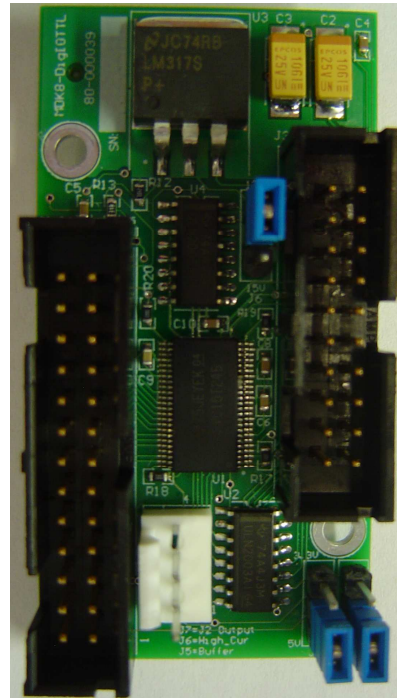


FEATURES

- MDK-8 Interface Form Factor
- 9 Buffered Digital Outputs
 - 6 Low Speed (< 5 us)
 - 3 High Speed (<20 ns)
 - 5V or 3.3V Selectable (J5)
- 9 High Current Digital Outputs
 - 6 Low Speed (< 5 us)
 - 3 High Speed (<20 ns)
 - 12V, 15V or User Input Selectable (J6)
 - Max 500mA/channel (Note 1)
- 9 Digital Inputs
 - 6 Low Speed (< 5 us)
 - 3 High Speed (<20 ns) (Note 2)
 - 3.3V to 24V Max Input Level
- 2 Input/Outputs
 - Suitable for I2C Interfaces
 - 1 Mbps Data/Clock Rate



APPLICATIONS

- External Hardware Interfacing
- Embedded Instrumentation

DESCRIPTION

The MDK8-DigiIOTTL card provides digital input/output interface circuitry in the MityDSP Development Kit 8 (MDK-8) series form factor. The MDK8-DigiIOTTL is compatible with the MityDSP hardware and software development kit API. Refer to the User's Manual provided with the libraries for further information.

A block diagram of the MDK8-DigiIOTTL card is illustrated in Figure 1.

Note 1: When using the high current outputs three options exist for voltage levels to be used (Table 4). By setting J6 either 12V, 15V or some voltage provided outside of the board can be used. When using the 12V level a total max of 700mA (500mA per channel) can be drawn from the 9 high current outputs. In 15V mode a total of 2A can be drawn (500mA per channel) from the nine high current outputs. If the user voltage mode is chosen (removing J6's jumper) the desired voltage (up to 30V) can be applied to the voltage pins on J3 and the current limit is based upon the user's power source.

Note 2: A maximum of three extra digital outputs are available through the use of the 3 high speed digital inputs (J2 pins 2, 3 and 4). The outputs can drive ~2mA when used and are based on 3.3V levels.

