

6-Pin Mini-DIN “Packet”/”Data” Connector

The 6-Pin MiniDIN jack is a standard used by all the Japanese ham equipment manufacturers. Many current all-band all-mode and VHF/UHF transceivers are equipped with this jack.

This jack is variously called "data", "packet", "auxiliary", etc, but actually there are no data connections on this connector. This **IS NOT** a serial data or RTTY direct FSK port. Only various forms of receive and transmit audio are present. The connector provides **receive audio** output at a fixed level of about 100-300mV, **transmit audio** input at about the same level, transmit **PTT** keying, receiver **squelch status** (COR), and **ground/common**.

The normal RX audio line, which is live on both FM and SSB in multimode transceivers, is sometimes labeled "1200 baud packet". However, the output is just standard receiver audio (de-emphasized on FM) similar to what comes out the radio's speaker. Output level is fixed, unaffected by the volume control. The audio at this point is suitable for any voice-frequency-band application such as sound card interfaces (for SSTV, Echolink/IRLP, PSK31, RTTY, etc) multimode data controllers for Pactor, 1200 baud packet TNCs, phone patches, APRS trackers, DTMF and paging encoders/decoders/selective calls, etc.

The audio levels into and out-of this connector are similar to home audio “line level” connections at RCA jacks on amplifiers, tuners, CD players, etc. The levels are also a perfect match for the levels on 3.5mm computer sound card “Line Out” and “Line In” (not Mic input!) jacks. No attenuator pads or voltage dividers are required.

Normally computer sound systems must have at least **three** 3.5mm mini-jacks present to offer the proper line-level input. Many newer computer sound systems have only two jacks; a line-level **output** (variously labeled “Headphones” or “Speakers” or “Line Out”), but only a low-level “Mic In” **input** jack with a sensitivity of 5-50 mV.

Trying to couple the much-higher-level receive audio of the mini-DIN data jack directly into a MIC input will almost always result in overloading the mic preamp inside the PC, yielding severe distortion of the incoming audio. An audio attenuator (voltage divider) of somewhere between 10:1 and 50:1 is normally required. Further, the Mic-In jack is always monophonic, despite the three-conductor “stereo” jack. Audio is normally input through the ring contact of the jack, while the tip contact carries 5-8 VDC power from the PC to power amplified electret microphones.

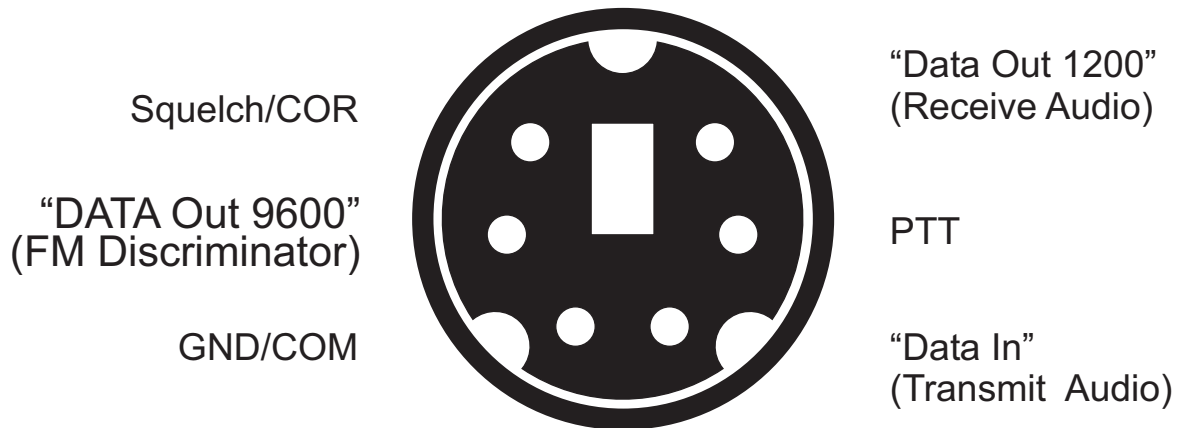
The “Transmit Audio” pin is also used for TTL-level transmit data for 9600-baud packet in some radios.. The pin's function is normally switched from millivolts-of-audio to DC-coupled volts-of-data by a setup menu option in radios that support this mode.

The “COR”, “Squelch” or “CD” pin is a 0/5-volt logic-level signal that follows the state of any “Busy” or “RX” indicator light on the radio's front panel. It can be used to inhibit transmit of APRS trackers, Echolink interfaces, TNCs, etc when the radio channel is busy.

