

Simplicity Plus

64 OR 126 DEVICE CAPACITY,
SINGLE LOOP ANALOGUE ADDRESSABLE FIRE ALARM CONTROL PANEL



INSTALLATION MANUAL

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1. INTRODUCTION

THIS FIRE ALARM CONTROL PANEL IS CLASS 1 EQUIPMENT AND MUST BE EARTHED

This equipment must be installed and maintained by a qualified and technically experienced person.

1.1 HANDLING THE PCBs

If the PCBs are to be removed to ease fitting the enclosure and cables, care must be taken to avoid damage by static.

The best method is to wear an earth strap, but touching any earth point (eg building plumbing) will help to discharge any static. Hold PCBs by their sides, avoiding contact with any components. Always handle PCBs by their sides and avoid touching the legs of any components. Keep the PCBs away from damp dirty areas, e.g. in a small cardboard box.

1.2 USING THIS MANUAL

This manual explains, in a step-by-step manner, the procedure for the installation of the **Simplicity Plus** Range of Fire Alarm Control Panels. For full operational and maintenance information, please refer to document GLT.MAN-108 (USER MANUAL, MAINTENANCE GUIDE & LOG BOOK). It also contains a System set-up table, and Installation Certificate, that must be completed by the Commissioning Engineer prior to system handover.

Unlike the User Manual, this Installation Manual must not be left accessible to the User.

1.3 ABOUT THE SIMPLICITY FIRE ALARM PANEL & INTEGRAL PSE

- The SIMPLICITY Fire alarm control panel is a one loop analogue addressable Fire Alarm Control Panel, with the loop split into 4 or 8 Zones.
- It has a set of terminals to drive a 24V fire relay- allows user to select appropriate relay for their application.
- It has a set of terminals to drive a 24V fault relay- allows user to select appropriate relay for their application. This output is normally powered to allow a fault signal in the case of total power failure.
- It has a class change connection to allow remote activation of the sounders. (not required by EN54-2)
- It has the ability to disable any zone or the addressable sounders.
- It has a one man test mode, which resets the zone in test after 8 seconds. (EN54 option with requirements)
- It has a maximum battery capacity of 7 Ah.

- It will operate in ambient temperatures of -5 to 40°C
- It will operate in a relative humidity of up to 93% (non condensing)
- It will withstand vibrations between 5 & 150 Hz
- It has a maximum capacity of 16 devices per zone
- The PSE is linear, with a 1.5A output at system voltage (18-32V)
- The mains supply is filtered before entering the transformer.
- The charger & battery are both fused at 1.6 (time delay)
- The PSE will draw a maximum of 25uA from the battery in the event of mains failure. (the FACP will continue to take around 60mA)
- The FACP & PSE should be maintained as described in section 3 of the User Manual, Maintenance Guide & Log Book.

1.4 DESIGNING THE SYSTEM

This manual is not designed to teach Fire Alarm System design. It is assumed that the System has been designed by a competent person, and that the installer has an understanding of Fire Alarm System components and their use.

We strongly recommend consultation with a suitably qualified, competent person regarding the design of the Fire Alarm System. The System must be commissioned and serviced in accordance with our instructions and the relevant National Standards. Contact the Fire Officer concerned with the property at an early stage in case he has any special requirements.

If in doubt, read BS 5839: Pt 1: 2002 "Fire Detection and Alarm Systems for buildings (Code of Practice for System Design, Installation, commissioning and maintenance)" available from the BSI, or at your local reference library.

1.5 EQUIPMENT GUARANTEE

If this equipment is not fitted and commissioned according to our guidelines, and the relevant National Standards, by an approved and competent person or organisation, the warranty may become void.

2. SIMPLICITY PLUS OVERVIEW

2.1 PANEL DESCRIPTION & DESIGN CONCEPT

The Simplicity Plus is a single-loop analogue addressable fire alarm control panel designed to EN54 part 2 & 4. It is available in two versions. Simplicity 64 allows 64 devices to be connected, and divided into 4 zones. Simplicity 126 allows 126 devices to be connected, and divided into 8 zones.

The Simplicity has been designed to only use addressable sounders (so that all devices sit on the same wiring loop). All sounders on a Simplicity panel will activate on any alarm.

It has been designed to give the advantages of an addressable system, with the simplicity of a conventional system. To help achieve this, the Simplicity Plus uses default values to cut out many of the programming steps normally associated with addressable panels. It also uses its LEDs as the Primary source of information, so in most cases, there is no reason to look at the screen, or access any menus. The screen is simply there to identify loop device fault locations, and to help in setting up the panel.

2.2 ADVANTAGES OF AN ADDRESSABLE FIRE ALARM SYSTEM

The table below lists the main advantages of addressable systems, and how our panels use them.

FEATURE	PREMIER AL	PREMIER AD	SIMPLICITY
UNIQUE ALARM IDENTIFICATION	PANEL, LOOP & ADDRESS	LOOP & ADDRESS	LOOP & ADDRESS
DEVICE LABEL	20 CHARACTERS	20 CHARACTERS	20 CHARACTERS
PREALARM	PROGRAMMABLE LEVEL	PRESET @ 45	PRESET @ 45
DETECTOR SENSITIVITY	PROGRAMMABLE (INCLUDING DAY/NIGHT SENSITIVITY)	PRESET @ 55	PRESET @ 55
ZONE ALLOCATION	PROGRAMMABLE	SET BY DEVICE ADDRESS	SET BY DEVICE ADDRESS
PROGRAMMING	FULL PROGRAMMABILITY	ZONAL ALARM OR COMMON ALARM ONLY	COMMON OPERATION ONLY
EVENT LOG	YES (200 EVENTS)	YES (2048 EVENTS)	YES (2048 EVENTS)

While all options are programmable on our larger Premier AL panel, the Simplicity uses pre-configured settings for most options.

Device sensitivity and pre-alarm levels are preset.

To simplify configuration, there is no zone allocation programming. Instead each loop is split into 8 zones, and each device is assigned to a zone by the address set with its 8 way dip switch.

Address 1-16	Zone 1 (Simplicity 64 or 126)
Address 17-32	Zone 2 (Simplicity 64 or 126)
Address 33-48	Zone 3 (Simplicity 64 or 126)
Address 49-64	Zone 4 (Simplicity 64 or 126)
Address 65-80	Zone 5 (Simplicity 126 only)
Address 81-96	Zone 6 (Simplicity 126 only)
Address 97-112	Zone 7 (Simplicity 126 only)
Address 113-126	Zone 8 (Simplicity 126 only)

The loop sounder operation is always common.

This leaves only the device label to be programmed by the installer.

2.3 IMPROVEMENTS FROM V1 CPU CARD

This version of the Simplicity panel has an upgraded CPU board to the previous version (Hence the name Simplicity Plus). The improvements include:-

- Real time clock
- Event Log (2048 events)
- Printer port (RS232)
- Repeater port on CPU card
- Improved fault messages
- Improved call point identification (Panel now identifies a call point alarm immediately)
- Improved sounder base starting & stopping time
- Option to disable individual points or whole zones
- Detector LED & sounder can be operated from the menu to help identify devices
- Panel software version can be viewed through menu.

To determine which version of CPU card is fitted to a panel, compare to the pictures below:-

Old CPU – 3 large ICs



New CPU – 2 small surface mount ICs



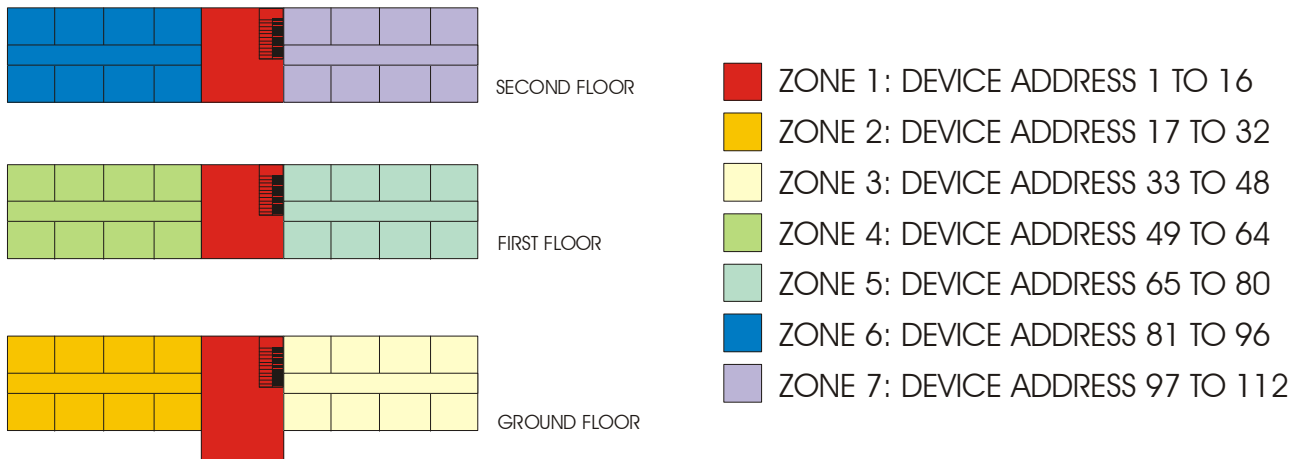
If the control panel has the OLD CPU card, then some of the options in this manual will not be applicable. Contact your supplier to obtain Version 1 manuals.

The upgraded CPU card can be retrofitted to a SIMPLICITY 126 with an earlier version card. Contact your supplier for details.

3. DESIGNING THE SYSTEM

Designing a Simplicity System is a fairly straightforward matter. It just takes a bit of thought to zone allocation during the system design stage.

1. Decide on the zone allocation for the system. Each zone can have a maximum of 16 devices fitted. Consider the simplified 3-storey building below.



The advantage of this method of zone allocation is that it simplifies the panel setup by eliminating a programming stage.

The main disadvantage of this method of zone allocation is the maximum zone capacity of 16 devices. If a zone has more than 16 devices it will need to be split into smaller zones.

Similarly, a zone with only one device would leave 15 empty addresses on that zone.

This will not cause a problem if it is considered at the system design stage.

(Note that a Simplicity 64 can only have 4 zones, so would not be suitable for the above system)

2. Sounder operation. On the Simplicity Panels, all sounders are common acting. That is, an alarm signal from any device will activate all sounders. If you require any kind of zonal sounder operation, ask your dealer about the premier AD & Premier AL Fire Alarm Panels.

3. Whenever possible, give each device as descriptive a label as possible. The better the description, the easier it is to locate in the event of an alarm. The panel allows 20 characters. It may be necessary to use abbreviations to achieve the required label.

4. Keep the design of the system, and any changes to it well documented. This makes it easier to trace any configuration errors during installation & commissioning.

4. FIRST FIX

4.1 Mounting the Control Panel

The control panel should be installed in accordance with the following recommendations:-

- The panel should be close to the main entrance of the building, so that it can be viewed by any fire-fighting personnel entering the building.
- It should be fitted to a sturdy wall that will not flex unnecessarily.
- It should be mounted at eye level, in order for it to be viewed without need of a ladder.
- It should be installed in a dry, weatherproof place, preferably NOT in direct sunlight.
- It should be easily accessible, so that the responsible person can perform their regular fire alarm checks.

4.2 RECOMMENDED CABLE TYPES AND THEIR LIMITATIONS

All wiring must be installed to meet BS5839: Pt1: 2002 and BS 7671 (Wiring Regs) standards. Other National standards of fire alarm system installation should be adhered to where applicable.

Screened cables should be used throughout the installation to help shield the Panel from outside interference and ensure EMC compatibility.

The two categories of cable according to BS5839: Pt1: 2002, Clause 26 "Fire Detection and Alarm Systems for Buildings (Code of Practice for System Design, Installation and Servicing)" are:

Standard fire resisting cable – to PH30 classification of EN 50200
Enhanced fire resisting cable – to PH120 classification of EN 50200
(Note that all cables should be at least 1mm² cross section)

On the Simplicity Panel the general recommendation would be to use standard fire resistant cable, such as GLT Exports Fire Defence Cable, Firetuff™, FP200 or an equivalent. These cables are screened, and will provide good EMC shielding when properly grounded at the panel. Certain system specifications may demand the use of a particular type of cable and due regard should be paid to this fact.

