

DOCUMENT CONTROL NUMBER /

**801AP MX SERVICE TOOL
USER INSTRUCTIONS**



Fig. 1 801AP MX Service Tool

1. INTRODUCTION

The 801AP MX Service Tool is used to program the loop address into MX addressable devices. (A Quick Functional Reference Table is detailed on page 10).

The 801AP displays information and performs tests on devices. It has a 32 character backlit LCD alphanumeric display, arranged in 2 rows of 16 characters and four ‘softkeys’, F1, F2, F3 and F4. (The display format is shown in Fig. 5).

Power for the 801AP is derived from 4 AA size nickel metal hydride rechargeable batteries. It may be run from an unregulated +12V dc input ie, car cigarette lighter connection or 110/230V ac mains adaptor, both of which will recharge the batteries as well. The 801AP consists of the following:

- MX Service Tool
- Service Tool to ancillary connector lead
- 110 or 230V ac adaptor plus lead
- 4 x rechargeable AA size Nickel Metal Hydride batteries

The 801AP is designed to be used as a desktop unit, clipped to a trouser belt or be carried with a shoulder strap. The 801AP has four external connections:

DC IN +12V	From car cigarette lighter or 110/230V ac mains adaptor
AUX	Ancillary connection port

PC	PC connection port for use with MX CONSYS (not yet available)
µP	Internal micro-processor program download port for use with PMS - Program Management Software.

Detectors are programmed by placing the detector onto the 801AP and turning clockwise until fully engaged.

Ancillaries are programmed via the AUX port on the 801AP. The ancillary programming cable consists of an RJ11 connector at one end and a custom moulded connector at the other end.

2. TECHNICAL SPECIFICATION

2.1 MECHANICAL

Dimensions

HWD:	48 x 200 x 112mm
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Weight

801AP Service Tool:	0.36kg
801AP Service Tool + batteries:	0.5kg

Materials

Top:	FR ABS Dark Blue
Bottom:	FR ABS Dark Blue

801AP

17A-05-AP

2 11/02

2.2 ELECTRICAL

The 801AP can be operated with LCD backlight OFF or ON.

Batteries:	4 x rechargeable AA size Nickel Metal Hydride
Operating Time (Batteries only)	Up to 15 hours (dependent on battery charge and usage)

The ac adaptor is required when testing high current MX addressable devices, including the SAM800/SAB800.

2.3 ENVIRONMENTAL

Operating Temperature:	0°C to +45°C
Storage Temperature:	0°C to +50°C
Relative Humidity:	90% (non-condensing)
Battery Disposal:	No special considerations are applicable in the UK at time of writing. (Check with local authorities).

2.4 EMC

The 801AP MX Service Tool meets the requirements of the EU EMC Directive 89/336/EEC.

3. OPERATION

IMPORTANT:

FULLY CHARGE THE BATTERIES FOR 10 HOURS BEFORE USING FOR THE FIRST TIME

RECHARGE THE BATTERIES AS SOON AS THE LOW BATTERY INDICATOR APPEARS.

DO NOT OPEN BATTERY LID WHILE THE UNIT IS SWITCHED ON.

3.1 STARTING UP

3.1.1 INSTALLING BATTERIES

To install/change the batteries, proceed as follows:

- Unscrew the two screws on the base of the 801AP, using a cross-point screwdriver, holding the battery compartment cover whilst removing it.
- Insert the batteries ensuring correct polarity as shown inside the battery compartment.
- Replace the battery compartment cover and screw down.

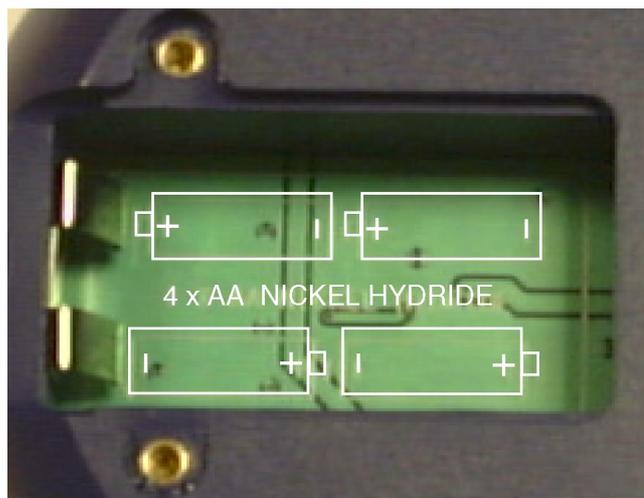


Fig. 2 Battery Compartment

CAUTION:

ENSURE ONLY NICKEL METAL HYDRIDE RECHARGEABLE BATTERIES ARE USED.

