AIT Applied Instrument Technologies

MGA iSCAN™

Mass Spec Analyzer

The **MGA™ iSCAN** analyzer advances the state-of-the-art in process mass spectrometry with the first double-focusing, magnetic scanning design. Fusing mass spectrometer technology from our military and space businesses, the MGA iSCAN analyzer provides real-time multicomponent gas analysis.

- Superior stability, sensitivity, resolution and ruggedness.
- Rapid analysis time – multiple components in less than 30 seconds.
- Investigative scan provides unknown compound identification to better characterize processes.
- Measures up to 40 components from low ppb to 100% for as many as 100 sampling sites.
- Mass range of 1-200 amu with 1-300 amu optional.
- Easy to use Cypress™ Windows® based software designed for use by maintenance personnel, engineers and development chemists.
- Communication options including Modbus®, Ethernet, OPC® and analog protocols.
- Optional validation assistance for 21 CFR Part 11 compliance.

AIT Worldwide
Leader in Process Analytics

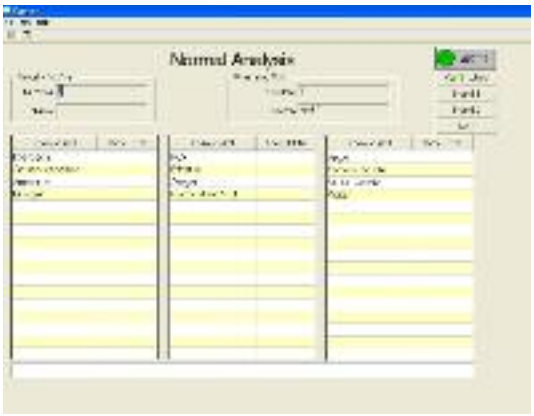
MGA Advantage

- Easily configurable to meet changing application needs
- Designed to monitor reactive gases
- Scalable sample interface solutions
- Global applications and after-market support

Cypress™ Software – Windows® Based

Cypress is designed to be an intuitive, user-friendly interface to the MGA iSCAN analyzer. It offers a stable and robust platform with easy to use, menu-driven, point and click graphical user interfaces.

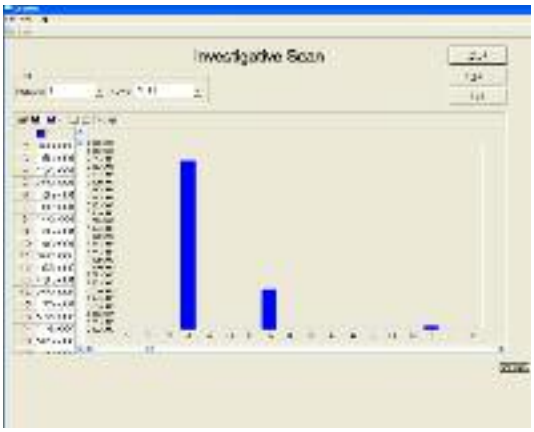
- Real-time diagnostics
- Real-time configuration changes
- Sample system controls
- Auto-restart after power failure



Real-time displays

Displays up to 40 components and 100 process streams. User can define any port sequence depending on operational parameters, or manually select any single stream.

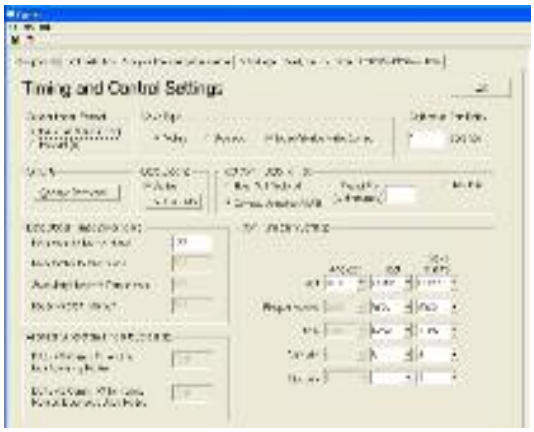
- Compositional analysis
- Access to alarm conditions
- Display previous analysis of any port without affecting the current analysis



Investigative Scan

Provides the ability to identify unknown compounds and evaluate spectra to better characterize processes.

