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To: Anna Di Giorgio/Riccardo Cerulli-Irell, Christophe Cara

From: John Delderfield

cc: Colin Cunningham, Bernard Jackson

FIRST SYNC. WIRING CONFIGURATION

The configuration for this system was finalised at yesterday's EMC Group meeting at ESTEC. The section pertinent to us is shown edited on to the attached FIRST block diagram.

Each unit which requires the Sync. signal receives two ungrounded screened twisted pair signals, one fed via the prime 1553 bus connector and one via the redundant. This keeps the sync. signals in bundles that do not include power wires but it means that the all SPIRE/FIRST interfaces including the sync. signals for the FSFCUs are at the DPU*.

Thus 8 isolated pairs are required as shown, four pairs sourced by each FCDMU*.

SPIRE can combine the signals in each of the units that require Sync. simply by joining one side of each to a point at half logic supply voltage decoupled to ground and feeding the live sides of each signal into the inputs of one differential comparator. As the FCDMU feeds are floating and we require safe unit/unit integration, the input circuit shall include static series protection resistors and normally back-biased ground/supply clamp diodes. The SPIRE DPUs and FCUs shall use identical I/Fs. Please (re)-advise me of this circuit for inclusion in the IIDB.

Cheers

John

*Anna/Riccardo: This may require a clarification to your DPU contractor, sorry.

* Note that the SPIRE block diagram is drawn as per the recent CDMS meeting so that the both the Prime FCDMUs can master both the Prime and the Redundant 1553 buses. Although wired with the 1553 harness, my understanding is that having regard to its function the sync. system is quite complicated enough as is, and so it is not set up analogously to the 1553 buses. As shown therefore, the Prime FCDMU continues to drive the sync. system along the prime 1553 harness bundle even though it might be mastering the redundant 1553 bus, and visa versa for the redundant FCDMU, noting the arrangement of connectors/harness so the FCDMUs can be electrically identical when thus used. *If* this were to be amended, the SPIRE side of the sync. interface can remain unchanged. The then 16 FCDMU toroid secondary outputs could be connected in series pairs using the inter-unit harnessing, and of course ensuring that the FCDMU toroid primaries are not effectively shorted in the unpowered unit, e.g. that they are driven via suitable resistors.

Relay status lines,
RT thermistor lines??

Cryostat Wall

SVM Conditioned Temperature sensors on thermal strap, etc....outside FSFPU EMC enclosure

