



PHONTECH COMMUNICATION

P.B. 274, 3183 HORTEN NORWAY

PHONE +47 33 08 35 00 FAX +47 33 08 35 01

E-mail : info@phontech.no

www.phontech.no

**HANDBOOK
FOR**

**PUBLIC ADDRESS SYSTEM
CONCEPT SPA 1500**



PUBLIC ADDRESS SYSTEM SPA-1500

User Manual content

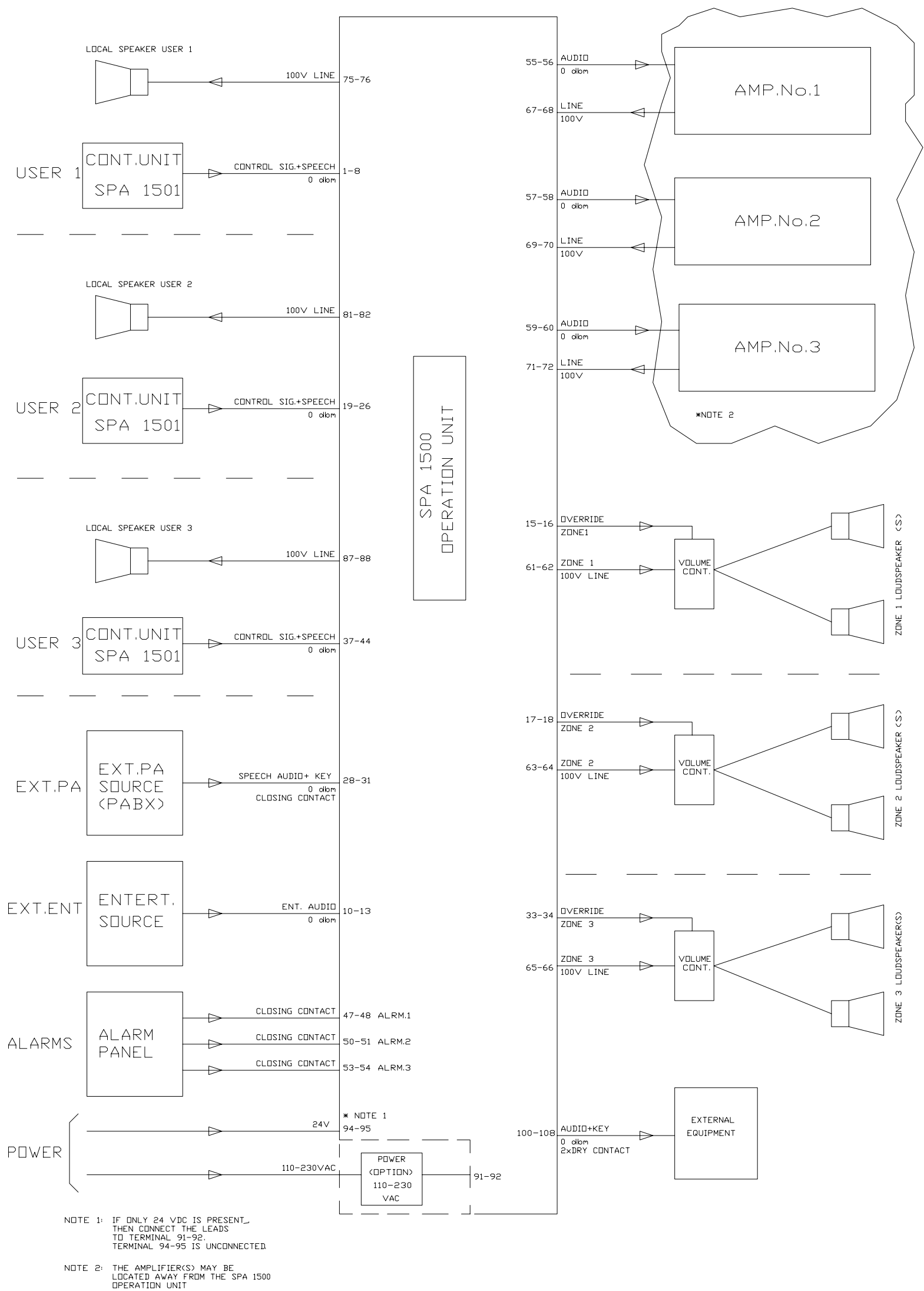
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TITLE: PUBLIC ADDRESS SYSTEM.
SPA-1500.
SINGLE LINE DIAGRAM.



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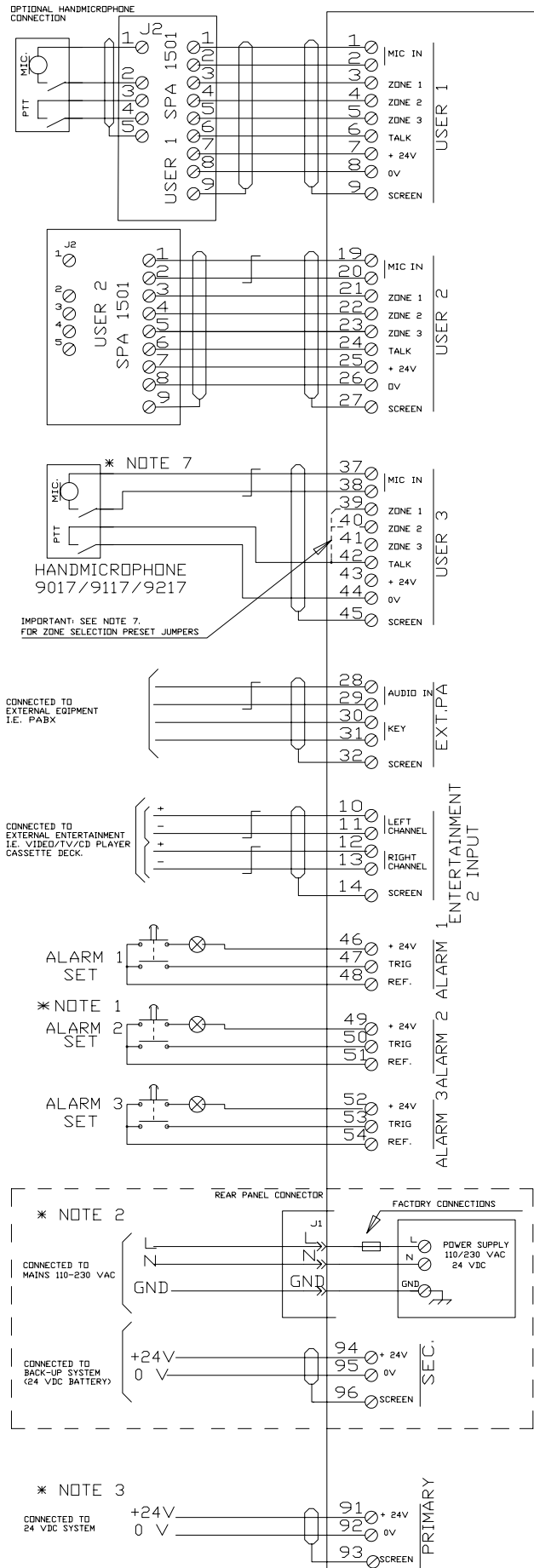
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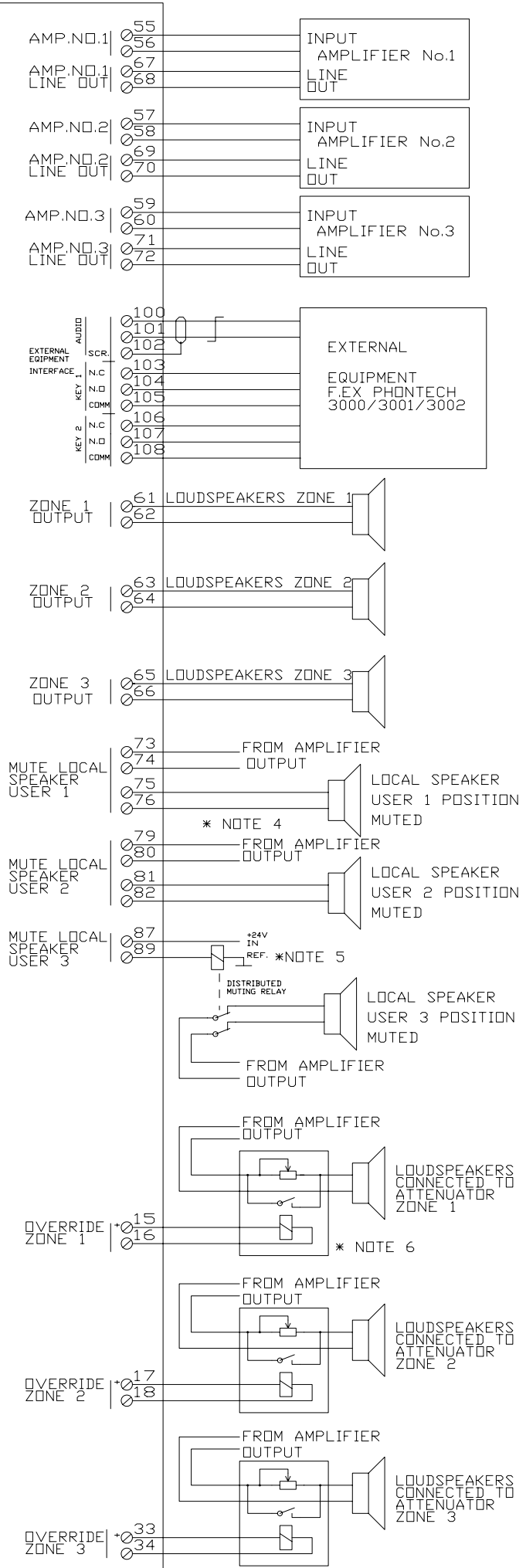
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OPERATION UNIT
SPA 1500



NOTE 1: DISPLAYS THE PRINCIPLE OF MANUAL ALARM PANEL CONNECTION. THE SWITCHES MAY BE AUTOMATICALLY OPERATED BY A F&G SYSTEM

NOTE 2: THE CONNECTIONS SHOWN IN DOTTED AREA VIEWS THE CONNECTION IF BOTH MAINS AND BACKUP IS PRESENT.

NOTE 3: DISPLAYS CONNECTION IF ONLY 24V VOLTAGE IS PRESENT.

NOTE 4: ONE WAY TO OBTAIN MUTED LOCAL LOUDSPEAKER THE INTERNAL MUTING RELAY IS UTILIZED.

NOTE 5: ANOTHER WAY TO OBTAIN MUTED LOCAL LOUDSPEAKER. THE INTERNAL RELAY OPERATE AN EXTERNAL LOCAL MUTING RELAY.

NOTE 6: DISPLAYS THE PRINCIPLE OF VOLUME CONTROL OVERRIDE.

NOTE 7: DISPLAY THE CONNECTION OF HANDHELD MICROPHONE TYPE 9017/9117/9217 ON THE USER 3 INPUT. EXAMPLE ZONE 1 AND ZONE 2 ACTIVATED.

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TITLE: PUBLIC ADDRESS SYSTEM.
SPA-1500.
INSTALLATION DRAWING.
EXTERNAL CONNECTION.



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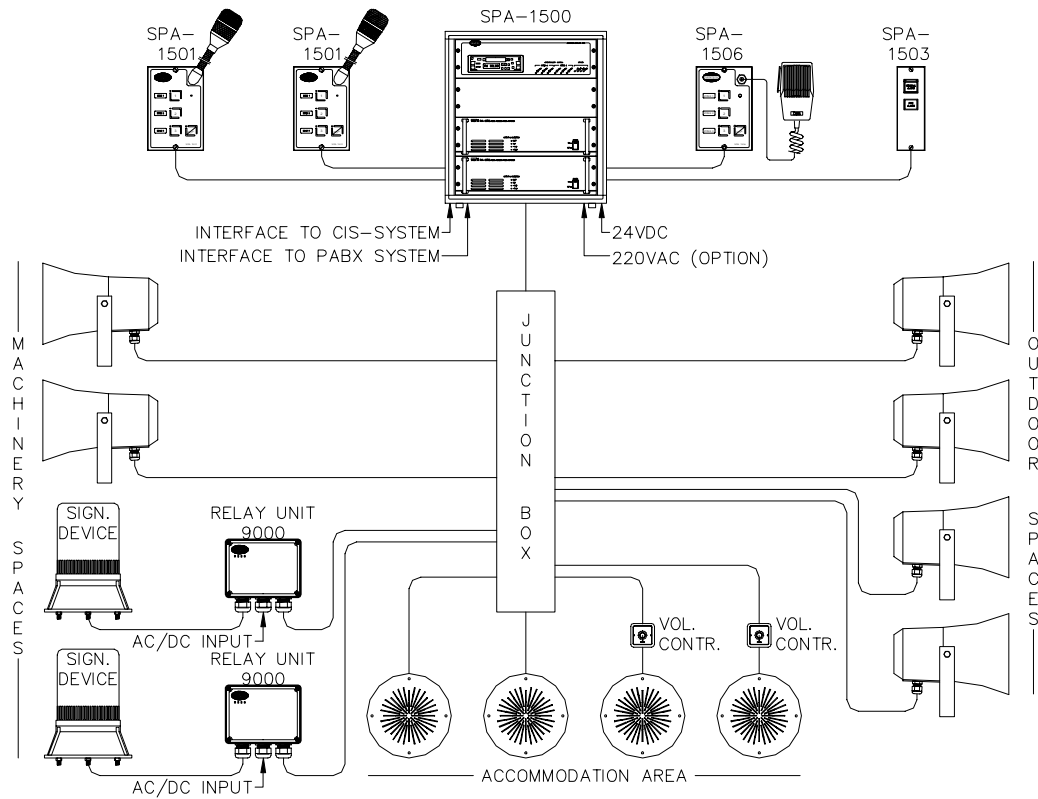
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SPA 1500 SYSTEM DESCRIPTION							SIZE: A4	UED no: 92
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1.0. INTRODUCTION.

The phonTECH SPA system is a standard Small Public Address system especially designed to cover the needs for PA and entertainment distribution on smaller and mid-size ships and offshore platforms.

The SPA is a very compact design, but never the less the functions are very much like those in larger familiar systems.

The customer may chose meny optional functions /facilities, and thus obtain an almost tailor made PA system.

2.0. GENERAL DESCRIPTION.

2.1 OPERATION UNIT SPA 1500:

The SPA 1500 is the central unit in the SPA system. The SPA 1500 contains all the necessary electronics/ logic needed to obtain the functions/ facilities in a PA and entertainment system.

The functions/ facilities lists as follows:

- 3 user inputs.
- 1 external PA input (typical PABX line)
- 1 external entertainment audio line input.
- 1 internal entertainment audio line input.
- 1 Car radio cassette/ CD player for internal entertainment source. (option)
- 24 VDC backup supply connection with automatic switching.
- 24 VDC primary supply input.
- 3 alarm types (externally triggered) option.
- 3 amplifier inputs
- 3 amplifier outputs
- 3 zone outputs
- Mute local loudspeaker relays for the 3 users.
- Override volume control outputs for the 3 zones.
- User priority ranking.
- Attention tone (ding dong) for paging.(optional)

STATUS INDICATOR LEDS

- Power on led indicator
- Power failure led indicator
- Alarm on led indicator.
- Entertainment on led indicator.
- PA activity led indicator.

ENTERTAINMENT CONTROL .



3 toggle switches for each entertainment source.
Both sources may be distributed to any of the 3 zones.
The status led " ENT" illuminates.

2.2 PA CONTROL UNIT SPA 1501:

The SPA 1501 is designed especially to operate together with the SPA 1500.
The SPA 1501 is the paging station.
The SPA 1501 is flush mounted, but back-box for wall mounting is optional.

