Interfacing the SDR Cube Transceiver to a PC

This “how to” guide is intended to illustrate how to connect an SDR Cube to a computer … and more importantly “why” one would want to do it.

In a nutshell, the SDR Cube is primarily designed to be a standalone and very portable SDR transceiver. This means that one is able to easily use this *software defined radio* in field ops … *without* the need that most other SDR rigs have for using a PC. Laptops screens and the all-important spectrum displays are hard to see in daylight, and the computers themselves are power hungry and notoriously difficult to configure properly. The SDR Cube neatly sidesteps all those cumbersome issues by using its own onboard computer to provide the digital processing and user interface!

The SDR Cube Transceiver may also be interfaced with a PC at the home station in order to take advantage of more powerful software apps providing panagraphic spectrum displays and a greater selection of signal processing. In effect, when connected by USB or audio in/out cables to the sound card, these apps serve as the main user interface for SDR “bricks” connected to the computer.

The SDR Cube Transceiver is currently able to do some of these PC-controlled operations, with an appropriate interface cable connecting the Cube to the PC sound card.

- **The Cube Breakout Box** (see page 2) provides raw analog audio input and output signals, as well as the PTT line. This configuration is useful when a PC’s sound card interface is available for these connections.
- **The SignaLink USB Interface Cable** (see page 3) enables connection to this popular “external sound card”, which in turn connects to the PC via a USB cable. In this case the Cube’s audio and PTT lines are interfaced to the Sound Card and the PC application can display and control the SDR signal path. *(Note: There are many other good sound cards available, and each would have its own separately-orderable cable for connecting to the Cube.)*

Note that when using the Cube like this with PC apps such as HRD, HDSDR, Digipan, Fldigi, and WSJX, one would **manually adjust the Cube controls** (frequency, mode, band, filters, et al) in order to view the spectragraph of the audio on the PC display. The SDR Cube does not yet have the “CAT” capability of being controlled by the PC; hence the need to manually adjust the Cube while viewing the signals on the PC screen. This CAT feature is in development, and when available will offer a more conventional ability to have the PC serve as the primary interface to the Cube Transceiver.

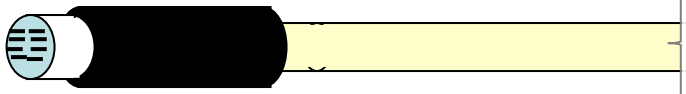
Lastly, note the **Computer USB Adapter** (on page 4) that is currently the method of accessing the Cube’s advanced menu, as well as for loading new software into the SDR Cube. This port will also be used for the CAT feature, when available.

Remember, at the end of the day, the SDR Cube Transceiver was designed to be a standalone rig providing many advanced software defined radio capabilities without PC connection. “We don’t need no stinkin’ computer!” (This is the tagline for the SDR Cube and the NUE-PSK Digital Modem ☺) But we’ll continue advancing the feature set of the Cube in order to make it even more capable for users!

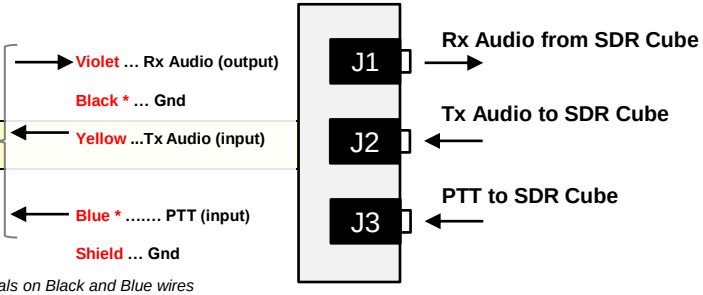
SDR Cube Breakout Box

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

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



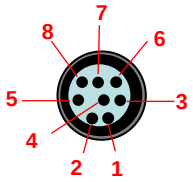
SDR Cube Breakout Box

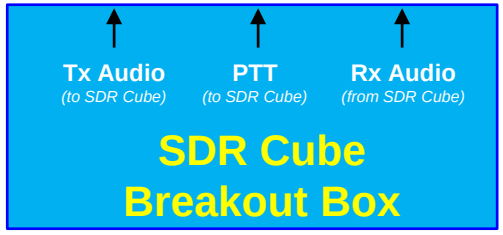


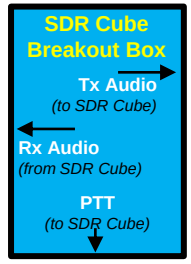
** Signals on Black and Blue wires may be reversed in come cables.*

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)

