

Application Note MPA-3

Throughput Performance



MPA-3 throughput performance

The MPA-3 Multiparameter System is capable of accepting burst data at up to 6.000.000 16-bit datawords/second.

Typically 16-bit digital data originating from ADC's, TDC's or other front-ends can be stored in the FIFO memory of the MPA-3 system.

The data will then be transferred to the PC via a PCI interface card.

The PCI-bus is presently one of the fastest means to transfer data from external devices to the RAM-memory of the PC.

It depends very much on the PC used, the operating system, other programs operating on the PC, the type of frontend, the shape of the input pulse etc. what final throughput performance you can achieve. Also the processing priority settings are of outmost importance. The priority setting in WIN2000 of the MPA3EXE has to be set to **realtime**, while the MPANT should be set to **normal**. The exception is for direct storage of list data on HDD where you should leave all priorities at **normal**.

The data shown below was taken with a 1 GHz Pentium III and a dual 1 GHz processor Pentium III. The input pulses to the FAST ComTec 7072 ADCs had a rise time of approx. 100 ns and a fall time of 600 ns.

There are much faster processors around these days and even faster ones will be announced soon. It is possible that the new Pentium IV processors will further

improve the throughput. The same applies for the HDD's - since the performance data was acquired the industry has announced new generation HDD's with improved data throughput. We recommend IDE HDD arrays (RAID) which offer a far better performance at an insignificant increase in the cost for the RAID controller.

The list data to RAM memory storage shown in the chart indicates the throughput for histogramming in the RAM memory of the PC in single and coincident data acquisition mode.

The list data storage to HDD performance shown in the chart below was generated by a RAID system with two IDE HDD's.

The MPA-3 system is delivered with a PCI-card with a 4k FIFO data buffer. For increased data throughput in PCs with low performance processors a special version of the PCI-card is available that offers increased FIFO capacity (16 k).

FAST ComTec can quote complete systems with all components installed and tested in our factory prior to shipment.

Ordering Information:

Model 16k FIFO option, Order No. MP3F01

MPA-3 Throughput	Dual Param.	4 ADC System	8 ADC System	16 ADC System
Systems configured with WIN2000		Processor: Intel Pentium III, 1 GHz		Single or Dual Pentium III, 1 GHz
Storage of ADC conversions/sec without loss of data				
List data to RAM memory				
4k FIFO (standard)				
coincidence	1.120.000	2.100.000	3.500.000	3.500.000
singles	1.400.000	2.600.000	4.600.000	5.400.000
16k FIFO (option)				
coincidence	1.120.000	2.100.000	3.500.000	3.500.000
singles	1.400.000	2.600.000	4.600.000	5.400.000
List data to HDD IDE (singles)				
RAID Controller with two IDE HDDs	1.300.000	2.600.000	3.000.000	3.000.000
Loss of data < 5%	1.300.000	2.600.000	4.500.000	4.500.000

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