

PEX-TMC12A

PCI Express, 12-ch Timer/Counter Board

Features

- Supports PCI Express x1
- 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 channels DI / 16 channels DO
- Card ID Function (SMD Switch)
- DO status readback
- More flexible interrupt mechanism
- Hardware mechanism for the generation of two starting-clock

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 highresolution 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-widthmodulated) 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.

Software

Drivers

- ☑ 32/64-bit Windows 10/11
- ☑ Linux

Sample Programs

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

Ordering Information

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

Hardware Specifications

Hardware	
Connector	Female DB37 x 1,20-pin box header x 2
Card ID	Yes (4-bit)
Digital Input	
Channels	16
Type	5 V/TTL
ON Voltage Level	2.0 V Min.
OFF Voltage Level	0.8 V Max.
Response Speed	500 kHz (Typical)
Trigger Mode	Static Update
Digital Output	
Channels	16
Type	5 V/TTL
Operation Mode	Static Update
Load Voltage	Logic 0: 0.4 V Max. Logic 1: 2.4 V Min.
Load Current	Sink: 24 mA @ 0.8 V Source: 15 mA @ 2.0 V
Response Speed	500 kHz
Timer/Counter/Frequency	
Channels	12
Type	5 V/TTL (82C54 compatible timer)
Resolution	16-bit
Input Frequency	10 MHz max.
Reference Clock	Internal: 8 MHz
PC Bus	
Type	PCI Express x 1
Data Bus	16-bit
Power	
Consumption	500 mA @ +5 V
Mechanical	
Dimensions (mm)	108.71 x 151.36 x 22 (W x L x D)
Environment	
Operating Temperature	0 ~ +60°C
Storage Temperature	-20 ~ +70°C
Humidity	5 ~ 85% RH, Non-condensing

Note: Refer to the PCI-FC16U card for simple frequency measurement applications.

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Accessories

CA-2002 CR	20-pin flat cable, 20 cm x 2
CA-2010 CR	20-pin flat cable, 1 M
CA-2020 CR	20-pin flat cable, 2 M.
CA-3710 CR	DB-37 Male-Male D-sub cable 1 M (Cable for Daughter Board (45°))
CA-3710D CR	DB-37 Male-Male D-sub cable 1 M (Cable for Daughter Board (180°))
CA-3715DM-H CR	DB-37 Male-Male Cable, 1.5 M, 180°. (RoHS)
CA-3730DM-H CR	DB-37 Male-Male Cable, 3.0 M, 180°. (RoHS)
CA-3750DM CR	DB-37 Male-Male Cable, 5.0 M, 180°. (RoHS)
CA-3750DM-H CR	DB-37 Male-Male Cable, 5.0 M, 180°. (RoHS)
DB-37 CR	Directly connect signal to D-sub 37-pin connector
DN-37 CR	DIN Rail Mounting 37-pin Connector
DN-20 CR	Two 20-pin header DIN-rail terminal board
DN-20/N CR	DN-20 without DIN-Rail mount.
DB-16P CR	Isolated Digital Input Daughter Board
DB-16R CR	Relay Output Daughter Board
ADP-20/PCI CR	20-pin extender

Pin Assignments

Pin Assignment	Terminal No.		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			

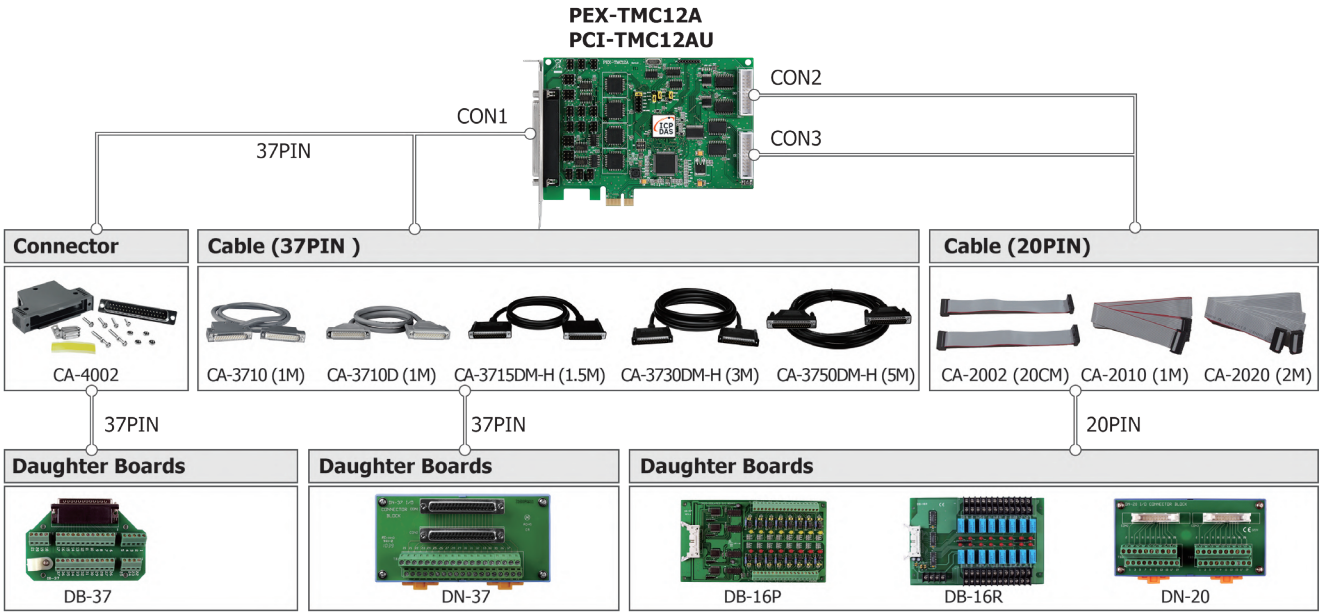
CON1

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



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