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Find the *Keithley / MetraByte DAS-16F* at our website: *Click HERE*

What are my upgrade options for a DAS-16 Series Board?

The DAS-16 Series offered 4 boards: DAS-16, DAS-16F, DAS-16G1, DAS-16G2.

Model	Sample Rate	Gains	Gain Feature	A/D Chip Used*
DAS-16	50KHz	1, 2, 4, 8	Switch Select	674
DAS-16F	100KHz	1, 2, 4, 8	Switch Select	774
DAS-16G1	70KHz	1, 10, 100, 500	Software Select	674
DAS-16G2	70KHz	1, 2, 4, 8	Software Select	674

*the A/D chip is a large, 28pin chip on the board with a gold in color metal square. On this metal square is the logo for Harris and a part number which will start with either 674 or 774. Only the 100KHz rated DAS-16F uses the faster 774 chip.

In addition to these analog input features described in the above table, the boards also have

- 4 digital input lines
- 4 digital output lines
- two 12bit Analog Outputs

Any upgrade or board replacement should be carefully planned. Often times software and cabling changes are required. Sufficient time should be allowed for complete understanding of the existing system as well as testing of the migrated system to fully discover any subtle differences. Study the documentation for your current system (or reverse engineer it from the wiring and source code) to determine which features of the DAS-16 Series board are actually in use by the application. Often, only a portion of the board's features are required, so board replacement purely on feature specifications can be misleading.

Upgrading to PCI cards: The KPCI-3108 or KPCI-3107 offers the best upgrade path. The use of the STA-3108-A2 together with the CAB-1284CC-2 will provide a DAS-16 compatible 37pin connection.

If the DriverLINX driver was used for code development for the DAS-16 Series board, then code migration to KPCI cards will take only moments to complete. If however, the code for the DAS-16 Series was written with other methods (register level, mode calls for DOS, etc.), then a rewrite of the controlling software will be necessary. Keithley's PCI cards ship with Windows based DriverLINX support only.

PCI cards are typically memory mapped rather than I/O mapped. Controlling a PCI card from a DOS environment will require use of 32bit DOS extenders for access to the 32bit memory space of the board's registers. Your programming language needs to be able to access the 32bit registers of the card. Furthermore, PCI boards are Plug-and-Play devices so do not have base address switches to control what addresses they inhabit; your program needs to be able to enumerate the PCI bus to detect the card and to read out the assigned address configuration.

Register level control of PCI cards requires a significantly different skill and tool set

than was required for ISA boards and often is done with third party tools like WinRT to gain real mode access into 32bit memory space.

Upgrading to Instrument Products: Especially if you have a strong motivation to stay in the DOS operating system, use of the Integra Series Data Acquisition Systems should be considered as an upgrade path. The 27xx mainframes of the Integra Series can be computer controlled via their bus interfaces (RS-232, GPIB or Ethernet) with simple string commands. So in addition to the Windows based IVI drivers and start up software, control from DOS based systems is also quite easy.

While reading rates of Instrument based products are typically slower than plug-in board products, the integrating A/D converters of instruments gives a much greater immunity to noise than plug-in board products. This greater noise immunity eliminates the need for signal averaging which is a common technique required when using plug-in board based systems. The effective sampling rates, especially for temperature monitoring applications, are quite comparable when considering that each single measurement from an instrument will be usable data.

Upgrading to other ISA cards: For minimal impact in terms of both software and cabling, one of the boards in the DAS-1600 Series could be considered. The DAS-1601 most closely corresponds to the DAS-16G1 (high gain) while the DAS-1602 corresponds to the DAS-16G2 (low gain). The DAS-1601 and DAS-1602 continue the provision of two analog output channels.

If the analog output channels of the DAS-16 Series are not important to the application, the DAS-140x or DAS0120x boards could also be considered. The DAS-1401 and DAS-1402 provide the high gain or low gain feature via software control. The DAS-1202 provides bipolar ranges via switch settings. This is similar to but not exactly like the DAS-16 or DAS-16F. (Note: the DAS-16 and DAS-16F permit selection of Unipolar or Bipolar ranges while the DAS-120x have only bipolar ranges)

Software written for DAS-16G1 or DAS-16G2 will operate with the corresponding DAS-1601 or DAS-1602 (register compatible). If the software is only for the analog input or digital I/O, then the DAS-1401 or DAS-1402 would also drop in. Your DAS-16 or DAS-16F board would need to have been used in bipolar mode for the DAS-1202 to be a drop in replacement.

If the motivation for the upgrade is to be able to operate in Windows NT, Win2000 or WinXP, then do not consider the DAS-1600 Series. Like the DAS-16 Series, Windows based driver software for the DAS-1600 is limited to Windows 95 or 98.

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