



A DIVISION OF

Machine Application Corporation

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Phone: 419-621-2322 Fax: 419-621-2321

www.macinstruments.com

MAC 155 Moisture Analyzer Probe

for
Continuous Stack Monitoring
With
Built In Two Point Calibration



The MAC 155 In Situ Moisture Analyzer is designed to continuously monitor emission stack gases. It is designed to meet EPA and local regulatory requirements for stack gas moisture measurements.

The patented solid state design has been proven in hundreds of industrial process control applications. The moisture sensor is extremely rugged and requires no chemicals, compressed air, optics or mirrors.

The % moisture by volume is measured using a proprietary high temperature capacitive sensor that responds to water vapor pressure in the presence of other gasses.

The probe is protected from particulates by a 10 micron stainless steel sintered filter element, that is cleanable and replaceable.

The MAC 155 Moisture Analyzer is provided with automatic two point calibration check. The on board calibration system can challenge the sensor with a controlled water vapor sample. An internal tank holds enough water to generate vapor samples for one year of daily calibration checks.

The MAC 155 Controller (see reverse side) automatically sequences the daily calibration check process.

- **Measure % Moisture By Volume In Exhaust Gasses At Temperatures up to 1200°F/650°C optional to 2400°F/1300°C**
- **Nema 4X Waterproof Design** suitable for outside installations
- **Contains Built In Equipment Allowing Daily 2 Point Calibration Check**
- **Can Be Re-Calibrated In the Field Using Internal Calibrator**
- **System Test**
Three different moisture levels can be simulated in order to check the total system including data acquisition equipment
- **In Situ Measurement**
mounts directly to stacks or ducts
- **Filter Blow Back Option**
allows automatic filter cleaning (requires 10psi/69kp clean dry air)
- **Case Heater Option**
extend ambient temperature rating to -40°F/-40°C
- **Case Cool Option**
extends maximum allowable ambient temperature (requires 10psi/69kp clean dry air)

THE STANDARD FOR HIGH TEMPERATURE ABSOLUTE HUMIDITY MEASUREMENT

MAC 155 Moisture Analyzer



MAC 155 Controller (shown with desk top option)

The MAC 155 Controller is the interface to the MAC 155 Moisture Analyzer Probe. The controller provides power to the probe and communicates with it over a serial link.

The 2U rack mount design occupies only 3½” of rack space. Options are available for desktop operation or for mounting to a control panel.

The easy to read vacuum fluorescent display shows the stack moisture level in % by volume. The moisture level signal is available as a 4-20ma or 0-20ma current loop output.

The daily calibration check sequence can be programmed into the controller using the menu driven display and pushbuttons on the unit. Alarms are also displayed. A diagnostic menu is also provided.

An Ethernet option allows full control of the MAC 155 Moisture Analyzer System over a network .

The system can be controlled from a PLC using either the discrete I/O option or the serial PLC option.

- Displays moisture level, alarms and diagnostic information
- Provides 4-20ma or 0-20ma current loop output
- Force output values for checking or adjusting down stream equipment
- Automatically controls daily calibration check sequence
- Large easy to read vacuum fluorescent display
- Tactical feedback pushbuttons for programming and menu sequencing
- 2U rack mount design. Optional panel mounting, or desktop use
- Configurable through menu driven front panel display and push buttons
- TCP/IP connectivity available with Ethernet option. View moisture level, program calibration check sequence, view alarms and diagnostics over your network
- Remote PLC interface option provides control through PLC discrete I/O. DIN rail mountable
- Modbus interface option provides control through serial PLC interface



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SPECIFICATIONS

Measurement Range

| | |
|----------------|---|
| MAC155-L | 3% to 15% OR 6% to 30% User selectable |
| MAC155-H | 3% to 15% OR 6% to 30% OR 9% to 45% OR 12% to 60% User selectable |

Calibration Check Points

| | |
|------------------------|-------------|
| 3% to 15% Range | 6% and 12% |
| 6% to 30% Range | 12% and 24% |
| 9% to 45% Range | 18% and 36% |
| 12% to 60% Range | 24% and 48% |

Maximum stack gas temperature 1200°F
Higher temperatures available.
Consult factory

Ambient temperature range 30°F to 130°F
-40°F with case heater option
160°F with case cooling option

Altitude range Sea level to 6000 ft.

Accuracy ±1% of full scale

Linearity ±1% of full scale

Calibration check point accuracy ±½% of full scale

Response time 60 seconds or less to reach 90% of final value

Power requirements 90V to 135V 50/60 HZ @ 3A max
Standard 120V unit

180V to 270V 50/60HZ @1.5A max
With 230V option

Distilled water

Tank capacity 1.07 pint
Water usage 1 pint per year



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