ETHERCAT® PRODUCT SELECTION GUIDE

NEW STANDARDS IN PERFORMANCE & FLEXIBILITY

AUTOMATION & CONTROL

PAC 100

Programmable Automation Controller

- Modular, scalable, and configurable programmable control solution
- Supports standard IEC 61131-3 environment
- Seamless interface with HMI, supporting OPC UA

MultiTherm™ 2000

Modular Temperature Controller

- Easily configured for single zone or multi-zone temperature control (48+)
- Ideal for dynamic control applications requiring tight temperature stability
- Precision sensor input channels, accepting RTDs, all thermocouple types, voltage and current inputs

CM

Communication Fieldbus Coupler Module

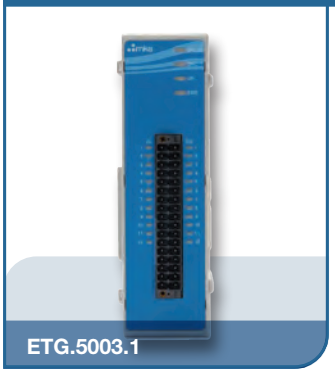
- Compact, customizable solution for standalone manual control, data logging, or distributed I/O, or EtherCAT gateway
- Scalable to any number of MKS I/O slices to create a distributed I/O support for up to hundreds of I/O channels

Analog IO

Analog Input/Output Module

- Compact and high density solution for a variety of input and output ranges
- Each AIO module supports 8 analog inputs and 4 analog outputs
- Supporting voltage inputs and outputs are configurable: 0-5V, 0-10V, ±5V, ±10V, 0-20mA, 4-20mA (ranges)

AUTOMATION & CONTROL



Digital IO

Digital Input/Output Module

- Integrates digital input and output channels with MKS PAC or CM modules
- Each DIO module supports 12 digital inputs and outputs

MicroNode™ Combo

Programmable Automation Controller

- Each MicroNode module supports 16 DIO
- Each module supports 16-bit, 8 analog inputs, 4 analog outputs, ±10V

HyperPAC

Programmable Industrial PC

- Ease of fieldbus protocols integration with IIoT solution
- Compact form factor
- Robust IPC
- Flexible configuration

FLOW/GAS DELIVERY

ETG.5003.2020

G Series

Mass Flow Controllers and Meters

- Full Scale flow rates from 5 sccm to 300 slm
- Proven, patented thermal sensor and mechanical design
- Multi-range/multi-gas capability; 1% of set point accuracy

ETG.5003.2025

G Series

Pressure Controllers

- Pressure control for Full Scale from 500 Torr to 100 psia
- Thermally stable pressure sensor for 1% of set point accuracy
- Digital flow control algorithm for fast response to set point

ETG.5003.2025

P Series

Pressure Controllers

- Pressure control for Full Scale from 10 to 1000 Torr
- Thermally stable pressure sensor for 1% of set point accuracy
- Flow meter option for backside wafer pressure control applications

ETG.5003.2025

P Series

Dual Zone Pressure Controller

- Pressure control for Full Scale for 20, 50 or 100 Torr
- Integrated mass flow meter
- Full Scale flow measurement range for 20, 50, 100 sccm

FLOW/GAS DELIVERY

ETG: MKS Specific

Delta™

Flow Ratio Controllers

- Accurate and repeatable flow ratio control for better process optimization
- For use in cascade configurations
- Operates to temperatures up to 60°C ambient

HA-MFV

High Accuracy In-Situ Mass Flow Verifier

- Flow rates up to 3000 sccm
- External volume insensitivity
- Reading measurement accuracy of 1.0% or better

PLASMA SOURCES

ETG.5003.201X

Paragon®

Remote Plasma Sources

- For high gas dissociation rates (>98%) of NF_3
- Gas flows up to 8 slm and pressures up to 10 Torr
- Compatible with O_2 and NF_3 mixed gases

ETG.5003.201X

R*evolution®

Remote Plasma Sources

- Up to 6kW of plasma power
- Integrated, self-contained unit for on-chamber installation
- Quartz plasma applicator, high density for oxygen species

