

Advanced Signal Generation and Analysis System

Solving Modern EW and Radar's Most Demanding Test Challenges



Giga-tronics

Solutions for Next Gen EW / Radar Test & Deployment

Challenges for Radar and EW Test

Modern radars and countermeasures produce complex waveforms with dynamically varying pulse types, repetition intervals, modulation, as well as agility in frequency and amplitude, including the effects of Doppler. Such are the characteristics of today's AESA-based synthetic aperture and moving target indicator radars. Test Engineers face the challenge of emulating a diverse set of threats scenarios and EW techniques during integration and design verification.

The functionality and performance of modern EW systems require emulation of realistic signal environments that accurately represent both the quantity and quality of threats. Real-time emulation systems must accurately create these threat environments while applying the effects of platform kinematics to mimic what the candidate receiver will experience in operation.



We understand the specific needs of today's military and aerospace systems and provide test solutions for all types of mission critical programs

Not just “Off-the-Shelf”

Giga-tronics Advanced Signal Generator and Analysis System

The Giga-tronics Advanced Signal Generator and Analysis System are a family of Real-Time Synthesizers (RTS) designed as modular building blocks for agile signal generation and downconversion of signals with up to 1 GHz of instantaneous bandwidth. The RTS's unique digital interface provides real-time control of frequency, phase and amplitude for RF carriers up to 18 GHz allowing users to create dense threat environments to verify system performance of modern radars and jammers. Any number of phase-coherent channels can be configured for both signal generation and downconversion applications.



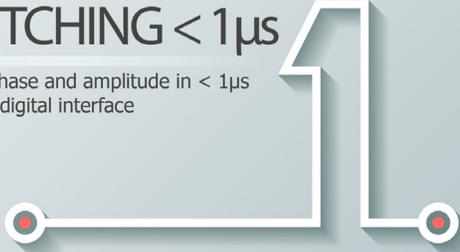
multi-emitter
multi-channel
closed-loop



Key Attributes

FAST SWITCHING <math>< 1\mu\text{s}</math>

Change frequency, phase and amplitude in <math>< 1\mu\text{s}</math> through a dedicated digital interface



REAL-TIME

Apply RF signal parameter changes on-the-fly through a dedicated parallel interface. Ideal for close-loop testing



COHERENT

Coherent Frequency Switching
synchronized multi-channel operation for upconversion and downconversion



MODULAR

Scalable, Affordable, Reliable
The modular architecture allows any number of channels to be configured simplifying upgrades and large channel configurations



WIDE IBW

Waveform Generation
Upconversion / Downconversion - the IF can have an intra-pulse instantaneous bandwidth up to 1 GHz



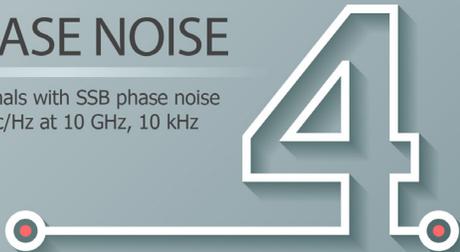
CONFIGURABLE

Multi-purpose
configurable as Quiet Radar Target Generator, EW (Jammer) Simulator, or Adaptive Threat Radar Emulator



LOW PHASE NOISE

Identify close-in signals with SSB phase noise better than -115 dBc/Hz at 10 GHz, 10 kHz offset



OPEN ARCHITECTURE

Upgradable, Servicable
Industry Standard AXIe provides for easy upgrades to leverage the latest technologies to address new mission areas or increased capabilities



Design

The Giga-tronics Advanced Signal Generation and Analysis System consists of 5 main elements as follows:

1. CHSIS2A and CHSIS4A AXle System Chassis with Zone3 coherent analog synchronization bus
2. SRM100A AXle System Reference Module (supports 1 to 4 channels)
3. ASGM18A AXle Advanced Signal Generator: 100 MHz to 18 GHz
4. ASAM18A AXle Advanced Signal Analyzer: 500 MHz to 18 GHz
5. CHSISBK 2-slot blank module for air flow management and backplane termination

For Advanced Signal Creation and Analysis, the ASGM / ASAM can be used with a number of COTS Arbitrary Waveform Generators and Signal Digitizers.



