



# Active Technologies Product Catalog

## Reinvent the Signal Generation



## RIDER



Explore the Product Family

# ARB RIDER 2000 Series



The **AWG Rides 2000 Series** gives top class AWG functionalities like advance sequencer, wide memory and digital outputs in a compact and cost-effective instrument.

It provides 2 or 4 analog channels and integrates three operating modes in the same instrument: Arbitrary Function Generator (**AFG**), Arbitrary Waveform Generator (**AWG**) and Digital Pattern Generator (**DPG**).

## Key Features

- 2 or 4 Analog Channels
- 16 bit Vertical Resolution
- 600MS/s (variable clock) or 1.2GS/s (with x2 interpolation)
- Minimum Edge Time down to 2.2ns
- 12Vpp into 50Ω Maximum Dynamic Range
- 256Mpts per channel
- 8 Digital Channels synchronous with Analog Generation
- Three Operating Modes: AFG, AWG and DPG



## Best Analog Performance

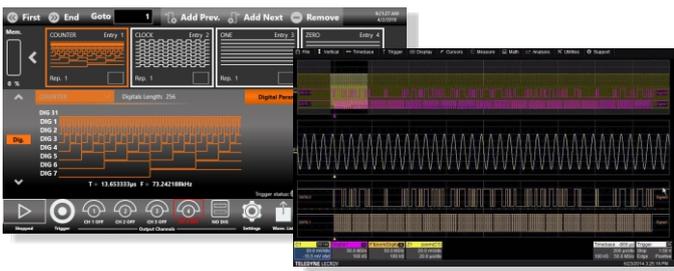
- 12Vpp into 50Ω
- 2 or 4 Analog Channels
- 16 bit Resolution and 180MHz Bandwidth



## Designed for Touch UI

Two extremely powerful and intuitive User Interfaces designed for the 7" touchscreen provide advanced AFG and AWG functionalities.

Designer can create complex waveform and real scenarios with the advanced sequencer as well as standard waveforms and modulations with just few screen touches.



## Analog + Digital Mixed Mode

With up to 4 analog channels and 8 digital channels it is possible to generate full featured mix signal stimuli to cover the more demanding test needs.

Models	Analog Channels	Digital Channels	Max. Sample Rate	Analog Bandwidth	Record Length	Vertical Resolution	Max. Output Frequency	Max. Output Voltage
AWG2182	2	8	1.2GS/s	160MHz	256MS/Ch	16 bit	180MHz	12Vpp
AWG2184	4							

# ARB RIDER 4000 Series

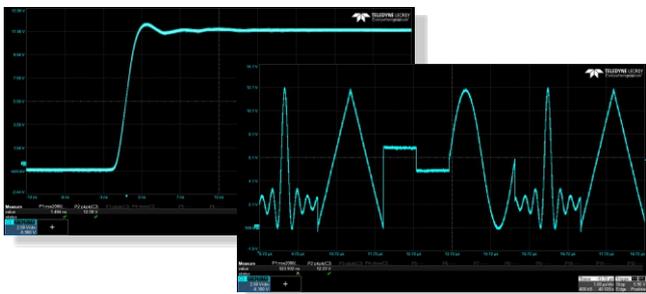


The **ARB Rider Series** offers premium signal integrity with the easiest to use touch screen display interface. The Generation of complex signals requires only a few screen touches.

**Arb Rider 4000** is also an affordable waveform generation platform which helps to stretch the specifications of your projects to the limit, offering not just analog outputs but also digital channels.

## Key Features

- Up to 2.5GS/s, 14 bit Vertical Resolution
- Minimum Edge Time down to 350ps
- 12Vpp into 50Ω Maximum Dynamic Range
- 256Mpts per Channel
- 16-32 Digital Channels synchronous with Analog Generation
- 300Mbps Multi-Level Serial data Pattern Generator
- Multi Instrument Synchronization: up to 32 analog channels
- Four Operating Modes: AFG, AWG, DPG and SPG



## Best In Class Amplitude vs. Frequency

- 5Vpp into 50Ω with more than 1GHz of Analog Bandwidth (4022 model)
- 12Vpp into 50Ω with more than 300MHz of Analog Bandwidth (4012, 4014 and 4018 models)



## Multiple Operating Modes

Three extremely powerful and intuitive User Interfaces designed for the 7" touchscreen provide advanced AFG, AWG, DPG and SPG functionalities.

