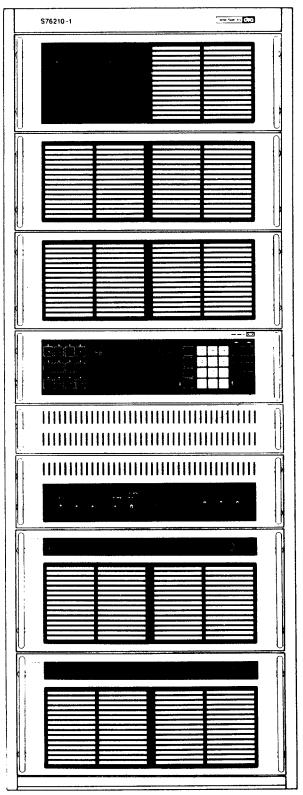
Technical Manual

LA76210-1
HF SSB/ISB Communications Transmitter



TERMA Elektronik AS
Hovmarken 4, DK-8520 Lystrup, Denmark

FSCM R0567

Document No. 236753 HT, Rev A (BR453609)

SEP 1994

1	TRANSMITTER	S 76210-1
2	CABINET RACK	CS 6210
3	POWER AMPLIFIER	PA 6150
4	COMBINATION AND FILTER UNIT	CF 6210
5	POWER SUPPLY	PS 6151 (PS 6150)

C O N T E N T S

TECHNICAL SPECIFICATION: S76210-1 TRANSMITTER

General

The HF SSB/ISB transmitter S76210-1 is a high performance synthesized radio communications transmitter for telephony and telegraphy.

The transmitter consists in the basic version of six 19" drawer panels and a rigid cabinet rack. These panels are the synthex (synthesized exciter) SE4010, two power supply panels PS6150/ PS6151, two power amplifier panels PA6150 and the combination and filter panel CF6210.

The cabinet rack is designed to further accept a control panel AT6211 for an automatic antenna coupler which can be supplied to extend the versatility of the transmitter.

The transmitter covers the frequency range 1.5 MHz to 30 MHz in 100 Hz steps. It offers a choice of upper and lower sideband, independent sideband and radio telegraphy as well as radio teleprinter operation.

The solid state linear power amplifier is designed to provide very high reliability and consists of a number of independent modules, the outputs of which are combined in a hybrid network before being fed to a filter unit and from there to a wide-band antenna or to an automatic antenna coupler which matches a wide variety of whip and long-wire antennas over the whole frequency range to the required 50 ohm transmitter load.

The transmitter is fully controlled by the synthex which selects the frequency, the mode, and the power level by keyboards and controls the harmonic rejection output filters and the switching out of faulted PA modules during service, without any interruption in the transmission only with the inevitable power reduction. The transmitter includes an ALC system which ensures that the output power is kept within 1 dB of selected power level except at high SWR, where it performs a necessary reduction in the output power.

Meters are provided on the synthex and combination and filter panels. The possible measurements include output power, reflected power, SWR, current and voltages in the power amplifier panels and signal levels in the synthex panels.

Frequency Ranges

1.5 MHz to 29.9999 MHz in synthesized 100 Hz increments. The transmitting frequency is selected by a frequency keyboard on the front panel and is indicated by a 7-digit LED display.

Frequency Stability

-15 to +50°C : 0.1 ppm
-25 to +55°C : 0.3 ppm
Ageing (after 30 days of power on): < 0.01 ppm/day
: < 0.04 ppm/month
: < 0.1 ppm/year

Types of Emission

SSB version : J3E
R3E
H3E
H2A
F1B
A1A

ISB version : J3E
R3E
H3E
H2A
F1B
A1A
ISB

3 kHz bandwidth.

Output Power

1 kW PEP/average +/- 1 dB into 50 ohm unbalanced for SWR = 1:1 to SWR 1.5:1.

Output Power Levels

0 dB, -3 dB, -6 dB, -12 dB and -18 dB relative to 1 kW.

In the 0 dB and -12 dB power level stages, the forward power is further reduced continuously for SWR worse than 1.5:1 (-1 dB at SWR = 2:1 and -6 dB at SWR = 3:1).

In the 0 dB power level stage, the level is further reduced by 3 dB when SWR > 5:1.

Carrier Suppression

H2A, H3E: 6 dB +/-1 dB

R3E, ISB, B9W: 17 dB +/-1 dB

J3E: More than 50 dB, typically 60 dB.

Intermodulation

1.5 MHz to 30 MHz:
Better than 35 dB relative to PEP at maximum output power.
Typically 41 dB relative to PEP at maximum output power.

Hum and Noise (Line Input)

Less than -45 dB relative to PEP in 3 kHz BW.

Spurious Emissions (incl. harmonics)

Less than -45 dB relative to PEP, typically less than -60 dB.

Suppression of Unwanted Sideband

More than +50 dB relative to PEP.

Muting

More than 130 dB below PEP.

Audio Input Levels

Line inputs for USB, LSB and telex:
-30 dBm to +10 dBm into a 600 ohm balanced insulated input.

Return loss more than 26 dB from 250 Hz to 6 kHz.

Microphone inputs for USB and LSB:
2 mV to 0.2 V into 500 ohm.

Audio Frequency Response

Option 02/SSB:
Within 3 dB from 300 Hz to 3400 Hz.

Option 04/SSB:
Within 6 dB from 350 Hz to 2700 Hz.

Option 05/SSB:
Within 3 dB from 300 Hz to 3000 Hz.

Option 06/ISB:
Within 3 dB from 300 Hz to 3400 Hz.

Option 07/ISB:
Within 3 dB from 300 Hz to 3000 Hz.

Audio AGC

An audio input variation of +/- 10 dB relative to an input signal between -20 dBm and 0 dBm at line input will produce a change in the output level of less than +/-0.4 dB.

Keying Input (A1A, H2B)

ON/OFF keying. OFF voltage : 5 V
ON current : 0.3 mA

Keying Speed

50 baud.

Remote Control

All functions via a single telephone line.

Power Supply

50/60 Hz.

Single phase version:
200, 220, 230, 240, 254 V +/-10%.
Optional: 100, 110, 115, 120, 127 V +/-10%.

Three phase version:
350, 380, 400, 415, 440 V +/-10%.
Optional: 200, 220, 230, 240, 254 V +/-10%.

Power Consumption

Max. 4.2 kW. Power factor 0.9.

Cooling System

Forced air-cooling with blower and temperature control in the individual panels.

Climatic Conditions

Operationg temperature	:	-15°C to +55°C.
Storage temperature	:	-40°C to +70°C.
Operating humidity	:	95% at 40°C.
Storage humidity	:	70% (regardless of temperature).

Dimensions and Weight

Width	:	570 mm
Height	:	1420 mm
Depth	:	700 mm
Weight	:	340 kg approx.

SECTION 2. Description

2.1. Mechanical Description

The transmitter consists of up to eight panels, which are housed in a standard 19-inch. cabinet rack. The arrangement of the panels in the cabinet rack is shown below.

Combination and
Filter Unit CF 6210

Power Amplifier PA 6150

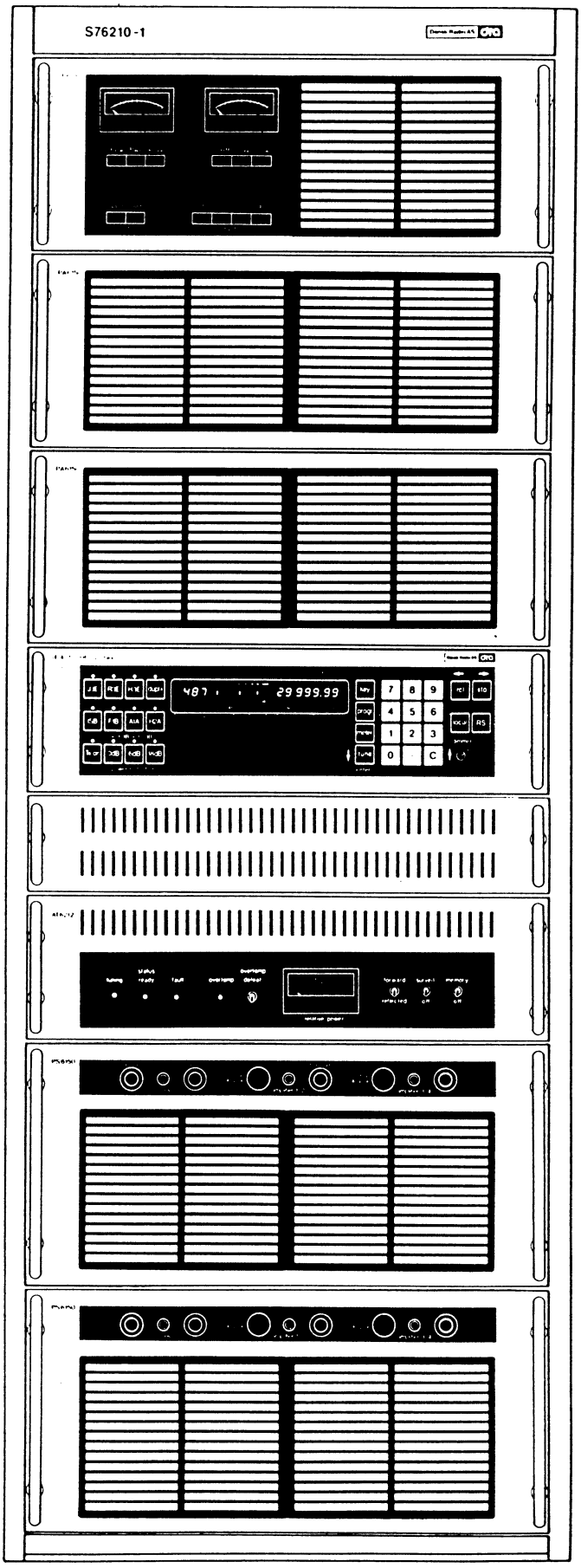
Power Amplifier PA 6150

Synthex SE 4010

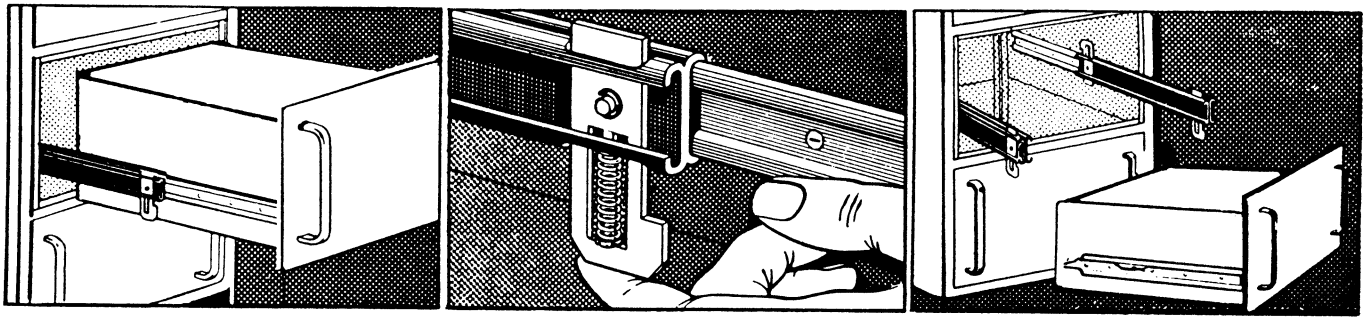
Antenna Tuner Control
AT 6210/AT 6212 (Optional)

Power Supply
PS 6150 1-phase or
PS 6151 3-phase

Power Supply
PS 6150 1-phase or
PS 6151 3-phase



The panels are designed as drawers (panel-and-chassis assemblies) mounted on telescopic slides. The front panels are fastened to the cabinet rack by means of captive panel-mounting screws. The telescopic slides are fitted with trigger latches which automatically and securely lock the unit in the withdrawn position, when fully extended. The projecting latches are pressed to release the lock so that the drawer can be closed or completely removed from the cabinet rack as shown below. Before removing a drawer from the cabinet all plugs on cables for connecting the unit to the cabinet wiring should be taken out of their sockets at the rear of the chassis.



The panels are connected to one another via flexible cables with plugs which can be removed from the jacks of the panels. External connections to or from the transmitter are made by terminal blocks or jacks at the rear of the transmitter.

All the major panels which need forced air cooling have air-inlet filters at the front. The outlet at the rear of each panel is connected to an air-outlet duct, which in turn has its outlet either via a 200 mm round tube or via a square outlet. The round outlet is used if the cooling air is to be directed out of the building it is housed in, the square one if it is desireable to heat the building with the hot outlet from the transmitter. For dimensions and measures see Section 4, Installation.

2.2 Electrical Description

2.2.1 Block Diagram, S76210-1. Dwg. No. 496138

Data and AF signals are applied to the Synthex SE4010. The Synthex is both a synthesizer and exciter, combined. (Hence the name "Synth - ex").

The applied data determines both the mode and frequency of the transmitter.

The output from the synthex at the chosen frequency is fed to a 1:4 splitter, which separates the signal into four equal amplitude and phase signals.

The synthex has a number of control line connections to the combination and filter panel, CF 6210. These include a number of control functions from the synthex to the rest of the transmitter. Information on the SWR, forward and reflected power and fault supervisory lines, i.e. status data from the remaining transmitter functions are returned to the synthex from the combination and filter panel.

The control lines to the 1:4 splitter consist of four fault supervisory lines so that the input to a faulty 300-W module is switched off.

When the RF signal has been split into four equal parts, the four signals are fed to the power amplifier panels PA 6150, each of which consist of two 300-W modules with separate outputs. The necessary DC power supplies to the power amplifier panels are delivered by the two power supply panels, PS 6151. The power supply panels also provide AC voltage for the blowers in the power amplifier panels.

Control and monitor lines from the power amplifier panels to the combination and filter panel, carry a number of control functions from the combination and filter panel to the power amplifier panels. Monitoring of voltage- and current measurements in the power amplifier panel is performed from the combination and filter panel.

The control lines connecting the combination and filter panel to the power supply panels include a switching-on function and the fault supervisory lines. DC and AC power lines for the combination and filter panel are included.

The four 300-W RF signals are fed to the combination and filter panel where they are combined into one RF signal. This signal is fed via the filter section of the panel to a directional coupler and then to the antenna jack.

Installations, where the transmitter system includes an automatic antenna tuner, will have Antenna Tuner Control, (AT 6210, AT 6211 or AT6212), mounted in the cabinet rack.

An automatic antenna coupler (placed in direct proximity to the antenna) is connected between the cabinet rack's antenna connector and the antenna to ensure that the transmitter's output load requirement of 50 ohms is met.

SECTION 4. INSTALLATION

The mounting dimensions of the transmitter are shown in the outline dimentional drawing located at the end of this section. The transmitter should be so located that there is sufficient clearance at each side for free circulation of air and for connecting the output cable and the input cables. A minimum clearance of 300 mm should be left behind the transmitter when it is fitted with a round air-outlet to afford access for the airtube. When the transmitter is fitted with a square outlet a clearance of at least 500 mm should be left behind the transmitter to allow the air to circulate freely.

Sufficient space should also be allowed in front of the transmitter for the panels to be withdrawn and for manipulation of control knobs and reading the meters etc.

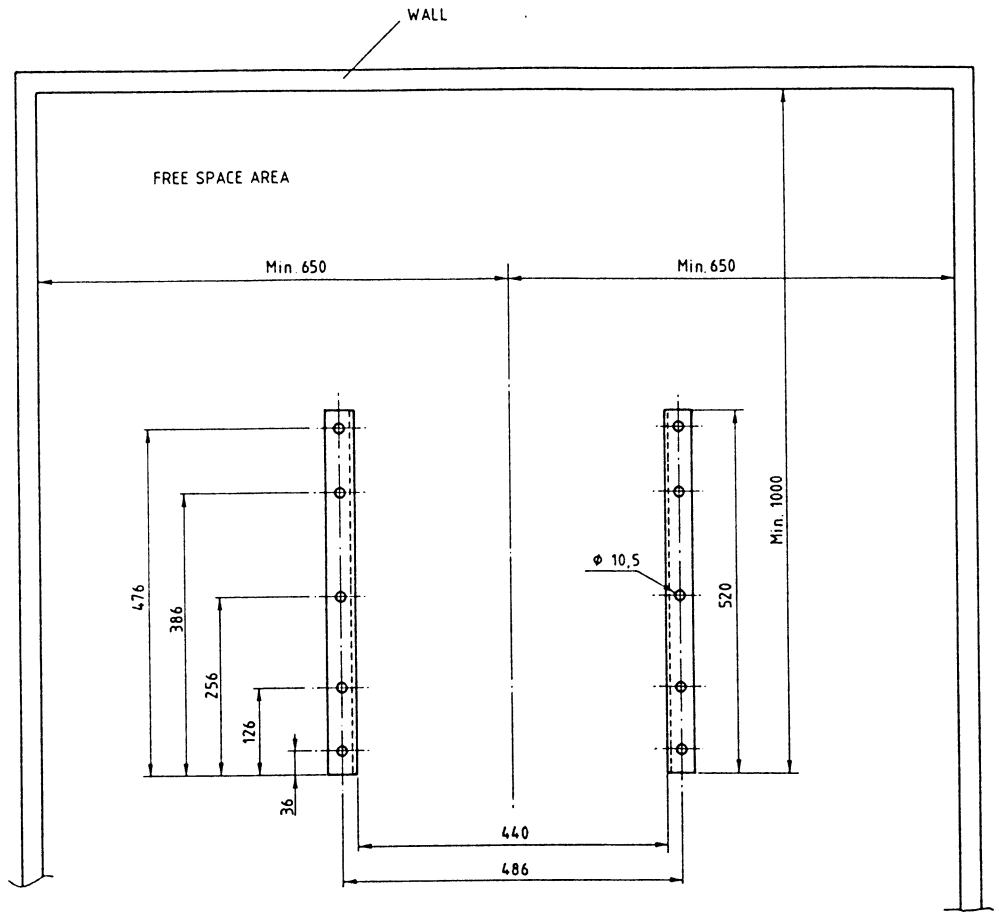
While mounting the cabinet rack all the panels should be removed from the cabinet rack, and the side plates should also be removed to give better access to cables and plugs.

The external cables should be connected to the terminal boards at the rear of the transmitter. LF and key inputs and mains supply are via terminal boards, connections for the antenna coupler and the remote panel are via jacks at the rear of the transmitter.

Then the external connections have been made in accordance with the installation wiring diagram the panels may be inserted again starting from the bottom. When the lower power supply panel has been connected to the cabinet rack wiring the next panel may be inserted and connected etc. When connecting the cables and plugs to the rear of the panels it must be in such a way that the cable is running on top of the roller. If the installation proceeds in this way the work will be easier. When all panels have been installed into the cabinet rack, the side plates and the top plate may be refitted.

