JUGGERNAUT

JUGGERNAUT VELOX MOUNT

INTERFACE CONTROL DOCUMENT

JUGGERNAUT

REVISION RECORD

REVISION	DESCRIPTION OF CHANGE	DATE OF REVISION	APPROVED BY
A.1	PUBLIC RELEASE	05/08/2024	Goodfellow
B.1	UPDATED 3.2.5 ADDED 3.2.6 UPDATED 3.3.4.4 ADDED 3.4.1.4. ADDED 3.4.2.2	4/22/25	Goodfellow

TABLE OF CONTENTS

JUGGERNAUT

1. SCOPE

This document describes the various mechanical and electrical interfaces for the Juggernaut Velox Mount.

1.1. IDENTIFICATION

1.1.1. This document is applicable to the following SKUS

PART NUMER	DESCRIPTION
JG.MTVX.S23.XX.01-XX	Mount, Velox, S23, XX", NETT Warrior
JG.MTVX.S23.XX.02-XX	Mount, Velox, S23, XX", ODU

JUGGERNAUT

2. SYSTEM OVERVIEW

2.1. The Juggernaut Velox Mount is a PALS compatible mount which enables the USB connection of an EUD to various hubs, radios and other equipment. The cable is permanently attached to the mount using integrated cable management features, while the EUD can be quickly attached and detached to the mount.
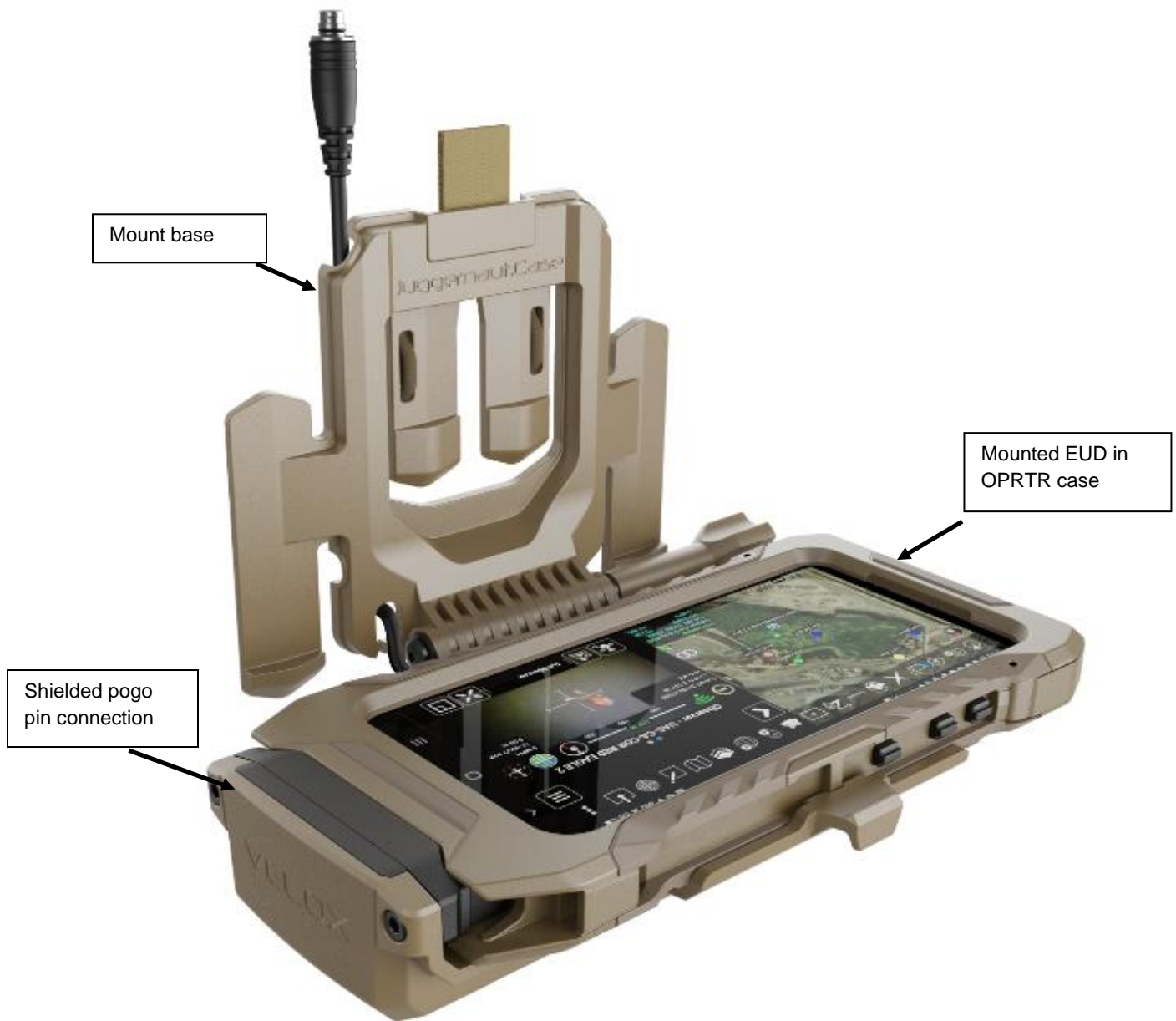
Mount base

