ADEMCO microtech

galaxy

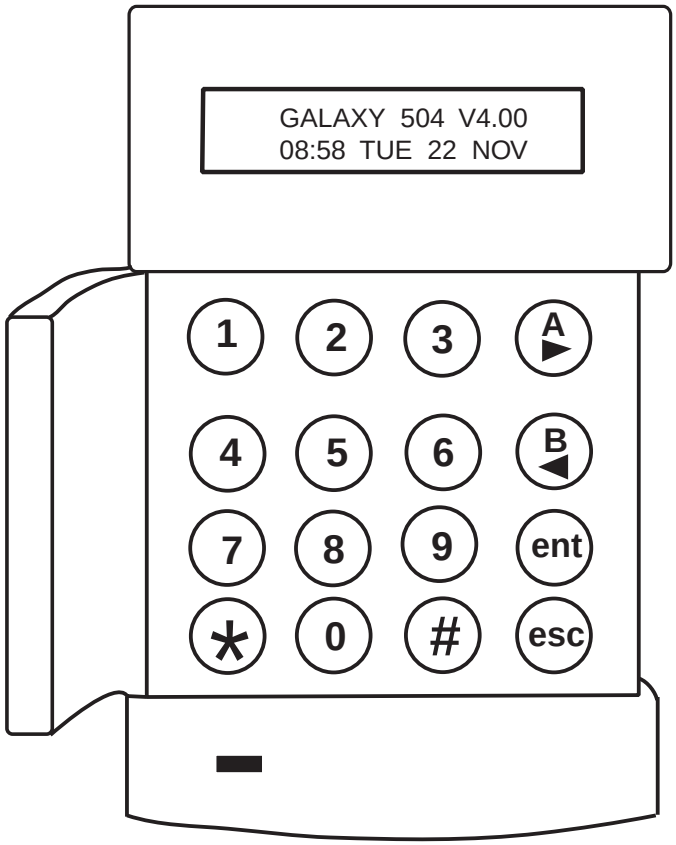
8/18/60/128/500/504/512

Installation Manual

Contents

Introduction

The Galaxy control panels can be fully programmed via the Galaxy LCD keypad. This manual gives a full description of all engineer and user programming options.
Throughout this Installation Manual, references to menu options, unless otherwise indicated, are found in the **Galaxy Programming Manual**, part number **IP1-0030.**



Mk7 LCD Keypad

Section 1: Quick Setup

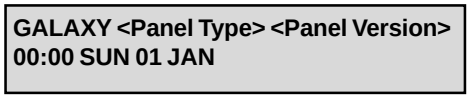
To quickly set up the Galaxy control panel for programming follow these simple steps:

1. Connect a 1k Ω (1%) resistor across each of the zones on the panel and RIO (if connected).
2. Ensure that the tamper return loop — the terminal marked as **T** on the PCB — is a complete loop.
   NOTE: This is factory set as a completed loop with a 0 V return.
3. Connect a keypad to the **AB LINE** terminals on the control panel. The Galaxy 500, 504 and 512 have four **AB LINE** terminals. Connect the terminals as follows:

Control Panel	Keypad
B	B
A	A
+	+
-	-

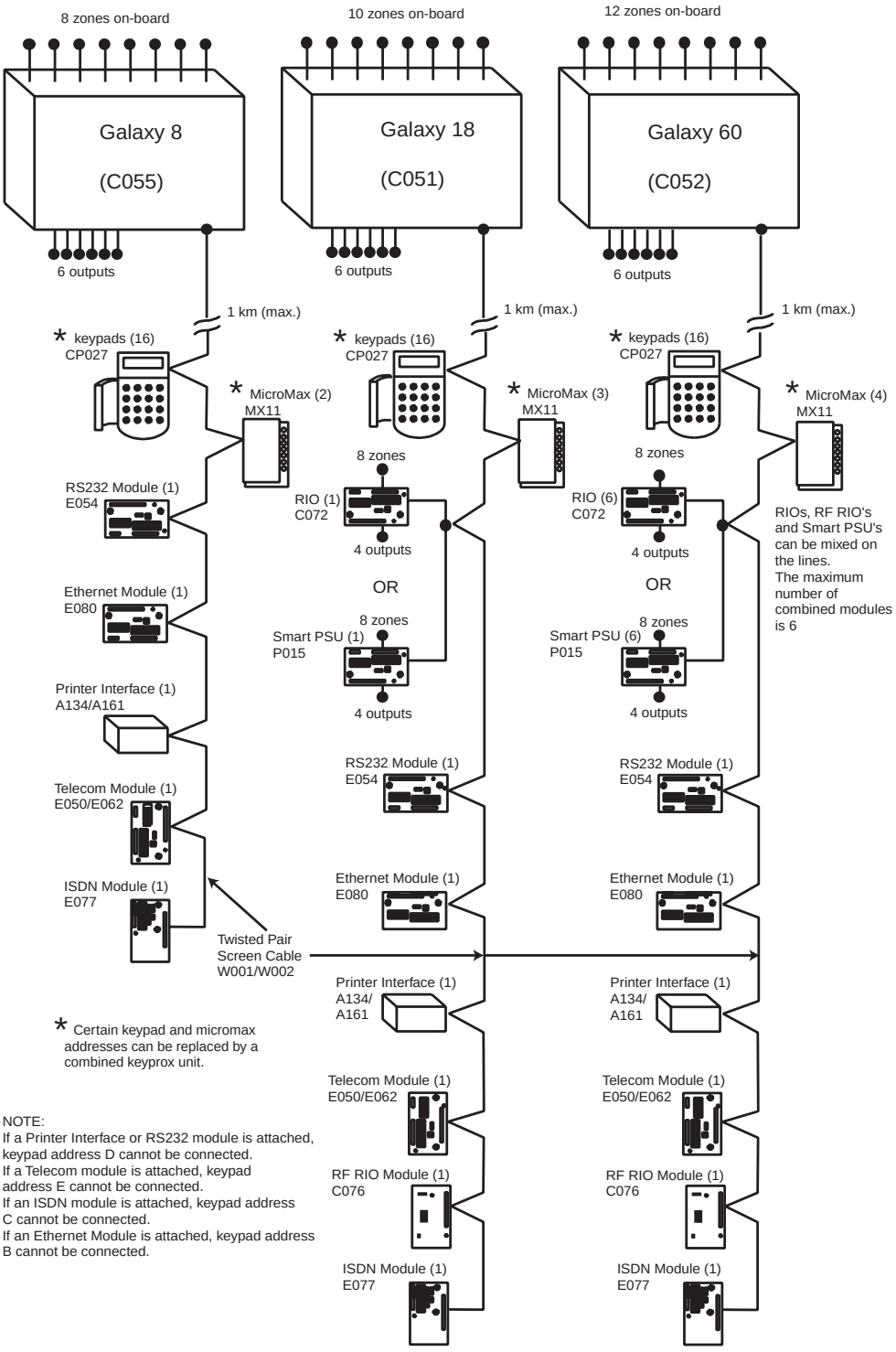
Table 1-1 Terminal Connections

4. Connect a 680 Ω End Of Line (EOL) resistor across the **A** and **B** terminals of the keypad.
5. Ensure that the keypad is fitted to the wall (see **Keypad Installation Procedure, Section 4**).
6. Connect the battery before replacing the control panel lid.
7. Connect the mains wiring to the control panel. **Do not** switch the mains ON.
8. Replace the control panel lid and secure the fastening screw.
9. Switch on the mains voltage (230 Va.c. / 50 Hz).
10. The following sequence of events occur:
    - the keypad buzzer and control panel horn (if fitted) activate momentarily,
    - flashing ✶✶✶✶✶✶✶✶✶✶✶✶✶✶✶✶ is displayed on the keypad,
    - the sounders stop and the keypad displays become blank,
    - the green power LED lights,
    - the default banner is displayed on the keypad.



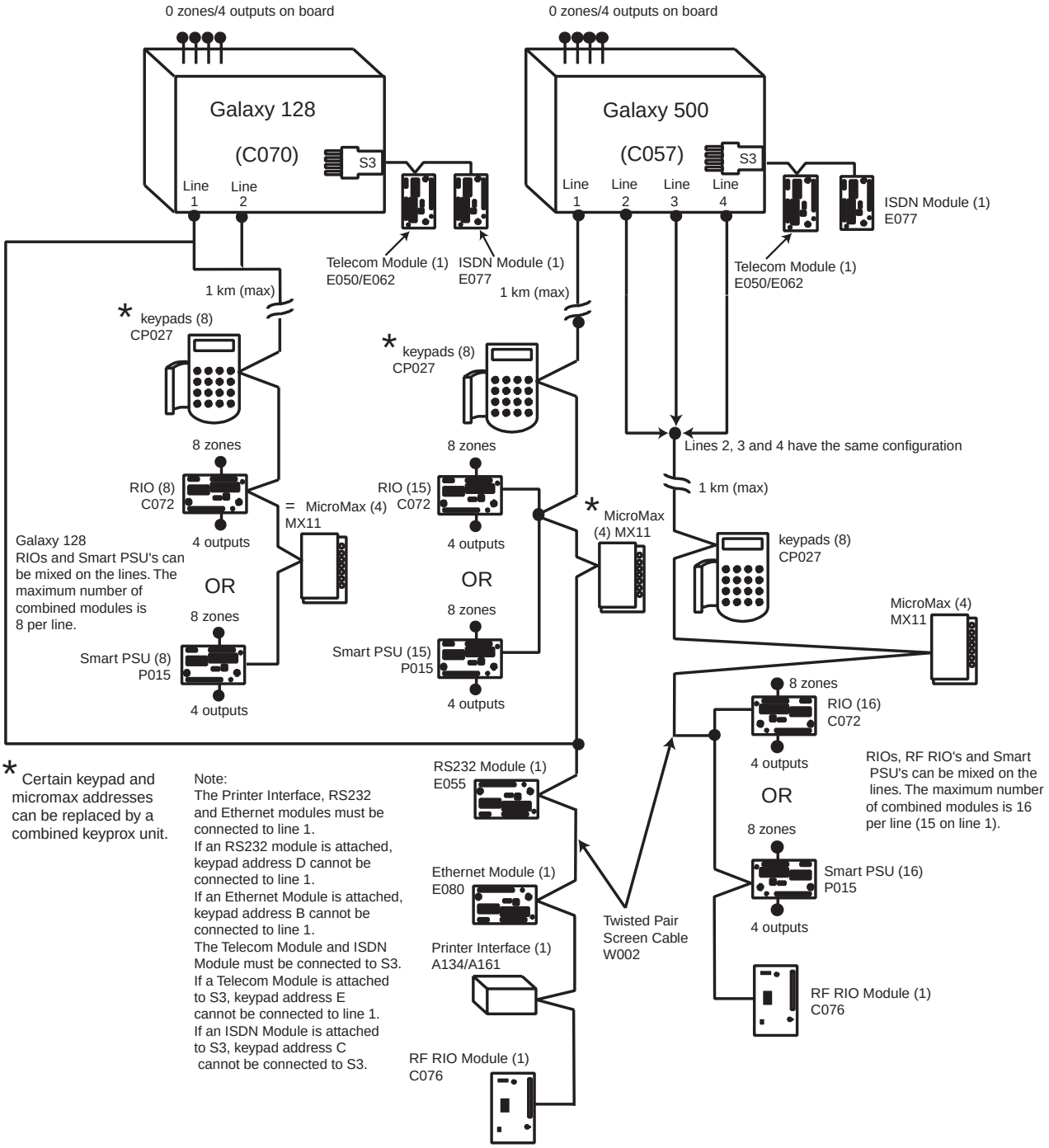
11. The system is now ready to be programmed. Refer to **Programming Manual: System Operation** for programming details.

Section 2: System Architecture



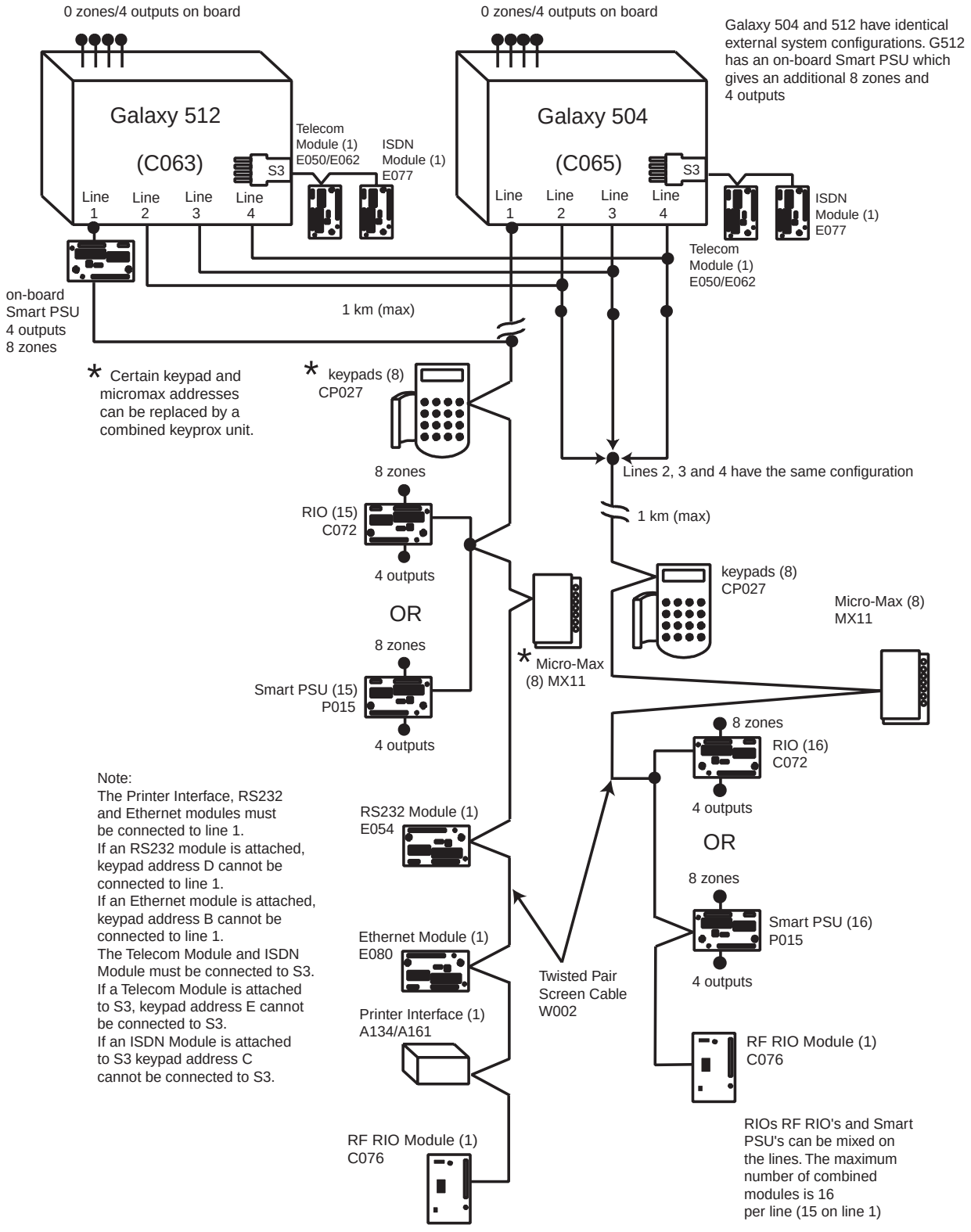
	On-board		RIOs				Keypads		MicroMAX	Keyprox
	Zones	Outputs	Poss.	Address	Zones	Outputs	Poss.	Address	Poss.	Poss.
Galaxy 8	8	6	0	–	–	–	16	0 – 9, A – F	2	2
Galaxy 18	10	6	1	2	8	4	16	0 – 9, A – F	3	3
Galaxy 60	12	6	6	2 – 7	8 – 48	4 – 24	16	0 – 9, A – F	4	3

Table 2-1 Galaxy 8, 18 and 60 System Configurations



	On-board		RIOs/ Smart PSUs				Keypads		MicroMAX	Keyprox
Galaxy Panel	**Zones**	**Outputs**	**Poss.**	**Address**	**Zones**	**Outputs**	**Poss.**	**Address**	**Poss.**	**Poss.**
128 (line S3)	0	0	0	0	0	0	0	C, E	0	0
(line 1)	0	4	8	1 - 8	128	68	8	0 - 2, B, D & F	4	3
(line 2)	0	4	8	0 - 7			8	0 - 6, F	4	4
500 (line S3)	0	0	0	0	0	0	0	C, E	0	0
(line 1)	0	4	15	1 - 9, A - F	504	256	8	0 - 2, B, D & F	4	3
(lines 2, 3, 4)			16	0 - 9, A - F			8	0 - 6, F	4	4

Table 2-2 Galaxy 128 and 500 system Configurations



	On-board		RIOs				Keypads		MicroMAX	Keyprox
Galaxy Panel	**Zones**	**Outputs**	**Poss.**	**Address**	**Zones**	**Outputs**	**Poss.**	**Address**	**Poss.**	**Poss.**
504, 512 (line S3)	0	0	0	0	0	0	0	C, E	0	0
(line 1)	8	4+4	16	0–9, A –F	512	260	8	0 – 2, B, D & F	8	7
(line 2, 3, 4)			16	0 –9, A –F			8	0 – 6, F	8	8

Table 2-3 Galaxy 504 and 512 System Configurations

Galaxy 8 PCB Layout

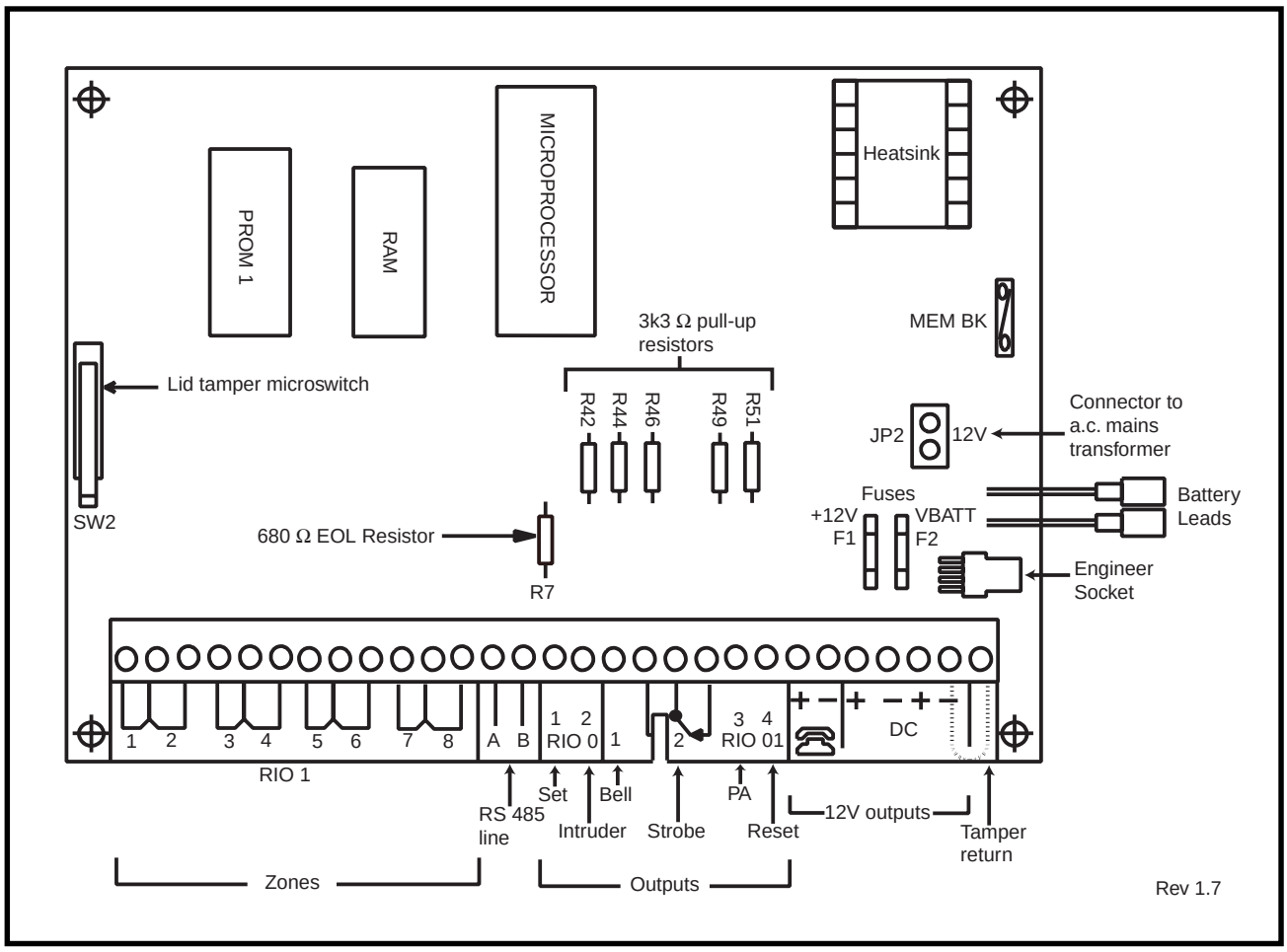


Figure 2-1 Galaxy 8 PCB Layout

The five transistorised outputs on the Galaxy 8 are converted to open collectors by cutting the appropriate pull-up resistor. Refer to the following table:

