



Amplidan Communication Systems

**Public Address System
Type 6700**

**Instruction Manual
819517**



0.0 Index

0.0 Index	1
1.0 System description.....	3
1.1 Operation of system.....	5
1.3 Front view of rack.....	7
1.4 Installation of system.....	8
2.0 Construction of system.....	9
2.1 Function construction	11
3.0 Installation instruction.	13
3.1 Connection of Controlboxes 1st. and 2nd, priority.	14
3.1 Connection of rack.	15
3.1 Connection of loudspeaker lines.	16
3.1 Connection of loudspeakers and volume-controls.	17
4.0 Function description of the system.....	18
4.1 Internal connection of Rack "Sound".....	21
4.2 Internal connection of Rack "Power".....	22
5.0 Diagram of Panels	23
Diagram of Input module Type 007884.....	23
Diagram of Program module Type 006615-006553.....	24
Diagram of Volume & Tone control for 006615 Type 006798.....	25
Diagram of Command module Type 006202.....	26
Diagram of Ding-dong module Type 006726.....	27
Diagram of Group module Type 015540.....	28
Diagram of Group module Type 016460.....	29
Diagram of Control module Type 006200.....	30
Diagram of Alarm module Type 016597.....	31
Diagram of Alarm module Type 019200.....	32
Diagram of Microphone pre-amplifier Type 006803.....	33
Diagram of Level amplifier Type 006804.....	34
Diagram of 100 Watt power amplifier Type 006486.....	35
Diagram of Emergency relay unit Type 006809.....	36
Diagram of Voice adapter Type 007860.....	37
Diagram of Filter for Tape-recorder and Compact disc Type 014620.....	38
6.0 Diagram of Controlboxes ext.....	39
Diagram of Controlbox Type 016576.....	39
Diagram of Watertight controlbox Type 021370.....	40
Diagram of Alarmbox with microphone Type 019275.....	41
Diagram of Alarm controlbox Type 019188.....	42
7.0 Dimension drawing.....	43
Dimension drawing of Public Address System.....	43
Dimension drawing of Control Type 016576.....	44
Dimension drawing of Watertight controlbox Type 021370.....	45
Dimension drawing of Alarmbox with microphone Type 019275.....	46
Dimension drawing of Alarm controlbox Type 019188.....	47
Dimension drawing of Alarm key switch Type 017290.....	48
Dimension drawing of Alarm switch Type 019420.....	49

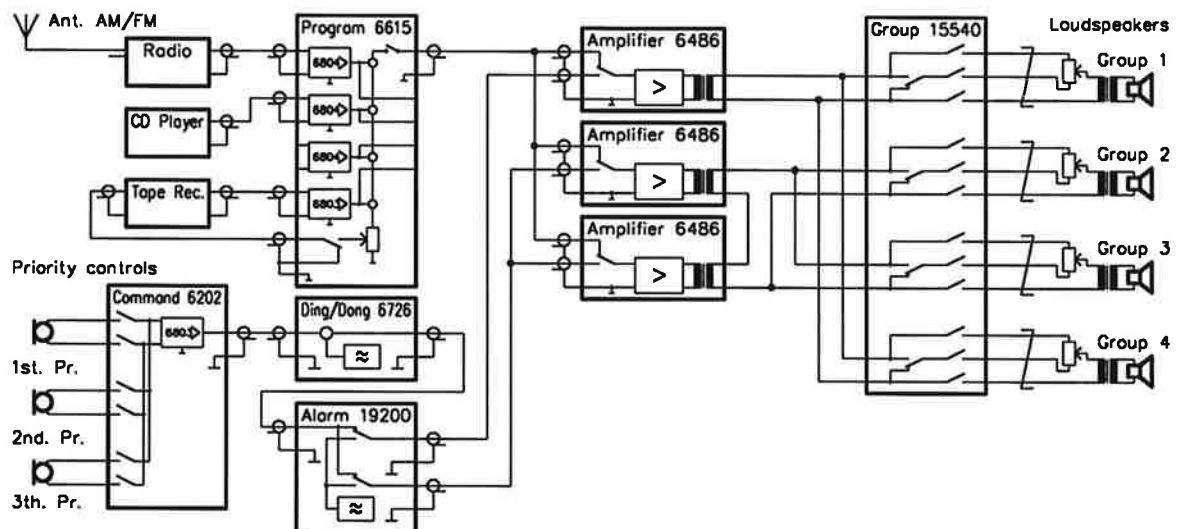


Dimension drawing of Microphone Type 015106.....	50
Dimension drawing of Volume control Type 021601-07.	51
Dimension drawing of Program selector & Volume control Type 021641-47.	52
Dimension drawing of Loudspeaker flush Type 901034.	53
Dimension drawing of Loudspeaker flush with cover Type 901032.	54
Dimension drawing of Loudspeaker bulkhead with volume Type 022261.	55
Dimension drawing of Loudspeaker steel double-faced Type 016927.	56
Dimension drawing of Loudspeaker CAR-4T Type 901015.....	57
Dimension drawing of Re-entrant horn H-44T Type 900051.	58
Dimension drawing of Re-entrant horn HP-10T Type 900005.	59
Dimension drawing of Re-entrant horn HP-15T Type 900006.	60
Dimension drawing of Re-entrant horn HS-15T Type 900007-65-68-78.	61
Dimension drawing of Re-entrant horn HP-20T Type 900011.....	62
Dimension drawing of Hailer with 1 horn Type 019682-83.	63

1.0 System description.

The Public Address System 6700 is an audio system designed to combine the features of "General Alarm", "Paging" and "Sound Distribution". The three functions can be repeated and supplied as individual units.

The system is designed for centralised operation and is built into a standard 19" rack. To ensure great flexibility the system is built up in basic modules. Each system is designed to each ship and with the required features.



General Alarm

General Alarm can have any priority according to your requirements and can be activated by external push buttons only. One or more in parallel for each alarm signals. The alarm can only be reset at the position where activated. The alarm can be transmitted to the crew or passengers individually or all together.

Paging

Paging is available from the transmission of important information. It is possible to carry out the paging from either the centralised rack or from remote controlboxes. The paging controlboxes can have various levels of priority i.e. allocation of 1st. priority will override all other paging, alarm and sound distribution. Paging announcement may be proceeded by a Ding-Dong signal.

Sound Distribution

Sound Distribution can be transmitted from 4 signal sources i.e. Radio, Tape or other forms of entertainment sources. The signal sources can be transmitted in 1, 2, 3, or 4 entertainment programs simultaneously all over the ship. The output level can be adjusted individually for all signal sources and entertainment programs. The main audio amplifier has an output of 100 Watt in a 100 or 50 Volt line. Connecting two amplifiers in parallel will give an audio output power of 200 Watt, but only into a 100 Volt line. The total power requirement is dependent on the total number of loudspeakers, their function and the grouping of the loudspeakers. The audio can be distributed into maximum 24 groups, where alarm and paging will override the setting of the volume controls (with or without program selector) and be transmitted at full power. The Public Address system is operated at the ships main power 220V/110Vac



with 24Vdc emergency backup power. So that in the event of an AC mains failure, there will be power to operate the alarm and the paging functions.



1.1 Operation of system

Power connection

The system is connected to 115/220V ac single phase 50/60 Hz mains supply and 24V dc battery supply for emergency operation on the emergency relay unit type 006809.

For systems operating on 115/220V ac or 24V dc only, is delivered without emergency relay unit 006809 and the power is then connected to the terminal unit 021460 in the bottom of the rack.

Input module type 007884

The program sources are connected by keys **1** to **3**, and the signal level is adjusted by the volume control. The signal is now connected to the power amplifiers. The signal can be recorded on the tape recorder when activating the *TAPE REC* key.

The tone of the signal can be adjusted with the *BASS* and *TREBLE* keys.

The module is equipped with a pre-amplifier type 006803 for the paging signal and a ding-dong signal generator.



Program module type 006615-006553

The program sources are connected by keys marked **1** to **4**, and the signal level is adjusted by the belonging volume control. However, type 006553 is delivered with preset volume controls.

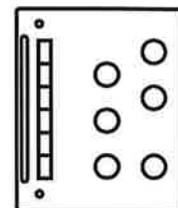
The output is connected to the power amplifiers, when the **OUTPUT** key is activated.

The signal can be recorded on the tape recorder when activating the **TAPE REC** key.

When releasing the **OUTPUT** key, transmission to the loudspeaker lines is avoided.

The tone of the signal can be adjusted with the **BASS** and **TREBLE** keys, however only on module type 006615. When activating more than one input mixing of the signals is possible.

Systems with more than one program are provided with one program module for each program.



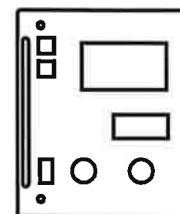
Control module type 006200

The *ON/OFF* key functions as a main switch of the system, and must always be activated. Otherwise, the alarm keys can be activated only. The yellow lamp marked *ON* will glow.

All output lines from the 100 watt amplifiers are controlled by the key marked *CHANNELS*. The quality is heard on the control speaker, and the level can be controlled by the key marked *VOLUME*.

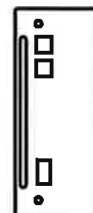
The signal level (100V line) is measured on the VU-Meter.

If the system is provided with emergency supply, the white lamp marked *EMERGENCY* will indicate when the system is operating on the emergency batteries.



Command module type 006202

Paging from the control boxes is indicated by a red lamp marked *BLOCKED*, and paging from the rack is indicated by the red lamp *BLOCKED* as well as the green lamp marked *READY*. If a music program is to be transmitted with full power (Bypassing the volume controls), the key marked *ENTERTAINMENT AS COMMAND* must be activated.



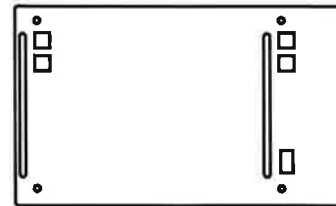


Power amplifier type 006486

The amplifier is activated by the key marked *MAINS*, and the lamp marked *ON* will glow.

Remote start of the amplifier (the key marked *MAINS* is deactivated) is indicated when the lamps marked *REMOTE* and *ON* glow. The lamp marked *OUTPUT* indicates the output level of the amplifier.

Paging calls are indicated by the lamp marked *BREAK-IN*. The total number of amplifiers depends on the loud, groups, and functions of the system.



Group module type 015540-016460

In order to transmit a music program the wanted groups must be activated (indicated by the belonging yellow indication lamp).

When paging from the rack is wanted the music groups must be deactivated, and the paging groups as well as the key marked *C* (belonging lamp will glow) must be activated.

When pressing the *TALK* button on the microphone paging can be transmitted. When having finished the paging, deactivate the *C* button as well as the paging group keys and activate the music group keys again.

Paging can also be transmitted by pressing the key marked *ALL* (all lamps are activated, also on the other group modules).



Alarm module type 019200

The alarm module can be operated from the alarm key panel only, and/or from the fire alarm system of the ship.

Relay module type 016470

The relay module has no operational parts

Ding-Dong module type 006726

The ding-dong module has no operational parts

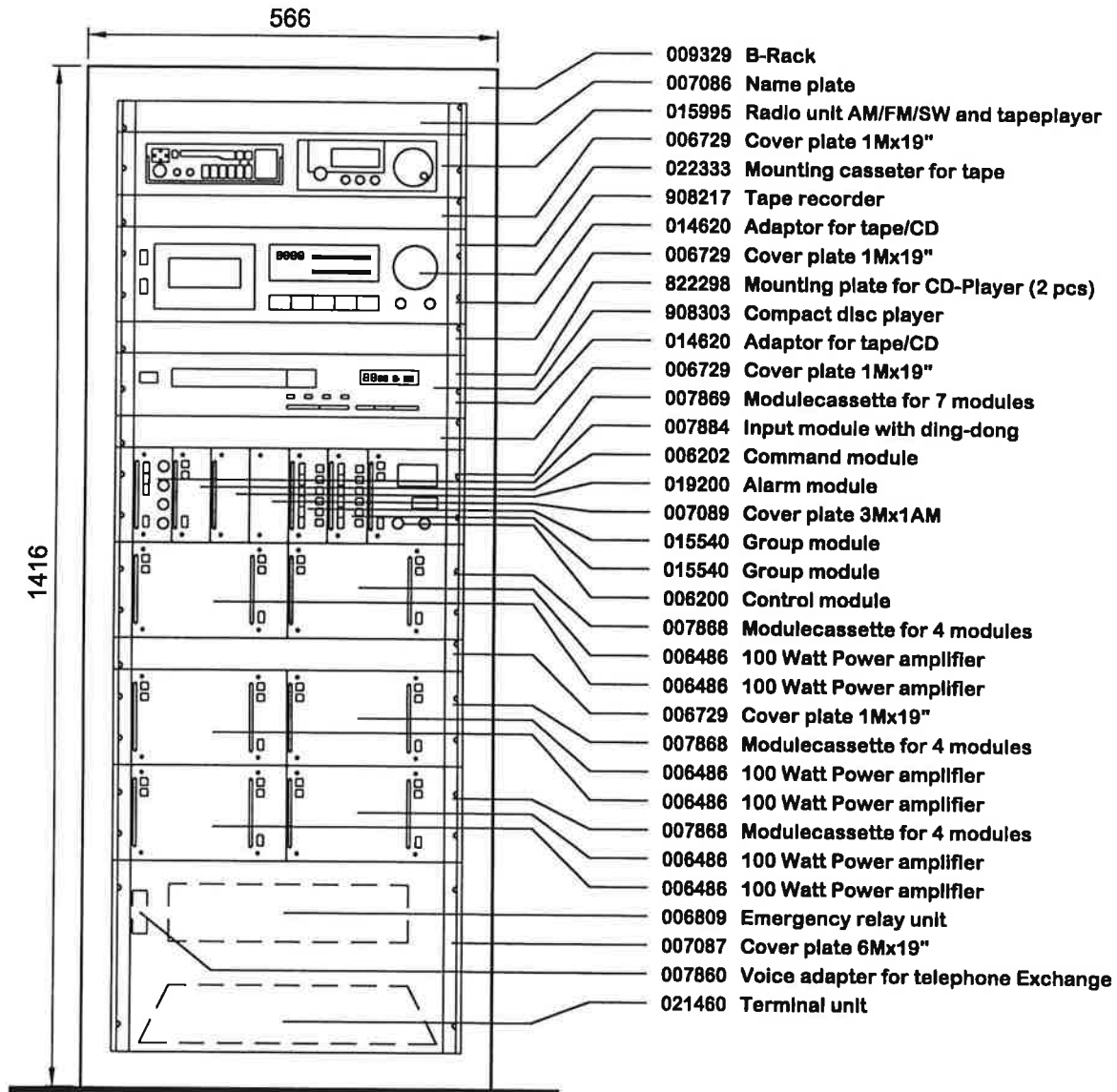
Program sources

The program sources such as radio, tape recorder, compact disc, etc. are operated according to their respective operation instructions.

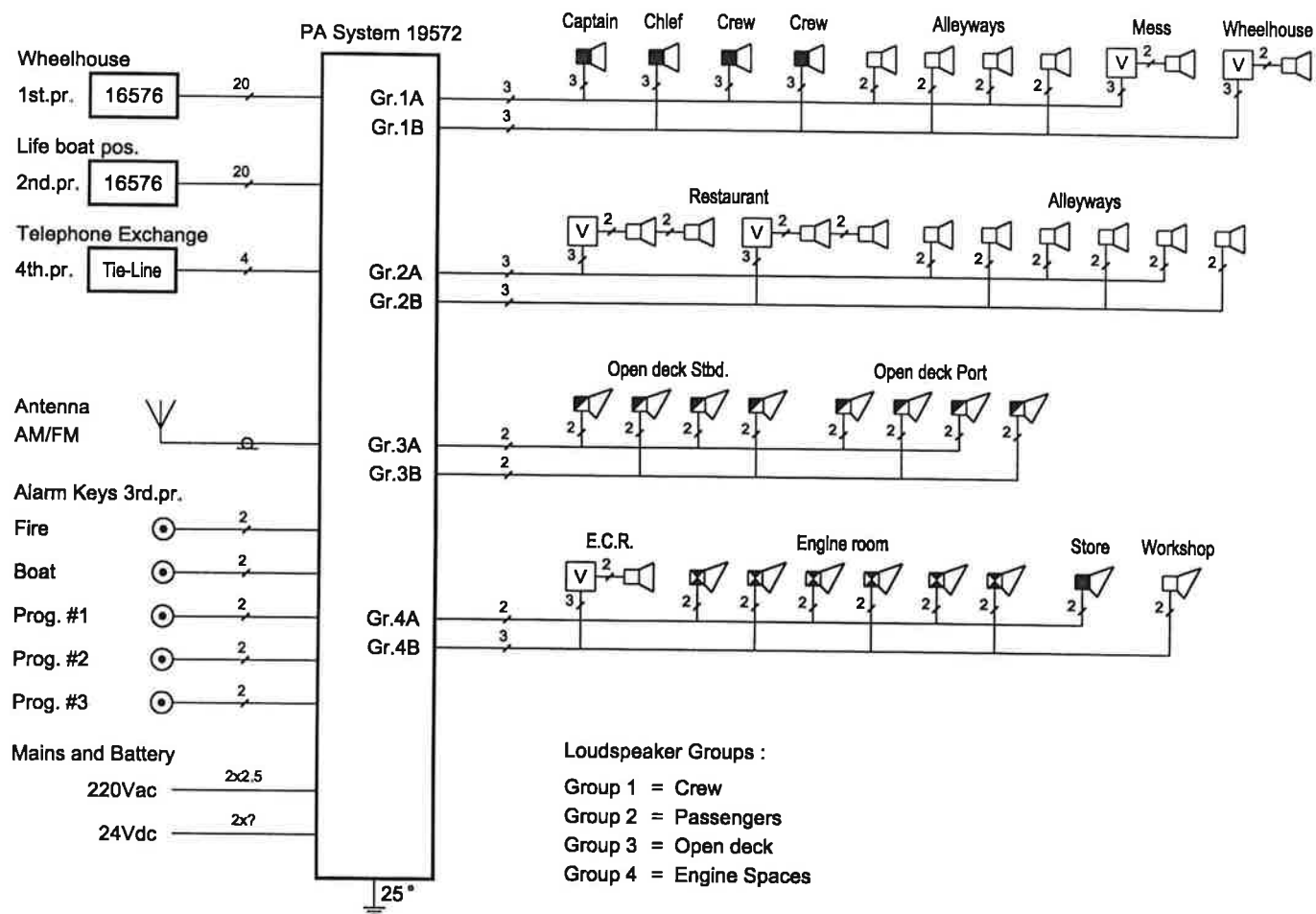


1.3 Front view of rack

Front view



1.4 Installation of system



-  Coax 75 Ohm
-  Cable 2x1.5
-  Cable 3x1.5
-  Cable 2x2x0.75
-  Cable 10x2x0.75
-  02160x Volume control

-  901034 Loudsp. flush 1-4 W
-  022261 Loudsp. w. Volume Ctrl.
-  900051 Hornsp. H-44T 0.4-6 W
-  900005 Hornsp. HP-10T 1.5-10 W
-  900011 Hornsp. HP-20T 1.5-20 W
-  900073 Hornsp. HP-30T 2-30 W



2.0 Construction of system.

The Public Address System is for maritime use and comprises a centralised 19" rack, subdivided into individual functional units, controlboxes and loudspeakers etc.

The functions of the Public Address system can be divided into the following units.

- Operational controls
- Entertainment sources
- Amplifiers
- Terminal section
- Ext. control units
- Loudspeakers groups

Operational controls of the rack.

This section of the rack may comprise any combination of the following modules :

Input module with paging control and ding-dong	007884
Program module with variable controls	006615
Program module with pre-set controls	006553
Command module for paging controls	006202
Ding-Dong module for announcement	006726
Group module	015540
Group module with fuses	016460
Control module	006200
Alarm module with solas 74 signal	016597
Alarm module with 3 programmable signals	019200
Relay module with 4 relays	016470

The program modules may also contain up to 4 submodules (Pre-amplifiers).

Microphone pre-amplifier with AVC.	006803
Level amplifier	006804

The Command module may contain 1 submodule.

Microphone pre-amplifier with AVC.	006803
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This panels are to be mounted into the Modulcassette 7868 with space for 4 modules or Modulecassette 007869 with space for 7 modules, height of 3M (133mm). Modules/panels are made with 3 standard widths 1AM (54mm) 2AM (108mm) and 4AM (215mm). Maximum number of panels per modulcassette is 8 panels with standard width 1AM (or any combination of maximum 8AM).

Note ! 100 Watt power amplifier comprise of two modules (One amplifier pcb and one supply pcb).



Entertainment sources.

This section of the rack may comprise any combination of the following units:

Radio unit AM/FM and tape-player	015988
Radio unit AM/FM/SW and tape-player	015995
Radio unit with 2 x AM/FM with RDS and tape	015992
Radio unit with 2 x AM/FM with tape-player	015993
Tape recorder	908217
Compact disc player	908303
Multi CD-player for 6 CD's	908309
Mounting cassette for tape and Multi CD player	022333
Mounting plate for CD player	2x819315
Filter for Tape recorder and CD players	014620

Height of all radio units and mounting plate for CD is 2M (88mm) and the mounting cassette for tape recorder and multi compact disc player is 4M (176mm). All units are 19" width. All Tape recorders and compact disc players must be mounted together with one Filter type 014620.

Amplifiers.

This section of the rack may only contain the amplifiers:

100 Watt power amplifier	006486
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This amplifiers are to mounted into the modulcassette 007868, height of 3M (133mm), width of amplifier is 4AM (215mm). Maximum of amplifiers per modulcassette is 2.

Terminal section.

This section of the rack contains the terminals for interunit wiring, main inputs etc. and may comprise the following:

Terminal unit	021460
Emergency relay unit	006809
Power supply	019121
Voice adapter	007860
Any special units for the system	

The total height of this section is 6M (264mm).

To obtain the best utilisation of the rack space the individual modules should be positioned as stated above, see page 5.



2.1 Function construction

To obtain maximum utilisation of the system and the exact number and type of modules to be used, a full knowledge of the customer requirements is necessary. The total number of modules will determine the rack size.

Before proceeding with the build up of the system a clear understanding of the following is necessary.

The total number of loudspeakers - in saloons, dining rooms, large rooms, etc. , 1 loudspeaker per 25 sq. meter delivering 1 watt audio power is required. In accommodation alleyways 1 x 1 watt loudspeaker is required every 12-15 meters. When placing speakers on open decks and in noisy areas, care should be taken to obtain sufficient audio output.

When the total number of speakers is known, the total system audio power requirement can be calculated.

Number of groups.

Having allocated the total speaker requirement, it may be necessary to subdivide the speakers into separate groups. Module type 015540 or 016460, "Group panel" allows for the division into 4 groups. If more than 4 groups are required then more group panels are required. If dual loops are required the number of groups must be multiplied with two.

Total audio power.

Each 100 watt power amplifier represents 1 line, which can be subdivided into groups as long as the power requirement does not exceed 100 watt (200 watt). If the total power requirement exceeds 100 watt, more than one amplifier will be needed. When calculating the speaker/line impedance it should be remembered that 1 x 100 watt amplifier can have a line voltage of 50 or 100 volt but two 100 watt amplifiers build together will always have a line voltage of 100 volt. If one speaker group power requirement exceed 200 watt the line must be divided into two lines and two group with the same address number.

Alarm signals.

For this function is required a alarm panel must be added to the rack. Alarm panel 016597 have 4 alarm signals "Boat", "Fire", "Solas 74" and "Clear area". Alarm panel 019200 have 5 alarm signals "Boat", "Fire" and 3 programmable signals. On each panel the signals can be divided into the groups for the crew, passengers or all together.

Paging - controlboxes.

For this function Command panel 006202 along with submodule Microphone pre-amplifier with AVC type 006803 is required. Up to 3 controlboxes along with one microphone near the rack can be connected to a command panel. They can be designated various levels of priority with the microphone near the rack always at the lowest priority. Should additional controlboxes be required additional panels are required , but without the microphone pre-amplifier 006803.

If the announcement signal "Ding-dong" is required then the Ding-dong panel type 006726 must be added to the rack. Program sources - Radio - Tape units etc. require a program panel between the program source and the power amplifiers. This is accomplished by one of the two Program panels type 006615 or 006553. The type 006615 with variable controls and type 006553 with pre-set controls.



The program panel has the capability of 4 inputs and is provided with a submodule (Level amplifier type 006804) for adjustment of the program source signal, one for each program source. In the case where more than one program panel is used, multi program systems, for transmission from the same program source only one pre-amplifier is fitted. Two panels will have a total capability of 7 sources, since one input is used for the output of the other panel.

One program panel can be used with up to 10 x 100 watt power amplifiers.

Where emergency power is required module type 006809 is required. The normal power source for the equipment is AC mains and 24V dc direct from the battery. It is necessary to know the voltage and frequency of the ship's AC mains supply (115/220V - 50/60Hz).

Two extension card type 006645 should always be included with the system.

3.0 Installation instruction.

Connection between the rack and the installation is made on the terminal unit type 021460 placed in the bottom of the rack. The cover plate (Front plate) of the terminal section is removed by the 4 screws (2 at each side of the cover plate). The cable lead-in can either be made through the bottom of the rack (floor) or from the backside (wall) of the rack. The cables are unloaded with clamps to a perforated cable plate mounted on slide bars (behind) of the terminal plate. This cable plate can either be mounted vertically (cable lead-in from floor) or horizontally (cable lead-in from wall).

The free ends of the cables must at least have a length of 1 meter. The cable shell is removed up to the fixing clamp, whereby the conductors can be identified. The mounting of conductor is facilitated if the 2 screws, which lock the edge of the terminal plate to the slide bars are loosened and removed, and the terminal plate is drawn out.

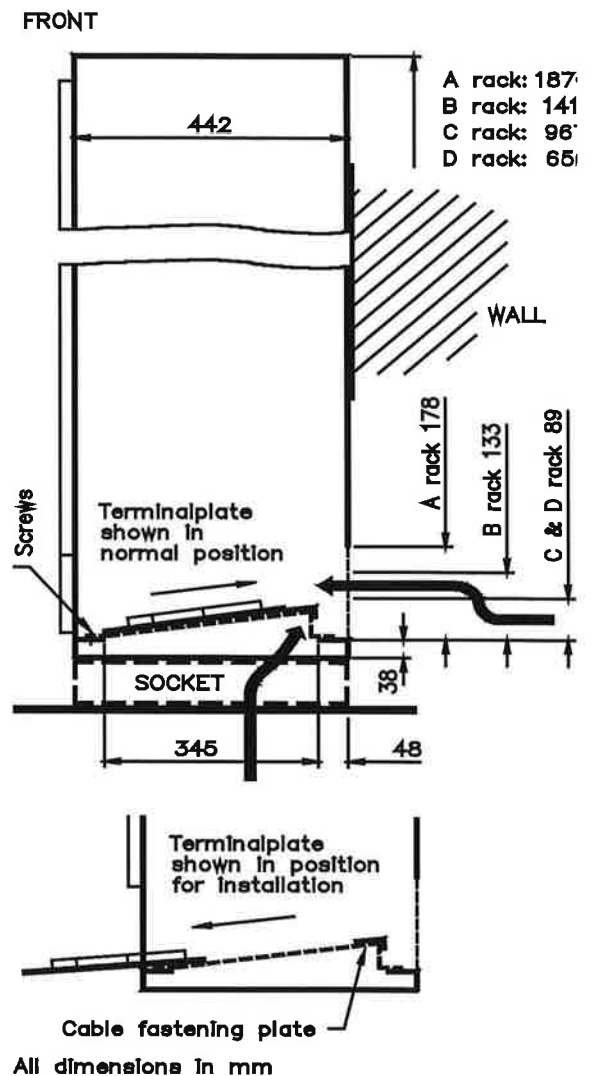
After identification and division of sections of the cable conductors, these ones are unloaded to the terminal plate, after which de-isolation and conductor mounting are made.

