warning signals

A131 High level audible warning system

The A131 is a high output 131dB(A) @ 1 metre electronic siren in a compact and easy to install package. Using up to four speakers, it can be mounted in a variety of ways and is ideal as a plant alarm to cover outdoor locations, areas with high background noise or smaller COMAH (Seveso II) applications with sound coverage requirements up to 300m.

Offering a choice of three alarm stages, selected from a choice 45 tones including many national standard tones, it can be incorporated in fire, security and general alarm systems where existing equipment is not powerful enough or the system needs expanding.

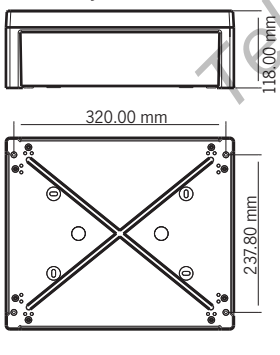
The speaker horns are suitable for pole or wall mounting and are protected to IP66 which makes them suitable for use in the most arduous locations. They come pre-wired with 10m of cable to ensure a quick installation and can positioned in a variety of ways to suit the application.

E2S has considerable experience in this field and is able to offer full pre and post installation support including assistance with siren selection.

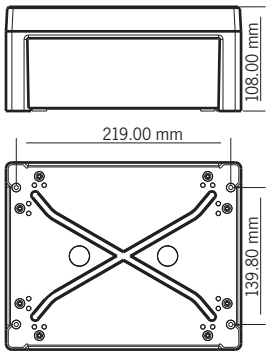
Features:

The A131 has the option of battery back up which means it can deliver it's safety warning even in the event of a power failure, for up to 30 days in standby and 30 minutes in alarm.

The siren is operated by push buttons either on the siren control box or via a remote panel or remote contact from another system which can be linked by hardwire, telephone cables or radio control using telemetry to create a secure communication network.



Multi-horn Control Unit mounting Installation: A131xxxxxG2, G3 & G4

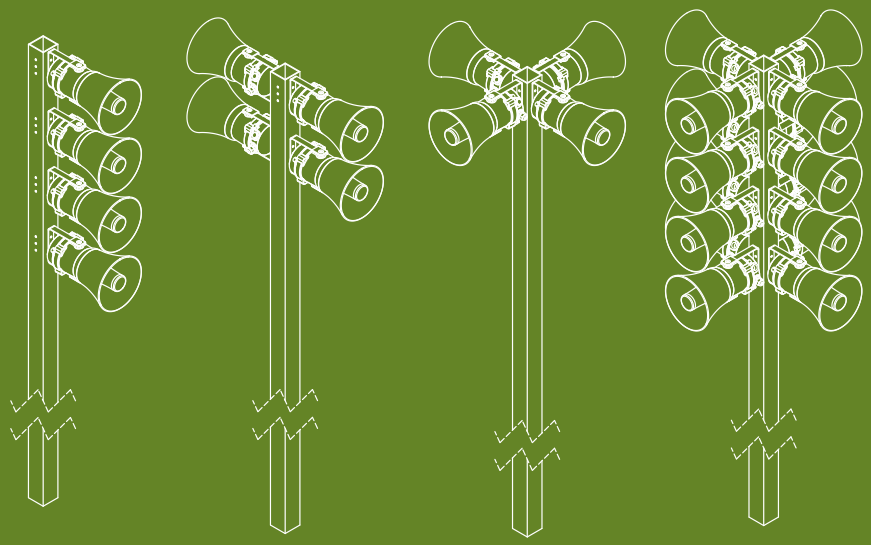


Single Horn Control Unit mounting installation: A131xxxxxG1

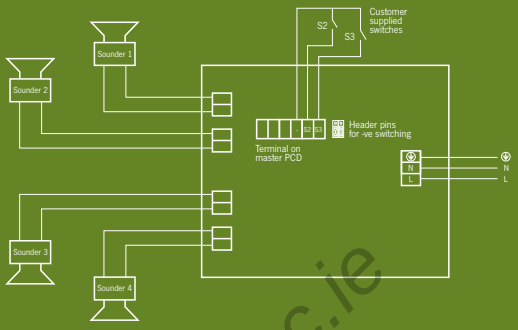
Part codes:

Version:	Voltage:	Range:	Part code:	Current:
1 Horn	24V dc	18-30V dc	A131DC24G1	3.20A
1 Horn	115V ac	90-264V ac	A131AC230G1	0.78A
1 Horn	230V ac	90-264V ac	A131AC230G1	0.39A
2 Horns	24V dc	18-30V dc	A131DC24G2	6.50A
2 Horns	115V ac	90-264V ac	A131AC230G2	1.60A
2 Horns	230V ac	90-264V ac	A131AC230G2	0.78A
3 Horns	24V dc	18-30V dc	A131DC24G3	9.80A
3 Horns	115V ac	90-264V ac	A131AC230G3	3.90A
3 Horns	230V ac	90-264V ac	A131AC230G3	1.50A
4 Horns	24V dc	18-30V dc	A131DC24G4	13.2A
4 Horns	115V ac	90-264V ac	A131AC230G4	4.20A
4 Horns	230V ac	90-264V ac	A131AC230G4	1.95A

Other voltages available on request.



