

Technote 160--TDT Software Benchmarks for High Sampling Rates

BioSig32

Methods

Benchmark tests were made with DA3-4 and AD2. AP2 with 128k SRAM and 8 MB DRAM. 40 ms signal was played at a rate of 10/s. The acquisition buffer was 40 ms in duration. A few tests with different length signals and acquisition buffers did not deviate very much from these results. For the given D/A sample rates, the maximum A/D sample rate was determined in 10 μ s steps.

How to check your signal

When these specifications are exceeded the DA converter will not play out the signal properly. The signal data may be corrupted and or randomly delayed many ms. This is readily apparent on an oscilloscope or in the raw A/D window in the multiplot (if you connect the D/A ch 1 output directly to A/D ch1 input). If you will be using sample rates less than 5 us, you should check that your signal is properly played.

1 channel D/A	Maximum AD2 Sample Period 1 Channel
4.0 μ s	110 μ s
4.2	100
4.4	90
4.6	60
4.8	40
5.0	20

1 channel D/A	Maximum AD2 Sample Period 2 Channels
4.0 μ s	220 μ s
4.2	200
4.4	160
4.6	150
4.8	60
5.0	20

1 channel D/A	Maximum AD2 Sample Period 4 Channels
4.0 μ s	380 μ s
4.2	380
4.4	320
4.6	150
4.8	80
5.0	40

2 channel D/A (simultaneous)	Maximum AD2 Sample Period 1 Channel
8 μ s	100 μ s
10	10

Note: The maximum sampling rate for the DA1 is 170 kHz (5.92 us sample period).

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1 Channel DA3-2 (sample period)	Max # Channels A/D (at default of 25 kHz/channel)
4.0 μ s	4 Chan max
2.0 μ s	1 Chan max

2 Channels DA3-2	Max # Channels A/D (at default of 25 kHz/channel)
5.0 μ s/ch	1 Chan max
8.0 μ s/ch	3 Chan max
10.0 μ s/ch	4 Chan max

1 Channel DA1	Max # Channels A/D (at default of 25 kHz/channel)
5.92 μ s	4 Chan max

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Configuration	Max sample rate
1 ch DA3	3.0 μ s
2 ch DA3	5.0 μ s
1 ch DA1	5.92 μ s
2 ch DA1	5.92 μ s