3.1.2 CHARGING AND MAINS USE

The 801AP has its own built-in charging circuit, powered by the mains adaptor. The batteries are boost-charged for 4-5 hours and reach full charge within 10 hours.

The 801AP can be powered from the mains supply using the DC adaptor. If batteries are installed, this allows them to be charged at the same time. For low battery indicator, see page 9.

3.2 PASSWORD PROTECTION

The 801AP MX Service Tool is switched ON/OFF by pressing any button for more than 3 seconds. The following example screen showing the software revision number, is displayed for 2 seconds when the Service Tool is switched on:

```
MX SERVICE TOOL  
Rev 00072501 E
```

Note that the 'E' displayed stands for English version. (appropriate letters are used for other languages). The Service Tool then displays:

```
Password:
```

Note: The following information on Password Protection is CRUCIAL to the operation of the MX Service Tool.

The Service Tool requires a 6-digit password to be entered. The password is different for each service tool and will be issued by the respective branch office.

The password uses only the digits 1 to 4, and may be entered by pressing the corresponding buttons F1 to F4; eg, button F1 to enter 1, button F2 to enter 2, etc.

The user has **3 attempts** to enter the correct code. On the **4th attempt** the following screen is displayed:



The user **must** telephone the branch office to get the correct 6-digit password at this point.

WARNING:

FAILURE TO ENTER THE CORRECT PASSWORD AT THE FOURTH ATTEMPT WILL RESULT IN THE SERVICE TOOL SWITCHING OFF AND ALLOWING ONLY ONE ATTEMPT ON SUBSEQUENT POWERING UP OF THE UNIT.

The password has an expiry time associated with it.

The hours left indicates the actual usage (switched on) time remaining.

CAUTION:

ONCE THE HOURS LEFT REACHES ZERO, THE SERVICE TOOL BECOMES INOPERABLE AND MUST BE RETURNED TO THE BRANCH OFFICE.

When there is less than 50 hours, the expiry time appears. The screen displays the expiry time in the form of 'Hours Left':



On successful entry of the password, the following screen is displayed:



This is the start of the main menu options, which are discussed further in para. 3.6.

3.3 CONNECTING TO A DEVICE

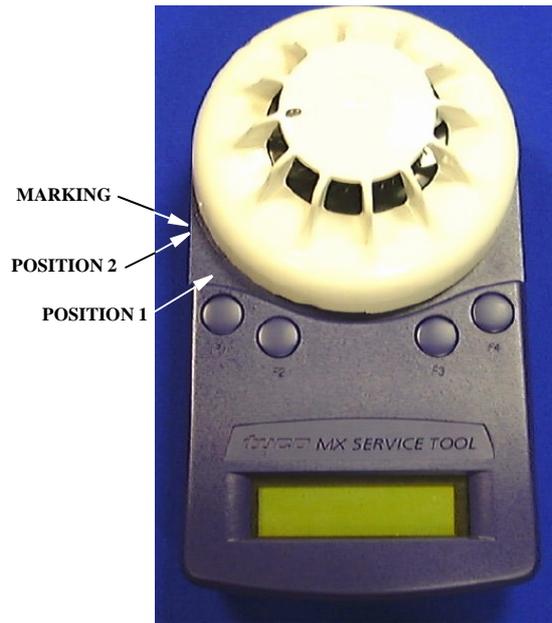


Fig. 3 Connecting a detector

Detectors are inserted as shown in Fig. 3. Use the marking on the service tool (above F1 button) to align the detector. Place detector in position 1 to engage and then twist clockwise to position 2 to lock.

Ancillaries are connected to the 'AUX' socket using the ancillary connection lead connector lead as shown in Fig. 4.



Fig. 4 Connecting to an ancillary

Note:

- 1) It is good practice to connect either a detector or ancillary at any one time. However, the Service Tool is equipped with a port interlock feature. This allows an ancillary and a detector to be connected at the same time. In such a case, the detector will have priority for communication. When the detector is removed, the ancillary will be able to communicate.

2) The 801AP may be connected to an ancillary device that is also connected to and powered from the addressable loop. However, a 'No Response' fault for that device may be generated at the Control Panel under these conditions.