Schematic Circuit:
AC unit with connections for S2 and S3 for second and third stage alarms.



Specification:

Horn unit:

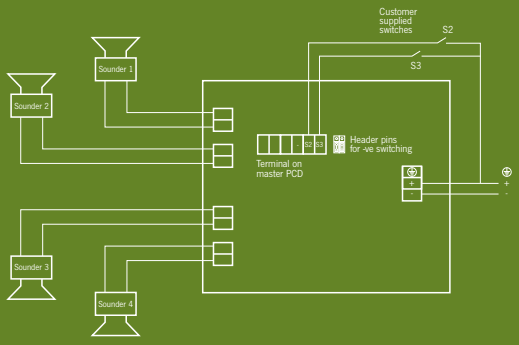
Output:	131dB(A) @ 1m (Tone 2 at nominal voltage +/-3dB(A)) 102db(A) @ 30m
Operating temp:	-20°C to +55°C
Weight:	4.7Kg per horn
Horn body Material:	Aluminium LM6 phosphated & powder coated
Horn flare material:	UL94 V0 & 5VA ABS
Colour:	Grey
Ingress protection:	IP66
Connection:	Supplied with 10m of cable for connection to the control unit as standard. Custom lengths available.
Mounting:	Adjustable U bracket.

Control Panel:

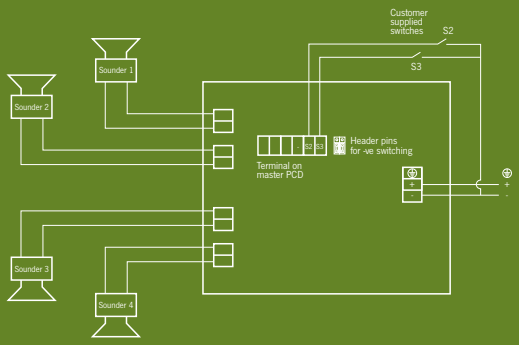
Input voltage DC:	24V dc (18V dc to 30V dc range)
Input voltage AC:	115 or 230V ac (90V to 264V ac range)
Terminals:	0.5 to 4.0mm² cable
Operating temp:	-20°C to +55°C
Ingress protection:	IP65
Weight :	1.5kg 1 Horn AC unit 2.9Kg 4 Horn AC unit