The transmitter without antenna coupler is designed to operate into a 50-ohm load. When the transmitter is fitted with antenna coupler it must be checked in the coupler manual which antenna the coupler will accept.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
	B	REVISED	7.12.88	VH



All demensions are in mm

NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075

ANGLES

LIN. DIM.

MATERIAL

DR.	F.S.P.	14-10-83
CH.		
AP.		
AP.		

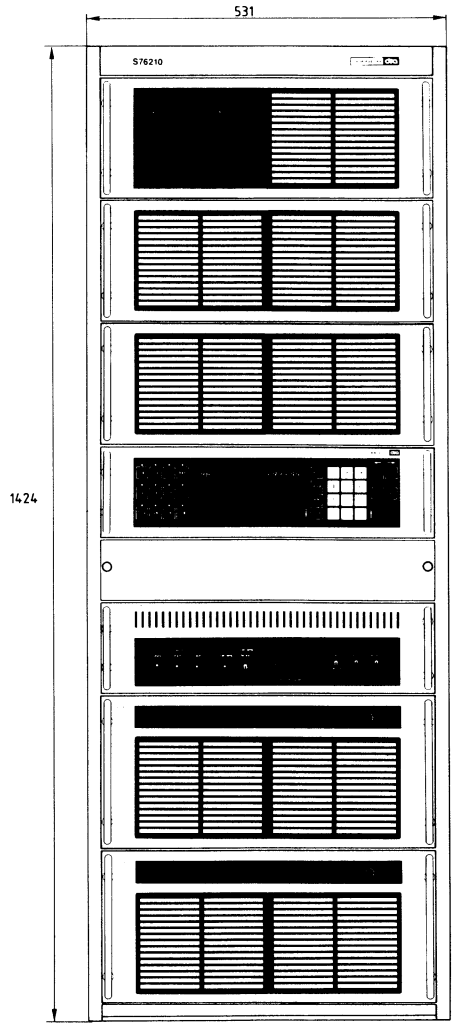
FIRST ANGLE PROJECTION

Dansk Radio AS

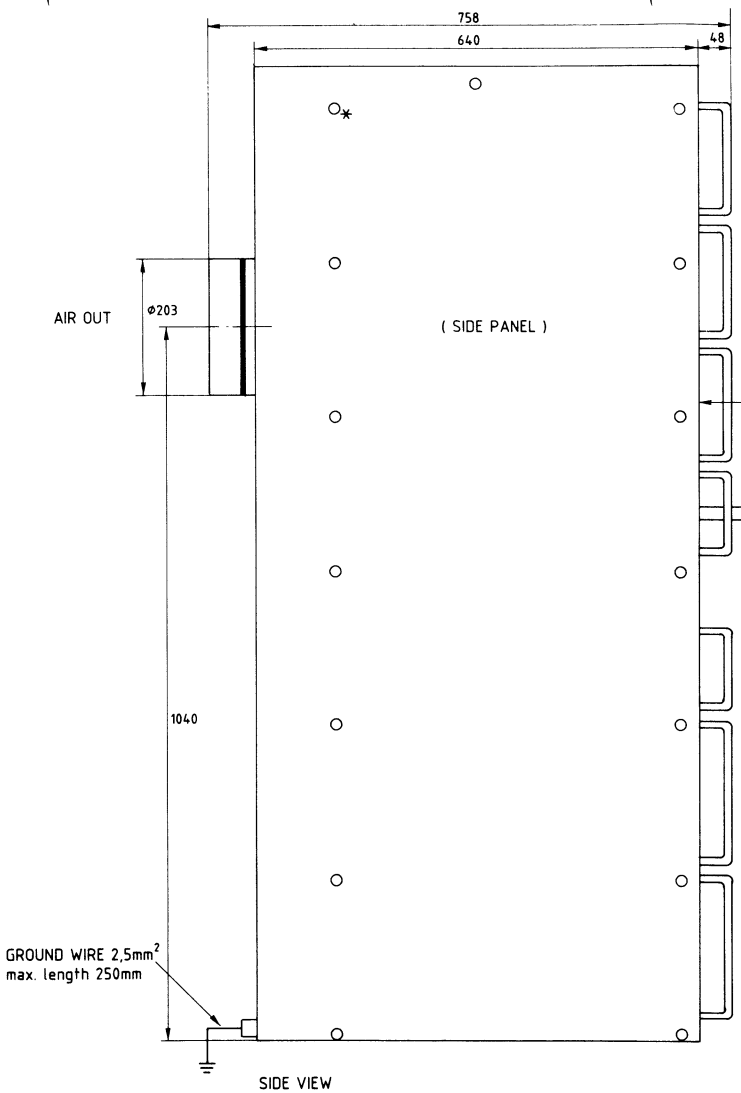
TITLE: Mounting dimensions S76xxx

SIZE	CODE IDENT	DRAWING NO.
A2		PB-1767-2

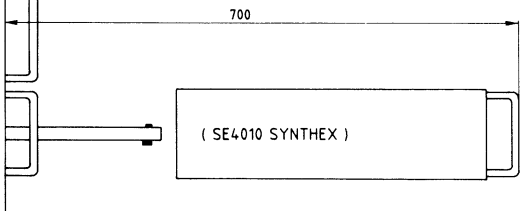
SCALE 1:5 | SHEET 1 OF 1

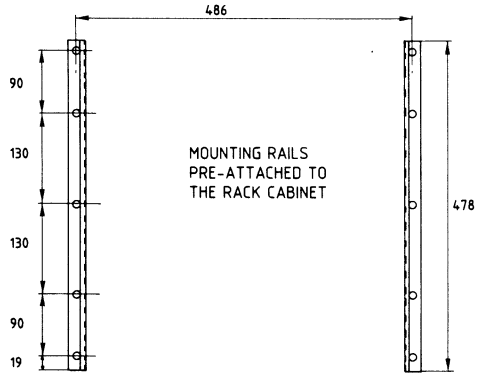


FRONT VIEW



SIDE VIEW





NOTE:

* ACCESS TO MOUNTING RAILS IS OBTAINED BY REMOVING ALL MOUNTING SCREWS AT EACH SIDE-PANEL.

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVAL

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075

ANGLES

LIN. DIM.

MATERIAL

NEXT ASSY	USED ON
APPLICATION	

DR.	VH	7.12 1988
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FIRST ANGLE PROJECTION

Dansk Radio AS

TITLE
INSTALLATION DIAGRAM
S76210-1
1000W TRANSMITTER RACK

SIZE	CODE IDENT	DRAWING NO.
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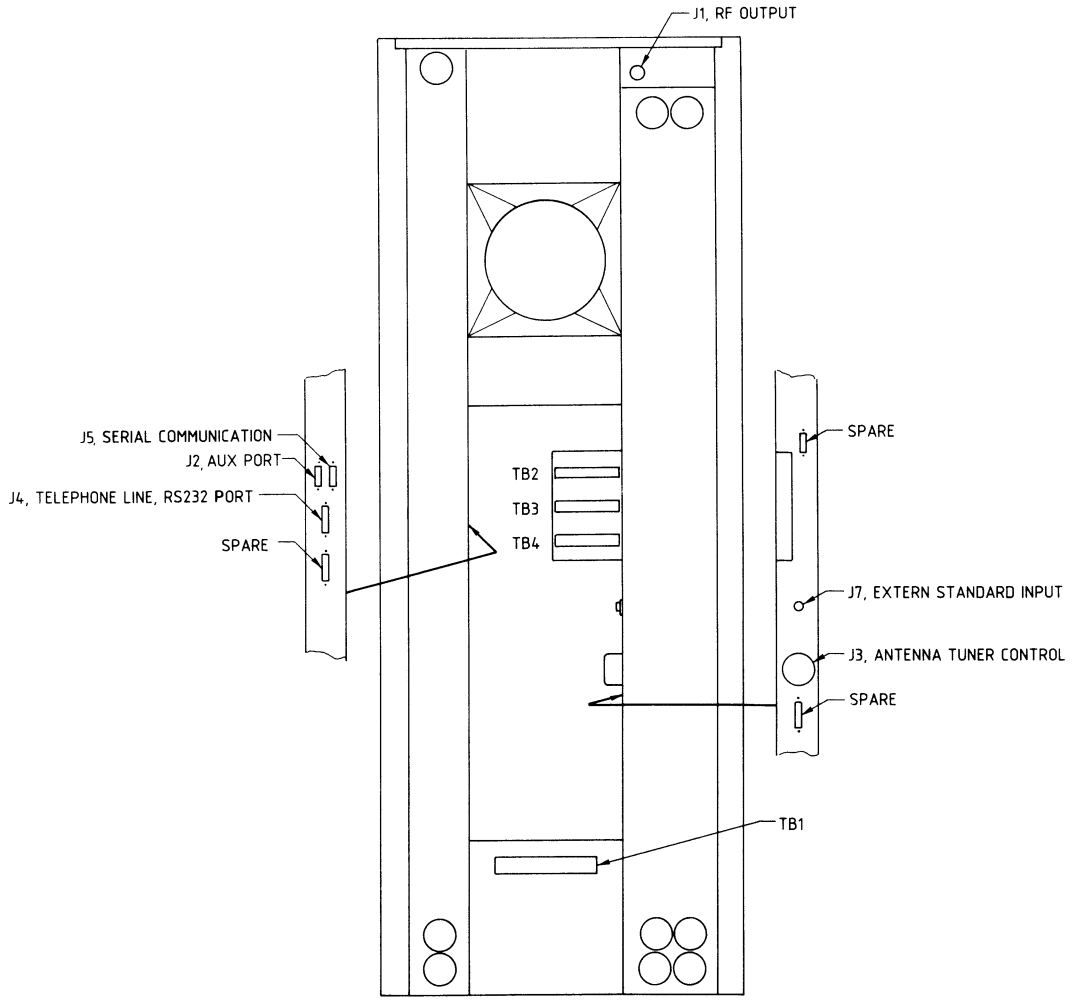
SCALE | SHEET 1 OF

EWJ 90/95 plot (05) 81 45 99

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL



NEXT ASSY	USED ON
APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075

ANGLES

LIN. DIM.

MATERIAL

DR.	VH	9.12 1988
CH.		
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FIRST ANGLE PROJECTION

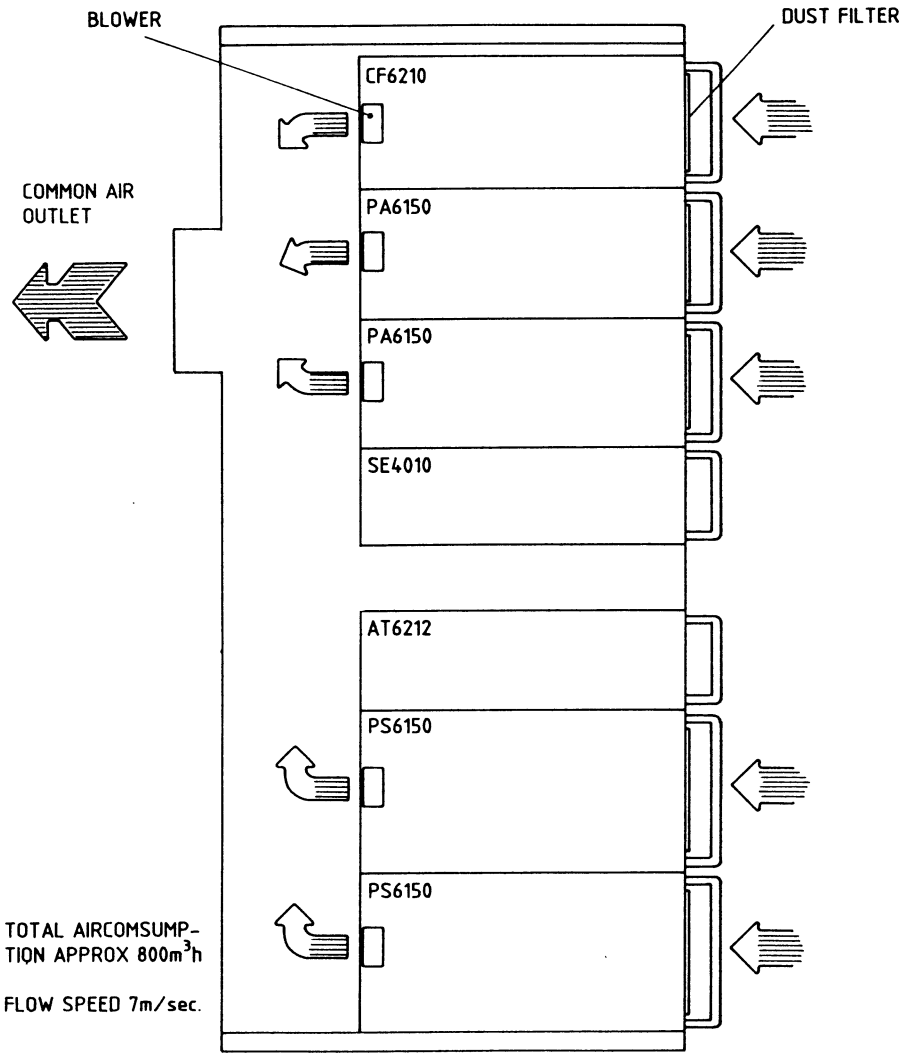
Dansk Radio AS

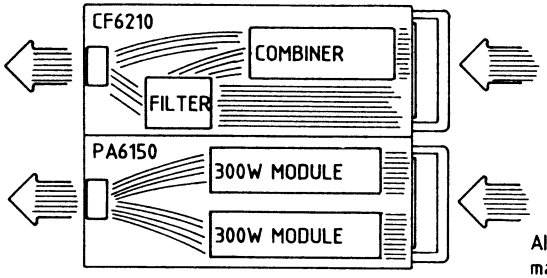
TITLE
REAR PANEL CONNECTIONS FOR
S76210-1 (S76150-1)
TRANSMITTER RACK

SIZE	CODE IDENT	DRAWING NO.
A2		49 65 96
SCALE		SHEET 1 OF 1

EWJ 90/95 plot 05/81 45.99

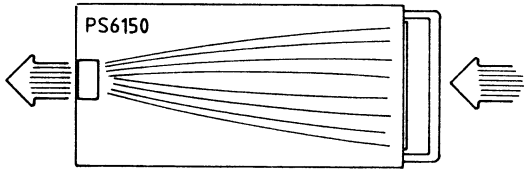
REVISIONS			
LTR	DESCRIPTION	DATE	APPROVAL





AIRFLOW 165m3h
max. INPUT TEMP. = 55°C

TEMPERATURE RAISE AT OUTPUT
+20°C = max. OUTPUT TEMP. = 75°C



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APPLICATION	

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075

ANGLES

LIN DIM

MATERIAL

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FIRST ANGLE PROJECTION

Dansk Radio AS

TITLE
VENTILATION OUTLINE
TRANSMITTER S76210-1 (S76150-1)

SIZE	CODE IDENT NO	DRAWING NO
A3		49 65 88-A
SCALE		SHEET 1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

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1	1,000	ST	41	BR444030	PANEL CF6210-01 COMB.& FL	1			A1	
2	2,000	ST	41	BR444057	PANEL PA6150-01 EMK PA500	1			A2,A3	
4	2,000	ST	41	[illegible]	PANEL PS6151 F3/380-440	1			A7,A8	
5	1,000	ST	41	[illegible]	RACK PTP/REMOTE CS6210	1			MP1	
7	1,000	ST	41	[illegible]	FRONT PLATE DUMMY 3M	1				A2
8	1,000	ST	41	BR496280	FRONT PLATE DUMMY 2M	1				A2
9	1,000	ST	60	210685-001	KIT, TX BASIC	1				A7
11	7,000	ST	48	BR375337	LABEL HIGH VOLT.	3				A5
12	6,000	ST	53	BR297015	WASHER,NYLON Ø12MM X15MM	3				A5
13	2,000	ST	41	BR294288	PLATE,LOCK 1 3/4 INCH	1				A5
14	200,000	MM	57	201199-003	GROMMET, EDGING 1.8-3.3MM	4				A5
15	4,000	ST	53	BR433500	WASHER,FLAT Ø 3,5 X9,5 J	4				A8
16	1,500	M	46	BR260843	PAD,RUBBER ADHESIV 3,2X19	4				A9
17	1,000	ST	48	BR498998	LABEL, LOGO	3				A10
18	1,000	ST	48	BR464872	LABEL, DRA TYPE/SER.NO	3				A10
19	10,000	G	78	202170-001	COMPOUND,SILICONE	4				A10
20	10,000	G	78	202251-001	GREASE, SILICONE TYPE 33	4				A10
21	1,000	ST	41	BR426989	CHANNEL,RIGHT CS6210	3				B
22	1,000	ST	41	BR426997	CHANNEL,LEFT CS6210	3				B
24	1,000	ST	41	BR425021	PLATE,RIGHT SIDE CS6210	3				B
25	1,000	ST	41	BR425048	PLATE,LEFT SIDE CS6210	3				B
26	1,000	ST	41	BR425591	TOP PLATE CS6150-621	3				B
27	43,000	ST	51	BR275522	SCREW M 3 X 8 CHJ GULCR	4				B
28	2,000	ST	51	BR452920	SCREW M 3 X16 CHR	4				B
29	2,000	ST	51	222790-017	SCREW M 4X 6 POZIDR. A2	4				B
30	4,000	ST	51	222790-021	SCREW M 4X16 POZIDR. A2	4				B
31	23,000	ST	51	222790-025	SCREW M 5X 8 POZIDR. A2	4				B
32	23,000	ST	51	BR321605	SCREW UNBRAK M 5X 8 CHJ G	4				B
33	2,000	ST	53	BR452955	WASHER,NYLON Ø 3,0	4				B
34	6,000	ST	53	BR323845	WASHER,NYLON Ø 4,0	4				B
35	23,000	ST	53	BR452947	WASHER,NYLON Ø 5,0	4				B
36	45,000	ST	53	202232-005	WASHER,SPRING 3,1X 6,2	4				D
37	6,000	ST	53	BR295674	WASHER,NYLON Ø10MM	4			H12	C
38	1,000	ST	41	BR426973	PLATE,COVER CS6210	1			MP9	C
39	1,000	ST	41	BR430242	PLATE,COVER CS6210	1			MP10	C
40	1,000	ST	46	BR433519	BOTTOM LIST CS6150-621	1			MP11	C

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TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
LA 7621C 1000M 3F	BR453609 (453609)	D1	1 OF 2