ETG.5003.201X

CM12P1

Remote Plasma Source

- 12kW of plasma power
- Compatible with NF_3, O_2, N_2, and Ar
- Meets Semi F47 immunity response requirements

ETG.5003.201X

CH24P1

Remote Plasma Source

- 24kW of plasma power
- Supports high flow applications
- Split power train for flexible installation

PRESSURE/VACUUM MEASUREMENT

ETG.5003.2080

901P

Load Lock Transducer

- Designed specifically for semiconductor load lock applications
- Providing medium vacuum measurement and atmospheric switching
- Fast and accurate pressure measurement for improved cycle time and particle reduction

ETG.5003.2080

902B

Vacuum Transducer

- 1000 Torr Full Scale range
- Piezo resistive diaphragm sensor
- Stainless steel diaphragm

ETG.5003.2080

925 MicroPirani™

Vacuum Transducer

- MEMS-based technologies, including MicroPirani™ technology
- Applicable for foreline and general vacuum measurement applications
- Fast and accurate pressure measurement

ETG.5003.2080

972B DualMag™

Cold Cathode Transducer

- Single transducer with wide pressure measurement range from atmosphere to ultra-high vacuum
- MEMS-based MicroPirani technology combined with cold cathode ionization technology
- Small footprint design

PRESSURE/VACUUM MEASUREMENT

ETG.5003.2080

DA02B

Baratron® Capacitance Manometer

- Unheated or temperature-controlled at 45°C, 80°C, 100°C
- Industry-leading accuracy and repeatability
- Inconel®-based sensor offers superior corrosion resistance to common process gases

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DA03B

Baratron® Capacitance Manometer

- High temperature-controlled at 150°C to 200°C
- Optional internally-mounted solid state process relays
- Compact design

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DA05A

Baratron® Capacitance Manometer

- Ambient operating temperature at 60°C
- 0.1 - 1.0 Torr Full Scale ranges
- Standard sensor or etch/fluorine/deposition-friendly sensor option

ETG.5003.2080

DA06A

Baratron® Capacitance Manometer

- Temperature-controlled at 45°C, 80°C, 100°C
- 1 Torr and 1000 Torr Full Scale ranges
- Standard sensor or fluorine/deposition-friendly sensor option

PRESSURE/VACUUM MEASUREMENT

ETG.5003.2080

390 Micro-Ion®

Vacuum Transducer

- Combined Micro-Ion® ionization gauge technology, Conductron heat loss sensor, and 2 Piezo resistive sensors
- Continuous pressure measurement from high vacuum to atmosphere

ETG.5003.2080

392 Micro-Ion®

Vacuum Transducer

- Combined Micro-Ion® ionization gauge technology with a miniature Pirani Conductron heat-loss sensor
- Dual ionization gauge filaments

SENSING SOLUTIONS

ETG.5003.1

TEMPERATURE CONVERTER

Multichannel

- 3 – 5 channels
- ±0.1°C (2σ) stability
- 0.01°C resolution

VALVES

ETG.5003.2030

T2BA

Exhaust Throttle Valve

- Advanced model-based pressure control algorithm
- High-speed configurations available (<250 msec. open to close)
- Selectable high torque drives with soft-sealing available

WHY MKS?

CRITICAL TECHNOLOGIES

World-class technology and development capabilities for leading-edge processes

PROVEN PARTNER

Recognized leader delivering innovative, reliable solutions for our customers' most complex problems

OPERATIONAL EXCELLENCE

Consistent execution across all aspects of our business

COMPREHENSIVE PORTFOLIO

Extensive offering of products and services for the markets we serve

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MKS INSTRUMENTS enables technologies that transform our world. We deliver foundational technology solutions to leading edge semiconductor manufacturing, electronics and packaging, and specialty industrial applications.

We apply our broad science and engineering capabilities to create instruments, subsystems, systems, process control solutions and specialty chemicals technology that improve process performance, optimize productivity and enable unique innovations for many of the world's leading technology and industrial companies.

Our solutions are critical to addressing the challenges of miniaturization and complexity in advanced device manufacturing by enabling increased power, speed, feature enhancement, and optimized connectivity. Our solutions are also critical to addressing ever-increasing performance requirements across a wide array of specialty industrial applications.

Additional information can be found at **www.MKS.com**.