To: HTRP Group (Bagri, Beno, Dooley, Hankins, Hjellming)
From : M. McKinnon MMM
Date : Dec. 22, 1988
Subject : HTRP Rack Layout and Interface Module.

HTRP MEMO NO. 106

Attached are sketches of the proposed HTRP rack layout, Interface Module, and Interface Module boards. These sketches and notes attempt to document the requirements of the HTRP which we have discussed during the past few weeks. I would appreciate your comments. Hopefully the following list will clarify any questions you might have concerning the sketches.

(1) The Interface Module is designed to provide interconnects between the HTRP computer, the Phase Shifter/Detector/Integrator Modules, existing VLA signals, and visitors' hardware. The module will contain five boards : Junction, Labmaster Interface, Master LO, Labmaster Daughter, and Labmaster Expansion.

(2) The Labmaster Daughter and Expansion boards were purchased with the Labmaster Mother board.

(3) The sketches for the Junction, Master LO, and Labmaster Interface boards only list signals entering and exiting these boards. I have not attempted to produce detailed drawings of board layouts. Please comment if these boards are too crowded or if you can think of better ways to provide external connections (I think the back of the Interface Module has too many connections, but the sketch shows what is required by the system).

(4) The analog sums are routed to the Interface Module for visitors who provide their own detection hardware (e.g. Gray Box, spectral line correlator, dedispersers). Power splitters would be required for each IF.

(5) The four switches on the junction card are 16-pole switches which would allow an observer or technician to view individual channel detected output with an oscilloscope.

(6) The meter on the front of the interface module displays the sampling frequency of an external trigger for the Labmaster A/D converter. An extremely accurate external trigger is required for pulsar timing experiments. The accuracy and stability of the Labmaster counters is probably not accurate enough for these experiments.

(7) The VLBA standard interface board requires an RS-485 data link while the HTRP computer provides RS-232. The data link will be converted in a small box adjacent to the HTRP computer. The converter box has been designed by DCS lab personnel. The data link is required to monitor and command the Integrator Module.

(8) Power supplies will be located with the Phase Shifter/Detector/Integrator modules. The monitor and control bus will be located in the Integrator Module.

(9) A stop A/D conversion signal is required by the integrator sample, track and hold circuit. The signal is generated by the Labmaster.

(10) The 20MHz and 50MHz signals at the Interface Module are intended for visitors' hardware such as frequency synthesizers. Additional hardware (e.g. isolation amplifiers) and design work would be needed to provide these signals.

(11) Space is provided in the HTRP Rack for visitor interface modules. This space would be an ideal location for circuitry contained in what is now called the Gray Box. Another module which could occupy this space is a Princeton timing system interface module. I have drawn the HTRP Interface Module so that necessary signals are readily available to visiting observers.

(12) An alternative to boards in the Interface Module is loose or bundled wire. The major disadvantage of loose wire is difficulty in installation and troubleshooting.

(13) Connections have been provided on the Interface Module for the Labmaster D/A converter and digital I/O. Digital I/O could possibly be used for communication with the MODCOMPs via the serial line controller; however, RS-232 to a serial port is probably a more practical communication method.

(14) A BNC bulkhead is shown at the top of the HTRP Rack. The bulkhead is just a metal plate with 32 BNC connectors. The outputs of the Mk III video converters will plug into one side of the bulkhead. The inputs to the Phase Shifter Module will plug into the other side.