- Gooseneck microphone as standard.
- 3 zone select buttons with light indication
- 1 talk/ all buttons with light indication.
- Zone/ area indicator windows with backlight.
- Handheld microphone (optional instead of gooseneck)

3.0. TECHNICAL DATA.

3.1 OPERATION UNIT SPA 1500:

- 19" 3 HE rack/ console mounting unit.
- Operating voltage: 24 VDC
- Optional mains supply: 110 VAC to 240 VAC.
- Automatic switch over if mains failure occurs.
- Mic input level: 5mV.
- External PA input level: 0 dBm typical.
- External entertainment input level: 0 dBm typical.
- Amplifier inputs level: 0 dBm typical
- Amplifier output level: 100 V line.
- Zone output level: 100 V line.
- Car cassette radio/ CD player. (optional) for entertainment.
- Rack enclosure (option)

3.2 PA CONTROL UNIT SPA 1501:

- Flush mounting
- Operating voltage: 24 VDC.
- Mic line audio level: 5 mV.
- Led indicators for all keys.
- Backlight led`s for area text.
- Withstands rough and moisty environment.

4.0. INSTALLATION:

The SPA system is adapted to fit rack mounting 19", and standardized dimensions in modern ship consoles.
The system may be delivered with rack enclosure. The racks are from 6HE in the smallest configuration (SPA 1510) up to 12 HE in the biggest version (SPA 1530).
Depth of all rack mounted units is 510 mm.



4.1 POWER REQUIREMENTS:

The operating power is 24 VDC.
Optional power is 110>230 VAC 50 Hz.

4.2 CABLE REQUIREMENTS:

The 24 VDC power supply cable conductor area is 4 sqmm.
The 110>230 VAC cable conductor area is 1,5 sqmm.
All signal cables must be twisted pairs with outer screen.
All signal cables conductor area is 1,5 sqmm.

4.3 MOUNTING/ SCREEN TERMINATION:

SPA 1500 operation unit is mounted in a 19" standard rack or console, and fixed with front bolts.

For flush mounting: cut-out dimensions is 130 x 445 mm (h x w)

Cable inlet from behind.

SCREEN CONNETION.

In order to obtain maximum performance after installation, it is important to terminate the cables and ground the screens in a good maner.

The cables is to be de- isolated by removing the outer insulation. Then the screen braid is cut off appr. 30mm longer than the outer isolation.

The conductors is de- isolated and fitted with end- crimps before they are screwed on to the terminal.

The outer screen, which now is open is clamped onto the cable fixing arcs inside the cabinet. Cable ties of conductive type is recomended for best result.

Please see figure 1 on page 7 for more details.

SPA 1501 pa control unit is flush mounted in standardized measurement ship consoles.

For other flush mounting: cut-out dimensions is 90 x 123 mm.

Cable inlet from behind.

To ease the cable termination the screw terminals are plugg-in type.

5.0. OPERATING DESCRIPTION.

The SPA includes both an entertainment and a public address system.

The entertainment system is operated and controlled at the operation unit SPA 1500.

The car cassette radio/ CD player serves as one of the entertainment sources.(SOURCE A)

One additional entertainment audio source may be incorporated into the system. (SOURCE

B)

5.1 ENTERTAINMENT CONTROL

Both sources is routed to the selected zone by means of the entertainment control at the SPA 1500.

As soon as any of the toggle switches is activated the ENT. led in the **STATUS** panel is lit.

IMPORTANT

**DO NOT ACTIVATE BOTH SOURCES IN THE SAME ZONES SIMULTANEOUSLY.
THIS WILL MIX THE AUDIO INTO THE LOUDSPEAKERS.**



5.2 ENTERTAINMENT SOURCE A.

The car cassette radio/ CD player (option) serves as entertainment source A.
Switch the car radio on, tune to a strong station and route the signal to the desired zone.
(see 5.0 and 5.1)

5.3 ENTERTAINMENT SOURCE B.

The entertainment source B is an external audio line from e.g. a TV / video system.
Make sure the signal is present, and operate as in 5.0 and 5.1.

5.4 PAGING

Paging is possible from any of the three PA CONTROL UNITS SPA 1501, and from an EXTERNAL PA source, typical a PABX line.
Paging may be performed in any of the three zones, or all zones. See 5.6 and 5.7.
Press the TALK key and speak clearly and directly into the microphone.
PA messages should always be as brief as possible.
PA messages should also be of "non-personal" kind, since this messages is public.
PA messages should be repeated once to ensure the message is received.
Also see 5.5.

5.5 ATTENTION TONE DING DONG (OPTIONAL)

When paging is performed an attention tone (ding-dong) will be distributed over the loudspeakers in the actual zone.
Note the attention tone is optional, and requires a module mounted in the SPA 1500.
The duration of this attention tone is approximately 2 seconds, therefore wait at least 2 seconds prior to paging.

5.7 AUTOMATIC ZONE SELECTOR

The PA CONTROL UNIT SPA 1501 has three zone keys plus one TALK/ALL key.
As one of the zone keys is activated, the indicator led illuminates full light.
If none of the zone keys is active (half-light), and the TALK/ALL key is operated, the system AUTOMATICALLY goes into ALL CALL mode.
I.e. all the zone key indicator leds illuminates full light and the message is distributed in ALL ZONES.

5.8 PRIORITY

The SPA system incorporates user priority. The priority ranking is:

1. USER 1 (SPA 1501)
2. USER 2 (SPA 1501)
3. USER 3 (SPA 1501)
4. EXTERNAL PA
5. ENTERTAINMENT

The alarm (option) has top priority. I.e. an alarm will override all PA, and the user loses access.

The user however will regain his access by releasing his TALK key and then press it once more.

5.9 MUTE LOCAL LOUDSPEAKER

Each user (3) has one "mute local loudspeaker" circuit.
The users local speaker may be routed through this circuit to obtain undistorted PA messages.
This will minimize the risk of audible feedback, and ensure safe operation.

5.10 OVERRIDE VOLUME CONTROL

Each zone has one "override volume control" output.
In an entertainment system it is convenient to have local volume controls at the loudspeaker.
A PA message or alarm however is important to be distributed at full volume to ensure safe operation.
The "override volume control" output is to be utilized for this function.

6.0. ALARMS (OPTION)

The SPA system may comprise an alarm tone generator board. (optional).
This board has three different alarm types.
Active alarm is indicated in the status panel by illuminated ALARM led.

6.2 ALARM ACTIVATION / RESET.

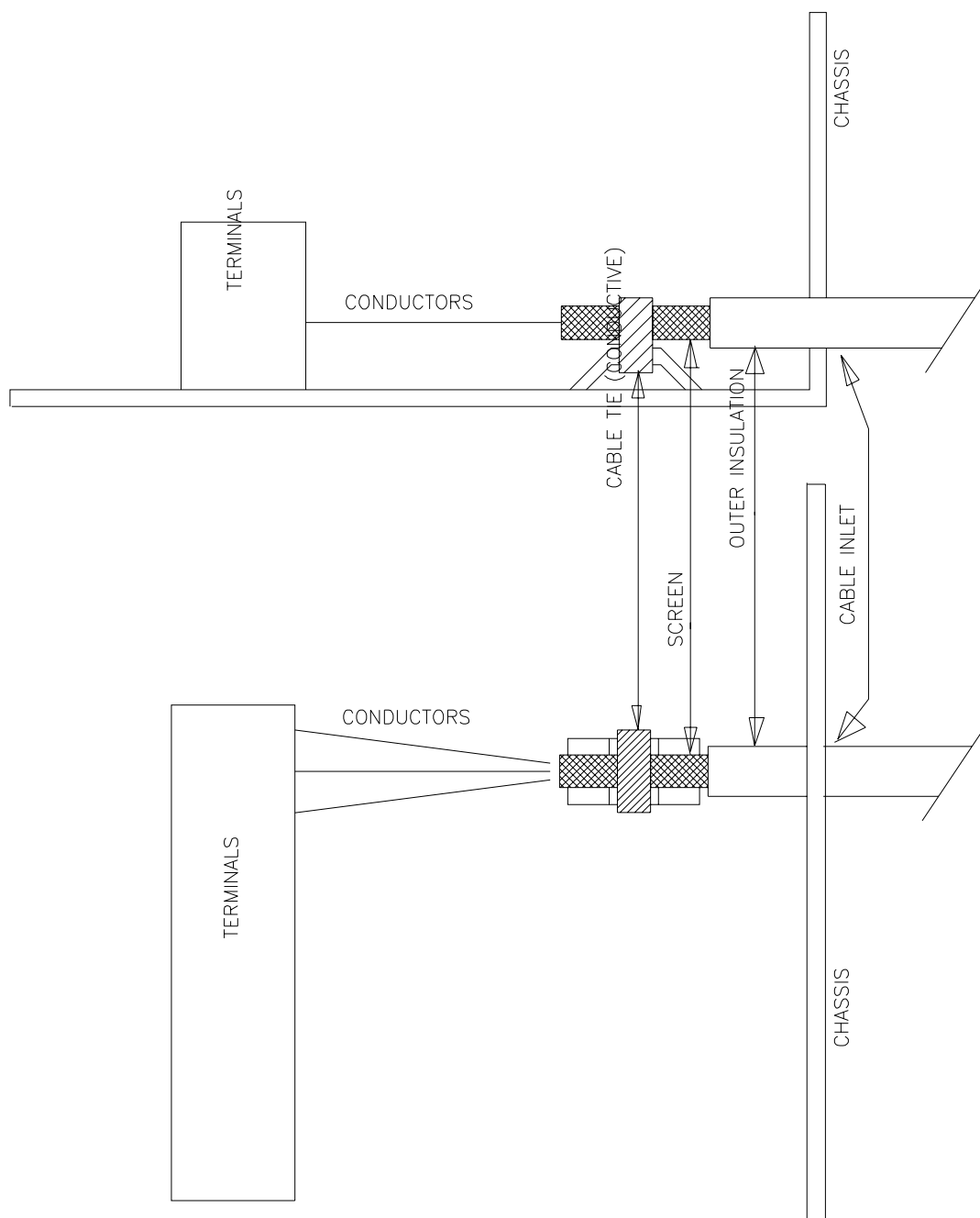
The alarms may be automatically (F&G panel) activated / reset.
Alternatively an alarm control panel may be connected panel.

6.3 ALARM PRIORITY.

The alarm signal has top priority.
I.e. an active alarm will break down any PA message or entertainment audio.
The PA user may regain access by releasing the talk key and press it once more.

FIGURE 1.

The cable outer screens is to be terminated as shown. Conductive type of cable ties is recommended to obtain best possible screen connections.



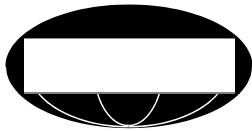
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COMMISSIONING PROCEDURE FOR SPA-1500 SYSTEM

1. CHECK THAT CABLING IS ACCORDING TO APPROVED DRAWINGS.
2. USE SPA-1501 UNIT TO ACCESS ZONE 1 TO 3 AND VERIFY AUDIO IN THE CORRESPONDING SPEAKERS. ALSO VERIFY 24VDC VOLUME OVERRIDE OUTPUT FOR ZONE 1-3(TERM.15/16,17/18,33/34) IF IN USE.
3. ACTIVATE ENTERTAINMENT IF INSTALLED AND VERIFY THAT IT'S DISTRIBUTED TO THE SELECTED ZONE.(SWITCHES IN FRONT)
4. IF AN ALARMCARD IS INSTALLED TEST THAT BOTH ALARMS IS DISTRIBUTED TO ALL ZONES AND CAN BE OVERRIDDEN BY THE ACCESS PANEL(S) 1501.(USER1 TO USER 3 AND EXTERNAL INPUT)
5. IF AN ALARMCARD OR DING-DONG CARD IS INSTALLED EACH ANNOUNCEMENT COULD START WITH A PRETONE.
6. IF THE EXTERNAL INPUT IS IN USE, THEN CHECK THAT THE AUDIO IS DISTRIBUTED TO THE PRESELECTED ZONES(DIPSWITCH S7 1-3)
7. IF EXTERNAL OUTPUT(AUDIO/KEY) IS IN USE, VERIFY AUDIO IS PRESENT AT TERMINALS 100/101 REGARDLESS OF THE ZONE SELECTIONS. KEY 1 AND 2 OUTPUT IS POTENTIAL FREE RELAY CONTACTS. KEY 1 TERM 103/104/105, KEY 2 TERM 106/107/108. THESE CONTACTS ACTIVATES WHEN ALL ZONES ARE ACTIVE

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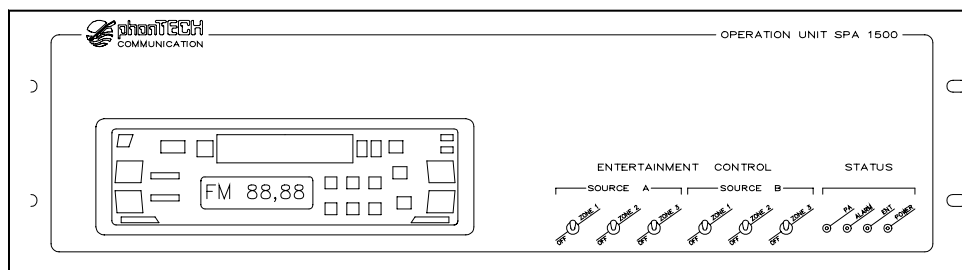



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ITEM	ACCEPTED (YES/NO)	COMMENTS



Doc.No.: 96106-001-DE



	TITLE: SPA SYSTEM OPERATION UNIT SPA 1500 DESCRIPTION						
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5.0. OPTIONAL DING-DONG BOARD INSTALLED.

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10.0. DC CONVERTER.

11.0. ENTERTAINMENT CONTROL.

12.0. STATUS LEDS.

1.0. INTRODUCTION.

A pa and entertainment system consist of PA control units, operation unit, and the amplifiers.

The operation unit SPA 1500 is the central unit in a SPA system.

The compact design makes it easy to install. The mounting is in standard 19" rack or console.

All the electronics and logic required is located in the SPA 1500.

The amplifiers may be placed away from the SPA 1500, but this requires more cabling.

2.0. GENERAL DESCRIPTION.

The SPA 1500 in max version is comprising the following parts:

- System board for SPA 1500.
- Car cassette radio/ CD player. (option)
- Power supply for 110 > 230 VAC (option)
- DC converter for the car radio.(option)
- Entertainment control panel.
- Status panel leds.
- Screw terminals for power and signal cables.

3.0. SYSTEM BOARD FOR SPA 1500.

This PCB contains all the electronic parts required in an operation unit.

The below description refers to drawing 96106-006-CD.

3.1. AUDIO ROUTING.

The 3 microphone line inputs are routed through the user audio switching relays RE1-RE3 to the preamplifier (M19,M20) with automatic gain control. The preamp. raises the audio from microphone level to approximately 0 dBm. (775 mV)

0 dBm is the appropriate level to the power amplifier inputs.

The external pa audio interface is on 0dBm level, and goes through RE4 directly to the audio buffer.

Attention tone ding-dong board. (option.)

This circuit board generates a ding-dong sound in the loudspeakers prior to a PA message.

An active TALK/ KEY signal from the three users or the external pa source starts the ding-dong generator.

Note that the ding-dong only work in PA mode, entertainment does not start the ding-dong.

Alarm tone generator board (option).

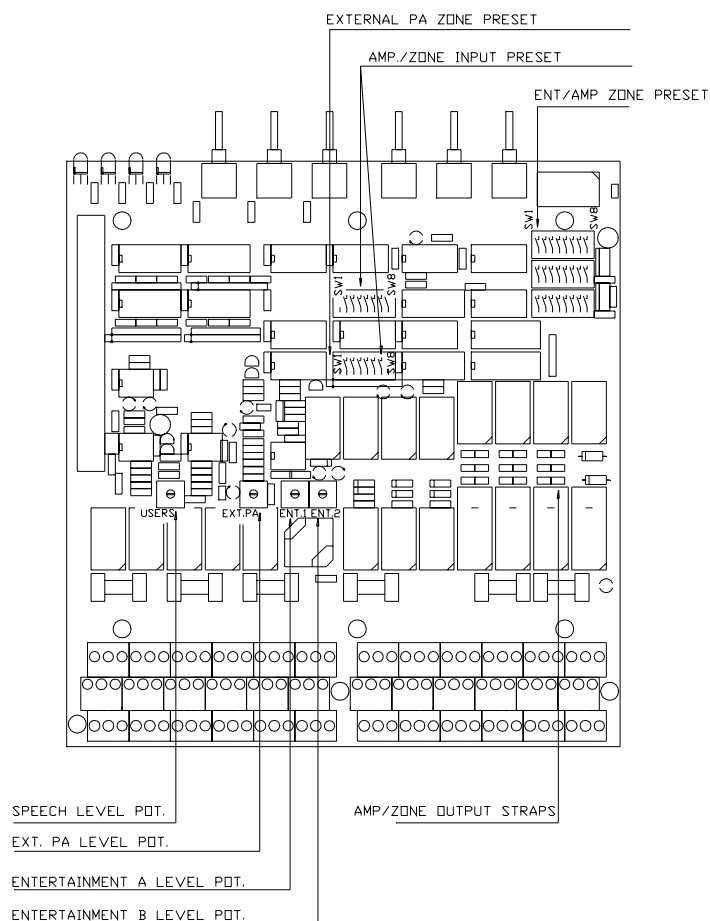
The alarm is an optional facility. There are three different alarm sounds available in the system.

