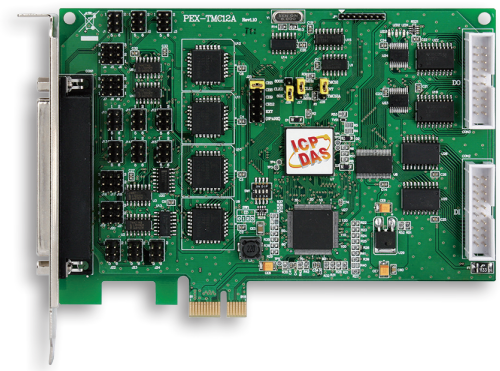


PEX-TMC12A

PCI Express, 12-channel Timer/Counter Board

Features

- Supports PCI Express x 1
- 4 onboard 8254 timer/counter chips
- 12 independent 16-bit timers/counters
- 12 external clock inputs
- 12 external gate control inputs
- 12 timer/counter output channels
- 16-bit timer/counter can be cascaded to create 32/48-bit timer/counter
- Gate input can be either an external signal or the output of a previous timer/counter channel
- Four interrupt sources
- Two internal clock sources
- 16 TTL D/I channels and 16 TTL D/O channels
- Supports Card ID (SMD Switch)
- Supports DO Status Readback
- More flexible interrupt mechanism
- Hardware mechanism for the generation of two starting-clocks

Introduction

The PEX-TMC12A utilizes the PCI Express bus and is designed as an easy replacement for the PCI-TMC12A series without requiring any modification to either the software or the driver.

The PEX-TMC12A provides twelve 16-bit timers/counters (four 82C54 chips x 3 timers/counters), 16 TTL digital input channels and 16 TTL digital output channels. The two onboard clocks (8 M/1.6 M and 0.8 M/80 K) are jumper selectable and provide a high-resolution clock source for timers/counters. Counters/timers can be used for industrial and laboratory applications such as pulse/event/switch-toggle counting, frequency readings, elapsed time measurement, pulse-width measurement, PWM (pulse-width-modulated) output, and pulse (square wave) and rate generation, etc.

The PEX-TMC12A includes a Card ID switch that enables the board to be easily recognized via software if two or more cards are installed in the same computer.

Pin Assignments

Pin Assignment	Terminal No.		Pin Assignment
ECLK1	01	20	EXTG1
COUT1	02	21	ECLK2
EXTG2	03	22	COUT2
ECLK3	04	23	EXTG3
COUT3	05	24	ECLK4
EXTG4	06	25	COUT4
ECLK5	07	26	EXTG5
COUT5	08	27	ECLK6
EXTG6	09	28	COUT6
ECLK7	10	29	EXTG7
COUT7	11	30	ECLK8
EXTG8	12	31	COUT8
ECLK9	13	32	EXTG9
COUT9	14	33	ECLK10
EXTG10	15	34	COUT10
ECLK11	16	35	EXTG11
COUT11	17	36	ECLK12
EXTG12	18	37	COUT12
GND	19		

CON1

Pin Assignment	Terminal No.		Pin Assignment
DI 0	01	02	DI 1
DI 2	03	04	DI 3
DI 4	05	06	DI 5
DI 6	07	08	DI 7
DI 8	09	10	DI 9
DI 10	11	12	DI 11
DI 12	13	14	DI 13
DI 14	15	16	DI 15
GND	17	18	GND
+5 V	19	20	+12 V

CON2

Pin Assignment	Terminal No.		Pin Assignment
DO 0	01	02	DO 1
DO 2	03	04	DO 3
DO 4	05	06	DO 5
DO 6	07	08	DO 7
DO 8	09	10	DO 9
DO 10	10	12	DO 11
DO 12	12	14	DO 13
DO 14	14	16	DO 15
GND	16	18	GND
+5 V	18	20	+12 V

CON3

Software

Drivers

- ☑ 32/64-bit Windows XP/2003/2008/7/8/10
- ☑ Linux

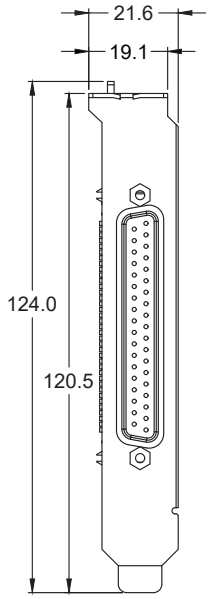
Smple Programs

- ☑ DOS Lib and TC Demo
- ☑ LabVIEW Toolkit
- ☑ VB/VC/Delphi/BCB/VB.NET/C#.NET/VC.NET/MATLAB Demo

