

MAP Digital Out Guide

For the Multichannel Acquisition Processor (MAP)
Data Acquisition System



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Documentation History

Date	Version	Notes	Author
April 2013	v1.3	- Minor updates and applied new branding. - Reformatted document to current branding guidelines.	Yolanda Rowe
February 2012	v1.2	- Added notes on unit C and D output.	Chris Heydrick
September 2010	v1.1	- Added Digital Output latency information.	Chris Heydrick
June 2010	v1.0	- Initial creation of Digital Output overview document.	Chris Heydrick

Introduction

This guide provides the hardware components, Digital Out (DO) pinout instructions and software component information for the Multichannel Acquisition Processor (MAP) Data Acquisition System. The DO board is a 34-pin daughter-board to the MAP digital signal processing (DSP) board. The DO board autonomously outputs TTL pulses for the units sorted on a channel range determined by where the DO board is positioned.

Hardware Components

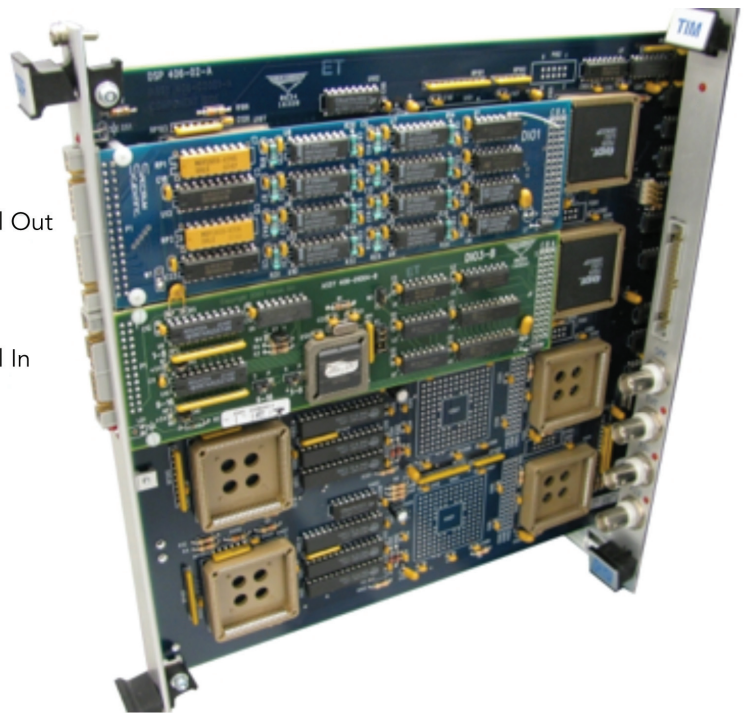
Each DSP board has up to four DSP chips, and each DSP chip handles 8 channels of spike data for a total of 32 channels. The DSP chips are arranged vertically on the DSP board and have mounts for daughter-boards such as the DO and Digital Input (DI). There is only room for one daughter-board per chip position — you cannot have a DO board for channels 1 – 8 if there is a DI board occupying the topmost DSP chip.

For each channel on the DO board, there is a pin that shares output for unit A and unit C, and a pin that shares output for unit B and unit D.

When a sorted unit is detected on a channel that has a DO board, a TTL pulse is output on the pin respective to the channel and unit.

Digital Out

Digital In



Digital Out Pinout

A DO board can be placed in any position with a DSP chip that is not occupied by another DO or DI board.

Chan 1 Unit B & D	1 ○ 2 ○	GND
Chan 1 Unit B & D	3 ○ 4 ○	GND
Chan 2 Unit A & C	5 ○ 6 ○	GND
Chan 2 Unit B & D	7 ○ 8 ○	GND
Chan 1 Unit A & C	9 ○ 10 ○	GND
Chan 2 Unit B & D	11 ○ 12 ○	GND
Chan 1 Unit A & C	13 ○ 14 ○	GND
Chan 2 Unit B & D	15 ○ 16 ○	GND
Chan 1 Unit A & C	17 ○ 18 ○	GND
Chan 2 Unit B & D	19 ○ 20 ○	GND
Chan 1 Unit A & C	21 ○ 22 ○	GND
Chan 2 Unit B & D	23 ○ 24 ○	GND
Chan 1 Unit A & C	26 ○ 27 ○	GND
Chan 2 Unit B & D	28 ○ 29 ○	GND
Chan 1 Unit A & C	30 ○ 31 ○	GND
Chan 2 Unit B & D	32 ○ 32 ○	GND
NC	33 ○ 34 ○	GND

The illustration to the left details the DO board pinout. This pinout is true when the DO board is on the topmost position (channels 1 – 8). Adjust channel ranges accordingly for other positions

DI boards are available in configurations that send a 220µS pulse or a 330µS pulse.

Software Components

There is no software configuration required to make the DO board function. It simply outputs pulses for the first two units on each channel on its respective channel range (DSP slot). All that is required is sorting units in SortClient on a channel that has a DO board available.

The latency between when a unit is sorted on the DSP board and a pulse being generated in the DO board is dependent on the DSP chip load. At the absolute minimum, a TTL pulse will be sent after the window width of the spike (default is 800µS) and three clock tics (120µS). Under heavy load however (lots of spikes being sorted at once) this could increase to slightly over a millisecond.

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