



# AT-AWG500

## 500Mps 16Bit Arbitrary Waveform Generator

16Bit waves fast and easy as never before

AT-AWG500 is a high performance 500 MHz 16Bit fully arbitrary waveform generator. The AT-AWG500 has a powerful parallel architecture which can perform at runtime complex signal processing and waveform sequencing. A powerful analog front-end provides three outputs with different performances and analog signal conditioning options.

AT-AWG500 is the ideal choice to generate high quality waveforms in the easiest way ever.

The AT-AWG500 engine can run in Arbitrary or DDS (Direct Digital Synthesis) mode at 500Mps and 16Bit resolution:

### Arbitrary Mode features

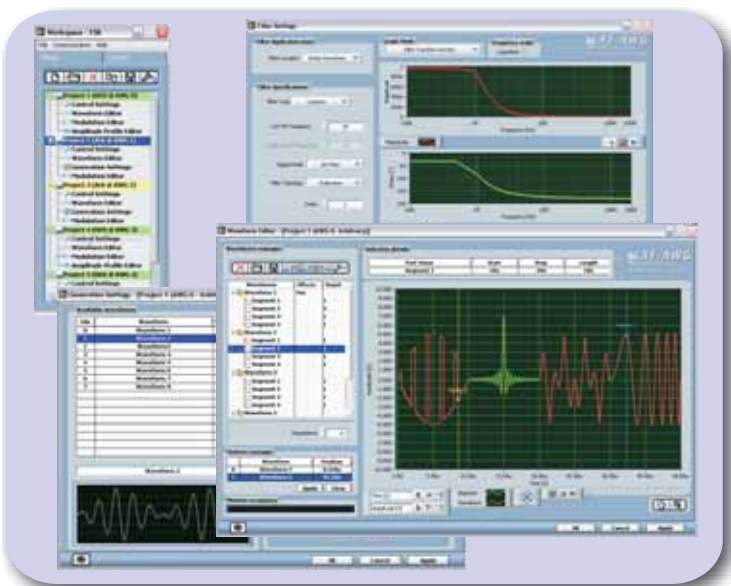
- Up to 349,504 different waveforms definable
- Waveform sequences defined statically or at runtime
- Triggering modes: single, continuous, stepped, burst
- 16Bit ASK modulation

### DDS Mode features

- 36Bit DDS with 7.27mHz resolution
- FSK or PSK modulation over any arbitrary carrier
- Modulation law defined statically or at runtime
- Triggering modes: single, continuous, stepped, burst
- Programmable amplitude vs frequency correction figure

The dynamic update operations are very effective thanks to the USB 2.0 connection to the PC which can program the AT-AWG500 while it is generating the output signal.

The analog front-end has three outputs with different features to fit any kind of signal requirement:



- **500Mps**
- **16Bit resolution**
- **8 Million samples**
- **Up to 8 channels**

### The LVOut

- Single ended 50Ohm full power bandwidth
- < 600 ps rise time ( $T_{20-80\%}$  at  $1V_{pkpk}$ ),  $\pm 3V$  voltage swing

### The HVOut

- Single ended 50Ohm or low impedance output
- < 1.8 ns rise time ( $T_{20-80\%}$  at  $2V_{pkpk}$ ),  $\pm 12V$  voltage swing
- Analog filters: unfiltered, 65 Mhz, 146 MHz, 225 MHz
- Attenuations:  $\div 1$ ,  $\div 2$ ,  $\div 4$ ,  $\div 8$
- Current limitation: unlimited, 200uA, 10mA

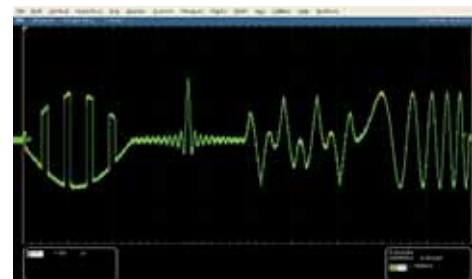
### The DiffOut

- Differential 100Ohm output
- < 1.2 ns rise time ( $T_{20-80\%}$  at  $1V_{pkpk}$ ),  $\pm 6V$  voltage swing
- Analog filters: unfiltered, 65 MHz, 146 MHz, 225 MHz
- Programmable common mode voltage

AT-AWG500 has the AT-XSS system that can extend at up to 8 synchronous output at 500Mps.

