NidaqServer

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July 11, 2017

1 Introduction

Digital Input/Output capabilities of certain I/O cards from National Instruments. Currently supported devices are: PCI-6221 (Fries lab) and PCI-6503 (Singer lab). Both cards provide 3 digital ports each representing 8 digital lines.

There is a Matlab class that provides most of the fuctionality from within Matlab.

2 Subsystems

2.1 Reward

There are two mechanisms to drive the reward line (`port2/line3`).

1. auto reset event named `Reward`. Whenever this event is set to the signaled state, the server generates a pulse of a given length at the output line. The default duration is 100 ms. It can be changed though a pipe command. After connecting to the `kernel32` event:

   ```
   reward = IPCEvent('Reward');
   ```

   you may generate a reward pulse by setting the event to the signaled state:

   ```
   reward.trigger();
   ```

2. Send a command to the server defining a sequence of up to 8 output pulses (and the time intervals between them).

At the end of a reward pulse or sequence the server (starting with version 1.0.4.0) sets the `kernel32` auto reset event `RewardDone` to the signaled state. You may use this event to wait for the end of the reward signal.

2.2 Event Markers

`port0` and `port1` are used to output 16 bits of event marker information. The marker value is supplied to the server through a pipe command. The output lines are strobed with a positive pulse on `port2/line7` (PCI-6221) or `port2/line0` (PCI-6503) respectively.

2.3 Digital Input Events (Lever etc.)

Not documented yet.