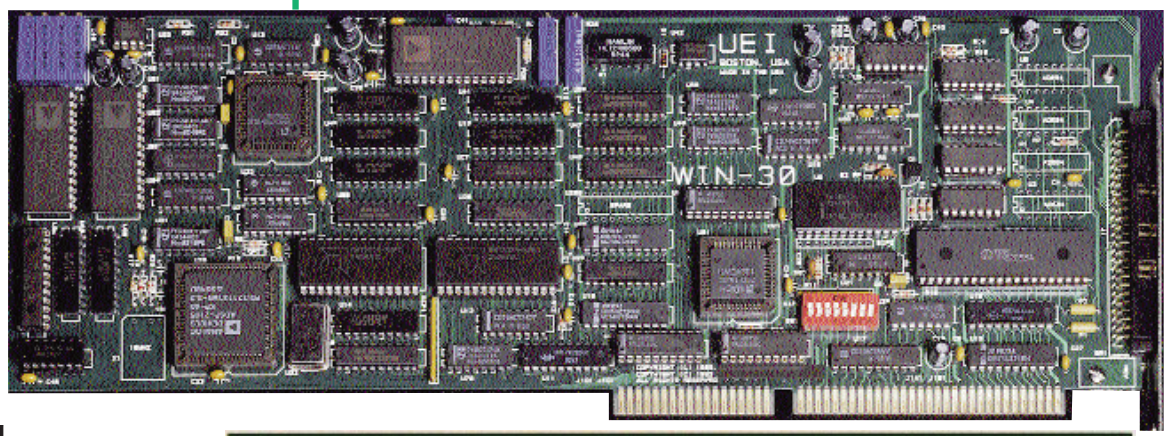
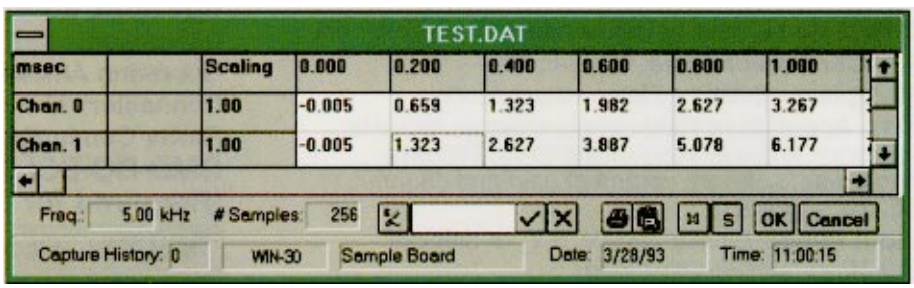
Ultra High Speed Data Acquisition Board

Model WIN-30D
$1250

- **12-Bit, 1 MHz A/D Conversions On AT Bus**
- **Optimized For Windows; Full Throughput Available in Windows 3.1 Enhanced Mode**
- **Data Packing**
- **16 Single-Ended Inputs With 0–5 and ±5 V Ranges**
- **On Board FIFO 2k Buffers**
- **Gap Free Dual Channel DMA**
- **Ultra High Speed 32-Bit Rep String Operations**
- **24 Digital I/O Lines**
- **Configure Through Software – No Jumpers**





The WIN-30D is an ultra high performance multifunction analog and digital input/output board designed for the PC-AT compatible computers.The WIN-30D offers full 1 MHz throughput utilizing a spectrum of advanced technology, including data packing and a choice of bursting DMA, 16-bit Rep String operations, or, for the ultimate in performance and effficiency, 32-bit Rep String operations.The board can sample 1 channel at 1 MHz, 2 channels at 500 kHz each, up to 16 channels at 62.5 kHz each. All configuration of input ranges, DMA and interrupt levels, etc. is done in software. Once installed, the PC never needs to be opened again.

The WIN-30D provides 16 single-ended analog inputs with selectable ranges, and high impedance inputs. Software selectable voltage ranges are 0 to 5 V or ±5 Vdc. Each input is individually buffered, obliviating the requirement for low impedance voltage sources, and eliminating all possibility of charge pump-back problems.