Two software provide a user-friendly graphic interface: an easy quick start software and a full software which provides full support for all AT-AWG500 features:

- Project navigator with multiple display windows
- Complex waveform and modulation editors
- Waveform sequence editor
- Noise editor and waveform filtering editor
- LabVIEW and C/C++ SDK (Software Development Kit)



Tektronix® TDS7154B print screen \*



Active Technologies

www.activetechnologies.it

# Tech Specs:

Generation mode:	Arbitrary or 36Bit DDS (Direct Digital Synthesis)
Sampling frequency:	500MSps
Sampling frequency prescaler:	1 to 65,532 in multiples of 4
Memory Depth:	2, 4 or 8 Msamples
DAC resolution:	16Bit
Waveforms Length:	12 to 4,194,048 points in multiples of 4 (4Msamples memory option)
Number of Waveforms:	1 to 349,504
Sequence Length:	1 to 1,024 or infinite
Sequence repeat counter:	1 to 4,294,967,295
Trigger mode:	Single, continuous, stepped, burst
Modulation type:	M-ASK, M-FSK and M-PSK
Minimum M-FSK frequency resolution:	0.00727 Hz ( $500\text{MHz}/2^{36}$ )
Minimum M-PSK frequency resolution:	$2.14\text{E}-5^\circ$ ( $2\pi/2^{24}$ rad)
Programmable amplitude vs frequency figure:	256 steps with programmable delta frequency and amplitude
Programmable markers:	2 vertical markers in ARB mode 1 horizontal marker in DDS mode
Low voltage output:	Single ended 50Ohm full power bandwidth < 600 ps rise time ( $T_{20-80\%}$ at $1V_{pkpk}$ ), $\pm 3V$ voltage swing
High voltage output:	Single ended 50Ohm or low impedance output < 1.8 ns rise time ( $T_{20-80\%}$ at $2V_{pkpk}$ ), $\pm 12V$ voltage swing Analog filters: unfiltered, 65 MHz, 146 MHz, 225 MHz Attenuations: $\div 1$ , $\div 2$ , $\div 4$ , $\div 8$ Current limitation: unlimited, 200uA, 10mA
Differential output:	Differential 100Ohm output < 1.2 ns rise time ( $T_{20-80\%}$ at $1V_{pkpk}$ ), $\pm 6V$ voltage swing Analog filters: unfiltered, 65 MHz, 146 MHz, 225 MHz Programmable common mode voltage
Harmonic distortion:	< -55dBc, (Low voltage output at 10MHz)
Overshoot:	< 10% (any output)
Digital filters effect (HP, LP, BS, BP):	Butterworth, Chebyshev, Inverse Chebyshev, Elliptic, Bessel
Digital noise effect:	Uniform, Gaussian, White, Poisson, Periodic random, Bernoulli, Gamma, Binomial
External I/O :	External Trigger input and output. Connector type: BNC External clock input. Connector type: BNC AT-XSS expansion bus. Connector type: SCSI
Dimensions (WxLxH):	17.3 x 27.3 x 6.7 cm
Weight:	700g
Interface:	USB 2.0 (compatible with USB 1.1)
Power Supply:	12 VDC

AT-AWG500 is a test equipment instrument designed and made in Italy by Active Technologies.

The company was founded in 2002 by a staff of engineers expert in semiconductor test equipment and instrumentation design.

Active Technologies is a supplier of innovative and avant-garde Automated Test Equipment and electronic instrumentation to world wide semiconductor company leaders.

Info and orders:

[info@activetechnologies.it](mailto:info@activetechnologies.it)

Technical Support:

[sales@activetechnologies.it](mailto:sales@activetechnologies.it)  
[support@activetechnologies.it](mailto:support@activetechnologies.it)

Phone:

+39 0532 91456

Fax:

+39 0532 970134



**Active Technologies**  
via Bela Bartok, 29/B  
44100 Ferrara - Italy