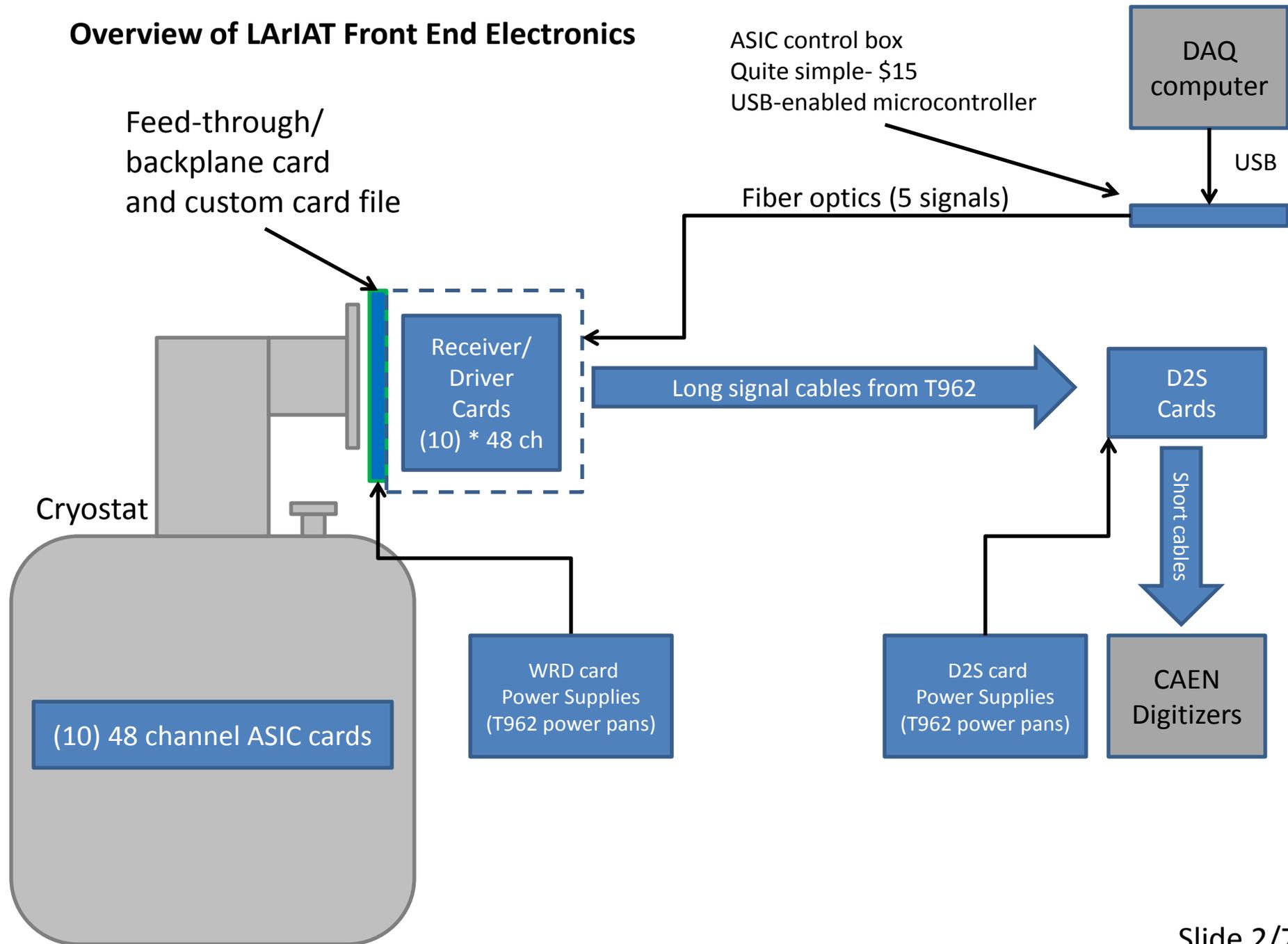


LArIAT Front End Electronics Update

January 13, 2015

Carl Bromberg, Dean Shooltz

Overview of LArIAT Front End Electronics



Current status

ASIC cards are tested and installed in cryostat

Cabling is installed and tested

Feed-through card is installed and tested

Vacuum check is OK

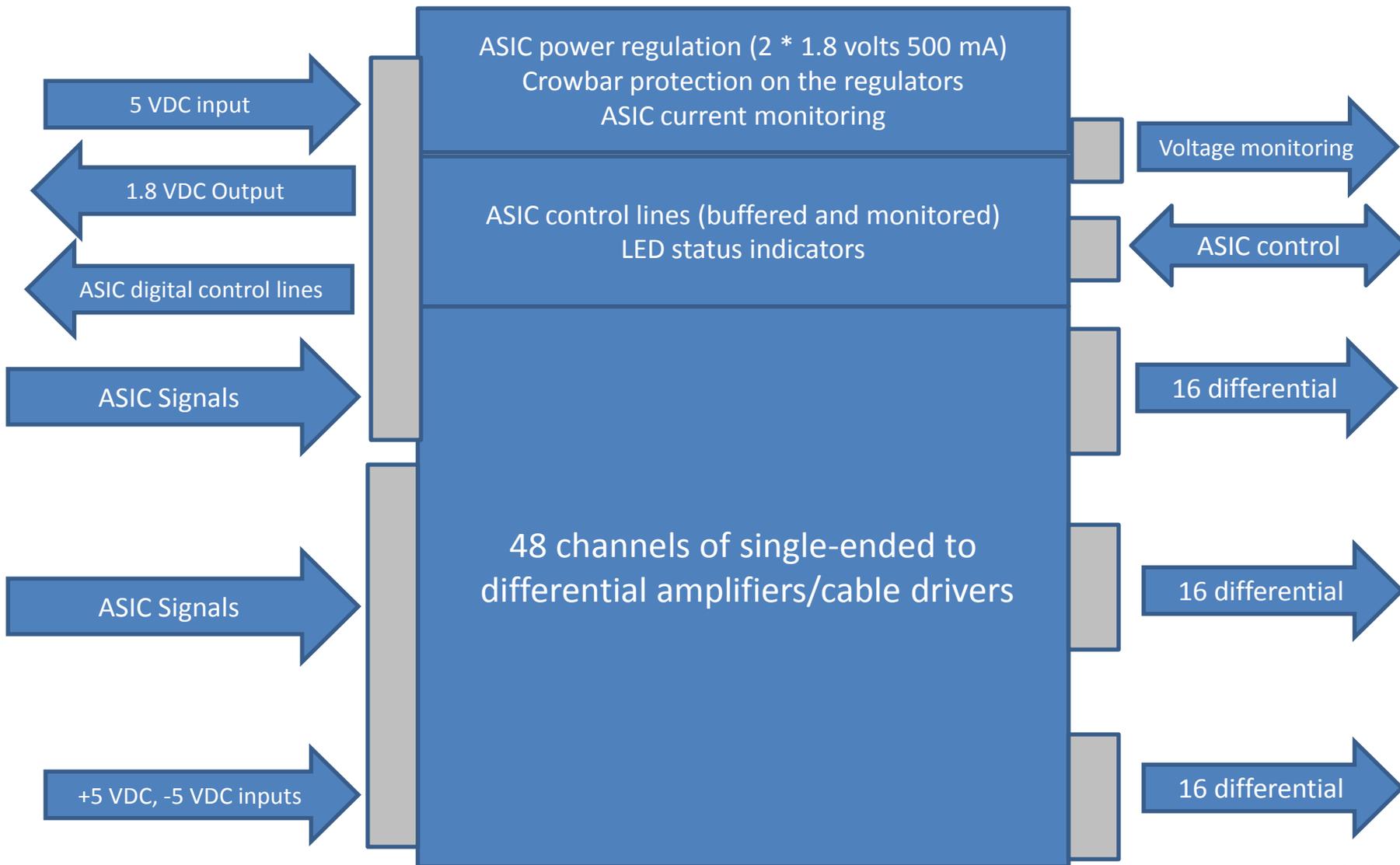
All 480 channels are tested to be OK

Cryostat has been moved to MC7



Warm receiver/Driver card block diagram

Each warm receiver card supplies power and control signals to one 48 channel ASIC motherboard. The ASIC control lines are routed to the front panel through buffers to protect the ASICs. From the front panel the ASIC control lines are daisy chained and then connected to inexpensive fiber optic links. Front panel status LEDs to assist in diagnosing any problems during a run.



