

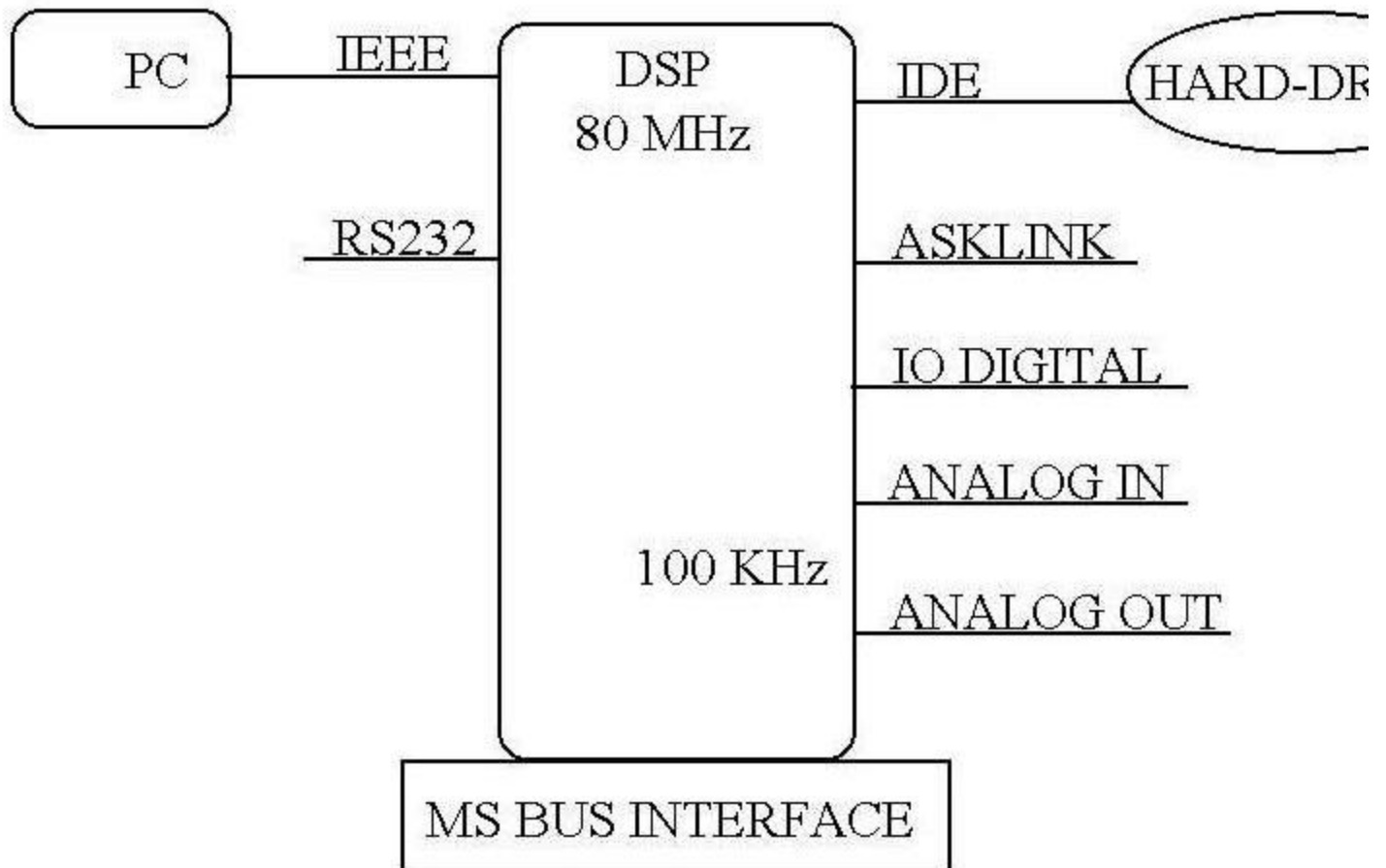
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MSTATION - Pittcon 2002 Poster -

MStation * data acquisition system (DACQ) brings new possibilities to the users of old HP mass spectrometers. MStation was used to replace the SmarCard and part of the ChemStation software to interface a 5970. The 597x is a reliable instrument, making it better with few modifications is not so difficult.



MStation Hardware Synopsis

Increased bandwidth - Faster GC

The MStation is designed to be fully independent of the PC. The acquisition software will not slow down or stop even in the case of a PC crash. MStation uses its own hard-drive to store the data to insure no delay while scanning the mass spectrometer. At full acquisition speed the system can record profile spectra over the entire mass range without slowing down.

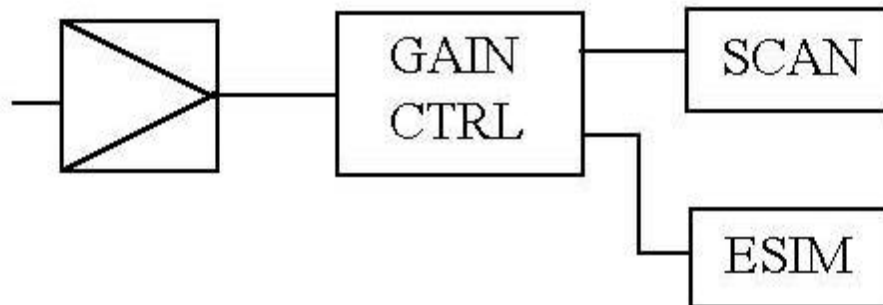
Better mass identification

The increased bandwidth allows the scanning of spectra with a resolution of 20 points / mass (With original 5970 Quad Driver). However the increased scan speed needed when doing fast GC could modify

the position of a peak. To correct this problem the calibration software is designed to handle the calibration of up to 16 ions. Like what is done on a magnetic instrument (Free scan), the calibration algorithm uses Time to reference a peak instead of voltage. The result is better mass assignment.

