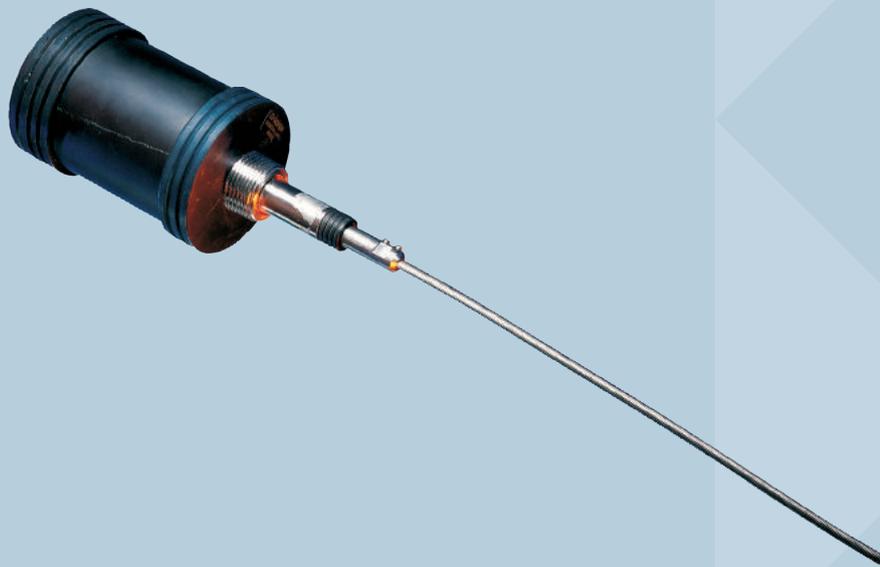




PARTICULATE EMISSION MONITORING



EMP 7

PARTICULATE EMISSION MONITOR

GOYEN - EMP7 PARTICULATE EMISSION MONITOR

PRODUCT LEAFLET

WHAT IT DOES

- Continuously monitors for filter media leakage
- EMP7 is a simple self contained 2-wire, particulate monitor with 4–20 mA 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 calibration to Iso-kinetic sample
- Self Test Diagnostics including Statistical History, Run Time, Power Up and Optional Remote Diagnostics Reporting

PRODUCT DESCRIPTION

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.

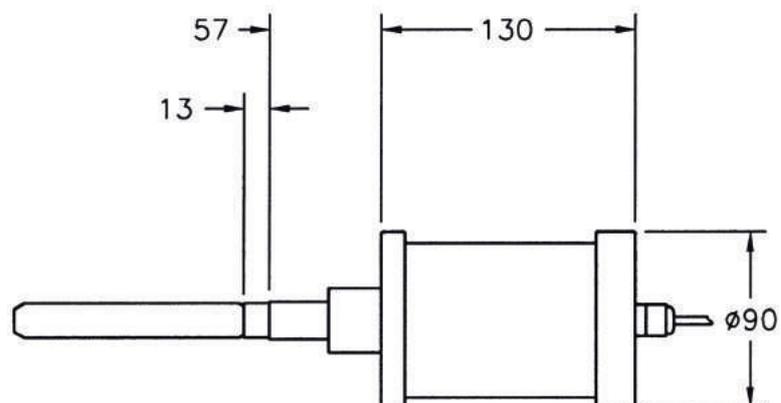
Made a reality by recent advances in low power digital signal processing, ISE technology is as significant a step forward now as the introduction of AC Triboelectric technology was in 1992.

OPERATIONAL RANGE

- Suitable for a wide range of dust collection and materials handling operations and gas cleaning plants
- Dust concentrations from $0.01 \text{ mg}/\text{m}^3$ ($4 \times 10^{-6} \text{ gr}/\text{ft}^3$)
- Accurate for most particle and particle characteristics
- Insertion temperatures from -20°C over 650°C (-4°F to over 1200°F) with additional hardware
- For duct sizes from 50 mm (2") to outlets over 10 m (33 ft)
- Suitable for most stack material. e.g. steel, brick 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