Then the terminal plate is pushed back again and locked with the 2 screws.

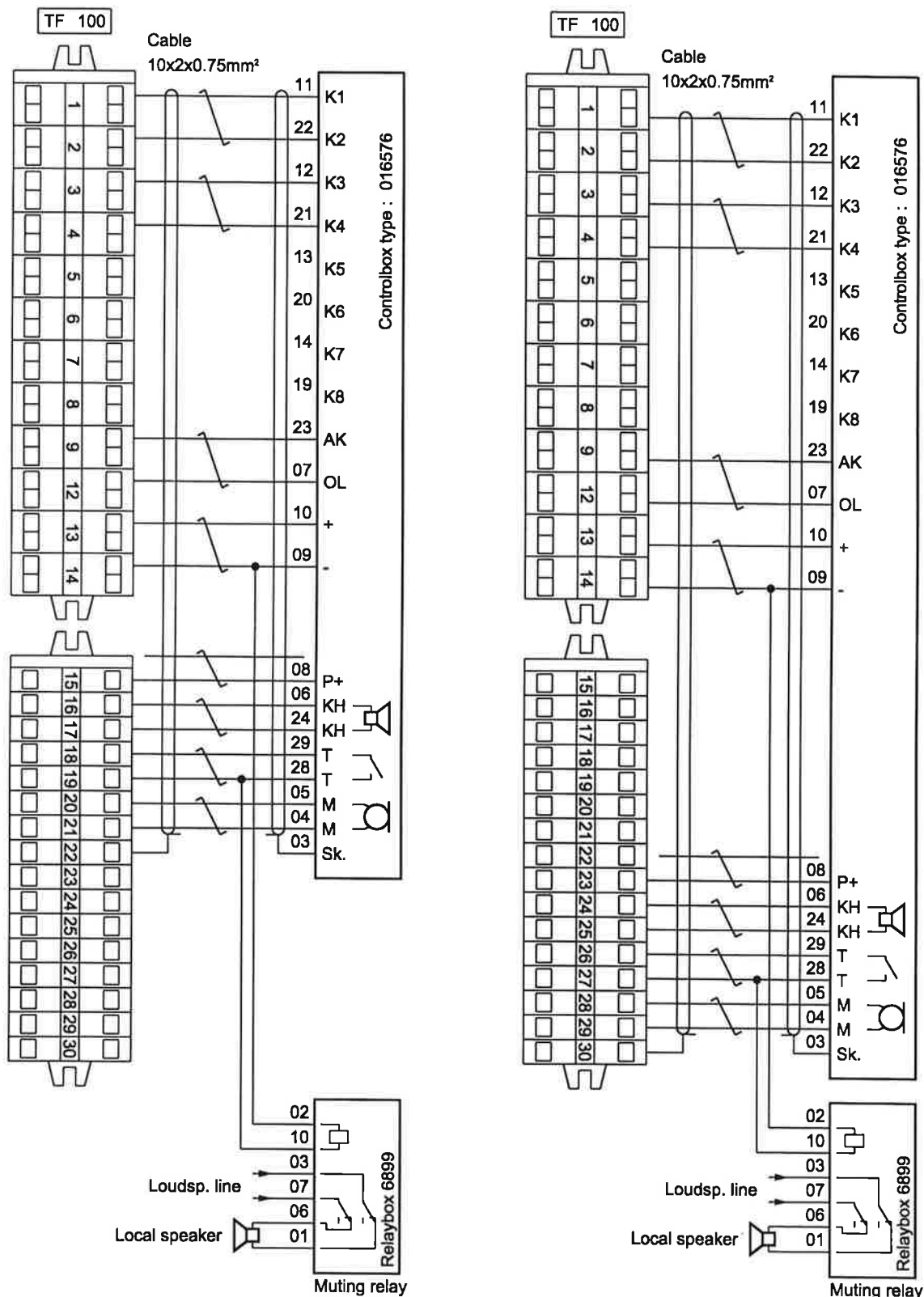
If the system is provided with emergency unit (placed in the back of the terminal section), mains supply and emergency battery are to be connected to this unit. Systems without emergency unit power is connected at the terminal unit.

Furthermore, controlboxes, alarm keys, microphone, antenna and etc. is connected as described on the following pages.

Connection of 3 wire loudspeakers and volume controls see page 16.



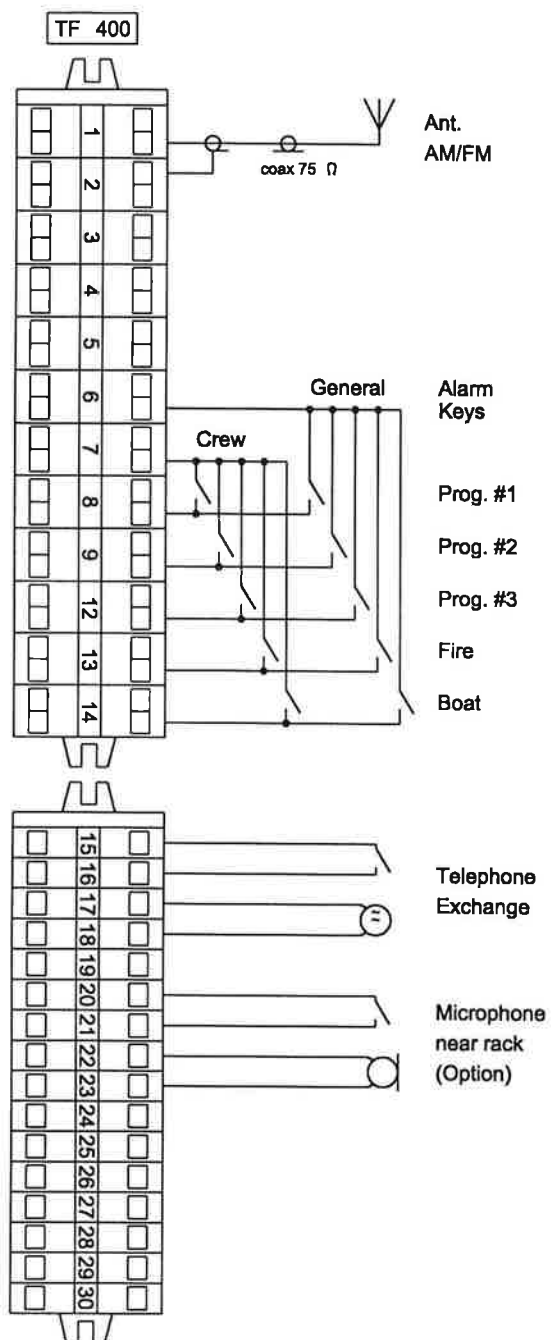
3.1 Connection of Controlboxes 1st. and 2nd, priority.



Note !

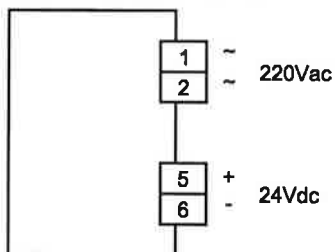
The two rows are the same one in the rack

3.1 Connection of rack.

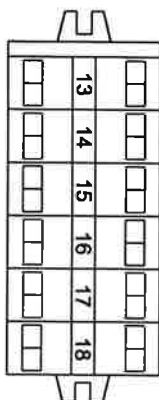
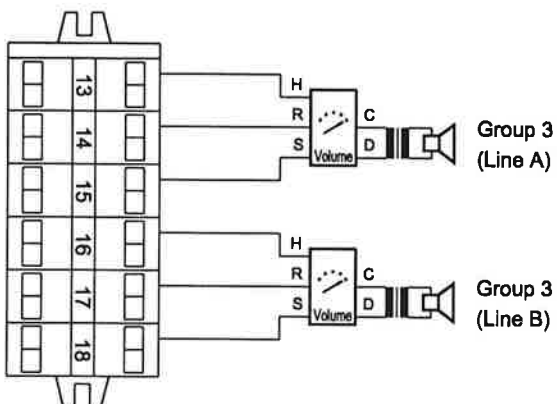
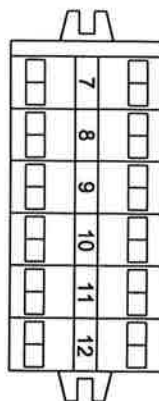
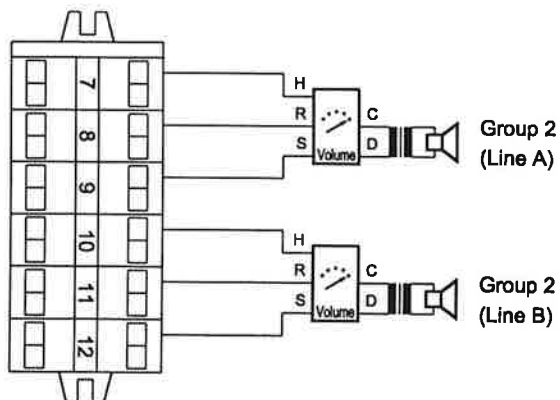
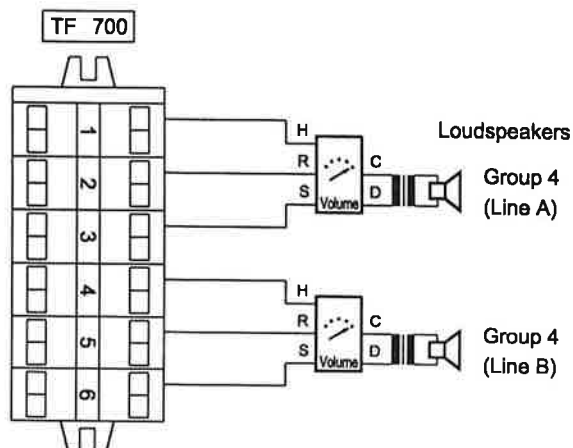
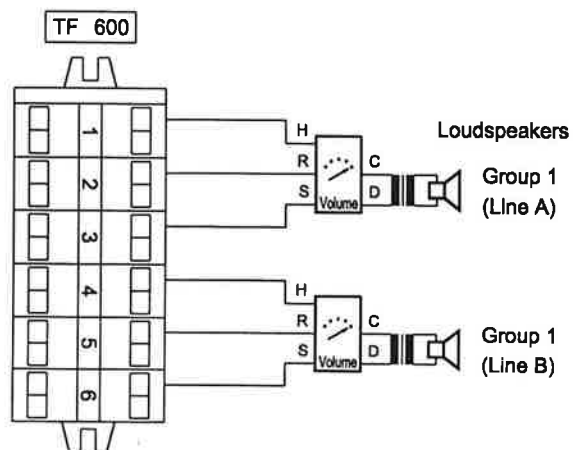


E.R.U. 6809

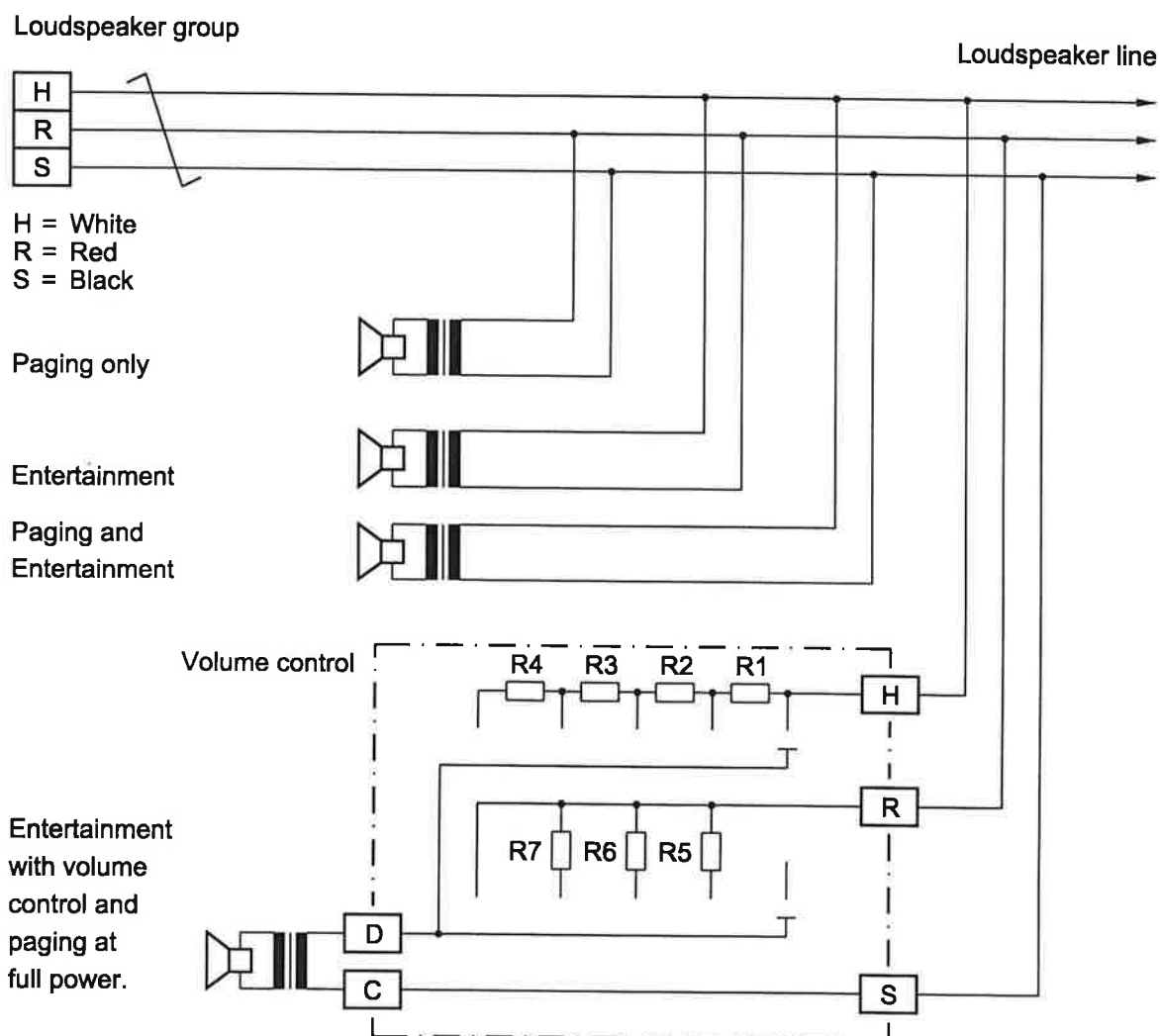
Mounted in bottom of Rack



3.1 Connection of loudspeaker lines.



3.1 Connection of loudspeakers and volume-controls.



Note ! All loudspeakers must be with linetransformer for 100V Line

Type Imped.	Resist.	R1		R2		R3		R4		R5		R6		R7	
		Ω	W	Ω	W	Ω	W	Ω	W	Ω	W	Ω	W	Ω	W
021601	10K	5K6	1	2K2	1	1K	1/2	2K2	1/2	10K	1/2	3K3	1/2	1K5	1/2
021602	5K	2K7	1	1K	1	510	1/2	1K1	1/2	5K1	1/2	1K8	1/2	750	1/2
021603	2K5	1K5	5	560	1	270	1	560	1	2K7	1	820	1	390	1
021604	1K5	820	5	330	5	150	1	330	1	1K5	1	470	1	220	1
021605	1K	560	5	220	5	100	1	220	1	1K	1	330	1	150	1
021606	750R	390	5	150	5	68	5	150	1	820	5	270	1	100	1
021607	500R	270	7	100	5	33	5	100	1	560	5	220	1	68	1



4.0 Function description of the system.

In this part a 1 music channel system will be explained.

The system is built up with all present modules to give an idea of the functional connection of the modules. It should, however, be noted that only the general functions are represented. Further, it should be noted that modules may be omitted or added according to demand.

Power supply.

Mains voltage 220V/110V ac and battery voltage 24V dc are connected to emergency relay unit type 006809. 24V dc is taken direct from the unit to the alarm module (dose not start until is activated) and control panel, where the on/off key functions as a main switch, (when in position off only the alarm can be activated). With on/off key activated 24V dc is transmitted via fuse (2 Amps.), and on-lamp (this is turned on) to paging module, ding dong, group module and other modules (program module etc.) 24V dc (0) is taken to the control boxes and the relays in the 100 watt power amplifiers. Further, 24V dc (+) is taken to X3 relay in emergency relay unit, which is activated, and via X3 contacts makes the 220V relay X1 draw. 220V ac is now taken via X1 contacts to the 100 watt power amplifiers and the tape recorder. 100 Watt power amplifiers are turned on with their mains switch.

Program function.

The antenna signal is taken to the radio and LF signal from the radio is taken to the program module, where it is amplified in a level amplifier to a 0dBm signal. The Lf signal is taken from the tape recording via the separation transformer to the program module, where amplified in a level amplifier. Program key 1 for radio and/or key 2 for tape recorder is activated, and the signals is via mixer stage taken to the output key. If the program is to be recorded the tape recorder key is to be activated, whereby the signal is taken to the recording part of the tape unit. By activating the output key the signal is transmitted to the 100 watt power amplifiers via break in relay, where it is amplified to a 100V line signal. This one is taken to group module, paging module and control module. In the control module the line signal is via channel selector taken to the VU-meter and via X1 to the loudspeaker. In the command module the line signal is given a transformer, where it is transformed into a low power signal via P1 contact to the loudspeaker in the controlbox. In group module, group key 1 is activated, whereby plus via FS contact and group key activates G1 relay. The line signal is change over by FS contact to a 3 string line (H-R-S). The line signal is via G1 contacts taken to the loudspeakers group 1. As the string R and S are short-circuited by FS contacts, the volume controls on the line is working normally.

A program in progress can be transmitted with full power, when the paging modules E.A.C. key is activated. Hereby a plus is given to the group panel and draws FS relays. The line signal is now taken to the line by string R and S and string H and R are short-circuited by the FS relay.

Hereby the line signal passes the volume controls at full power.



Paging function form the rack.

By paging call from the rack (4th priority) group keys in group module and C key are activated. Microphone key T4 is activated, whereby a plus via P1, P2 and P3 contacts draws PH4 relay and turns on the ready lamp. A plus is now transmitted via PH4 contacts, C key in group module and the group keys to the group relays and FS relays and to the 100 watt power amplifiers where break in relay is activated. Plus is now taken to 100 watt power amplifiers where X2 relay (remote start) draws and short-circuited the mains switch. Further, plus from c key is taken via paging module to control module, X1 relay draws. This plus turns the blocked lamp on in the paging module and activates the ding dong signal. Further, plus is taken to X4 relay in emergency relay unit. When 220Vac is short-circuited, X1 relay is drawn, whereby minus to X4 relay is disconnected by X1, so that X4 relay cannot draw. Please see emergency function.

The microphone signal from M4 is now taken to paging module, where it via PH4 is amplified in a mic. pre-amplifier to a 0dBm signal. This signal is transmitted via a mixer in the ding-dong and via the alarm module to the 100 watt power amplifiers where X1 break in relay is drawn, amplified into a 100V line signal. The line signal is taken to the control module where the signal is lowered with 47 ohm to avoid acoustic feed-back, paging module, listening in for the controlboxes and the group module. The line signal is now transmitted via the group relays to the loudspeaker lines with full power as FS relays is drawn, whereby the line strings H and R are short-circuited by FS contacts.

All station call is made with an all station key in the group module, which releases the same function as C key, however, with an extension to all group relays.

Paging function from control boxes.

By paging call from controlbox 1 (1st. priority) group keys is activated and microphone key, whereby plus activates P1 relay (and PH1 relay) in paging module. As P1 relay is drawn plus is removed from T4 key whereby 4th. priority is disconnected. Now plus is taken to blocked lamp and starts the ding-dong signal and the emergency relay unit (X4). Further, plus is via P1 taken to the control box, where Group key lamp is turn on. From here plus via group keys are taken to group module, where group relays and FS relays are activated and via the group module to the 100 watt power amplifiers relays.

Microphone signal M1 form the controlbox is now taken to paging module, where it via PH1 is amplified in a microphone pre-amplifier to a 0dBm signal.

This signal is via the ding-dong module, announcement and microphone signal are mixed in this module, taken via the alarm module to the 100 watt power amplifiers where it via X1 (X1 relay is drawn) is amplified into a 100V line signal. As X1 relay is drawn a program in progress in disconnected. The 100V line signal is now taken to control module , paging module and group module. In the paging module it is transformed into a low power signal by a line transformer. This is via a 47 ohm resistor taken and P1 taken to the loudspeaker in the controlbox (the signal is lowered by the resistor to avoid acoustic feed-back between the microphone and the loudspeaker in the controlbox).

The line signal is also taken to the group module, where it via the group relays is taken to the loudspeaker groups with full power, as FS relays is drawn as well.

All station call is made like a group call but it will activates all the group and FS relays in the group module.



Emergency function.

Mains 220V/110V ac and battery 24V dc are connected to emergency relay unit. When the on/off key of the control module is activated, X3 relay draws whereby mains via X3 activates X1 relay. Mains is then taken via X1 to the respective units. Furthermore, minus voltage to X4 relay and emergency lamp is opened by X1 circuit breaker, through X4 and X2 relays cannot be activated.

In case of mains falls out, X1 relay falls, whereby minus via X1 is taken to X4 and turns on emergency lamp. By paging call X2 relay draws with plus via X4, so that the 100 watt power amplifiers is given 24V dc via X2 contacts.

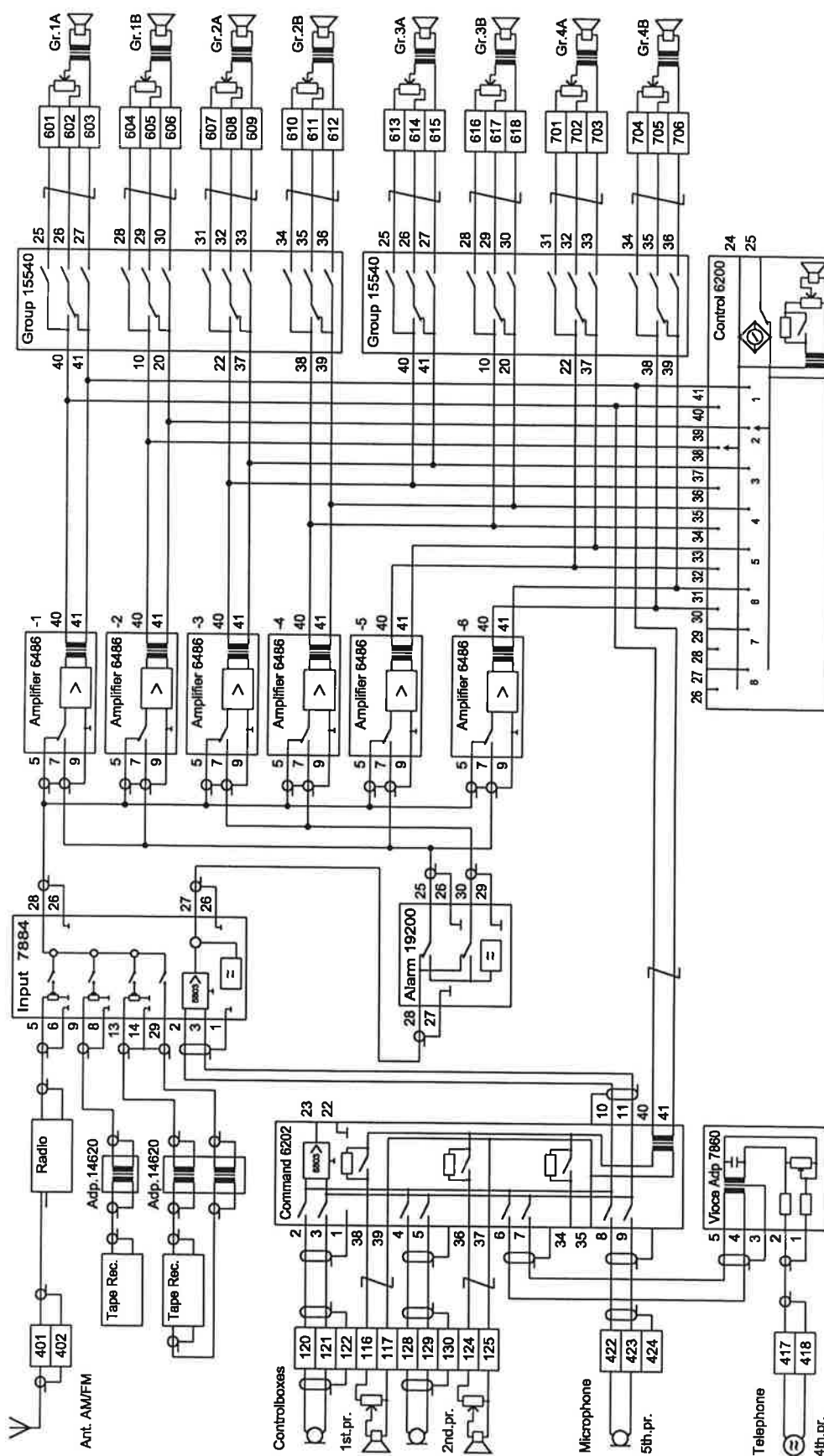
Alarm function

The alarm module have 4 to 5 different alarm signal depending on the type of module. 0dBm signal can be send to the crew via X1 and/or via X2 to the passengers.

