

## Technical Specification

### 6400 Series Common Specifications

Temperature Range  
Maximum Humidity  
Working Voltage  
Secure Network

Node Power Supply

Total Node Load

Year 2000 compliant  
0 - 40 Degrees Centigrade  
85% Non-Condensing  
21.5 - 30V DC.  
Dual channel RS485 fault tolerant communications network for up to 100 nodes.  
3 wire loop (2 Data & 0V), maximum 1km between Nodes.  
Fault monitored dual path 24V DC from 6400/BC range PSU 4 wire plus 2 wire (2 Primary Power, 2 signals)(2 Sec. Power).  
Maximum load to a 6400/LPN or 6400/DCN/LPN is 6 Amp.

### 6400/DCN

Standby load (Mains Fail Condition)  
Alarm Load (Mains Fail Condition)  
Display  
Zones  
Printer  
Nodes  
RS232 Ports  
Auxiliary Output Supply  
Common Fire Output (fire station)  
Common Fault Output (fire station)  
Dimensions (mm)

210mA  
390mA  
Quarter VGA Backlit Graphics LCD  
100 Zone Fire indicators, plus common 'FIRE' indicator. Expandable to 800.  
40 column low noise thermal printer.  
The 6400/DCN counts as one node on the network.  
Two full duplex RS232 ports for site programming, BMS, Colour Graphics or pager system interfacing.  
Two sets of 24V DC output terminals. Total load 1A  
24V DC fully monitored output rated at 20mA. 1K EOL.  
24V DC fully monitored output rated at 20mA. 1K EOL.  
440Wx385Hx104D

### 6400/LPN

Standby Load (Mains Fail Condition)  
Alarm Load (Mains Fail Condition)  
Analogue Addressable Loops  
Total Loop Load  
Nodes  
Programmable Alarm Outputs

230mA (2 loop) 290mA (4 loop)  
460mA (2 loop) 520mA (4 loop)  
2 to 4 loops, each with 127 address capacity per loop. Total 6400/LPN capacity 4 loops, 508 addresses.  
600mA per loop including all loop connected devices.  
The 6400/LPN counts as one node on the network.  
8 monitored 24V DC sounder circuits 1A rated. 47K EOL. 6 non monitored - clean changeover contacts (1A rated @24V). Expansion modules available to increase alarm output capability. Up to 127 programmable alarm outputs per loop using loop output devices. Total node load 6A.  
Four sets of 24V DC output terminals. Total load 1A  
24V DC fully monitored output rated at 20mA. 1K EOL. Dedicated Clean Changeover contacts (1A rated @24V).  
24V DC fully monitored output rated at 20mA. 1K EOL. Dedicated Clean Changeover contacts (1A rated @24V).  
Class change, day/night mode, bomb alert. Plus four additional non-dedicated inputs.  
440Wx385Hx144D

Auxiliary Output Supply  
Common Fire Output (fire station)  
Common Fault Output (fire station)

Software Input Switches  
Dimensions (mm)

### 6400/DCN/LPN

Overview  
Standby load (Mains Fail Condition)  
Alarm Load (Mains Fail Condition)  
Nodes  
Dimensions (mm)

Combined 6400/DCN and 6400/LPN nodes within a common enclosure. The full specification for a 6400/LPN applies plus DCN controls.  
360mA (2 loop) 510mA (4 loop)  
750mA (2 loop) 810mA (4 loop)  
The 6400/DCN/LPN counts as TWO nodes on the network.  
440Wx385Hx144D

### 6400/RDN or 6400/MIMIC

Standby Load (Mains Fail Condition)  
Alarm Load (Mains Fail Condition)  
Working Voltage  
Nodes  
Outputs  
Dimensions (mm)

150mA  
220mA  
21.5 - 30V DC from LPN,DCN or local PSU.  
The 6400/RDN or 6400/MIMIC each counts as one node on the network.  
Local fault clean changeover contacts (1Amp rated at 24V)  
440Wx385Hx104D

### 6400/LCD

Standby Load (Mains Fail Condition)  
Alarm Load (Mains Fail Condition)  
Working Voltage  
Nodes  
Secure Network  
Dimensions (mm)

100mA  
170mA  
21.5 - 30V DC from LPN,DCN or local PSU.  
Does not count as a system node. Listen only device.  
Can be spurred off from the network loop. Maximum Eight 6400/LCD's between each node (396 per system).  
360Wx215Hx47D