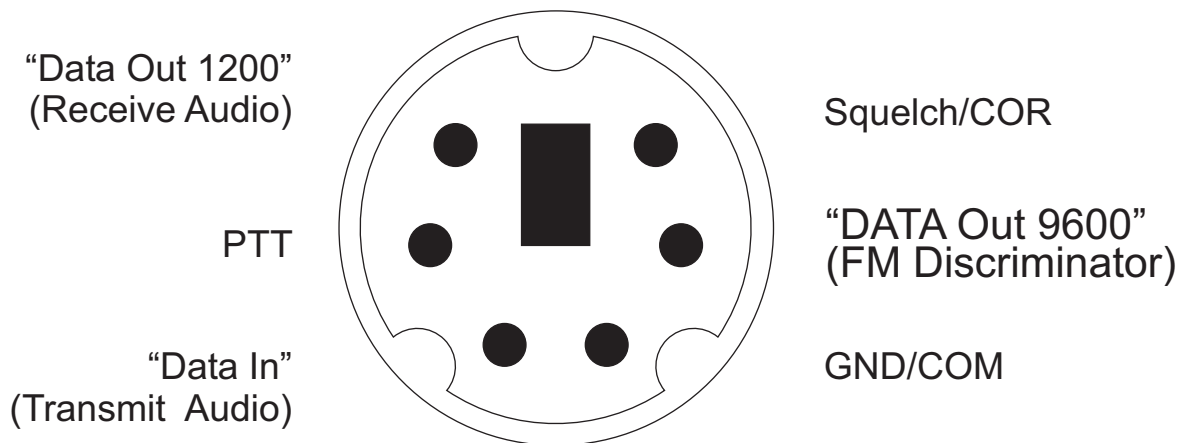
The “PTT” pin (confusingly labeled “Standby” on many Kenwood radios) is a normal ground-to-transmit line. On most radios, grounding this line to transmit also automatically mutes the front panel mic input to prevent extraneous audio pickup from the microphone from corrupting transmitted data.

On radios with FM, the 6th pin, usually labeled “9600 Baud”, is a DC-coupled connection directly to the receiver's FM discriminator. The NON-demphasized wide-band audio at this point (typically at around 50 mV) is normally used for receive by 9600 baud or higher packet modes.

6-Pin Mini-DIN “Packet”/”Data” Connector PinOut Diagrams



Looking into **Female Panel Jack**
(Soldering end of Male Plug)



Looking into **Male Plug**
(Soldering end of Female Jack)

Computer “PS/2” 6-Pin Mini-DIN Keyboard/Mouse Connector

The 6-pin mini-DIN plug and connector are also commonly known as “PS/2” connectors when used for keyboard and mouse connections on computers. (This connector was first widely used on the IBM PS/2 family of personal computers in the mid-to-late 1980s.)

Note that cables salvaged from dead mice and keyboards often only have 4 of the 6 pins wired. On the other hand, keyboard/mouse PS/2 “extension cords”, available at most computer supply stores, normally have all six conductors present.

Such extension cords are a good source of ready-made cable assemblies for the ham mini-DIN jack. Cut an extension cord in half. Use the end with a male plug to make up connecting cables for TNCs, soundcard interfaces, APRS trackers, etc. The resulting cable assembly is identical to the so-called “data cables” sold by the ham manufacturers for up to \$35.

Solder the leads of the half with a female inline **jack** to a male 13-pin full-size DIN **plug**. This creates an adapter that converts from the ACC2 jack on Kenwood HF transceivers to the standard mini-DIN 6 female jack. In turn, this allows you to use the same hardware cabled for use with mini-DIN6 -equipped radios, with Kenwood HF radios.

Finally, the PS/2 jack, in it’s original usage on computers, is a convenient source of 5 volts DC power for small devices such as GPS receivers or cell phones.

The external keyboard/mouse connector of this type present on some laptops is often used to steal +5 VDC power from the laptop's power system for an external **serial** GPS unit. Before USB, older serial GPS units often had a forked cable with a DB9 plug for serial data and a PS/2 plug for power.

(Current USB GPS receivers don’t need the forked cable, since USB ports inherently can supply up to 500mA at 5 VDC to power the device at the other end of the USB cable.)



Looking into **Female Jack**
(Soldering end of Male Plug)