Designers can create complex waveform, serial data patterns or standard waveforms and modulations with just few screen touches.



## Highest Channel Density

Up to 4 instruments can be connected together with multi-unit Synchronization.

Models	Analog Channels	Digital Channels	Max. Sample Rate	Analog Bandwidth	Record Length	Vertical Resolution	Max. Output Frequency	Max. Output Voltage
AWG4022	2	16/32	2.5GS/s	>1GHz	64MS/Ch	14 bit	1GHz	5Vpp
AWG4012	2	8	1.2GS/s	>318MHz	128MS/Ch	14 bit	300MHz	12Vpp
AWG4014	4	8/16						
AWG4018	8	8/16/32						

# ARB RIDER 5000 Series

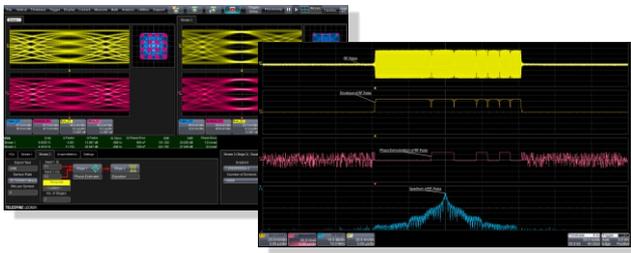


The **ARB Rider 5000** gives unmatched hardware performance by setting a new record as the fastest 16bit AWG on the market (16bit @ 6.16GS/s) and the highest Amplitude\*Bandwidth product (5Vpp\*2GHz).

The **ARB Rider 5000** provides up to 8 analog channels, 32 digital channels and 4 operating modes: Arbitrary Function Generator (**AFG**), Arbitrary Waveform Generator (**AWG**), Digital Pattern Generator (**DPG**) and Serial Pattern Generator (**SPG**) in 3U form factor.

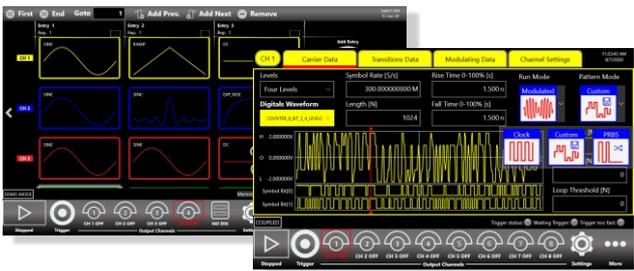
## Key Features

- 6.16GS/s, 16 bit Vertical Resolution
- 5Vpp into 50Ω with 2GHz Analog Bandwidth
- Minimum Edge Time  $\leq$  110ps
- 4Gpts per channel
- Up to 8 Analog (S.E. or Diff.) and 32 Digital Channels
- 1.5Gbps Multi-Level Serial data Patter Generator
- Multi Instrument Synchronization: up to 32 Analog and 128 Digital Channels
- Four Operating Modes: AFG, AWG, DPG and SPG



## Unmatched Hardware Performances

- 5Vpp into 50Ω with more than 2GHz of Analog Bandwidth
- 6.16GS/s and 16 bit Resolution
- 2, 4, 8 Differential or Single Ended Channels



## Multiple Operating Modes

Three extremely powerful and intuitive User Interfaces designed for the 7" touchscreen provide advanced AFG, AWG, DPG and SPG functionalities.

Designers can create complex waveform, serial data patterns or standard waveforms and modulations with just few screen touches.



## Highest Channel Density

Up to 4 instruments can be connected together with multi-unit Synchronization to reach up to 32 Analog and 128 Digital Channels.

Models	Analog Channels	Digital Channels	Max. Sample Rate	Analog Bandwidth	Record Length	Vertical Resolution	Max. Output Frequency	Max. Output Voltage
<b>AWG5062</b>	2 S.E.	8	6.16GS/s	2GHz	4GS/Ch	16 bit	2GHz	5Vpp S.E.
<b>AWG5062D</b>	2 Diff.							3Vpp Diff.
<b>AWG5064</b>	4 S.E.	8/16	6.16GS/s	2GHz	4GS/Ch	16 bit	2GHz	5Vpp S.E.
<b>AWG5064D</b>	4 Diff.							3Vpp Diff.
<b>AWG5068</b>	8 S.E.	8/16/32	6.16GS/s	2GHz	4GS/Ch	16 bit	2GHz	5Vpp S.E.
<b>AWG5068D</b>	8 Diff.							3Vpp Diff.

