ESP
ELITE SECURITY PRODUCTS

Electronics Line

FIRE CONTROL Panel

MAG8/16

USER MANUAL
Version 1.3

READ THIS MANUAL BEFORE CONNECTING THE EQUIPMENT AND KEEP IT SAFE FOR FUTURE REFERENCE.

To call our technical support line dial
+44 (0) 121 786 1881

Contents   Page

General Information

The system is to be installed by a qualified person to the latest Fire Alarm and Installation Regulations which are mandatory in the applicable country of installation.

Before commencing the installation of this Fire Alarm Panel, ensure it is sited in a position, which is visible to the Fire Brigade when entering the premises, and where ease of access is provided for users and service engineers. Space must be available to easily open external and internal doors.

The Electrical Supply to the panel must be isolated and must not be capable of being accidentally switched off. A 'Lockable Switch fuse Unit' positioned within 2 meters of the panel should be clearly labelled FIRE ALARM - DO NOT SWITCH OFF.

EN 54-2 compatible panels.

Using the MAG 8 Controls

• Refer to the instructions on the inside of the outer door.

Indications / Outputs

NORMAL: • The **green** lamp next to the 'power Supply 230 v' will be illuminated.

FIRE: • Two integrated **red** common FIRE LED's and a zone identification LED will flash together on receipt of a FIRE condition and become steady after the Silence Alarm button is pressed.

• An internal buzzer will operate until silenced.

• The external sounders will operate.

• The FIRE relay will energize.

FAULT: • A **yellow** General Fault LED will always illuminate together with an external or internal identification LED.

• An internal buzzer will sound.

• The FAULT relay will de-energize.

Faults are monitored as follows:

• Zone fault - open or short circuit. Detector head removed.

• Sounder Circuit One fault - open or short circuit, reverse connected sounder, or bad sounder parameters.

• Sounder Circuit Two fault - open or short circuit, reverse connected sounder, or bad sounder parameters.

• A.C. Loss or Battery charger fault.

• Battery Loss.

• Low Battery condition.

• 24V DC Supply fault.

• Processor fault.

• Auxiliary supply fault.

• Short circuit to earth.

All fuses are monitored and will cause a fault condition should they fail. Selecting an 'Engineers Facility' will indicate and announce a Fault condition at the panel.

NOTE: FAULT CONDITIONS WILL NOT BE ANNOUNCED INSTANTLY. THERE WILL BE A SHORT DELAY WHICH WILL VARY FROM CONDITION TO CONDITION. FAULTS WHEN CLEARED WILL AUTOMATICALLY RESET AT THE PANEL.

Engineers Facilities:

MAG 8 has the ability to select various facilities to assist the engineer during installation and testing of the system. These facilities include:

Zone Test - Individual zones can be tested and activated without the need to return to the panel to effect a RESET. This is done automatically by the panel.

Isolate Sounders - System can be tested without operating the Sounder circuits.

Disable / Enable Zone - Each zone can be disabled / enabled.

Installing the Panel

- Decide the best location for the panel position, with an ambient temperature between 5degrees C and 40 degrees C., away from heating systems, environmental dust and potential water ingress.
- Remove all packaging.
- Remove the protective coating covering the display window.
- Inspect the panel for any damage.
- Unpack the Door Key from the plastic bag.
- Carefully remove the outer door, by inserting the key, turning the key anti-clock wise. Open the door and un-plug the earth bonding connection. Slide the door upward and pull it away from the back box. Stow the door in a safe position.
- Unscrew the inner door fixing screws and insert a finger in the rectangular 'hole' to pull open the door. Un-plug the earth bonding connection and un-plug the wiring cable loom from the door connection. Slide the door upward and pull it away from the back box.
- Stow the door in a safe position.
- Internally inspect the PCB's and make sure the internal components are firmly in place.
- Choose which cable entry points to knock out and carefully remove the knock-outs.
- Observe the top center fixing location at the back of the panel.
- Stow the back box in a safe position.
- Drill the wall to suit the back box center fixing position, plug and insert a fixing screw.
- Temporally hang the back box from the fixing screw and mark out the two bottom left and right fixing locations.
- Remove the back box from the center fixing screw position and drill and plug the bottom fixing holes.
- Hang the back box from the center fixing position and fix securing screws through the bottom fixing holes.
- Tighten all the fixing screws.
- Route the external cables onto the back box, make off connection glands etc., **BUT DO NOT make any connections at this stage. ENTER THE MAINS CABLE THROUGH ITS OWN CABLE ENTRY POINT AND KEEP MAINS WIRING AWAY FROM SYSTEM AND OTHER LOW VOLTAGE WIRING.**
- Connect the mains supply and earth to the main terminal block **BUT DO NOT** apply the main electrical supply at this stage.
- Position the two standby batteries in an upright position, by inserting the left hand battery first and so the battery terminals are together in the center.
- Unpack the battery connection lead from the plastic bag and connect a positive of one battery to a negative of the second battery.
- Re-connect and re-fit the inner door.

