ARTISAN®
TECHNOLOGY GROUP

Your **definitive** source for quality pre-owned equipment.

Artisan Technology Group
(217) 352-9330 | sales@artisantg.com | artisantg.com

Full-service, independent repair center
with experienced engineers and technicians on staff.

We buy your excess, underutilized, and idle equipment
along with credit for buybacks and trade-ins.

Custom engineering
so your equipment works exactly as you specify.

- Critical and expedited services
- In stock / Ready-to-ship
- Leasing / Rentals / Demos
- ITAR-certified secure asset solutions

Expert team | Trust guarantee | 100% satisfaction

All trademarks, brand names, and brands appearing herein are the property of their respective owners.

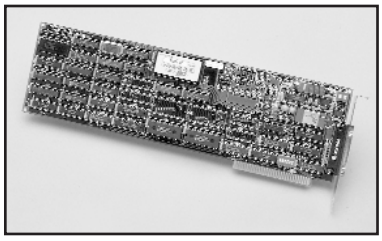
Find the *Keithley / MetraByte PCIP-AWFG* at our website: *Click HERE*

PCIP-AWFG

Arbitrary Waveform Function Generators

Functional Description

The PCIP-AWFG is an Arbitrary Waveform Generator on an IBM PC/XT/AT plug-in board. The PCIP-AWFG/2 board provides one or two output channels. Each channel consists of one analog output and four digital outputs. The board provides all the functionality and performance you expect from a benchtop arbitrary waveform generator without the cost and programming complexity of a typical GPIB instrument.



Instead of LCDs, knobs, and buttons, the PCIP-AWFG uses one-third of the computer screen for the front panel display and the keyboard or a mouse for control. The PCIP-AWFG'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 Control Panel is deactivated, the screen returns to its original display.

The analog outputs are generated by a pair of 12-bit DACs. The DAC outputs are deglitched and buffered before driving the analog outputs. The digital outputs are driven by conventional TTL circuits and include series termination resistors. All output signals are brought out through a 25-pin D connector which is located at the rear of the card. In addition to the analog and digital outputs, the external clock and gate signals can be input via this connector. A data valid signal is also available.

The data which drives the analog and digital outputs is stored in 32k words of onboard RAM per channel. The memory words are 16 bits wide with the 12 most significant bits driving the DACs and the 4 least significant bits providing the digital output data. Control circuitry on the card automatically reads data from sequential locations in RAM at a periodic rate and writes it to the outputs. The output update rate is user programmable with a minimum update period of 200 nanoseconds. An internal timebase or external clock (1MHz max) is software selectable. In addition, the PCIP-AWFG provides a means of repeating a desired output sequence a specified number of times (1-65535), then halting. Both output channels share common RAM address busses and a common timebase. This allows the two channels to operate at the same data update rate.

FEATURES

- One or two channels
- 12-bit analog output resolution
- 4 bits digital output per channel
- 32k points per channel
- Up to 5MHz output update rate
- Selectable output ranges
- Data output in single or repetitive mode
- Generate waveforms captured by PCIP-SCOPE
- External clock and gate inputs

