User's guide
Delta OP

Operating panel

This product satisfies all requirements applicable to relevant standards and directives:

EMC
Immunity Standard
- EN50130-4 Product Family Std. Immunity Alarm Systems

Generic Emission Standard:
- EN50081-1 Residential, Commercial and Light Industry
- EN50081-2 Industrial Environment

CE 0470-CPD-0024

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DELTA OP panel's article number is   251157.XX

Quick Reference Guide   (cut out)
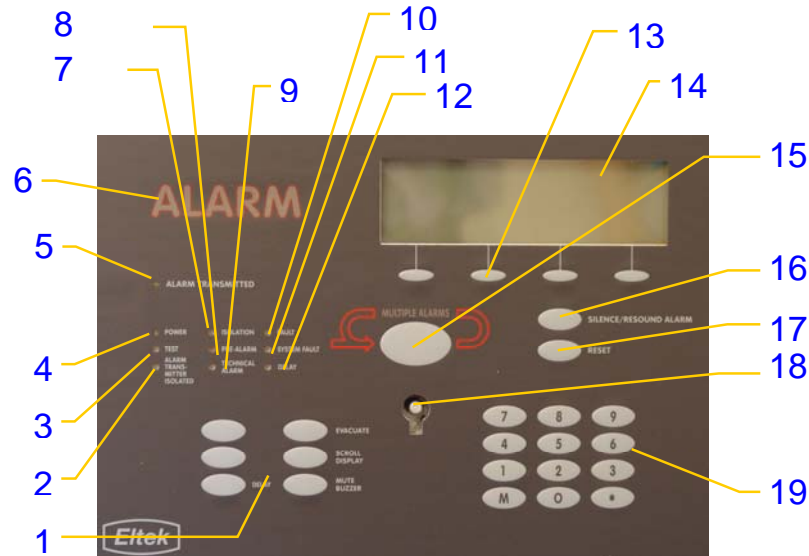
Front Keys and LED's in *DELTA OP* [1]

1. **Function keys:**
   EVACUATE, SCROLL DISPLAY and MUTE BUZZER
2. **ALARM TRANSMITTER ISOLATED**
3. **TEST**
4. **POWER**
5. **ALARM TRANSMITTED**
6. **ALARM**
7. **ISOLATION**
8. **PRE-ALARM**
9. **TECHNICAL ALARM**
10. **FAULT**

11. **SYSTEM FAULT**

12. **DELAY**

13. **Dynamic 'Soft' Keys**

14. **Graphic display** [2]

15. **MULTIPLE ALARMS**

16. **SILENCE ALARM**

17. **RESET**

18. **Operating panel's *Key Switch***

19. **Numeric keypad**
   0 to 9 , ✱ and M

[3]

How to silence the buzzer & alarm bells

To silence the internal buzzer and the alarm bells — after a fire or fault alarm has been reported — press following keys:

🔑   **Unlock the panel**
with the key switch

☞ **SILENCE ALARM**
— press this key again to reactivate the alarm

How to reset the Operating Panel

To reset the fire alarm system to its *normal mode* of operation:

🔑   **Unlock the panel**
with the key switch

☞ **RESET**
— for at least 2 seconds (more information on page 15)

The M–key doesn't work when the system is in alarm mode. Why?

When the fire alarm system reports an alarm — pre-alarm, fire or fault alarm — you have to unlock the panel BEFORE using the menus.
Do as follows:

🔑   **Unlock the panel**
with the key switch

☞ M (*main menu*)
You have now access to the *main menu.* (Find more information on "The Operating Menus" on page 22*).*

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[1] Find more information about "Front Keys and LED's" on page 14.
[2] Find more information about "Graphic Display" on page 13.
[3] Note that the graphic symbols represent actions – the symbols do not appear on the panel. ☞ = press key

Quick reference guide (cut out)

How to reset alarms

When the operating panel system reports an alarm
— pre-alarm, fault or fire alarm — you must press
the following keys:

  ☞ **Locate and remove the cause of the
    alarm**
     and when the situation is under control

  🔑 **Unlock the panel**
    with the key switch

  ☞ **RESET**
    — for at least 2 seconds

More information on pages 16, 17 and 18.

How to isolate a detector

If you want to disconnect an addressable detector
— for example detector '0245' — you must press
the following keys on the numeric keypad:

  🔑 **Unlock the panel**
    with the key

  ☞ M (main menu)

  ☞ ② (ISOLATE / DE-ISOLATE)

  ☞ ② (ISOLATION)

  ☞ ① (PERMANENT)

  ☞ ② (DETECTOR)

  ☞ ⓪②④⑤✶ (key in the detector's address)

  🔑 **Lock the panel again**
    with the key

Remember to de-isolate the detector later.

Further information can be found in the chapters
The Operating Menus', page 22 and "The Operating
Menus", page 22.

How to de-isolate a detector

When you later want to de-isolate the detector —
for example detector '0245' — you must press
the following keys on the numeric keypad:

  🔑 **Unlock the panel**
    with the key

  ☞ M (*main menu*)

  ☞ ② (ISOLATE / DE-ISOLATE)

  ☞ ① (DE-ISOLATE)

  ☞ ② (DETECTOR)

  ☞ ⓪②④⑤✶ (key in the address of the
  detector)

  🔑 **Lock the panel again**
    with the key

Checking active isolations

If you want to check which units — detectors,
loops or alarm outputs — are isolated, you must
press the following keys on the numeric keypad:

  🔑 **Unlock the panel**
    with the key

  ☞ M (*main menu*)

  ☞ ② (ISOLATE / DE-ISOLATE)

  ☞ ③ (DISPLAY ISOLATIONS)
    the display now shows an isolated unit

  ☞ ✶ (shows the next isolated unit)

  ☞ ✶ (shows the next isolated unit)
    When you are finished scrolling
    through all isolations,

  ☞ M (*main menu*)

  🔑 **Lock the panel again**
    with the key

Further information can be found on page 23, "The
Operating Menus".

Table of Contents

1. Welcome

Congratulations on your purchase of the *DELTA OP* module, — a elegant operating panel developed for both centralised and decentralised operation of Eltek's fire alarm systems.

DELTA OP enables you to hide cabinets with DA modules, batteries, terminals, etc. in technical rooms. The whole fire alarm system can be operated from the *DELTA OP* panel.

About this Manual

User Guide
(this manual)

Installation Guide

This manual has been written with the intention of giving users of *DELTA OP* the information required in order to be able to operate the new operating panel. The manual also contains important technical information about the system.

> ✓ **Installation of *DELTA OP* :**
> For information on how to install *DELTA OP*, see the folder '*Installation Guide DELTA OP'* which accompanies the unit.
> Also refer to 'Documentation Chart for *DELTA Technolog*', page 35.
>
> ✓ **Set-up of *DELTA OP* :**
> For safety reasons, the configuration of *DELTA OP* should be regarded as *access level 3* (in accordance with EN 54). Only authorised and qualified personnel should have access to the-set up. Please contact *Honeywell Life Safety's* Service Department.

Take a look at the table of contents to familiarise yourself with the booklet.

Glossary and Abbreviations

If you wonder what certain words, expressions or abbreviations in our publications mean (technical terms), please, visit our site on the Internet to download the freshest version of the booklet "*Glossary Base, Terminology Fire Alarm Systems*". The booklet explains technical terms in *Eltek*'s fire alarm systems.

Visit us at www.eltek-fs.com , then do as follows:

Click on the button *TechZone*
(a Web site for technical personnel)

Click on the "*Guest >*" button

Click on the category "*2_Questions & Answers*"

Download the booklet (follow the on-screen instructions)

2. Brief Description of *DELTA OP*

DELTA OP is a micro processor-based operating panel designed for connection to the *DELTA* and *ANX95* families of fire alarm systems.

The *DELTA OP* panel is the interface between you and the system and represents the vital nerve centre of the fire alarm system.

All system activity — fire, pre-alarms, faults, the exact location of the alarm, etc. — is presented via the graphic display and LEDs. The operator communicates with the system with the aid of function keys and the numeric keypad.

DELTA OP incorporates several ports for direct network connection with *ANX95* systems and for communication with computers, printers and other control or presentation equipment.

You can program whole fire alarm system using *FireWin Explorer* — a Windows-based program that runs on a connected PC. Simple functions can also be configured via the keypad on connected *DELTA OP* panels by selecting commands from *set-up menus* in a hierarchical menu system.

Adjustment of the advanced functions in *Discovery* detectors — the new range of Apollo fire monitors — can also be performed directly from *DELTA OP*.

Applications

The elegant *DELTA OP* may be used as the main operating panel in a large fire alarm system or as a repeater or fire brigade panel. Also, the *DELTA OP* panel can directly drive mimic and orientation panels. Read more on chapter "Typical Configurations", on page 11.

Key features

☆ **Small, elegant and cost effective main control panel**
   enabling central operation of the whole fire alarm system, while installing the big cabinets where they belong: in technical rooms

☆ **ANX95 compatibility**
   enabling direct connection to existing master/slave- and multi-master fire alarm networks

☆ **Compliance with *European Standard EN 54 Part 2***
   on control and alarm equipment

☆ **Cutting-edge technology**
   using micro-controller-based electronics with support for a whole range of communication protocols

☆ ***Discovery* Detector Range Support**
   permitting adjustment of fire monitors with 5 sensitivity bands, automatic variation of day/night sensitivity, automatic maintenance alert, etc.

☆ **Support for the new intelligent *IQ8Quad* detector range**
   with patented multi sensor technology. The detector has a high immunity to unnecessary alarms via filter and advanced algorithmic. All the detectors have build-in isolators and are connected to the *Delta DA Quad* modules.

☆ **Intelligent *DELTA Logic+***
   signal processing facility

☆ **Reliable and flexible control and monitoring system**
   with low power consumption and sophisticated monitoring of all critical components

☆ **Centralised Fire Alarm System Configuration**
   allowing changing the parameters of any networked control panel directly from *DELTA OP*

Block Diagram

The block diagram below — *Figure 1* — shows the main functions of *DELTA OP*.

The **system main code** is stored in 32kx8 or 128kx8 RAM or FLASH chips

DELTA OP requires a 21 to 30VDC **power supply**

Input for **HDFA Detection Line** (fire alarm monitoring, even when the processor has failed)

User interface: graphic display, LEDs and keypad

Mimic Panels standard output, max. 64 LEDs

DELTA OP

| RAM | Micro Controller | EEPROM |

Power Supply	eComm FTT10
Hardware Detection Fire Alarm	COM1 RS232C or RS485
	COM2 RS232C or RS485
LCD Display	
Keypad	Fire Brigade Termination Card (kit output, PL9)
Mimic Panel 64 LED	

The **micro controller** is the heart of the system and represents the intelligence of *DELTA OP*

All customer-specified functionality is stored in 64 kb EEPROM chips

DELTA Net, communication port for **eBus** network, for connection to other control panels (plug-in PCB)

Programmable serial **communication ports**, for connection to other control panels, PC, printer, pager system, etc.