The panel is now ready for testing.

Testing the Panel

- Connect the battery leads from the black power supply box to the remaining positive and negative battery terminals.
- Apply the mains power.
- If the buzzer and indicator LED's are operating, press the RESET button.
  Once operating normally only THE POWER SUPPLY 230V LED will be illuminated on the fascia label and the power LED will be illuminated internally on the black power supply box.

If in the Normal Operating Mode other LED's are illuminated and the buzzer is sounding, carefully check that fuses and connections are sound. Refer to the part of the internal connections or circuitry the associated yellow LED's apply to. The connection diagram on the back of the internal door will assist in identifying the LED.

NOTE: The battery might show a 'Low Battery Fault' initially until it has had time to charge up to the required level.

If by some chance the fault will not cancel, and only on the advice of our Technical Support Department, <u>return the P.C.B. ONLY to your supplier. DO NOT return the metal box.</u>

Once the panel is found to operate satisfactorily in the NORMAL MODE, it is time to connect the external circuits.

It has been assumed that prior to making the connection at the panel, the integrity of the system wiring has been comprehensively tested, including insulation to earth.

• Disconnect the mains supply and a battery connection.

• Fit the Active End of Line Device to the last detection device of zone one.

• Ensure all terminations are made correctly and all detector heads are plugged into their bases.

• Connect Detector circuit **ONE** to the panel terminal block.

• Power up the panel with the mains and battery.

• Press RESET button.

The panel should be in the 'NORMAL MODE.'

NOTE: If General Fault and zone 1 FAULT LED's illuminate, there is a wiring / connection problem. Check the polarity of the connection, the connection of the devices and whether a head is removed. Check the EOL proper polarity and position.

• Operate **ALL** detection devices applicable to this zone to ensure correct receipt of a fire signal and the correct operation of the panel controls. Refer to the User Instructions on the inside of the outer door.

• Repeat the connection process for all zones as stated above. **ENSURE** the supply voltages are initially disconnected prior to each stage.

ONCE THE CONNECTION OF THE ZONES IS COMPLETED, CONNECT AND TEST ANY OF THE OTHER AUXILIARY CIRCUITS <u>BEFORE</u> CONNECTING THE EXTERNAL SOUNDER CIRCUITS.

Relay Connection - The onboard relay volt free change over terminals are for low voltage use only.

MAINS SUPPLY MUST NOT BE APPLIED TO THESE TERMINALS.

Once the zone and auxiliary circuits have been connected and tested to function correctly, it is time to connect the first external sounder circuit:

• Disconnect the mains and battery supply.

• Remove the End of Line Monitoring Resistor from the terminal block of sounder circuit 1 (SND 1) and fit to the last sounder of circuit one.

• Check all sounder connections are made.

• Connect the sounder circuit to the panel terminal block.

• Apply mains and battery power.

• Press RESET

The panel should be in the 'NORMAL MODE.'

- Repeat the connection process for the second external sounder circuit, as stated above. **ENSURE** the supply voltages are initially disconnected prior to each stage.

NOTE: If General Fault and SOUNDER FAULT / DISABLE LED.'s illuminate, there is a wiring / connection problem. Check the polarity of the connection of each of the devices, the polarity of the connection of the devices to the Panel terminal block or whether an earth fault exists.

