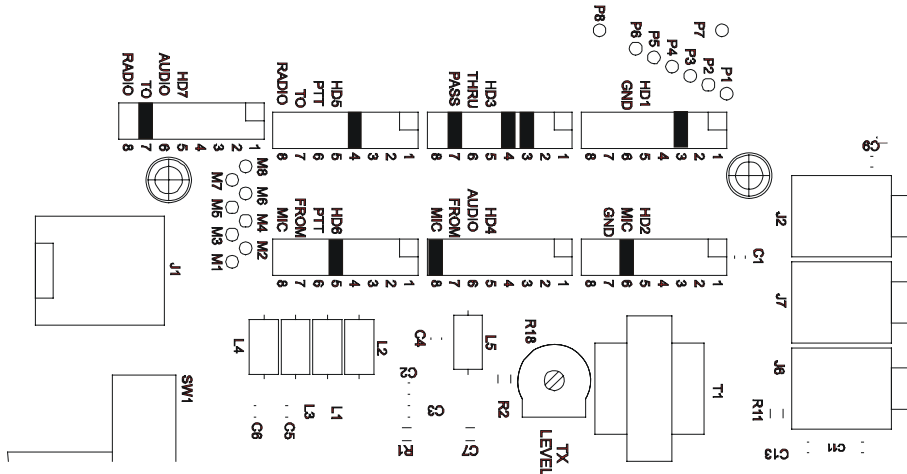

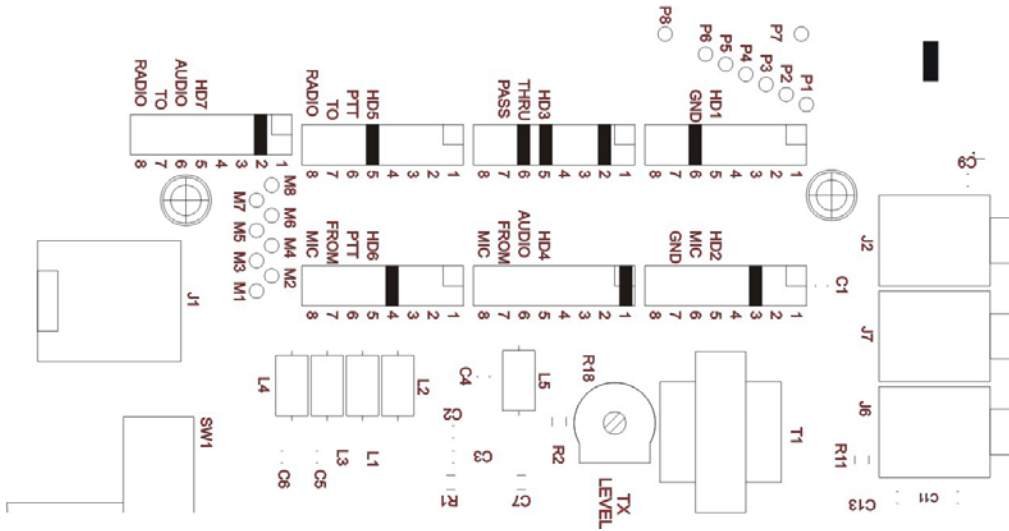**Figure 15: MFJ-1275/1279 Internal Jumpers**

Figure 15A: MFJ-1275M/1279M Internal Jumpers

EASY START INSTRUCTIONS

Computer Cables: Connect the cables to the computer that will be used for the Sound Card Interfacing as shown on your MFJ-1275/1279 Manual.

Place the switch in the Stereo position and the radios should be equal in volume Radio 1 in the left ear and Radio 2 in the right ear.

Place the switch in the Mix position and move the Mix control from radio 1 to radio 2 and you will see how the radios are continuously variable in volume.

TYPICAL SPECIFICATIONS

Input source………………….Dynamic or Electret mic low or high Z
                           Stereo or Monaural radio audio.
                           Sound card or Modem. Key or Keyer.

Output ……………………… All input passed direct to the respective outputs.

