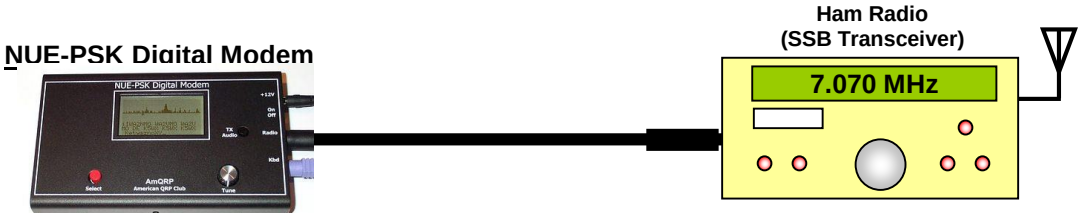
NUE-PSK Digital Modem

Radio Cable Guide

A guide for attaching a connector to the radio cable supplied with the NUE-PSK Digital Modem. Just follow these simple instructions to connect the modem audio and PTT signals to your SSB rig.



Type 0 (Stock Cable): Shipped standard with all modems. One end unterminated so you can add your own connector. Our spec defines wiring color codes for "type A" and "type B" versions of the cable.	
Type 1 Cable: Icom IC-703, 703Plus, 706MKIIG, 746, 746PRO, 7000, 7100, 8800, 2820 Kenwood TS-480(SAT) Yaesu FT-817, -857, -897, -450, -100	**Type 2 Cable:** Icom IC-756, -756PRO (and -II, -III), -707, -725, -725A IC-726, -732, -735, -736, -737, -738, -761, -765, IC-775, -781, -7400, -7600, -7800
Type 3 Cable: Ten Tec Argonaut 516, Orion 565 (5-pin Aux jack), Omni VII Yaesu FT-990, -1000, -1000/D, -1000MP, -1000MP Mark-V, -2000, -9000	**Type 4 Cable:** Yaesu FT-890, -900
Type 5 Cable: Ten Tec Scout 555	**Type 6 Cable:** Small Wonder Labs PSK-xx, Warbler, BITx40, uBITx
Type 7 Cable: Elecraft K2	**Type 8 Cable:** Ten Tec Orion I (565) and Orion II (566) (8-pin AUX jack for both)
Type 9 Cable: Kenwood TS140S, TS-450, TS-570, TS-590, TS-690 (13-pin aux jack), TS-850, TS-2000	**Type 10 Cable:** Elecraft K3, Kenwood TS-930
Type 11 Cable: SG-2020, Alinco DX70	**Type 12 Cable:** Yaesu FT-7
Type 13 Cable: Icom IC-703, -703Plus, -706, -706MKII, -706MKIIG, -718, -7000, -7200, -7300, -9100	**Type 14 Cable:** Kenwood TS-50, TS-60
Type 15 Cable: Yaesu FT-847	**Type 16 Cable:** YouKits TJ6A, Kenwood TS-130
Type 17 Cable: Ten Tec Eagle 599	**Type 18 Cable:** Yaesu FT-290R-II
Type 19 Cable: Ten Tec Paragon 585, Omni VI 563	**Type 20 Cable:** Yaesu FT-757
Type 21 Cable: Elecraft KX1, YouKits HB1B (both in CW Direct Mode)	**Type 23 Cable:** **Elecraft KX3**
Type 24 Cable: Kenwood TS-930	**Type 25 Cable:** Icom IC-751A
Type 26 Cable: Kenwood TS-990	**Type 27 Cable:** LNR Precision FX-4
Type 28 Cable: Icom IC-251E	**Type 29 Cable:** Kenwood R-5000
Type 30 Cable: Kenwood TS-940	

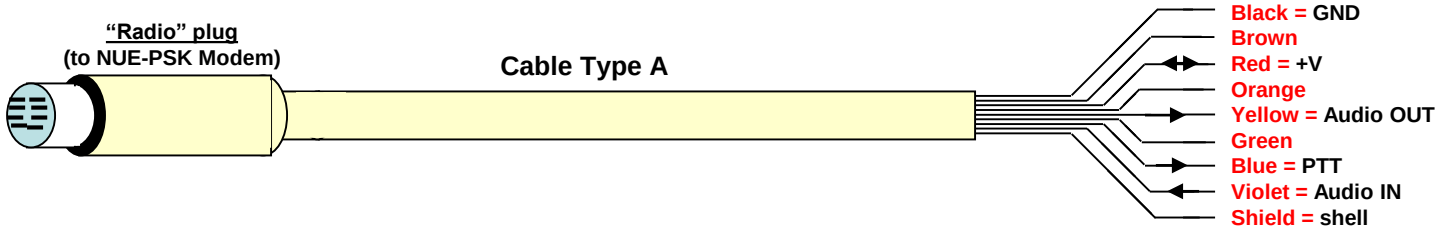
See the following pages for details on each cable type.

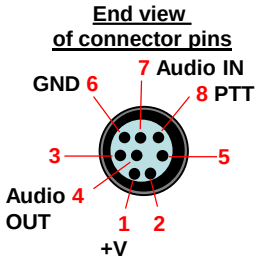
Oct 2018
G. Heron, N2APB

Radio Cable Type 0

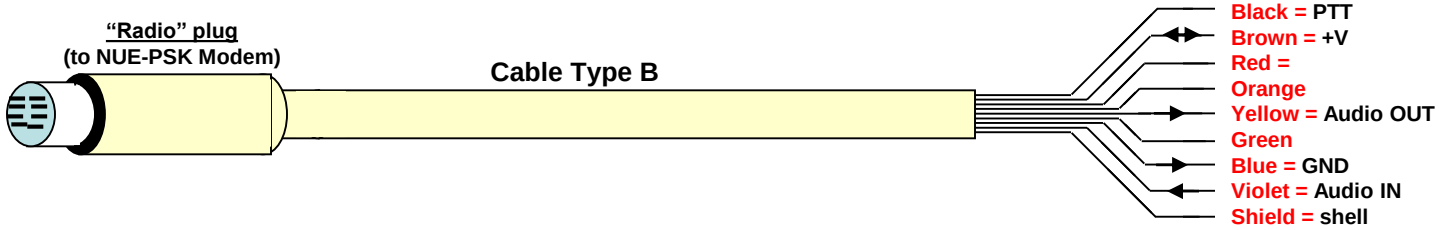
This cable has color-coded wires, as shown in one of the two figures below. You will need to determine which type you have before attaching the connector required for the data connection to your specific radio.

You can easily determine which cable type you have by using a VOM to check for continuity from pin 8 on the molded Radio plug (on the left) to the blue wire on the right end of the cable. If there is continuity, you have Cable Type A. Otherwise, with pin 8 continuity to the black wire, you have Cable Type B





OR



Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 1

for Yaesu FT-817, FT-857, FT-891, FT-897, FT-450, FT-100
and Icom IC-703, IC-703 Plus, IC-706MKIIG, IC-746/PRO, IC-7000, IC-8800, IC-2820
and Kenwood TS-480(SAT)

Transmitter Settings Guidance for Digital Mode Operation

(For the FT-817. May be similar on other models.)

1) Set the rig to a PSK31area of the band (e.g., 14.070 MHz) and set the rig operating mode to DIG (use arrow buttons above the display).

2) Set the rig's power level to be full 5W output. (Tap the F key, dial to the PWR MTR screen and tap A button repeatedly until you see the 3 bars blinking. Tap the F key again to exit.)

3) Select "PSK31-U" in rig menu #26 DIG MODE. (See the "Note" paragraph at bottom.)

4) Set the "Digital Mic" level to 50 in rig menu #25 DIG MIC.

5) Connect the rig RF output to a power meter with a dummy load attached.

6) Put the modem into TUNE (press F8) and adjust the TX Audio control to obtain about 3 watts of output power. Press F8 again to turn off the modem TUNE mode. (Since TUNE produces a CW signal, the BPSK signal will be somewhat lower on average, but will peak to this level at times.)

7) Use the CONFIGURE menu of the modem (press-hold the Select pushbutton) to read the Tx Audio level. It should be in the range of 15-20% at the default, power-on modem frequency of 1500 Hz.

If You Don't Have a Power Meter – You can also adjust the Tx Audio output to the proper level by viewing the ALC meter bars when the modem is in TUNE mode. Starting with the Tx Audio control fully counter-clockwise, turn it up slowly until you just barely see the first ALC bar appear, then back it off slightly until it just disappears. This should also yield the same 15-20% Tx Audio reading in Configuration as obtained in step 7. (Make sure you are still using a dummy load.)

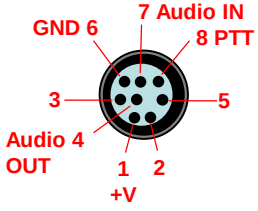
Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

Note: Convention seems to suggest using "PSK31-U", as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the 817. If you use xxx-L, you have to subtract the modem displayed frequency from the frequency on the 817 to get the "true" frequency.

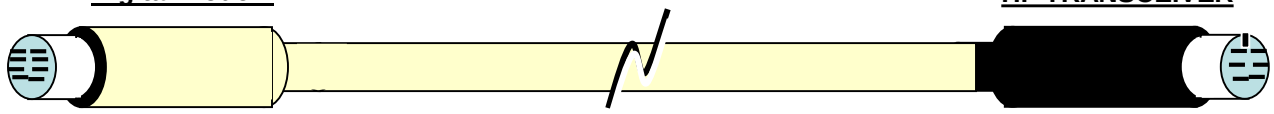
For further detailed descriptions, refer to the Transmitter Operation section of your transceiver manual. For example, see pages 38-40 of the FT-817ND manual. The manual can also be downloaded from the Yaesu website www.yaesu.com and look under Products.

NUE-PSK Digital Modem

End view of connector pins

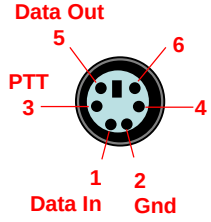


8-pin mini-DIN
Digital Modem



6-pin mini-DIN plug
HF TRANSCEIVER

End view of connector pins



Cable Wire Colors

Modem End	Radio End	Type A Cable	or	Type B Cable
Pin 8 (PTT)	PTT	blue		black
Pin 7 (Audio In)	Data Out	violet		violet
Pin 6 (Ground)	Ground	black		blue
Pin 4 (Audio Out)	Data In	yellow		yellow
Pin 1 (+V)	+V (caution)	red		brown

Radio Cable Type 2

Icom IC-756, -756PRO, -756PRO-III, -756PRO-II, -707, -735, -736, -738, -726, -765, -732, -737, -775, -781, -761, -7400, -7600, -7800

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, if you have a 100 watt PEP rig, set it up for 100 watts on SSB.

