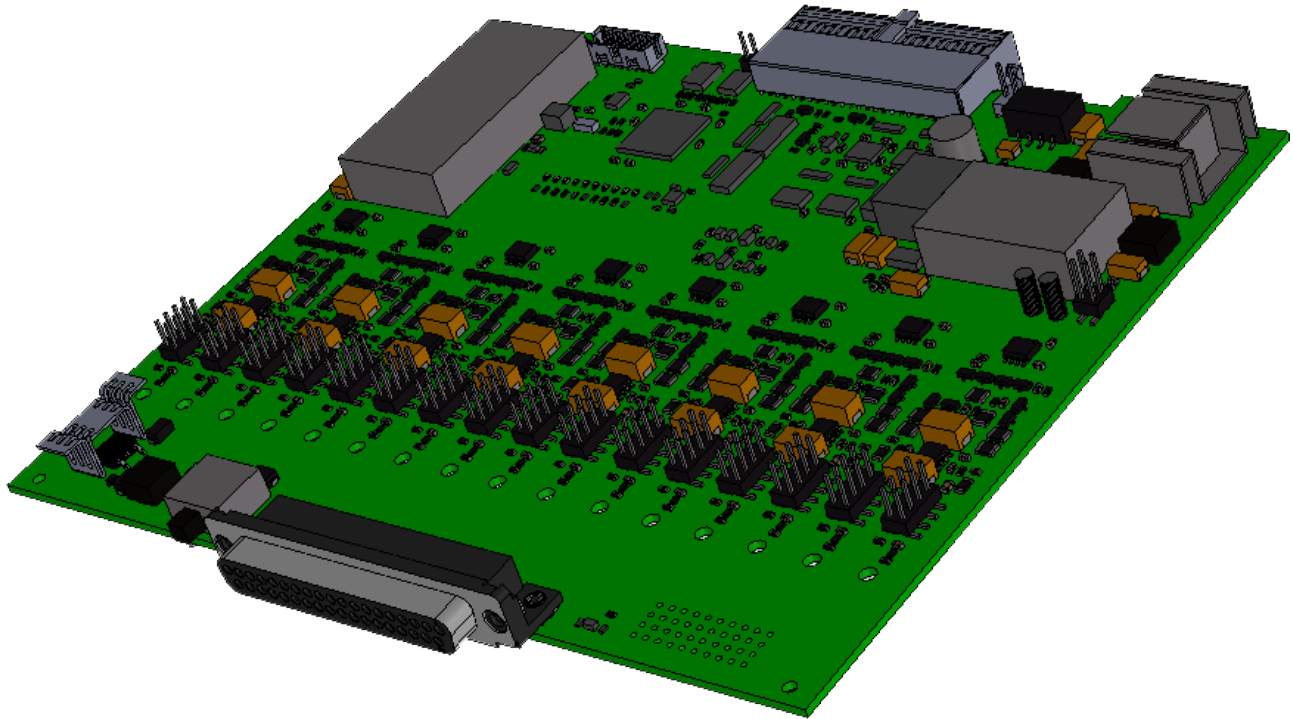




OPAL-RT



OP7817 User Manual

Optically Isolated 16 Digital
Outputs Module

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OP7817 16 DOUT SIGNAL CONDITIONING MODULE

DESCRIPTION

The OP7817 provides 16 push-pull digital output signals with specific voltage conditioning. All outputs are updated individually by the OP7000 FPGA outputs with a maximum time delay of less than 75 nanoseconds.

FEATURES

- 16 opto-isolated output channels.
- All channels are controlled individually by the FPGA with a resolution of 10 nanoseconds and a maximum delay of 75 nanoseconds.
- All outputs support voltage up to 30V and the output current is up to 100mA in push-pull mode.

INSTALLATION

The OP7817 digital output signal conditioning module must be inserted into the back of the OP7000 simulator, making sure that the board is properly aligned, using the guide tracks, before pressing into place.

Make sure that the board is in the appropriate slot, considering the model and bitstream loaded in the FPGA. An optional signal monitoring board can be connected in the front of the simulator (see the OP7000 User Manual for details).

MODULE IDENTIFICATION AND INITIALISATION

The I2C communication link allows the FPGA to recognize the slot into which the board is inserted and what type of board is inserted (digital in, digital out, analog in, analog out, etc.).

The diagram below illustrates the circuit.

