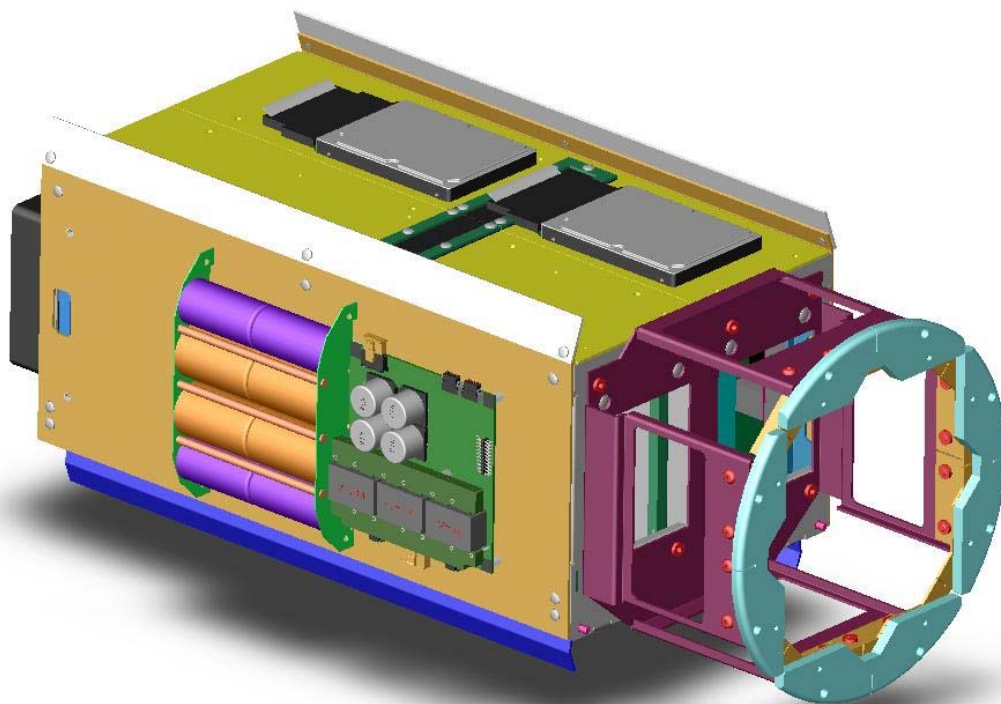


Interface Control Document

7-I Interface Control and Processor Unit



20 January 2003



Revision History:

Version	Issue Date	Revision	Author
P1.0	9 November 2002	Review Draft	D. Suchman
P1.1	15 November 2002	Final Dimensions	D. Suchman
P1.2	21 January 2003	Corrected Pinout	D. Suchman

Table of Contents

1	Interface Between 7-I Integrated Control & Processor Unit and the Customer Provided Pressure Housing	3
1.1	Description	3
2	External Mechanical Interface to Pressure Housing	3
3	Internal Mechanical Interface to Electronics Frame	7
4	Electrical Interfaces	8
4.1	Projector Unit Interface	8
4.2	Receiver Unit Interface	9
4.3	Interface to Customer-Provided Electronics	10



1 Interface Between 7-I Integrated Control & Processor Unit and the Customer Provided Pressure Housing

1.1 Description

The 7-I Integrated Control & Processor Unit (ICPU) consists of a rectangular frame housing a number of printed circuit boards and other electronic components. The ICPU, used in AUV systems, includes many of the functions and components of the Link Control Unit and also a custom pcb containing an FPGA-based Beamformer. RESON's electronics occupies one-half of the frame. The other half is available for use by MBARI.

The ICPU is housed in a MBARI-provided 11" I.D. cylinder (Electronics Housing), with rounded end caps.

The physical interfaces are:

- The external mechanical interface to the Electronics Housing
- The mechanical interface to the unoccupied portion of the electronics frame (internal mechanical interface)
- The electrical interfaces to the Projector and Receiver Units
- The data and command interfaces to the Customer's Electronics

Because it is located in a sealed pressure housing, the ICPU does not come into contact with the surrounding water and operates at one atmosphere pressure.

2 External Mechanical Interface to Pressure Housing

The 7-I Integrated Control and Processor Unit is shown in Figure 1. It is rectangular in shape, 8 inches wide, 6 inches high, and about 17 inches long.

