ASTRONICS
TEST SYSTEMS

MAC

PinPoint Multi-function Analog Card

The Multi-function Analog Card adds a suite of integrated instruments to the PinPoint IIR or PinPoint UDA systems.

Features and Specifications

The card provides the following:

- **Counter Timer** with 1.5GHz input to perform Frequency, Period, Time A-B, Unit Count, and Frequency Ratio measurements. Input voltage range AC coupled.
- **5 ½ digit DMM** (Digital Multimeter) capable of measuring AC, DC, Current, capacitance, and 4-wire resistance. Choice of high accuracy and program run- time optimization modes. Fast conversion rates.
- **Oscilloscope** 4 Channels plus Trigger @ 500MSPS and each at 200MHz bandwidth. Option to alternate channels 1&2, 3&4 into double data rate, permitting 1GSPS.
- **Arbitrary Waveform Generator** with 4 outputs referenced to ground. The waveform generator is capable of providing Sine, Square, Triangle, and Sawtooth waveforms at up to 10MHz, as well as DC offset levels and user-defined waveforms. All Channels can be synchronized to generate multi-phase signals. Channel 1 has 350mA back-drive current compliant to DEF STAN 0053 for in- circuit testing of hybrid devices, such as Analog to Digital Converters.

All of these instruments can be used as part of an integrated test sequence or as individual analog instruments in "Immediate Mode", as required. Each Instrument is hardware independent and, as such, each can be used simultaneously.

The Multi-function Analog Card can be inserted into a PinPoint or UDA system ready for immediate use. TestVue recognizes the new MAC and configures the software auto-matically allowing all its functionality to be used in a test program or interactively by the user.

ORDERING INFO

Astronics Test Systems
MAC - Multi-function Analog Card

Astronics Test Systems

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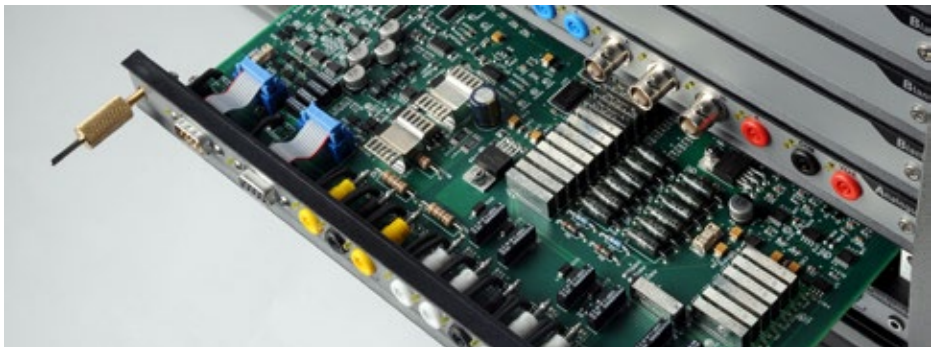


DMM (Digital Multimeter)

Measurement Characteristics

DC Voltage

- Ranges: 200mV, 2V, 20V, 200V, 1000V
- Accuracy: (% + 10 counts) ± 0.1%
- Input resistance: 10MΩ

AC Voltage

- Ranges: 200mV, 2V, 20V, 200V, 1000V
- Accuracy: (% + 40 counts)
  - 50 to 100Hz ± 0.1%
  - >100Hz to 1kHz ± 2.5%
  - >1kHz to 10kHz ± 3.5%
  - >10kHz to 20kHz ± 5.0%
- Bandwidth: 30kHz
- Input Impedance: 10MΩ Paralleled by 100pF

Current

- AC and DC Ranges: 2A
- DC accuracy: (% + 10 counts) ± 0.5%
- AC accuracy: (% + 40 counts)
  - 50 to 100Hz ± 1.0%
  - >100 to 1kHz: ± 2.5%
  - Bandwidth: <= 30kHz

