9575 PTT Dock
PTT Interface
Application Note

Filename	Application Note - ExtrmPTT Dock PTT Interface rev1.docx
Document Control	Commercial In-Confidence
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1 CONTENTS

2 INTRODUCTION

2.1 OVERVIEW

This Application note explains how to connect the PTT interface of the DriveDOCK Extreme PTT Kit (Beam part number EXTRM-PTT-C1) to other 3rd party equipment.

2.2 PURPOSE & SCOPE

The target audience is for engineers to reference this document to design and test an integration proposal for Iridium PTT service using the Beam DriveDOCK PTT hardware. This document is provided confidential to selected integration partners with a program that is under direct guidance from Iridium or Beam Communications.

This document is a guide to explain the hardware interface. Any integration system that is created should be fully tested by the Integrator to comply with their intended objectives.

2.3 DEFINITIONS, ACRONYMS, AND ABBREVIATIONS.

For the remainder of this document for the following terms of reference shall apply:

Term used in this document	Meaning
Integrator	Individual or group that is using the Beam product to design into a larger system or solution
PTT	Push To Talk (voice communication service)
DPL	Digital Peripheral protocol (Iridium handset)

2.4 REFERENCES

- Beam User Manual: **DriveDOCK Extreme** (Beam P/N: USRMAN007106 manual rev-6 or higher)
- Beam User Manual: **DriveDOCK Extreme – PTT Handset Kit** (Beam P/N: USRMAN008301 manual rev-1 or higher)

3 DPL HANDSET / PTT PORT

3.1 ADAPTION

The PTT port uses the RJ45 8-pin port of the DriveDOCK Extreme. This port was originally designed for the DPL handset, and leveraged the Iridium DPL handset pin-out.

3.2 RJ45 PORT AS PTT

For PTT functionality, certain signals become dual purpose and the following pin-out can be utilized. Signals shown in **green** text are the minimum connections for PTT operation.

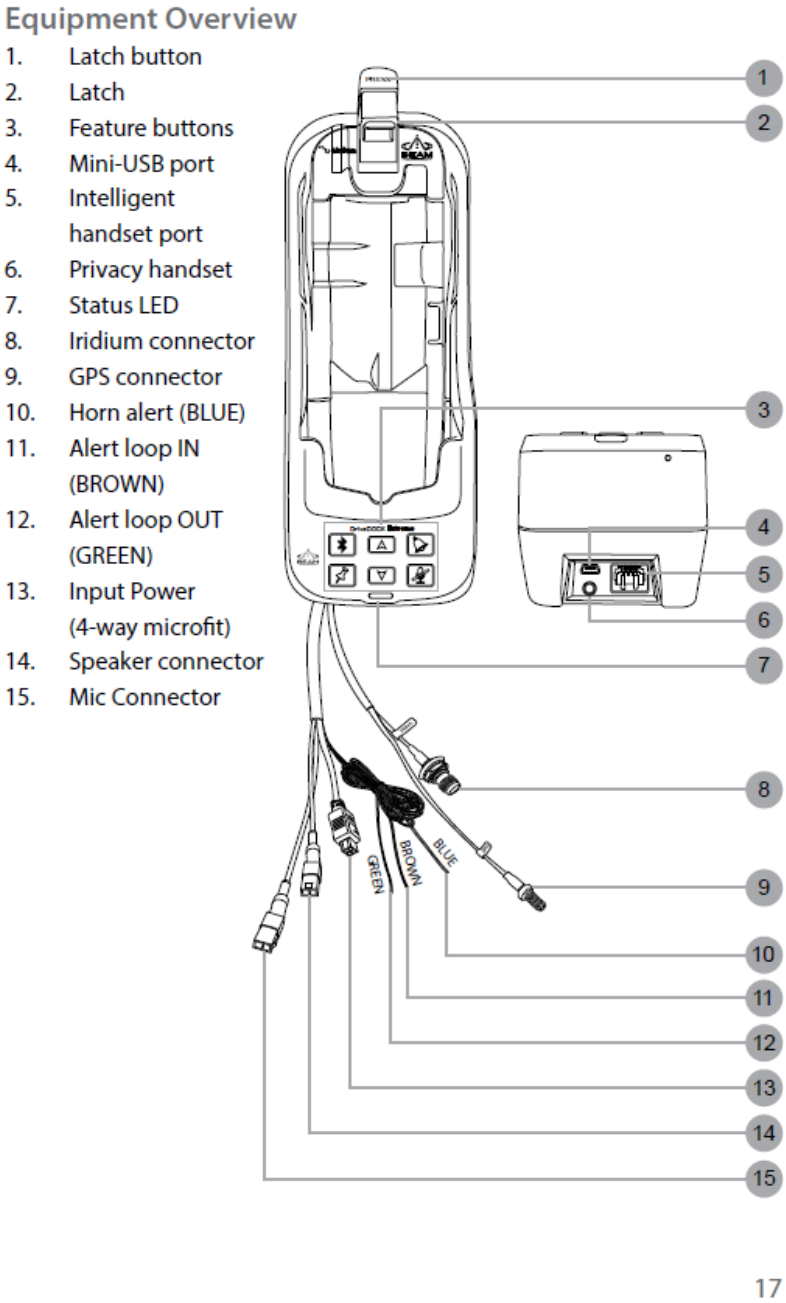
Pin	Direction (relative to Dock)	DPL Function (reference only)	PTT Function
1	In	DPL_MIC	**MicHi** (1)
2	Out	DPL_SPK_N	SpkLo (2) [optional]
3	In	DPL_Ext_ON_OFF	DO NOT CONNECT
4	Out	DPL_SPK_P	**SpkHi**
5	Out	CPU_Txd	DO NOT CONNECT
6	In	CPU_Rxd	**PTT** **[active high** (3) **]**
7	n/a	GND	**GND, Shield, MicLo**
8	Out	+12VDC	12VDC output power, do not exceed 200mA [optional, AT OWN RISK, please seek advice]

