GOYEN

EMP7 PARTICULATE EMISSION MONITOR

WHAT IT DOES

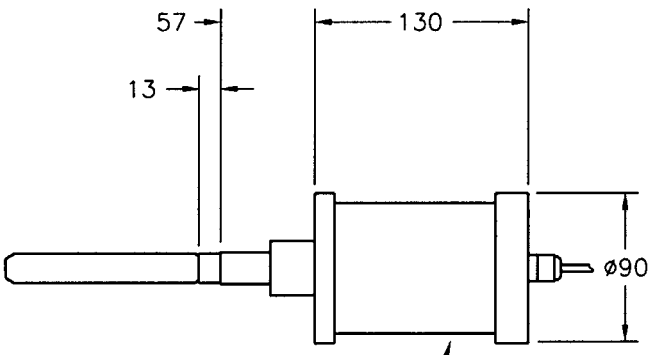
- EMP7 is a simple self contained 2-wire, particulate monitor with 4-20mA output designed to feed a PLC, display device such as AUD1 or Connect Network via Connect Access Card or Numeric Display, AUD1.
- Continuously monitors particulate flow, primarily emissions from process plants.
- Indicates condition and efficiency of cleaning system.
- Maintains absolute calibration.
- Models available for mg/m^3 (gr/ft^3) or mg/s (gr/s) following calibraton to Iso-kinetic sample.
- Self Test diagnostics including Statistical History, Run Time, Power Up and optional remote diagnostics reporting.

PRINCIPLES OF OPERATION

The EMP7 utilises ISE technology. Each particle travelling through the process develops an electrical charge. As the particle passes or impacts with the sensing element, a current is induced which is processed in EMP7 by a method called Impulse Signature Extraction ("ISE").

ISE technology extracts the basic characteristics (the "signature") of the impulsive signals induced by individual particles in the gas stream. Since these characteristics are related to such things as the particle velocity, EMP7 is able to compute velocity as a parameter, and therefore to calculate the emission level as either mass flow rate or mass density as required. In addition, although ISE technology processes the entire signal from the sensing element, its algorithm effectively negates the potentially erroneous effects of the DC component of the signal, so ISE technology shares all the advantages of existing AC Triboelectric technology.

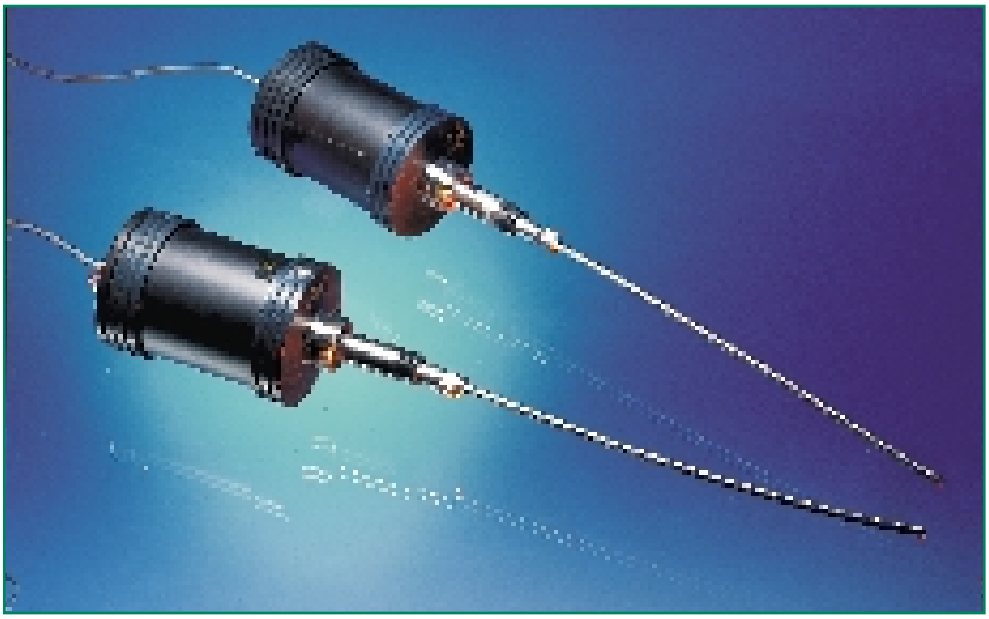
Made a reality by very recent advances in low power digital signal processing, ISE technology is as significant a step forward now as the introduction of AC Triboelectric technology was in 1992.



EMP7 – 3100 : Basic Unit 80°C
EMP7 – 3200 : Basic Unit 200°C
EMP7 – 3250 : Velocity Compensation 200°C
EMP7 – 3270 : Velocity Compensation + Diagnostics 200°C

INSTRUMENT SPECIFICATIONS

Enclosure Rating:	IP66/NEMA 4
Enclosure Size:	ø88 x 125mm high (ø 3½" x 5") not including sensor length
Power Supply:	10-32VDC
Insertion Temp Range:	-20°C to 200°C (-4°F to 392°F) *See supplier for higher temperature options*
Connection required on duct:	1" BSPT socket
Sensing Element Material:	316 Stainless steel (5mmOD x 300mm (standard cable length) 3/16" x 12")
Sensing Element Options:	• solid rod • tubular • teflon coated • multiple supports • cable type • other lengths available
Air Purge Requirments:	• Connection: 1/8" gas thread on side of unit • Air Pressure: 400kPa (60psi) max • Air Consumption: 1.7-17m³/hr (1-10cfm) pulsed
Electrical Specification between Sensing Head and Electrical Input:	2 core screened data cable: max 5000m (16,400ft)
Resolution:	0.001mg/m³ (0.4x10⁻⁷gr/ft³)
Range Stability:	±1% 4-20mA signal