The alarms are started and stopped from an external control panel or from automatic alarm panels like a fire detector panel.

Audio buffer (M20). The above described audio sources, speech, ding-dong and alarm are added into one audio buffer. From this buffer the audio goes through the amplifier input relays (RE6-RE8) to the amplifiers.

The amplifier outputs are fed back to the operation unit for zone switching. From the zone relays RE9-RE11 the output goes to the loudspeaker network.

See below for an overview over the trimmer potmeters and the dipswitches location onboard the PCB 96106-006.



This board is mounted inside the operation unit SPA 1500.



EXTERNAL PA ZONE PRESET: The first 3 switches on dipswitch S7 is for the external PA zone preset (typical PABX)
AMP/ZONE INPUT PRESET: The last 3 switches on dipswitch S7 is for the amplifier 1 zone. The three first switches on dipswitch S8 is for the amplifier 2 zones. The three last switches on dipswitch S8 is for the amplifier 3 zones.
ENT/AMP ZONE PRESET: The dipswitches S9,S10;S11 is for the entertainment amplifier zoning. (see description in this document on page 6).

SPEECH LEVEL POT: Common trimmer potentiometer for the users 1,2,and,3.
EXT PA LEVEL POT: Trimmer for the external PA audio level. (typical PABX etc.)
ENTERTAINMENT "A" LEVEL POT: Trimmer for the entertainment source A audio level. (typical internal car radio)

ENTERTAINMENT "B" LEVEL POT: Trimmer for the entertainment source B audio level. (typical an external source)

AMP/ZONE OUTPUT STRAPS: Strapping field for the amplifier output to zones strapping.

3.2. PRIORITY.

The system includes user priority.

The priority ranking is fixed. Therefore the users connection into the system board must be decided according to the desired priority ranking.

The ranking is as follows:

1. PRIORITY USER 1
2. PRIORITY USER 2
3. PRIORITY USER 3
4. PRIORITY EXT. PA.

3.3. ZONE SELECTOR LOGIC.

The system includes three PA / ENT zones.

The user panels has three zone selector keys.

If none of the zones are selected the system automatically select all three zones. (all call)

3.4. EXTERNAL PA ZONE SELECTOR.

The external pa input does not have zone select possibility.

Therefore this set-up must be preset.

This is decided on the dip-switch S7.

- S7 SWITCH 1 = ZONE 1
S7 SWITCH 2 = ZONE 2
S7 SWITCH 3 = ZONE 3

The location of the different dip-switches aso. is indicated on page 4. fig. 1.

3.5. AMPLIFIER>ZONE PRESET.

Due to the fact that the amplifiers can be dedicated to different zones, both the input and the

output routing must be totally flexible.

Both the entertainment input and the PA input must be strapped / preset in accordance to the tables on page 6.

The location of the different dip-switches aso. is indicated on page 4. fig.1.

3.6. EXTERNAL EQUIPMENT AUDIO OUTPUT.

The circuitry includes an external audio output line with dual dry contact relay contacts for keying.

The nominal audio level is 0dbm.

This audio output includes speech from all users plus alarms.

Note the two key contacts only operate in an all-call situation in the PA system.

I.e. the user has selected all-call, or in an alarm situation.

(alarm enabled automatically operates all zones, all-call)

TABLE 1. TYPICAL CONFIGURATION.

1 = CLOSED STRAP/SWITCH ON

0 = OPEN STRAP/SWITCH OFF

X = DON`T CARE

NUMBER OF AMPS.	DIPSWITCH 7 1 2 3 4 5 6 7 8	DIPSWITCH 8 1 2 3 4 5 6 7 8	DIPSWITCH 9 1 2 3 4 5 6 7 8 A B	DIPSWITCH 10 1 2 3 4 5 6 7 8 A B	DIPSWITCH 11 1 2 3 4 5 6 7 8 A B	OUTPUT STRAPS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	NO-TE
1	---111XX	000000XX	111000XX	000000XX	000000XX	11111100000000000000	1)
2	---100XX	011000XX	100000XX	011000XX	000000XX	11000000111100000000	2)
3	---100XX	010001XX	100100XX	010010XX	001001XX	11000000110000000011	3)

Note 1) One amplifier cover all three zones. Only entertainment A present. Entertainment possible in all zones.

Note 2) One amplifier on zone 1, one amplifier cover zone 2 and 3.

Note 3) One amplifier for each zone. Two entertainment sources. Both sources (A+B) possible in all zones.

TABLE 2. EXAMPLE.

NUMBER OF AMPS.	DIPSWITCH 7 1 2 3 4 5 6 7 8	DIPSWITCH 8 1 2 3 4 5 6 7 8	DIPSWITCH 9 1 2 3 4 5 6 7 8 A B	DIPSWITCH 10 1 2 3 4 5 6 7 8 A B	DIPSWITCH 11 1 2 3 4 5 6 7 8 A B	OUTPUT STRAPS 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18	NO-TE
1	---111XX	000000XX	111000XX	000000XX	000000XX	11111100000000000000	1)
2	---110XX	001000XX	110000XX	001000XX	000000XX	11000000000011000000	2)
3	---100XX	010001XX	100100XX	010010XX	001001XX	11000000110000000011	3)



Note 1) One amplifier cover all zones. Only entertainment A present. Entertainment possible in all zones.

Note 2) One amplifier zone 1 and 2. One amplifier zone 3.

Note 3) One amp per zone. Two entertainment sources. Both sources (A+B) possible in all zones.

4.0. OPTIONAL ALARM BOARD INSTALLED.

The SPA 1500 may have an alarm tone generator board installed.

The alarm board may be the std. PCB 92100-027, or the duplicated alarm board 99100-003.

In this case the **ST 20** is to be mounted.

The **ST 21** is removed.

5.0. OPTIONAL DING-DONG BOARD INSTALLED.

The SPA 1500 may have a ding-dong board installed.

PCB 88100-014.

In this case the **ST 19** is to be mounted.

The **ST 21** is mounted.

6.0. AUTOMATIC GAIN CONTROL (AGC) DISABLE.

The AGC may be disabled for special purposes.

The **ST 22** is installed in this case.

7.0. ENTERTAINMENT MUTE.

If the SPA system is single amplifier based the entertainment zone set-up must be disabled during PA paging. The **ST 23** is removed.

If the system includes one amplifier per zone the entertainment and PA is separated, and simultaneous operation is possible. The **ST 23** is mounted.

If one of the amplifiers is combined in two zones the **ST 23** is removed.

8.0. CAR CASSETTE RADIO/ CD PLAYER

The SPA 1500 may be delivered with an optional car cassette radio / CD player.

This unit serves as the entertainment source A in the system.

9.0. POWER SUPPLY.

The SPA 1500 operates on 24 VDC supply. The system board has two power line inputs. One is supply directly from the ships batteries, the other from the optional net adapter. (option)

The AC supply may span from 110 to 230 VAC without having to do any re-wiring in the power supply.

10.0. DC CONVERTER.

The car cassette radio is operating on 12 VDC. This voltage is supplied from the DC converter. (option)



11.0. ENTERTAINMENT CONTROL.

The entertainment sources is controlled by means of the entertainment control switches on the front at the SPA 1500. There are three toggle switches for the A source zoning configuration, and three toggle switches for the B source zoning configuration.

12.0. STATUS LEDS.

The system status is displayed on the STATUS part of SPA 1500.

Led for supply status: POWER led. Green colour means OK. Red colour means mains (110-220VAC) failure.

Led for PA activity: PA led. Illuminates when the system is active in PA mode.
(Paging from users/ PABX etc.)

Led for entertainment: ENT. led. Illuminates when any of the six entertainment switches is active.

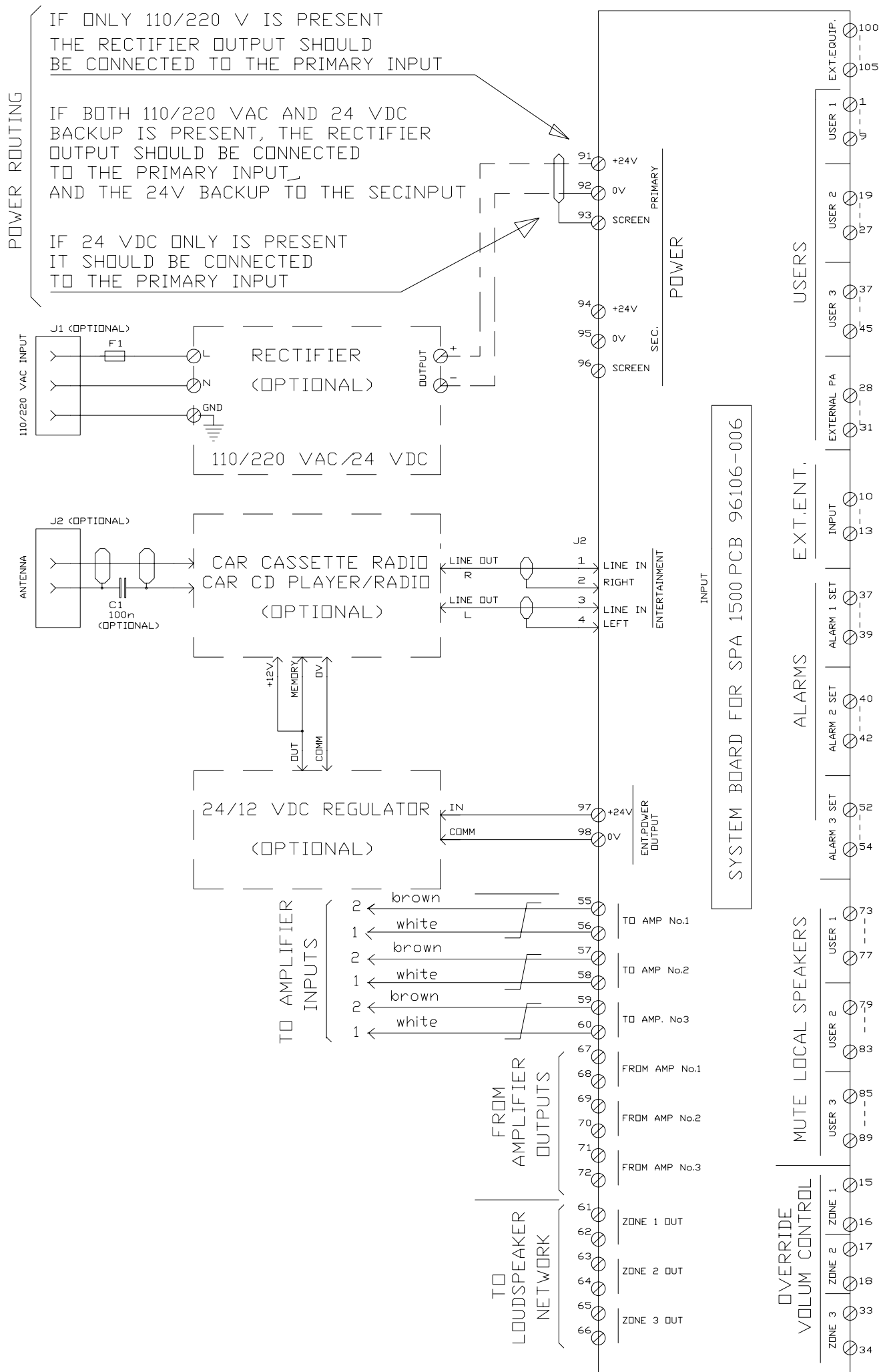
Led for alarm. ALARM led. Illuminates if the alarm is active. (Alarm is optional)

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3	24.03.2001	CHANGE ORDER No. 842	TLy	ASk	ASk
2	06.02.1998	CHANGE ORDER No. 689	TLy	ASk	ASk
1	06.02.1997	CHANGE ORDER No. 636	TLy	ASk	ASk
0	02.10.1996	AS BUILT.	TLy	ASk	ASk
REV No.	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED

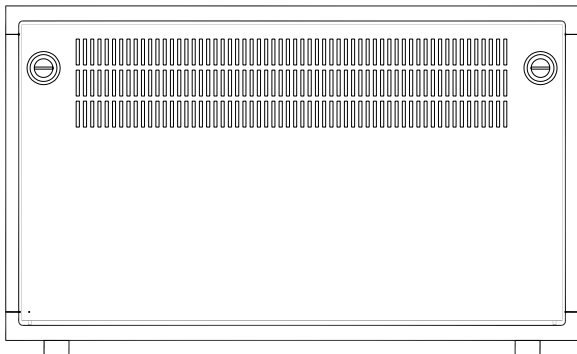
TITLE: PUBLIC ADDRESS SYSTEM,
SPA-1500.
OPERATION UNIT.
INTERNAL WIRING.



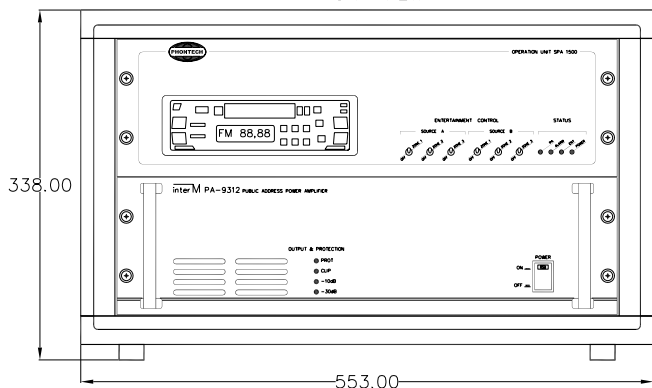
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SIZE: A3 UED No: 92
DOC. No: 96106-001-IW
FILE NAME: 96106-001-IW.DWG

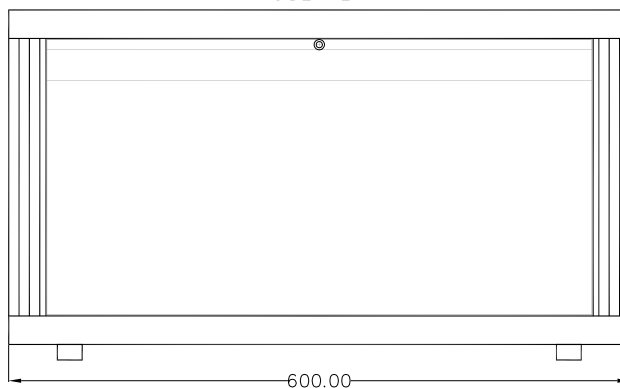
REAR VIEW



FRONT VIEW



SIDE VIEW



EQUIPMENT DATA:

MANUFACTURER	: PHONTECH AS.	FIXING DETAILS	: YARD SUPPLY.
MODEL/TYPE	: SPA-1510.	ACCESS	: FRONT.
RACK/BOX SUPPL.	: SCHROFF.	CABLE ENTRY	: BOTTOM.
RACK/BOX TYPE	: MINI-6.	GLANG TYPE	: NA.
MATERIAL	: ALUMINIUM/STEEL.	PROTECTION IP	: IP-20.
COLOUR	: RAL 7030/7035.	POWER SUPPLY	: 24VDC/220VAC.
WEIGHT OF UNIT	: 30,00Kg.	POWER CONSUMP.	: DEPEND ON AMPL.
MOUNTING	: ON SHELF.	HEAT DISSIPATION	: DEPEND ON AMPL.



