
HIGH VOLUME
AIR SAMPLER


RESPIRABLE DUST SAMPLER
MAINS
NEON
ON
FUSE
PUSH TO ON
INSTRUMEX
VOLTMETER

HIGH VOLUME SAMPLER IPM 164 (BL)

INSTRUMEX
EMINENCE IN INSTRUMENTATION

INTRODUCTION : **INSTRUMEX** High Volume Sampler is based on a simple design, standardized by the USEPA, to monitor the Suspended Particulate Matter (SPM) in ambient air and also simultaneous sampling of pollutant gases like SO_2, NO_x, Cl_2, $H2_s$, CS_2, etc. These gases are analyzed subsequently by simple chemistry method to determine concentration of specific pollutants. They are widely used the world over, for measurement of air pollution in various urban as well as industrial areas. When the main objective of ambient air quality monitoring is protecting the local community, measuring of SPM alone is often misleading. Hence it is necessary to determine the deterioration of air quality caused by local human activity. Health effects are caused primarily by (SPM) Suspended Particulate Matters in the Air. The rudimentary control systems are capable of removing only the coarser particles, the fine particles being sustained in the industrial emissions. High Volume Samplers play a decisive role in studying the air analysis and health hazards caused by these particles.

PRINCIPLE OF OPERATION : The mass concentration of Suspended Particulates in ambient air, expressed in micrograms per cubic meters, is calculated by measuring the mass of collected Particulates and the Volume of air sampled.
In the Instrumex IPM 164 (BL) the flow rate of air passing through the filter is monitored by measuring the pressure drop across an orifice plate placed between the filter holder and the blower. The scale of the manometer used to measure the pressure drop is calibrated in airflow units of cubic meters per minute. Microprocessor Time totalizers and a Timer are provided which record the time in minutes / hours for which the system has sampled the air. Hence the Volume of air sampled is known.
The mass of the particulates collected is measured gravimetrically, using the balance capable of reliable measurement to the nearest milligram. For identification of trace quantities of specific elements or components, the collected dust may be analyzed using standard techniques like Electron Microscopes, Atomic-Absorption, Infra-red Spectroscope, etc.

BLOWER MOTOR : The instrument has a brushless motor which has replaced the conventional high speed blower where carbon brushes are required to be replaced at regular intervals. Therefore there is no need to keep track of carbon brushes.

SPECIFICATION OF IPM 164 (BL)

Flow Rate	:	0.9 to 1.4 meter cube/min. Free flow
Particle size	:	Particle size of 100 and below collect on Filter paper, Filter holder designed to accept any standard filter sheet of 8 x 10 inches
Sampling Time	:	28 hours
Time Totalizer	:	0 to 9999.99 hours. Time Totalizer circuit detects blower halt due to any reason
Automatic Sampling & Time Record	:	Automatically shuts off the machine and there is a 24 Hrs Programmable Electronic Timer cum Totalizer. Micro controller Programmer. There is a facility to check the off time (Power Failure time) while running the machine with a battery back up.
Time Record	:	After pre-set time intervals
Filter	:	GF/A. (8x10)"
Power Requirement	:	230 V. 50 Hz. 1 Phase A.C. in built Voltage stabilizer with automatic Shut-off beyond (170-270) Volts. Normal Voltage 220 to 230 Volts.
Overall size	:	Approximate (400X300X650) mm.
Blower Motor	:	Heavy Duty Brushless Induction Motor

GASEOUS SAMPLING ATTACHMENT :

Flow Rate	:	0.3 to 3 LPM + - 2% accuracy
Flow Control	:	One inlet and four outlets manifold with an inbuilt needle valve for flow control of each outlet.
Sampling Train	:	Four (04) Nos. Cap. 35 ml. Borosilicate glass impingers kept in an ice tray. Dimensions as per IS: 5182 part V.
Over all Size	:	Approximately (240X125X350) mm.

FLOW MEASUREMENT : The IPM 164 (BL) High Volume Sampler uses a proven Orifice Plate based flow-metering system. The design has established its reliability through trouble free operations in more than 75 installations of Instrumex's popular IPM - 164 (BL) Sampler. The Orifice Plate is built in to the body of the filter adaptor assembly and there are no joints or leakage paths between the Orifice and the filter. A calibrated manometer measures the pressure drop across the orifice plate.

GASEOUS SAMPLING ARRANGEMENT : A tapping is drawn from the suction of the blower below the orifice plate assembly, to provide suction for sampling air through a set of Impingers housed in a separate enclosure and kept in an Ice Tray. Insulate the impingers from ambient temperature and heat generated in the motor of the blower. The IPM 116 is provided with a gas manifold and rotameter to allow setting up of independent sampling rates through each of the impingers. The IPM 116 Gaseous sampling attachment can be easily detached form the main sampler, transported and stored independently.

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Ashish Udyog Bhawan, Unit No.7, Ramchandra Ext. Lane, Malad (W), Mumbai - 400 064 (INDIA).
TeleFax : 022-2844 3997 / Mobile : 93222 35281
E-mail : info@instrumex.net / instrumex1@rediffmail.com / www.instrumex.net

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