An aluminum adaptor ring mounts on one end of the electronics frame. The other end of the adaptor ring bolts to the endcap of the Electronics Pressure Housing, as shown in Figure 2.

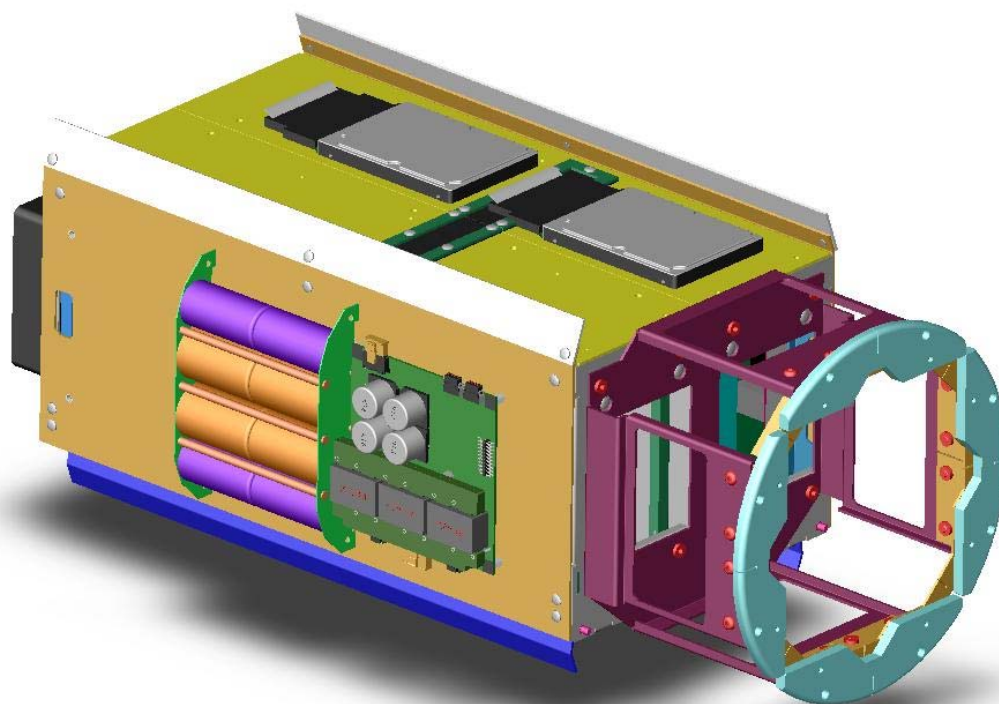


Figure 1 – 7-I Integrated Control and Processor Unit and Mounting Adaptor

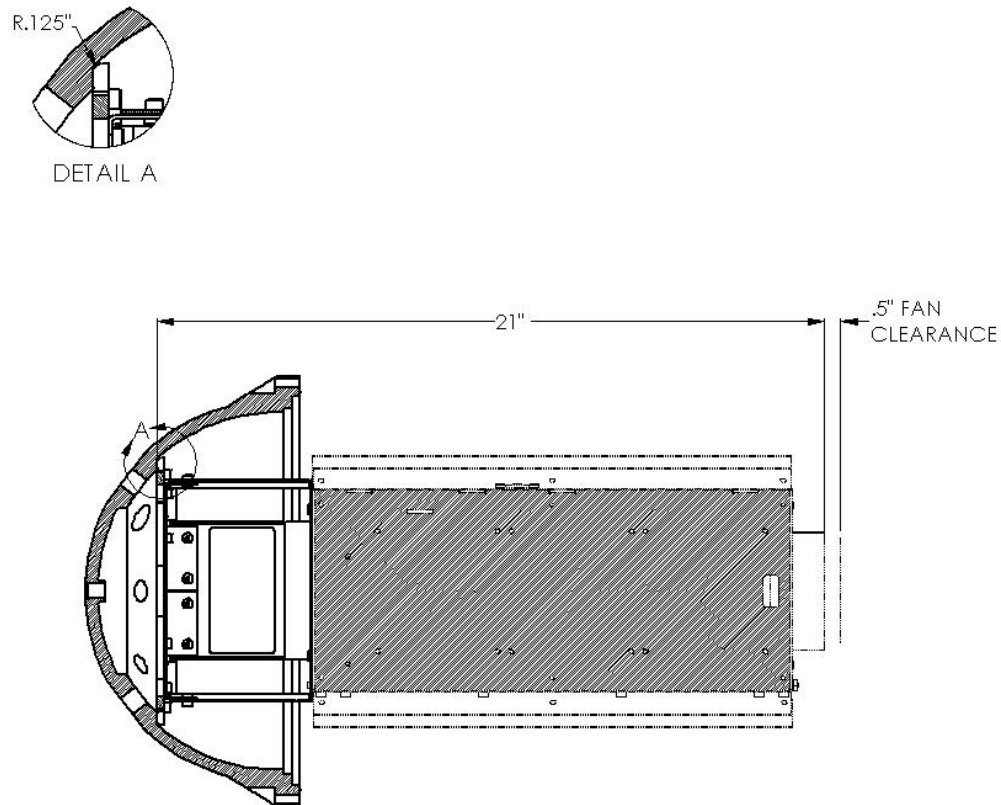


Figure 2. 7-I Integrated Control and Processor Unit Fastened to End Cap