### 6400/BC6/24

Standby Load (Mains Fail Condition)  
Power Supply  
Integral Charger  
Integral Battery  
Dual path output  
Supply fault signal  
Charger inhibit input  
Wiring to 6400 Node  
Dimensions (mm)

Complies with EN54 part 4 1998  
80mA  
Mains 230V AC nominal +/- 10%  
2A Battery charge, 4A/6A output load.  
24 Ampere-Hour 24V Sealed Lead Acid.  
O/P1- 24V DC Primary supply. O/P2 - 24V DC Secondary supply.  
Output path is automatically switched if a S/C fault is detected.  
Communicated to nearest connected 6400 node.  
From 6400 node during fire conditions to increase output to 6A.  
4 wire plus 2 wire (2 Primary Power, 2 signals) (2 Sec. Power).  
440Wx385Hx220D



Protec Fire Detection plc

Protec Algo-Tec™ 6400

INTERACTIVE DIGITAL ADDRESSABLE

FIRE CONTROL SYSTEM



Protec Fire Detection plc

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BS EN ISO 9002  
Cert. No. FM 10567



BS EN ISO 9002  
Cert. No. FM 10567



INTRUDER ALARMS  
Cert. No. 100316



ISO 9001 Certificate  
No.s. 201, 188 & 268

Southern Office: **Detection** Crayfield House, Crayfield Industrial Park, Main Road, Orpington, Kent BR5 3HP  
Tel: (01689) 894700  
Fax: (01689) 894701

Yorkshire Office: Copley Hill Trading Estate, Whitehall Road, Leeds LS12 1HF  
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Fax: (0113) 220 4401

Midlands Office: Albrighton House, 135 Allport Street, Cannock, Staffordshire WS11 1JZ  
Tel: (01543) 468646  
Fax: (01543) 468647

Scotland Office: **Detection plc** The Glass Cube, Wyman Gordon Complex, Houstoun Road, Livingston EH54 5BZ  
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Fax: (01506) 498168

Company policy is one of continuous improvement, we reserve the right to change specifications without prior notice.



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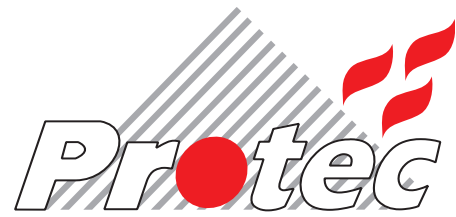
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INTERACTIVE DIGITAL ADDRESSABLE  
FIRE CONTROL SYSTEM

Protec Algo-Tec™ 6400





Protec Fire Detection plc

Protec Algo-Tec™ 6400

INTERACTIVE DIGITAL ADDRESSABLE

FIRE CONTROL SYSTEM

The Protec Algo-Tec™ 6400 Interactive Digital Addressable System unwrapped:

The Protec Algo-Tec™ protocol developed by Protec's in-house Research and Development team is utilised by the Protec Algo-Tec™ 6400 interactive digital addressable fire control system. Immunity to false alarms, more responsive fire detection, and ease of use has all been achieved to develop one of the most reliable systems available.

**Protec Algo-Tec™ 6400**

The name Algo-Tec™ is a derivative of Protec algorithms. Algorithms are logical mathematical procedures for solving problems. Protec have developed fire detection algorithms coupled with fuzzy logic specifically designed to reduce unwanted fire alarms and to enhance the sensitivity of the system to true fire phenomenon.

The Algo-Tec™ algorithms are exclusively utilised by the Protec Algo-Tec™ 6400 and 6200 Interactive Digital Addressable Fire Control Systems.

**Interactive**

Algo-Tec™ evaluates the data of each fire sensor and is able to learn from the information received. This may simply be to recognise that a sensor is becoming contaminated or in a dirty environment and to automatically adjust the alarm threshold to compensate for the background levels (Threshold Compensation). More complex Algo-Tec™ functions include the ability to discriminate between certain fire and non-fire conditions, filtering out certain environmental stimuli, such as steam from a hotel bathroom, and increasing the sensitivity of a sensor when an increase in temperature is detected.

The net effect of the interaction between the sensors and the Algo-Tec™ decision making is enhanced performance, through immunity to false alarms and more responsive fire detection.