Output for kit **Fire Brigade Termination Card.** The kit is screwed in the *DELTA OP* cabinet and supports Fire Brigade waning electronics, also the standard output for FBF, German Fire Brigade Panel

Figure 1 Block diagram for *DELTA OP*
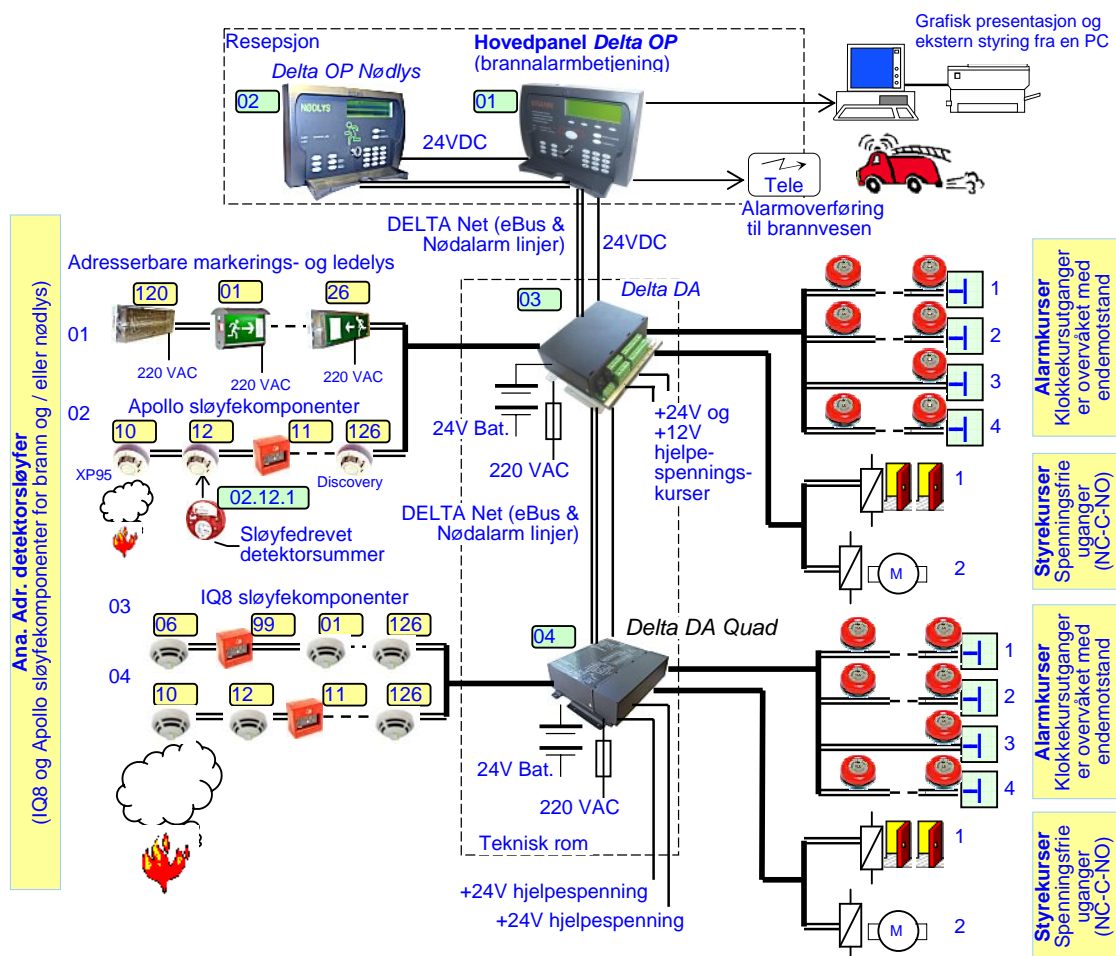
Communications Ports

The *DELTA OP* panel has 3 communications ports for integrating the panel with other network equipment. The communications ports support several protocols, which can be selected by configuring the panel or by using plug-in circuit cards.

COM1 and COM2

The COM1 and COM2 communications ports — see Figure 2 — are 9-pin D-Sub male ports principally intended for communication with computers, printers, modems and other external units by using the standard *RS232 Point to Point* serial bus.

The COM1 and COM2 ports can also be configured to support the '*RS485 Master/Slave'* serial bus for communications with other network equipment on the RS485 bus.

DELTA Net Communications Port — eBus

The *DELTA Net* communications port is based on the use of "*Kit for OP, DA: eBus Communication Board*" — a circuit card to be plugged on the *DELTA OP* main card.

Kit for OP, DA: eBus Communication Board

Terminal block connections CN1-7.8 on *DELTA OP* are to be used for communications via a *free topology multi-master eBus* for connecting to other modules and fire alarm systems in the *DELTA* and ANX95 families. *DELTA OP* must then use the plug-in "*Kit for OP, DA: eBus Communication Board*".

You can find more information in the folder, 'Installation Guide for *Kit for OP, DA: eBus Communication Board*, which accompanies kit.
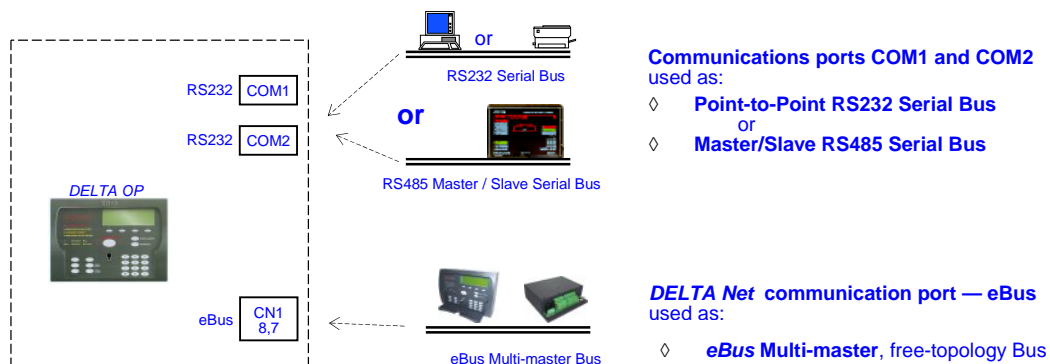
Figure 2   Communication ports on the *DELTA OP* panel

Typical Configurations

The *DELTA DA* module can be used in both compact and distributed solutions.

In the compact solution — all-in-one cabinet — the *DELTA OP* and *DELTA DA* modules form a complete centralised fire alarm system: *DELTA Compact*.

In distributed solutions, the *DELTA OP* panel is connected to a network of fire alarm panels that can be of types: *DELTA DA*, *DELTA Compact* and *ANX95*. The panel can then be used as the main operating panel for the installation or as either a repeater or fire brigade panel. *DELTA OP* can also drive LEDs in mimic panels, which provide instant graphic presentation of the area reporting a fire alarm.

The figures in this chapter represent two examples of typical *DELTA OP* configurations.
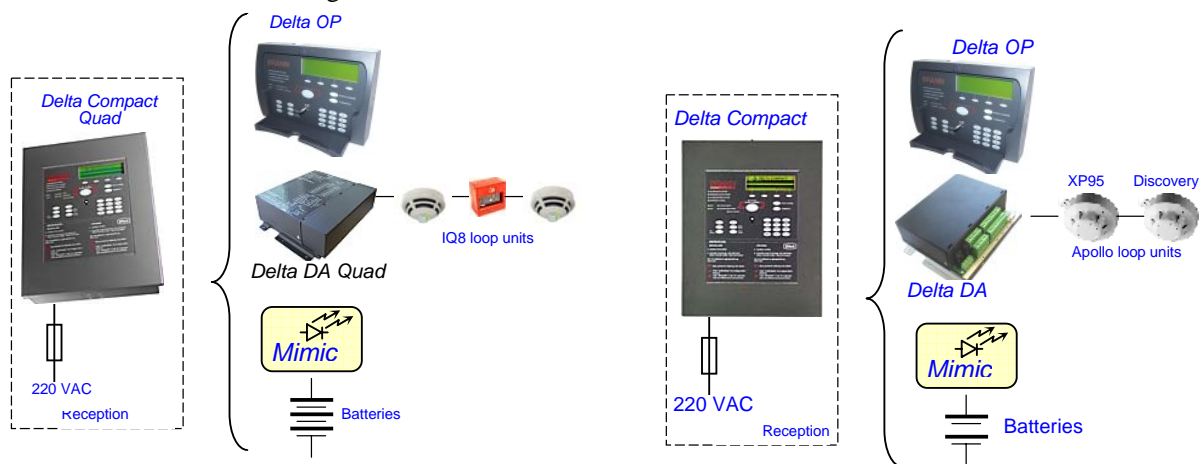
Figure 3   **Standard *DELTA Compact* cabinet**
(the cabinet can contain all the illustrated modules.)
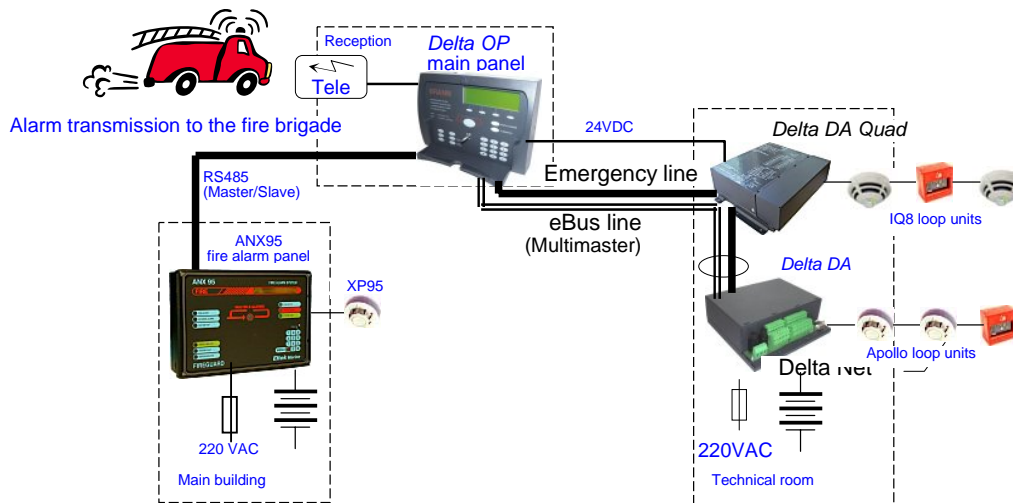
Figure 4   **Distributed solution with *DELTA OP***
DELTA DA modules and ANX95 fire alarm panel

3. How to Operate *DELTA OP*

This chapter has been written to provide *DELTA OP* users with fundamental information about how to operate the panel.

The *DELTA OP* Operating Panel

DELTA OP's front panel has a standardised design —manufacturer independent— to meet Scandinavian specifications regarding display and handling of all types of alarms.

The layout consists of two functional areas: the *presentation area* and the *control area*.