Once all the external circuits have been connected, and the panel is operating correctly in its NORMAL MODE, the panel can be programmed to suit each individual system application.

System **Programming**

Delayed Sounders:

The MAG 8 has the ability to delay the operation of the external sounder circuits, but announce immediately at the panel the receipt of the FIRE condition. After the selected delay period, (which could give the user time to investigate the cause and effect of the fire) the Panel will operate the external sounders.

To program the panel to Delay the External Sounders from 1 to 10 minutes :

- Refer to the 'Time Delay Table' on the diagram on the inside of the internal door.
- Identify the programming 'jumper switches' marked TIME DELAY on the MAINBOARD.
- Position the 'jumper switches' as per the diagram to suit the Time Delay required.
- **Press the reset button to effect the programming change.**

Double Action Mode:

This feature allows for the receipt of two 'alarm calls' on all zones, before announcing a FIRE condition. The feature has been included to assist with the prevention of false alarms.

- Connect a jumper switch across the 'DOUBLE' terminals at the top of the MAINBOARD.
- **Press the reset button to effect the programming change.**

Immediate Mode:

Immediate Mode overrides by zone, the global programming of Double Action Mode and Time delay.

- Identify the 'jumper switches' on each of the zone cards.
- Connect the jumper across the applicable zone terminals to effect the Immediate Mode.
- **Press the reset button to effect the programming change.**

Master Mode:

The jumper switch will only need connecting across these terminals, if this panel is to become a MASTER and a second MAG will become the Slave. **In its 'stand alone mode' the jumper is not connected.**
- **Press the reset button to effect the programming change.**

Slave Mode:

The jumper switch will only need connecting across these terminals, if this panel is to become a SLAVE when a second MAG is the MASTER. **In its 'stand alone mode' the jumper is not connected.**
• **Press the reset button to effect the programming change.**

Engineers Facilities:

To Disable a Zone:

Press DISABLE / ENABLE button:	*DISABLE / ENABLE lamp will flash.*
	Zone lamp will flash.
Select zone by the following:	*Press the TEST / SCROLL button until the zone to be disabled is reached.*
	Press DISABLE / ENABLE button. The zone lamp will become steady.
Press RESET.	***At this point the zone is disabled.***

To Enable a Zone:

Press DISABLE / ENABLE button:	*Both lamps will flash.*
	The DISABLED zone lamp will remain steady.
Press the TEST / SCROLL button until the disabled zone is reached.	
Press DISABLE / ENABLE button:	*The zone lamp will change from steady to flashing.*
Press the RESET button:	*All the lamps will illuminate. Wait for the system to clear down.*

(Multiple zones can be disabled by repeating the DISABLE process when scrolling through the zones.)

To 'One Man' Test a Zone:

Press TEST / SCROLL button:	*TEST AND ZONE yellow LED's will flash.*
	Zone 1 is in Test Mode.
Press TEST / SCROLL button:	*Flashing LED will move down to zone 2.*
	Zone 2 is in test mode.

Continue the test process by pressing the TEST / SCROLL button. The Mode will automatically exit when reaching the final zone, or at any time, by pressing RESET.

Disable Sounders:

Press DISABLE / ENABLE button:	DISABLE / ENABLE lamp will flash
	Zone lamp will flash.
Press TEST / SCROLL button until it reaches zone 8.	
Press TEST / SCROLL button once again:	*DISABLE / ENABLE lamp will flash*
	SOUNDER FAULT / DISABLE lamp will flash.

Press DISABLE / ENABLE button:	*DISABLE / ENABLE lamp will become steady.*

Press RESET: *All the lamps will illuminate and go out, with the exception of SOUNDER FAULT / DISABLE lamp and the DISABLE / ENABLE lamp.*

The sounders are now disabled.

To enable the Sounders:

Press DISABLE / ENABLE button: *DISABLE / ENABLE lamp will flash.*

Press TEST / SCROLL button until it reaches zone 4 if four zones fitted or zone 8 if 8 zones fitted.

Press TEST / SCROLL button
once again: *DISABLE / ENABLE lamp will flash.*
                                               SOUNDER FAULT / DISABLE lamp will be steady.

Press DISABLE / ENABLE button: *DISABLE / ENABLE lamp will flash.*

Press the RESET button to return the system to NORMAL.