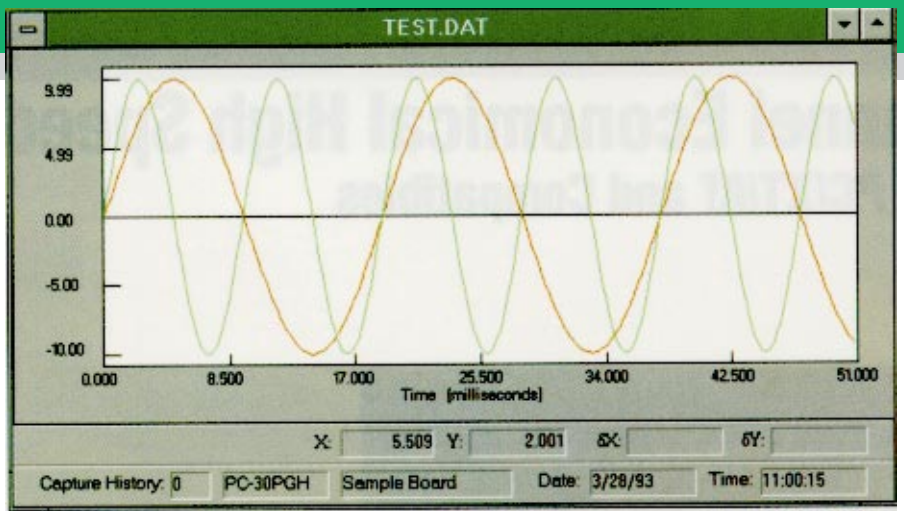
The WIN-30D also features a channel list in hardware, which specifies the sequence in which input channels should be scanned. This technique allows complete flexibility in sampling, as channels can be sampled in any sequence, and allows the card to maintain its full 1 MHz throughput regardless of the number of channels sampled. Block scan mode, or near-simultaneous mode is also available. In this mode, a preset number (or block) of channels is scanned on each strobe. This allows all 16 channels to be sampled within 16 µsec.

The WIN-30D offers the user the option of data packing. This packs four 12-bit samples into three 16-bit words, meaning that for each four 12 bit input samples, the host PC has only to perform three 16-bit AT-bus transfers. This reduces the card's maximum data rate from 1 MHz to only 750 kHz.

Conventional data transfer techniques on PCs are normalled limited to either polled I/O or DMA. The WIN-30D offers three additional high speed techniques, Dual DMA Channel, 16-Bit Rep String, and 32-Bit Rep String operations.

Dual DMA channel operation utilizes burst DMA transfers, allowing data to be acquired into all available memory, including extended or XMS memory, by utilizing two DMA channels alternately. In contrast to conventional DMA technology, the bust DMA mode transfers a block of 512 samples, with only a single acquire/release operation for each block. This allows a typical AT class computer to reach a transfer rate of over 900 kwords per second. When used in combination with the WIN-30D's data packing, this allows a maximum possible transfer rate of over 1.2 million samples per second, comfortably above the WIN-30D's max. sampling rate.

Repeat string operations utilize the REP INSW instruction of 286/386/486 microprocessors. The Rep String instruction performs a zero-overhead look which inputs data from the WIN-30D to main system memory. Because processor generated I/O cycles are faster than DMA generated cycles (typically 350 nsec vs 800 nsec), data transfer rates are faster than DMA transfers. When combined with data packing, data transfer rates between 1.6 and 2.5 million samples per second are available. On 386 or better computers, the WIN-30D can take advantage of 32-bit Rep String instructions, improving transfer rates and efficiency by approx. 10% over the 16-bit rep string.



The WIN-30D contains 24 digital I/O lines, each of which may be programmed for input or output. All lines are fully TTL compatible.

The WIN-30D is supplied with driver software for both DOS and Windows. The DOS driver provides access to languages such as Microsoft C, Borland C++, Turbo C, Turbo C++, QuickBASIC, Microsoft Fortran and Turbo Pascal. The Windows 3.1 driver allows access to all board functions from Windows-based compiled languages, including Microsoft C, Borland C++, Tubo C for Windows, Turbo Pascal for Windows and Visual Basic. This software also includes a virtual device driver, which directly handles interrupts generated by the board without the latency introduced by the default Windows 3.1 interrupt handling system. "Status" Software for DOS and Windows, advanced data acquisition programs, are also included. For High speed streaming to disk, Labtech Notebook Pro supports up to 750khz.

