User’s Guide

iProTx™

I²C Bus/SMBus
ESD / Current Limiting Protection Device
For 1.5 V to 5 V Applications
DISCLAIMER: Micro Computer Control Corporation makes no representations or warranties with respect to the contents hereof and specifically disclaims any implied warranties of merchantability or fitness for any particular purpose. Further, Micro Computer Control Corporation reserves the right to revise the product described in this publication and to make changes from time to time in the content hereof without the obligation to notify any person of such revisions or changes.

**WARNING - Life Support Applications**: MCC Products are not designed for use in high risk appliances, devices, or systems where the malfunction of a MCC Product can reasonably be expected to result in a personal injury.

**WARNING - Radio Frequency Emissions**: This equipment can radiate levels of radio frequency energy that may cause interference to communications equipment. Operation of this equipment may cause interference with radio, television, or other communications equipment. The user is responsible for correcting such interference at the expense of the user.

Printed in the United States of America

MCC products are licensed to use the I²C Bus.

Purchase of Philips I²C components conveys a license under the Philips I²C patent to use the components of the I²C system, provided the system conforms to the I²C specifications defined by Philips.

I²C is a trademark of Philips Corporation.

09-JAN-07
iProTx

I²C Bus/SMBus
ESD / Current Limiting
Protection Device

Features

• Protects I²C and SMBus devices in Lab or Factory Environments.
• Inserts In-Line between I²C/SMBus devices.
• Protects SCL, SDA, Interrupt, Power, and Ground.
• 5 Volt Tolerant.
• Transient Voltage Suppression and Auto-Resetting Fuses.
• Compatible with bus speeds up to 400 kHz.
• Plug-Compatible with MCC I²C Products and Connectors.

Typical Applications

• Product development, manufacturing, system testing.
• Any application requiring I²C Bus ESD protection.

Description

The iProTx (pronounced “i-pro-tex”) is an ESD (Electrostatic Discharge) and Current Limiting protection module for I²C/SMBus circuit protection in testing and manufacturing environments. Based on transient voltage suppression (TVS) technology created for hot-plug USB devices, and automatic resetting fuses for current limiting protection, the iProTx gives I²C/SMBus devices protection in automatic insertion applications typically found in factory automation, testing, and plug-and-play environments.
Pin Configuration

<table>
<thead>
<tr>
<th>Pin Number</th>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1, 10</td>
<td>/INT</td>
<td>Interrupt Signal</td>
</tr>
<tr>
<td>2, 9</td>
<td>VCC</td>
<td>Voltage Reference</td>
</tr>
<tr>
<td>3, 8</td>
<td>SDA</td>
<td>Serial Data</td>
</tr>
<tr>
<td>4, 7</td>
<td>SCL</td>
<td>Serial Clock</td>
</tr>
<tr>
<td>5, 6</td>
<td>GND</td>
<td>Signal Ground</td>
</tr>
</tbody>
</table>

Interconnects

I²C Interface Connector

One side of the iProTx I²C/SMBus interface uses a short two-inch cable terminating in a modular plug compatible with most MCC I²C products. The other side I²C/SMBus interface uses a modular receptacle, also compatible with most MCC I²C products. See Appendix A for more information on these connectors.

/INTerrupt Interface Connector

/INTerrupt is an optional signal used on some I²C Bus devices. It is primarily used on slave-only devices to get the attention of a bus master. MCC I²C products that support the /INTerrupt signal use a 0.090" (2.03mm) pin/receptacle connector. The iProTx includes a pin to pin wire for connecting the /INTerrupt signal to external devices such as the iPort/AFM I²C adapter.

Application

The iProTx is inserted into the I²C/SMBus cable between the devices to be protected.

Installation
Insert the iProTx into the I²C/SMBus cable between the devices. Optionally connect the /INTerrupt line if used.

Typical Application

<table>
<thead>
<tr>
<th>Protection</th>
<th>Description</th>
</tr>
</thead>
</table>
| Signal ESD                    | • 15KV Human Body Model  
• 2KV Machine Model.  
• IEC-1.2/50uS waveform is 10V @ 5A; -7V @ -7A. Peak Power is 60W. |
| Signal Current Limiting       | • PTC protected @ 0.4A trip. Peak Power 60W.                                 |
| Power and Ground              | • 100A 8.3mS surge.  
• PTC protected with 1A trip.                                        |

References:
1. SN75240 Universal TVS.  
2. 1206L020/1206L050 Resettable PTC from Littlefuse.  
3. SMBJ5.0C 600W Surface Mount TVS.
Appendix A - I²C Connector Information

Interface Connector and Plug Information

MCC uses two (2) different connectors and plug assemblies. We have found these parts to be compatible.

I²C Receptacle Connectors

Molex SEMCONN ACCESS.bus Receptacle Connector

Molex Part # 15-83-0064

AMP SDL (Shielded Data Link) Connectors for ACCESS.bus

AMP Part # 4-943197-1

I²C Plug Connectors

Molex SEMCONN ACCESS.bus Plug

Molex Part # 15-83-1564

AMP SDL (Shielded Data Link) Plug for ACCESS.bus

Bush Amp Part # 520851-1
Ferrule Amp Part # 520433-1
SDL (Shell) Amp Part # 520461-1
SDL (Shell) Amp Part # 520460-1
SDL Amp Part # 4-520424-1

The following I²C Cables are available from MCC

MCC Part # CAB4 I²C Interface Cable, 48 inches (4ft)
MCC Part # CAB8 I²C Interface Cable, 96 inches (8ft)
MCC Part # CAB16 I²C Interface Cable, 192 inches (16ft)
MCC Part # CABCL I²C and SMBus Clip Lead Cable
Declaration of Conformity

This Declaration of Conformity is issued by the indicated company which is solely responsible for the declared compliance.

Product(s): iProTx
Product Part Number(s): IPROTX
Product Description: I2C Bus Electrostatic Discharge and Current-Limiting Protection Module


Compliant Standards:
EN 55022 : 1998
Emissions Standard
Conducted Emissions (Class B)
Radiated Emissions (Class B)

EN 55024 : 1998
Immunity Standard
Immunity to Radiated Electromagnetic Fields
Immunity to Fast Transient Bursts - AC Power Lines
Immunity to Conducted Field - AC Power Lines
Immunity to Voltage Dips - AC Power Lines
Immunity to Electrostatic Discharge

Test Laboratory Information:
Cass Industries Ltd., Blackbrook Trading Estate, Weybrook Road, Manchester M19 2QD, ENGLAND.
Test Report Number: CI02570a
Test Report Date: August 19th, 2005
Technical file held by: Micro Computer Control Corporation, 17 Model Avenue / PO Box 275, Hopewell, New Jersey 08525 USA, or its applicable authorized distributor or representative.

Responsible Company: Micro Computer Control Corporation, 17 Model Avenue / PO Box 275, Hopewell, New Jersey 08525 USA, or its applicable authorized distributor or representative.

Signature of Authorized Representative:

Edward Thompson

Name: Edward Thompson
Title: President, Micro Computer Control Corporation
Date: 09-JAN-07