Warm receiver/driver design: 10" x 7" pcb

Voltage sense lines

Analog test signal input

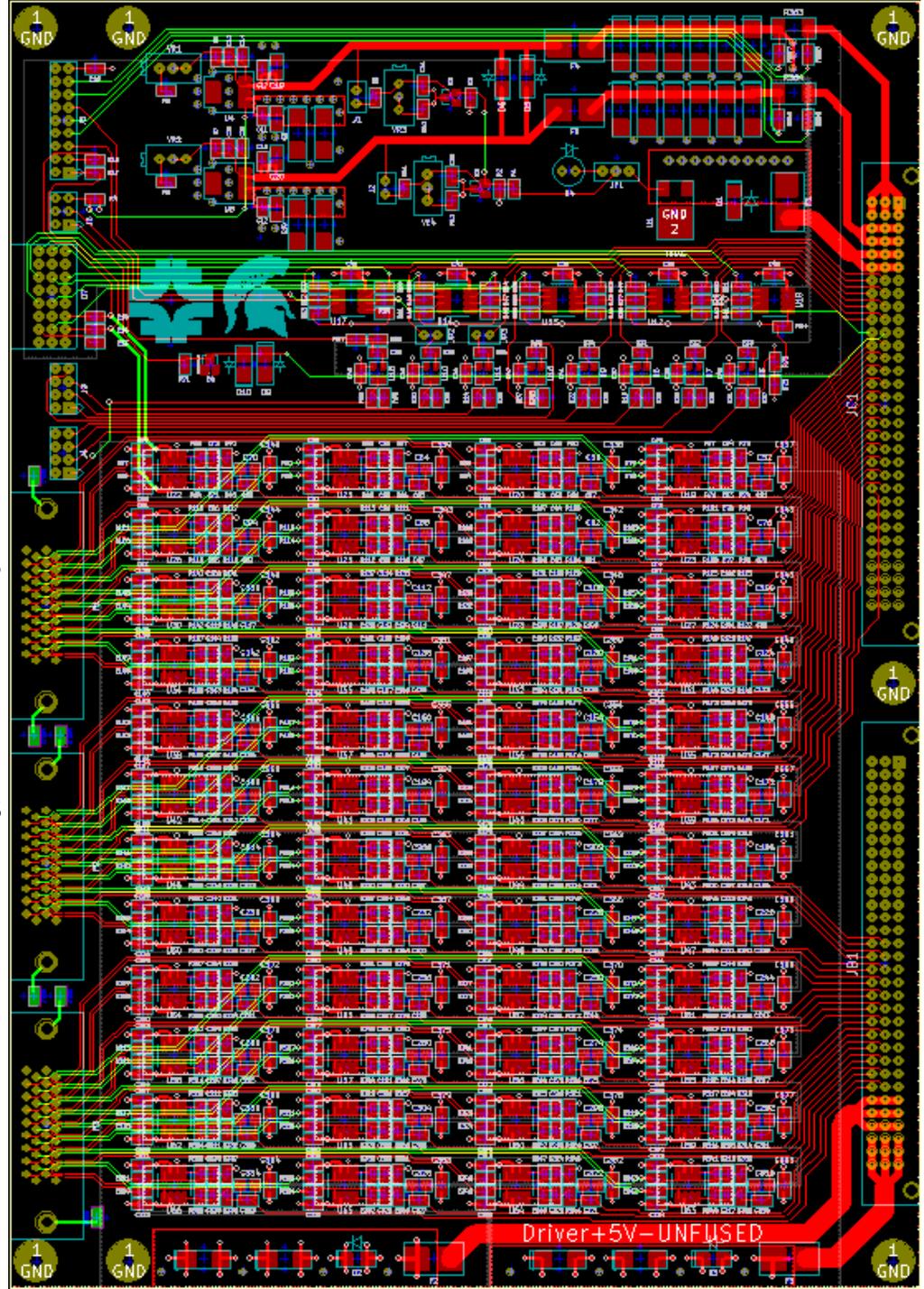
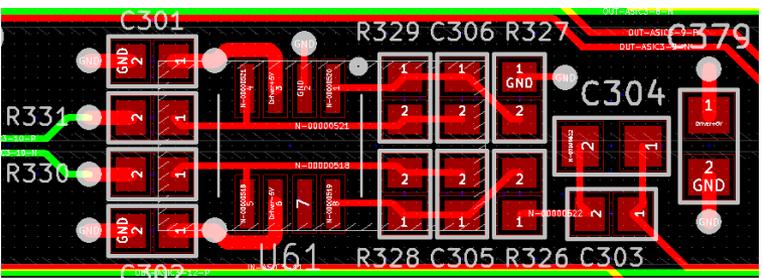
Status LEDs

ASIC control
 4 bus lines (CLK, CS, RESET, TEST)
 1 daisy chained line (SDI → SDO)