HTRP INTERFACE MODULE

MMM
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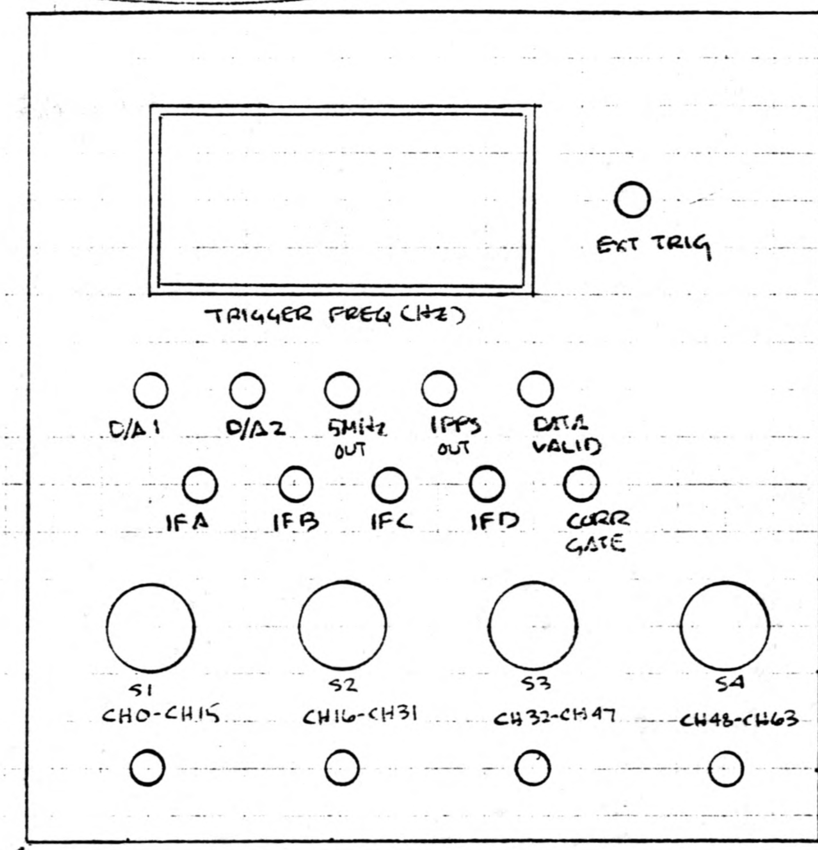
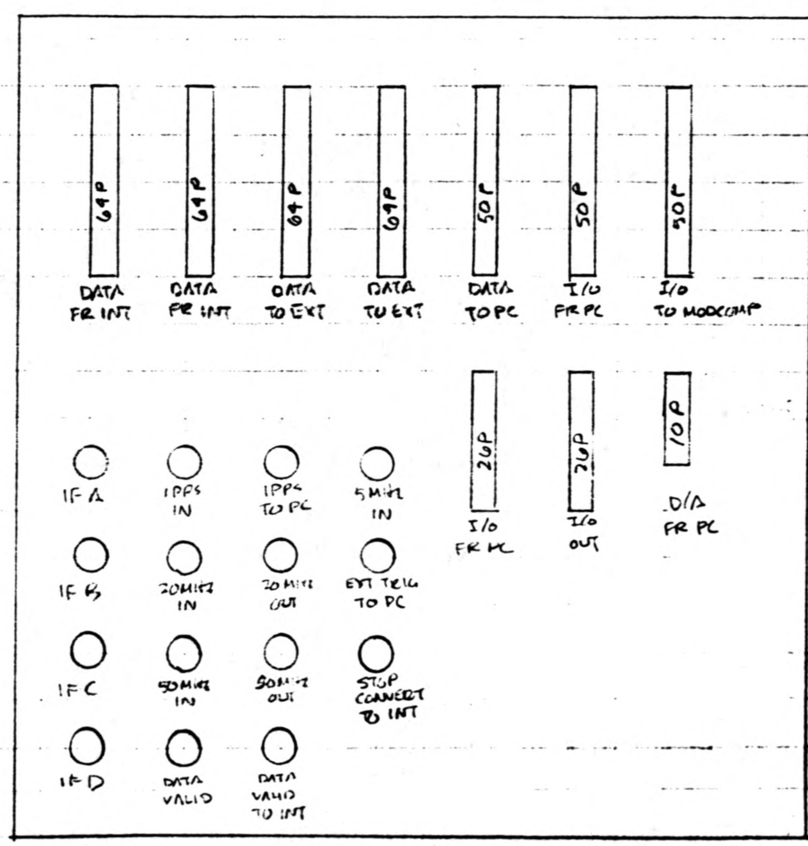
FRONT