Depending on the environment, the cables may need mechanical protection (such as a conduit).

4.3 MAINS WIRING RECOMMENDATIONS

The Mains supply to the FACP is fixed wiring, using **Fire resisting** 3-core cable (Between 1 mm² and 2.5mm²) or a suitable 3-conductor system, fed from an isolating double pole switch fused spur, fused at 3A. **IT SHOULD NOT BE CONNECTED THROUGH AN RCD.** This should be secure from unauthorised operation and be marked 'FIRE ALARM: DO NOT SWITCH OFF'. The supply must be exclusive to the Fire Panel. **MAKE SURE ANY SPARE ENTRY HOLES ARE COVERED WITH THE GROMMETS PROVIDED**

For information on how to connect Mains to the Panel's Power Supply PCB, see page 8. Also refer to rating information on the mains cover inside the FACP.

5. MOUNTING THE FIRE ALARM PANEL

The Simplicity comes with many cable entry holes. If another entry hole is required, it is strongly recommended that the panels door be removed to avoid accidental damage. Also, the termination PCB should be removed and stored in a safe place. This would also help while fixing the back box to the wall.

5.1 PLANNING CABLE ENTRY

Fig.2 below shows the location of the cable entries to facilitate planning of wiring (home runs) to be brought to the panel.

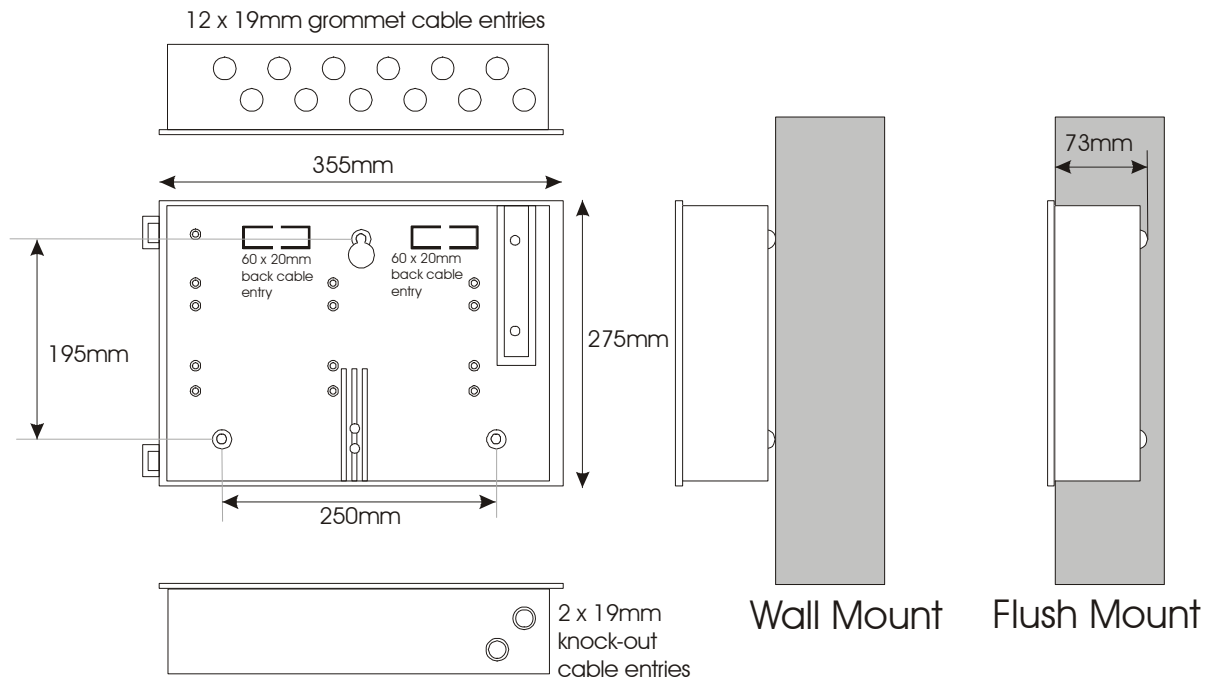
The grommets can be easily removed by a push from inside the control panel box.

If a grommet is removed, fill the hole with a brass cable gland. If any knockout is removed, but subsequently not used, it should be covered up.

The 230Va.c. Mains cable must be fed into the enclosure via one of the cable entries at the top right corner of the back box. (Refer to "Connecting the Mains" on Page 8).

5.2 FIXING THE BACK BOX TO THE WALL

Figure 2: Plan view inside the enclosure without PCBs. Side view for surface installation.



Fix the enclosure to the wall using the three mounting holes provided.

Check the build & condition of the wall to decide a suitable screw fixing.

The mounting holes are designed for No 8 roundhead or countersunk woodscrews (or similar).

Remove any debris from the enclosure.

Take care not to damage the FACP during installation.

6 CONNECTING MAINS & BATTERY POWER

6.1 CONNECTING THE MAINS POWER

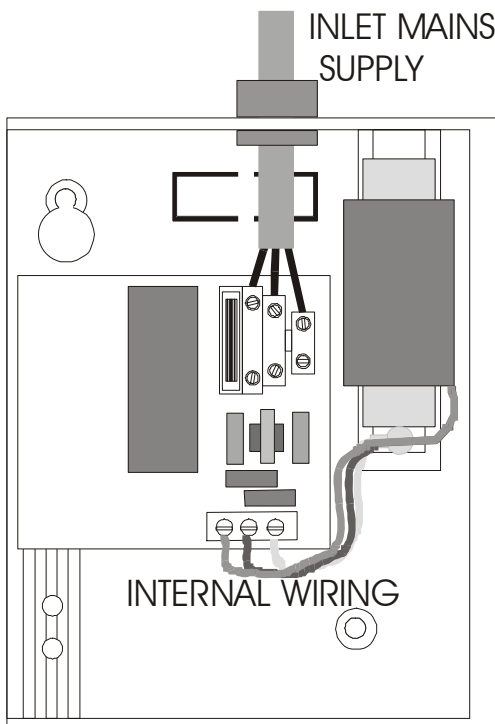


Figure 3: Power Supply PCB layout and Mains connection details

The panel should be connected to 220-240V AC by a 3A rated spur to the fuse box with 1mm² to 2.5mm² 3-core cable. Nothing else should be connected to this supply. The cable should be fire resistant

The Live, Earth and Neutral connections are marked on the PCB. The Mains is protected by a quick blow 20mm 2A HBC fuse. (Also known as HRC)

The incoming mains cable should be kept separate from the zone cables to help minimise mains interference.

Once the mains is connected, the protective cover should be replaced BEFORE turning on the mains power. This will minimise the chance of electric shock from the PCB.

MAKE SURE ANY SPARE ENTRY HOLES ARE COVERED WITH THE PLASTIC GROMMETS PROVIDED

It is advisable to apply power to the panel before connecting any devices, to check for correct operation, and to familiarise yourself with the fire alarm panels controls.

6.2 CONNECTING THE BATTERIES

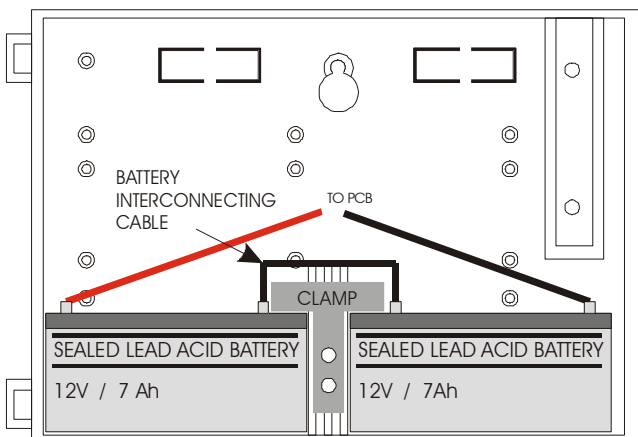


Figure 4: Battery location and connection details

Although there are many sizes of suitable battery, the sizes we usually recommend for the SIMPLICITY are 12V 7Ah.

To calculate the exact requirement, use the equation in section 16, BATTERY CONNECTIONS

The two batteries are wired in **series**.

The **+ve** of one battery is connected to the **red** battery lead.

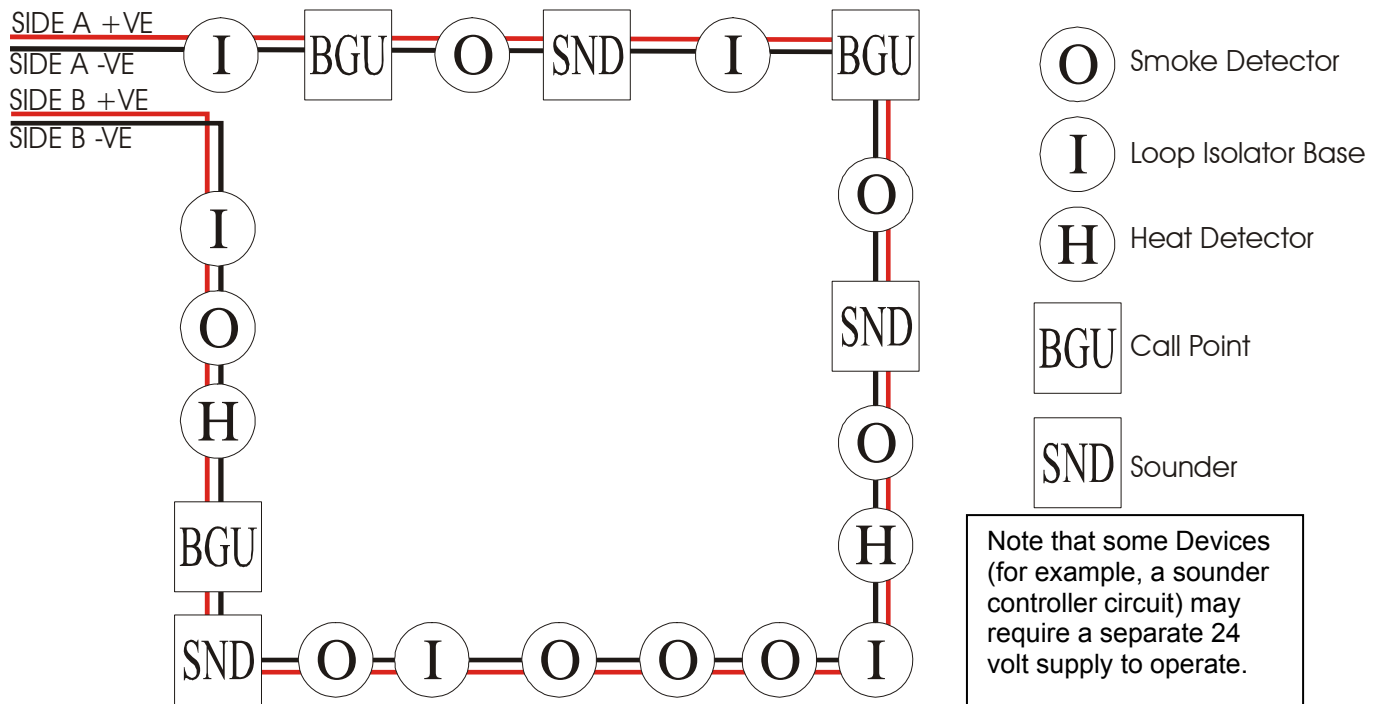
The **-ve** of the other battery is connected to the **black** battery lead.

The **-ve** of the first battery is connected to the **+ve** of the second battery using the link wire supplied.

When fitting the batteries, take care not to damage the temperature monitoring thermistor. This is used to prevent overcharging the batteries in high ambient temperatures.

7 ADDRESSABLE LOOP WIRING

The Simplicity comes with one addressable loop. Addressable detectors, addressable call points, addressable loop powered sounders and several other interface units can be connected to these loops. A MAXIMUM OF 126 DEVICES CAN BE CONNECTED TO THE LOOP. We recommend that the first and last devices on a loop have isolator bases fitted. Also the last device on each zone should have an isolator fitted. This is to prevent a short circuit fault in one zone effecting another zone.



A maximum of 32 loop-powered addressable sounders or sounder bases are permitted on the loop. On the Simplicity Panel, all Sounder Bases are always configured as common sounders.