Output Number	Pull-up Resistor
1001	R42
1002	R44
1011	R46
1013	R49
1014	R51

Table 2-4 Galaxy 8 Output Pull-up Resistors

Galaxy 18/60 PCB Layout

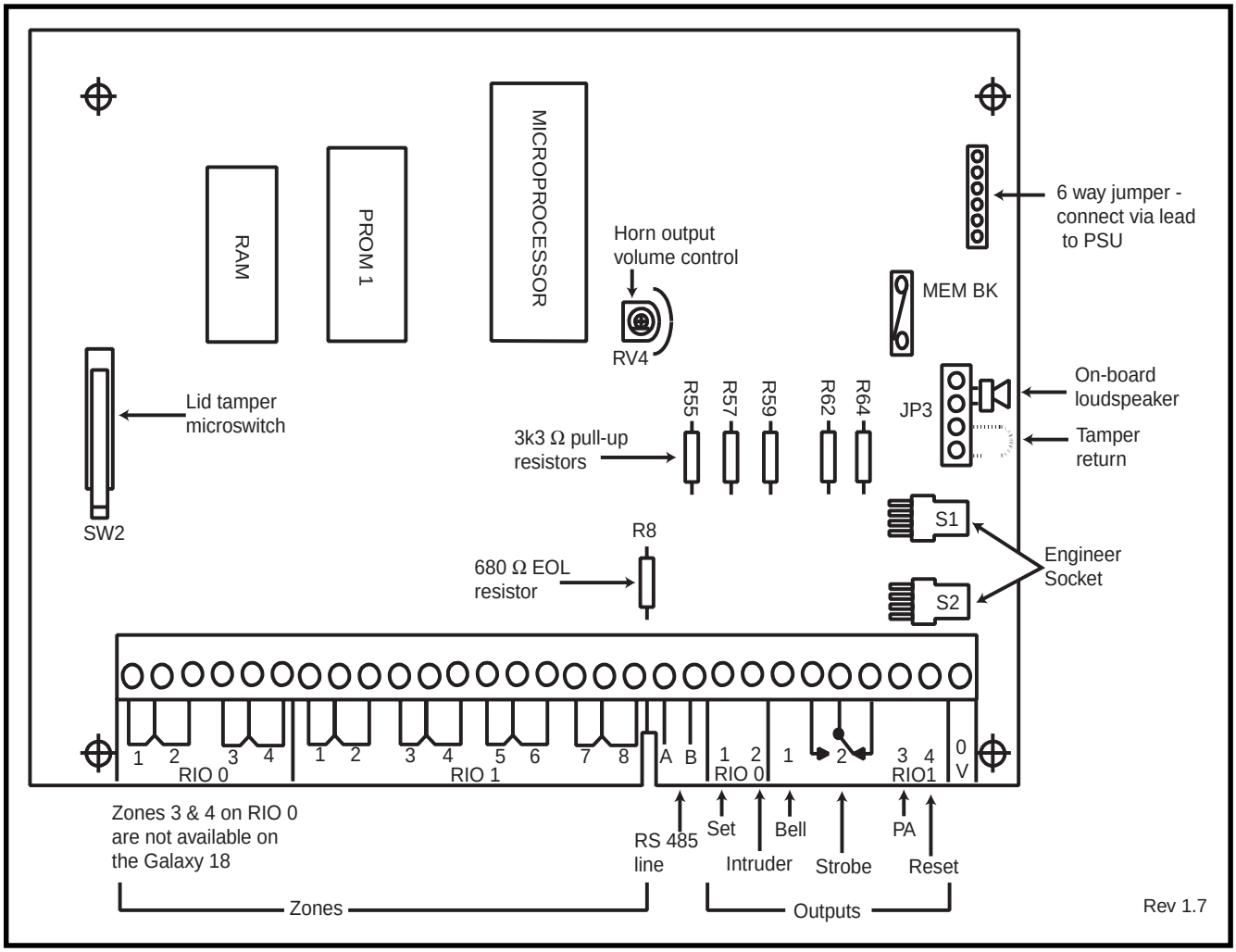


Figure 2-2 Galaxy 18/60 PCB Layout

The five transistorised outputs on the Galaxy 18/60 are converted to open collectors by cutting the appropriate pull-up resistor. Refer to the following table:

Output Number	Pull-up Resistor
1001	R55
1002	R57
1011	R59
1013	R62
1014	R64

Table 2-5 Galaxy 18/60 Output Pull-up Resistors

Galaxy 128, 500, 504 & 512 PCB Layout

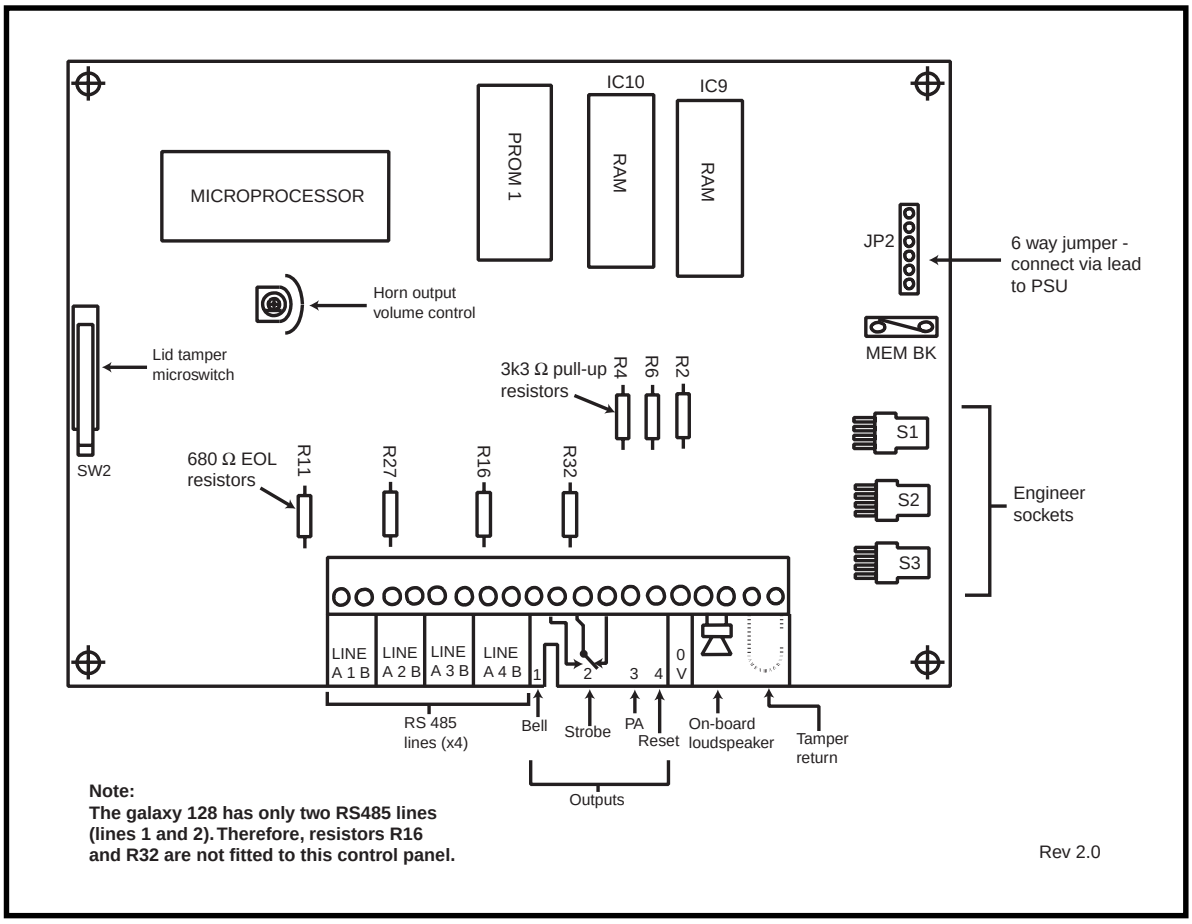


Figure 2-3 Galaxy 128, 500, 504 & 512 PCB Layout

The three transistorised outputs on the Galaxy 128, 500, 504 & 512 are converted to open collectors by cutting the appropriate pull-up resistor. Refer to the following table:

Output Number	Pull-Up Resistor
1001	R2
1003	R4
1004	R6

Table 2-6 Output Pull up Resistors

System Installation and Wiring

The installation and wiring must be performed by a competent engineer. For permanently connected equipment, a readily accessible disconnect device must be incorporated in the fixed wiring having contact separation of at least 3 mm on each pole. The Galaxy control panel must be connected to the a.c. mains supply (230/240 Va.c. 50 Hz) via a fused connection outlet.

The fuse in the mains outlet must not exceed 3A.

Route the mains cable through the hole on the right hand side of the enclosure base. Securely anchor the cable to the box using the tie-wrap as shown in the following Figure:

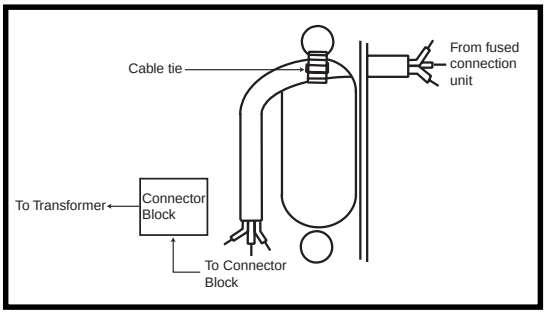


Figure 2-4 Securing the Mains Cable to the Panel

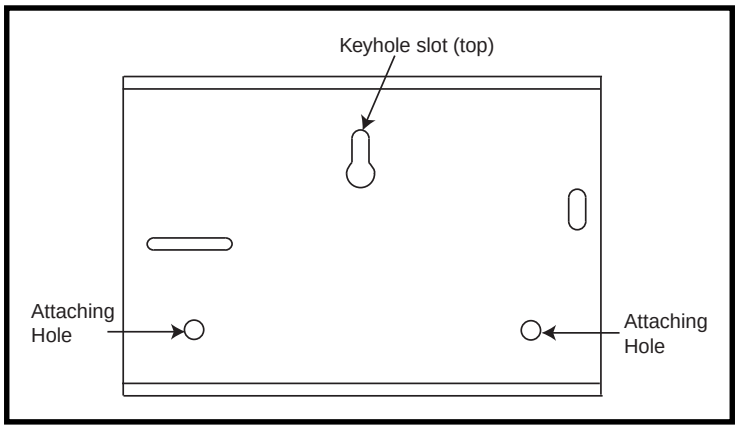


Figure 2-5 Galaxy Panel Base

Secure the panel base to the wall using three 1.5" No. 8 round head steel screws through the holes provided.

The mains cable used must be a three core type (with green/yellow earth insulation) of adequate current carrying capacity.

NOTE: The mains cable must satisfy the requirements stated in BS6500.

Connect the mains cable to the mains terminal block as follows:

- blue wire to the terminal marked N (Neutral)
- green/yellow wire to the terminal marked (Earth)
- brown wire to the terminal marked L (Live)

NOTE: No other connections to the mains connector are permitted.

All wiring must be in accordance with the latest edition of the IEE Wiring Regulations (Regulations for Electrical Installations), see also BS7671.

Once all zones and module wiring has been completed replace the lid of the enclosure and screw the lid to the base with the screw provided.

Stand-by Battery

The Galaxy control panels can accommodate up to 2x7 Ahr or 17 Ahr stand-by battery. Ensure that the battery connector leads on the control panel Powers Supply Unit (PSU) are connected to the correct terminals on the battery.

Power Supply Unit

The Power Supply Unit (PSU) supplies power to the system. The Switch Mode PSU (Rev 1.00) does not have a separate transformer.
PSU variants to Rev 1.6 are: 1A, 3A, and 3A Smart.
Switch Mode PSU variants to Rev 1.0 are: 1A and 3A.

WARNING: THERE ARE LETHAL VOLTAGES PRESENT IN THE SWITCH MODE PSU. REMOVE MAINS POWER FROM THE BOARD BEFORE HANDLING IT.

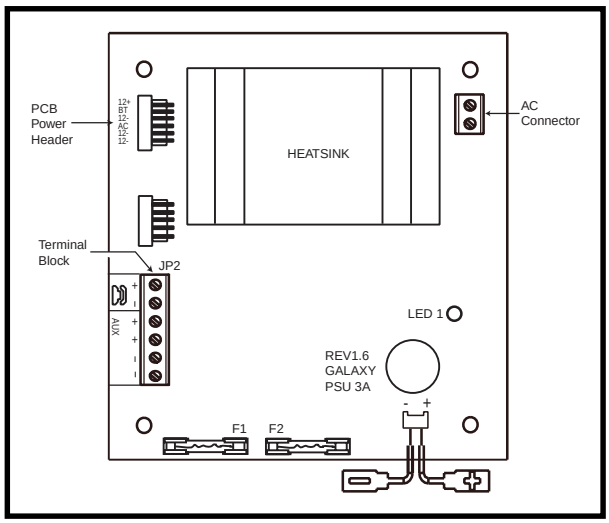


Figure 2-6. 1A/3A Power Supply Unit

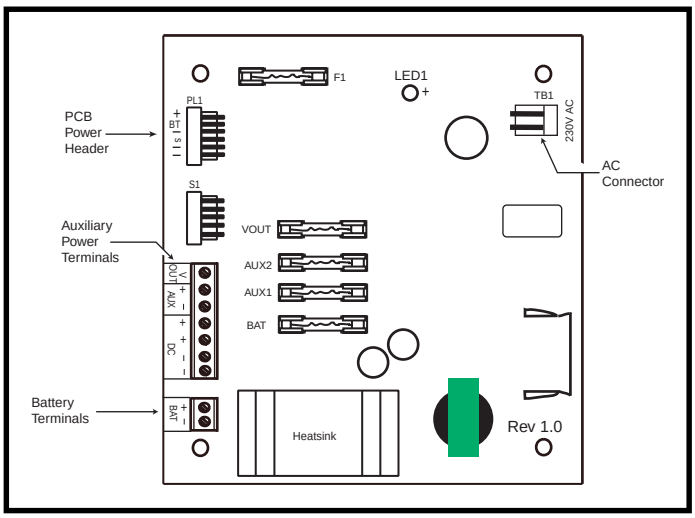


Figure 2-7. 1A/3A Switch Mode Power Supply Unit

FUSE NAME	1A VALUE	3A VALUE
AUX F1	1.0	2.0
BAT F2	1.0	2.0

Table 2-7 PSU fuses

FUSE NAME	VALUE IN AMPS
BAT	1.6
AUX1	1.6
AUX2	1.0
VOUT	0.5
F1	1.0

Table 2-8 Switch Mode PSU Fuses

Memory

The Galaxy control panels are fitted with a memory chip with its own battery backup on the main PCB. This allows the panels to retain the system configuration and programming details and the event log for up to 8 hours (G8, 18 and 60) or 28 days (G128, 500, 504 and 512), when both the mains power and stand-by battery have been disconnected. The backup battery switch (marked **MEM BK** on the PCB) must be kept closed to retain the memory during a complete power down. This is known as a **warm start**.

NOTE: The period that the memory is retained for is dependent on the charge of the backup battery.

To completely erase the system memory and returnto the factory default settimgs open the **MEM BK** switch and remove all power to the PCB. This is known as **cold start**.

RS485 Data Communication Bus (AB Lines)

Communication between the Galaxy control panels and the modules attached to the system takes place on the AB line. The communication protocol is RS 485 format. The control panel constantly monitors the modules attached to it. A break in the communication from any of the modules generates a module tamper alarm

RS485 Wiring Configurations

The system **must** be wired in a daisy-chain configuration. That is the **A** line from the previous module is connected to the **A** terminal of the current module and then on to the **A** line of the next module.

The RS485 (**AB**) line must have a 680 Ω resistor fitted across the **A** and **B** terminals of the last module on the line. If two lines are connected, both ends must be terminated with 680 Ω resistors and the appropriate EOL resistor on the control panel PCB must be cut.

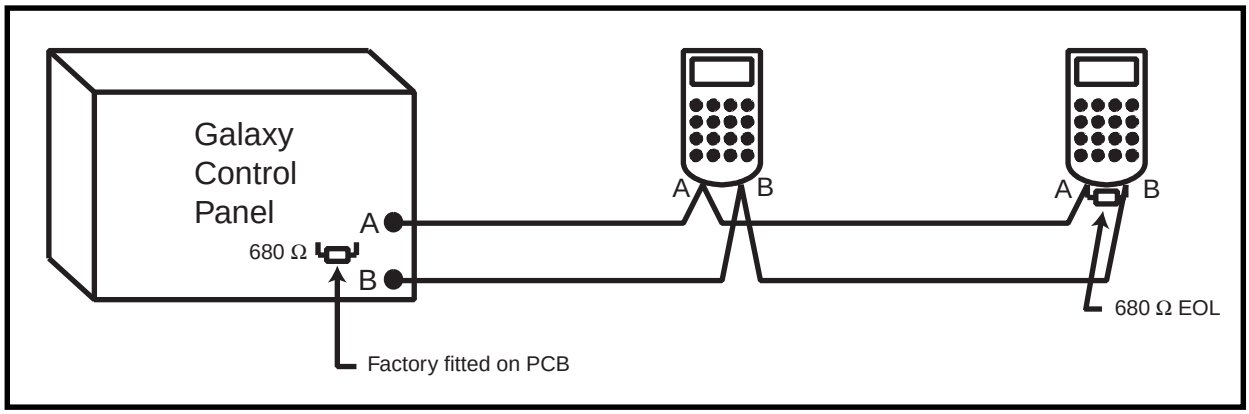


Figure 2-8 Daisy Chain Configuration

Each **AB** line can run in two directions from the control panel. This requires a minor hardware modification to the control panel PCB.

- cut EOL resistor — G8 = R7; G18/60 = R8; G128 = R11 & R 27; G500, 504 & G512 = R11, R27, R16 and R32 for lines 1, 2, 3 and 4 respectively,
- run two lines from the **A** and **B** terminals of the line,
- terminate both Ends Of Line (EOL) with a 680 Ω resistor.

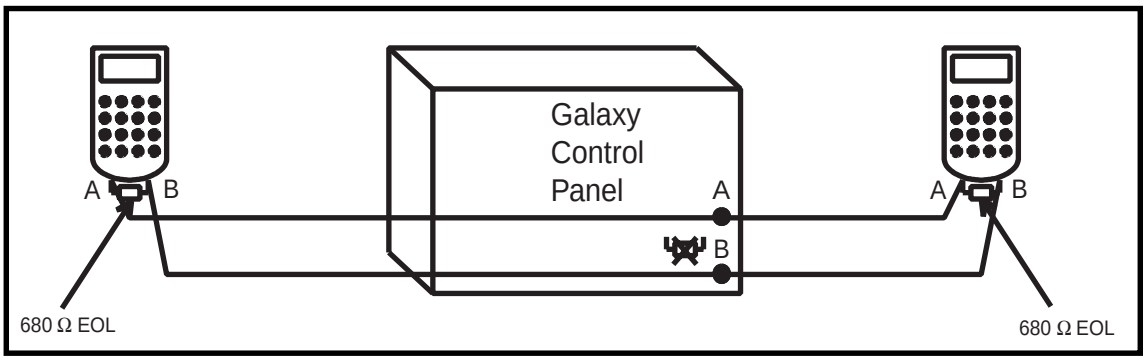


Figure 2-9 Twin AB Line Daisy-Chain configuration

RS485 Wiring Recommendations

To ensure that the system communicates at the maximum level of efficiency, the following recommendations **must** be adhered to:

1. Each communication line can support 32 devices. The maximum number of devices on each line are:

	Galaxy 8	Galaxy 18	Galaxy 60	Galaxy 128	Galaxy 500	Galaxy 504	Galaxy 512
Keypads	16	16	16	8	8	8	8
RIO's/SPSU's	0	1	6	8	16 (line1=15)	16 (line1=15)	16
MicroMAX	2	3	4	4	4	8	8
RS232	1	1	1	1(line1only)	1(line1only)	1(line1only)	1(line1only)
Telecoms	1	1	1	1 (connected to S3)	1 (connected to S3)	1 (connected to S3)	1 (connected to S3)
Printer	1	1	1	1(line1only)	1(line1only)	1(line1only)	1(line1only)
ISDN	1	1	1	1 (connected to S3)	1 (connected to S3)	1 (connected to S3)	1 (connected to S3)
Ethernet	1	1	1	1(line 1 only)	1(line 1 only)	1(line 1 only)	1(line 1 only)
Keyprox	2	3	3	4 (line 1 = 3)	4 (line 1 = 3)	8 (line 1 = 7	8 (line 1 = 7)

Table 2- 9 Communication Devices

2. The system **must** be wired in a daisy-chain configuration. Spur and star configurations **must not** be used as they reduce the immunity to electrical interference.

