

# PERTRONIC INDUSTRIES LTD

## FIREBITS

March 2004

### F120 Panel Installed At Diagnostic Medlab



Auckland's Diagnostic Medlab headquarters, in the eastern suburb of Ellerslie, has undergone a significant extension and upgrade to accommodate the increasing demand for the company's services. As part of the extension, a Pertronic F120 analogue addressable fire alarm system has been installed, supporting approximately 350 smoke detectors (which were all initially directly connected to the Fire Service).

To minimise nuisance alarms for both staff and the Fire Service, two important features of the F120 panel have since been used. Firstly, in the large open office and laboratory areas, the panel's Boolean logic functions are used to create a "double knock" operation among selected groups of smoke detectors - two detectors within each group must go into alarm to generate a fire call. Secondly, in smaller offices containing only one smoke detector, a timer delay on smoke detector activation is introduced, to allow staff time to investigate the alarm before the timer runs out and the brigade is called. If the alarm is not genuine, a reset button on the LCD mimic at reception allows the detector to be reset and cancels the timer operation. The F120 panel also has a modem fitted, giving the servicing company remote access to the system to carry out routine servicing tasks for their client- without having to battle Auckland's traffic - such as temporary isolation (then reinstatement) of devices, and downloading reports to monitor detector contamination levels.



VESDA



## **Major Product Changes For NZS4512:2003**

This revised Fire Alarm Standard had a twelve month delay on the introduction of several key changes, many of which revolve around the fire alarm control panel operation. As a result, a huge amount of development work has been carried out on all Pertronic fire alarm panels and peripheral equipment over the past year to meet the new requirements.

### **Major changes to fire alarm panel operations under NZS4512:2003**

- An open circuit or short circuit shall not generate a fire call [clauses 204.9, 402.2(n) & 402.9]. This requirement has meant both hardware and software changes to all fire alarm panels. It also means that indicating (or electronic) heat detectors and call points must be used on panels built to the new Standard. Please note that the open circuit switch-type conventional heat detectors and call points used under the old Standard will not generate an alarm if connected to a panel built to the new Standard - these devices will generate a defect only.
- As an extension to the above, an open circuit or short circuit on a sprinkler input to a fire alarm panel will generate a defect instead of a fire call.
- Operating the “Silence Alarms” key switch and returning it to its normal position shall isolate the device/s or circuit/s currently in alarm from indicating or generating further alarms (until the panel is reset), but will allow other devices or circuits to go into alarm, operate sounders and send an additional alarm signal to the Fire Service [clause 205.4]. This has also involved software and hardware upgrades to all fire alarm panels. The type of key switch used for “Silence Alarms” has also been changed, as there is the added requirement that the key can not be removed in the “silence” position, forcing the user to return the switch to the normal position to remove their key and thereby isolating the devices or circuits in alarm. So an easy way for technicians to identify which Standard a panel complies with is to operate the Silence Alarms switch and attempt to remove the key.
- Extending the Alarm Verification Facility, or “double knock” feature (already present in Pertronic panels on smoke detector activation) to meet the changed times in clause 204.7 involved modifications to panel software.
- Complete failure of the electrical power supply of the fire alarm panel shall not generate a fire call [clause 211.6] but will generate a defect instead. This also involved software modifications to all panels. This change means that fire alarm technicians, rather than the Fire Service, will be called out to fire alarm panels with a faulty power supply.
- Under certain conditions, a search zone can be expanded from 750m<sup>2</sup> to 2000m<sup>2</sup> [clause 401.2.3] where unique detector and call point identification is available to the Fire Service - in other words, an analogue addressable system with an LCD display. Clause 210.7 then outlines the requirements for these LCD displays. The one addition required on Pertronic equipment to meet these requirements is the provision of a “next” button, to allow firemen to scroll through the list of alarms that may be present. A “next” button has been incorporated into the Pertronic LCD mini mimic, and this mimic can be mounted in a position readily accessible to the Fire Service. Additional software changes have been made to F100 and F120 panels so that their LCD displays will also follow the “next” command generated at the LCD mini mimic.

### **Changes to peripheral devices under NZS4512:2003**

- There is a requirement for all detectors and manual call points to provide a visual indication of operation [clause 216.5 & E4]. Analogue addressable devices and conventional smoke detectors already do this. For conventional systems, the redeveloped Pertronic indicating heat detectors (refer Firebits December 2003) and indicating manual call points both meet this requirement, having an LED that latches on in an alarm condition until the panel is reset.

## New F16E Conventional Panel For NZS4512:2003

The Pertronic F16 conventional panel was originally introduced ten years ago and has proven to be a highly successful and reliable unit, in configurations from 8 to 32 circuits. Rather than modify the existing panel to meet the requirements of the new Standard, the decision was taken to completely redevelop a new panel and introduce a number of new features, namely:

- The panel changes from a 12 volt to a 24 volt unit, providing more power to better support amplifier-driven evacuation circuits which will be more commonly used under the new Standard.
- With the introduction of three programming push-buttons and a 10-way bar graph LED unit, each circuit can now be individually configured to perform the following options - call brigade; operate bell output one and/or bell output two; be latching or non-latching; activate an “alert” control output; operate an auxiliary relay on the masterboard; operate as a “residential” circuit, that is, heat detectors and call points on the circuit will call brigade, while smoke detectors on the same circuit will not.
- The same push-buttons are also used for individual circuit isolation, in conjunction with the bar graph LED unit. System events, such as sprinkler fault, earth fault, door open fault, are also indicated through the bar graph LED’s.
- Under NZS4512:2003 there is a requirement for zones of non-brigade calling smoke detectors to be indicated separately on the LED mimic display [clause 402.8.2(m)]. The F16E achieves this by having two LED’s available on the mimic for each circuit. Brigade calling devices will activate one LED while non-brigade calling devices on the same circuit will activate the other LED. Installation companies can then decide which LED’s they want visible externally on the mimic display.
- The F16E has also been designed to have networking capability, and in the future will be able to be mixed with F120 and F100A analogue addressable panels on a Pertronic Network System.

