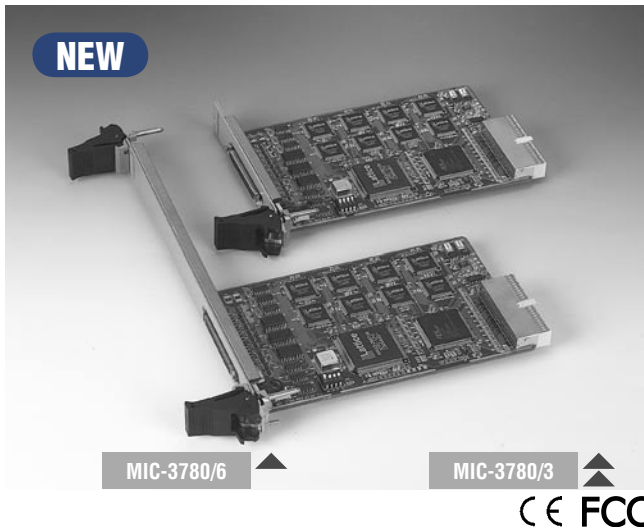


# MIC-3780

## 8-ch Counter/Timer Card



### Features

- 8 independent 16-bit counters
- 8 programmable clock source
- 8 digital TTL outputs and 8 digital TTL inputs
- Up to 20 MHz input frequency
- Multiple counter clock source selectable
- Counter output programmable
- Counter gate function
- Flexible interrupt source select
- BoardID™ switch

### Introduction

The MIC-3780 is a general purpose multiple channel counter/timer card for the 3U/6U CompactPCI® system. It targets the AM9513 to implement the counter/timer function by CPLD. Plus, it provides eight 16-bit counter channels and 8 digital outputs and 8 digital inputs. Advantech has designed in powerful counter functions to fulfill your industrial or laboratory applications.

#### Flexible Counter Modes

The MIC-3780 features up to 12 programmable counter modes, to provide one shot output, PWM output, periodic interrupt output, time-delay output, and to measure the frequency and the pulse width. The MIC-3780 is an ideal solution for variant counter/timer applications.

#### Special Shielded Cable for Noise Reduction

The PCL-10168 shielded cable is specially designed for the MIC-3780 to reduce noise. Its wires are all twisted pairs, and the input signals and output signals are separately shielded, providing minimal cross talk between signals and solid protection against EMI/EMC problems.

#### BoardID™ switch

The MIC-3780 has a built-in DIP switch that helps define each card's ID when multiple cards have been installed on the same PC chassis. The board ID setting function is very useful when users build their system with multiple MIC-3780 cards. With correct Board ID settings, you can easily identify and access each card during hardware configuration and software programming.

#### Plug & Play Function

The MIC-3780 is a Plug & Play device, which fully complies with PICMG 2.0, Ver 2.1 CompactPCI specifications. During card installation, there is no need to set jumpers or DIP switches. Instead, all bus-related configurations such as base I/O address and interrupt are automatically done by the Plug & Play function.

### Specifications

#### Programmable Counter

- **Channels** 8 (independent)
- **Resolution** 16-bit
- **Programmable Clock Source** 8 (independent)
- **Programmable Counter Modes** 12
- **Max. Frequency** 20 MHz
- **Interrupt Source** 8 counter outputs

#### Digital Input/Output

- **Input Channels** 8
- **Input Voltage** Low: 0.8 V max. High: 2.4 V min.
- **Interrupt Source** Channel 0
- **Output Channels** 8
- **Output Voltage** Low: 0.5 V max. @ 24 mA (sink)  
High: 2.4 V min. @ -15 mA (source)

#### General

- **I/O Connector Type** 68-pin SCSI-II female
- **Dimensions (L x H)** 160 x 100 mm (6.3" x 3.9") with 3U/6U Bracket
- **Power Consumption** Typical: +5 V @ 900 mA  
Max: +5 V @ 1.2 A
- **Operating Temperature** 0 ~ 60° C (32 ~ 140° F) (refer to IEC 68-2-1, 2)
- **Storage Temperature** -20 ~ 70° C (-4 ~ 158° F)
- **Relative Humidity** 5 ~ 95 % RH non-condensing (refer to IEC 68-2-3)
- **Certifications** CE, FCC Class A

### Ordering Information

- **MIC-3780/3** 3U, 8-ch. Counter/Timer Card, user's manual and driver CD-ROM. (cable not included)
- **MIC-3780/6** 6U, 8-ch. Counter/Timer Card, user's manual and driver CD-ROM. (cable not included)
- **PCL-10168** 68-pin SCSI-II cable with male connectors on both ends and special shielding for noise reduction, 1 and 2 m
- **ADAM-3968** 68-pin SCSI-II Wiring Terminal Board for DIN-rail mounting

