

Integration of Front End Electronics into Instruments

The cable between a Front End Electronics board (FEE) and the related interface board is a natural separation line between electronics which should be close to detector arrays / spectrometer units and electronics which have to be with the computer. While the interface board has to sit at the used computer Bus (ISA, PCI, PC/104) the FEE will normally sit within a housing comprising the measurement equipment called instrument. The following modes of implementation may be considered:

Backpanel Mounting of an FEE

The easiest way as well as solution with the lowest cost is to mount the FEE directly to the backplane of the instrument. The on-board connector of the FEE (3M 40 pin μ -connector) acts as the connector for the link cable, no additional connections / costs arise.

Internal Mounting of an FEE

If it cannot be mounted that way, the FEE board can sit in principle everywhere in the instrument. Some aspects have to be kept in mind, which are valid of course for any mode of installation:

The distance to the array(s) / spectrometer module(s) should not exceed 50cm. No strong emitter of electro-magnetic radiation should sit close.

We propose to use the version /SYS in which all tec5 FEEs are available. The /SYS version does not have the 3M μ -connector. It carries instead a 40 pin header connector which can be easily accessed by a flat-ribbon cable with appropriate connector. To terminate this flat-ribbon cable to the μ -connector style, tec5

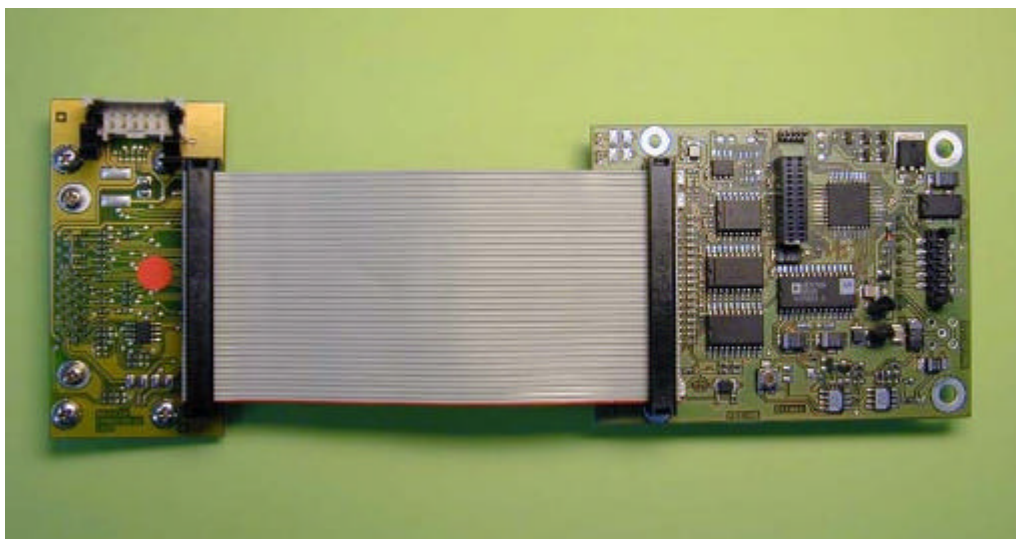


Fig. 1: Internal connection of FEE /Sys and LKONV-40-37

provides a small board called LKONV-40-37 carrying this μ -connector in such a way, so it can be mounted directly to the backplane. Four standoffs for fixation are already on as well (see silver looking "nuts" on Fig. 2). The internal connection to the flat-ribbon cable is made by the standard header connector.

The length of the flat-ribbon cable depends on the length of the outside PCI cable between computer (PCI board) and the instrument. The overall length should not exceed 5m.

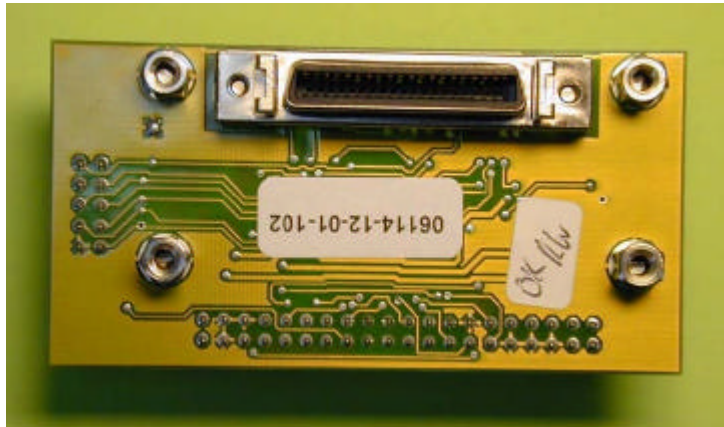


Fig. 2: The LKONV-40-37 adapter board for backpanel mounting, in the lower section close to the edge, the two rows of soldered pins of the 40 pin header connector for the internal cable can be seen.

FEE Types

This connection technology works with all new FEE boards (FEE-HS, FEE-HR and FEE-NIR), i.e. all these boards are available as /SYS versions.

To use the old FEE (FEE-003, FEE-IR) with a PCI interface board, tec5 provides an electronic converter called LKONV-40-25 designed as a dongle. The dongle can be plugged to a standard SUBD-25 male connector. The opposite end of the dongle contains a 3M 40 pin μ -connector, the counterpart of the PCI cable with the 3M connectors on both sides.

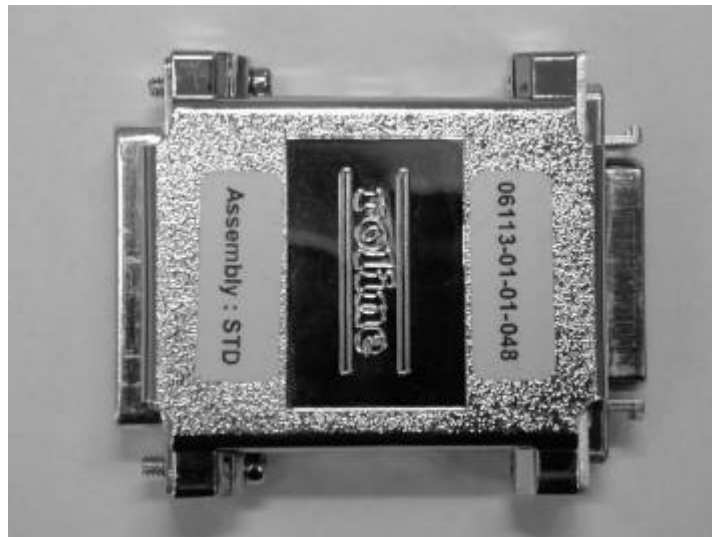


Fig. 3: The "Dongle", LKONV-40-25 for upgrading / adapting the old FEE versions to the new standard in respect to EEPROM and I2C Bus (Clock speed remains the original one).