Masterboards and metal cabinets have been kept the same size as the previous panel, to simplify future site upgrades or replacements. Circuit extender boards have been shortened to create additional space on the gearplate inside the panel for mounting amplifiers.

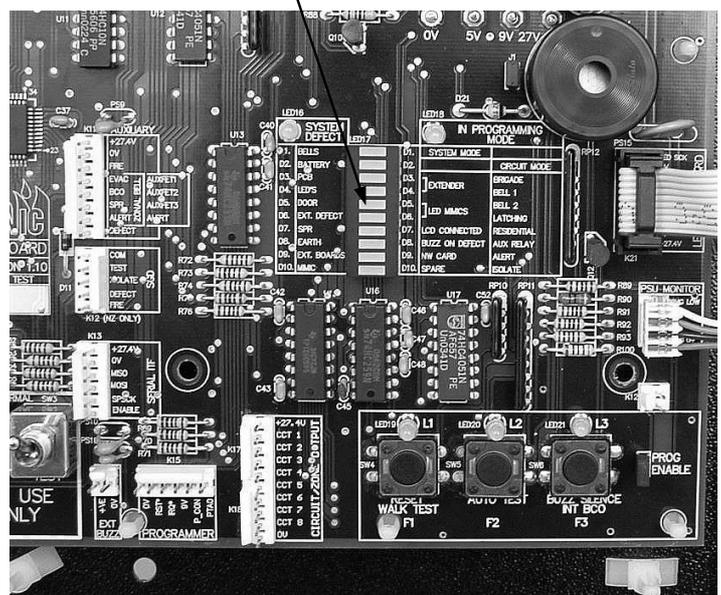
Other key features of the previous F16 panel have also been retained, specifically:

- 8-way circuit extender boards to increase the panel capacity from 8 to 32 circuits.
- External RS485 connection for remote LED mimic displays (up to three units).
- Two independent monitored bell relays, each with 5A drive capability.
- Earth leakage detection.
- Clean relay contacts for fire and defect.
- Auxiliary relay output with isolate control.
- Monitored DBA or sprinkler input.
- A selection of cabinet heights - 410mm, 600mm, or 900mm tall, all in the same width and depth (450mm x 130mm).

For further information please contact Brent Pells in Wellington or Rob Fenton Auckland.

### Lower right section of F16E Masterboard

10-way bar graph LED’s



Push-buttons for zonal programming and isolations

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## New Evacuation Systems For NZS4512:2003

An important change under the revised Standard is the requirement for the evacuation and alert “sound” in new installations to include a voice message. The way to achieve this economically is through the use of amplifiers, either installed at the fire alarm panel or mounted elsewhere on the evacuation circuit.

Pertronic Industries has developed a new range of products for these different types of installations.

### Pertronic Amplifiers

Three cost-effective amplifiers have been produced:

- EVAC 50W24V - a 50 watt, 24 volt amplifier, which is capable of producing the AS2220 Evacuation and Alert tones with speech, plus a “Customised” tone for local alarm in Type 5 or Type 7 installations (four different customised tones are available). With F100A and F120 fire alarm panels, the amplifier is connected to the panel’s internal RS485 comms for selection of the relevant alarm tone through panel programming. In Type 5 or staged evacuation installations (on analogue addressable panels), programmable relays are used to switch on the speakers in the designated areas only. The amplifier can also be used with the new Pertronic F16E fire alarm panels.
- EVAC 20W24V - a 20 watt, 24 volt amplifier, which is capable of producing the AS2220 Evacuation tone with speech. This amplifier is used in installations where a global evacuation tone only (with speech) is required, and can be used with F120, F100A and F16E fire alarm panels.
- EVAC 20W12V - a 20 watt, 12 volt amplifier, which is capable of producing the AS2220 Evacuation tone with speech. The amplifier is also used in installations where a global evacuation tone (with speech) is required, and is designed specifically for use with the 12 volt F4 fire alarm panel.

All three amplifiers are D class products - considerably more energy efficient than A or B class equivalents - with the 50 watt amplifier drawing only 2.5 amps at full load. Note that the End-Of-Line resistors to use with these amplifiers (for monitoring purposes) are a 10k-1 watt resistor.

### Pertronic Speakers

Two unique speaker products have also been developed, for use in conjunction with the amplifiers:

- Pertronic Speaker Base - a slimmer development of the popular Pertronic Sounder Base, this new product incorporates a speaker in the detector base, for use in apartments (for local and global alarm) and in other installations where aesthetics are important - no second penetration required for a separate speaker with grill on the ceiling or wall (product code PSSB).
- Pertronic Sounder Speaker - a stand-alone speaker mounted on a standard PDL switch gearplate and finished with the red or white rectangular covers used for the past three years with PS1 and PS2 sounders. It is also ideal for installations where aesthetics are important, and can be flush or surface mounted (product code PSS1).

Both of these speakers have selectable output levels incorporated into their design.



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