## PULSE RIDER 1000 Series

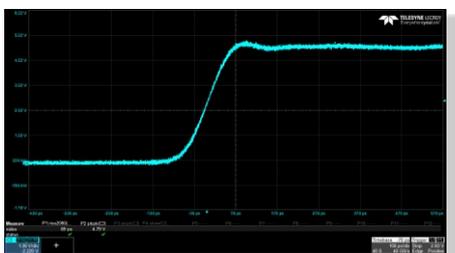


The **Pulse Rider Series** offers premium signal integrity with the easiest to use touch screen display interface (**SimpleRider™**).

Its innovative hardware architecture provides the possibility to generate multiple pulse sequences, such as **double**, **triple** or **quad pulses**, with fully independent timing parameters.

### Key Features

- 70 ps Edge Time
- 5 Vpp Output Voltage Range
- Min Pulse Width less than 300ps
- Dual and Quad Channels Systems
- SimpleRider™ touch User Interface



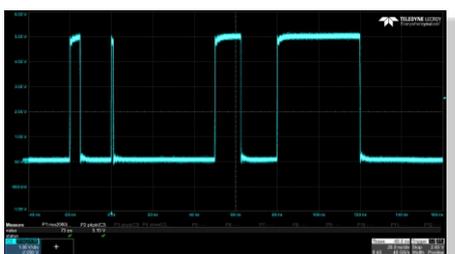
### Rider Fast Edge

First to market low cost Analog Edge Converter with the ability to reach less than 70ps edge (20-80%) at 5V into 50Ω, with fully adjustable Output Voltage and Baseline Offset.



### SimpleRider UI

SimpleRider UI is designed for touch to drive simplicity in operating with a pulse generator.



### Multiple Pulse Mode

Double, triple or quad pulses, with fully independent timing parameters and up to 800MHz output frequency.

Model	Output Channels	Amplitude pk-pk	Baseline Offset	Rise/Fall Time (20-80%) typ.	Maximum Frequency	Period Range and Resolution	Width Range and Resolution
PG-1072	2	10mVpp to 5Vpp Adj.	±2.5V Adj.	<70ps fixed	800MHz (quad pulse mode)	8ns to 8s (10ps res.)	300ps to (period-300ps) (10ps res.)
PG-1074	4						

# Application Areas

## Quantum Computers

Modern RF systems like superconducting quantum bit controllers are based on wideband, coherent, multi-channel architecture, they come with significant challenges in terms of precision and synchronization.

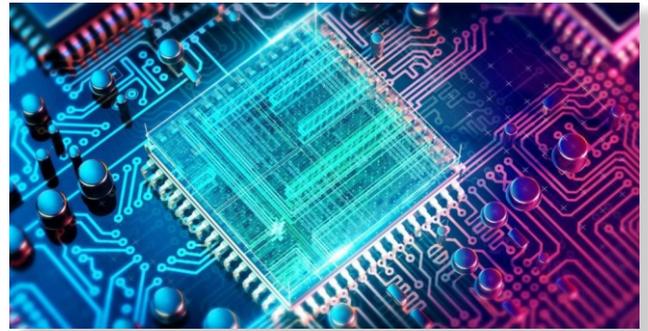
**Active Technologies** signal generators may be the perfect solution for these kind of applications.

In all those kind of applications, it is fundamental to have multiple synchronized units.

## IoT & Ind 4.0 perfect RF Modulator

**ARB Riders** will be the iconic instrument for those applications.

They offers the possibility to emulate complex RF I/Q modulation for Simulation and Test vs. wireless devices or working on Internet of Things of industry 4.0 applications.



**RIDER**   
SERIES



## Research Applications

Research centers and Universities, are key users of have Rider generator's series.

Complex waveform and/or sophisticated Pulses emulation based variable or multilevel edges could be perfectly created.

The combination of fast edge generation, excellent dynamic range and easy to use user interface meet

perfectly scientists and engineers working on large experiments such Accelerators, Tokamak or synchrotrons to emulate signals without creating specifics test boards.

There are several large experiments where Riders can be the perfect solution to combine high-speed transition time with high channels density (*4 channels in just 3U – 19" rackmount*).