Connecting The Additional Facilities

Class Change:

Connect a 'non latching' switch to the class change terminals at the top of the MAINBOARD.

Operation of the switch will cause the external sounders to pulse one second on followed by one second off.

Connecting the Repeater Module:

It is possible to connect to and use any other MAG panel as a repeater. In this case the MASTER panel must be configured as the MASTER, by fitting the 'jumper switch' on the MAINBOARD pins.

The panel to be configured as the SLAVE, must fit the 'jumpers' between the SLAVE pins on the MAINBOARD.
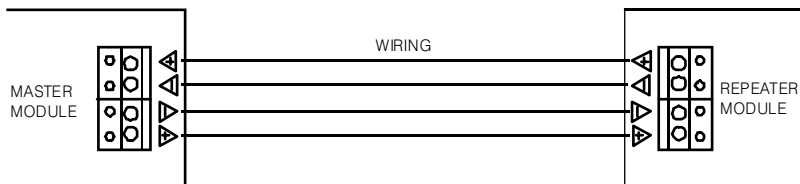
Connecting the Relay Module:

Zone operated relays can be operated by the connection of the Relay Module
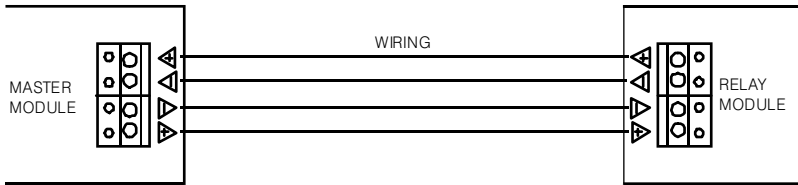
Connecting a Relay Module and a Repeater Module Simultaneously:
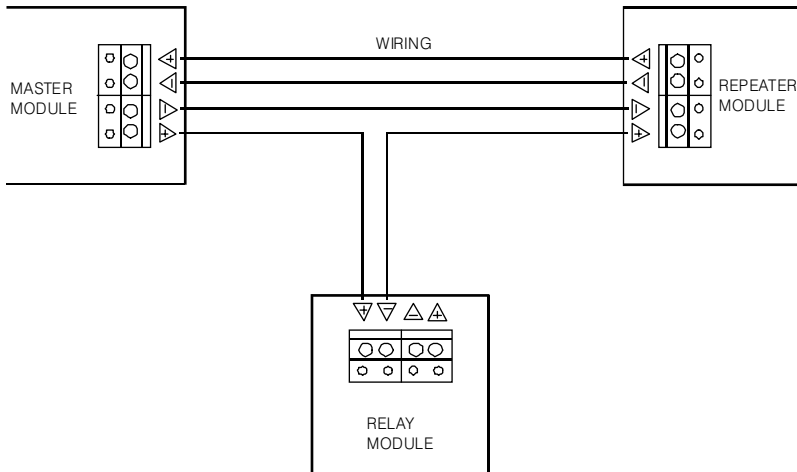
Connecting the Zone Relay Module:

The MR8 contains eight (8) free changeover contacts relays.

The MR8 is to be connected on the same wires as the Repeater module (see MAG8/16 User manual).

If a MAG16 is used then at least two MR8's need to be used to cover all sixteen zones.

In case a fire alarm is detected on a zone in the host panel (MAG8 or MAG16) the MR8 responds by switching ON the corresponding relay.

The MR8 has to be configuring by internal jumpers as follows:

- The range of zones (from 1 to 8 or from 9 to 16) that correspond to the 8 relays on the MR8 by means of one jumper on the PCB.
- The type of free changeover contacts for each zone individually by means of eight jumpers on the PCB.