Specifications

Resolution: 12-bit, 1 part in 4096
Input Channels: 16, single-ended
Total System Accuracy: ±3.5 LSB
Differential Nonlinearity: ±1 LSB max
Input Channel Matching: 0.3 mV typ., 2 mV max
Input Ranges: 0 to 5 V dc, ±5 V dc, software selectable
Input Bias Current: ±5 nA max
Gain Drift: ±30 ppm/°C
Offset Drift: ±15 ppm/°C
Input Impedance: 10G/20 pF
Offset Voltage: ±5 LSB, adjustable to zero
Gain Accuracy: ±5 LSB, adjustable to zero
Data Acquisition Rate: 1 MHz, dependent on CPU/host PC performance

Internal Clock

Frequency: 10 MHz or 2 MHz frequency, software selectable, crystal controlled
Internal Clock Prescaler: 16-bit
External Clock: TTL compatible
External Trigger: TTL compatible, enables or disables conversions

A/D Clock

Clock Source: internal or external
Internal Clock Divider: 16-bit
Channel List Length: 31 entries max
Block Scan Mode: up to 256 channels for sampling frequencies below 200 kHz; above 200 kHz, up to 16 channels per block, channel list length must be an integer multiple of block size

D/A

Models with D/A contain 2 16 bit and 2 12 bit D/A with output range of ± 5 V and D/A speed of 100kHz.

Digital I/O

Number of Lines: 24 in 3 ports (programmable)
Compatibility: TTL
Output Low Voltage: 0.5 V @ 1.7 mA sink
Output High Voltage: 2.4 V @ 0.2 mA source

PC Interface

Compatibility: PC/AT, 16-bit bus; ISA
Base Address: DIP switch selectable
Number of Registers: 32 8-bit registers
Interrupts: software selectable on end of conversion, end of block, DMA terminal count
DMA: dual channel bursting, software selectable
Power: +5 Vdc, 1.2 A typ; +12 V, 300 mA typ; -12 V, 300 mA typ
Connector: 50-pin IDC

To Order *(Specify Model Number)*

Model No.	Price	Description
Analog Input & Output Boards, 12-Bit		
WIN-30D	**$1250**	1 MHz, 16 SE A/D channels, 24 I/O lines, DSP
WIN-30DA	**1495**	1 MHz, 16 SE A/D channels, 4 D/A channels, 24 I/O lines, DSP
Analog Input & Output Boards, 12-Bit with programmable gain		
WIN-30PGH*	**$1875**	1 MHz, 8 DI A/D channels, 4 D/A, 24 I/O lines, low gain (1, 2, 4, 8), DSP
WIN-30PGL*	**1875**	1 MHz, 8 DI A/D channels, 4 D/A, 24 I/O lines, high gain (1, 10, 100, 1000), DSP
Analog Input & Output Boards, 12-Bit with simultaneous sample/hold (SSH)		
WIN-30DS/4	**$1625**	750 kHz, 16 SE A/D channels (4 SSH), 4 D/A, 24 I/O lines, DSP
WIN-30DS	**2125**	750 kHz, 16 SE A/D channels (16 SSH), 4 D/A, 24 I/O lines, DSP
Analog Input & Output Boards, 16-Bit		
WIN-3016D	**1250**	150 kHz, 16 SE A/D channels, 24 I/O lines, DSP
Analog Input & Output Boards, 16-Bit with programmable gain		
WIN-3016PGH	**$1875**	150 kHz, 8 DI A/D channels, 4 D/A, 24 I/O lines, low gain (1, 2, 4, 8) DSP
WIN-3016PGL	**1875**	150 kHz, 8 DI A/D channels, 4 D/A, 24 I/O lines, high gain (1, 10, 100, 1000) DSP
Analog Input & Output Boards, 16-Bit with simultaneous sample/hold (SSH)		
WIN-3016DS/4	**$1875**	150 kHz, 16 SE A/D channels (4 SSH), 4 D/A, 24 I/O lines, DSP
WIN-3016DS	**2125**	150 kHz, 16 SE A/D channels (16 SSH), 4 D/A, 24 I/O lines, DSP
Accessories		
WIN-30ST	**$195**	Screw terminal panel, includes cable

Ordering Example: *WIN-30D interface with WIN-30ST screw terminal panel, $1250 + 195 =* ***$1445.***