**Digital Addressable**

The data communication between the sensors and the control equipment is Digital. The Algo-Tec™ protocol utilised by the 6400 system enables high levels of data to be transferred, providing far more detailed information than was previously achievable with analogue addressable systems. It should however be noted that some analogue addressable systems use digital communication but do not transfer the high levels of data associated with the Algo-Tec™ protocol.

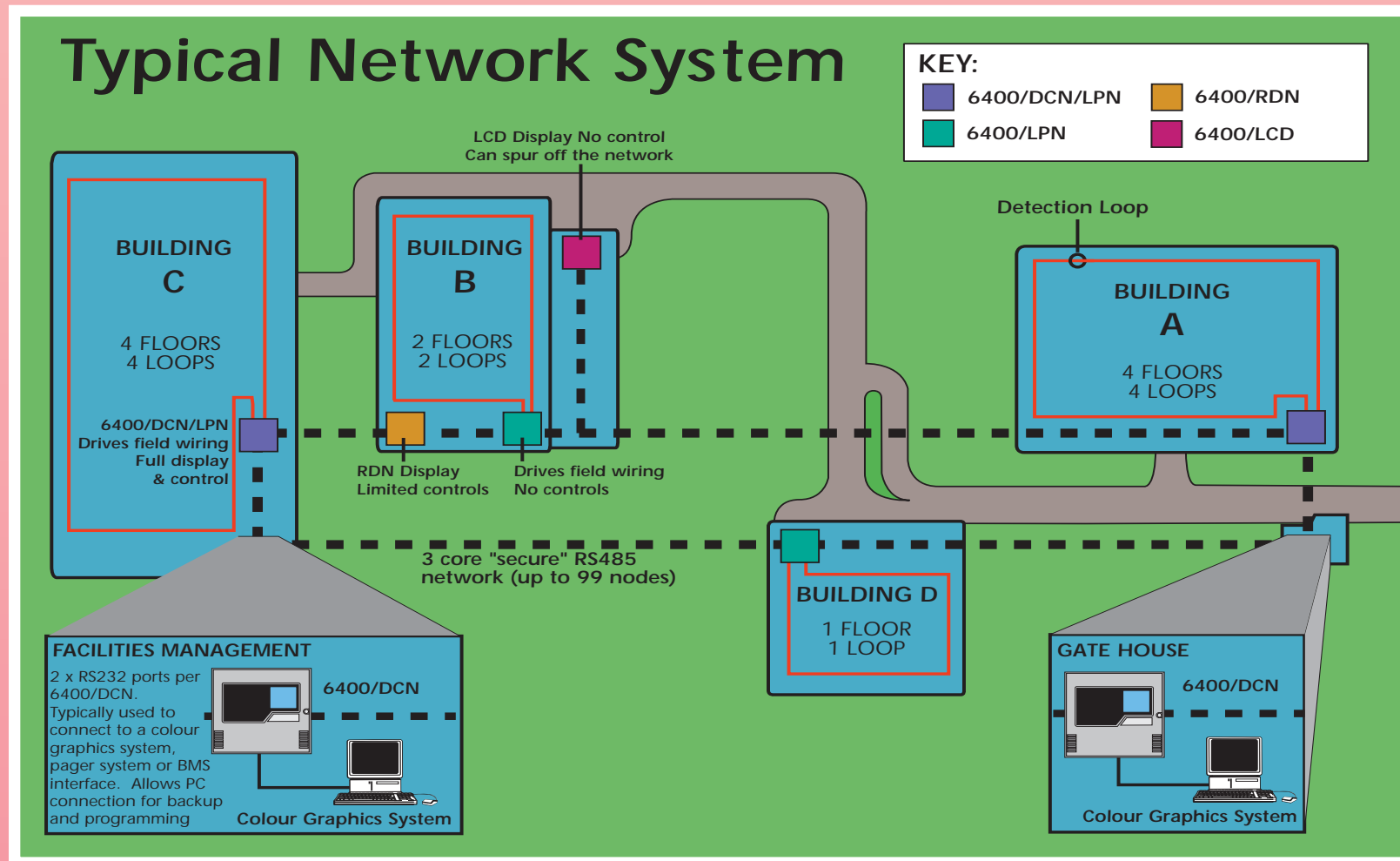
Speed, stability, excellent EMC and security all serve to enhance the Algo-Tec™ Digital signalling. Why select analogue addressable when you can now choose Algo-Tec™ Digital Addressable?