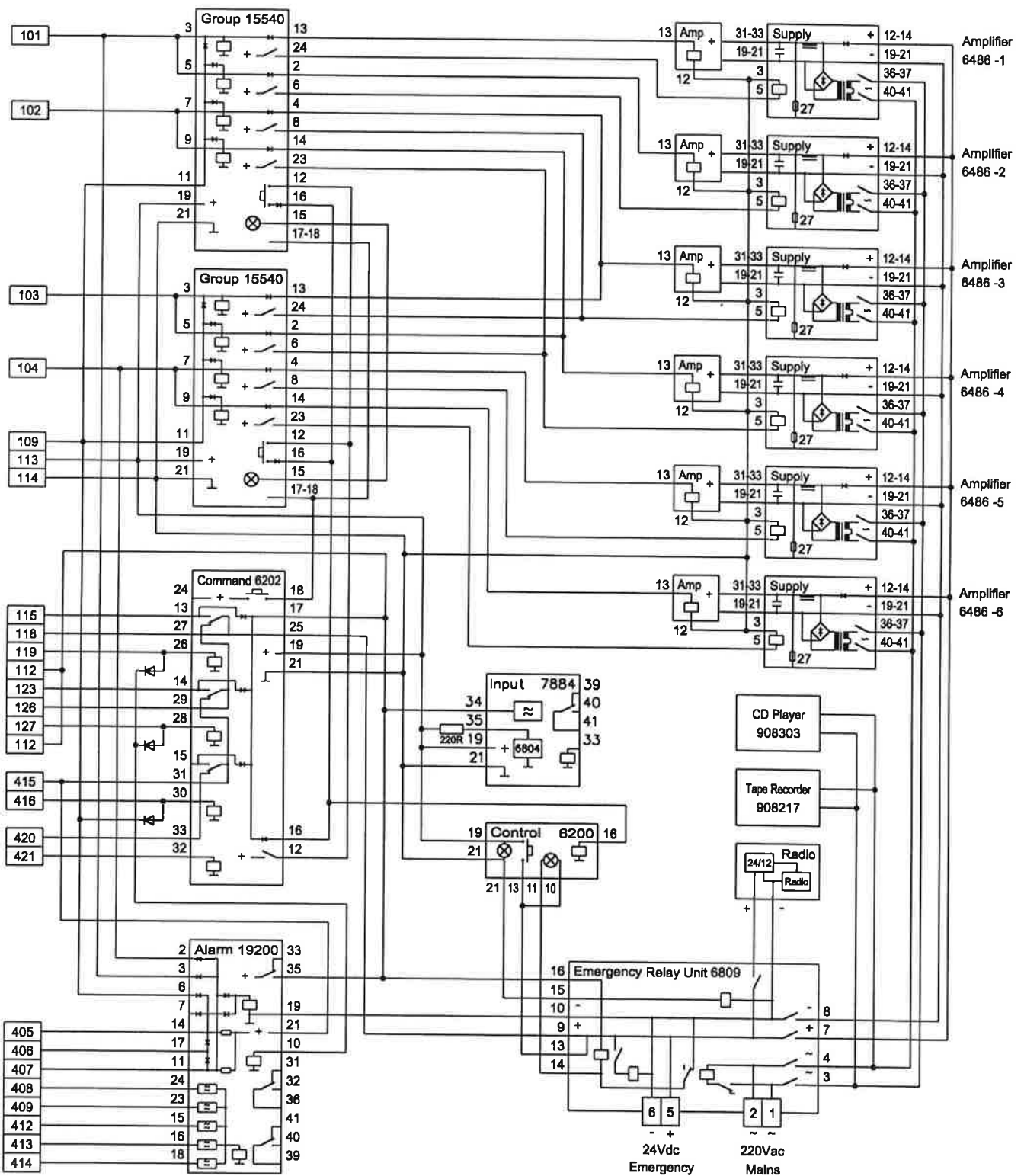
By activating one of the alarm keys X1 and/or X2 is drawn and starts the alarm signal. Further, plus is taken to the group module, where group and FS relays is drawn for transmitting the alarm signal with pull power and to the 100 watt power amplifiers for activating the break in relays. X3 is drawn to activates the emergency relay unit.

The alarm generator influences a 0dBm signal. this is taken via X1 and/or X2 to the 100 watt power amplifiers, where it via X1 (break in relay) is amplified into a 100V line signal. The line signal is now taken to the group module, where it via the group and FS relays are transmitted to the loudspeaker group lines with full power.

4.1 Internal connection of Rack "Sound".

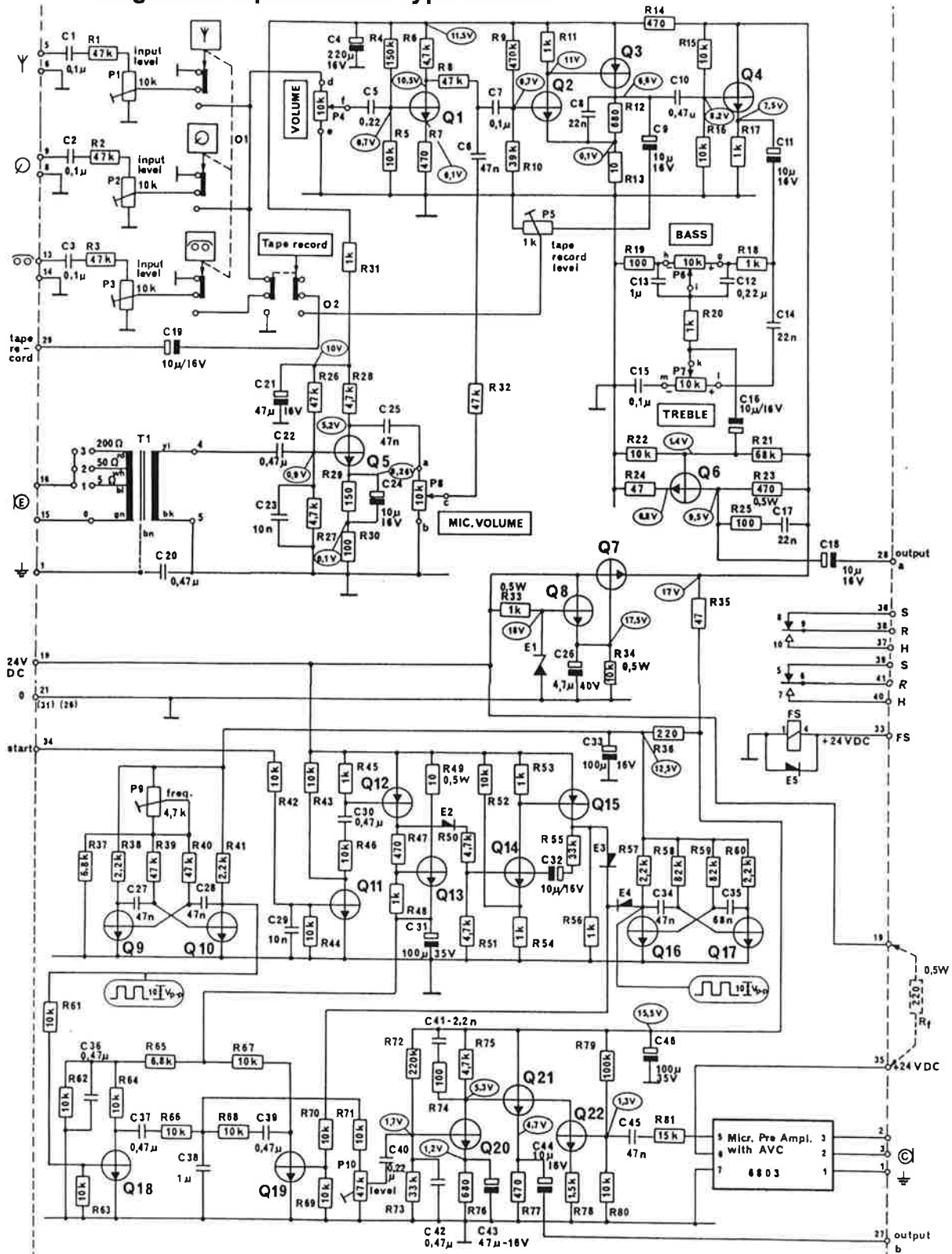


4.2 Internal connection of Rack "Power".



5.0 Diagram of Panels

Diagram of Input module Type 007884.



The DC-VOLTAGES specified are positive with respect to chassis and are measured without signal.

Diagram of Program module Type 006615-006553.

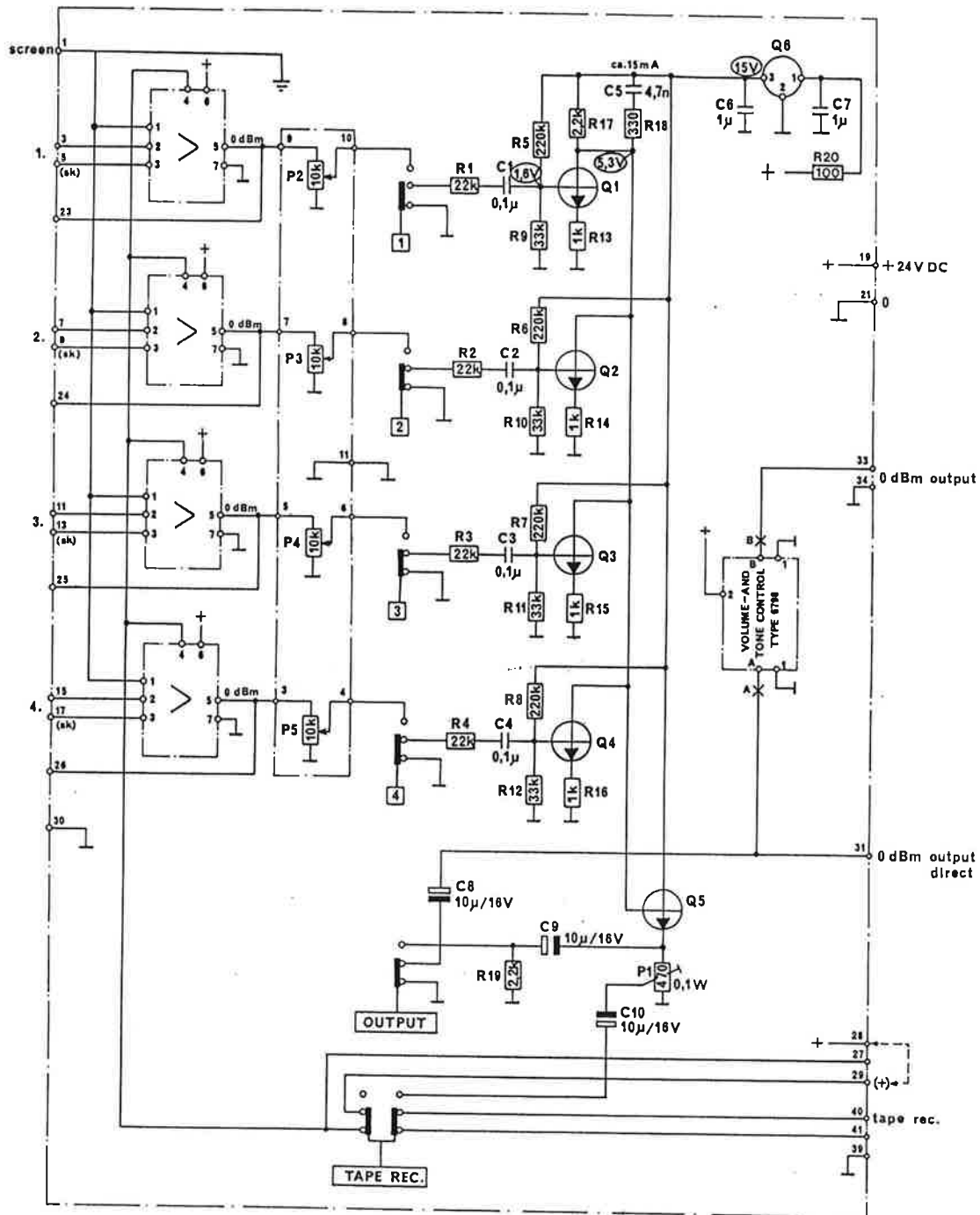


DIAGRAM is shown in OFF-POSITION.

The DC-VOLTAGES specified are positive with respect to chassis and are measured without signal.

RESISTORS without specifications: 0,3 W.

Q1-Q5 : BC237A
Q6 : 78M15CT

Diagram of Volume & Tone control for 006615 Type 006798.

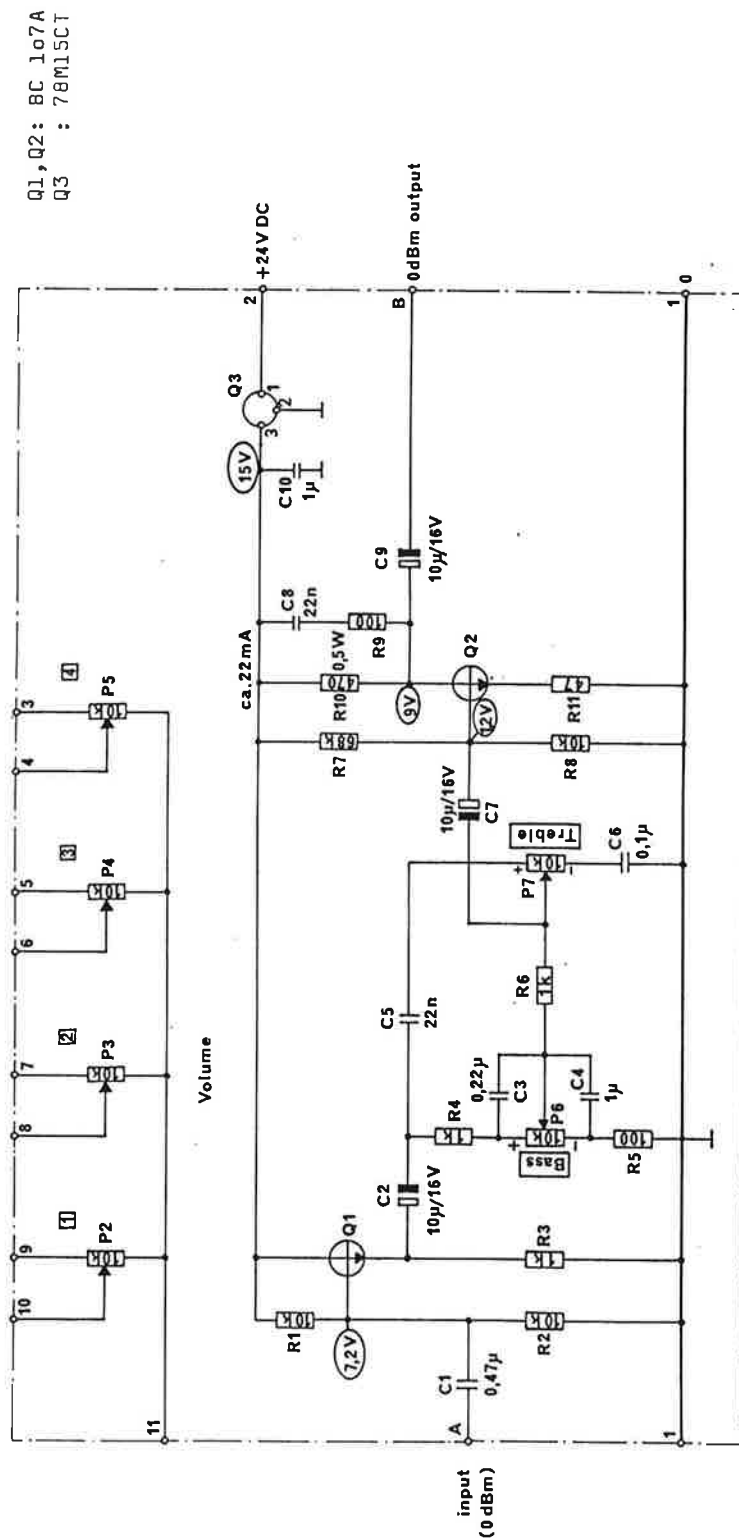


Diagram is shown in off-position

The DC-voltages specified are positive with respect to chassis and are measured without signal.

Resistors without specifications: 0,3 W

Diagram of Command module Type 006202.

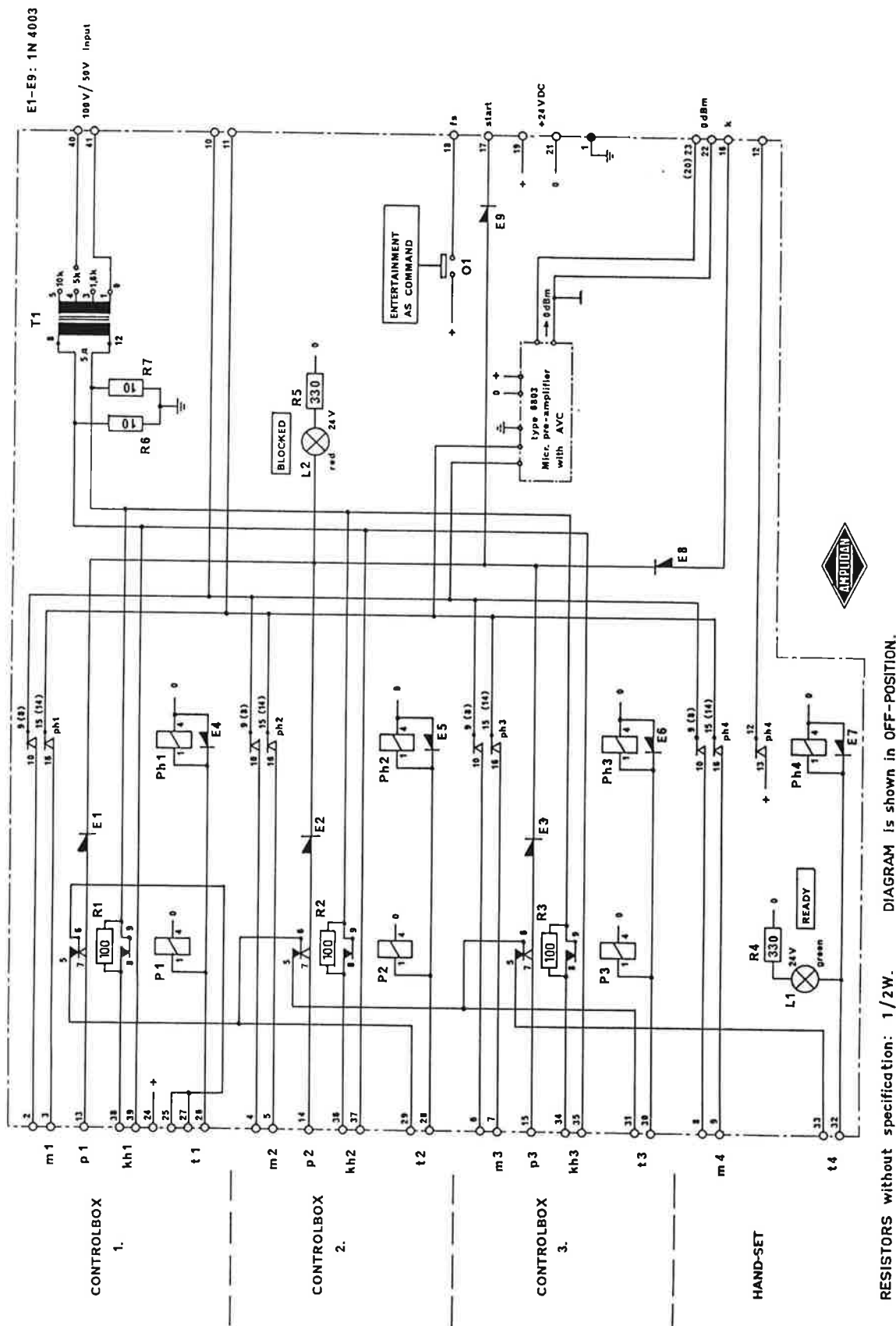


Diagram of Ding-dong module Type 006726.

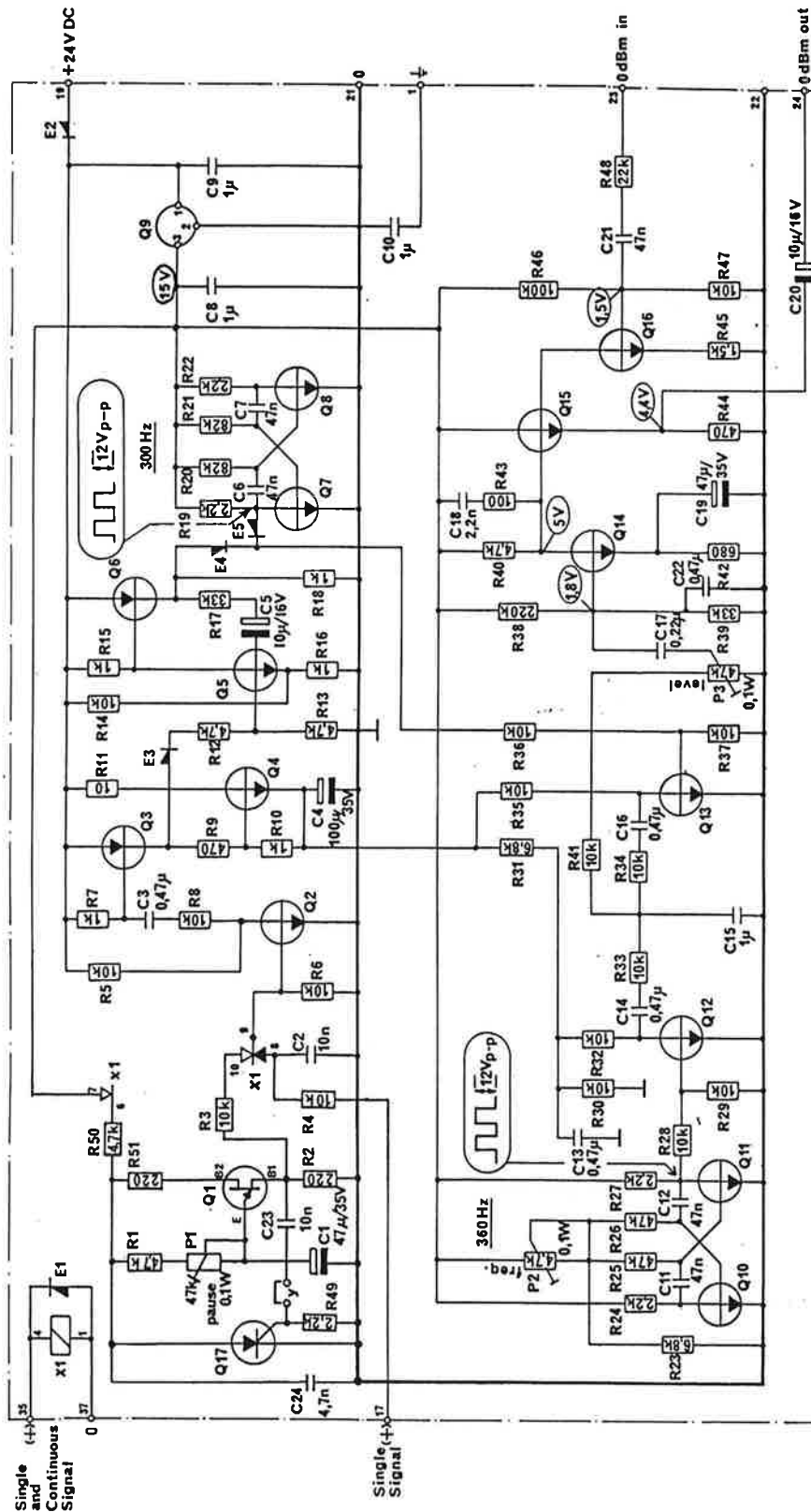


DIAGRAM is shown in OFF-POSITION.
The DC-VOLTAGES specified are positive with respect to chassis and are measured without signal.

Q1 : 2N4870
Q2, Q5, Q7, Q8, Q10-Q16 : BC107A/BC 237A
Q3, Q6 : BC177A
Q4 : 40312
Q9 : 825CE7104/78M15CT
Q17 : 2N5060/2N5061
E1-E5 : 1N4003/1N4007.

Diagram of Group module Type 015540.

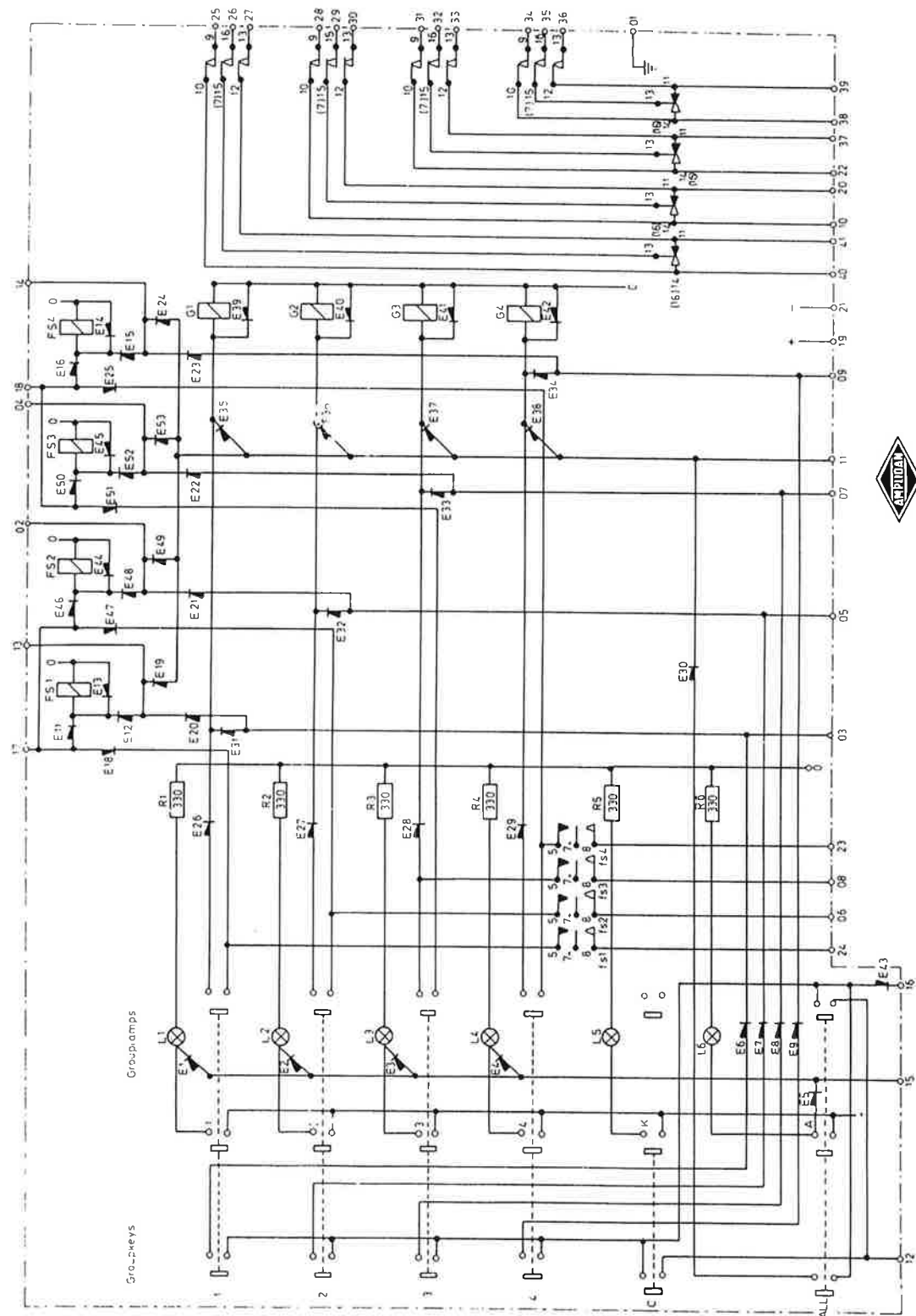


Diagram of Group module Type 016460.