3. The cable used to wire the RS485 (**AB**) line **must** be screened twisted pair (Part No. **W002**) or Belden 8723 equivalent.

4. Shielded twisted pair cable, where used, is connected to the earthing pillar on the Galaxy control panel using the P-clip and nut supplied (refer to Figure 2-10).

5. The RS485 (**AB**) line must have a 680 Ω resistor fitted across the **A** and **B** terminals of the last module on the line. If two lines are connected, both ends must be terminated with 680 Ω resistors and the appropriate EOL resistor on the control panel PCB must be cut (refer to figures 2-1, 2-2 and 2-3).

6. There must only be a single **AB** pair of wires in each of the cables.
7. The power supply in the Galaxy control panel and remote power supplies **must not** be connected in parallel.
8. The 0 V of all remote power supplies should be connected in common to the 0 V of the Galaxy control panel.
9. Ensure that any extension loudspeakers are not wired in the same cable as an **AB** pair of wires.
10. Where possible, ensure that the **AB** cable is at least 30 centimetres away from any other cables.
11. Where possible, ensure that the **AB** cable does not run parallel to other cables for extended distances (maximum 5 metres).

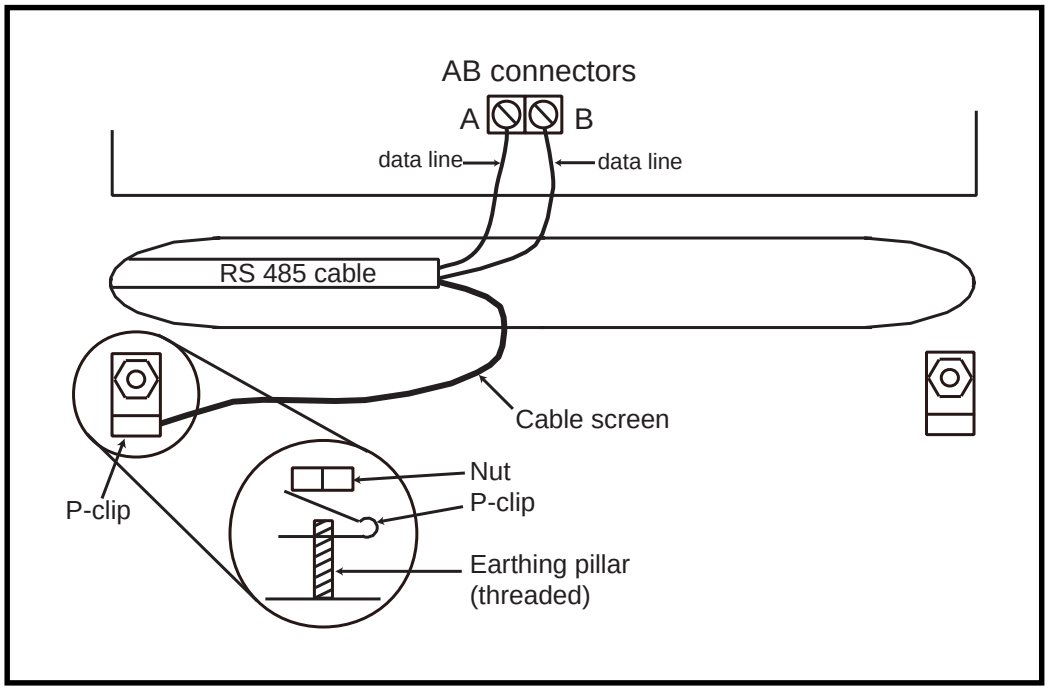


Figure 2-10 Connection of Cable screen using the P-Clip

Zones

The default setting for the zones on the Galaxy panels are shown in the following table:

Galaxy Panel	Zone 1001	Zone 1002	Remaining Zones
8, 18, 60	Final	Exit	Intruder
128, 500	-	-	Intruder
504, 512	Intruder	Intruder	Intruder

Table 2-10 Default Zone Functions

Zone addresses

Each zone has a four digit address; **1004**, **4136**. The address is made up of three reference numbers as shown in the following figure:

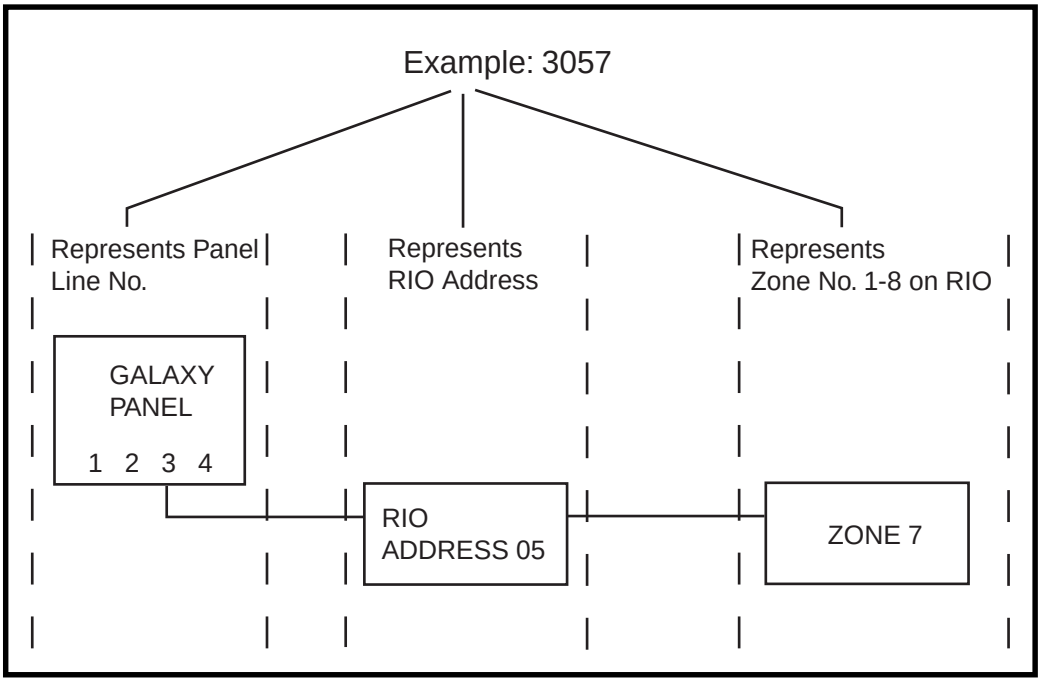


Figure 2-11 Zone Addresses

For example, zone **3057** is the detector connected to line **3**, RIO **05**, zone **7**.

PANEL	ON-BOARD RIO RANGE	TOTAL	RIO ZONES	TOTAL
G8	1011 - 1018	8	0	8
G18	1001 - 1002, 1011 - 1018	10	1	18
G60	1001 - 1004, 1011 - 1018	12	6	60
G128	No on-board Rio's	0	Line 1 (01-08) Line 2 (00-07)	128
G500	No on-board Rio's	0	Line 1 (01-09, A-F) Lines 2,3,4 (00-09, A-F)	504
G504	No on-board Rio's	0	Line 1 (00-09, A-F) Lines 2,3,4 (00-09, A-F)	512
G512	No on-board Rio's	0	Line 1 (00-09, A-F) Lines 2,3,4 (00-09, A-F)	512

Table 2-11 Zone Address Ranges

Wiring Zones

The zones on Galaxy panels are double balanced. Each zone is 1 kΩ closed and 2 kΩ open. The transition from 1 to 2 kΩ generates an alarm condition. Refer to Table 2-12 for details of the zone resistance and resulting conditions.

NOTE: The circuit debounce time (the period the zone must remain open to register a change in condition) is 300 milliseconds by default.

Zone Resistance (Ω)	Condition
0-800	Tamper Short Circuit (TAMP S/C)
800-900	Low Resistance (LOW RES)
900-1200	Normal (CLOSED)
1200-1300	High Resistance (HIGH RES)
1300-12000	Alarm (Open) (OPEN)
1200-α	Tamper Open Circuit (TAMP O/C)

Table 2-12 Zone Resistance and conditions

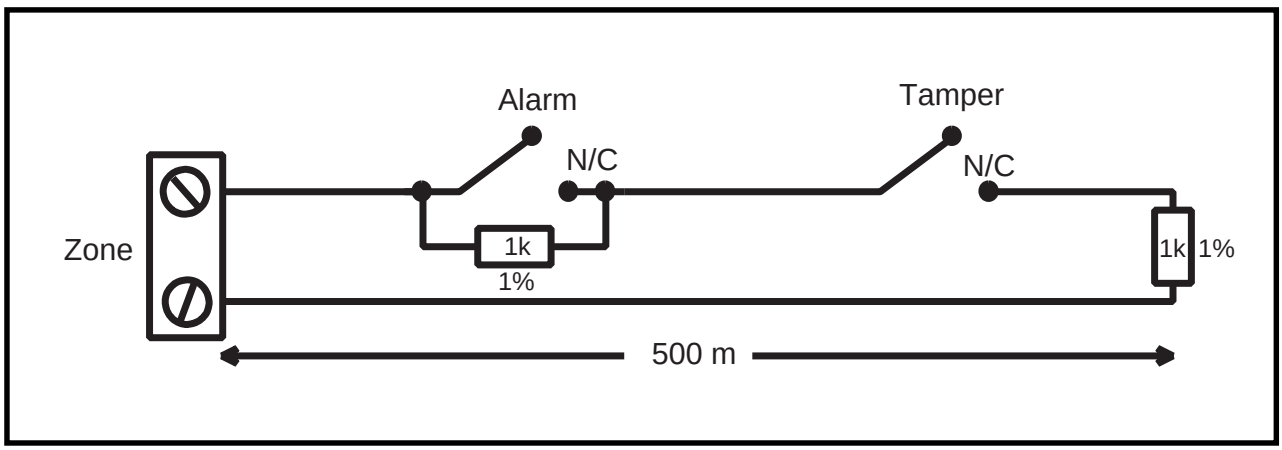


Figure 2-12 Standard Zone/Detector wiring

NOTE: The recommended maximum cable run from a zone to a detector is 500 metres.

Wiring Multiple Zones

Multiple detectors can be wired into a single zone as shown in the following Figure. The maximum number of detectors that can be connected to a single zone is ten.

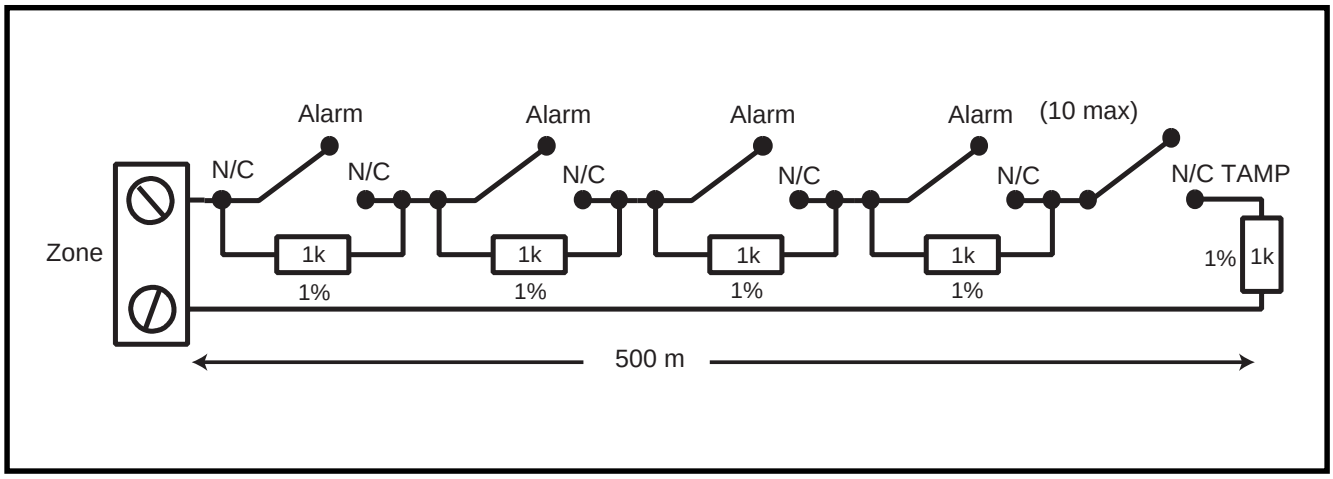


Figure 2-13 Zone to Multiple Detector Wiring

Wiring Keyswitches

Latching or spring loaded keyswitches can be used to set and unset the Galaxy panels; option **52 = PROGRAM ZONES** has provision to accommodate both types of transition.

If the keyswitch latches, the transition from 1 kΩ to 2 kΩ initiates the setting procedure of an unset system, the transition from 2 kΩ to 1 kΩ instantly unsets a set system. If the system is already set, then the transition from 1 kΩ to 2 kΩ has no effect. If the system is unset, the transition from 2 kΩ to 1 kΩ has no effect. This is programmed as a ✳ **Keyswitch** in the **PROGRAM ZONES** option.

If the keyswitch is spring-loaded (returns to its normal position), the transition from 1 kΩ to 2 kΩ initiates the setting procedure of an unset system and instantly unsets a set system, the transition from 2 kΩ to 1 kΩ - the return to the normal position - has no effect. This is programmed as a **Keyswitch** in the **PROGRAM ZONES** option.

The wiring of the keyswitch is shown in figure 2-14

Wiring Terminator Buttons

Zones programmed as **Push-Set** (terminator) buttons can be open going closed (2 kΩ to 1 kΩ) or closed going open (1 kΩ to 2 kΩ). The first activation of the terminator button initialises its status to the system.

NOTE: The first activation of a terminator may not set the system as this can be the initialisation routine. If the system continues setting, push the button again. The system will set on the second push. This initialisation only occurs on the first setting. All subsequent setting routines set on the first push of the terminator.

The wiring of the terminator is shown in the following figure:

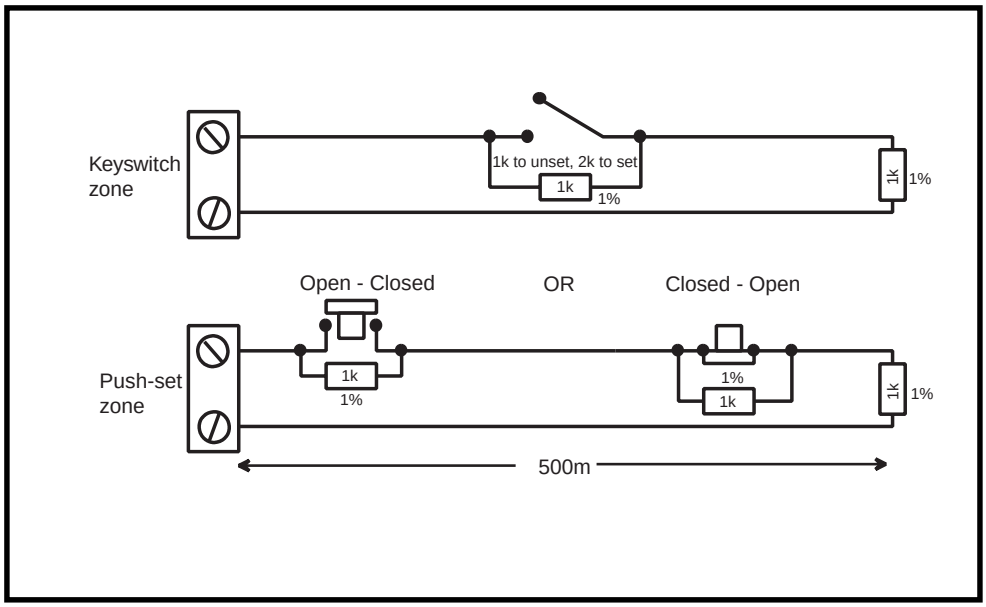


Figure 2-14 Terminator Zone Wiring

Outputs

The Galaxy control panel outputs are detailed in the following table:

Output Address		Default Function	Type	Current (mA)	Voltage (V)	Normal State
G8, 18, 60	G128, 500, 504, 512					
1001	–	Set	Transistorised	400	12	Positive
1002	–	Intruder	Transistorised	400	12	Positive
1011	1001	Bells	Transistorised	400	12	Positive
1012	1002	Strobe	Single Pole Change Over Relay (SPCO)	1000	30 (max.)	De-energised
1013	1003	PA	Transistorised	400	12	Positive
1014	1004	Reset	Transistorised	400	12	Positive

Table 2-13 Outputs

All other outputs available via RIO's are programmed as Intruder by default.

Output Applications

The outputs on the Galaxy panels, with the exception of the SPCO relay output, are transistorised outputs; negative applied (positive removed) by default. These supply up to 400 mA and can be used to drive the necessary output devices.

NOTE: The polarity of each output can be changed using option **53 = PROGRAM OUTPUTS**

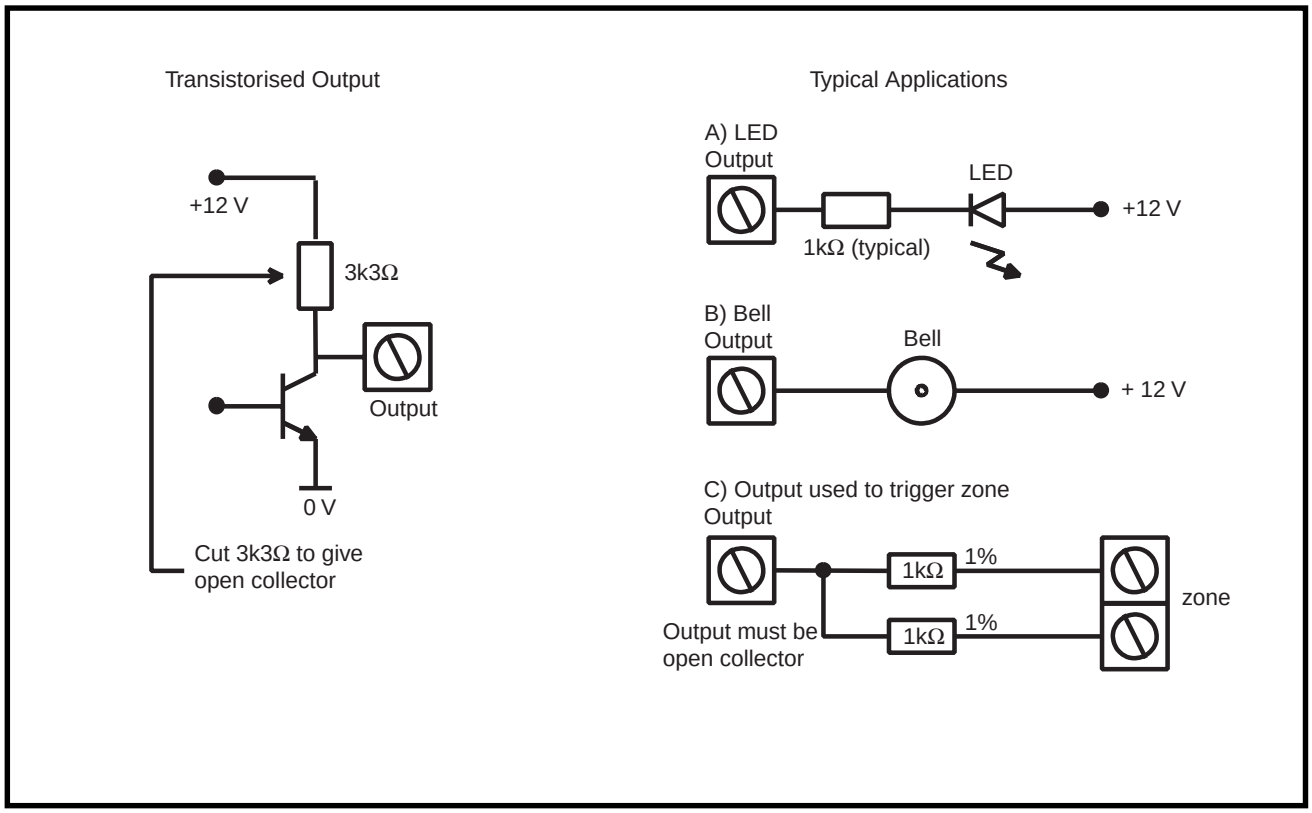


Figure 2-15 Output Configuration and Typical Applications

Note: For the appropriate 3k3Ω pull-up resistor refer to tables 2-4, 2-5 and 2-6.