Relay module terminals
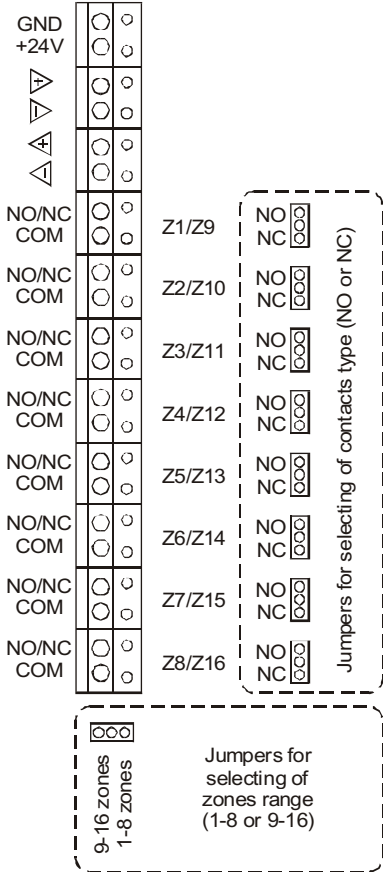
Technical Specifications

Number of relays	8
Power supply	24V
Current consumption in quiescent condition	8mA
Additional current consumption for every relay switched ON	10mA
Maximum ratings of volt-free changeover contacts:	12V/1A or 24V/0,5A
Max voltage	125V
Max current	2A
Cabling	Recommended wires section 1,5mm^2 Terminal max. wire diameter 2,5mm
Environment	Working temp.: 0°C to 40°C Storage temp.: -20°C to +60°C Humidity 0 to 95% (non condensing)

Specification

Maximum number of detectors per zone	Up to 32 *conventional detectors and unlimited number of manual call points.

Thresholds for zone conditions

• 0 - 2 mA	Open circuit fault condition.
• 2 - 6 mA	Normal condition.
• 6 - 110 mA	Fire Alarm condition.
• 110 - Short circuit	Short circuit condition.

Power Supply

Main Power supply	230 V AC $\pm$ 10%
	0.8A fuse
Standby Power supply	2 x 12V (24V) Sealed Lead Acid Batteries
	Up to 7 Ah internally
	2A fuse

Current consumption from 230V AC in quiescent condition	80 mA for Mag 8
	125 mA for MAG 16

Current consumption from batteries in AC fault condition	85 mA for MAG 8
	125 mA for MAG 16

Current consumption from batteries in FIRE condition	240 mA for MAG 8
	280 mA for MAG 16

Outputs

Sounder Circuit 1	24V / 0.5 A
	0.5A fuse
Sounder Circuit 2	24V / 0.5 A
	0.5A fuse
Fault Relay	volt free changeover contacts
	12V / 1A or 24V / 0.5A
	Max voltage 125V
	Max current 2A

Auxiliary output	24V DC 0.5A fuse
Cabling	Maximum 2.5mm diameter
Environment	Working temperature 0 to 40 degrees C
	Storage temperature -20 to 60 degrees C
	Humidity 0 to 95%

Notes

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

....

CALL POINT   DETECTOR   CALL POINT   DETECTOR

EOL   RED   FIRE PANEL
BLACK

LAST DEVICE ON ZONE
RECOMMENDED USE SCHOTTKY DIODE TYPE BYV-1060
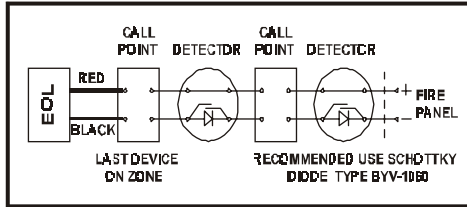
UP TO 32 AUTOMATIC DETECTORS AND UNLIMITED NUMBER OF CALL POINTS FOR EACH ZONE

NOMINAL CURRENT PER ZONE:

I < 2 mA - OPEN ZONE
I = 2 - 6 mA - NORMAL CONDITION
I = 6 - 105 mA - FIRE CONDITION
I > 120 mA - CURRENT LIMITED

MAG 8/16 Conventional Fire Alarm Panel

18010036

BATTERY FUSE: (T) 2A

POWER SUPPLY

24V 0,5A AUX + −   CLASS CHANGE   REPEATER   TIME DELAY   DOUBLE MASTER SLAVE

min 1 2 4 8   TIME (min)

