The 104-DIO-48S and 104-DIO-24S provide a total of 48 or 24 lines of digital I/O with counter/timer for PC/104-based data acquisition. This low-cost, high-performance, reliable board features Change of State (COS) detection on user-selected ports, allowing the board to generate an interrupt port by port. Since one READ determines the data, there is no need for constant polling, which greatly reduces processor overhead and allows applications to run more smoothly.

The 104-DIO-48S board uses two 82C55A chips to provide a computer interface to the 48 I/O lines. Each chip provides two 8-bit ports and two 4-bit ports with software programmable direction. Each I/O line is buffered and capable of sourcing 32mA or sinking 64mA. Pull-ups to 5V are provided for contact monitoring. Optionally available is an 82C54 chip that includes three 16-bit counter/timers factory configured in an optimal module for use as event counters, frequency output, pulse width, and frequency measurement. Connections are made via two industry-standard 50-pin headers plus one ten-pin header for the optional counter/timer.

 SOFTWARE

The 104-DIO-48S is supported for use in most operating systems and includes a free DOS, Linux and Windows 95/98/Me/NT/2000/XP/2003 compatible software package. This includes sample programs and source code in “C” and Pascal for DOS, and Visual Basic, Delphi, C++ Builder, and Visual C++ for Windows. Also included is a graphical setup program in Windows. Embedded OS support includes Windows XPe and CE. Linux support includes installation files and basic samples for programming from any user level via an open source kernel driver.
### Specifications

#### Digital I/O

- **Chip**: 82C55A (each supports 24 lines)
- **Number of I/O lines**: 48 or 24 TTL/CMOS compatible
- **Direction**: Programmable as inputs or outputs in two groups of 4 and 8 per 82C55A
- **Sink and source current**: 64mA and 32mA respectively
- **Pullup resistors**: 10K all input lines with optional pull-downs
- **Change of state detection (COS)**: Port by port selectable on rising and falling edge
- **Throughput**: Up to 1 Megabyte per second
- **Power output**: Re-settable fused +5V at 500mA per 50-pin connector

#### Counter/Timers

- **Chip**: Type 82C54
- **Counter/timers**: 3 x 16 bit
- **Maximum input frequency**: 10MHz
- **On-board time-base**: 1MHz
- **Signal type**: TTL
- **Input voltage**: Logic low: 0.5V min, 0.8V max; Logic high: 2.0V min, 5.0V max
- **Output voltage**: Logic low: 0.0V min, 0.4V max; Logic high: 3.0V min, 5.0V max

#### General

- **Power required**: +5V at 50mA typical, all outputs open
- **Operating temperature**: 0 to 70°C, optional -40 to +85°C, all versions
- **Storage temperature**: -50 to 120°C
- **Operating humidity**: 5% to 95% RH, non-condensing

#### Interrupts

- **Number of interrupts**: 11
- **Interrupt requests**: IRQ’s 3-7, 9-12, 14, 15
- **Interrupt sources**: Counter/timer outputs, external interrupt input, or DIO lines with change of state detection enabled by software

### Ordering Guide

- **104-DIO-48S**: 48 lines of digital I/O with change of state detection
- **104-DIO-24S**: 24 lines of digital I/O with change-of-state detection