Switch to Digital mode (if your rig provides that option, otherwise retain the SSB mode) and press F8 on the keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 15 to 40 watts with a 100 watt rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

If You Don't Have a Power Meter – You can also adjust the Tx Audio output to the proper level by viewing the ALC meter bars when the modem is in TUNE mode. Starting with the Tx Audio control fully counter-clockwise, turn it up slowly until you just barely see the first ALC bar appear, then back it off slightly until it just disappears. This should also yield the same 15-20% Tx Audio reading in Configuration as obtained in step 7. (Make sure you are still using a dummy load.)

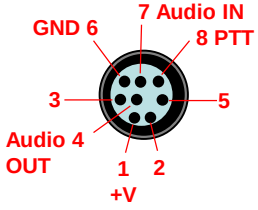
Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

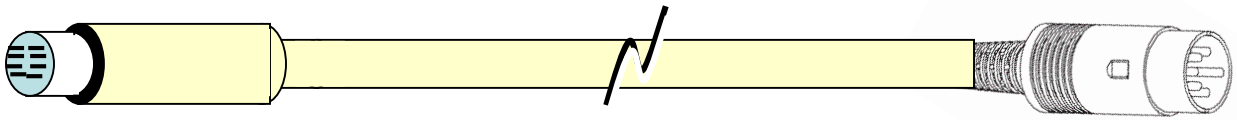
Note: Convention seems to suggest using "PSK31-U", as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the 817. If you use xxx-L, you have to subtract the modem displayed frequency from the frequency on the transceiver to get the "true" frequency.

For further detailed descriptions, refer to the Transmitter Operation section of your transceiver manual. For example, see page 19 of the IC-756 manual. The manual can also be downloaded from the IcomAmerica website http://www.icomamerica.com/en/products/

NUE-PSK Digital Modem

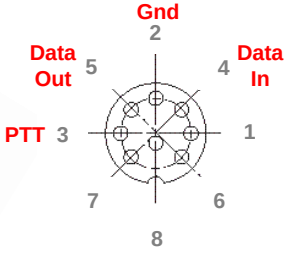
End view of connector pins





8-pin mini-DIN
Digital Modem

8-pin DIN plug
HF TRANSCEIVER



End view of pins on cable plug

Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 3

Ten Tec: Argonaut V 516, Orion 565 (with 5-pin AUX jack on rear panel), Omni VII

Yaesu FT-990, FT-1000, FT-1000/D, FT-1000MP, FT-1000MP Mark-V, FT-2000, FT-9000

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, if you have a 100 watt PEP rig, set it up for 100 watts on SSB.

Switch to Digital mode (if your rig provides that option, otherwise retain the SSB mode) and press F8 on the keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 15 to 40 watts with a 100 watt rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

If You Don't Have a Power Meter – You can also adjust the Tx Audio output to the proper level by viewing the ALC meter bars when the modem is in TUNE mode. Starting with the Tx Audio control fully counter-clockwise, turn it up slowly until you just barely see the first ALC bar appear, then back it off slightly until it just disappears. This should also yield the same 15-20% Tx Audio reading in Configuration as obtained in step 7. (Make sure you are still using a dummy load.)

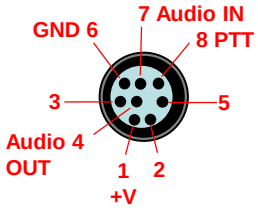
Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

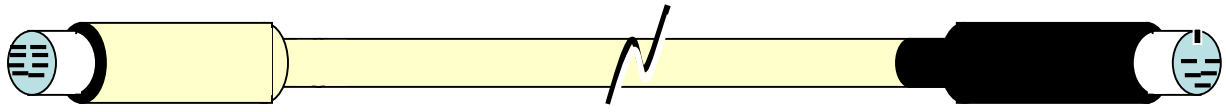
Note: Convention suggests using "PSK31-U", as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the rig. If instead you use the lower sideband, you have to subtract the modem displayed frequency from the frequency on the transceiver to get the "true" frequency.

NUE-PSK Digital Modem

Ten Tec Argonaut
(5-pin AUX jack)

End view of connector pins

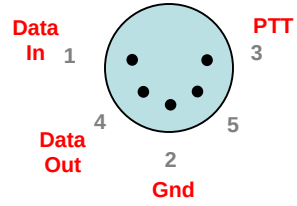




8-pin mini-DIN
Digital Modem

5-pin DIN plug

End view of pins on cable plug



Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 4

Yaesu FT-890, -900

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, if you have a 100 watt PEP rig, set it up for 100 watts on SSB.

Switch to Digital mode (if your rig provides that option, otherwise retain the SSB mode) and press F8 on the keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 15 to 40 watts with a 100 watt rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

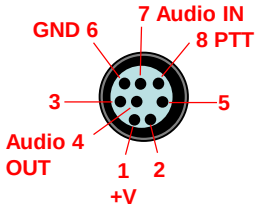
If You Don't Have a Power Meter – You can also adjust the Tx Audio output to the proper level by viewing the ALC meter bars when the modem is in TUNE mode. Starting with the Tx Audio control fully counter-clockwise, turn it up slowly until you just barely see the first ALC bar appear, then back it off slightly until it just disappears. This should also yield the same 15-20% Tx Audio reading in Configuration as obtained in step 7. (Make sure you are still using a dummy load.)

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

Note: Convention suggests using "PSK31-U", as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the rig. If instead you use the lower sideband, you have to subtract the modem displayed frequency from the frequency on the transceiver to get the "true" frequency.

NUE-PSK Digital Modem

End view of connector pins

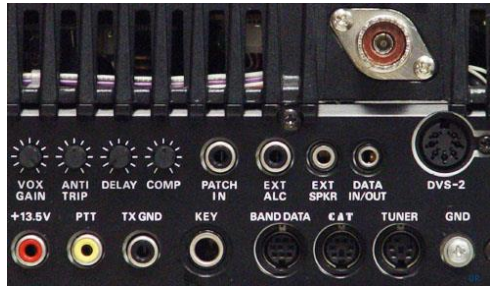


8-pin mini-DIN
Digital Modem

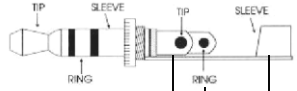
FT-900 TRANSCEIVER
(Rear Panel)

Refer to the Digital Mode section of your transceiver manual. (Page 32 of the FT-900 manual.)

NOTE: The hand mic must be disconnected for the PTT jack to put the rig into transmit.



DATA IN / OUT
(1/8" stereo plug)



Data In
Data Out
Gnd
PTT

PTT
(RCA phono plug)
Mouser p/n: 174-4359-E

Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 5

Ten Tec Scout 555

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. You will be using the Tx Audio control on the modem to adjust the audio level sent to the Scout.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation. The Scout is a 50 watt PEP rig, so set it up for 50 watts on SSB.

Still in SSB mode, press F8 on the modem keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone that is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit.

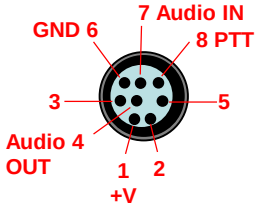
Adjust the Tx Audio control on the modem (just to the right of the display) to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended (about 7 to 20 watts with the Scout). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. Use the rig's power meter when making this setting. Once the power level has been set with

the Tx Audio control, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.
Note: Convention suggests using "PSK31-U", as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the rig. If instead you use the lower sideband, you have to subtract the modem displayed frequency from the frequency on the transceiver to get the "true" frequency.

NUE-PSK Digital Modem

End view of connector pins



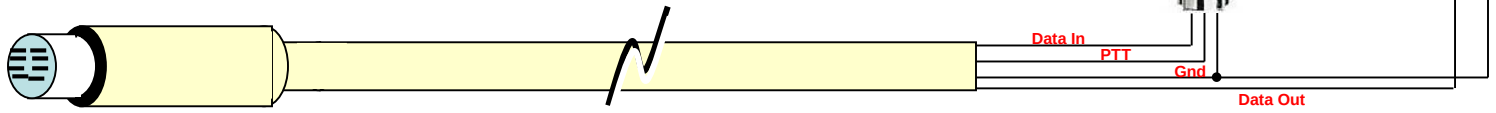
Plug the 1/4" stereo connector into the front panel jack on the front panel of the Scout. If the stereo plug is fully inserted, it cuts off the speaker. But if it is only engaged to the first detent, the speaker is still connected and the audio is fed properly to the modem. (Apparently the ring and tip are connected together within the Scout. We connected only the tip on the plug.)

Ten Tec Scout 555

Plug the 4-pin jackinto the front panel Mic connector on the Scout. This connection is for the Tx audio and modem Push To Talk lines.

Data Out
(1/4" stereo phono plug)
Mouser p/n: 171-PA62111-1-E

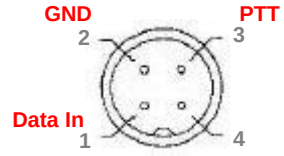
MIC Jack
Radio Shack 274-001



8-pin mini-DIN
Digital Modem

Cable Wire Colors

Modem End	Radio End	Type A Cable	or	Type B Cable
Pin 8 (PTT)	PTT	blue		black
Pin 7 (Audio In)	Data Out	violet		violet
Pin 6 (Ground)	Ground	black		blue
Pin 4 (Audio Out)	Data In	yellow		yellow
Pin 1 (+V)	+V (caution)	red		brown



End view of pins on cable plug

Radio Cable Type 6

Small Wonder Labs "PSK-xx", Warbler, Bitx40, uBitx

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

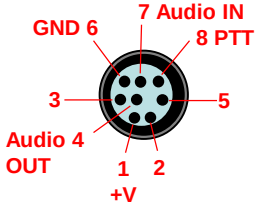
Press F8 on the keyboard to place the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 1.6 watts with a 4 watt PSK-xx rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

The actual operating frequency of the modem+PSKxx rig is just the sum or difference of the center frequency of the PSX-xx rig and the audio frequency shown on the spectrum display of the modem. For example, for a PSK-40 used with a modem spectrum display indicating 1000 Hz, the actual RF frequency being used is 14.071 – 1000 Hz = 14.070. (It would be an addition on a PSK-20 since upper sideband is used.)

NUE-PSK Digital Modem

End view of connector pins

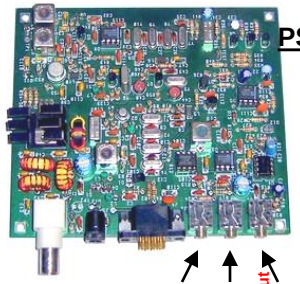


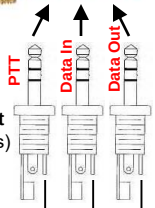
An original PSK20 is shown (used RS232 to control the PTT). I modified the PSK-20 PTT line on the DB9 connector circuit is easily modified to allow the PTT line of the modem to key the PSK-20. The modem cable is terminated with 3 stereo plugs--one for audio to the PSK-20, one for audio from the PSK-20 to the modem, and the third for PTT.

The newer PSK-xx rigs do not have a DB9 serial connector for PTT control since they use VOX. So only the audio in and audio out plugs are required to interface to the modem.