GOYEN - EMP7 PARTICULATE EMISSION MONITOR

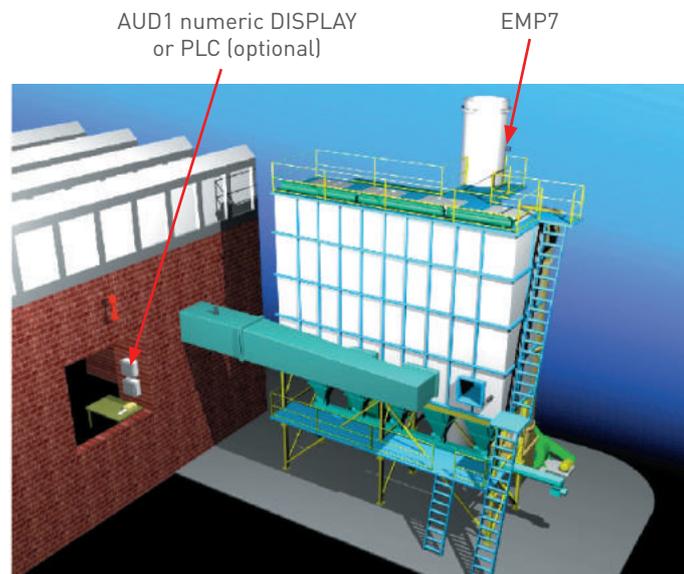
PRODUCT LEAFLET

TECHNICAL SPECIFICATION

FUNCTIONS	
Monitoring units calibrated	mg/m ³ (gr/ft ³) user defined automatic or mg/s (gr/s)
Monitoring units diagnostics	Statistical history, run time diagnostics, power-up diagnostics and optional reporting
OUTPUTS	
Emission specification	4–20 mA
Emission function	Log (concentration/mass flow)
INSTRUMENT SPECIFICATION	
Enclosure rating	IP66/NEMA 4
Enclosure size	ø88 × 125 mm high (ø3.5" × 5") not including sensor length
Power supply	10–32 V DC
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 (5 mmOD × 300 mm (standard cable length) 3/16" × 12")
Sensing element options	Solid rod, tubular, teflon coated, multiple supports, cable type, other lengths available
Air purge requirements	Connection: 1/8" gas thread on side of unit
Air pressure	400 kPa (60 psi) max
Air consumption	1.7–17 m ³ /hr (1–10 cfm) pulsed
Electrical specification between sensing head and electrical input	2 core screened data cable: max 5000 m (16,400 ft)
Resolution	0.001 mg/m ³ (0.4 × 10 ⁻⁷ gr/ft ³)
Range stability	±1% 4–20 mA signal

FEATURES

- Extremely wide, adjustment free range (0.01 mg/m³ to 1 kg/m³ or 4 × 10⁻⁶ gr/ft³ to 400 gr/ft³)
- Simple 4–20 mA, 2-wire output connection
- Output is true mass density (mg/m³) (gr/ft³) 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/m³ (4 × 10⁻⁷ gr/ft³)
- Logarithmic output for wide range displays, but also easily converted to linear





GOYEN
EMP - EMISION MONITOR

1. Set Function - Normal MODE F - N
2. Power up the unit, wait until TRIP LED stops flashing
3. Adjust Sensitivity to around the 25% position on the Bargraph DISPLAY
4. PRESS and then ADJUST Ready Trip Level on the Bargraph DISPLAY
5. Set Ready Time DELAY 0 - 18 seconds in 2 Sec Steps

WARNING
DISCONNECT THE POWER BEFORE REMOVING THIS PANEL

SUPPLY: 18-32V \pm 0.3A MAX
RELAY RATING: 120V AC
1A RESISTIVE LOAD
1A INDUCTIVE LOAD



REMOVE THIS PANEL TO ACCESS ELECTRICAL CONNECTIONS

EMP6B

PARTICULATE EMISSION MONITOR

GOYEN - EMP6B PARTICULATE EMISSION MONITOR

PRODUCT LEAFLET

Note: This brochure is compatible with the original EMP6 brochure and refers to the new part numbers in the B series.

