

UNIO96-5, UNIO48-5 Programmable I/O Card

PC/104 format

FEATURES

- 96/48 digital/frequency I/O channels programmable in any combination
- Compatibility with digital/analog opto-isolated modules Opto-22, Grayhill (including 73G, 73L)
- Frequency, phase measurement at any channel
- Timers/counters
- Frequency generation and pulse width modulation (PWM) at any channel
- Code conversion at any channel
- Timing diagrams generation
- Input event interrupts generation
- Programmable debounce logic
- In-System Programming
- Extended operating temperature range from -40°C to +85 °C

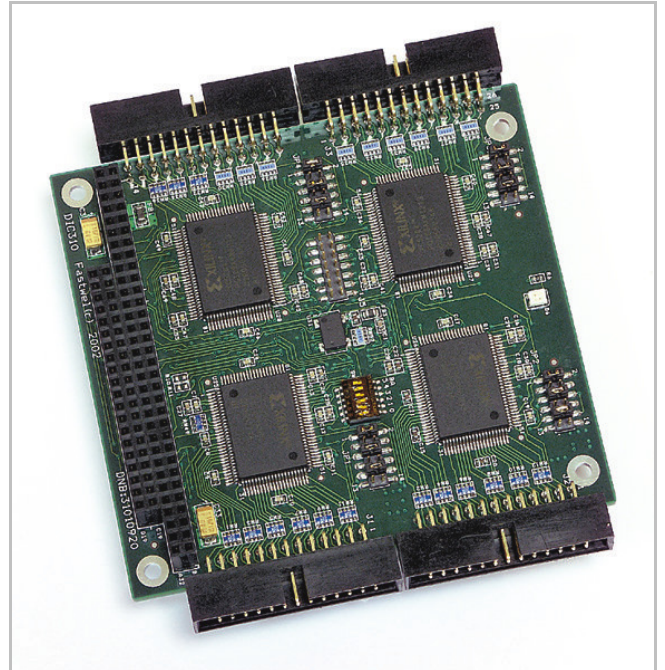
DESCRIPTION

The UNIO96/48-5 are 96/48-channel digital I/O PC/104 add-on cards. The cards deal with the TTL-level signals and can be used to interface with opto-isolated modules racks, displays, LED-devices. The card provides a wide range of functions – counting, sequencing, timing diagrams generation, pulse width modulation, code conversion etc.

The module uses FPGA chips for signal processing. It supports in-system programming, which allows to change the control logic algorithm without turning power off. Software examples are available in C, description files of basic and custom circuit programming variants are available on the CD supplied with the card or can be downloaded via Internet from the Fastwel web-site: <http://www.fastwel.com>.

Interface with Grayhill opto-isolated modules (circuit versions “g00”, “g01”)

One of the main applications of the UNIO96/48 is an interface with opto-isolated Opto-22 and Grayhill modules and with isolated digital I/O cards (TBI-24/0, TBI-0/24). These versions of the circuit allow to operate with opto-isolation modules of any type (analog, digital, input, output) through any of 96/48 channels. When operating with Grayhill analog opto-isolated modules the UNIO96-5 accepts four input/output lines of series 73G or eight



input/output lines of series 73L simultaneously without using the processor.

The interrupts generation is available while operating with the analog opto-isolated modules.

Displays control

The UNIO96/48-5 can be used to interface with LCD, vacuum fluorescent displays or LED indicators with parallel and serial interfaces.

Counters/timers

The UNIO96/48-5 can be used as timers or pulse counters. Circuit version “t00” provides 16/8 16-bit timers based on external or internal frequency source. Circuit version “c00” provides 96/48 16-bit counters.

Frequency measurement

Frequency measurement is one of popular applications of UNIO96/48-5 card. There are different types of frequency measurement circuits in the basic circuitry set. They differ by: measurement methods (averaging for time period, filling by the sample frequency); measurement ranges (from 0.001 Hz to 50 MHz); accuracy (up to 0.0001%), and the number of measuring devices (for UNIO96-5 – from 4 to 32 devices). Frequency measurement can be performed at any channel of the card. The frequency gauges can generate interrupts (AND/OR) both within card and from several cards.

Pulse width modulation and frequency generation

The UNIO96/48-5 can be used for frequency generation and PWM in frequency range up to 25 MHz.

Interrupts generation on input events

The UNIO96/48-5 provides interrupts generation on input events (switching 1→0; 0→1; 1→0+0→1) at any of 96/48 lines with programmable debounce time.

In-System Programming

Thanks to the ISP technology the UNIO96/48 configuration may be quickly changed (in 10...60 sec) without turning off the power. The program isp.exe is used for reprogramming of the module. The program uses as parameters the base address for the UNIO96/48-5 and circuitry binary resource files (*.bit). This technology considerably reduces the implementation time of custom and non-standard configurations of the module and reduces costs.

Connections

The 96/48 I/O lines on the UNIO96/48-5 are organized into 4/2 26-pin IDC-26 connectors. The TB-26 series terminal boards, MPB-xx series opto racks and TBI-xx/xx series interface opto-isolated boards can be used to connect signals to the UNIO96/48-5 card. The I/O lines can be pulled to +5 V or GND through 10 kΩ pull-up/pull-down resistors by the groups of 8.

Software library

A utility disk supplied with the UNIO96/48-5 package contains:

- Software for in-system programming
- Binary resource files of circuit configurations
- Configurations descriptions
- Configuration programming examples in C

TECHNICAL SPECIFICATIONS

Input voltage CMOS and TTL levels compatible

Output voltage CMOS level compatible

Output current

0-8 mA logic interface (CMOS level)
0-30 mA for opto module racks

Frequency measurement range

Up to 50 MHz

Frequency measurement accuracy

Up to 0.0001%

Frequencies generation range

Up to 25 MHz

Measurement time of analog inputs of the

Grayhill 73G/73L opto-isolated modules:
750/250 μs

Settling time of analog outputs of the Grayhill

73G/73L opto-isolated modules:
800/250 μs

Power requirements: +5 V ±5%

Current consumption:

UNIO48-5: 180 mA
UNIO96-5: 340 mA

Operating temperature range: from -40°C to +85°C

RH up to 95%, non-condensing

Size: 124.46 x 114.30 mm (4.5" x 4.9")

ORDERING INFORMATION

DIC31001 UNIO96-5, PC/104 universal digital I/O card, 96 lines

DIC31002 UNIO48-5, PC/104 universal digital I/O card, 48 lines

Accessories

ACS00002 FC26-60, ribbon cable, 26 threads, IDC connectors, 0.6 m (2 ft)

DIB9120x TBI-24/0C -x, digital input terminal cards, 24 channels

DIB91301 TBI-0/24C, isolated digital output terminal card, 24 channels

DIB91101 TBR8, relay output terminal board, 8 channels

TIB96101 TBI-24LC, terminal board for Grayhill 70L&73L, 24 contacts

TIB96201 TBI-16L, terminal board for Grayhill 70L&73L, 16 contacts

TIB96501 TB-26, terminal board, 26 contacts