CCII Systems (Pty) Ltd

Communications • Computer Intelligence • Integration

Interface Control Document

for the

CCII 3U cPCI Digital Input / Output Board

with

Modified Input Channels

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Abbreviations and Acronyms

C²I² Systems	CCII Systems (Pty) Ltd
cPCI	Compact Peripheral Component Interconnect
DIO	Digital Input / Output
DIP	Dual In-Line Package
FPGA	Field-Programmable Gate Array
IC	Integrated Circuit
ID	Identification
I/O	Input/Output
JTAG	Joint Test Action Group
LED	Light Emitting Diode
PCI	Peripheral Component Interconnect

1. Scope

1.1 Identification

This document is the Interface Control Document for the C²I² Systems 3U 64-Channel Isolated Digital Input / Output (DIO) Board with modified input channels, hereinafter named the DIO Board.

1.2 System Overview

The 64-Channel DIO Board provides 32 opto-isolated digital output channels, each with internal output status read-back, plus 32 opto-isolated digital input channels on a single 3U CompactPCI o. Field-Programmable Gate Arrays (FPGAs) are used to provide access to the digital data over the PCI bus or PCIe interface.

I/O channel to system isolation is 2 500 V RMS.

The 3U DIO Board is available in two different formfactors, namely CompactPCI and VPX. The cPCI DIO Board conforms to the PICMG 2.0 (R3.0) 3U CompactPCI standard [2.1.1] and the VPX DIO Board conforms to the ANSI/VITA 46.0-2007 (R2013), VPX Base Standard [2.2.2].

The cPCI DIO Board is available as an air-cooled or a conduction-cooled version.

The DIO Board may be configured to achieve different numbers of input and output channels. Details for different build options are available on enquiry.

Applicable Part Numbers are :

CCII/DIO/3UCPCI/64C/BP/COM	Commercial Grade, cPCI Interface, Air-Cooled, Backplane I/O
CCII/DIO/3UCPCI/64C/BP/IND	Industrial Grade, cPCI Interface, Air-Cooled, Backplane I/O
CCII/DIO/3UCPCI/64C/BP/CC	Ruggedised Grade, cPCI Interface, Conduction-Cooled, Backplane I/O

1.3 Document Overview

This document describes the connector pinouts for the 3U 64-Channel Isolated DIO Board with modified input channels.

2. Applicable and Reference Documents

2.1 Applicable Documents

2.1.1 CCII/DIO/6-MAN/004 *Hardware Reference Manual for the 3U cPCI and VPX 64-Channel Isolated Digital Input / Output*, 2015-12-03 Rev 1.1

2.2 Reference Documents

2.2.1 PICMG 2.0 (R3.0), *CompactPCI Specification*, dated 1999-10-1.

2.2.2 ANSI/VITA 46.0-2007 (R2013), *VPX Baseline Standard*, dated May 2013.

3. 3U cPCI Backplane Connector Pinout

Table 1 shows the pin mappings for the CCII 64-Channel 3U cPCI DIO Board with modified inputs and the ADE Circular Connector (38999 64-pin Connector). Note that all the DIO Board Signal Names are according to the standard configuration of the 64-Channel DIO Board.

The Table 1 pin assignments apply to the following part number :

- CCII/DIO/3UCPCI/64C/BP/COM
- CCII/DIO/3UCPCI/64C/BP/IND
- CCII/DIO/3UCPCI/64C/BP/CC

The 3U cPCI DIO Board uses a shortened cPCI rear I/O connector for P2, therefore Rows 1, 2 and 22 are left unconnected from the Backplane.

Refer to the cPCI standard [2.1.1] for further details on the cPCI connector P1 pin assignments for the 32-bit PCI signals.

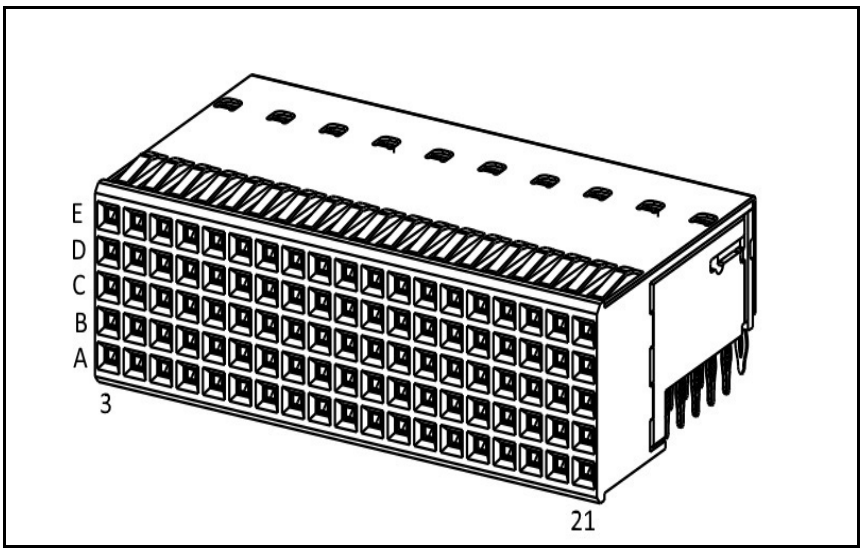

Figure 1 : 3U cPCI DIO Board Rear I/O Connector (P2)

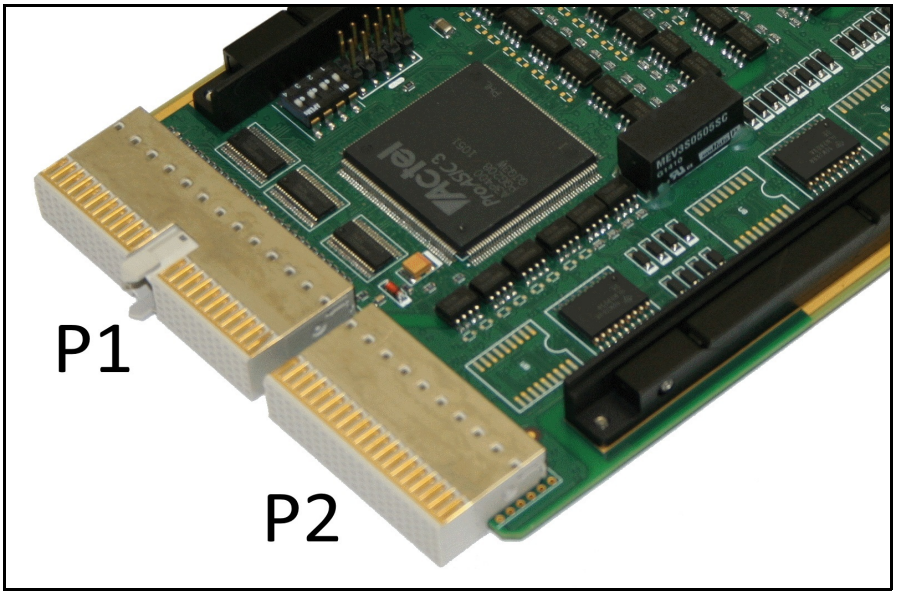

Figure 2 : P2 Connector Location on the 3U Conduction-Cooled DIO Board

P2 Pin Number	Signal Name	ADE Circular Connector (38999 64-pin Connector) Pin Number	I/O Channel Type
A1	Unconnected	Unconnected	
A2	Unconnected	62	
A3	GNDiso	57	
A4	Reserved	52	
A5	GNDiso	46	
A6	CH 4 (Output)	41	Open/GND output channel
A7	GNDiso	36	
A8	CH 60 (Input)	31	Open/GND input channel
A9	GNDiso	26	
A10	CH 52 (Output)	21	Open/GND output channel
A11	GNDiso	15	
A12	CH 44 (Input)	10	TTL input channel
A13	GNDiso	5	
A14	CH 36 (Output)	Unconnected	Open/GND output channel
A15	GNDiso	Unconnected	
A16	CH 28 (Input)	Unconnected	High Voltage input channel
A17	GNDiso	Unconnected	
A18	CH 20 (Output)	Unconnected	Open/GND output channel

P2 Pin Number	Signal Name	ADE Circular Connector (38999 64-pin Connector) Pin Number	I/O Channel Type
A19	GNDiso	Unconnected	
A20	CH 12 (Input)	Unconnected	High Voltage input channel
A21	GNDiso	Unconnected	
A22	Unconnected	Unconnected	
B1	Unconnected	66	
B2	Unconnected	61	
B3	GNDiso	56	
B4	Reserved	51	
B5	GNDiso	45	
B6	CH 3 (Output)	40	Open/GND output channel
B7	Reserved	35	
B8	CH 59 (Input)	30	Open/GND input channel
B9	Vcom (CH 48-55)	25	
B10	CH 51 (Output)	19	Open/GND output channel
B11	Reserved	14	
B12	CH 43 (Input)	9	TTL input channel
B13	Vcom (CH 32-39)	4	
B14	CH 35 (Output)	Unconnected	Open/GND output channel
B15	Reserved	Unconnected	
B16	CH 27 (Input)	Unconnected	High Voltage input channel
B17	Vcom (CH 16-23)	Unconnected	
B18	CH 19 (Output)	Unconnected	Open/GND output channel
B19	Reserved	Unconnected	
B20	CH 11 (Input)	Unconnected	High Voltage input channel
B21	Vcom (CH 0-7)	Unconnected	
B22	Unconnected	Unconnected	
C1	Unconnected	65	
C2	Unconnected	60	
C3	Reserved	55	
C4	Reserved	50	
C5	CH 7 (Output)	44	Open/GND output channel

P2 Pin Number	Signal Name	ADE Circular Connector (38999 64-pin Connector) Pin Number	I/O Channel Type
C6	CH 2 (Output)	39	Open/GND output channel
C7	CH 63 (Input)	34	Open/GND input channel
C8	CH 58 (Input)	29	Open/GND input channel
C9	CH 55 (Output)	24	Open/GND output channel
C10	CH 50 (Output)	18	Open/GND output channel
C11	CH 47 (Input)	13	Open/GND input channel
C12	CH 42 (Input)	8	TTL input channel
C13	CH 39 (Output)	3	Open/GND output channel
C14	CH 34 (Output)	Unconnected	Open/GND output channel
C15	CH 31 (Input)	Unconnected	High Voltage input channel
C16	CH 26 (Input)	Unconnected	High Voltage input channel
C17	CH 23 (Output)	Unconnected	Open/GND output channel
C18	CH 18 (Output)	Unconnected	Open/GND output channel
C19	CH 15 (Input)	Unconnected	High Voltage input channel
C20	CH 10 (Input)	Unconnected	High Voltage input channel
C21	Reserved	Unconnected	
C22	Unconnected	Unconnected	
D1	Unconnected	64	
D2	Unconnected	59	
D3	Reserved	54	
D4	Reserved	49	
D5	CH 6 (Output)	43	Open/GND output channel
D6	CH 1 (Output)	38	Open/GND output channel
D7	CH 62 (Input)	33	Open/GND input channel
D8	CH 57 (Input)	28	Open/GND input channel
D9	CH 54 (Output)	23	Open/GND output channel
D10	CH 49 (Output)	17	Open/GND output channel
D11	CH 46 (Input)	12	Open/GND input channel
D12	CH 41 (Input)	7	High Voltage input channel
D13	CH 38 (Output)	2	Open/GND output channel
D14	CH 33 (Output)	Unconnected	Open/GND output channel

P2 Pin Number	Signal Name	ADE Circular Connector (38999 64-pin Connector) Pin Number	I/O Channel Type
D15	CH 30 (Input)	Unconnected	High Voltage input channel
D16	CH 25 (Input)	Unconnected	High Voltage input channel
D17	CH 22 (Output)	Unconnected	Open/GND output channel
D18	CH 17 (Output)	Unconnected	Open/GND output channel
D19	CH 14 (Input)	Unconnected	High Voltage input channel
D20	CH 9 (Input)	Unconnected	High Voltage input channel
D21	Reserved	Unconnected	
D22	Unconnected	Unconnected	
E1	Unconnected	63	
E2	Unconnected	58	
E3	Reserved	53	
E4	Reserved	48	
E5	CH 5 (Output)	42	Open/GND output channel
E6	CH 0 (Output)	37	Open/GND output channel
E7	CH 61 (Input)	32	Open/GND input channel
E8	CH 56 (Input)	27	Open/GND input channel
E9	CH 53 (Output)	22	Open/GND output channel
E10	CH 48 (Output)	16	Open/GND output channel
E11	CH 45 (Input)	11	Open/GND input channel
E12	CH 40 (Input)	6	High Voltage input channel
E13	CH 37 (Output)	1	Open/GND output channel
E14	CH 32 (Output)	Unconnected	Open/GND output channel
E15	CH 29 (Input)	Unconnected	High Voltage input channel
E16	CH 24 (Input)	Unconnected	High Voltage input channel
E17	CH 21 (Output)	Unconnected	Open/GND output channel
E18	CH 16 (Output)	Unconnected	Open/GND output channel
E19	CH 13 (Input)	Unconnected	High Voltage input channel
E20	CH 8 (Input)	Unconnected	High Voltage input channel
E21	Reserved	Unconnected	
E22	Unconnected	Unconnected	

Table 1 : 3U cPCI DIO Board Backplane (P2) Connector Pin Assignments