6400/DCN

6400/RDN

**Typical Network System**



**FEATURES AND BENEFITS**

• **Cost Effective** - Distributed network of Display and Control Nodes (DCNs) and Loop Processing Nodes (LPNs) providing a cost effective solution for medium and large sized buildings and sites.

• **Secure Network** - Wired as a loop, the networks dual channel RS485 link ensures that no single fault will affect the system.

• **Easy To Install** - Alarm Sounders, Beacons, Interfaces, Manual Call Points and Sensors can all be loop powered.

• **Reduced False Alarms** - The Protec Algo-Tec™ 6000 interactive fire sensors utilise advanced discriminating algorithms for maximum reliability and immunity to false alarms.

• **Enhanced Performance** - The Protec Algo-Tec™ 6000 sensors learn from their environment, applying interactive decision making algorithms to provide stability, threshold compensation and optimised performance.

• **Secure Detection Loops** - Many Protec Algo-Tec™ 6000 devices incorporate built-in short circuit isolator units. These can be located as required.

• **Easy to Address** - FAST™ (Firmware Addressed Secure Technology) ELIMINATES troublesome and time consuming setting of address cards and DIL switches.

• **Devices Display Address Number** - 'RVAV' Remote Visual Address Verification. Confirmation of the correct location of each device can be easily identified, using the devices in-built LED to indicate the device address number.

• **Accurate Location of Fire Incidents** - 16 characters of loop location text plus 60 characters of device location text ensure pinpoint accuracy of the location of an incident. A further 60 characters of alarm message text provide additional details of possible hazards and /or means of access.

• **Full Site Control** - All system controls and menus can be accessed from any Display and Control Node (DCN) location, including device isolation.

• **On Site Flexibility** - Configuration of all system functions is fully site programmable.

• **Reduced Maintenance Costs** - Early indication and reporting of sensors approaching contamination level, reduce false alarms and enable dirty sensors to be cleaned.

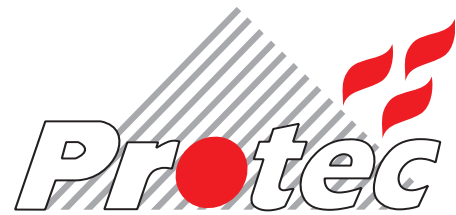
• **True System Management** - As each device incorporates a unique FAST™ serial number encoded during manufacture, TRUE SYSTEM MANAGEMENT is achievable, providing precise DEVICE history in addition to LOCATION history for a specific site system and total traceability of all devices manufactured from our commissioning files for quality management, using optional PC package.

• **Designed to EN54 parts 2 & 4 1998**

ADDRESSING SAFETY SYSTEMS WITH INTELLIGENCE

Protec Algo-Tec™ 6400 INTERACTIVE DIGITAL ADDRESSABLE FIRE CONTROL SYSTEM





Protec Fire Detection plc

Protec Algo-Tec™ 6400

INTERACTIVE DIGITAL ADDRESSABLE

FIRE CONTROL SYSTEM

### System Features

#### Overview

The Protec Algo-Tec™ 6400 is a fully distributed, networked interactive digital addressable fire detection and alarm system, ideally suited for medium and large sized buildings such as hotels, offices, universities, hospitals and complex industrial and commercial sites.

Designed and manufactured by Protec, to comply with EN54 parts 2 & 4 1998, the system architecture has been developed to provide a seamless network of Display and Control Nodes (6400/DCNs) and Loop Processing Nodes (6400/LPNs). The nodes can be located to suit the site structure and for convenience of wiring, enabling the loop and sounder circuit cabling to be wired locally to the nearest 6400/LPN and displayed at any 6400/DCN around the network. This eliminates the problem of routing all the system wiring to one central location, usually in the reception of a building or a security lodge with restricted space or access. The integrity of the system is also increased as the network is secure and an isolated incident cannot render the entire system inoperative.

#### Secure Network

A 'secure network' interconnects all 6400 node options. The network is seamless with all system status and activities communicated around the network and accessible from any 6400/DCN location. The system 'cause and effect' programming is stored within each 6400/DCN and 6400/LPN node for added security. Wired as a loop the networks dual channel fault tolerant RS485 ensures that no single fault can disable the system. In the unlikely event of multiple faults, each node will continue to function independently. Up to 99 nodes can be connected to the network. As all 6400/DCNs display and control the entire system network there is no need for a 'master' panel as they all perform this function. This further enhances the integrity of the system. The network can be wired using copper or fibre optic cables.