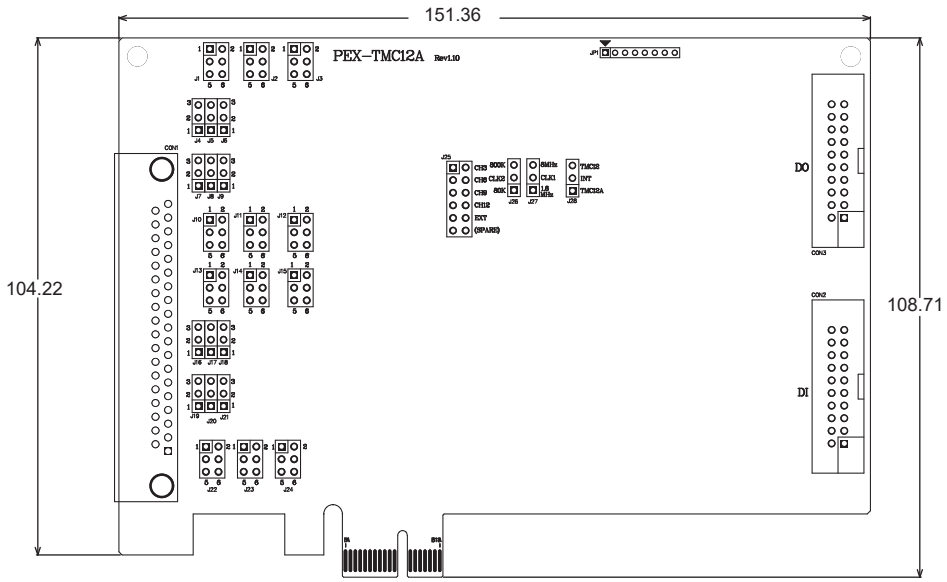
Hardware Specifications

Digital Input	
Channels	16
Compatibility	5 V/TTL
Input Voltage	Logic 0: 0.8 V Max., Logic 1: 2.0 V Min.
Response Speed	500 kHz
Digital Output	
Channels	16
Compatibility	5 V/TTL
Output Voltage	Logic 0: 0.4 V Max. Logic 1: 2.4 V Min.
Output Capability	Sink: 24 mA @ 0.8 V, Source: 15 mA @ 2.0 V
Response Speed	500 kHz
Timer/Counter	
Channels	12 (Independent x 12)
Resolution	16-bit
Input Frequency	10 MHz Max.
Reference Clock	Internal: 8 MHz
General	
Bus Type	PCI Express x 1
Card ID	Yes (4-bit)
Connectors	Female DB37 x 1, 20-pin Box Header x 2
PCB Dimensions	151.36 mm x 108.71 mm (L x H)
Power Consumption	500 mA @ +5 V
Operating Temperature	0°C to +60°C
Humidity	5 to 85% RH, Non-condensing

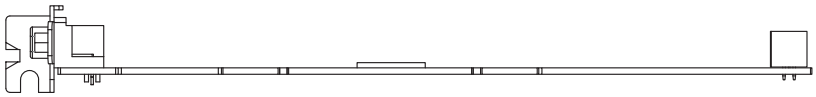
Dimensions (Units: mm)



Left Side View



Front View



Bottom View

Ordering Information

PEX-TMC12A CR	PCI Express, 12-channel Timer/Counter Board (RoHS) Includes one CA-4002 D-Sub connector.

Accessories

 **CA-2002**	20-pin flat cable, 20cm x 2
 **CA-2010**	20-pin flat cable, 1M
 **CA-2020**	20-pin flat cable, 2M
 **CA-3710**	DB-37 Male-Male D-sub cable 1M (Cable for Daughter Board (45°))
 **CA-3710D**	DB-37 Male-Male D-sub cable 1M (Cable for Daughter Board (180°))
 **CA-3715DM-H**	DB-37 Male-Male Cable, 1.5M, 180° (RoHS)
 **CA-3730DM-H**	DB-37 Male-Male Cable, 3M, 180° (RoHS)
 **CA-3750DM-H**	DB-37 Male-Male Cable, 5 M, 180° (RoHS)

 **CA-4002**	37-pin Male D-sub connector with plastic cover
 **DB-16P**	16-channel Isolated Digital Input Daughter Board
 **DB-16R**	16-channel Relay Output Daughter Board
 **DN-37**	37-pin Din-Rail Mounting I/O Connector Board
 **DB-37**	Directly connect signal to D-sub 37-pin connector
 **DN-20**	20-pin Din-Rail Mounting I/O Connector Board
 **DN-20/N**	DN-20 without DIN-Rail Mount
 **ADP-20/PCI**	20-pin extender