FAULT INDICATION

REPEATER / MASTER
SOUNDER 1
SOUNDER 2
AUX
ZONE POWER
EARTH
LOW BATT
LOSS BATT
AC
PROCESSOR

POWER SUPPLY

INDICATION CONNECTOR

FIRE OUTPUT   FAULT OUTPUT
NC NO COM NO NC COM

24V AUX FUSE: (T) 0,5A

SOUNDER OUTPUT 1 24V / 0,5A
SOUNDER1 FUSE: (T) 0,5A

SOUNDER OUTPUT 2 24V / 0,5A
SOUNDER2 FUSE: (T) 0,5A

END OF LINE RESISTORS 10k

MAINBOARD

EOL   D   D   ZONE 1 + −
EOL   D   D   ZONE 2 + −
EOL   D   D   ZONE 3 + −
EOL   D   D   ZONE 4 + −

EXPANDER 4 ZONES

ZONE

CALL POINTS

~230V / 0,3A NOMINAL CONSUMPTION

FUSE: (T) 230V 0,8A

L   L
N   N

FUSE: (T) 230V 0,8A

14

Fire Alarm Record

Installation Address: ....
....
....

Contact Person: ....

Telephone: ....

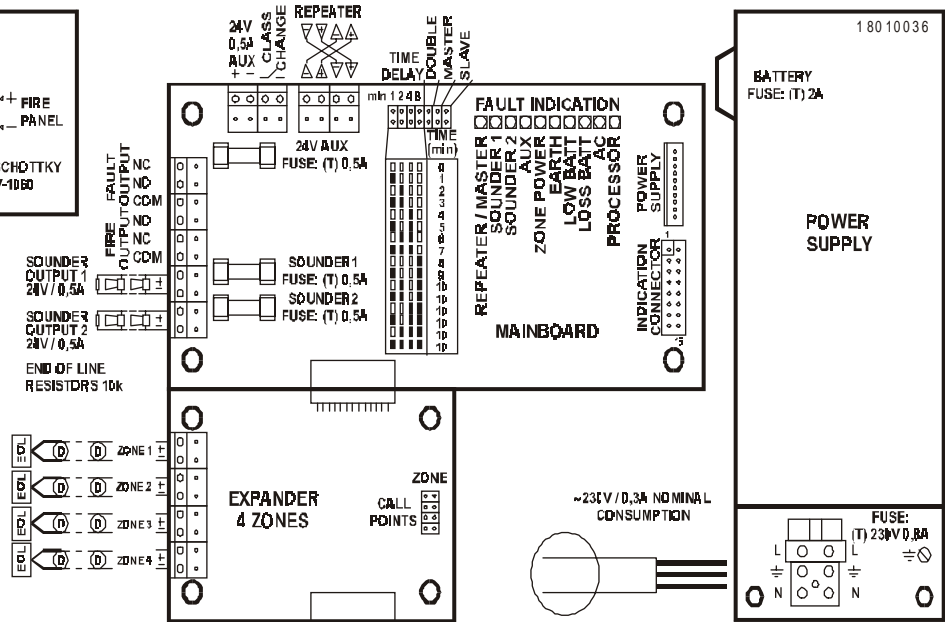**Fax:** ....

Date Completed: ....

Commissioned By: ....

Contract Reference: ....

Service Intervals: Monthly / Quarterly / Half Yearly / Annually

ZONE NUMBER	LOCATION	DETECTOR TYPE and QUANTITY PER ZONE					SOUNDERS Zone Quantity and Related Circuit	
		Ion	Ph	RoR	F/T	C.P.	Circuit 1	Circuit 2
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
13								
14								
15								
16								
	TOTALS:							

System Installed By: ....
....

Telephone: ....

Fax: ....

Service Record

Date Completed	Zones Tested	Faults Rectified	Signature of Engineer	Next Visit Due
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		Name:	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		Name:	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		Name:	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		Name:	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		Name:	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		Name:	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		Name:	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		Name:	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		Name:	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		Name:	
	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16		Name:	

Fire Alarm Event Log

DATE	TIME	FIRE yes/no	ZONE	FAULT yes/no and TYPE	ACTION TAKEN	NAME

E.S.P.
Elite Security Products
Unit 7 Leviss Trading Estate,
Stechford, Birmingham
B33 9AE
Tel.: 0121 789 8111
Fax: 0121 789 8055

Distributed by:

18020100