Computer Control pins:

1 - Strobe
2 – Band Data A
3 – NA program TX1/TX2
4 – NA Program RX1/RX2
5- NA Program Stereo Mix Audio
6 – N/C
7 – Band Data B
8 - Band Data C
9 – Band Data D
10 - N/C
11- N/C
12 - NA and TR Programs CW Dot
13 - NA and TR Programs CW Dash
14 – CT/TR/WL/LogEQF programs Radio 1/ Radio2
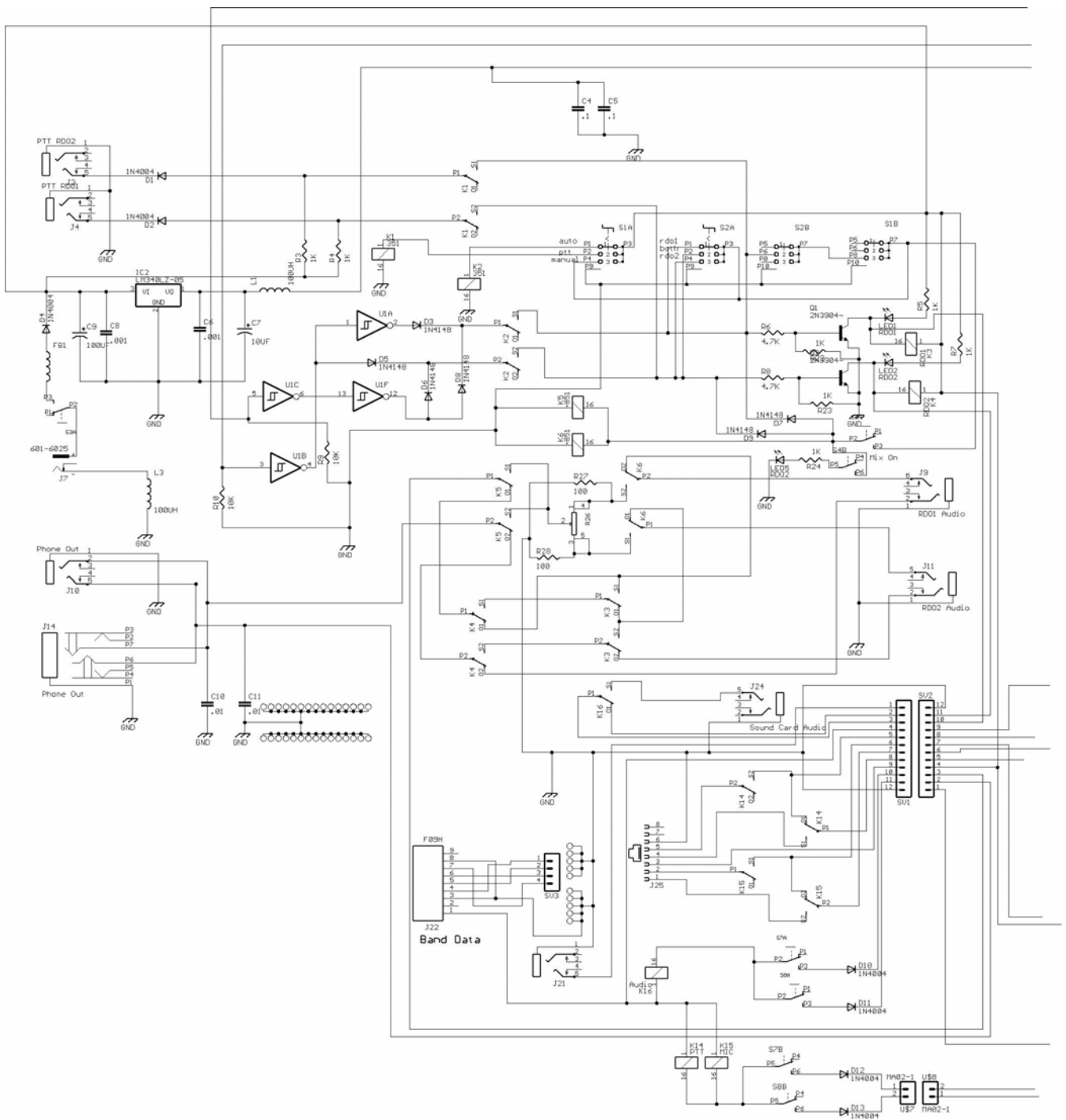15 – N/C
16 – Early PTT
17 – CW Keying
18-25 GND

FIGURE 16: MFJ-645 Schematic Diagram Part 1

FIGURE 17: MFJ-645 Schematic Diagram Part 2

TECHNICAL ASSISTANCE

IN CASE OF DIFFICULTY

[ ] Won't Power up: Check the polarity and connection to your power supply.