WARNING:

SPECIAL CARE MUST BE TAKEN WHEN CONNECTING TO A DEVICE ON THE ADDRESSABLE LOOP TO PREVENT UNWANTED ACTION IN OTHER EQUIPMENT EG, EXTINGUISHING SYSTEMS.

3.4 BUTTON OPERATION

The screen displays the start of the main menu as shown in Fig. 5.

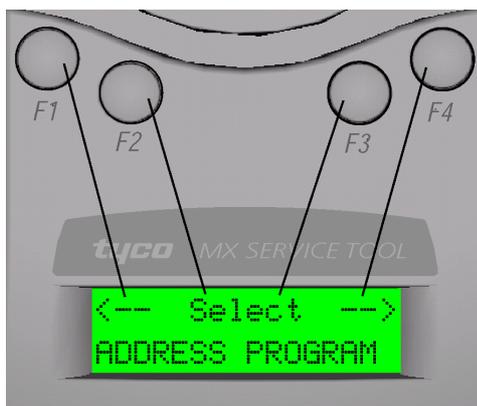


Fig. 5 First Display Screen of the main menu

The main menu can always be identified by the word 'Select' between two arrows on the **top line** of the display. The **bottom line** of the main menu displays the option.

The **top line** position of text is always shown in relation to the F1-F4 buttons above. In the Main Menu:

- F1 scrolls **left** through the main menu options
- F2 or F3 select the menu option displayed
- F4 scrolls **right** through the main menu options

When an option is selected from the main menu, the display uses the format shown in Fig. 6:

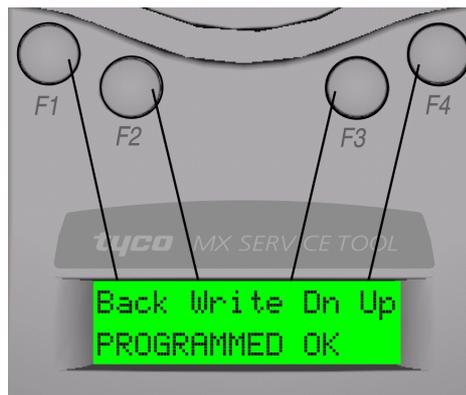


Fig. 6 Example of Writing an address

The **bottom line** displays information to the user. The **top line** displays the available options.

Note: The position of the options on the top line is relative to the buttons.

Fig. 6 shows:

- F1 selecting 'Back'
- F2 selecting 'Write'
- F3 selecting 'Dn' (for down)
- F4 selecting 'Up'

In some cases there may be fewer options available.

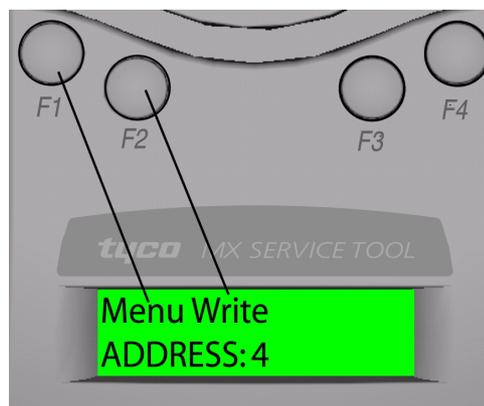


Fig. 7 Example of Reading an address

Fig. 7 shows:

- F3 & F4 - no action
- F1 selecting 'Menu'
- F2 selecting 'Write'

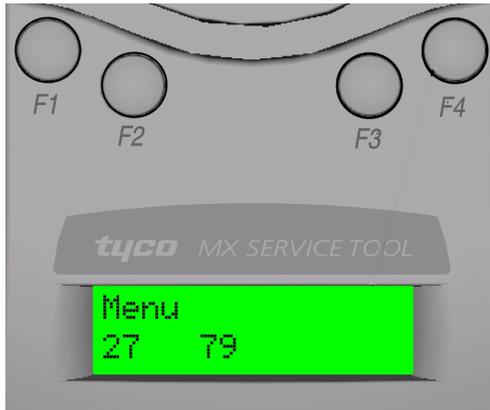


Fig. 8 Example of Single Option

In Fig. 8 pressing F1 selects the 'Menu', F2-F4 are redundant here.