Parts List

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PARTS LIST PER.. 94/09/29

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42	6,000	ST	46	BR258682	GUIDE F/THUMBSCREW 260827	2			MP17	C
43	6,000	ST	51	BR260827	THUMBSCREW,KNURLED M6	3			MP19	C
**********	**********	**	***	**********	**********	**********	**********	**********	**********	******
					*** BILL OF DOCUMENTATION					
			AS	201350	WORKMANSHIP					
			PD	BR453609	LA 76210 1000W 3F					
1001			PD	BR	TX.S76210 1000W 3F.					
1002			IP	BRJA6002	FINAL TEST SHEET					
1003			IP	BRJA6501	TRANSM.S76210 OG S76150					
1004			II	BRJA6002	LA76210, FINAL TEST SHEET					
1005			AF	BR300427	LA.S76210 1KW TX, 1F/3F					

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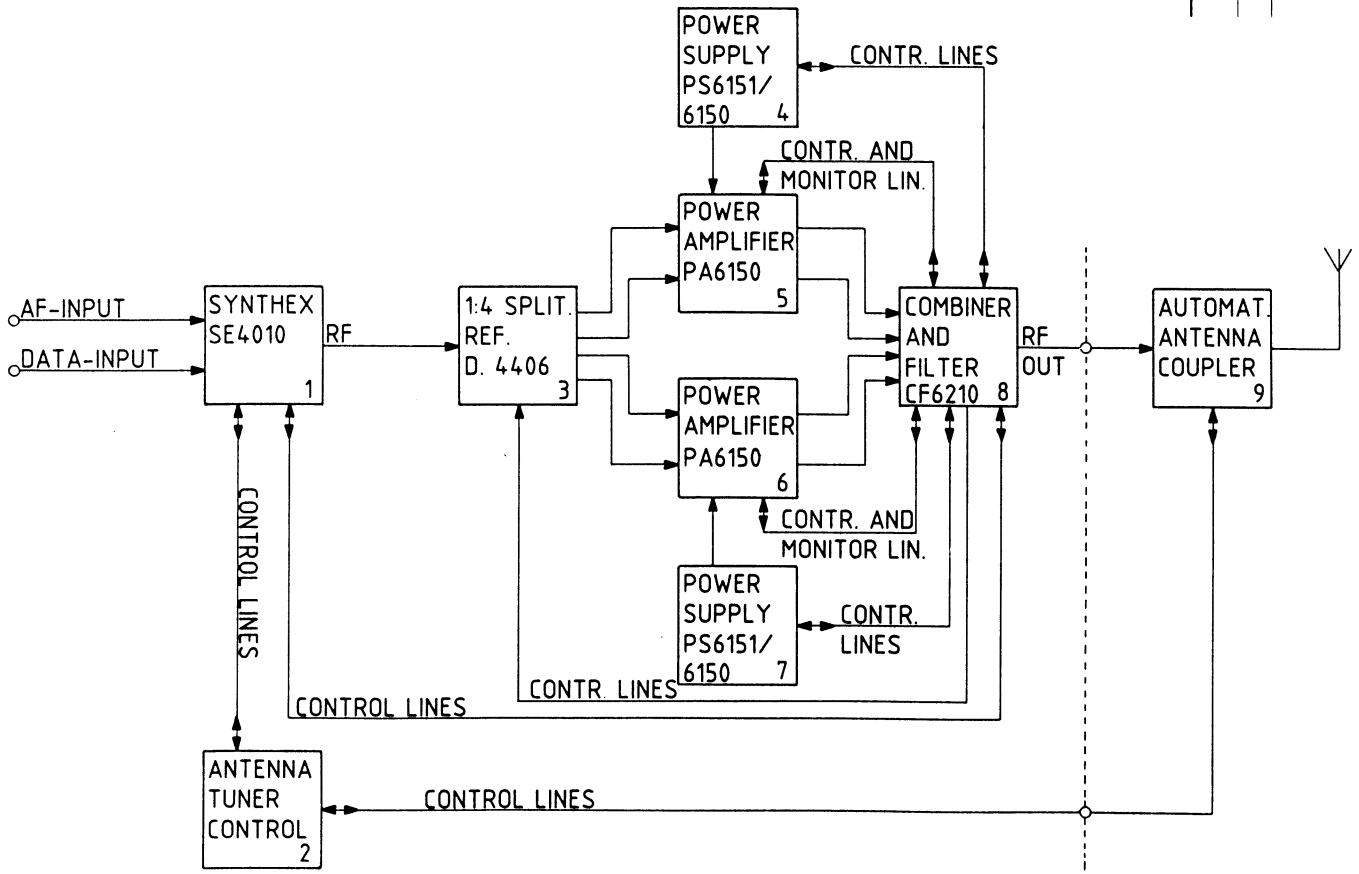
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
LA 7621C 1000W 3F	BR453609 (453609)	D1	2 OF 2

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL



NEXT ASSY	USED ON	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS
APPLICATION		ANGLES LIN. DIM.	DR. VH 8.12 1989 CH. AP. AP.	TITLE CONFIGURATION TRANSMITTER S76210-1
		MATERIAL	FIRST ANGLE PROJECTION	SIZE A2 / CODE IDENT / DRAWING NO 49 61 38 SCALE / SHEET 1 OF 1

C O N T E N T S

2.2. Electrical Description

2.2.1. Block Diagram S76210 Power Amplifier Part (Ref. Designation 4449)

The power amplifier part of the S76210 consists of 5 panels, i.e. two power amplifier panels called PA6150 upper and PA6150 lower, two power supply panels each supplying +40 V DC to the corresponding PA panel. The power supplies may be either three-phase units or single-phase units, the former called PS6151 and the latter PS6150. The last panel in the power amplifier part of the S76210 is the combination and filter panel called CF6210.

Also included in the power amplifier part is the 1:4 splitter which is located in a separate box at the rear of the rack.

In the block diagram each panel is separated by a dashed line.

In the 1:4 splitter the input signal from the synthex is divided into four equal amplitude and phase signals, each feeding a 300 W module in the power amplifier panels. Each power amplifier panel consists of two 300 W modules which feed separate signals to the 4:1 1000 W output combiner. The 1000 W output combiner is part of the CF6210.

The output from the 300 W modules contains harmonics of the wanted frequency. Therefore, a filter bank is included to attenuate these unwanted output components. The second harmonic is attenuated by the low-pass filter. The third harmonic is fed via the high-pass section to a 50 ohms load where it is dissipated.

From the filter bank the signal is sent via a 3 dB attenuator control either directly to the directional coupler or through a 3 dB attenuator. If a mismatch exists at the antenna terminal the signal is routed via the 3 dB attenuator to protect the output transistors.

The directional coupler delivers two signals to the SWR computer, one which is analog to the forward power, one which is analog to the return power.

The standing wave ratio computer calculates the actual SWR which is shown on one of the meters on the CF6210. The information about the SWR is also fed to the synthex where among other things it is used to operate the 3 dB attenuator control.

The power regulator in the CF6210 delivers DC to the SWR computer and meter amplifiers.

The blower control which is built on the same PCB as the 3 dB attenuator control, selects 110 Vac to the blower from either of the power supplies depending upon which one is functioning, that is if a fault exists on one PS, the other one will deliver power to the blower.

2.2.2. Interconnection Diagram

2.2.2.1. Cabinet Rack CS6210
Dwg. No. 495359

The transmitter consists of two identical power supplies, PS6151, which are three-phase panels, or PS6150, which are single-phase panels, supplying a nominal voltage of 40 V DC to the power amplifier panels, PA6150. The arrangement is such that the upper power supply panel is connected to the upper power amplifier panel.

The synthex, SE4010, is the heart of the system, i.e. selection of transmitter mode and frequency is performed either from the front panel controls of the SE4010 or via the Remote Control TC4010.

The combination and filter panel, CF6210, combines and filters the output signal.

The signal path is from the RF output jack of SE4010, J8, via the coaxial cable W115 to the 1:4 splitter J5. The 1:4 splitter, which is located on the air-outlet duct, splits the signal into four equal amplitude and phase signals to each of the 300-W modules in the two PA6150s. The upper power amplifier panel being fed via W116 and W117, the lower via W118 and W119.

The four 300-W outputs from the power amplifier panels are taken from J4 and J5 on each panel to the combination and filter panel via the coaxial cables W108-W111.

On Dwg. No. 495859/SE4010 the cables that are connected from pin nos. in one plug to the same pin nos. in the other plug are not shown. The cables with special connections are shown.

The AF and key inputs must be connected to terminal boards TB2, TB3 and TB4, located at the rear of the transmitter.

Mains powerline connections must be made to terminal board TB1, located at the rear of the transmitter.

The HF output jack is a type N connector located at the top-rear of the transmitter.

When the transmitter system incorporates an automatic antenna coupler, the control cable from the coupler must be connected to J3, located at the rear of the transmitter.

2.2.3. Circuit Diagram

2.2.3.1. 1:4 Power Splitter (Ref. Designation 4406)

The 1:4 splitter is mounted on PCB 21645, which in turn is mounted in a shielded box. The box is mounted on the air outlet duct at the rear of the transmitter rack.

The input to the 1:4 splitter is at J5. T501 divides the signal into two parts of equal amplitude. The series combination of T504 and T505 again divides the signal into two parts which are fed to the two output jacks J3 and J4 via the relays K503 and K504. The series combination of T502 and T503 performs the same function as T504 and T505.

When a fault occurs in one of the 300-W modules, the associated relay will be activated, terminating the appropriate transformer in a 50-ohm resistor, e.g. a fault occurs in the upper left 300-W module. This means that the relay K501 is energized via J6 pin 1. Pin 8 of J6 is supplied with +40 V DC for the relays.

The input to J5 does normally come from the synthex.

SECTION 8. PARTS LISTS AND COMPONENT SPECIFICATIONS.

8.1. Parts Lists.

This section gives for each module all components used. The parts lists are arranged in order of module (= diagram) numbers. The components are identified by their DRA code numbers.

REFERENCE DESIGNATIONS

A . . . . . assembly
AT . . attenuator; isolator; termination
B . . . . . fan; motor
BT . . . . . battery
C . . . . . capacitor
CP . . . . . coupler
CR . . . . . diode; diode thyristor; varactor
DC . . . directional coupler
DL . . . . . delay line
DS . . . . . annunciator; signaling device (audible or visual); lamp; LED
E . . . . . miscellaneous electrical part
F . . . . . fuse
FL . . . . . filter
H . . . . . hardware
HY . . . . . circulator
J . . . electrical connector (stationary portion); jack
K . . . . . relay
L . . . . . coil; inductor
M . . . . . meter
MP . . . . . miscellaneous mechanical part
P . . . electrical connector (movable portion); plug
Q . . . . . transistor; SCR; triode thyristor
R . . . . . resistor
RT . . . . . thermistor
S . . . . . switch
T . . . . . transformer
TB . . . . . terminal board
TC . . . . . thermocouple
TP . . . . . test point
U . . . . . integrated circuit; microcircuit
V . . . . . electron tube
VR . . . . voltage regulator; breakdown diode
W . . . . cable; transmission path; wire
X . . . . . socket
Y . . . . crystal unit (piezoelectric or quartz)
Z . . . . tuned cavity; tuned circuit

ABBREVIATIONS

A . . . . . ampere
ac . . . . alternating current
ACCESS . . . . . accessory
ADJ . . . . . adjustment
A/D . . . . analog-to-digital
AF . . . . . audio frequency
AFC . . . . . automatic frequency control
AGC . . . . . automatic gain control
AL . . . . . aluminum
ALC . . . . . automatic level control
AM . . . amplitude modulation
AMPL . . . . . amplifier
APC . . . . automatic phase control
ASSY . . . . . assembly
AUX . . . . . auxiliary
avg . . . . . average
AWG . . . . American wire gauge
BAL . . . . . balance
BCD . . . . . binary coded decimal
BD . . . . . board
BE CU . . . . . beryllium copper
BFO . . . . . beat frequency oscillator
BH . . . . . binder head
BKDN . . . . . breakdown
BP . . . . . bandpass
BPF . . . . . bandpass filter
BRS . . . . . brass
BWO . . . . . backward-wave oscillator
CAL . . . . . calibrate
ccw . . counter-clockwise
CER . . . . . ceramic
CHAN . . . . . channel
cm . . . . . centimeter
CMO . . cabinet mount only
COAX . . . . . coaxial
COEF . . . . . coefficient
COM . . . . . common
COMP . . . . . composition
COMPL . . . . . complete
CONN . . . . . connector
CP . . . . . cadmium plate
CRT . . . cathode-ray tube
CTL . . . . complementary transistor logic
CW . . . . . continuous wave
cw . . . . . clockwise
cm . . . . . centimeter
D/A . . . . digital-to-analog
dB . . . . . decibel
dBm . . . . decibel referred to 1 mW
dc . . . . . direct current
deg . . degree (temperature interval or difference)
° . . . . . degree (plane angle)
°C . . . . . degree Celsius (centigrade)
°F . . . . degree Fahrenheit
°K . . . . . degree Kelvin
DEPC . . deposited carbon
DET . . . . . detector
diam . . . . . diameter
DIA . . . diameter (used in parts list)
DIFF AMPL . . differential amplifier
div . . . . . division
DPDT . . . . . double-pole, double-throw
DR . . . . . drive
DSB . . . . double sideband
DTL . . . . diode transistor logic
DVM . . . digital voltmeter
ECL . . . . emitter coupled logic
EMF . . electromotive force
EDP . . . . . electronic data processing
ELECT . . . . . electrolytic
ENCAP . . . . encapsulated
EXT . . . . . external
F . . . . . farad
FET . . . . . field-effect transistor
F/F . . . . . flip-flop
FH . . . . . flat head
FIL H . . . . . fillister head
FM . . frequency modulation
FP . . . . . front panel
FREQ . . . . . frequency
FXD . . . . . fixed
g . . . . . gram
GE . . . . . germanium
GHz . . . . . gigahertz
GL . . . . . glass
GRD . . . . . ground(ed)
H . . . . . henry
h . . . . . hour
HET . . . . . heterodyne
HEX . . . . . hexagonal
HD . . . . . head
HDW . . . . . hardware
HF . . . . . high frequency
HG . . . . . mercury
HI . . . . . high
HPF . . . . . high pass filter
HR . . . . . hour (used in parts list)
HV . . . . . high voltage
Hz . . . . . Hertz
IC . . . . integrated circuit
ID . . . . . inside diameter
IF . . . . . intermediate frequency
IMPG . . . . . impregnated
in . . . . . inch
INCD . . . . . incandescent
INCL . . . . . include(s)
INP . . . . . input
INS . . . . . insulation
INT . . . . . internal
kg . . . . . kilogram
kHz . . . . . kilohertz
kΩ . . . . . kilohm
kV . . . . . kilovolt
lb . . . . . pound
LC . . . . . inductance-capacitance
LED . . light-emitting diode
LF . . . . . low frequency
LG . . . . . long
LH . . . . . left hand
LIM . . . . . limit
LIN . . . linear taper (used in parts list)
lin . . . . . linear
LK WASH . . . lock washer
LO . . . low; local oscillator
LOG . . . . logarithmic taper (used in parts list)
log . . . . . logrithm(ic)
LPF . . . . . low pass filter
LV . . . . . low voltage
m . . . . . meter (distance)
mA . . . . . milliampere
MAX . . . . . maximum
MΩ . . . . . megohm
MEG . . . . meg (10^6) (used in parts list)
MET FLM . . . . metal film
MET OX . . metallic oxide
MF . . . medium frequency; microfarad (used in parts list)
MFR . . . . . manufacturer
mg . . . . . milligram
MHz . . . . . megahertz
mH . . . . . millihenry
mho . . . . . mho
MIN . . . . . minimum
min . . . . . minute (time)
. . . ' . . . . . minute (plane angle)
MINAT . . . . . miniature
mm . . . . . millimeter
MOD . . . . . modulator
MOM . . . . . momentary
MOS . . . . . metal-oxide semiconductor
ms . . . . . millisecond
MTG . . . . . mounting
MTR . . . meter (indicating device)
mV . . . . . millivolt
mVac . . . . . millivolt, ac
mVdc . . . . . millivolt, dc
mVpk . . . . millivolt, peak

Parts List

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PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	37	BR377023	PWB,1/4 SPLITTER S76210	3				
2	4,000	ST	23	BR228141	DIO POW. 1N4007 SI 1KV 1A	4			CR01,CR02,CR03,CR04	
3	1,000	ST	22	BR357502	CAP. CER. 33P 100 G N150	4			C501	
4	1,000	ST	22	BR202975	CAP. PLST 1U 100 K	4			C502	
5	4,000	ST	22	BR209534	CAP. PLST 10N 250 K	4			C503,C504,C505,C506	
6	4,000	ST	22	BR357456	CAP. CER. 12P 100 G N150	4			C507,C508,C509,C510	
7	4,000	ST	51	BR275506	SCREW M 3 X 5 CHJ GULCR	4			H1	
8	4,000	ST	51	BR278467	SCREW M 3 X15 CHN NYLON	4			H2	
9	4,000	ST	52	BR321583	NUT M 3 NYLJN	4			H3	
10	1,000	ST	45	201197-347	STRAP, CABLE, NAT Ø20X2.5	4			H4	B1
11	5,000	ST	31	BR261270	TERMINAL STJD	4			H5	
12	4,000	ST	53	BR323345	WASHER,NYLON Ø 4,0	4			H6	A1
13	4,000	ST	33	BR363162	RELAY 42V 2K8 1XCHG.	4			K501,K502,K503,K504	
14	4,000	ST	52	BR269581	STAY NUT M3 X 8 N7	3			MP1	
15	10,000	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	4			R501,R502,R506,R507,R508, R509,R510,R511,R512,R513	
16	2,000	ST	21	BR240400	RES CARB. 1KO 1/4J SFR25	4			R503,R505	
17	1,000	ST	21	BR240200	RES CARB. 200R 1/4J SFR25	4			R504	
18	1,000	ST	25	BR369543	TRAFO CF6210	1			T501	
19	4,000	ST	25	BR369551	TRAFO CF6210	1			T502,T503,T504,T505	
20	0,630	M	32	BR223112	COAX CABLE 50R TEFLON	4				B
**********	**********	**	**	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	**********
			AS	201350	WORKMANSHIP					
			EC	BR4406	POWER SPLITTER S76210					
			PD	BR363804	1/4 SPLITTER S76210					
**********	**********	**	**	**********	********** NEXT ASSY **********	**	**********	**********	**********	**********
	1,000	ST		BR364940	1/4 SPLIT.AS S76210 D4406	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
1/4 SPLITTER S76210 D4406	BR363804 (363804)	B1	1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	60	BR333804	1/4 SPLITTER S76210 D4406	1			A1	
2	4,000	ST	51	BR333263	SCREW M 3 X 8 UHJ GULCR	4			H1	
4	2,000	ST	53	202232-005	WASHER,SPRING 3,1X 6,2	4			H3	B
6	5,000	ST	31	BR377821	TERMINAL LUG 10,2MM	4			H5	
7	5,000	ST	31	BR368210	COAX CONN BNC FEM-CHASS.	4			J	
8	1,000	ST	31	212654-000	CONN D-TYPE 9P/CRIMP	4			J	C1
9	5,000	ST	31	212654-210	CONN PIN AWG20-24	4			J	D
10	1,000	ST	31	BR368512	CONN D ACCESS. LATCH	4			J	
11	1,000	ST	41	BR365033	BOX F/INP.SPLITTER CS6150	1			MP1	
12	1,000	ST	41	BR366072	PLATE,MOUNTING CS6150-621	1			MP2	
13	0,030	M	32	BR331260	FLEX PLAST 4,0MM/YEL	4			W	
14	0,060	M	32	BR367230	WIRE,ELEC 0,25 YELLOW	4			W	
15	0,060	M	32	202264-029	WIRE, ELEC 0.25MM2 WHT	4			W	D1
16	0,060	M	32	202264-026	WIRE, ELEC 0.25MM2 BLU	4			W	D1
17	0,060	M	32	202264-025	WIRE, ELEC 0.25MM2 GRN	4			W	D1
18	0,060	M	32	202264-023	WIRE, ELEC 0.25MM2 ORN	4			W	D1
*****	**********	**	***	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	*****
			AS	201350	WORKMANSHIP					
			EC	BR4406	POWER SPLITTER S76210					
			TP	BRQA4626	1:4 OG 1:2 POWER SPLITTER					
*****	**********	**	***	**********	********** NEXT ASSY **********	**	**********	**********	**********	*****
	1,000	ST		BR426655	CHANNEL COOLING.AS.CS6210	1				