Increased sensitivity

The replacement of the Smartcard allowed us to change the signal path. We changed both the Detector board and logarithmic amplifier on our 5970. Our electrometer was designed using today's technology the analog converter is positioned close to signal's source to reduce noise. The fast conversion time of the ADC can be used for either faster scan speed or signal averaging. The electrometer circuitry allows the selection of the amplifier sensitivity (By increment up to 25 Times the sensitivity of the Log amp). A special configuration of the electrometer is used to increase the dynamic of the measure when performing SIM (Patent pending).



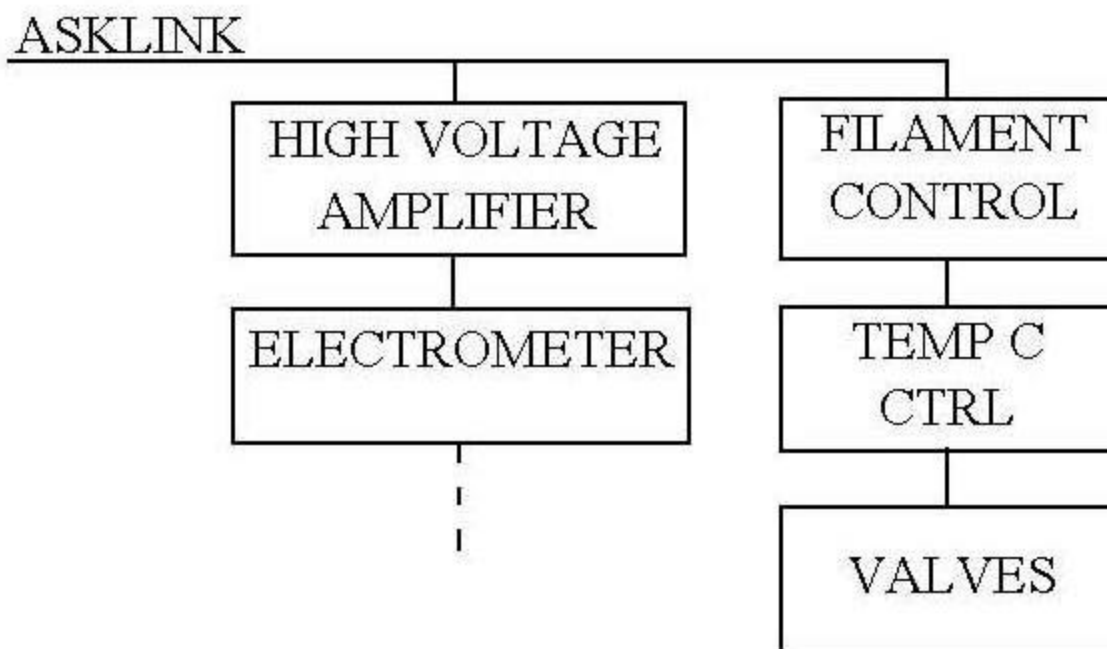
Electrometer's configuration

Multiple Experiments

The ability to perform both SIM & Scan / Profile during the course of an analysis can make the detection of Semi-volatile, Pesticides ... an easier task. (Request application note : [Enhanced Simultaneous Total Ion and Selective Multi-Ion GC/MS Using a Combination of New Software and Low-Bleed Columns](#)). This functionality comes from MS/MS instrument, which can mix scan functions (Daughter & Parent) within one injection. What about using two 5970 to build a low cost MS/MS . MStation is MS/MS ready.

ASKLink

The MStation DACQ board is equipped with a fast serial link (ASKLink) which is used to control additional functions like Temps control, Valves control, Lenses, [Vacuum Diffusion System Controller](#), [TC gauge](#)... These functions can be modify or new one designed to fit special application or experiment.



ASKLINK - Subsystem Controllers

Easier software development tool

The MStation hardware uses only one quick processor (DSP). The total memory size on the board is 128 K. The resident on board software can be changed and the program debugged using a simple RS232 connection. The real time kernel is small and efficient.

Conclusion

The open architecture, open source code makes the MStation a solid base for the development of new instruments or for the upgrade of aging but valuable equipment. Improved performances of newer instrument come mostly from modified electronic functions, fabrication method, electron multiplier ... the actual technology of quadrupole have not changed. The 597x is quiet a reliable and valuable instrument still.

More ...

[MStation for GCD, 5971](#)

[Inproved electrometer](#)

[Data system for mass spectrometers](#)

[Hardware solutions](#)

* MStation :

This redesigned version of Force7 offers extended capabilities. It is well integrated with the sequencing function of the ChemStation from HP and is compatible with 5970 - 5971 - 5972 - 5973

Acknowledgement :

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ChemStation, 5970, 5971, 5972, 5973, SmartCard are trademark of HP.

MStation, Force7 are trademark of Acquisition Solutions k

USA Price list (subject to changes without notice) :

MStation - MST100 - \$7375
Communication Interface Board
Cables
ModCtrl DSP MS Controller
MStation 32 bit version
Pentium Computer

EMeter - MST101 - \$1500

Loaner available (please call)
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