16 differential signal outputs

16 differential signal outputs

1 of the 48 differential driver channels



Backplane connector

Backplane connector

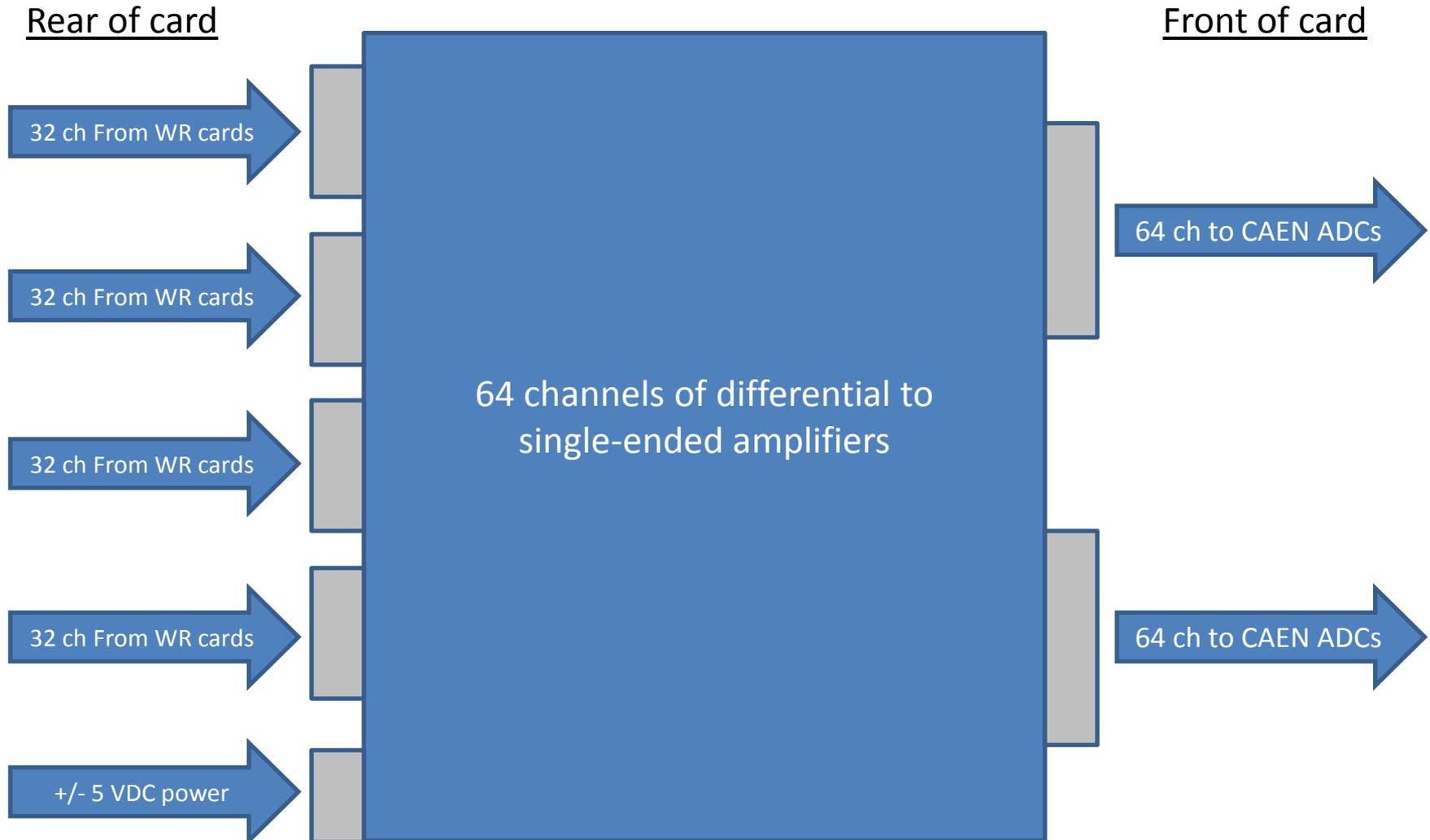
D2S (differential to single-ended) card block diagram

Card supplies a simple function- no major design challenges.

Cards will reside in a simple card file above the CAEN ADCs.

Cards will be supplied from +/- 5 volt power supplies.

Schematic completed, parts selected, PCB layout *in progress*.



Status and Expected Schedule

Since last week:

Adjusted schedule: Interleave WRD and D2S card work. The reasoning is to be able to send a system-level information package to Fermi safety for a pre-production review. Then get both types of card manufactured at the same time.

Communicated system overview to S. Chappa, D. Mertz (they asked for this first).

Finished D2S schematics.

Finished D2S part selection.

Started D2S PCB copper layout.

This week's goals:

Finish the D2S copper layout.

Order components (everything is currently in-stock).

Send information package to S. Chappa and D. Mertz (probably Mon. 19th).

While PCBs in manufacture:

Finish mechanical work (card crates) and package the ASIC control card.