

PCIP-DMM/A

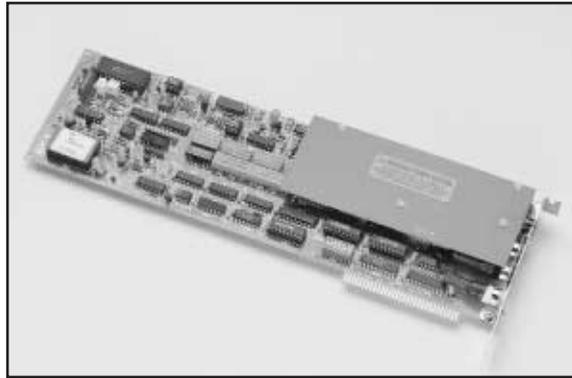
ISA-Bus 4½-Digit Multimeter

Functional Description

The PCIP-DMM/A is a 4½-digit multimeter that plugs directly into any full length I/O slot of an ISA-bus compatible computer. The board provides all the functionality and performance you expect from a standard bench-top multimeter without the cost and programming complexity of a typical GPIB instrument.

Instead of LEDs or LCDs, knobs and buttons, the PCIP-DMM/A uses one-third of the computer screen for the front panel display and the keyboard or a mouse for control. The PCIP-DMM/A's front panel can be popped up and down while another application program is running by pressing a user selected key sequence. When the pop-up panel is deactivated, the screen returns to its original display.

The PCIP-DMM/A features automatic or manual data logging. This records PCIP-DMM/A readings to a user-specified ASCII file. This file can then be used as input to a spreadsheet or presentation program. When automatic data logging is selected, the PCIP-DMM/A can be programmed to record up to 999,999 readings at rates between 0.5 seconds and 99.9 minutes. Data logging may be set up to run in the background while the PC is used for other tasks. When combined with the PCIP-SCAN, the PCIP-DMM/A turns your computer into a multi-channel data-logger.



Hardware features include the measuring of AC and DC voltage, AC and DC current and resistance. The AC readings are true rms. Both absolute and relative readings are possible. The inputs are fully isolated from the computer and line power. All connections are made through three "banana jack" compatible binding posts. The terminals are spaced at the standard ¾ inches for ease of connection and safety considerations.

The PCIP-DMM/A can operate in two modes, manual mode and program mode, similar to the GPIB local and remote operation. In manual mode, the front control panel of the instrument is popped up on the screen when a series of keys is pressed. This pop-up control panel gives access to all functions of the PCIP-DMM/A. Since this can be activated while inside an applications package, a program can be written and debugged as measurements are being taken.

In program mode, the PCIP-DMM/A can be fully controlled by the PC. However, unlike GPIB instruments, the PCIP-DMM/A is programmed using easy to read English commands. Gone are the IEEE-488 worries of talkers versus listeners, serial and parallel polls, and confusing ASCII instrument commands.