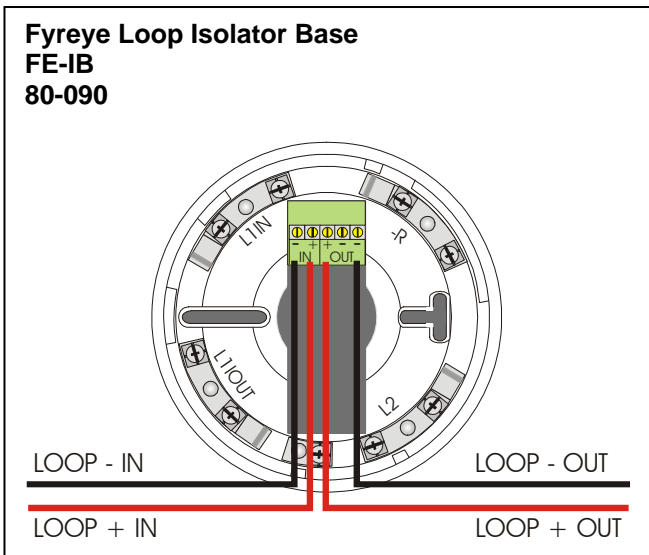
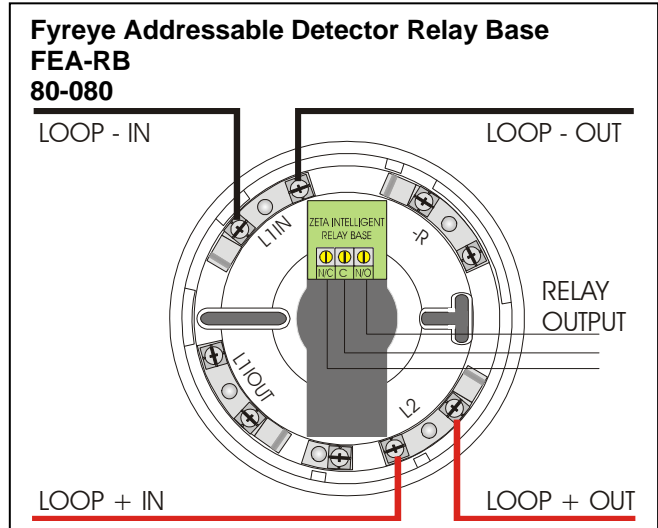
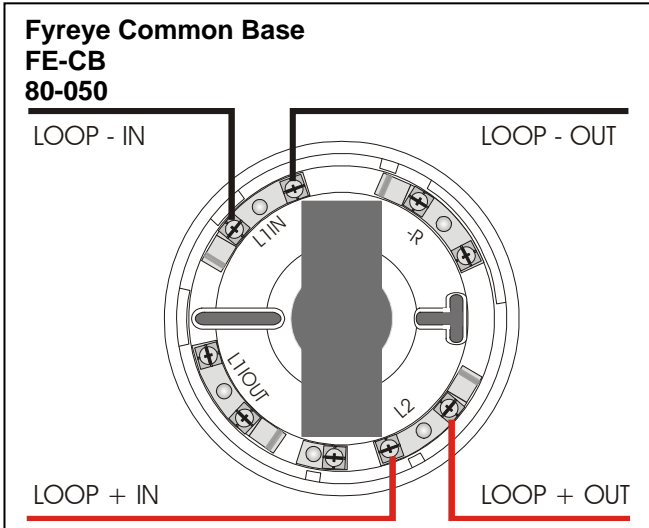
Short circuit isolators should be used to prevent losing the whole loop in the event of a single short circuit fault. They should be fitted to each zone boundary, such that any short circuit will only affect the devices in 1 zone.

The termination of each wiring circuit must be as indicated on the main PCB (See page 31). The Earthing of the cable screens should be as shown on page 17

Pre-Commissioning Cable Checks

1. +ve in to +ve out less than 24 ohms
2. -ve in to -ve out less than 24 ohms (may need to temporarily disable isolators to measure)
3. +ve to -ve greater than 500k ohm
4. +ve to Earth greater than 1M ohm.
5. -ve to Earth greater than 1M ohm.
6. +ve to -ve less than 50 mV pickup (on AC & DC scales)

7.1 SPECIFIC DEVICE WIRING INSTRUCTIONS

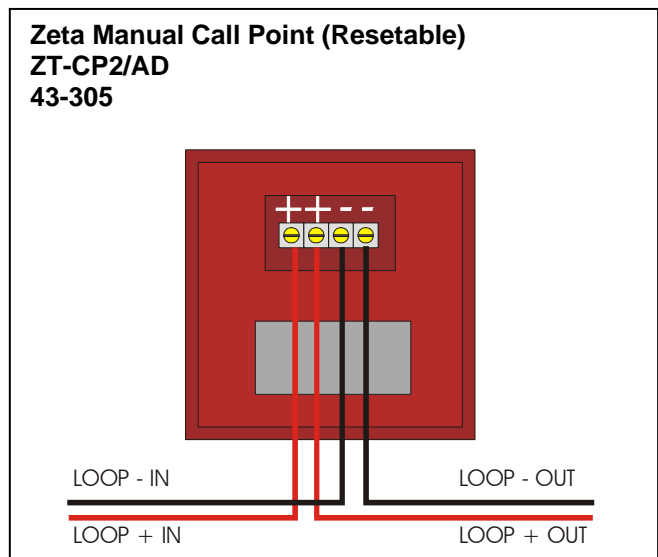
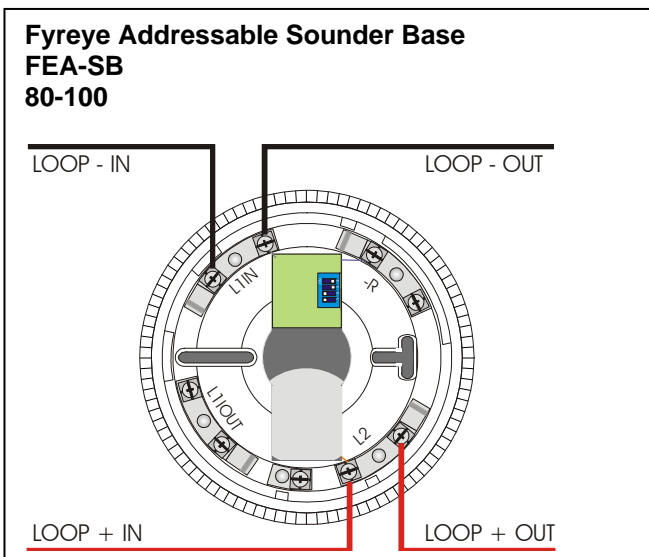


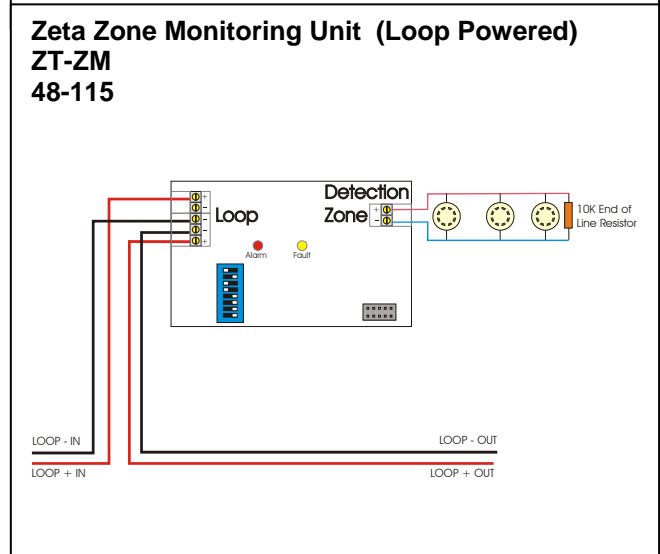
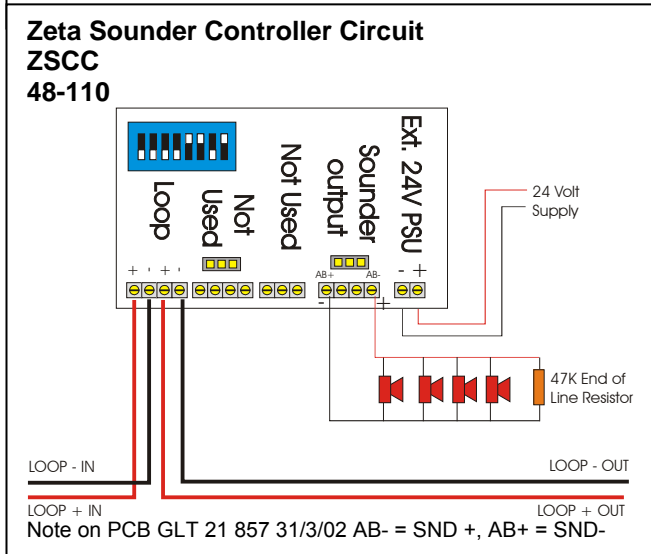
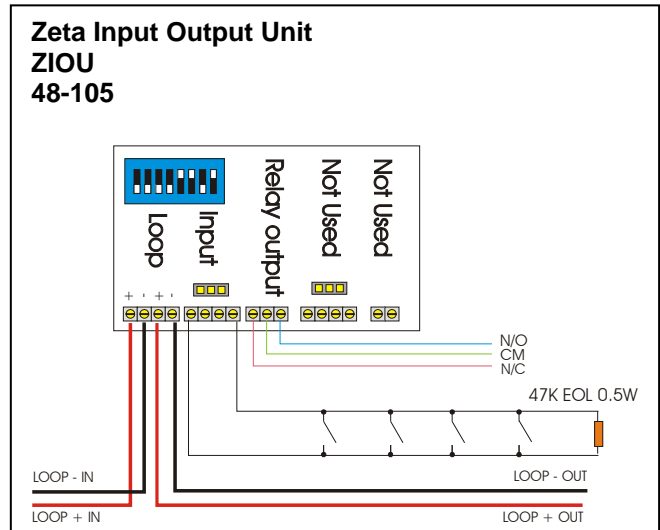
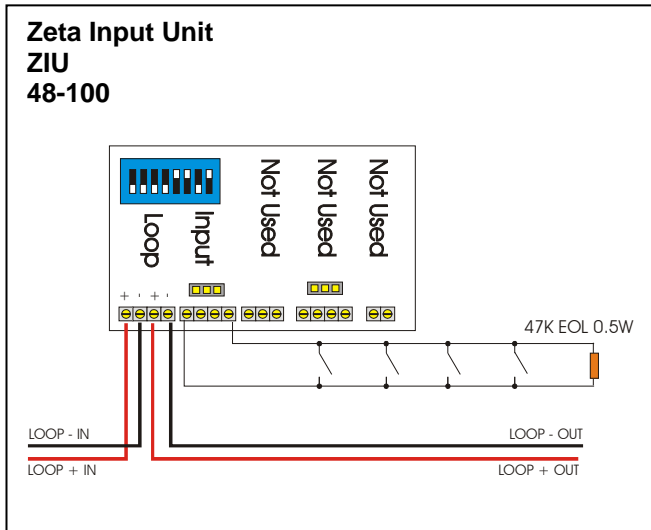
Note that on the Fyreye Loop Isolator Base, the loop wiring connects to the terminal block on the PCB and NOT to the Base Spring Screws.

The terminals are marked + & - in, and +,- & - out.

The second -ve contact can be used during commissioning to check the loop integrity.

(Connect the -in to the spare - out. Repeat for all isolators. Measure -ve line resistance with a DVM. Return the -in cable to its original terminal block when tests completed.)