Presentation Area

Key Switch

Front Cover

Control Area
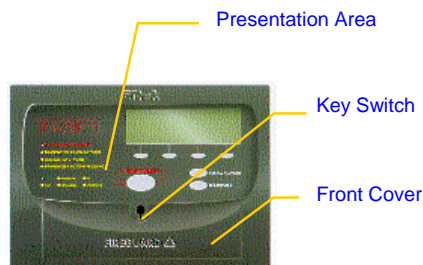
Figure 5
DELTA OP with closed front cover

Figure 6
DELTA OP with open front cover

Description of Keys and Indicators

When *DELTA OP*'s front cover is closed — see *Figure 5* — you face a user-friendly panel consisting of a graphical LCD display, LED indicators and some membrane keys — the *presentation area*.

By opening the front cover — see *Figure 6* — you get access to the keypad and additional function keys — the *control area*.

Regardless of the front cover position, a key switch is used to deactivate important keys as a protection against unauthorised personnel. See also '*Keyboard Access*', on page 16.

For information on access levels, see chapter '*Access Levels*', on page 23

Graphic Display

The graphic display is an important part of the fire alarm system's user interface, and is divided in following specific areas:

- *Graphics Area*— **(lines 1 & 2):**
  The two upper lines display the actual type of alarm, if any.

- *Menu Area*— *First Alarm* and *Scroll Area* **(lines 3 & 4):**
  Normal Mode
  These two lines are used by the system for general communication with the user— via the hierarchical menu system.
  Alarm Mode
  When in alarm mode the panel displays the 1st reported alarm.
  When several alarms are detected, the user can scroll through the rest of the alarms— while the most recent is locked on lines 6 & 7.
  Line 3 displays the programmable display text assigned to the detector in alarm.
  Line 4 indicates the address of the detector in alarm, its type, its zone number and the time & date the alarm was detected.
  The menus are still accessible while in alarm mode.

- *Statistics Area*— **(line 5)**.
  Depending on the panel's mode of operation, this area shows the actual number of detected *fire or fault alarms* and the number of loop components and outputs which are disconnected.

- *Most recent Alarm Area*— **(lines 6 & 7):**
  When in alarm mode of operation, these two lines display the most recent alarm.
  Line 6 displays the programmable display text assigned to the detector in alarm.
  Line 7 indicates the address of the detector in alarm, its type, its zone number and the time & date the alarm was detected

- *Date & Time* **Area— (line 8):**
  The actual time & date is displayed on this line. It is also used to display the isolation status of the *Alarm Transmitter* and *Alarm Devices*.

Example of Display in Alarm Mode

The figure below shows *DELTA OP* in fire alarm mode (3 reported alarms).

Lines 6 & 7 show the location of the detector/monitor reporting the most recent fire alarm (room 1435). The detector address is 0102, assigned to zone 1, while the alarm has been detected at 23.55 hours, December 31st

Three minutes later, while still in alarm mode, the user has pressed the *menu* key (M), so the *main menu* is displayed on line 3 & 4.
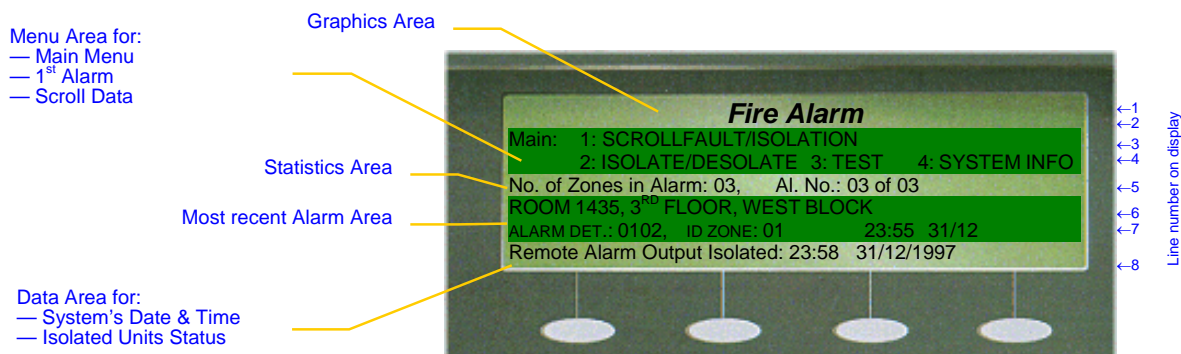
Front Keys and LED's

DELTA OP incorporates an elegant and user-friendly front panel with well arranged keys and indicators, as shown below.
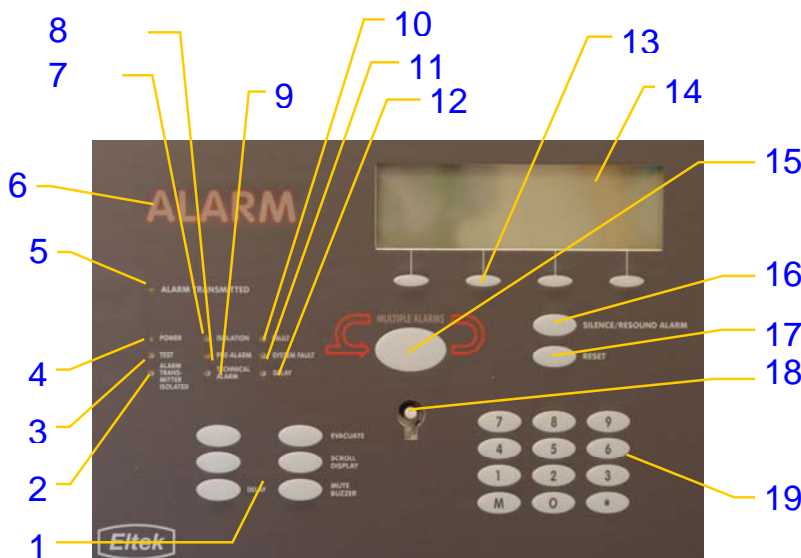
1. Function Keys

Six programmable membrane keys — three of them are pre-programmed for:

⬥ **EVACUATE** (general alarm; sounds activation)
⬥ **MUTE BUZZER** (while in *Alarm Mode,* press this key to mute the internal buzzer; press again to resound it), and
⬥ **SCROLL DISPLAY** (scroll the display through active fault or fire alarms)

6. ALARM

When the red text is illuminated, indicates that the system is in *Fire Alarm Mode*

2. ALARM TRANMITTER ISOLATED

Yellow LED ON indicates that the *Alarm transmitter* output is isolated.

3. TEST

Yellow LED ON indicates that the system is in *Test Mode*

4. POWER

When the green LED is ON indicates that the system is powered — the power supply is healthy

5. ALARM TRANSMITTED

Yellow LED ON indicates that the *Fire Brigade Alarm Output* is activated— or, if feedback is available, that the alarm has been received

7. ISOLATION

When the yellow LED is ON indicates that an input or output device is isolated

8. PRE-ALARM

Pulsing yellow LED indicates a pre-alarm from an input device

9. TECHNICAL ALARM

Pulsing orange LED indicates an alarm from a technical control (fire door, escalator etc.)

10. FAULT

Pulsing yellow LED indicates a fault alarm

11. SYSTEM FAULT

Pulsing yellow LED indicates a system fault alarm — caused by program error or low 5VDC

12. DELAY

Yellow LED ON indicates that one or several outputs are delayed.

13. *Dynamic 'Soft' Keys*

Press the actual *Soft* key to execute the macro (all the key-entries) saved under the key.

14. *Graphic Display*

Important user interface with a resolution of 240x64 dots in graphic mode or 8x40 characters in text mode. More information on page 13.

15. MULTIPLE ALARMS

The red text above the key is illuminated when several alarms are active; press the key to scroll through active alarms

16. SILENCE ALARM

When the system is in *Alarm Mode*, press this key to silence alarm bells and internal buzzer; press this key again to reactivate the alarm

17. RESET

When the system is in *Alarm Mode,* press this key for 2 seconds to reset the system to *Normal Mode* of operation

18. **Operating Panel's** *Key Switch*

Enables and disables keyboard activation

19. *Numeric Keypad*

Use the keypad to communicate with the system:

- ◆ Press keys 0 through 9 to choose numeric values or menu options
- ◆ Press key ✶ to enter information or when required by the system
- ◆ Press M key to access the main menu
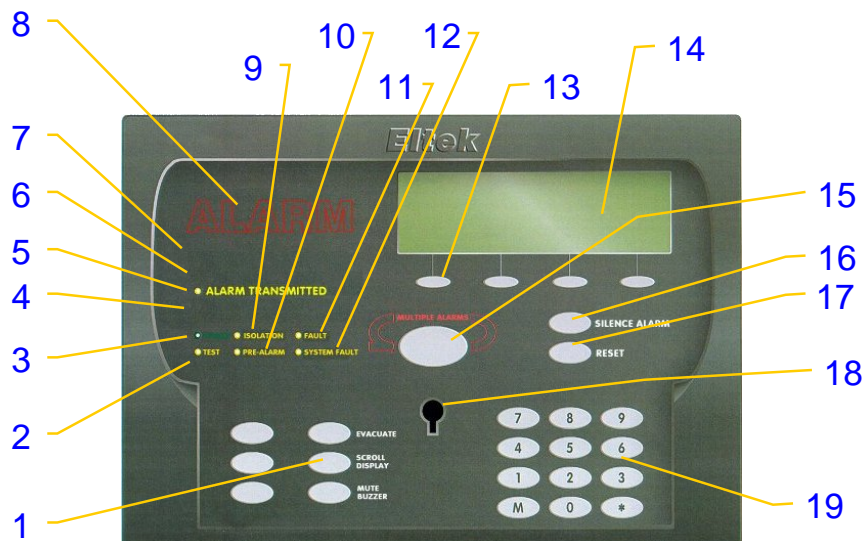
Basic Operation

You can control the whole fire alarm system from *DELTA OP* panel.

The primary operation is based on activation of the main function keys, for example the *SILENCE ALARM* key, the *RESET* KEY, etc.

All other functions — not assigned to specific keys — are available via a network of software menus accessed through the control panel's keypad, the 'soft' keys and the graphical display.

Keyboard Access

When *DELTA OP* is locked — the key switch is in disabled position — the user only has access to the information presented in the graphical display and the LED indicators; the only operation allowed is silencing the internal buzzer — *Access Level 1*.

When you unlock *DELTA OP* with the key switch, the function keys and keypad are enabled, allowing the operation of the whole fire alarm system.

When the panel is unlocked you gain direct access to the *user menus — Access Level 2.*

When the key switch is operated, the system indicates the chosen position for a short period of time in the display's *menu area.*

For example, if you turn the key switch to unlock the panel, the display shows:

KEY SWITCH IN ENABLE

Modes of Operation

The fire alarm system is always in one of following five possible modes of operation:

- Normal Mode
- Fault Alarm Mode
- Pre-Alarm Mode
- Fire Alarm Mode
- Test Mode

How to Reset Alarms

To reset the fire alarm system to its *normal mode* of operation — after a fire or fault alarm has been reported — you have to press the *RESET* key; in other words:

When the alarm situation is under control, unlock the panel and

☞   Press the **RESET** key — for at least 2 seconds
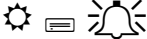
Normal Mode

A fire alarm system is in *normal mode* of operation when neither fault nor fire alarms are reported. Also, the system is not to be in *test mode* and none of the detector, input or output devices are to be isolated

CONTROL PANEL IN *NORMAL MODE* OF OPERATION	
Fire Alarm System's Response	**You Carry Out Following**
● [4] Fire alarm system Is in *normal mode* — only the green *Power* LED is ON	

Fault Alarm Mode
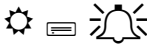
A fire alarm system is in *fault alarm mode* when the control panel reports a failure — short circuit, break, error, malfunction, etc. — in any of the monitored components, such as detectors, input or output devices, internal and external circuitry, etc.

