

 **GOYEN**



N6-TM

PARTICULATE EMISSION TREND MONITOR

What It Does

- Provides a high-quality and cost-effective solution for monitoring multiple-filter media performance.
- Indicates, stores and transmits the relative condition of media in multiple-filter units.
- Validates and calibrates raw particulate data.
- Provides local and remote alarm functions.
- Transmits calibrated data to remote data collection systems via 4 to 20 mA outputs.
- Includes an optional data-logging facility for onboard storage of data.

Product Description

The Goyen N6-Trend Monitor forms part of the Goyen Network Systems range of particulate monitors. It is a rugged, industrialised solution for monitoring filter media performance, whether it be for regulatory, plant performance or maintenance purposes. It is used in conjunction with the well-renowned EMS6 Particulate Monitoring Probes to produce a fully featured and yet cost-effective solution to monitoring particulate emissions from multiple sources in modern-day industrial processes.

The units are housed in IP65/NEMA4 steel enclosures and can be located at most convenient points throughout an industrial facility. The N6-TM is configurable, with each unit able to monitor up to 6 probes, delivering both analogue representation of the particulate emissions and also fault and alarm relay status signals. The units offer operators clear, local indication of particulate concentration and include an 'auto-sense' feature to ignore offline units. Included in the basic package is the ability to calibrate the readings against reference method gravimetric calibrations for genuine quantitative particulate measurement. Optionally data can also be stored to an onboard solid state data storage system.

Communication between the display unit and the monitoring probes is via the industry standard RS485 MODBUS communications protocol which ensures reliable data collection with low-cost installation. The EMS6 sensing heads utilise AC Coupled Triboelectric technology, comprising a duct/stack-mounted IP65 electronics housing with integral sensing element protruding into the duct. As particles travel through the process they develop a charge, which 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. This gives a linear representation of the concentration 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 element.

The EMS6 totally filters out 50 Hz and 60 Hz frequencies related to the mains supply. The EMS6 linear representation of concentration has been validated by independent laboratories and has also been tested and certified for monitoring dust emissions according to the UK Environment Agencies 'MCERTS' standard.

Operational Range

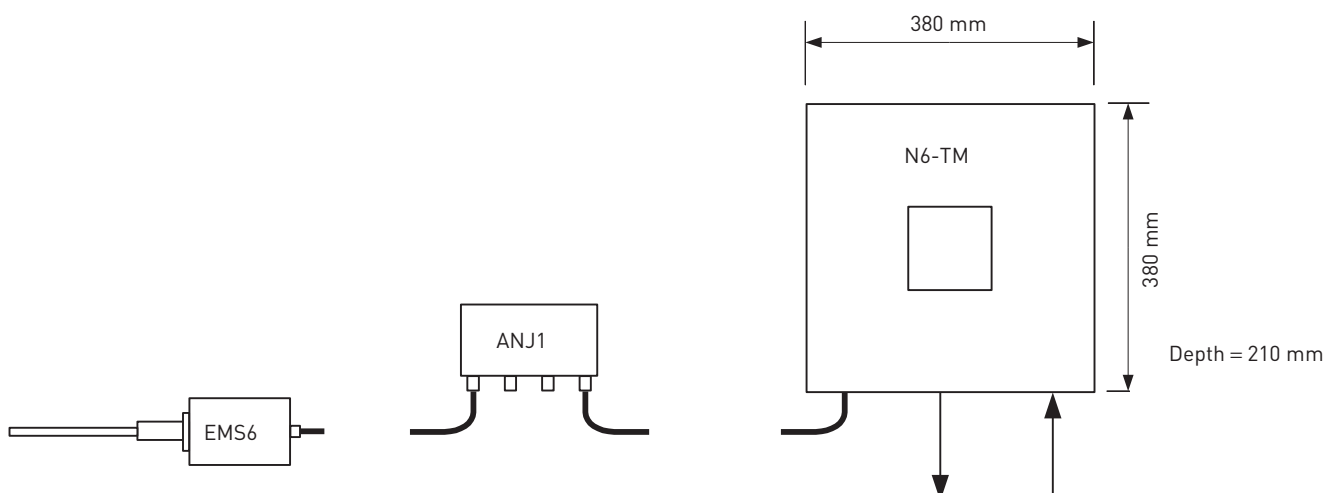
- Suitable for a wide range of dust collection, gas cleaning and stack emissions.
- Applicable for all types of outlet stack geometrical arrangements.
- Insertion temperatures up to 200°C (392°F)
- Applicable to most particulate types.
- Suitable for duct sizes from 50 mm (2") to outlets over 10 m (33')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