Mounted EUD in OPRTR case

Shielded pogo pin connection

Fig 1. Velox shown deployed with an EUD installed

JUGGERNAUT

Mount arm

Retaining cord

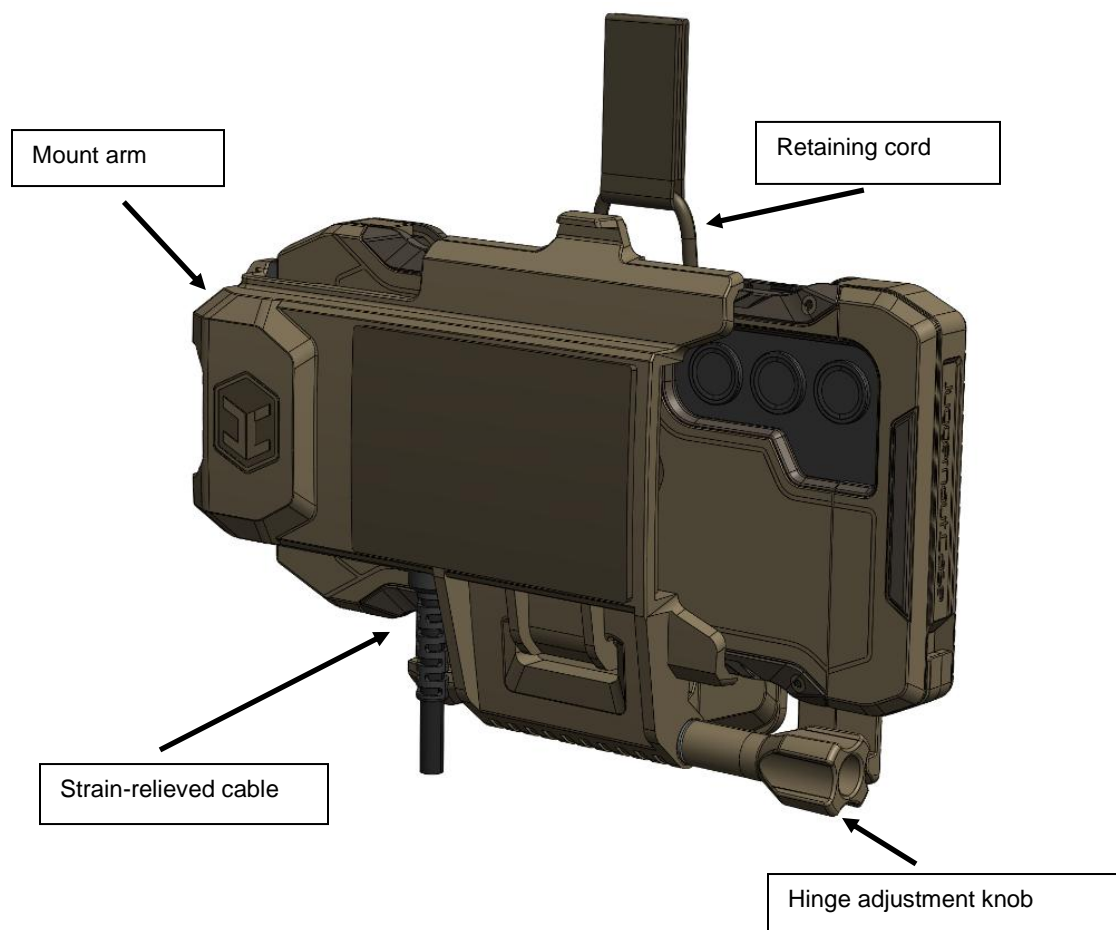Strain-relieved cable

Hinge adjustment knob

Fig. 2. Velox shown stowed with an EUD installed.

JUGGERNAUT

2.2. Velox contains a pogo pin array which allows for rapid connection and disconnection of the EUD USB and Power interface.

Fig. 3. Pogo pin array on the Velox Mount Arm

2.3. Velox requires the use of a compatible Juggernaut OPRTR case with a Smartblock installed.

S23 OPRTR with Smartblock installed

The Smartblock is compatible with the OPRTR QD interface and is retained by 2 screws