HOW TO PROCEED IN A *FAULT ALARM* SITUATION	
Fire Alarm System's Response	**You Carry Out Following**
☼ ▭ 🔔 Pulsing fault LED indicators, legible fault alarm information in the display Internal buzzer sounds Fault alarm bells and control outputs are activated — if assigned	👆 Locate the cause of the fault alarm and, 🔑 ☞ Unlock *DELTA OP* and, if necessary, press the **SILENCE ALARM** or **MUTE BUZZER** keys
🔔 ○ Internal buzzer and fault alarm bells are deactivated and LED indicators show steady illumination	✖ Remove the cause of the fault alarm and, ☞ Press the **RESET** key for at least 2 seconds ☎ If the system still reports the same fault alarm, call the service engineer
● Fire alarm system Is now in *normal mode* — only the green *Power* LED is ON	🔑 Lock *DELTA OP* again

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[4] These visual cues are NOT displayed in *DELTA OP,* but may help you interpret information easily.

Pre-alarm Mode

A fire alarm system is in *pre-alarm mode* when the control panel reports a pre-alarm from an analogue monitor connected to any loop in the system (analogue values normally above 45 a.u.).

HOW TO PROCEED IN A *PRE-ALARM* SITUATION	
Fire Alarm System's Response	**You Carry Out Following**
☼ ▭ 🔔 Pulsing *pre-alarm* LED indicator, legible pre-alarm information in the display Internal buzzer sounds Pre-alarm bells and control outputs are activated — if assigned	ᐷ Locate the cause of the pre-alarm and, 🔑 ☞ Unlock *DELTA OP* and, if necessary, press the **SILENCE ALARM** or **MUTE BUZZER** keys
🔔 O Internal buzzer and *pre-alarm* bells are deactivated and the pre-alarm LED indicator shows steady illumination	✖ Remove the cause of the pre-alarm or change the monitor and, ☞ Press the **RESET** key for at least 2 seconds ☎ If you cannot get the system into *normal mode* of operation, call the service engineer
● Fire alarm system is now in *normal mode* — only the green *Power* LED is ON	🔑 Lock *DELTA OP* again

✔ For other operating information — such as isolating or de-isolating devices, getting system information, etc. — take a look at chapters '*The Operating* Menus', page 22, or '*System Information*', page 26.

Fire Alarm Mode

Brannalarm

A fire alarm system is in *fire alarm mode* when the control panel indicates a fire alarm situation reported from a monitor or detector connected to any loop in the system; normally the alarms are caused by smoke, heat, manual activation, etc.
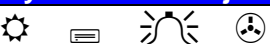
HOW TO PROCEED IN A *FIRE ALARM* SITUATION	
Fire Alarm System's Response	**You Carry Out Following**
ALARM 🔲 🔆 ☉[5] The ALARM indicator text is illuminated, legible fire alarm information in the display Internal buzzer sounds Fire alarm bells and control outputs are activated — if assigned	👆 📄 Locate the cause of the alarm — following the fire alarm instructions of the premises — and, when the situation is under control, 🔑 ☞ Unlock *DELTA OP* and, if necessary, press the **SILENCE ALARM** key (pressing the key again will reactivate the alarm and cancel pre-programmed activation delays)
🔔 Internal buzzer and fire alarm bells are deactivated	✕ Remove the cause of the fire alarm and, ☞ Press the **RESET** key for at least 2 seconds ☎ If you cannot get the system into *normal mode* of operation, call the service engineer
● Fire alarm system Is in *normal mode* — only the green *Power* LED is ON	🔑 Lock *DELTA OP* again

A (marked beside second header row area)
B (marked beside second data row)

Technical alarm

A fire alarm system is in *technical alarm modus* when it warns an alarm given from a fire door, escalator etc., that is connected to the detector circuits in the system, by the DIO units.

FREMGANGSMÅTE I EN *TEKNISK ALARM* SITUASJON	
Brannalarmsystemets reaksjon	**Du utfører følgende**
ALARM ✿ 🔲 🔆 ☉ Pulserende oransje *Teknisk alarm* LED lampe lyser; ALARM og tydelig informasjon om alarmen vises i displayet Den interne summer aktiveres Alarmklokker og styrekurser aktiveres — hvis de er programmert	👆 📄 Lokaliser årsaken til alarmen — følg gjeldende alarminstruksene — og, når situasjonen er under kontroll, 🔑 ☞ Åpne opp *Delta OP* og, om ønskelig, trykk på tasten **AVSTILL KLOKKER** (trykk på denne tasten én gang til for å aktivere alarmklokkene igjen; eventuell programmert forsinkelse av utgangene utheves)
(Se trinn B og C ovenfor)	✕ Fjern årsaken til den tekniske alarmen og tilbakestill systemet. (Utfør handlingene beskrevet i trinn B og C ovenfor)

---

[5] These visual cues are NOT displayed in *DELTA OP,* but may help you interpret information easily.

Test Mode

A fire alarm system is in *test mode* when one or several detectors, input or output devices are being tested, while the rest of the system is completely monitored. Several test facilities can be performed via the panel's keypad.

However, fault, fire and pre-alarms — from detectors not in *test mode* have precedence over the *test mode* facility and will be alarmed normally.

Following types of tests can be performed:

- Zone Test:
  Allows 'fire' testing detectors in a zone
- Test of individual analogue detectors
  Permits automatic testing of analogue values of individual detectors — individually or all in a loop
- LED Test
  Tests the front panel's LED indicators and graphic display
- Test of alarm output circuits
  Allows testing whether the system alarm output circuits are operative

HOW TO PERFORM *SYSTEM TESTS*	
Fire Alarm System's Response	**You Carry Out Following**

●
 	
 Fire alarm system is in *normal mode* — only the green *Power* LED is ON
	🔑 ☞
	
	 Unlock *DELTA OP* and
	 press following keys on the keypad:
	
	    M (*main menu*)
	    ③ (Test)

○ ⬌
 	
 The *Test* LED indicator is ON and legible test information is presented in the graphical display
	☞
	
	 Depending on the test you want to perform, press one of following keys:
	
	    ① (Zone Test), or
	    ② (Detector Test), or
	    ③ (Front Panel Test, LED Test), or
	    ④ (Alarm Circuit Test)
	
	Notice that no menu operations are allowed while the system is in *test mode*. Exit *test mode* first, if you want to operate the panel.

⬌ Legible test information for the test you have chosen is presented in the graphical display	☞ 🔧 Enter on the keypad the device number or the data specified on the display and verify that the detector or the device under test is operating properly For more information about each test, read the test descriptions below, or turn to chapter "The Operating Menus", on page 23.

(ALARM) ⬌ (🔔) (⊙)
 	
 Depending on the test you perform, the following indicators may be activated:
 	
 FIRE ALARM indicator text is illuminated
 	
 Legible test information is presented on the display
 	
 Internal buzzer sounds
 	
 If you press the *SILENCE ALARM* key, the alarms are activated for a short period of time
 	
 Control outputs are not activated
	☞
	
	 To exit *test mode*, press following keys on the keypad:
	
	    M (*main menu*)
	    ✶
	
	☎
	
	 Correct equipment or functions that are not working properly; if necessary, call the service engineer

● Fire alarm system is in *normal mode* — only the green *Power* LED is ON	🔑 Lock *DELTA OP* again

✔   For other operating information — such as isolating or de-isolating detector devices, getting system information, etc. — take a look at chapters "The Operating Menus", page 23, or "System Information", page 26.

Fire Alarm Test

The control panel *Zone Test* facility enables you to test whether the detectors assigned to a zone are operative. Using test gas sprays you can test the correct operation of the detectors in the zone.

Proceed with the following steps:

1. Spray the detector head with gas
2. The control panel reports visually a fire alarm from the activated detector
3. No Alarm Output is activated
4. The detector is automatically reset after approx. 20 seconds

If desired, press the *Silence alarm* key to activate alarm bells for 1-2 seconds. Automatic reset after approx. 20 seconds.

✓   Fault, fire and pre-alarms — from detectors not in *test mode*— have precedence over the *test mode* facility and will be alarmed immediately in the normal way.

Testing Analogue Detectors

The control panel *Detector Test* facility enables you to test the analogue values of detectors. *IQ8* detectors uses continuous self diagnostic tests.

The test results for each detector are presented as a *test value* compared to the detector *normal analogue value*. The detector test is satisfactory if the *test value* is at least 25 analogue units higher that the given *normal analogue value.*

You can run the test on all detectors on a loop and print out the results or you can test the detectors individually and get the results on the graphic display.

LED Test

The *Front panel test* facility enables you to test all LED[6] indicators, the internal buzzer and the graphic display.

The test will last for approx. 10 seconds, and will then stop automatically. The system will revert to *normal mode* again.

Testing Alarm Output Circuits

The control panel *Alarm Circuit Test* facility enables you to test the system's alarm outputs.

The test consists of automatically activating the chosen output for approx. 20 seconds. The system then returns to *normal mode*.

Following *Alarm Output Circuits* may be tested:

- Extinguishing/Control Outputs   (A.Gr. 22)
- Alarm Transmitter Output   (A.Gr. 03)
- Fault Alarm Output   (A.Gr. 04 and A.Gr. 06)
- Alarm Device/Sounders Output   (A.Gr. 05)
- Other types of Alarm Group   (A.Gr. XX)

[6] *System fault* LED can only be tested together with testing of the fault alarm output.

The Operating Menus

You can control the whole fire alarm system from the *DELTA OP* panel.

Primary operation is based on activation of the main function keys such as the *SILENCE ALARM* key, the *RESET* key, etc.

The more advanced operation of *DELTA OP* incorporates the use of hierarchical software menus built up around the *Main Menu*. Each option in the *main menu* displays submenus with new options, giving you access to all system functions.

You choose menu options by selecting via the keypad the number in front of them on the display.

> ☑ The system will report any alarm detected while you are operating the panel. No alarm will be ignored or postponed while interacting with the system, as alarms have higher priority than the menus.

Access Levels

There are four levels of access to the system— in accordance to the *European Standard EN 54 Part 2 on Control and Indicating Equipment*.

- *Access level 1* is the lowest level — key switch in disabled position — allowing the user to receive information from the graphical display, the front panel's LED indicators and other interfacing equipment, such as printers, PC's, etc. The only operation permitted is muting the internal buzzer.

- *Access level 2* allows the authorised user to operate the control panel— key switch in enabled position— giving access to the panel's *function keys*, the keypad and most of the functions, via menus.

- *Access level 3* is only used by system engineers and other technical personnel. This level is password controlled and has three sub levels:

  Sub level A— password A— accesses vital engineering functional controls, such as *Automatic Key Entries,* isolations, detector texts, etc.