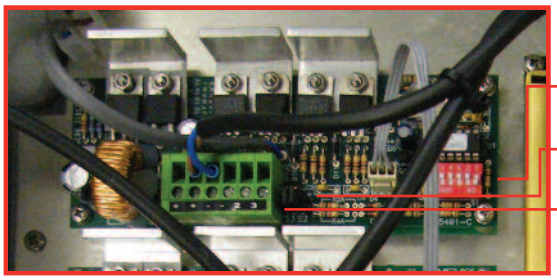
Stage 1	Frequency Description	Stage 2	Stage 3
Tone 1	340 Hz Continuous	Tone 2	Tone 5
Tone 2	800/1000Hz @ 0.25 sec Alternating	Tone 17	Tone 5
Tone 3	500/1200Hz @ 0.3Hz 0.5 sec Slow Whoop	Tone 2	Tone 5
Tone 4	800/1000Hz @ 1Hz Sweeping	Tone 6	Tone 5
Tone 5	2400Hz Continuous	Tone 3	Tone 20
Tone 6	2400/2900Hz @ 7Hz Sweeping	Tone 7	Tone 5
Tone 7	2400/2900Hz @ 1Hz Sweeping	Tone 10	Tone 5
Tone 8	500/1200/500Hz @ 0.3Hz Sweeping	Tone 2	Tone 5
Tone 9	1200/500Hz @ 1Hz - DIN / PFEER P.T.A.P.	Tone 15	Tone 2
Tone 10	2400/2900Hz @ 2Hz Alternating	Tone 7	Tone 5
Tone 11	1000Hz @ 1Hz Intermittent	Tone 2	Tone 5
Tone 12	800/1000Hz @ 0.875Hz Alternating	Tone 4	Tone 5
Tone 13	2400Hz @ 1Hz Intermittent	Tone 15	Tone 5
Tone 14	800Hz 0.25sec on, 1 sec off Intermittent	Tone 4	Tone 5
Tone 15	800Hz Continuous	Tone 2	Tone 5
Tone 16	660Hz 150mS on, 150mS off Intermittent	Tone 18	Tone 5
Tone 17	544Hz (100mS)/440Hz (400mS) - NF S 32-001	Tone 2	Tone 27
Tone 18	660Hz 1.8sec on, 1.8sec off Intermittent	Tone 2	Tone 5
Tone 19	1.4KHz-1.6KHz 1s, 1.6KHz-1.4KHz 0.5s -NFC48-265	Tone 2	Tone 5
Tone 20	660Hz Continuous	Tone 2	Tone 5
Tone 21	554Hz/440Hz @ 1Hz Alternating	Tone 2	Tone 5
Tone 22	544Hz @ 0.875 sec. Intermittent	Tone 2	Tone 5
Tone 23	800Hz @ 2Hz Intermittent	Tone 6	Tone 5
Tone 24	800/1000Hz @ 50Hz Sweeping	Tone 29	Tone 5
Tone 25	2400/2900Hz @ 50Hz Sweeping	Tone 29	Tone 5
Tone 26	Bell	Tone 2	Tone 15
Tone 27	554Hz Continuous	Tone 26	Tone 5
Tone 28	440Hz Continuous	Tone 2	Tone 5
Tone 29	800/1000Hz @ 7Hz Sweeping	Tone 7	Tone 5
Tone 30	300Hz Continuous	Tone 2	Tone 5
Tone 31	660/1200Hz @ 1Hz Sweeping	Tone 26	Tone 5
Tone 32	Two tone chime.	Tone 26	Tone 15
Tone 33	745Hz @ 1Hz Intermittent	Tone 2	Tone 5
Tone 34	1000 & 2000Hz @ 0.5 sec Alternating - Singapore	Tone 38	Tone 45
Tone 35	420Hz @ 0.625 sec Australian Alert	Tone 36	Tone 5
Tone 36	500-1200Hz 3.75sec /0.25sec. Australian Evac.	Tone 35	Tone 5
Tone 37	1000Hz Continuous - PFEER Toxic Gas	Tone 9	Tone 45
Tone 38	2000Hz Continuous	Tone 34	Tone 45
Tone 39	800Hz 0.25sec on, 1 sec off Intermittent	Tone 23	Tone 17
Tone 40	544Hz (100mS)/440Hz (400mS) - NF S 32-001	Tone 31	Tone 27
Tone 41	Motor Siren - slow rise to 1200 Hz	Tone 2	Tone 5
Tone 42	Motor Siren - slow rise to 800 Hz	Tone 2	Tone 5
Tone 43	1200 Hz Continuous	Tone 2	Tone 5
Tone 44	Motor Siren - slow rise to 2400 Hz	Tone 2	Tone 5
Tone 45	1KHz 1s on, 1s off Intermittent - PFEER Gen. Alarm	Tone 38	Tone 34

Schematic Circuit:
DC unit with connections for S2 and S3 for second and third stage alarms using negative switching.



Schematic Circuit:
DC unit with connections for S2 and S3 for second and third stage alarms using positive switching.





Master control board

Dip switch for tone selection (1 0 0 0 0 0 position shown)

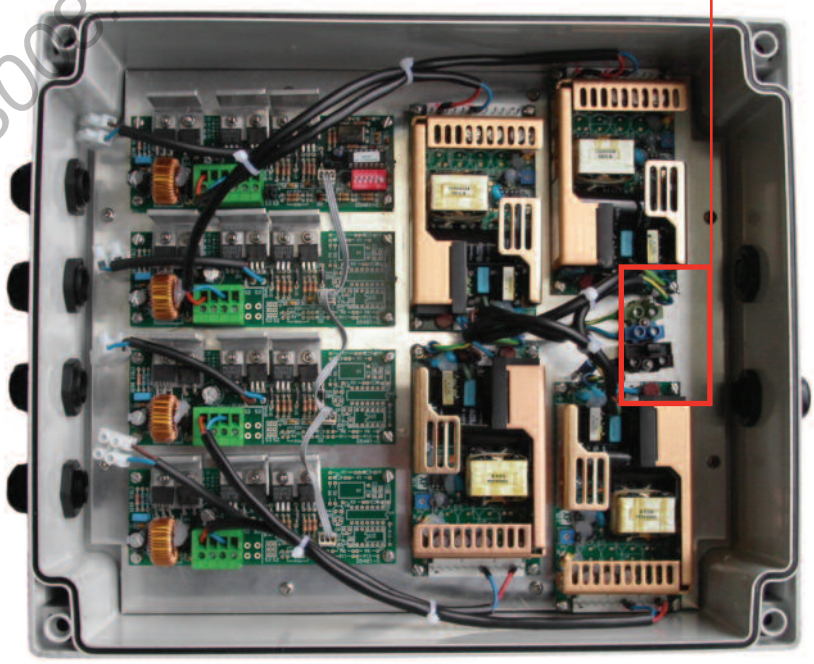
S3 and S2 header pins for -ve and +ve switching (-ve shown)

