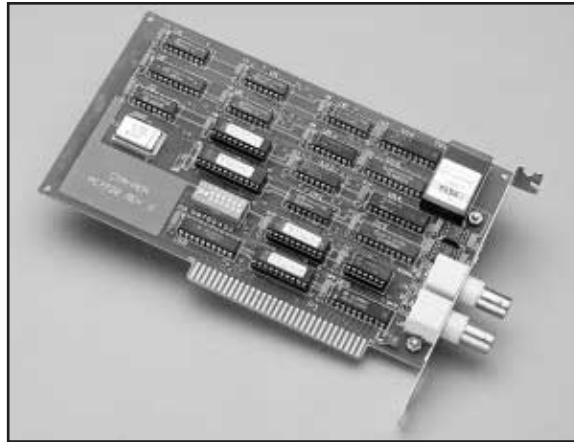# CTM-PER

**Continuous Period
ISA-Bus Counter Board**

Functional Description

The CTM-PER is an ISA-bus plug-in board used to measure every period of a TTL signal for signals of frequencies of DC to 80kHz (the upper limit is computer dependent and may be as low as 20kHz).

The CTM-PER utilizes a 10MHz oscillator clock and a 28-bit up-counter. When a signal edge is detected, the value of the 28-bit counter is loaded into FIFO memory. Successive level changes cause the new counter values to be loaded. The period or interval is the difference of the two counter values. Because the clock is 10MHz, the resolution of the period is 0.1 microsecond. The longest interval that can be measured is determined by the 28-bit counter and is 2.8 seconds. CTM-PER inputs are electrically isolated by optocouplers.

Software

The software provided with the CTM-PER allows the user to set up the board, start/stop operations, and to remove the counter data from the FIFO on a continual basis. The software extracts the counter differences (or delta) from an array of data. A DOS Call Driver is provided which can be used from BASIC, QuickBA-SIC, PASCAL, C or FORTRAN. Commented examples and setup utility programs are also provided.

FEATURES
- **28-bit counter**
- **Resolution of 0.1 microsecond**
- **Every period measured DC to 80kHz**
- **Programmable gate**
- **LSTTL inputs (isolated)**
- **Signal programmable for positive, negative or both edges**
- **DOS Software included**

APPLICATIONS
- **Extraction of doppler information**
- **Continuous monitoring of relay closure intervals**
- **Replaces averaging counter/timer where each period needs to be measured**
- **Extraction of pulse width modulation information**

SPECIFICATIONS

SIGNAL AND GATE INPUTS

CONNECTORS: BNC (2)
SIGNAL/GATE LOAD: 1 LSTTL unit load
ABSOLUTE MAXIMUM INPUT: +7VDC
INPUT PROTECTION: 100Ω in series with input and 6.8V zener
TRANSIENT IMMUNITY: 500V/µs min (common mode)
ISOLATION VOLTAGE: 500VDC (input to computer)

CRYSTAL CLOCK AND COUNTER

FREQUENCY: 10.000MHz
FREQUENCY STABILITY: ±0.01% (±100ppm)
MEASUREMENT RESOLUTION: 0.1ms
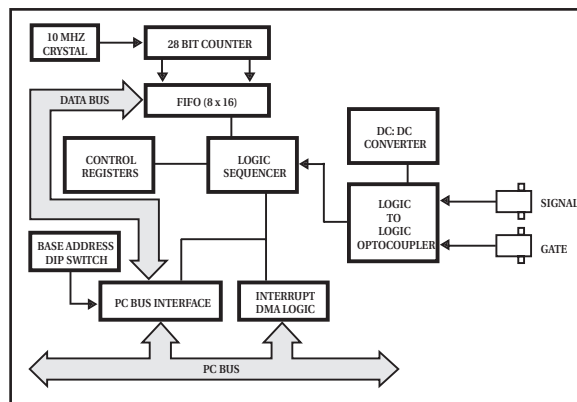**MEASUREMENT ROLLOVER:** 26.8s
MEASUREMENT BITS: 28

PROGRAMMED CONTROL

GATE: Positive, negative or none
SIGNAL EDGES: Positive, negative or both
MAX SIGNAL FREQUENCY: 1.0MHz (burst of 4) 20 to 80kHz (continuous DMA, computer dependent)
DATA ACQUISITION MODES: Programmed, interrupt or DMA

ENVIRONMENTAL

OPERATING TEMPERATURE: 0–50°C
POWER REQUIREMENTS: +5VDC @ 600mA typ
DIMENSIONS: 7.0in L × 4.25in H × 0.75in D
(17.8cm × 10.8cm × 1.9cm)

Block Diagram

ORDER	DESCRIPTION
CTM-PER	Continuous Period Counter Board with DOS Software

OPTIONS	
MS-CTM-PER	Additional Hardware Manual and DOS Software