#### Loops

The distributed nature of the 6400 system enables expansion by adding 6400/LPN Loop Processing Nodes to the system network. 6400/LPNs can be 2 or 4 loops. Each loop can accommodate up to 127 Protec Algo-Tec™ 6000 interactive addressable devices, totalling 508 addressable devices per 6400/LPN and a total network capacity of over 50,000 addressable devices. In addition to sensors, interfaces and manual call points, the loop can also support loop powered SOUNDERS, BEACONS and OPTICAL BEAM DETECTORS. Loop powered sounder bases adopt the sensor address to increase the capacity of the loops still further.

#### Node Options

**6400/DCN - Display and Control Node**

**6400/LPN - Loop Processing Node**

**6400/DCN/LPN - Combined DCN and LPN (2 nodes)**

**6400/RDN - Repeat Display Node**

**6400/RDN/LPN - Combined RDN and LPN (2 Nodes)**

**6400/MIMIC - Illuminated Mimic Node**

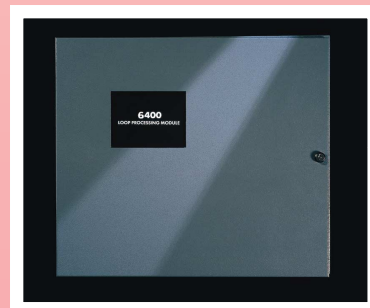
**6400/LCD - LCD Display (Listen Only)**



6400/DCN



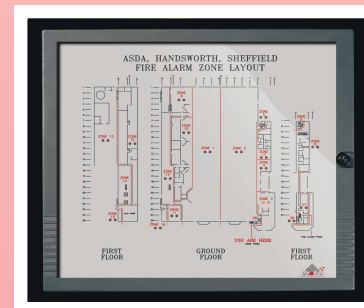
6400/RDN & 6400/LCD



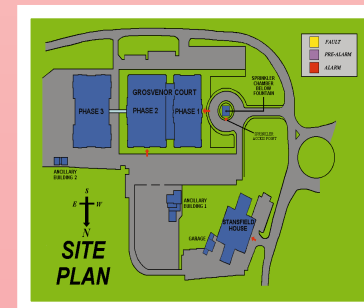
6400/LPN



6400/BC6/24



6400/MIMIC



Colour Graphics

#### 6400/LPN

The 6400/LPN nodes process the loop data from the field devices, communicate with other network nodes, and implement the cause and effects program for local and network fire signals. Sounder circuits and auxiliary change-over contacts are also controlled from the 6400/LPN.

#### 6400/DCN/LPN

The 6400/DCN and 6400/LPN are combined within a common enclosure. The appearance is the same as the 6400/DCN and uses the 6400/LPN back box to accommodate the cabling.

#### 6400/MIMIC

The Protec 6400 customised illuminated mimic can be connected to the network in the same way as other nodes. The LED indicators can be activated by the appropriate zone or specific device activation as defined and the mimic is available in a range of styles and finishes to suit the application. The 6400/MIMIC is a node on the network.

#### 6400/BC6/24

The 6400/BC6/24 power supply is housed in a similar enclosure to the 6400/LPN and is finished in storm grey. The unit incorporates a 6 amp charger and 24A/hr sealed lead acid cells. The charger provides a dual path 24VDC output for parallel supplies to the 6400/LPN or 6400/DCN nodes. A short circuit fault on one path is isolated and the load is provided via the second supply path. Power on and charger fault indications are displayed on the power supply "secret until lit" display and are also relayed to the 6400 network via the node being powered. A range of Protec 6400/BC power supplies are available with an extensive range of battery and charger sizes.

#### 6400/LCD

The 6400/LCD is a 'listen only' device which is connected to the 6400 network. There are three function push buttons on the front of the LCD enclosure: menu, select and mute. Pressing the 'menu' button displays the LCD menu functions: view current fire events, view current fault events, and view current disablements. The 'mute' button will mute the fault buzzer on the LCD but will not mute the fire buzzer. There are no system control functions from the 6400/LCD and the device is not classed as a node on the 6400 network. Up to eight 6400/LCDs can be connected between each node on the network.