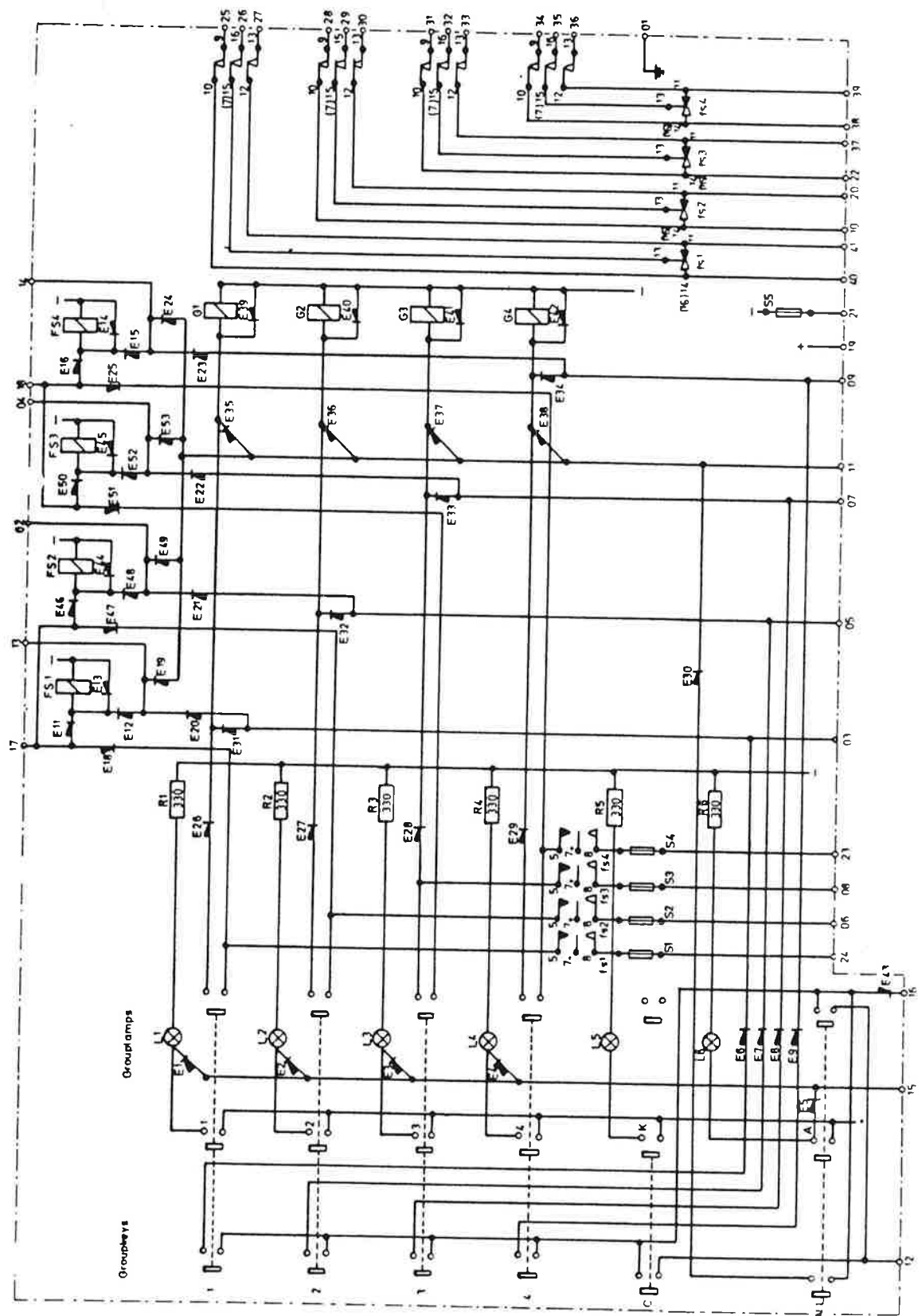


Diagram of Control module Type 006200.

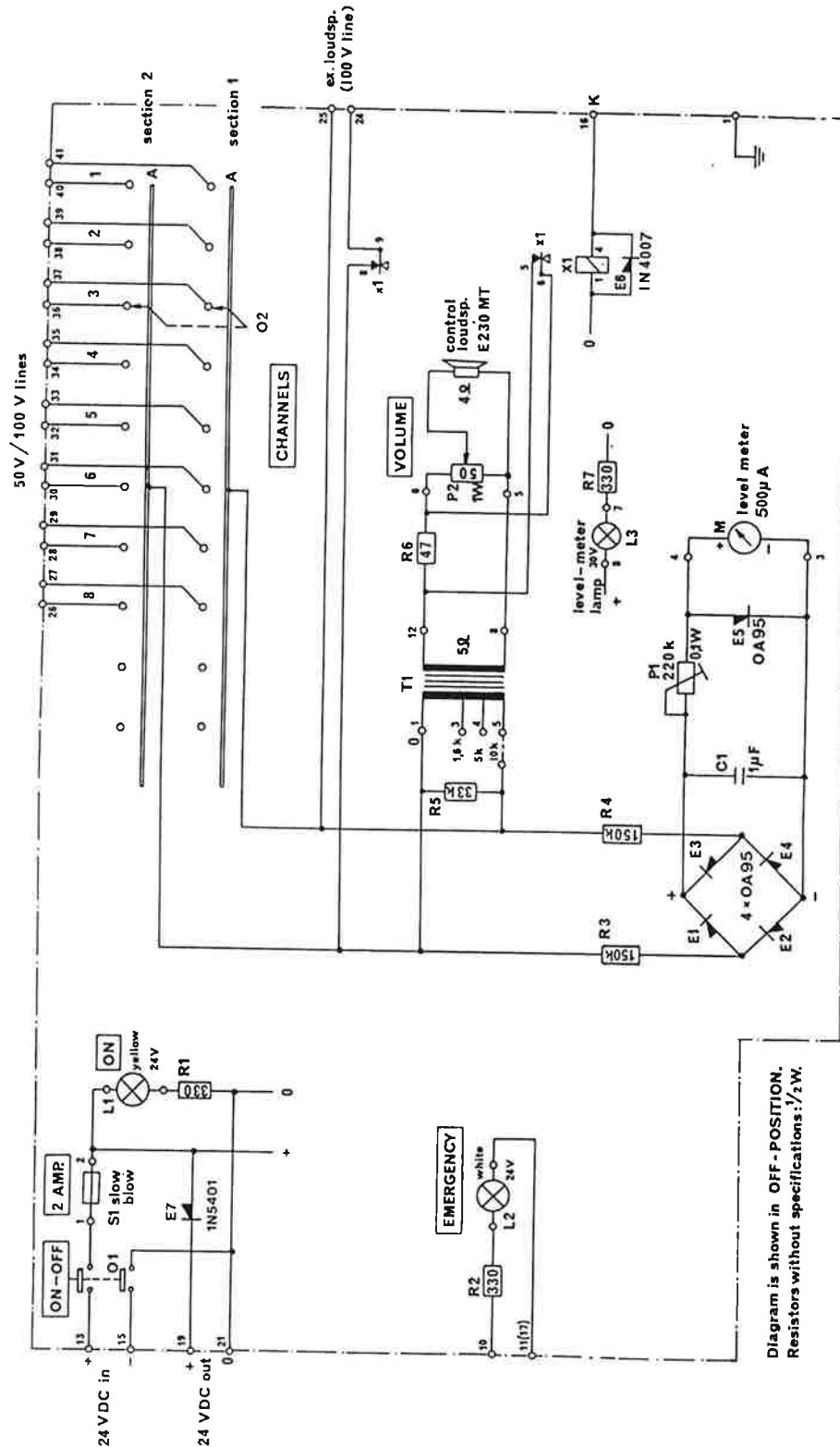


Diagram of Alarm module Type 016597.

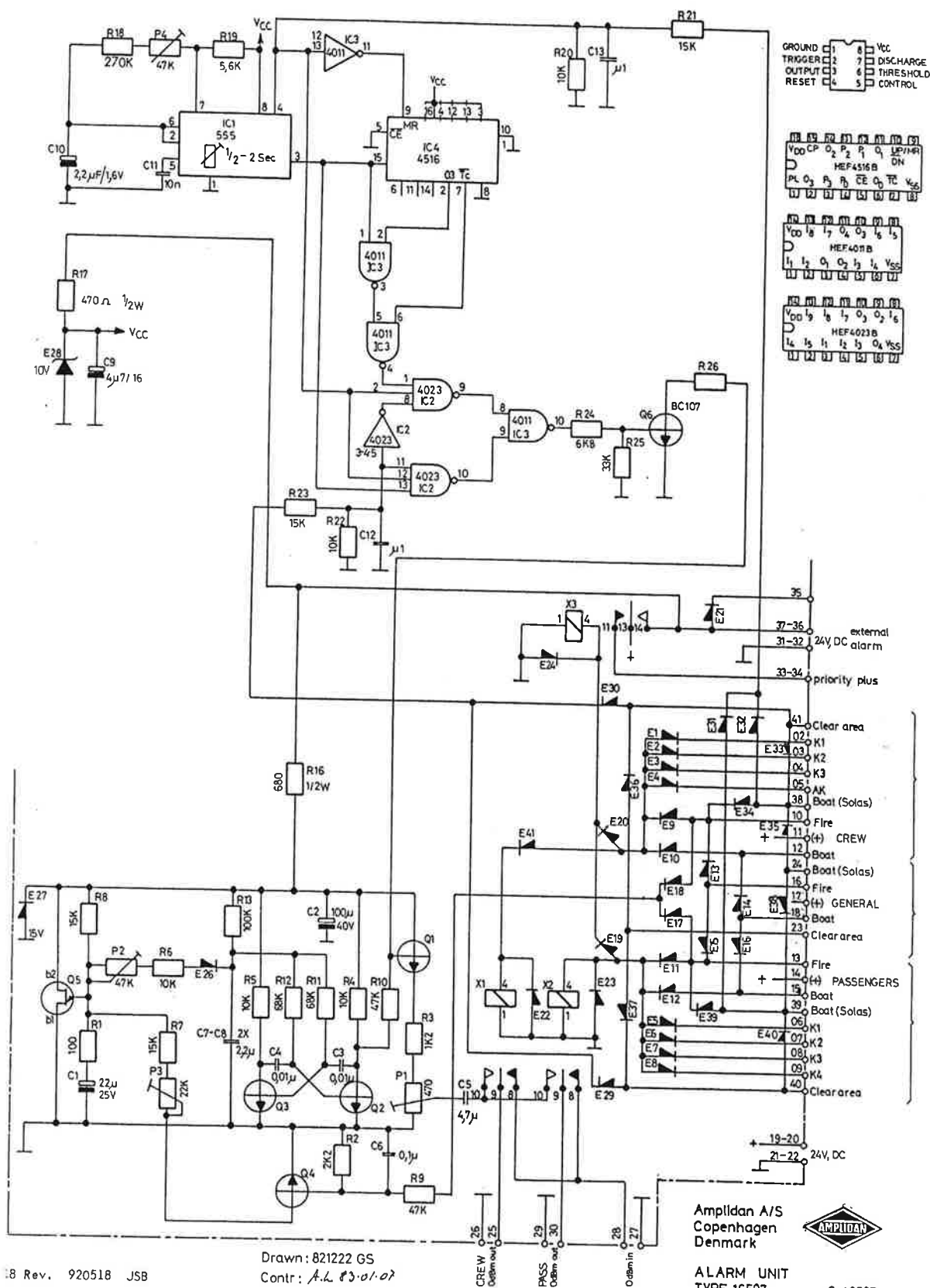


Diagram of Alarm module Type 019200.

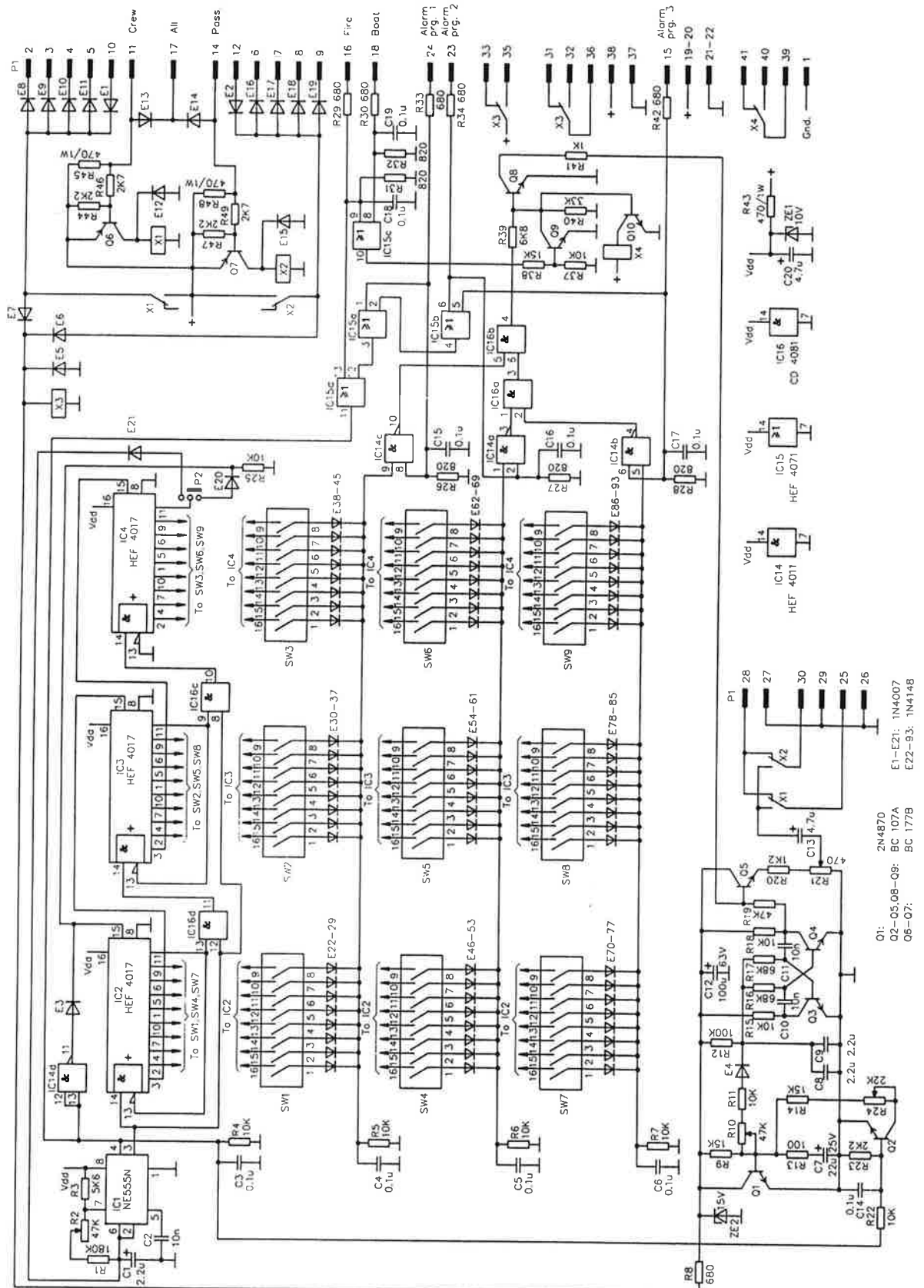
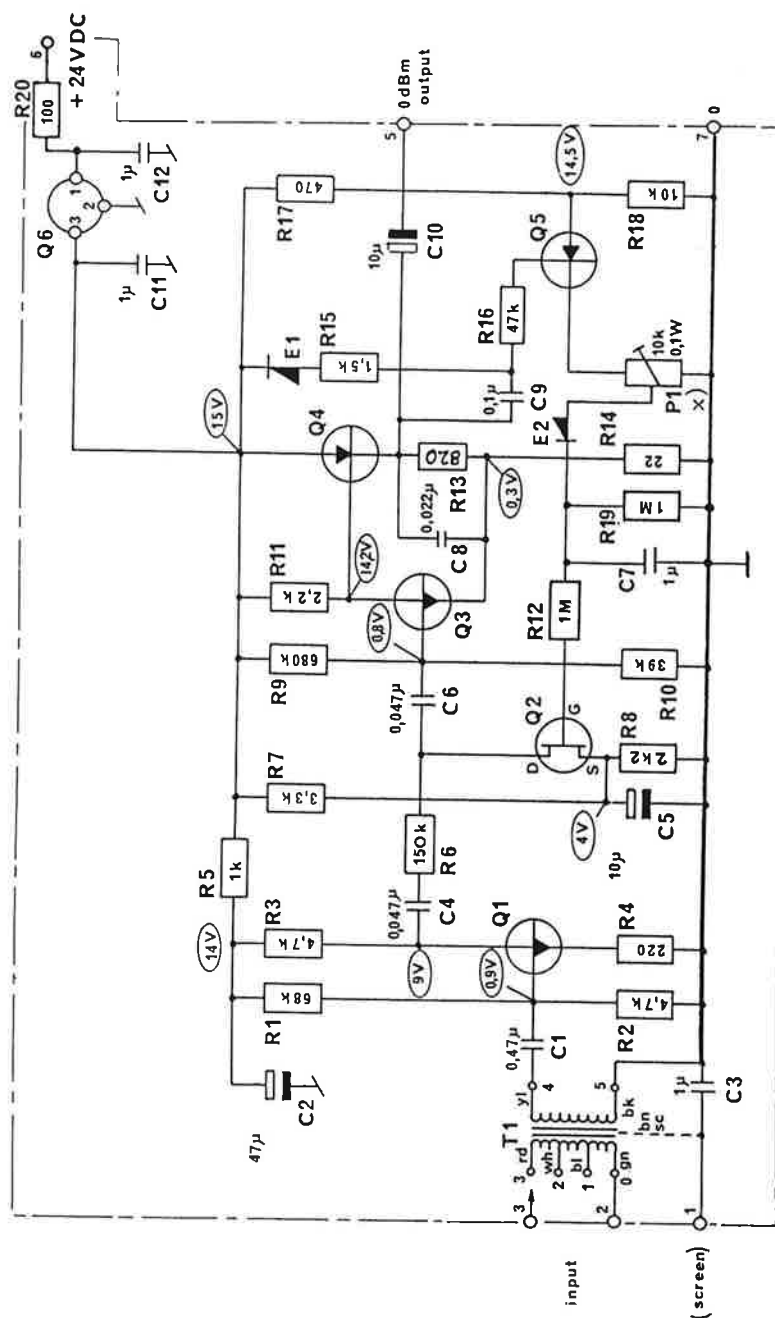


Diagram of Microphone pre-amplifier Type 006803.



E1,E2: 1N 4148

Q1: BC 107A

Q2: 2N4302

Q3: BC107A

Q4: BC177A

Q5: BC 177A

Q6: 825CE 7104

Input impedance:

$$0-1=52$$
 $0-2=50\Omega$
$$0-3=200\text{ }\Omega$$

The DC-VOLTAGES specified are positive with respect to chassis and measured without signal.

RESISTORS without specifications: 0,3W

x) P1 is turned to left bottom pos.

The DC-VOLTAGES specified are positive with respect to chassis and measured without signal.
RESISTORS without specifications: 0.3 W

Q1 - Q5 : BC237 A
Q6, Q7 : 40312
Q8, Q9 : 40411
E1 - E5 : 1N4003
E6 : B40C5000
E7 : 368 DR

DIAGRAM is shown in OFF-POSITION

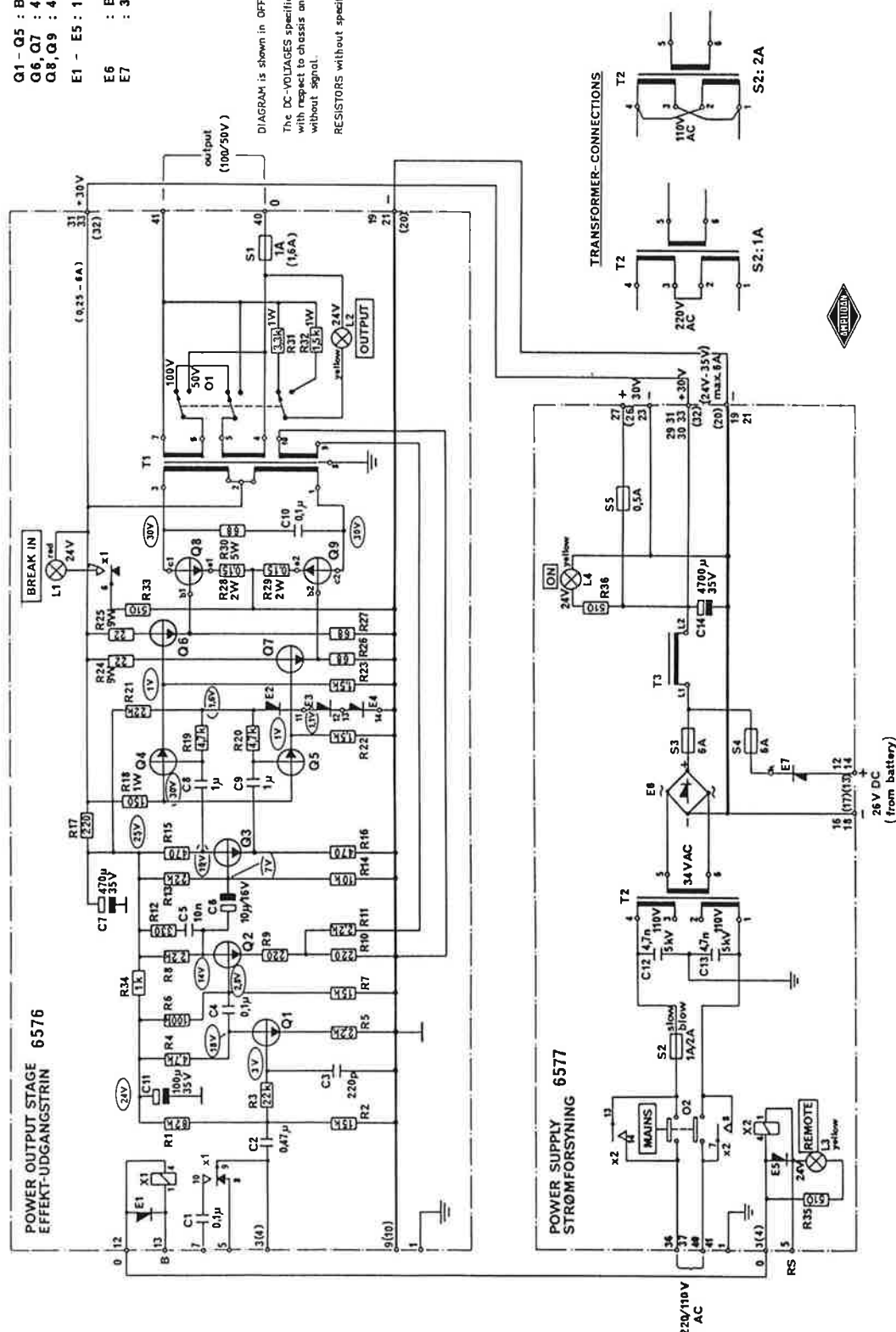


Diagram of Emergency relay unit Type 006809.