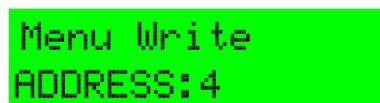
3.5 FUNCTIONALITY

ADDRESS PROGRAM

(See also 'STORE SETTINGS' to clear the used address memory).



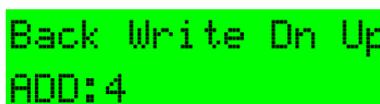
The main menu starts with ADDRESS PROGRAM. Press buttons F2 or F3 to choose 'Select' and the address of the device is displayed (eg, address 4).



- Use 'Write' to program the device with a new address
- 'Menu' to return to the main menu

Note: Whenever 'Menu' appears on the display, this always returns to the main menu.

If 'Write' is selected, the following screen is displayed:

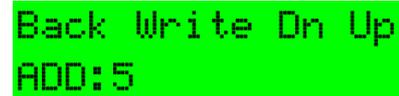


- Use 'Up' to increase the address number
- 'Dn' to decrease it
- 'Write' to program the address displayed
- 'Back' to return to the previous screen

If 'Write' is selected then the following message will appear for 2 seconds:

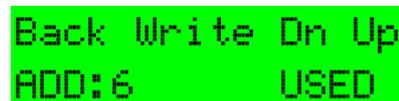


This is followed by:



Having programmed an address, the Service Tool moves to the next sequential address. This may be used or available.

If an address has already been used, the Service Tool indicates:



The user has the choice to continue with a used address, or to move to the next sequential address, using the up and down (Dn) buttons.

If the user decides to use a previously used address, the following screen is displayed:

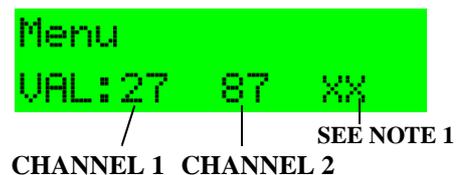


Press 'Write' and the Service Tool displays 'PROGRAMMED OK' briefly and then displays the next sequential address.

The Service Tool uses a memory map of the addresses that have been programmed. To erase this, select 'Store Settings' from the main menu and choose Clear Used 'CIU'.

ANALOGUE VALUES

ANALOGUE VALUES displays the analogue values of the attached device.



The above example shows a device with 2 channels, eg, an Optical/Heat detector, where channel 1 is the optical value and channel 2 is the heat value. Press 'Menu' to return to the main menu.

801AP

17A-05-AP

2 11/02

Note:

- 1) Only displayed if channel 3 is used on a device.
- 2) These are the values that the device would transmit to the control panel. The values do NOT include any calibration or correction factors.

MEASURE TEMP

This feature measures temperature in degrees Celsius and degrees Fahrenheit, but is only available on detectors which have a temperature sensing element, ie, Heat only, Optical & Heat and CO & Heat detectors. A typical display is shown in b):

```
<-- Select -->
MEASURE TEMP
```

b)

```
Menu
T: 23 C 75 F
```

MEASURE CO LEVEL

For CO detectors only. Gives values for CO levels in the measuring environment. Normal value is zero PPM (parts-per-million).

```
<-- Select -->
MEASURE CO LEVEL
```

```
Menu
CO: 0 PPM
```

SELF TEST

This menu option performs a self test for detectors which have this facility.

- Select SELF TEST to display the sensor analogue values (a)
- Select ON to perform the self test; wait 10seconds to see if PASS is displayed (b)
- If FAIL is displayed, then the detector is faulty and must be replaced

a)

```
Menu On
16 71
```

b)

```
Menu On
255 77 PASS
```

Self Test is available on the following types of detectors:

- MX Ionisation
- MX Optical + Heat (Optical sensing element only)
- MX CO + Heat (CO sensing element only)

Note: Self test is NOT available for the heat sensing channels of these detectors.

DIRTINESS

Available for Optical detectors only. Indicates the

```
Menu
DIRTINESS%: +6
```

contamination level of the optical chamber. Compares the current optical analogue value as a percentage where 0% would indicate that the analogue value has not changed since manufacture, 100% would indicate that the analogue value has risen to its maximum allowable value (the point at which it would generate a fault).

At 80% or above, the detector should be replaced to avoid the possibility of a fault occurring in the near future.

Note: Dirtiness can be displayed as a negative number if the analogue value has fallen since manufacture.

SERIAL NUMBER

Select SERIAL NUMBER from the main menu and the unique preset factory number of the device in hexadecimal will be displayed.

```
Menu
x80000731
```

Note: This number cannot be changed by the user.