SCALE: 1/2" ≈ 1"

STANDARD VLA MODULE

BACK



MMM
7/8
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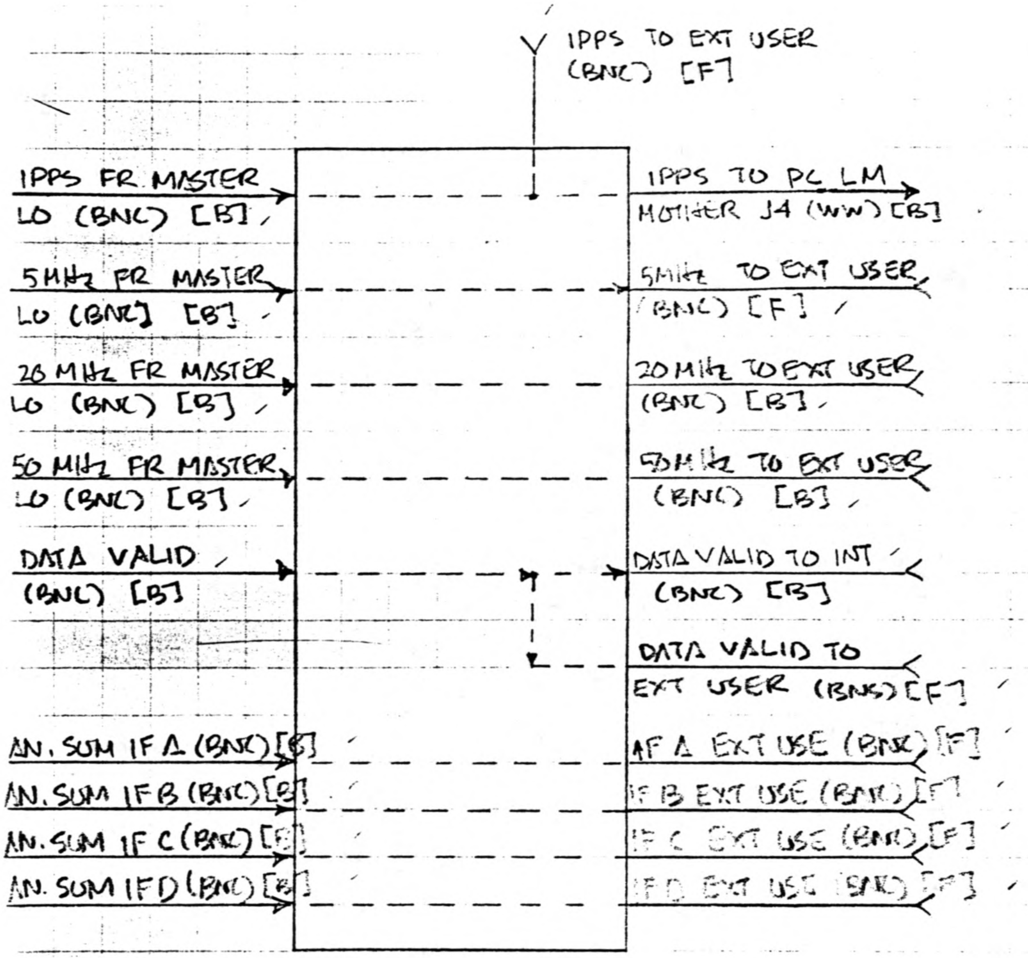
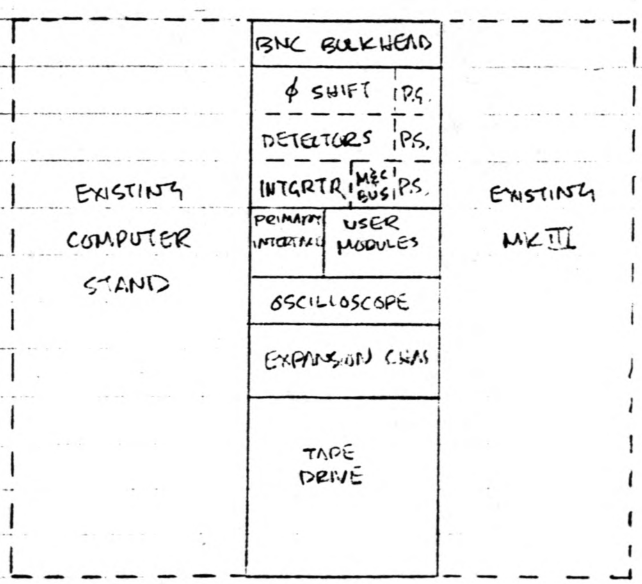