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1	2001.10.09	CHANGE ORDER No.876.	R.F.	ASk	TLy
0	99.01.20	AS BUILT.	R.F.	ASk	TLy
REV No.	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED

TITLE: SPA SYSTEM, CONTROL & AMPLIFIER RACK.
SPA 1510.
MECHANICAL LAYOUT.

SIZE:	A3	UED No:	92
DOC. No:	96106-004-ML		
FILE NAME:	96106-004-ML.DWG		

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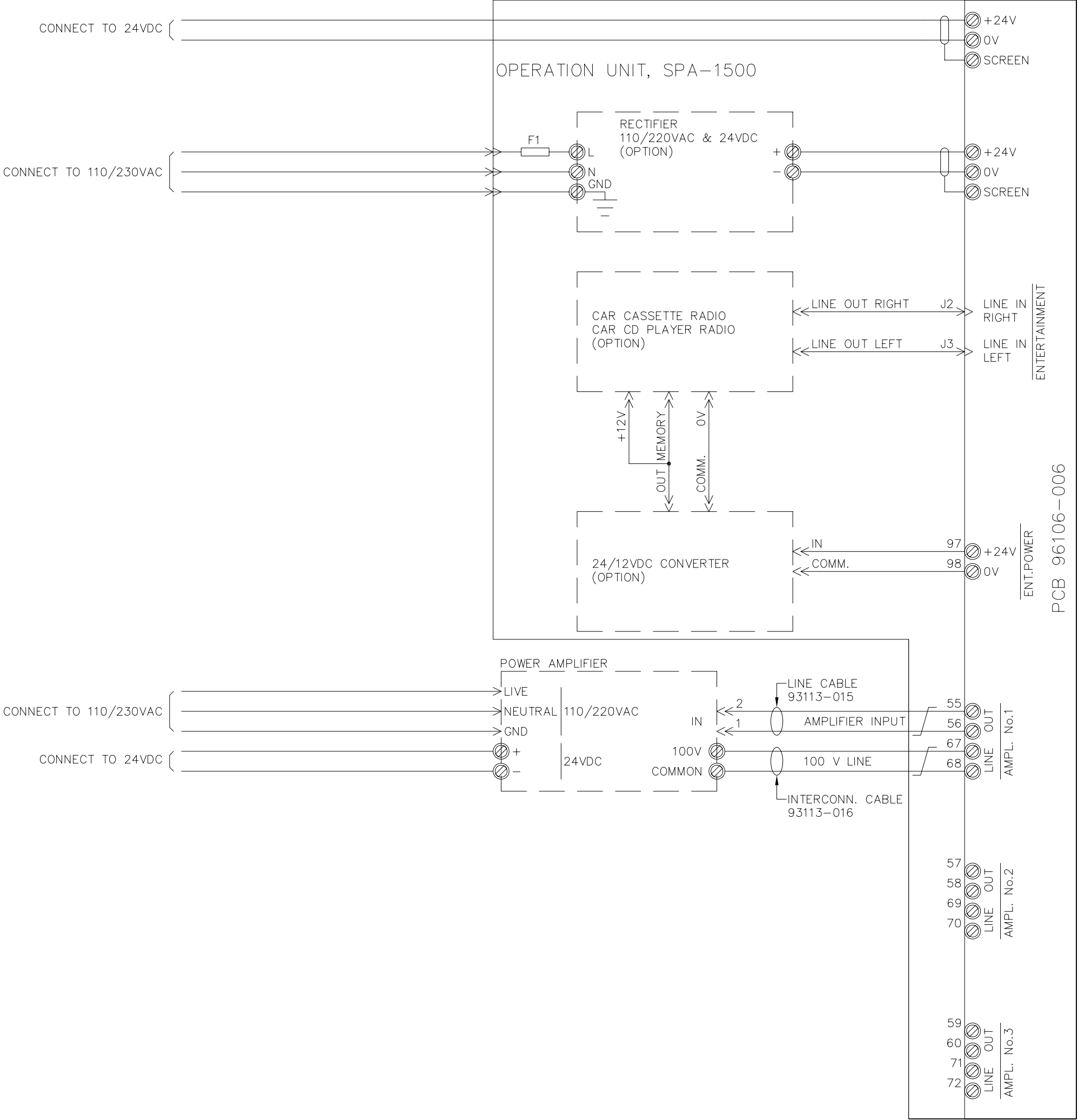
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0	05.02.1997	AS BUILT.	TLy	ASk	ASk
REV No.	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED

TITLE: SPA SYSTEM.
CONTROL & AMPLIFIER RACK.
SPA-1510.
INTERNAL WIRING.



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FILE NAME:	96106-004-IW.DWG		

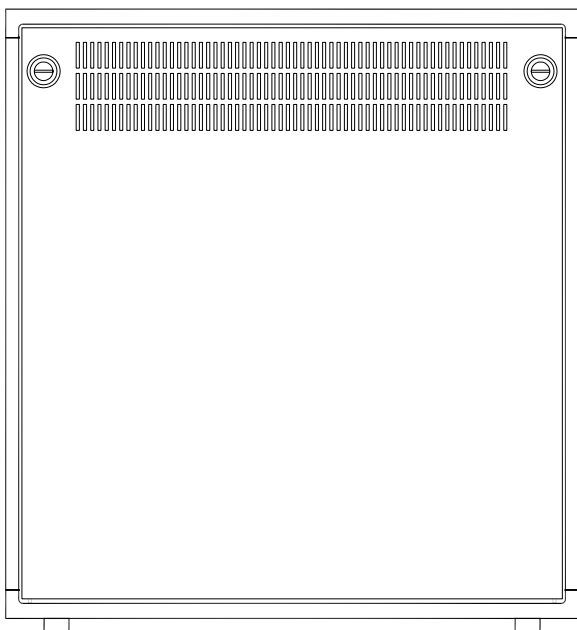
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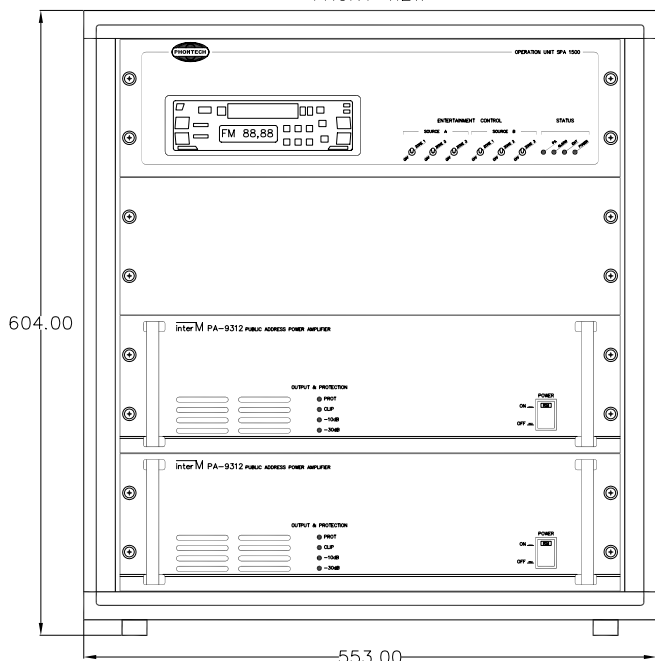
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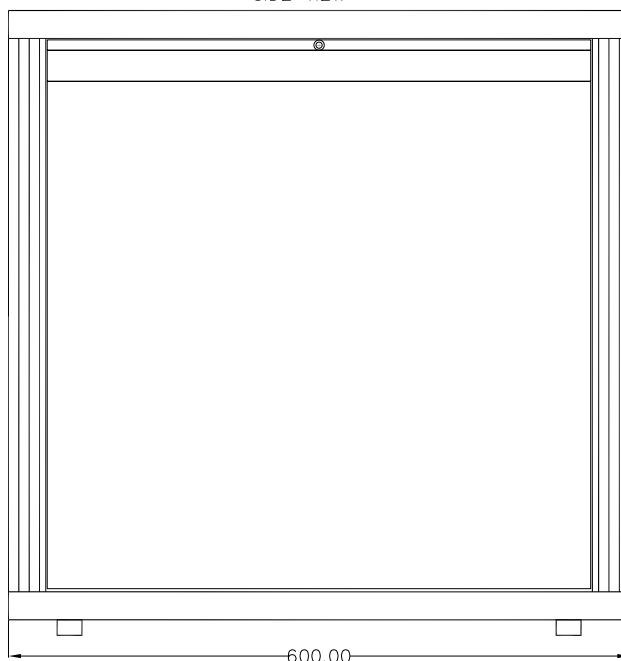
REAR VIEW



FRONT VIEW



SIDE VIEW



EQUIPMENT DATA:

MANUFACTURER	: PHONTECH AS.	FIXING DETAILS	: YARD SUPPLY.
MODEL/TYPE	: SPA-1530.	ACCESS	: FRONT.
RACK/BOX SUPPL.	: SCHROFF.	CABLE ENTRY	: BOTTOM.
RACK/BOX TYPE	: MINI-12.	GLANG TYPE	: NA.
MATERIAL	: ALUMINIUM/STEEL.	PROTECTION IP	: IP-20.
COLOUR	: RAL 7030/7035.	POWER SUPPLY	: 24VDC/220VAC.
WEIGHT OF UNIT	: 60,00Kg.	POWER CONSUMP.	: DEPEND ON AMPL.
MOUNTING	: ON SHELF.	HEAT DISSIPATION	: DEPEND ON AMPL.



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1	2001.10.09	CHANGE ORDER No.876.	R.F.	ASK	TLy
0	99.01.20	AS BUILT.	R.F.	ASK	TLy
REV No.	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED

TITLE: SPA SYSTEM, CONTROL & AMPLIFIER RACK.
SPA 1530.
MECHANICAL LAYOUT.

SIZE:	A3	UED No:	92
DOC. No:	96106-005-ML		
FILE NAME:	96106-005-ML.DWG		

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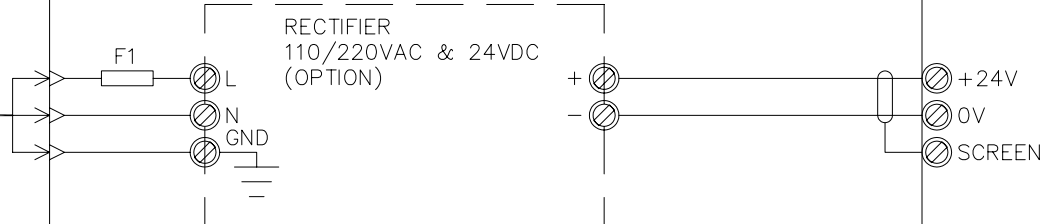
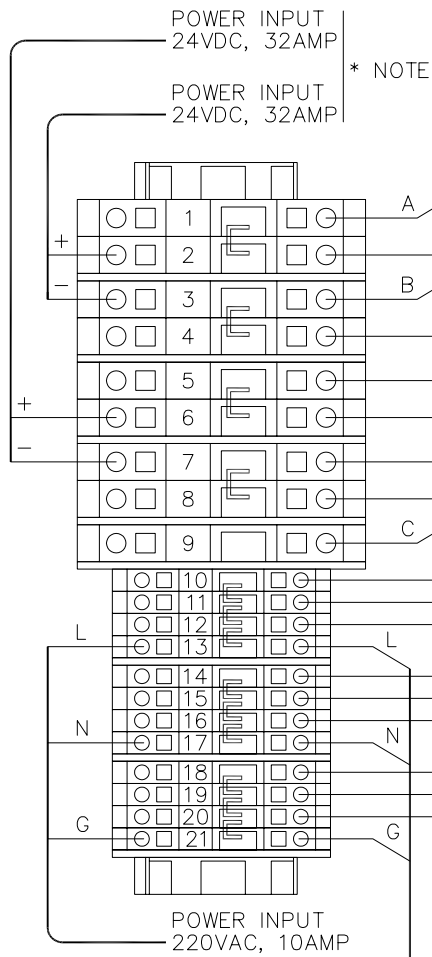
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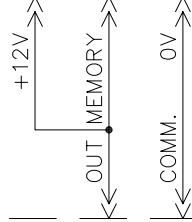
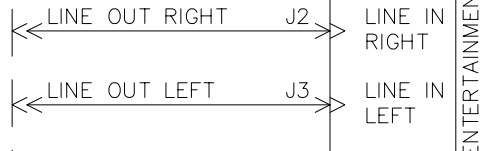
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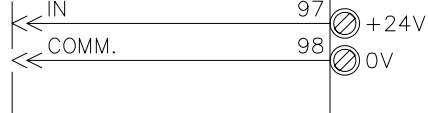
OPERATION UNIT, SPA-1500



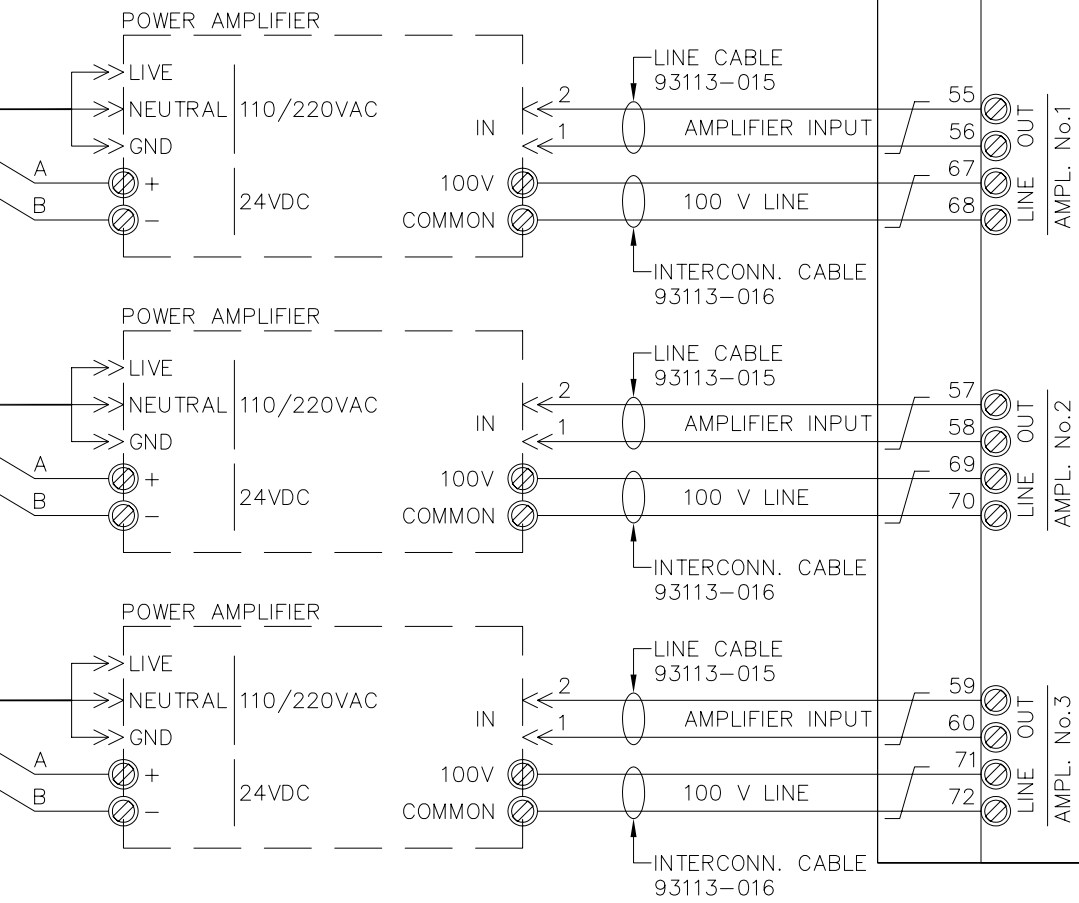
CAR CASSETTE RADIO
CAR CD PLAYER RADIO
(OPTION)



24/12VDC CONVERTER
(OPTION)



PCB 96106-006



NOTE:
THIS SECOND CIRCUIT IS REQUIRED DEPENDANT OF THE
SYSTEM CONFIGURATION. SEE TABLE BELOW.
(ORDER OF AMPLIFIERS ARE INDIFFERENT TO CONFIGURATION).
THIS IS DUE TO HIGH CURRENT REQUIREMENT.