- Export data to a spreadsheet for comparison of mass spectra



Communications

- Standard serial output, ASCII format, Modbus RTU, Bidirectional Modbus
- Other optional protocols include:

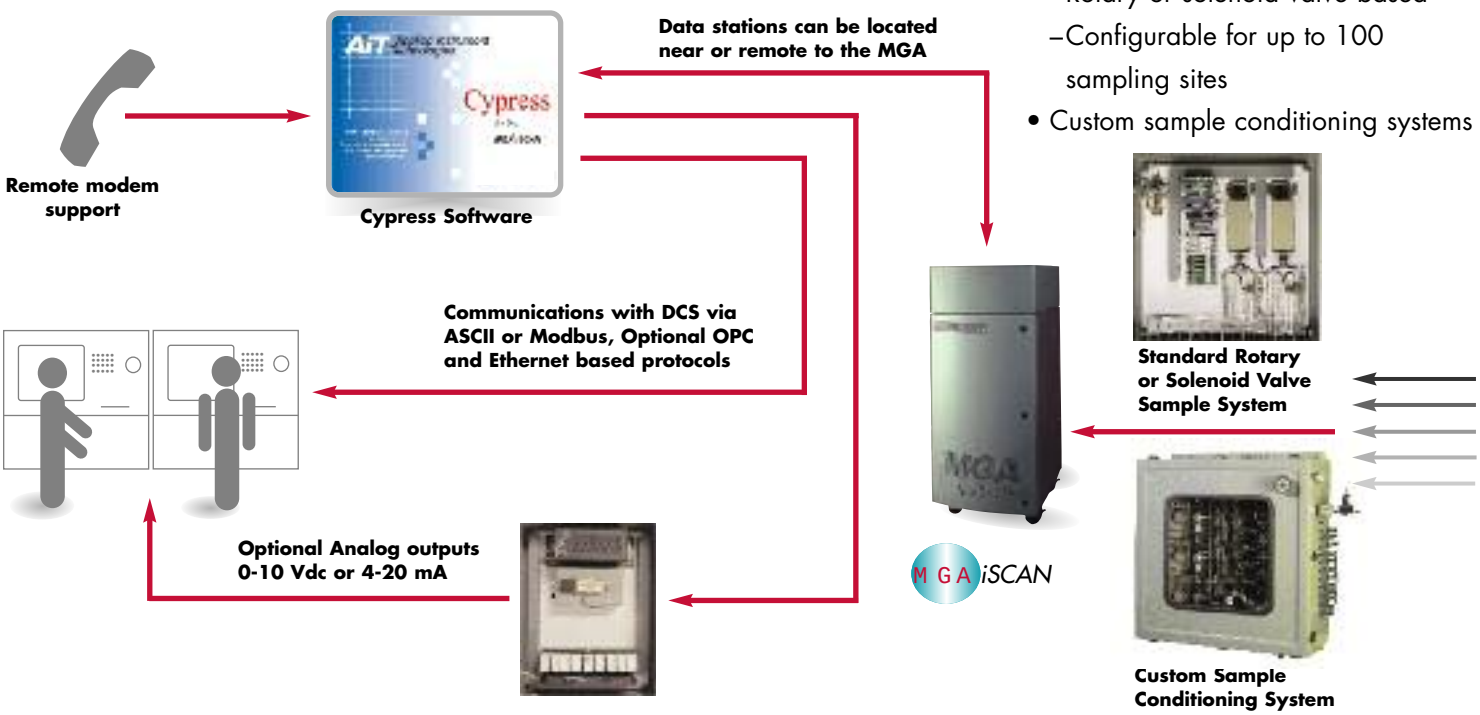
– OPC for process control

– 4-20 mA or 0-10 Vdc isolated analog outputs

– Profibus

Interface Solutions

AIT understands that in order for an on-line analyzer to produce reliable results, it must be properly interfaced to the process streams as well as the control system. This is why AIT has engineered scalable solutions to provide turnkey sample systems and communications protocols to ensure that your MGA system produces results you can trust.



Customized Sample Interfaces

The MGA iSCAN analyzer is easily integrated to a variety of accessories providing turnkey system solutions including:

- Multi-point stream switching systems
  - –Rotary or solenoid valve based
  - –Configurable for up to 100 sampling sites
- Custom sample conditioning systems

Analytical Performance – AIT's policy of modular product design enables us to customize a system configuration for today's requirements as well as an upgrade path when your application changes.