#### 6400/RDN

The 6400/RDN node has all the functions detailed for the 6400/LCD and additionally has 'silence' & 'reset' push buttons to silence and reset active system fire events. All controls are housed behind a hinged lockable door, moulded from polycarbonate finished in storm grey. The 6400/RDN has an optional printer to print current fire events, fault events or disablements. The 6400/RDN is a node on the network. The 6400/RDN can also be combined with a 6400/LPN in a common enclosure.

#### Protec Colour Graphics System

The Protec Colour Graphics System is a Windows based PC package providing a graphical representation of large sites enabling the precise location of an incident to be readily identified enabling a prompt response. Using a touch screen or mouse, the operator can track an incident and zoom from a site plan to intermediate plan listing floor levels, then zoom to a specific floor plan and if necessary then zoom to a specific detailed area within the floor plan showing the device in question. Colour prints of the maps can also be printed automatically or on demand.

### 6400/DCN Overview

Display and controls of the Algo-Tec™ 6400 system are via 6400/DCNs. All the functions of the 6400/DCN are accessed via a modern styled hinged lockable door, moulded from polycarbonate, finished in storm grey with a clear display viewing window, optional polished solid brass or brushed stainless steel finishes for recess mounting only. When opened, the door allows access to the system controls. These controls are SOUND ALARMS, SILENCE, ACCEPT and RESET push buttons plus a qwerty membrane keypad and arrow keys to enable access to the user menu facilities. The display consists of a quarter VGA graphics LCD with backlight, common 'FIRE' indicator, 100 separate zonal fire LEDs, power on, pre-alarm, supply fault, alarms silenced, system fault, print, alarms on, outputs disabled, fire link disabled, test, fault, alarm fault, fire link active, fire link fault, fire link delay, output delay & a 'print on demand' 40 column low noise thermal printer.

Two full duplex RS232 ports that are site configurable for baud rate/handshaking are available for site programming and interfacing to BMS, Colour Graphics or Pager systems.

#### Liquid Crystal Display

The 6400/DCN incorporates a quarter VGA backlight graphics LCD. In normal conditions the date and time is displayed and 'system status: normal'. During a fire event the LCD will display the following:-

- Zone Number in Fire
- Loop Location Text (16 Characters)
- The Device Number in Alarm
- Date and Time of Incident
- Device Location Text (60 Characters)
- Device Alarm Message Text (60 characters)
- Number of devices in alarm

The LCD also displays all faults, disablements, pre-alarms, user menus, past events and analogue values graphically in a bar graph.

#### Zones

The 6400/DCN has 100 separate secret until lit zonal fire LED indicators. Each addressable device can be allocated to any one of the 100 zones. Expansion panels are available to expand the zonal capacity to a maximum of 800 zones.

#### Printer

The integral printer is a 40 column low noise thermal printer. In operation the printer will print all system activities on demand detailing the date and time of event; the loop location text, and address number; 60 character device location text; and in alarm conditions, the alarm message text. By accessing the appropriate function from the user menu facility, reports can be printed detailing current faults, current disablements, past events, analogue values, loop devices, fire events or all events from the internal 2000 event historical log.

#### User Menu

The user menu functions available include:- set time and date, display events, printer menu, disablement menu, test options, text editor menu, clear system fault and access codes. 32 access codes can be configured by entering a 'master user' code. The access codes can be configured to restrict access to certain user menu functions.

The disablement menu enables the user to disable any loop driven device on the 6400 network. When disabled the device is prevented from producing a fire condition on the system. Devices can be isolated by address number, address location text or by zone.

#### Qwerty Keyboard

The text editor menu function within the 'user menu', enables the user to edit the 60 character 'device location text' and 60 character 'alarm text'. The text is entered using the in-built qwerty membrane keypad on the front of the 6400/DCN.

#### On Site Programming

Recognising the problems associated with commissioning and maintaining a complex site, the 6400 system is site programmed using dedicated PC based programs. The entire system configuration can be downloaded from any 6400/DCN via the integral RS232 port and distributed using the 6400 network. The programming method not only reduces on site commissioning, but also provides copies of site data as a backup, stored remote. Hard copies of the programming data can be provided via the PC software.

ADDRESSING SAFETY SYSTEMS WITH INTELLIGENCE

INTERACTIVE DIGITAL ADDRESSABLE FIRE CONTROL SYSTEM  
Protec Algo-Tec™ 6400  
REGISTERED TRADE MARK