MANUFACTURE DATE

Selecting MANUFACTURE DATE shows the date of manufacture of the device. Press 'Menu' to return to the main menu.

```
Menu
25 JAN 00
```

COMMISSION DATE

Selecting COMMISSION DATE from the main menu displays the date of device commissioning, which is downloaded from the MX Front Panel (CIE) on the actual date of commissioning. Press 'Menu' to return to main menu.



```
Menu
30 MAR 00
```

DEVICE TYPE ID

DEVICE TYPE ID displays the addressable device Model No. eg, 801PH. Select DEVICE TYPE ID and the detector type is displayed.



```
Menu
Model:801PH
```

LED MODE

The LED on the attached addressable device can be programmed to blink, it will flash each time the detector is polled. This can be done by selecting 'Blnk'.

- To switch off the blinking select 'Off'
- Test the LED status by selecting 'Tst'. This turns the LED 'On' for 2 to 3 seconds
- Press 'Men' to return to the main menu



```
Men Blnk Off Tst
LED BLINK
```

For all devices using the MIM800 module (eg, call points) or Intrinsically Safe variants (eg, CP840Ex Callpoint), the LED can not be made to illuminate unless the device is powered from the addressable loop. Observe the warning (see DIGITAL OUTPUTS) when connecting the Service Tool to a device on the addressable loop.

DIGITAL INPUTS

This menu option displays the status of the digital inputs as a decimal number between 0 to 255 for all addressable devices.



```
Menu
227
```

For ancillaries RIM800 and APM800, the following status messages are displayed (in addition to the decimal number):

RIM800	APM800
Relay Activ	Device OK
Relay Inact	Device Flt
Relay Fault	

DIGITAL OUTPUTS



```
Menu Tog --> Set
000: 00000000
```

The user may set the Digital Output of the addressable device by using the following function buttons, F2 to F4:

Flashing cursor denotes the digit to be set.

- --> - moves the cursor one position to the right
- Tog - toggles between 0 and 1 for each digit
- 'Set' - prompts the 801AP to send an instruction to the addressable device
- 'Menu' - to return to the main menu options

WARNING:

WHEN USING THE SERVICE TOOL WITH AN ANCILLARY DEVICE CONNECTED TO THE ADDRESSABLE LOOP, MAKE SAFE ANY ATTACHED EQUIPMENT, eg, EXTINGUISHING, PLANT SHUTDOWN etc. UNLESS IT IS BEING USED SPECIFICALLY FOR TESTING THE ATTACHED EQUIPMENT.

801AP

17A-05-AP

2 11/02

After 'Set' is selected, a message will appear asking for confirmation of the action to send the data to the device, as follows:

```
No Yes
CONFIRM ACTION
```

TEST RI TERMINAL

TEST RI TERMINAL tests the remote indicator output. Selecting this menu option displays either PASS or FAIL.

```
Menu
TEST RI:PASS
```

TEST L2 TERMINAL

TEST L2 TERMINAL tests the functional base interface output. Selecting this menu option displays either PASS or FAIL.

```
Menu
TEST L2:PASS
```

BACKLIGHT

This controls the display backlight. If 'On' is selected, the display is illuminated for 6 seconds on each button press.

The display can also be temporarily illuminated by pressing any two buttons simultaneously at any time.

Note: Use of the backlight will reduce battery life.

```
Menu On
BACKLIGHT OFF
```

AUTO POWER OFF

AUTO POWER OFF is designed to save battery life. If there have been no button presses during a preset time period, the Service Tool automatically turns itself off. This menu option allows the preset time period to be increased or decreased.

The timer is set by the user, after which the Service Tool turns itself off. The preset time period may be increased (or decreased) firstly in 1 minute steps, then in 5 minute steps up to 60 minutes maximum.

- Use 'Dn' and 'Up' to decrease or increase the timer period

- Choose 'Set' at the required level and then press 'Menu' to return to the main menu

```
Menu Set Dn Up
AUTO OFF:5 MIN
```

STORE SETTINGS

The following settings may be changed during use and this option enables the current values to be stored. The stored values are recalled when the unit is next powered up. The settings saved are: Auto Power-off time and Customer Code.

```
Menu Def CIU Sto
SETTINGS
```

- Menu - returns to the menu option
- Def - returns to default settings
- CIU - clears list of previously used addresses
- Sto - select to save changed settings

Any settings which are changed and not stored will be lost when the Service Tool powers down.

