DATA PATTERNS

DP-OBC-1122

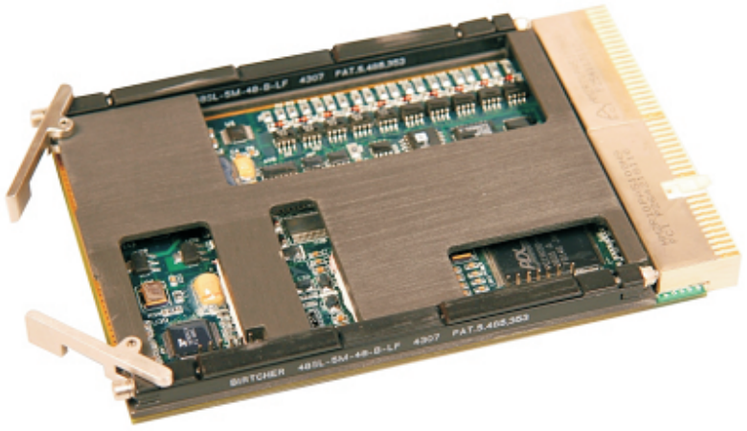
Multi Functional I/O Module

KEY FEATURES AND BENEFITS

- 16-bit analog to digital conversion with 4 differential or 8 single-ended channels
- 16-bit digital to analog conversion with 4 analog output channels
- 2 Transmitter channels and 4 receiver channels of ARINC429 interface
- 3 numbers of RS422 serial ports with isolated receivers
- 1 number of RS232 serial port
- 8 channel opto-isolated differential digital input lines
- 8 channel differential digital output lines
- 2 channels of opto-isolated differential external interrupts
- 32 bit, 33MHz PCI bus interface
- FPGA for on-board logic
- Software support: Vx Works 6.3

APPLICATIONS

- Airborne environment



OVERVIEW

DP-OBC-1122 is a standard 3U cPCI Multi-Functional IO module. This board operates on 32bit, 33MHz PCI bus. The key function of the module is to provide analog IO interface, in addition to the various communication interfaces such as ARINC429, RS422 and Rs232.

It has an ADC, operating with ±10V analog input catering for 8 single ended / 4 differential ended channels and a DAC which provides 4 channels of analog signals with a maximum output voltage of ±10V.

The module also features standard communication channels and general purpose IOs. It has 3 asynchronous RS422 channels and 1 RS232 channel, which supports baud rate up to 115.2 Kbps. T wo channels of ARINC429 transmitters and four channels of ARINC429 receivers are provided. The module has 8 opto-isolated differential digital input channels and 8 differential digital output channels. In addition, the unit has two opto-isolated differential interrupt channels.

INTERFACES

A PCI to local bus bridge is used to interface with the local devices such as UART, ARINC, ADC and DAC. All IO signals are terminated in the rear cPCI J2 connector.

ANALOG TO DIGITAL CONVERSION

This section performs analog to digital conversion with a resolution of 16-bit. ADC block can be configured either as 4 differential channels or 8 single ended channels.

DIGITAL TO ANALOG CONVERSION

This module has 4 analog output channels which provides output in the range of ±10V with 0.01% accuracy . The module uses quad, 16 bit resolution, current output, serial input DAC.

ARINC INTERFACE

The module has 2 ARINC transmitters and 4 ARINC Receivers. The ARINC controller has internal transceivers. The transmit data from the TX FIFO is given as input to the ARINC transmitter. The ARINC line driver translates the CMOS/TTL control inputs to ARINC specified amplitudes. The ARINC line receiver receives the incoming ARINC 429 level inputs and converts it to an ARINC word.