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FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TERMA

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
1/4 SPLIT.AS S76210 D4406	BR364940 (364940)	D1	1 OF 1

A4 Form 200473 FA Rev B

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	11,000	ST	51	BR275638	SCREW M 4 X 8 CHJ GULCR	4			H1	
2	120,000	ST	51	BR433537	SCREW M 4 X 8 HEX J GULCR	4			H2	
3	83,000	ST	51	BR333417	SCREW M 4 X10 UHJ GULCR	4			H3	
4	24,000	ST	51	BR333425	SCREW M 4 X12 UHJ GULCR	4			H4	
5	105,000	ST	51	BR321605	SCREW UNBRAK M 5X 8 CHJ G	4			H5	
6	10,000	ST	51	BR321621	SCREW UNBRAK M 5X12 CHJ G	4			H6	
7	155,000	ST	53	202232-007	WASHER,SPRING 4,1X 7,6	4			H7	B
8	110,000	ST	53	202232-005	WASHER,SPRING 5,1X 9,2	4			H8	B
9	24,000	ST	52	BR321060	NUT M 4 M CU SN	4			H9	
10	4,000	ST	51	221233-037	BOLT M 8X35 CARRIAGEYEL.I	4			H10	A2
11	4,000	ST	52	BR333956	NUT M 4 J GULCR	4			H11	
12	4,000	ST	53	BR336777	WASHER,FLAT Ø 4MM CU SN M	4			H12	
13	1,000	ST	41	BR359993	PLATE,BOTTOM CS6150-621	3			MP1	
14	1,000	ST	41	BR367087	FRAME,FRONT CS6210	3			MP2	
15	1,000	ST	41	BR367095	FRAME,REAR CS6210	3			MP3	
16	2,000	ST	46	BR359950	BRACKET,TOP CS6150-621	1			MP4	
17	1,000	ST	46	BR359934	BRACKET,BOTTOM RGHT CS615	3			MP5	
18	1,000	ST	46	BR359942	BRACKET,BOTTOM LEFT CS615	3			MP6	
19	10,000	ST	41	BR371009	ADJ.PLATE F/SLIDE CS6150-	1			MP7	
20	10,000	ST	41	BR371017	PLATE F/SLIDE CS6150-621	1			MP8	
21	24,000	ST	53	BR267023	WASHER,ADJUST Ø19,8 X2MM	1			MP9	
22	10,000	ST	42	BR389927	SLIDE CS6150-621	1			MP10	A1
23	2,000	ST	41	BR494453	ADJ.PLATE F/SLIDE CS6150-	1			MP11	
24	2,000	ST	41	BR494461	PLATE F/SLIDE CS6150-621	1			MP12	
25	10,000	ST	51	BR275549	SCREW M 3 X12 CHJ GULCR	4				A1
**********	**********	**	**	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	******
			AS	201350	WORKMANSHIP					
**********	**********	**	**	**********	********* NEXT ASSY *******	**	**********	**********	**********	******
	1,000	ST		BR430374	RACK PTP/REMOTE CS6210	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: RACK MECH.MOUNTED CS6210

DOCUMENT NO.: BR426687
(426687)

REV: B

SHEET NO.: 1 OF 1

A4 form 2004/3 TA rev D

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	60	BR364940	1/4 SPLIT.AS S76210 D4406	1			A1	
2	150,000	ST	45	BR473960	STRAP,CABLE L197XB4,9	4			H1	
4	0,500	M	44	BR377503	EDGING KANTLIST F/2,1-3MM	4			H3	
5	3,000	SÆ	31	222335-140	CONN FEMALE SCREW 4-40	4			H4	D2
6	1,000	ST	56	BR211214	CLAMP 4,5MM	4			H5	
7	1,000	ST	56	BR211230	CLAMP	4			H6	
8	27,000	ST	51	BR275514	SCREW M 3 X 6 CHJ GULCR	4			H7	
9	4,000	ST	51	BR275530	SCREW M 3 X10 CHJ GULCR	4			H8	
11	6,000	ST	51	BR275646	SCREW M 4 X10 CHJ GULCR	4			H10	
12	2,000	ST	51	BR275670	SCREW M 4 X16 CHJ GULCR	4			H11	
13	4,000	ST	53	202232-005	WASHER,SPRING 3,1X 6,2	4			H12	D
15	1,000	ST	41	BR426717	CHANNEL,MECH.MOUNT CS6210	1			MP1	
16	33,000	ST	42	BR339943	SLIDE Ø19,5X18MM CS6150-6	3			MP2	
17	1,000	ST	41	BR379042	PLATE,INSULATED ETRONIT 6	3			MP3	
18	1,000	ST	41	BR430390	BOX,TERM.BRD,MOUNT.CS6...	1			MP4	
19	1,000	ST	41	BR431680	PLATE,COVER F/CONN. CS615	1			MP5	
20	2,000	ST	52	BR369705	STAY NUT M3 X15 N5	3			MP6	A2
21	1,000	ST	31	BR369926	TERMINAL BD 7P SCREW/TAP	4			TB1	
23	1,000	ST	37	BR424722	MULTICABL ASS W100 CS6210	1			W100	
24	1,000	ST	37	BR424730	MULTICABL ASS W101 CS6210	1			W101	
25	1,000	ST	37	BR495891	MULTICABL ASS W104 CS6210	1			W104	
26	1,000	ST	37	BR424773	MULTICABL ASS W105 CS6210	1			W105	
27	1,000	ST	37	BR424781	MULTICABL ASS W106 CS6210	1			W106	
28	1,000	ST	37	BR424803	MULTICABL ASS W107 CS6210	1			W107	
29	1,000	ST	37	BR424811	COAX CA ASSY W108 CS6210	3			W108	
30	1,000	ST	37	BR424838	COAX CA ASSY W109 CS6210	3			W109	
31	1,000	ST	37	BR424846	COAX CA ASSY W110 CS6210	3			W110	
32	1,000	ST	37	BR424854	COAX CA ASSY W111 CS6210	3			W111	
33	1,000	ST	37	BR495921	MULTICABL ASS W112 CS6210	1			W112	
34	1,000	ST	37	BR424870	COAX CA ASSY W113 CS6210	3			W113	
35	1,000	ST	37	BR424889	MULTICABL ASS W114 CS6210	1			W114	
36	1,000	ST	37	BR496278	COAX CA ASSY MM	3			W115	
37	1,000	ST	37	BR424900	COAX CA ASSY W116 CS6210	3			W116	
38	1,000	ST	37	BR424919	COAX CA ASSY W117 CS6210	3			W117	
39	1,000	ST	37	BR424927	COAX CA ASSY W118 CS6210	3			W118	
40	1,000	ST	37	BR424935	COAX CA ASSY W119 CS6210	3			W119	

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FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
CHANNEL COOLING.AS.CS6210	BR426695 (426695)	E	1 OF 2

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
41	1,000	ST	37	BR424943	MULTICABL ASS W120 CS6210	1			W120	
42	1,000	ST	37	BR424951	MULTICABL ASS W121 CS6210	1			W121	
43	1,000	ST	37	BR425956	MULTICABL ASS W122 CS6210	1			W122	
44	1,000	ST	37	BR431400	CABLE ASSY W132 CS6210	1			W132	
45	1,000	ST	37	BR426049	MULTICABL ASS W134 CS6210	1			W134	
47	1,000	ST	3C	BR433277	LABEL	1				A4
48	1,000	ST	3C	BR429285	LABEL	1				A4
49	1,000	ST	41	210338-001	DUMMY PLATE	2				B
50	1,000	ST	3C	210925-001	MULTICABLE W123	1				C
51	2,000	ST	53	BR336777	WASHER,FLAT Ø 4MM CU SN M	4				D2
**********	**********	**********	**********	**********	********** BILL OF DOCUMENTATION	**********	**********	**********	**********	**********
			AS	201350	WORKMANSHIP					
**********	**********	**********	**********	**********	********** NEXT ASSY **********	**********	**********	**********	**********	**********
	1,000	ST		BR430374	RACK PIP/REMOTE CS6210	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TERMA

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
CHANNEL COOLING.AS.CS6210	BR426695 (426695)	E	2 OF 2

A4 Form 2004/3 FA Rev B

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	67,000	ST	45	BR426C08	RETAINER,CABLESTRAP NYLON	4			H1	A1
2	139,000	ST	54	BR430803	RIVET,TUBULAR 3,3/3,1	4			H2	A1
3	1,000	ST	41	BR426709	CHANNEL,COOLING CS6210	3			MP1	
4	1,000	ST	41	BR426725	CHANNEL,WALL 1 CS6210	1			MP2	
5	1,000	ST	41	BR426733	CHANNEL,WALL 2 CS6210	1			MP3	
6	1,000	ST	41	BR426741	CHANNEL,WALL 3 CS6210	1			MP4	
7	1,000	ST	41	BR426768	CHANNEL,WALL 4 CS6210	1			MP5	
8	1,000	ST	41	BR432603	CHANNEL,WALL 5 CS6150-210	1			MP6	
9	1,000	ST	41	BR426830	CHANNEL,CABLES CS6210	1			MP7	
10	4,000	ST	46	BR426775	BRACKET CS6150-621	1			MP8	
11	2,350	M	44	BR303156	GASKET COL. 18908	4				A1
12	0,350	M	44	BR377503	EDGING KANTLIST F/2,1-3MM	4				A1
13	10,000	ML	76	205254-001	ADHESIVE SILICONE, RTV	4				A1
**********	**********	**	**	**********	********** BILL OF DOCUMENTATION	**********	**********	**********	**********	******
			AS	201350	WORKMANSHIP					
			PD	BR230C0	KØLEKANAL S76210 1000W					
**********	**********	**	**	**********	********** NEXT ASSY **********	**********	**********	**********	**********	******
	1,000	ST		BR426695	CHANNEL COOLING.AS.CS6210	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
CHANNEL,MECH.MOUNT CS6210	BR426717 (426717)	A1	1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

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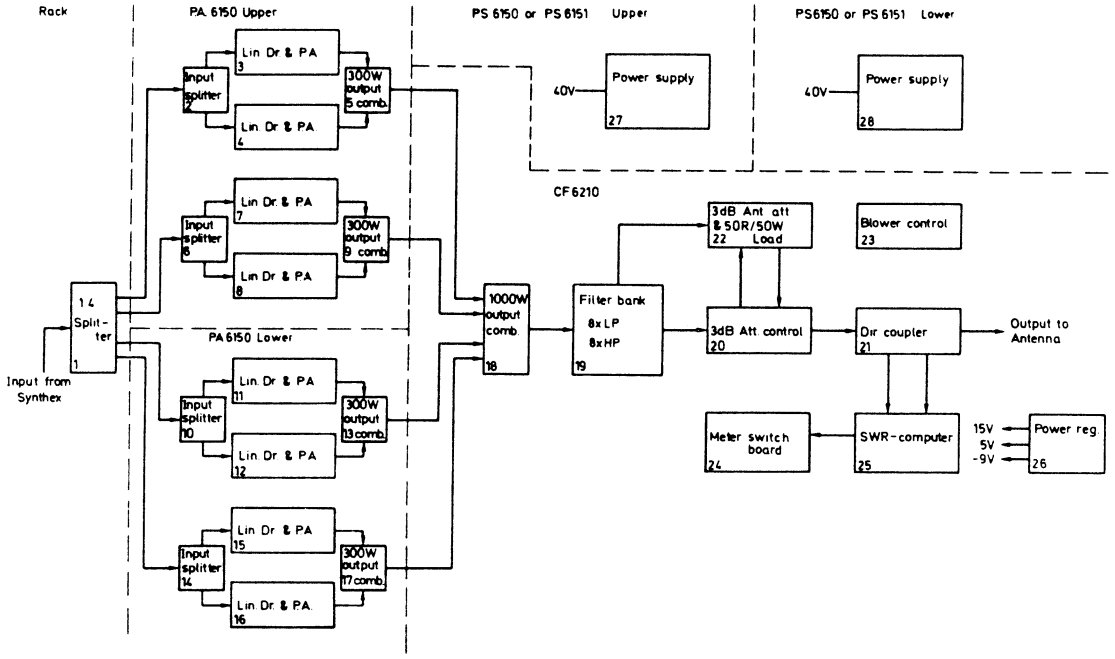
1	4,000	ST	51	BR275506	SCREW M 3 X 5 CHJ GULCR	4			H1	
2	8,000	ST	51	BR275522	SCREW M 3 X 8 CHJ GULCR	4			H2	C
5	4,000	ST	51	BR275638	SCREW M 4 X 8 CHJ GULCR	4			H5	
8	2,000	ST	51	BR321605	SCREW UNBRAK M 5X 8 CHJ G	4			H8	B
13	11,000	ST	53	202232-005	WASHER,SPRING 3,1X 6,2	4			H13	D
14	4,000	ST	53	202232-007	WASHER,SPRING 4,1X 7,6	4			H14	D
15	1,000	ST	41	BR426687	RACK MECH.MOUNTED CS6210	1			MP1	
19	1,000	ST	41	BR426695	CHANNEL COOLING.AS.CS6210	1			MP2	
20	1,000	ST	41	BR430110	PLATE F/COAX CONN. CS6150	3			MP6	
21	1,000	ST	41	BR430218	SCREEN F/TERM.BD CS6150-6	1			MP7	
34	4,000	ST	52	BR209611	STAY NUT M3 X10 N7	3			MP20	C
36	1,000	SE	45	BR373205	TELESCOP.SLIDE,PAIR 17 3/	4				A1
37	1,000	ST	41	BR430129	PLATE,LEFT CHANNEL CS6150	1				C
38	4,000	ST	51	BR275530	SCREW M 3 X10 CHJ GULCR	4				C
39	4,000	ST	52	BR327506	NUT M 3 M CU SN	4				C
**********	**********	**	***	**********	*** BILL OF DOCUMENTATION	**********	**********	**********	**********	*****
			AS	201350	WORKMANSHIP					
1002			PD	BR498513	MERKNING AF S76210					
**********	**********	**	***	**********	********* NEXT ASSY *********	**********	**********	**********	**********	*****
	1,000	ST		BR453609	LA 76210 1000W 3F	1				

TERMA Elektronik AS	TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
FSCM R0567 Hovmarken 4, DK-8520 Lystrup, Denmark	RACK PTP/REMOTE CS6210	BR430374 (430374)	D	1 OF 1

A4 Form 200473 FA Rev B



Block Diagram of Power Amplifier Part S76210

CS6210 DIAG No. 4449

Ref. Designation 4449

Note 1:

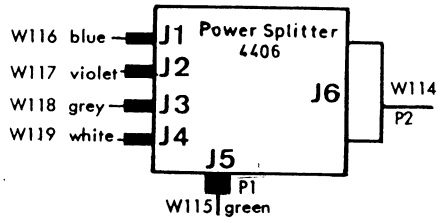
Partial Reference Designations are shown. For complete Designation prefix with Assembly and Subassembly Reference Designations (Circuit Diagram Nos.)

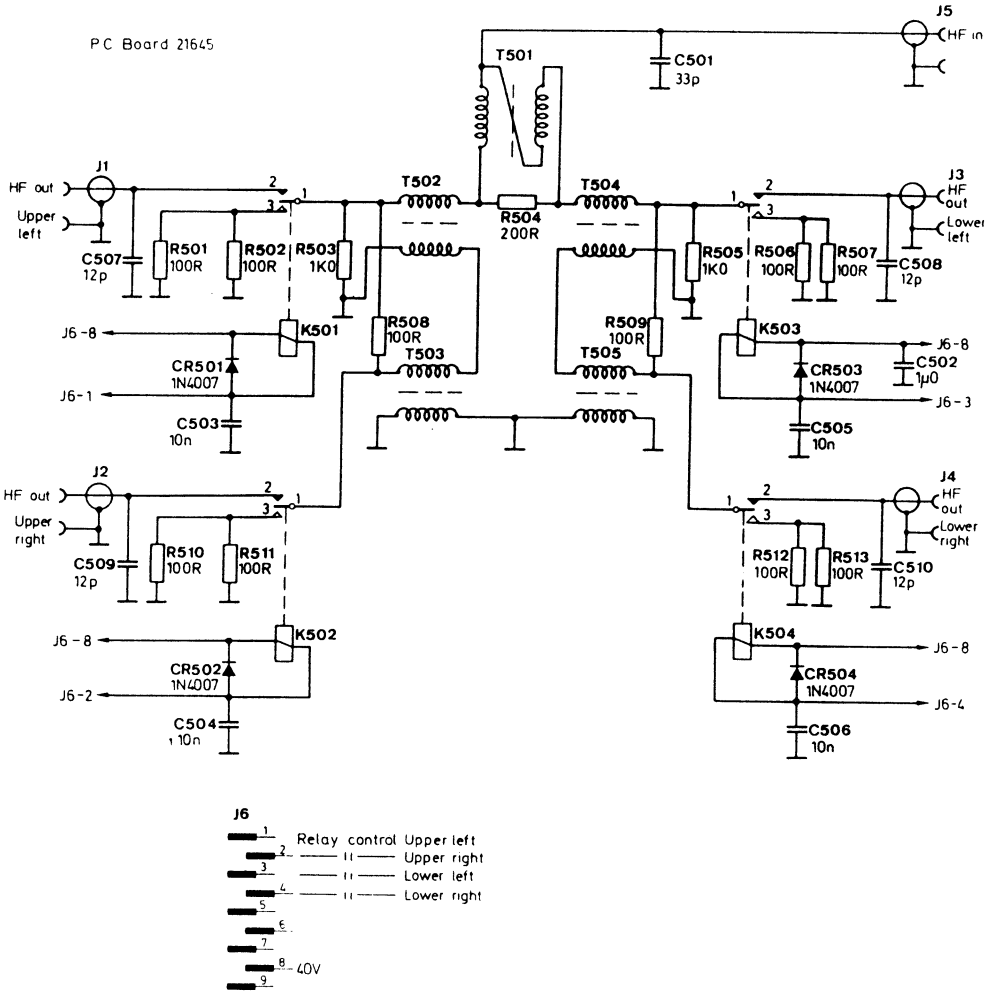
Note 2:

The code system used for indicating resistance values corresponds to that specified in IEC 62, with the exception that decimal fractions are used for values below 1Ω, e.g. 0,47 = 0,47Ω, but 4R7 = 4,7Ω.