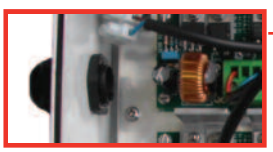
Terminal on master PCB S2 / S3 connections

Terminal block for customer power input

Tone Selection:
The A131 audible alarm system has the facility to use either +ve or –ve switching to change the tone to the second and third stages. For –ve switching connect the two pin headers on the master pcb to the –ve and centre pins. For +ve switching connect the pin headers to the +ve and the centre pins. To change to the second stage tone, connect either a -ve or +ve supply line to terminal S2 on the master pcb, depending on which switching mode is being usedwhile maintaining the dc supply to the +ve and –ve control unit input terminals. Similarly for the third stage tone, connect a -ve or +ve supply line to terminal S3 on the master pcb. The supply to the S3 terminal will automatically override a supply to the S2 terminal.

To switch the second and third stage tones on the AC units remotely connect the -ve terminal on the six way terminal block on the master pcb to the S2 terminal for the second stage tone and the S3 terminal for the third stage tone.





Horn unit connection 1 to 4 off units

INSTRUCTION MANUAL
A131 High Level Audible Warning System

1) Introduction

The A131 high level audible warning system is an effective wide area warning alarm system and can be used where there is a requirement to attract attention over large areas and also where potential high levels of background noise exist.

The system comprises of a central control unit which is configured to drive between one and four synchronized audible horns.
The control unit produces forty five different alarm sounds (tones) that are selectable using an internal dipswitch (see tone table page 3 for available tones) including a stage 2 and stage 3 alarm option.

Each audible horn is capable of producing a range of loud warning signals with output levels at one meter of approximately 131dB(A) depending on tone selected.

Both the control unit and horns are suitable to mount either indoors or outdoors in a number of mounting configurations with ingress protection to IP66.

2) Operating and Marking

All units have the following operating requirements and limitations.

Audible Horn Units
Unit Type No.: A131
Operating Temp: -20 to +55°C
IP Rating: IP66
Weight: 4.7kg per horn

Control Panel
Unit Type No. A131xxxxxGx (dependent on variant chosen see table 1)
Input Voltage:
24V DC (18V to 30V DC range)
115 or 230VAC (90V to 264V AC range)
Operating Temp: -20 to +55°C
IP Rating: IP66
Weight: 1.5kg single AC unit
2.9kg four way AC unit

Marking: CE

3) Installation Requirements

Always de-energize control unit before removing cover.
The installation of the units must be in accordance with any local codes that may apply and should only be carried out by a competent electrical engineer who has the necessary training.

3) Power Supply Selection

It is important that a suitable power supply is run the control unit. The power supply selected must have the necessary capacity to provide the input current to the control unit.

The following table shows the input current taken by the various control unit configurations units:-

DC Unit Type No. Horns	Input Voltage	Input Current	Range. I/P Volts
A131DC24G1			18-30V DC
1 Horn Unit	24V DC	3.2A	
A131DC24G2			18-30V DC
2 Horn Units	24V DC	6.5A	
A131DC24G3			18-30V DC
3 Horn Units	24V DC	9.8A	
A131DC24G4			18-30V DC
4 Horn Units	24V DC	13.2A	
AC Unit Type No. Horns	**Input Voltage**	**Input Current**	**Range. I/P Volts**
A131AC230G1			90-264V AC
1 Horn Unit	115V AC	0.78A	
1 Horn Unit	230V AC	0.39A	
A131AC230G2			90-264V AC
2 Horn Units	115V AC	1.60A	
2 Horn Units	230V AC	0.78A	
A131AC230G3			90-264V AC
3 Horn Units	115V AC	3.9A	
3 Horn Units	230V AC	1.5A	
A131AC230G4			90-264V AC
4 Horn Units	115V AC	4.2A	
4 Horn Units	230V AC	1.95A	

Table 1: Control Unit variants and power requirements

INSTRUCTION MANUAL
A131 High Level Audible Warning System

Current levels shown above are for the nominal input voltage. The input current will vary according to the voltage input level and the tone selected.
The above table also shows the maximum and minimum voltages at which the control units can be operated.

4) Cable Selection

When selecting the cable size consideration must be given to the input current that the control unit draws (see table above) and the length of the cable run.

5) Earthing

AC powered control units must be connected to a good quality earth. The unit is provided with internal earthing terminal which is located next to the power terminal (See figure 4).

6) Horn Location and Mounting

The location of the horns should be made with due regard to the area over which the warning signal must be audible. The horns should only be fixed to services that can carry the weight of the unit.

