

ETA Process Instrumentation

www.etapii.com
sales@etapii.com
tel: 978.532.1330

New England

Martech Controls

www.martechcontrols.com
sales@martechcontrols.com
tel: 315.876.9120

Upstate New York

**MULTI-COLLECTOR,
FIXED MAGNET
MASS SPECTROMETER**

PRODUCT DATASHEET

MGA™ 1200CS Process Mass Spectrometer

Cybersecure & Future-Proof Architecture –
100% ROI in Less Than One Year



Precise

Fast

Reliable

- Rugged cybersecure communication options standard
- Non scanning ultra-fast parallel processing of spectra
- Analyze up to 100 streams in a user-defined sequence configured at the HMI
- Hazardous area compatible touchscreen HMI
- Role-based access permission standard

MGA 1200CS CyberSecure

Next-Gen Process Mass Spectrometer Monitoring Designed for IIoT

The MGA™ 1200CS process mass spectrometer is a fixed magnetic sector analyzer that provides rapid, accurate and stable real-time analysis of up to 16 gas components in significantly less than 1 second. The optional Phoenix multi-stream sampler provides fast-purging stream selection for 16, 32, 50 or 100 streams. The unique combination of parallel spectrum processing and rapid stream selection makes this the world's fastest available process gas analyzer with new stream analysis data provided every 2-3 seconds.

Designed with IIoT in mind, the control architecture is based on the Modicon M580 ePAC programmed with EcoStruxure Control Expert software. The Magelis touch-screen HMI provides full support for secure role-based access permissions and stored audit trails for end-to-end cybersecurity.

The hazardous area compliant HMI provides full access to system configuration, real-time data, stored data, system status and diagnostics. The native ethernet control architecture provides industrial connectivity for SCADA, DCS, SIS and Data Historians.

Applications

Ammonia

- Precise HN ratio
- Steam/carbon ratio
- Methane slippage
- Inert gas buildup
- Catalyst activity

Biotech & Pharmaceuticals

- Fast & precise OUR, CER, RQ in fermentation
- Greater precision available in cell culture
- Up to 100 reactors monitored at 3 second intervals

Ethylene Oxide

- Precise carbon balance
- Precise oxygen balance
- Selectivity near real-time

Ethylene Cracking

- High-speed cracking severity measurements
- Multiple furnace capability
- 3 second interval between furnaces

Steel Processing

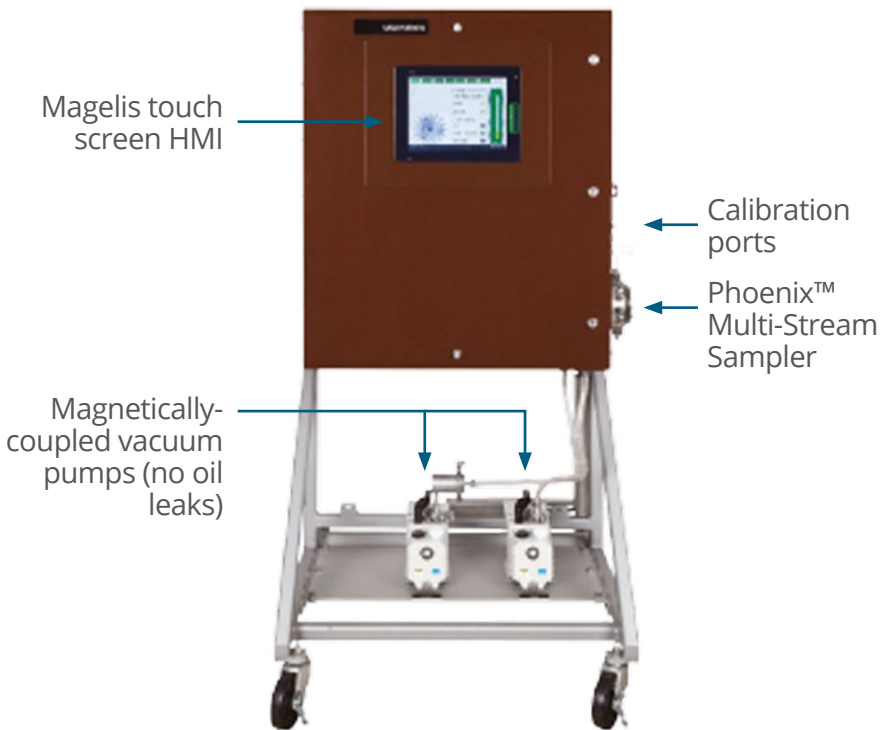
- Blast furnace top gas
- Blast furnace burden probes
- Steel converter gas analysis
- Fuel gas mixing control

System Advantages

- Analyze up to 100 streams in a user-defined sequence configured at the HMI and/or in the DCS
- Rugged cybersecure communication options is standard
- Hazardous area compatible touchscreen HMI provides configuration and interrogation without opening the door or requiring a PC
- Role-based access permission standard
- Non scanning ultra-fast parallel processing of spectra