7.2 LIST OF COMPATIBLE EQUIPMENT

Stock No	Product Code	Device	
37-160	SP-64	Simplicity Plus 64 Fire Alarm Panel	
37-165	SP-126	Simplicity Plus 126 Fire Alarm Panel	
37-155	REP-AD	Premier Addressable Repeater	
80-110	FEAI2000	Fyreye Addressable Ionisation Detector	
80-120	FEAO2000	Fyreye Addressable Optical Detector	
80-130	FEAH2000	Fyreye Addressable Heat Detector	
80-131	FEAHH2000	Fyreye Addressable High Temperature Heat Detector	
80-140	FEAOH2000	Fyreye Addressable Multi-Point Detector	
80-050	FE-CB	Fyreye Common Base	
80-080	FEA-RB	Fyreye Addressable Relay Base	
80-090	FE-IB	Fyreye Addressable Loop Isolator Base	
80-100	FEA-SB	Fyreye Addressable Sounder Base	
80-101	FEA-SFB	Fyreye Addressable Sounder Flasher Base	
43-305	ZT-CP2/AD	Zeta Addressable EN54 Call Point	
43-001	ZT-MCP/AD	Zeta Addressable Call Point	
43-022	ZT-MCP/AD/WP	Zeta Weatherproof Addressable Call Point	
48-100	ZIU	Zeta Input Unit	
48-105	ZIOU	Zeta Input Output Unit	

48-110	ZSCC	Zeta Sounder Control Module	
48-115	ZT-ZM	Zeta Zone Monitor Unit (Loop Powered)	
42-007	ZAMT	Zeta Addressable Maxitone Sounder	
42-060	ZAMDD	Zeta Addressable Miditone Sounder	
42-062	ZAMDF	Zeta Addressable Miditone Sounder with LED Flasher	
42-030	ZAST	Zeta Addressable Securetone Sounder	
48-020	ZTA/LE2	Zeta Addressable Remote Led Indicator	
47-055	ZTA-50RA	Fyreye Addressable Reflective Beam Detector 50m	
47-056	ZTA-100RA	Fyreye Addressable Reflective Beam Detector 100m	

7.3 MAXIMUM LOOP LENGTH RECOMMENDATIONS

With an addressable system, some care must be taken when calculating the appropriate cable gauge for the system.

The main limitation is that during an alarm condition (maximum current draw), the voltage at all detectors must be at least 17 Volts with at least 5V of superimposed data signal.

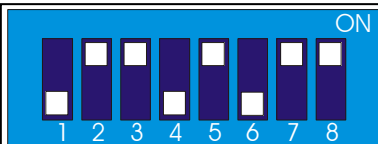
The exact calculation equations are beyond the scope of this manual, because of the distributed load of the sounders on the loop, but the following table gives a rough guide for maximum cable lengths at various current loads for 3 different cable gauges

Maximum Loop Current (in Alarm)	500 mA	400 mA	300 mA	200 mA
1mm CSA cable	500 m	625 m	830 m	1250 m
1.5mm CSA cable	750 m	930 m	1250 m	1870 m
2.5mm CSA cable	1000 m	1250 m	1660 m	2500 m

EG. A system with a maximum load of 300mA using 1.5mm cable can have a maximum loop run of 1250 m end to end.

7.4 SETTING THE DEVICE ADDRESS (DETECTORS, CALL POINTS & SOUNDERS)

The device address is set with a dip switch on the rear of the device.



The address setting is binary, with the **ON** position being binary **0**, and the **OFF** position being binary **1**. Switch 8 is not used for setting the address, but sometimes has a device specific function. (check instructions that came with the device)

If you are not familiar with binary, check the table on page 14, or use the following rule:

Switch 7 off = add 64,
 Switch 6 off = add 32,
 Switch 5 off = add 16,
 Switch 4 off = add 8,
 Switch 3 off = add 4,
 Switch 2 off = add 2,
 Switch 1 off = add 1.

The example shown would be:
 switches 6, 4 & 1
 =32 + 8 + 1 = Address 41

7.5 ADDRESS - ZONE TABLE

On the Simplicity, each available address corresponds to a zone, with 1-16 being in zone 1, 17-32 being in zone 2, 33-48 in zone 3 etc.

The table below shows the din switch settings for each address and the zone that address will be in

SW 4,3,2,1

	0000	0001	0010	0011	0100	0101	0110	0111	1000	1001	1010	1011	1100	1101	1110	1111	LOOP 1	LOOP 2	
SW	000	N/A	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	ZONE 1	ZONE 9
7,6,5	001	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	ZONE 2	ZONE 10
	010	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	ZONE 3	ZONE 11
	011	48	49	50	51	52	53	54	55	56	57	58	59	60	61	62	63	ZONE 4	ZONE 12
	100	64	65	66	67	68	69	70	71	72	73	74	75	76	77	78	79	ZONE 5	ZONE 13
	101	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	ZONE 6	ZONE 14
	110	96	97	98	99	100	101	102	103	104	105	106	107	108	109	110	111	ZONE 7	ZONE 15
	111	112	113	114	115	116	117	118	119	120	121	122	123	124	125	126	N/A	ZONE 8	ZONE 16

Remembering that 0 = ON & 1 = OFF, the switch settings for 37 are:

7=ON, 6=OFF, 5=ON, 4=ON, 3=OFF, 2=ON, 1=OFF

As an alternative to using this chart, use the table on the following page:-

7.6 DIP SWITCH ADDRESS SETTINGS - FULL TABLE

ADDRESS	SWITCHES							ADDRESS	SWITCHES							ADDRESS	SWITCHES														
	1	2	3	4	5	6	7		1	2	3	4	5	6	7		1	2	3	4	5	6	7		1	2	3	4	5	6	7
0 =	n	o	t	u	s	e	d	32 =	on	on	on	on	on	off	on	64 =	on	on	on	on	on	on	off	96 =	on	on	on	on	on	off	off
1 =	off	on	on	on	on	on	on	33 =	off	on	on	on	on	off	on	65 =	off	on	on	on	on	on	off	97 =	off	on	on	on	on	off	off
2 =	on	off	on	on	on	on	on	34 =	on	off	on	on	on	off	on	66 =	on	off	on	on	on	on	off	98 =	on	off	on	on	on	off	off
3 =	off	off	on	on	on	on	on	35 =	off	off	on	on	on	off	on	67 =	off	off	on	on	on	on	off	99 =	off	off	on	on	on	off	off
4 =	on	on	off	on	on	on	on	36 =	on	on	off	on	on	off	on	68 =	on	on	off	on	on	on	off	100 =	on	on	off	on	on	off	off
5 =	off	on	off	on	on	on	on	37 =	off	on	off	on	on	off	on	69 =	off	on	off	on	on	on	off	101 =	off	on	off	on	on	off	off
6 =	on	off	off	on	on	on	on	38 =	on	off	off	on	on	off	on	70 =	on	off	off	on	on	on	off	102 =	on	off	off	on	on	off	off
7 =	off	off	off	on	on	on	on	39 =	off	off	off	on	on	off	on	71 =	off	off	off	on	on	on	off	103 =	off	off	off	on	on	off	off
8 =	on	on	on	off	on	on	on	40 =	on	on	on	off	on	off	on	72 =	on	on	on	off	on	on	off	104 =	on	on	on	off	on	off	off
9 =	off	on	on	off	on	on	on	41 =	off	on	on	off	on	off	on	73 =	off	on	on	off	on	on	off	105 =	off	on	on	off	on	off	off
10 =	on	off	on	off	on	on	on	42 =	on	off	on	off	on	off	on	74 =	on	off	on	off	on	on	off	106 =	on	off	on	off	on	off	off
11 =	off	off	on	off	on	on	on	43 =	off	off	on	off	on	off	on	75 =	off	off	on	off	on	on	off	107 =	off	off	on	off	on	off	off
12 =	on	on	off	off	on	on	on	44 =	on	on	off	off	on	off	on	76 =	on	on	off	off	on	on	off	108 =	on	on	off	off	on	off	off
13 =	off	on	off	off	on	on	on	45 =	off	on	off	off	on	off	on	77 =	off	on	off	off	on	on	off	109 =	off	on	off	off	on	off	off
14 =	on	off	off	off	on	on	on	46 =	on	off	off	off	on	off	on	78 =	on	off	off	off	on	on	off	110 =	on	off	off	off	on	off	off
15 =	off	off	off	off	on	on	on	47 =	off	off	off	off	on	off	on	79 =	off	off	off	off	on	on	off	111 =	off	off	off	off	on	off	off
16 =	on	on	on	on	off	on	on	48 =	on	on	on	on	off	off	on	80 =	on	on	on	on	off	on	off	112 =	on	on	on	on	off	off	off
17 =	off	on	on	on	off	on	on	49 =	off	on	on	on	off	off	on	81 =	off	on	on	on	off	on	off	113 =	off	on	on	on	off	off	off
18 =	on	off	on	on	off	on	on	50 =	on	off	on	on	off	off	on	82 =	on	off	on	on	off	on	off	114 =	on	off	on	on	off	off	off
19 =	off	off	on	on	off	on	on	51 =	off	off	on	on	off	off	on	83 =	off	off	on	on	off	on	off	115 =	off	off	on	on	off	off	off
20 =	on	on	off	on	off	on	on	52 =	on	on	off	on	off	off	on	84 =	on	on	off	on	off	on	off	116 =	on	on	off	on	off	off	off
21 =	off	on	off	on	off	on	on	53 =	off	on	off	on	off	off	on	85 =	off	on	off	on	off	on	off	117 =	off	on	off	on	off	off	off
22 =	on	off	off	on	off	on	on	54 =	on	off	off	on	off	off	on	86 =	on	off	off	on	off	on	off	118 =	on	off	off	on	off	off	off
23 =	off	off	off	on	off	on	on	55 =	off	off	off	on	off	off	on	87 =	off	off	off	on	off	on	off	119 =	off	off	off	on	off	off	off
24 =	on	on	on	off	off	on	on	56 =	on	on	on	off	off	off	on	88 =	on	on	on	off	off	on	off	120 =	on	on	on	off	off	off	off
25 =	off	on	on	off	off	on	on	57 =	off	on	on	off	off	off	on	89 =	off	on	on	off	off	on	off	121 =	off	on	on	off	off	off	off
26 =	on	off	on	off	off	on	on	58 =	on	off	on	off	off	off	on	90 =	on	off	on	off	off	on	off	122 =	on	off	on	off	off	off	off
27 =	off	off	on	off	off	on	on	59 =	off	off	on	off	off	off	on	91 =	off	off	on	off	off	on	off	123 =	off	off	on	off	off	off	off
28 =	on	on	off	off	off	on	on	60 =	on	on	off	off	off	off	on	92 =	on	on	off	off	off	on	off	124 =	on	on	off	off	off	off	off
29 =	off	on	off	off	off	on	on	61 =	off	on	off	off	off	off	on	93 =	off	on	off	off	off	on	off	125 =	off	on	off	off	off	off	off
30 =	on	off	off	off	off	on	on	62 =	on	off	off	off	off	off	on	94 =	on	off	off	off	off	on	off	126 =	on	off	off	off	off	off	off
31 =	off	off	off	off	off	on	on	63 =	off	off	off	off	off	off	on	95 =	off	off	off	off	off	on	off	127 =	n	o	t	u	s	e	d

8 SOUNDERS

8.1 ADDRESSABLE SOUNDERS.

On the Simplicity, addressable sounders (the ones that take a loop address) will always start quicker than associated sounders (ones that do not take an address. If sounder start time is an issue, choose an addressable type sounder.

8.2 ASSOCIATED SOUNDER BASES

Associated sounder bases (also known as platform sounders) do not communicate with the fire alarm panel. They are controlled by the detectors remote output signal. This means that when a panel configures the loop, it can not see these sounders. The Simplicity assumes that any detector could have one of these sounders connected, so when an alarm signal comes, the panel sends the “turn on your remote output” to EVERY detector. This makes their operation slower than standard addressable detectors.

If not every detector has a sounder base fitted, it might be possible to speed up the sounder base start/stop time. See configuring sounder bases on page 19

8.3 SUPPORTED SOUNDER TYPES & THEIR APPLICATIONS

The Simplicity supports 3 general sounder types; addressable, addressable sounder controller, and associated sounders. All types have advantages & disadvantages.

Sounder type	Advantage	Disadvantage
Addressable	No Extra Cabling Sounders can be configured as zonal	Tends to be more expensive Maximum 32 per loop for quick start/stop Quiescent current high Uses device address.
Associated (sounder-base)	No Extra Cabling Doesn't occupy Device Address Can have more than 32 per loop	4-8 second start & stop time. Always configured as common sounders Needs detector present to operate. Does not operate during sounder test mode
Addressable Sounder Circuit Controller	Wide range of devices Devices tend to be cheaper. Can add many sounder circuits to system Sounder circuit can be set as zonal	Needs Extra Cabling. Needs External PSU Maximum 32 per loop for quick start/stop Quiescent current high Uses device address.

