ISO-14001
ISO-9001

SPECIFICATION SHEET

TOA DKK

PARTICULATE MONITOR

Model: FPM-222/223

This equipment operates on the principle of Beta ray attenuation. The Beta ray attenuation method measures particle mass without the effects of shape, size or colour of the suspended particulate matter. The equipment includes a PM10 inlet and PM2.5 WINS Impactor or BGI VSCC cyclone. By connecting a PC, storage of data (including PM hourly average, ambient temperature, barometric pressure, sample flowrate etc.) is possible. By connecting the network unit, data can be remotely acquired through a modem.

FEATURES

- US EPA approval (EQPM-0905-0156)
- Microprocessor control
- Sealed Beta ray source below 100µCi
- No handling qualification, or license required
- Long life Beta ray detector (semi-permanent use)
- Filter paper roll lasts for 33 days
- RS-232C port (option)
- Digital network system (option)
- Smart heater to control cell RH (option)

STANDARD SPECIFICATIONS

Name	:	Particulate Monitor
Model	:	FPM-222/223
Measuring Object	:	PM2.5 / PM10
Measuring Method	:	Beta ray attenuation method
Beta ray Source	:	Safe sealed source of 90µCi, Promethium 147
Measuring Range	:	Switching over between 0~1mg/m³ and 0~5mg/m³ automatically/manually.
Beta ray Detector	:	Semiconductor type
Accuracy	:	Within ±10µg/m³ of indication for PM (≤100µg/m³) Within ±10% of indication for PM (≥100µg/m³) (Within 3% of indication for calibration film)
Calibration	:	By calibration film
Sampling		
Collection	:	Filtration
Filter Paper	:	Glass fiber filter tape (replaced every month)
Cut off size	:	PM2.5 (PM10)
Sample flow rate	:	16.7L/min
Sampling duration	:	55.5min
Output Signal	:	PM; 0~1V DC (isolated) to 1 hour average value
Operating Temp	:	0~40°C
Power Source	:	100/115/200/220 VAC, 50/60Hz
Power Consumption	:	200VA max, average 150W (FPM-222)
	:	690VA max, average 180W (FPM-223)
Dimensions	:	399(W)x360(D)x214(H)mm (Main body)
Weight	:	15kg (main body) + 15kg (pump unit)

Optional Devices

- Digital network unit and software
- PC software for data loading
- Rack mount kit (19") with chassis slide rails
- Smart heater (sample heater assay and sample RH & temp measurement assay)

PRINCIPLE OF MEASUREMENT

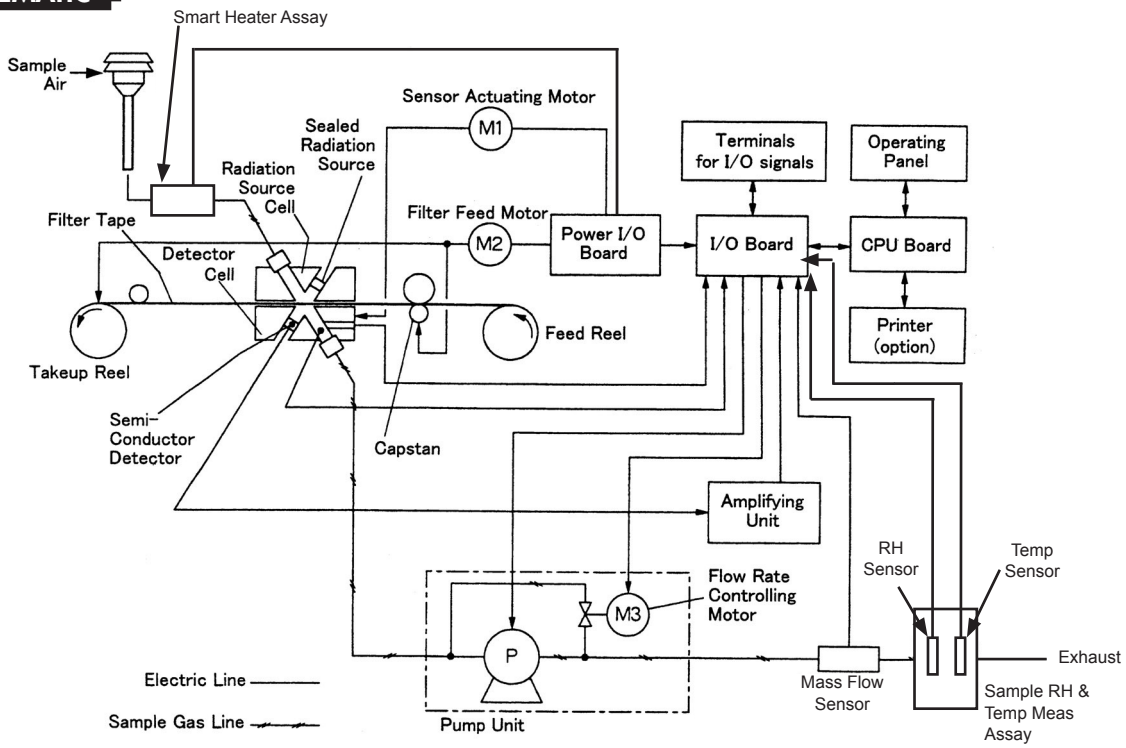
When Beta rays irradiate a substance, part of the rays are absorbed by the substance. The absorbance is proportional to mass of the substance. The Beta ray attenuation method utilizes this property and measures the transmitted intensity of Beta rays through the PM collected on filter tape. This monitor draws in the sample air at a constant rate of 16.7 L/min through the filter tape and PM in the sample is deposited on the filter tape during this time.