Note: Used addresses are stored automatically.

CUSTOMER CODE

CAUTION:

THIS MENU OPTION CHANGES THE CUSTOMER CODE OF THE SERVICE TOOL AND SHOULD ONLY BE USED FOR DE-BUGGING PURPOSES. IT SHOULD BE SET TO 254 NORMALLY.

```
Menu Set Dn Up
CUST CODE:254
```

Note:

- 1) Communication is only possible if the same customer code is present in the addressable device and the service tool.
- 2) The addressable device is manufactured with a default code of 254. This is set in the device and cannot be changed.

3.6 ADDITIONAL FUNCTIONS

DEVICE POLLING

In all operations that retrieve data from an attached device, the 801AP polls the attached device at a pre-determined interval. This interval is 2 seconds for the ADDRESS PROGRAM function and 5 seconds for all other functions. The polling instants will be observable if the LED is set to blink mode.

LOW BATTERY

This is indicated by a flashing cursor in the bottom right of the LCD display.

The batteries must be charged using the mains adaptor with its connecting lead plugged into the Service Tool dc input socket.

CPU RESET

Note: This function is not normally used.

If the buttons or display are not responding correctly, the Service Tool may be reset. This is done by pushing a small jewellers type screwdriver into the pinhole on the bottom of the Service Tool to actuate a switch.

When a CPU reset is carried out, the Service Tool will start up as described in para 3.2 'Password Protection'.

INTRINSICALLY SAFE 800Ex DETECTORS

Intrinsically Safe 800Ex detectors can only be programmed if an Ex dongle adaptor (supplied with the EXI800) is fitted to the 'AUX' port of the 801AP Service Tool (see Fig. 9).

When using with Intrinsically Safe 800Ex devices, the Service Tool must be used in a non hazardous safe area.



Ex Dongle Adaptor
fitted to 801AP 'AUX'
port

Fig. 9

3.7 ACCESSORIES

3.7.1 ACCESSORY KIT (516.800.923 UK)

Consisting of:

- Carry case
- Car lighter adaptor
- Shoulder strap

3.7.2 SPARES

- | | |
|--|----------------|
| Spare ancillary lead: | 516.800.922 UK |
| Ancillary lead spare pins (bag of 10): | 516.800.924 |
| Spare batteries, pack of 4 x AA
Nickel Metal Hydride: | 516.800.925 |

801AP

17A-05-AP

2 11/02

MAIN MENU DISPLAY	ACTIONS
'Address Program'	Read/Writes the address of the connected addressable device
'Analogue Values'	Displays the analogue values of the addressable device
'Measure Temp.'	Measures temperature in degrees C and F (only available on detectors which have a temperature sensing element)
'Measure CO Level'	For CO detectors only. Gives values for CO levels in the measuring environment. Normal value is zero PPM (parts-per-million)
'Self Test'	Performs a self test if the detector has such a facility
'Dirtiness'	Indicates the contamination level of the optical chamber expressed as a percentage, where 100% is the fault level
'Serial Number'	Displays the unique serial number of the addressable device
'Manufacture Date'	Displays the date of manufacture of the device
'Commission Date'	Displays the date of device commissioning
'Device Type ID'	Displays the device type identification value
'LED Mode'	<ul style="list-style-type: none">• Blnk - flashes each time the device is polled• Off - switches OFF the blinking option• Tst - tests of the LED
'Digital Inputs'	Displays the status of the digital inputs in addressable devices
'Digital Outputs'	Allows the user to set the digital output of the addressable device
'Test RI Terminal'	Tests the Remote Indicator output
'Test L2 Terminal'	Tests the Functional Base interface output
'Backlight'	Switches the backlight ON/OFF
'Auto-Power Off'	<ul style="list-style-type: none">• Dn - decreases the time• Set - sets auto power OFF to the selected time• Up - increases the time
'Store Settings'	This customises the Store Settings which are: Auto Power-off time and Customer Code. <ul style="list-style-type: none">• Def - returns to default settings• CIU - clears 'used addresses' memory• Sto - stores changed settings
'Customer Code'	Not normally used, but it should be set to the same as the customer code in the detector
Low Battery	Indicates Low Battery by using a flashing cursor in the bottom right of the LCD display
CPU Reset	Switch is accessed through a small hole at the rear of the unit near the label

Table 1: Functional Reference table

JM/jm 19th November 2002