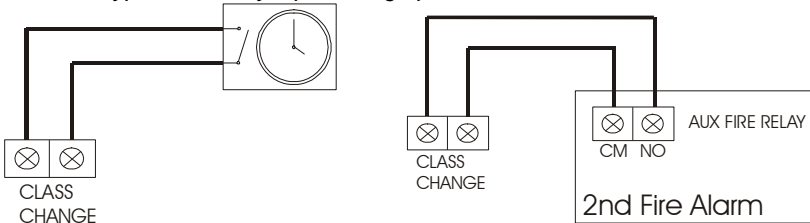
9. AUXILIARY INPUTS & OUTPUTS

9.1 AUXILIARY INPUT WIRING EXAMPLES

There is one non-latching auxiliary input connection on the Fire Alarm Panel.

Class Change Input (CC): This will energise all alarm outputs continuously when the CC terminals are shorted together. (This includes the 4 conventional sounder outputs & any loop powered sounders.)

Typical auxiliary input wiring options



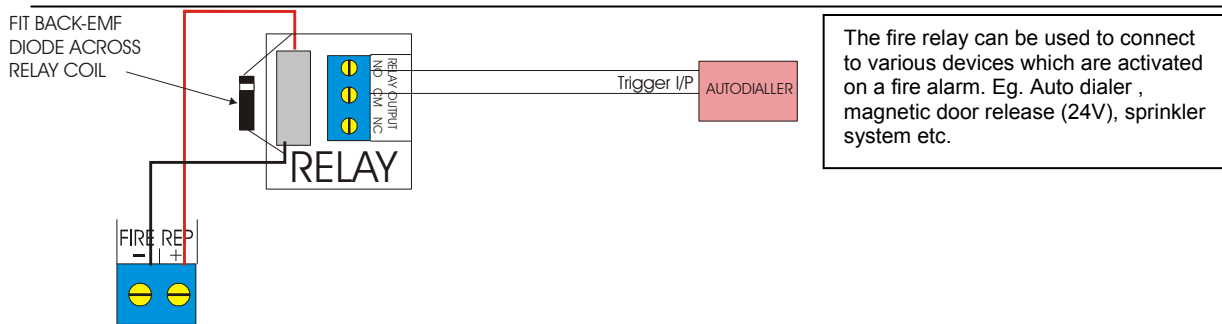
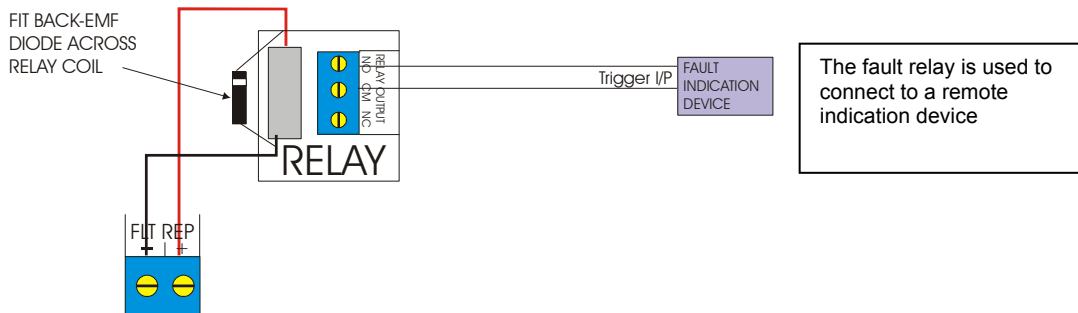
The termination for the above inputs must be as indicated on the main PCB (See page 15). The Earthing of the cable screens should be as shown on page 9.

9.2 AUXILIARY OUTPUT WIRING (24V Relay Drive Outputs)

Auxiliary Fire Output (AUX): Supplies 24V in any fire condition. This is used to drive a 24 volt relay (coil voltage), which can be connected to emergency lights, local fire fighting equipment such as sprinkler systems, magnetic door holders, air conditioning shut off, etc. More than one relay can be connected to this output if required.

Fault Output (FAULT): Gives 24V in the quiescent condition, and 0V in a fault condition. This ensures failsafe operation even in the event of total power loss. More than one relay can be connected to this output if required.

Typical auxiliary output wiring



The termination for the above inputs must be as indicated on the main PCB (See page 31). The Earthing of the cable screens should be as shown on page 17.

10. FIELD DEVICE TERMINATION

10.1 TERMINATING THE WIRING.

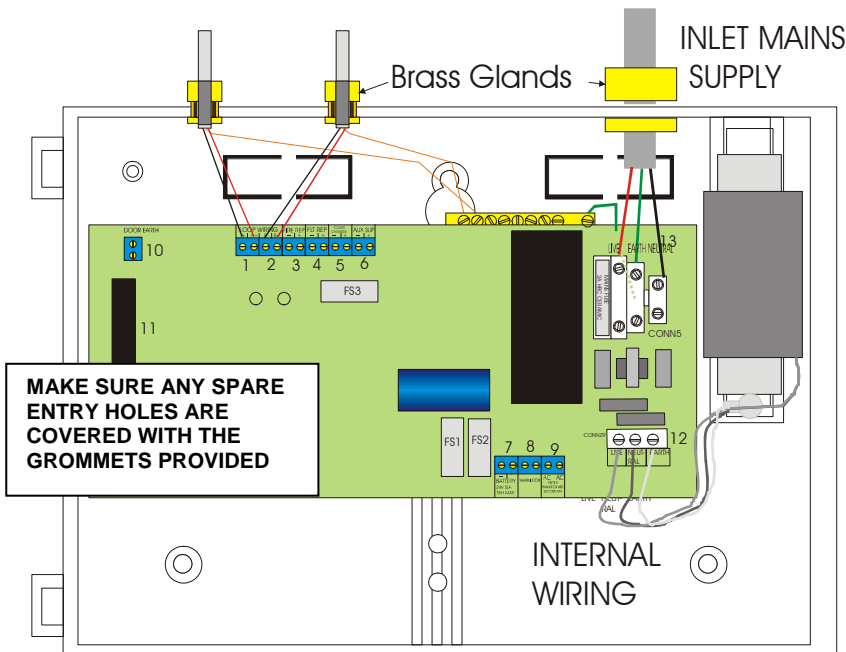


Figure 6: Detector and Sounder Circuit Connection

All cables entering the enclosure should have brass cable glands, which will ensure a good ground to the steel EMC cable grounding plate.

The Detector and Sounder circuits should be connected to the appropriate connector block on the Termination PCB as shown in Figure 6 below.

All screens should be terminated at the brass earthing strip as shown in Figure 6

(For detailed detector and alarm circuit wiring diagrams, please refer to pages 4 and 5.)

11 OTHER CONNECTIONS

11.1 REPEATER CONNECTION

The Simplicity has an RS485 connection for a serial repeater. The repeaters are display only (no control). A single repeater can be powered from the panel's Auxiliary Supply. If 2 or more are to be connected, then they must be powered from external 24V power supplies. The panel supports up to 4 repeaters.

Connections

Simplicity Plus	Addressable Repeater
CPU PCB:SERIAL REPEATER +	COM +
CPU PCB:SERIAL REPEATER -	COM -
TERMINATION PCB:AUX SUP +	+28V
TERMINATION PCB:AUX SUP -	0V

11.2 SERIAL PRINTER CONNECTION

The Simplicity has a connection for a serial printer. The printer will print out panel events as they occur. The recommended printer is an Epson LQ300 II+. The serial port on the Simplicity is configured to this printer's default settings.

Connections

Simplicity	25 pin D connector
TX	Pin 3 (RX)
RX	Pin 2 (TX)
GND	Pin 7 (GND)
CTS	Pin 4 (RTS)
DSR	Pin 20 (DTR)

Serial Port Settings

Setting	Value
Baud Rate	19200
Data Bits	8
Stop bits	1
Parity	NO
Flow Control	Hardware

12. CONFIGURING THE SIMPLICITY FIRE ALARM PANEL

12.1 CONFIGURING THE LOOPS

1 After the system has been installed, and the cabling checked and the addresses of each device set, connect the loop to the fire alarm panel and power up the system (mains & batteries). It should say "system normal, and only the green Power LED will be lit.

```

Fire Alarm Panel
To EN54 pt2 & pt4
System Normal
15-01-2006 12:59
    
```

2. Turn the keyswitch to the Controls Enabled Position. The controls Active LED will light.

```

Configuration Menu 1
1:Loop Contents
2:Device Status
3:Event logs >
    
```

3. Press Enter button. This will bring up Configuration Menu 1 (the user menu). In this Menu there are options to view loop contents, view the status of each device, or view the event log. The arrow in the bottom left hand corner shows that pressing NEXT will bring up a new screen

```

Enter Access Code

***
    
```

4. Press NEXT button. This will prompt for the access code to enter Configuration Menu 2 (the engineer menu). The access code for the Simplicity is 369

```

Configuration Menu 2
4:Configure Loops
5:Edit Device
6:Config System <
    
```

5. The panel now shows Configuration Menu 2. In this menu there are options to Configure the loops, to edit each device, and to configure the system options. The arrow in the bottom left hand corner shows that pressing PREVIOUS button will return to Configuration Menu 1

```

Configuration in
Progress

Please Wait
    
```

6. Press button 4 to configure the loop. The panel displays configuration in progress, Please wait. It will return to Configuration Menu 2 when completed.

```

CO 00|SCC 14|DAD 00
I/O 03|ION 02|
ZMU 01|OPT 45|Loop 1
HET 07|BGU 05|Tot 77
    
```

7. Press PREVIOUS button, followed by button 1 to view the loop contents. It lists the number of each type of device, the number of Double Addresses (DAD) on the system, the loop number (Loop 1 only), and the total number of devices on that loop. Check that the number of devices seen compares to the number expected. If it is different, refer to the fault finding guide.

8. The panel is now configured, and will function as a basic system, (press Cancel until screen shows system normal to run the panel), but it is more useful to enter device labels, to give a more precise location of an alarm device. We recommend that the device labels be entered to allow the panel to be more user friendly during normal operation.

```

Optical
Analog: 25 Normal
Zone:01 Ad:016
    
```

9. To add a label, go to configuration menu 2 as described above. Select option 5 to Edit Device. Use Next / Previous to select the first device to edit. Press Enter, and a cursor will appear at the start of the 3rd line. Type in the 20 character label for this device, using the caps lock as necessary.

```

Optical
Analog: 25 Normal
Fl 3 Bedroom 303
Zone:01 Ad:016
    
```

10. Press enter when the label has been entered.

```

Enter Loop Address

Loop: 1
Address: 100
    
```

11. To skip many addresses, press 1 (for loop 1). The Panel will then prompt for the address. Type the address and press enter. The panel will now jump to this address.

The sounder symbol in the top right hand corner shows that this detector might have an "associated sounder base" connected. The panel will send the "activate base sounder" command to this address in the event of an alarm. See Sounder section & Sounder base setup for further information.

12. When all devices have been entered, press Cancel to exit the message editing screen, and cancel again to exit the menu and to return to normal.

The panel is now configured and ready for operation.

12.2 CONFIGURING THE SOUNDER BASES

On the Simplicity, all detectors are treated as if they have a sounder base during the initial configuration. If a loop contains a large number of detectors, and a small number of sounder bases, then the sounders might take a long time (between 4 & 8 seconds) to start.

If this scenario exists, it is possible to speed up operation as shown below. (Note: if every detector has a sounder base, or if most of the detectors have a sounder base this "speed up operation" will have little or no effect.

1. Press enter, NEXT, followed by 369 to enter Configuration Menu 2. Select option 5 to edit device status. Select a detector that does NOT have a sounder base attached.

```
Optical 🔔
Analog: 25 Normal
Fl 3 Bedroom 303
Zone:01 Ad:016
```

2. Press the Disablement SELECT button. The sounder symbol turns off to show that this detector no longer has an associated sounder. (Pressing select again will continue to toggle the sounder on & off.)

```
Optical
Analog: 25 Normal
Fl 3 Bedroom 303
Zone:01 Ad:016
```

3. Repeat for all detectors that do not have an associated sounder base fitted.

12.3 SETTING TIME AND DATE

To set the time & date, enter Configuration Menu 2 and select Configure System (6). The System Menu is now displayed. Select option 1 to set time & date. Enter the Day, Month, Year, Hour & Minutes as prompted, and press enter to save, or Cancel at any time to exit.