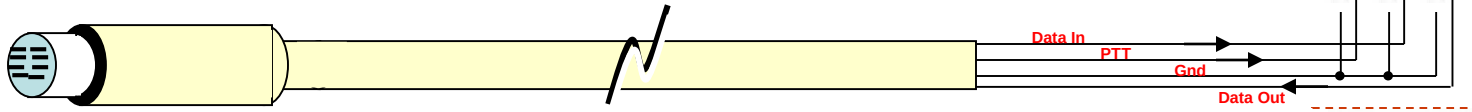
The NUE-PSK modem also must have its internal Hi-Level audio jumper (red shunt) in place to provide enough audio drive for the PSK20.

PSK-20



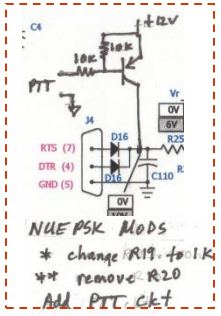


PTT, Data In, Data Out
(1/8" stereo phono plugs)



8-pin mini-DIN
Digital Modem

Modem End	Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	PTT	blue		black
Pin 7 (Audio In)	Data Out	violet		violet
Pin 6 (Ground)	Ground	black		blue
Pin 4 (Audio Out)	Data In	yellow		yellow
Pin 1 (+V)	+V (caution)	red		brown



Radio Cable Type 7

for Elecraft K2

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, if you have a 10 watt PEP Elecraft rig, set it up for 10 watts on SSB.

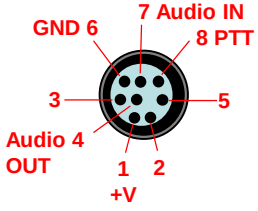
Switch to SSB mode and press F8 on the keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 1.5 to 4 watts with a 10 watt rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

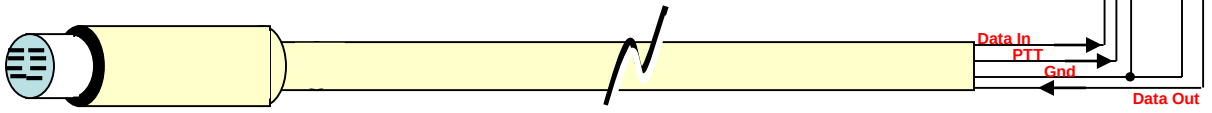
Instead of using the power meter on the K2, you can also adjust the Tx Audio output to the proper level by viewing the ALC meter bars when the modem is in TUNE mode. Starting with the Tx Audio control fully counter-clockwise, turn it up slowly until you just barely see the first ALC bar appear, then back it off slightly until it just disappears. This should also yield the same 15-20% Tx Audio reading in Configuration as obtained in step 7. (Make sure you are still using a dummy load.)

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

Note: Convention suggests using USB for PSK-31 modes. The actual operating frequency then is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the K2.

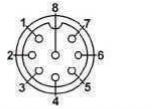
NUE-PSK Digital Modem





8-pin mini-DIN
Digital Modem

K2



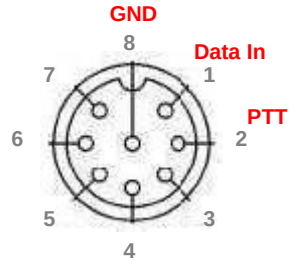
Front Panel Mic Jack Wiring:

1 Mic Audio (with bias)
2 PTT
3 DN (ignored for now)
4 UP (ignored for now)
5 FUNC (ignored for now)
6 BIAS
7 GND
8 GND

MIC Jack
Radio Shack 274-025

Data Out
(1/8" stereo phono plug)
Mouser p/n: 171-PA3291-1-E

Data In
PTT
Gnd
Data Out



End view
of pins on cable plug

Cable Wire Colors

Modem End	Radio End	Type A Cable	or	Type B Cable
Pin 8 (PTT)	PTT	blue		black
Pin 7 (Audio In)	Data Out	violet		violet
Pin 6 (Ground)	Ground	black		blue
Pin 4 (Audio Out)	Data In	yellow		yellow
Pin 1 (+V)	+V (caution)	red		brown

Radio Cable Type 8

for Ten Tec Orion 565 and Orion II 566 (both with 8-pin AUX jack)

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, if you have a 100 watt PEP rig, set it up for 100 watts on SSB.

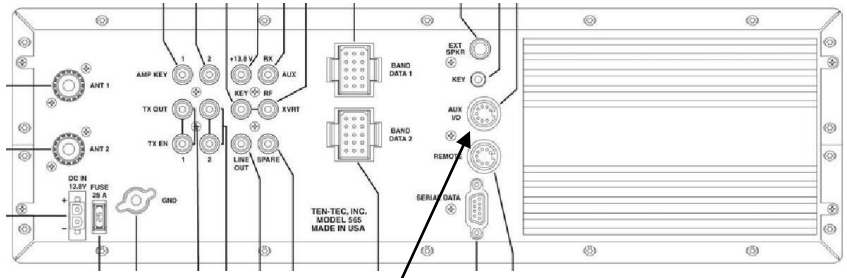
Switch to Digital mode (if your rig provides that option, otherwise retain the SSB mode) and press F8 on the keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 15 to 40 watts with a 100 watt rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

If You Don't Have a Power Meter – You can also adjust the Tx Audio output to the proper level by viewing the ALC meter bars when the modem is in TUNE mode. Starting with the Tx Audio control fully counter-clockwise, turn it up slowly until you just barely see the first ALC bar appear, then back it off slightly until it just disappears. This should also yield the same 15-20% Tx Audio reading in Configuration as obtained in step 7. (Make sure you are still using a dummy load.)

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

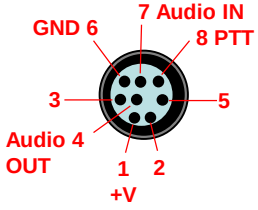
Note: Convention suggests using "PSK31-U", as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the rig. If instead you use the lower sideband, you have to subtract the modem displayed frequency from the frequency on the transceiver to get the "true" frequency.

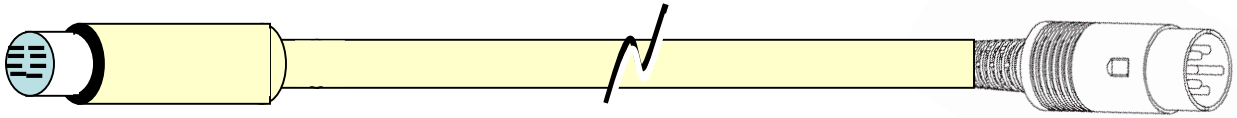
NUE-PSK Digital Modem



Ten Tec Orion 565
(with 8-pin AUX jack)

End view of connector pins

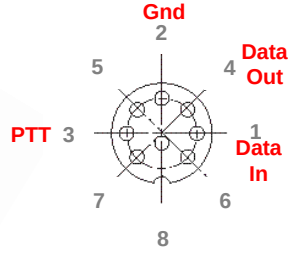




8-pin mini-DIN
Digital Modem

8-pin DIN plug

End view of pins on cable plug



Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

For detailed description, refer to the Transmitter Operation section of your transceiver manual.
http://images.tentec.com/radio/pdf/565%20manual%20revised%20February%202005.pdf

Radio Cable Type 9

for Kenwood TS-140S, TS-450, TS-570, TS-590, TS-690 (with 13-pin AUX jack), TS-850, TS-2000

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, using the power setting you usually employ. For example, if you have a 100 watt PEP rig, set it up for 100 watts on SSB.

Switch the rig to SSB mode and press F8 on the keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 15 to 40 watts with a 100 watt rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. Using the built-in meter in the Power Out setting, or an external power meter, is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

You can also adjust the Tx Audio output to the proper level by viewing the ALC meter bars on the rig's meter when the modem is in TUNE mode. Starting with the Tx Audio control fully counter-clockwise, turn it up slowly until you just barely see the first ALC bar appear, then back it off slightly until it just disappears. This should also yield the same 15-20% Tx Audio reading in Configuration as obtained in step 7. (Make sure you are still using a dummy load.)

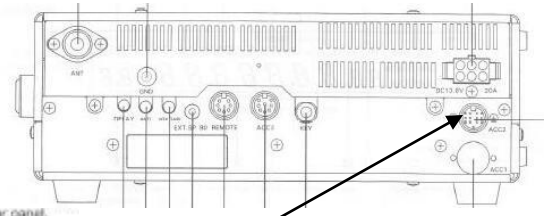
Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

Note: Convention suggests using the Upper sideband setting on the rig, as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the rig. If instead you use the lower sideband, you have to subtract the modem displayed frequency from the frequency on the transceiver to get the "true" frequency.

TS-2000 Menu Settings

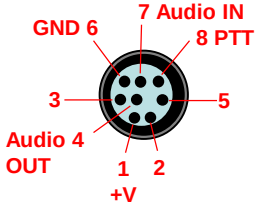
For best modem operation with the TS-2000, the following menu settings are recommended …
Menu 50B: AF Input Level for Packet = 1 or 2
Menu 50C: Main Band AF Output Level for Packet = 5 or 6

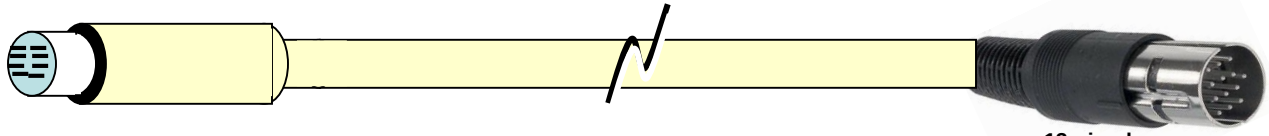
NUE-PSK Digital Modem



Kenwood TS-140S
(with 13-pin AUX jack)

End view of connector pins

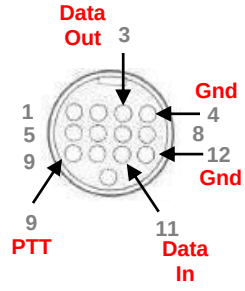




8-pin mini-DIN
Digital Modem

13-pin plug
(Digi-Key CP-1013-ND)

End view of pins on cable plug



Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 10

for Elecraft K3, Kenwood TS-930

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, if you have a 10 watt PEP Elecraft rig, set it up for 10 watts on SSB.

Switch to SSB mode and press F8 on the keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 1.5 to 4 watts with a 10 watt rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

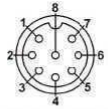
Instead of using the power meter on the K3, you can also adjust the Tx Audio output to the proper level by viewing the ALC meter bars when the modem is in TUNE mode. Starting with the Tx Audio control fully counter-clockwise, turn it up slowly until you just barely see the first ALC bar appear, then back it off slightly until it just disappears. This should also yield the same 15-20% Tx Audio reading in Configuration as obtained in step 7. (Make sure you are still using a dummy load.)

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

Note: Convention suggests using USB for PSK-31 modes. The actual operating frequency then is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the K3.