WHAT IT DOES

- Continuously monitors for filter media leakage
- Indicates and transmits relative condition of bags
- Provides a 4–20 mA and 0–10 V DC output designed to feed a PLC or other display device
- Continuously monitors particulate flow, primarily emissions from process plants
- Can be calibrated for mg/m³ (gr/ft³) or mg/s (gr/s) following calibration to Iso-kinetic sample
- Push button and remote input to enable zero and span checks
- Built in data logging capability for redundancy
- Acts as a preventative maintenance tool

PRODUCT DESCRIPTION

The EMP6B 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 buildup of process dust on the sensing rod. The EMP6B remote Active Head totally filters out any 50 Hz or 60 Hz frequencies related to mains supply. The amplified signal is then sent via data cable to Control Unit for further processing and display.

OPERATIONAL RANGE

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

BENEFITS

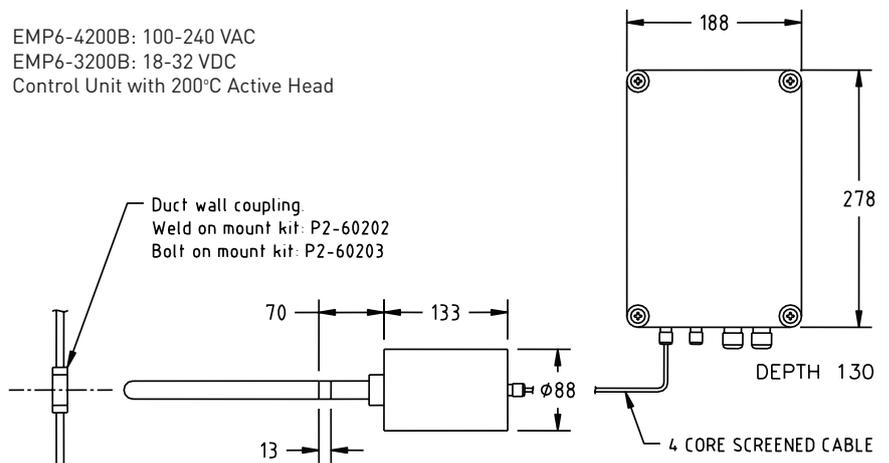
- Detects most particles regardless of composition.
- Very sensitive due to AC coupled technology.
- Can monitor extremely small particles, e.g. galvanising fume ($\sim 0.1 \mu\text{m}$)

- Can be calibrated for large range of concentrations or mass flow rates 0.01 mg/m³ to 800 mg/m³ (4×10^{-6} gr/ft³ to 0.35 gr/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
- Dual relay outputs
- SD card slot for data logging (ASCII comma delimited)
- Digital two way communication to ensure product integrity
- Sensitivity adjustment to aid in the elimination of bridging
- Air purge port
- Simple installation
- Alarm level adjustment
- ATEX II 3 D&G and MACT compliant

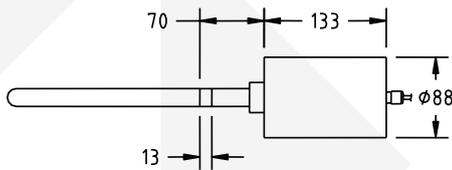
EMP6-4200B: 100-240 VAC
EMP6-3200B: 18-32 VDC
Control Unit with 200°C Active Head



GOYEN - EMP6B

PARTICULATE EMISSION MONITOR

PRODUCT LEAFLET



MODES OF OPERATION

The EMP6B is a continuous monitoring device for particulate emissions in a gas stream. The instrument is applied in an uncalibrated indicative mode in which levels are displayed and recorded in a relative scale (0-100%) or as a 4-20 mA scale which ensures that the signal output to PLC, SCADA system or data logger has the same value as that at the Control Unit. The EMP6B gives a linear representation of either mg/m³ or mg/s (gr/ft³ or gr/s), when calibrated to gravimetric standards.

The EMP6B also has 2 relay modes – Normal and Failsafe.

Normal

- The alarm relay is de-energised when the EMP6B is powered up.

