

## 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 9).

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
------	------------------

##### 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

4 8/07

## 2.2 ELECTRICAL

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/SAB801.

## 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.**

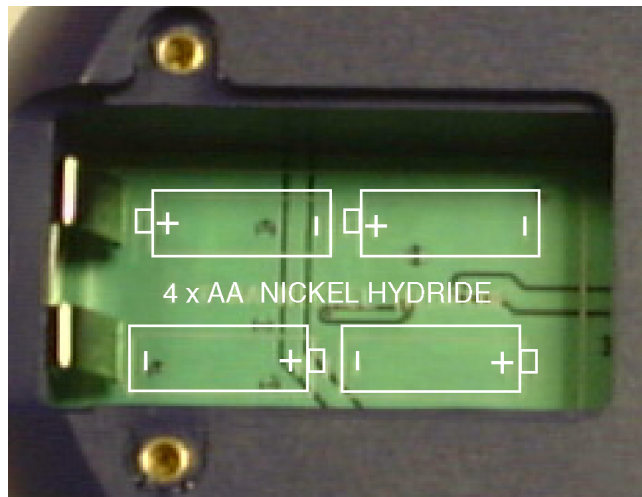
**DO NOT OPEN BATTERY LID WHILE THE UNIT IS SWITCHED ON.**

### 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 AND FULLY CHARGED BEFORE USE.**

#### 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 7.

#### 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 2.30.2012E
```

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:

```
Phone Base  
Password:
```

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':

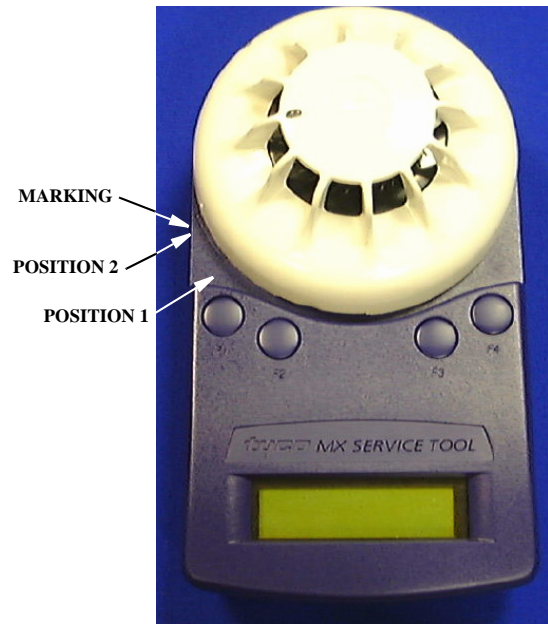
```
Hours Left: 46 (example)  
Password:
```

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

```
<-- Select -->  
ADDRESS PROGRAM
```

This is the start of the main menu options, which are discussed further in para. 3.5.

### 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 only a detector or ancillary at any one time. However, the Service Tool is equipped with a port interlock feature. When the ancillary lead is connected to the 'Aux' socket, communication with the detector will be disabled. When the ancillary lead is removed, the detector will be able to communicate.

2) On older models of the 801AP Service Tool, the detector had priority for communication. Newer models of the 801AP, where the ancillary has priority, can be identified by the C-tick mark on the product identity label on the underside of the tool (see Fig. 10 on Page 8)

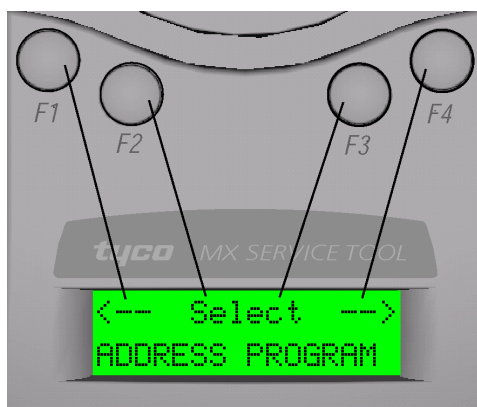
3) The 801AP may be connected to an ancillary device that is also connected to and powered from the addressable loop. However, a 'No Response' fault for that device may be generated at the Control Panel under these conditions.

**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.



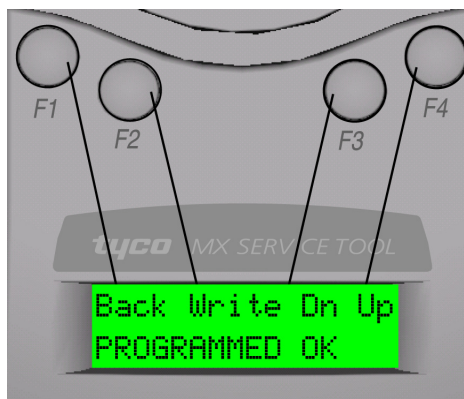
**Fig. 5 First Display Screen of the main menu**

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**

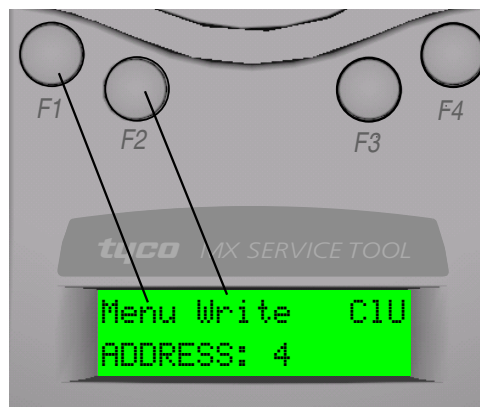
The **bottom line** displays information to the user. The **top line** displays the available options.

*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'

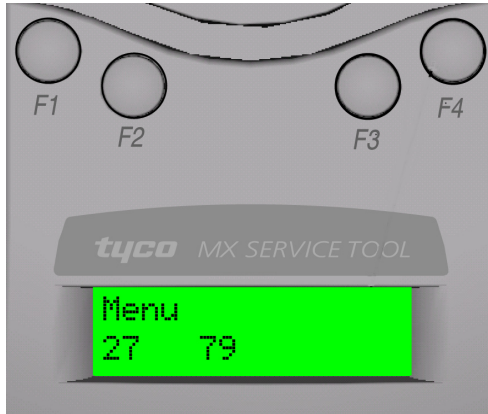
In some cases there may be fewer options available.



**Fig. 7 Example of Reading an address**

Fig. 7 shows:

- F1 selecting 'Menu'
- F2 selecting 'Write'
- F3 no action
- F4 clear used memory map



**Fig. 8 Example of Single Option**

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

### 3.5 FUNCTIONALITY

#### ADDRESS PROGRAM