NUE-PSK Digital Modem

K3

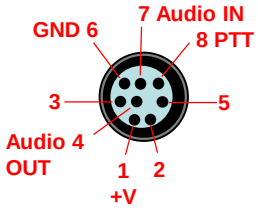


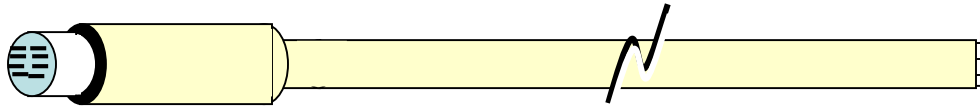
Front Panel Mic Jack Wiring:

1 Mic Audio (with bias)
2 PTT
3 DN (ignored for now)
4 UP (ignored for now)
5 FUNC (ignored for now)
6 BIAS
7 GND
8 GND

Data Out
(1/4" stereo phono plug)
Mouser p/n: 171-PA62111-1-E

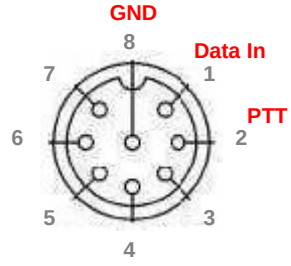
End view of connector pins





MIC Jack
Radio Shack 274-025

8-pin mini-DIN
Digital Modem



End view of pins on cable plug

Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 11

for SGC-2020, Alinco DX70

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future.

The SG-2020 is designed for various HF data transmission modes, such as RTTY, NAVTEX, weatherfax, and packet. Connection to the radio is through the microphone jack on the front panel, using standard audio in, audio out, PTT, and ground. Select either USB for conventional PSK31 data transmission and adjust the bandwidth setting as described in the manual for clear data reception.

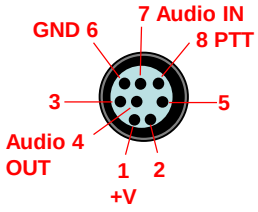
We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, set up the SG-2020 for full 20 W PEP output on SSB. Press F8 on the keyboard to place the modem in the TUNE state, which is denoted by "TUNE" at the top left of the modem display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 3 to 8 watts on the SG-2020). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

Note: Convention suggests using USB for PSK-31 modes. The actual operating frequency then is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the K2.

NUE-PSK Digital Modem

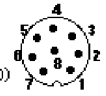
End view of connector pins



8-pin mini-DIN
Digital Modem

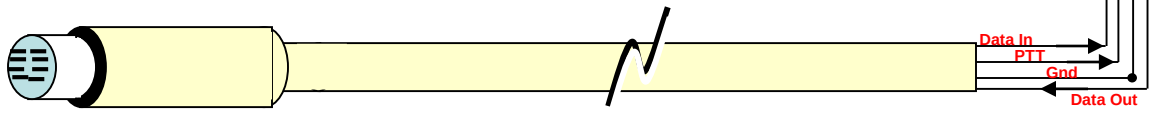
SG-2020

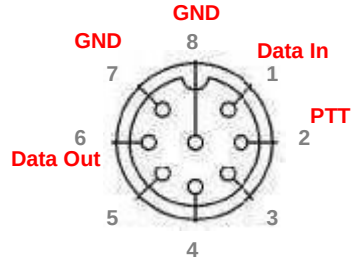
1 MIC AUDIO
2 PTT
3 OPT 1
4 OPT 2
5 N/C
6 PHONE (RX AUDIO)
7 MIC GND
8 GND



VIEWED FROM FRONT OF RADIO

MIC Jack
Radio Shack 274-025





End view of pins on cable plug

Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 12

Yaesu FT-7

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. You will be using the Tx Audio control on the modem to adjust the audio level sent to the FT-7.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation. The FT-7 is a 20 watt PEP rig, so set it up for 20 watts on SSB, using the Mic Gain control on the rig.

Still in SSB mode, press F8 on the modem keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone that is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit.

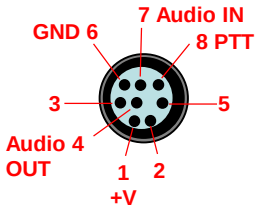
Adjust the Tx Audio control on the modem (just to the right of the display) to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended (about 3 to 8 watts with the FT-7). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. Use the rig's power meter when making this setting. Once the power level has been set with the

Tx Audio control, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.
Note: Convention suggests using "PSK31-U", as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the rig. If instead you use the lower sideband, you have to subtract the modem displayed frequency from the frequency on the transceiver to get the "true" frequency.

NUE-PSK Digital Modem

End view of connector pins

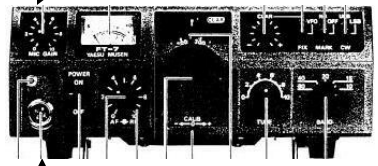


8-pin mini-DIN
Digital Modem

EXT SP jack on rear panel

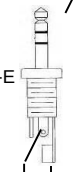
FT-7

Plug the 1/8" stereo connector into the EXT SP jack on the rear panel of the FT-7.



Plug the 4-pin jackinto the front panel Mic connector on the FT-7. This connection is for the Tx audio and modem Push To Talk lines.

Data Out
(1/8" stereo phono plug)
Mouser p/n:
171-PA3291-1-E

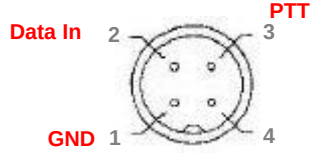


MIC Jack
Radio Shack 274-001

Data In
PTT
Gnd
Data Out

Cable Wire Colors

Modem End	Radio End	Type A Cable	or	Type B Cable
Pin 8 (PTT)	PTT	blue		black
Pin 7 (Audio In)	Data Out	violet		violet
Pin 6 (Ground)	Ground	black		blue
Pin 4 (Audio Out)	Data In	yellow		yellow
Pin 1 (+V)	+V (caution)	red		brown



End view of pins on cable plug

Radio Cable Type 13

Icom IC-703, -703Plus, -706, -706MKII, -706MKIIG, -718, -7000, -7200, -7300, -9100

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. You will be using the Tx Audio control on the modem to adjust the audio level sent to the transceiver

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation. While in SSB mode, press F8 on the modem keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone that is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit.

Adjust the Tx Audio control on the modem (just to the right of the display) to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. Use the rig's power meter when making this setting. Once the power level has been set with the Tx Audio control, press F8

again to return to receive mode. You should now be ready for transmitting PSK.

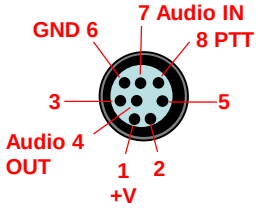
Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.
Note: Convention suggests using "PSK31-U", as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the rig. If instead you use the lower sideband, you have to subtract the modem displayed frequency from the frequency on the transceiver to get the "true" frequency.

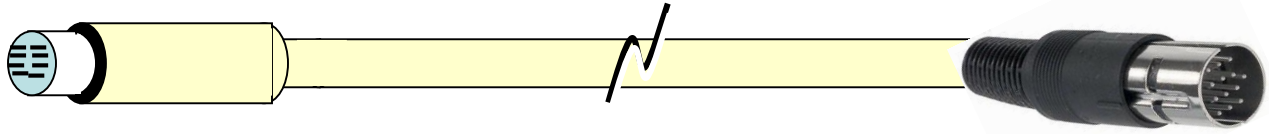
NUE-PSK Digital Modem

IC-706MKII

13-pin jack

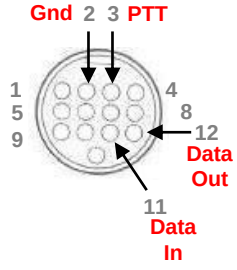
End view of connector pins





8-pin mini-DIN
Digital Modem

End view of pins on cable plug



13-pin plug
(Digi-Key CP-1013-ND)

Modem End	Radio End	Cable Wire Colors: Type A Cable	Type B Cable
Pin 8 (PTT)	PTT	blue	black
Pin 7 (Audio In)	Data Out	violet	violet
Pin 6 (Ground)	Ground	black	blue
Pin 4 (Audio Out)	Data In	yellow	yellow
Pin 1 (+V)	+V (caution)	red	brown

Radio Cable Type 14

for Kenwood TS-50, TS-60

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

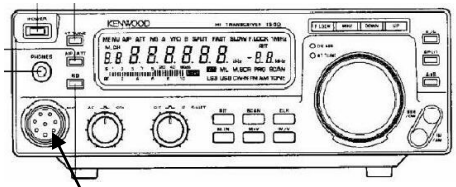
Set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, set it up for 10 watts on SSB. And for initial setup, connect an RF power meter and dummy load to the antenna jack.

Switch to SSB mode and press F8 on the keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 1.5 to 4 watts with a 10 watt rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. Remove the dummy load and you should now be ready for transmitting PSK.

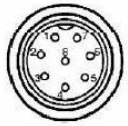
Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.
Note: Convention suggests using USB for PSK-31 modes. The actual operating frequency then is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the transceiver.

NUE-PSK Digital Modem

TS-50



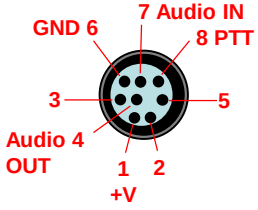
MIC connector and TNC signal cable

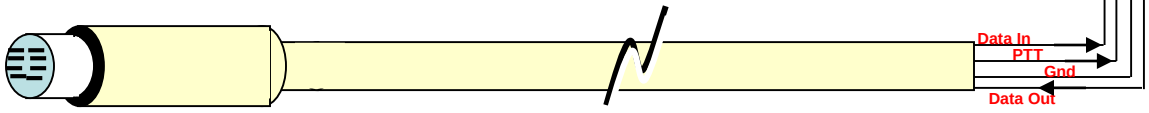


Viewed from the front

No.	Signal line name
1	TXD
2	Standby (PTT)
3	(Microphone, DOWN)
4	(Microphone, UP)
5	(Microphone, 8V)
6	RXD
7	(Microphone, GND)
8	GND

End view of connector pins

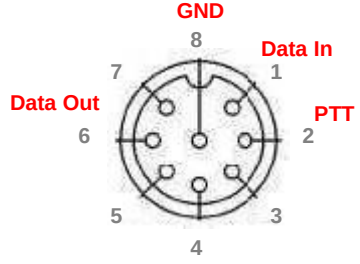




8-pin mini-DIN
Digital Modem

MIC Jack
Radio Shack 274-025

Data In
PTT
Gnd
Data Out



End view of pins on cable plug

Cable Wire Colors

Modem End	Radio End	Type A Cable	or	Type B Cable
Pin 8 (PTT)	PTT	blue		...black
Pin 7 (Audio In)	Data Out	violet		violet
Pin 6 (Ground)	Ground	black		blue
Pin 4 (Audio Out)	Data In	yellow		yellow
Pin 1 (+V)	+V (caution)	red		brown

Radio Cable Type 15

for Yaesu FT-847

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

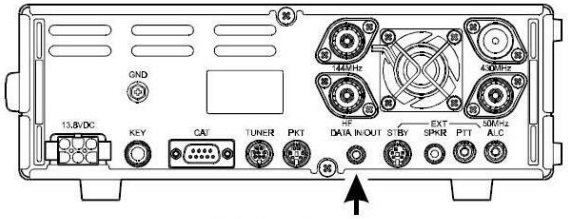
Set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, set it up for 10 watts on SSB. And for initial setup, connect an RF power meter and dummy load to the antenna jack.