Failsafe

- The alarm relay is energised when the EMP6B is powered up.
- The alarm relay is de-energised when the EMP6B is in the alarm state.
- This mode is used to operate external alarm, indicating power failure.

Historical Logging of Data

For improved preventative maintenance and compliance with some permit agreements, it may be necessary to have all historical information charted for future reference. The EMP6B carries an SD card slot for data logging and recording internally through ASCII comma delimited format. The system is user settable through the system port (adjustments include averaging time, sample rate).

TECHNICAL SPECIFICATION

FUNCTIONS	
Bar graph	Visual indication of emission density
Alarm time delay	0-9 seconds in 1 second steps to prevent false alarms due to pulsing
Sensitivity	Adjustable sensitivity within the active head (high, medium and low available)
OUTPUTS – PARTICULATE CONCENTRATION OR MASS FLOW	
Specification	4-20 mA (1 K max) or 0-10 V (10 K min)
Function	Full range of particulate level
ALARM RELAY	
Specification	8A Resistive/3.5A Inductive × 2
Function	High High/High Level Alarm, High/Low Level Alarm, Low Low/Low Level Alarm
CONTROL UNIT	
Enclosure rating	IP54, ATEX II 3 D&G
Enclosure size	280 mm × 190 mm × 130 mm (254 mm × 164 mm mounting)
Enclosure material	Plastic composite
Power supply	100-240 V AC 50/60 Hz or 18-32 V DC
Bargraph display	20 step LED
Temperature range	-20°C to 60°C (-4°F to 140°F)
Active head	One per control unit
ACTIVE HEAD	
Insertion temperature range	P2-45200B: -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	IP54, ATEX II 3 D&G
Enclosure material	Aluminium
Sensing element material	316 Stainless steel
Sensing element options	Wire cable [standard]. Also available; solid rod, tubular, extendable, PTFE coated, tubular ceramic, wearresistant alloys and multiple supports, at any length
Air purge requirements	Connection: 1/8" gas thread on side of unit Air Pressure: 400 kPa (60 psi) max air consumption: 1.7-17 m ³ /hr (1-10 cfm) pulsed
Electrical specification between active head and control unit	4 core screened data cables: BELDEN 8723NH (or equivalent) max 200 m (656 ft)
Gain switch	Three positions (located on the Active Head): High (0-20 mg/m ³), Medium (0-150 mg/m ³) Low (0-1000 mg/m ³), Nominal only: depends on material velocity, geometry



BBD6B

BROKEN BAG DETECTOR

GOYEN - BBD6B

BROKEN BAG DETECTOR

PRODUCT LEAFLET

Note: This brochure is compatible with the original BBD6 brochure and refers to the new part numbers in the B series.

WHAT IT DOES

- Continuously monitors for filter media leakage
- Indicates relative condition of bags
- Acts as a preventative maintenance tool

PRODUCT DESCRIPTION

The BBD6B 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, giving 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 BBD6B remote Active Head transfers via a digital signal totally filters out any 50 Hz or 60 Hz frequencies related to mains supply. The amplified signal is then sent via data cable to the Control Unit for further processing and display.