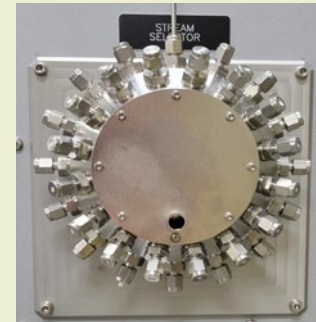
MGA 1200CS CyberSecure

Gives you a REAL advantage for the most challenging applications



The Phoenix Multi-Stream Sampler

- Zero dead volume
- <1 second flush
- Flow validation
- Very low maintenance



Benefits

- Near real-time analysis
- Analysis speed more or less real time due to multiple collectors
- Monitor up to 16 components in a complex gas stream
- Best available measurement precision for all gases
- Single analyzer to calibrate and maintain
- Reduces maintenance costs
- Single link data highway (Modbus, OPC, Profibus, HART)
- Simplifies communication to host computer
- Improved measurement precision for all components
- Provides tighter process control

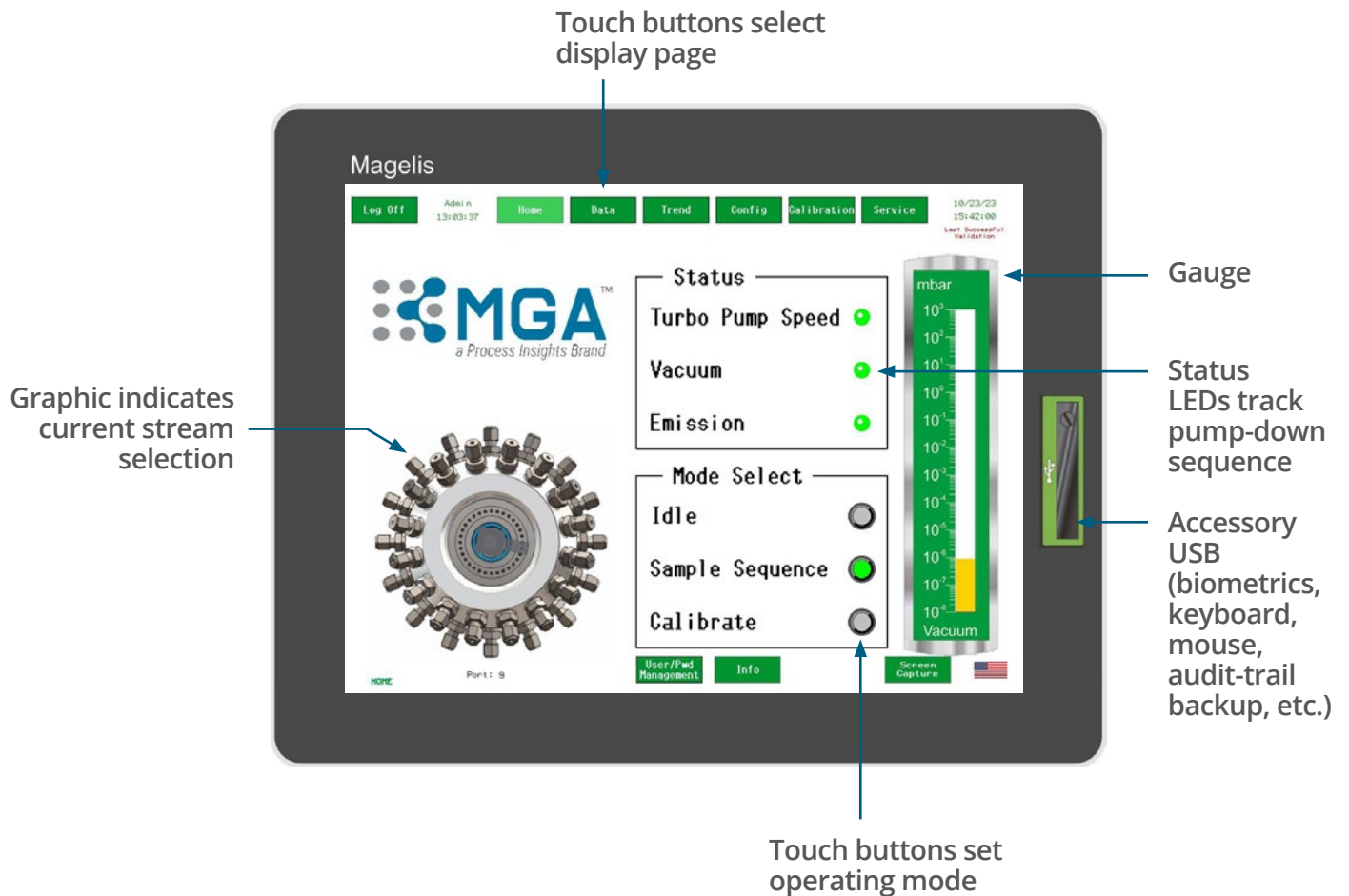
Modicon® X/80 system

Wide-range vacuum gauge



Mass spectrometer power supply

MGA 1200CS CyberSecure HMI Home Screen



Touch-Screen HMI

Provides robust and versatile access to system status, analytical data, stream alarms, system configuration, extensive diagnostics, and role-based secure access control for analyzer tuning.