Resistance

- Ranges: 20Ω, 200Ω, 2kΩ, 20kΩ, 200kΩ, 2MΩ, 20MΩ
- Mode: 2-wire or 4-wire measurement
- Accuracy: (% + 10 counts)
  - 20Ω (2T & 4T)
  - 200Ω (2T) 1.0%
  - 200Ω (4T) 0.2%
  - 2kΩ to 2MΩ 0.2%
  - 20MΩ 5.0%

Diode test

- Test current: 10mA
- Test voltage: <=10V

Capacitance

- Ranges: 200nF, 2uF, 20uF, 200uF, 2000uF, 20000uF
- Accuracy: ± 1.0%

SPECIFICATIONS

- Display Digits: 5½
- Display Count: 200,000
- Conversion Rates: 2, 5, 10, 20, 100k conversions per second
- Maximum input voltage: 450V (320V AC)
- Maximum floating voltage: 500V
- Maximum input current: 2A continuous (3A fused)
- Overload protection: Fuse / VDR
- Kelvin 4-wire resistance measurements with guard. Multiplex DMM to Analog Highways.
- Peak detector circuit for measuring spikes

A – D Converter (for run-time optimization)

- Ranges: 200mV, 2V, 20V, 200V, 1000V
- Accuracy: ± 1%
- Sample rate: 250kS/s
- Resolution: 14 bits

Counter Timer

SPECIFICATIONS

- Display Digits: 8 (32bits)
- Modes: FREQ, PERIOD, UNIT COUNTER, TIME AB, FREQ RATIO
- Input channels: Ch A, Ch B, HI-FREQ

Ranges

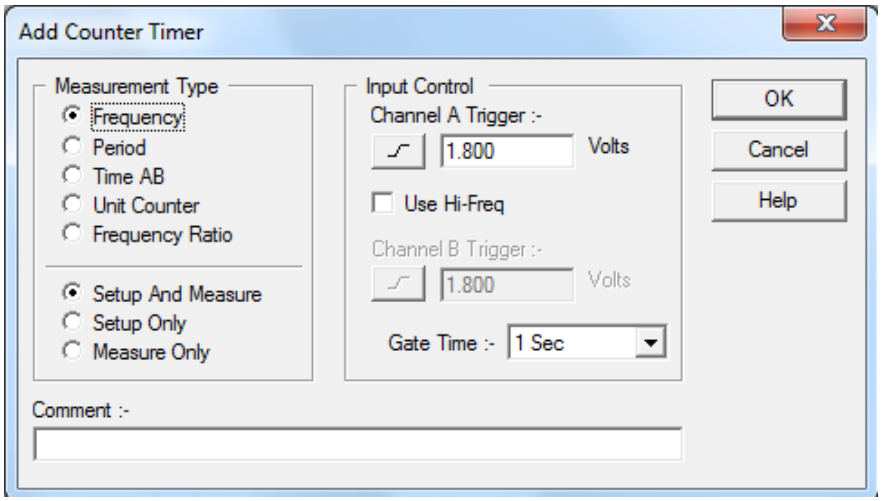
- Ch A / B: DC to 30MHz (can be routed to the backplane)
- HI-FREQ: 100kHz to 1.5GHz (restricted to frequency only)

Input Impedance

- Ch A / B: 1MΩ paralleled by 20pF (each input has a 50Ω Impedance switch)
- HI-FREQ: 1MΩ paralleled by 20pF with DC bias circuit to power external probes

Accuracy

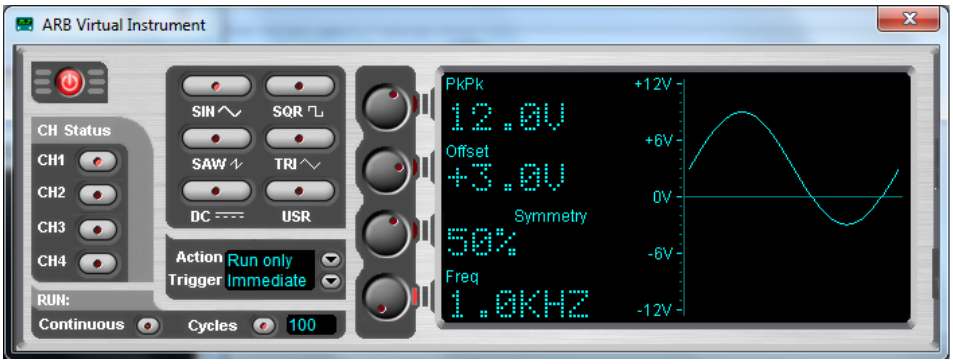
- Timing: ± 0.01% +100ns
- Threshold level (Ch A / B): ± 1%