The horns should be securely bolted to a suitable surface using the 7mm diameter bolt holes in the stainless steel U shaped mounting bracket (see figure 1). The angle can then be adjusted in the direction that the sound is primarily required to cover. This can be achieved by loosening the two large bracket screws in the side of the unit, which allow adjustment in steps of 18°. On completion of the installation the two large bracket adjustment screws on the side of the unit must be fully tightened to ensure that the unit cannot move in service.

7) Control Unit Location and Mounting

The location of the control unit will depend on the level of customer accessibility required. The control unit should only be fixed to services that can carry the weight of the unit.
The control unit is mounted using 4 off suitable screws in the mounting positions given on installation figures 2 & 3.

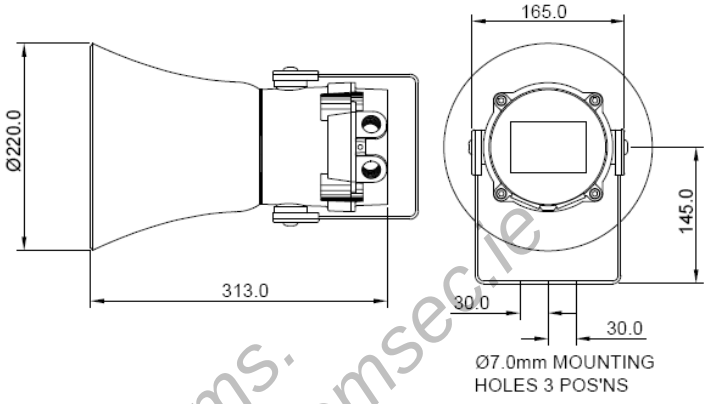


Fig 1 Horn Installation

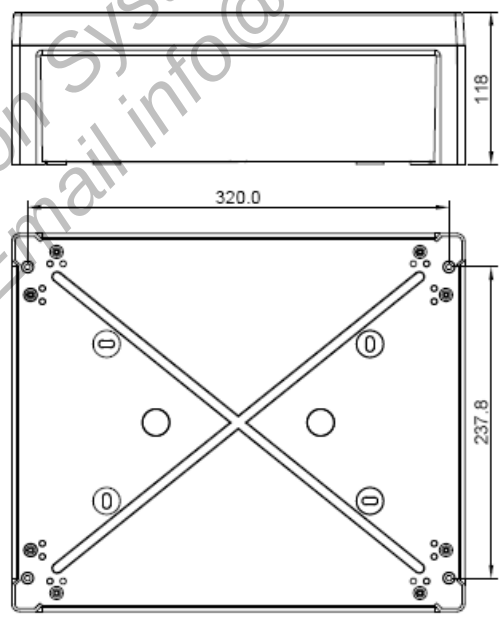


Fig 2 Multi-horn Control Unit mounting Installation A131xxxxxG2, G3 & G4

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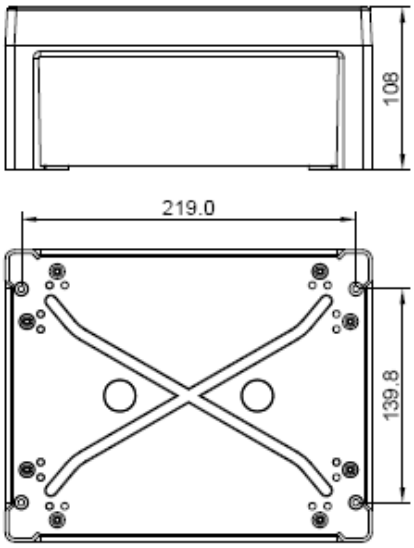

Fig 3 Single Horn Control Unit mounting Installation A131xxxxxG1

8) Wiring of Control Unit to Power and horn units

For wiring schematics see figures 5a, 5b & 5c:
The control unit needs to be wired to a suitable power supply cable supplied by the customer.
The power terminals on the control unit are clearly marked and will accept up to 2.5mm^2 cable. See figure 4.

The cable from the horn unit is feed through the cable gland in the control unit and then wired into the terminal block provided.

To keep horns in-phase ensure that the red horn cable is connected to the brown and the blue to the blue. See figure 4.
As all the sounder units are synchronized it does not matter which unit is cabled into which board.

9) Tone Selection Table

The A131 high level audible warning system has 45 different tones that can be selected for the first stage alarm. The systems can then be switched to sound second and third stage alarm tones. The tones are selected by operation of a DIP switch in the control unit for both DC and AC units. The tone table below shows the switch positions for the 45 tones and which tones are available for The operation of the second and third stages is different for DC and AC units.

the second and third stages. To sound stage one simply connect the supply voltage (+ve and –ve) for DC units and (L, N and E) for AC units, to the supply input terminals in the control unit.

