

## **SPECIFICATION FOR AUTOMATIC FIRE FIGHTING WATER MONITOR SYSTEM FOR ATRIUM FLOOR FIRE PROTECTION.**

1. The water monitor device shall be of compact design with its detection devices, electronic circuits, monitor drive mechanism and nozzle housed within the unit. The mass of the device shall not exceed 15 kg.
2. The water monitor device (WM) shall be approved by SCDF for use in Singapore.
3. The WM shall detect a fire on the atrium floor by means of infra-red (IR) and ultra-violet (UV) flame detectors housed within the unit.
4. There shall be three separate sets of flame detectors. The first set shall be a combination of IR and UV detectors. This set shall be the first to detect a fire on the atrium floor and activate the WM drive mechanism to rotate the WM and locate the fire.
5. The second set of IR detectors in the WM shall locate the fire in the horizontal plane as the WM rotates and stop the rotation with the nozzle pointed in the general direction of the fire.
6. The third set of the IR detectors in the WM shall locate the fire, after the monitor has stopped rotating, by activating the nozzle movement mechanism to locate the fire on the vertical plane.
7. The nozzle movement shall stop when the nozzle is pointing at the fire location and the WM shall signal the WM's solenoid valves to open, thus discharging water from the nozzle.
8. The water discharge can be stopped only by manually operating a stop switch to be located in the Fire Command Centre (FCC).
9. The WM device shall be designed such that all three sets of flame detectors in the WM activate in the correct sequence in order for water to discharge from the nozzle.
10. The device shall activate and discharge water within 25 seconds of first detection of fire.
11. The WM device shall be connected to the building's sprinkler system's distribution pipework of minimum 80mm dia. and shall be able to provide sufficient pressure and flow at the nozzle as specified below.

12. The WM shall be connected to the sprinkler main by a minimum 50mm dia. branch pipe with a stop valve and two normally closed solenoid valves in parallel before connecting to the monitor's inlet pipe.
13. The WM shall be affixed securely and rigidly to the building structure, with the monitor jutting out into the atrium space by about 300mm, so that it has a clear, unobstructed view of the atrium floor.
14. The WM shall incorporate an automatic self-diagnostic test function that will regularly check the monitor's electronic circuitry, detectors and mechanical moving parts for correct operation.
15. A WM Alarm Panel shall be located at the FCC and connected to the monitors in the atrium by fire-rated cabling.
16. The purpose of the Alarm Panel shall be to indicate activation of the water monitors, status of stop valves and solenoid valves, and display and record the results of the self-diagnostic tests complete with date and time stamp for each WM device.
17. Next to the Alarm Panel, a switch (deadman type) to stop water discharge shall be installed. There shall be one switch for each monitor. When the switch is operated (to stop water discharge) and released, the WM shall return to automatic standby mode.
18. Each WM shall have a local manual control device installed in the vicinity of the particular WM, so that the full operating functions of the WM can be manually operated by a person in the atrium who discovers a fire on the atrium floor. The person standing at the local manual control device shall have unobstructed view of the particular monitor as well as the atrium floor area served by this WM.
19. Performance parameters of the Water Monitor device.

<b>PARAMETER</b>	<b>REQUIREMENT</b>
Operating Voltage:	230 V.A.C. (single phase)
Power Consumption:	Monitoring: max. 3 watts Scanning: max. 10 watts
Min. pressure req'd at nozzle:	6 bar
Min. flow from nozzle	5 l/s
Water discharge radius:	24 metres
Start-up time:	< 25 seconds
WM installation height above atrium floor	8 to 35 metres