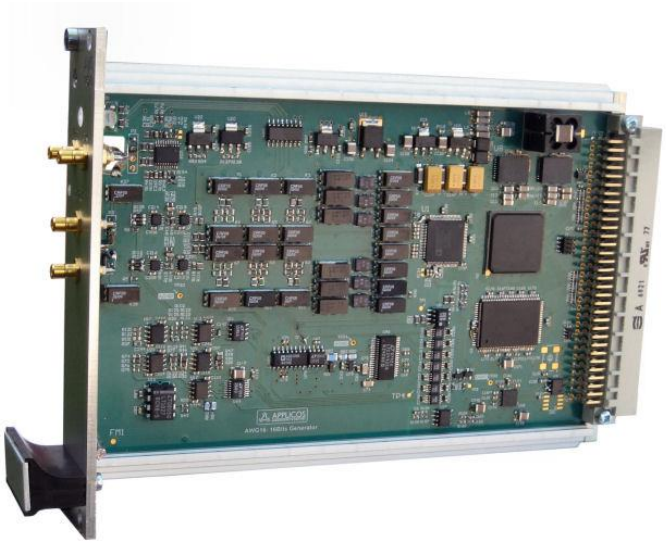
16 bit / 400Msps Arbitrary Waveform Generator

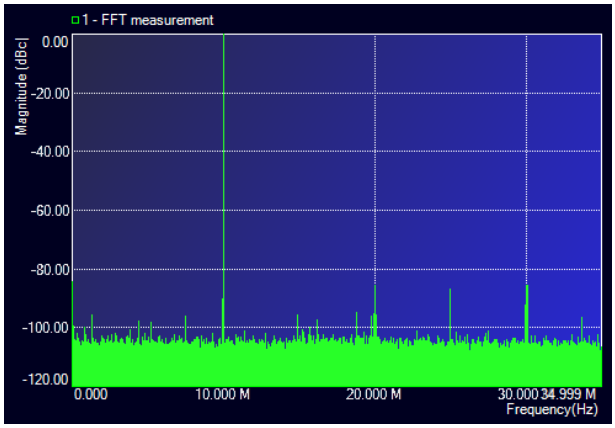
AWG16

- 400MHz max sample speed
- 16 bit resolution
- Differential outputs
- 8 output ranges
- Selectable filters to improve signal quality
- -95dB THD typical at 1MHz
- 73dB SNR typical
- Programmable common mode voltage
- For ATX series hardware platform



The AWG16 is a 16 bit Arbitrary Waveform Generator for high-speed / high resolution waveform generation. The fully differential signal path from the DAC all the way to the outputs ensures an exceptional high signal quality. Despite the emphasis on signal quality the AWG16 also has a very good DC accuracy.

The module features differential outputs with a programmable common-mode voltage. For single ended applications the positive output as well as the negative output can be used. The clock can come from the backplane or from the front panel.



The module has 8 output ranges starting at 0.48Vpp up to 5.12Vpp, which covers a wide range of Unit Under Test input voltages.

A filter-bank with 3 Low Pass filters (15MHz, 30MHz, and 60MHz) provide excellent signal conditioning to obtain the best possible signal integrity.

The Module uses a self calibrating DAC which results is an excellent SNR, THD and linearity. For DC levels there are various calibration DACs that allows an unsurpassed DC accuracy for a high speed module. The unit is an excellent choice for sine wave generation as well as high speed linear ramp generation. With 8M-word (16M-byte) of memory very complex signal shapes can be generated.

All these features ensure a very accurate result when performing analog measurements. The unit is very suitable for testing ADC linearity and dynamic performance.