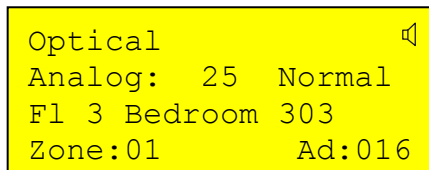
12.4 SETTING A CUSTOM BANNER

On the Simplicity, the default screen shows Simplicity 64/126 Fire alarm Panel . But this can be changed to any 2 lines of 20 Characters that are required. In the System Menu, type **NaMe** (Caps lock,**N**,Caps lock,**a**,Caps lock,**M**,Caps lock,**e**). Then type the first line of text, followed by enter, then the second line of text, followed by enter. This message will now be the screen when the panel is running normally.

12.5 VIEWING DEVICE STATUS

On the Simplicity, all loop devices can be viewed from Configuration Menu 1, or viewed & edited from Configuration Menu 2.

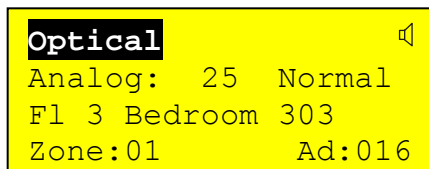
Enter configuration menu 2 as described above, and select option 5 (Edit Device)
The following screen is shown



The screen is divided into the following sections:-

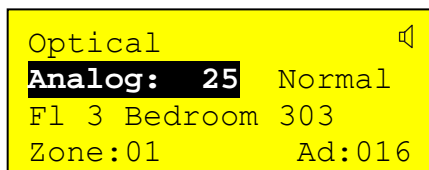
Configured Device Type

This shows the Device that was at this address during the last loop configuration. There are 8 possibilities for this:- Optical, Ion, Heat, Call-Pt, Sounder, I/O Unit, Zone Mon or CO



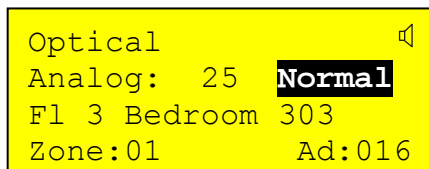
Analogue Value

This shows the analogue value that the device is sending To the panel. For detectors, this value is usually about 25 for clean air, and 55 during alarm. Non analogue devices such as call points and I/O units have a normal value of 16, and an alarm value of 64. They will return a value of less than 8 to report a fault condition.



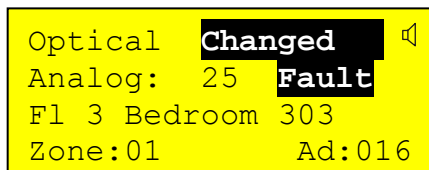
Device Status

This is the current status of the device. It will show one of the following values:- Normal, Fault, Alarm or Prealarm



Fault Description

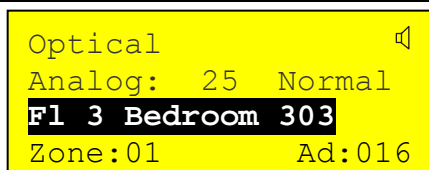
If the device is in a fault condition, a description of the fault will appear here. It will show one of the following messages:-



FAULT	MEANING
Changed	The device had been changed with one of a different type since last configuration. The message will flash between Changed, and the new type of device seen (eg. Ion).
Missing	The device is not communicating (ie removed , damaged or Address setting changed)
Side A Only	There is a break in the cable, and the device is only seen from Side A
Side B Only	There is a break in the cable, and the device is only seen from Side B
2-ADDR	Two devices have the same address setting
No message	This device is signalling an internal fault by returning a value of less than 8. (EG sounder control unit that has lost it's power supply.)

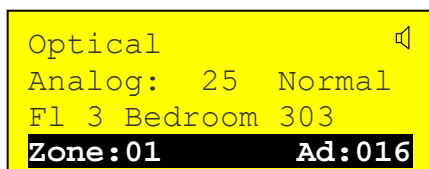
Device Label

This is the 20 character description of the device location entered by the installer. To change this Press Enter button to activate the cursor.



Device Identification

This is the Zone and address of the device. This is how the device will probably be referred to on the system drawings.

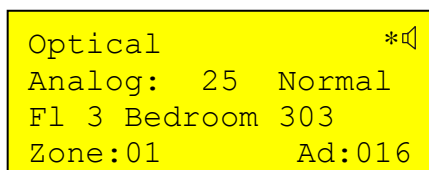


12.6 LOCATE OR VERIFY A DEVICE

From the edit device screen, it is possible to send commands to individual devices to start their sounder, or to turn on their alarm LED.

Select the loop and address for the device to be checked.

If the device is a detector, its LED can be turned on by pressing the TEST SELECT Button. An star will appear in the top right hand corner to show that the LED has been lit on this device. Press again to turn off.



If the device is an addressable sounder, or a detector with a sounder base attached, the sounder can be started by pressing the TEST button. The Outline sounder Symbol turns solid to show that the Sounder is active. Press again to turn off.

```
Optical
Analog: 25 Normal
Fl 3 Bedroom 303
Zone:01 Ad:016
```

The LED & sounder can both be activated if required.

Scrolling to another device or exiting the menu will automatically turn the LED or sounder off.

12.7 USING THE EVENT LOG

The Simplicity has a 2048 entry event log. In the event of the log being full, it will wrap around, and overwrite the earliest entries. The event log can be viewed through Configuration Menu 1 by selecting Option 3 - View Event Log. The screen prompts for which events to display: Alarms, Faults, System or All.

```
View Event Log
1: Alarms 4: All
2: Faults
3: System
```

Alarms

If the alarm option is shown, only alarms will be displayed. The screen will show the event number, the date, the time, the type of event (in this case, a DEVICE ALARM), and the Zone, loop and address, if appropriate. Next & Previous buttons will cycle through the list.

```
Event 167
13-01-2007 17:21
Device Alarm
Zone:03 Lp:1 Ad:037
```

Faults

Selecting this option will display all the faults recorded on the system, Both device faults and general faults. The screen will show the event number, the date, the time, the type of event (in this case, a DEVICE CHANGED fault), and the Zone, loop and address, if appropriate. Next & Previous buttons will cycle through the list.

```
Event 173
25-01-2007 17:21
Device Changed
Zone:01 Lp:1 Ad:013
```

System.

The Simplicity also records other non critical items, such as keyswitch turned on etc. These can be used to help determine the chain of actions before or after an event.

The type of events recorded are:- Power On/Startup, Panel Reset, Evacuate, Keyswitch ON, Keyswitch OFF, Sounders Silenced, Configure Loops, Time & Date Set, Zone Disabled, Zone Enabled, Device Disabled, Device Enabled, Zone Test Start, and Zone Test Finish.

```
Event 174
25-01-2007 17:22
Keyswitch On
```

Note: during installation and commissioning, it is possible to create a large number of events, especially if a configured loop is disconnected. This is normal, and is not a case for concern. These events can be cleared, using Configuration Menu 2.

```
System Menu
1: Set Clock
2: Version Info
3: Clear Logs
```

To clear the event log, go to Configuration Menu 2 and select option 6 (Configure System). Select Option 3 to clear the event log.

The screen warns that this can not be undone. Press ENTER to clear the event log, or any other button to cancel this screen.

```
Clear Event Log
WARNING: This Action
cannot be undone
ENT to delete logs
```

Note that when the event log is cleared, the EVENT NUMBER remains the same. This is so that a visiting engineer will have an idea of the activity on a panel, even if the event log has been cleared. The counter has a maximum value of 524287, and will return to 0 after this.

12.8 CHECKING SOFTWARE VERSION

The Simplicity now has the ability to view the software version from the screen. From Configuration menu 2, select configure system. The System Menu Will Be displayed.

```
System Menu
1: Set Clock
2: Version Info
3: Clear Logs
```

Press 2 (Version Info), and the panel will display the software in its two Microcontrollers. One for the main functions, one for the Loop Driver. This information is will be useful for technical support in the Event of any problems occurring with the Control Panel.

```
GLT Exports Ltd
Simplicity 126
Panel: r1578
Loop : r1062
```

13. DISABLEMENT

On the Simplicity, there are 2 disablement options. A whole zone of detectors can be disabled, or an individual point can be disabled. Both types of disablement can be used at the same time if required.

13.1 ZONE DISABLEMENT

To aid commissioning and assist routine maintenance checks, any of the zones or the loop sounders can be disabled.

When a zone is disabled, the panel will not respond to any fault or fire signals it receives from DETECTORS from that zone. Call points will remain operational.

This might be used if the system requires routine maintenance, and the customer needs the system to continue running, but doesn't want spurious false alarms.

The panel will respond in the usual manner to any events in any non-disabled zones.

The Simplicity also allows the loop sounders to be disabled. If they are disabled, the panel will not start any sounders in an alarm condition.

13.2 TO PROGRAMME ZONE (OR SOUNDERS) AS DISABLED

Any number of zones (or the sounders) can be disabled, but it is good practice to only disable one zone at a time.

1. Insert and turn control key to enabled position;
2. Press GENERAL DISABLEMENT button and the screen will show: ZONE DISABLEMENT ZONE 1. The panel is now in SELECT DISABLEMENT MODE.
3. Press DISABLEMENT SELECT until the required zone or loop sounders is DISPLAYED. Press DISABLEMENT CONFIRM button. The screen will now show that the zone is disabled, and the Zone or Sounder LED will come on steady, along with the GENERAL DISABLEMENT LED. This section is now disabled. **(NOTE: Call points in this zone will still be active. To disable the call points as well, disable them individually as points – see 13.3)**
4. If more than one zone (or sounder) needs to be disabled, then press DISABLEMENT SELECT again until the required zone (or sounder) is selected.
5. If the panel needs to be taken out of SELECT DISABLEMENT MODE (eg to silence a fault on another part of the system), Either press GENERAL DISABLEMENT button, or turn the keyswitch off, then back on again.
6. Once all the maintenance work has been done the zones need to be enabled again. If the panel is still in SELECT DISABLEMENT MODE, jump to paragraph 7, otherwise, turn the keyswitch to controls enabled, press GENERAL DISABLEMENT button. The panel is now in SELECT DISABLEMENT MODE
7. Press the DISABLEMENT SELECT button until the disabled zone is displayed on the screen. Press DISABLEMENT CONFIRM button to de-select disablement. Scroll to any other disabled zone and enable in the same way. When all zones are enabled again, the GENERAL DISABLEMENT LED will turn off. Turn the keyswitch to off position to return the system to normal. (NOTE: This will also enable any points individually disabled in that zone)

```
Zone Disablement
Zone 1
Enabled
Single Devices: 0
```

```
Zone Disablement
Zone 3
Disabled
Single Devices: 0
```

13.3 POINT DISABLEMENT

The Simplicity Plus panel can also disable individual devices (detector, call point, sounder or interface). To do this, enter CONFIGURATION MENU 2 and select EDIT DEVICE. Select the required device, then press GENERAL DISABLEMENT button. The Device label now flashes between the programmed label and Device Disabled. The general disablement LED will also be lit. This device is now disabled.

To re-enable the device, press the disable button again. Note that the Zone disablement LED for this address will not light because this would suggest that the whole zone is disabled, so would be misleading.

```
Optical 🔊
Analog: 25 Normal
Device Disabled
Zone:01 Lp:1 Ad:016
```

13.4 VIEWING DISABLEMENTS

There are two ways to check for disablements: from the Disablement screen, or from the device status screen.

To view from the disablement screen, press disable, then press select to scroll through all the zones & sounders.

If there are no disablements, the screen will show

```

Zone Disablement
Zone 1
Enabled
Single Devices: 0
    
```

If the whole zone is disabled, the screen will show

```

Zone Disablement
Zone 1
Disabled
Single Devices: 0
    
```

If there are one or more disabled points in this zone, the screen will show.