The capacitance units are indicated by means of the international prefixes p, n, and µ, (pF, nF, and µF).

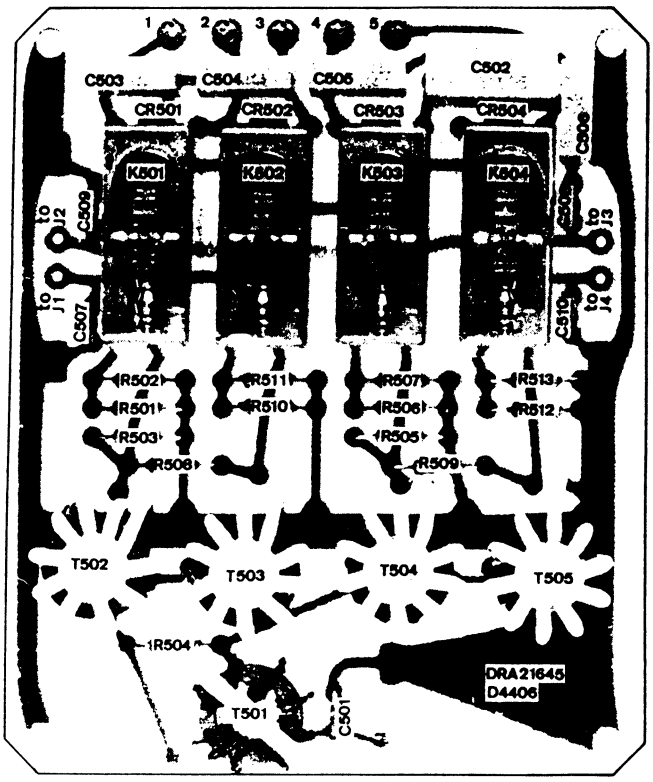
The inductance units are indicated by means of the international prefixes µ, and m, (µH, and mH).





1:4 Power Splitter

Ref. Designation 4406

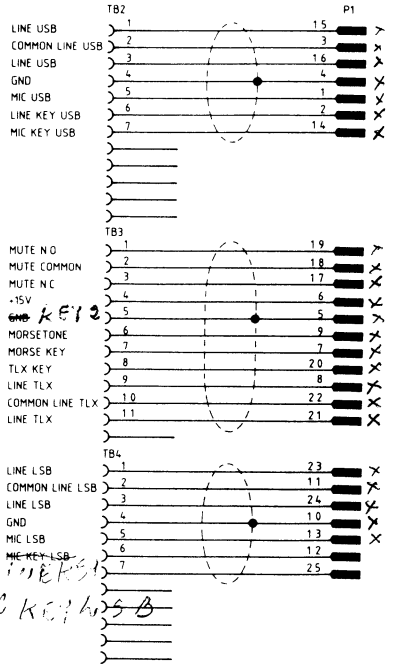


1 :4 Power Splitter
Ref. Desig. 4406
Component Location

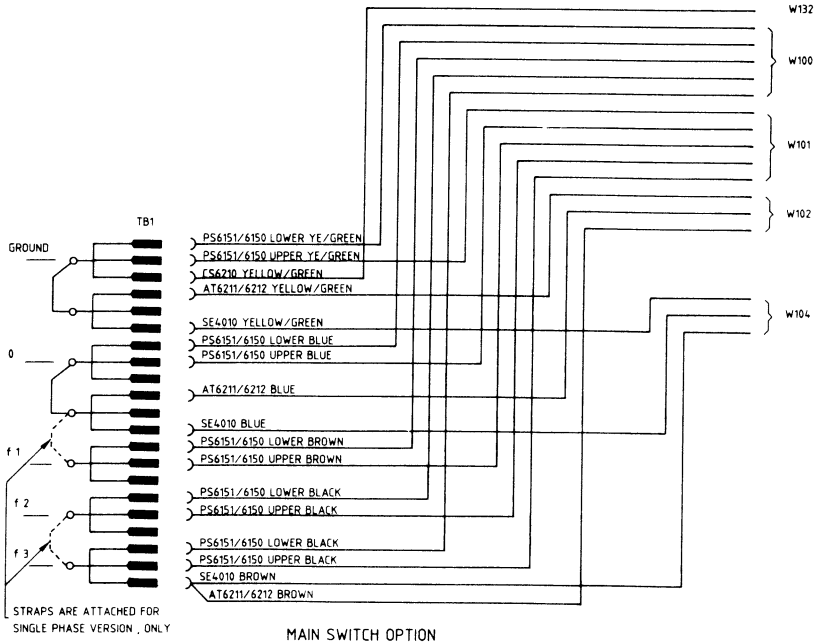
REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
	B	REVISED	9 12 88	VH

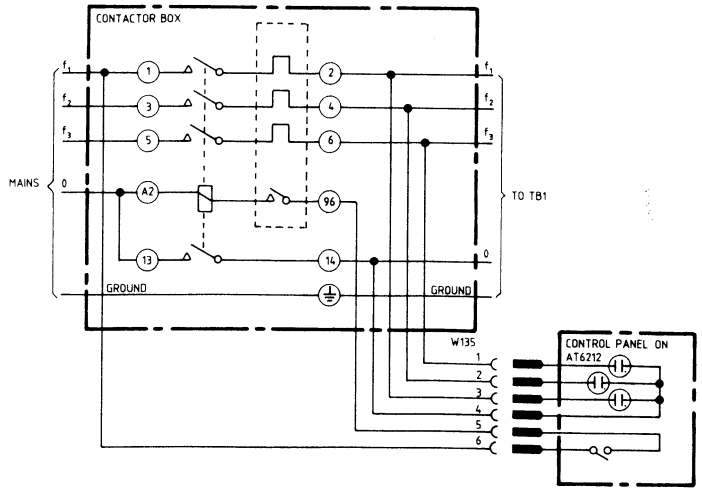
AUDIO AND KEY INPUTS

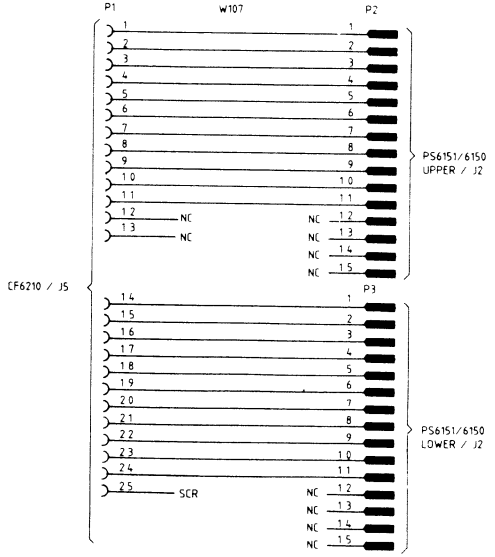


PRIMARY POWER



MAIN SWITCH OPTION





CONNECTIONS FOR ANTENNA TUNER CONTROL, CONTROL CONNECTOR J3 (OPTION)

A FAULT LED
B KEY ENABLE
C TX KEY INT. (N/C)
D SURVEILLANCE
E CH1
F EXT. PWR. FWD.
G GROUND (BRAID)
H SILENT TUNE P.B.
J TUNE P.B.
K READY LED
L CH4
M TUNING LED
N CH8
P PROGRAM TUNE P.B.
R EXT. PWR. RFL.
S O.T. INH. BIT/BCD INVERT
T CH20
U +5VDC B SUPPLY
V COUPLER ENABLE
W GROUND
X O.T. LED
Z CH2

a CH80
b +5VDC B SUPPLY
c TX KEY INT. (N/O)
d AUTO-HOME
e O.T. OVERRIDE P.B.
f GROUP SELECT
g 115/230 VAC (HOT)
h 115/230 VAC (COMMON)
j CH40
k TEMP. SENCE
m BYPASS SW.
n 115/230 VAC (HOT)
p 115/230 VAC (COMMON)
r TEMP. SENCE
s CH10

IN ALL OTHER INTERCONNECTION CABLES, FOR WHICH SPECIAL CONNECTION DIAGRAMS ARE NOT SHOWN, THE CONTACTS AT THE ONE END ARE CONNECTED TO THE CONTACT WITH THE SAME CONTACT NUMBER AT THE OTHER END

FIRST ANGLE PROJECTION	SIZE A2	CODE IDENT	DRAWING NO. 49 58 59
	SCALE		SHEET 2

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			

1.

NORMAL FRONT VIEW

CF6210

PA6150

PA6150

SE4010

AT6212

PS6150

PS6150

REAR PANEL LEFT SIDE

FRONT VIEW WITH INVISIBLE FRONT PANELS

RF OUTPUT

EXTERN STANDARD INPUT

KEY AND AUDIO INPUTS

ANTENNA TUNER CONTROL

POWER SPLITTER 4406

REAR PANEL , RIGHT SIDE

AUX PORT

TELEPHONE LINE / RS232 PORT

SERIEL COMMUNICATION

REAR PANEL , MIDDLE

PRIMARY POWER

* INDICATES CONNECTORS MOUNTED ON THE BACK-SPACE.

DASHED LINES INDICATE THAT THE CABLES ARE ONLY MOUNTED IN THE RACK WHEN THE APPROPRIATE OPTION IS SUPPLIED

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075

ANGLES

LIN. DIM

MATERIAL

NEXT ASSY | USED ON

APPLICATION

DR	VH	12 9 1988
CH	CA	12.9.1988
AP		
AP		

FIRST ANGLE PROJECTION

Dansk Radio AS

TITLE
INTERCONNECTION DIAGRAM
FOR CABINET RACK
AND PANEL CHASSIS ASSEMBLIES

SIZE	CODE IDENT	DRAWING NO.
A2		49 58 59

SCALE 15 | SHEET 1 OF 2

C O N T E N T S

SECTION 1. TECHNICAL SPECIFICATION

General:

The HF power amplifier PA 6150 is a wideband all solid state linear HF power amplifier panel designed to be used in the HF SSB/ISB transmitters S 76210-1 and S 76150-1. Its construction and reliability make it attractive for use in other connections where a HF power of 500-600 W in the frequency range 1.5-30 MHz and low intermodulation distortion is required.

The power amplifier panel employs two independent 300-W amplifier units and a common forced air-cooling system.

Each 300-W amplifier unit is made up of two 150-W push-pull amplifiers containing a class-A driver amplifier and a class-AB output amplifier. The input signal for each 300-W amplifier unit is fed to an input splitter dividing the signal between the two 150-W amplifiers, the outputs of which are combined to provide the desired 300 W by means of an output combiner.

The amplifiers are protected against excess heat sink temperature by means of thermal switches mounted on each 150-W amplifier heat sink controlling the switching off of the 40 V DC supply for the 300-W amplifier unit.

Means are provided for measuring driver and output stage collector supply current and supply voltage.

A gain reduction of approx. 13 dB is possible by grounding a single control line, which by-passes the output stage and removes its bias.

Frequency Range: 1.5 - 30 MHz.

Gain: 36 dB +/- 2.5 dB.

Output Power: Max. 300 W CW and PEP.

Harmonic Distortion: 2nd harmonic: less than -25 dBr
3rd harmonic: less than -15 dBr
at 300 W CW output.

Intermodulation: Typically more than 35 dB below two-tone test signal level at max. output power.

Input and Output Impedance: 50 ohms.

Cooling: Built-in blower with heat sink temperature supervision, max. 112°C.

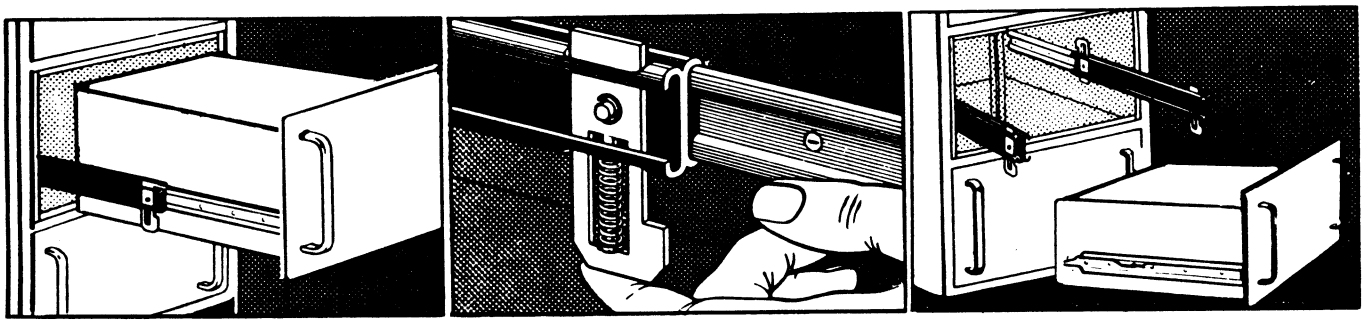
Power Requirements:	40 V DC +/- 1 V, max. 37,5 A at 300 W CW output
	41 V DC +/- 1 V, max. 28 A at 300 W PEP two-tone output
	115 V AC +/- 10%, 45 to 66 Hz. 65 V A for blower.
Environmental Conditions:	Operating Temperature: -15°C to +55°C
	Storage Temperature: -40°C to +70°C
	Relative Humidity: 95% at 40°C
	Shock and Vibration: According to MIL-STD-810B
Dimensions:	Panel width: 19" (483 mm)
	Panel Height: 180 mm
	Panel Depth: 470 mm
Weight:	28 kg approx.

SECTION 2. DESCRIPTION

2.1. Mechanical Description

The "500-W Power Amplifier" panel-and-chassis assembly (drawer) is designed to be mounted on telescopic slides in a standard 19-inch cabinet rack.

The front panel is fastened to the cabinet rack by means of captive panel-mounting screws. The telescopic slides are fitted with trigger latches which automatically and securely lock the unit in the withdrawn position, when fully extended. The projecting latches are pressed (see drawing) to release the lock so that the drawer can be closed or completely removed from the cabinet rack. Before removing a drawer from the cabinet all plugs on the rear panel should be taken out of their sockets.



For the purpose of making the panel-and-chassis assembly resistant against heavy shock and vibration influences the chassis is divided into three main compartments by means of two partitions. One parallel with the front and rear panels and one at right angles to and between the above mentioned partition and the chassis front plate.

The two compartments behind the chassis front plate contain the two 300-W amplifier units. The front panel carries the two air-inlet filters for the cooling air for two amplifier units. These filters are removable from the front side.

The compartment between the rear panel and the partition parallel to it contains the blower and the collecting chamber for the cooling air from the two amplifier units.

The rear panel carries the blower, the two HF input connectors farthest to the left, the two HF output connectors and the power supply connector farthest to the right seen from the front panel.

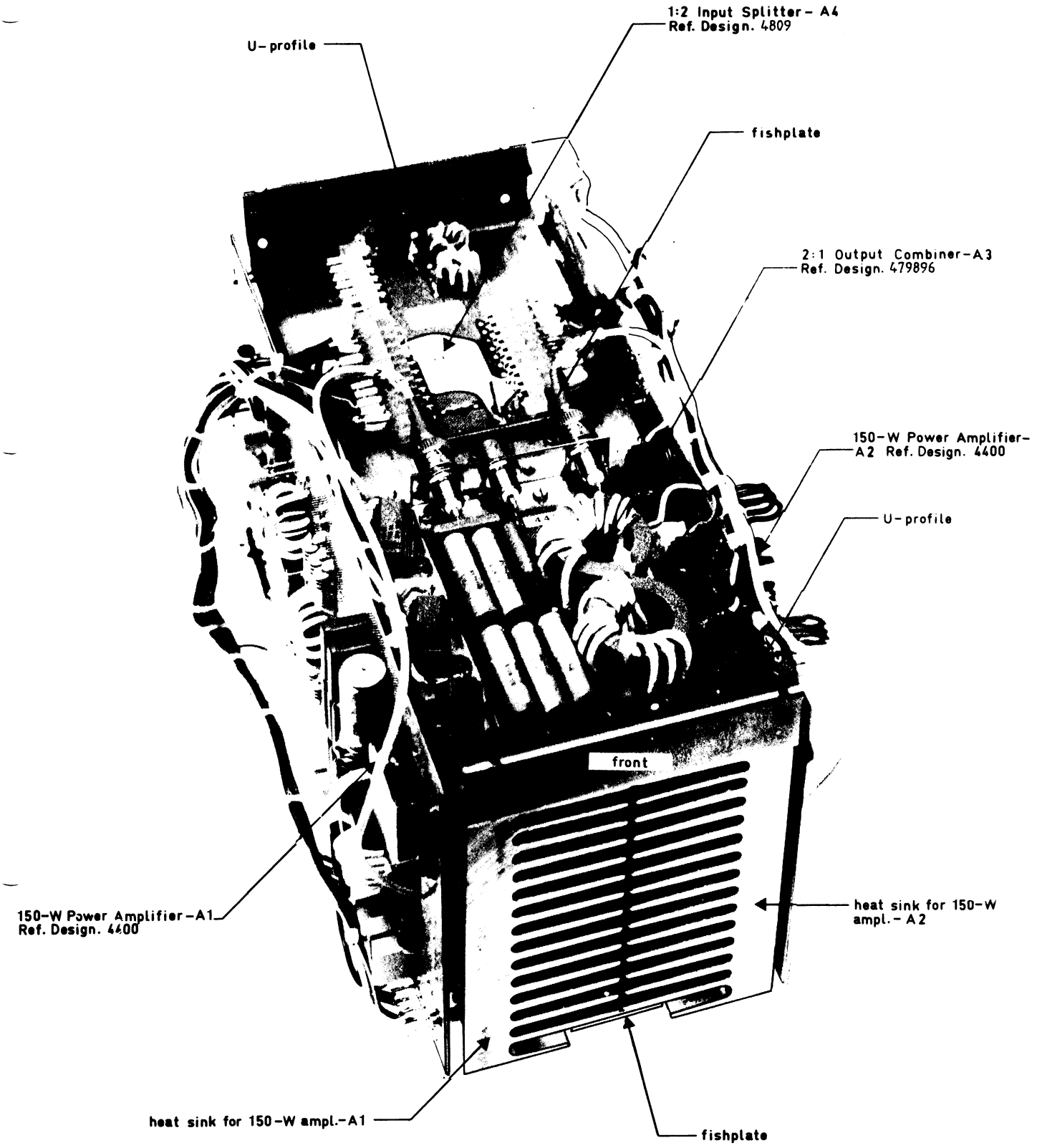
The 300-W amplifier unit is built up around the sturdy heat sinks of the two 150-W amplifiers. These heat sinks make up the chassis for the 300-W amplifier and are held together by means of two U-shaped profiles and a fishplate in the top plane and a longitudinal fishplate in the bottom plane. Besides carrying the two 150-W amplifier boards with associated power devices the heat sinks also carry the 1:2 input splitter and the 2:1 output combiner boards.