The relay output is a single pole change over; this can be used to drive output devices that require a clean set of contacts, isolated from the output voltage.

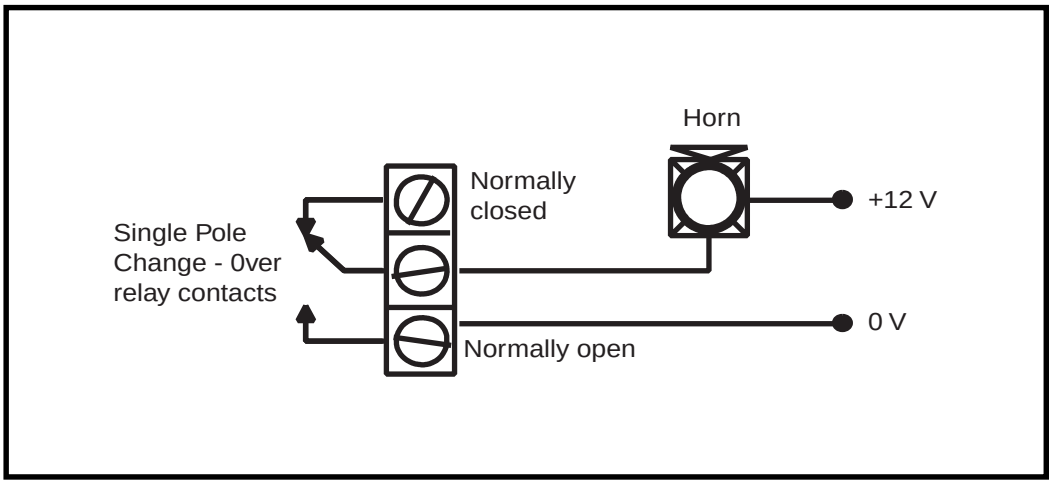


Figure 2-16 Single Pole Change–Over Relay Output Configuration and Typical application

Section 3: Optional Modules and Facilities

Remote Input Output (RIO) Modules – C072

Galaxy RIO's can be added to the Galaxy 18, 60, 128, 500, 504 and 512 control panels. Each additional RIO expands the system by eight zones and four outputs.

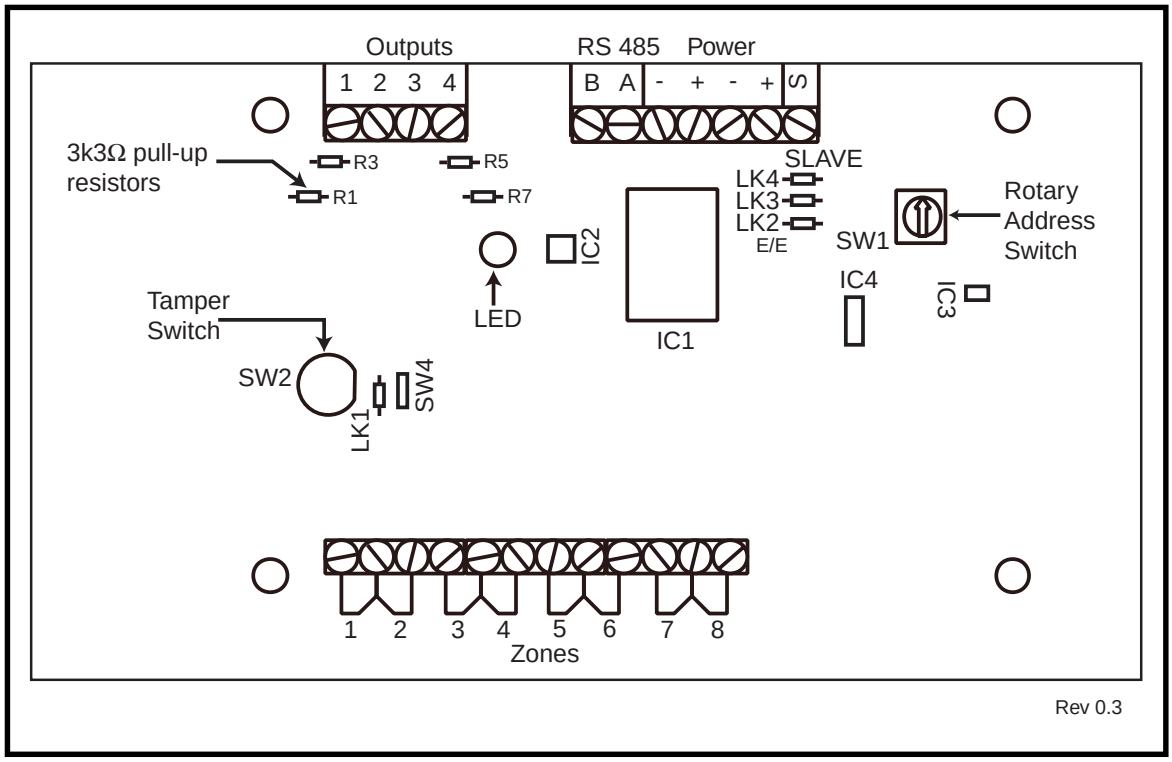


Figure 3-1 Galaxy RIO

Addressing

The Galaxy RIO **must** be given a unique address **before** it is connected to a power supply. This address is selected using the 16-way Rotary Address Switch (SW1). Refer to **Figure 3-1.**

Galaxy Panel	No of RIO's (MAX)	Valid Addresses
8	0	-
18	1	2
60	6	2-7
128	16	Line 1 = 1-8 Line 2 = 0-7
500, 504	63	Line 1 = 1-F Line 2, 3, 4 = 0-F
512	64	Lines 1, 2, 3, 4 = 0-F

Table 3-1 Valid RIO Addresses

Connecting the RIO

The RIO can only be connected to the system while engineer mode is accessed. The RS485 (**AB**) line of the Galaxy RIO **must** be wired in parallel (daisy-chain configuration) with the RS485 (**AB**) line of any keypads connected to the system. The RIO requires 12 Vd.c. (range 10.5 to 16.0 V) and 40 mA. This can be supplied from the control panel power supply or from a remote power supply if the distance causes a large voltage drop on the cable.

NOTE: A 3 Ampere Smart PSU (part no. P015) can be fitted in place of a RIO.

Connect the RIO terminals as follows:

+12 V (either control panel, keypad or remote power supply);

–0 V or ground (either control panel, keypad or remote power supply);

A to the **A** terminal of the previous module (or control panel if RIO is the first on the line);

B to the **B** terminal of the previous module (or control panel if RIO is the first on the line).

NOTE: If the RIO is the last module on the line, connect a 680 Ω EOL resistor across the **A** and **B** terminals.

Configuring the RIO

The added RIO is configured into the system on exiting from engineer mode. If the message **XX Mod Added [<],[>] To View** is displayed, the system has recognised that a new module is present. Press the **A** or **B** keys to confirm that the RIO has been added. If this message is not displayed or the RIO is not on the list of added modules, then the RIO is not communicating with the control panel or has been set to the same address as the RIO already connected to the system.

The flash rate of the red LED (LED1) on the RIO indicates the status of the communication with the control panel - refer to the following **Table:**

Flash Rate	Meaning
0.1 ON / 0.9 OFF	Normal communications
OFF	No d.c. supply
1.5 ON / 1.5 OFF	RIO has not been configured into system
0.2 ON / 0.2 OFF	RIO has lost communication with system
0.9 ON / 0.1 OFF	Very poor communications

Table 3-2 RIO LED Flash Rates

Zones

The Galaxy RIO has eight programmable zones. These default to **INTRUDER**. Each zone is Double Balance monitored with a 1 kΩ resistor in series with the zone detector and a 1 kΩ (1%) resistor in parallel across the detector switch. The change to 2 kΩ (1%) resistance registers the zone as open/alarm.

Outputs

The RIO has four transistorised outputs. Each output is connected to +12 V via a 3k3Ω pull-up resistor (refer to Table 3-3). When an output is activated, the load is switched to the negative supply voltage (ground or 0 V) of the RIO. The current available from each output is 400 mA.

The default functions and pull-up resistors of each RIO output, when connected to a Galaxy are shown in the following **Table:**

Output No.	Function	Pull-up Resistor
1	Bells	R1
2	Strobe	R3
3	PA	R5
4	Reset	R7

Table 3-3 RIO Output Default Functions

There are several links on the RIO which, if altered when the module is powered down, modify the RIO operation:

- LK1 - short circuit this to by-pass the RIO lid tamper switch SW2
- LK2 - cut this to configure the module as an **Entry/Exit RIO**
- LK4 - cut this to configure the module as a **Slave** or **Shunt RIO** (If LK2 is already cut this modifies the exit time on the **Entry/Exit RIO** from 30 to 90 seconds).

For further information refer to **Galaxy Remote Input Output (RIO) Installer's Guide** (Part Number: L/051 supplied with the RIO).

Entry/Exit RIO

A RIO is configured as an **Entry/Exit RIO** if resistor LK2 is cut, this allows a further sub-system to be added to the Galaxy. The **Entry/Exit RIO** can be armed while the main system is unset, allowing protection of specific areas; or disarmed when the main system is set allowing access to particular areas without unsetting a group (shunting of zones). If the main system is set and the **Entry/Exit RIO** is not shunted, an activation on the RIO will cause a full alarm on the main system. The **Entry/Exit RIO** configuration is shown in the following **Table:**

Zone	Default Function	Programmed Function	Output	Default Function (Fixed)
1	Intruder	Any function	1	Ready
2	Intruder	Any function	2	Entry/Exit Horn
3	Intruder	Any function	3	Set
4	Intruder	Any function	4	Alarm
5	Intruder	Any function		
6	Exit	Non-Programmable		
7	Final	Log		
8	Keyswitch	Log		

Table 3-4 Entry/Exit RIO Configurations

Entry/Exit RIO Zone Programming

Zones 1 – 5 operate as normal zones. If a zone is programmed as **Security**, any activation - whether the **Entry/Exit RIO** is armed or disarmed and the Galaxy is set or unset - results in the appropriate alarm condition being generated on the control panel.

If zones 1 – 5 are programmed as **Intruder**, then an alarm condition can be generated on the **Entry/ Exit RIO** when it is armed and the Galaxy is unset.

Zones 6 and 7 behave as an **Exit** and **Final** zone respectively. The functioning of these zones is fixed and is independent of the programming of the Galaxy. Zone 7 can be programmed as **Log** in order to report and record its activation in the Galaxy event log.

The function of zone 8 is fixed as a **Keyswitch**. This should also be programmed as **Log** in order to report and record its activation in the Galaxy event log.

Entry/Exit RIO Zone Operation

The **Entry/Exit RIO** is armed by the transition of zone 8 (the keyswitch zone) from 2 kΩ to 1 kΩ (reverse to normal operation). This starts an exit/entry time of 30 seconds. Closing the contact on zone 7 (the Final zone) or expiry of the exit time set the RIO. Any activation of zones 1 – 5 when the **Entry/Exit RIO** is armed activates the Alarm output (output 4).

The **Entry/Exit RIO** is disarmed by the transition of the keyswitch zone (zone 8) from 1 kΩ to 2 kΩ. The disarming procedure can be started by activating the final zone, (zone 7), and gaining access to the keyswitch zone via the exit zone (zone 6). Activating zones 1–5 during the disarming period result in an alarm condition being generated. If the **Entry/Exit RIO** is disarmed while the main Galaxy is set, then activation of any of its zones programmed as **Intruder** does not generated an alarm condition on the RIO or the control panel; the zones are **shunted**.

The exit/entry time can be changed from 30 seconds to 90 seconds by cutting resistor LK4.

Slave RIO

A RIO is configured as a **Slave** or **Shunt RIO** if resistor LK4 is cut, this allows a further sub-system to be added to the Galaxy.

The programming and operation of the **Slave RIO** is identical to that of the **Entry/Exit RIO** except for zones 6 and 7, which are **Intruder** type zones by default. **Slave RIOs** do not have an **Exit** or **Final** zone, or an exit time; they are instantly unset and reset by the transition from 1 to 2 kΩ of zone 8.

Zone	Default Function	Programmed Function	Output	Default Function (Fixed)
1	Intruder	Any function	1	Ready
2	Intruder	Any function	2	Fail to Set
3	Intruder	Any function	3	Set
4	Intruder	Any function	4	Alarm
5	Intruder	Any function		
6	Intruder	Any function		
7	Intruder	Any function		
8	Keyswitch	Log		

Table 3-5 Slave RIO Configuration

RF RIO – C076

The Galaxy Radio Frequency (RF) RIO module is an optional add-on to the existing Galaxy product range. The module acts as an RF receiver for the Ademco 868MHz transmitter range (refer to Appendix D).

Features

The RF RIO contains the following features:

- Support for up to 32 RF zones
- Support for up to 30 RF keyfobs
- 4 transistorised outputs

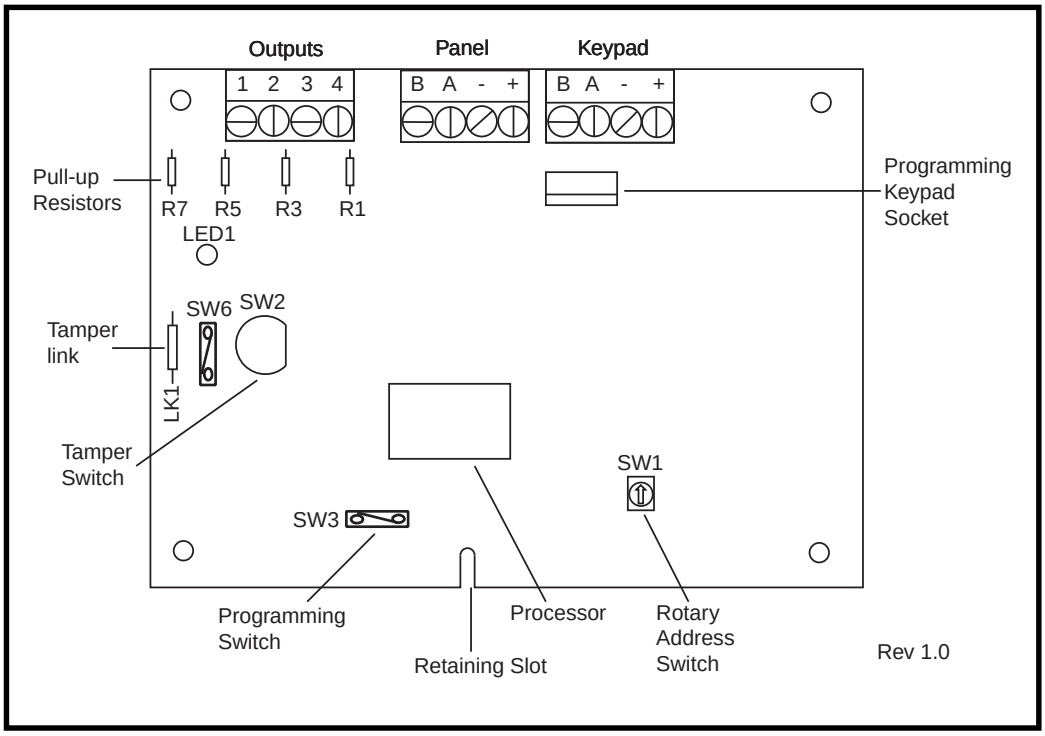


Figure 3-2 RF RIO PCB Layout

Compatibility

The RF RIO is compatible with Galaxy Control Panels 8 - 512 V3 and above. It can be used in reduced capability mode with panel revisions V1.07 - V2.
In reduced capability mode RF specific signals from the RF RIO must be interpreted by the user/ receiving centre.

Connecting the RF RIO

The RS 485 (AB) line of the RF RIO **must** be wired in parallel (daisy chain configuration) with the RS 485 (AB) line of the keypad connected to it. The RF RIO requires 12 V d.c. (range 10.5 to 16.0 V) and 55 mA. This can be supplied from the control panel power supply or from a remote power supply if the distance causes a large voltage drop on the cable.

Connect the RF RIO terminals in accordance with the following **Table:**

RF RIO Terminal	Connected to...
+	+12 V (at control panel, keypad or remote power supply)
-	0V or ground (at control panel, keypad or remote power supply)
A	To the A terminal of the previous module on the line (or the control panel if the RF RIO is the first module on the line)
B	To the B terminal of the previous module on the line (or the control panel if the RF RIO is the first module on the line)

Table 3-6 RF RIO Connections

Note: If the RF RIO is the last Module on the line, connect a 680 Ω resistor across the A and B terminals.

Outputs

The RF RIO has four transistorised outputs. Each output is connected to +12 V via a 3k3Ω pull-up resistor (refer to **Table 3-6 RF RIO Connections**). When an output is activated, the load is switched to the negative supply voltage (ground or 0 V) of the RF RIO. The current available from each output is 400 mA.
The default functions and pull-up resistors of each RF RIO output, when connected to a Galaxy are shown in the following **Table:**

Output No	Function	Pull-up Resistor
1	Bells	R1
2	Strobe	R3
3	PA	R5
4	Reset	R7

Table 3-7 Output Functions

RF RIO Tamper

Switch SW2 on the RF RIO acts as a tamper if the Tamper Link (LK1) is missing. Removing the lid from the RF RIO enclosure activates the RF RIO tamper alarm if the system is not in Engineer Mode. The tamper switch can be bypassed by fitting a 0 Ω link to LK1.

Addressing the RF RIO

The Galaxy RF RIO must be given unique addresses before it is connected to a power supply. This unique address is selected using the 16-way Rotary Address Switch (SW1). The address selected will act as the base address for the RF RIO. Subsequent addresses will be
base address + 1, base address + 2, base address + 3. For example:
Base address = **2** followed by **3**, **4** and **5.**

Address Ranges

This option allows the programming of the RIO addresses, which are to be simulated by the RF RIO. For example, if the RF RIO being programmed supports 32 zones (4 RIO addresses), and the base address, programmed at the hexi-decimal rotary switch is 02, the available addresses would be 02, 03, 04, 05. However, you may want to only respond as RIO addresses 02, 04. The remaining addresses should be disabled and will not respond to commands from the control panel. The base address is enabled by default. All other addresses are disabled by default.
Module status on the RF RIO such as lid tamper,will be reported to the panel using the address set on the rotary switch.

RF RIO Programming

Programming of the RF RIO is achieved by connecting a Galaxy Mk7 keypad directly to the RF RIO at the Programming Keypad Socket or the Keypad Connector Block. The Keypad is not part of the Galaxy network and must be addressed as 0.

Note: To program RF devices, please refer to **RF RIO Module, Installation and Programming Instructions, (II1-0076)** supplied with the RF RIO.

Configuring the RF RIO

The RF RIO is configured into the system on exiting from engineer mode. If the message **XX Mod Added [<],[>] To View** is displayed, the system has recognised that a new module is present. Press the **A** or **B** keys to confirm that the RF RIO has been added. If this message is not displayed or the RF RIO is not on the list of added modules, then the RF RIO is not communicating with the control panel.
The flash rate of the red LED (LED1) on the RF RIO indicates the status of the communication with the control panel — refer to the following **Table.**

FLASH RATE	MEANING
0.1 ON/-.9 OFF	Normal communications
OFF	No d.c. supply
1.5 ON/1.5 OFF	RF RIO has not been configured into system
0.2 ON/0.1 OFF	RF RIO has lost communication with system
0.9 ON/0.1 OFF	Very poor communications

Table 3-8 RF RIO LED flash rates

3 Ampere Smart PSU – P015

The Galaxy Smart PSU can be connected to the Galaxy control panels. The Smart PSU integrates a three ampere power supply with an eight zone Galaxy RIO. This can be used in place of a standard RIO to overcome power problems that arise when the additional RIO is fitted distant to the control panel.

The connection, addressing, zones and outputs information is identical to that described in the previous **Remote Input Output (RIO) Modules** sub-section.