```
<-- Select -->
ADDRESS PROGRAM
```

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).

```
Menu Write CIU
ADDRESS:4
```

- Use 'Write' to program the device with a new address
- 'Menu' to return to the main menu
- CIU to clear the memory map of used addresses

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

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

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

```
Back Write Dn Up
ADD:4
```

- 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:

```
Back Write Dn Up
PROGRAMMED OK
```

This is followed by:

```
Back Write Dn Up
ADD:5
```

Having programmed an address, the Service Tool moves to the next sequential unused address.

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

```
Back Write Dn Up
ADD:6 USED
```

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

```
Back Write
ADD.USED:6
```

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

#### ANALOGUE VALUES

ANALOGUE VALUES displays the analogue values of the attached device.

```
Menu
VAL:27 87 XX
      |   |   |
      |   |   | SEE NOTE 1
      |   |   |
CHANNEL 1 CHANNEL 2
```

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.

*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
```

## TEST ALL

This option combines a test on the detector R1 and L2 terminals and tests the detector's sensor circuitry for units which have this facility.

- The Test R1 terminal tests the remote indicator output.
- The Test L2 terminal tests the functional base interface output.
- The Selftest tests the sensor input circuitry. Completion of the Selftest may require a maximum of 30 seconds.

Following the completion of all three tests, a test report is displayed on the LCD. Each test can result in a PASS, FAIL or NOT AVAILABLE report message.

To start a new test, select the TEST ALL menu to begin.

WAIT is displayed until all tests are completed.

When the tests are complete, the test results are reported on three alternating displays:

```
Menu TEST R1:  
PASS
```

```
Menu TEST L2:  
PASS
```

```
Menu SELFTEST:  
PASS
```

Self Test is available on the following types of detectors:

- MX Ionisation.
- MX Optical + Heat (including 814P). (Optical sensing element only).
- MX CO + Heat (CO sensing element only).
- MX Flame.

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

## DIRTINESS

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

Available for detectors with an optical sensing element only. Indicates the 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.*

## DEVICE TYPE ID

Device Type ID displays the unique value associated with each addressable device Model No., eg, for Model No. 801PH - Type Value 10 is displayed.

```
Menu  
Device Type: 10
```

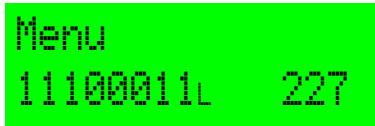
Type Value may be cross-referenced to Model No. by referring to Table 2 on Page 10.

---

## DIGITAL INPUTS

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

The binary number is aligned with the least significant bit on the right as indicated with a small 'L' character.



## DIGITAL OUTPUTS



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.**

---

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



An LED test may be performed on addressable devices using the digital output function. Move the cursor to the eighth bit on the far-right and toggle this bit "1". The LED should illuminate red on all models".

---

## 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.

---



### 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.

### LOW BATTERY

This is indicated by a flashing symbol 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.

### LCD BACKLIGHT

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

### AUTO POWER OFF

AUTO POWER OFF is designed to save battery life. If there have been no button presses during the last 5 minutes, the Service Tool automatically turns itself off.