The adaptor ring is secured with 8 each 0.221 bolts, equally spaced on a 7.75 inch bolt circle, as shown in Figure 3.

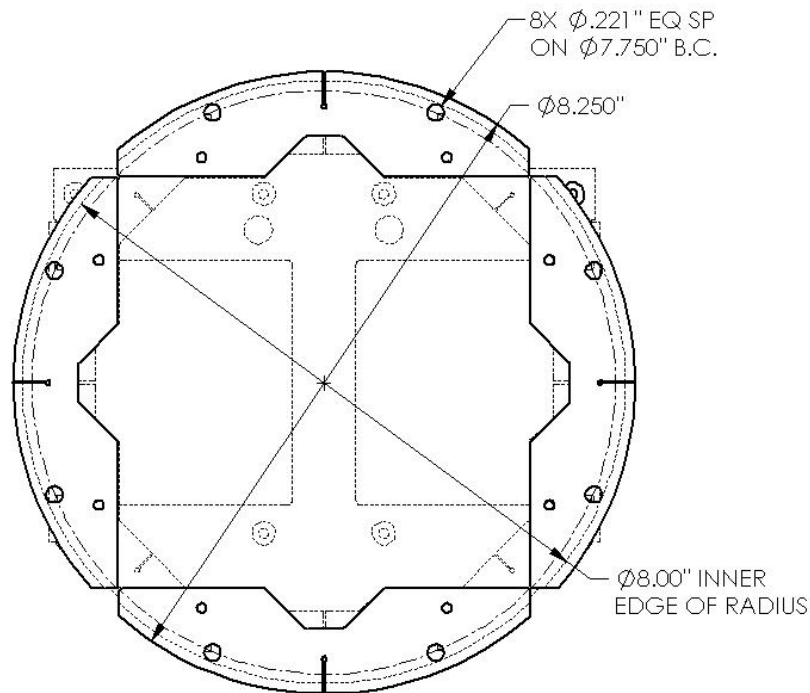


Figure 3. Mounting Adaptor Bolt Circle

The electronics frame and adaptor weigh approximately 17.25 pounds (7.8 kg).

3 Internal Mechanical Interface to Electronics Frame

RESON electronics occupies the left half of the electronics rack (seen from the perspective of facing the end cap from inside the housing). The right side is available for use by the customer.