Fig. 4. OPRTR case with Smartblock shown

JUGGERNAUT

2.4. The Smartblock is a USB C-to-pogo adapter that enables the EUD USB port to connect to the Velox pin module.

USB C Connector

Nickle plated aluminum housing

Pogo array

Fig. 5. Smartblock

9

JUGGERNAUT
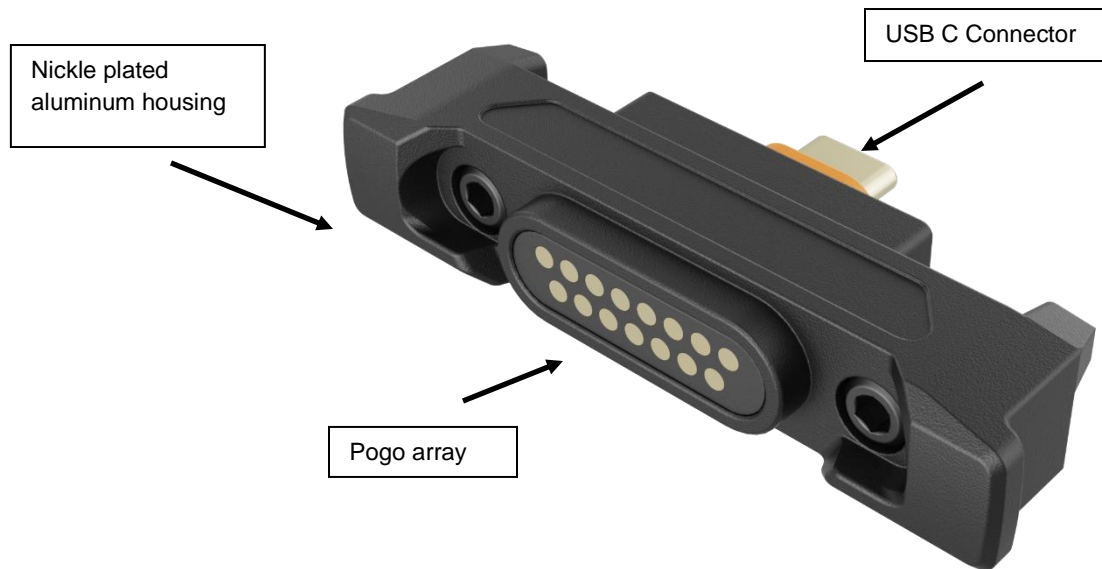
2.5. System Diagram

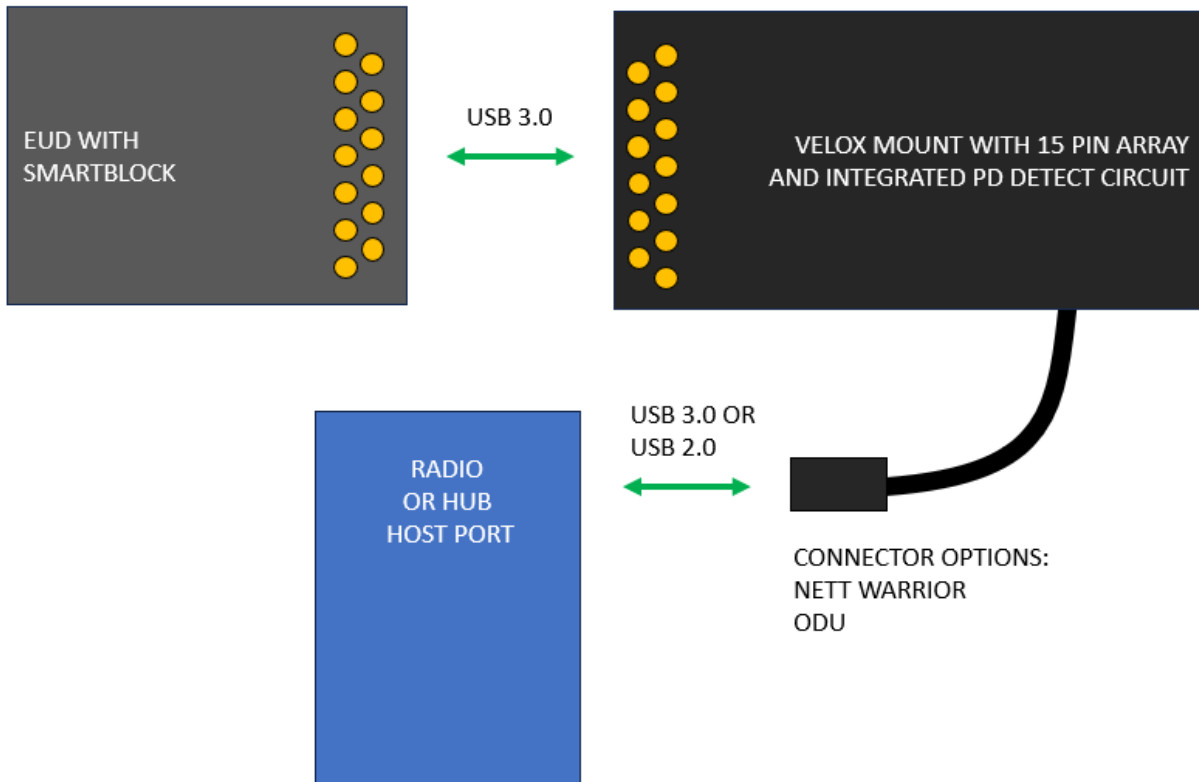An overview diagram of the Velox system is shown below:

Fig. 6. System Overview

3. INTERFACES

3.1. OPRTR CASE

3.1.1. The Juggernaut OPRTR Case has 2 Velox Mount interface points: the Quick Disconnect (QD) bosses and the Mount Ribs.

3.1.1.1. The QD bosses consist of 2 threaded brass inserts molded into the OPRTR Case. These mounting features are designed to allow for the installation of various Juggernaut accessories. The Velox configuration requires the installation of a Smartblock to the QD bosses. The Smartblock is keyed to allow installation in one orientation only. The retaining screws have a 7/64" size hex drive.