Features	Benefits	Value
Magnetic sector mass spectrometer	Proven superior stability and high sensitivity	Better characterization of processes with less frequent calibration
Double-focusing design	High resolution and specificity in separating masses	Improved product quality
Magnetically scanned	Consistent sensitivity over a 2-200 amu mass range	Provides application versatility
Electron multiplier (Optional) and electrometer detector channels	High dynamic range for detecting compounds at ppb to % levels with superior analysis	Provides application versatility
Reactive Gas Inlet and ion source (Optional)	Measures reactive gases	Provides application versatility
Software configurable for analyzing up to 40 compounds	Easily programmed for specific applications	Comprehensive monitoring for tighter process control
Optimized sample path	Real-time compositional analysis	Rapid identification of process changes
Turbomolecular pump	Long life with rapid vacuum pumpdown time	Continuous use with minimal maintenance
Modular layout	Simplified maintenance	Lowest cost of ownership

Specifications

Spectrometer	
• Double-focusing, magnetically scanned design	
• Mass range:	1-200 amu (1-300 amu optional)
• Number of filaments:	2
• Maximum no. of compounds:	40
• Maximum no. of sample valves under software control:	100
Performance	
• Dynamic range:	20 ppb to 100% with optional electron multiplier 700 ppm to 100% w/o optional electron multiplier
• Drift:	1 hour ±0.1% of full scale 1day ±0.24% of full scale 1 month ±1.0% of full scale
Sample Conditioning Requirements	
• Temperature:	20-120°C
• Particles:	2 microns or less
• Condensables:	None, must be removed prior to entry into MGA
Sample Inlet Requirements	
• Minimum/maximum flow:	0.25-1 Liters/min
• Max supply pressure:	0.5 psig/34 mBar (gauge)
• Discharge pressure:	Local ambient
Ambient Environment Conditions	
• Temperature:	20-40°C
• Humidity:	<80%
Area Classification	
• Standard:	General purpose
• Optional:	Air conditioned or vortex cooled
• Hazardous area options:	ATEX zone 1 or 2
Utility Requirements	
• Line voltage:	115/230 Vac ±10%, 50/60 Hz
• Power:	950 VA
• Instrument air cooling (purged):	425 liters/min. (226 liters/min.)
Communications	
• Standard:	RS 232/422 serial communications, modbus RTU, Modbus TCP/IP
• Optional:	Analog (0-10 Vdc or 4-20 mA)
• Optional:	Serial Modbus RTU and Ethernet OPC, Profibus
Physical Dimensions	
• Analyzer cabinet size:	60"H x 22"W x 23"D 152cm x 56cm x 58cm
• Weight:	440 lb/200 kg

Applications

- Air Separation - Purity
  - Hydrogen
  - Helium
  - Nitrogen
  - Carbon Dioxide
  - Others
- Ammonia/Urea
  - H_2/N_2 Converter Efficiency
  - Feed Gas
  - Reactor Efficiency
  - Separation
- Biotech/Pharmaceuticals
  - Microbial Fermentation
  - Mammalian Cell Culture
  - Sterilization
  - Vacuum Dryer
- Chemical/Petrochemical
  - Vinyl Chloride
  - Methanol
  - Ethanol
  - Polyethylene/Polypropylene
- Coal Gasification
- Ethylene Oxide
  - Reactor Inlet / Outlet
  - Ethylene Purity
- Fuel Cell Analysis - PEMFC/SOFC
  - Fuel Source and Converter Emissions
- Leak Detection
  - Hydrogen Leaks
  - Hazardous Gases
- Liquid Natural Gas
  - Separation Efficiency
  - Feedstock
- Petroleum Refining
  - Hydrogen Production
  - Reformer
  - Tail Gas
  - Flame Stack Monitoring
- Steel Processing
  - Blast Furnace Top Gas
  - BOF Top Gas
  - Fuel Gases
  - Vacuum Degasser
- General
  - High Purity Analysis
  - Ambient Air Monitoring- Low Level Toxins
  - Turbine Feed Gas Analysis
  - Batch Contamination

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