Stage 1	Frequency Description	Switch 1 2 3 4 5 6	Stage 2	Stage 3
1	340Hz Continuous	0 0 0 0 0 0	Tone 2	Tone 5
2	800/1000Hz @ 0.25 sec Alternating	1 0 0 0 0 0	Tone 17	Tone 5
3	500/1200Hz @ 0.3Hz sec Slow Whoop	0 1 0 0 0 0	Tone 2	Tone 5
4	800/1000Hz @ 1Hz Sweeping	1 1 0 0 0 0	Tone 6	Tone 5
5	2400Hz Continuous	0 0 1 0 0 0	Tone 3	Tone 20
6	2400/2900Hz @ 7Hz Sweeping	1 0 1 0 0 0	Tone 7	Tone 5
7	2400/2900Hz @ 1Hz Sweeping	0 1 1 0 0 0	Tone 10	Tone 5
8	500/1200/500Hz @ 0.3Hz Sweeping	1 1 1 0 0 0	Tone 2	Tone 5
9	1200/500Hz @ 1Hz - DIN *PFEER P.T.A.P.*	0 0 0 1 0 0	Tone 15	Tone 2
10	2400/2900Hz @ 2Hz Alternating	1 0 0 1 0 0	Tone 7	Tone 5
11	1000Hz @ 1Hz Intermittent	0 1 0 1 0 0	Tone 2	Tone 5
12	800/1000Hz @ 0.875Hz Alternating	1 1 0 1 0 0	Tone 4	Tone 5
13	2400Hz @ 1Hz Intermittent	0 0 1 1 0 0	Tone 15	Tone 5
14	800Hz 0.25 sec on, 1 sec off Intermittent	1 0 1 1 0 0	Tone 4	Tone 5
15	800Hz Continuous	0 1 1 1 0 0	Tone 2	Tone 5
16	660Hz 150mS on, 150mS off Intermittent	1 1 1 1 0 0	Tone 18	Tone 5
17	544Hz (100mS)/440 Hz (400m/S) - NF S 32-001	0 0 0 0 1 0	Tone 2	Tone 27
18	660Hz 1.8 sec on, 1.8 sec off Intermittent	1 0 0 0 1 0	Tone 2	Tone 5
19	1.4KHz - 1.6KHz 1s, 1.6KHz - 1.4 KHz 0.5s - NFC48-265	0 1 0 0 1 0	Tone 2	Tone 5
20	660Hz Continuous	1 1 0 0 1 0	Tone 2	Tone 5
21	554Hz/440Hz @ 1Hz Alternating	0 0 1 0 1 0	Tone 2	Tone 5
22	544Hz @ 0.875 sec Intermittent	1 0 1 0 1 0	Tone 2	Tone 5
23	800Hz @ 2Hz Intermittent	0 1 1 0 1 0	Tone 6	Tone 5
24	800/1000Hz @ 50Hz Sweeping	1 1 1 0 1 0	Tone 29	Tone 5
25	2400/2900Hz @ 50Hz Sweeping	0 0 0 1 1 0	Tone 29	Tone 5
26	Bell	1 0 0 1 1 0	Tone 2	Tone 15
27	554Hz Continuous	0 1 0 1 1 0	Tone 26	Tone 5
28	440Hz Continuous	1 1 0 1 1 0	Tone 2	Tone 5
29	800/1000Hz @ 7Hz Sweeping	0 0 1 1 1 0	Tone 7	Tone 5
30	300Hz Continuous	1 0 1 1 1 0	Tone 2	Tone 5
31	660/1200Hz @ 1Hz Sweeping	0 1 1 1 1 0	Tone 26	Tone 5
32	Two tone chime	1 1 1 1 1 0	Tone 26	Tone 15
33	745Hz @ 1Hz Intermittent	0 0 0 0 0 1	Tone 2	Tone 5
34	1000 & 2000Hz @ 0.5 sec Aletrnating - Signapore	1 0 0 0 0 1	Tone 38	Tone 45
35	420Hz @ 0.625 Sec Australian Alert	0 1 0 0 0 1	Tone 36	Tone 5
36	500-1200Hz 3.75 sec /0.25 sec Australian Evac.	1 1 0 0 0 1	Tone 35	Tone 5
37	1000Hz Continuous - *PFEER Toxic Gas*	0 0 1 0 0 1	Tone 9	Tone 45
38	2000Hz Continuous	1 0 1 0 0 1	Tone 34	Tone 45
39	800Hz 0.25 sec on, 1 sec off Intermittent	0 1 1 0 0 1	Tone 23	Tone 17
40	544Hz (100mS)/440Hz (400mS) - NF S 32-001	1 1 1 0 0 1	Tone 31	Tone 27
41	Motor Siren - slow rise to 1200Hz	0 0 0 1 0 1	Tone 2	Tone 5
42	Motor Siren - slow rise to 800Hz	1 0 0 1 0 1	Tone 2	Tone 5
43	1200Hz Continuous	0 1 0 1 0 1	Tone 2	Tone 5
44	Motor Siren - slow rise to 2400Hz	1 1 0 1 0 1	Tone 2	Tone 5
45	1KHz 1s on, 1s off Intermittent - *PFEER Gen. Alarm*	0 0 1 1 0 1	Tone 38	Tone 34