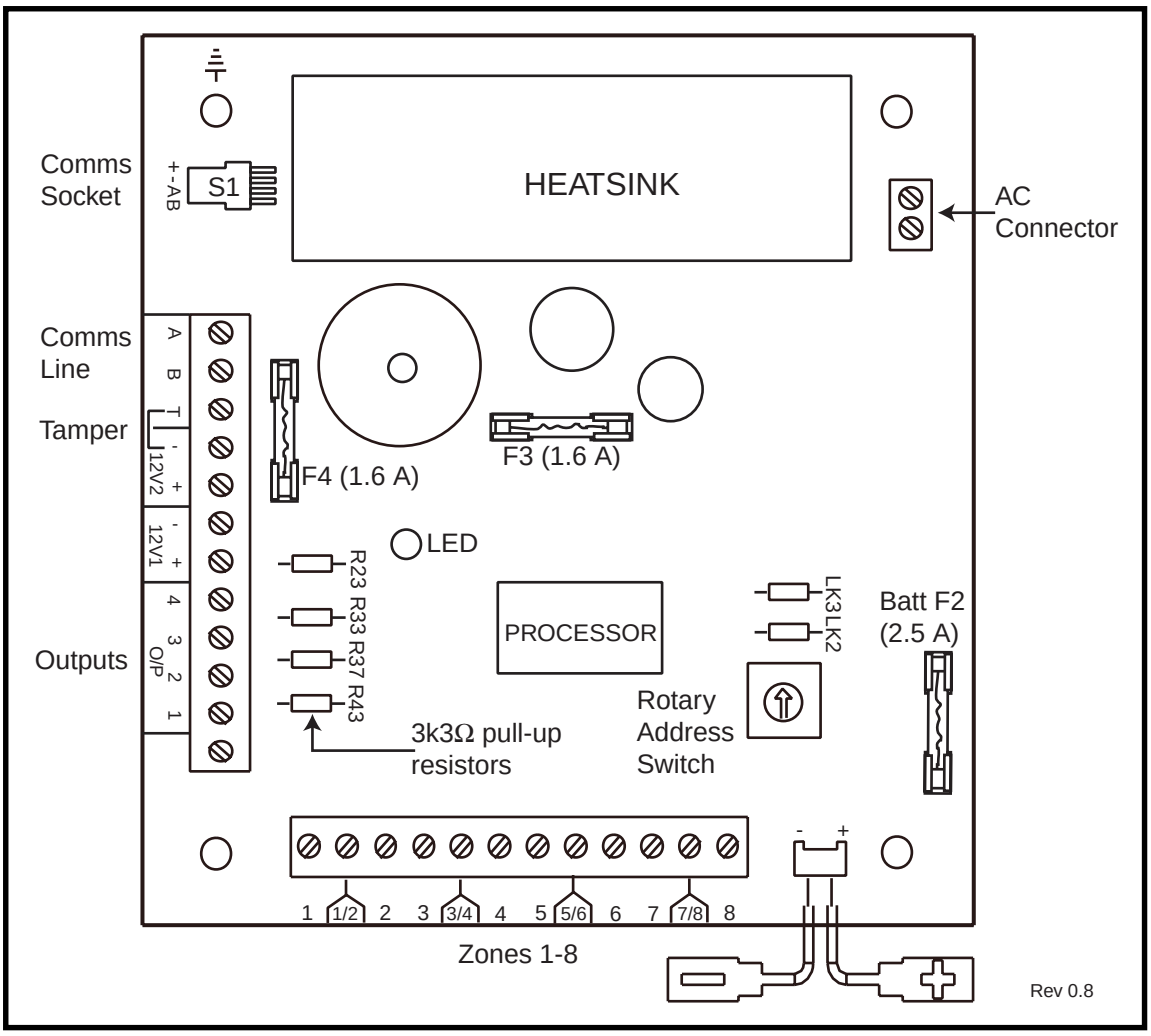


Figure 3-3 Galaxy 3A Smart PSU

The integrated RIO has eight programmable zones and four programmable outputs. It is programmed and operates in exactly the same way as the standard Galaxy RIO. The Smart PSU has two separately fused regulated 12 Vd.c. outputs, each capable of supplying one ampere to additional modules and devices. A fused regulated voltage is also supplied to charge a 12 volt lead-acid stand-by battery.

For further information refer to **Galaxy Smart Power Supply Unit Installation Instructions** (**II1-0101**).

The default functions and pull-up resistors of each Smart PSU output, when connected to a Galaxy are shown in the following **Table:**

Output No.	Function	Pull-up Resistor
1	Bells	R43
2	Strobe	R37
3	PA	R33
4	Reset	R23

Table 3-9 Smart PSU Output Default Functions

Printer Interface Module-A134/A161

The Printer Interface module allows the Galaxy to be connected to a serial printer and the contents of the event log and the programming details of the system to be printed out. The module is available with either a:

- 25 way sub D type RS232 serial connector (part number **A161**)

  OR

- 6 pin DIN plug (part number **A134**)

The printer **must** have a serial interface port. The printer protocol **must** be set to:

Protocol	Setting
Start Bit	ON
Stop Bit	ON
Word Length	8 Data Bits
Parity	None
Baud Rate	1200

Table 3-10 Printer Protocol Settings

Telecom Module – E062

The Galaxy Telecom module is an optional add-on to the existing Galaxy product range. It is a highly intelligent and compact module, combining both digital communication capabilities and remote servicing facilities.
The Telecom Module is connected to the RS485 communication line 1 (AB line) on the Galaxy control panels (G8, 18 & 60), and is connected to connector S3 on Galaxy control panels (G128, 500, 504 & 512).
As a digital communicator (digicom), the Telecom Module transmits alarm signals using the selected format; the factory default setting is DTMF (Dual Tone Multiple Frequency). As a remote servicer the Telecom Module can be used, in conjunction with Galaxy Gold software, to remotely access the Galaxy control panel, allowing copying and overwriting of the program and on-line servicing.

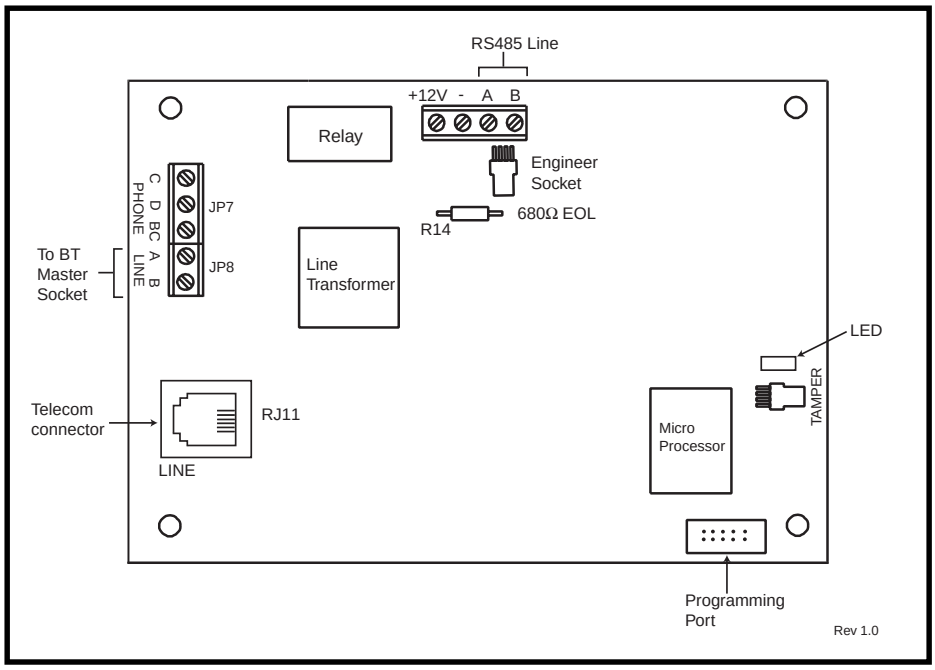


Figure 3-4 Telecom PCB Layout

Connection to the PSTN

The TelecommunicationsNetwork Voltage (TNV) port (Line A and B, JP8) on the Module must be permanently connected (hardwired) to the Public Switched Telephone Network (PSTN) via a BT Master Socket.

Note: If the BT Master Socket is the newer type (NTE5), then the connection can be carried out by an installation engineer. If the BT Master Socket is not an NTE5, then the connection must be made by a network operator.

Programming the Telecom Module

The Telecom Module is programmed from the Galaxy control panel using menu option
56 - Communucations.
For further information regarding the Galaxy Telecom Module refer to **TELECOM MODULE - INSTALLATION AND OPERATION INSTRUCTIONS (II1-0079 Issue 1).**

RS232 Interface Module - E054

The Galaxy RS232 module provides full duplex serial communication between Galaxy control panels and PCs or printers. This module has three main functions:

1. Copy and overwrite the control panel programming
2. Interface with a PC
3. Interface with a serial printer

For further information regarding the Galaxy RS232 Interface Module refer to **RS232 Module, Operating Instructions (IO1-0054)**

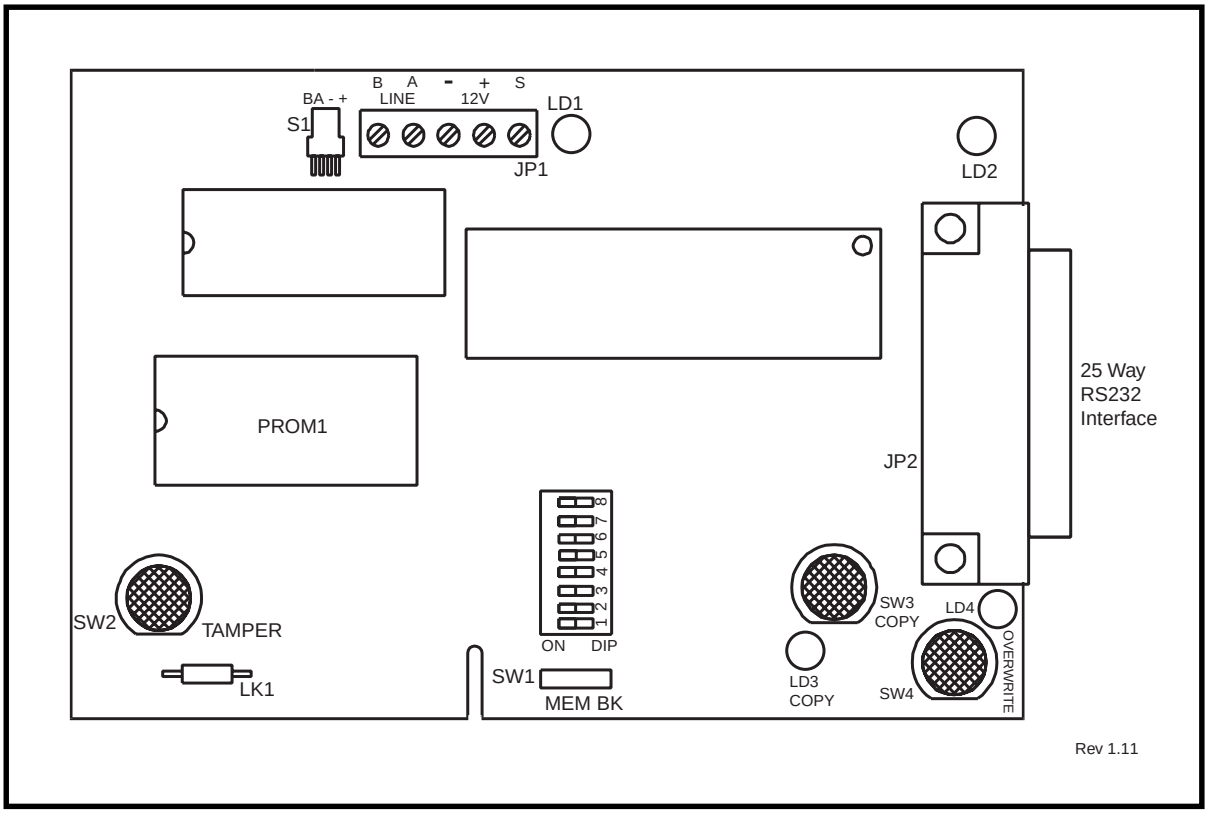


Figure 3-5 RS232 Interface Module

Copy and Overwrite

The panel program can be copied to the RS232 module, stored and then transferred: back to the same panel or another Galaxy (overwrite); or to a PC with Galaxy Gold software installed. The data can be stored on the module for up to 28 days (indefinitely if the module is constantly powered).

Interface with a PC

The panel can be directly linked to a PC via the RS232 module allowing remote servicing via Galaxy Gold or system supervision via Alarm Monitoring or SIA protocol.

Serial Printer Interface

The module can also operate as an interface to a serial printer. Refer to the following **Tables** for printer protocol settings.

DIP Switch	Function	Setting
1	Printer/PC interface	ON – Printer
2	Stop Bits	OFF – 1
3	Word Length	OFF – 8
4	Even/Odd Parity	N/A
5	Parity ON/OFF	OFF – No Parity
6	BAUD Rate	Must match printer Baud Rate
7		
8		

Table 3-11 RS232 Module Printer Interface Protocol

Baud Rate	DIP Switch Setting		
	6	7	8
300	Off	Off	Off
600	Off	Off	On
1200	Off	On	Off
2400	Off	On	On
4800	On	Off	Off
9600	On	Off	On
19200	On	On	On
38400	On	On	On

Table 3-12 Baud rate DIP Switch Settings

ISDN Module – E077

The ISDN Module is an optional add-on to the existing Galaxy product range. It connects directly to the Galaxy RS485 communication bus, allowing signalling and remote servicing over an ISDN network. The ISDN Module is housed inside the Galaxy enclosure in the same way as the existing Telecom Module. The ISDN Module supports the following features:

- Full existing Galaxy Telecom Module functionality
- Analogue/digital/X.25 communication
- Support for existing DTMF, SIA, Contact ID and Microtech signalling formats in addition to two receiver specific X.25 protocols
- Hardware and software line snatch
- Comprehensive line fail detection and rteporting
- Two-way communication using B-Channel and D-Channel.

The ISDN Module is allocated keypad address 12 on line 1 of the panel, and reports itself as Comm Mod 3. As a result of the addition of the ISDN Module, keypad address 4 is not available on line 1. If this keypad is required, the ISDN Module should be removed. For Galaxy 128 - 512, keypad 12 must be connected to socket S3 on the PCB.

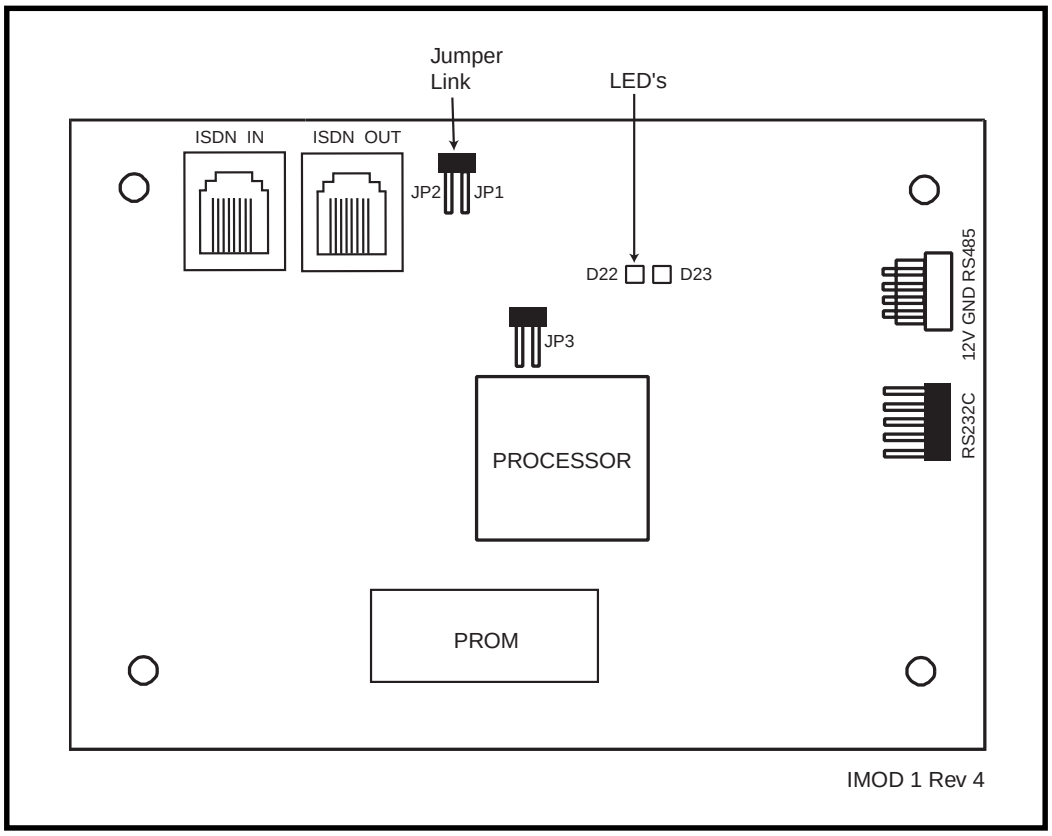


Figure 3-7 ISDN PCB Layout

Programming the ISDN Module

The ISDN module is programmed from the Galaxy control panel using menu option **56 - Communications**. The menu is allocated as option 3 after the Telecom and RS232 Modules.

Ethernet Module - E080

The Ethernet Module is a communication module available for use on V4 software and above.The Galaxy Ethernet Module connects directly to the Galaxy RS485 bus and provides an interface with a TCP/IP network to allow alarm signalling via SIA and Microtech formats. It also allows servicing over a network with V6 Galaxy Gold software remote servicing package.
The Ethernet module supports the following features:

- Two-way communication over TCP/IP networks
- Full alarm signalling on SIA
- Microtech protocol signalling with Alarm Monitoring Software V3.1/3.2
- Remote servicing via Galalxy Gold V6.1/6.2

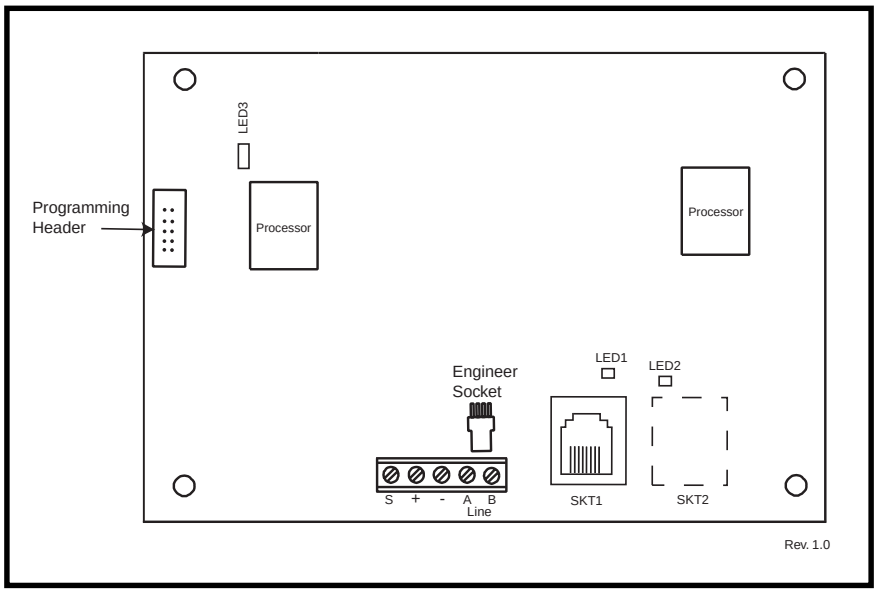


Figure 3-8 Ethernet PCB Layout

Configuring the Ethernet Module

The added Ethernet Module is configured into the system on exiting from engineer mode. If the message **XX Mod Added [<],[>] To View** is displayed, the system has recognised that a new module is present. Press the **A** or **B** keys to confirm that com 4 has been added. If this message is not displayed or the Ethernet Module is not on the list of added modules, then the Ethernet Module is not communicating with the control panel.

The flash rate of the red LED (LED3) on the Ethernet Module indicates the status of the communication with the control.

Ethernet Communication

The green LED (LED1) is illuminated when the Ethernet Module is connected to Ethernet.
The amber LED (LED2) flashes when the Ethernet Module is sending or receiving data.

For further information regarding the Ethernet Module, refer to **Ethernet Module, Installation Instructions (II1-0080).**

Software Packages

Galaxy Gold

Galaxy Gold is an advanced, high performance software program that allows a PC to communicate and control the Galaxy control panels. The software program can also upload, store and download the control panel programming.

NOTE: This software program is only available to registered Galaxy Gold users.

