HERAB Fast Control System

Fiber Receiver Module

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1 General Remarks

- The module uses two slots in the crate.
- The module uses a special backplane connector (HARTING), only the VCC and GROUND pins are connected.
- The module is available in two different board sizes:
  standard (160 mm), actual board number: 6280-3
  long (220 mm), actual board number: 6718-0
- Power consumption: ~ 1.5 A @ 5 V.

The module is used to fan out the data from the serial transmitter module into 8 daughter modules via parallel differential signals.

The serial data are received via the optical fiber link and converted into parallel signals by a FEA-developed high speed serial link receiver module (**FEA_HSSL_RX**) . The output sigals of this module (TTL) are fanned out by differential line drivers DS90C031 into eight identical differential cables, each of those is used to service one daughter module.

The fiber link receiver module is a SIEMENS FC 266 Mbaud Transceiver (266 Mbaud, 1270-1380 nm, SC Receptacle); the transmitter part is not used.

The fiber cable to be used is a preassembled Simplex cable (multimode, core diameter 62.5 μm) with SC-connectors (e.g. SIEMENS V23820-C1088-Axxx, xxx = length in meters).

2 Daughter Module Data Connectors (P1...P8)

The eight daughter module data connectors are standard 2*30 pin SCOTCHFLEX connectors
DIN 41651 (e.g. 3M-3372-6002, DESY-26758).
The (differential) output signals are driven by differential line drivers DS90C031.
The differential signals use positive true logic, i.e. the signal is 'true' if SIG 0 'high', SIG* = 'low'.
The connectors are on the board, i.e. the cables have to be fed through openings in the front panel.

Pin	Signal		Pin	Signal
1	GND		2	GND
3	FIBER(0)		4	FIBER*(0)
5	FIBER(1)		6	FIBER*(1)
7	FIBER(2)		8	FIBER*(2)
9	FIBER(3)		10	FIBER*(3)
11	GND		12	GND
13	FIBER(4)		14	FIBER*(4)
15	FIBER(5)		16	FIBER*(5)
17	FIBER(6)		18	FIBER*(6)
19	FIBER(7)		20	FIBER*(7)
21	GND		22	GND
23	FIBER(8)		24	FIBER*(8)
25	FIBER(9)		26	FIBER*(9)
27	FIBER(10)		28	FIBER*(10)
29	FIBER(11)		30	FIBER*(11)
31	GND		32	GND
33	FIBER(12)		34	FIBER*(12)
35	FIBER(13)		36	FIBER*(13)
37	FIBER(14)		38	FIBER*(14)
39	FIBER(15)		40	FIBER*(15)
41	GND		42	GND
43	FIBER(16)		44	FIBER*(16)
45	FIBER(17)		46	FIBER*(17)
47	FIBER(18)		48	FIBER*(18)
49	FIBER(19)		50	FIBER*(19)
51	CMD AV (n.u.)		52	CMD AV* (n.u.)
53	LINK READY		54	LINK READY*
55	ERROR		56	ERROR*
57	STROBE		58	STROBE*
59	ENABLE		60	ENABLE

The two ENABLE pins are shorted within the daughter module. This allows to disable the differential line drivers if no daughter module is connected.

2.1 Fiber Link Data Word

The 20-bit fiber link data words have the following format:

	19 ... 16	15 ... 8	7 ... 0
FLT EVENT	1 0 0 0	0 0 0 0 0 0 0 0	FLT-BX #
RANDOM TRG	1 0 0 1	0 0 0 0 0 0 0 0	FLT-BX #
VME TRG	1 0 1 0	0 0 0 0 0 0 0 0	FLT-BX #
LEMO1 TRG	1 1 0 0	0 0 0 0 0 0 0 0	FLT-BX #
LEMO2 TRG	1 1 0 1	0 0 0 0 0 0 0 0	FLT-BX #
LEMO3 TRG	1 1 1 0	0 0 0 0 0 0 0 0	FLT-BX #
LEMO4 TRG	1 1 1 1	0 0 0 0 0 0 0 0	FLT-BX #
COMMAND HIGH	0 1 1 0	0 0 0 0 0 A A A	DATA
COMMAND LOW	0 1 1 1	0 0 D D D D D D	0 0 C C C C C C
FLT #	0 1 0 1	FLT #	
BX #	0 0 0 0	0 0 0 0 0 0 0 0	BX #

A: command code

D: daughter number

C: cluster number

3 Front Panel Elements

The only front panel element is the SC receptacle of the fiber link receiver.