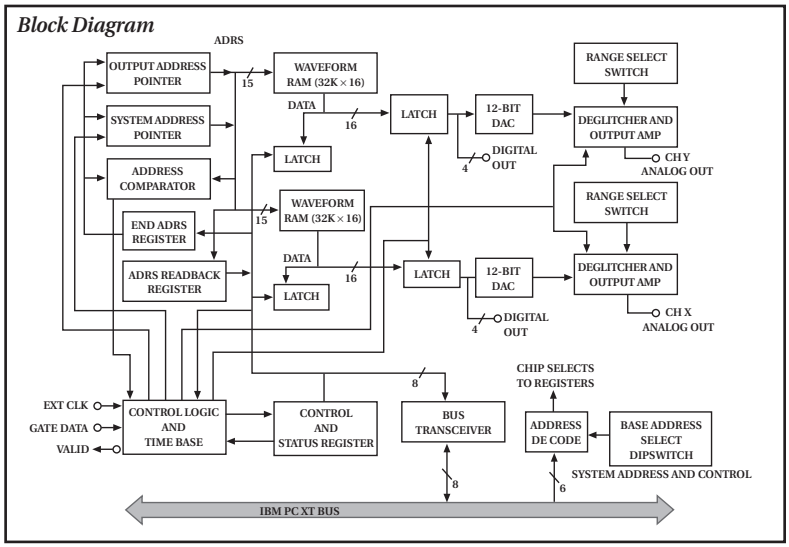
APPLICATIONS

- Automated testing
- Low-frequency waveform generation
- Motor control, X,Y positioning
- Vibration testing
- Playback of recorded events
- Stimulus/response

Options for the PCIP-AWFG include a 25-pin ribbon cable and the STA-AWFG screw terminal accessory board, allowing a convenient means to connect the digital and analog signals. The STA-AWFG also provides BNC connectors for the CLOCK and GATE inputs.

The PCIP-AWFG 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. The computer keyboard or mouse is used to select all functions of the PCIP-AWFG/2. Since the Pop Up Control Panel can be activated while inside an applications package, a program can be written and debugged as waveforms are being generated.

Block Diagram



PCIP-AWFG/2 Pop Up Control Panel



QUESTIONS?

1-800-552-1115 (U.S. only)

Call toll free for technical assistance, product support or ordering information, or visit our website at **www.keithley.com**.

KEITHLEY
Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

PCIP-AWFG

In program mode, the PCIP-AWFG/2 can be fully controlled by the PC. However, unlike GPIB instruments the PCIP-AWFG/2 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.

Programming

The PCIP-AWFG software comes in the form of a language-independent DOS File I/O Driver. This driver can be loaded during the system configuration (CONFIG.SYS) each time you re-boot or turn on your computer or can be loaded and unloaded by executing a single command from the DOS prompt. The PCIP-AWFG's device name is $AWFG. To access the PCIP-AWFG simply "open" the device called $AWFG. From there ASCII commands are PRINTed to the board and INPUT from the board. All commands are high-level, easy to use English statements. For example the following program configures the PCIP-AWFG to output a waveform.

IN BASIC:

```
 10 OPEN "$AWFG" FOR OUTPUT AS #1     ' Open PCIP AWFG
 20 PRINT #1, "CLEAR"
 30 OPEN "$AWFG" FOR INPUT AS #2
 40 ON ERROR 1000
 50 PRINT #1, "Set Channel X"         ' Select channel X
 60 PRINT #1, "Set Sample 500"        ' Set number of samples
 70 PRINT #1, "Set Rate 1E-3"         ' Set scan rate to 1 ms
 80 PRINT #1, "Set Scans 200"         ' Set number of scans to 200
 90 PRINT #1, "File c:\demo.dat"      ' Configure data file
100
500 STOP
999 REM To retrieve an error, read from the device
1000 INPUT #2,ErrorNum,A$,B$          ' Read error number and
                                        explanation
1010 PRINT "AWFG Error Number" ;ErrrorNum ' Print out driver error
                                        number
1020 PRINT "ERROR"B$                  ' Print out error explanation
1030 PRINT "On Command Line of . . . ";A$  ' Print copy of original
                                        command
1040 PRINT "Strike Any Key to Continue"
1050 IF INKEY$ = "  " GOTO 1050
1060 CLS
1070 RESUME NEXT
```

SPECIFICATIONS

(Note: Specifications apply for both PCIP-AWFG and PCIP-AWFG/2 except as to number of channels.)

WAVEFORM OUTPUTS

OUTPUT CONFIGURATION: Each output channel consists of an analog output and 4 digital outputs

NUMBER OF OUTPUT CHANNELS: 2 (for PCIP-AWFG/2)

OUTPUT MODES: Single or Dual channel modes available. In single-channel mode the unused outputs are held at zero.

OUTPUT UPDATE RATE: 5MHz maximum (200ns) using internal clock, variable in 200ns steps to a maximum period of 859 seconds 1MHz maximum (1µs) using external clock

(Note: Both output channels are updated at the same rate)

INTERNAL TIMEBASE STABILITY: ±100ppm (±0.01%)

EXTERNAL TIMEBASE JITTER: 50ns max (from external clock edge to waveform output)

ANALOG OUTPUTS

Output ranges are individually switch-selectable.