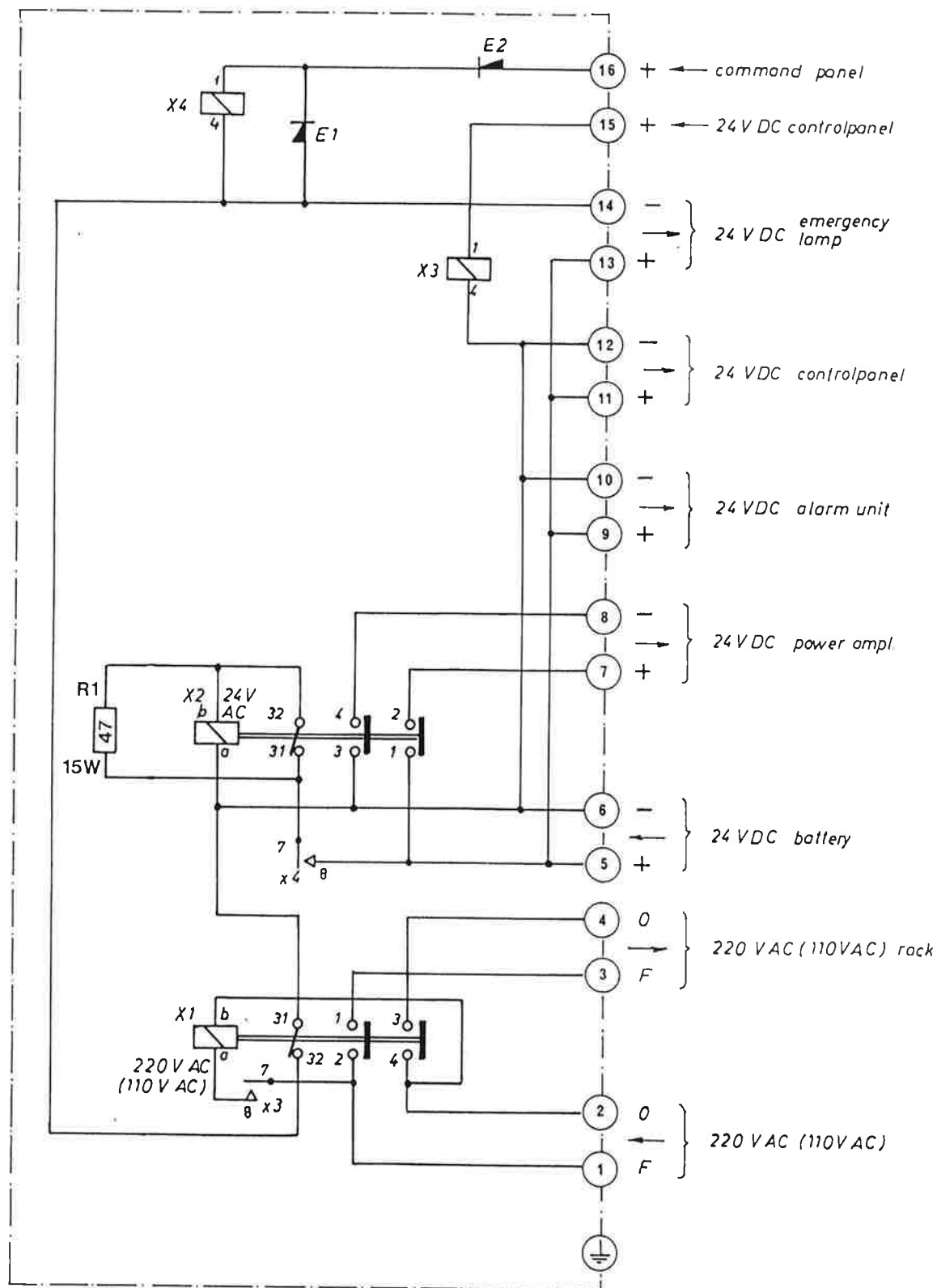
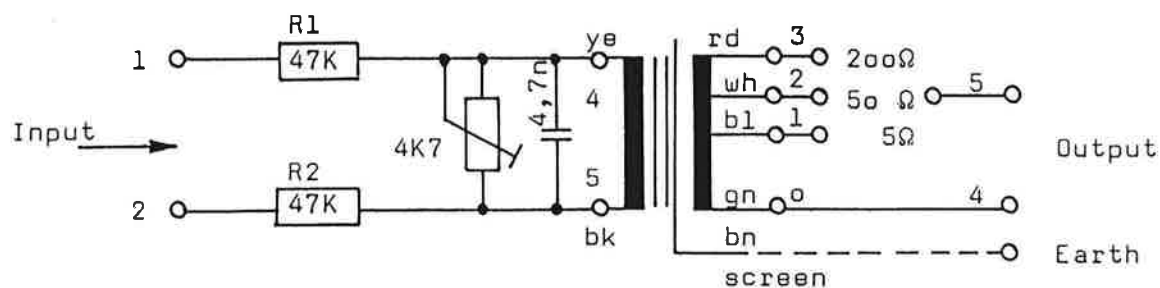


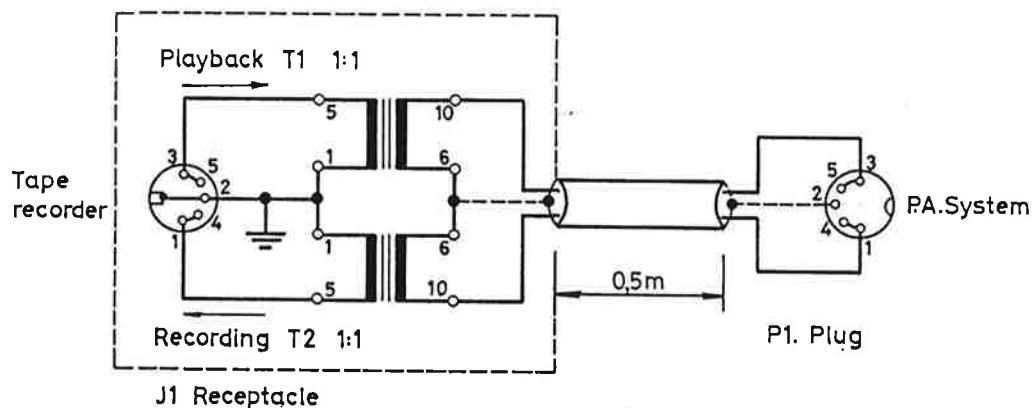
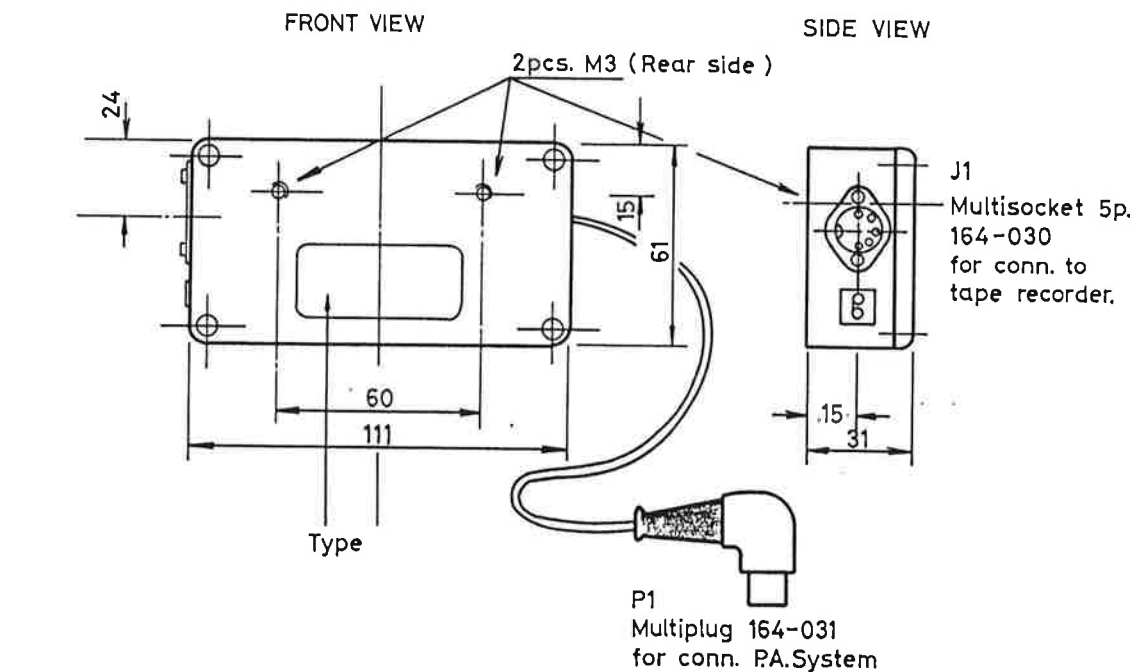
DIAGRAM is shown in OFF-POSITION

Diagram of Voice adapter Type 007860.



To input
transformer on
6803 Module.
System 6700

Diagram of Filter for Tape-recorder and Compact disc Type 014620.



T1 and T2: AF-Transformer
 Type: LN30C3-10
 Level: $\leq 0\text{dBm}$
 Impedance: $10\text{K}\Omega : 10\text{K}\Omega$
 f-3dB: 50-15000 Hz

Note: The adapter is inserted between the tape recorder and P.A.System, to reach separation between earth ($\perp$) and signal-0 (-battery) in the P.A.System.

6.0 Diagram of Controlboxes ext.

Diagram of Controlbox Type 016576.

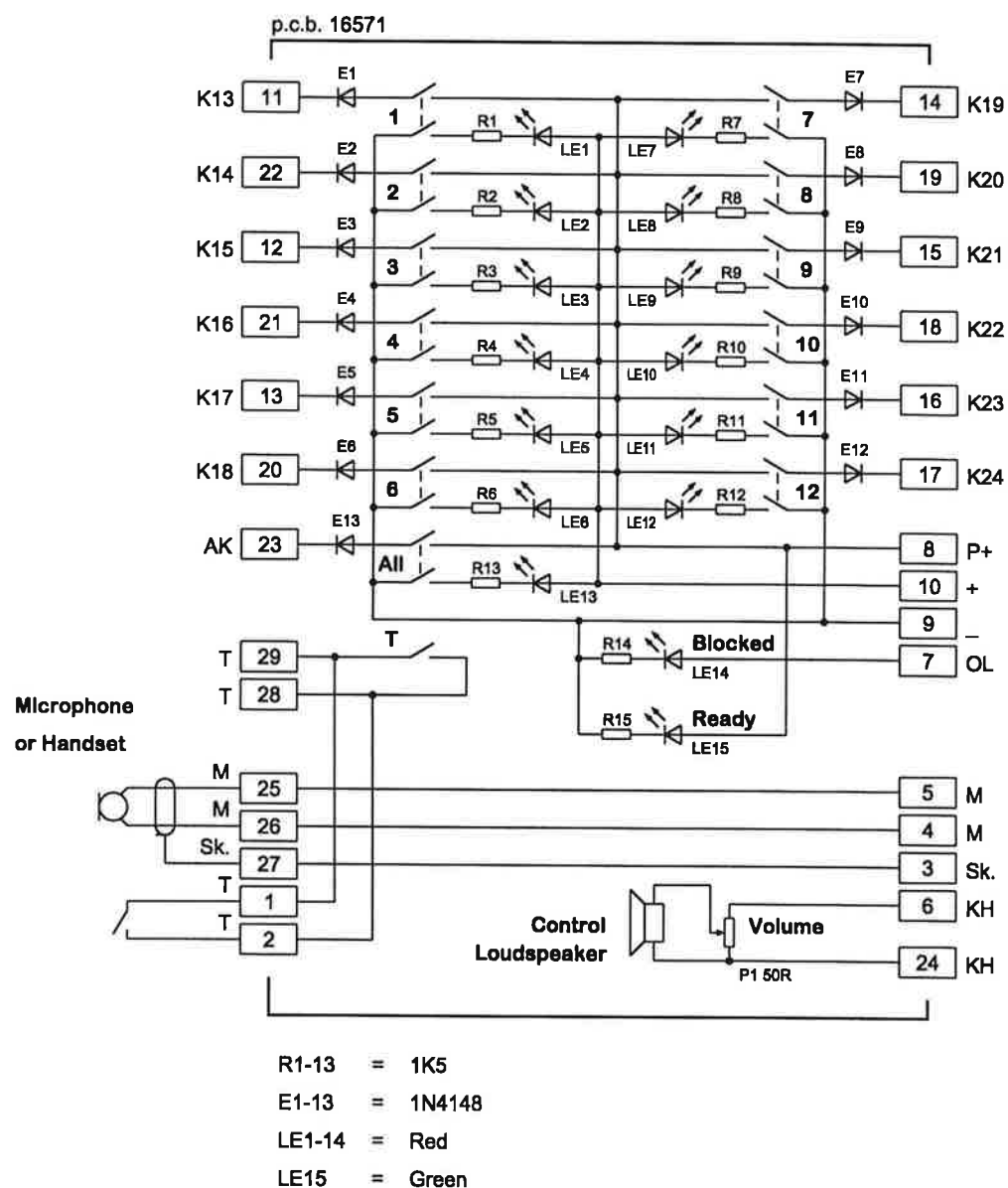
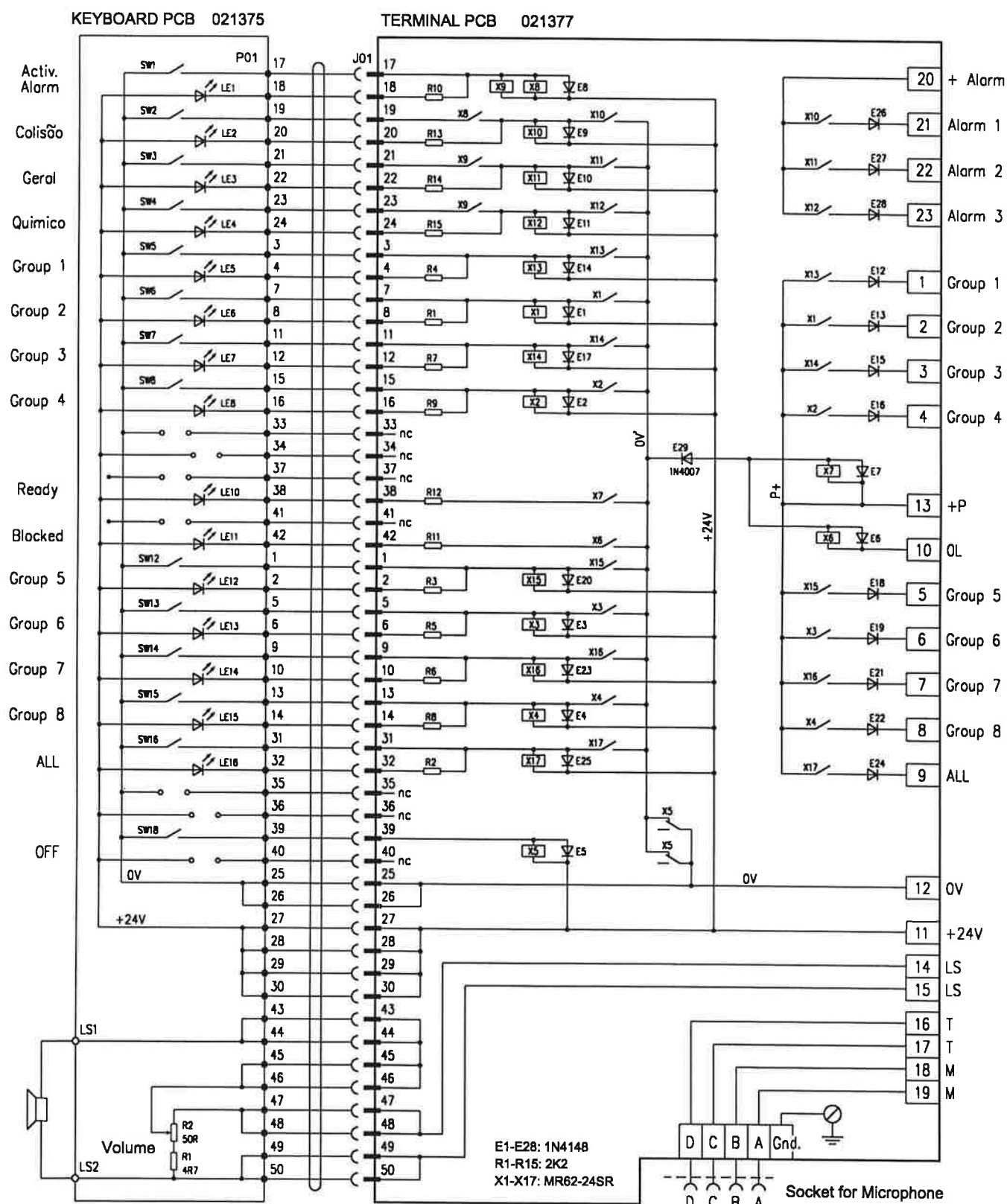


Diagram of Watertight controlbox Type 021370.



Public Address System 6700
Watertight Controlbox type 021370

Diagram of Alarmbox with microphone Type 019275.

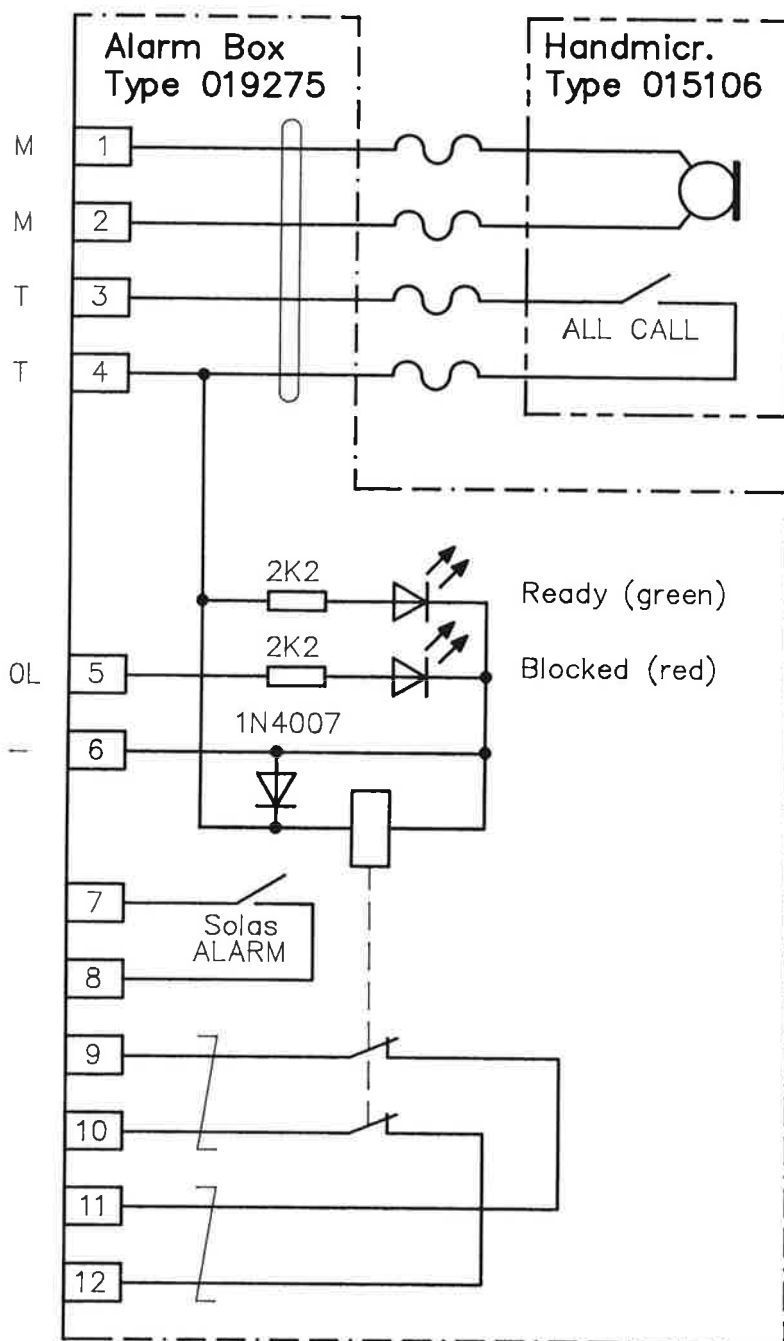
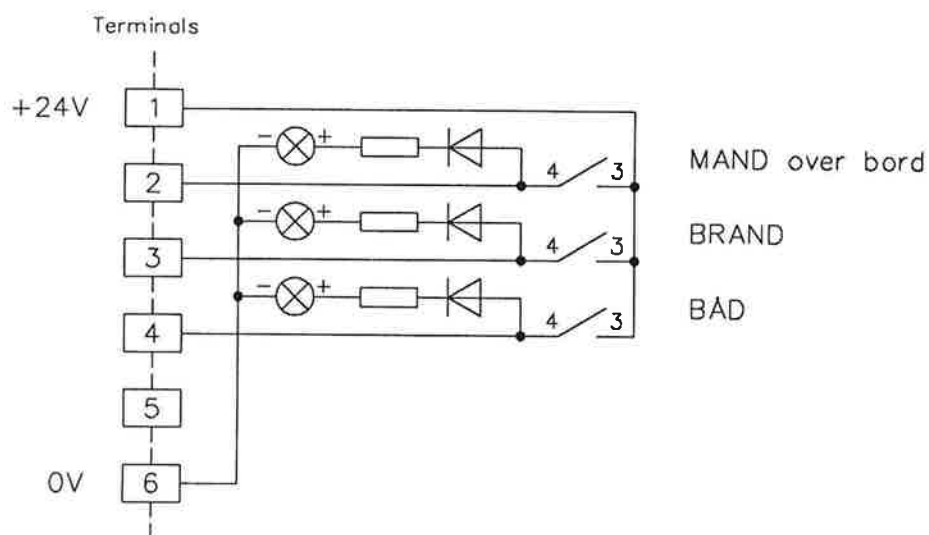


Diagram of Alarm controlbox Type 019188



Lamps: T 4,5 24V/0.48W type 170052

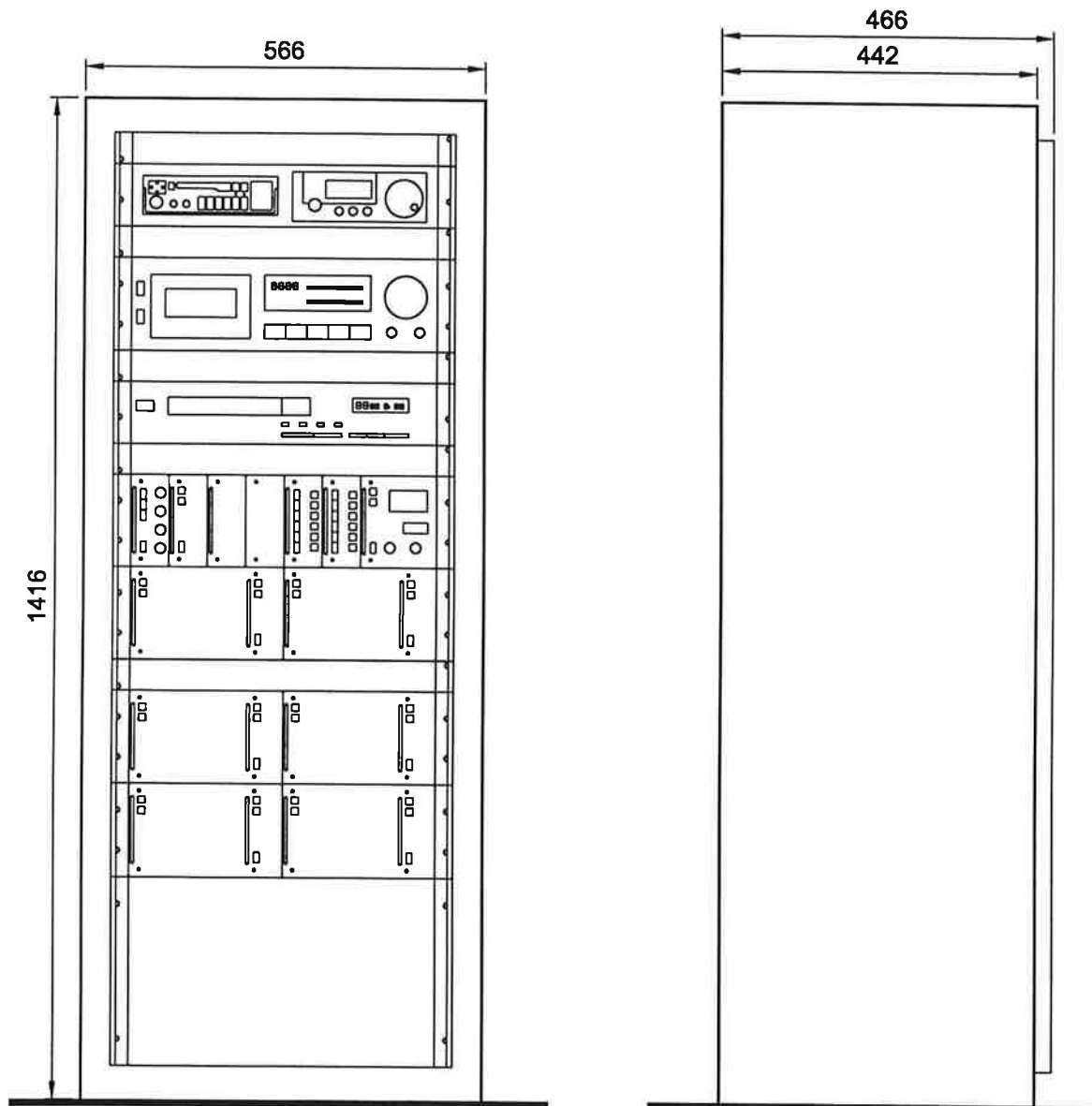
Resistors: 330R/1W type 103031

Diodes: 1N4007 type 146015

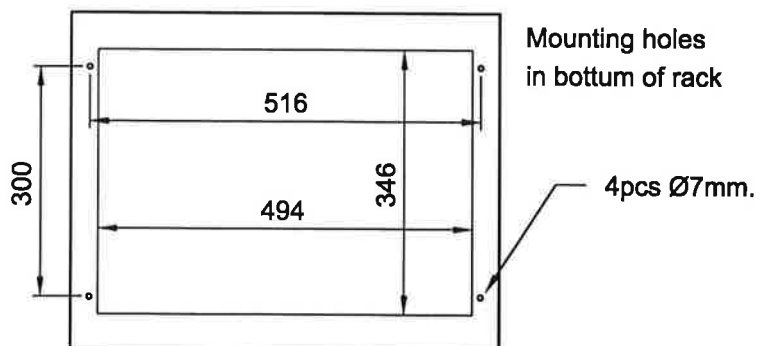
Public Address System 6700
Alarm controlbox type 019188

7.0 Dimension drawing

Dimension drawing of Public Address System.