Table 2 : Tone selection table

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A131 High Level Audible Warning System

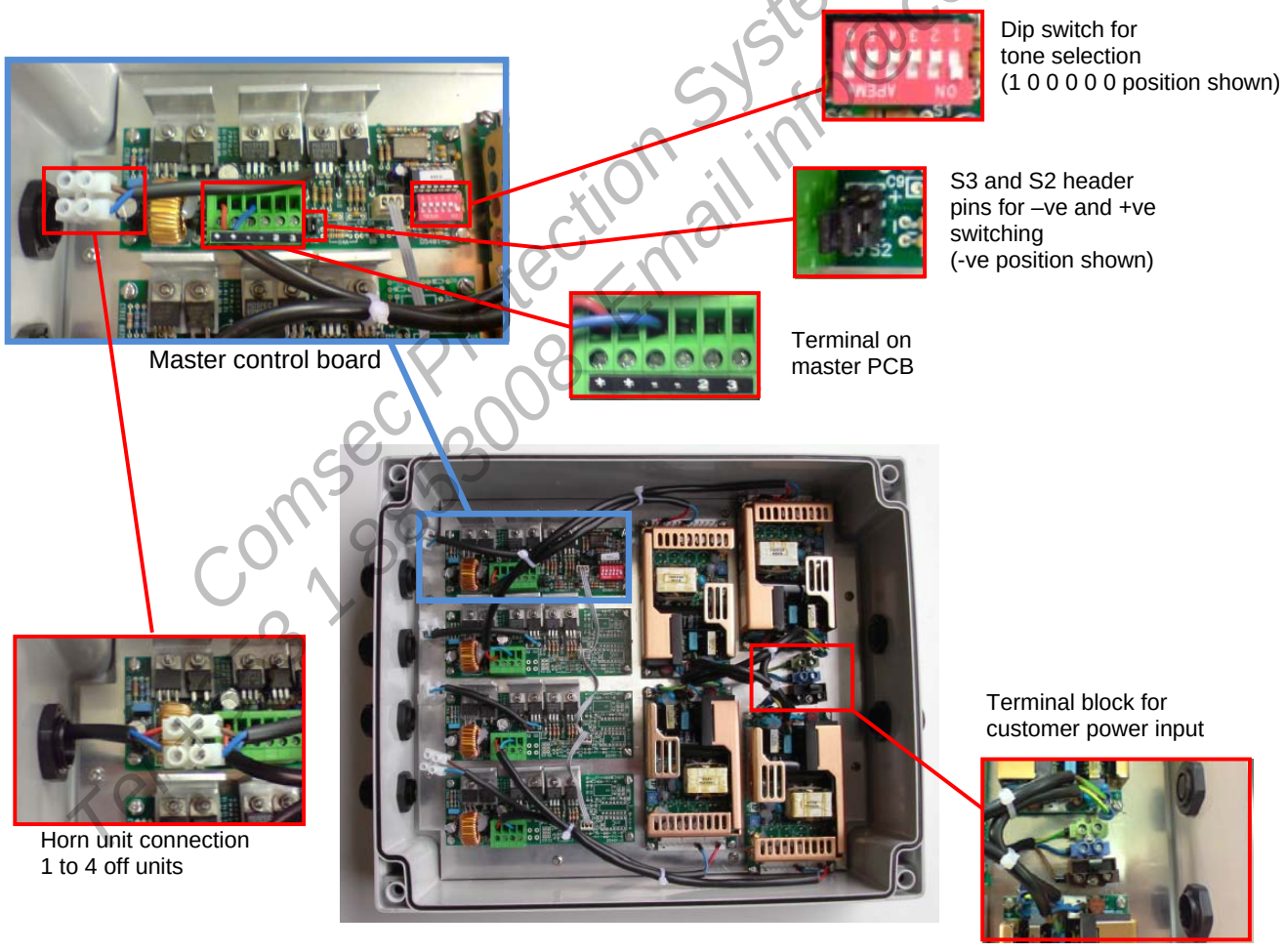
DC Units Second and Third Stage Tone Selection

The A131 audible alarm system has the facility to use either +ve or –ve switching to change the tone to the second and third stages. For –ve switching connect the two pin headers on the master pcb to the –ve and centre pins (see figures 4 & 5b). For +ve switching connect the pin headers to the +ve and the centre pins (see figure 5c).
To change to the second stage tone, connect either a -ve or +ve supply line to terminal S2 on the master pcb, depending on which switching mode is being used while maintaining the dc supply to the +ve and –ve control unit input terminals. Similarly for the third stage tone, connect a -ve or +ve supply line to terminal S3 on the master pcb. The supply to the S3 terminal will automatically override a supply to the S2 terminal.

