

TinaLab Data Acquisition Card

This data acquisition card turns your IBM PC/XT/AT or compatible into a powerful circuit engineering station, allowing you to examine the responses of custom designed analog electronic circuits by computer aided means. Built-in function generators of *TinaLab* provide inputs for the analyzed circuit, while the output signals can be examined and represented on your PC in a multimeter or oscilloscope mode.

The *TinaLab* card is the most effective add-on to the popular **TINA** (Toolkit for Interactive Network Analysis) software package used for engineering and education of analog electronic networks. Now you can not only design circuit schemes and predict their behavior, but also compare the theoretical results to the reality, by combining the calculated and measured DC characteristics, Bode diagrams, time functions, spectra, etc. on the same screen. Measurements are executed automatically in full accordance with the analysis mode formerly set in **TINA** for theoretical examination. This sophisticated feature has an excellent demonstrating capability while facilitating effective starting-up, measurement and diagnosis of circuits.

9 program selectable input ranges are available for DC measurements. A D/A converter supports the determination of transfer characteristics.

The built-in function generator supplies sinusoidal, square or triangular test signals. The actual frequency of the selected waveform is defined (and wobbled) by software means. In addition, the D/A converter can produce arbitrary excitations, too.

Fast AC measurements are backed by a peak detector, which determines the amplitude of sinusoidal signals directly in 9 ranges. Frequency response curves (Bode diagrams) are measured by combining a wobbled sinusoidal test signal with peak detection or DSP.

Transient characteristics can be measured in polling, interrupt or DMA modes, using software or hardware triggering. Time base is set with Intel 8254 programmable timer. This device is also used for high precision frequency measurements.

A digital I/O interface allows to identify, select and program the optional devices attached to the *TinaLab* card.

A significant application of this digital I/O is represented by the **TINA** *Experimenter Box*, which allows to examine both breadboard borne prototype networks and prefabricated demo circuits by 16 channel measurements. Channels are selected by the multiplexer of the digital I/O controlled **TINA** *Experimenter Box*. In addition to this control function, the digital I/O can recognize and control the demo circuits connected to the **TINA** *Experimenter Box*, as well.

Designsoft Inc.
www.tina.com
info@tina.com
Tel: +36 (1) 269 12 06
Fax: +36 (1) 332 77 77

Technical specifications

Analog input

Resolution: 8 bits

- Input ranges: 50V, 20V, 10V, 5V, 2V, 1V, 0.5V, 0.2V, 0.1V (unipolar or bipolar, software selectable)
- Input resistance: > 100M Ω (within the 0-5V input ranges)
> 1M Ω (within the 10-50V input ranges)
- Output data codes: straight binary (unipolar), offset binary, or two's complement (bipolar)
- Conversion time: 2ms
- Accuracy: ± 1 bit (software adjusted)
- Linearity: ± 1 bit
- Triggering source: software or hardware
- Operating modes: polling, interrupt, direct memory access (DMA)

Analog output

- Sinusoidal, square, triangular waveforms, and direct D/A output
- Output ranges: 2V, 1V, 0.2V, 0.1V, 0.05V, 0.02V bipolar or unipolar (software selectable)
- Output frequency ranges: 0-128 Hz, 0-1.28 kHz, 0-12.8 kHz, 0-128 kHz, software selectable with 8 bit resolution in each range
- Output drive: 100mA
- Resolution: 8 bits
- Linearity: ± 1 bit
- Settling time: 2ms

Digital I/O

- Data lines: 8 bit bidirectional (or 32 when multiplexed)
- Command lines: 2 bit
- Multiplexer lines: 4 bit

Programmable timer

- Device: Intel 8254
- Counters: 3 channels; 16 bits each; software configurable for time and frequency measurement or for the oscilloscope function
- Internal clock: 8 MHz

Interrupt line

- Level: IRQ 2,3,4,7 (switch selectable)
- Enable: via INTE of the Control Register

DMA channel

- Level: 1 or 3 (switch selectable)
- Enable: via DMAEN of the Control Register