

Model CAM A/B - Continuous Air Monitoring System

(Alpha and/or Beta channels , Electronic Air Flow measurement, Bq/M³ and CPM Display)



Model CAM A/B is a Continuous Air Monitoring system with independent Alpha and Beta Channels. CAM A/ B is designed and manufactured indigenously by Para Electronics Mfg. Division of Electronic Enterprises (I) Pvt. Ltd. for Continuous Monitoring of Alpha and/or Beta activity in the surrounding atmosphere.

Electronic flow measurement enables user to get the activity reading in Bq/M³, Time totalized air flow measurement provides information on the amount of air sampled in the given time. However, CAM system is also available with standard Rotameter type air flow measurement providing only CPM Display. There is no interaction between air flow lines, since independent pumps are used for Alpha and Beta channels.

Connectivity of CAM to network or PC is provided through RS-485 /RS 232. Modbus based Data Transfer software is supplied as an option.

Continuous Air Monitoring System CAM is housed in 19" mechanical trolley with two compartments. These compartments house the main electronic Instrument on the top side. Alpha/Beta detectors, lead shield for Beta channel, Flow measurement, Sample Changing mechanisms and two independent Air Sampling Pumps are housed in the lower compartments.

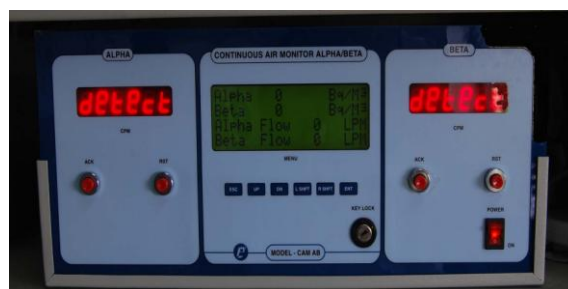
Standard version of CAM A/B includes

- Alpha Channel with 2" dia ZnS(Ag) scintillation detector mounted on 2" dia PMT, Air Sampling System with electronic flow meter, **Easy-to- Replace** Filter Paper Holder Arrangement, 100 LPM independent air sampling pumps.
- Beta Channel with 20 mm dia End Window GM tube, Air Sampling System with electronic flow meter, Easy-to- Replace Filter Paper Holder Arrangement, 100 LPM separate air sampling pump
- Common Electronic Microcontroller unit with independent HV supplies, Pulse Processing Circuits, Counters, Flow Measurement and Display of Air Flow, CPM and Bq/M³ for each channel. 6 digit LED display for CPM and 4 x 20 Char LCD for menu, Bq/M³, Flow and other menus
- Low and High Level Count Rate Alarms, 4-20mA output, Potential Free Relay Contact outputs, Green, Red Tower Lamps with Flasher and Audio Alarms for each channel
- Calibrate Mode to calibrate the activity in Bq using reference sources, Flow in LPM using standard Flow Meter



Electronic Readout Unit uses 2 LED displays for CPM indication. 4 x 20 Character LCD is used for various menus, Bq/M³ and flow reading. 6 Keys pad enables user to set up the parameters and also calibrate the instrument for Flow and Activity measurement.

Keylock is provided to prevent unauthorized tampering of the set up.



MAIN READOUT UNIT



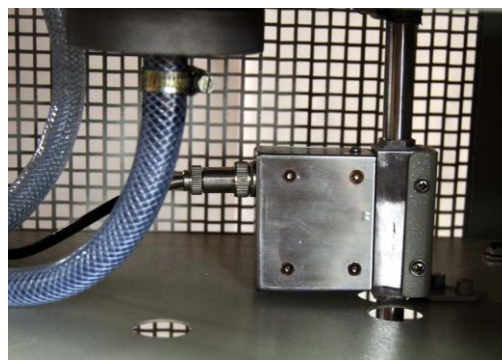
ALPHA BETA DETECTOR ASSEMBLIES

Electronic Flow sensors are employed for measurement of air flow in LPM. The flow totalizer gives the integrated value of air volume that has passed through the filter paper in the given time. This gives accurate estimates of Bq/M³.

These flow sensors are calibrated against standard turbine type flow meter for the range 20 to 100 LPM

2" dia ZnS(Ag) Scintillator based Alpha Detector is mounted on 2" dia PMT. Voltage Divider and Preamplifier are also housed in the detector assembly. This detector gives better than 25% efficiency.

Beta detection is done by 25mm dia GM tube type 72314 from LND USA. GM tube is covered by 25 mm thick lead shield to reduce the gamma background. Beta efficiency is around 10 ~12%



ELECTRONIC FLOW



AIR SAMPLING PUMP ASSEMBLIES

Elegant yet simple, design of CAM enables user to change the filter paper(s) without disturbing the detector mounting arrangement. Air Sampling Pumps are rated for continuous operation. Rotameter flow measurement is also possible as an alternative to electronic flow measurement. CAM is also available in only Alpha, only Beta or both Alpha and Beta versions.

Two independent air sampling pumps with 117 LPM (free air) capacity are used for Alpha and Beta Channels. Use of separate pumps removes any interaction of air flow between Alpha and Beta channels.

Since Air Flow measurement is carried out by electronic flow meter, conventional Rotameters are not required in the air line. Air flow is adjusted by the vent valves provided at the inlet side of the pump(s).



FILTER HOLDER REMOVAL



Parameter	CAM A / B	
	CAM A	CAM B
No. of Channels	Alpha(1)	Beta(1)
Detector(s)	2" dia ZnS(Ag) Scintillator on 2" dia PMT	20 mm dia End Mica Window GM tube with 25 mm thick lead shield
Filter Paper Arrangement	2" dia filter paper mounting, with easy-to-replace filter holder in sampling system for Alpha Channel	2" dia filter paper mounting, with easy-to-replace filter holder in sampling system for Beta Channel
Flow Measurement	Electronic or by Rotameter (0 to 100 LPM Range)	Electronic or by Rotameter (0 to 100 LPM Range)
Air Sampling	Continuous rated air sampling pump (100 LPM) for Alpha channel	Continuous rated air sampling pump (100 LPM) for Beta channel
HV supply	0 to 1000V preset for alpha channel	0 to 1000V preset for beta channel
Display	6 digit LED for CPM 4 x 20 Char large LCD for Bq/M ³ Flow, Alarm Levels	6 digit LED for CPM 4 x 20 Char large LCD for Bq/M ³ Flow, Alarm Levels
Ranges	50, 500, 5000 or 50000 CPM settable	50, 500, 5000 or 50000 CPM settable
Calibration	Air Flow and Counting Efficiency	Air Flow and Counting Efficiency
Alarms	Green / Red Tower Lamps with audio alarm	Green / Red Tower Lamps with audio alarm
Alarm Setting	Warning and High CPM Alarm	Warning and High CPM Alarm
	Low and High for Air Flow	Low and High for Air Flow
Outputs	Potential free Relay contacts, 4-20mA Output RS-485(Modbus)/RS-232	Potential free Relay contacts, 4-20mA Output RS-485(Modbus)/RS-232
Air Flow Pump	Independent pump 126 LPM open flow with silencer	Independent pump 126 LPM open flow with silencer
Flow Control	By Vent Valve with inlet air filter	By Vent Valve with inlet air filter
Mechanical Enclosure	Powder coated MS Trolley on caster wheels	Powder coated MS Trolley on caster wheels
Power	230V / 50 Hz AC Mains	230V / 50 Hz AC Mains

Due to continuous R&D, specifications are likely to change without notice

Manufactured By :

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