  Sub level B— password B—allows use of special functions for servicing personnel, such as programming the number of input devices in a loop, etc.

  Sub level C— password C— is used by system engineers to set up and program the fire alarm system.

- *Access level 4* is the highest level, permitting change of the system by means of replacing electronic parts, such as PCBs, EPROMs, EEPROMs, etc. It is also the only level that allows changing the *Fire Counter.*

User Menus, Overview

This chapter will provide you with an overview of the hierarchical structure of the *user menus* — access level 2.

The user menus of *DELTA OP* are built up around the *main menu*. You can access the *main menu* by pressing the M key on the keypad. You choose menu options by selecting the number in front of them

✔ If no key on the keypad is pressed for a long period of time (approx. 20 seconds), the display's *menu area* will revert to the information displayed before you accessed the *main menu.*

For example, to access the analogue value of a monitor with address '0214' — follow the hierarchical menu structure on the next page and press the following keys on the keypad:

    ☞ M (*main menu*)
    ☞ ④ (SYSTEM INFO)
    ☞ ② (DETECTOR DATA)
    ☞ ① (READ ANALOGUE VALUE)
    ☞ ① (ANALOGUE VALUE & LIMITS)
    ☞ ② (INDIVIDUALLY)
    ☞ ⓪②①④ ✱ (enter monitor's address)

The display will show the current analogue value, as well as the pre-alarm and fire alarm limits for the detector.

LEVEL 1	LEVEL 2	LEVEL 3	LEVEL 4	LEVEL 5

MAIN MENU

① Show fault/Isolation
- ① Fault
- ② Isolations
- ③ Zones isolated

② Isolate/De-Isolate
- ① De-isolate
  - ① Zone
  - ② Detector
  - ③ Control/Alarm functions
    - ① Alarm transmitter
    - ③ Extinguishing
    - ④ Fault O/P
    - ⑤ Alarm circuit
    - ⑥ Select group
    - ⑦ Speaker
  - ④ Buzzer
  - ⑤ Output (not in use)
- ② Isolate
  - ① Permanent
    - ① Zone
    - ② Detector
    - ③ Control/alarm functions
      - ① Alarm transmitter
      - ③ Extinguishing
      - ④ Fault O/P
      - ⑤ Alarm circuits
      - ⑥ Select group
      - ⑦ Speaker
    - ④ Buzzer
  - ② Limited (hours)
    - ① Zone
    - ② Detector
    - ③ Control/alarm functions
      - ① Alarm transmitter
      - ③ Extinguishing
      - ④ Fault O/P
      - ⑤ Alarm circuit
      - ⑥ Select group
      - ⑦ Speaker
    - ④ Buzzer
- ③ Display Isolations

③ Test
- ① Zone
- ② Detector
  - ① All on loop (Printer)
  - ② One by one
- ③ Front panel
- ④ Alarm circuits
  - ① Alarm transmitter
  - ③ Extinguishing
  - ④ Fault O/P
  - ⑤ Alarm circuit
  - ⑥ Select group
- ⑤ Output (not in use)
- ⑥ VCU
  - ① Zone
  - ② Speaker
    - ① Pink noise
    - ② Select message (speaker & message no.)

④ System Info
- ① Time & Date
- ② Detector data
  - ① Read analogue value
  - ② Set alarm limits
  - ③ Loop data
    - ① Analogue value & limits
      - ① All on loop
      - ② One by one
      - ③ Over 30 and under 16
      - ④ Not normal limits
    - ② High & low analogue value
      - ① All on loop
      - ② one by one
    - ③ Clean air value/Analogue value
- ③ Log
  - ① Printer
    - ① Alarms
    - ② Faults
    - ③ All
    - ④ EEPROM
    - ⑤ Isolations
  - ② Display
    - ① Alarms
    - ② Faults
    - ③ All
  - ③ PC
    - ① Alarms
    - ② Fault
    - ③ All
    - ④ EEPROM
    - ⑤ Isolations
- ④ Customer text
- ⑤ Version no.
- ⑥ Alarm Counter

The next chapter, System Information, page 25, provides you with more detailed information about main menu option: System Info

System Information

DELTA OP incorporates the facility to access legible system information via software menus.

The following type of system information can be accessed:

- Adjusting the system clock, regarding time, date, year and day of the week.
- Adjusting, reading or printing detector data— such as analogue values, highest & lowest values, limits, number and type of detectors on a loop, customer specified detector texts, etc.
- Display or printing of system log (events history).
- Programming of customer specified detector texts.
- Display of system's version number
- Display of system's fire counter.

✔ For information about how to access system information, take a look at '*The Operating* Menus*'*, page 23.

Version Number

In order to ensure that your *DELTA OP* incorporates specific functions or the latest improvements, you may need to check your system's software version. This information is available via software menus, and you can quick access it as follows:

Press following keys on the keypad:

    ☞ M (*main menu*)

    ☞ ④ (SYSTEM INFO)

    ☞ ⑤ (VERSION NO.)

System Date & Time

DELTA OP incorporates a real-time clock that enables you to determine the exact time an event occurred.

The system clock is, among other things, used as reference when automatic de-isolation of devices is performed.

☑ It is very important that you set up the system clock to the correct date & time, especially when the control panel is 'powered up' for the first time or after reconnection of the power supply.

Press the following keys on the keypad:

    ☞ M (*main menu*)

    ☞ ④ (SYSTEM INFO)

    ☞ ① (TIME AND DATE)

System Log

DELTA OP recalls in its electronic memory the most recent 1,500 to 2,000 events, faults, pre-alarms, fire alarms, operations on the panel's keyboard, etc.

Further control panel activity will also be saved, but it will overwrite the oldest messages in the memory. In other words, the system will always 'remember' the most recent 1,500-2,000 events.

All these events — the system log or history of events — are stored chronologically, allowing the possibility of maintaining statistics concerning alarm situations. The data can also be used to take decisions in order to prevent false alarms in critical environments.

The log provides information about:

- Type of event, (alarm, pre-alarm, fault, function, user operations, etc.)
- Loop- and/or address number, analogue values, etc.
- Time & date of the occurrence.

The system log of events can be presented on the following equipment:

- **On the system printer**
  (connected directly to the panel)
- **On the operating panel display**
  (scrolling of events on the display)
- **On a personal computer**
  (using, for instance, "*terminal.exe*"[6] —MS Windows terminal emulator software — to read log files 'NOTES1', 'NOTES2'... 'NOTES5', depending on the chosen type of log. The files may then be saved in your hard drive as ASCII-files — text files.)

Logs with the following types of events may be chosen:

- All fire alarms detected
- All fault alarms detected
- All kinds of recorded events
- Data stored in the system's EEPROM
- All isolations.

For quick access to your system log, press following keys at the keypad:

☞ M (*main menu*)
☞ ④ (SYSTEM INFO)
☞ ③ (LOG)

✔ For information about how to access system information, take a look at, '*The Operating* Menus' page 23.

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[6] The communication parameters (baud rate, parity, etc.) in *DELTA OP* and the computer are to be the same. Note that the program '*PCMENY'* is not to be used.

The Fire Alarm Counter

DELTA OP stores in its electronic memory the number of fire alarms reported since the panel was assembled in factory.

> ✔ For security reasons, resetting the number of reported fire alarms is considered as *access level 4*. Only authorised personnel may have access.

To check how many fire alarms your system has reported since installation, obtain your system's *fire alarm counter number* by pressing following keys:

> ☞ M (*main menu*)
>
> ☞ ④ (SYSTEM INFO)
>
> ☞ ⑥ (FIRE-COUNTER)

Adjustment of Detector Data

The facility of displaying and adjusting detector data— especially regarding addressable & analogue detectors — is of great importance for adapting your fire alarm system to the site environment.

The following detector data may be accessed:

- Current analogue values, limits and maximum & minimum values.
- Setting limit values
- The number and type of detectors on a loop
- Customer specified detector texts

Reading Analogue Values

Addressable & analogue detectors sense the conditions in the area being protected, producing an analogue signal which changes with smoke density and temperature.

This detector converts the signal from analogue to digital data and transmits it to the control panel.

The following standard set-up of threshold alarm levels is recommended for monitors installed in a normal clean atmosphere:

Analogue value (a.u.)

5		45	55	

Fault	Normal	Pre-alarm	Fire

- **Normal Level (approx. 25 a.u.)**
  An analogue value of 20 to 30 should be expected from a monitor sited in normal clean environment.
  Manual Call Points, Zone Monitoring Units and other non-analogue devices have a *Normal Level* of 16.

- **Pre-alarm Level (approx. 45 a.u.)**
  Analogue values over 45 — adjustable from 30 to 55 — represent smoke densities and/or temperatures high enough to indicate a pre-alarm.
  Non-analogue devices have no *Pre-alarm Level*.

- **Fire Alarm Level (approx. 55 a.u.)**
  Analogue values over 55 — adjustable from 45 to 65 —represent smoke densities and/or temperatures from monitors enough to indicate a fire condition. Non-analogue devices have a *Fire Alarm Level* of 64.

When you select *Reading Analogue Values*, the information is presented—depending on the chosen menu option— in one of the following manners:

1.   **Obtain *Current Analogue values & limits***

      a)   From *All monitors* on the loop (as a printout)

      b)   From *one monitor* (*individually)* (on the display)

      c)   From monitors with analogue values *over 30 and under 16*, (as a printout)

      d)   From detectors with *non-standard limits* — limit values changed since system reset (as a printout)

2.   **Obtain *Maximum & Minimum analogue values*** **(since power down or last analogue value reading)**

      a)   From *All monitors* on the loop (as a printout)

      b)   From *one monitor* (*individually)* (on the display)

If you want the system to present the detector data on the display as a histogram, see "Dynamic Histogram", on page 29.

For quick access to detector data, press following keys on the keypad:

      ☞ M (*main menu*)

      ☞ ④ (SYSTEM INFO)

      ☞ ② (DETECTOR DATA)

Dynamic Histogram

If you prefer to view the analogue values as dynamic histograms, each segment of the display represents 3 analogue values, while the display presents the monitor data, press following key on the keypad:

      ☞ ⑦ (Special *histogram* key, while displaying detector data)

The histogram will move right/left dynamically, representing the actual analogue value. Press ⑦ once again to go back to numeric display. To return the system to *normal mode*, press:

      ☞ M (*main menu*)

Setting Alarm Limits

Due to environmental pollution, (e.g. dust, cigarette smoke, etc.) the monitors' response may be gradually altered, producing higher analogue values.

In order to reduce the occurrence of false alarms, *DELTA OP* incorporates the facility of individually adjusting the pre-alarm and alarm limits of the monitors.

✔ For security reasons, adjusting alarm limits is considered as access level 3, and requires a password. Only authorised personnel may have access.

☑ Alarm limits must be adjusted within the ranges below; otherwise, the values will not be accepted by the system:

PRE-ALARM LIMIT should normally be 20 analogue units (±10 %) above the adjusted normal level, and should be between 30 and 55 a.u.