MASTER LO INTERFACE BOARD



PROPOSED HTRP RACK LAYOUT

MMM
3/3
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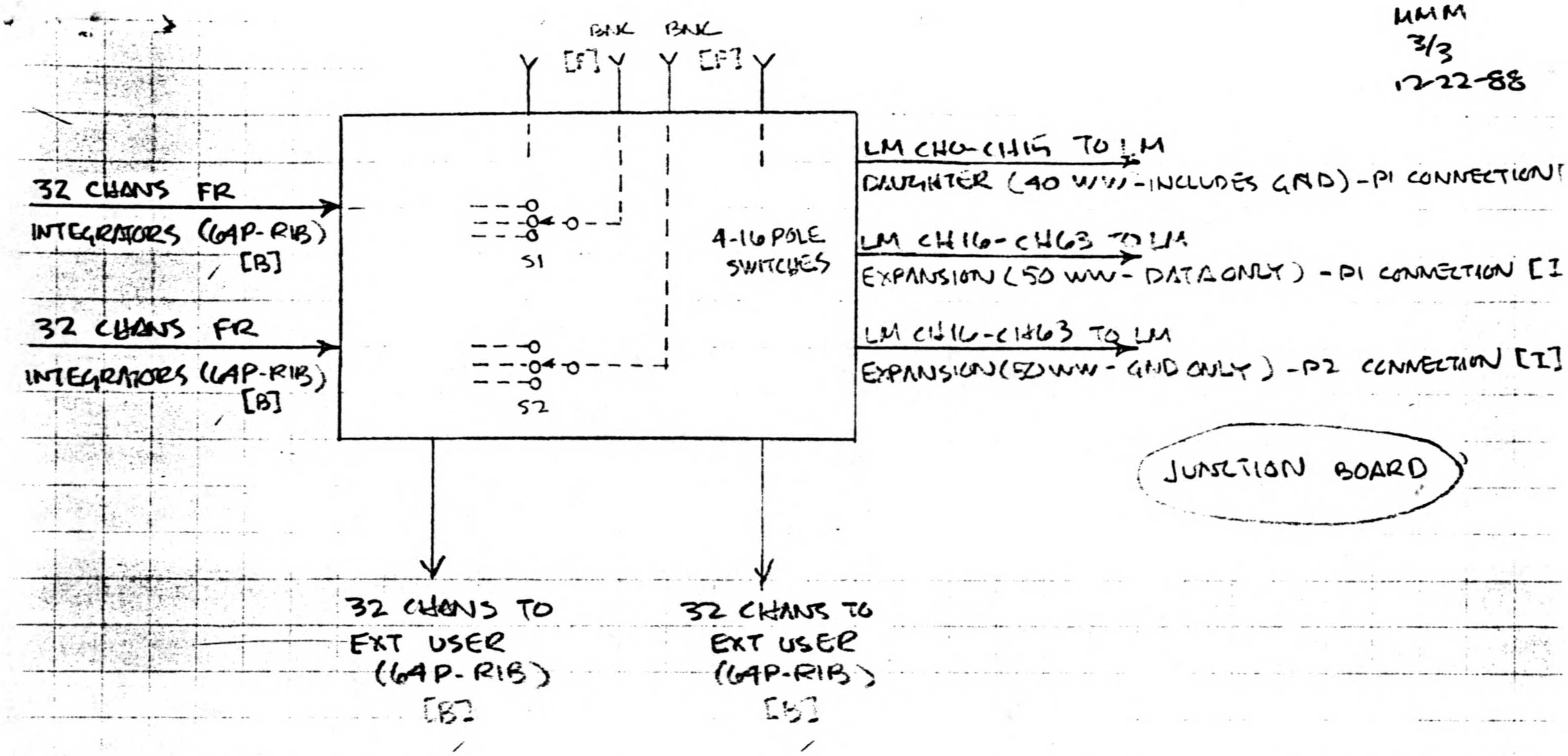

