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

1. GENERAL

The chlorine gas detection system, comprising 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 and powered by d.c. supply from the control panel. It shall provide 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. The sensor shall be of electrochemical type, with a service life in air of at least two years. It shall be suitable for exposure to concentrated chlorine gas of 20 parts per million (ppm) for at least two hours. The detector shall achieve a 90% pick up response time not exceeding 150 seconds and shall be suitable for monitoring chlorine gas concentrations in the range of 1 ppm to 10 ppm by volume.

The detector used in air sampling of ventilation ducts shall be equipped with a gas sensor with a response time less than 12 seconds. It shall be suitable for duct sizes ranging from 300 mm to 1500 mm in width, inside which the air velocity is greater than 5 m/s. The detector shall be supplied with necessary accessories such as dust filter, extraction fan, hoses, inlet and vent connections and other fittings required for proper operation.

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 at least a degree of protection of IP54 in accordance with IEC 60529, and shall be of wall-mounted type. Each detector shall have at least two adjustable alarm levels, which can be set at 1 ppm and 3 ppm respectively. The control panel shall indicate the following information/ status at the front: -

(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 generate both audible and visible alarms, and be able to relay the alarm signals via volt-free contacts rated at least of 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 control panel shall operate on a 220V 50Hz a.c. power supply and shall be equipped with a local back-up battery of sealed type, complete with charger, having sufficient capacity for continuous operation under alarm condition without mains supply for at least five hours. 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 chlorine gas detection system shall be at least 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 the Director of Fire Services or listed by Product Certification Bodies (PCBs) in accordance with Hong Kong Fire Services Department (FSD) Circular Letter No. 1/2024 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 upon request.

- End of this Specification -