Alarm Monitoring

Alarm Monitoring is an advanced, high performance software program that allows a PC to receive and store detailed event and alarm information from Galaxy control panels.

NOTE: This software program is only available to registered Alarm Monitoring users.

Security Directors Gold

Security Directors Gold is a software program designed specifically for in-house security managers, and allows access to key features of the Galaxy Gold program in order to facilitate:

- Event log copying
- Holiday period changes
- Summer time date change
- User code amendment

SYSTEMS	ORDER CODES
Galaxy Gold Licence Kit	R006-CD
Galaxy Gold Update	R007-CD
Galaxy Gold CD Licence Dongle	R011-01-CD
Galaxy Gold UK Update Dongle	R012-CD
SGD Licence Kit	R021-CD
SGD Update	R023-CD
SGD CD Licence Dongle	R022-01-CD
SGD UK Update Dongle	R024-CD
Alarm Monitoring Licence Kit	R009-CD
Alarm Monitoring Update	R010-CD
Alarm Monitoring UK CD Licence Dongle	R013-01-CD
Alarm Monitoring Update Dongle	R014-CD

Table 3-13 Galaxy PC Products and Order Codes

Section 4: The Galaxy Keypad

General

The Galaxy Mk7 keypad has a 2 x 16 character display.

Figure 4-1 Galaxy Mk7 Keypad

Power Consumption

The Galaxy keypads require a 12 Vd.c. supply – from the control panel or a remote power supply. The current consumption of the keypad is:

Mode	Current Draw Mk7 (LCD)
Backlight OFF	45 mA
Backlight ON (default)	55 mA
Maximum (Buzzer and LED)	90 mA

Table 4-1 Mk7 Keypad Current Consumption Figures

Wiring the Keypad

Connections to the keypad terminals are:

Connector Terminals	Galaxy Keypads
A	A line to panel
B	B line to panel
+	12 Vd.c. input (Max LCD = 120 mA)
–	0 V

Table 4-2 Keypad Terminal Connections

Addressing

The valid addresses of the keypads on each of the Galaxy panels are shown on the following **Table:**

Control Panel Addresses	Line	Valid Keypad
Galaxy 8, 18, 60	1	0–9, A–F (NOTE 1)
Galaxy 128	S3 1 2	C, E (NOTE 2) 0-2, B, D & F (NOTE 3) 0-6, F
Galaxy 500, 504, 512	S3 1 2, 3, 4	C, E (NOTE 2) 0–2, B, D & F (NOTE 3) 0-6, F

Table 4-3 Valid Keypad Addresses

NOTE 1: **G8, 18 and 60**:- On Line 1, keypad addresses B, C, D and E are not available if the Ethernet, ISDN, RS232 or Telecom modules respectively are fitted.

NOTE 2: **G128, 500, 504 and 512**:- On Line S3, keypad addresses C and E are not available if the ISDN or Telecom modules are fitted.

NOTE 3: **G128, 500, 504 and 512**:- On Line 1, keypad addresses B, D and F are reserved for the Ethernet, RS232 module and engineer keypad respectively, but can be used for keypads if these modules are not connected.

A 16-way rotary address switch is used to address Galaxy LCD keypads. The address switch assigns a hexadecimal address value to the keypad.

NOTE: Any change to the keypad address must be made when the power is disconnected from the keypad.

Keypad Installation Procedure

1. Remove the keypad from its packaging.
2. To attach the keypad to the wall, the back plate must first be removed from the front plate. To do this, insert a suitable tool into both openings at the bottom of the keypad and turn the tool gently.

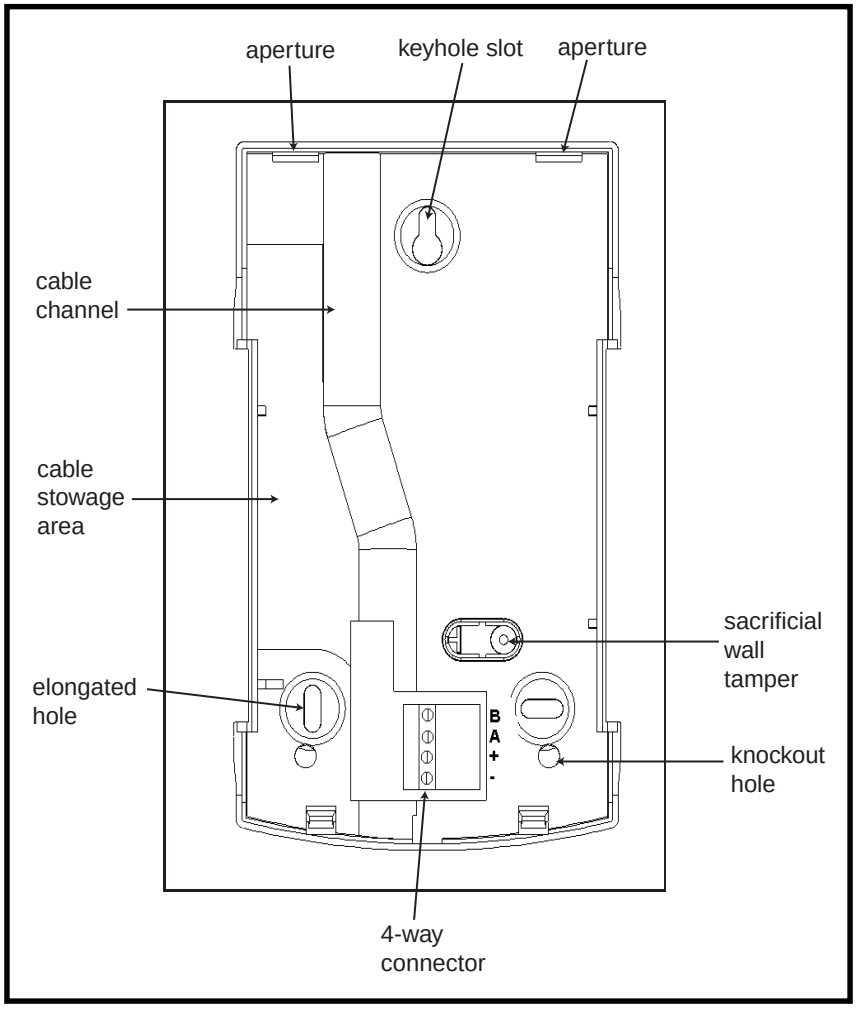
   CAUTION: When the keypad is separated make sure that the anti-static precautions are taken with the keypad pcb to avoid damage from esd (electro static discharge).
3. Use the backplate as a template, then mark the locations for the three attachment screws in the required position.
4. If it is a new installation, use the keyhole slot at the top of the backplate and the two elongated holes at the bottom. If replacing an existing Mk3 keypad with a Mk7 keypad, use the keyhole slot at the top of the backplate and the two knockout holes at the bottom. This means that you can use the existing holes in the wall, whist keeping the backplate in the same position.
5. If you are using a wall-run cable for the keypad (A, B, +12V, 0V) position the cable behind the back plate in the cable channels provided. The cable can be run in from either the top or the bottom of the back plate. Use a sharp tool to remove the plastic from the top or the bottom of the cable guides on the back plate skirting.

CAUTION: Use of any screws other than No. 6 Pan-head can damage the keypad mouldings.

6. Make sure that the keypad wiring is fed through the large opening on the keypad backplate, then position the keypad base on the wall and attach it securely with the three No. 6 Pan-head screws.

7. If an off the wall tamper is required, using a No. 6 Pan-head screw, secure the sacrificial wall tamper, indicated in Figure 4-2, to the wall. Make sure that the tamper knockout is still connected to the backplate moulding.

8. Connect the A, B and power wires to the correct terminals of the removable, four-way connector block.



Figur 4-2 Galaxy Mk7 Keypad Backplate Installation

9. Make sure that the power is disconnected then set the keypad to a unique address using the 16 way rotary switch on the PCB.

10. To re-assemble the keypad, connect the four-way connector block onto the pins on the keypad PCB. Attach the keypad front plate to the back plate by inserting the two clips on the top of the keypad front plate into the two apertures at the top of the keypad back plate, then gently push the bottom of the keypad front plate into the back plate until it snaps securely into place.

Note: The keypad door can be re-orientated to allow opening from either the left or right-hand sides. However, fitting or removal of the door must only be done when the front plate is detached from the back plate. Attempting to remove or install the door, when the keypad is assembled, may cause damage to the keypad mouldings.

Adding a Keypad to the System

When adding a keypad to an existing system, the following points must be considered:

1. Ensure that the keypad to be added has a unique address from the other keypads on the system.
2. Ensure that the keypad has a valid address.
3. Connect the keypad to the system - refer to the Keypad Installation Procedure.

Note: A new keypad can only be configured into an existing Galaxy system from engineer mode.

4. Access engineer mode.
5. Connect the RS485 (AB) line of the keypad in parallel with the RS485 (AB) line of the existing keypads.
6. Connect + and – terminals of the keypad to a power supply.
7. Exit engineer mode - engineer code **+ esc**:
8. The Mk7 keypad displays the message **1 MOD. ADDED — esc=CONTINUE.** Press the esc key; the keypad returns to the unset banner. If this message is not displayed, the keypad is not communicating with the control panel and has not been configured into the system.
9. The keypad is now configured into the system.

Removing a Keypad from the System

A keypad can only be removed from an existing Galaxy system from engineer mode

1. Access engineer mode.
2. Disconnect the keypad.
3. Exit engineer mode. The message **1 MOD. MISSING — [<],[>] to View** is displayed
4. Press the **A** or **B** key. The message **KEYPAD XX — ✳ =REMOVE MODULE** is displayed.
5. Press the ✳ key to acknowledge and accept that the keypad has been removed. The keypad returns to the unset banner.

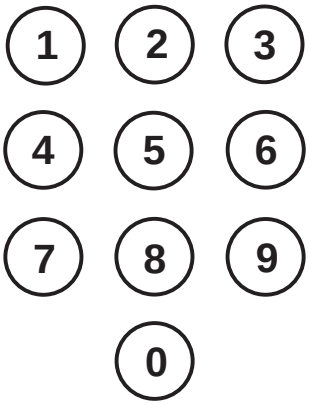
Self Diagnostics

The keypad has a self diagnostic feature that is used to test the operational status of the inputs and outputs of the keypad.
The test is started by disconnecting the power from the keypad, then reapplying the power while pressing the **ent** key. The test routine commences immediately. Each test last approximately four seconds. The test is terminated by removing the power.

- Keypad address is displayed
- Keypad buzzer is activated and a bell symbol is displayed.
- Power LED is illuminated and an a.c. (∿) and LED (☼) symbol is displayed.
- Keypad keys are displayed. Each key press is confirmed by the buzzer sounding and the key display being highlighted.
- To return keypad to operational mode remove and reapply power.

Keypad Operation

Number Keys



The number keys are used to enter the Personal Identification Number (PIN) which identifies users to the Galaxy and permits access to the system options. The PIN is a four digit number.

	Default Code
Engineer	112233
Remote User	543210
Master Manager	1234

Table 4-4 Default Codes

The number keys are also used, once access to the system has been gained, to select and modify options.

View Keys

These keys are used to initiate the setting of the Galaxy
Pressing the **A** or **B** key immediately after a valid PIN has been entered starts one of the routines for setting the system. The **A** key initiates the full setting of the Galaxy. The **B** key starts the part setting routine.
Once the system has been successfully accessed the **A** key can be used to step forward through the Galaxy menu options and the **B** key to step backwards.
The **A** and **B** keys can also be re-programmed for different functions.

Enter Key

The **ent** key is used to:

- Access the menu options
- Confirm the programming selections

Escape Key

The **esc** key cancels any modification made to the current option and returns to the previous option level. Successive pressing of this key returns the user to the banner display.
The **esc** key also aborts the setting routine if pressed during the exit time.

Hash Key

The # key is used :

- as a toggle key, which enables or disables the programming features of the Galaxy options, for example, enabling the OMIT attribute of a zone,
- to give additional information on the programming options, for example pressing the # key while in option **22=DISPLAY LOG** shows details of the user number, descriptor and keypad used to cancel alarms or unset the system.
- to activate the Duress outputs; enter a valid user code followed by two presses of the # key, then the **ent** key to activate the duress alarm.

Star Key

The ✱ key is used:

- to correct or erase PINs in the **CODES** option and alpha-numeric descriptors in the **TEXT** option,
- to start printing from the current event when viewing option **22=DISPLAY LOG.**
- to display the set status of the groups. When Show Status (refer to option 58.6=KEYPADS.Show Status) is enabled, pressing the ✱ and # keys simultaneously when the normal banner is displayed indicates the group set status.

R = Ready to Set (all active zones in group closed)
F = Faulted (at least one of the active zones in the group is open)
S = Set
P = Part Set
L = Locked Out
- = Group not assigned to keypad

Note: The **Show Status** indicates the set conditions of groups when the system is set (keypad blank) or unset (normal banner). **Show Status** does not operate while engineer mode is accessed.

Pressing the ✱ and # keys again toggles the display to show the status of the groups individually. To move between each groups, press the ✱ and A or the ✱ and **B** keys simultaneously.

Pressing the ✱ and # again returns the keypad to the banner display.

Galaxy 500, 504 & 512

The Galaxy 500, 504 and 512 have more than eight groups; these are displayed on the keypad in blocks of eight groups. Press the **A** or **B** key to display each of the group blocks.

Power LED

The green power LED indicates the status of the a.c. power supply and the stand-by battery.

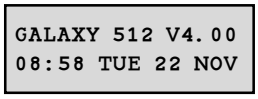
Power LED	a.c. Status	Battery Status	Fuse Status
ON	a.c. OK	Battery OK	Fuses OK
Slow flash	a.c. Fail	Battery OK	Fuses OK
Quick Flash	a.c. Fail/OK	Battery Low	Fuse blown

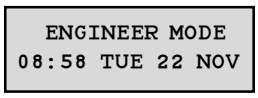
Table 4-5 a.c./Battery Status Indicator

NOTE: It is advised that a suitably rated stand-by battery is fitted to the system in order to provide continued protection in the event of a mains failure. The battery is not included.

Banner

The banner is the information shown on the keypad display when the system is in the unset state.





There are two banners:

- the unset mode banner displays the Galaxy variant and software version, the time, day and date.
- The Engineer banner indicates that the system is in engineer mode as well as the time, day and date.

The Galaxy KeyProx

General

The KeyProx is a standard Mk7 with a proximity card reader built in to the lower right corner. Installation and wiring of the KeyProx is identical to the Mk7 keypad.

Mode	Current Draw (KeyProx)
Nominal (no Backlight,no horn, no read)	65mA
Card read	130mA
Backlight on	95mA
Backlight on, horn on	155mA
Backlight on, horn on, card read (MAX)	220mA

Table 4-6 KeyProx Current Consumption Figures

Addressing

Both the KeyProx and reader share a common address, which is set by the rotary switch.
An address must be chosen which will be supported by the panel for both.

Operation

The operation of the KeyProx is identical to the Mk7 keypad. The proximity reader is seen by the panel as an on-line MAX reader. It is programmed in exactly the same way with the exception that it does not require to be addressed (this being set already by the rotary switch). The KeyProx does not have a door relay built in. It is designed for use only with the MAX card-held function.

Card Types

The KeyProx is available in two versions. Both versions can read standard ASK (Amplitude Shift Keying) type cards up to 34 bit. There is a HID compatible variant which will also read HID cards up to 34 bits. A self learn feature is incorporared into the KeyProx to aid in card programming.

For further details refer to **Galaxy Programming Manual (IP1-0030), Option 42 - Codes.**

Section 5 : Door Control - MicroMAX (MX11)

Installation Instructions

The MicroMAX is a proximity reader door control device for a single door. It is programmed and operated using MicroMAX proximity cards or tags.
The proximity cards and tags have unique ID numbers and must be identified by the MicroMAX before being used to operate the system. The MicroMAX memory can store up to 2000 ID numbers, including at least three reserved for masters. Once programmed, the ID number of the tags and cards are stored indefinitely in the MicroMAX memory until voided (removed) or erased. Removing power from the MicroMAX does not erase the programming memory.
The MicroMAX box contains the following:

1. MicroMAX reader (P/N **MX11**) including cable
2. MicroMAX facia label
3. MicroMAX drilling template.

The MicroMAX installation sequence is as follows:

1. Wiring the MicroMAX
2. Installing the MicroMAX
3. Attaching the facia label.

Wiring the MicroMAX

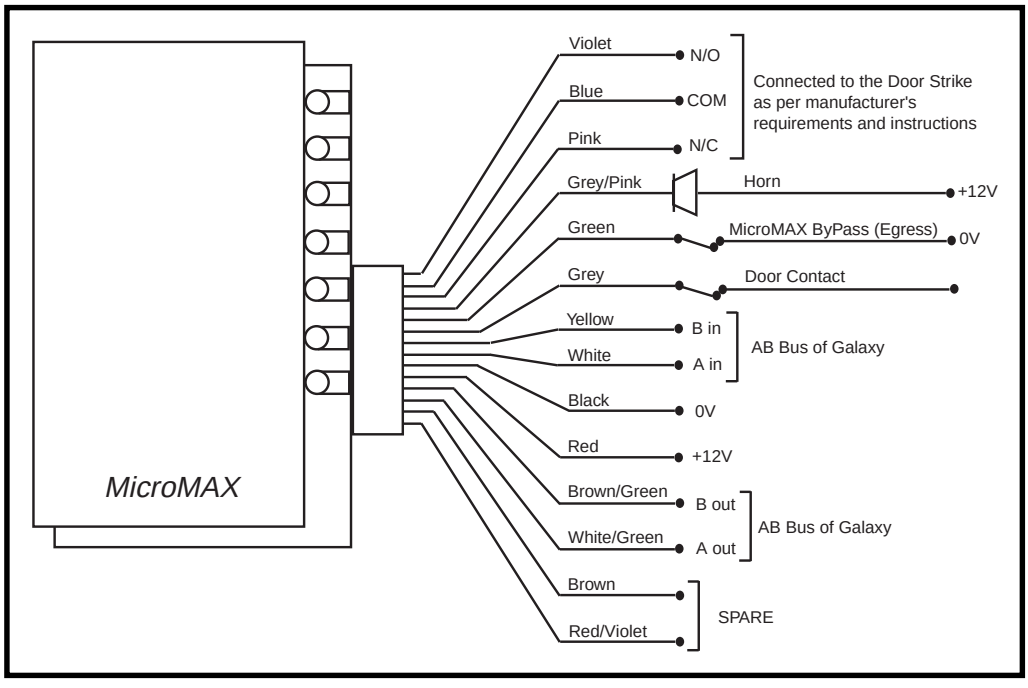


Figure 5-1 MicroMAX Connections

1. The Egress switch is used to activate the door strike without activating the horn (Egress normally open).
2. The Contact switch is used to connect an access door to an alarm contact. An alarm is caused when the door is opened without a valid MicroMAX card or Egress switch activation.

3. Connect a 12V d.c. power supply to the MicroMAX.

4. Connect the A and B Data terminals when the MicroMAX is being operated on-line with a Galaxy Panel (V2 and above). **The main point to note is that there are separate in and out connections for the A and B data lines.** This is important for maintaining the daisy-chain wiring configuration. When wiring the A and B data terminals, the following instructions must be followed:

5 The A and B lines from the panel or the previous module must be connected to the White and Yellow cores.

6 The A and B lines going on to the next module or the End of Line Resistor must be connected to the White/Green and Brown/Green cores.

7. Connect the door strike in accordance with the manufacturer's recommendations, via the relay.

8. The Horn output is an open collector. This is connected to the output device via a relay.

Installing the MicroMAX

The MicroMAX is supplied with 14 wire AWG26 (Dark Grey DIN41700) cable which is fixed and sealed through a keyhole opening on the rear surface of the MicroMAX (see **Figure 5-2**). Do not bend the cable within 25mm of the MicroMAX. As supplied this cable is 3 metres long to allow for difficult mounting situations. However, if using the Micro-MAX in on-line mode with a Galaxy Panel, the cable must be cut back as short as possible. It is recommended that the cable be cut back to 50cm or less from the Micro-MAX unit whenever possible. The cable should then be connected, via screw terminals, to screened twisted pair cables for connection to the rest of the Galaxy System. If multiple MicroMAXes are connected to the same AB data bus, then the cable must be cut back to within 20cm on all of the MicroMAX units to reduce the amount of unscreened cable on the system.