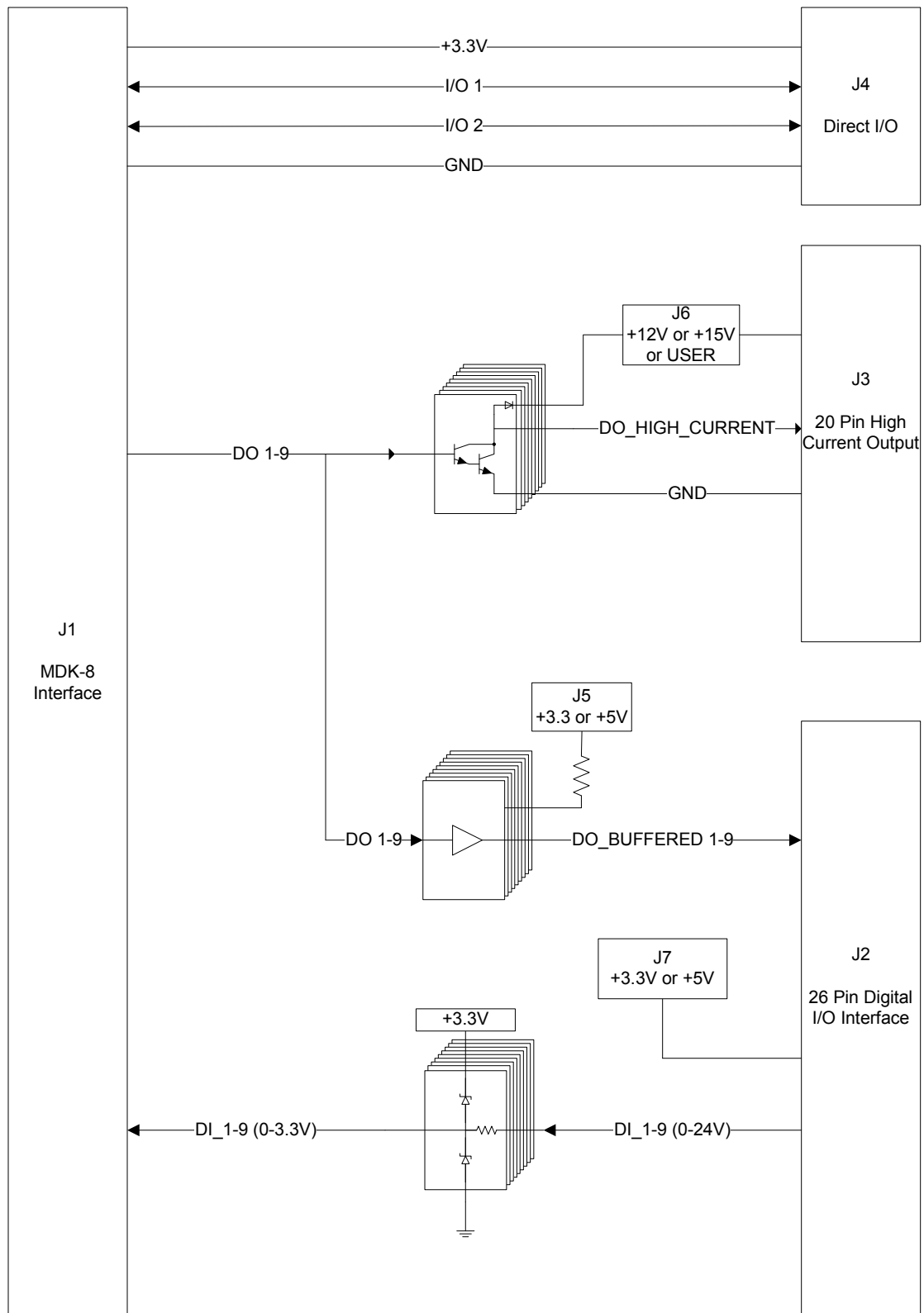


Figure 1 MDK8-DigIOISO Block Diagram

ABSOLUTE MAXIMUM RATINGS

If Military/Aerospace specified cards are required, please contact the Critical Link Sales Office or unit Distributors for availability and specifications.

Storage Temperature Range	-65 to 80C
Shock, Z-Axis	±10 g
Shock, X/Y-Axis	±10 g

OPERATING CONDITIONS

Ambient Temperature Range	0 to 55C
Humidity	0 to 95% Non-condensing
Vibration, Z-Axis	TBS
Vibration, X/Y-Axis	TBS

ELECTRICAL CHARACTERISTICS

Symbol	Parameter	Conditions	Typical	Limit	Units (Limits)
Ihigh current, max	High Current output max per channel	Any Voltage		500	mA
Ihigh current, max	High Current output max total	12V High Cur Supply		700	mA
Ihigh current, max		15V High Cur Supply		2.0	A
Vin-high, max	Maximum high voltage level on digital input			24	V
Vin-high, min	Minimum high voltage level on digital input			3.3	V
Vin, High Current Max	Maximum voltage for high current outputs			30	V

MDK-8 Socket Interface Description

The bottom connector of the MDK-DigiIOTTL card uses the required Hirose FX6-50P-0.8SV 50 position socket. The pin assignments for the card are listed in

Table 1.

Table 1 MDK-8 Connector Pin Assignments

Pin	Signal	I/O	Pin	Signal	I/O
A1	DO_HS_1	Out	B1	+5 V	-
A2	DO_HS_2	Out	B2	+5 V	-
A3	DO_HS_3	Out	B3	+3.3 V	-
A4	DIO_HS_1	In	B4	+3.3 V	-
A5	DIO_HS_2	In	B5	+12 VA	-
A6	DIO_HS_3	In	B6	GND	-
A7	IO_1	In/Out	B7	GND	-
A8	IO_2	In/Out	B8	GND	-
A9	DO_LS_1	Out	B9	-12 VA	-
A10	DO_LS_2	Out	B10	+15 V	-
A11	DO_LS_3	Out	B11	+15 V	-
A12	DO_LS_4	Out	B12	-15 V	-
A13	DO_LS_5	Out	B13	-15 V	-
A14	DO_LS_6	Out	B14	AGND	-
A15	Not Used	-	B15	AGND	-
A16	DI_LS_1	In	B16	CLKOUT	-
A17	DI_LS_2	In	B17	Not Used	-
A18	DI_LS_3	In	B18	Not Used	-
A19	DI_LS_4	In	B19	Not Used	-
A20	DI_LS_5	In	B20	Not Used	-
A21	DI_LS_6	In	B21	Not Used	-
A22	Not Used	-	B22	Not Used	-
A23	Not Used	-	B23	Not Used	-
A24	Not Used	-	B24	Not Used	-
A25	Not Used	-	B25	Not Used	-