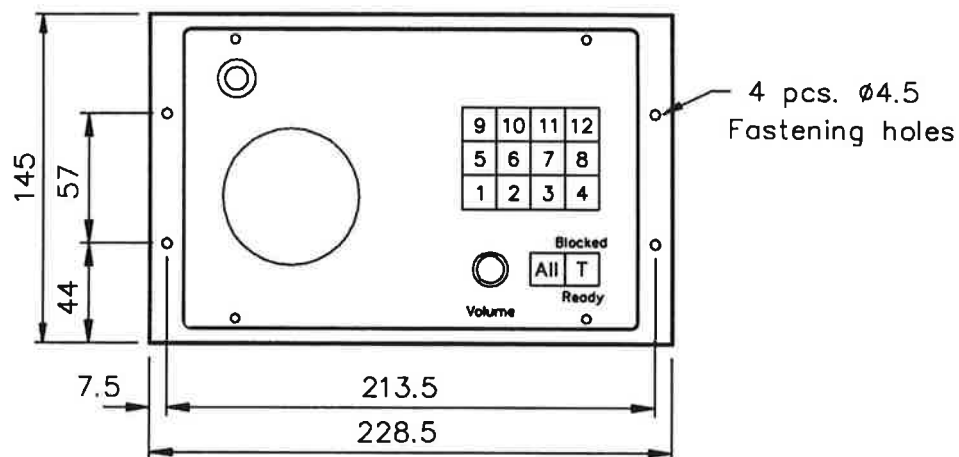


Bottom view

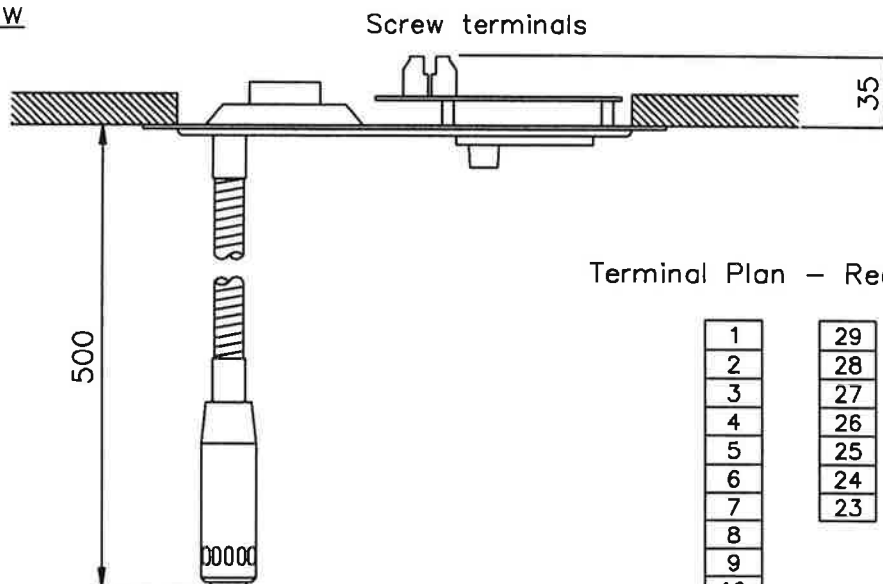


Dimension drawing of Control Type 016576

Front view



Top view



Terminal Plan – Rear view

1	29
2	28
3	27
4	26
5	25
6	24
7	23
8	
9	
10	
11	22
12	21
13	20
14	19
15	18
16	17

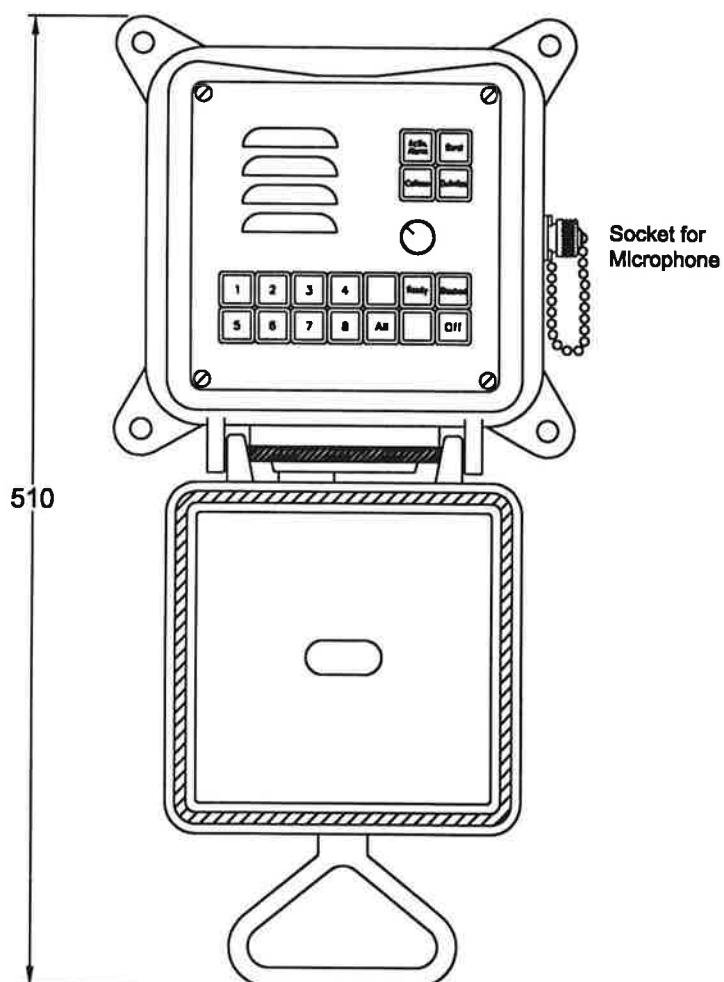
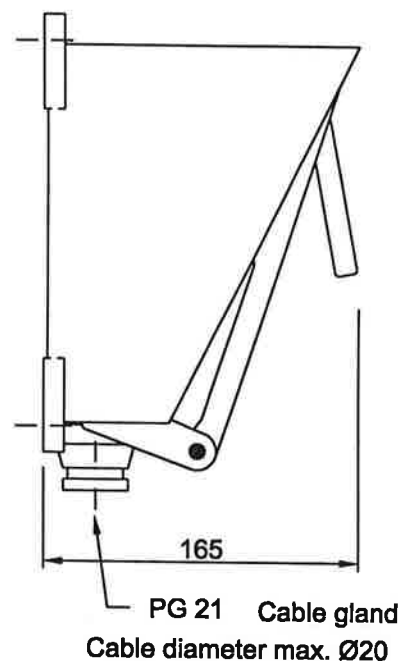
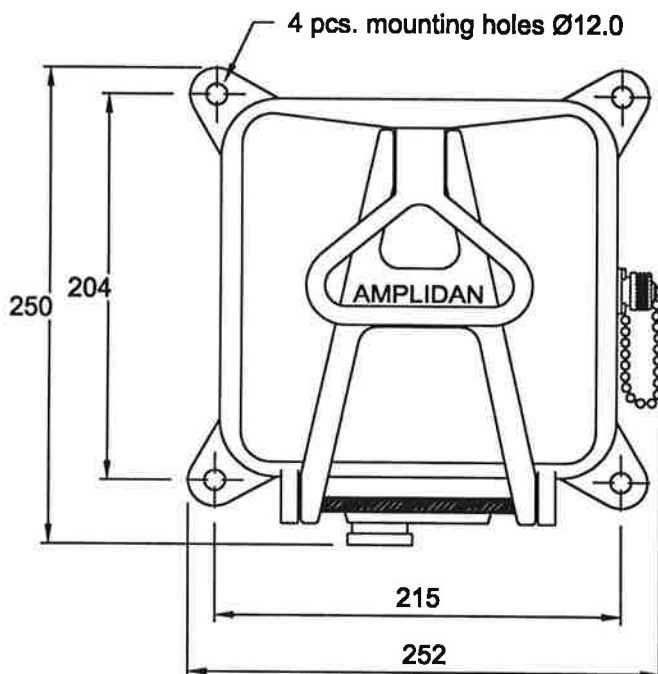
Cut out dimension: 132 x 196 mm

Material: 1.25–1.5 mm. steel plate
 Finish: Black non glass
 Protection: IP 30
 Weight: 0.94 kg
 All dimensions in mm.

Screw terminals max. 2.5 sq.mm.

Public Address System 6700
 Controlbox type 016576

Dimension drawing of Watertight controlbox Type 021370



Material: AL 4253

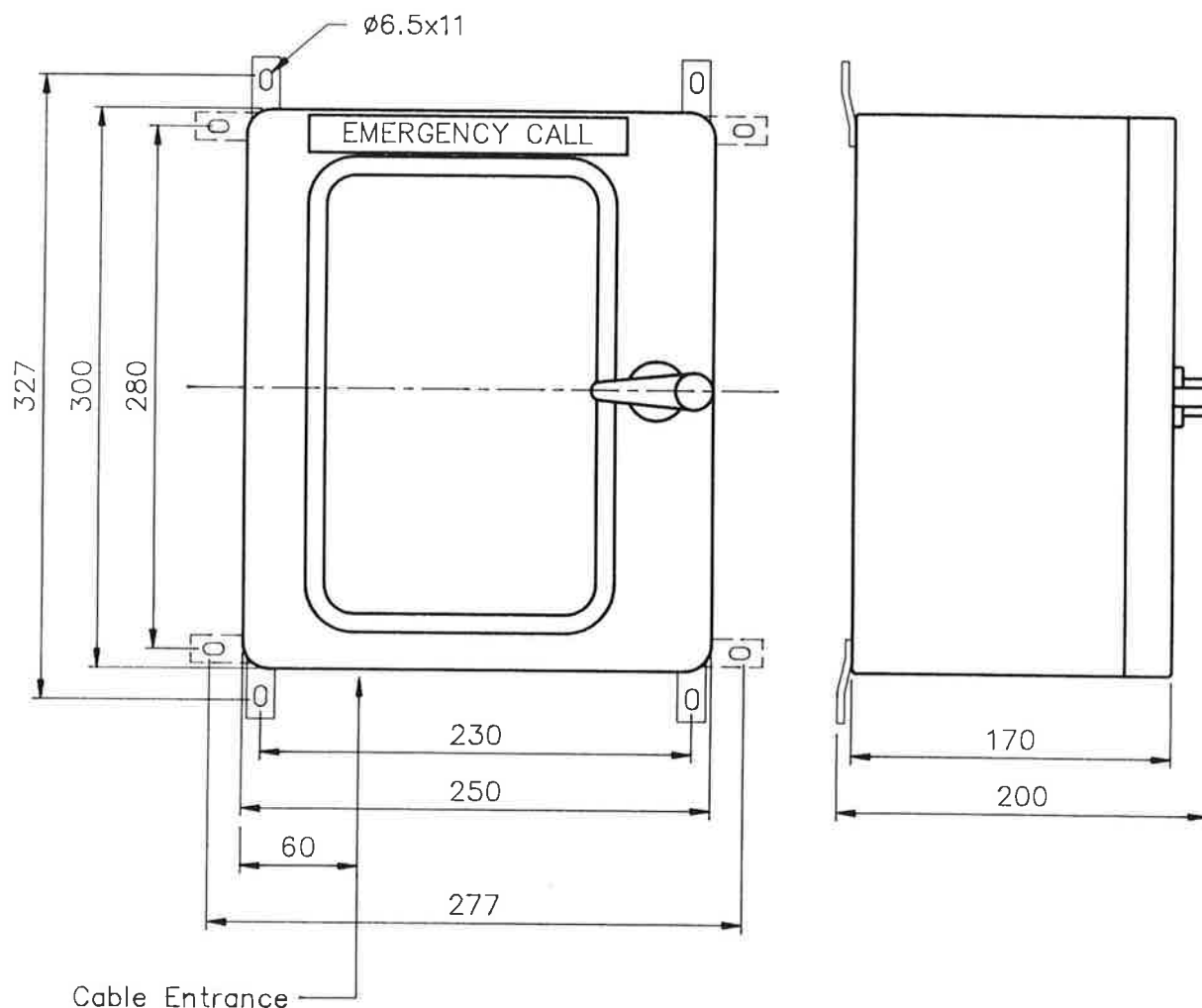
Finish: Rilsan 355

Protection: IP67

Weight: 4.3Kg.

All dimensions in mm.

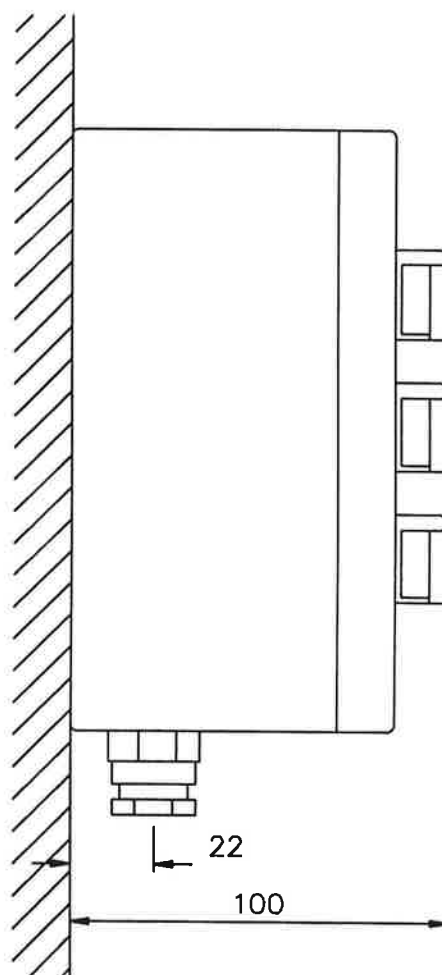
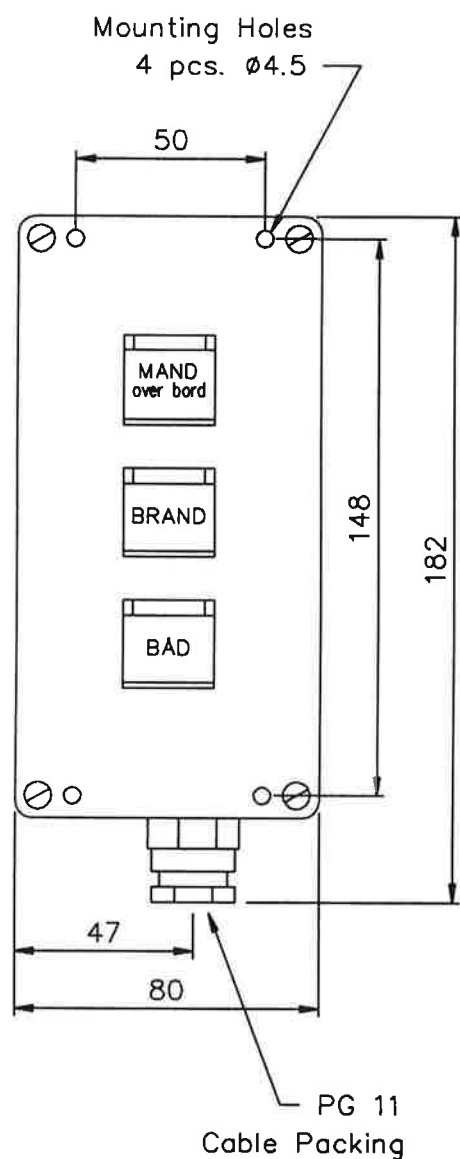
Public Address System 6700
Watertight Controlbox type 021370

Dimension drawing of Alarmbox with microphone Type 019275

Contents: Weatherproof Handmicrophone
with spiral cable and bracket.
Connection Box with keyswitch
for "SOLAS Alarm" and indication
for "Ready" and "Blocked".

Material: Polyester
Colour: Light Grey RAL 7032
IP norm: 65
Weight: App. 3.5 Kg.
Screw Terminals: 2.5 sq.mm

All dimensions in mm

Dimension drawing of Alarm controlbox Type 019188Front ViewSide ViewCable Dim: $\varnothing 8-11$ mm

Screw Term.: 0.75–2.5 sq.mm

Material: ABS

Finish: Light Grey RAL 7035

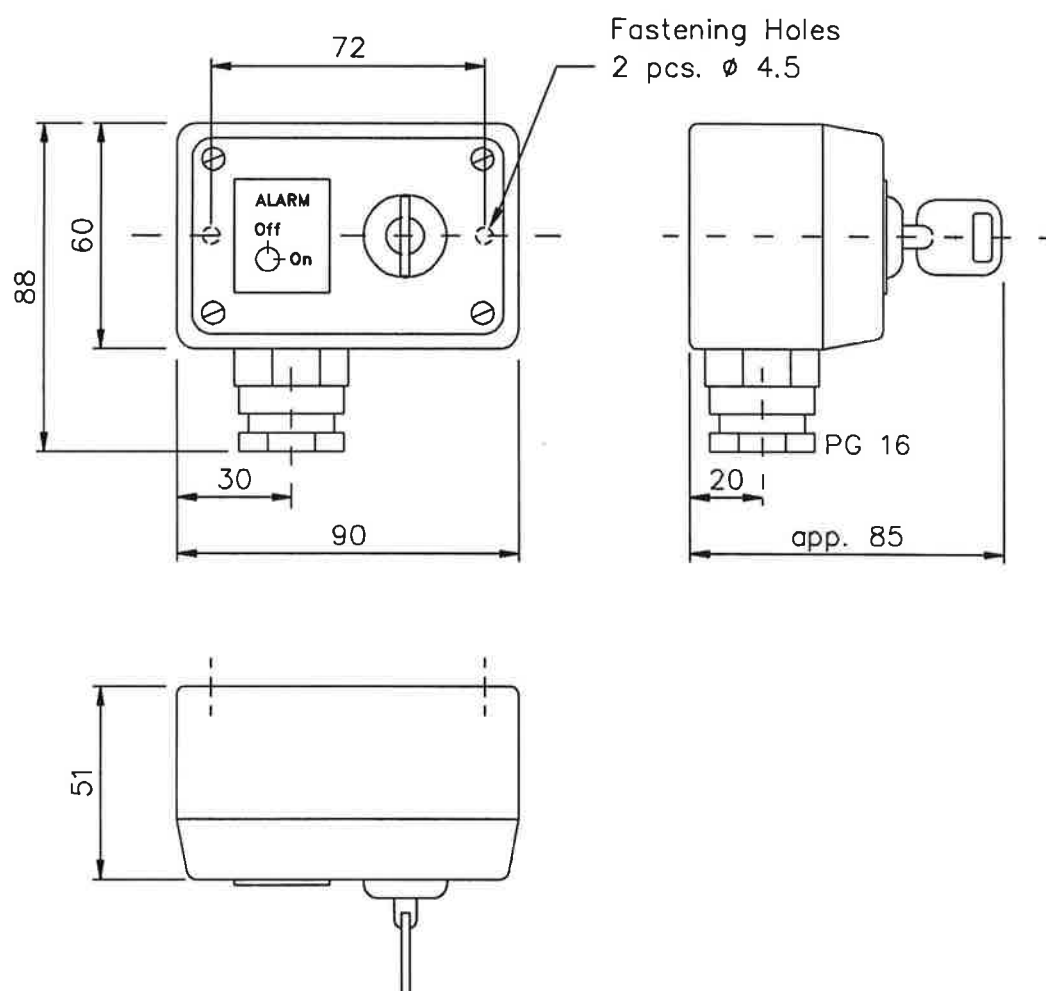
Protection: IP65

Weight: 0.6 Kg.

All dimensions in mm.

Alarm controlbox type 019188

Dimension drawing of Alarm key switch Type 017290.



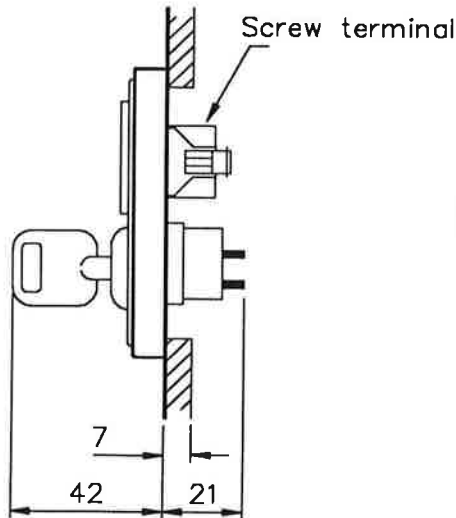
1 Poled switch 3A/125V ac
2 positions
Activated by turning clock-wise
2 pcs. of keys with each unit
for spare key, note number
on key.

Material: ABS-Cyclac
Finish: RAL 7001 Gray
Protection: IP 55
Weight: 0.30 Kg
All dimensions in mm.

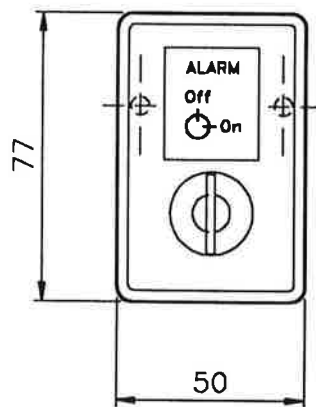
Alarm key switch type 017290

Dimension drawing of Alarm switch Type 019420.

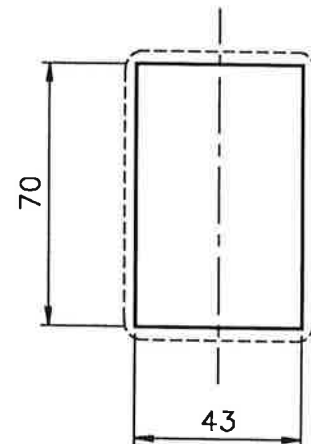
Side View



Front View



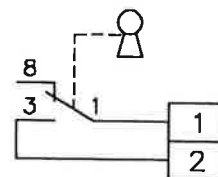
Cut-out



1 Poled switch 3A/125V ac
2 positions
Activated by turning clock-wise
2 pcs. of keys with each unit

For flush mounting in materials
less than 7mm. Use mounting
bracket 102H0070 LK/NES
(not supplied by Lyngsø Marine)

Material: Bakelite, grey
Screw Term.: 0.5–2.5 sq.mm
Protection: IP43
Weight: 0.125 Kg.
All dimensions in mm



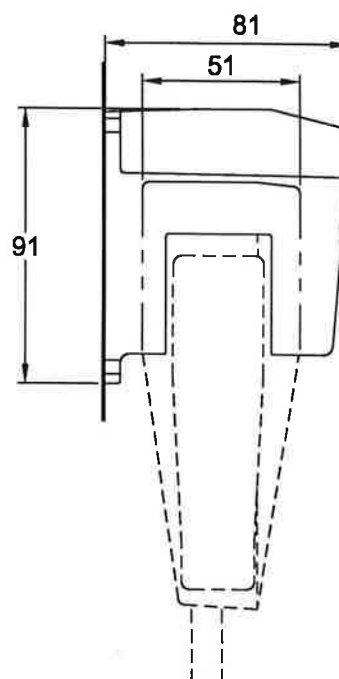
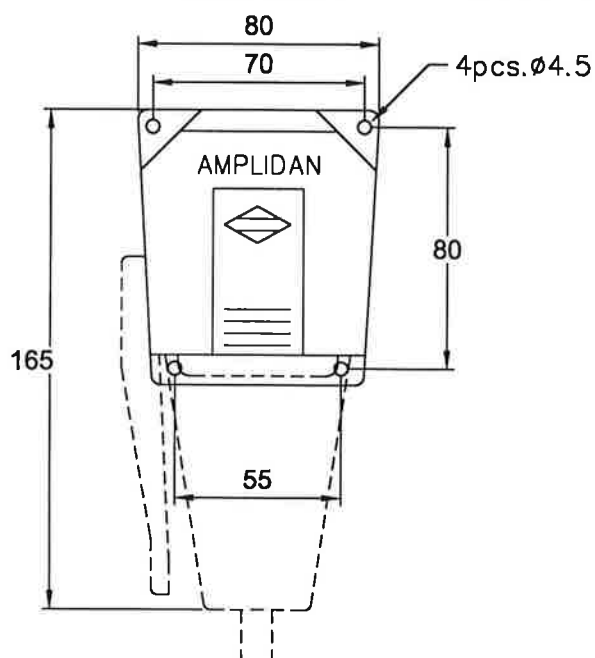
Alarm Switch, Flush Type 019420

Dimension drawing of Microphone Type 015106.

006178 Mounting Bracket

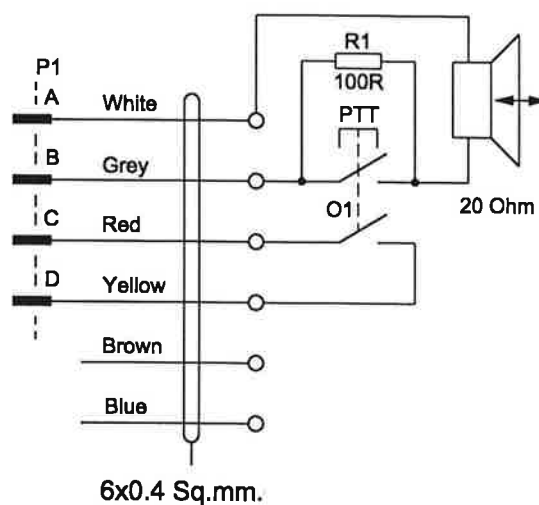
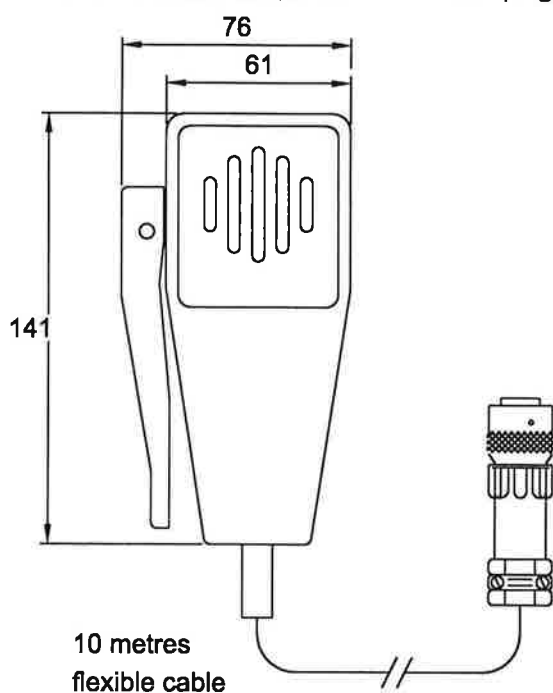
with microphone

shown in phantom



015106 Handmicrophone
015107/2 Handmicrophone

without plug
with plug

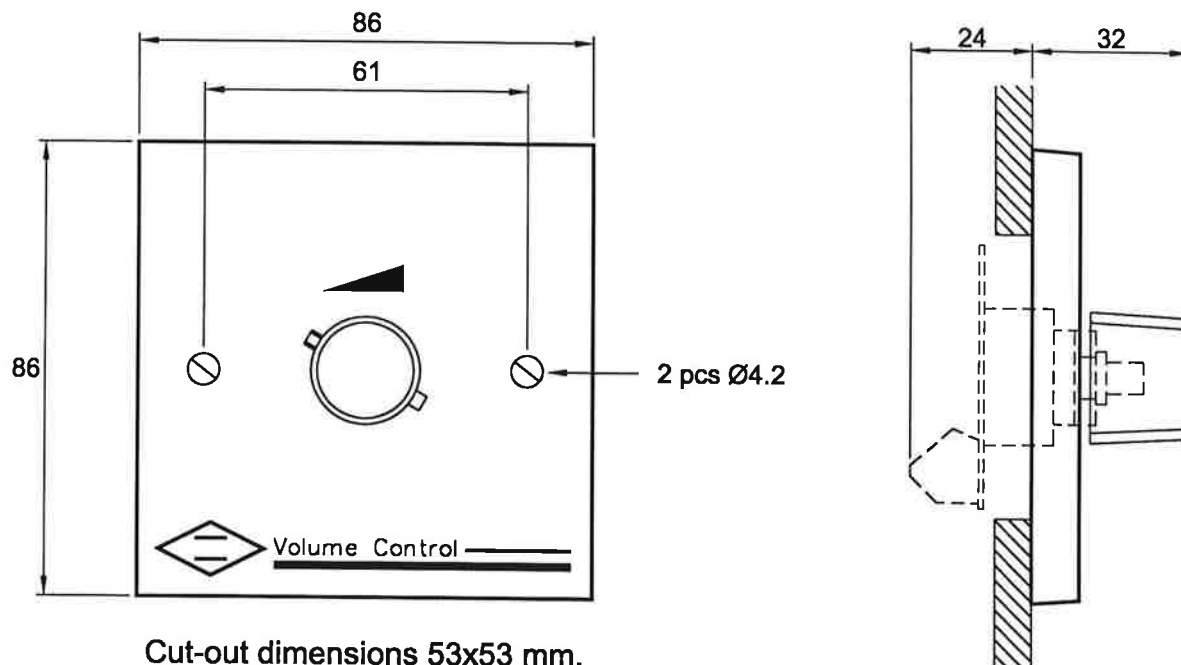


Material: Cast Aluminium Alloy
Finish: Rilsan, Light grey, grey and red
Protection: IP66
Weight: Microphone 1.0/1.1 Kg
Bracket 0.45 Kg

All dimensions in mm.

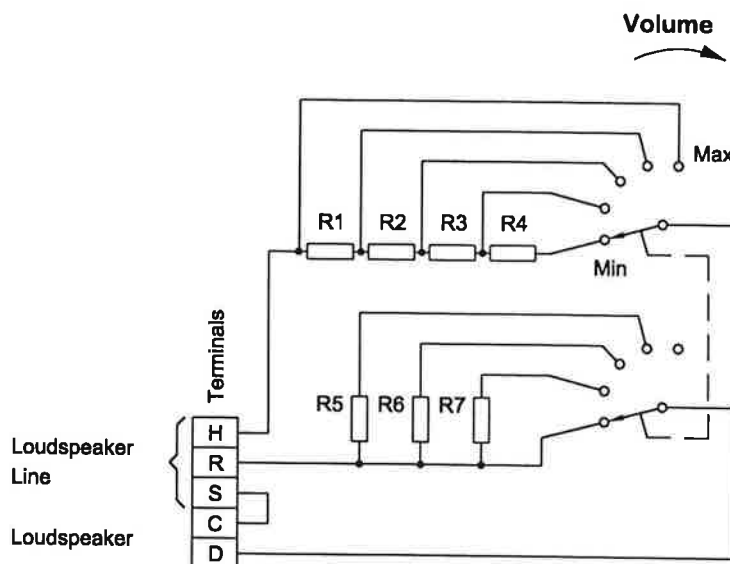
Micr. Bracket type 006178
Microphone type 015106
Microphone type 015107/2

Dimension drawing of Volume control Type 021601-07.



