

# Installation Manual for the **TME-2001**

Dual Programmable Timer for PCI Express



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The material in this manual is for informational purposes only and is subject to change without notice.

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# Chapter 1: Installation

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This chapter lists the steps involved in installing the TME-2001 hardware. The TME-2001 module is shown in Figure 1-1. Refer to this figure as you follow the steps outlined below.



Figure 1-1: TME-2001 Module

## Open the workstation enclosure or expansion chassis

To remove the cover from the workstation or expansion chassis enclosure:

- A. Shut down the system software as described in the instructions that came with your software.
- B. Remove power to the system unit or expansion chassis.
- C. Open the enclosure as described in the manuals that came with the unit.

### Note

Use the anti-static wrist strap supplied with your system unit to prevent damage to the equipment. Clip the free end of the strap to the metal frame of the enclosure.

## Install the TME-2001 controller.

- a. Refer to the manual that came with the system to install the TME-2001 controller in any available full height, half length PCIe slot.
- b. Make sure that TME-2001 controller does not make contact with a heat sink or other component(s) and it is firmly seated and mechanically secured.
- c. Replace the cover on the enclosure and secure it.

### Note

If the enclosure contains RFI clips along the slot, take care when inserting the module not to push the clips out of alignment.

## Cable the user equipment to the timers

Cable the DE9 connector on the TME-2001 controller to your user equipment. One DE9-S connector provides user interface signals for the timers. Figure 1-2 shows the connector, Table 1-1 lists the interface signal names and their pin numbers.

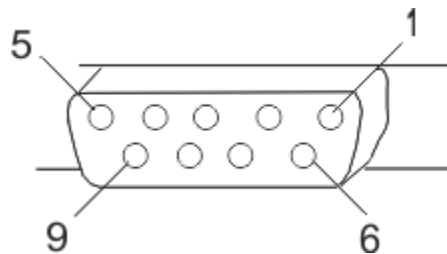


Figure 1-2: TME-2001 User Connector

Signal Name	Connector Pin
PULSEA	1
GND	2
GND	3
PULSEB	4
GND	5
EXTINTA	6
EXTINTB	7
EXTINTB1	8
GND	9

Table 1-1: User Connector Pin Assignments

## Test and Verification.

The Logical Company does not provide any device drives or diagnostics for the TME-2001 controller. For installation verification of the TME-2001, please use the same procedure and software used for the TMI-2000 controller.

# Chapter 2: General Description

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## Product Description

The TME-2001 is a PCI Express (PCIe) controller with two independent program controlled timers and is software compatible with the TME-2001 controller. Each timer can be programmed to generate a PCIe bus interrupt at the completion of the selected time interval. Two pulse timer output signals are provided for user connection to external equipment. The outputs can be programmed for positive or negative polarity and pulse width duration. Two user input signals are also available for generation of one or two PCIe interrupts from an external source(s). The input signals can be programmed for positive or negative edge detection.

## Features

**Two Independent Timers.** Each timer can be independently programmed for an interval ranging from 50 microseconds to over 214 seconds in increments of 50 nanoseconds.

**Two User Output Signals.** One output signal is provided from each pulse timer for user connection to external equipment. The two output signals are user programmable for a pulse width from 100 nanoseconds to 3.276 milliseconds in increments of 50 nanoseconds and available to the user from an on-board mounted DE9 connector. Signals EXTINTB and EXTINTB1 are OR tied together and can receive different electrical levels but only one of the signals should be used at a time.

**Two User Input Signals.** Two user input signals are provided for generation of one or two PCIe interrupts from external sources. The two input signals are user programmable and available to the user from an on-board mounted DE9 connector.

**Compatibility.** Compliant with PCIe specification 3.0.

## Specifications

### Physical

Controller     PCIe full height, half length card  
11.515 cm x 16.765 cm (4.376 in by 6.60 in)

## Electrical

### Power Required:

+3.3 volts DC	0.4 amp, max
+3.3 volts aux	Not used
±12 volts DC	1.0 amp, max
Bus Loading	2 ac loads, 1 dc load

### PCI Express Bus

Lane Size	x1
Compliance	3.0

### Interface

Signals	Nine user signals: PULSEA, PULSEB, EXTINTA, EXTINTB, EXTINTB1 and four GND pins
Connector	DE9-S
Levels	TTL, Open collector, 180/390 termination. Input signal EXTINTB1 has a 1K ohm series resistor and can receive input level in the range of ±12V (such as the RS-232 input). EXTINTB and EXTINTB1 are two sources for the same input signals and each can receive a different electrical level, but only one signal may be used at a time.

### Programmed Parameters

Timer Interval	Timer interval from 50 microsecond to over 214 seconds in 50 nanosecond increments.
Timer Pulse	Pulse width duration from 100 nanoseconds to over 3.2 milliseconds at 50 nanosecond increments.
Pulse Polarity	Positive or negative
EXT Detection	Positive or negative edge



## **Environmental**

### Operating Conditions:

Temperature 5° to 50° C (41° to 122° F)

Relative Humidity 20% to 80% noncondensing

### Storage Conditions:

Temperature -40° to 66° C (-40° to 150° F)

Relative Humidity 10% to 90% noncondensing

# Appendix A: Loopback Test Connector

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This appendix lists the components and pin to pin wiring connections to make a loopback connector used for testing the external signal functionality of the TME-2001.

<b>Pin</b>	<b>Signal Name</b>	<b>Pin</b>	<b>Signal Name</b>
1	PULSEA	6	EXTINTA
4	PULSEB	7	EXTINTB

Use a DE9-P solder cup connector, AMP (Tyco) part # 747904-2 and two 2 inch 22AWG wires to connect Pin1 to Pin-6 and Pin-4 to Pin-7. For ease of use, the connector can be enclosed in a cover, Amphenol part # 17-1724-2 or equivalent components.



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