

**WATER SUPPLIES DEPARTMENT**  
**STANDARD SPECIFICATION EM-02-04**  
**CHLORINE GAS DETECTION SYSTEM**

1. **GENERAL**

The chlorine gas detection system, which is composed of detectors and control panel, shall be suitable for chlorine leak detection and alarm applications. All materials used in the system which can come into contact with chlorine gas shall be corrosion resistant to chlorine gas. The system shall be designed on a 'fail safe' basis such that it can still initiate alarms in case of mains failure.

2. **DETECTOR**

The detector shall be of wall-mounted type. It shall be powered by d.c. supply from the control panel. It shall have a 4-20mA analogue output signal.

The gas sensor of the detector shall be of modular "plug-in" type without requiring any wiring work to facilitate easy replacement. It shall be of electrochemical type. Its service life in air shall be at least two years. It shall be suitable for exposure to concentrated chlorine gas of 20 ppm for at least two hours. The 90% pick up response time shall not exceed 150 seconds. It shall be suitable for monitoring chlorine gas concentration between 1 ppm and 10 ppm by volume.

The detector used in air sampling of ventilation ducts shall have gas sensor with response time less than 12 seconds. It shall be suitable for duct sizes between 300 and 1500 mm wide, inside which the air velocity is greater than 5 m/s. Accessories such as dust filter, extraction fan, hoses, inlet and vent connections, etc. shall be provided.

3. **CONTROL PANEL**

The control panel shall be able to simultaneously monitor the required number of chlorine gas detectors as specified in the particular specification and to indicate the current status of each individual detector. The control panel shall have a degree of protection of IP54 to IEC 60529. It shall be of wall-mounted type. It shall have at least two adjustable alarm levels per detector which can be set at 1 ppm and 3 ppm respectively. It shall indicate the following information/ status on front panel:

- (a) Power supply on
- (b) Fault alarm(s)
- (c) High chlorine leak alarm
- (d) Low chlorine leak alarm
- (e) Chlorine gas concentration in ppm

The control panel shall give audible and visible alarms, and be able to relay the alarm

signals via volt-free contacts rated at 2A 220V a.c. to other systems for remote monitoring and control upon the following conditions:

- (a) Equipment fault alarm
- (b) High chlorine leak alarm
- (c) Low chlorine leak alarm

The power supply to the control panel shall be 220V 50Hz a.c. The control panel shall have a local back-up battery which has sufficient capacity for continuous operation under alarm condition without mains supply for at least five hours. The battery shall be of sealed type with charger provided. The control panel shall be able to detect and indicate any battery fault condition.

4. CALIBRATION

Pre-calibration shall be carried out at factory with calibration certificate issued by the manufacturer. The system shall be calibrated by direct chlorine gas at 1, 3 and 10 ppm using a gas generator. When specified, a set of gas generator shall be supplied for calibration verification.

5. PRODUCT APPROVAL OF FIRE SERVICE INSTALLATION AND EQUIPMENT

The chlorine gas detection system shall be approved by Fire Services Department (FSD) or listed by Product Certification Bodies (PCBs) in accordance with FSD Circular Letter No. 1/2007 and the latest FSD requirements. A copy of the approval document issued by FSD or the relevant documentary proof such as product listing certificates/ records/ letters issued by the respective PCBs shall be submitted for information if requested.

- End of this Specification -