AC Units Second and Third Stage Tone Selection

To select the second and third stage tones on the A131 audible alarm system, connect the -ve terminal on the six way terminal block on the master pcb to the S2 terminal for the second stage tone and the S3 terminal for the third stage tone (see figure 5a).

Figure 4 Layout of wiring in control unit



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A131 High Level Audible Warning System

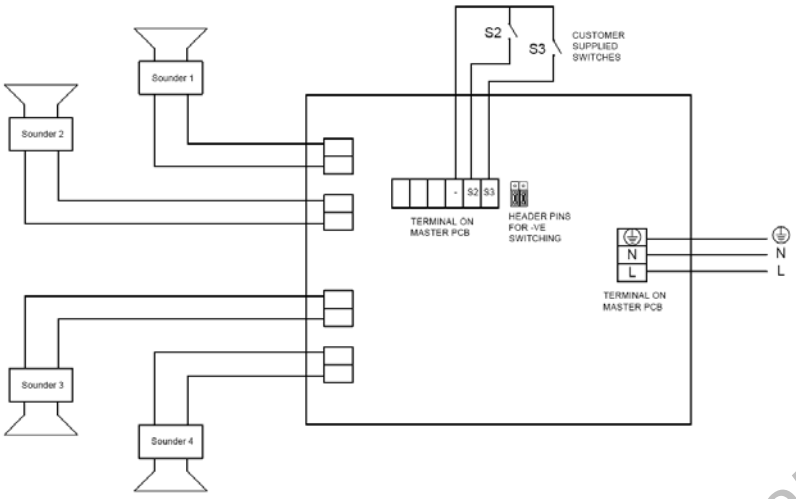

Fig 5a: Schematic Circuit Diagram of AC unit with stages S2 and S3 with negative switching

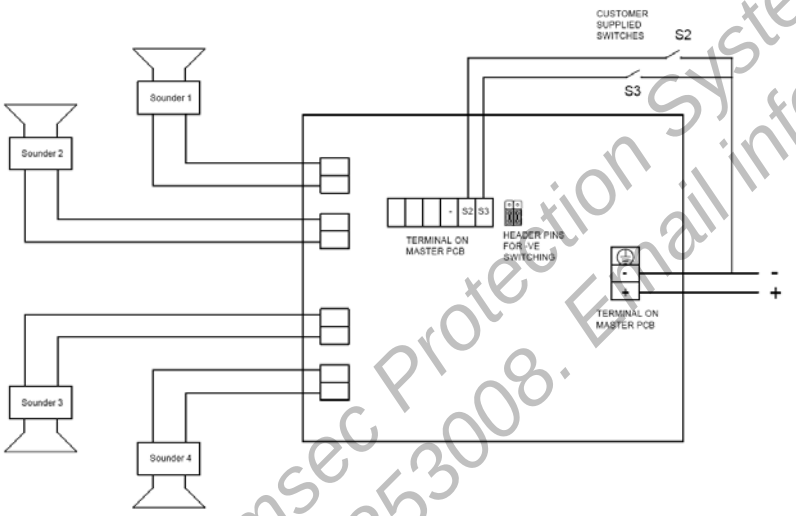

Fig 5b: Schematic Circuit Diagram of DC unit with stages S2 and S3 with negative switching

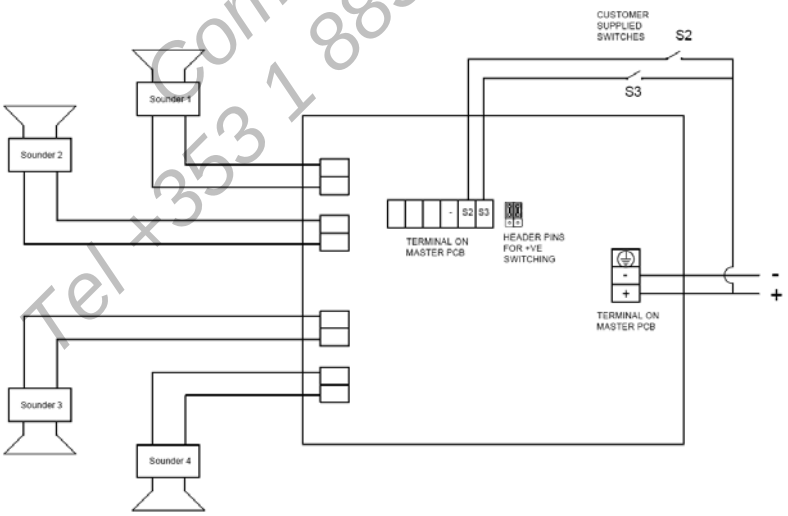

Fig 5c: Schematic Circuit Diagram of DC unit with stages S2 and S3 with positive switching