NOTES:

1. The DPL Mic input is routes internally to the AUX port of the WM8940 Codec. This has up to 35dB gain adjustment (Beam firmware use only). It does NOT have any DC bias and is not recommended to connect to an electrets Microphone as internal gain is set too low.
2. The Spk output (downlink audio) from the Dock is a differential output driver that is capable of supporting direct connection to a speaker. The dock uses a WM8940 Codec differential drive, it claims to output 0.4W into 8R (Bridged Tied load using SpkrHi and SpkrLo), or 40mW into 16R (using SpkrHi and GND).
3. PTT is asserted high (e.g. via a 1K resistor being switched to 8Vdc). This is tied internally to a MAX3232 converter Input (RS232).

4 DOCK POWER

This diagram is taken from "Beam User Manual: **DriveDOCK Extreme**". Please refer to Manual for more information.



4.1 PTT FUNCTION

To power the Dock for PTT functionality the minimum connections are:

13. Input Power (4-way microfit). Note the Accessory signal needs to be asserted to remain on. This is the yellow sire from the 3-way stripped cable (see User Manual).
8. Iridium Antenna connection.
9. GPS Antenna connection.

5 ADDITION INFORMATION

5.1 GPS

GPS location is required for the 9575 Iridium handset to register and operate in PTT talk groups. Please ensure that the GPS SMA connector at rear of Dock is connected to appropriate active GPS antenna.

5.2 MAX3232 INPUT

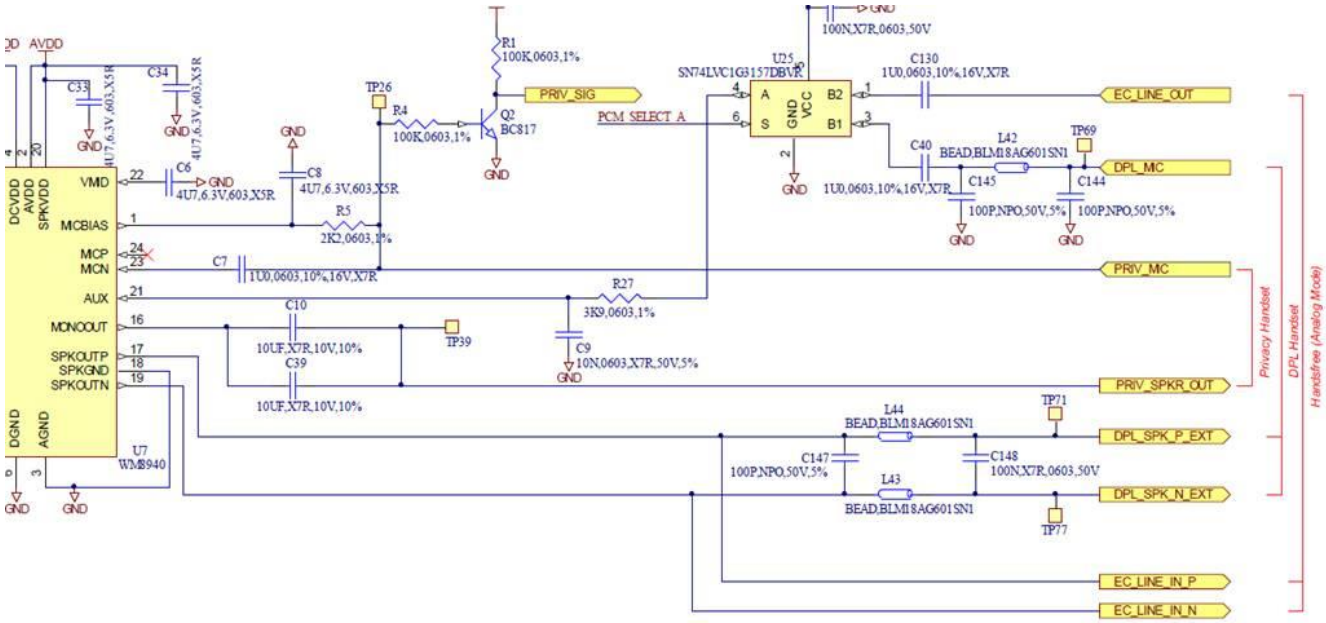
PTT de-asserted: "floats" to GND via the on-chip 5k resistor to GND.

PTT Asserted: Pull high via the PTT handset switch to +12V (e.g. via a 1k resistor).

V_I	Receiver input voltage	RIN		–25 25	V
V_{IT+}	Positive-going input threshold voltage	V_{CC} = 3.3 V		1.5 2.4	V
		V_{CC} = 5 V		1.8 2.4	
V_{IT-}	Negative-going input threshold voltage	V_{CC} = 3.3 V	0.6	1.2	V
		V_{CC} = 5 V	0.8	1.5	
V_{hys}	Input hysteresis ($V_{IT+} - V_{IT-}$)			0.3	V
r_i	Input resistance	V_I = ±3 V to ±25 V	3	5 7	kΩ

5.3 DOCK AUDIO CIRCUITRY

This is a snippet of the audio circuitry inside the Dock. NOT shown is the EC, Power Amp, and the Privacy Handset (3.5mm) and Cup-detect interfaces. Signals for PTT function are the DPL_MIC, and DPL_SPK_x_EXT signals.



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