

FM-200

Application Bulletin

CHEMETRONTM
Fire Systems
A World of Protection



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FM-200 FIRE SUPPRESSION —

Telecommunication Facilities

For many years, Halon 1301 was the agent of choice to protect Telecommunication Facilities. However, due to its high ozone depletion potential, Halon production has been banned, making it necessary to find a suitable substitute. This is FM-200 (HFC-227ea). While not a “drop-in” replacement for Halon, FM-200 has been proven to offer the same level of fire protection and provide the same inherent advantages of Halon 1301. These are:

- Cost effectiveness
- Clean and nondamaging to sensitive electronic equipment
- Fast fire suppression (agent discharge time of 10 seconds or less)
- People compatible at design concentrations used. (While evacuation of a protected space is recommended in the event of a discharge, personnel that might be in the area flooded by FM-200 agent will experience no adverse effects from exposure to the agent.)
- Tested effectiveness in suppressing fires that involve equipment that may have to be kept energized, even with fire in the area. (This may, however, require provision for maintaining the fire suppressing gas concentration in the protected space for a longer holding time.)

The FM-200 system consists of:

- Appropriate fire detection, designed to provide early detection of the types of fires expected. Detectors used are usually of the smoke detection type, with both ionization and optical types used in a cross-zoned configuration. (Cross-zoning requires alternate detectors be wired in two loops, with one type detector in one loop and the other type detector in the second loop.) In this arrangement, operation of one detector will give a signal alerting personnel to investigate. However, operation of the second detector in the other loop will automatically activate a system discharge. A manual release station allows personnel to initiate the discharge without waiting for the detectors to trip if they witness a fire.

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- A “dead-man” abort, provided in the event that a sensitive detection system senses an event not requiring the FM-200 agent discharge. In this case, the system control panel is programmed to delay the start of the discharge for the few seconds needed to evaluate the situation in the protected space. If a discharge is not needed, the abort is used to stop the discharge and save the cost of recharging the system. Release of the abort without resetting the system will initiate the discharge.

- FM-200 agent stored in the liquid state, under pressure and superpressurized with nitrogen. This gives the agent the “push” needed to discharge the contents of the storage cylinder in 10 seconds or less. The FM-200 cylinder valve is equipped with a solenoid operator that is part of the electric controls and used to open the valve. The Chemetron system illustrated herein utilizes the Beta series system that is described in a Data Sheet available from Chemetron Fire Systems. The cylinder(s) should be installed near the protected space but preferably not in the space, unless there is no alternative. The Chemetron cylinder valve is equipped with an Emergency Manual Release that allows actuation of the system if there is a catastrophic failure of the electric controls. Thus, it is best that the emergency manual release be accessible in the event of a fire.

- Alarms, both audible and visual, used to alert personnel to an imminent discharge.

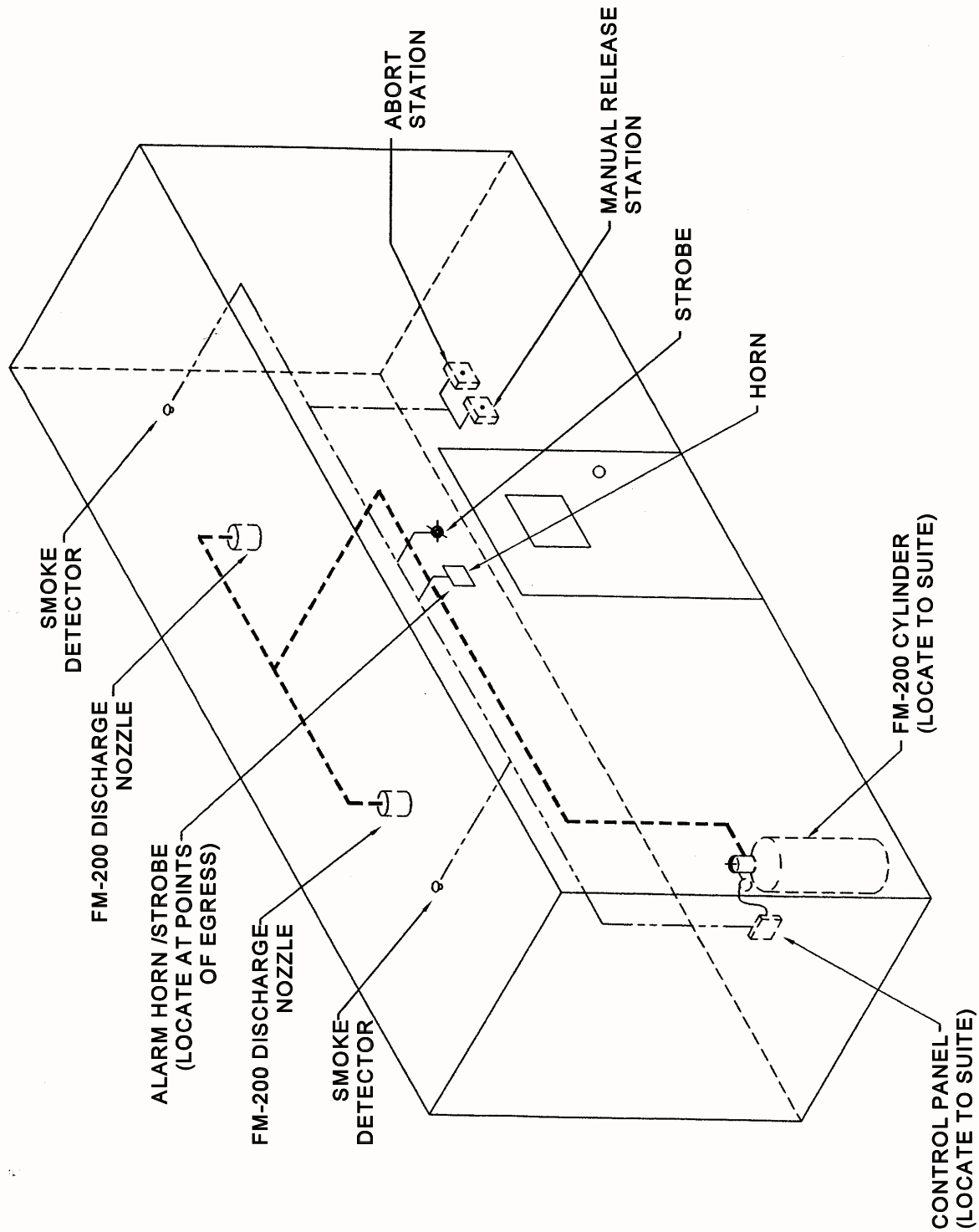
- A control panel that performs a wide variety of functions. The basic function is to translate operating signals from the detectors or manual release station to release the agent while initiating the alarms. The panels can also have the capability to perform appropriate shutdowns and annunciation. The panel, equipped with a battery backup, supervises the power supply and all operating and electric control circuits.

- The FM-200 agent is distributed throughout the protected space by a piping network feeding nozzles that are appropriately located to provide a full and even distribution of the agent. A variety of nozzle types are available to ensure that the necessary distribution piping can be installed to avoid interference with operating equipment and avoid any potential exposure to energized equipment. The proper distribution of the agent is accomplished by properly sizing the orifices in the discharge nozzles. The piping and nozzles are sized by a proprietary computer flow calculation program that is part of the agency (UL, FM, etc.) system approval.

A system for a Telecommunications Module is illustrated on the attached sketch. This system is based on a 20 ft transportable module with a protected volume of approximately 1,400 cu ft (40 cm) requiring approximately 50 lbs (15.25 kg) of FM-200. To give the reader an idea of the approximate cost of this type protection, we calculated that the system design and equipment would run approximately \$3,390.00 FOB our plant. This price does not include the piping or wiring shown on the sketch. Local conditions will dictate the installation cost. In this case the piping is 3/4" Schedule 40.

To minimize the potential of both direct loss and loss of service to users of the system, along with a loss of their confidence in the service provided, hundreds of Telecom firms have selected FM-200 protection as a means of minimizing the loss potential, even though the fire risk is slight.

Contact info@chemetron.com for further information or technical assistance on a specific application.



FM-200 Fire Suppression System for Telecommunication Trailer