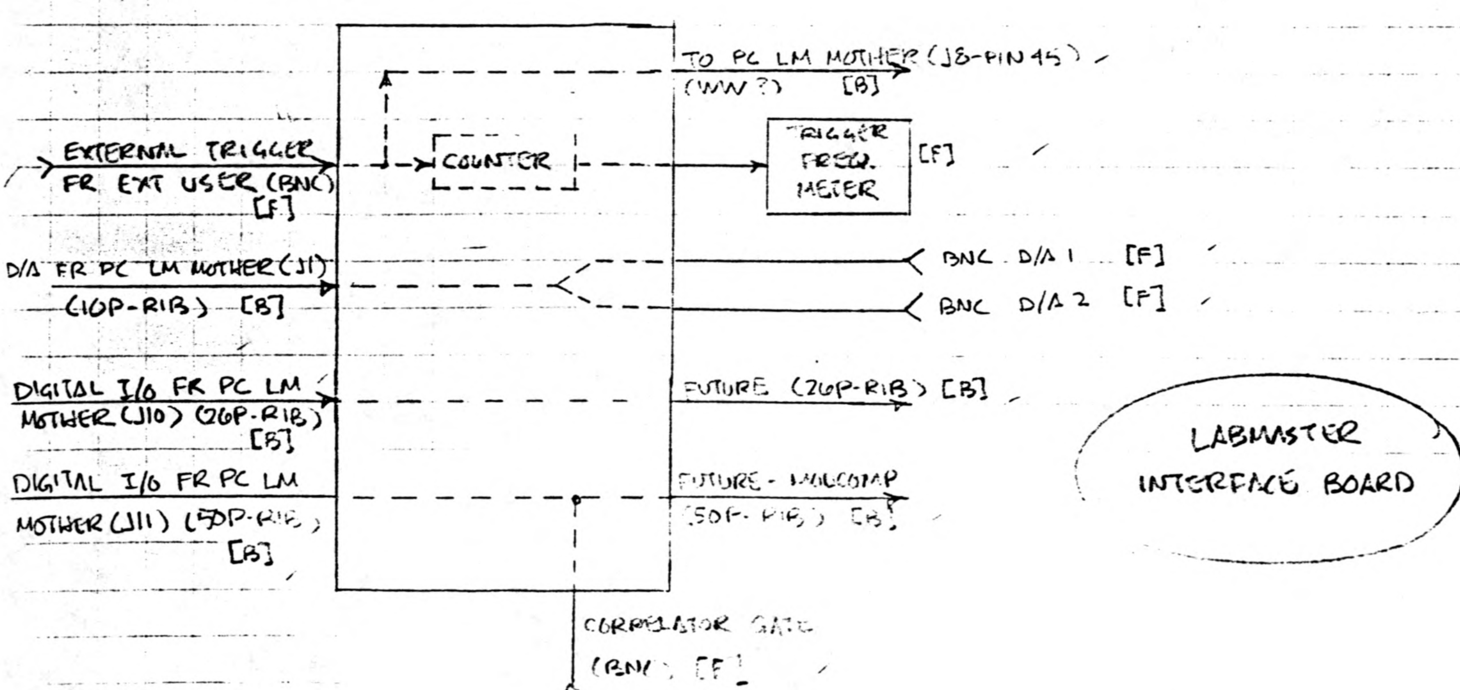

KEY:

WW = WIRE WRAP
RIB = RIBBON
LM = LABMASTER
[B] = CONNECTION @ BACK OF MODULE

[F] = CONNECTION @ FRONT OF MODULE
[I] = CONNECTION INTERNAL TO MODULE