Software

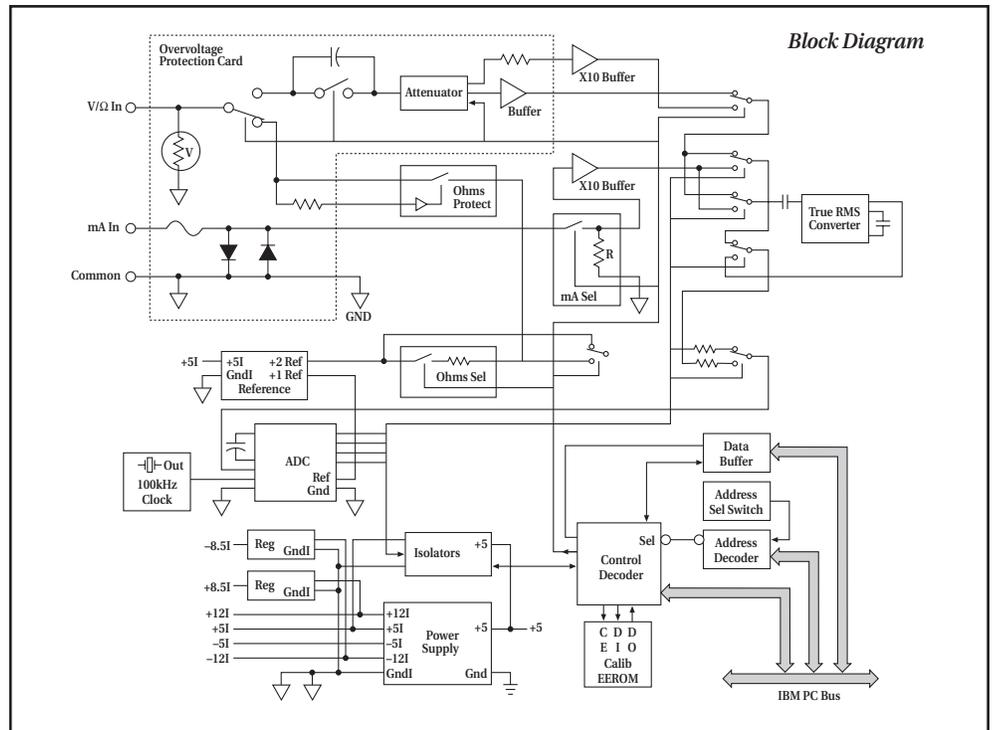
Software available for PCIP-DMM/A board includes DOS File I/O Driver.

FEATURES

- 4½-digit resolution
- DC and AC voltage, current and resistance measurements
- True rms AC measurement
- Manual or auto ranging
- Relative reference for offset nulling
- Digital calibration
- Fully isolated from the host computer
- Programmed with simple English words, no complex IEEE-488 commands
- Automatic datalogging
- Input protection
- Operates in two modes:
 - As a standard bench instrument
 - Under program control from any computer language
- Windows 3.X/95/98

APPLICATIONS

- Portable/field test
- General purpose bench instrumentation
- Automated/production test
- Automatic data logging
- Laboratory automation



PCIP-DMM/A

DOS File I/O Driver

The PCIP-DMM/A driver is a language-independent DOS File I/O driver for support of the board under 16-bit applications of Windows 3.X/95/98. This driver, supplied with the board, can be loaded during the system configuration (CONFIG.SYS) each time you re-boot or turn on your computer. Alternatively the driver can be loaded or unloaded by executing a single command from the DOS prompt. The PCIP-DMM/A's device name is \$DMM. To access the PCIP-DMM/A simply "open" the device called \$DMM. From there ASCII commands are PRINTed to the board and INPUTed from the board. For example, the following program sets the PCIP-DMM/A into the 20 volt DC mode, takes a reading, compares the reading to 15 volts, and if the input is greater than 15 volts, prints an alarm message.

In Basic:

```

10 Open "$DMM" for output as #1 ' Open device for output
20 Open "$DMM" for input as #2 ' Open device for input
30 On error 1000
40 Print #1, "Set 20 V DC" ' Set the input range
50 Print #1, "Read Value" ' Set DMM to read mode
60 Input #2, VOLTS ' Read data into VOLTS
70 If volts <= 15 goto 100 ' Good reading
80 Print "Warning, input over voltage"
90 STOP
100 PRINT "Input =", VOLTS
500 STOP
1000 REM To retrieve error, ' Retrieve error number &
read from the device message
1010 Input #2, n, A$ ' Display error message
1020 PRINT A$
    
```

SPECIFICATIONS

(All accuracy specifications are 1 year values expressed as ± (% reading + digits) with zero set by REL function.)