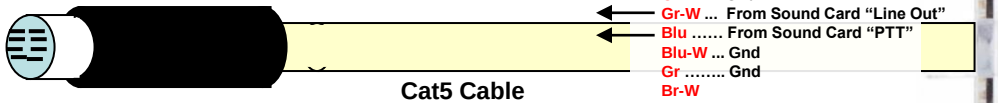
Breakout Box

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

Signalink Interface Cable

for SignaLink USB (with Elecraft K3 settings)

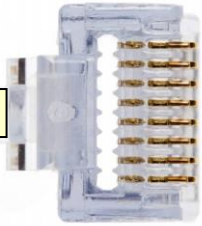
SDR Cube "NUE-PSK" Port
(Labeled "NUE-PSK", MiniDIN-8)



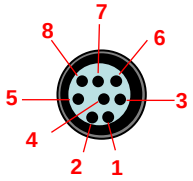
Cat5 Cable
(30-inch, 4-pr, twisted)

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

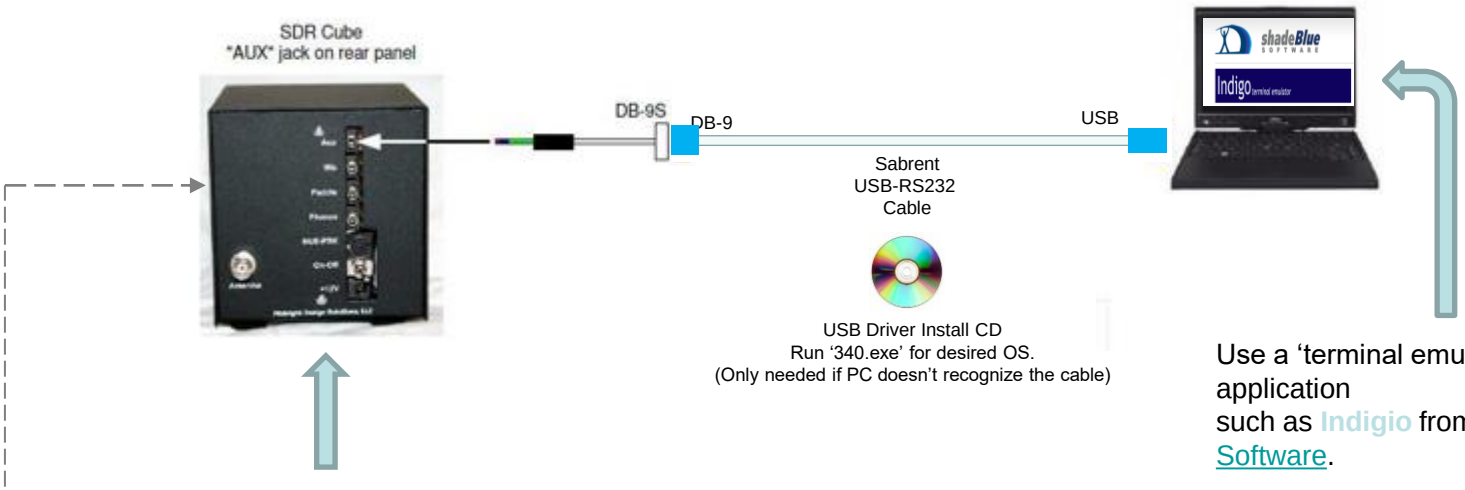
Pin 1: (Unused)
Pin 2: 12VDC (output, I/O Bd P3 shunt req'd)
Pin 3: UART2-Tx (input)
Pin 4: Rx Audio (output) ……. Orange-White
Pin 5: UART2-Rx (output)
Pin 6: PTT (input) ……. Blue
Pin 7: Tx Audio (input) ……. Green-White
Pin 8: Ground ……. Orange, Blue-White, Green

Cat5 Connector

(Signal Direction)

SDR Cube Transceiver

Computer USB Adapter



When turned on, the SDR Cube sends power-up status text sequence to a 'terminal emulator' connected to the RS-232 AUX port on the rear panel, ending with a 'Configuration' menu that allows the user to manually test individual subsystems or request a settings report with the [i]nformation menu selection.

Use a 'terminal emulator' application
such as Indigio from ShadeBlue Software.

Select desired COM port with parameters: 9600, N, 7, 1 for use with the SDR Cube.

Note: *Some Cubes are supplied with a DB25 connector on the rear panel, which provides user-supplied access to user-supplied external electronics that often includes an "External RF Deck" (a different softrock or other SDR electronics) for higher-end applications. In these cases, the Internal Cable Set would be ordered from the SDR Cube ordering page and the user would replace the internal RF deck with this cabling to the DB25 connector on the rear panel.*