APPLICOS
MEASUREMENT & CONTROL

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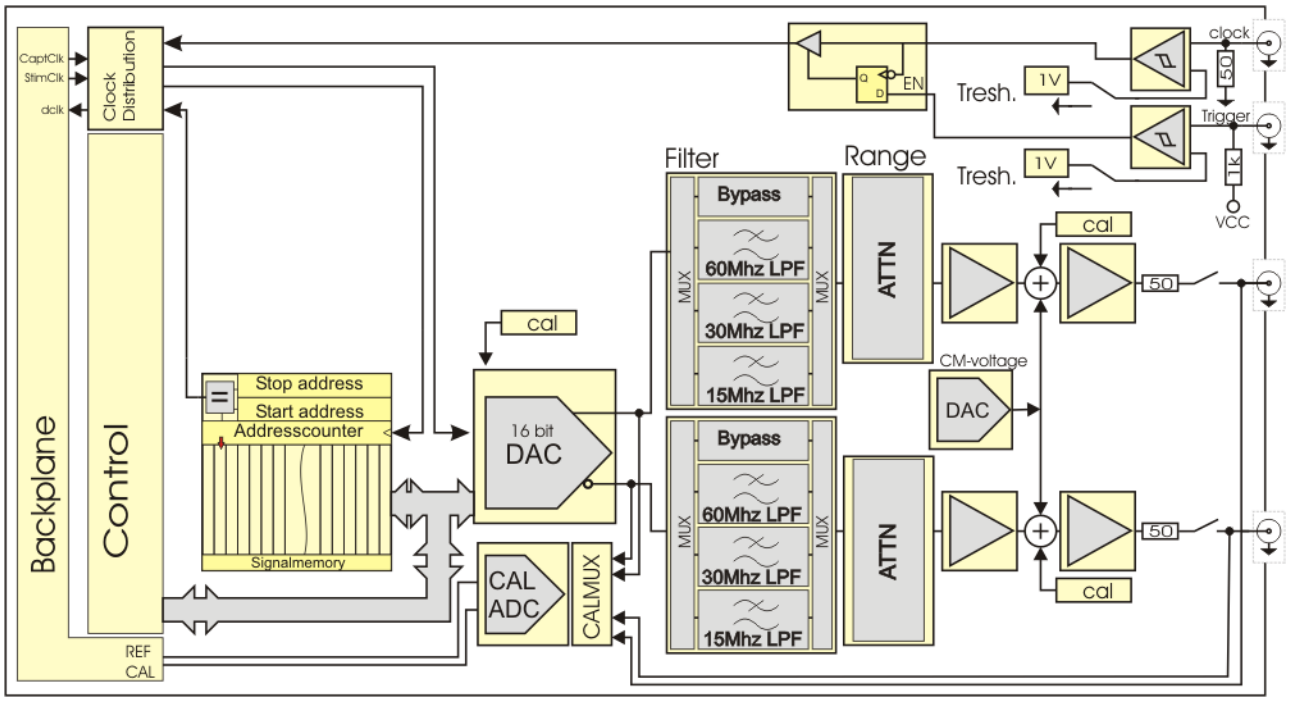
Block diagram



Specifications (conditions: after 1 hour warm-up, T_A=25ºC, filter bypass unless otherwise mentioned)

General

Resolution	16 bit
Update rate	DC - 400MHz
Pattern depth	8M words

Output characteristics

Output impedance	50Ω
Ranges Single Ended (Vpp into open circuit)	0.48V, 0.64V, 0.96V, 1.28V, 1.92V, 2.56V, 3.84V, 5.12V
Ranges differential (Vpp into open circuit)	0.96V, 1.28V, 1.92V, 2.56V, 3.84V, 5.12V, 7.68V, 10.24V
Output filters (3 pole Butterw.)	Bypass, 15MHz, 30MHz, 60MHz
Bandwidth, -3dB (typical)	120MHz (excl. sinX/X effect)
0.1dB flatness (typical)	30MHz (excl. sinX/X effect)
Output configuration	Differential, Single Ended, 50Ω
Output operating range	+/- 5.12V

Accuracy (filter bypass)

Absolute accuracy	±(500µV + 0.08% of range)
Non Linearity	±0.003% of range
Temperature drift (typical)	±(10ppm of range + 20ppm of value)/ºC

Common mode voltage source

Resolution	≤100µV
Voltage range	-2.56V to +2.56V
DC-offset accuracy	±(200µV + 0.02% of value)
Non Linearity	±0.01% of range

Dynamic characteristics

(2.5Vpp diff. output signal, 200Msps, BW DC-100MHz)

SNR (f-out=1MHz)	70dB
SNR (f-out=10MHz)	68dB
THD (f-out=1MHz)	-87dB
THD (f-out=10MHz)	-82dB
SFDR (f-out=1MHz)	88dB

Clock input

Input impedance	50Ω
Threshold level	0V or 1V (programmable)
Input level around threshold	±100mV to ±2V (±4V max.)
Jitter from clock-in to f-out	110fs (typical, f-out=100MHz, jitter BW= 1kHz-10MHz)

Trigger input

Input impedance	1kΩ
Threshold level	0V or 1V (programmable)
Input level around threshold	±100mV to ±2V (±4V max.)

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