Jumpers

There are three sets of jumpers to set voltages on the DigIOTTTL board. They are J5, J6 and J7. J5 controls the voltage level of all nine (9) of the buffered outputs. J6 controls the voltage level of Pin 11 on the 26 pin header (J2). J7 controls the voltage level of all nine (9) of the high current outputs.

Table 2 Voltage Jumpers

Jumper	Pin 1	Pin 2	Pin 3	Result
J5	ON	ON	OFF	+5V Buffer Output
	OFF	ON	ON	+3.3V Buffer Output
	OFF	OFF	OFF	Buffer Output Disabled
J6	ON	ON	OFF	+15V High Current
	OFF	ON	ON	+12V High Current
	OFF	OFF	OFF	User Inputted Voltage
J7	ON	ON	OFF	+5V J2-Pin 11
	OFF	ON	ON	+3.3V J2-Pin 11
	OFF	OFF	OFF	No voltage on J2-Pin 11

Digital Interface Description

The digital interface to the MDK-DigIOTTTL card uses a dual row AMP 26 pin connector (J2 – Table 3) and dual row AMP 20 pin connector (J3 - Table 4) on standard 0.100 inch spacing. AMP Ribbon Cable connectors (1658621-6/4 or equivalent) should be used with interface cables.

Also there is a 4 pin single row Molex header (J4) on standard 0.100 inch spacing for the I/O signals (Table 5). A Molex 22-01-2047 (or equivalent) mating connector should be used to interface with it.

Table 3 J2 Pin Assignments

Pin	Signal	I/O	Pin	Signal	I/O
1	GND	-	2	DIO_HS_1_USER	In/Out
3	DIO_HS_2_USER	In/Out	4	DIO_HS_3_USER	In/Out
5	DI_LS_1_USER	In	6	DI_LS_2_USER	In
7	DI_LS_3_USER	In	8	DI_LS_4_USER	In
9	DI_LS_5_USER	In	10	DI_LS_6_USER	In
11	+5V/+3/3V	-	12	DO_HS_1_BUFFER	Out
13	DO_HS_2_BUFFER	Out	14	DO_HS_3_BUFFER	Out
15	DO_LS_1_BUFFER	Out	16	GND	-
17	DO_LS_2_BUFFER	Out	18	GND	-
19	DO_LS_3_BUFFER	Out	20	GND	-
21	DO_LS_4_BUFFER	Out	22	GND	-
23	DO_LS_5_BUFFER	Out	24	GND	-
25	DO_LS_6_BUFFER	Out	26	GND	-

Table 4 J3 Pin Assignments

Pin	Signal	I/O	Pin	Signal	I/O
1	DO_HS_1_HIGH_CURR	Out	2	HIGH_CURRENT_SUPPLY	-
3	DO_HS_2_HIGH_CURR	Out	4	HIGH_CURRENT_SUPPLY	-
5	DO_HS_3_HIGH_CURR	Out	6	HIGH_CURRENT_SUPPLY	-
7	DO_LS_1_HIGH_CURR	Out	8	HIGH_CURRENT_SUPPLY	-
9	DO_LS_1_HIGH_CURR	Out	10	HIGH_CURRENT_SUPPLY	-
11	DO_LS_1_HIGH_CURR	Out	12	HIGH_CURRENT_SUPPLY	-
13	DO_LS_1_HIGH_CURR	Out	14	HIGH_CURRENT_SUPPLY	-
15	DO_LS_1_HIGH_CURR	Out	16	HIGH_CURRENT_SUPPLY	-
17	DO_LS_1_HIGH_CURR	Out	18	HIGH_CURRENT_SUPPLY	-
19	GND	-	20	GND	-

Table 5 J4 Pin Assignments

Pin	Signal	I/O	Pin	Signal	I/O
1	+3.3V	-	2	IO_1	In/Out
3	IO_2	In/Out	4	GND	-

Software API and Supported Modes

The MityDSP software and firmware development kit includes a core interface and C++ API for interfacing to general purpose I/O (GPIO). Refer to the MDK Software User's Guide for more information. Users may also modify the FPGA and software in order to implement hard real-time or system synchronous signals as required.