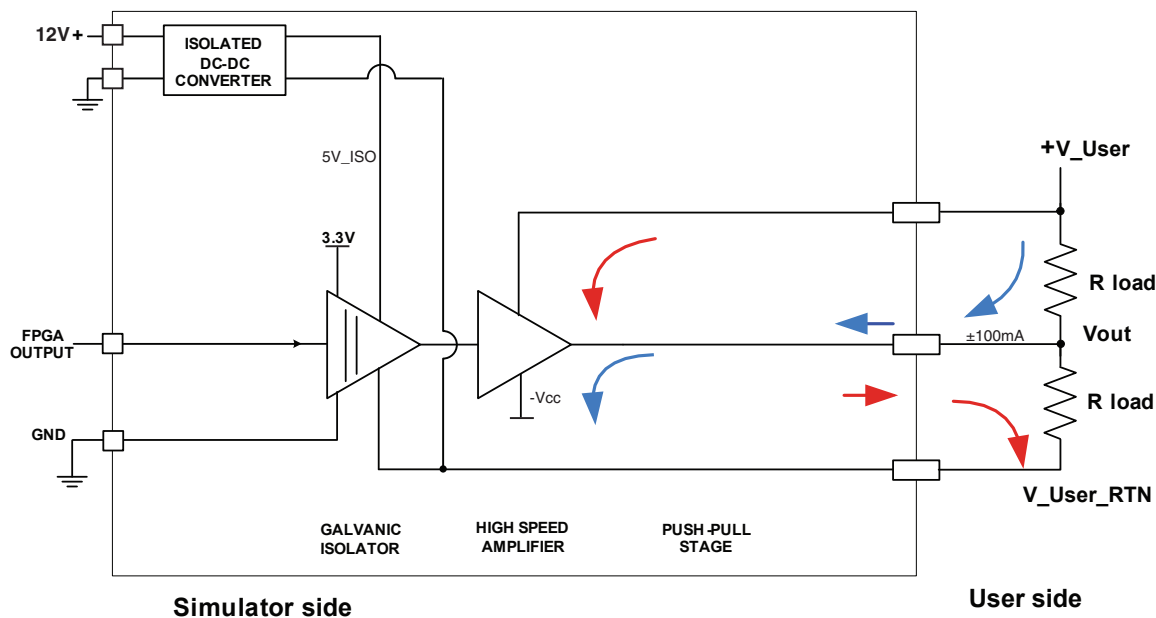


Figure 1: Typical Push-Pull circuit diagram

CIRCUIT BOARD LAYOUT DIAGRAMS

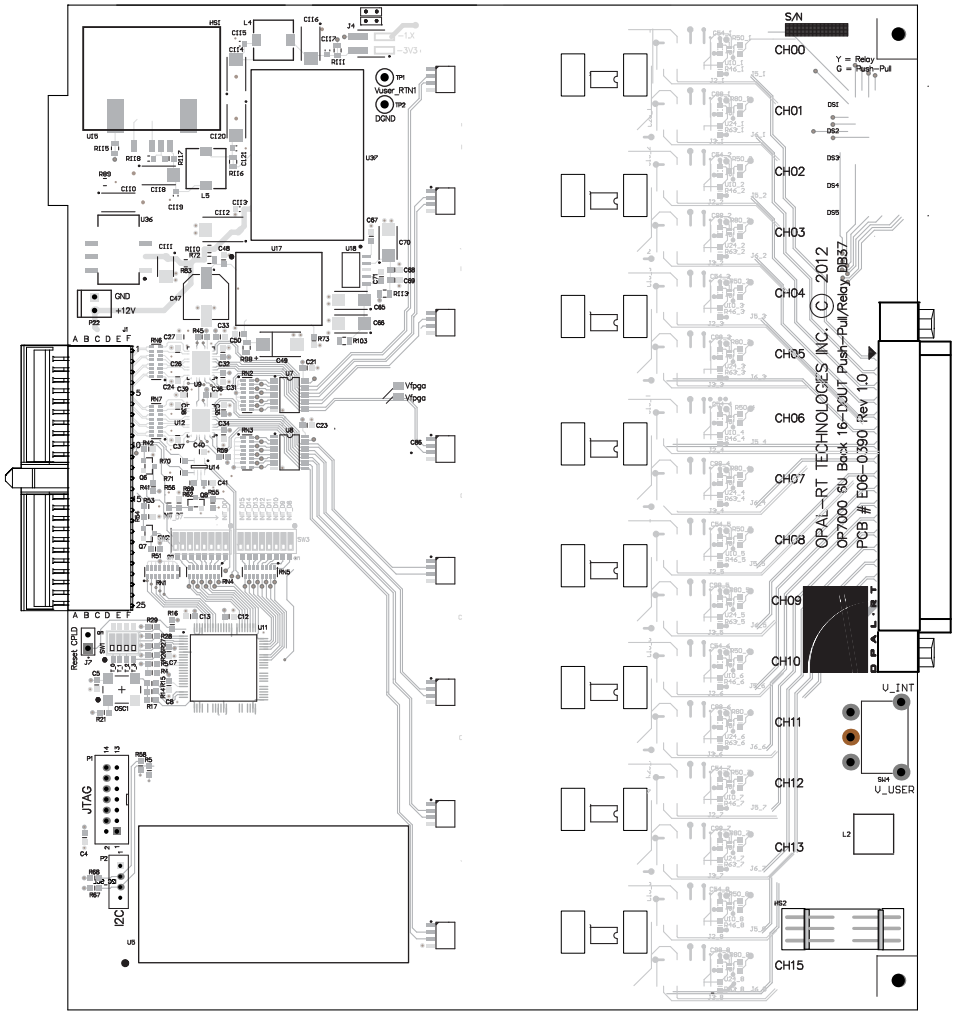


Figure 2: OP7817 Digital Signal Conditioning Module

OP7817 PIN ASSIGNMENTS

DB37 CONNECTOR

DB37 Connector	Channel	DB37 Connector	Channel
1	+IN00	20	-IN00
2	+IN01	21	-IN01
3	+IN02	22	-IN02
4	+IN03	23	-IN03
5	+IN04	24	-IN04
6	+IN05	25	-IN05
7	+IN06	26	-IN06
8	+IN07	27	-IN07
9	+IN08	28	-IN08
10	+IN09	29	-IN09
11	+IN10	30	-IN10
12	+IN11	31	-IN11
13	+IN12	32	-IN12
14	+IN13	33	-IN13
15	+IN14	34	-IN14
16	+IN15	35	-IN15
17		36	
18		37	
19			

GENERAL SPECIFICATIONS

Product name	OP7817
Part number	126-0390
Product type	OP7000 back 16 Dout push-pull
Number of channels	16 digital outputs
Isolation	opto-isolator
Output Current max	±100 mA continuous (shared between 2 consecutive outputs, see opposite)
Output Protection	Reverse Bat/Overvoltage protection (33V)/short-circuit protection
Output Voltage range	3.3V to 30 Vdc
Vuser (external)	5 Vdc to 30 Vdc
Delay Low-to-High	65 ns (with 500Ω load)
Delay High-to-Low	65 ns (with 500Ω load)
Rise/Fall times	50 ns (with 500Ω load)
Bandwidth	500 kHz
Dimensions	18.8 x 16.4 cm (7.4 in x 6.46 in)
I/O connector	DB37 (in from client side) per board
Operating temperature	10 to 40 °C (50 to 104°F)
Storage temperature	-55 to 85°C (-67 to 185°F)
Relative humidity	10 to 90%, non condensing
Maximum altitude	2,000 m (6562 ft.)

ELECTRICAL SPECIFICATIONS

