
Beam Tech Note – 05
How to interface to Line Level Audio ports

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Introduction:

A number of Beam products are able to interface from the line level audio port into audio systems of aircraft, or other pre-existing systems.

Scope:

The privacy handset “4-way jack” used in the following products:

- PotsDOCK 9555 (9555PD)
- IntelliDOCK 9555 (9555ID)
- SatDOCK-G 9555 (9555SD-G)
- PotsDOCK Extreme (EXTRMPD)
- DriveDOCK Extreme (EXTRMDD)

Interfacing: The privacy handset “4-way jack”

PotsDOCK 9555 (9555PD), IntelliDOCK 9555 (9555ID), SatDOCK-G 9555 (9555SD-G), PotsDOCK Extreme (EXTRMPD), DriveDOCK Extreme (EXTRMDD) models.

The pinout for the 4-pole 3.5mm socket is:



- 1 = tip = Mic (uplink)
- 2 = ring = Spkr (downlink)
- 3 = return = GND (audio, and cup-detect reference)
- 4 = outer shell = Cup Detect



For the **Cup Detect**, you will need to drive this as follows:

A/ connecting to ground (0V) (via a switch or open-collector transistor) indicates onhook, which tells the Dock that the Privacy handset is **not** in use.

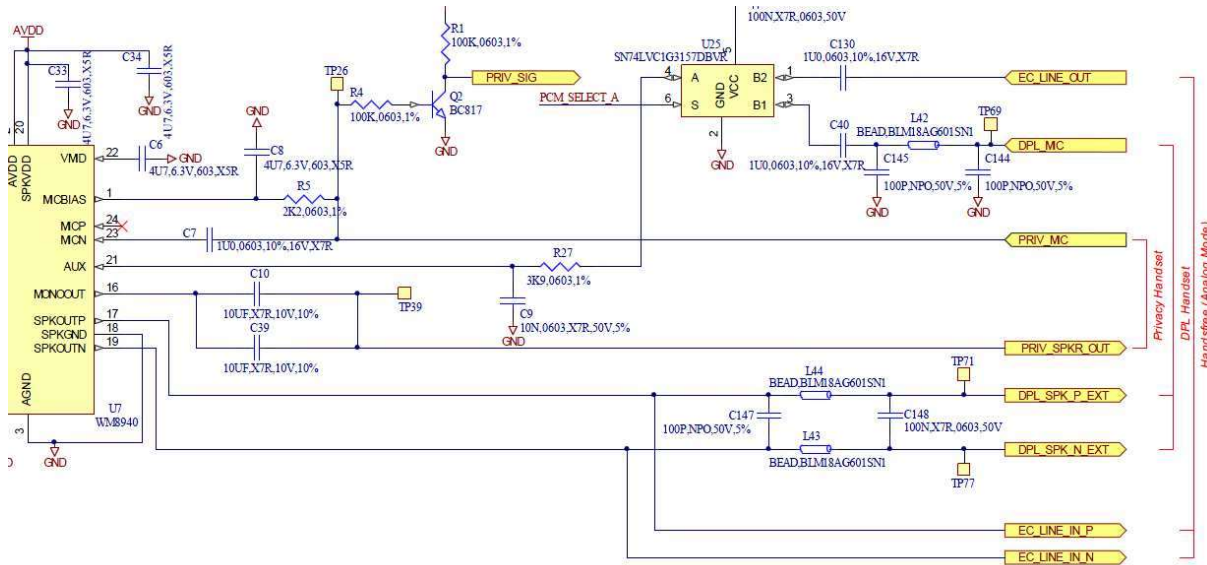
B/ changing Cup-detect input from ground (0V) to be open-circuit (disconnected or floating), indicates to route audio to this Privacy Handset 4-pole socket. Changing from grounded to open-circuit will also answer an incoming call (if this functionality is required).

C/ If you choose to always leave the Privacy Handset active, the Dock will need to see that the Cup-Detect was at ground (0V) at some point, before it acknowledges that this port is to be available in the system (done by design - as the Privacy Handset is an optional accessory with Beam Docks).

Every time the Dock is powered on, the Cup-detect signal needs to be at ground for at least 2 seconds (via a switch, or delayed relay contact), to allow subsequent use of this port. Alternatively, a switch can be activated to open the ground connection just at the time of wanting to answer a call, or connect the audio to this port.

(continued...) Interfacing: The privacy handset “4-way jack”

Figure 1 - 9555SD-G / EXTRMDD audio stage



The figure 3 above shows the audio stage of the 9555-SDG. The “Privacy Handset” (4-pole 3.5mm socket) lines are the nets **PRIV_MC** and **PRIV_SPKR_OUT**.

PRIV_MC = Socket Pin 1 = tip = Mic (uplink) :

The main difference between this compared with the HFI LineIn input, is that this Mic signal has 2Vdc (via the MCBIAS output from U7 WM8940) to power the microphone inside the privacy handset. To use this PRIV_MC input connecting to the user audio system this DC voltage may need to be blocked via an inline capacitor (1uF will do) to suit the output stage of the user audio system.

PRIV_SPKR_OUT = socket Pin 2 = ring = Spkr (downlink) :

This signal can be used at a Line Out level as is, noting that it is referenced to ground. It has DC blocking or 20uF, and is capable of driving into a load of 16ohms, 32ohms, or higher. The user audio system may need to be tuned to attenuate this signal during configuration, if it is a sensitive high impedance input.

The 9555PD, 9555ID and EXTRMPD Privacy handset port uses the same circuit concept as above.