Switch to SSB mode and press F8 on the keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 1.5 to 4 watts with a 10 watt rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. Remove the dummy load and you should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.
Note: Convention suggests using USB for PSK-31 modes. The actual operating frequency then is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the transceiver.

NUE-PSK Digital Modem

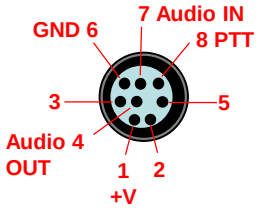
FT-847

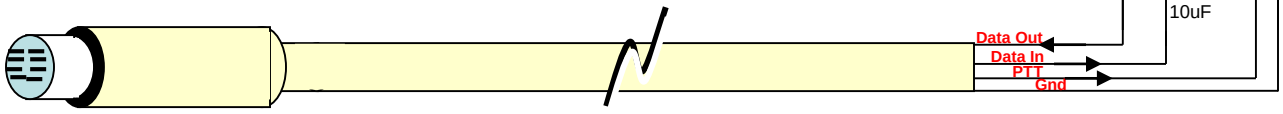


DATA IN/OUT
(1/8" stereo phono plug)
Mouser p/n: 171-PA3291-1-E

Tip
Ring
Ground

End view of connector pins





8-pin mini-DIN
Digital Modem

Modem End	Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	PTT	blue		black
Pin 7 (Audio In)	Data Out	violet		violet
Pin 6 (Ground)	Ground	black		blue
Pin 4 (Audio Out)	Data In	yellow		yellow
Pin 1 (+V)	+V (caution)	red		brown

Radio Cable Type 16

YouKits TJ6A, Kenwood TS-130

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. You will be using the Tx Audio control on the modem to adjust the audio level sent to the Scout.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation. With the rig in SSB mode, press F8 on the modem keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone that is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit.

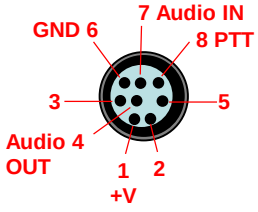
Adjust the Tx Audio control on the modem (just to the right of the display) to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended (about 2-4 watts with the Scout). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. Use the rig's power meter when making this setting. Once the power level has been set with the Tx Audio control, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

Note: Convention suggests using "PSK31-U", as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the rig. If instead you use the lower sideband, you have to subtract the modem displayed frequency from the frequency on the transceiver to get the "true" frequency.

NUE-PSK Digital Modem

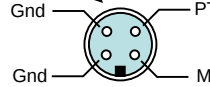
End view of connector pins

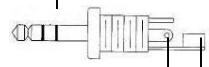


8-pin mini-DIN
Digital Modem

The TJ6A does not have a "phones" jack, although you may wish to install one on the rear panel. If you do, the supplied 1/8" stereo plug can plug in to supply the Rx audio to the modem. Otherwise, tap onto the speaker terminals with the Data Out and Ground wires from the modem cable, as shown below.

TJ6A

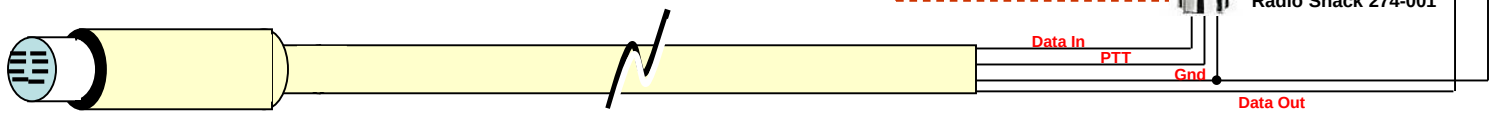




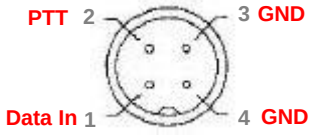
Data Out
(1/8" stereo phono plug)
Mouser p/n: 171-PA3291-1-E

Plug the 4-pin jack into the front panel Mic connector on the TJ6A. This connection is for the Tx audio and modem Push To Talk lines.

MIC Jack
Radio Shack 274-001



Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown



End view of pins on cable plug

Radio Cable Type 17 *(Same as Type 8)*

for Ten Tec Eagle 599

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

To set up the Eagle for digital communications using the ACC-1 rear connector you must first turn on the ACC-1 line input. Press and hold the MIC button until the word MIC disappears from the front screen and just the gain numbers appear on the screen. You may now adjust the line level gain for the proper levels to your computer or TNC. Pressing the MIC button one more time will toggle the line input off and the microphone input will be turned back on and the display will again show MIC

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, if you have a 100 watt PEP rig, set it up for 100 watts on SSB.

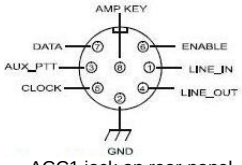
Switch to Digital mode (if your rig provides that option, otherwise retain the SSB mode) and press F8 on the keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 15 to 40 watts with a 100 watt rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

If You Don't Have a Power Meter – You can also adjust the Tx Audio output to the proper level by viewing the ALC meter bars when the modem is in TUNE mode. Starting with the Tx Audio control fully counter-clockwise, turn it up slowly until you just barely see the first ALC bar appear, then back it off slightly until it just disappears. This should also yield the same 15-20% Tx Audio reading in Configuration as obtained in step 7. (Make sure you are still using a dummy load.)

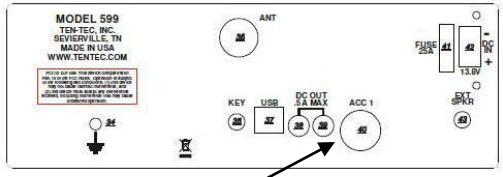
Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

Note: Convention suggests using "PSK31-U", as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the rig. If instead you use the lower sideband, you have to subtract the modem displayed frequency from the frequency on the transceiver to get the "true" frequency.

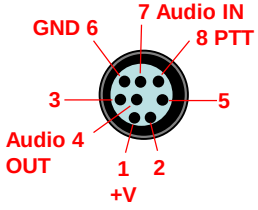
NUE-PSK Digital Modem



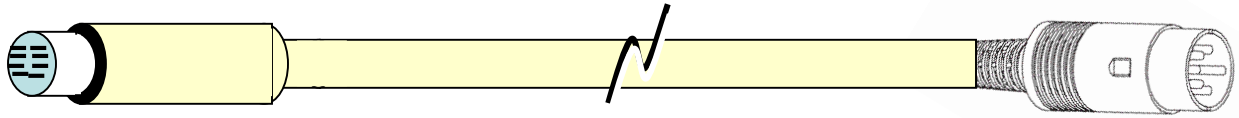
ACC1 jack on rear panel



End view of connector pins



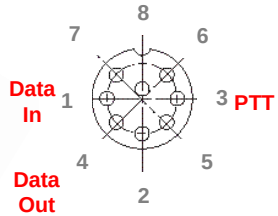
Ten Tec Eagle 599
(with 8-pin ACC1 jack)



8-pin mini-DIN
Digital Modem

8-pin DIN plug

End view of pins on cable plug



Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 18

for FT-290R-II

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future.

Connection to the radio is through the microphone jack on the front panel, using standard audio in, audio out, PTT, and ground. Select either USB for conventional PSK31 data transmission.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, set up the radio for full output on SSB. Press F8 on the keyboard to place the modem in the TUNE state, which is denoted by "TUNE" at the top left of the modem display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

Note: Convention suggests using USB for PSK-31 modes. The actual operating frequency then is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the K2.

NUE-PSK Digital Modem

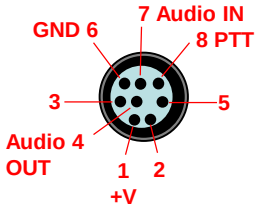
From Ken VA3NEK … The FT-290 is an all mode 2 meter job that I would like to try out the NUE-PSK with. It has an 8 pin mic connecter (MH-10F8) that uses;
Pin 1: Up
Pin 2: +B
Pin 3: DWN
Pin 4: Spkr
Pin 5: NC
Pin 6: PTT
Pin 7: GND
Pin 8: MIC

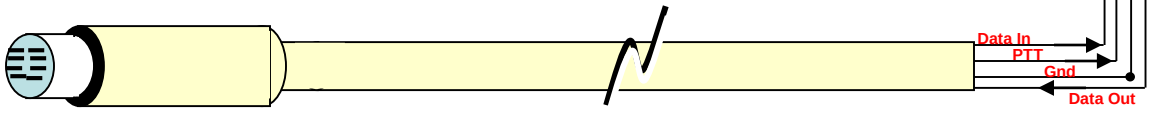
Unverified connections.

FT-290R-II

MIC Jack
Radio Shack 274-025

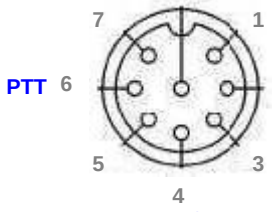
End view
of connector pins





8-pin mini-DIN
Digital Modem

Data In



Data Out
End view
of pins on cable plug

Cable Wire Colors

Modem End		Radio End	Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 19

Ten-Tec 585 "Paragon", 563 "Omni VI"

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

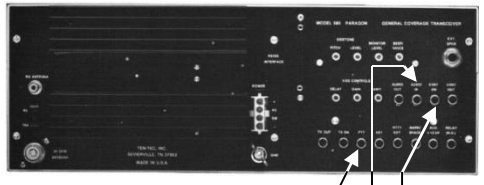
Press F8 on the keyboard to place the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 1.6 watts with a 4 watt PSK-xx rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

The actual operating frequency of the modem+PSKxx rig is just the sum or difference of the center frequency of the PSX-xx rig and the audio frequency shown on the spectrum display of the modem. For example, for a PSK-40 used with a modem spectrum display indicating 1000 Hz, the actual RF frequency being used is 14.071 – 1000 Hz = 14.070. (It would be an addition on a PSK-20 since upper sideband is used.)