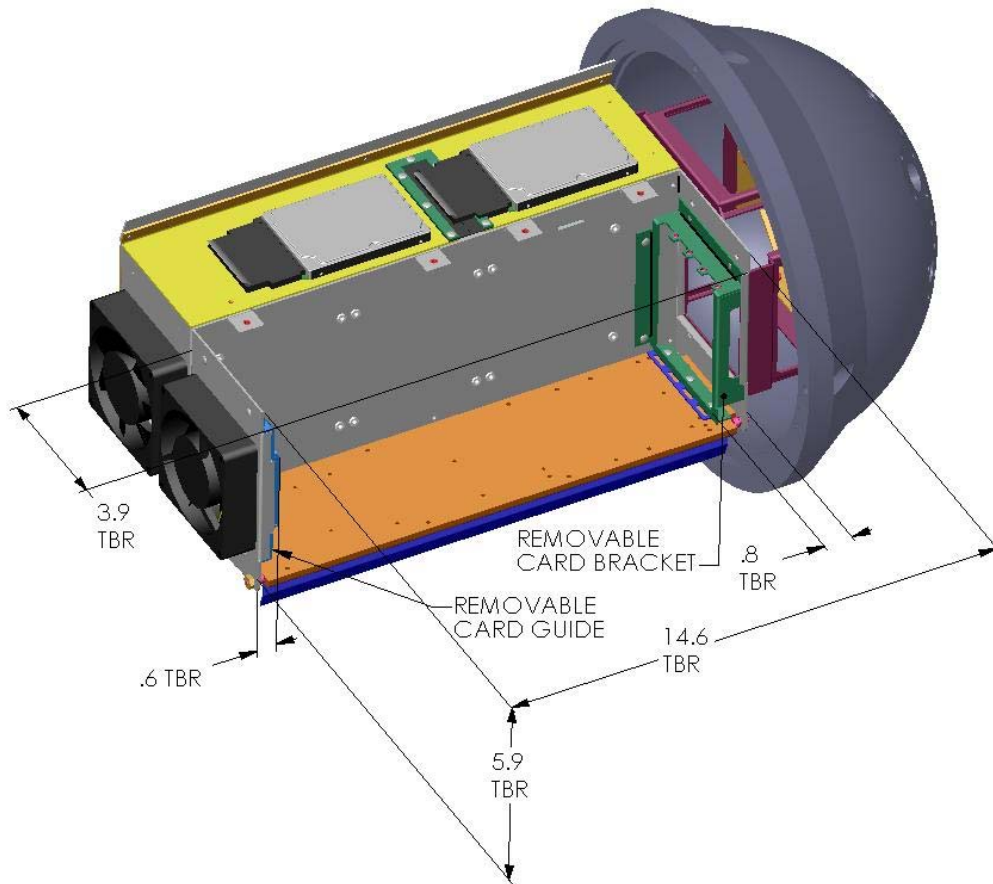


Figure 4 – Available Space within Electronics Frame

A rectangular space just under 3500 cubic inches is provided. Detail is shown on Figure 4. Removable card brackets are included.

4 Electrical Interfaces

The 7-I ICPU has the following Electrical Interfaces:

- Interface to the Projector Unit(s)
- Interface to the Receiver Unit(s)
- Interface to MBARI's electronics

4.1 Projector Unit Interface

The Projector Unit(s) interfaces electrically to the ICPU through a single TBD long cable (Reson, Inc. Dwg. No. 11393-X, where X denotes cable length), as shown in Figure 5. A maximum of two (2) Projector Units can be accommodated, with a separate cable and connector required for each. Figures 5 and 6 show the most common ICPU configuration, with a single Projector Unit and a single Receiver Unit.

At the Projector Unit end of the cable, is a female 8-pin connector (Impulse Model LPMIL-8-FS). At the end of the cable that interfaces with the ICPU Pressure Housing, there is a male connector (Impulse Model MCIL-8-MP). The maximum allowable length for this cable is 3 meters.