For mounting with cover use
bulkhead mounting box type 177031
see drawing no. 4-21610
or flush mounting box type 821611
see drawing no. 4-21620

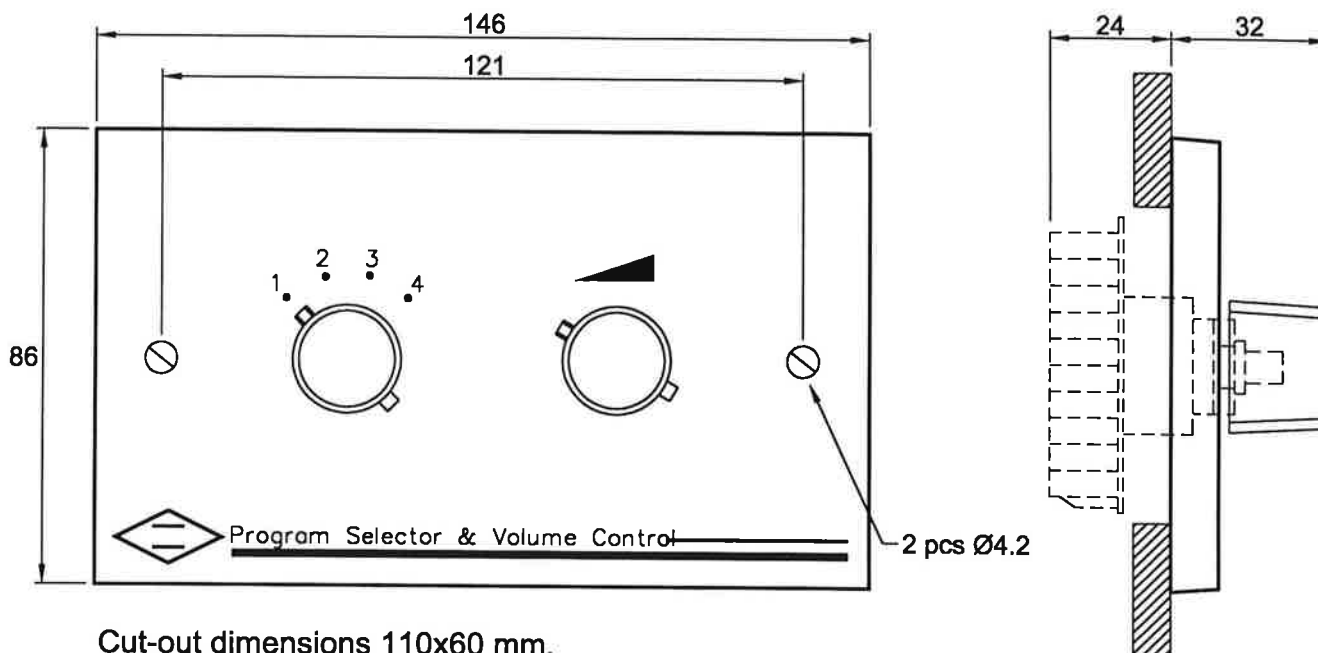
Material : Urea formaldehyde
Finish : White
Terminals : 0.08-2.5 sq. mm.
cage-clamp spring
Protection : IP43
Weight : 0.2 Kg.
All dimensions in mm.



Type	021601	021602	021603	021604	021605	021606	021607
Impedans	10K Ω	5K Ω	2.5K Ω	1.5K Ω	1K Ω	750 Ω	500 Ω
Max. load	1 Watt	2 Watt	4 Watt	7 Watt	10 Watt	14 Watt	20 Watt
R1.	5K6/1W	2K7/1W	1K5/5W	820/5W	560/5W	390/5W	270/7W
R2.	2K2/1W	1K0/1W	560/1W	330/5W	220/5W	150/5W	100/5W
R3.	1K0/0.5W	510/0.5W	270/1W	150/1W	100/1W	68/5W	33/5W
R4.	2K2/0.5W	1K1/0.5W	560/1W	330/1W	220/1W	150/1W	100/1W
R5.	10K/0.5W	5K1/0.5W	2K7/1W	1K5/1W	1K0/1W	820/5W	560/5W
R6.	3K3/0.5W	1K8/0.5W	820/1W	470/1W	330/1W	270/1W	220/1W
R7.	1K5/0.5W	750/0.5W	390/1W	220/1W	150/1W	100/1W	68/1W

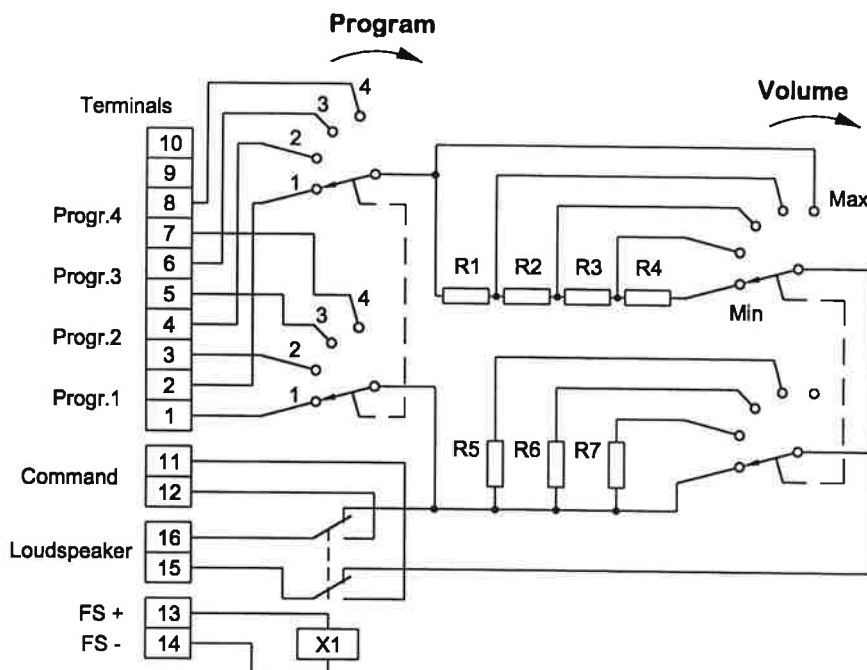
Public Address System 6700
Volume Control type 021601-07

Dimension drawing of Program selector & Volume control Type 021641-47.



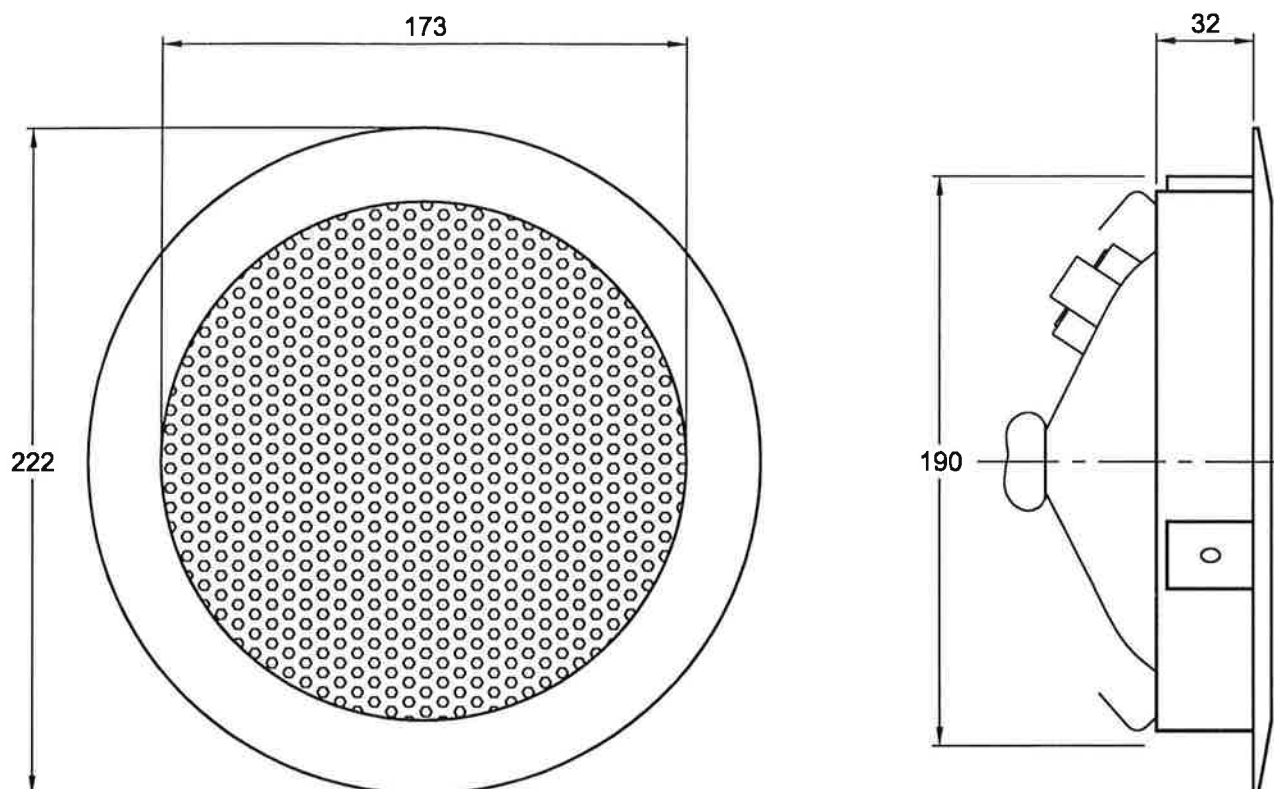
For mounting with cover use
bulkhead mounting box type 177032
see drawing no. 4-21650
or flush mounting box type 821612
see drawing no. 4-21640

Material : Urea formaldehyde
Finish : White
Terminals : 0.08-2.5 sq. mm.
Cage-clamp spring
Protection : IP43
Weight : 0.3 Kg.
All dimensions in mm.



Type	021641	021642	021643	021644	021645	021646	021647
Impedans	10K Ω	5K Ω	2.5K Ω	1.5K Ω	1K Ω	750 Ω	500 Ω
Max. load	1 Watt	2 Watt	4 Watt	7 Watt	10 Watt	14 Watt	20 Watt
R1.	5K6/1W	2K7/1W	1K5/5W	820/5W	560/5W	390/5W	270/7W
R2.	2K2/1W	1K0/1W	560/1W	330/5W	220/5W	150/5W	100/5W
R3.	1K0/0.5W	510/0.5W	270/1W	150/1W	100/1W	68/5W	33/5W
R4.	2K2/0.5W	1K1/0.5W	560/1W	330/1W	220/1W	150/1W	100/1W
R5.	10K/0.5W	5K1/0.5W	2K7/1W	1K5/1W	1K0/1W	820/5W	560/5W
R6.	3K3/0.5W	1K8/0.5W	820/1W	470/1W	330/1W	270/1W	220/1W
R7.	1K5/0.5W	750/0.5W	390/1W	220/1W	150/1W	100/1W	68/1W

Dimension drawing of Loudspeaker flush Type 901034.

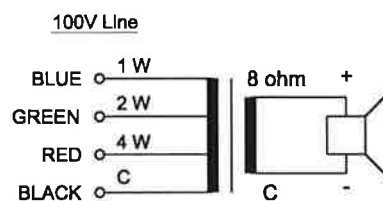


Ceiling cut-out:

dia. 195 mm $\pm$ 5 mm

Min. depth 80 mm

3 spring clips are
supplied with each speaker.

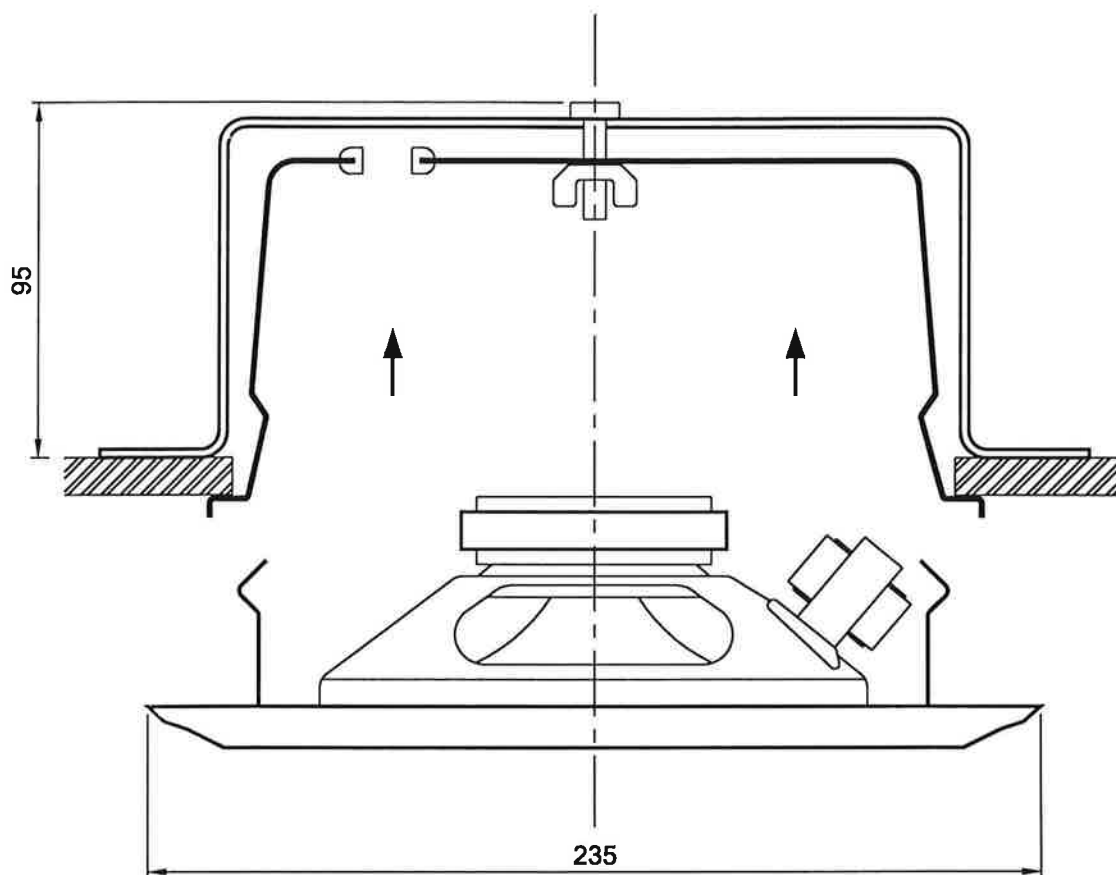


Frame material: ABS plastic
Weight: Approx. 0.7 Kg
Colour: Frame and grille white

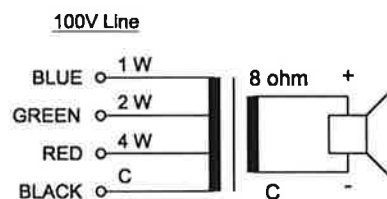
Nom. power: 4 W
100 V trafo tapings: 1, 2, 4 W.

All dimensions in mm

Dimension drawing of Loudspeaker flush with cover Type 901032.



Ceiling cut-out:
dia. 190 mm $\pm$ 5 mm



Material: Aluminium

Weight: Approx. 1.4 Kg

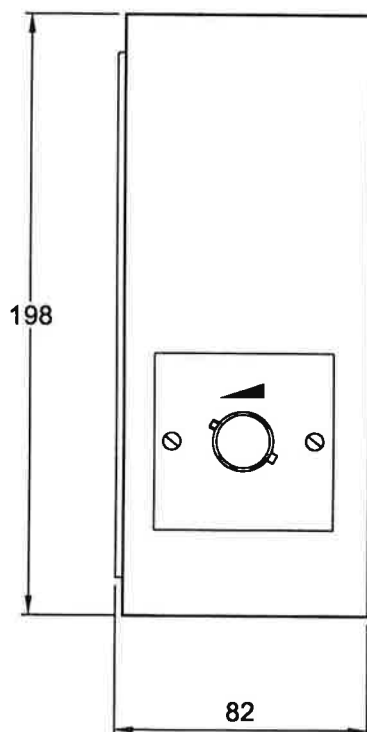
Colour: Ring and grill white

Nom. power: 4 W

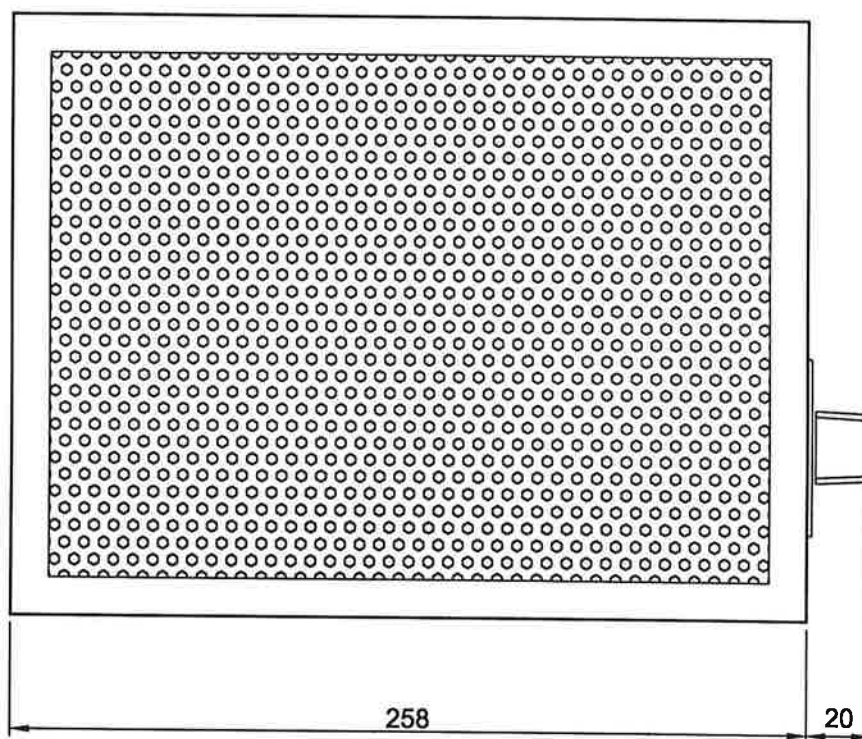
100 V trafo tapings: 1, 2, 4 W.

Dimension drawing of Loudspeaker bulkhead with volume Type 022261.

Side View



Front View



3 mounting holes in the back panel.

Spring clip mounted front panel,
easily removable.

Provided with line transformer
for 100V line
Impedance : $10K\Omega = 1 \text{ Watt}$

Material: Impact- and scratch-
resistant plastic

Colour: Alpine-white

Aluminium grill: White

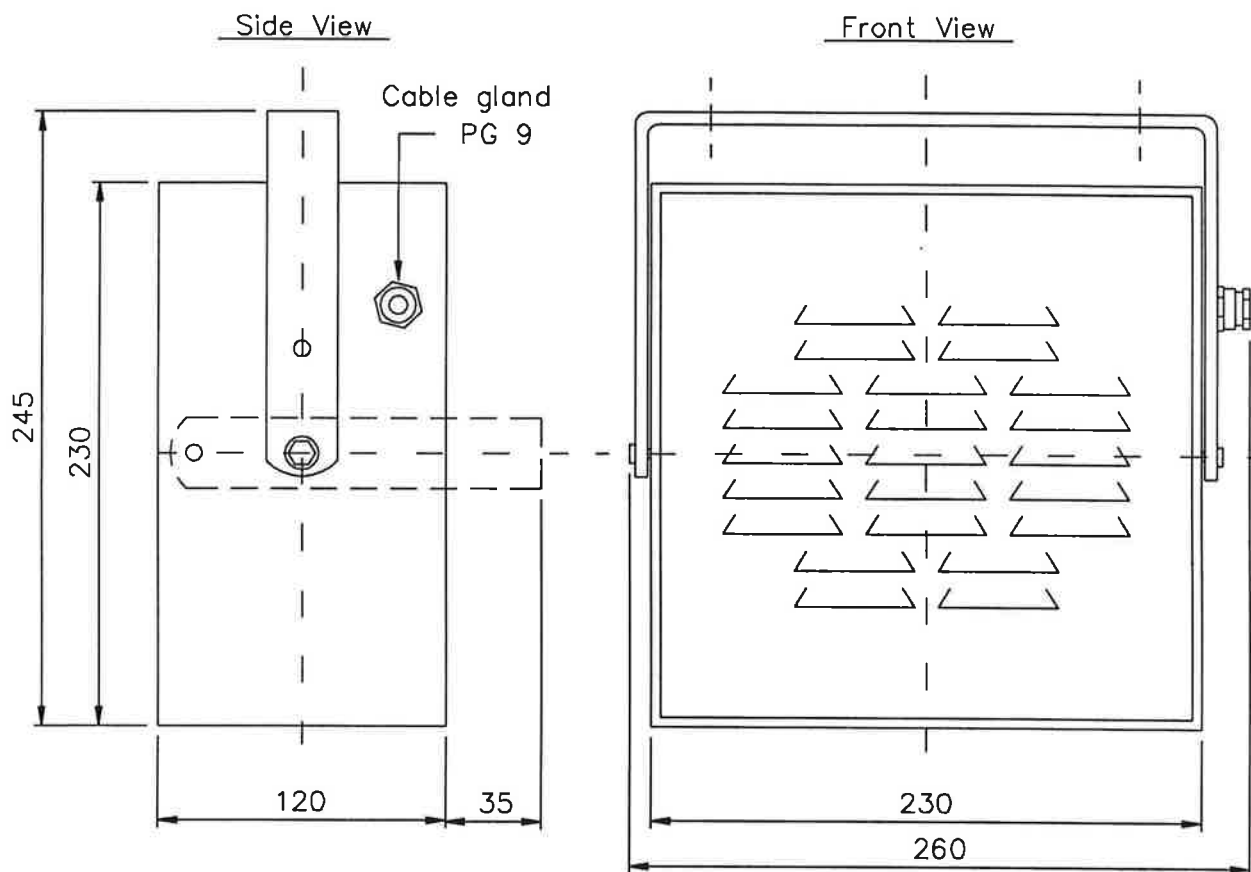
Protection: IP 30

Weight: app. 1.2 Kg

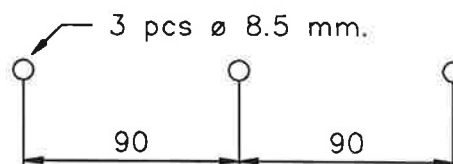
All dimensions in mm.

Public Address System 6700
Loudspeaker with volume control type 0232261

Dimension drawing of Loudspeaker steel double-faced Type 016927.



Mounting holes



100V transformer impedance:

1.6K Ω = 6 Watt
3K Ω = 3 Watt *
5K Ω = 2 Watt
10K Ω = 1 Watt

Sec. = 4 Ω

* standard

Material :

Housing 1mm steelplate (aluzink)
Mount. bracket 5mm steel
Finish: Rilsan, grey 355
Delivered with 1 mtr. 2x0.75 cable.

IP – norm: 56

Weight 4.2 kg.

All dimensions in mm

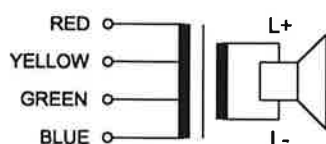
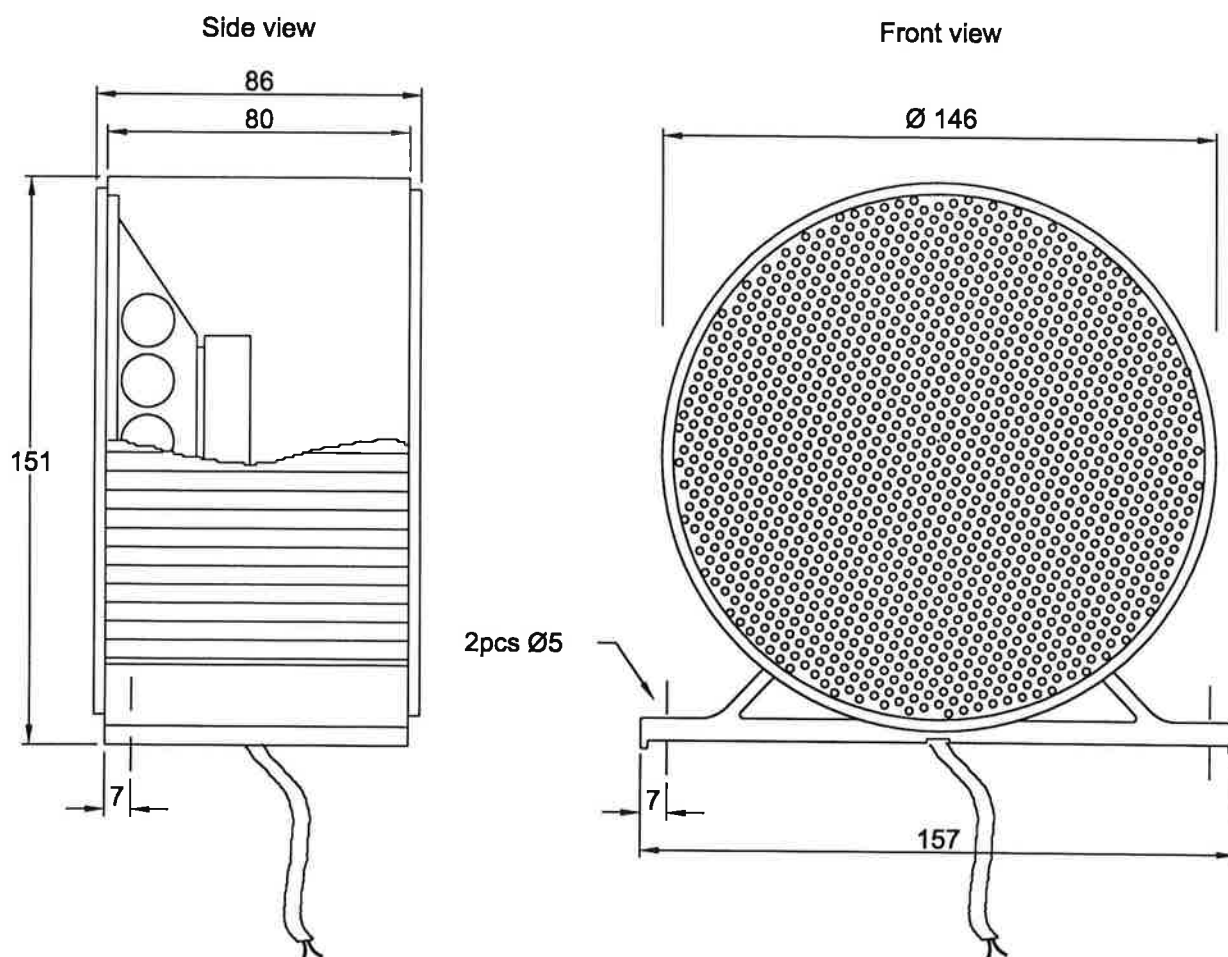
016922 / Double-faced loudspeaker 50 Ohm

016927 / Double-faced loudspeaker
with transformer for 100V line

017523 / Single-faced loudspeaker
with transformer for 100V line

Loudspeaker, bulkhead type 016922–27, 017523

Dimension drawing of Loudspeaker CAR-4T Type 901015.