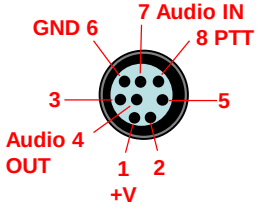
NUE-PSK Digital Modem

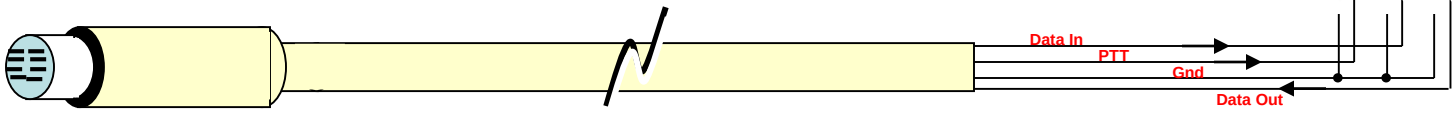
TT Paragon, Omni VI



PTT
Data In
Data Out

End view of connector pins





8-pin mini-DIN Digital Modem

(RCA phono plugs)
Mouser p/n: 174-4359-E

Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 20

Yeasu FT-757

Transmitter Settings Guidance for Digital Mode Operation

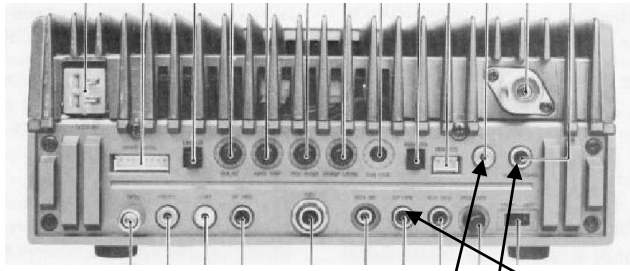
Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

Press F8 on the keyboard to place the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 1.6 watts with a 4 watt PSK-xx rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

The actual operating frequency of the modem+PSKxx rig is just the sum or difference of the center frequency of the PSX-xx rig and the audio frequency shown on the spectrum display of the modem. For example, for a PSK-40 used with a modem spectrum display indicating 1000 Hz, the actual RF frequency being used is 14.071 – 1000 Hz = 14.070. (It would be an addition on a PSK-20 since upper sideband is used.)

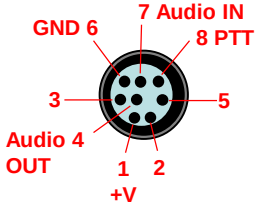
NUE-PSK Digital Modem

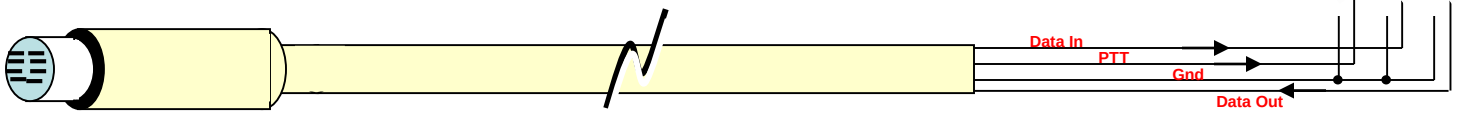


FT-757

PTT
Data In
Data Out

End view of connector pins





8-pin mini-DIN
Digital Modem

(RCA phono plugs)
Mouser p/n: 174-4359-E

Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 21

Elecraft KX1, KD1JV ATS-3x, YouKits HB1B (both in CW Direct Mode)

Connection to CW Transceivers for "CW Direct" Mode

The "CW Direct" mode is used with CW transceivers such as the Elecraft KX1. In this mode, the NUE-PSK toggles its PTT line (blue cable) in Morse code, such that the radio operates as if a straight (manual) key is inserted into its key input jack. (Don't forget to set the KX1 "INP" mode to "Hnd", indicating straight key mode.)

Then, with the "Data Out" line (red cable) plugged into the radio's headphone jack, the modem can will be able to "read" (decode) the CW signals being received.

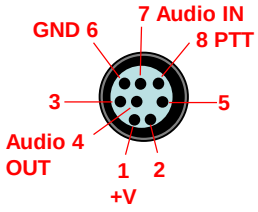
It will be very helpful to listen to the radio's output at the same time as when the modem is plugged it, as this will assist in finding the CW signals you wish to copy. To do this, a common "1-to-2" earphone splitter jack may be used, available from radio Shack, best Buy, etc., thus enabling you to plug in both your headphones and the modem "Data Out" cable to the KX1. See photo below.

Connections from the NUE-PSK Modem to the Elecraft KX1 CW Transceiver

NUE-PSK Digital Modem

KX1

End view of connector pins



PTT (1/8" stereo phono plugs)

Mouser p/n: 171-PA3291-1-E

Phones (1/8" stereo phono plug)

Mouser p/n: 171-PA3291-1-E

PTT

Gnd

Data Out

8-pin mini-DIN **Digital Modem**

Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 23

Elecraft KX3

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

Rig Settings: You should consult the operating manual for the Elecraft KX3 to determine the proper menu settings recommended for using the radio for digital communications.

Modem Settings: Press F8 on the keyboard to place the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended (i.e. about 4W for the KX3 when set at 10W). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

The actual operating frequency is usually just the sum or difference of the center frequency of the transceiver and the audio frequency shown on the spectrum display of the modem. For example, fif the rig is set to 14.070 and the modem spectrum display indicate 1000 Hz, the actual PSK transmission is centered at 14.070 + 1000 Hz = 14.071 MHz. (It is an addition since upper sideband is normally used for digital modes.)

NUE-PSK Digital Modem

Elecraft KX3

White cable

Phones

Tip: Data Out
Ring: N/C
Sleeve: Gnd

1/8" stereo phono plug:
Mouser p/n:
171-6435-EX

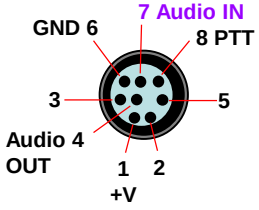
Black cable

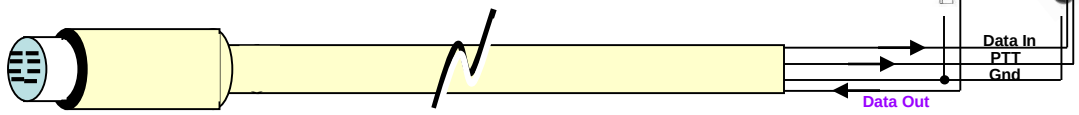
Mic

Tip: Data In
Ring 1: PTT
Rng 2: Logic Gnd
Sleeve: Gnd

1/8" stereo phono plug:
Digi-Key p/n:
CP-35401SP-ND

End view of connector pins





8-pin mini-DIN
Digital Modem

Cable Wire Colors

Modem End	Radio End	Type A Cable	or	Type B Cable
Pin 8 (PTT)	PTT	blue		black
Pin 7 (Audio In)	Data Out	violet		violet
Pin 6 (Ground)	Ground	black		blue
Pin 4 (Audio Out)	Data In	yellow		yellow
Pin 1 (+V)	+V (caution)	red		brown

Radio Cable Type 24

Kenwood TS-930

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

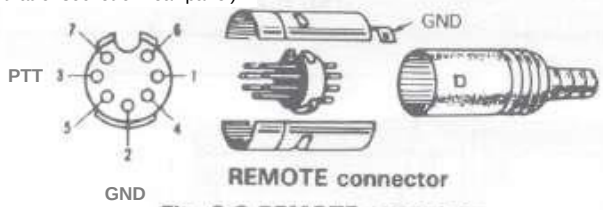
We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, set up the TS-930 for full output on SSB. Press F8 on the keyboard to place the modem in the TUNE state, which is denoted by "TUNE" at the top left of the modem display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

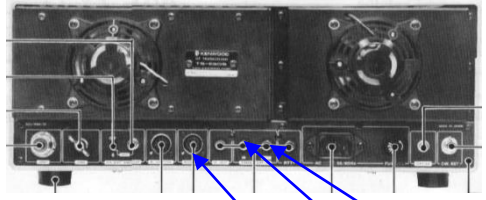
If You Don't Have a Power Meter – You can also adjust the Tx Audio output to the proper level by viewing the ALC meter bars when the modem is in TUNE mode. Starting with the Tx Audio control fully counter-clockwise, turn it up slowly until you just barely see the first ALC bar appear, then back it off slightly until it just disappears. This should also yield the same 15-20% Tx Audio reading in Configuration as obtained in step 7. (Make sure you are still using a dummy load.)

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

NUE-PSK Digital Modem

Pin view of connector
(and that of socket on rear panel)



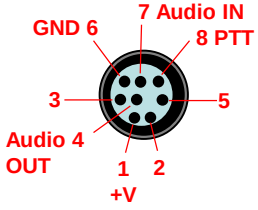


TS-930

PTT
Data In
Data Out

PIN	FUNCTION	PIN	FUNCTION
1	Speaker output	5	No connection
2	Ground	6	ALC input ALC threshold level approx. −6 V
3	PTT line	7	Normally opened, closed in transmit See Fig. 6-3.
4	Normally opened, closed in transmit		

End view
of connector pins



7-pin DIN plug
(Digi-Key CP-1070-ND)

Data In
PTT
Gnd
Data Out

8-pin mini-DIN
Digital Modem

(RCA phono plugs)
Mouser p/n: 174-4359-E

Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 25

for Icom IC-751A

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, including whatever power setting you usually employ. For example, if you have a 10 watt PEP rig, set it up for 10 watts on SSB.

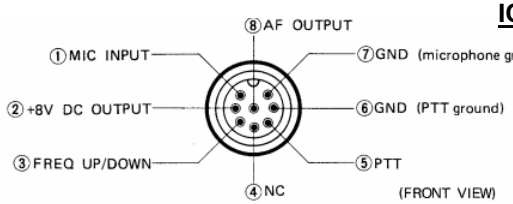
Switch to SSB mode and press F8 on the keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 1.5 to 4 watts with a 10 watt rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

Instead of using the power meter on the rig, you can also adjust the Tx Audio output to the proper level by viewing the ALC meter bars when the modem is in TUNE mode. Starting with the Tx Audio control fully counter-clockwise, turn it up slowly until you just barely see the first ALC bar appear, then back it off slightly until it just disappears. This should also yield the same 15-20% Tx Audio reading in Configuration as obtained in step 7. (Make sure you are still using a dummy load.)

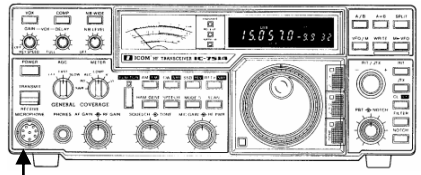
Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

Note: Convention suggests using USB for PSK-31 modes. The actual operating frequency then is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the K2.