ALARM LIMIT should normally be 30 analogue units (±10 %) above the adjusted normal level, and should be between 45 and 65.

For information about the normal level, turn to page 28.

✔ The adjusted values will be stored in the system's memory (EEPROM) and will be *remembered*, even if the control panel is powered-down.

Displaying Loop Information

In order to give you useful information about the number and type of detectors connected to a loop, *DELTA OP* incorporates following menu option:

On the keypad, press the following keys:

☞ M (*main menu*)

☞ ④ (SYSTEM INFO)

☞ ② (DETECTOR DATA)

☞ ③ (LOOP DATA)

For each loop, you will be able to access the address of the last detector and total number of detectors of each type — smoke, heat detectors, manual call points, etc.

✔ For information about how to access system information, take a look at, '*The Operating Menus*', page 22.

Displaying Detector Texts

DELTA OP incorporates the facility of displaying a pre-programmed customer specified text of maximum 40 characters for each addressable detector and conventional loop.

Usually, this text information indicates which area of the building a conventional detector loop protects or where an addressable monitor is installed.

Detector texts will be automatically displayed when the monitor reports a fault, pre-alarm or fire alarm. For control purposes, you may manually display the programmed display text of any detector and conventional loop in the system.

For quick access to a detector's text, press following keys at the keypad:

☞ M (*main menu*)

☞ ④ (SYSTEM INFO)

☞ ② (DETECTOR DATA)

☞ ④ (SHOW ALARM-TEXT/ZONE INFO)

Other Functions

The advanced technology in *DELTA OP* incorporates many other facilities particularly useful to you.

Some of the facilities that make *DELTA OP* a user-friendly system are described below.

Automatic Key-Entries, Macros

Most of the *DELTA OP* functions are accessed via menu options by pressing a specific sequence of keys on the keypad.

To facilitate activating frequently used functions, (i.e. daily isolation of a specific zone), the system incorporates an automatic way of entering the specific sequence of keys — a macro.

What is a macro?

A macro is a sequence of key-entries saved by the system for later use.

A macro is programmed by first giving it a name (which you do by choosing a *number* on the keypad, for example number 8) and then pressing the *specific sequence of keys* necessary for activation of the function you want to automate (for example to isolate a zone). The system will then save the sequence of key-entries for later use.

When the function — isolation of the zone — is required, instead of pressing through the sequence of keys to isolate the zone manually, just enter the *macro number* from the main menu. The system will then automatically isolate the zone for you.

Each *DELTA OP* panel incorporates the possibility of programming 7 different macros, with storage capacity for up to 100 key-entries for each macro.

Macro numbers 7, 8 and 9 are activated via the panel's numeric keypad. Macro numbers 1, 2, 3 and 4 are activated via the *DELTA OP* panel's *dynamic 'soft'* keys under the graphic display.

Programming a Macro

To program a macro select *hidden* option 5 from the *main menu*.

> ✔ For security reasons, macro programming is considered as access level 3, and requires a password. Only authorised personnel may have access.

> ☞ M (*main menu*)
> ☞ ⑤ (*hidden option*)
> ☞ ○○○○ ✱ (actual password)
> ☞ ⬭ (for example, *soft key* with macro name '2')
> ☞ ○ ----- ○ (sequence of keys to isolate zone 15)
> ☞ M M (stops recording key-entries)

All the key entries are now recorded in the system.

Note that zone 15 has been isolated during macro programming.

In the same manner, you could program a macro (with name '3', activated by *soft key* number '3') to de-isolate all devices in zone 15.

Using a Macro

If, as explained above, you have programmed macro number '2' for isolation of zone number 15 and macro number '3' to de-isolate the same zone 15, you could now press *soft key* number 2 under the graphic display— to isolate zone no. 15.

Some hours later, you could press *soft key* number '3' — under the graphic display to de-isolate zone no. 15.

Macros Activated from Menu Options

To program or use macros 7, 8 and 9 (for activation directly from the panel's menu options) you follow the same procedure as explained above, but you choose macro name 7, 8 or 9 instead of 1, 2, 3 or 4.

Pre-programmed Macros

Macro numbers '8' and '9' are pre-programmed from factory. Macro number '8' scans detector loops and collects data from analogue devices. Macro number '9' stops the system printer before printout is finished.

You may re-program macro number '8' and '9' with different key entries to suit your needs.

4.   Technical Specification

This chapter provides you with technical specification about *DELTA OP*.

Communication Channels

	PROGRAMMABLE	TYPE	APPLICATION
COM1 9-pins D-Sub male	Yes	Serial RS232C or RS485	RS485 is used for communications with control panels in *Master/Slave* networks.
COM2 9-pins D-Sub male	Yes	Serial RS232C or RS485	RS232C is used for communications with printers, computers, modems, pagers, etc.
CN1- 7,8 Terminal Block	Yes	Serial FTT-10	Control Panels in *eBus* networks (the use of *Kit for OP,DA: eBus Communication Board* is required)

Inputs

TYPE	No.	ELECTRICAL DATA	COMMENTS
HDFA Detection Line CN1- 1,2	1	+24VDC	Hardware Detection of Fire Alarm

Outputs

TYPE	No.	ELECTRICAL DATA	COMMENTS
PL5 -Mimic Panel (delivered from factory)	1	Max. 64 LED Max 240 assignments Max. 3 LED	Multiplexed Output Programmable from control panel Per assignment
PL9 - Fire Brigade (the use of "*Kit for OP: Fire Brigade Termination Card*" is required)	1	+24V or NC-C-NO Remote Fire Alarm +24V or NC-C-NO Remote Fault Alarm FBF Fire Brigade Panel Output	Monitored when coil voltage outputs are selected Compatible with German standard

Storage Capacity

PROGRAMMED IN →	EEPROM	EPROM	RAM
Assignments Mimic Panel	240		
Assignments Alarm Outputs	90		
Log Messages			1000

Power Supply

TYPE	ELECTRICAL DATA	COMMENTS
Voltage Current	21 to 30 VDC 50-60mA, (normal mode) 300mA, (alarm mode)	Two monitored power supply inputs (CN1-3,4 and 5,6) to be supplied via two different circuits, so that short-circuiting one of them will not affect the other

Other Data

Weight	1.7 kg	Enclosure included
Storage Temperature	-20 ºC to +70 ºC	
Operating Temperature	0 ºC to +50 ºC	
Humidity	0% to 95%	
IP Rating	42	Engineered for indoors mounting
Dimensions	300x210x70 mm	WxHxD

5. Appendix

What's a Fire Alarm System?

Eltek's fire alarm system principally consists of an *intelligent* control panel (or several panels in a network) which provides visual warnings of alarm situations in various ways and activates the control panel's *alarm and control outputs.* This is done on the basis of information about the development of smoke, heat, flames, etc., from *components* on the loops.

The system communicates with the following types of *components* on the detector loops:

- ♦ **Conventional** detectors
- ♦ **Analogue, addressable** detectors
- ♦ **Ancillary addressable devices**
  (e.g. addressable digital and analogue inputs on I/O units — *DIO*)

Each of the system's *alarm and control outputs* — terminal blocks in the control panels or modules and in ancillary devices — can be programmed individually and can be of the following types:
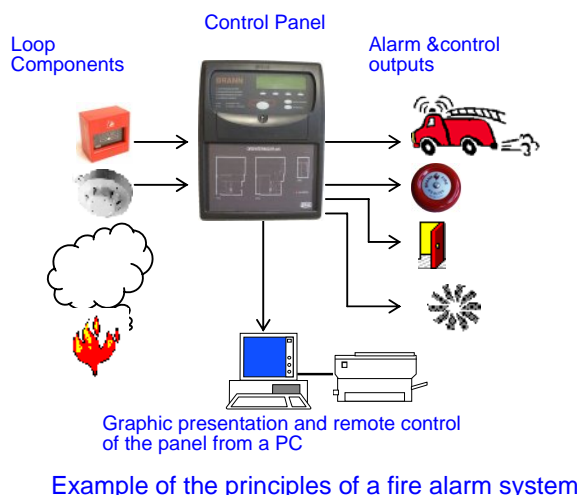
Example of the principles of a fire alarm system

- ♦ Voltage Outputs
- ♦ Voltage-free outputs

The control panel may be configured to activate — based on information from *loop components* — every output in the system in many different ways. Each of the panel's outputs must be set up with the following parameters:

- ♦ **Type of alarm** (alarm group):
  alarm bells, fire brigade remote alarm, control outputs, faults, pre-alarms, two-detector dependency, etc.
- ♦ **Delayed** or instant activation
- ♦ **Monitoring function** and output number
- ♦ **Cause & Effect** (activation pattern):
  which *loop components* activate the output and activation pattern (pulsing, continuous, etc.)

DELTA Technology — definition

DELTA Technology is the collective term for the *Eltek* fire alarm system, which uses new, user-friendly logic for network engineering, control panel operation and fire alarm evaluation.

The *DELTA Technology* concept has the following principal features:

- Complies with EN 54, Parts 2 and 4
- Modular construction
- Decentralised or centralised
- Flexible and user friendly
- Fully scaleable
- Extensive signal processing
- Compatible with ANX95
- High noise immunity

Documentation Chart for *DELTA Technology*

The documentation chart below is a summary of the types of manuals, guides, instructions, etc. that are available for products in the *DELTA* family.

DELTA △net

◊ **Engineering Design Guide** *DELTA Technology*
(Standard functionality, reverse compatibility, special functions, etc.)

◊ **Service Manual** *DELTA Technology*
(Commissioning, fault-finding procedures, etc.)

Manuals, A4

Delta Compact

◊ **Assembly Guide** *DELTA Compact*
◊ **Kit for** *Compact:* **Assembly Cables**
◊ **Installation Guide** *DELTA OP*
◊ **User's Guide** *DELTA OP*
◊ **Installation Guide** *DELTA DA*
◊ **User's Guide** *DELTA DA*

Delta OP

◊ **Installation Guide** *DELTA OP*
◊ **User's Guide** *DELTA OP*

Data sheets, A4

Delta DA

◊ **Installation Guide** *DELTA DA*
◊ **User's Guide** *DELTA DA*

Manuals and folders, A5

FireWin Explorer

◊ **User's Guide** *FireWin Explorer*
(Windows-based PC application for main configuration and set-up of *DELTA* modules)

Programmable Functionality

◊ **Configuration Guides for** *Software modules*
(Instructions for configuring *DELTA* modules with special control functions, protocols, etc.)

KITs

Installation Guides for:

DELTA Compact
◊ Fire Brigade Termination Card
◊ Printer, PC Interface Connection

DELTA OP & DELTA DA
◊ Fire Brigade Termination Card
◊ eBus Communication Board

HDFA Detection Line — Fire Brigade Output

In today's modern, software-based systems, if the microprocessor stops and the internal *watchdog* electronics do not manage to start it again, the system will not function satisfactorily.

HDFA:
Hardware **D**etection
of **F**ire **A**larm

In order to avoid this — and other communication faults on the network or detector loops — the *DELTA* modules have built-in galvanically insulated electronics for hardware detection of fire alarms. Thus the *DELTA* modules conform to the *European Standard EN54 Part 2*.