CHSIS2A AXle System Chassis (4U) (For 1 to 2 channel systems)



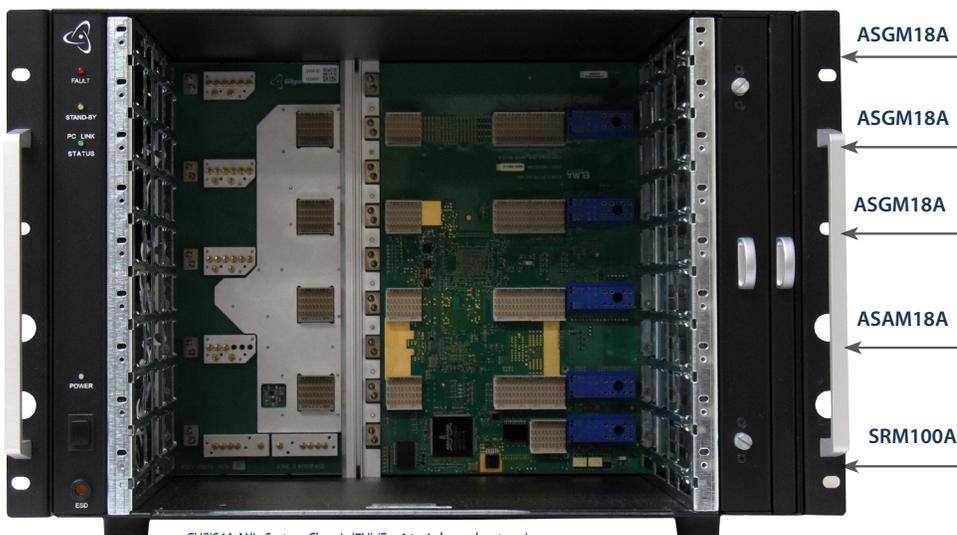
ASGM18A AXle Advanced Signal Generator Module - 100 MHz to 18 GHz



ASAM18A AXle Advanced Signal Analyzer Module - 500 MHz to 18 GHz



SRM100A AXle System Reference Module - 10 MHz, 100 MHz, 1200 MHz



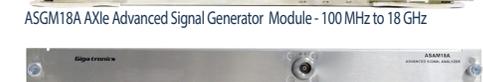
CHSIS4A AXle System Chassis (7U) (For 1 to 4 channel systems)



ASGM18A AXle Advanced Signal Generator Module - 100 MHz to 18 GHz



ASGM18A AXle Advanced Signal Generator Module - 100 MHz to 18 GHz



ASGM18A AXle Advanced Signal Generator Module - 100 MHz to 18 GHz



ASAM18A AXle Advanced Signal Analyzer Module - 500 MHz to 18 GHz



SRM100A AXle System Reference Module - 10 MHz, 100 MHz, 1200 MHz

Product Features

ASGM18A AXIe Advanced Signal Generator Module



- Frequency range: 100 MHz to 18 GHz with 1 Hz resolution
- Frequency switching: <math>< 1 \mu\text{s}</math>
- Real-time control of frequency, phase and amplitude: BCD parallel
- PC control of frequency, phase and amplitude: PCIe and USB
- Upconversion: 1 GHz instantaneous bandwidth
- Multi-channel phase coherent operation

ASAM18A AXIe Advanced Signal Analyzer Module



- Frequency range: 500 MHz to 18 GHz with 1 Hz resolution
- Frequency switching: <math>< 1 \mu\text{s}</math>
- Real-time control of frequency, phase and amplitude: BCD parallel
- PC control of frequency, phase and amplitude: PCIe and USB
- Downconversion: 1 GHz instantaneous bandwidth
- Multi-channel phase coherent operation

SRM100A AXIe System Reference Module



- Ultra-low phase noise precision frequency reference
- Drives 1 to 4 Advanced Signal Generator / Analyzer channels
- Provides 10 MHz, 100 MHz and 1200 MHz outputs
- 10 MHz or 100 MHz external reference input
- Spurious <math>< 80 \text{ dBc}</math>

CHSIS2A and CHSIS4A AXIe System Chassis



- Houses one to four Giga-tronics Advanced Signal Generator or Analyzer Modules and a System Reference Module
- Compatible with selected AXIe arbitrary waveform generators and digitizers from a number of leading companies
- High reliability for mission critical applications
- Chassis health monitored with embedded temperature, fan and voltage sensors
- AXIe platform ensures high performance in a small footprint, ideal for RF/ Microwave modular applications
- Easy to maintain: Replace fans, filters, and power supply without having to remove the chassis from rack mount
- PCIeExpress x8 GEN2
- 4U or 7U high and rack-mountable