NUE-PSK Digital Modem

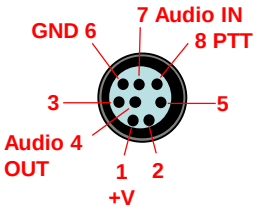


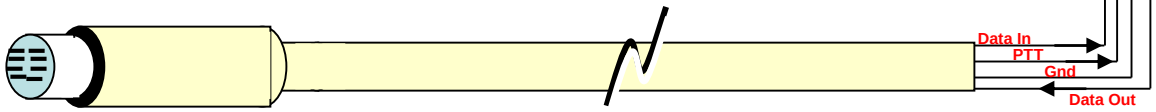
IC-751A



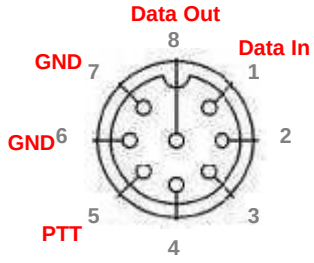
MIC Jack
Radio Shack 274-025

End view
of connector pins





8-pin mini-DIN
Digital Modem



End view
of pins on cable plug

Cable Wire Colors

Modem End	Radio End	Type A Cable	or	Type B Cable
Pin 8 (PTT)	PTT	blue		black
Pin 7 (Audio In)	Data Out	violet		violet
Pin 6 (Ground)	Ground	black		blue
Pin 4 (Audio Out)	Data In	yellow		yellow
Pin 1 (+V)	+V (caution)	red		brown

Radio Cable Type 26

Kenwood TS-990

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. You will be using the Tx Audio control on the modem to adjust the audio level sent to the TS-990.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation.

Still in SSB mode, press F8 on the modem keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone that is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit.

Adjust the Tx Audio control on the modem (just to the right of the display) to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. Use the rig's power meter when making this setting. Once the power level has been set with the Tx Audio control, press F8

again to return to receive mode. You should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

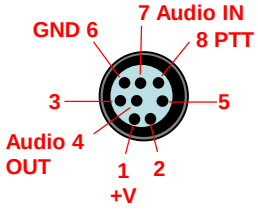
Note: Convention suggests using "PSK31-U", as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the rig. If instead you use the lower sideband, you have to subtract the modem displayed frequency from the frequency on the transceiver to get the "true" frequency.

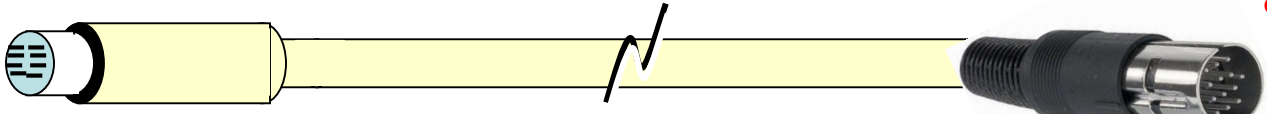
NUE-PSK Digital Modem

TS-990

13-pin jack

End view of connector pins

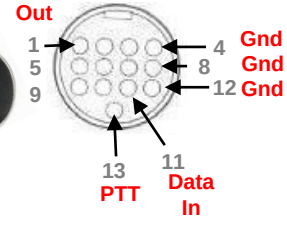




8-pin mini-DIN
Digital Modem

13-pin plug
(Digi-Key CP-1013-ND)

End view of pins on cable plug



Modem End		Radio End	Cable Wire Colors: Type A Cable	Type B Cable
Pin 8 (PTT)	→	PTT	blue	black
Pin 7 (Audio In)	←	Data Out	violet	violet
Pin 6 (Ground)	—	Ground	black	blue
Pin 4 (Audio Out)	→	Data In	yellow	yellow
Pin 1 (+V)	→	+V (caution)	red	brown

Radio Cable Type 27

LNR Precision FX-4

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

Rig Settings: You should consult the operating manual for the LNR FX-4 to determine the proper menu settings recommended for using the radio for digital communications.

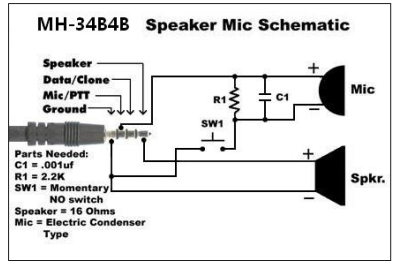
Modem Settings: Press F8 on the keyboard to place the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

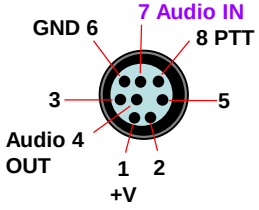
The actual operating frequency is usually just the sum or difference of the center frequency of the transceiver and the audio frequency shown on the spectrum display of the modem. For example, fif the rig is set to 14.070 and the modem spectrum display indicate 1000 Hz, the actual PSK transmission is centered at 14.070 + 1000 Hz = 14.071 MHz. (It is an addition since upper sideband is normally used for digital modes.)

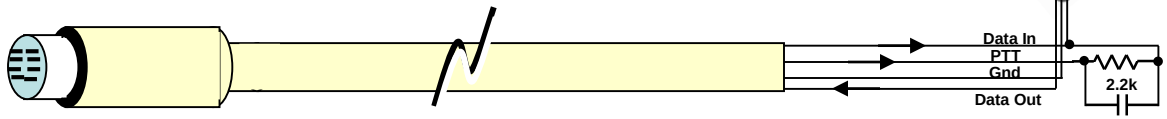
NUE-PSK Digital Modem

LNR Precision FX-4



End view of connector pins





8-pin mini-DIN
Digital Modem

Tip: Data Out
Ring 1: (Not used)
Rng 2: Data In & PTT
Sleeve: Gnd

1/8" stereo phono plug:
Digi-Key p/n:
CP-35401SP-ND

Modem End	Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	PTT	blue		black
Pin 7 (Audio In)	Data Out	violet		violet
Pin 6 (Ground)	Ground	black		blue
Pin 4 (Audio Out)	Data In	yellow		yellow
Pin 1 (+V)	+V (caution)	red		brown

Radio Cable Type 28

for ICOM IC-251E

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

Rig Settings: You should consult the operating manual for the IC-251e to determine the proper menu settings recommended for using the radio for digital communications.

Modem Settings: Press F8 on the keyboard to place the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. A power meter is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

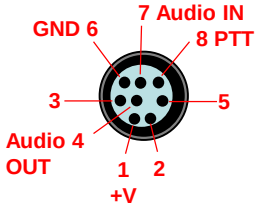
The actual operating frequency is usually just the sum or difference of the center frequency of the transceiver and the audio frequency shown on the spectrum display of the modem. For example, fif the rig is set to 14.070 and the modem spectrum display indicate 1000 Hz, the actual PSK transmission is centered at 14.070 + 1000 Hz = 14.071 MHz. (It is an addition since upper sideband is normally used for digital modes.)

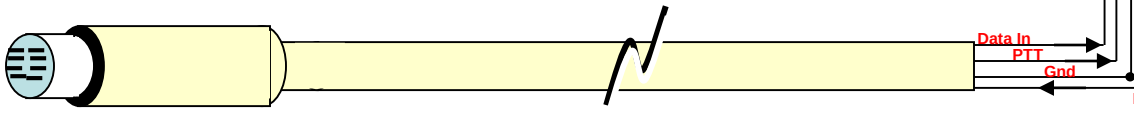
NUE-PSK Digital Modem

IC-251e

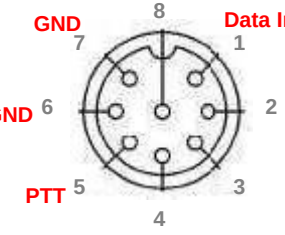
Headphone Jack
(1/4" mono plug)

MIC Jack
Radio Shack 274-025





8-pin mini-DIN
Digital Modem

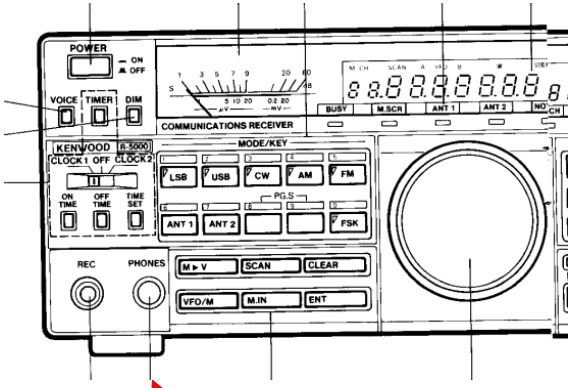


End view
of pins on cable plug

Modem End	Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	PTT	blue		black
Pin 7 (Audio In)	Data Out	violet		violet
Pin 6 (Ground)	Ground	black		blue
Pin 4 (Audio Out)	Data In	yellow		yellow
Pin 1 (+V)	+V (caution)	red		brown

Radio Cable Type 29

for Kenwood R5000

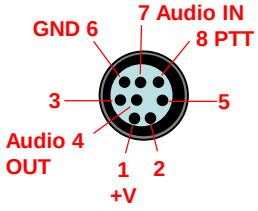


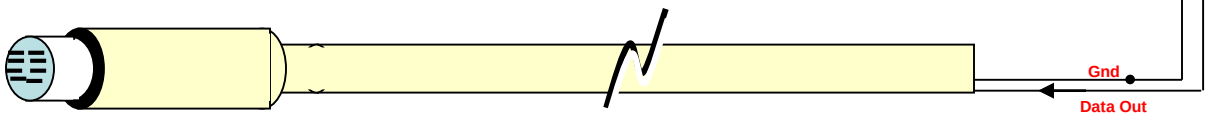
R5000 Receiver

1) The NUE-PSK Digital Modem gets the receive audio signal from the R5000 headphone jack. To have the Rx audio be heard while simultaneously going to the modem, pull the ¼" headphone plug slightly out of the front panel jack. (Alternatively, you could emply a common "headphone Y-splitter" between the jack and the plug on the modem cable.)
2) Use the "USB" mode when listening and decoding PSK and RTTY signals.
3) Adjust the R5000 audio level such that the spectrum displayed on the modem is not over-driven.

NUE-PSK Digital Modem

End view of connector pins





8-pin mini-DIN
Digital Modem

Headphone Jack
(1/4" mono plug)

Gnd

Data Out

Cable Wire Colors

Modem End		Radio End	Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Cable Type 30

for Kenwood TS-940

Transmitter Settings Guidance for Digital Mode Operation

Since PSK signals generated by the modem contain simultaneous multiple frequencies (over a very narrow bandwidth), it is imperative that the audio output from the modem not overdrive the input to the rig, or very poor signal quality will result. To facilitate setting the audio drive to the rig, a potentiometer on the modem may be used to adjust the level. In addition, the modem includes provision for "measuring" the position of the potentiometer, so that it can be easily reset to the same setting in the future. More on this later.

We have found that the best way to set up for PSK operation is to initially set up the transceiver for normal SSB operation, using the power setting you usually employ. For example, if you have a 100 watt PEP rig, set it up for 100 watts on SSB.