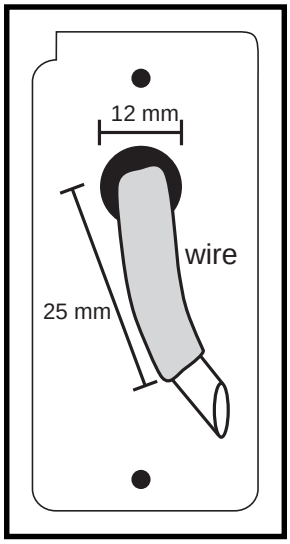


Figure 5-2 MicroMAX Rear

The MicroMAX has an infra red tamper switch in the rear of the unit. The MicroMAX is supplied from the factory with a white label covering the tamper switch. Remove the label before installation. The tamper protection is improved by applying a white surface reflector to the mounting surface (see **Figure 5-3**).

Note: To avoid erroneous tampers it is crucial that no light accesses the MicroMAX in normal operation.

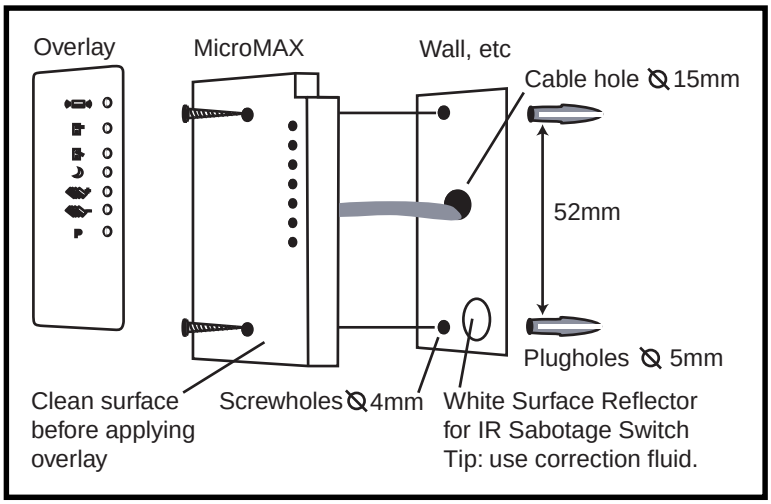


Figure 5-3 Mounting the MicroMAX

Configuring a MicroMAX Reader into the System

MicroMAX readers can only be configured into the Galaxy system from engineer mode.
Wire the MicroMAX as per the instructions given in **Figure 5-1** then access engineer mode.
The MicroMAX reader must be assigned as either an **On-Line** or a **Stand-Alone** module using option **63.2.2 = OPTIONS.MAX.MAX Address:**

0 = On-Line: The MAX is fully integrated with the Galaxy system and communicates via the AB line, sharing system resources and facilities (factory default configuration).

1 = Standalone: The MAX operates as an entirely independent unit. The Galaxy does not monitor the MAX for alarms, tampers or power failure.

Configuring as On-Line MicroMAX

1. Connect the **AB line** of the MicroMAX reader to the **AB line** from the control panel (ensuring that a daisy-chain connection is maintained and that the 680Ω resistor is located in the last module on the line). Connect 12 Vd.c. to the +**VE** and –**VE** terminal of the MAX reader.
2. Ensure that the MAX mode is enabled (option **63.2.1 = OPTIONS.MAX.MAX Mode**).
3. Select option **63.2.2 = OPTIONS.MAX.MAX Address** and press the **ent** key; the Galaxy searches for the MAX with the highest address (the new MAX reader The Galaxy panel may prompt (depending on model) for the AB line (1 – 4)) that is to be searched; select the line and press the **ent** key.
4. **Only if adding a new MicroMAX reader:** On locating the MAX address, the keypad prompts for the **OPERATING MODE** of MAX to be assigned: select **0 = On-Line** and press the **ent** key.

NOTE: If reprogramming an existing stand-alone reader, the system automatically selects the **On-Line** operating mode.

The MicroMAX can then be readdressed. The keypad displays the current address of the MicroMAX and the range of valid addresses. Enter the new MicroMAX address and press the **ent** key; the Galaxy then reprograms the address of the MicroMAX. The keypad indicates the old and new MicroMAX addresses and the status of the reprogramming.

NOTE: All new MicroMAX readers default to address **7**. It is recommended that when adding a reader, it is addressed as the lowest available number on the line.

When the reprogramming is complete the MicroMAX bleeps, the LEDs on the MicroMAX switch off and the keypad display returns to **2 = MAX Address**.

NOTE: If the Galaxy has been warm started with the MicroMAX connected and the reader is re-programmed with its existing address, then the LED does not switch off and engineering mode does not have to be exited to configure the MicroMAX into the system.

5. Exit engineer mode - engineer code + **esc**: the keypad displays the message **1 MOD. ADDED - esc=CONTINUE**. LED 2 on the MicroMAX reader switches on. Press the **esc** key; the keypad returns to the unset banner.

If this message is not displayed, the MicroMAX reader is not communicating with the control panel and has not been configured into the system (LED 2 does not switch on).

NOTES:

1. The MicroMAX reader **will not** operate until engineer mode is exited and the reader is configured into the system.

2. All MicroMAX doors **must** be closed, otherwise engineer mode cannot be exited.

6. The on-line MicroMAX reader is now configured into the system.

Configuring as a Stand-Alone MicroMAX

1. Ensure that the MicroMAX is connected to the Galaxy (**RS485 AB line**) and the MAX mode is enabled (option **63.2.1 = OPTIONS.MAX.MAX Mode**).
2. Select option **63.2.2 = OPTIONS.MAX.MAX Address** and press the **ent** key; the Galaxy searches for the MicroMAX with the highest address (the new MicroMAX reader). The Galaxy panel may prompt (depending on model) for the AB line (1 – 4) that is to be searched; select the line and press the **ent** key. On locating the MAX address, the keypad prompts for the **OPERATING MODE** of MAX to be assigned: select **1 = Standalone** and press the **ent** key. The MicroMAX reader is readdressed as **32**.

When the reprogramming is complete the MAX bleeps, LED 3-7 on the MicroMAX switches on and the keypad display returns to **2 = MAX Address**.

3. Disconnect the **AB line** from the MicroMAX reader. Ensure that all other modules (keypads, RIOs and on-line MicroMAX readers) are still daisy-chained into the Galaxy panel. If the MicroMAX reader is the last module on the **AB line**, remove the 680Ω end of line resistor and put it into the last module on the line
4. The MicroMAX reader is now programmed as a stand-alone module in sleep mode (LEDs 3–7 on) and can be programmed using the MicroMAX cards (refer to Programming Stand-Alone MicroMAX Readers).

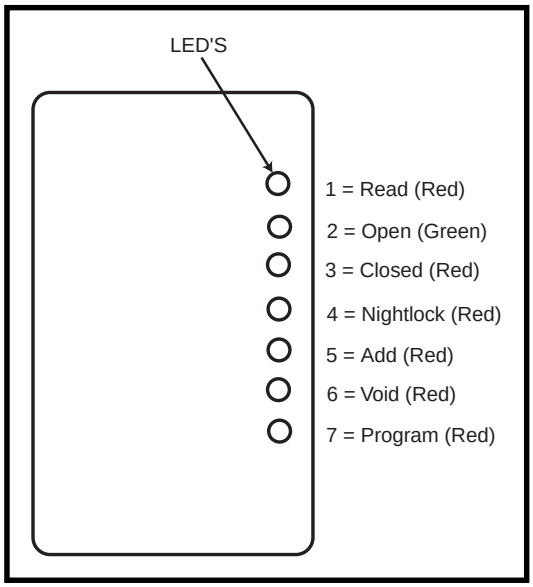


Figure 5-4 MicroMAX LED's

Removing a MicroMAX Reader from the System

On-Line Mode

1. Access engineer mode.
2. Disconnect the MicroMAX reader (**AB line** and power).
3. Exit engineer mode.
4. The message **1 MOD. MISSING — [<],[>] to View** is displayed.
5. Press the **A** or **B** key.
6. The message **MAX X —✱ =REMOVE MODULE** is displayed.
7. Press the ✱ key to acknowledge and accept that the MicroMAX reader has been removed. The keypad returns to the unset banner.

Operating Instructions

The MAX must be presented with a valid user card to allow access. Opening the door while LED 3 is on activates an alarm; the buzzer sounds and LED 2 flashes until the door is closed.
Activating the egress switch allows the door to be opened without activating an alarm when no card has been presented to the MAX.

1. Ensure that LED 3 is on and all other LEDs are off.
2. Swipe the MAX with a standard user or nightlock access user card. LED 3 switches off and LED 2 switches on for the programmed **Open Timeout**.
3. Open the door while the LED 2 is on and access the area.
4. Close the door; LED 2 switches off and LED 3 switches on. The door must be closed within the programmed **Close Timeout**; if the door remains open longer than this, an alarm is activated.

Card-Held Function

The MicroMAX card can be assigned a single menu option (refer to option **42.2.8 = CODES.User Codes.MAX Function**). To activate the function assigned to the MicroMAX card, hold the card in front of the reader for three seconds; all of the LEDs switch on. If a keypad has been assigned to the MAX function then it displays the details of this option. If no keypad is assigned, pressing a key on any of the keypads assigned to a common group to the user displays the card-held function.

Card-Held System Setting

If the MicroMAX card is assigned one of the setting options (option 12, 13, 14 & 16 – 19), the card-held functions starts the setting procedure for the groups assigned to the card.

NOTE: If **Group Restriction** is assigned, then only the groups that are common to both the MicroMAX reader and the MicroMAX user are set/unset

To unset the system using the MicroMAX, swipe the reader with a valid MicroMAX card. The MicroMAX reader beeps. All of the groups assigned to the card are instantly unset.

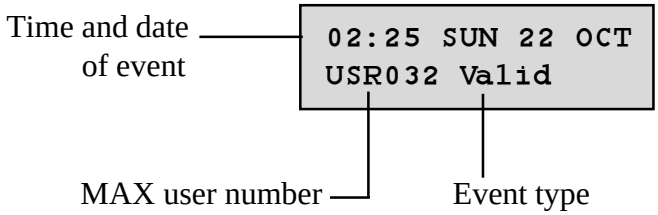
Note: **V4 software and above:-** the max tags can unset from an alarm condition.

MicroMAX Log

The Galaxy system has a panel dependent event log for the recording the MicroMAX activations. This log is shared by all readers on the system and operates on a first-in-first-out basis for overwriting events when the log is filled.

To display the events in the MicroMAX log select option **25 = ACCESS DOORS**; use the **A** or **B** keys to select the required MicroMAX address then press the **ent** key. The first event that occurred on the selected MicroMAX is displayed along with details of the time, date and MicroMAX number.

To view the log press the **A** key to move forward in time through the events or the **B** key to move backwards. Press the **esc** key to return to the MicroMAX address display. To view the log of another MicroMAX, use the **A** or **B** key to select the required address. To escape from the **Access Doors** option press the **esc** key.



MicroMax Events Print-Out

The MicroMAX events can be printed out as they occur to an on-line printer. To print the MicroMAX events ensure that option **51.27 = PARAMETERS.On-Line Print** is enabled. Select option **51.28 = PARAMETERS.On-Line Level** and enter **2** to print out all system events including the MicroMAX events or **3** to print out only the MicroMAX events.

NOTE: A serial printer must be connected to line one of the Galaxy panel and the printer must remain on-line (ready to print) at all times.

Panel	Log Size
8	250
18	500
60	500
128	500
500	1000
504	1000
512	1000

Table 5-1 Panel Log Size

Downloading the MicroMAX Log

The MicroMAX event log can be downloaded to Galaxy Gold/SDG by using the MAX Log copy option in Galaxy Gold/SDG.

Note: This option is only available in Galaxy panels V4 and above and Galaxy Gold/SDG V6 and above.

Dual Access Cards

V4 software and above: If a user's card number is assigned a *, then the card becomes Dual access. This means that it will not open the door on its own; it needs another PIN or card as well. If the PIN belonging to the same user has a # assigned, then that PIN must be entered first before access will be granted to that card.
If the PIN has no # assigned, then the card will work only in conjunction with any other Dual Access card that shares one or more groups (see option **42 = Codes** for programming).

Dual Focus (Card Held)

If a card has a # assigned to the number, then any card-held function will only work in conjunction with the PIN from the same user, provided that the PIN has a # assigned also. The Dual Focus function will work in either order, but if the card is presented first, it will simply enable the PIN to gain access to the normal menu (see option **42 = Codes** for programming).

Timed Anti-Passback

V4 software and above: When the Timed Anti-Passback feature is enabled, it will prevent more than one use of any particular card at a particular reader within a given time period. See option **63.2.3.6 = Options.MAX.Max Parameters.Anti-Passback** for programming details.
A forgiveness function is available to clear all or particular antipassback restrictions in force. There are set Anti-Passback users as defined in the following **Table**. If a card belonging to one of these users is swiped at a reader, all anti-passback restriction at that reader are cleared. A manager code can authorise a forgive function on a particular user in option **42.1 = Codes.User Codes.** An engineer code can authorise a forgive function on a particular reader in option **63.2.3.6 = Options.MAX.Max Parameters.Anti-Passback.**

PANEL	ANTI-PASSBACK FORGIVE USER NO'S
8	47-48
18	96-98
60	194-198
128	244-248
500	489-498
504	988-997
512	988-997

Table 5-2 Anti-Passback Users

Appendix A : Door Control - MAX (MX01)

Installation Instructions

The MAX box contains the following:

- MAX reader (P/N **MX01**),
- MAX facia label (P/N 21_1627),
- 10-way connector block.

The MAX installation sequence is as follows:

1. Wiring the MAX
2. Mounting the MAX
3. Attaching the facia label

Wiring the MAX

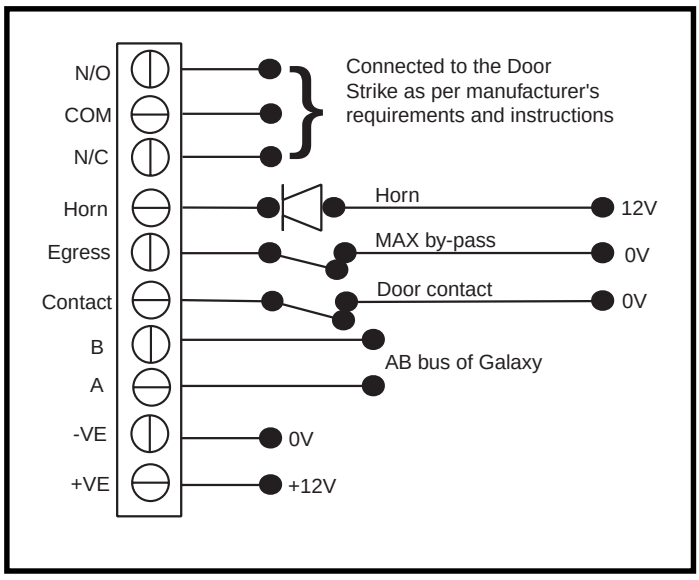


Figure A-1 MAX Wiring Details

1. Connect the A and B lines of the Galaxy communication bus to the **A** and **B** terminals. This configuration must be a daisy-chain (parallel) connection. If the MAX is the last module in the line, then the End of Line (EOL) resistor must be connected across the A and B terminals.
2. Connect the door strike in accordance with the manufacturer's recommendations, via the relay.
3. The **Horn** output is an open collector. This is connected to the output device via a relay.

   NOTE: With MAX software version 1.23 the horn output does not function when the reader is programmed as on-line operating mode.

4. The **Egress** switch is used to activate the door strike, allowing the door to be opened without activating the horn (the egress switch is normally open).
5. The **Contact** switch is used to connect the access door to an alarm contact, giving alarm indication when the door is opened without the door strike being activated (either by a MAX card or the egress switch).
6. Connect a 12 Vd.c. power supply to the MAX terminals marked **–VE** and **+VE**.

Mounting the MAX

Attach the wired-up 10-way connector block to the pins on the rear of the MAX reader.

Surface Mounting the MAX

1. If the wiring is not wall recessed, remove the appropriate knock-out (from the sides, top or bottom of the MAX).
2. Using the MAX reader as a template locate the two mounting screws in the required positions.

   NOTE: The MAX is positioned with the two LEDs at the top of the module.

3. Securely attach the module to the wall with two No.8 roundhead 2 inch screws.

Flush Mounting the MAX

1. Using the template on the lid of the MAX flush mounting kit box (P/N **MX02**), locate the position of the screws and mark and cut-out the recess area required.

   NOTE: Ensure that there is sufficient wall surface to securely fix the screws.

2. Fit the MAX reader into the flush mounting kit; push the reader in from the rear ensuring that the four retaining arms on the flush mounting kit click into place
3. Securely attach the module to the wall with two No.8 roundhead 1½ inch screws.

   NOTE: The MAX is positioned with the two LEDs at the top of the module.

Remove the backing from the facia label, line up the label images with the six LEDs and place it on the face of the MAX.

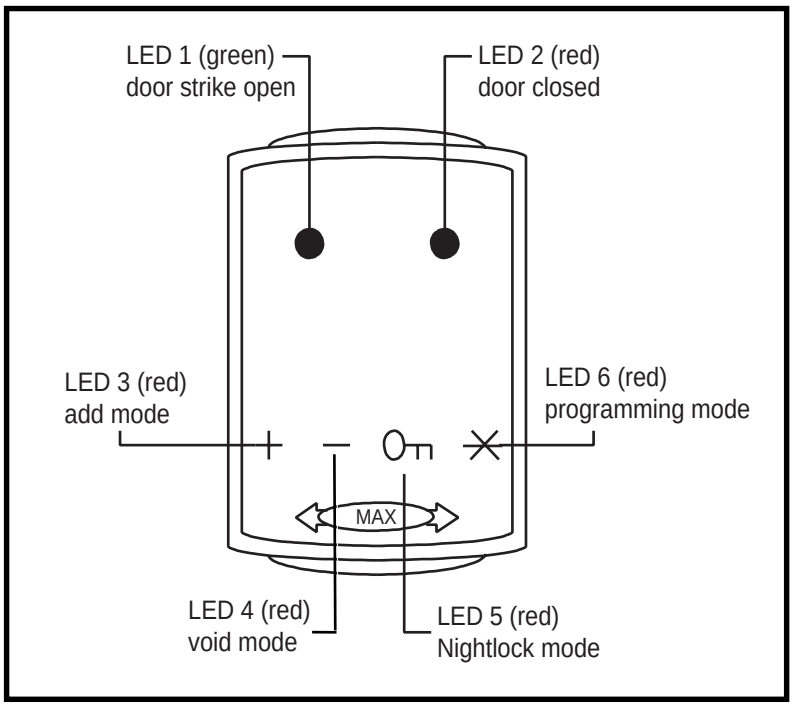


Figure A-2 MAX LED's

Configuring a MAX Reader into the System

MAX readers can only be configured into the Galaxy system from engineer mode.

NOTE: When adding a MAX reader to a Galaxy panel ensure that there are no more than eight MAX readers connected to the RS485 (**AB**) line.

Wire the MAX as per the instructions given with figure 5-1 then access engineer mode.
The MAX reader must be assigned as either an **On-Line** or a **Stand-Alone** module using option **63.2.2 = OPTIONS.MAX.MAX Address:**
0 = On-Line: The MAX is fully integrated with the Galaxy system and communicates via the AB line, sharing system resources and facilities.
1 = Standalone: The MAX operates as an entirely independent unit. The Galaxy does not monitor the MAX for alarms, tampers or power failure.

NOTE: Early versions of MAX readers cannot convert between the stand-alone and on-line operating modes:

- **MX01S (software V1.23)** is a dedicated stand-alone reader. This cannot be converted to on-line mode and must not be connected to the Galaxy AB line. The horn output is fully functional.

- **MX01 (software V1.23)** is programmed as an on-line reader. The horn output is non-functioning. The reader can be reprogrammed, via the Galaxy system, into stand-alone mode, however, once programmed as stand-alone it cannot be converted to on-line mode. In stand-alone mode the horn output is fully functional.

- **MX01 (software V1.32)** can be reprogrammed as stand-alone or on-line as often as required. In on-line mode, the horn output is non-functioning; in stand-alone mode the horn output is fully functional.

Configuring as a Stand-Alone MAX

1. Ensure that the MAX is connected to the Galaxy (**RS485 AB line**) and the MAX mode is enabled (option **63.2.1 = OPTIONS.MAX.MAX Mode**).
2. Select option **63.2.2 = OPTIONS.MAX.MAX Address** and press the **ent** key; the Galaxy searches for the MAX with the highest address (the new MAX reader). The Galaxy 500 and 512 prompt for the AB line (1 – 4) that is to be searched; select the line and press the **ent** key. On locating the MAX address, the keypad prompts for the **OPERATING MODE** of MAX to be assigned: select **1 = Standalone** and press the **ent** key. The MAX reader is readdressed as **32**.