**SONAR** Sonar image of shipwreck of the Latvian Naval Forces ship Virsaitis in Estonian waters

## Army Applications

Electronics warfare signals driven by Radar or Sonar systems perfectly match with these generators.

Large BW Riders may be also used on digital modulation systems for Radio Applications or others I/Q signal modulation.

## Semiconductors Test

Emulation of complex signals generated with inclusion of noise or distortions, may became an excellent way to provide Compliance Components Test to help semiconductors engineers.

The fast edges and pulse generation may be used to provide characterization in fast Power devices.



**CERN** Assembling the last module of the vertex locator for LHCb. Photograph: Maximilien Brice © 2007-2017 CERN. All Rights Reserved

# AT-AWG-GS 2500



## Key Features

- RF Signal Generation
- Digital Modulations
- Output Selection: AC amp, Direct DAC, DC amp
- Very Low Harmonic Distortion
- High Speed Digital Outputs
- Real Time Data Streaming and Processing
- Multi-Instrument Synchronization
- Arbitrary, DDS and Function Generator modes

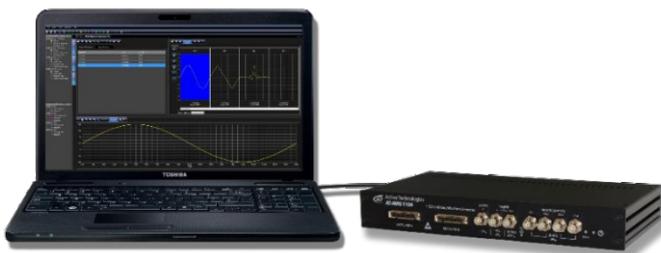
### New Generation Waveform for Complex Real-World Signals

High bandwidth and high resolution AWGs help you to generate with confidence complex signals like digital modulations and RF stimuli for functional and performance tests.

AT-AWG-GS 2500, by combining 2.5GS/s with 14 bit Vertical Resolution, gives you high performance analog and digital waveforms to meet demanding for test signals and applications where speed, resolution and quality are an issue.

Models	Analog Channels	Digital Channels	Max. Sample Rate	Analog Bandwidth	Record Length	Vertical Res.	Max. Output Frequency	Max. Output Voltage
AWG-GS2500-1M	2	16/32	2.5GS/s	>1 GHz	1MS/Ch	14 bit	Up to 1GHz	2Vpp
AWG-GS2500-16M					16MS/Ch			
AWG-GS2500-32M					32MS/Ch			
AWG-GS2500-64M					64MS/Ch			

# AT-AWG1100 Series



## Key Features

- Flexibility: Arbitrary and Direct Digital Synthesis (DDS) waveform generation
- Built-in modulation capabilities: AM, PM, FM, ASK, PSK, FSK, PWM
- Mixed signal generation: analog and digital pattern generation
- Digital Pattern Generator: 18 or 36 channels
- AFG Mode
- **SDK software package** available for Microsoft Visual Studio and NI LabView
- Synchronize multiple devices for up to 32 channels
- 19" Rackmount option (1104 and 1104D only)

### AWG 1100 Series

A waveform generator must provide flexibility to cover a wide range of applications, ensure high-performance to meet demanding requirements and be easy to use.

AT-AWG 1102/1104 meet the needs of today's engineers and technicians with uncompromised performance, a wide variety of signal types, modulation schemes and generation modes all controlled through an intuitive, easy to use interface.

Models	Analog Channels	Digital Channels	Max. Sample Rate	Analog Bandwidth	Record Length	Vertical Res.	Max. Output Frequency	Max. Output Voltage
AWG1102	2	NO	1GS/s Interpolated (250MS/s Real Time)	125MHz	2MS/Ch	16 bit	125MHz	12Vpp
AWG1102D		18						
AWG1104	4	NO						
AWG1104D		36						



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#### About Active Technologies

Active Technologies is an Italian company expert in semiconductor test equipment and electronic instrumentation design.

Company is evolving to deliver the industry's best signal stimulus solution by using disruptive and innovative technologies.

This allows an easy generation of very complex signals, combined with controllable jitter, noise and other signal impairments.

The products fit nicely advance research pulse generation providing best in class pulse generation, great solution in complex defense electronics application such radar pulse generation and EW signaling and modulation.



## Active Technologies

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