The mass of PM is derived from the following formula;

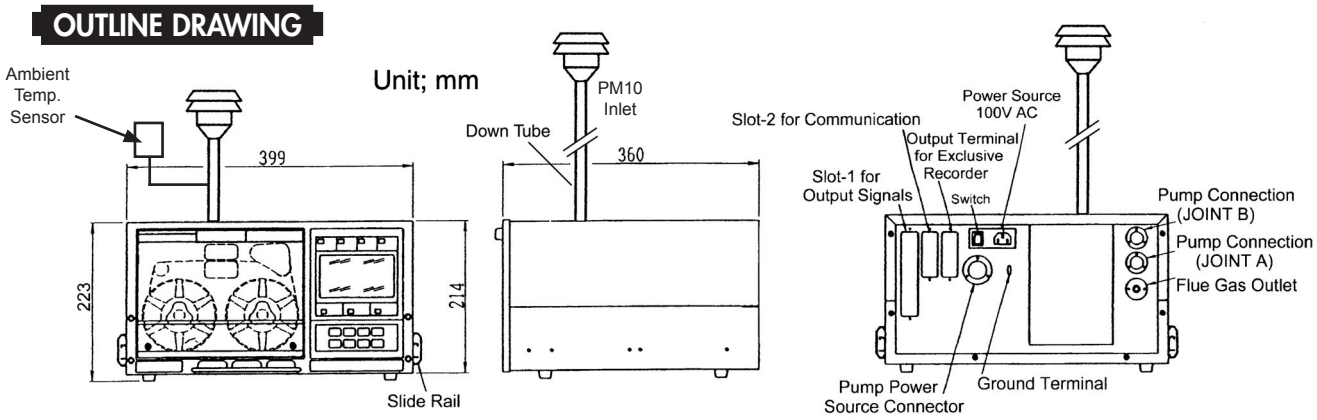
$I = Io \exp(-\mu m \cdot Xm)$ Hence, $Xm = 1/\mu m \cdot \ln(Io/I)$

I : Intensity of transmitted Beta ray through PM on filter tape.
Io : Intensity of transmitted Beta ray through only filter tape.
µm : Mass absorption coefficient (cm^2/g)
Xm : Mass of PM (g/cm^2)

FLOW SCHEMATIC



OUTLINE DRAWING



Arrangement of slots

1. Slot-1 for transmission of output signals
- Analog outputs of measured value (standard) or
- Temperature outputs (option)

2. Slot-2 for communication port
- RS-232C (option) or
- Exclusive network system (option)

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CAUTION Do not operate products before consulting instruction manual.