   When the reprogramming is complete the MAX bleeps, LED 2 on the MAX switches on and the keypad display returns to **2 = MAX Address**.
3. **(MAX software versions 1.23 and 1.32)** Disconnect the **AB line** from the MAX reader. Ensure that all other modules (keypads, RIOs and on-line MAX readers) are still daisy-chained into the Galaxy panel. If the MAX reader is the last module on the **AB line**, remove the 680Ω end of line resistor and put it into the last module on the line.

   NOTE: The Galaxy cannot operate if the **AB line** is connected to stand-alone MAX readers with software V1.23 or V1.32.

4. The MAX reader is now programmed as a stand-alone module in sleep mode (LEDs 2 – 5 on) and can be programmed using the MAX cards (refer to Programming Stand-Alone MAX Readers).

Configuring as On-Line MAX

1. **Only if reprogramming an existing stand-alone MAX reader:**
   - Put the MAX reader into the sleep mode (present the **Void Master** card then swipe twice with the **Program Master** card — LEDs 2 – 5 switch on. Refer to the **MAX Installation and Operations Guide (L120)**.).
   - Remove the power from the MAX reader.
2. Connect the **AB line** of the MAX reader to the **AB line** from the control panel (ensuring that a daisy-chain connection is maintained and that the 680Ω resistor is located in the last module on the line). Connect 12 Vd.c. to the +**VE** and –**VE** terminal of the MAX reader.
3. Ensure that the MAX mode is enabled (option **63.2.1 = OPTIONS.MAX.MAX Mode**).
4. Select option **63.2.2 = OPTIONS.MAX.MAX Address** and press the **ent** key; the Galaxy searches for the MAX with the highest address (the new MAX reader). The Galaxy 500 and 512 prompt for the AB line (1 – 4) that is to be searched; select the line and press the **ent** key.

   Only if adding a new MAX reader: On locating the MAX address, the keypad prompts for the **OPERATING MODE** of MAX to be assigned: select **0 = On-Line** and press the **ent** key.

   NOTE: If reprogramming an existing stand-alone reader, the system automatically selects the **On-Line** operating mode

   The MAX can then be readdressed. The keypad displays the current address of the MAX and the range of valid addresses. Enter the new MAX address and press the **ent** key; the Galaxy then reprograms the address of the MAX. The keypad indicates the old and new MAX addresses and the status of the reprogramming.

   NOTE: All new MAX readers default to address **7**. It is recommended that when adding a reader, it is addressed as the lowest available number on the line.

When the reprogramming is complete the MAX bleeps, the LEDs on the MAX switch off and the keypad display returns to **2 = MAX Address**.

NOTE: If the Galaxy has been warm-started with the MAX connected and the reader is re-programmed with its existing address, then the LED does not switch off and engineering mode does not have to be exited to configure the MAX into the system.

5. Program the MAX Parameters. This option defines the operational features of the MAX reader.
   - **1 = Descriptor:** This option is used to assign a name of up to 12 characters to each of the MAX modules.
   - **2 = Open Timeout:** This is the period, following the user card swipe, that the MAX relay is activated allowing a door strike to be unlocked and the door to be opened without creating an alarm. The MAX relay de-activates as soon as the door is closed or the **Close Timeout** occurs.
   - **3 = Close Timeout:** This is the period following the user card swipe that the door can remain open when gaining access. If the door remains open longer than the period assigned to the **Close Timeout**, then an alarm occurs.
   - **4 = Groups:** Each MAX module can be assigned to selected groups; the MAX then responds only to cards that have a group common to it.

Keypad Group Restriction: To restrict the operation of the function only to groups that are common to both the card and the MAX, press the ✳ key when assigning groups to the MAX. This means that when a card with access to groups 1, 2 and 3 activates the MAX card function on a MAX module assigned to groups 2, 3 and 4, the function only operates on the common groups (groups 2 and 3).

6. Exit engineer mode — engineer code + **esc**: the keypad displays the message **1 MOD. ADDED — esc=CONTINUE**. LED 2 on the MAX reader switches on. Press the **esc** key; the keypad returns to the unset banner.

If this message is not displayed, the MAX reader is not communicating with the control panel and has not been configured into the system (LED 2 does not switch on).

NOTES:

1. The MAX reader **will not** operate until engineer mode is exited and the reader is configured into the system.
2. All MAX doors **must** be closed, otherwise engineer mode cannot be exited.

7. The on-line MAX reader is now configured into the system

Removing a MAX Reader from the System

Stand Alone Mode (Software V1.23 & V1.32)

The stand-alone MAX reader is not connected to the **AB line**, therefore it can be removed simply by disconnecting the power to the reader. There is no requirement to access engineer mode.

On-Line Mode

1. Access engineer mode.
2. Disconnect the MAX reader (**AB line** and power).
3. Exit engineer mode.

   The message **1 MOD. MISSING — [<],[>] to View** is displayed.
4. Press the **A** or **B** key.

   The message **MAX X — ✳=REMOVE MODULE** is displayed.
5. Press the ✳ key to acknowledge and accept that the MAX reader has been removed. The keypad returns to the unset banner.

Programming Instructions for On-Line Readers

Refer to **Section 6: System Operation**, menu option **63 = OPTIONS** for details on programming the **Open Timeout**, **Close Timeout** and **Group** parameters for the MAX reader.

NOTE: These programming instructions refer only to on-line MAX readers (modules that are connected to a host Galaxy panel via the RS485 data bus). For details on stand-alone MAX installation refer to the **MAX Installation and Operations Guide (L120)**.

For details on the programming of the MAX user cards and functions refer to **Section 6: System Operation**, menu option **42 = CODES**.

Operating Instructions (On-Line Modes)

The MAX must be presented with a valid user card to allow access. Opening the door while LED 2 is on activates an alarm; the buzzer sounds and LED 1 flashes until the door is closed.
Activating the egress switch allows the door to be opened without activating an alarm when no card has been presented to the MAX.

Gaining Access

1. Ensure that LED 2 is on and all other LEDs are off.
2. Swipe the MAX with a standard user or nightlock access user card. LED 2 switches off and LED 1 switches on for the programmed **Open Timeout**.
3. Open the door while the LED 1 is on and access the area.
4. Close the door; LED 1 switches off and LED 2 switches on. The door must be closed within the programmed **Close Timeout**; if the door remains open longer than this, an alarm is activated.

Nightlock Access (Stand-Alone Only)

Only cards programmed as nightlock access users can gain access when the MAX is nightlocked. The operation is identical to the standard user card.

NOTE: Access cannot be gained using a standard user card.

Card-Held Function

The MAX card can be assigned a single menu option (refer to option **42.2.8 = CODES.User Codes.MAX Function**). To activate the function assigned to the MAX card, hold the card in front of the reader for three seconds; all of the LEDs switch on. If a keypad has been assigned to the MAX function then it displays the details of this option. If no keypad is assigned, pressing a key on any of the keypads assigned to a common group to the user displays the card-held function.

Card-Held System Setting

If the MAX card is assigned one of the setting options (option 12, 13, 14 & 16 – 19), the card-held functions starts the setting procedure for the groups assigned to the card.

NOTE: If **Group Restriction** is assigned, then only the groups that are common to both the MAX reader and the MAX user are set.

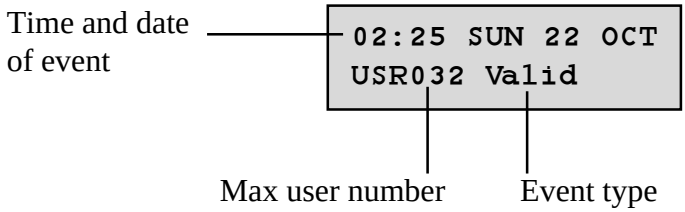
If all of the groups that are assigned to the MAX are set (either by the card-held function or by any other setting means) all of the LEDs switch off.
To unset the system using the MAX, swipe the reader with a valid MAX card. The MAX reader beeps and LED 2 switches on. All of the groups assigned to the MAX are instantly unset.

Max Log

The Galaxy system has a 100 event log for the recording the MAX activations. This log is shared by all readers on the system and operates on a first-in-first-out basis for overwriting events when the log is filled.

To display the events in the MAX log select option **25 = ACCESS DOORS**; use the **A** or **B** keys to select the required MAX address then press the **ent** key. The first event that occurred on the selected MAX is displayed along with details of the time, date and MAX number.

To view the log press the **A** key to move forward in time through the events or the **B** key to move backwards. Press the **esc** key to return to the MAX address display. To view the log of another MAX, use the **A** or **B** key to select the required address. To escape from the **Access Doors** option press the **esc** key.



Max Events Print-Out

The MAX events can be printed out as they occur to an on-line printer. To print the MAX events ensure that option **51.27 = PARAMETERS.On-Line Print** is enabled. Select option **51.28 = PARAMETERS.On-Line Level** and enter **2** to print out all system events including the MAX events or **3** to print out only the MAX events.

NOTE: A serial printer must be connected to line one of the Galaxy panel and the printer must remain on-line (ready to print) at all times.

Appendix B: Panel Comparisons

	Galaxy Panel						
	8	**18**	**60**	**128**	**500**	**504**	**512**
Zones (on board to max)	8	10 to 18	12 to 60	0 to 128	0 to 504	0-504	8 to 512
Zone types	32	41	41	41	41	41	45
Outputs (on board to max)	6	6 to 10	6 to 30	4 to 68	4 to 256	4 to 256	4 to 260
Output Types	25	60	60	60	60	60	65
Super User Codes	50	100	200	250	500	999	999
Groups	0	3	4	8	16	32	32
Group Omit	No	Yes	Yes	Yes	Yes	Yes	No
Muti-Users	No	No	4	8	8	16	16
Event Log	250	500	500	500	1000	1000	1000
MAX Log	250	500	500	500	1000	1000	1000
Links	0	32	64	128	256	256	256
Link Outputs	0	5	15	15	15	15	15
7-Day Timers	0	2	2	2	2	2	2
Autoset	No	20 On/Off	20 On/Off	20 On/Off	20 On/Off	20 On/Off	20 On/Off
Lockout	No	No	No	No	No	No	20 On/Off
Pre-Check	No	No	Yes	Yes	Yes	Yes	Yes
Part Set	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Library (Words)	0	538	538	538	538	538	538
RS485 Lines	1	1	1	2	4	4	4
RIO's	0	1	6	16	63	63	64
Keypads	16	16	16	16	32	32	32
MAX's	2	3	4	8	16	32	32
RS232 Module Support	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Printer Module Support	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Telecom Module Support	Optional	Optional	Optional	Optional	Optional	Optional	Optional
Remote Servicing	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Ethernet Module	Optional	Optional	Optional	Optional	Optional	Optional	Optional
KeyProx	2	3	4	8	16	32	32

Appendix C: Specifications

PCBs	Weight	Order Code
Galaxy 8	217 g	A129-01
Galaxy 18	192 g	A124-01
Galaxy 60	193 g	A130-01
Galaxy 128	201 g	A206-01
Galaxy 500	201 g	A138-01
Galaxy 504	201 g	A207-01
Galaxy 512	201 g	A185-01
Galaxy RIO	92 g	A158
Galaxy RF RIO	63 g	A215
1A Power Supply Unit (PSU)	822 g	A125
3A PSU	1,190 g	A155
3A Smart PSU	1,212 g	A139
RS232	124 g	A169
Telecom	90 g	E062
Network	56 g	E080
ISDN	114 g	E077

Note: The above weights and order codes are from the populated Printed Circuit Board (PCB) only.

Modules	Weight	Order Code
Galaxy Keypad (Mark VII) ……..	207.7 g	CP027
Size: ……..	149 x 91 x 31 mm (L x B x H)	
Keypads Material		PC + ABS
Keypad Colour		Cool grey
Galaxy RIO (Boxed) ……	793 g	C072
Size: ……..	180 x 155 x 35 (L x B x H)	
Galaxy RF RIO (Boxed)	270 g	C076
Size	150 x 162 x 39 (L x B x H)	
RS232 Module (Boxed) ……...	823 g	E054
Size: ……..	180 x 155 x 35 (L x B x H)	
Doorguard ……	995g	C075
Size: ……..	150 x 185 x 40 (L x B x H)	
Printer Interface (6-Way DIN Plug) …….	120 g	A134
Printer Interface (25-Way D Plug) ……	130 g	A161
Box Size: ……..	75 x 52 x 28 mm (L x B x H)	
Cable Size:	2m for 4-Way IDC, and 0.3m for 6-Way/25-Way plug.	

Galaxy Control Panel Box	Weight	Order Code
6 Ahr size (Special Small)……..	2,925 g	W1242
Size: ……	395 x 81 x 251 mm (L x B x H)	
15 Ahr size (Standard Large) …….	3,892 g	W1246
Size: ……	415 x 93 x 310 mm (L x B x H)	

Panel Box Material: ……..18 SWG (1.2 mm) Mild Steel.
Panel Colour: …… Ash Grey 00A01 Epoxy Texture.

Note: The above weights and order codes are for the empty box only.

Device	Quiescent Current (mA)	Device	Quiescent Current (mA)
Galaxy 8 (Note 1)	100	RS232 Module (E054, E055)	50
Galaxy 18 (Note 1)	55	4-Way Relay Interface (C037)	160
Galaxy 60 (Note 1)	75	General Purpose Relay Interface (A060)	40
Galaxy 128	121	Galaxy Mk 3 (LCD) Keypad	100
Galaxy 500	145	Galaxy Mk 7 (LCD) Keypad	55
Galaxy 504	145	Printer Interface (A134/A161)	100
Galaxy 512 (High Security)	145	Doorguard (C075)	10
Galaxy RIO (Note 1)	40	Max Reader	35
RF RIO	55	MicroMAX	25
3 A Smart PSU (Note 1)	100	ISDN Module	40
Telecom Module (E062) (Note 2)	45	Ethernet	155
		Key Prox	90

Table C-1 Current Consumption

Note 1: Measured with no load on zone input

Note 2: Not communicating

Appendix D: Parts List Index

Product Name	UK Part No	Comments	Product Name	UK Part No	Comments
Galaxy Classic Range			**Galaxy Panel PCB's**		
Galaxy 8 Control	CO55-01	8 zones	Galaxy 8 PCB	A129-01	
Galaxy 8 Pack (incl. Mk7 Keypad)			Galaxy 18 PCB	A124-01	
			Galaxy 60 PCB	A130-01	
Galaxy 18 Control:		10 to 18 zones	Galaxy 128 PCB	A206-01	
with 1 amp power supply	CO51-01-1A		Galaxy 500 PCB	A138-01	
with 3 amp power supply	CO51-01-3A		Galaxy 504 PCB	A207-01	
with 3 amp smart PSU	CO51-01-3AS		Galaxy 512 PCB	A185-01	
Galaxy 60 Control:		12 to 60 zones	**Accessories:**		
with 1 amp power supply	CO52-01-1A		Max Reader	MX01	
with 3 amp power supply	CO52-01-3A		Max Flush Mounting Kit	MX02	
with 3 amp smart PSU	CO52-01-3AS		MicroMAX Reader	MX11	Weather proof
			Max Proximity Keyfob	YXO-0004	
Galaxy 128 Control:		0 to 128 zones	Max Proximity Card	YXO-0002	
with 1 amp power supply	CO70-01-1A		Max Card with Magnetic Stripe	YXO-0001	
with 3 amp power supply	CO70-01-3A		Max programmer	YXO-0007	
with 3 amp smart PSU	CO70-01-3AS		Max Overlay Label	LP1-1627	
			Max Weatherproof Kit	MX10	For MX01 only
Galaxy 500 Control:		0 to 504 zones	Doorguard	C075	Door Isolation Unit
with 1 amp power supply	CO57-01-1A		Doorguard Common Key	C075C	All use the same key
with 3 amp power supply	CO57-01-3A		Engineer Keypad Cable	A136	
with 3 amp smart PSU	CO57-01-3AS		Twisted Pair 4-core Cable (200m)	W002	
Galaxy 504 Control:		0 to 504 zones	**Keypads:**		
with 1 amp power supply	CO65-01-1A		Galaxy Mk3 Keypad Aluminium	CPO23-A	Flush mount
	CO65-01-3A		Galaxy Mk3 Keypad Brass	CPO23-B	Flush mount
	CO65-01-3AS		Galaxy Mk7 Keypad	CP027	Replaces Mk3 Keypad
			Galaxy Mk7 "Special Keypad"	No part number	Order modified keypad (ref. Tech. Support)
Galaxy 512 High Security Control:		8 to 512 zones	Galaxy KeyProx	CP028/CP	Keypad with integrated reader
Complete with 3 amp Smart PSU	CO63-01-3AS		Galaxy KeyProx HID	CP028-H	Keypad with integrated reader

Product Name	UK Part No.	Comments	Product Name	UK Part No.	Comments
PSU's:			**Software Packages:**		
12 Volt, 1 amp PSU			**Galaxy Gold (remote servicing software):**		
Boxed	P019		PC Licence	R006	
PCB Kit	P020	1 amp PCB transformer and AC connections	Software and Manual Pack	R006-P	
PCB	A125-X		Software Update (additional)	R007	
1 amp Transformer Kit	A195-X	Transformer and AC connections	Dongle Variant PC Licence	R011	
			Dongle Variant Software and Manual	R011-P	
12 Volt, 3 amp PSU			Dongle Software Update (additional)	R012	
Boxed	P017				
PCB Kit	P021	3 amp PCB transformer and AC connections	**Security Director's Gold:**		
PCB	A155-X		End User remote servicing software available to Galaxy Gold licence holders only		
3 amp Transformer Kit	A196-X		PC Licence	R021	
			Software and Manual Pack	R021-P	
12 Volt, 3 amp Smart PSU			Software Update (additional)	R010	
Boxed	P015		Dongle Variant PC Licence	R013	
PCB Kit	P022	3 amp SPSU PCB transformer and mains connections	Dongle Variant Software and Manual	R022-P	
PCB	A180-A		Dongle Software Update (additional)	R024	
3 amp Smart Transformer Kit	A197-X	Transformer and mains connections			
			Alarm Monitoring:		
Leads and Cables:	See Spares		System Monitoring Software		
			PC Licence	R009	
Interfaces:			Software and Manual Pack	R009-P	
RF RIO Boxed	C076		Software Update (additional)	R010	
RIO Boxed	C072		Dongle Variant PC Licence	R013	
Telecom Module PCB	E062		Dongle Variant Software and Manual	R013-P	
Telecom mounting Kit	A203	Stand-off plate for mounting above PCB	Dongle Software Update (additional)	R014	
RS232 Module Boxed	E054		Galaxy Software Dongle	YY0-0004	
RS232 Module PCB	A169				
ISDN Module PCB	E077				
Ethernet Module Boxed	E080				
Printer Interface	A161	Galaxy Printer interface			
4-way Relay Interface	B024	Printer, PSU and Galaxy Interface			
4-way Relay Interface Kit	C037	Boxed			
1-way Relay Interface (PCB)	A101	PCB only			
	A060	PCB only			

Product Name	UK Part No	Comments
Spares:		
Line Driver (RS485)	UJ2-7517-M	
Sticky foot	NB5-1462	For mounting Telecom Module/RIO
1K resistor	RM4-1921	For Galaxy zone wiring
6-way standard PSU lead	WB3-0006	For 1 or 3 amp PSU to Galaxy
4-way smart PSU lead	WB3-0007	For Smart PSU to Galaxy Panel
Battery Lead Red	WB3-0009	Red and black leads required for a PSU
Battery Lead Black	WB3-0010	Red and black leads required for a PSU
Mk3 Keypad Wall Plate	EK8-1584-M	Wall mounting bracket
Mk3 Keypad Door	EK8-1580-M	
Mk3 Keypad Tamper Spring	NP8-1586-M	
RF Transmitter Peripherals:		
5802H Panic Button	2021-010	
5804H Keyfob	2021-011	
5808H Smoke Detector	2021-011	
5816H Universal Door Contact	2021-013	
5810HUK UK Door Contact	2021-020	
5888H 12m PIR	2021-014	
RF Survey Kit	2021-026	
Literature:		
Installation Manual	II1-0027	
Programming Manual	IP1-0027	
Galaxy Gold User Guide	IU1-0057	
Alarm Monitoring User Guide	IU1-0096	
Telecom Module Installation instructions	II1-0079	
RS232 Module Operating Instructions	IO1-0054	
Smart PSU Installation Instructions	II1-0101	
RIO Installer's Guide	L051	
RF RIO Installation and Programming Instructions	II1-0076	
ISDN Module Installation Instructions	II1-0211	
Ethernet Module Installation Instructions	II1-0080	

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