[ ] No microphone audio: Check the Mic Audio Jumper block and the Mic Ground Jumper block for proper placement of the jumper on the proper header position. If using an electret microphone ensure the phantom voltage has been set to the proper level.

[ ] No receiver audio: Check the cabling from your radio to the MFJ-645. Ensure the Test/Operate switch on the rear of the unit is in the Operate position.

[ ] Station PTT will not function: Check the PTT jumper block. Ensure that you have a ground between the radio and the MFJ-645 as the Mic Ground is isolated from the Chassis Ground.

[ ] Noisy audio, Hum: Magnetically induced hum can be caused to any modern piece of audio equipment by proximity to unshielded power transformers or equipment that radiated strong AC fields. Another source of hum can be caused by a ground loop. This is when equipment is connected together but do not have their grounds well connected. The use of "Daisy Chain" grounding techniques can contribute to this problem. The use of a single point ground is always recommended in Amateur Radio installations. RF floating in the shack can also contribute to distortion. To determine if you have this problem, simply transmit into a Dummy Load. If the distortion goes away then you have RF in the shack.

TECHNICAL ASSISTANCE

If you have any problem with this unit first check the appropriate section of this manual. If the manual does not reference your problem or if reading the manual does not solve your problem, you may call *MFJ Technical Service* at **662-323-0549** or the *MFJ Factory* at **662-323-5869**. You will be best helped if you have your unit, manual and all information on your station handy so you can answer any questions the technician may ask.

You can also send questions by mail to MFJ Enterprises, Inc., 300 Industrial Park Road, Starkville, MS 39759; by Facsimile (FAX) to 662-323-6551; or by email to techinfo@mfjenterprises.com. Send a complete description of your problem, an explanation of exactly how you are using your unit, and a complete description of your station.

LIMITED 12-MONTH WARRANTY

MFJ Enterprises, Inc. warrants to the original owner of this product, if manufactured by MFJ Enterprises, Inc. and purchased from an authorized dealer or directly from MFJ Enterprises, Inc. to be free from defects in material and workmanship for a period of 12 months from date of purchase provided the following terms of this warranty are satisfied.

1. The purchaser must retain the dated proof-of-purchase (bill of sale, canceled check, credit card or money order receipt, etc.) describing the product to establish the validity of the warranty claim and submit the original or machine reproduction of such proof of purchase to MFJ Enterprises, Inc. at the time of warranty service. MFJ Enterprises, Inc. shall have the discretion to deny warranty without dated proof-of-purchase. Any evidence of alteration, erasure, or forgery shall be cause to void any and all warranty terms immediately.

2. MFJ Enterprises, Inc. agrees to repair or replace at MFJ's option without charge to the original owner any defective product under warrantee provided the product is returned postage prepaid to MFJ Enterprises, Inc. with a personal check, cashiers check, or money order for **$7.00** covering postage and handling.

3. This warranty is **NOT** void for owners who attempt to repair defective units. Technical consultation is available by calling the Service Department at 662-323-0549 or the MFJ Factory at 662-323-5869.

4. This warranty does not apply to kits sold by or manufactured by MFJ Enterprises, Inc.

5. Wired and tested PC board products are covered by this warranty provided **only the wired and tested PC board product is returned.** Wired and tested PC boards installed in the owner's cabinet or connected to switches, jacks, or cables, etc. sent to MFJ Enterprises, Inc. will be returned at the owner's expense unrepaired.

6. Under no circumstances is MFJ Enterprises, Inc. liable for consequential damages to person or property by the use of any MFJ products.

7. **Out-of-Warranty Service:** MFJ Enterprises, Inc. will repair any out-of-warranty product provided the unit is shipped prepaid. All repaired units will be shipped COD to the owner. Repair charges will be added to the COD fee unless other arrangements are made.

8. This warranty is given in lieu of any other warranty expressed or implied.

9. MFJ Enterprises, Inc. reserves the right to make changes or improvements in design or manufacture without incurring any obligation to install such changes upon any of the products previously manufactured.

10. All MFJ products to be serviced in-warranty or out-of-warranty should be addressed to:

    MFJ Enterprises, Inc.,
    300 Industrial Park Road
    Starkville, Mississippi 39759 USA

    and must be accompanied by a letter describing the problem in detail along with a copy of your dated proof-of-purchase.

11. This warranty gives you specific rights, and you may also have other rights which vary from state to state.

NOTES: