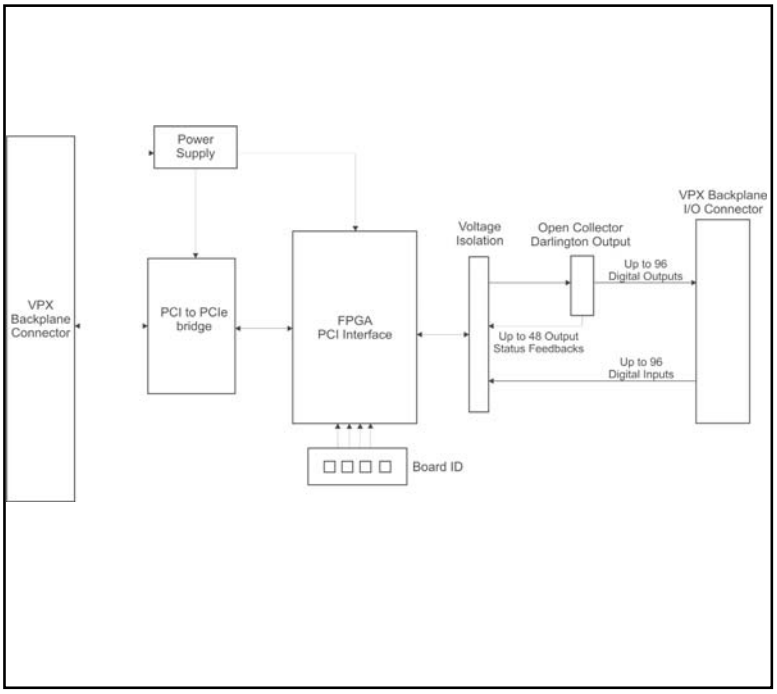
96-Channel Isolated Digital I/O 3U VPX Board

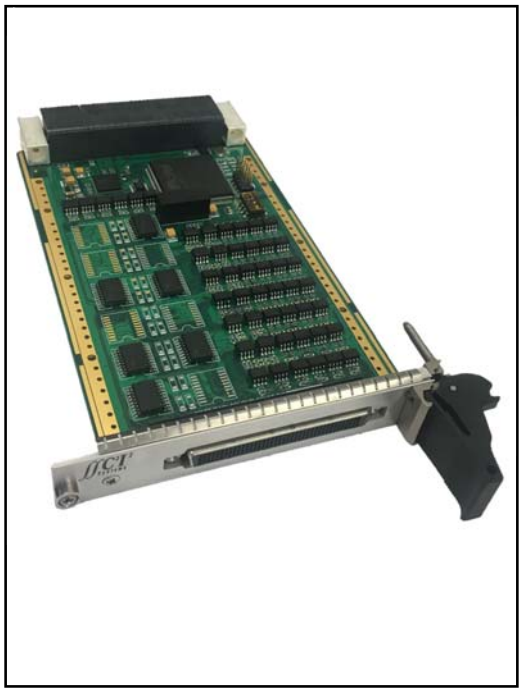
The 96-Channel Digital Input / Output (DIO) Board provides up to 96 opto-isolated digital input and output channels with internal output status feedback on a single 3U VPX board.

All 96 digital channels may be configured at build time as either digital inputs, digital outputs, internal output status feedbacks or as a combination of all three. The high current digital output channels can sink up to 600 mA. A Field-Programmable Gate Array (FPGA) and a PCI to PCIe bridge are used to provide access to the digital data over the PCIe bus.

I/O channel isolation voltage is 2 500 V RMS with 500 V RMS isolation voltage across the VPX backplane connectors.



Block Diagram



Photograph

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Architecture

A FPGA is used to control the output channels and read the input channels as well as providing the PCI interface to the PCIe bridge. LED optocouplers on all inputs and outputs provide 2 500 V RMS isolation and the outputs are driven by high-current optical coupled MOSFETs.

Features

- I/O channel to system voltage isolation
- high number of digital inputs and digital outputs
- high output sink current (up to 600 mA)
- board identification switch
- programmable inputs and outputs
- Commercial, Industrial and Ruggedised grades

VPX Conformance

- VPX (VITA 46)
- OpenVPX™ (VITA 65)
- Slot Type : Peripheral Slot SLT3-PER-1F-14.3.2
- Compatible with Backplane Profile : BKP3-CEN03-15.2.9-3

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Formfactor and Bus Interface	ANSI/VITA 46.0-2007 (R1.2, April 2008), VPX Base Standard ANSI/VITA 46.4-2012, PCI Express on VPX Fabric Connector PCI Express Base 1.0a compliant (1 lane; 2,5 GHz)		
Digital Outputs	up to 96 Channels	Optically-Isolated Open Collector Darlington Transistor	
Digital Inputs	up to 96 Channels	Optically-Isolated DC	
Status Feedbacks	up to 48 Channels		
Standard Build	32 x Digital Input Channels 32 x Digital Output Channels 32 x Output Status Feedback Channels		
Build Options **Option Criteria**	Various combinations of Input, Output and Feedback Channels are available as Build Options. Maximum Total = 96 x Digital Outputs, Digital Inputs and Status Feedbacks in Groups of 8 x Digital Outputs, Digital Inputs and Status Feedbacks		
Voltage Isolation	2 500 V RMS (on I/O channels) 500 V RMS (on VPX backplane connectors)		
Power	3,3 V DC at 0,3 A (1 Watt); 5 V DC at 0,5 A (2,5 Watt)		
Input Resistance	320 Ohm +/- 5%		
MTBF	Figures according to MIL-HDBK-217F, Parts Stress Method		
	Commercial and Industrial Grades	Ground Benign, Controlled, 25 C	1 800 000 hours
	Ruggedised Grade	Ground, Mobile, 45 C Naval, Sheltered, 40 C Airborne, Inhabited Cargo, 55 C	1 400 000 hours 1 200 000 hours 1 000 000 hours
Software Drivers	Support for Linux. VxWorks, Windows and others are costed options.		

Physical Characteristics		
Cooling Type	**Air-Cooled**	**Conduction-Cooled**
Dimensions	100,0 mm x 160,0 mm	100,0 mm x 160,0 mm
Mass	300 g +/- 10 g	350 g +/- 10 g

Environmental Specifications

Grade	Commercial	Extended Industrial	Ruggedised
Temperature			
- Operating	0 C to +55 C	-20 C to +75 C	-40 C to + 85 C
- Storage	-40 C to +85 C	-40 C to +85 C	-55 C to +125 C
Humidity	0% to 90%	0% to 95%	0% to 95%
Shock	10 g peak for 11 ms	20 g peak for 11 ms	40 g peak for 11 ms
Vibration			
- Sine	2 g (peak) at 10 Hz to 100 Hz	5 g (peak) at 5 Hz to 2 kHz	10 g (peak) at 5 Hz to 2 kHz
- Random	0,04 g²/Hz at 15 Hz to 2 kHz	0,06 g²/Hz at 15 Hz to 2 kHz	0,1 g²/Hz at 15 Hz to 2 kHz

Designation	Cooling	Connector	Grade
CCII/DIO/3UVPX/96C2/(BP-FP)/COM	Air	Front Panel and/or Backplane	Commercial
CCII/DIO/3UVPX/96C2/(BP-FP)/IND	Air	Front Panel and/or Backplane	Industrial
CCII/DIO/3UVPX/96C2/(BP-FP)/RGD	Air	Front Panel and/or Backplane	Ruggedised
CCII/DIO/3UVPX/96C2/BP/CC	Conduction	Backplane	Ruggedised

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