Fig. 7. QD features on an S23 OPRTR case

3.1.1.2.   The Mount Ribs are features along the top and bottom edges of the OPRTR case to ensure proper alignment to the Velox Mount arm.
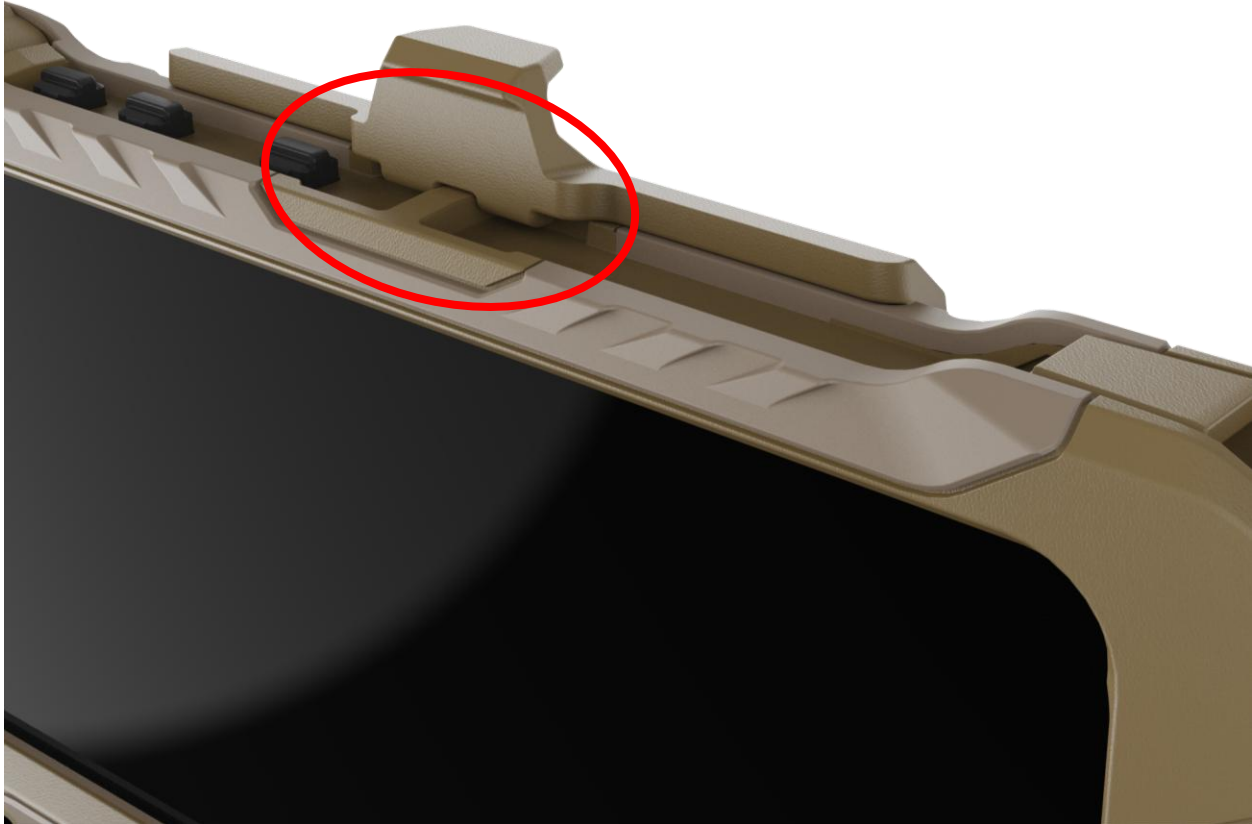

