

GOL Test Board Manual

Introduction

The GOL test board is used to test the transfer of data from via the GOL chip. The FPGA is configured in a way that a packet of data can be send. This data has the CPC card format and can be received and processed in the MROD-In when a GOLA board is mounted at the place of the input S-Link.

Push button operation

The GOL Test Board has three push button switches with LEDs. The table below explains their behaviour.

		LED On:	LED Off:
SW1	RESET	GOL and FPGA in Reset	Not in Reset
SW2	FF0	Sending data packet may be triggered by pushing the button	GOL not READY or data packet is being send
SW3	ERR	Arm the generation of an error on word 21	No Error will be generated

Table 1: Push button switch behaviour

Note that a Reset can also be generated when URESET_n is applied. This will also light the LED.

The data packet that is send corresponds to 3 events numbered [1..3] with 18 TDCs being send to the MROD-In. The data format does correspond to the data format that is used on the CPC cards (used at L3-Cosmics). Note that this is a different format from the AMT to be used on the mezzanine cards for the Atlas MDT.

Here is a HEX dump of the Event ROM content:

```

Addr      +0      +1      +2      +3      +4      +5      +6      +7
00      DD000000 A400108B A4001022 A4001025 00000000 A40010F7 00000000 A400103E
08      A400103B A400109F 00000000 A40010E6 A40010E7 00000000 00000000 A40010EA
10      A40010EB 00000000 A40010ED DD000000 33000000 33000001 00000000 A4001026
18      33000004 00000000 33000006 00000000 33000008 A40010E5 3300000A 3300000B
20      A40010E8 00000000 3300000E 00000000 00000000 33000011 DD000000 33000000
28      00000000 33000002 33000003 33000004 A40010AF 33000006 33000007 33000008
30      33000009 3300000A 3300000B 3300000C A40010E9 00000000 3300000F A40010EC
38      33000011 DD000000 D5001004 00000000 33000002 33000003 D5001004 33000005
40      D5001004 33000007 D5001004 33000009 D5001004 D5001004 3300000C 3300000D
48      00000000 3300000F 33000010 D5001004 DD000000 A400208B 33000001 D5001004
50      D5001004 00000000 33000005 00000000 D5001004 A400209F 00000000 A40020E6
58      A40020E7 D5001004 3300000D 3300000E D5001004 33000010 A40020ED DD000000
60      33000000 D5001004 A4002025 A4002026 00000000 D5001004 00000000 A400203B
68      33000008 D5001004 3300000A 3300000B A40020E8 D5001004 D5001004 A40020EB
70      D5001004 33000011 DD000000 D5002003 A4002022 33000002 33000003 A40020F7
78      A40020AF A400203E 00000000 00000000 A40020E5 D5002003 00000000 3300000C
80      A40020E9 A40020EA 00000000 A40020EC D5002003 DD000000 00000000 33000001
88      D5002003 D5002003 33000004 33000005 33000006 33000007 D5002003 33000009
90      00000000 D5002003 D5002003 3300000D 3300000E 3300000F 33000010 A40030ED
98      DD000000 A400308B D5002003 A4003025 A4003026 D5002003 D5002003 D5002003
A0      D5002003 A400309F D5002003 A40030E6 A40030E7 A40030E8 D5002003 D5002003
A8      D5002003 D5002003 33000011 DD000000 33000000 A4003022 33000002 33000003
B0      A40030F7 A40030AF A400303E A400303B 33000008 A40030E5 3300000A 3300000B
B8      3300000C A40030E9 A40030EA A40030EB A40030EC 00000000 DD000000 33000000
C0      33000001 33000002 33000003 33000004 33000005 33000006 33000007 33000008
C8      33000009 3300000A 3300000B 3300000C 3300000D 3300000E 3300000F 33000010
D0      00000000 DD000000 D5003004 33000001 D5003004 D5003004 33000004 33000005
D8      33000006 33000007 D5003004 33000009 D5003004 D5003004 D5003004 3300000D
E0      3300000E 3300000F 33000010 33000011 DD000000 00000000 D5003004 00000000
E8      00000000 D5003004 D5003004 D5003004 D5003004 00000000 D5003004 00000000
F0      00000000 00000000 D5003004 D5003004 D5003004 D5003004 D5003004 DD000000
F8      00000000 00000000 00000000 00000000 00000000 00000000 00000000 00000000

```

```

DD      :Separator
A4      :TDC Header
D5      :TDC Trailer
001     :Event ID
003     :Word Count
33000000 :When armed, this word will be signalled having an ERROR

```

Note that Byte 2 is always 0x00. This byte is not stored in ROM but set as 0x00 by default. The Altera FLEX device (EPF10K10A) on the GOL Test Board only can accommodate 24 bits and not 32 bit wide data because it has only 3 EABs.

Sending the content of this event ROM once, will generate the following events on the MDOD-In:

```
A400108B 33000000 33000000 D5001004
A4001022 33000001 33000001 D5001004
A4001025 33000002 33000002 D5001004
A4001026 33000003 33000003 D5001004
A40010F7 33000004 33000004 D5001004
A40010AF 33000005 33000005 D5001004
A400103E 33000006 33000006 D5001004
A400103B 33000007 33000007 D5001004
A400109F 33000008 33000008 D5001004
A40010E5 33000009 33000009 D5001004
A40010E6 3300000A 3300000A D5001004
A40010E7 3300000B 3300000B D5001004
A40010E8 3300000C 3300000C D5001004
A40010E9 3300000D 3300000D D5001004
A40010EA 3300000E 3300000E D5001004
A40010EB 3300000F 3300000F D5001004
A40010EC 33000010 33000010 D5001004
A40010ED 33000011 33000011 D5001004
```

```
A400208B 33000000 D5002003
A4002022 33000001 D5002003
A4002025 33000002 D5002003
A4002026 33000003 D5002003
A40020F7 33000004 D5002003
A40020AF 33000005 D5002003
A400203E 33000006 D5002003
A400203B 33000007 D5002003
A400209F 33000008 D5002003
A40020E5 33000009 D5002003
A40020E6 3300000A D5002003
A40020E7 3300000B D5002003
A40020E8 3300000C D5002003
A40020E9 3300000D D5002003
A40020EA 3300000E D5002003
A40020EB 3300000F D5002003
A40020EC 33000010 D5002003
A40020ED 33000011 D5002003
```

```
A400308B 33000000 33000000 D5003004
A4003022 33000001 33000001 D5003004
A4003025 33000002 33000002 D5003004
A4003026 33000003 33000003 D5003004
A40030F7 33000004 33000004 D5003004
A40030AF 33000005 33000005 D5003004
A400303E 33000006 33000006 D5003004
A400303B 33000007 33000007 D5003004
A400309F 33000008 33000008 D5003004
A40030E5 33000009 33000009 D5003004
A40030E6 3300000A 3300000A D5003004
A40030E7 3300000B 3300000B D5003004
A40030E8 3300000C 3300000C D5003004
A40030E9 3300000D 3300000D D5003004
A40030EA 3300000E 3300000E D5003004
A40030EB 3300000F 3300000F D5003004
A40030EC 33000010 33000010 D5003004
A40030ED 33000011 33000011 D5003004
```