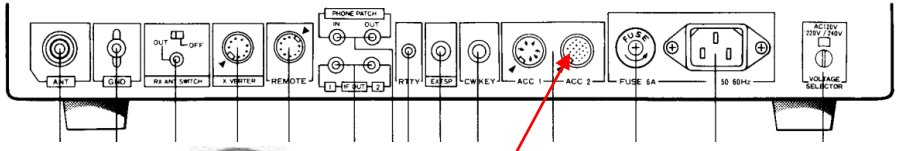
Switch the rig to SSB mode and press F8 on the keyboard. This places the modem in the TUNE state, which is denoted by "TUNE" at the top left of the display. The modem is now generating a continuous tone, which is fed to the audio input of the rig. The PTT signal from the modem should also cause the transceiver to switch to Transmit. At this point, the potentiometer on the modem (just to the right of the display) can be adjusted to set the power level of the transceiver. A transmit power of 15 to 40 per cent of the rig's rated power is recommended. (i.e. 15 to 40 watts with a 100 watt rig). Keeping the power at this level does two things. First, it minimizes distortion due to clipping. Second, it avoids excessive heating in the rig finals, since PSK is a 100% duty cycle mode. Using the built-in meter in the Power Out setting, or an external power meter, is very handy for making this setting. Once the potentiometer has been set, press F8 again to return to receive mode. You should now be ready for transmitting PSK.

You can also adjust the Tx Audio output to the proper level by viewing the ALC meter bars on the rig's meter when the modem is in TUNE mode. Starting with the Tx Audio control fully counter-clockwise, turn it up slowly until you just barely see the first ALC bar appear, then back it off slightly until it just disappears. This should also yield the same 15-20% Tx Audio reading in Configuration as obtained in step 7. (Make sure you are still using a dummy load.)

Determining Signal Quality -- If you have an additional receiver, you could use Digipan on it to view the waterfall and get an IMD reading on your modem-generated signal. (Use an attenuator or disconnected the receive antenna to ensure that you are not overloading the receiver.) A reading below -25dB indicates a good setup of the modem and transmitter. You might try adjusting for great power output in step 3 above if you can verify that the signal has an IMD reading of least -20dB and set up to monitor the quality of the BPSK signal, you should not try to go much higher than 3 to 4 watts in TUNE. It might be possible to run higher power, say up to 4 watts in the TUNE set above, but only if you can verify an IMD of -20dB or less.

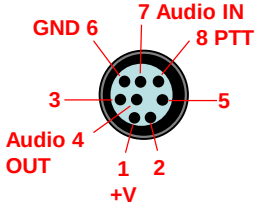
Note: Convention suggests using the Upper sideband setting on the rig, as recommended in step 2. This way the actual operating frequency is just the sum of the audio frequency as shown on the modem, and the frequency shown on the dial of the rig. If instead you use the lower sideband, you have to subtract the modem displayed frequency from the frequency on the transceiver to get the "true" frequency.

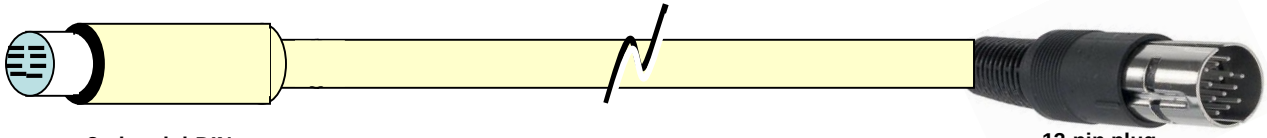
NUE-PSK Digital Modem



Kenwood TS-940
(13-pin AUX jack)

End view of connector pins

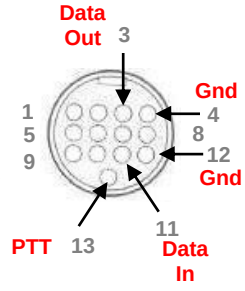




8-pin mini-DIN
Digital Modem

13-pin plug
(Digi-Key CP-1013-ND)

End view of pins on cable plug



Modem End		Radio End	Cable Wire Colors: Type A Cable	or	Type B Cable
Pin 8 (PTT)	→	PTT	blue		black
Pin 7 (Audio In)	←	Data Out	violet		violet
Pin 6 (Ground)	—	Ground	black		blue
Pin 4 (Audio Out)	→	Data In	yellow		yellow
Pin 1 (+V)	→	+V (caution)	red		brown

Radio Breakout Box Cable Type 33

for generic connections to the NUE PSK modem

NUE-PSK Digital Modem

End view
of connector pins

8-pin mini-DIN
Digital Modem

Radio Break-Out Box

Yellow … Rx Audio (output)
Black …. Gnd
Violet …. Tx Audio (input)
Blue …… PTT (input)
Shield …. Gnd

Audio to Radio
Audio from Radio
PTT to Radio

3.5 mm Stereo Jacks (3)
(DK Mouser p/n ____)

Radio Breakout Box

Modem End	**Cable**	
Pin 8 (PTT)	blue ……..	**PTT from Radio**
Pin 7 (Audio In)	violet …….	**Audio from Radio**
Pin 6 (Ground)	black …….	
Pin 4 (Audio Out)	yellow …….	**Audio to Radio**

Signalink Interface Cable Type 31

for SignaLink USB (with Elecraft K3 settings)

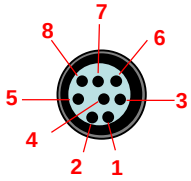
SDR Cube "NUE-PSK" Port
(Labeled "NUE-PSK", MiniDIN-8)

Cat5 Cable
(30-inch, 4-pr, twisted)

Or-W … To Sound Card "Line IN"
Or ……. Gnd
Gr-W … From Sound Card "Line Out"
Blu …… From Sound Card "PTT"
Blu-W … Gnd
Gr …….. Gnd
Br-W
Br

SignaLink Radio Port
(Cat5 Connector)

SDR Cube Rear Panel
"Digital Port"
(Labeled: NUE-PSK)



Or-W … From radio "Line Out"
Or ……. Gnd
Gr-W … To radio "Line IN"
Blu …… To radio "PTT"
Blu-W … Gnd
Gr …….. Gnd
Br-W
Br

Pin 1: (Unused)
Pin 2: 12VDC (output, I/O Bd P3 shunt req'd)
Pin 3: UART2-Tx (input)
Pin 4: Rx Audio (output) ……→…… Orange-White
Pin 5: UART2-Rx (output)
Pin 6: PTT (input) ……←…… Blue
Pin 7: Tx Audio (input) ……←…… Green-White
Pin 8: Ground …… Orange, Blue-White, Green

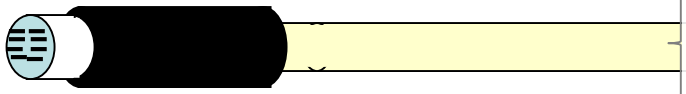
Cat5 Connector

(Signal Direction)

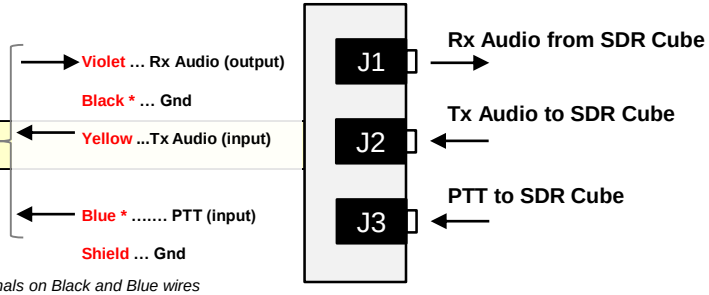
SDR Cube Breakout Box Type 32

*Breakout box for generic connection to the **SDR Cube***

SDR Cube Digital Port
(Labeled "NUE-PSK", MiniDIN-8)



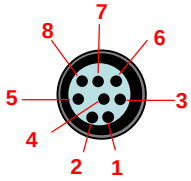
SDR Cube Breakout Box

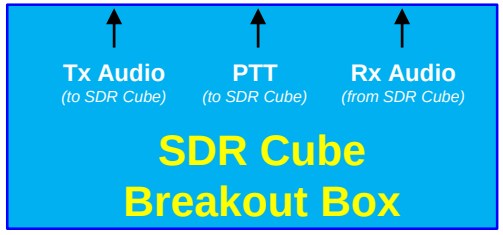


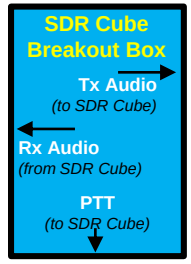
** Signals on Black and Blue wires may be reversed in come cables.*

3.5 mm Stereo Jacks (3)
(DK Mouser p/n ____)

SDR Cube Rear Panel
"Digital Port"
(Labeled: NUE-PSK)







Pin 1: (Unused)
Pin 2: (Unused)
Pin 3: UART2-Tx (input)
Pin 4: Rx Audio (output) ……
Pin 5: UART2-Rx (output)
Pin 6: PTT (input) ……
Pin 7: Tx Audio (input) ……
Pin 8: Ground ……

(Signal Direction)

Breakout Box

Violet …… **[J1] Audio to Computer Sound Card**
Blue …… **[J3] PTT from Computer Sound Card**
Yellow …… **[J2] Audio from Computer Sound Card**
Black, Shield

Flex 3000 Interface Cable Type 33

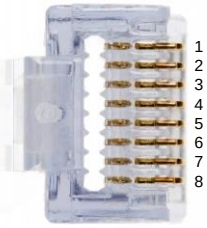
NUE-PSK Digital Modem

End view of connector pins

8-pin mini-DIN
Digital Modem

1 Or-W
2 Or
3 Gr-W
4 Blu ..... Mic +
5 Bl-W ... Mic -
6 Gr ..... PTT
7 Br-W ... Gnd
8 Br

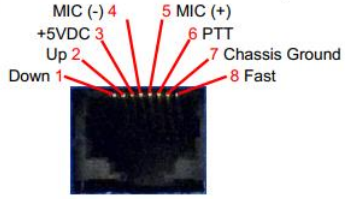
Flex 300
(RJ-45 Connector)



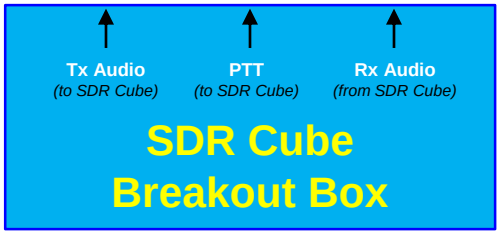
G: Microphone/PTT

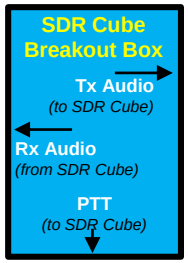
Connect your microphone/PTT to the RJ-45 **MIC** jack.

The pin-out of the microphone jack is as follows:



Modem End		Modem Cable Wire Colors	RJ-45 Cable Wire Colors	Spkr Plug
Pin 8 (PTT)	→ PTT	Black	Gr	
Pin 7 (Audio In)	← Data Out	Violet		Tip
Pin 6 (Ground)	— Ground	Blue	Bl-W, Br-w	Shld
Pin 4 (Audio Out)	→ Data In	Yellow	Blu	
Pin 1 (+V)	→ +V (caution)	brown		


Tx Audio
(to SDR Cube)
PTT
(to SDR Cube)
Rx Audio
(from SDR Cube)
SDR Cube
Breakout Box


SDR Cube
Breakout Box
Tx Audio
(to SDR Cube)
Rx Audio
(from SDR Cube)
PTT
(to SDR Cube)