OUTPUT RANGES: 0–5V, 0–10V, ± 2.5V, ± 5V, ±10V.

RESOLUTION: 12-bits (1 part in 4096).

RELATIVE ACCURACY: ½ LSB (0.01%) min.

OUTPUT TRIMS: Full-scale gain and DC offset are user-trimmable for each channel .

FULL SCALE GAIN ADJUST: Variable over a range of ±0.25% of nominal full-scale (min).

DC OFFSET ADJUST: Variable over the range of ±0.15% of nominal full-scale (min).

MINIMUM LOAD IMPEDANCE: 500Ω shunted by 100pF.

OUTPUT DRIVE CURRENT: ±20mA at ±10V.

OUTPUT SHORT CIRCUIT CURRENT: 50mA typ.

OUTPUT IMPEDANCE: <0.1Ω.

OUTPUT SLEW RATE: 100V/µs typical at minimum load impedance.

OUTPUT RISE/FALL TIME: 150ns typ for a 20V step (–10V to +10V measured at 10% to 90% points) at minimum load impedance.

OUTPUT SETTLING TIME: 600ns typ for a 10V step to 0.01% (12-bit accuracy) at minimum load impedance.

DAC OUTPUT GLITCH ENERGY: <1nV–sec typ.

DIGITAL DATA OUTPUTS

CONFIGURATION: 4 bits per channel, updated at same time as analog outputs.

OUTPUT CHARACTERISTIC: Digital outputs are driven by 74 LS logic.

OUTPUT LOW SINK CURRENT: 1.6mA @ V_{OL} = 0.5V.

OUTPUT HIGH SOURCE CURRENT: –400µA @ V_{OH} = 2.7V.

DIGITAL CONTROL FUNCTIONS

EXTERNAL CLOCK: The external clock input allows the user to output data at a rate determined by the frequency of the signal applied to this input.

GATE: The gate input allows the user to control whether or not the outputs are being updated via an externally applied logic signal.

REFERENCE CLOCK: This output is provided as a timing reference to allow the user to determine the time at which the outputs have been updated. A positive edge (low to high transition) indicates that the output has been updated.

EXTERNAL CLOCK AND GATE INPUT CHARACTERISTICS

LOGIC LOW LEVEL =: 0.0V to 0.8V @ –0.4mA.

LOGIC HIGH LEVEL =: 2.0V to 5.0V @ 20µA.

POWER REQUIREMENTS

5VDC ±5%: 2A typ, 2.5A max.

ENVIRONMENTAL

OPERATING TEMP. RANGE: 0 to +40 °C.

PHYSICAL

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

ORDER	DESCRIPTION
PCIP-AWFG	5MHz, One Channel Arbitrary Waveform Generator w/DOS software
PCIP-AWFG/2	5MHz, Two Channel Arbitrary Waveform Generator w/DOS software
OPTIONS	
K-1800	PCIP-AWFG/2 to STA-AWFG Cable
STA-AWFG	Screw Terminal Accessory Board
MS-PCIP-AWFG	Additional hardware manual and DOS software

See page 479 for descriptions of all accessories.

Artisan Technology Group - Quality Instrumentation ... Guaranteed | (888) 88-SOURCE | www.artisantg.com

Artisan Technology Group is an independent supplier of quality pre-owned equipment

Gold-standard solutions

Extend the life of your critical industrial, commercial, and military systems with our superior service and support.

We buy equipment

Planning to upgrade your current equipment? Have surplus equipment taking up shelf space? We'll give it a new home.

Learn more!

Visit us at **artisantg.com** for more info on price quotes, drivers, technical specifications, manuals, and documentation.

Artisan Scientific Corporation dba Artisan Technology Group is not an affiliate, representative, or authorized distributor for any manufacturer listed herein.

We're here to make your life easier. How can we help you today?

(217) 352-9330 | sales@artisantg.com | artisantg.com

ARTISAN® TECHNOLOGY GROUP