## Applications

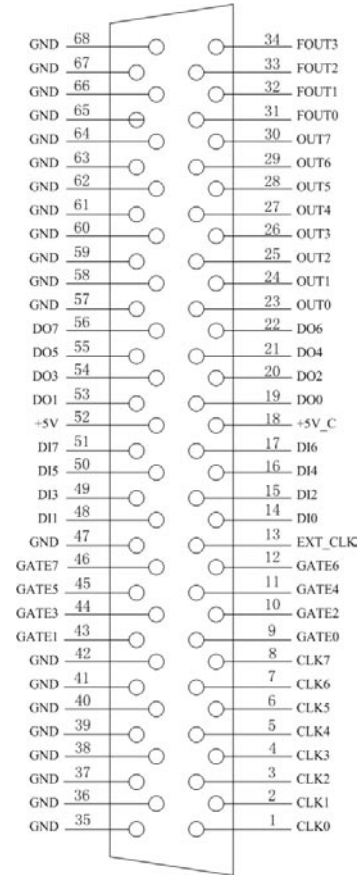
- Event counting
- One shot output
- Programmable frequency output
- Frequency measurement
- Pulse width measurement
- PWM output
- Periodic interrupt generation
- Time-delay generation

## Counter Mode Table

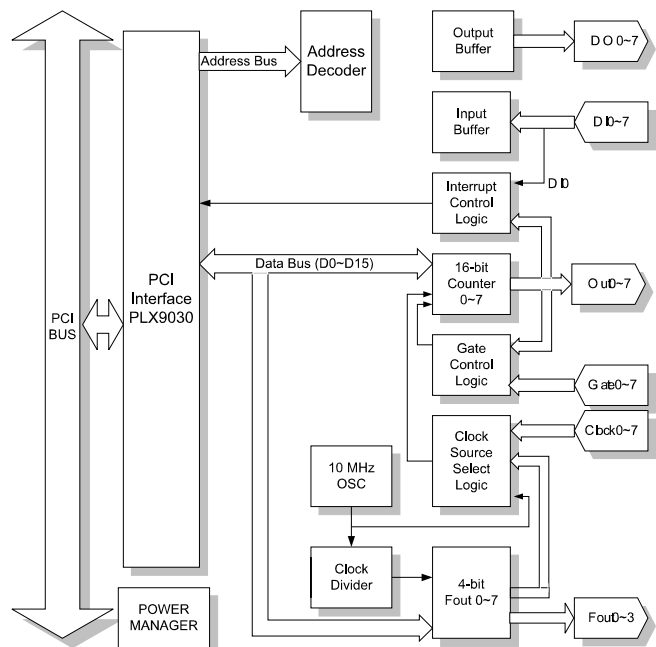
Counter Mode	A	B	C	D	E	F	G	H	I	J	K	L
Reload Source (CM5)	0	0	0	0	0	0	1	1	1	1	1	1
Repetition (CM4)	0	0	0	1	1	1	0	0	0	1	1	1
Gate Control (CM15 ~ CM12)	N	L	E	N	L	E	N	L	E	N	L	E
Count to T/C once, then disarm	√	√	√									
Count to T/C twice, then disarm							√	√	√			
Count to T/C repeatedly without disarming				√	√	√				√	√	√
Gate input dose not gate counter input	√			√			√			√		
Count only during active gate level		√			√			√			√	
Start count on active gate edge and stop count on next T/C			√			√						
Start count on active gate edge and stop count on second T/C									√			√
No hardware re-triggering	√	√	√	√	√	√	√	√	√	√	√	√
Reload counter from Load Register on T/C	√	√	√	√	√							
Reload counter on each T/C, alternating reload source between Load and Hold Registers							√	√	√	√	√	√

Note: Gate Control:  
 N: No gate control  
 L: Level gate control  
 E: Edge gate control

## Pin Assignments



## Block Diagram



- 1 Software
- 2 IPCC
- 3 TPC
- 4 FPM
- 5 ATM & AWS
- 6 DA&C
- 7 cPCI
- 8 ADAM-3000
- 9 Motion Control
- 10 ICOM
- 11 eConnectivity
- 12 UNO
- 13 ADAM-4000
- 14 ADAM-5000
- 15 ADAM-6000
- 16 ADAM-8000
- 17 BAS