Fig. 8. Mount Ribs

JUGGERNAUT

3.2. SMARTBLOCK

3.2.1. The Smartblock is a USB Type-C connector module with a pogo pad interface for connecting to the Pin Module. The electrical pinout is shown below:
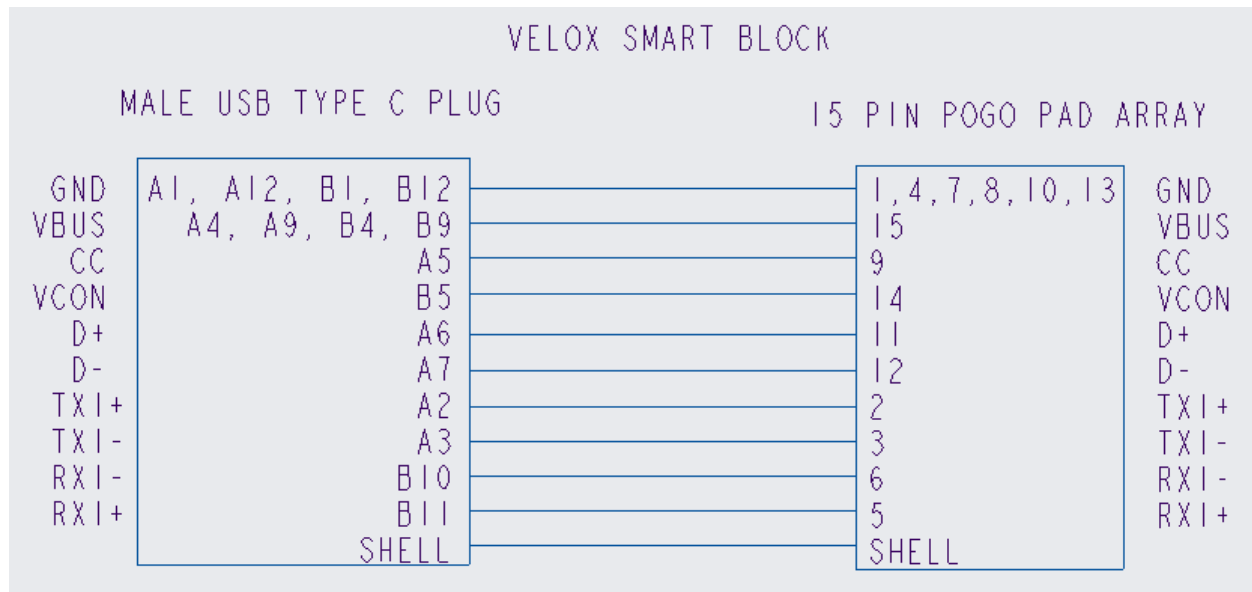

Fig. 9. Smartblock Pinout

The Smartblock breaks out all the signals required for USB 2.0 and USB 3.0 (also known as USB 3.2 Gen 1)

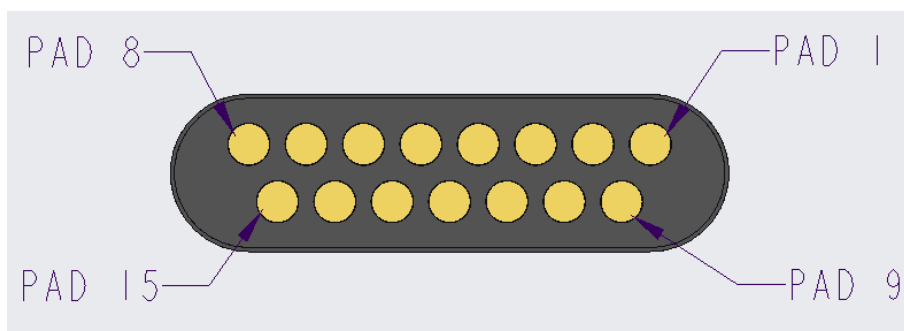3.2.2. The pogo pad interface on the Smartblock is shown below:

Fig.10. Pogo pad interface

3.2.3. The Smartblock is IP rated to IP68, 1.5m for 30mins. If the pogo pads become exposed to moisture they will need to be dried with a soft, dry cloth and the EUD may require to be restarted before the USB C port resets.

13

JUGGERNAUT

3.2.4.   The Smartblock supports USB 3.0/USB 3.2 Gen 1 signals and is fully shielded. There are several ground pins on the array which surround the data pair signals and are all tied together in the internal PCBA.

3.2.5.   The USB Type C connector shell is connected to the aluminum housing of the Smartblock.

3.2.6.   There is user-replaceable sealing gasket on the Velox Pin Module which makes contact with the Smartblock housing around the perimeter of the pogo pad array to prevent ingress of dust and water.