Multiplex Counter Timer Channels A and B to Analog Highways

- CH A /B Inputs: Frequency to 100MHz
- Input voltage range: ±10V programmable
- Edge: Positive or negative edge
- HI-FREQ Input: Frequency to 1.5GHz
- Input voltage range: AC coupled (±5V)
- Range Automatic

Arbitrary Waveform Generator, 4 Channels



Waveform Generation

- Types: Sine, Square, Triangle, Sawtooth, Pulse, DC Offset, User (arbitrary).
- Signal frequency: 0.1Hz to 10MHz, ≈0.1Hz resolution
- Functions: Offset, Skew / Duty cycle adjustment
- Sync mode: Channel - Channel
- Burst: 1—65,534 cycles in one shot
- Trigger: Hard trigger from backplane or by software command
- Completion signal: Signal to back-plane at end of burst
- Multiplex ARB Channels to Analog Highways

Waveform Source

- Resolution: 16 bit
- Sample Rate: 50MS/s for standard waveforms
- Frame Depth: 32kB

Accuracy

- Voltage Level: ± 0.5%
- Timing: ± 0.01%

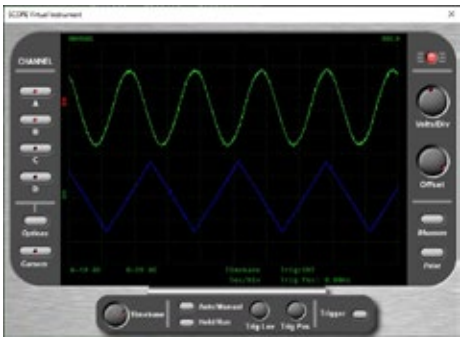
Current Limit

- Analogue Output: 25mA continuous
- In-Circuit Mode: 350mA for < 25mS (Channel 1 only)

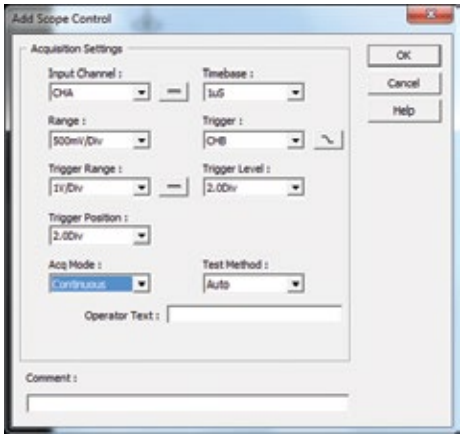
Modes

- Precondition states: Run-Reset - Stop

Digital Oscilloscope, 4 Channels



- No. of Channels: 4 (Plus Trigger)
- Input Voltage Range: ± 5V Max (± 50V with 10:1 Probe)
- 500MS/s per channel, real-time sampling
- 8-bit vertical resolution
- 8,192 Samples per Channel



- 200MHz Analog Bandwidth channels
- Internal and External Triggering
  - Trigger from any channel
  - Trigger position cursor
  - Time cursors with readout

SPECIFICATIONS

The arbitrary waveform generators can be programmed to provide Sine, Square, Triangle, and Sawtooth standard waveforms, as well as DC offset levels and user-defined waveforms.

The outputs can operate in a fully-synchronous mode such that each waveform generator can be phase-locked, started / stopped together, or synchronized to generate multi-phase waveforms.

- No. of independent channels: 4
- Output voltage range: ±12V

SPECIFICATIONS

The digital oscilloscope provides 4 channels with 500MS/s real-time sampling and 200MHz bandwidth.

- Measure button includes:
  - Peak-to-Peak volts
  - Peak Maximum / Minimum
  - Frequency