DELTA Net

DELTA Net communication — between *DELTA OP* and *DELTA DA* modules — consists of two twin cables, where one of them is used as HDFA detection line and the other twin cable as *eBus* communication line.

The HDFA function will be able to report a fire alarm from the *DELTA DA* modules even if:

The microprocessor in *DELTA OP* stops

The microprocessor in *DELTA DA* stops
(*Discovery* detectors only)

Communication on the *DELTA DA* detector loops does not work
(*Discovery* detectors only)

There is a break or short circuit in network communications
(all types of detectors)

In such situations the HDFA function in the relevant *DELTA DA* module will be activated. Any fire alarm signals will be detected by the *DA* module's HDFA function, which will send the message on to the main *DELTA OP* panel via the HDFA detection line.

HDFA *alarms* will be shown as a fire alarm indication[7] and will activate the fire brigade remote output in the main *DELTA OP* panel.

Example: *DELTA Net* with HDFA Detection Line

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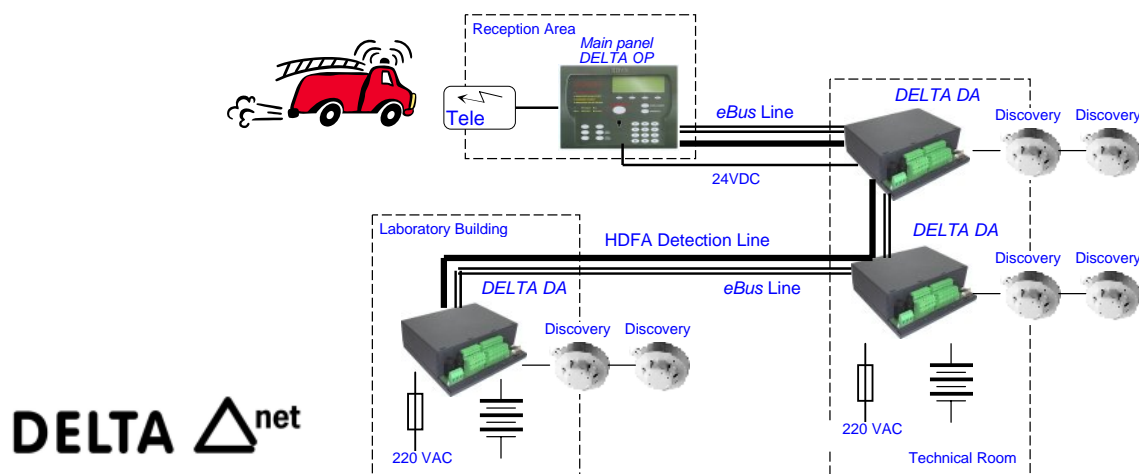
[7] A HDFA alarm is indicated by LED and buzzer, it is not displayed on the graphic display.

Intelligent DELTA *Logic+*

In order to make secure and stable operation of fire alarm installation easier and to prevent undesired alarms, even in difficult environments, *Eltek* has developed *DELTA Logic+*, a further development of our *Fireguard Logic* system. *DELTA Logic+* is collective expression used to cover the environmental adaptation features on offer with the DELTA concept, and incorporates the three main functions set out below.

A key feature of *DELTA Logic+* is the option it gives you of adjusting areas of the protected premises to provide greater sensitivity so that you achieve the benefits of early warning (greater security in sensitive areas). Another great feature is the automatic environmental compensation built-in the *Discovery* range of detectors.

DELTA Logic+ has the following main properties:

Individual Adjustment of Alarm Limits

Pre-alarm and fire alarm detection levels can be adjusted individually at the control panel, within acceptable limits, for each analogue detector.

This property makes it possible to use smoke detectors in areas where some smoke may be present.
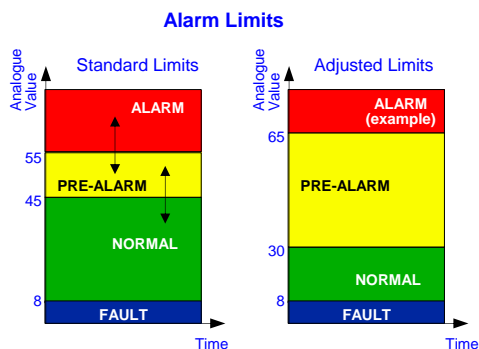
Alarm Verification

This function allows you to individually adjust at the control panel how long an analogue detector may report a pre-alarm or fire alarm before the fire alarm panel raises the alarm.

This property makes it possible for some areas to have high temporary concentrations of smoke without notifying an alarm. The fire alarm panel stores the highest and lowest smoke concentration levels for any detector.

Automatic Environmental Compensation

Compensation Level

Analogue value

Alarm Threshold

55

Raw Analogue Value

25

Compensated Analogue Value

Time (months)
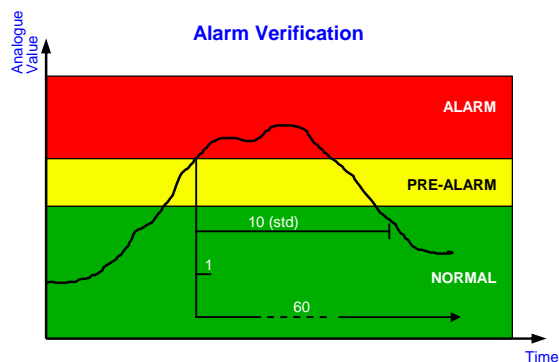
This detector function automatically compensates for environmental influences, e.g. dust, pollution.
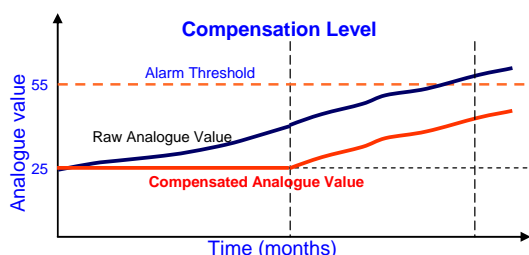
All *Discovery* smoke detectors include compensation for sensor drift as part of the internal signal-processing algorithm. The algorithm will compensate for changes in sensor output caused, for example by dust in the chamber, and will therefor hold the sensitivity at a constant level even with severe chamber contamination.

Compensation values are stored in non-volatile memory and will be retained even if detectors are disconnected.

Response Modes

Each detector in the *Discovery* range can operate in one of five response modes, any of which can be selected from the control panel. Each mode corresponds to a unique response behaviour, which can be broadly related to sensitivity to fire. Whatever the type of detector, Mode 1 will give a higher sensitivity to fire than Mode 5. The selection of the most suitable mode depends on the application. Guidance on detector and mode selection is given in the selection grid below:

Discovery Response Mode Selection Grid

|	Cleanroom, EDP suite	Office, Hospital ward, hotel room	Warehouse, bar	Loading area (with fork-lift trucks)	Car Park (enclosed ventilated)	Kitchen, Laundry	Boiler room
Mode 1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5	1 2 3 4 5
Ion							
Optical							
Multi							
Heat							

Suitable   Recommended

For ionisation and optical smoke detectors, the modes relate to different combinations of smoke response threshold and response time. For the heat detector, the mode relates to the fixed temperature setting and the sensitivity to rate-of-rise of temperature. For the multisensor, the mode relates to the levels of smoke and heat sensitivity and to the way in which the responses of the two sensors are combined.

The response characteristics of the detectors have been carefully set so that detectors will comply with the requirements of the relevant part of EN54 in all response modes.

To program the system, please contact *Honeywell Life Safety's* Service Department. For security reasons, the configuration of the system should be regarded as access level 3 (in terms of EN 54). Only authorised and qualified personnel should have access to the set-up.

Addressing Rules for Networked Systems

Network — Address Ranges

Example of s*ystem units' numbers*

DELTA OP   DELTA DA
                 Quad

eNode
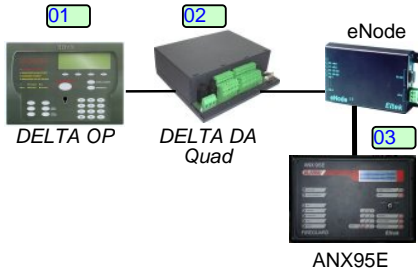
ANX95E

Eltek's distributed fire alarm system usually consists of a network of *intelligent* fire alarm panels, operating panels and other modules — *DELTA DA, OP, ANX95, ANX95E*, etc. — which communicate with each other via the fire-alarm network. Every panel and module is a *system unit* in the network. In order to identify each of them, they must configured with a unique *system unit number*.

You can configure the *DELTA* module's *system unit number* from the keypad of any *DELTA OP* panels connected to the *eBus* network or from the *FireWin Explorer* application running on a PC.

Note that the configuration of the *system unit number* on an ANX95 and ANX95E control panel is only to be done from its own keypad.

Eltek's fire alarm system has the following address range for *system units* in networks:

Address Range for System Units		
Control Panel	**Connected to Eltek Network**	
	eBus	**RS485 Master / Slave**
DELTA Compact	01 — 256	01 — 99
DELTA OP	01 — 256	01 — 99
DELTA DA Quad	01 — 256	—
DELTA Repeater	01 — 256	01 — 99
Fireguard DELTA	01 — 99	01 — 99
ANX95	01 — 99	01 — 99
ANX95E	01 — 99	01 — 99

- Note that eBus networks require **consecutive** *system unit numbers* starting with number "01". Also, to conform to the *European Standard EN 54 Part 2,* the main operating *DELTA OP* panel is to be configured with *system unit number* "**01**".

- RS485 Master / Slave networks **do not** require **consecutive** *system unit numbers*, but do not conform to the EN54 standard.

- The address ranges above are **also limited by the wiring topology** of the *eBus* (FTT10) network. The maximum number of nodes allowed is: 128 nodes in STAR, LOOP and FREE topologies and 64 nodes in BUS topology.

Fire Zones — Definition

A *fire zone* is the defined area of a building or property to be fire protected. All the fire detectors monitoring this area are assigned to the *fire zone*. A *fire zone* maybe monitored by one or more detectors or by all the detectors on a loop.

Fire zones mainly define natural fire cells in the building, and are divided into **sub zones** in order to be able to implement various control requirements within the same fire zone. Fire zone definition enables you following features:

On the display
alarms or pre-alarms from detectors will be referred to their *fire zone*

During operation
you can test, connect or disconnect *fire zones* in one operation

When programming
you will be able to specify the **sub zones** that will activate individual alarm and control outputs

Example of Fire Zone Assignments:

If loop 01 has 60 detectors, you could assign all of them to the same *fire zone* "01". As no special control functions are required for this zone, you assign all the 60 detectors to just one *sub zone,* "0101". See table below

Loop 05 has 95 detectors connected, and as you need for instance to disconnect detectors 61 to 95 separately, you assign them to two different *fire zones* ("02" and "03"). See table below.

In addition, you have different control requirements for the loop 05 detectors: detectors 01 to 12 must activate certain door retainers, while detectors 13 to 20 will not activate the sounders, etc. You assign then *sub zones* "0201", "0202", etc. for the different control requirements. See table below.