3.3. PIN MODULE & PD DETECT
   3.3.1.   The Pin Module is a 15-pin pogo array within the Velox Mount. The pogo pins interface with the Smartblock to make the electrical connection to the EUD.

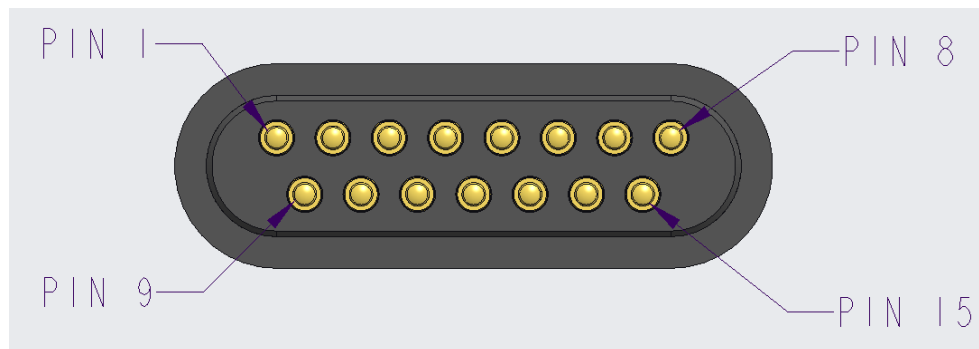   3.3.2.   The pin array interface is shown below:

Fig. 11. Pogo pin interface

3.3.3.   Pin 1 and Pin 8 are First-Mate-Last-Break ground pins.

3.3.4.   The Pin Module contains an integrated PCBA known as the PD Detect Circuit. This circuit is designed to allow the Velox Mount to be compatible with systems containing integrated Power Delivery functionality, as well as systems which do not.

   3.3.4.1.   The PDDetect Circuit monitors the Configuration Channel for PD functionality. If it determines that PD functionality is present in the hub, radio or other attached equipment, the circuit will present itself as a "Pass-thru" circuit, allowing the equipment to connect to the EUD through the CC1 configuration channel and negotiate the power and data roles.

   3.3.4.2.   If it is determined that there is no integrated PD functionality and the hub or radio is configured to provide +5V on the VBus pin, then the PDDetect

14

circuit will operate as a "Proxy" PD circuit, enabling the EUD to be configured into the power-sinking data-host mode.

3.3.4.3.   In "Pass-Thru" mode, the charge rate will be determined by the PD negotiations between the EUD and the attached equipment.

3.3.4.4.   In "Proxy" mode, the PDDetect circuit limits charging to +5V, 500mA for the ODU terminated version. The NETT Warrior terminated version can draw up to 5V, 1500mA.

3.4. TERMINATION OPTIONS

Diagrams of the various Velox Termination options are shown below:

3.4.1. NETT Warrior termination: Juggernaut Part Number JG.MTVX.S23.XX.01-FDE

3.4.1.1.   The NETT Warrior terminated Velox is intended for connection to NETT Warrior receptacles which are configured to provide +5V on pin 3 and do not have any PD communication capabilities on pin 6. The Velox will sink power from the provider on pin 3 to power the PDDetect circuit and enable the Proxy PD mode.

3.4.1.2.   When connected to a NETT Warrior receptacle which does have PD capabilities on pin 6, the PDDetect circuit will enter into Pass-Thru mode and allow for PD communications across the CC channel between the EUD and the attached PD system.