# 801AP

17A-05-AP

4 8/07

## 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).

*Note: On later models of the 801AP Service Tool, the Ex dongle adaptor is not required for programming Intrinsically Safe 800Ex detectors. The applicable models of the 801AP can be identified by the C-tick mark on the product identification label on the underside of the tool. See Fig. 10.*

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**



C-TICK MARK

**Fig. 10**

## 3.7 PROGRAMMING LEAD

The new version of hardware (with the C-tick mark, on the product identification label, Fig. 10) is compatible with download lead 801PL PMS MX Programming Lead (S/C No. 516.800.929) but is not compatible with earlier download lead AVRISP-02 PMS MX Programming Lead (S/C No. 516.800.928)

## 3.8 ACCESSORIES

### 3.8.1 ACCESSORY KIT (516.800.923)

Consisting of:

- Carry case
- Car lighter adaptor
- Shoulder strap

### 3.8.2 SPARES

- Spare ancillary lead: 516.800.922
- Ancillary lead spare pins (bag of 10): 516.800.924



MAIN MENU DISPLAY	ACTIONS
'Address Program'	Read/Writes the address of the connected addressable device Reads the stored address map of used addresses
'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)
'Test All'	Performs: a self test if the detector has such a facility remote indicator output functional base interface output
'Dirtiness'	Indicates the contamination level of the optical chamber expressed as a percentage, where 100% is the fault level
'Device Type ID'	Displays the device type identification value
'Digital Inputs'	Displays the status of the digital inputs in addressable devices
'Digital Outputs'	Allows the user to set the digital outputs of the addressable device
'Customer Code'	Not normally used, but it should be set to the same as the customer code in the device
<b>Low Battery</b>	Indicates Low Battery by using a flashing symbol in the bottom right of the LCD display
<b>CPU Reset</b>	Switch is accessed through a small hole at the rear of the unit near the label
<b>LCD Backlight</b>	The display can be temporarily illuminated by pressing any two buttons simultaneously

**Table 1: Functional Reference table**

DESCRIPTION	MARKET	MODEL	TYPE VALUE
Optical smoke + Heat	Europe	801PH	10
	Marine	811PH	11
	Australia	814PH	13
	IS Baseefa	801PHEX	14
	France	816PH	18
	Ex 'n' Baseefa	811PHEXn	11
Optical Smoke	Europe	813P	15
	Australia	814P	17
	France	816P	19
High sensitivity optical smoke	Europe	801PS	17
Heat only	Europe/ France	801H/816H	20
	Marine	811H	21
	Australia	814H	23
	IS Baseefa	801HEX	24
	Ex 'n' Baseefa	811HEXn	21
CO + heat	Europe	801CH	30
	Marine	811CH	31
	Australia	814CH	33
	IS Baseefa	801CHEX	34
	Ex 'n' Baseefa	811CHEXn	31
Ion	Europe	801I	40
	Australia	814I	43
Plug in – Flame Detectors	World land	801F	65
	IS	801FEX	66
	Marine	811F	68
	Marine IS	811FEX	69
CO + heat +optical	Europe	801PC	70
	Marine	811PC	71
Sounder module	Europe	SAM800	80
Sounder module + beacon	Europe	SAB800	81
Sounder module + beacon	Europe	SAB801	82
Mini-Input Monitored	All	MIM800	128
Callpoints			
Indoor	UK/ Europe/ France	CP820	129
Outdoor	UK/ Europe/ France	CP830	130
Indoor Marine	UK/Europe	CP820M	131
Outdoor Marine	UK/Europe	CP830M	132
Ex 'n' Callpoint	EX 'n' Baseefa	CP830EXn	132
DIN Indoor	Europe	DIN820	133
DIN Outdoor	Europe	DIN830	134
Mini-Input Monitored	Aus/NZ	MIM801	138

Table 2: Type Values

DESCRIPTION	MARKET	MODEL	TYPE VALUE
IS Call point	IS Baseefa	CP840EX	139
Contact Input Monitor	All/France	CIM800	145
Detector Input Module	All	DIM800	146
IS Interface module	IS Baseefa	IF800EX	147
Single Input/ Output module	All	SIO800	148
Detector Driver Module	All	DDM800	149
Relay Interface Module	All/France	RIM800	161
Power Supply Monitor	All	APM800	162
Door Control Module	Europe	TSM800	165
Sounder/ Notification Mod	All	SNM800	177
Loop Powered Sounder	All	LPS800	178
Aspirating Detector	All	VLC800	179
Extinguishing Module	All	LAV800	180
Beam Detector Module	All	BDM800	181
Loop Powered Symphoni Sounder (Indoor)	UK/ Europe/ Middle East/Asia	LPSY800-R/W	183
Loop Powered Symphoni Sounder (Outdoor)	UK/ Europe/ Middle East/Asia	LPSY865	183
Loop Powered Symphoni AV (Indoor)	UK/ Europe/ Middle East/Asia	LPAV800-R/W	184
Loop Powered Symphoni AV (Outdoor)	UK/ Europe/ Middle East/Asia	LPAV865	184
Dual Input Output Module	All	DIO800	193
Multi Input Output Module	All/France	MIO800	194

Table 2: Type Values

JM/an

24<sup>th</sup> August 2007