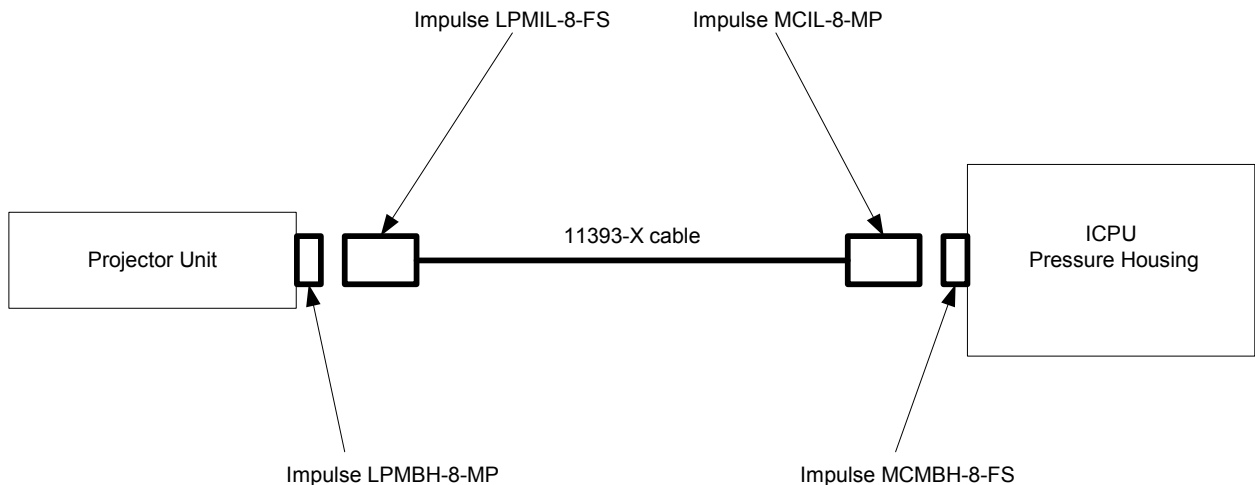


Figure 5 – Projector Unit to ICPU Interface



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The Projector Unit connects to connector number 1 on the MBARI-provided pressure housing. The Projector Unit pinout is an internal RESON hardware interface.

4.2 Receiver Unit Interface

The Receiver Unit(s) interfaces electrically to the ICPU through a single TBD long cable (Reson, Inc. Dwg. No. 11392-X, where X denotes cable length, as shown in Figure 6. A maximum of two (2) Receiver Units can be accommodated, with a separate cable and connector required for each. At the Receiver Unit end of the cable, there is a male 8-pin connector (Model LPMIL-8-MP). At the end of the cable that interfaces with the Pressure Vessel housing the ICPU, there is a female connector (Model MCIL-8-FS). The maximum allowable length for this cable is 3 meters.

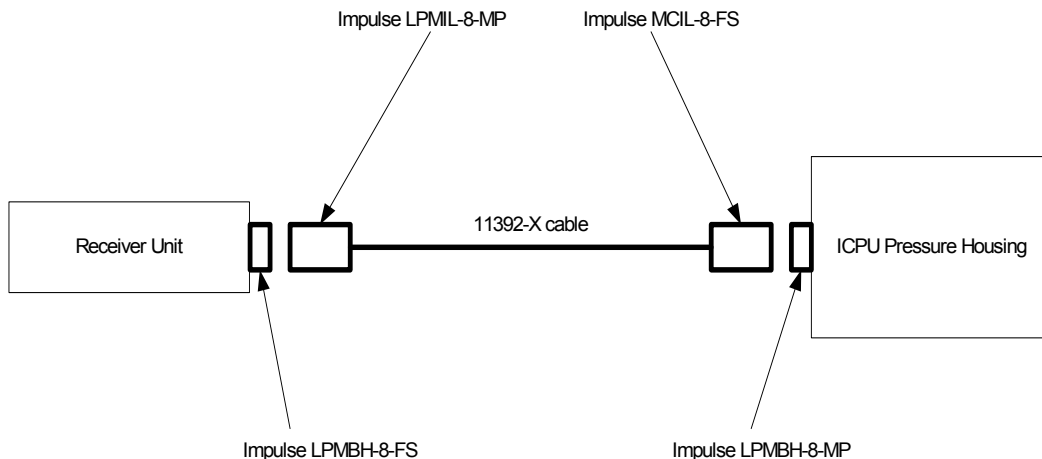


Figure 6 – Receiver Unit to ICPU Interface



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The Receiver Unit connects to connector number 3 on the MBARI-provided pressure housing. The Receiver Unit pinout is an internal RESON hardware interface. .

4.3 Interface to Customer-Provided Electronics

The ICPU interfaces electrically to MBARI's electronics through MBARI-provided cables connected to connectors 2 and 8 on the Pressure Housing. Both connectors are 16-pin MHDL-BCR type and are wired identically. These connectors are designated, respectively, Power/Coms Forward, and Power/Coms Aft.

The pinout of connectors 2 and 8 is as follows:

MHDL – 16 – BCR Connector		
Pin Number	AWG Wire Size	Description
1	22	Ethernet RJ45, Pin 1
2	22	Ethernet RJ45, Pin 2
3	22	Ethernet RJ45, Pin 3
4	22	Ethernet RJ45, Pin 4
5	22	Leak Detector
6	22	Leak Detector
7	22	Return DVL
8	22	Sonar 1 PPS In
9	22	DVL Trigger Out
10	22	Return for Pins 8 and 11
11	22	Shutdown/Reset In
12	22	Shield/Chassis
13	20	Battery Bus 0V
14	20	Battery Bus + 24V
15	20	Battery Bus + 24V
16	20	Battery Bus 0V

Data format is as defined in RESON 7k Data Format ICD, latest revision.