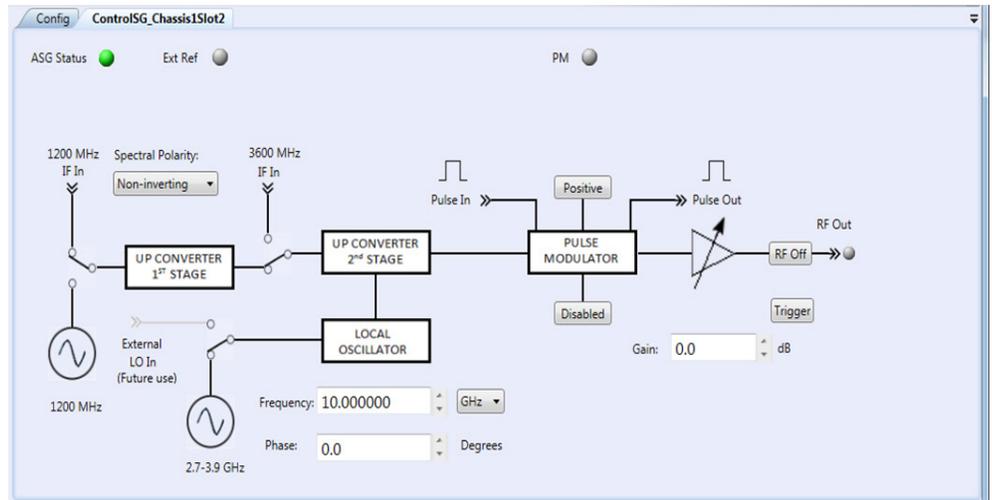
System Software



Advanced Signal Control Software Suite

Features:

- Designed for Windows® 7, 64 bit Pro
- Operates over cabled PCIe or USB
- Intuitive manual control
- Comprehensive API
- Supports Multiple Channels
- Status and fault monitoring



Advanced Signal Control is an easy to use graphical user interface for controlling each of the modules within the Advanced Signal Generation / Analysis System. The software monitors system status and can be used to customize thresholds and trigger alarms when conditions are beyond established limits. Advanced Signal Control also provides the tools for keeping your hardware up-to-date with the latest code revision.

The included GTSigGen.dll offers programmers a comprehensive Application Programming Interface (API) for controlling the Advanced Signal Generators from your station ATE software and allows complete use of all functions of every asset within each system. A programming manual (document# 35396) with coding examples is available for help in getting your application up and running as quickly as possible.

Recommended Controller Hardware

Computer

- 1 TB HDD with 100 GB free disk space at runtime
- Windows® 7, 64-bit Professional
- 2 GHz or faster processor
- 8 GB of memory minimum
- Microsoft.NET Framework 4.0 (should be included in Windows® Professional, or downloadable from Microsoft website)
- At least one open x8 or x16 PCIe expansion slot

PCIe Host Adapter Cards and Cables

- Dolphin Interconnect¹ IXH620 Gen2 PCI Express XMC Adapter Card
- Dolphin Interconnect IXC2M 1 meter x 8 copper cables
- One Stop Systems² OSS-PCIe-HIB25-x8-H PCIe X8 Gen2 Host Cable Adapter
- One Stop Systems OSS-PCIE-CBL-x8 copper cables

Contact Giga-tronics for model and option configuration recommendations



asg-info@gigatronics.com

1 Dolphin Interconnect Solutions, Woodsville, NH (www.dolphinics.com)
2 One Stop Systems, Escondido, CA (www.onestopsystems.com)

Real-Time Measurement from the Bench

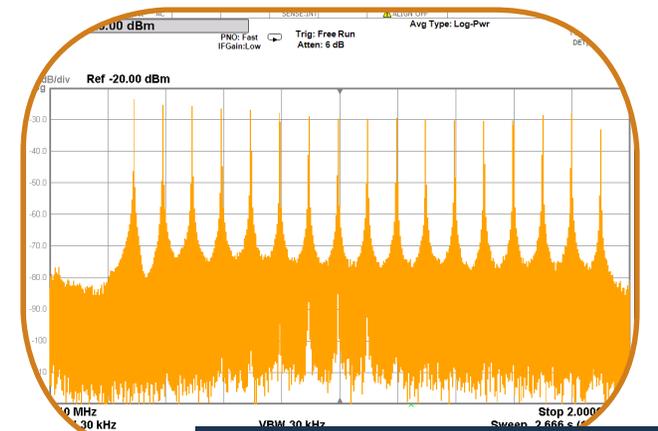
Request Online Demo
asg-info@gigatronics.com