Features

- Cost-effective multi-point solution
- Calibration facility for true quantitative particulate measurements
- Clear, local display in both digital and graphical form
- User-configurable ranges, alarm points and calibration factors
- Intelligent internal diagnostics feature
- Sophisticated alarm technology
- Intelligent 'auto-sense' feature, ignores offline units
- High reliability, no moving parts or delicate optics
- Low maintenance requirement and low cost of ownership
- Proven technology
- Internal data logging option
- Convenient ANJ1 junction boxes simplify installation and support

Benefits

- Simplifies and aids the management of monitoring particulate emissions
- Reduces the cost of monitoring particulate emissions
- Easy to operate and maintain
- Sophisticated alarm algorithm and 'auto-sense' features reduce false alarms
- Networked solution reduces initial capital outlay
- Networked solution simplifies installation and reduces associated costs
- Proven technology and high reliability result in low cost of ownership and minimal downtime
- Complete 'all in one' solution meets all customer needs



Modes of Operation

Calibration

Like all dust monitoring systems the N6-TM can only generate a signal that is proportional to particulate concentration; its raw output cannot represent particulate in absolute terms. However, it is possible to calibrate the device so that its output is a true quantitative representation of particulate expressed in mg/Nm³ or other relevant units.

Initially the unit is supplied in an un-calibrated state with ranges set 0 to 100% of range. In approximate terms this represents the following nominal ranges:

- High Gain = 0 to 20 mg/Nm³
- Medium Gain = 0 to 150 mg/Nm³
- Low Gain = 0 to 1000 mg/Nm³

Following comparison against a reference method iso-kinetic gravimetric test, calibration factors can be applied to bring the unit into calibration with the reference method and ranges set accordingly.

Alarms

Each channel is supplied with an alarm function which in turn operates a relay to signal a breach. Such alarms can be troublesome when the emission concentration hovers around the alarm set point causing it to operate and reset repeatedly. Many systems employ a straightforward time delay to attempt to minimise this effect, but the N6-TM employs a more sophisticated time and magnitude algorithm to provide the optimum solution to fast accurate alarm reporting with minimal nuisance tripping. The simple level alarm function is bolstered by the addition of a hysteresis function which considers both the time the alarm level has been exceeded and the magnitude by which the level has been exceeded. The algorithm ensures accurate alarm reporting with minimal inconvenience.

Data Logging

In some cases it may be desirable to store data in the N6-TM rather or in addition to the remote data collection device. In these cases an optional data storage facility is provided which permits the archiving of data to a solid state storage card.

Technical Specification

Functions	
Display	2.4", 128 x 64 pixel STN LCD with white backlight
User displays	Multiple-user displays covering configuration, alarms, status and emissions. Resolution = xxx.x
Alarms	One alarm per channel with user-configurable set point and hysteresis
Sensitivity	Adjustable within each active head, low, medium and high
Status	System OK, System calibrating, System fault, Plant operating/Not operating
Outputs	
Analog	1 x 4 to 20 mA output per channel, user-configurable range Self powered 24 V DC (12 bit 0 to 20 mA)
Digital	1 x high alarm relay contact per channel 30 V DC 3A max per channel 8A maximum total (resistive load)
Inputs	
	1 per channel, plant status, volt-free contact closure
Enclosure	
Rating	IP66/NEMA 4
Finish	Steel painted RAL 7035
Dimensions	380 mm x 380 mm x 210 mm deep
Weight	12.5 kg
Power supply	85 to 263 V AC, 47 to 63 Hz, 50 W
Temperature range	0°C to +50°C (32 to 122°F) operating, -20°C to +60°C (-4 to 140°F) storage
Sensing head	One per channel, maximum 6 per unit
Sensing Head	
Insertion temperature	-20°C to 200°C (-4 to 392°F)
Duct connection	1" BSPT female
Head enclosure temperature	-20°C to 60°C (-4 to 140°F)
Rating	IP66/NEMA 4
Material	Aluminium, black
Sensing element	316 stainless steel
Sensing element options	Solid rod, tubular, Teflon coated, multiple supports, cable type, varying lengths
Air purge requirements	Connection 1/8" gas thread on side of unit Air pressure: 400 kPa (60 psi) Max air consumption: 1.7 to 17 m ³ /hr (1 to 10 cfm) pulsed
Interconnecting cable	4-core screened data cable: Beldon 9534 or equivalent
Sensing head to display unit	See installation instruction for maximum lengths

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