



EMP5 PARTICULATE EMISSION MONITOR



Contact Us:

Tyco Environmental Systems

GOYEN - Western Regional Office

Ph: 818-713-2514

Fax: 818-713-2554



WHAT IT DOES

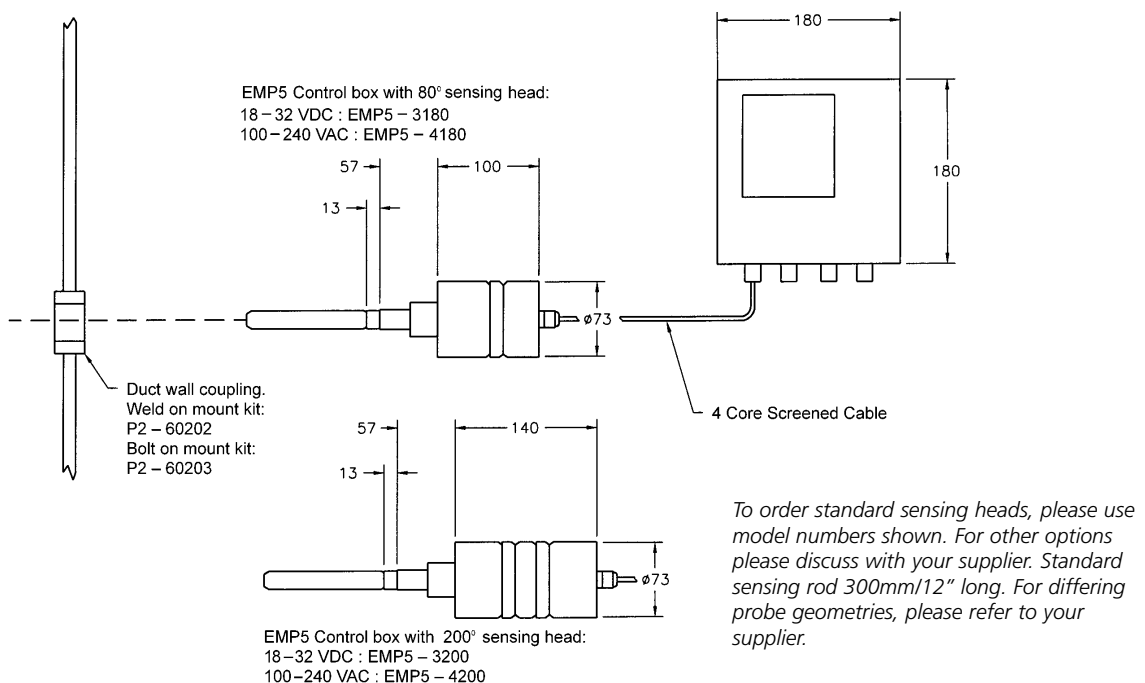
- Continuously monitors particulate flow.
- Indicates relative condition of bags.
- Provides, for the purpose of compliance and preventative maintenance, analogue output that can be connected to data logger for historical recording of process conditions.
- Output can be interfaced to PLC or SCADA system enabling data to be logged in plant operating system.
- Linear representation of mg/m³ or mg/s (gr/ft³ or gr/s). Iso-kinetic sample required for initial calibration.

PRINCIPLES OF OPERATION

The EMP5 utilises AC Coupled Triboelectric technology. As particles travel through the process they develop a charge. This charge is transferred as the particle passes or impacts the sensing element. The resulting current is amplified, filtered, rectified and further filtered looking only at the AC component, to give a linear representation of the concentration or mass flow rate of the particles in the gas stream.

The reason for measuring the AC component is that compared to the DC component the electronics are more sensitive. The AC signal is substantially less affected by influences such as amplifier noise and process parameters, which includes the build-up of process dust on the sensing rod.

The EMP5 remote sensing head totally filters out any 50Hz or 60Hz frequencies related to mains supply. The amplified signal is then sent via data cable to control unit for further processing and display.



FUNCTIONS

Bar Graph:	Visual indication of emission density
Alarm Time Delay:	0-18 seconds in 2 second steps to prevent false alarms due to pulsing
Sensitivity:	Coarse: Adjustable sensitivity (10 position switch) Fine: Allows fine tuning in between coarse steps

OUTPUTS

Type	Name	Specification	Function
Output	Particulate concentration or mass flow	4-20mA (470Ω max) or 0-10V (10K min)	Full range of particulate level
Output	Alarm Relay	8A Resistive/1A Inductive	High Level Alarm

CONTROL UNIT

Enclosure Rating:	IP66/NEMA4
Enclosure Size:	180mm wide x 180mm high x 90mm deep (7 ¹ / ₈ " x 7 ¹ / ₈ " x 3 ¹ / ₂ "
Enclosure Material:	Plastic Composite
Power Supply:	100-240VAC or 18-32VDC
Bargraph Display:	20 step LED
Temperature Range:	-20°C to 60°C (-4°F to 140°F)
Sensing Head:	One per control unit

SENSING HEAD

Insertion Temp Range:	P2-45210: -20°C to 80°C (-4°F to 176°F) P2-45220: -20°C to 200°C (-4°F to 392°F)
Connection required on duct:	1" BSPT socket
Enclosure Temperature Range:	-20°C to 60°C (-4°F to 140°F)
Enclosure Rating:	IP66/NEMA4
Enclosure Material:	Aluminium
Sensing Element Material:	316 Stainless Steel
Sensing Element Options:	<ul style="list-style-type: none"> • solid rod • tubular • teflon coated • multiple supports • cable type • different lengths available
Air Purge Requirements:	<ul style="list-style-type: none"> • 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 Control Unit:	4 core screened data cables: Beldon 9534 (or equivalent) max 200m (660ft)

OPERATIONAL RANGE

- Suitable for a wide range of dust collection, gas cleaning and stack emissions.
- Applicable for all types of outlet stack geometrical arrangements.
- Insertion temperatures up to 80°C or 200°C (176°F or 392°F), higher if required.
- Applicable to most particulate types.
- For duct sizes from 50mm (2") to outlets over 10m (33ft).
- Dust concentrations from 0.01mg/m³ (4 x 10⁻⁶gr/ft³).
- Suitable for most stack material. eg. steel, brick etc.
- Optional intrinsically safe barrier.

BENEFITS

- Detects most particles regardless of composition.
- Very sensitive due to AC coupled technology.
- Can monitor extremely small particles eg. galvanising fume (≈0.1µm).
- Can be calibrated for large range of concentrations or mass flow rates
0.01mg/m³ to 800mg/m³ (4 x 10⁻⁶gr/ft³ to 0.35gr/ft³).
- A seamless interface with industry standard PLC, data logger or SCADA.
- Can dramatically reduce plant downtimes when interfaced into existing plant monitoring equipment.

FEATURES

- Proven AC Triboelectric technology
- Relay time delay feature.
- Sensitivity adjustment.
- Air purge port.
- Potted construction for reliability and operational stability.
- Simple installation
- Alarm level adjustment.