AMPL.1	AMPL.2	AMPL.3	NUMBER OF CIRCUIT
120W	120W	0	1 CIRCUIT
120W	120W	120W	1 CIRCUIT
120W	120W	240W	2 CIRCUIT
120W	120W	360W	2 CIRCUIT
120W	240W	240W	2 CIRCUIT
120W	240W	360W	2 CIRCUIT
120W	360W	360W	2 CIRCUIT
240W	240W	240W	2 CIRCUIT
240W	240W	360W	2 CIRCUIT
240W	360W	360W	2 CIRCUIT
360W	360W	360W	2 CIRCUIT

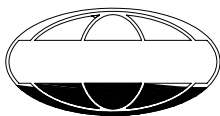
TITLE: SPA SYSTEM.
CONTROL & AMPLIFIER RACK.
SPA-1530.
INTERNAL WIRING.

REV No.	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED
1	26.01.2004	CHANGE ORDER No. 978	R.F.	ASk	ASk
0	05.02.1997	AS BUILT.	TLy	ASk	ASk



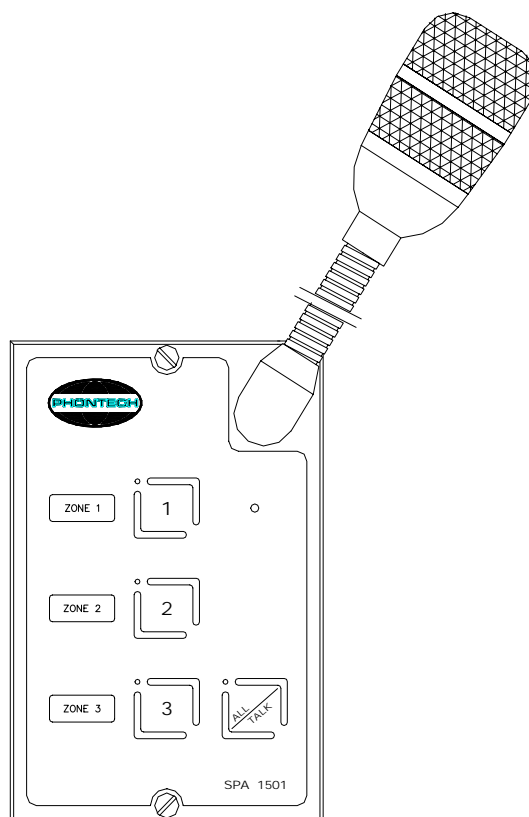
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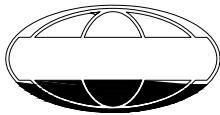


PA CONTROL UNIT SPA 1501

WITH GOOSENECK MICROPHONE



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0	2004.03.01.	FINAL DOCUMENTATION	D.A.	TBA	ASk	
REV No:	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED	
TITLE: PA CONTROL UNIT, SPA 1501. WITH GOOSE NECK MICROPHONE. DESCRIPTION.						SIZE: A4 UED no: 92
						DOC no: 96106-002-DE
						FILE NAME: 96106-002-DE



GENERAL DESCRIPTION.

The SPA 1501 is a PA control unit in the SPA system. The SPA 1501 contains all the necessary electronics/logic needed to obtain the function to control the SPA system.

The SPA 1501 is designed for flush or wall mounting.

A wall mounted back box (01100-006) optional.

- Mic. line audio level: 5mV.
- Led indicators for all keys.
- Backlight leds for area text.
- Replaceable zone description text.
- Withstands ruff and moist environment.

POWER REQUIREMENTS:

Operating power (included in the SPA1500 connection): 24VDC / 100mA

CABLE REQUIREMENTS:

The signal cable must be twisted pair with outer screen.

Number of pairs: 4

Conductor area: 0.75mm²

MOUNTING:

Spa 1501 PA control unit is flush mounted in standardized dimension ship consoles.

For other flush mounting: Cut-out dim. 90 x 123 mm.

Cable inlet is from behind.

To ease the cable termination the screw terminals are plug-in type.

PAGING:

Paging may be performed in any of the three zones, or all zones.

Press the TALK key on the handheld microphone and speak clearly and directly into the microphone.

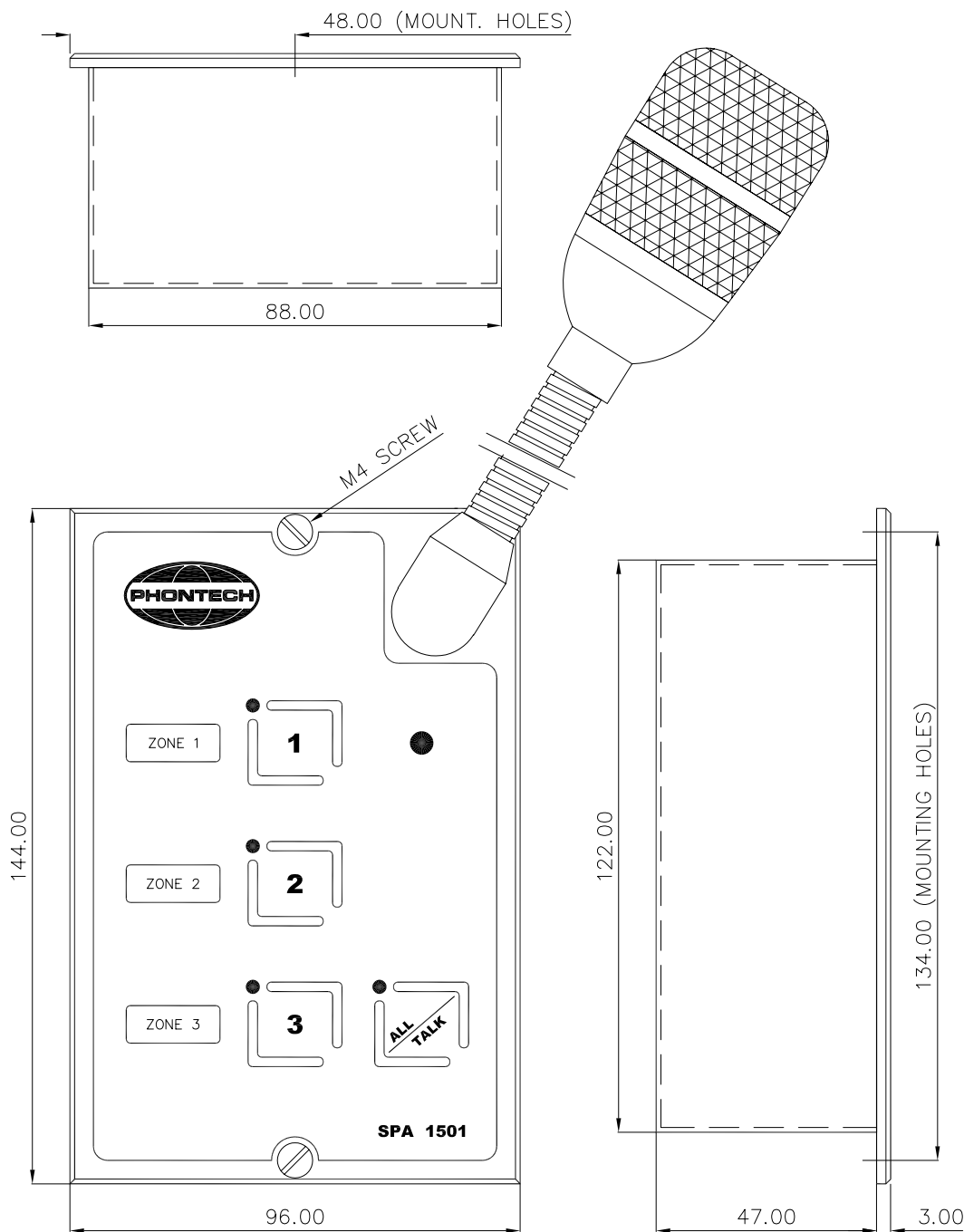
AUTOMATIC AND MANUAL ZONE SELECTION.

The PA control unit, SPA 1501 has three zone keys plus one TALK/ALL key.

When one of the zone keys is activated, the indicator led illuminates full light.

If none of the zones is active (half-light), and the TALK/ALL key is operated, the system automatically goes into ALL CALL mode.

I.e. all the zone key indicator leds illuminates full light and the message is distributed in ALL ZONES.



NOTE:

- COLOUR: BLACK WITH WHITE TEXT.
- BACKGROUND LIGHT. (ZONE INDICATION ONLY)
- GOOSENECK CAN BE MOUNTED SEPARATELY.
- FOR FLUSHMOUNTING.
- DEPTH OF UNIT: 50,00mm.
- TEXT FOR ZONES AS CUSTOMER DESCRIBES.
- LEDS FOR ACTIVATION OF ZONES AND ALL/TALK.

1	2000.11.01	REVISION EM-809.	R.F.	TBA	ASK
0	97.01.17	AS BUILT.	R.F.	TBA	ASK
REV No.	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED

TITLE: PA CONTROL UNIT.
SPA-1501.
MECHANICAL LAYOUT.

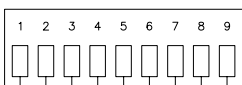
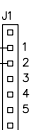
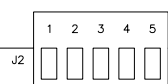


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SIZE: A3 UED No: 92
DOC. No: 96106-002-ML
FILE NAME: 96106-002-ML.DWG

STANDARD UNIT

GOOSENECK
MICROPHONE



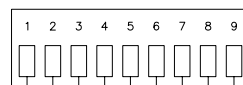
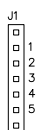
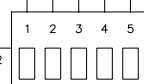
0V
+24V
TALK
ZONE 3
ZONE 2
ZONE 1
MIC

CONNECTION
TO SPA-1500

OPTIONAL: HANDHELD MICROPHONE CONNECTION

HANDHELD
MICROPHONE

MIC.
PTT



0V
+24V
TALK
ZONE 3
ZONE 2
ZONE 1
MIC

CONNECTION
TO SPA-1500

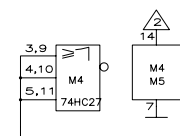


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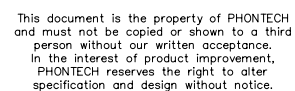
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1	97.03.06	REVISION EM-636	TLy	TBA	ASK
0	97.01.27	AS BUILT.	TLy	TBA	ASK

TITLE: SPA SYSTEM, CONTROL UNIT
SPA-1501.
INTERNAL WIRING.

SIZE:	A3	UED No:	92
DOC. No:	96106-002-IW		
FILE NAME:	96106-002-IW.DWG		



TITLE: PA CONTROL UNIT CIRCUIT BOARD.



DOC. No: 96106-007-CD

FILE NAME: 96106-007-CD.DWG

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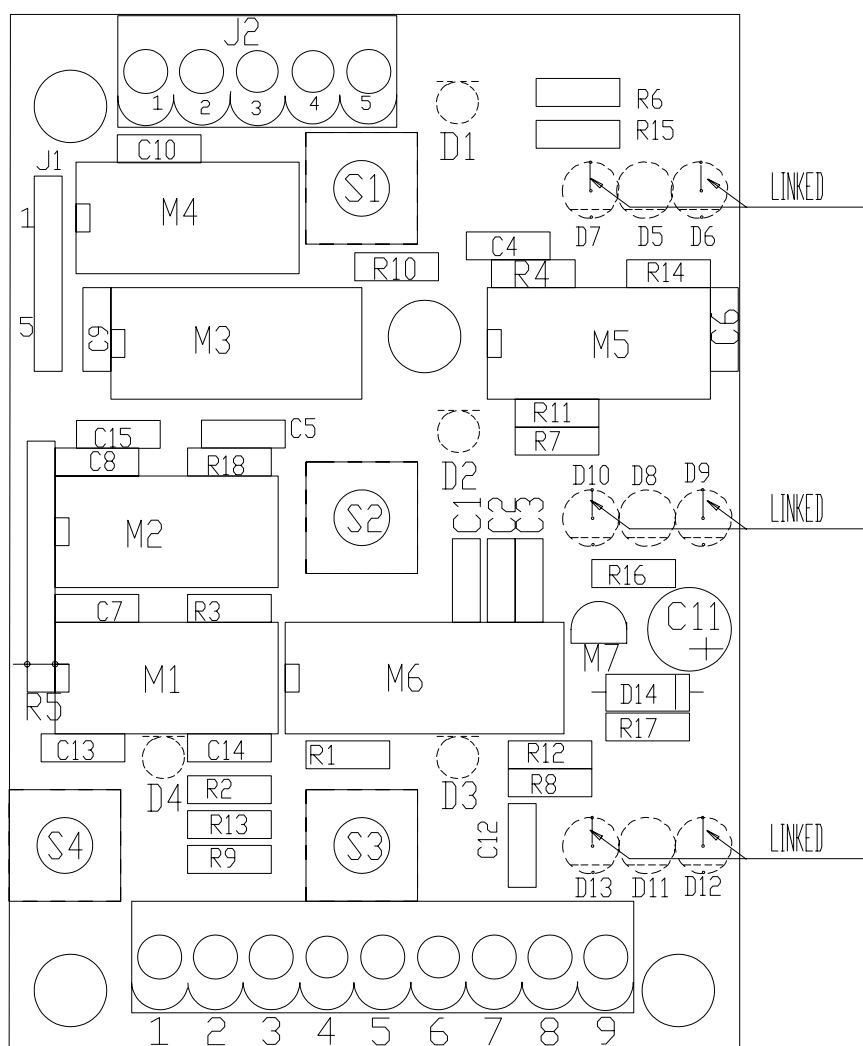
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NOTE: S1-S4, AND D1-D13 MOUNTED ON SOLDER LAYER.

E

E



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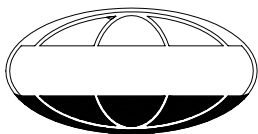
2	08.10.1999	CHANGE ORDER No.720	R.F.	ASK	TLy
1	06.03.1997	CHANGE ORDER No.636	R.F.	ASK	TLy
0	05.02.1997	AS BUILT.	R.F.	ASK	TLy
REV No.	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED

TITLE: PA CONTROL UNIT CIRCUIT BOARD.
SPA-1501.
LAYOUT.

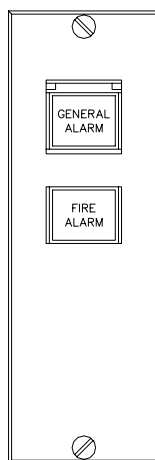
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DOC. No: 96106-007-L0
FILE NAME: 96106-007-L0.DWG


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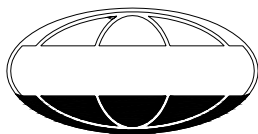
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PA ALARM PANEL
SPA-1503
DESCRIPTION



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0	05021997	FINAL DOCUMENTATION	Tly	Ask	TBA	<table><tr><td>SIZE: A4</td><td>UED no: 92</td></tr><tr><td colspan="2">DOC no: 96106-017-DE</td></tr><tr><td colspan="2">FILE NAME: 96106-017-DE.DOC</td></tr></table>	SIZE: A4	UED no: 92	DOC no: 96106-017-DE		FILE NAME: 96106-017-DE.DOC	
SIZE: A4	UED no: 92											
DOC no: 96106-017-DE												
FILE NAME: 96106-017-DE.DOC												
REV No:	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED							
TITLE: PUBLIC ADDRESS SYSTEM. ALARM PANEL, SPA-1503. DESCRIPTION.												



GENERAL DESCRIPTION.

The SPA-1503 is the alarm panel in the SPA system.

The SPA-1503 is directly connected to the operation unit SPA-1500.

The SPA-1503 is normally connected to the general alarm input on the SPA-1500.

The SPA-1503 is designed for flush mounting.

To prevent starting the alarm unintended, the general alarm button is protected by a hinged cover.

POWER REQUIREMENTS:

Operating power: (light emitting diode power) 24 VDC.

CABLE REQUIREMENTS:

Number of pairs: 3
Conductor area: 1,5 sqmm.

MOUNTING:

SPA-1503 alarm panel is flush mounted in standardised dimension ship consoles.

For other flush mounting: cut-out dimensions is 34 x 123 mm.

Cable entry from behind.