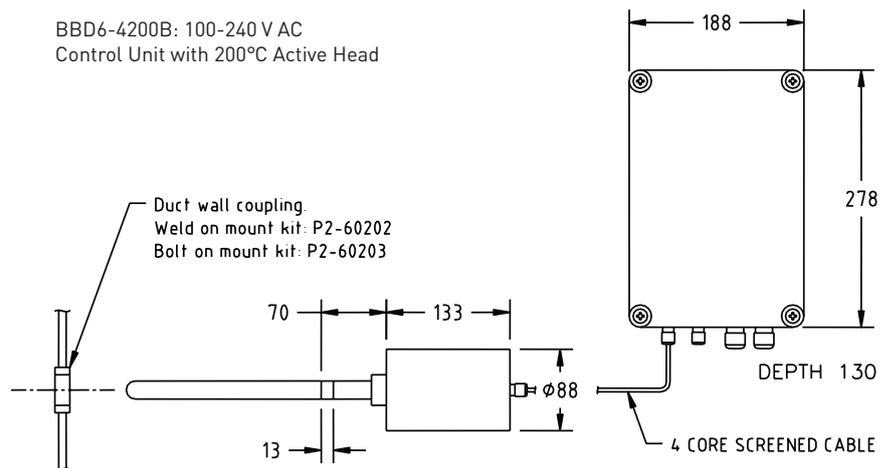
OPERATIONAL RANGE

- Suitable for a wide range of dust collection and stack emissions
- Applicable for all types of outlet stack geometrical arrangements
- Insertion temperatures up to 200°C (392°F), higher if required
- Applicable to most particulate types
- For duct sizes from 50 mm (2") to outlets over 10 m (33 ft)
- Dust concentrations from 0.01 mg/m³ (4 × 10⁻⁶ gr/ft³)
- Suitable for most stack material e.g. steel, brick etc
- Optional hazardous area (positively pressurised)

BENEFITS

- Detects most particles regardless of composition
- Very sensitive due to AC coupled technology
- Can monitor extremely small particles eg. galvanising fume (~0.1 µm)
- Can be used over a wide range of particulate densities
- Can assist in dramatically reducing plant down time through filter failures

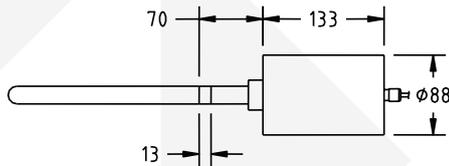
BBD6-4200B: 100-240 V AC
Control Unit with 200°C Active Head



GOYEN - BBD6B

BROKEN BAG DETECTOR

PRODUCT LEAFLET



FEATURES

- Proven AC Triboelectric technology
- Relay time delay feature
- Sensitivity adjustment
- Air purge port to aid in the elimination of bridging
- Simple Installation
- Alarm level adjustment
- Active Head to the Control Unit mounting up to 100 metres apart
- ATEX II 3 D&G compliant

MODES OF OPERATION

The BBD6B indicates instantaneous levels of particulate emissions stream.

The instrument is usually in an uncalibrated indicative mode in which levels are displayed in a relative scale (0–100%). The BBD6B also has 2 relay modes – Normal and Failsafe.

Normal

- The alarm relay is de-energised when the BBD6B is powered up.

Failsafe

- The alarm relay is energised when the BBD6B is powered up
- The alarm relay is de-energised when the BBD6B is in the alarm state
- Is used so that both power failure and high emissions are alarmed.

TECHNICAL SPECIFICATION

FUNCTIONS	
Bar graph	Visual indication of emission density
Alarm time delay	0–9 seconds in 1 second steps to prevent false alarms due to pulsing
Sensitivity	Adjustable sensitivity within the active head (high, medium and low available)
OUTPUTS	
Name	Alarm relay
Specification	8A resistive, 1A inductive
Function	Emission alarm
CONTROL UNIT	
Enclosure rating	IP54, ATEX II 3 D&G
Enclosure size	280 mm × 190 mm × 130 mm (254 mm × 164 mm mounting)
Enclosure material	Plastic composite
Power supply	100–240 V AC
Bargraph display	20 step LED
Temperature range	–20°C to 60°C (–4°F to 140°F)
Active head	One
ACTIVE HEAD	
Insertion temperature range	P2–45200B: –20°C to 200°C (–4°F to 392°F)
Connection required on duct	1" BSPT socket
Electrical specification between active head and control unit	4 core screened data cables: BELDEN 8723NH (or equivalent) max 100 m (330 ft)
Temperature range	–20°C to 60°C (–4°F to 140°F)
Enclosure rating	IP54, ATEX II 3 D&G
Enclosure material	Aluminium
Sensing element material	316 Stainless steel
Sensing element options	Wire cable [standard]. Also available; solid rod, tubular, extendable, PTFE coated, tubular ceramic, wearresistant alloys and multiple supports, at any length
AIR PURGE REQUIREMENTS	
Connection	1/8" gas thread on side of unit
Air pressure	400 kPa (60 psi) max
Air consumption	1.7–17 m ³ /hr (1–10 cfm) pulsed



GOYEN CONTROLS PTY LIMITED

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