# 5. Special Function Boards

## 5-1 Memory Board

### PCI-M512U

Universal PCI, 512 KB Memory Board with Digital I/O

CE  FC  RoHS

## Features ▶▶▶▶

- Universal PCI (3.3 V/5 V) Interface
- Two Li-ion Batteries to prevent Loss of SRAM Data
- 16-channel, 5 V/TTL Digital Output
- 12-channel, 5 V/TTL Digital Input
- 512 KB SRAM Onboard
- LED Indicators to monitor Battery Status (Low Voltage/Fault)
- 4-bit Battery Status Readback (DI0~3)

## Introduction

The PCI-M512U is a 512 KB SRAM Memory Board with battery backup and supports both the 3.3 V and the 5 V Universal PCI bus. The PCI-M512U provides 12 Digital Input channels and 16 Digital Output channels, and is designed as a direct replacement for the PCI version of the PCI-M512 board without requiring any modification to the software or the driver

The PCI-M512U is equipped with two Li-ion batteries to ensure that the content of the SRAM is maintained if a power loss occurs. The batteries can continue supplying power to the SRAM for 10 years, ensuring any important data is retained. The main benefit of the double-battery design is that either of the batteries can be replaced without losing data, so when one battery is removed, the other continues to provide power to the SRAM.

Four LED indicators are included on the board to provide a clear visual indication of whether the batteries are operating normally, whether the voltage is low, or whether the battery is bad or has encountered a fault. The PCI-M512U is an ideal solution for improving system reliability.
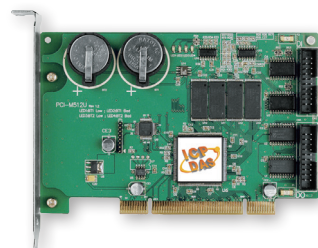
## Pin Assignments

| Pin Assignment | Terminal No. | | Pin Assignment | Pin Assignment | Terminal No. | | Pin Assignment |
|---|---|---|---|---|---|---|---|
| DO 0 | 01 | 02 | DO 1 | | 01 | 02 | |
| DO 2 | 03 | 04 | DO 3 | | 03 | 04 | |
| DO 4 | 05 | 06 | DO 5 | DI 4 | 05 | 06 | DI 5 |
| DO 6 | 07 | 08 | DO 7 | DI 6 | 07 | 08 | DI 7 |
| DO 8 | 09 | 10 | DO 9 | DI 8 | 09 | 10 | DI 9 |
| DO 10 | 10 | 12 | DO 11 | DI 10 | 11 | 12 | DI 11 |
| DO 12 | 12 | 14 | DO 13 | DI 12 | 13 | 14 | DI 13 |
| DO 14 | 14 | 16 | DO 15 | DI 14 | 15 | 16 | DI 15 |
| GND | 16 | 18 | GND | GND | 17 | 18 | GND |
| +5 V | 18 | 20 | +12 V | +5 V | 19 | 20 | +12 V |
| | CN1 | | | | CN2 | | |

## Software

### Drivers

| ✓ 32/64-bit Windows XP/2003/2008/Vista/7/8 | ✓ Linux |
|---|---|

### Sample Programs

| ✓ DOS Lib and TC/BC/MSC Demo | ✓ LabVIEW Toolkit |
|---|---|
| ✓ VB/VC/Delphi/BCB/VB.NET/C#.NET/VC.NET/MATLAB Demo | |

## Hardware Specifications

| Digital Input | |
|---|---|
| Channels | 12 |
| Compatibility | 5 V/TTL |
| Input Voltage | Logic 0: 0.8 V Max.<br>Logic 1: 2.0 V Min. |
| Response Speed | 1.4 MHz (Typical) |
| **Digital Output** | |
| Channels | 16 |
| Compatibility | 5 V/TTL |
| Output Voltage | Logic 0: 0.4 V Max.<br>Logic 1: 2.4 V Min. |
| Output Capability | Sink: 2.4 mA @ 0.8 V<br>Source: 0.8 mA @ 2.0 V |
| Response Speed | 1.4 MHz (Typical) |
| **Special** | |
| SRAM Size | 512 KB |
| Li-ion Battery | BT1 and BT2 |
| Battery Status Bits | BT1 Low, BT1 Bad, BT2 Low, BT2 Bad<br>(Low Voltage = 2.3 V, Fault = 2.1 V) |
| LED Indicators | BT1 Low (Green), BT1 Bad (Red)<br>BT2 Low (Green), BT2 Bad (Red) |
| **General** | |
| Bus Type | 3.3 V/ 5 V Universal PCI, 32-bit, 33 MHz |
| Connectors | 20-pin Box Header x2 |
| Power Consumption | 420 mA @ +5 V |
| Operating Temperature | -20°C to +60°C |
| Humidity | 0 to 90% RH, Non-condensing |

## Ordering Information

| PCI-M512U CR | Universal PCI, 512 KB Memory Board with DI/O (RoHS). |
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