ALARM CONTROL:

The alarm in the SPA system may be started/stopped automatically, or manually from the SPA-1503.

Only the GENERAL ALARM may be started from the SPA-1503, lamp indication for started alarm.

FIRE ALARM status may be monitored in the FIRE ALARM lamp.

SEVERAL ALARM PANELS IN THE SYSTEM:

If several SPA-1503 is to be incorporated in the system, the input "REMOTE INDICATOR GENERAL ALARM" may be utilised to obtain internal monitoring. Half-light in the general lamp indicate that other alarm panel has started the alarm.

ALARM ZONES:

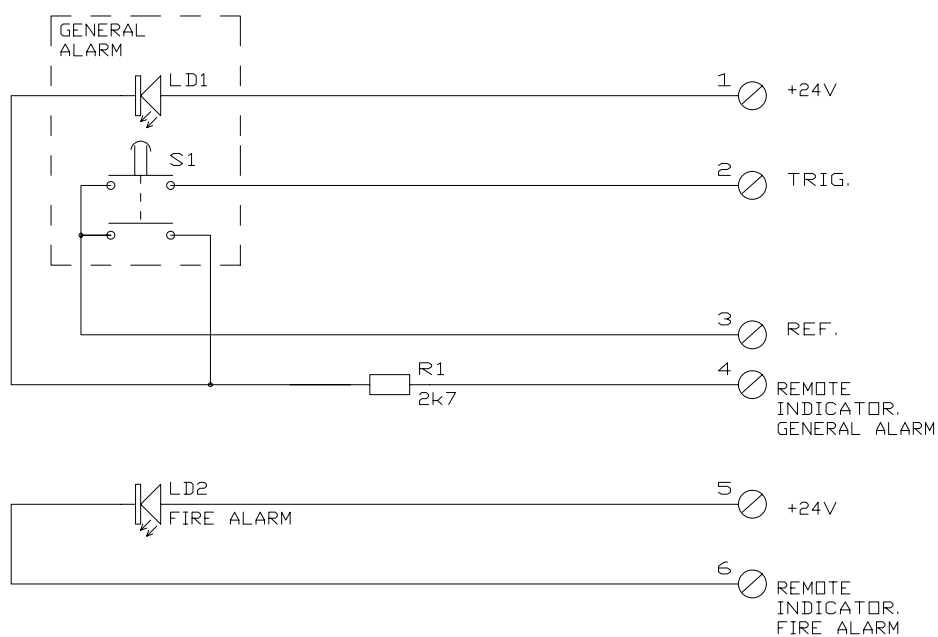
The SPA-1503 automatically distribute the alarm audio to all the zones.



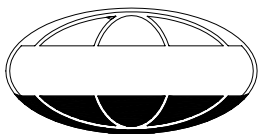
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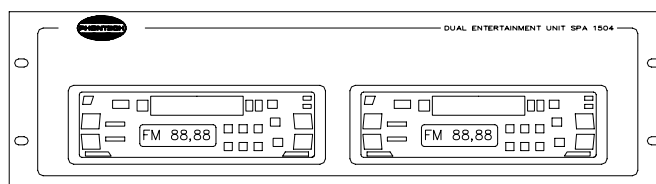
phonTECH P.O.B. 26 3178 VAALE - NORWAY	TITLE: SPA SYSTEM							
	ALARM PANEL SPA 1503							
	INTERNAL WIRING				FILE: 96106-017-IW			
THIS DRAWING IS PROPERTY OF PHONTECH A/S AND MUST NOT BE SHOWN TO A THIRD PERSON WITHOUT OUR WRITTEN ACCEPTANCE	DWG. NO: 96106-017-IW		DATE: 970505					
			DESIGN: t.ly					
	SCALE: NONE	CHECKED:	TRAC: -	O -	970605	t.ly		
SIZE: A4	REF:	UED NO: 92	APPR:	REV	EM	DATE	SIGN	




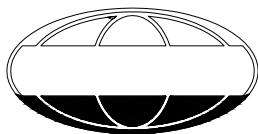
DUAL ENTERTAINMENT UNIT

SPA-1504

DESCRIPTION



												
0	12121997	FINAL DOCUMENTATION.	Tly	Ask	TBA	<p>This document is the property of PHONTECH and must not be copied or shown to a third person without our written acceptance. In the interest of product improvement, PHONTECH reserves the right to alter specification and design without notice.</p> <table><tr><td>SIZE: A4</td><td>UED no: 92</td></tr><tr><td colspan="2">DOC no: 96106-018-DE</td></tr><tr><td colspan="2">FILE NAME: 96106-018-DE.DOC</td></tr></table>	SIZE: A4	UED no: 92	DOC no: 96106-018-DE		FILE NAME: 96106-018-DE.DOC	
SIZE: A4	UED no: 92											
DOC no: 96106-018-DE												
FILE NAME: 96106-018-DE.DOC												
REV No:	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED							
TITLE: PUBLIC ADDRESS SYSTEM.												
DUAL ENTERTAINMENT UNIT, SPA-1504.												
DESCRIPTION.												



INTRODUCTION:

The SPA-1504 Dual Entertainment Unit was designed to operate the Phontech SPA-system. Together with the SPA-1510 or SPA-1530 it will be a complete public address and entertainment system.

The compact design makes it easy to install.

The mounting is in standard 19" rack or console.

GENERAL DESCRIPTION:

The SPA-1504 is in maxversion comprising the following parts:

- 2 pcs. Car cassette radio/CD players.
- Power supply for 110>230 VAC (option).
- DC converter for the car radios/CD players.
- Dual antenna input.

OPERATION:

The entertainment sources may be the radio, the cassette player or the CD player.

The type of car receiver installed is project dependent.

RADIO SOURCE:

Turn the radio on and tune to the desired station. The output level is adjustable by means of the volume control buttons/knob.

Please see the user manual for the attached car radio model for further information.

MUSIC CASSETTE SOURCE:

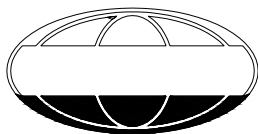
This source is comprehensive when pre-recorded public address message is to be broadcasted over the loudspeakers. For entertainment purposes this also can give around the clock music, by means of the auto reverse function.

Please see the user manual for the attached car radio model for further information.

CD PLAYER SOURCE:

High quality entertainment audio sound is accomplished when using the CD-player. Some players has random play. Around the clock entertainment is reached by enabling the replay function at the CD-player.

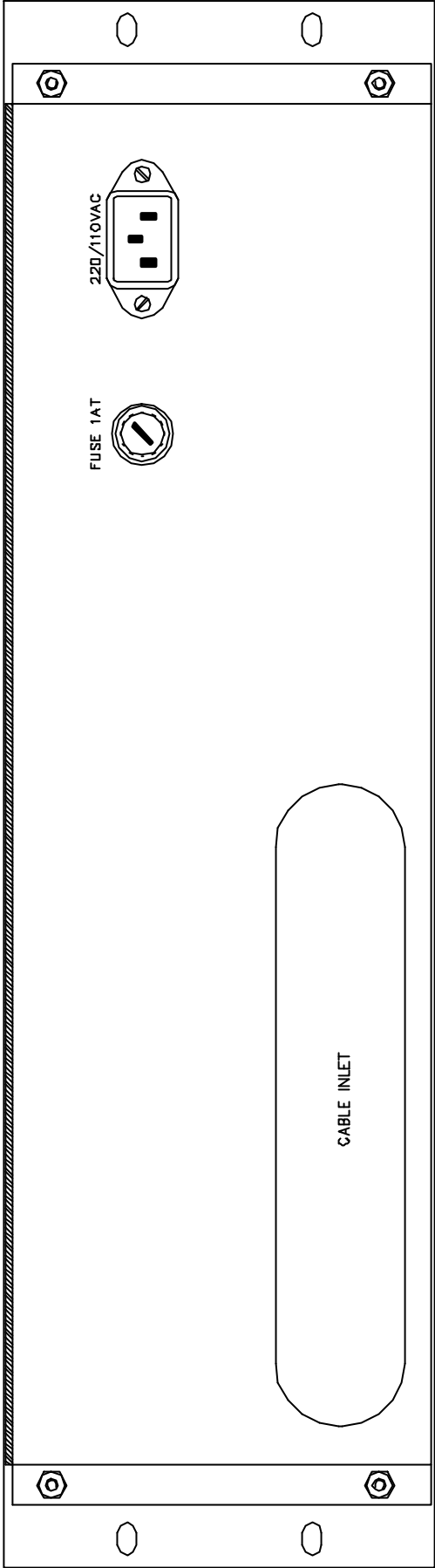
Please see the user manual for the attached car radio model for further information.



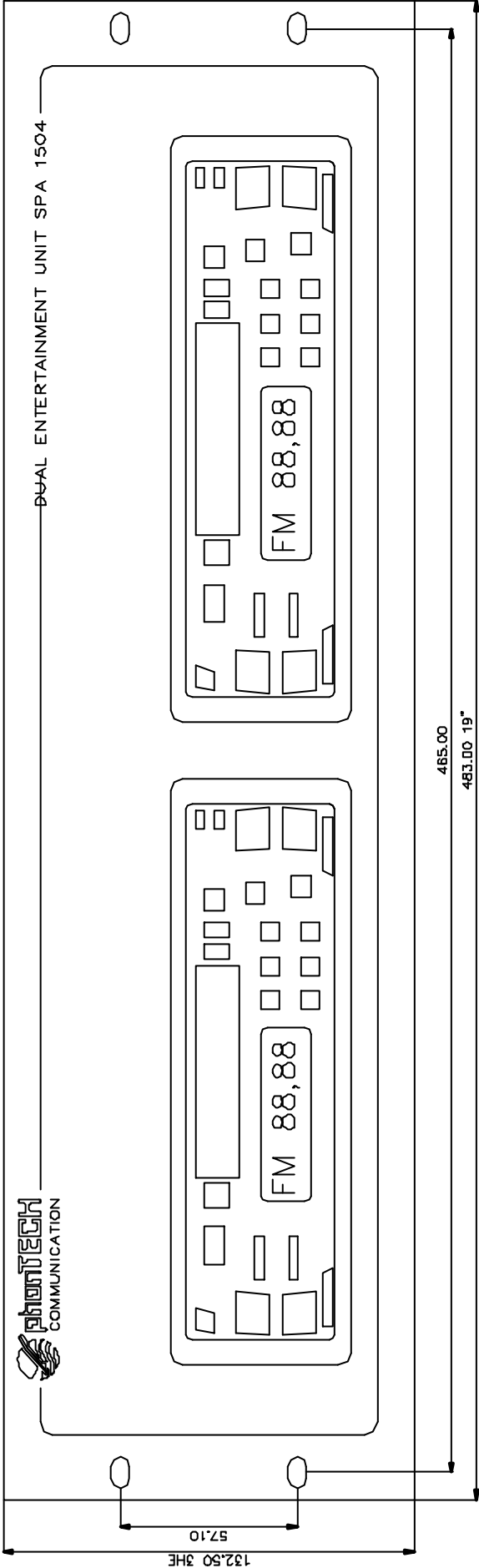
TECHNICAL DATA:

-Operation voltage:	24 VDC. (230 VAC optional).
-Current drain:	3A max.
-Capacity:	two car radio/CD/cassette players.
-Line out audio level:	500-700 mV.
-Mounting:	3HE/19" rack or console mounting.
-Dimension:	W: 483 / H: 132,50 / D: 282 mm.
-Weight:	<4 kgs.

REAR VIEW



FRONT VIEW



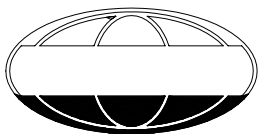
- NOTES.
- DEPTH OF UNIT: 281.00 EXCL. PLUG/FUSE.
 - COLOUR: RAL 9005 BLACK DULL.
 - SILKSCREEN: WHITE.
 - CHASSIS: ALUDINE - TREATMENT.

42	TITLE: DUAL ENTERTAINMENT UNIT. SPA 1504		FILE 1504-ML
	P.O.B. 26 3718 VAL-LE-NORMAY		DATE: 97.11.19
	THIS DRAWING IS THE PROPERTY OF PHONTECH A/S AND MUST NOT BE COPIED OR SHOWN TO A THIRD PERSON WITHOUT GET WRITTEN ACCEPTANCE.		DESIGN: R.F.
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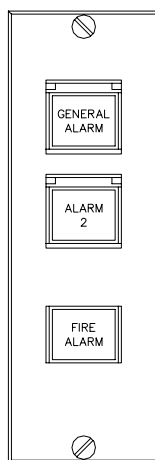



SIZE:	A4	UED No:	92
DOC. No:	96106-018-IW		
FILE NAME:	96106-018-IW.DWG		

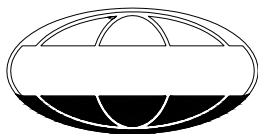
TITLE: SPA SYSTEM.
DUAL ENTERTAINMENT UNIT.
SPA-1504.
INTERNAL WIRING.



PA ALARM PANEL
SPA-1505
DESCRIPTION



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0	23111999	FINAL DOCUMENTATION	Tly	A.I.	ASk	<table><tr><td>SIZE:</td><td>A4</td><td>UED no:</td><td>92</td></tr><tr><td>DOC no:</td><td colspan="3">96106-019-DE</td></tr><tr><td>FILE NAME:</td><td colspan="3">96106-019-DE.DOC</td></tr></table>	SIZE:	A4	UED no:	92	DOC no:	96106-019-DE			FILE NAME:	96106-019-DE.DOC		
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FILE NAME:	96106-019-DE.DOC																	
REV No:	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED													
TITLE: PUBLIC ADDRESS SYSTEM.																		
ALARM PANEL, SPA-1505.																		
DESCRIPTION.																		



GENERAL DESCRIPTION.

The alarm panel SPA-1505 is a panel intended for flush mounting either separately or in combination with the control unit SPA-1501. It is based on 144 mm standard module height, 48 mm wide.

The alarm panel consists of 2 alarm buttons with integrated light indicators and a third light indicator for a remote controlled alarm.

The alarm button indicators also have a remote control indication mode where they will light with reduced strength.

Then the alarm is overridden by own activation it will light with full intensity.

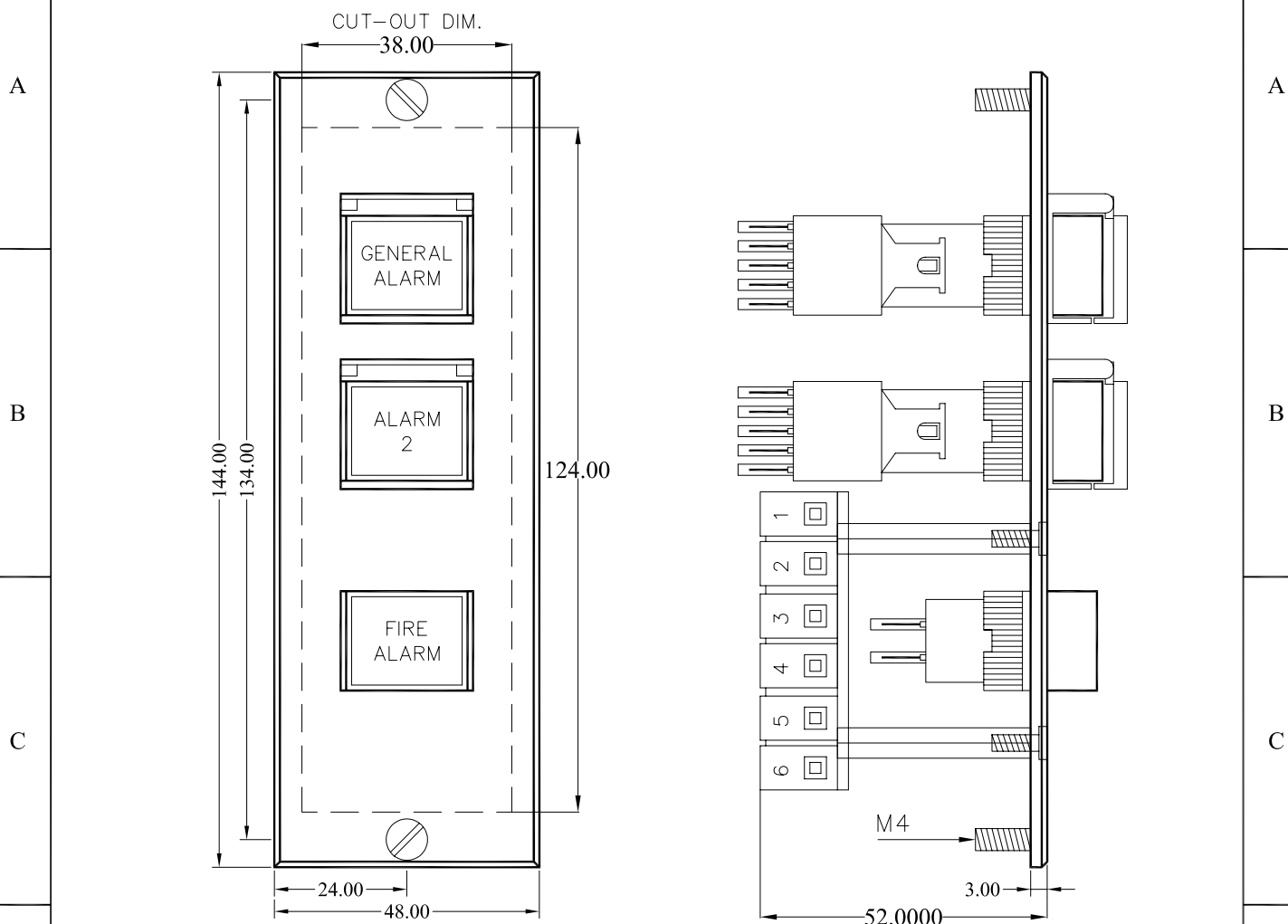
Both alarm buttons have mechanical alternate functionality. When connected to the SPA-1500 the termination will decide the priority of the alarm signal.