Each of the two 300-W amplifier units is held in position by means of six screws through the chassis bottom plate.

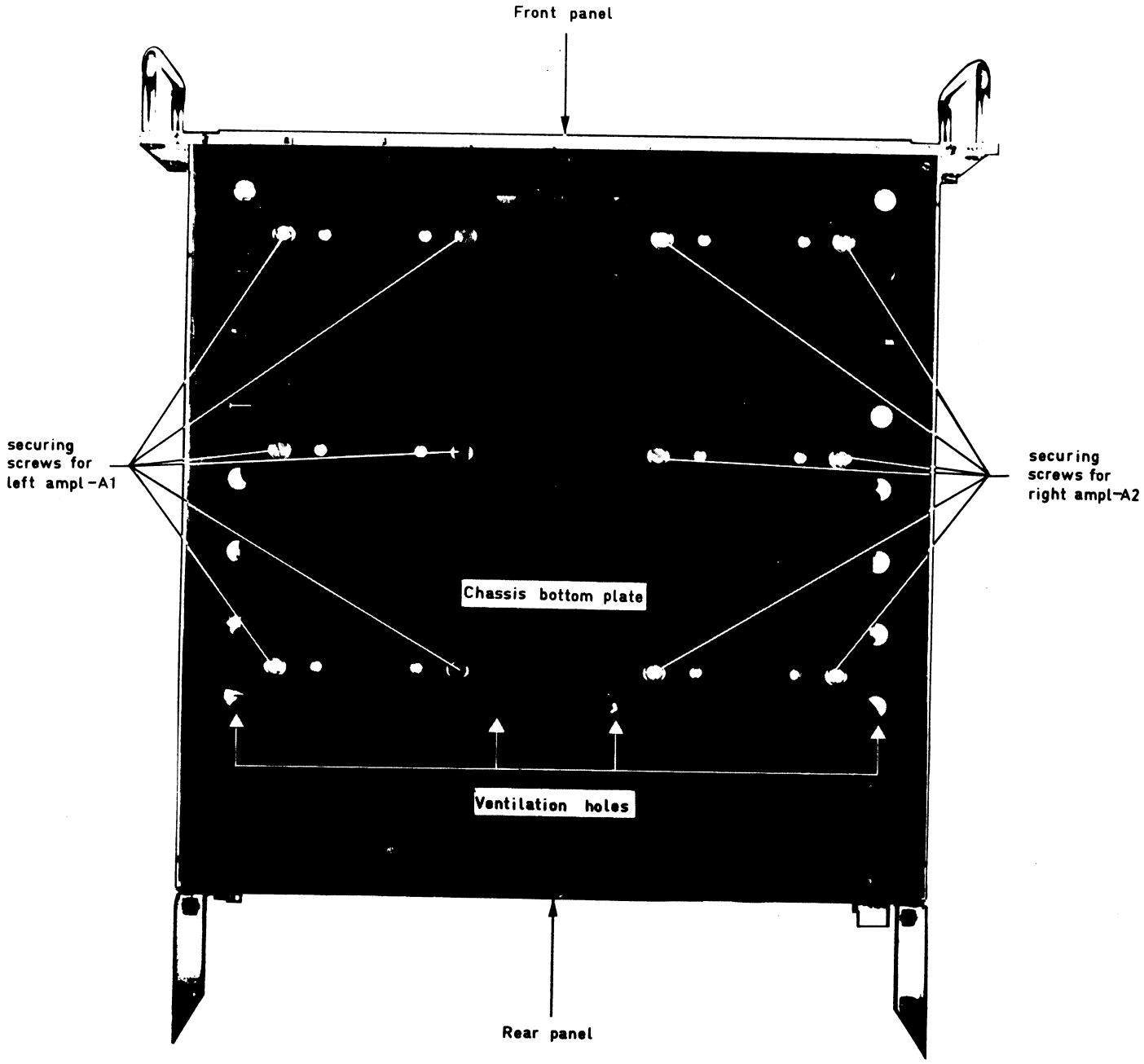
The top cover and the chassis bottom plate are provided with ventilation holes for convection cooling of the components inside the drawer and must not be covered.

For further information on the location of the separate circuits, see the following photos.

Top View, 500-W PA Panel
Ref. Designation 4416



300-W Amplifier Unit
Ref. Designation 4478



Bottom view, 500-W PA Panel
Ref. Designation 4416

2.2. Electrical Description.

2.2.1. Block Diagrams.

The diagrams are located in Section 9 of this description.

2.2.1.1. 500 W PA Panel.
Reference Designation 4445

The block diagram shows the two 300 W amplifier modules, each of which receives the input signal from the 1:2 (1:4) power splitter mounted in the rack of the HF SSB/ISB transmitter S 76150 (S 76210 and cabled between the SYNTHEX SE 4010 and the PA 6150 panels.

The output from each 300 W Amplifier Unit is fed to the 2:1 500 W/ 4:1 1000 W Power Combiner, in the CF 6150/CF 6210 Combination and Filter Panel.

Each of the two 300 W Amplifier Units consists of two separate 150 W Power Amplifiers, represented as diagram blocks 2,3 and blocks 6,7. Inputs to these two sets of 150 Power Amplifiers is applied through two separate 1:2 Input Splitters; represented by diagram blocks 1 and 5. Outputs of the two sets of 150 Power Amplifiers are combined in two 2:1 300 W Output Combiners, represented by diagram blocks 4 and 8.

2.2.1.2. 150 W Power Amplifier.
Reference Designation 4444

The input to the 150 W Power Amplifier is first passed through a constant impedance frequency correction network in block 1, shaped to give a certain compensation of the succeeding driver amplifier stage in block 2. The driver amplifier is a class-A push-pull stage, the output of which can be fed either to the input of the succeeding 150 W output stage in block 3 or directly to the output terminal of the 150 W Power Amplifier. This gives the possibility of a gain reduction of approx. 13 dB and a retention of the good intermodulation performance even at reduced power levels because class-A is employed in this stage.

The 150 W output amplifier operates in a class-AB push-pull with an associated bias circuit in block 4. This bias circuit has a low output impedance and is temperature controlled by the temperature of one of the two output transistors. The bias of these transistors is thus to a degree, independent of temperature and varying bias current demands at different power levels.

2.2.2. Interconnection Diagrams.

The diagrams are located in chapter 9.2. of this manual.

2.2.2.1. Interconnections, 500-W PA Panel. Reference Designation 4416

Diagram No. 4416 shows the interconnections in the "500-W PA Panel". Apart from diagram Nos. each block in the diagram has been provided with a letter and figure identification to allow references on jacks and plugs, i.e. looking at the lower right-hand corner of the diagram at the block named "Output Combiner 300-W" in the "Right 300-W Amplifier Unit" with reference designation 4478 and marked A2. It is marked "Ref. design.No. 479896",which is also the diagram number. The block is also marked with a "A2A3", so that the complete reference designations of jacks J1 and J2 are "A2A3J1" and "A2A3J2".

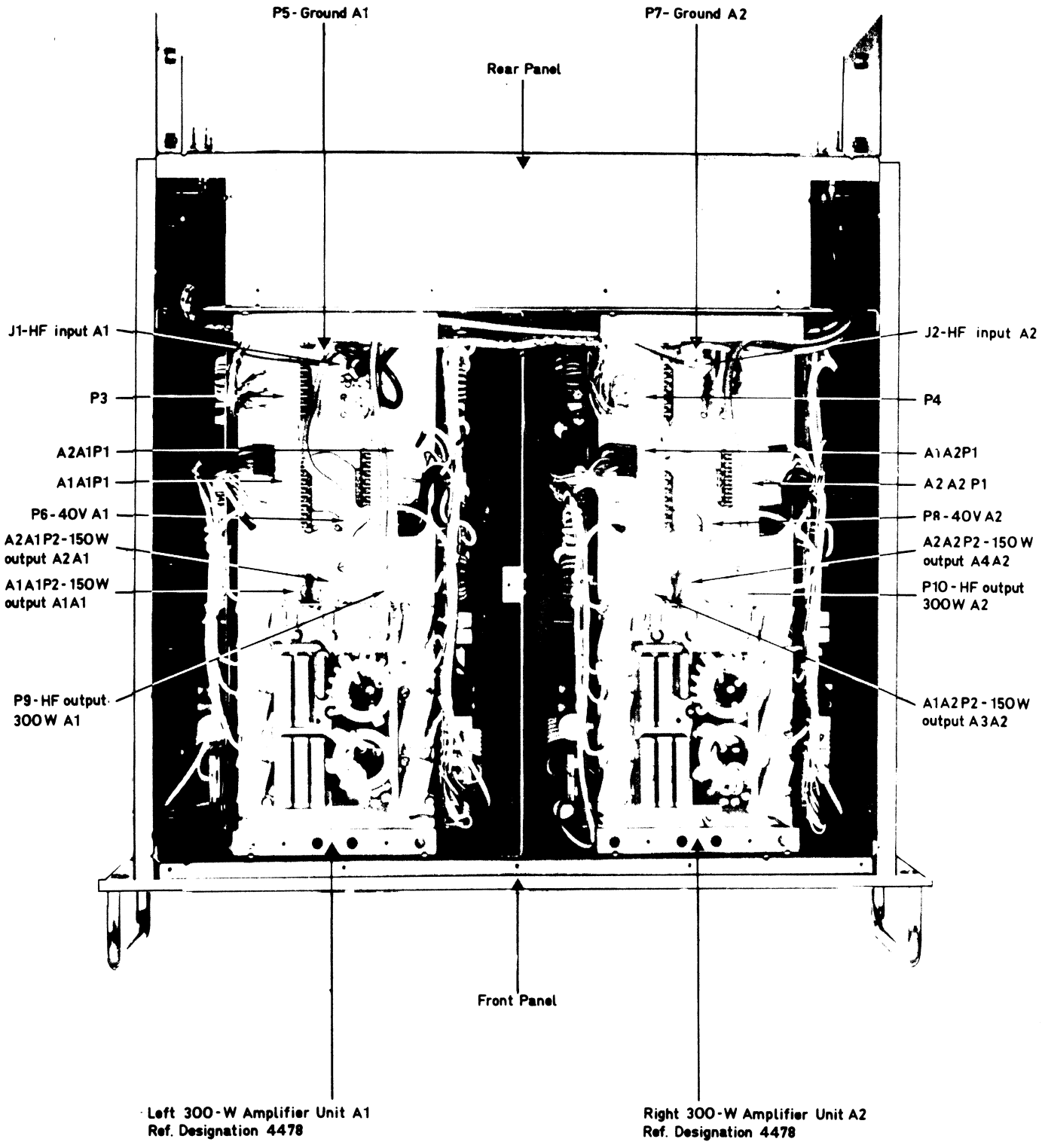
The jacks with the numbers J1, J2, J3, J4, J5 and J6 are located at the rear panel. See photos in chapter 3.2.

For information on the location of the individual blocks of the "500-W PA Panel" see photos in chapter 2.1. Regarding the inside jacks and plugs see the following photo.

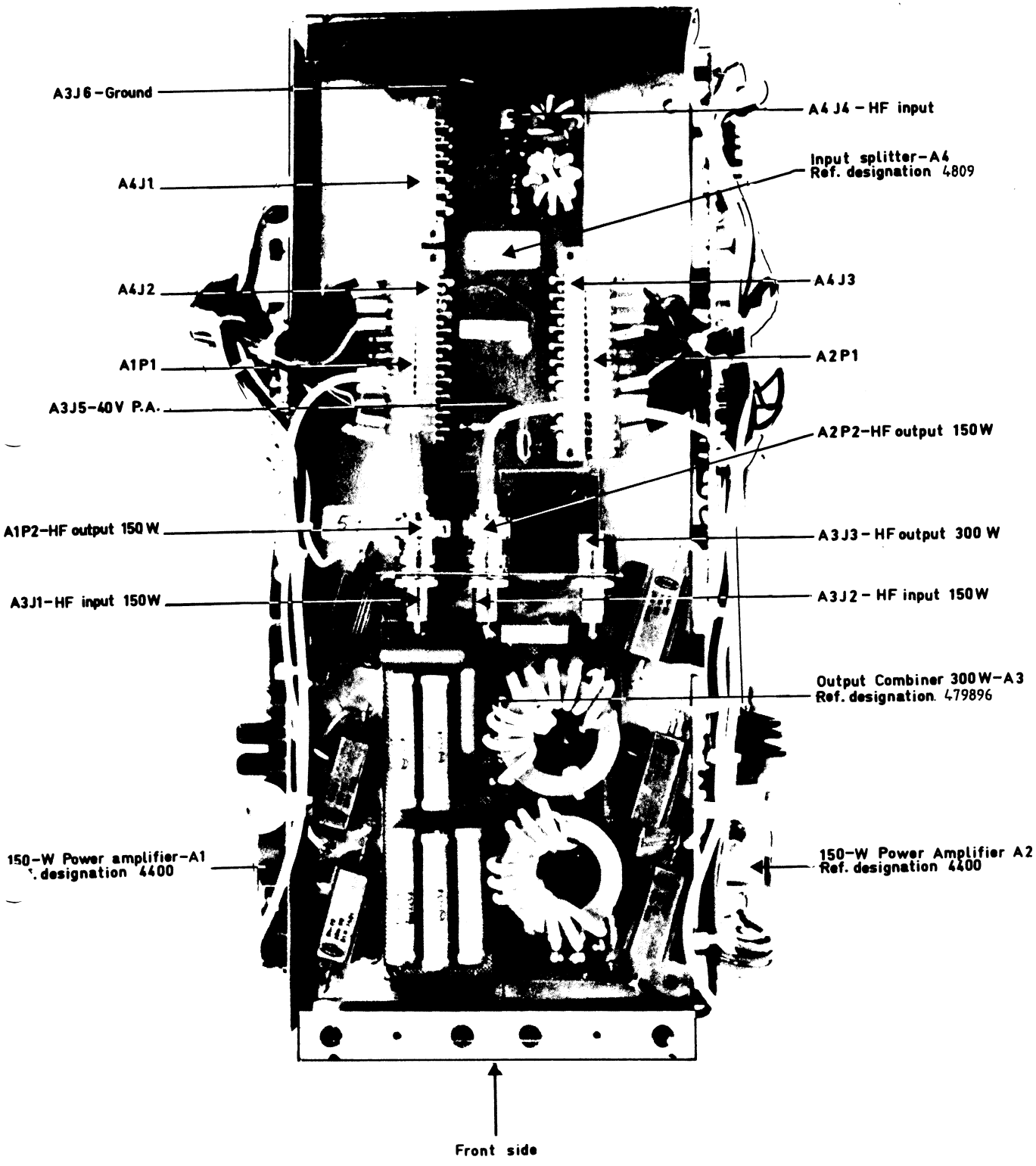
2.2.2.2. Interconnections, 300-W Amplifier Unit. Reference Designation 4478.

Diagram 4478 shows the interconnections of the 300-W Amplifier Unit. Each block in the diagram has been provided with a letter and figure identification as mentioned in chapter 2.2.2.1.

The following photo shows the positions of the individual circuits, jacks and plugs.



Interconnections, 500-W PA Panel Ref. Designation 4416



Top View, 300-W Amplifier Unit
Ref. Designation 4478

2.2.3. Circuit Diagrams.

2.2.3.1. 150 W Power Amplifier. Reference Designation 4400

The HF-input signal is fed to a bridge-T network (R101, R102, R103, R104, C101 and L101). This T-network ensures constant impedance frequency correction of the driver amplifier. Correction is approx. -12 dB at 1.6 MHz, -7.5 dB at 15 MHz and -6.5 dB at 30 MHz.

The driver amplifier is made up of Q101 and Q102 (BLX 13) and functions as a 10-W class-A push-pull stage.

The input is matched to 50 ohms by means of T101, a 2:1 unbalanced to balanced transformer (50-ohm unbal./12.5-ohm bal.). Low frequency input-impedance correction is performed by L102/R105 and L103/R106, that insure a low SWR figure over the entire frequency range.

Output-load impedance is 50-ohm balanced.

The DC stabilization is performed by the zener diodes CR101, CR102 and dropping resistors R111, R135 which maintain a constant V_{ce} for Q101 and Q102 of between 25 V and 30 V.

Transistors with an extremely low hFE value require a reduced value of R107 or R108 to hold V_{ce} under 30 V.

The collector currents are thus determined by the voltage drop across R111 and R135. As the Vcc-Dr supply voltage varies from 44.5 V to 40.0 V, the Icc-Dr varies from 2.2 A to 1.5 A. This is the total current consumption for the driver stage and is monitored by means of the voltage drop across R113, fed to the instrument circuit of the "CF 6210/CF 6150" panel through R112 and R133 and connected to P1-7 and P1-8. 3A will produce 300 mV across 0.1 ohms. Because the instrument circuit has a resistance of 100 ohms the serial combination R112, "instrument circuit" and R133 will produce a voltage drop of 100 mV across the instrument circuit.