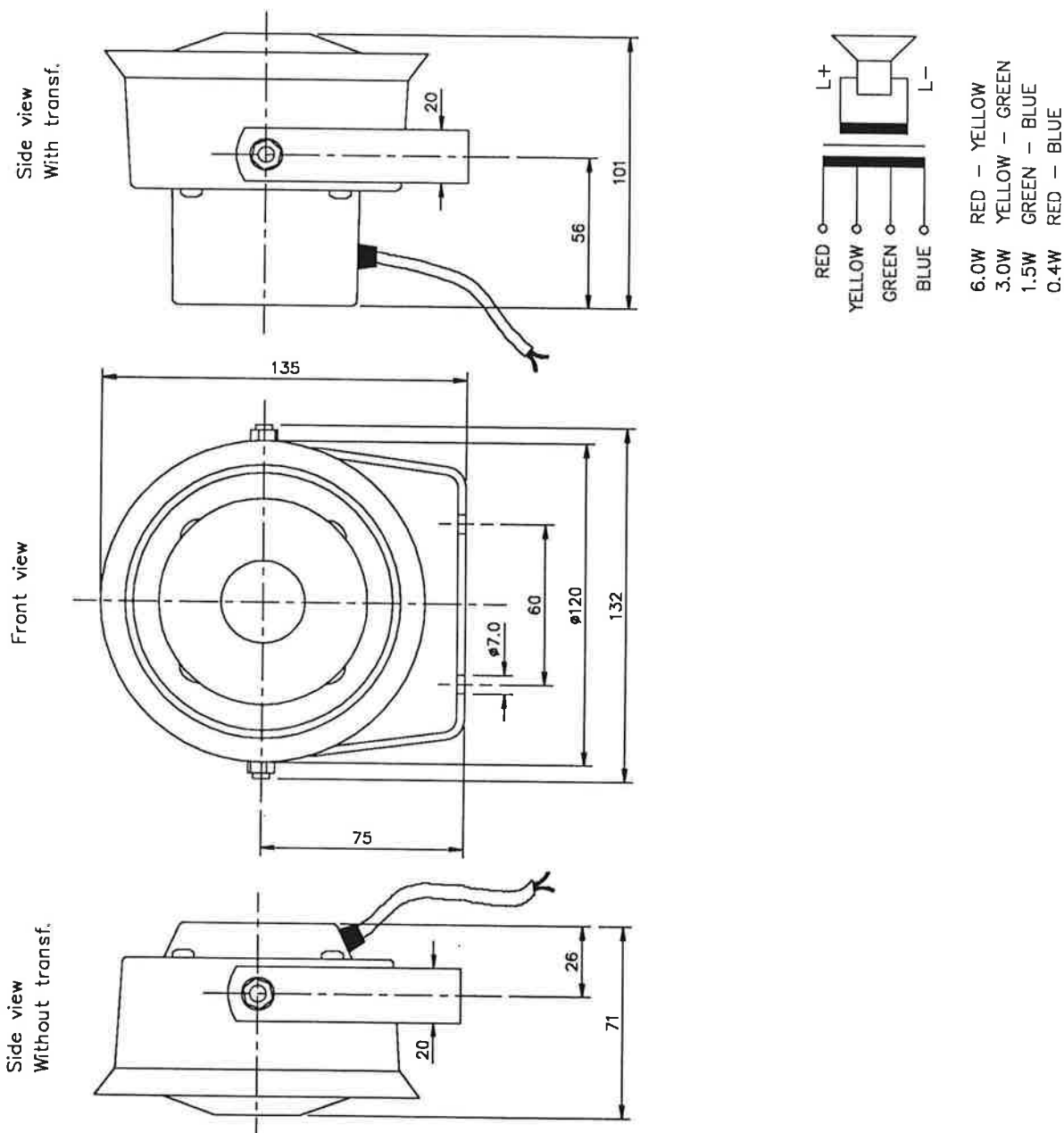
4.0W	RED - YELLOW
2.0W	YELLOW - GREEN
1.0W	GREEN - BLUE
0.5W	RED - BLUE

Material: Aluminium
 Finish: Anodized
 Protection: IP20
 Weight: 1.5 Kg.
 All dimensions in mm.

901015 / with transf. for 100V line
 Tapping 4, 2, 1 & 0.5W
 Cable 1.0 Meter

Loudspeaker CAR-4T type 901015

Dimension drawing of Re-entrant horn H-44T Type 900051.



Special properties

Completely Weatherproof

Good Microphone properties

Material: Phenolic, polycarbonate & Aluminium

Bracket: Steel with epoxy coating

Finish: Grey

Protection: IP67

Weight: 0.8 Kg. without transf.

1.1 Kg. with transf.

All dimensions in mm.

900050 / 8 Ohm

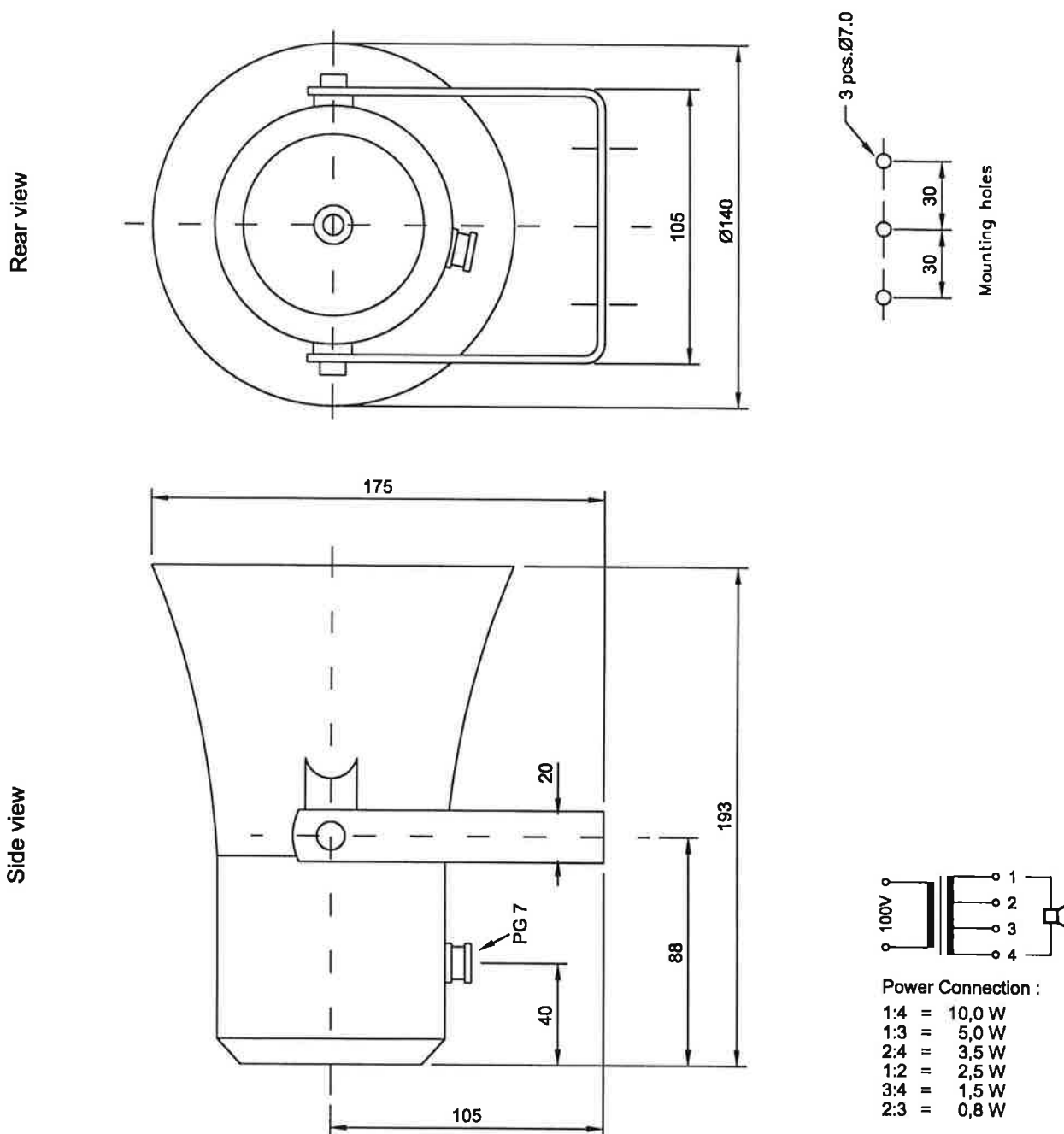
900052 / 50 Ohm

900051 / with transf. for 100V line
Tapping 6, 3, 1.5 & 0.4W

Cable 0.5 meters

Re-entrant horn
H-44 Type 900050-51-52

Dimension drawing of Re-entrant horn HP-10T Type 900005.



Special properties:

Completely weatherproof

Good Microphone properties

Material: Polycarbonate, polyamin & ABS

Bracket: Steel with epoxy coating

Finish: Gray

Protection: IP56

Weight: 1.05 Kg. without transf.

1.3 Kg. with transf.

All dimensions in mm.

900072 / 20 Ohm

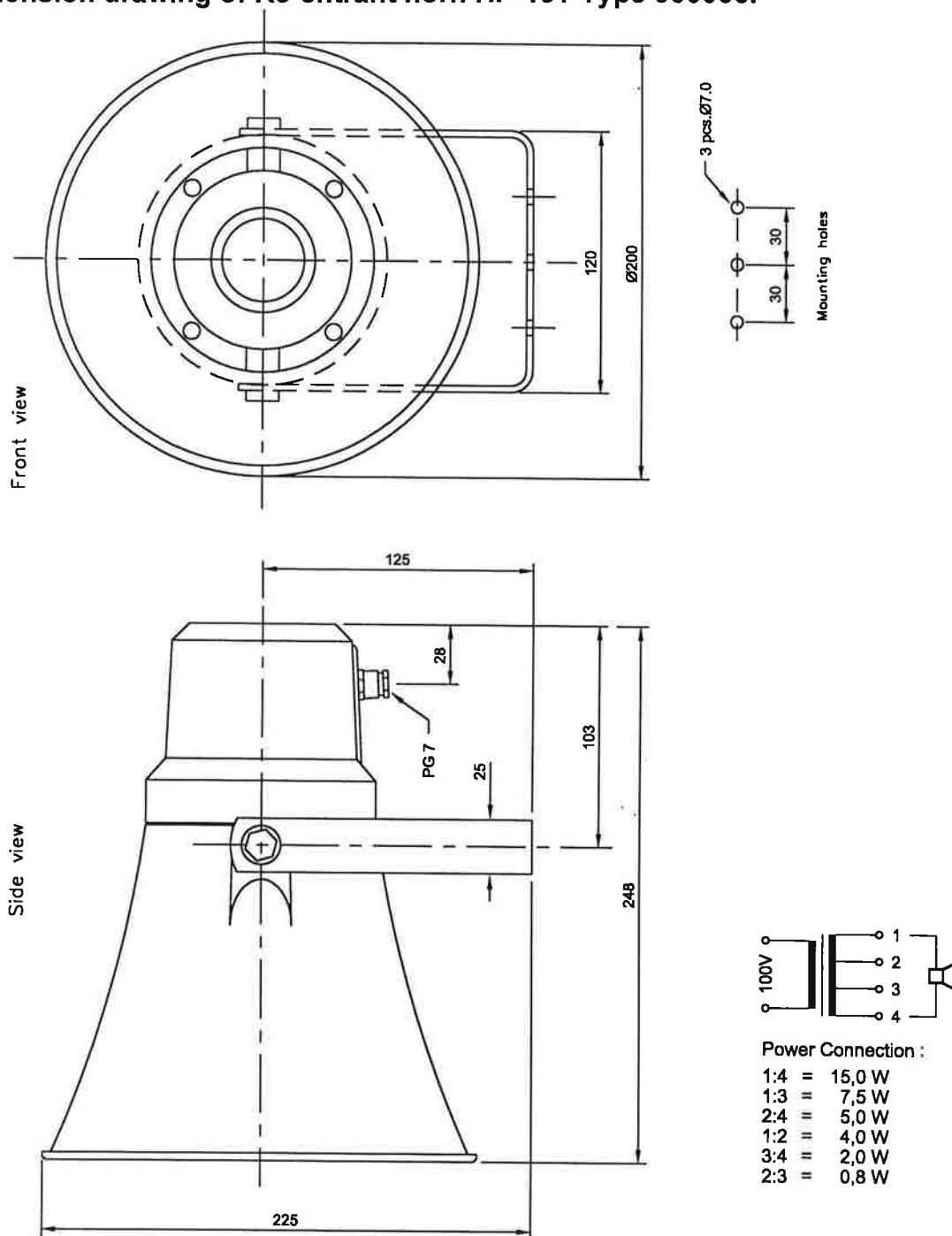
900074 / 50 Ohm

900005 / with transf. for 100V line
Tapping 10, 5, 2.5 & 1.5Watt

Terminals inside secured chamber

**Re-entrant horn
HP-10 type 900005-72-74**

Dimension drawing of Re-entrant horn HP-15T Type 900006.



Special properties

Completley weatherproof

Good microphone properties

Material Polycarbonate, polyamid and ABS

Bracket: Steel with epoxy coating

Finish: Grey

Protection: IP56

Weight: 1.4 Kg. without transf.

1.7 Kg. with transf.

All dimension in mm.

900003 / 8 Ohm

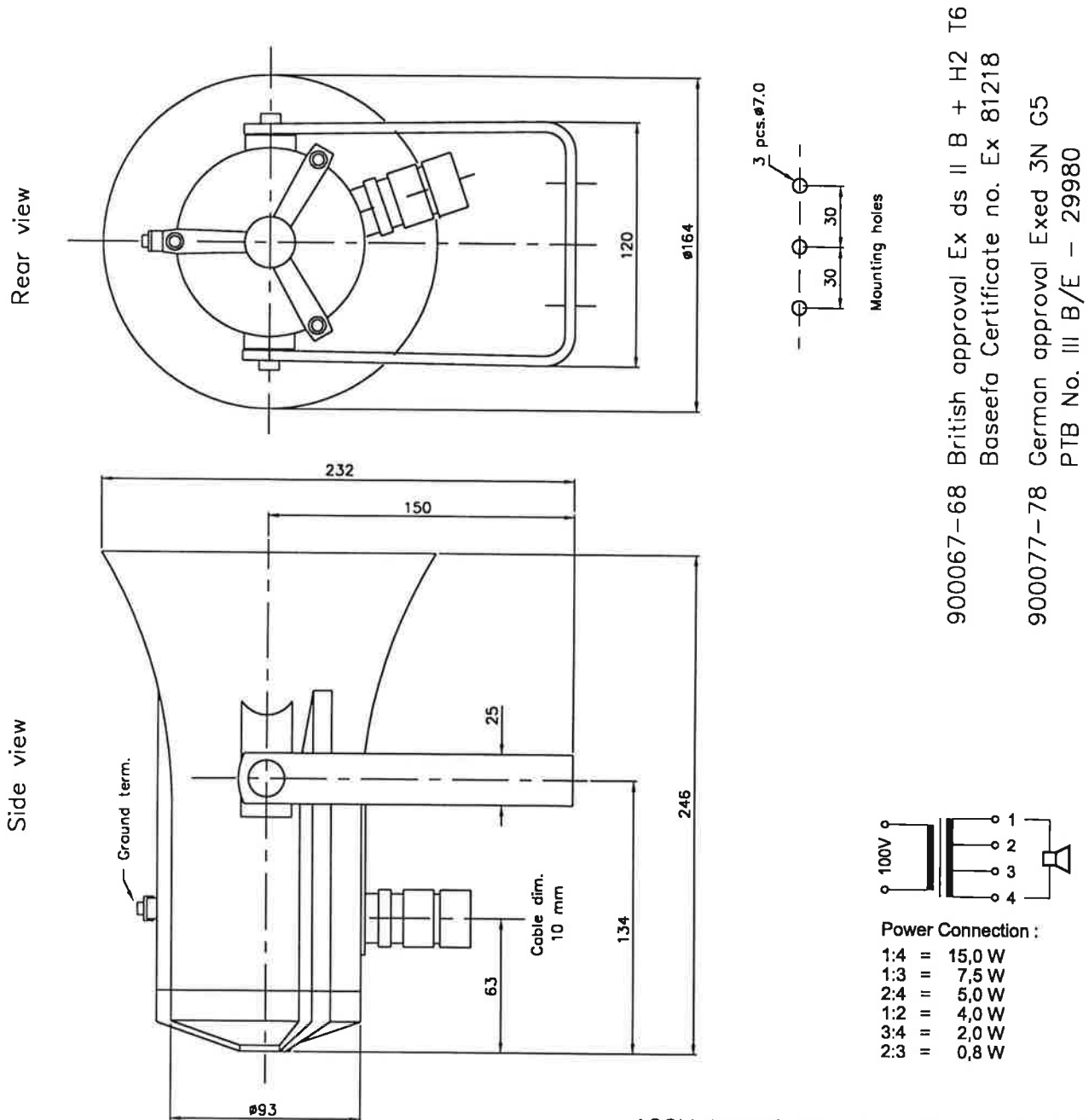
900004 / 20 Ohm

900006 / with transf. for 100V line
Tapping 15, 7.5, 4 & 2Watt

Terminals inside secured chamber

**Re-entrant horn
HP-15 type 900003-04-06**

Dimension drawing of Re-entrant horn HS-15T Type 900007-65-68-78.



Special properties
Completely weatherproof.
Resistant to salt laden air.

Terminals inside secured chamber
Material Aluminium Alloy
Finish Grey epoxy
Protection IP67 (900065 IP55)
Weight: 2.3 Kg. without transf.
2.5 Kg. with transf.

All dimensions in mm.

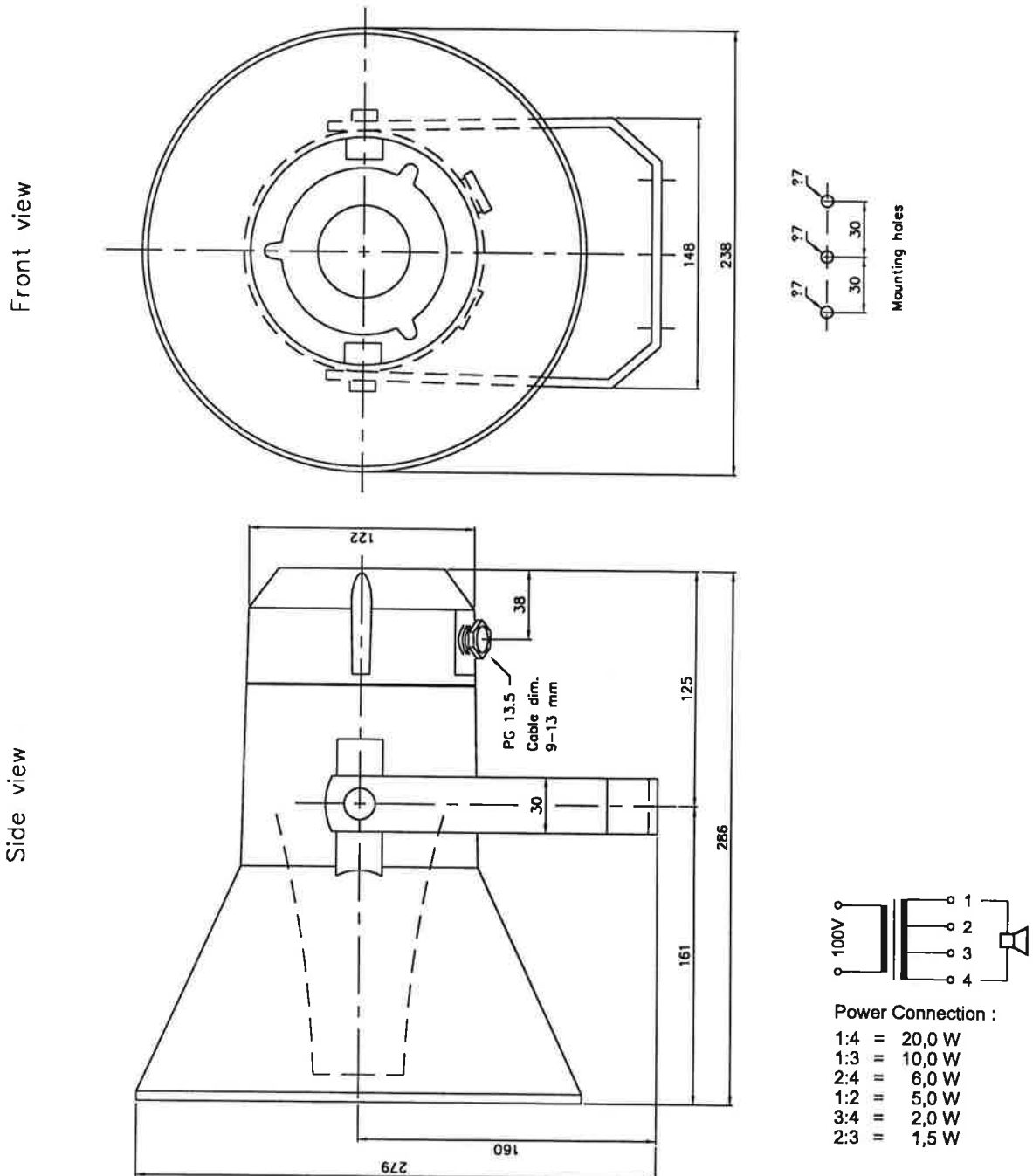
100V transf. tapping 15, 7.5 4 & 0.8W

900007 / with transf. for 100V line
900065 / with transf. for 100V line
Withstand sound-shocks.

900067 / 20 Ohm
900068 / with transf. for 100V line
900077 / 20 Ohm
900078 / with transf. for 100V line

Re-entrant horn
HS-15 type 900007-65-67-68-77-78

Dimension drawing of Re-entrant horn HP-20T Type 900011.



Special properties
Non Corrosive, Weatherproof
Very high sensitivity

Material: Poly-carbonate
Bracket: Aluminium with epoxy coating
Finish: Light gray
Protection: IP67
Weight: 2.5 Kg. without transf.
3.0 Kg. with transf.
All dimension in mm.

Termination inside secured chamber

900010 / 8 Ohm

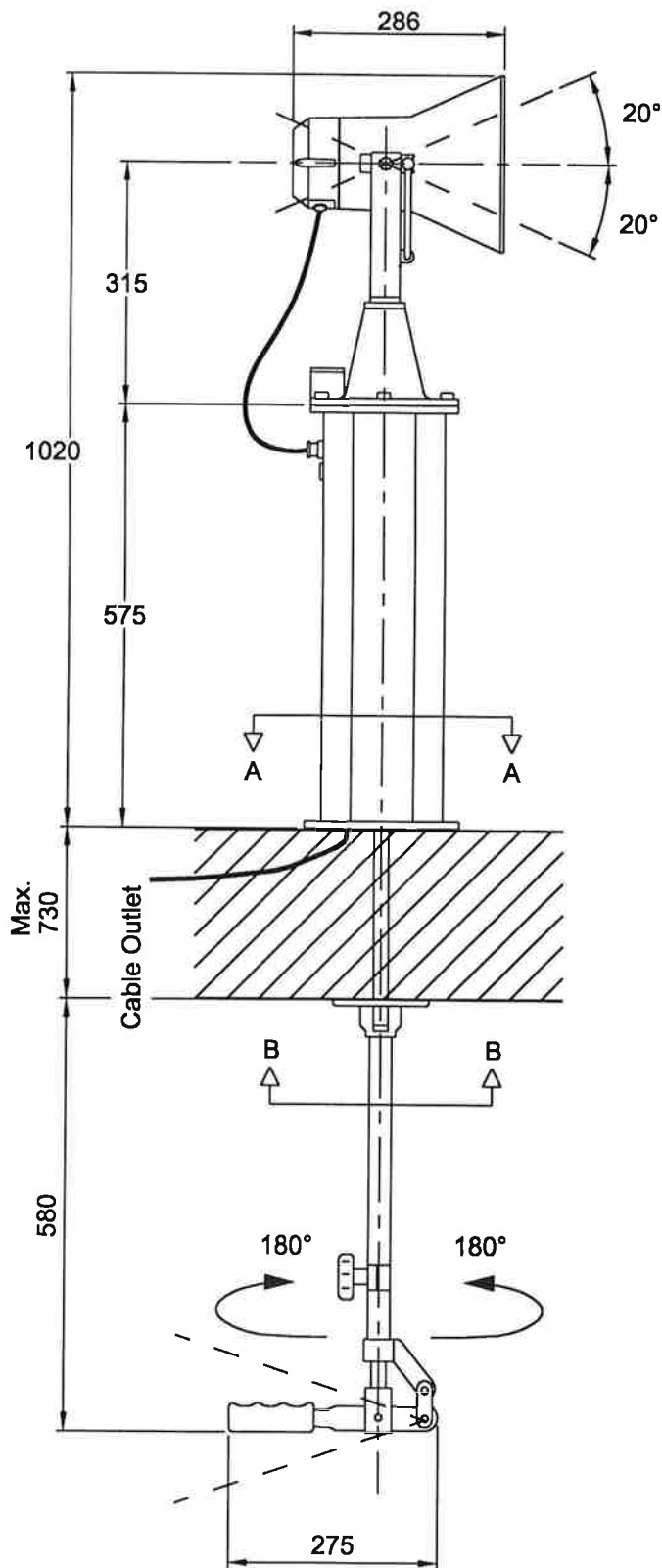
900011 / with transf. for 100V line
Tapping 20, 10, 5 & 1.5Watt

900012 / 20 Ohm

**Re-entrant horn
HP-20 type 900010-11-12**

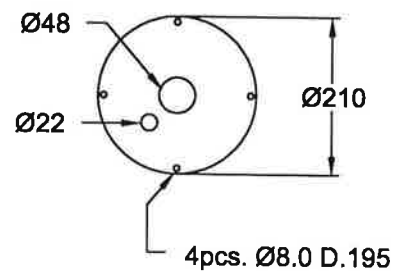
Dimension drawing of Hailer with 1 horn Type 019682-83.

Re-entrant Horn
Front view

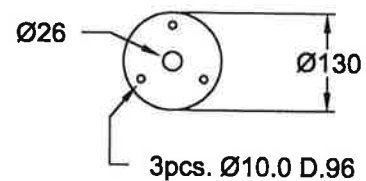


Colour: RAL 7035 (light grey)
Protection IP67
Weight: 16.0 kg with transformer
 15.5 kg without transformer
All dimensions in mm

Section A - A



Section B - B



Hailer for commander 1500

20Watt - 20 Ohm type 019680

30Watt - 20 Ohm type 019681

Hailer for PA-System 6700

20Watt - 100V line type 019682

30Watt - 100V line type 019683

Hailer type 019680-3