Phontech recommend the wiring indicated in the document 96106-019-EC.

This will make the priority according to IMO regulation like this:

1. General Alarm.
2. Fire alarm (remotely controlled from an automatic fire and gas system).
3. Alarm 2 (customer requirements/delivered upon request).

All alarm setting outputs and indicator inputs are based on 24 VDC supply with closing contacts to 0V.



NOTE:

- MATERIAL: ALUMINIUM.
- COLOUR: PAINTED BLACK. (RAL 9005).
- FOR FLUSHMOUNTING.

EQUIPMENT DATA.

MANUFACTURER : PHONTECH AS.
MODEL/TYPE : SPA 1505.
RACK SUPPLIER: PHONTECH AS.
RACK TYPE : NA.
MATERIAL : ALUMINIUM.
COLOUR : BLACK RAL 9005.
WEIGHT OF UNIT: APP. 0,3Kg.
MOUNTING : TO CONSOLE.

FIXING DETAILS : 2pcs. M4 BOLT.
ACCESS : NA.
CABLE ENTRY : REAR.
GLAND TYPE : NA.
PROTECTION IP : IP-20.
POWER SUPPLY : FROM MASTER STATION.
POWER CONSUMP.: NA.
HEAT DISSIPATION: NA.



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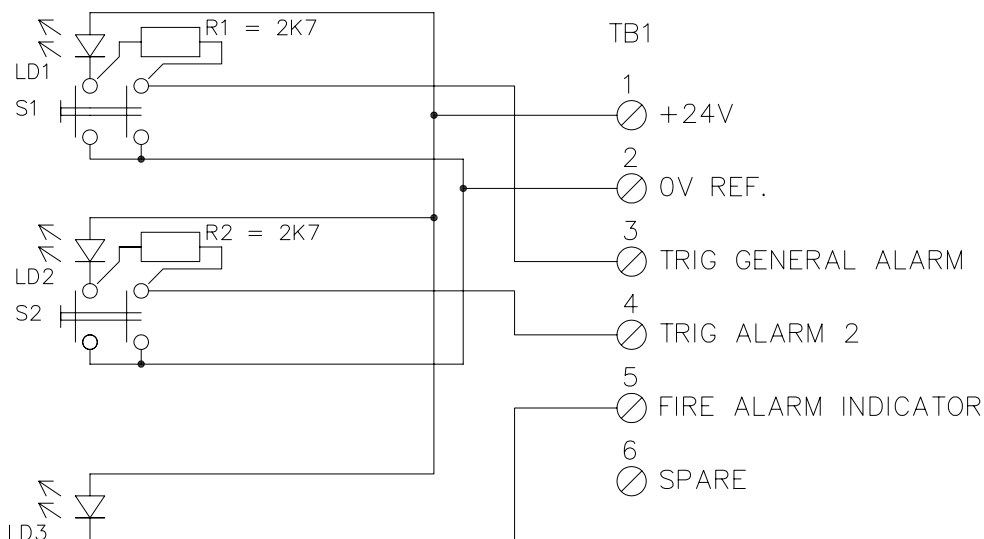
TITLE: ALARM PANEL SPA-1505.
MECHANICAL LAYOUT.

SIZE: A4 UED No: M003
DOC. No: 96106-019-ML
FILE NAME: 96106-019-ML.DWG

GENERAL ALARM

ALARM 2

FIRE ALARM

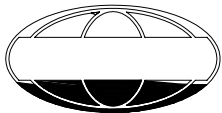


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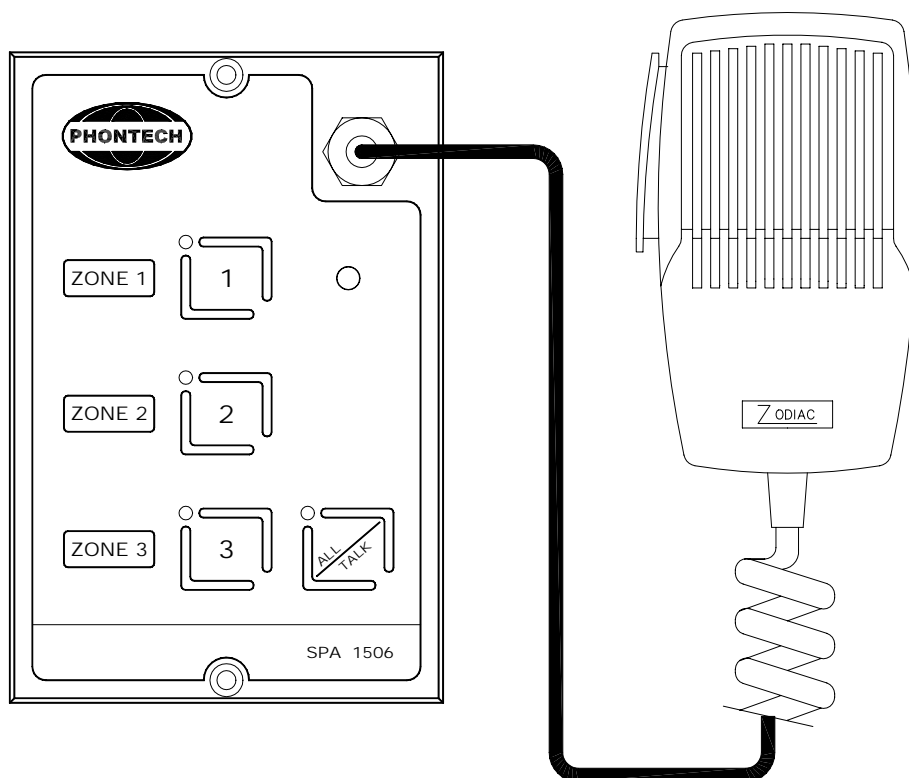
TITLE: ALARM PANEL SPA-1505.
INTERNAL WIRING.


SIZE: A4 UED No: M003
DOC. No: 96106-019-IW
FILE NAME: 96106-019-IW.DWG



PA CONTROL UNIT SPA 1506

WITH HANDHELD MICROPHONE



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0	2001.11.15	FINAL DOCUMENTATION	R.F.	TBA	ASk	<div>SIZE: A4UED no: M025</div> <div>DOC no: 01100-003-DE</div> <div>FILE NAME: 01100-003-DE</div>
REV No:	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED	
TITLE: PA CONTROL UNIT, SPA 1506.						
WITH HANDHELD MICROPHONE.						
DESCRIPTION.						



GENERAL DESCRIPTION.

The SPA 1506 is a PA control unit in the SPA system. The SPA 1506 contains all the necessary electronics/logic needed to obtain the function to control the SPA system.

The SPA 1506 is designed for flush or wall mounting.

A wall mounted back box (01100-006) optional.

- Mic. line audio level: 5mV.
- Led indicators for all keys.
- Backlight leds for area text.
- Replaceable zone description text.
- Withstands ruff and moist environment.

POWER REQUIREMENTS:

Operating power (included in the SPA1500 connection): 24VDC / 100mA

CABLE REQUIREMENTS:

The signal cable must be twisted pair with outer screen.

Number of pairs: 4

Conductor area: 0.75mm²

MOUNTING:

Spa 1506 PA control unit is flush mounted in standardized dimension ship consoles.

For other flush mounting: Cut-out dim. 90 x 123 mm.

Cable inlet is from behind.

To ease the cable termination the screw terminals are plug-in type.

PAGING:

Paging may be performed in any of the three zones, or all zones.

Press the PTT key on the handheld microphone and speak clearly and directly into the microphone.

(The PTT button on the panel will not work properly with a handheld mic.)

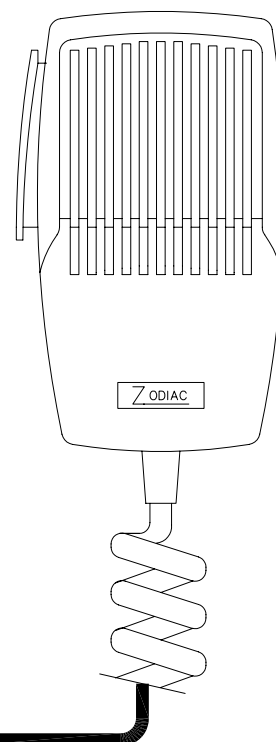
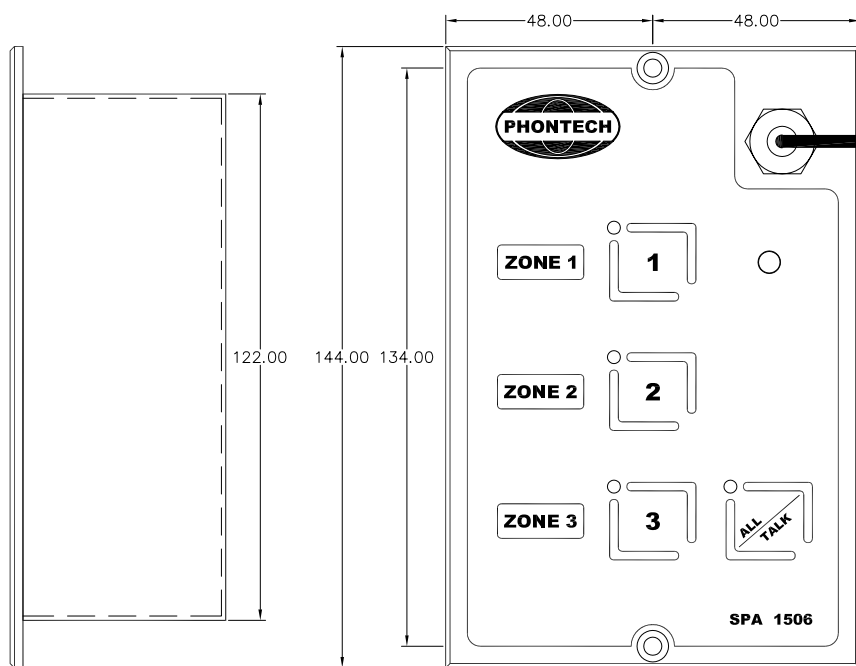
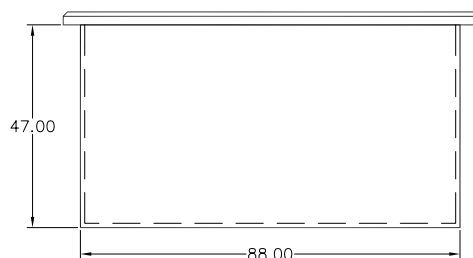
AUTOMATIC AND MANUAL ZONE SELECTION.

The PA control unit, SPA 1506 has three zone keys plus one TALK/ALL key.

When one of the zone keys is activated, the indicator led illuminates full light.

If none of the zones is active (half-light), and the TALK/ALL key is operated, the system automatically goes into ALL CALL mode.

I.e. all the zone key indicator leds illuminates full light and the message is distributed in ALL ZONES.



0	2001.11.15	FINAL DOCUMENTATION	R.F.	TBA	ASk
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TITLE: PA CONTROL UNIT, 1506.
WITH HANDHELD MICROPHONE.
FLUSH MOUNTED.
MECHANICAL LAYOUT.

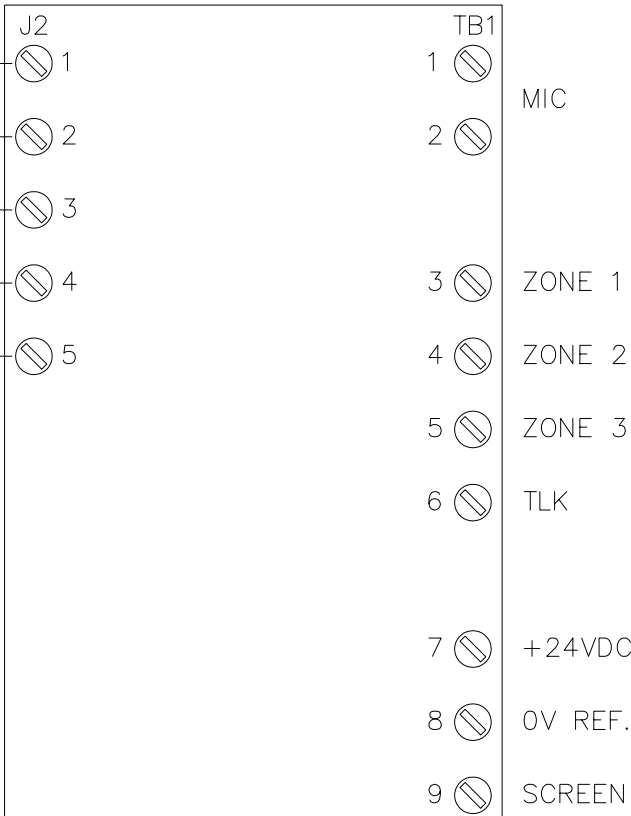
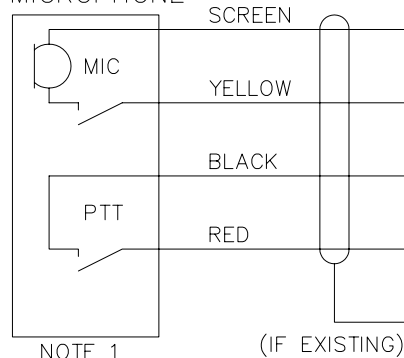


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SIZE: A3 UED No: M025
DOC. No: 01100-003-ML-01
FILE NAME: 01100-003-ML-01.DWG

PA CONTROL UNIT, CIRCUIT BOARD
96106-007

HANDHELD
MICROPHONE



CONNECTION
TO
SPA-1500

NOTE 1:
BLUE CABLE TO BE CUT AND REMOVE FROM SWITCH.
BLACK CABLE TO REPLACE THE BLUE CABLE.

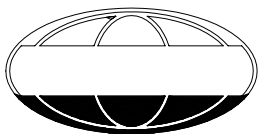
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0	2001.11.15	FINAL DOCUMENTATION	R.F.	TBA	ASk
REV No.	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED



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TITLE: PA CONTROL UNIT, 1506.
WITH HANDHELD MICROPHONE.
INTERNAL WIRING.