DC VOLTAGE

RANGE	RESOLUTION	ACCURACY	INPUT IMPEDANCE
200 mV	10 µV	0.03 +1d	>1000 MΩ
2 V	100 µV	0.03 +1d	>1000 MΩ
20 V	1mV	0.03 +1d	>10 MΩ
200 V	10mV	0.03 +1d	>10 MΩ

SETTLING TIME: 1 second to 3 counts of final reading on range.

MAXIMUM INPUT: 200VDC.

AC VOLTAGE (True rms, AC Coupled)

RANGE	RESOLUTION	ACCURACY (60Hz-1kHz)	ACCURACY (1kHz-10kHz)	INPUT IMPEDANCE
200 mV	10 µV	1 +30d	3 +30d	>10MΩ 100 pF
2 V	100 µV	1 +30d	3 +30d	>1000MΩ <100 pF
20 V	1 mV	1 +30d	3 +30d	>1MΩ <100 pF
200 V	10 mV	1 +30d	3 +30d	>10MΩ <100 pF

Note: Accuracy applies above 200 counts (1.0% of full scale)

UP TO 3:1 crest factor allowable.

MAXIMUM INPUT: 200V peak.

RESISTANCE

RANGE	RESOLUTION	ACCURACY
200Ω	0.01Ω	0.03 +1d
2 kΩ	0.1Ω	0.03 +1d
20 kΩ	1Ω	0.03 +1d
200 kΩ	10Ω	0.03 +1d
2 MΩ	100Ω	0.03 +1d

SETTLING TIME: 2 seconds to 3 counts of final reading.

MAXIMUM INPUT: 200V peak.

OPEN CIRCUIT VOLTAGE: < 3.5V all ranges.

DC CURRENT

RANGE	RESOLUTION	ACCURACY	BURDEN VOLTAGE
2 mA	0.1 µA	0.3 + 1d	0.3V
20 mA	1 µA	0.3 + 1d	0.2V
200 mA	10 µA	0.3 + 1d	0.2V

MAXIMUM INPUT: 0-5A, 42V peak.

AC CURRENT

RANGE	RESOLUTION	ACCURACY	BURDEN VOLTAGE
2 mA	0.1 µA	1 + 30d	0.3V
20 mA	1 µA	1 + 30d	0.2V
200 mA	10 µA	1 + 30d	0.2V

MAXIMUM INPUT: 0-5A, 42V peak.

CONVERSION RATE

2.5 readings/s.

POWER REQUIREMENTS

+5V: 985mA typ, 1.245A max

ENVIRONMENTAL

OPERATING TEMPERATURE: 0 to 50°C

STORAGE TEMPERATURE: -20 to 70°C

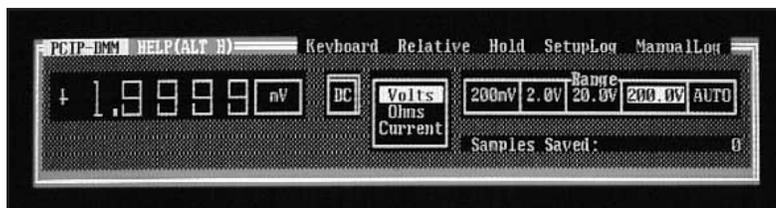
HUMIDITY: 0-90% non-condensing

PHYSICAL

DIMENSIONS: 13.30in L × 4.25in H × 0.75in D
(33.8cm × 10.8cm × 1.9cm)

ORDER	DESCRIPTION
PCIP-DMM/A	4½-Digit Multimeter w/DOS software
OPTIONS	
TCP-BAN	Dual banana plug to Clip Ball test leads
TCP-DBB	Dual banana to BNC adapter
TCP-MCB	Dual Micro clips to BNC adapter
TCP-ACB	Dual alligator clips to BNC adapter
C-BMM-5	5ft BNC Cable
C-BMM-15	15ft BNC Cable
MS-PCIP-DMM/A	Additional hardware manual and DOS software

See page 479 for descriptions of all accessories.



PCIP-DMM/A Pop-Up Control Panel