(TIP: a quick way to enable several disabled points is to disable the zone, then re-enable it)

```

Zone Disablement
Zone 1
Enabled
Single Devices: 2
    
```

To view from the Device Status screen, press enter then option 2 to select Device Status

If a device is enabled, the screen will show

```

Optical                                     🔊
Analog: 25 Normal
Fl 3 Bedroom 303
Zone:01 Ad:016
    
```

If a device is disabled, the screen will show
(Note that line 3 will flash between the device label and Device Disabled Message)

```

Optical                                     🔊
Analog: 25 Normal
Device Disabled
Zone:01 Ad:016
    
```

If a device is in a disabled zone, the screen will show
(Note that line 3 will flash between the device label and Zone Disabled Message)

```

Optical                                     🔊
Analog: 25 Normal
Zone Disabled
Zone:01 Ad:016
    
```

14. TEST MODE

14.1 WHY USE TEST MODE

To aid commissioning and assist routine maintenance check, a non-latching 'one man test' facility is available.

When a detector or manual call point is triggered on any zone in Test, the Alarm sounders operate for approximately eight seconds on and four seconds off. This cycle continues until the cause of the Alarm is removed (either by the test smoke clearing from the detector or the manual call point being reset), sounders will then stop activating.

Should an Alarm occur on a zone that is not programmed to test, the Fire Alarm Panel will cancel the test mode. After the cause of the alarm has been checked, and the panel reset, test mode will have to be selected again to resume testing.

14.2 TO PROGRAMME ZONE IN TEST MODE

NOTE: Only **one zone** can be programmed in test at any one time.

1. Insert and turn control key to enabled position;
2. Press TEST Button. The screen will prompt for the test code
3. Enter the Test code **2 4 8**.
4. The screen will now show Test Mode.
5. Press TEST FUNCTION SELECT button to select the zone to be tested.
6. Press CONFIRM to enter test mode for this zone
The General Test and Zone Test LEDs will now be lit.
7. Detectors in this zone can now be tested with smoke spray. The sounders will operate for about 4 seconds, then they will reset. This cycle will continue until all smoke spray has cleared from the detector.
8. Once testing of that zone is completed, press TEST FUNCTION SELECT button to move to another Zone or turn the control key switch to off position to exit test mode.

Enter Access Code

█

Test Mode
Zone 1

Normal Operation

Test Mode
Zone 2

Test Active

14.3 TO PROGRAM SOUNDER CIRCUITS IN TEST MODE

NOTE: Only the **ADDRESSABLE SOUNDERS** can be tested with the loop sounder one man test mode. The **ASSOCIATED SOUNDER BASES** cannot be tested this way because of their slower stop/start time.

1. Insert and turn control key to enabled position;
2. Press TEST Button, The screen will prompt for the test code.
Enter the code 2 4 8.
3. The screen will now show Test Mode, Zone 1, Normal Operation.
4. Press TEST FUNCTION SELECT button to select the sounder to be tested.
5. Press confirm to enter test mode for this function. The LED will now be on steady.
6. The Sounders will now pulse **3** seconds on, **3** seconds off until they are taken out of test mode. This allows all the sounders to be tested for correct operation, and dB output.
7. Once testing of that sounder circuit is completed, press TEST FUNCTION SELECT button to move to another circuit, or turn the control key switch to off position to exit test mode

Enter Access Code

█

Test Mode
Zone 1

Normal Operation

Test Mode
Loop Sounders

Test Active

To test associated sounder bases, use the stop/start sounder button (evacuate). Note that the sounders will take up to 9 seconds to start.

NOTE Associated sounder bases are controlled by the detector. **Removing the detector will leave the sounder base inoperative.**

15. GENERAL FAULT FINDING

On the Simplicity panel, Faults are divided into 2 types, "Faults" and "Device Faults". Device Faults are any fault associated with a particular address on the loop. Faults is everything else, EG sounder circuits, power supply etc. In the event of multiple faults, the Faults are grouped together first, followed by the device faults. Next button will scroll to next fault.

15.1 COMMON FAULT.

This is a general indicator which lights whenever a fault is present. It doesn't refer to a specific fault.

15.2 LOOP CONTENTS FAULT FINDING

If the loop contents are different to what was expected, then there two probable causes:-

1. Two or more devices may have the same address setting. This is referred to as a double address fault. If this occurs all devices with the same address will answer at the same time. The panel will not be able to understand the answer it receives. **NOTE: If a panel detects a double address, it will light the LEDs of the devices with the problem. (NOTE: only detectors will light their LED. Call points, sounders & interface modules will not be indicated).**
2. There may be some reversed connections to devices (they are polarity sensitive). The Fyreye detectors should be connected Loop + to L2, loop - to L1IN. Other devices will have their polarity marked by their connections.

If the panel reports any double addresses present, investigate these first as they are the easiest to find. The panel will turn on the LED of any incorrectly addressed detector.

1. Make a list of the double addresses reported (there may be more than one).
2. Go to view device screen in Configuration menu 1. Scroll through the devices, and make a list of any that are missing (note: the panel skips over empty addresses when scrolling)
3. Go to the location of the missing device, and check if it has its LED on (Detector), or check the dip switch setting.
4. If this does not cure all double addresses, go to the known location, and temporarily remove the device. The panel will now report the type of device that was also configured to this address. This will help narrow down the search for the device. (eg if extra device is call point, check all the call points)

If there are still less devices than expected, check the missing addresses for correct wiring polarity. If in doubt, contact your supplier.

If the wiring polarity is correct, check that there is no cable break on the loop. (If there is a break, the panel will report the break after 60 seconds or so, and inside the panel, the LOOP POWERED LEDS (green) will alternate on & off). Some devices take a few seconds to power up, so may show as missing during the repeated Power Down / Power Up cycle that occurs during a line break.

15.3 ZONE FAULTS

There are several reasons for the zone fault LED to light.

1. There is a cable break, or short circuit to devices in that zone,
2. A device has been removed from that zone
3. A device has been changed for one of a different type
4. There is a double address in this zone (see previous section)
4. A device in that zone is communicating a fault condition to the panel with its analogue value. A value less than 8 is usually a fault condition. (This could be a zone monitor reporting a fault in its zone wiring, for example.)

The LCD will show Device Fault, the user label, and the address Of the fault. Pressing enter will bring up the View Device screen for the device showing fault. This will give more information about the fault.

In this example, the device is Missing. IE the panel is not receiving an answer from this address. This could either be a removed detector, a changed address switch setting, or a damaged detector.
 Check the device has not been removed
 Check that there is power to the base
 Check address hasn't been changed (compare to system set-up chart)
 Check that the base contacts are clean and free from dirt & corrosion
 If possible, try a replacement head (remembering to set the correct address)

```
*** Device Fault ***
      1 of 1
Floor 1 Room 101
Zone:01      Ad:001
```

```
Optical Missing
Analog: 00 Fault
Floor 1 Room 101
Zone:01      Ad:001
```

15.4 SUPPLY FAULTS

a. BATTERY FAULT

Loss of Battery power – Remedy

- i. Check battery fuse FS2.
- ii. Check that battery connections are secure.

b. CHARGER FAULT

Loss of Mains power – Remedy

- i. Check mains fuse (Conn 6).
- ii. Check that main power is present.
- iii. Check charger fuse FS1.

c. LOW BATTERY

Low Battery voltage detected – Remedy

- i. Check battery voltage. (should be 26-27V)
- ii. Check that 2 x 12v batteries are connected in SERIES) to give 24V
- iii. Check that charger fuse FS1 is ok

```

***  FAULT  ***
      1 of 1

Battery Fault

```

```

***  FAULT  ***
      1 of 1

Mains/Charger Fail

```

Other possible causes of supply faults are:-

Wrong Charging Voltage.

The charging voltage should be 28.3V off load at 22-24°C. If it has been altered, reset using potentiometer VR1

Overcharged Batteries.

Remove the batteries and measure the voltage. If it is reading over 27.4 then the batteries are overcharged. Try to run the panel on batteries only for half an hour or so to try to discharge the batteries. If this doesn't solve the problem, replacement batteries will be required.

15.5 EARTH FAULTS

An EARTH fault indicates that something is shorting to earth (usually through the cable screen). Disconnect the earth screens one at a time to determine the problem line.

(Note: connecting other equipment, eg an oscilloscope, to the panel can give an earth fault)

```

***  FAULT  ***
      1 of 1

Earth Fault Pos

```

The Screen will indicate if it is a Positive or Negative voltage shorting to earth (Earth Fault Pos or Earth Fault Neg).

*****DO NOT DISCONNECT THE MAINS EARTH CONNECTION. THIS WILL CAUSE A PROBLEM WITH THE PANELS OPERATION*****

15.6 DOUBLE ADDRESS

This indicates that a double address has been detected. This usually happens if a head is replaced during maintenance, and its address has been wrongly set. The panel will report 2 fault addresses, one will be the double address, and the other will be a missing device. As a further aid to finding the fault, the panel will light the LEDs of any detectors with a double address (Call points, Sounders & I/O units will not be indicated as they have no panel controlled LED to light up)

15.7 SYSTEM FAULT

A system fault is an abnormal microprocessor running condition due to various unexpected phenomena.

This will result in the panel attempting to correct itself. Should this fault occur, the System Fault LED, General Fault LED, General Fault relay and fault internal buzzer will be constantly active until the control keyswitch is turned from off position to control enable position. This should cause this fault condition to reset. If not, consult your supplier.

15.8 PRE-ALARM

This is not a fault condition. The panel has detected a high reading from one of the devices on the loop. This could be caused by a fire starting (in which case it acts as an early warning), or it could be caused by a contaminated head. The panel will report the location of the problem device, which should then be investigated.

15.9 SOUNDER FAULTS

On the Simplicity there are only loop controlled sounders fitted. Fault-finding these is similar faultfinding zone faults.

Sounder circuit controllers(ZSCC).

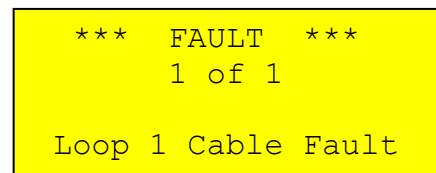
Check :-

- Check that the correct END of Line resistor is fitted. (47K – Yellow, purple, orange, gold)
- Check that the sounder fuses is OK (FS1, – 4000mA TD)
- If working on an existing installation, check that the devices are **polarised**. (See Page 5)
- Check cable continuity (remove from panel and measure continuity. Should read 47K)
- Check its external power supply is connected & working

For loop powered sounders, check that all sounders are communicating, and check their analogue value. If a sounder is returning a value less than 8, then it has detected an internal fault and should be replaced. If they are not communicating, then check that they have power, and that the power is connected the correct way. If they have power, they may be damaged. Try a replacement if available.

15.10 LOOP WIRING FAULTS

A loop fault can be caused by a break, or short circuit in the Loop wiring. Open the panel and look for the 2 green LEDs on the termination PCB. Under normal conditions these should be all lit steady. The LEDs represent Loop1 Side A and Loop 1 side B,



If both loop LEDs are off, then this indicates that there is a short on the loop that the isolators couldn't bypass. (Check that the isolators are enabled, and aren't set for a cable continuity check). Split the loop half way, and check if either side of the loop will power up. Continue making more splits until the short has been found.

If the LEDs for a loop are flashing (both on, side a only, both on, side b only etc), then this indicates a break in the wiring. This could be caused by either a break, or a pair of isolators shutting down a short circuit. If there are several missing devices (wait for the zone fault LED & check the addresses in that zone), then there is probably a short circuit on the loop (look for isolators lit Yellow or flashing). The missing devices should give an indication of the section with the break. Investigate that section as per the dead short circuit fault tracking method, as described above.

If there are no missing devices, then there is probably a simple break. If the loop has been configured such that as you move down the loop, the address always increases, then the fault can be located through the menu.

Go to view device screen. And select the first device on the loop. The screen will say either Side A only or Side B only. Scroll through the loop. When it changed from Side A only to Side B only (or Vice versa), this should be the location of the break.

Alternatively, disconnect one side of the loop and check which devices can be read. The break should be after the last read device.