The driver output is switched to either the input of the power stage or directly to the HF-OUTPUT through a balanced to unbalanced 1:1 transformer T102. This is done by relays K101 and K102, thus the driver output is used directly at the reduced power levels "-12 dB" and "-18 dB". Relays K101 and K102 are activated at the SYNTHEX SE 6000 where activation of the power level pushbuttons complete relay ground return via P1-4.

The output power amplifier is made up of Q103 and Q104 (BLX 15) forming a 150 W class-AB push-pull stage. Q103 and Q104 should be matched hFE-wise to within +/- 12 per cent at 1.4 A, 6 V.

The input is matched to 50 ohms by means of T103, a 3:1 balanced to balanced transformer (50-ohm bal./5.55-ohm bal.). A frequency and impedance correction network is placed between the transformer T103 and the inputs of the two power transistors Q103 and Q104 (R114 through 121 and C119 through 124). Capacitor C140 at the input of T103, improves the SWR in the high frequency range.

The output collector-to-collector load impedance is 12.5-ohms balanced, and is matched to the required 50 ohms, unbalanced by means of 1:2 balanced to unbalanced transformer, T104. Balancing transformer T105 improves the balance of the collector-to-collector load from T104 especially at low frequencies and serves as collector supply choke

for Q103 and Q104. Low frequency compensation of T104 and T105 is performed by means of C130 and C131.

The necessary base bias voltage for achieving the required zero signal collector current independent of temperature and power level is supplied from the bias circuit made up of Q105 and Q106, that form a voltage stabilizer. The output voltage is determined partly by V_{BE} of Q106 and partly by the voltage drop across R134 giving a possibility for adjustment. Q106 is in good thermal contact with Q104, so that the change of V_{BE} of Q104 (and Q103) and Q106 with the temperature will be equal because of equal temperature coefficients. This temperature stabilizes the zero signal collector currents of Q103 and Q104.

The total collector current consumption of Q103 and Q104 is monitored by means of the voltage drop across R125, R126, R127 and R128 fed to the instrument circuit of the CF 6210/CF 6150 panel through R131 and R132 connected to P1-5 and P1-6. 12A will produce 300 MV across 0.25 ohms. Because the instrument circuit has a resistance of 100 ohms, the serial combination R131, "instrument circuit", and R132 will produce a voltage drop of 100 mV across the instrument circuit. The bias voltage is adjusted by means of R134 for a total zero signal collector current of Q103 and Q104 at 200 mA corresponding to an unloaded voltage at 5 mV between P1-5 and P1-6.

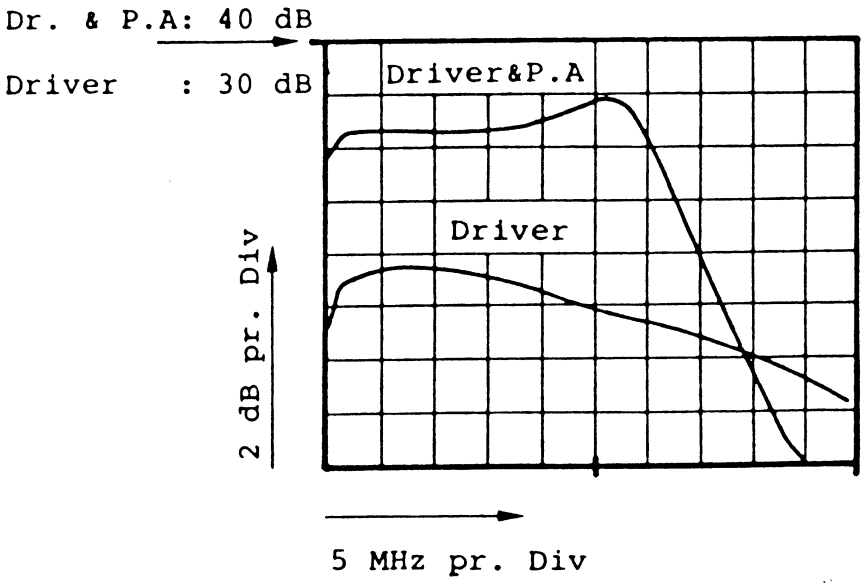
The bias voltage of Q103 and Q104 is removed in the reduced power levels, when the driver is used alone, by means of the relay K102.

The circuit is provided with a coaxial test jack J101 for the purpose of a possibility of a separate test of the output amplifier. For this the relay K101 is engaged by a grounding of the terminal named "PA test" (see photo at diagram no. 4400 in section 9.2.) thus switching the input of the output amplifier from the driver output to the test jack J101.

The power devices CR101, CR102, Q101, Q102, R111, R135, Q103, Q104 and R122 are all mounted on a common heat sink the temperature of which is maintained below 100°C up to an ambient temperature of 55°C by means of the built-in forced air-cooling system.

The heat sink temperature is supervised by means of the thermal switch ST1, with a nominal opening temperature of 112°C, connected to the Error Logic circuit in the CF 6210/CF 6150 panel via P1-3 and P1-9 controlling the switching off of the HF input and power supply for the entire 300 W Amplifier Unit.

The following drawing shows the typical gain-frequency characteristic for partly the complete 150 W Power Amplifier and partly the driver amplifier alone.



2.2.3.2. Input Splitter.
Reference Designation 4809

The circuit serves two purposes. Partly the splitting of the HF-input signal between the inputs of the two 150 W Power Amplifiers, and partly the distribution of DC power and collecting of measuring lines for the power amplifiers.

The signal splitter is made up by the hybrid transformer T525 with the associated balancing resistor R525.

The 1.4:. autotransformer T526 transforms the 50-ohm input impedance to the necessary 25-ohm input impedance for the hybrid transformer.

High frequency compensation is performed by means of C525 and C526.

The thermal switches ST1 of the two 150 W Power Amplifiers are connected in series with each other and connected to the 40 V DC supply via resistor R526 and Jlb-1 and finally fed to the Error Logic in the CF 6210/CF 6150 panel via Jla-6.

2.2.3.3. Output Combiner, 300 W.
Reference Designation 479896.

The circuit combines the output signals from the two 150 W Power Amplifiers fed to the input jacks Jl and J2 to 300 W output power at jack J3.

The combiner is made up by the hybrid transformer Tl with the associated balancing resistors Rl through R5.

The 4:3 transformer T2 transforms the 50-ohm load impedance to the necessary 25-ohm load for the hybrid transformer.

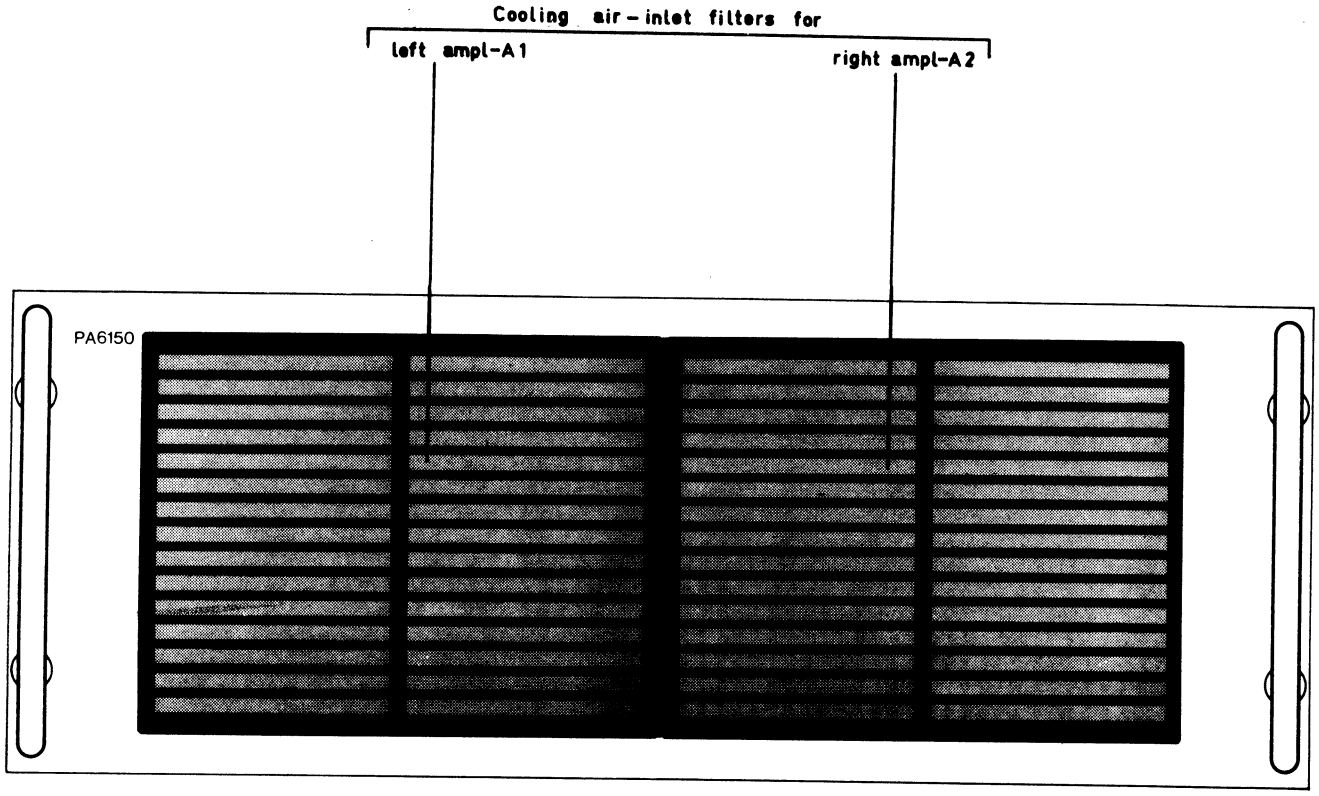
Low frequency compensation is performed by means of C 1 and C 2, high frequency compensation by means of L 1 and C 3. The isolation between the imputs is more than 25 dB, when the output is loaded with 50 ohms.

The insertion loss is maximum at 30 MHz and approx. 0.25 dB.

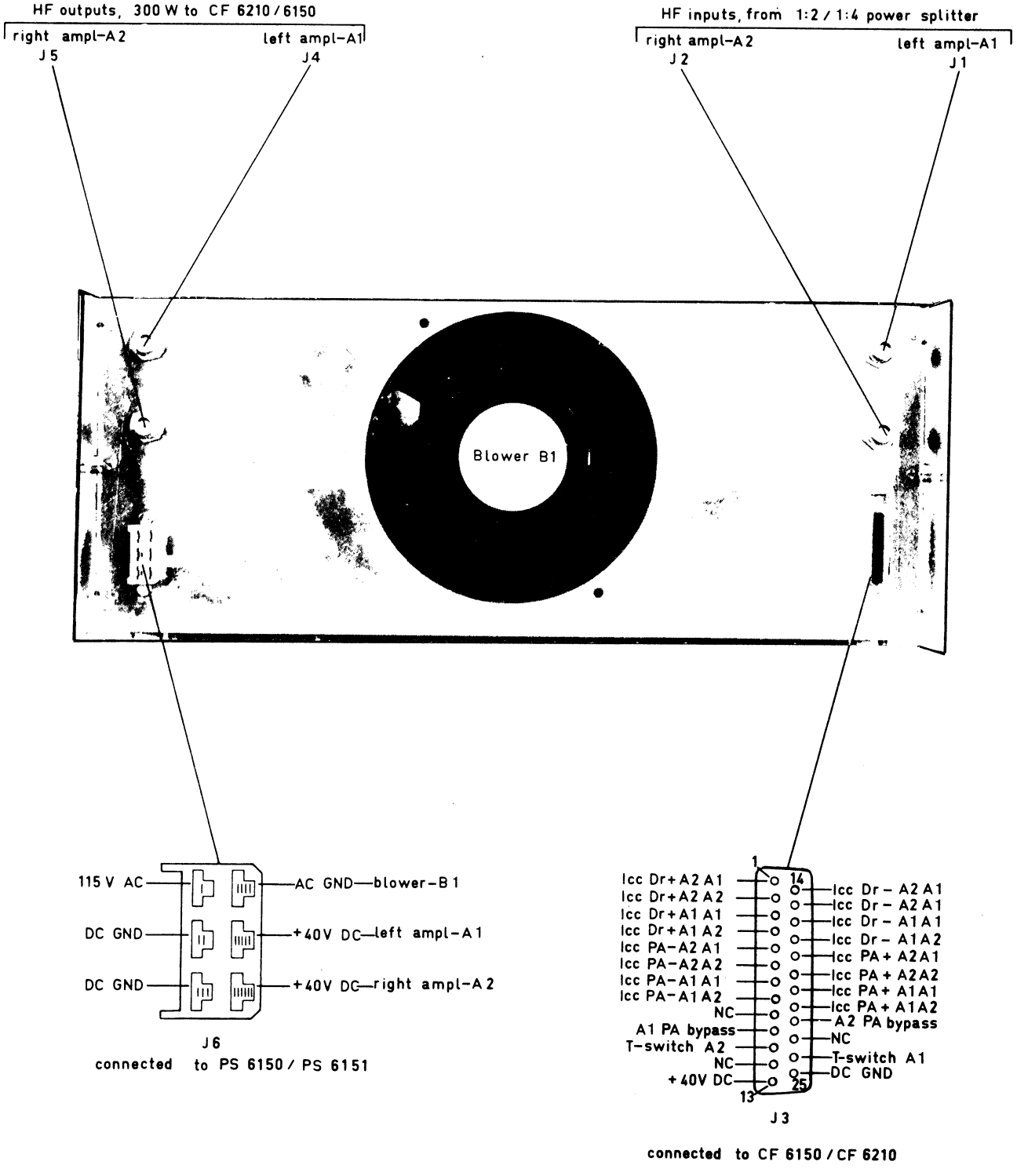
CR 1 and U 1 form an unbalance-detector that shuts off the power supply of the 300 W amplifier module when there is excessive output difference between both 150 W amplifiers.

SECTION 3. AIR FILTERS AND CONNECTORS

3.1. Front Panel



Front view, 500-W PA Panel
Ref. Designation 4416



Rear view, 500-W PA Panel
Ref. Designation 4416

SECTION 4. - INSTALLATION

The "500-W PA Panel" is designed to be mounted in a standard 19-inch. cabinet rack.

The exhausted cooling air might be conducted away from the rack and the installation room by means of an air channel/tube connected with the rear panel and tightened with a soft gasket.

It should be arranged to permit a total air flow through the "500-W PA Panel" of more than 165 m^3/h at the maximum ambient temperature at $55^{o}C$.

The temperature rise of the cooling air will be up to $20^{o}C$, i.e. a temperature of up to $75^{o}C$ of the exhausted cooling air could be expected at an ambient temperature at $55^{o}C$.

SECTION 5. OPERATING INSTRUCTIONS

See section 5, Synthex SE4010.

SECTION 6. - MAINTENANCE.

The cooling air-inlet filters should be checked regularly and cleaned or changed depending on operating hours and environment. Please refer to page 3.1 of section 3.

Order no. of filter : 377864.

REFERENCE LIST

MODULES PA 6150

Dansk Radio AS dra

P.C. nr.	Diagram nr.	Description	Component nr.
21636	D 4400	Right Poweramp 150w PA 6150	379077
21636	D 4400	Left Poweramp 150W PA 6150	363766
23297	D 4809	Input Splitt. PA150	442372
479888	479896	Power Comb. PA6150 300W	479896

SECTION 8. PARTS LISTS AND COMPONENT SPECIFICATIONS.

8.1. Parts Lists.

This section gives for each module all components used. The parts lists are arranged in order of module (= diagram) numbers. The components are identified by their DRA code numbers.

REFERENCE DESIGNATIONS

A . . . . . assembly
AT . . attenuator; isolator; termination
B . . . . . fan; motor
BT . . . . . battery
C . . . . . capacitor
CP . . . . . coupler
CR . . . . . diode; diode thyristor; varactor
DC . . . directional coupler
DL . . . . . delay line
DS . . . . . annunciator; signaling device (audible or visual); lamp; LED
E . . . . . miscellaneous electrical part
F . . . . . fuse
FL . . . . . filter
H . . . . . hardware
HY . . . . . circulator
J . . . electrical connector (stationary portion); jack
K . . . . . relay
L . . . . . coil; inductor
M . . . . . meter
MP . . . . . miscellaneous mechanical part
P . . . electrical connector (movable portion); plug
Q . . . . . transistor; SCR; triode thyristor
R . . . . . resistor
RT . . . . . thermistor
S . . . . . switch
T . . . . . transformer
TB . . . . . terminal board
TC . . . . . thermocouple
TP . . . . . test point
U . . . . . integrated circuit; microcircuit
V . . . . . electron tube
VR . . . . voltage regulator; breakdown diode
W . . . . cable; transmission path; wire
X . . . . . socket
Y . . . . crystal unit (piezo-electric or quartz)
Z . . . . tuned cavity; tuned circuit