3.4.1.3.   Pin 1 is not connected on the NETT Warrior connector.

3.4.1.4.   There is a ferrite overmolded to the cable, Wurth Elektronik P/N 74270062 or similar

JUGGERNAUT

3.4.2. ODU termination: Juggernaut Part Number JG.MTVX.S23.XX.02-FDE
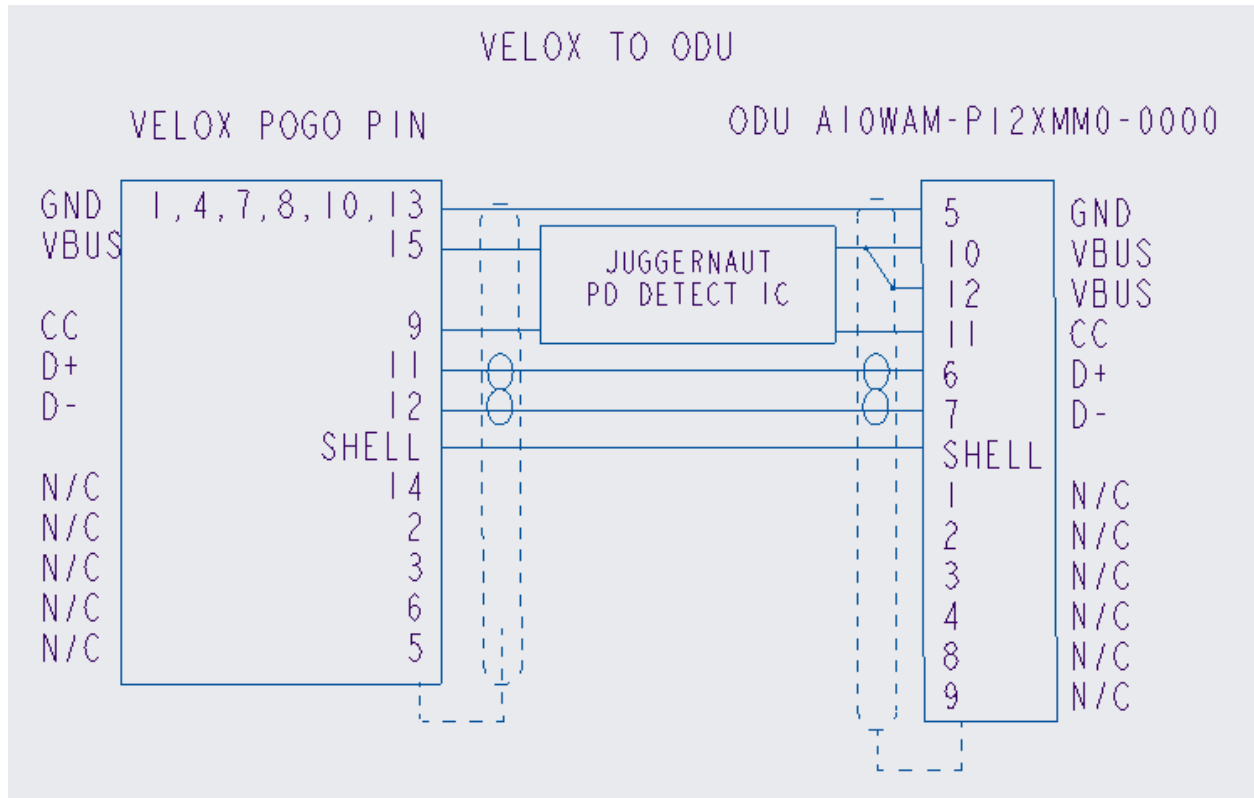
3.4.2.1.   The ODU terminated Velox is intended for direct connection to the L3 Harris AN/PRC 163 and 167 radios. The Velox can be connected to a side adapter or though the top W cable. The radio USB settings must be configured to the SIDE or TOP accordingly.

3.4.2.2.   There is a ferrite overmolded to the cable, Wurth Elektronik P/N 74270062 or similar

JUGGERNAUT

3.5. OPTIONAL CABLES/ADAPTERS

The following cables/adapters are available:

3.5.1. ODU-TO-NETT WARRIOR ADAPTER. Juggernaut Part Number JG.CBL.VX.01

The ODU terminated Velox can also be used in conjunction with the ODU-NW adapter cable. This allows the ODU terminated Velox to be connected to NETT Warrior systems as per section 3.4.1. The pinout for this cable is shown below: