# Construction Concerns: Fire Alarm System Control Panels

Article and photos by Gregory Havel

When most of us hear that a building has a fire alarm system, we usually assume that it has a control panel like the one shown in photo 1 and that it is at or near the main entrance. From this location, the alarm system can be tested, silenced, reset, or programmed as needed. If the system uses digital addressable initiating devices, the panel will not only tell us which part of the building has the fire alarm, it will also tell us which pull station, smoke detector, heat detector, flame detector, flow switch, or tamper switch activated the alarm and where in the building it is located.
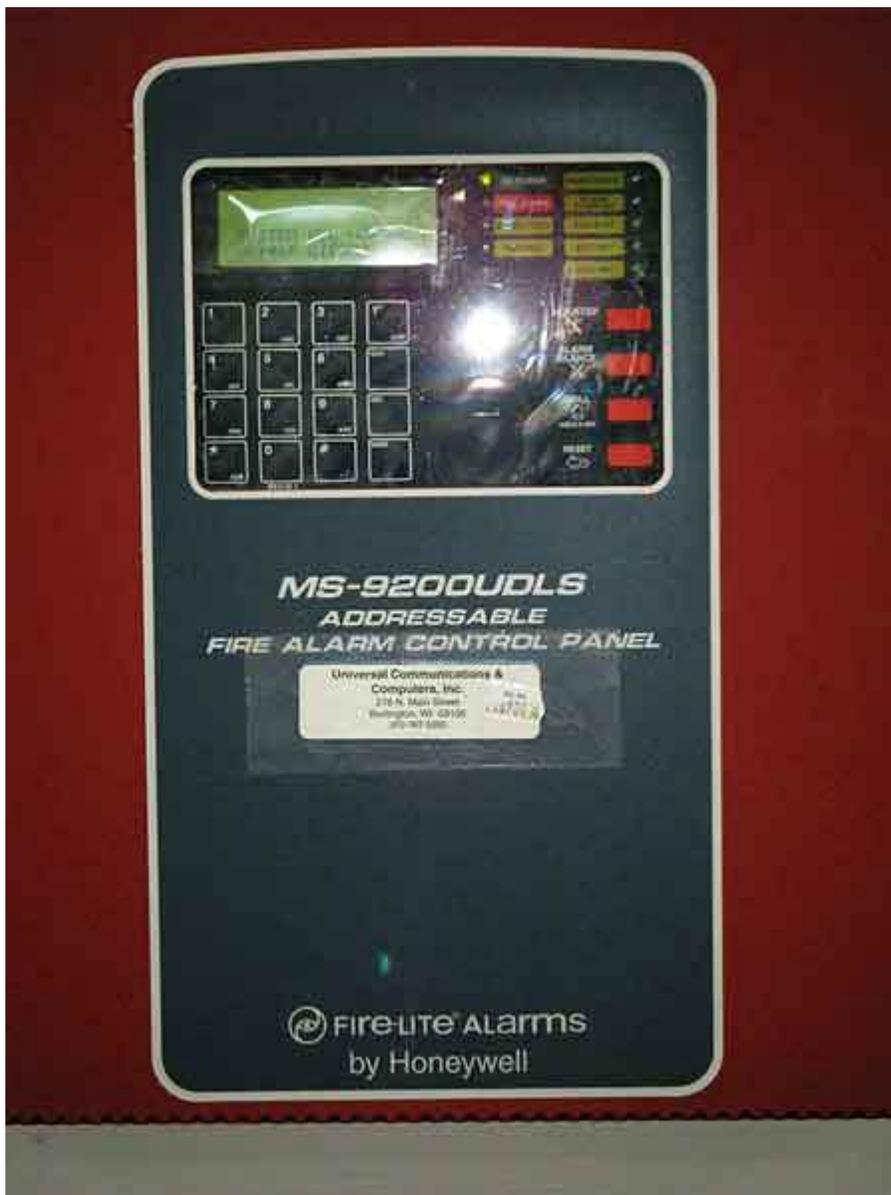
(1)

The fire alarm control unit contains primary and secondary power sources; monitors the power and signal circuits for short circuits and other troubles; receives signals from alarm-initiating devices; processes these signals; and activates visual and audible alarm signals. The control unit may also perform other activities:

- release holders for fire and smoke doors
- alert security stations or emergency service dispatch centers
- recall elevators for firefighter service
- serve as the emergency communications system
- monitor carbon monoxide and alarms
- control the fire sprinkler system and monitor the fire pump and alarms
- control the building security system monitoring and alarms

The requirements for fire alarm control units are detailed in National Fire Protection Association (NFPA) Standard 72, *National Fire Alarm and Signaling Code* —2010, 23.8.2

The fire alarm control panel contains indicator lights and buttons that control the operation of the alarm system:

- "Trouble" indicators may be present for power, system, signal circuits, and other functions; and each indicator will have a button to "acknowledge" or "silence" the trouble alarm.
- "Power" indicates that the main power supply is functioning. If there is a "power trouble" signal, the fire alarm system is operating on stand-by power, usually batteries.
- "Fire Alarm" indicates that the alarm horns, bells, or strobes have been activated. Pressing the "acknowledge" button will allow the system to be silenced or reset.
- "Alarm Silence" will turn off the alarm horns, bells, or strobes; leave the system in an alarm condition so that the initiating device that sets off the alarm can be located; and allows additional initiating devices to go into alarm and reactivate the alarm horns, bells, or strobes.
- "Reset" or "System Reset" will turn off the alarm horns, bells, or strobes and return the panel and any alarm-initiating devices to their normal non-alarm condition.

 A fire department's operating procedure for response to buildings with fire alarm systems that have been activated should be to "acknowledge" the alarm and to "silence" it to allow communication between firefighters and the incident commander. The alarm system should not be "reset" until after the building has been evacuated, the location of the alarm has been investigated, and any problem has been corrected. Since a modern fire alarm system contains microprocessor-controlled electronics, any repairs must be done by trained and qualified personnel like the building manager or the service contractor.

In larger and more modern buildings, the fire alarm control unit may be a distance from the main entrance, often in a secure room with the communications and data network equipment, as shown in photo 2. This will be a complete control panel from which the alarm system can be tested, silenced, reset, or programmed as needed. When the fire alarm control panel is in a remote locked room, NFPA 72 (2010 edition) requires that a remote control station is near the main entrance, as shown in photo 3 (*top of next page*). This remote control panel will allow the alarm system to be tested, silenced, or reset without physically visiting the location of the main control panel. Programming and troubleshooting a system like this will still need to be done at the main fire alarm control panel.

(2)

(3)

Very large buildings, including clinics and hospitals, factory complexes, and high-rise buildings, frequently have a computerized system that looks very different to the fire department when it arrives. There will still be cabinets full of electronic control equipment in a secure, fire-rated room somewhere in the building, but there will be no remote-control station as shown in photo 3.

Instead, the system will be controlled from one or more secure computer workstations that are protected by security software and passwords. Instead of LED indicators and a couple of lines of alphanumeric displays, there will be a computer monitor with menus of monitoring, function, and alarm displays, as well as system schematics and building floor plans and a keyboard and mouse for programming, testing, monitoring, silencing, and resetting the system. One of these workstations will usually be in the fire alarm system control room and will be dedicated to the system; often, a printer will be attached to produce a paper copy of whatever data are needed. The other work station is usually at a staffed security office or station which the incident commander and his staff can easily access, has similar security software and passwords; and will be capable of all of the functions of the workstation in the fire alarm control room, except for programming functions. Sometimes a third workstation is in the fire department command center, if this is not located in the security office.

Since the operation of these computerized systems uses proprietary software, and each system is designed for a specific building or complex, security procedures usually will not permit them to be photographed; so there is no photo 4. These systems look like an ordinary computer workstation, with a computer, monitor, keyboard, mouse, and printer; but usually no one will be sitting at that station. In addition, security will arrive as soon as a visitor tries to make it work and escort him away.

If your fire department is called to a facility with one of these computer-controlled systems, expect to be met by security or a technician who will gain access to the system for you and help you get the information you need. The procedure or contact phone number to gain access to fire alarm information in a computer-controlled system should be included in your prefire plan for the facility.

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