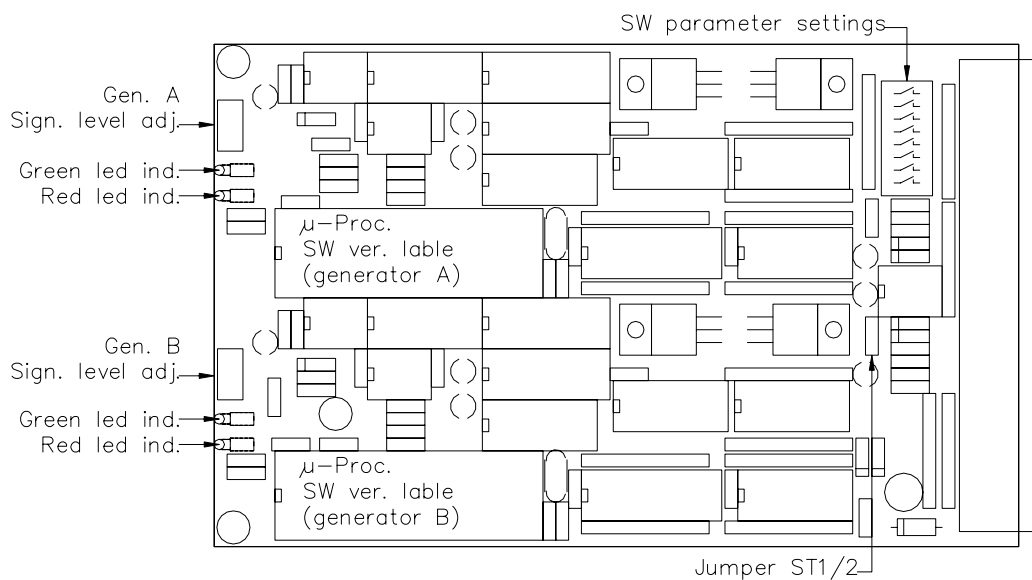
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DOC. No: 01100-003-IW
FILE NAME: 01100-003-IW.DWG




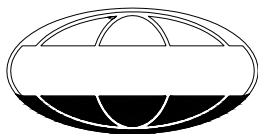
CARD DESCRIPTION

DOUBLE ALARM GENERATOR WITH SURVEILLANCE

99100-003



																		
0	23.11.1999	FINAL DOCUMENTATION.	ASk	A.I.	ASk	<p>This document is the property of PHONTECH and must not be copied or shown to a third person without our written acceptance. In the interest of product improvement, PHONTECH reserves the right to alter specification and design without notice.</p> <table><tr><td>SIZE:</td><td>A4</td><td>UED no:</td><td>M009</td></tr><tr><td>DOC no:</td><td colspan="3">99100-003-CA</td></tr><tr><td>FILE NAME:</td><td colspan="3">99100-003-CA.DOC</td></tr></table>	SIZE:	A4	UED no:	M009	DOC no:	99100-003-CA			FILE NAME:	99100-003-CA.DOC		
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DOC no:	99100-003-CA																	
FILE NAME:	99100-003-CA.DOC																	
REV No:	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED													
TITLE: DOUBLE ALARM GENERATOR. WITH SURVEILLANCE. Card Description.																		



GENERAL FACILITIES:

The DOUBLE ALARM GENERATOR WITH SURVEILLANCE – 99100-003 is an alarm generator module comprising 2 totally independent generator sections.

The digital in- and outputs as well as the primary audio output are however common to both generators.

Even so they are isolated in such way they will not interfere with normal operation in case of any single accident/failure.

The generator is fully microprocessor controlled and thus very flexible.

It can be pre-programmed to most requirements.

In many applications it can also be user-configured to meet the required performance.

In addition to be full duplication of the generator it is equipped with various supervision facilities:

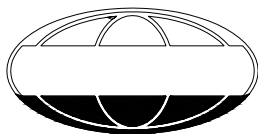
- Input power supply-supervision guard below 15-18 V. (Software processed).
- Supervision of the opposite generator operation voltage, above 4.6 V. (Software processed).
- Supervision of the signal output voltage, above 325 mV. Software processed).
- Supervision of the generators own operation voltage, above 4.5 V. This circuit will also protect the circuit from unintentional stops caused by power supply glitches. (Hardware processed).
- A Watchdog circuit monitoring the microprocessor and software performance in order to avoid any lockups. (Hardware processed – software triggered).

Level adjustment:

The signal output voltage is a common passive summarisation output for both signal generators. Both generator modules have separate level adjustment ranging between 0-1.5 V RMS. In order to avoid fault conditions caused by the output signal supervision circuit, the level must always be adjusted above 350mV.

JUMPER:

The jumper ST1/2 selects external I/O pull-up voltage between 24V and 5V. The normal setting for Phontech equipment is ST1 – 24V. In special applications ST2 – 5V pull-up voltage is necessary. The setting is dependent of the external logic level.



LED indicators

Led status conditions:

- Dark / no light
- T Slow flashing
- Z Fast flashing
- Steady light

Green LED	Red LED	Status
○	○	Power off – no operation
T	○	Idle – status OK
T	T	Idle – blinking generator OK – opposite generator power failure The remaining generator is still working, but the module requires service
Z	Z	Idle – generator OK – main power supply failure / below 15-18V The generator is still functional – the power source must be checked
●	○	The alarm module is generating an alarm tone, section OK
○	Z	The alarm module is generating an alarm tone, but the output level from the displaying section is below the acceptable limit. Thus, the alarm section has gone to idle and the other section has taken care of the functionality. The generator may still work if the other section is displaying OK. Else not. Service is required.
●	●	The alarm module is trying to generate an alarm tone. The remaining section, after primary section fail, is outputting a signal level below the acceptable limit, but is still trying to output. The generator is not working and immediate service is required.
○	●	Idle – the generator module is faulty. Service is required

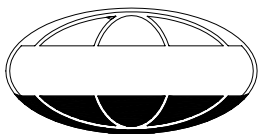
SOFTWARE:

Phontech will always configure the Alarm generator according to the requirement. Due to the full flexibility of the functionality it is possible to generate custom designed functionality as well as standard.

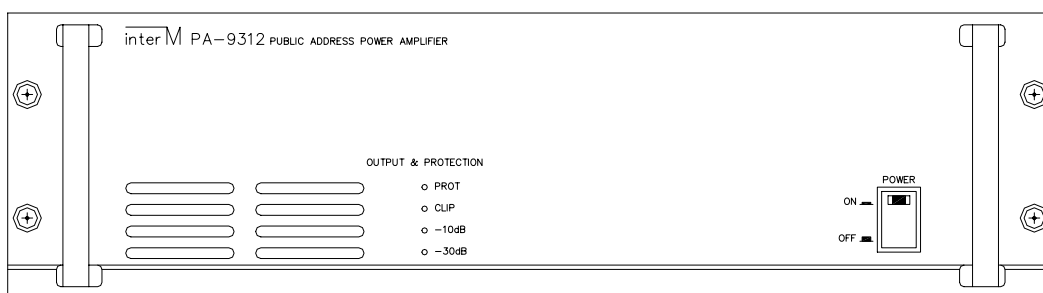
Within each software version there might be DIP-switch parameter settings available. The following list describes the standard software facilities.


Prog: Ver.	Description:	
1.0	STANDARD ALARM FOR SPA 1500:	
	<ul style="list-style-type: none"> • 1. Priority alarm = GENERAL ALARM – 7 short bursts (1 sec. ON / 1 sec. OFF) followed by 1 long burst (7 sec.). Tone - 1 kHz • 2. Priority alarm = FIRE ALARM (ref. DIP SW. Table below: 	
	DIP SW:¹ 1 2 3 4 5 6 7 8	Facility
	0 x x x x x x x	Continuous tone 800Hz
	1 x x x x x x x	Bell ring tone (1 sec ON / 1 sec. OFF)

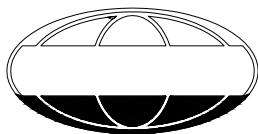
¹ DIP Switch setting: 0=OFF / 1=ON



PUBLIC ADDRESS
POWER AMPLIFIER
PA 9312 and PA 9324



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0	15.06.1998	FINAL DOCUMENTATION.	R.F.	A.I.	ASk	
REV No:	ISSUE DATE	REASON FOR ISSUE	PREPARED	CHECKED	APPROVED	
TITLE: POWER AMPLIFIER, INTERM. PA 9312 & PA 9324. INSTALLATION MANUAL.						SIZE: A4
						UED no:
						DOC no: INTERM-120-240
						FILE NAME: INTERM-120-240.DOC



Unpacking and Installation.

Although it is neither complicated to install nor difficult to operate your PA–amplifier, a few minutes of your time is required to read this manual for a properly wired installation and becoming familiar with its many features and how to use them.

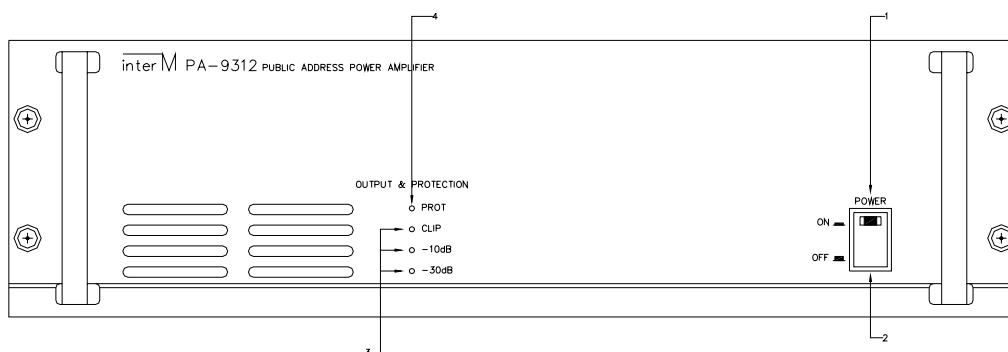
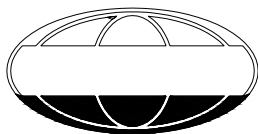
Please take a great care in unpacking your amplifier and do not discard the carton and other packing materials. They may be needed when moving your set and are required if it ever becomes necessary to return your set for service.

Never place the unit near radiators, in front of heating vents, in excessively humid or dusty location to avoid early damage and for your years of quality use.

Connect your complementary components as illustrated in the following page.

Features.

- * **THERMAL PROTECTION & AUTOMATIC IDLING CIRCUITRY.**
To insure stability and reliability against over-current and over-heating, thermal protection circuitry is provided. In addition, automatic idling circuit is provided to protect against thermal run-away.
- * **BALANCED INPUT.**
A balanced input is provided to reduce hum pick up from a long distance Input cable and to avoid ground loop problem when you build the system.
- * **GAIN ADJUSTMENT.**
You can adjust the input gain from –12dB to 0dB (1V) by using of input gain adjust control.
- * **USE OF EMERGENCY BATTERY.**
You can operate the PA amplifier by using emergency battery for unexpected AC power failure.



1. POWER INDICATING LED.

This LED indicates power is turn ON.

2. POWER SWITCH.

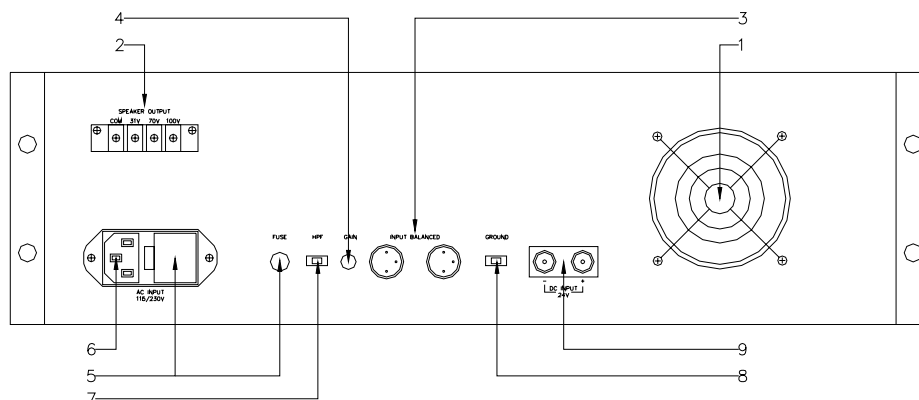
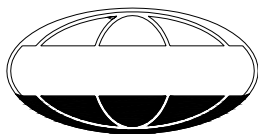
Pressing this switch to ON will make the power indicating LED ON and supply the power to unit.

3. OUTPUT LEVEL INDICATORS.

These led indicates the output level of this amplifier. Be sure not to operate the unit with the clip led on continuously (RED).

4. PROTECTION INDICATOR.

This led indicates the condition of the protection circuit. When the protection led is “ON” the amplifier is not operating normally (overheating and limiting), please check the input/output condition of the amplifier.



1. FAN.

The fan should be kept free of all obstructions and be accessible to Cool fresh air when possible. It is important that the fan be used in a dust free environment.

2. SPEAKER OUTPUT TERMINAL.

These terminals are for connection of speaker line to deliver power output to speakers. Impedance (voltage) of 4 ohm: 25V, 70V and 100V are provided for convenience. In any case, use the speakers whose combined impedance is equal to or higher than the rated output impedance of amplifier.

Model	4ohms	24V	70V	100V
PA-9312	22V	5.2ohm	42ohm	83ohm
PA-9324	31V	2.6ohm	21ohm	42ohm

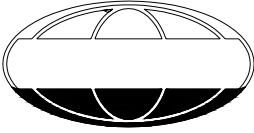
*100V or 25V can be seleted optionally.

3. INPUT JACKS.

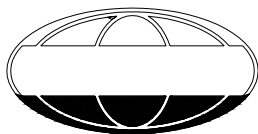
These input jacks and terminals are for the balanced input signal. You can connect amplifiers in parallel by using XLR jack.

4. LEVEL ADJUST CONTROL.

This control is for adjusting the level of amplifier from – 12dB to 0dB with reference input sensitivity of 0dB (1V). Rotating the control clockwise increases the level and counter clockwise decreases the level.



5. **FUSE HOLDERS, AC AND DC.**
These fuse holders contain AC and DC fuses. Replace them with Same type fuse when they are blown out. If they continuously blow, stop replacing fuses and refer servicing to qualified personel.
6. **AC INLET.**
This terminal is connected AC input cord.
7. **HIGH-PASS FILTER SWITCH.**
This switch is for activating the High-pass Filter circuit, to protect Speakers from excessive low frequency power demands. The –3dB frequency of the High-pass Filter is 400Hz.
8. **EARTH LINK SWITCH.**
This slide switch provides for separation of “safety” earth and “signal” earth to prevent from hum loops.
9. **DC INPUT TERMINALS.**
These terminals are for connecting DC power supply of battery, connect red colour terminal to positive lead of battery and black colour one to negative lead battery.



SPECIFICATIONS

Model: PA-9324

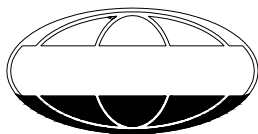
ELECTRICAL

Power output (THD 1%).....240W (RMS)
2.6 ohm (25V)
4 ohm (31V)
21 ohm (70V)
42 ohm(100V)
Frequency Response (+1/-3dB).....70Hz to 20KHz
THD at 1 KHz, Rated Output.....Less than 1%
HPF.....-3dB at 400Hz
Signal to Noise Ratio.....Better than 95dB
Input Sensitivity/Impedance.....1V/10K ohm Balanced
Input Level Adjustment.....-12dB to 0dB

GENERAL

Power source..... AC 115V (110/220) or 230V (220/240)
50Hz/60Hz, DC 24V
Dimensions.....W:482 x H:132 x D:280
Weight.....19Kg.

Note: Specifications and design subject to change without notice for improvements.



SPECIFICATIONS

Model: PA-9312

ELECTRICAL

Power output (THD 1%).....120W (RMS)
4 ohm (25V)
5.2 ohm (31V)
42 ohm (70V)
83 ohm(100V)
Frequency Response (+1/-3dB).....70Hz to 20KHz
THD at 1 KHz, Rated Output.....Less than 1%
HPF.....-3dB at 400Hz
Signal to Noise Ratio.....Better than 95dB
Input Sensitivity/Impedance.....1V/10K ohm Balanced
Input Level Adjustment.....-12dB to 0dB

GENERAL

Power source..... AC 115V (110/220) or 230V (220/240)
50Hz/60Hz, DC 24V
Dimensions.....W:482 x H:132 x D:280
Weight.....14Kg.

Note: Specifications and design subject to change without notice for improvements.