OPERATIONAL RANGE

- Suitable for a wide range of dust collection and materials handling operations and gas cleaning plants.
- Dust concentrations from 0.01mg/m^3 (4x10^{-6}gr/ft^3).
- Accurate for most particle and particle characteristics.
- Insertion temperatures from -20^{0}C to over 650^{0}C (-4^{0}F to over 1200^{0}F) with additional hardware.
- Duct sizes from 50mm (2”) to outlets over 10m (33ft).
- Suitable for most stack material. eg. brick, steel etc.

BENEFITS

- Detects all particles regardless of composition.
- Very sensitive due to ISE Technology Monitoring.
- No range switching or other adjustments.
- Calibration is constant.
- Extremely wide range of concentration and mass flow.
- Tolerates extremely high leakage of signal due to insulator bridging.
- Seamless interface into industrial controls systems, such as PLC.

FEATURES

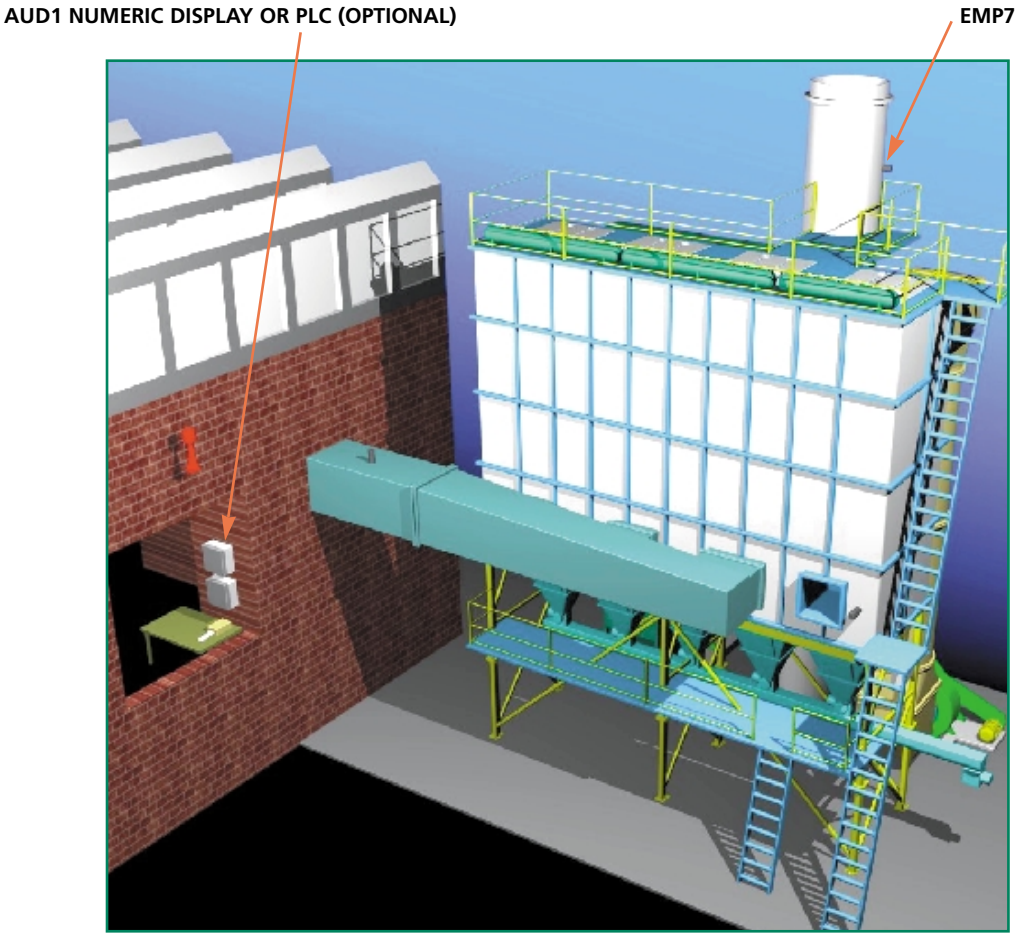
- Extremely wide, adjustment free range (0.01mg/m^3 to 1kg/m^3 or 4 x 10^{-6}gr/ft^3 to 400gr/ft^3).
- Simple 4-20mA, 2-wire output connection.
- Output is true mass density (mg/m^3) (gr/ft^3) or true mass flow rate (mg/s) (gr/s) depending on model selected.
- Full internal electrical isolation to prevent potential corruption due to ground potential differences.
- Resolution of 0.001mg/m^3 (4 x 10^{-7}gr/ft^3).
- Logarithmic output for wide range displays, but also easily converted to linear.

FUNCTIONS

Monitoring Units Calibrated:	mg/m³ (gr/ft³) user defined automatic or mg/s (gr/s)
Diagnostics:	Statistical History. Run Time Diagnostics. Power-Up Diagnostics and optional reporting

OUTPUTS

Type	Name	Specification	Function
Output	Emission	4-20mA	Log (concentration/mass flow)



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