The measurements provided below are for typical Vuser, but the board can also operate between the specified ranges.

5 V Option

5 Vuser	Conditions	MINIMUM	TYPICAL	MAXIMUM	UNITS	MODE
High Level	RL (1 kohm)	3	3.4		VDC	Pull Down
	Iout source max* 80 mA	2.2	2.8		VDC	
Low Level	Iout sink max* 80 mA			0.2	VDC	Pull Up

12 V Option

12 Vuser	Conditions	MINIMUM	TYPICAL	MAXIMUM	UNITS	MODE
High Level	RL (1 kohm)	10	10.4		VDC	Pull Down
	Iout source max* 100 mA	8.4	9.4		VDC	
Low Level	Iout sink max* 100mA			0.2	VDC	Pull Up

24 V Option

24 Vuser	Conditions	MINIMUM	TYPICAL	MAXIMUM	UNITS	MODE
High Level	RL (1 kohm)	21.7	22.4		VDC	Pull Down
	Iout source max* 100 mA	20.4	21.4		VDC	
Low Level	Iout sink max* 100mA			0.2	VDC	Pull Up

*One current shared on the same chip that supplies 2 channels, therefore it represents the maximum current for 2 Dout. For example, 100mA shared between 2 channels could be distributed as follows:

- Dout 1 and Dout 2 at 50mA each
- Dout 1 at 80mA and Dout 2 at 20mA
- Dout 1 at 0mA and Dout 2 at 100mA

The eight (8) chips on the OP7817 board each supply two channels, as shown:

- Channels 0 and 1
- Channels 2 and 3
- Channels 4 and 5
- Channels 6 and 7
- Channels 8 and 9
- Channels 10 and 11
- Channels 12 and 13
- Channels 14 and 15



Dout high levels may only be adjusted to suit desired user high level IF the application has a variable vuser.

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This publication is not intended to form the basis of a contract.



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