16. STANDBY BATTERY REQUIREMENTS

The Following Table shows the Quiescent, Fault & alarm currents of the main parts of a Simplicity Fire Alarm System

Device	Product Code	I _q (mA)	I _{fit} (mA)	I _{aim} (mA)	Max per Loop	Max per System
SIMPLICITY 64 Fire Alarm Panel	SP-64	100	150	200	N/A	1
SIMPLICITY 126 Fire Alarm Panel	SP-126	100	150	200	N/A	1
Premier Addressable REPEATER PANEL	REP-AD	200	220	220	N/A	4*
Fyreye Addressable Ionisation Smoke Detector	FEAI2000	0.6	N/A	2	126	126
Fyreye Addressable Optical Smoke Detector	FEAO2000	0.6	N/A	2	126	126
Fyreye Addressable Heat Detector	FEAH2000	0.6	N/A	2	126	126
Fyreye Addressable High Temperature Heat Detector	FEAHH2000	0.6	N/A	2	126	126
Fyreye Addressable Multi-point Detector	FEAOH2000	0.6	N/A	2	126	126
Fyreye Addressable Sounder Base	FEA-SB	0	N/a	10	32	32
Zeta Addressable Call Point (EN54)	ZT-CP2/AD	0.5	N/a	3	126	126
Zeta Addressable Call Point	ZT-MCP/AD	0.4	N/a	13	126	126
Zeta Weatherproof Addressable Call Point	ZT-MCP/AD/WP	0.4	N/a	13	126	126
Zeta Input Unit	ZIU	2	2	2.5	126	126
Zeta Input Output Unit	ZIOU	2	2	10	16	16
Zeta Sounder Control Module	ZSCC	2	2	10	16	16
Zone Monitor Unit	ZT-ZM	6	8-30	22	10	10
Fyreye Addressable Beam Detector (5-50m)	ZT-50RA	t.b.c.	t.b.c.	t.b.c.	t.b.c.	t.b.c.
Fyreye Addressable Beam Detector (50-100m)	ZT-100RA	t.b.c.	t.b.c.	t.b.c.	t.b.c.	t.b.c.
Zeta Addressable Maxitone Sounder	ZAMT	1.5	N/a	9	32	64
Zeta Addressable Miditone Sounder	ZAMD	1.5	N/a	9	32	64
Zeta Addressable Securetone Sounder	ZAST	1.5	N/a	9	32	64
Zeta Addressable Remote LED Indicator	ZTA/LE2	1.5	N/a	10	32	64
Conventional Sounders (via a sounder Control Circuit)						
Zeta Conventional Maxitone Sounder	ZMT/8	0	N/a	15	N/a	N/a
Zeta Conventional Miditone Sounder	ZMD/8	0	N/a	15	N/a	N/a
Zeta Conventional Securetone Sounder	ZST/8	0	N/a	15	N/a	N/a
Zeta Conventional Megatone Sounder	ZIDC	0	N/a	200	N/a	N/a
Zeta Conventional Flasher	ZFL2RR	0	N/a	90	N/a	N/a
Zeta Conventional Sounder Flasher	ZLT/8RR	0	N/a	110	N/a	N/a
Zeta Conventional 6" Bells	ZTB6B/24	0	N/a	25	N/a	N/a
Zeta Conventional 8" Bells	ZTB8B	0	N/a	35	N/a	N/a
Conventional Detectors (via a Zone Monitor)						
Fyreye Conventional Optical Detector	FEO2000	0.06	N/a	25	N/a	N/a
Fyreye Conventional Heat Detector (A1R)	FEHR2000	0.04	N/a	25	N/a	N/a
Fyreye Conventional Heat Detector (CS)	FEFH2000	0.04	N/a	25	N/a	N/a

* The Simplicity can only power 1 repeater. Any subsequent ones will need a separate power supply.

16.1 STANDBY BATTERY CALCULATION

In order to calculate the standby battery size required, the following formula can be used:-

$$\text{Battery Size (Standby time in Amp Hours)} = 1.25 \times [(T_{\text{ALM}} \times I_{\text{ALM}}) + (T_{\text{SBY}} \times (I_{\text{QP}} + I_{\text{QZ}}))]$$

Where:

- T_{ALM} = Maximum time in hours required for the alarm [$\frac{1}{2}$ hour is most common time]
- I_{ALM} = Total Alarm Current in amps for all alarm devices connected to the alarm circuits
- T_{SBY} = Standby time in hours for the system after mains failure [normally 24, 48 or 72 hr]
- I_{QP} = Quiescent current in amps of control panel in fault condition [because of mains failure]
- I_{QZ} = Quiescent current in amps of all detection zones. Eg Ion detector 0.00005 Amp (50 μA), Optical Detector = 0.0001 Amp (100 μA)

Typical Example:

A system comprises of 80 Addressable Optical detectors, 30 Sounder bases and the required standby is 24 hours. It will need to operate in alarm for $\frac{1}{2}$ hour.

Calculate the battery size required.

$$T_{\text{ALM}} = 0.5 \text{ Hr}$$

$$I_{\text{Alm-snd}} = 30 \times 0.010 = 0.30\text{A}$$

$$T_{\text{SBY}} = 24 \text{ Hr}$$

$$I_{\text{QP}} = 0.150\text{A}$$

$$I_{\text{AP}} = 0.200\text{A}$$

$$I_{\text{QZ}} = 80 \times 0.0006 = 0.048\text{A} \text{ [the quiescent current for an Addressable Optical detector is } 600 \mu\text{A}$$

$$I_{\text{alm}} = I_{\text{alm-snd}} + I_{\text{AP}}$$

Therefore using the equation:

$$\text{Battery Size (Standby time in Amp Hours)} = 1.25 \times [(T_{\text{ALM}} \times I_{\text{ALM}}) + (T_{\text{SBY}} \times (I_{\text{QP}} + I_{\text{QZ}}))]$$

$$\text{Battery Size (Standby time in Amp Hours)} = 1.25 \times [(0.5 \times (0.2+0.30)) + (24 \times (0.150 + 0.048))]$$

$$\text{Battery Size (Standby time in Amp Hours)} = 1.25 \times [0.25 + (24 \times 0.198)]$$

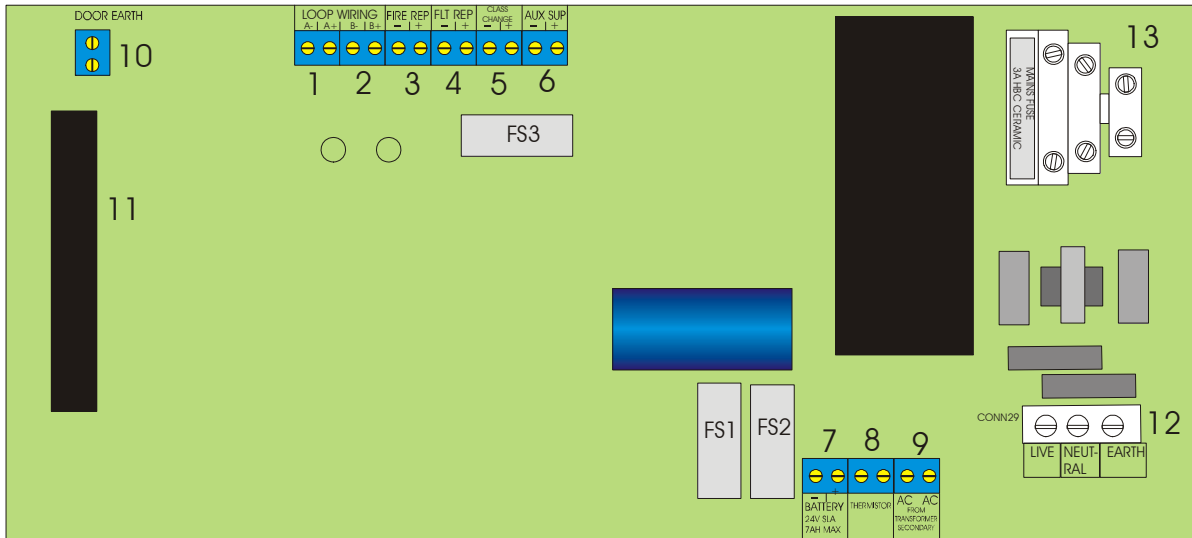
$$\text{Battery Size (Standby time in Amp Hours)} = 1.25 \times [0.25 + 4.752]$$

$$\text{Battery Size (Standby time in Amp Hours)} = 1.25 \times 5.002$$

$$\text{Battery Size (Standby time in Amp Hours)} = 6.25 \text{ Amp Hours}$$

This system would require a minimum of 6.25 batteries, so we would recommend using 7Ah batteries.

17. PCB TERMINATION CONNECTIONS.



17.1 CONNECTIONS

Connection No	Description	Use
1	LOOP 1A +&-	Connect to loop 1 side A
2	LOOP 1B +&-	Connect to loop 1 side B
3	FIRE REPEAT OUTPUT	24V on fire (including test mode). Use to drive relay.
4	FAULT REPEAT OUTPUT	Normally powered. 0V on fault. Use to drive FLT relay.
5	CLASS CHANGE	Join terminals to activate sounders
6	AUX SUP +&-	24 volt supply. 100mA Max
7	BATTERY + & -	Connect 2 x 12V SLA batteries in SERIES (ie 24V)
8	THERMISTOR	Thermistor to prevent thermal overcharge
9	AC AC	Connected to transformer secondary (30VAC)
10	CONN 27	EARTH connection to display PCB & SCREEN TAG
11	CONN 3	50 way ribbon cable to display PCB
12	CONN 29	Filtered mains to transformer
13	CONN 6	MAINS TERMINAL BLOCK

17.2 FUSES

FUSE NO	DESCRIPTION	RATING
FS1	Charger Fuse	1.6A time delay 5 x 20mm glass
FS2	Battery Fuse	1.6A time delay 5 x 20mm glass
FS3	Aux Supply	100mA time delay 5 x 20mm glass
INLET FUSE	Mains Protection Fuse	2.0A Quick Blow HBC 5 x 20mm ceramic

17. PANEL SPECIFICATIONS**17.1 ENCLOSURE SPECIFICATIONS**

DESCRIPTION	VALUE
ENCLOSURE SIZE	355 x 275 x 100 mm
TOP CABLE ENTRIES	12 x 19mm DIA GROMMETED ENTRIES
BOTTOM CABLE ENTRIES	2 x 19mm KNOCKOUT ENTRIES
REAR CABLE ENTRIES	2 SNAP OUTS, 60 x 20mm

17.2 ELECTRICAL SPECIFICATIONS

ELECTRICAL DESCRIPTION	VALUE
MAINS VOLTAGE	230V AC +/- 10% @ 50/60 Hz
BATTERY VOLTAGE	24V DC (2 X 12V SLA BATTERY)
SYSTEM VOLTAGE	24V DC NOMINAL (18 – 32 V)
SYSTEM VOLTAGE RIPPLE	2V PK-PK MAX
CHARGER SIZE	UP TO 7AH in 24 Hours
LOOP VOLTAGE	24V DC NOMINAL (+9 volt data)
SOUNDER ALARM OUTPUTS	LOOP POWERED SOUNDERS ONLY
AUXILIARY FAULT OUTPUT	24V RELAY DRIVE SIGNAL (NORMALLY ON)
AUXILIARY FIRE OUTPUT	24V RELAY DRIVE SIGNAL
NUMBER OF LOOPS	1 LOOP
MAXIMUM NUMBER OF ZONES	8 ZONES (4 FOR SIMPLICITY 64)
MAXIMUM LOOP CAPACITY	126 DEVICES (64 FOR SIMPLICITY 64)
MAXIMUM ZONE CAPACITY	16 DEVICES PER ZONE
MAXIMUM LOOP RESISTANCE	25 ohms
MAXIMUM LOOP CAPACITANCE	0.3µF
MAXIMUM VOLTAGE PICKUP ALLOWED	50mV
REMOTE SOUNDER ACTIVATION	VIA N/O CONTACTS
CHARGER VOLTAGE	28.3V @ 22-24°C (NO BATTERY CONNECTED)
LOOP SHORT CIRCUIT PROTECTION	750mA
CHARGER SHORT CIRCUIT PROTECTION	Batteries less than 20V
TOTAL CHARGER OUTPUT	1.1 Amp