Multi-Channel Signal Generation



Real-Time Fast Switching



**High Dynamic Range
 High Fidelity and Accuracy**



Selection Guide by Application

Model Number	APPLICATION				OPTIONS			
	Real-Time Synthesizer	AXIe Companion	Real-Time Threat Emulation	Radar Quiet Target Generator	OPT-ATT Electronic Step Attenuator	OPT-UP1 1200 MHz IF Input	OPT-BCD Parallel BCD Input	OPT-TCI TEmS Control Interface
ASGM18A 100 MHz to 18 GHz Advanced Signal Generator Module	•	•	•	•	•	•	•	•
ASAM18A 500 MHz to 18 GHz Advanced Signal Analyzer Module		•	•				•	
SRM100A System Reference Module	•	•	•	•				
CHSIS2A / CHSIS4A 2-Channel or 4-Channel AXIe System Chassis	•	•	•	•				
CHSISBK AXIe Blank Module: 2-Slot	•	•	•	•				
ONS On-Site System Configuration Service	•	•	•	•				
TEmS Threat Emulation Software and Control System			•					

Ordering Information

MODEL NUMBER	DESCRIPTION
ASGM18A OPT-ATT OPT-UP1 OPT-BCD OPT-TCI	AXIe Advanced Signal Generator: 100 MHz to 18 GHz Electronic Step Attenuator for 90 dB Dynamic Range 1200 MHz Upconverter IF Input Parallel BCD Input Control Interface TEmS Control Interface
ASAM18A OPT-BCD	AXIe Advanced Signal Analyzer: 500 MHz to 18 GHz Parallel BCD Input Control Interface
SRM100A	AXIe System Reference Module: 10 MHz, 100 MHz, 1200 MHz
CHSIS2A	2-Channel AXIe System Chassis (4U) (For 1 or 2 channel systems)
CHSIS4A	4-Channel AXIe System Chassis (7U) (For 1 to 4 channel systems)
CHSISBK	AXIe Blank Module: 2-Slot cover for Airflow Management and Backplane Termination
EWS20	Extended 2 Year Warranty
EWS40	Extended 4 Year Warranty
Consultancy	Professional Consultation

Standard Warranty



Giga-tronics warrants to the Customer that all manufactured products conform to published specifications and are free from defects in material and workmanship for one year. The period begins on the date of shipment and only applies to normal operation of the product within the appropriate service condition. Giga-tronics shall have no responsibility hereunder for any defect or damage caused by improper storage, improper installation, unauthorized modification, misuse, neglect, inadequate maintenance, accident, or any part which has been repaired or altered by anyone other than Giga-tronics or its authorized representative, or not in accordance with Giga-tronics furnished instructions. <https://go-asg.gigatronics.com/warranty>

Extended Warranty



Extended warranty (Service and Calibration) can only be purchased at time of ordering or within 30 days after the ship date. Service for extended warranties will be performed by Giga-tronics Incorporated, its Microsource subsidiary; or, an authorized Giga-tronics Service Center. Prices do not include freight, insurance, handling, taxes, duties or any other related shipping charges. Extended warranty service and extended calibration options are based on the original ship date of the product. Extended calibration option requires that units be calibrated annually, if applicable. <https://go-asg.gigatronics.com/warranty>



American Systems Registrar, LLC certified ISO 9001:2008
Certification: <https://go-asg.gigatronics.com/quality>

ISO 9001:2008

Giga-tronics Support Services

At Giga-tronics, we understand the challenges you face. Our support services begin from the moment you call us. We help you achieve both top-line growth and bottom-line efficiencies by working to identify your precise needs and implement smart and result orientated solutions. We believe and commit ourselves in providing you with more than just our superior test solutions. For technical support, contact:

Phone: +1 925.328.4650 | Email: asg-info@gigatronics.com

All data is subject to change without notice. For the latest information on Giga-tronics products and applications, please visit : <http://go-asg.gigatronics.com>