Required *fire zone* assignments in this example:

Fire Zone No.[8] (max. 256)	Sub Zone No. (max. 256)	Detector Addresses
01	0101	0101 — 0160
02	0201	0501 — 0512
02	0202	0513 — 0520
02	0203	0521 — 0560
03	0301	0561 — 0570
03	0302	0571 — 0595

Detector loop 01

Detector loop 05

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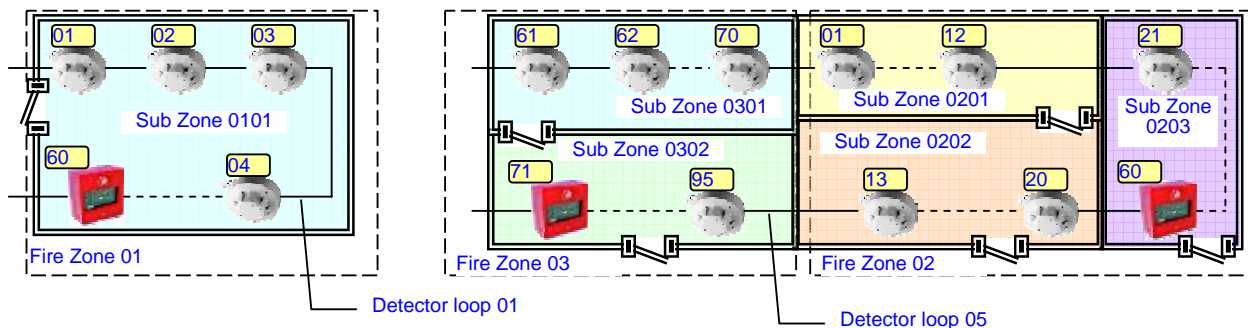
[8] ANX95E control panels have a maximum of 240 fire zones and no sub zones.
ANX95 control panels have no fire zones.

Loop Components — Address Ranges

In *Eltek's* fire alarm system all *loop components* (detectors, manual call points, Zone Monitors, DIO units, etc.) are connected to the control panel's detector loops. Every *addressable loop component* in a fire alarm network must be coded with a unique address in a random sequence. The control panel must be configured with the total number of loop components connected each detector loop and the address numbers not used in the sequence (*not present*).
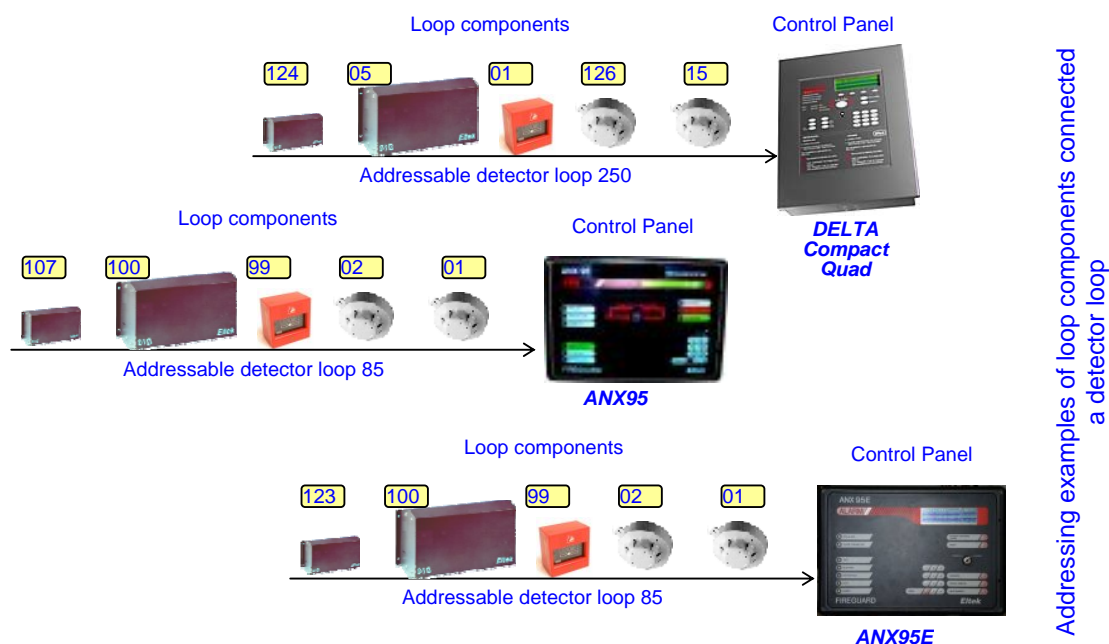
For example, say that you have coded 5 detectors with addresses 06, 01, 02, 04 and 03 and connected them to loop 20. Then you will have to configure the control panel so that loop 20 has a total of 5 detectors and then configure address 05 on loop 20 as "*not present*".

Eltek's fire alarm system has the following address ranges for the *loop components* on the detector loop:

Number of *Components* on Detector Loops (max.)			
	DELTA DA & Compact	**ANX95**	**ANX95E**
Number of loops in the network	255	255	255
Detector loop's address range for detectors and manual call points	01 — 126	01 → 99	01 → 99
Detector loop's address area for DIO- and other *loop components*	01 — 126	100 → 107	100 → 123

Loop components

124   05   01   126   15

Addressable detector loop 250

Control Panel

DELTA Compact Quad

Loop components

107   100   99   02   01

Addressable detector loop 85

Control Panel

ANX95

Loop components

123   100   99   02   01

Addressable detector loop 85

Control Panel

ANX95E

Addressing examples of loop components connected a detector loop

The unique address of a *loop component* consists of an address number in which the first two digits indicate the loop number *the component* is connected to and the remaining digits are *the component's* address number on the loop.

For example: address number '0526' is the complete address of a *loop component* coded with address '26' and connected to detector loop '05'.

Another example: the complete address of output no. 3 on a DIO unit can be '210.125.3' if the unit is coded with the address '125' and is linked to detector loop '210'.

Key-Entry for Numbers Above 99

Some of *Eltek's* fire alarm systems use hexadecimal figures (just two digits) to show and refer to the *system unit's numbers*, *loop component's numbers* and *fire zone numbers*.[9]

If you have to program one of these fire systems[10] with numbers higher than 99, for example 'system unit 140' or 'detector address 120' or 'fire zone 200', you have to use hexadecimal digits from '00' to 'FE', (corresponding to '00' to '254' in the decimal system).

Conversion table: decimal to hexadecimal figures																			
Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex	Dec	Hex
00	00	26	1A	52	34	78	4E	104	68	130	82	156	9C	182	B6	208	D0	234	EA
01	01	27	1B	53	35	79	4F	105	69	131	83	157	9D	183	B7	209	D1	235	EB
02	02	28	1C	54	36	80	50	106	6A	132	84	158	9E	184	B8	210	D2	236	EC
03	03	29	1D	55	37	81	51	107	6B	133	85	159	9F	185	B9	211	D3	237	ED
04	04	30	1E	56	38	82	52	108	6C	134	86	160	A0	186	BA	212	D4	238	EE
05	05	31	1F	57	39	83	53	109	6D	135	87	161	A1	187	BB	213	D5	239	EF
06	06	32	20	58	3A	84	54	110	6E	136	88	162	A2	188	BC	214	D6	240	F0
07	07	33	21	59	3B	85	55	111	6F	137	89	163	A3	189	BD	215	D7	241	F1
08	08	34	22	60	3C	86	56	112	70	138	8A	164	A4	190	BE	216	D8	242	F2
09	09	35	23	61	3D	87	57	113	71	139	8B	165	A5	191	BF	217	D9	243	F3
10	0A	36	24	62	3E	88	58	114	72	140	8C	166	A6	192	C0	218	DA	244	F4
11	0B	37	25	63	3F	89	59	115	73	141	8D	167	A7	193	C1	219	DB	245	F5
12	0C	38	26	64	40	90	5A	116	74	142	8E	168	A8	194	C2	220	DC	246	F6
13	0D	39	27	65	41	91	5B	117	75	143	8F	169	A9	195	C3	221	DD	247	F7
14	0E	40	28	66	42	92	5C	118	76	144	90	170	AA	196	C4	222	DE	248	F8
15	0F	41	29	67	43	93	5D	119	77	145	91	171	AB	197	C5	223	DF	249	F9
16	10	42	2A	68	44	94	5E	120	78	146	92	172	AC	198	C6	224	E0	250	FA
17	11	43	2B	69	45	95	5F	121	79	147	93	173	AD	199	C7	225	E1	251	FB
18	12	44	2C	70	46	96	60	122	7A	148	94	174	AE	200	C8	226	E2	252	FC
19	13	45	2D	71	47	97	61	123	7B	149	95	175	AF	201	C9	227	E3	253	FD
20	14	46	2E	72	48	98	62	124	7C	150	96	176	B0	202	CA	228	E4	254	FE
21	15	47	2F	73	49	99	63	125	7D	151	97	177	B1	203	CB	229	E5	255	FF
22	16	48	30	74	4A	100	64	126	7E	152	98	178	B2	204	CC	230	E6		
23	17	49	31	75	4B	101	65	127	7F	153	99	179	B3	205	CD	231	E7		
24	18	50	32	76	4C	102	66	128	80	154	9A	180	B4	206	CE	232	E8		
25	19	51	33	77	4D	103	67	129	81	155	9B	181	B5	207	CF	233	E9		

To enter the letter:	First press the key:	then, on the numeric keypad, the key:
A	*Hex key*	0
B	*Hex key*	1
C	*Hex key*	2
D	*Hex key*	3
E	*Hex key*	4
F	*Hex key*	5

To enter the letters in hexadecimal figures using the numeric keypad on the panel you must first press the '*hex key*'[11] on the panel and then one of the digits on the numeric keypad. Use the conversion table.

For example: to enter fire zone number '200', which corresponds to 'C8', press the following keys:

| *Hex key* | ②⑧

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[9] Windows program *FireWin Explorer* uses decimal digits: for example, fire zone 215 is displayed as '215'.
[10] This applies when the control panel is configured (set up) via the panel's keypad, not by *FireWin Explorer*.
[11] The location of the '*Hex key'* is not the same for all control panels: On *DELTA OP,* it is located above the SCROLL DISPLAY key; ANX95 used its '*hidden key*', while ANX95E used its EVACUATE key

User's guide Delta OP Art. no. 351204.013, v4-08-09

6. Feedback to *Honeywell Life Safety*

It is the policy of *Honeywell Life Safety AS* to work actively to ensure that our products are in accordance with our customer's expectations and requirements.

In order to achieve this goal at any time, we wish to follow up our products throughout their lifetime. We therefore request your kind assistance.

Your Comments about *DELTA OP*

You can contact us via our Internet pages, www.eltek-fs.no, if you have any comments about this product regarding technical specifications, design, maintenance or service. Also whether this manual, and other documents, live up to your wishes and expectations.

✔ Our addresses (mail, Internet) and telephone and fax numbers are on page 2, as well as on the cover pages of this booklet.

We will acknowledge your comments and inform you about eventual changes that we perform based on your feedback.

We thank you for your cooperation!

Make a Note

Honeywell Life Safety AS

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