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UART PORTS

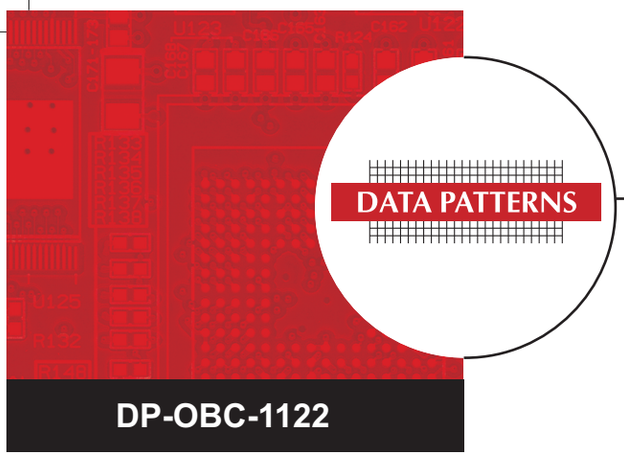
The module provides 3 RS422 serial ports and 1 RS232 serial port. Quad UART controller is used for the interface of RS232 and RS422 channels. The transmit signals from the RS422 channels are fed to the RS422 level transfer buffer, while the receiver signals are obtained from the opto-coupler. The transmit and receive signals from the RS232 channel are fed to the RS232 level transfer buffer.

DIGITAL INPUTS/OUTPUTS

The module has 8 channels of Digital Inputs, 8 channels of Digital Outputs and 2 channels of Digital Interrupts. The digital output data is written through registers implemented in the control logic section. This data passes through the RS422 buffer, which converts the single ended signals to differential signal. The 8 channels of Digital inputs and 2 channels of Digital Interrupts are obtained via opto couplers to provide electrical isolation.

SOFTWARE SUPPORT

The module is supplied complete with device drivers in Vx Works 6.3. Please contact factory for support in any other operating system such as Windows 2000, RT Linux, QNX, INTime, Lynx etc.



DP-OBC-1122

SPECIFICATIONS

ANALOG INPUTS

No. of channels	4 differential / 8 single ended
Resolution	16 bit
Accuracy	0.02% of full scale with calibration
Input range of A/D converter	±10V
Input impedance	>1 MO Input protection
Input protection	±42V

ANALOG OUTPUTS

No. of channels	4 Output voltage
±10V (max)	
Output drive current	±20mA / channel
Output accuracy	0.01% of full scale with calibration
Output resolution	16-bit
Reference voltage	On-board or external reference

DIGITAL INPUTS
Opto-isolated Differential Receiver

No. of channels	8
Input high voltage range	1.8V to 12V
Input low voltage range	0V to 0.8V
Input current	1.0mA (min)
Reverse voltage	6V

DIGITAL OUTPUTS
Differential Driver

No. of channels	8
Differential output voltage range	2 to 6V
Common mode output voltage	2.5V
Driver current	25mA

ARINC429
T ransmitter

No. of channels	2
Data rate	12.5 Kbps or 100 Kbps (Software selectable)
Word length	32-bit
Standard Output level	10V±1V tolerance

Receiver

No. of channels	4
Data rate	12.5 Kbps or 100 Kbps (Software selectable)
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Word length	32-bit
Label mode selection	0 to 255 labels
Standard Input level	±6.5 to ±13VDC

POWER

Typical power	4.95W
Maximum power	7.79W

RS422 INTERFACE
RS422 driver

Number of channels	3
Differential output voltage range	2 to 5V
Common mode output voltage	2.5V (typical)
Driver current	25mA
Baud rate	Up to 115.2 Kbps

Opto-isolated Differential RS422 Receiver

No. of channels	3
Differential input voltage range	1.3V to 12V
Input current	10mA (min)

RS232 INTERFACE
RS232 Driver

No. of channels	1
Output voltage range	± 5.4V
Driver current	60mA
Baud rate	Up to 115.2 Kbps

RS232 Receiverr

No. of channels	1
Output voltage range	± 1.3V to 12V
Driver current	10mA (typical)

DIGITAL INTERRUPTS
Opto-isolated Differential Receiver

No. of channels	2
Input high voltage range	1.8V to 12V
Input low voltage range	0V to 0.8V
Input current	1.0mA (min)
Reverse voltage	6V

DIMENSIONS 100±0.2mm(L)x140±0.2mm(B)x1.6±0.2mm(W)

TYPE Standard 33MHz 32 bit 3U cPCI board

ENVIRONMENT Rugged version

ORDERING INFORMATION

DP - OBC - 1122 - 6 0 0

- 0 - Factory options specified based on applications
- 0 - 100 ±0.2mm (L)x140 ±0.2mm (B)x1.6±0.2mm (W)
- 3 - 100 ±0.2mm (L)x160 ±0.2mm (B)x1.6±0.2mm (W)
- 6 – Rugged Version

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BLOCK DIAGRAM OF DP-OBC-1122