- Analytical data can be immediately interrogated using both tabular and historical trend presentations. Diagnostic data are presented in a root-cause manor to simplify troubleshooting.
- Multiple languages are supported.
- The Magelis HMI also supports ancillary equipment such as secure data backup and biometric interfaces.



Specifications:	MGA 1200CS CyberSecure
Analyzer Type	Multi-Collector, Fixed Magnet Mass Spectrometer
Control Architecture	Modicon X80 I/O control system configured with cybersecure M580 ePAC (dual ARM processors running EcoStructure Control Expert software Harmony touch-screen display for configuration, data review, diagnostics and troubleshooting. HMI includes the Premium BOX with RISC CPU running Vijeo Designer run time
Inlet Type	Temperature controlled micro-capillary/orifice with bypass – configurable for low flow applications
Sample Flow	70mL/min to 1.0 L/min Standard (lower limits to 20 mL/min available)
Sample Streams	Options for 1, 16, 32, 50 or 100 streams. Flush times 4 - 10 seconds typical per stream (longer times possible, application dependent)
Ion Source	Enclosed Electron Impact, with dual Filaments, controlled by state-of-the-art proprietary Power Supply providing precision High Voltage, Current and Temperature control and diagnostics
Detectors	Up to 16 Faraday cups and Electrometers. Simultaneously measured
Gases Monitored	Up to 16, factory configured (field changes possible)
Vacuum System	Multi-stage turbomolecular Pump – 85 liters per second pumping speed (N2), with... Single or dual magnetically-coupled rotary vane pumps (app. dependent) Wide-range vacuum gauge (10 - 1,000 mbar)
Analysis rate	0.1 seconds for all compounds (averaged over one second)
Precision	<0.005% Relative Standard Deviation*
Accuracy	<2% relative at 1 second updates (higher precision with additional averaging, dependent on calibration standards accuracy)
Dynamic Range	<10ppm – 100% (typical, application/gain setting dependent)
Stability	<0.01% relative over two weeks (typical, application dependent)*
Communications	Native TCP/IP Modbus with Achilles L2 cybersecurity for IIoT RS-232C, RS-485, RS-422 Available: OPC UA, PROFIBUS, HART... others on request.
Rated Voltage/Power	120 VAC 50/60 Hz, or 240 VAC 50/60 Hz, 800 VA
Calibration/Validation	Annual/Monthly – manual or automatic on demand

* Based on Nitrogen analysis at 78%

Maintenance	Typically one PM per year
Operating Temperature	0-30°C (32-86°F) standard; 0-40°C (32-104°F) with optional cooling
Ingress Protection	NEMA 4X, IP66
Instrument Dimensions	MGA 1200CS: approximate dimensions are configuration dependent Height with transport wheels: 73" (185 cm) Height without wheels: 67" (170 cm) Width: 30" (76.2 cm) Depth: 33" (84 cm) Weight: 442 lbs (200 kg)

Experience and Support Makes a Difference

Our staff of applications experts provide feasibility and calibration services that set the worldwide standard. We also provide system integration and post-installation support to ensure your success. We also offer annual hardware maintenance and calibration modeling service support agreements.

Our service agreements are designed for:

- Optimal performance of the analyzer and minimal delay in emergency situations
- Custom coverage tailored to meet your particular needs is also available
- Regular “preventative” monitoring to reduce the cost of maintenance over the life of equipment
- Priority repair service options for urgent repair situations
- A full line of quality factory-certified replacement parts also available

We design our training courses to address your specific technical and application questions. Regardless of the location, you will receive only Factory Trained and Certified instructors. The training courses are a great way to get hands-on experience with the instruments and software.

Training: Available

- Hands-on training on standard operating procedures, including basic analyzer and software functionality
- Classroom training, including the principle of operation
- Advanced diagnostic techniques
- Analyzer interface software demo and training
- Optimal sampling systems and special materials consideration

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GAIN REAL-TIME INSIGHT INTO YOUR PROCESS

Process Insights delivers premium analytical sensors, analyzers, instrumentation, software and solutions that are mission-critical to keep your operations, personnel, and the environment safe. Our commitment to customer satisfaction is evident through our diverse range of products, programs, and services, designed to accommodate various budgets and application needs.

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Upstate New York



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