ABBREVIATIONS

A . . . . . ampere
ac . . . . alternating current
ACCESS . . . . . accessory
ADJ . . . . . adjustment
A/D . . . . analog-to-digital
AF . . . . . audio frequency
AFC . . . . . automatic frequency control
AGC . . . . . automatic gain control
AL . . . . . aluminum
ALC . . . . . automatic level control
AM . . . amplitude modulation
AMPL . . . . . amplifier
APC . . . . automatic phase control
ASSY . . . . . assembly
AUX . . . . . auxiliary
avg . . . . . average
AWG . . . . American wire gauge
BAL . . . . . balance
BCD . . . . . binary coded decimal
BD . . . . . board
BE CU . . . . . beryllium copper
BFO . . . . . beat frequency oscillator
BH . . . . . binder head
BKDN . . . . . breakdown
BP . . . . . bandpass
BPF . . . . . bandpass filter
BRS . . . . . brass
BWO . . . . . backward-wave oscillator
CAL . . . . . calibrate
ccw . . counter-clockwise
CER . . . . . ceramic
CHAN . . . . . channel
cm . . . . . centimeter
CMO . . cabinet mount only
COAX . . . . . coaxial
COEF . . . . . coefficient
COM . . . . . common
COMP . . . . . composition
COMPL . . . . . complete
CONN . . . . . connector
CP . . . . . cadmium plate
CRT . . . cathode-ray tube
CTL . . . . complementary transistor logic
CW . . . . . continuous wave
cw . . . . . clockwise
cm . . . . . centimeter
D/A . . . . digital-to-analog
dB . . . . . decibel
dBm . . . . decibel referred to 1 mW
dc . . . . . direct current
deg . . degree (temperature interval or difference)
° . . . . . degree (plane angle)
°C . . . . . degree Celsius (centigrade)
°F . . . . degree Fahrenheit
°K . . . . . degree Kelvin
DEPC . . deposited carbon
DET . . . . . detector
diam . . . . . diameter
DIA . . . diameter (used in parts list)
DIFF AMPL . . differential amplifier
div . . . . . division
DPDT . . . . . double-pole, double-throw
DR . . . . . drive
DSB . . . . double sideband
DTL . . . . diode transistor logic
DVM . . . digital voltmeter
ECL . . . . emitter coupled logic
EMF . . electromotive force
EDP . . . . . electronic data processing
ELECT . . . . . electrolytic
ENCAP . . . . encapsulated
EXT . . . . . external
F . . . . . farad
FET . . . . . field-effect transistor
F/F . . . . . flip-flop
FH . . . . . flat head
FIL H . . . . . fillister head
FM . . frequency modulation
FP . . . . . front panel
FREQ . . . . . frequency
FXD . . . . . fixed
g . . . . . gram
GE . . . . . germanium
GHz . . . . . gigahertz
GL . . . . . glass
GRD . . . . . ground(ed)
H . . . . . henry
h . . . . . hour
HET . . . . . heterodyne
HEX . . . . . hexagonal
HD . . . . . head
HDW . . . . . hardware
HF . . . . . high frequency
HG . . . . . mercury
HI . . . . . high
HPF . . . . . high pass filter
HR . . . . . hour (used in parts list)
HV . . . . . high voltage
Hz . . . . . Hertz
IC . . . . integrated circuit
ID . . . . . inside diameter
IF . . . . . intermediate frequency
IMPG . . . . . impregnated
in . . . . . inch
INCD . . . . . incandescent
INCL . . . . . include(s)
INP . . . . . input
INS . . . . . insulation
INT . . . . . internal
kg . . . . . kilogram
kHz . . . . . kilohertz
kΩ . . . . . kilohm
kV . . . . . kilovolt
lb . . . . . pound
LC . . . . . inductance-capacitance
LED . . light-emitting diode
LF . . . . . low frequency
LG . . . . . long
LH . . . . . left hand
LIM . . . . . limit
LIN . . . linear taper (used in parts list)
lin . . . . . linear
LK WASH . . . lock washer
LO . . . low; local oscillator
LOG . . . . logarithmic taper (used in parts list)
log . . . . . logrithm(ic)
LPF . . . . . low pass filter
LV . . . . . low voltage
m . . . . . meter (distance)
mA . . . . . milliampere
MAX . . . . . maximum
MΩ . . . . . megohm
MEG . . . . meg (10^6) (used in parts list)
MET FLM . . . . metal film
MET OX . . metallic oxide
MF . . . medium frequency; microfarad (used in parts list)
MFR . . . . . manufacturer
mg . . . . . milligram
MHz . . . . . megahertz
mH . . . . . millihenry
mho . . . . . mho
MIN . . . . . minimum
min . . . . . minute (time)
. . . ' . . . . . minute (plane angle)
MINAT . . . . . miniature
mm . . . . . millimeter
MOD . . . . . modulator
MOM . . . . . momentary
MOS . . . . . metal-oxide semiconductor
ms . . . . . millisecond
MTG . . . . . mounting
MTR . . . meter (indicating device)
mV . . . . . millivolt
mVac . . . . . millivolt, ac
mVdc . . . . . millivolt, dc
mVpk . . . . millivolt, peak

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	37	BR353774	PWB,POWERAMPL.150W PA6150	3				
2	3,000	ST	23	BR228141	DIO POW. 1N4007 SI 1KV 1A	4			CR103,CR104,CR105	C
3	1,000	ST	22	BR357553	CAP. CER. 82P 100 C N150	4			C101	
4	4,000	ST	22	BR344275	CAP. PLST 22N 250 K	4			C105,C106,C107,C108	
5	2,000	ST	22	BR209759	CAP. TAN. 22U 16 S	4			C109,C110	
6	2,000	ST	22	BR202967	CAP. PLST 100N 100 K	4			C112,C117	
7	4,000	ST	22	BR232991	CAP. PLST 220N 100 K	4			C113,C114,C115,C116	
8	6,000	ST	22	BR203165	CAP. PLST 1N5 250 G	4			C119,C120,C121,C122,C123, C124	
9	1,000	ST	22	BR209333	CAP. ELEC 220U 64 T LL	4			C125	
10	4,000	ST	22	BR361887	CAP. PLST 220N 400 K	4			C126,C127,C128,C129	
11	2,000	ST	22	235389-433	CAP. MICA 33N / 500K	4			C130,C131	E1
12	5,000	ST	22	BR232975	CAP. PLST 1U 100 K	4			C132,C133,C134,C135,C136	
13	2,000	ST	22	BR209554	CAP. PLST 10N 250 K	4			C137,C138	
14	1,000	ST	22	BR209791	CAP. TAN. 2U2 35 S	4			C139	
15	1,000	ST	22	BR371068	CAP. CER. 120P 630 K N750	4			C140	
16	2,000	ST	51	BR275395	SCREW M 2 X10 CHJ GULCR	4			H1	
17	6,000	ST	52	BR327475	NUT M 2 M CU SN	4			H2	
19	3,000	ST	31	BR251279	TERMINAL STUD	4			H4	F
20	1,000	ST	31	BR358665	COAX CONN SMB FEM-PWB	4			J101	
21	2,000	ST	33	BR363588	RELAY 24V 1950R 2XCHG.	4			K101,K102	
22	1,000	ST	25	BR353278	COIL,CHOKE 0U33 M	4			L101	
23	2,000	ST	25	BR362964	COIL,CHOKE 0U1 K 3A	4			L102,L103	
24	8,000	ST	25	BR362948	COIL,CHOKE 10U K	4			L104,L105,L106,L107,L108, L109,L110,L111	
25	1,000	ST	25	BR490804	COIL,CHOKE 4U 6A	4			L114	
26	1,000	ST	44	BR371041	LOCK F.TRANSISTOR PA6150	3			MP1	
27	1,000	ST	26	BR488593	TRANS.HIPOW BLX-THX PAIR	1			Q101,Q102,Q103,Q104	C1
28	1,000	ST	26	BR362972	TRANS.HIPOW 2N4921 SI-N 7	4			Q106	
29	1,000	ST	21	BR240249	RES CARB. 150R 1/4J SFR25	4			R101	
30	2,000	ST	21	BR240184	RES CARB. 47R 1/4J SFR25	4			R102,R103	
31	1,000	ST	21	BR362913	RES CARB. 15R 1/4J SFR25	4			R104	
32	2,000	ST	21	BR240141	RES CARB. 27R 1/4J SFR25	4			R105,R106	
33	2,000	ST	21	BR361844	RES WIREW 33R 4J	4			R107,R108	
34	2,000	ST	21	BR362883	RES CARB. 8R2 1/4J SFR25	4			R109,R110	
35	4,000	ST	21	BR371033	RES FILM 100R 0,6F MRS25	4			R112,R131,R132,R133	

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: POWERAMP.150W PA6150 D440

DOCUMENT NO.: BR363766 (363766)

REV: F

SHEET NO.: 1 OF 3

Parts List

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PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
**********	**********	**	**	**********	********* NEXT ASSY **********	*	**********	**********	**********	******
	1.000	ST		BR379069	HEATSINK ASSY LEFT PA6150	1				
	1.000	ST		BR379077	HEATSINK ASSY RGHT PA6150	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: POWERAMP.150W PA6150 D++0

DOCUMENT NO.: BR363766
(363766)

REV: F

SHEET NO.: 3 OF 3

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Parts List

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FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
36	5,000	ST	21	BR361852	RES WIREW 0R1 2	4			R113,R125,R126,R127,R128	
37	6,000	ST	21	BR362891	RES FILM 10R0 1,6J PR02	4			R114,R115,R116,R117,R118, R119	
38	2,000	ST	21	BR362905	RES CARB. 12R 1/2JSFR25H	4			R120,R121	
39	1,000	ST	21	BR371025	RES WIREW 1K5 4J	4			R123	
40	1,000	ST	21	BR240168	RES CARB. 33R 1/4J SFR25	4			R124	
41	1,000	ST	21	200328-001	RES VAR 10R / 0.75K	4			R134	E1
42	1,000	ST	25	BR363154	TRAFO 150WPA,T101 PA6150	1			T101	
43	1,000	ST	25	BR363146	TRAFO 150WPA,T102 PA6150	1			T102	
44	1,000	ST	25	BR363138	TRAFO 150WPA,T103 PA6150	1			T103	
45	1,000	ST	25	BR363111	TRAFO 150WPA,T104 PA6150	1			T104	
46	1,000	ST	25	BR363137	TRAFO 150WPA,T105 PA6150	1			T105	
47	0,180	M	32	200102-020	WIRE, SOLID, AWG22 BLK	4				A1
48	0,020	M	32	200843-009	WIRE CCP TIN-CTD Ø0.6 MM	4				A1
49	0,075	M	32	200843-007	WIRE CCP TIN-CTD Ø1.0 MM	4				D
50	0,061	M	34	205500-007	SLEEVING TEFLON VIOLET	4				A1
51	0,150	M	34	200872-003	TAPE,LACING STYLE 35	4				A1
52	1,000	ST	48	227700-001	LABEL, BERYLLIUMOXID	3				A1
53	2,000	ST	21	221380-268	RES FILM 5R62 / 0.50F	4			R136,R138	B
54	1,000	ST	21	221380-428	RES FILM 215R / 0.50F	4			R137	B
55	2,000	ST	21	221380-240	RES FILM 2R87 / 0.50F	4			R139,R141	B
56	1,000	ST	21	221380-453	RES FILM 442R / 0.50F	4			R140	B
57	2,000	ST	21	221380-214	RES FILM 1R47 / 0.50F	4			R142,R144	B
58	1,000	ST	21	221380-485	RES FILM 866R / 0.50F	4			R143	B
59	6,000	ST	31	BR493910	JUMPER 0,1" 2P FEMALE	4			S1,S2,S3	E
60	2,000	ML	76	203234-001	ADHESIVE SILICONE, RTV	4				D
61	0,500	G	78	200799-001	COMPOUND,THERMAL,SILICONE	4				D
62	0,100	ML	76	201242-010	ADHESIVE, LOCTITE 290	4				D
63	0,500	ST	31	208801-001	CONN MINI-JUMP 36 PIN	4				E
*****	**********	***	***	**********	*** BILL OF DOCUMENTATION	**	*****	***	**********	*****
			AS	201350	WORKMANSHIP					
			EC	BR4400	150W HF-POWER AMP PA6150					
			MM	BR21636	PTP PA6150, LIN.HF OG PA.					
			PD	BR363766	POWERAMP. 150W					

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: POWERAMP.150W PA6150 D440

DOCUMENT NO.: BR363766 (363766)

REV: F

Parts List

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PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	61	BR363766	POWERAMP.150W PA6150 D440	1			A1	
2	2,000	ST	23	BR361577	DIO ZEN. BZY93C22 22V 20W	4			CR101,CR102	C
3	2,000	SA	23	BR363189	DIO ACCESS MOUNT.KIT	4			H1	
4	6,000	ST	56	BR200387	SPACER Ø3 5X 5MM MEC	3			H2	
5	7,000	ST	51	BR275522	SCREW M 3 X 8 CHJ GULCR	4			H3	
6	6,000	ST	51	BR275549	SCREW M 3 X12 CHJ GULCR	4			H4	A2
7	6,000	ST	53	202232-005	WASHER,SPRING 3,1X 6,2	4			H5	D
8	1,000	ST	56	BR369829	HEATSINK LEFT PA6150	3			MP1	
9	2,000	ST	31	201702-007	TERMINAL LUG, SOLDER	4			MP2	A3
10	1,000	ST	26	BR362980	TRANS.HIPOW MJE3055 SI-N	4			Q105	
11	2,000	ST	21	BR361860	RES WIREW 15R 25A	4			R111,R135	
12	1,000	ST	21	BR361879	RES WIREW 75R 25A	4			R122	
13	1,000	ST	33	BR363219	SW,THERMO 112C 6 0/0	4			ST1	
14	1,000	ST	37	BR373166	CABLE ASSY PA6150 V	1			W1	
15	1,000	ST	37	BR369101	COAX CA ASSY PA6150	3			W2	
16	2,000	ST	53	202234-002	WASHER DISK 5.2X10X0.5MM	4				A1
17	2,000	ST	53	202234-003	WASHER DISK 6.2X13X0.7MM	4				A1
18	1,000	ST	56	201201-003	INSULATOR, PLATE, MICA	4				A2
19	1,000	ST	53	202234-030	WASHER DISK 3.2X 8X0.5MM	4				A2
20	2,000	ST	56	BR211192	CLAMP 3MM	4				B
21	0,120	M	32	200102-020	WIRE, SOLID, AWG22 BLK	4				C
22	1,000	G	78	200799-001	COMPOUND.THERMAL,SILICONE	4				A4
23	0,015	M	32	200643-007	WIRE COP TIN-CTD Ø1.0 MM	4				D1
24	2,000	ST	53	202225-005	WASHER,FLAT 5,2X12,7X0,8	4				C
**********	**********	**	***	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	**********
			AS	201350	WORKMANSHIP					
			MM	BR22253/22254	PTP PA6150.MONT KØLEFINNE					
			PD	BR379069	HEATSINK ASSY LEFT PA6150					
1001			TP	BRQA4640	150W POWER AMPLIFIER					
1002			TP	BRQA6603	TEST REPORT					
1004			TP	BRQA4642	300W POWER S76210/S76150					
**********	**********	**	***	**********	********** NEXT ASSY **********	**	**********	**********	**********	**********

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TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
HEATSINK ASSY LEFT PA6150	BR379069 (379069)	D1	1 OF 2

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
	1.000	ST		BR444063	POWERAMP 250W PA6150 4810	1				

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FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: HEATSINK ASSY LEFT PA6150

DOCUMENT NO.: BR379069
(379069)

REV: D1

SHEET NO.: 2 OF 2

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Parts List

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PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	61	BR353760	POWERAMP.150W PA6150 D440	1			A1	
2	2,000	ST	23	BR361577	DIO ZEN. BZY93C22 22V 20W	4			CR101,CR102	D
3	2,000	SA	23	BR363189	DIO ACCESS MOUNT.KIT	4			H1	
4	6,000	ST	56	BR200387	SPACER Ø3 5X 5MM MES	3			H2	
5	7,000	ST	51	BR275522	SCREW M 3 X 8 CHJ GULCR	4			H3	
6	6,000	ST	51	BR275549	SCREW M 3 X12 CHJ GULCR	4			H4	A3
7	6,000	ST	53	202232-005	WASHER,SPRING 3,1X 6,2	4			H5	E
8	1,000	ST	56	BR363837	HEATSINK RIGHT PA6150	3			MP1	
9	2,000	ST	31	201702-007	TERMINAL LUG, SOLDER	4			MP2	A4
10	1,000	ST	26	BR362980	TRANS.HIPOW MJE3055 SI-N	4			Q105	
11	2,000	ST	21	BR361860	RES WIREW 15R 25A	4			R111,R135	
12	1,000	ST	21	BR361879	RES WIREW 75R 25A	4			R122	
13	1,000	ST	33	BR363219	SW,THERMO 112C 6 0/0	4			ST1	
14	1,000	ST	37	BR373141	CABLE ASSY PA6150 H	1			W1	
15	1,000	ST	37	BR359101	COAX CA ASSY PA6150	3			W2	
16	2,000	ST	53	202234-002	WASHER DISK 5.2X10X0.5MM	4				A1
17	2,000	ST	53	202234-003	WASHER DISK 6.2X13X0.7MM	4				A1
18	1,000	ST	56	201201-003	INSULATOR, PLATE, MICA	4				A2
19	1,000	ST	53	202234-030	WASHER DISK 3.2X 8X0.5MM	4				A2
20	3,000	ST	56	BR211132	CLAMP 3MM	4				C
21	0,120	M	22	200102-020	WIRE, SOLID, AWG22 BLK	4				D
22	1,000	G	78	200799-001	COMPOUND.THERMAL,SILICONE	4				B
23	0,015	M	32	200343-007	WIRE CCP TIN-CTD Ø1.0 1M	4				E1
24	2,000	ST	53	202225-003	WASHER,FLAT 5,2X12,7X0,8	4				D
**********	**********	**	***	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	*****
			AS	201350	WORKMANSHIP					
			MM	BR22253/22254	PTP PA6150.MONT KØLEFINNE					
			PD	BR379077	HEATSINK ASSY RGHT PA6150					
1003			TP	BRQA4540	150W POWER AMPLIFIER					
1003			TP	BRQA6603	TEST REPORT					
1004			TP	BRQA4642	300W POWER S76210/S76150					
**********	**********	**	***	**********	********** NEXT ASSY **********	**	**********	**********	**********	*****

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
HEATSINK ASSY RGHT PA6150	BR379077 (379077)	E1	1 OF 2

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
	1,000	ST		BR++4065	POWERAMP 250W PA6150 4810	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: HEATSINK ASSY RGHT PA6150

DOCUMENT NO.: BR379077
(379077)

REV: E1

SHEET NO.: 2 OF 2

A4 Form 200473 FA Rev B

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	37	BR442402	PWB,INPUT SPLITTER PA6150	3				
2	1,000	ST	22	BR366617	CAP. CER. 15P 100 G NP0	4			C525	
3	1,000	ST	22	BR366625	CAP. CER. 10P 100 G NP0	4			C526	
4	1,000	ST	31	BR358665	COAX CONN SMB FEM-PWB	4			J4	
5	4,000	ST	31	BR204768	CONN,FLAT,PWB 6,3X0,8	1			J5,J6,J7,J8	
6	1,000	ST	31	BR369276	CONN TAB F/PWB	4			J9	A1
7	6,000	ST	31	BR337355	CONN MOLEX 6P MALE	4			J1A,J1B,J2A,J2B,J3A,J3B	
8	1,000	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	4			R525	
9	1,000	ST	21	BR240486	RES CARB. 3K3 1/4J SFR25	4			R526	
10	1,000	ST	25	BR366633	TRAFO INP.SP,T525 PA6150	1			T525	
11	1,000	ST	25	BR366641	TRAFO INP.SP,T526 PA6150	1			T526	
12	0,700	M	32	200343-009	WIRE COP TIN-CTD Ø0.6 4M	4				A1
13	1,000	ST	45	201197-049	STRAP, CABLE, NAT Ø20X2.5	4				A2
*****	**********	***	***	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	*****
			AS	201350	WORKMANSHIP					
			PD	BR442372	INPUT SPLITT.PA6150					
			TP	BRQA4621	KVAITETSSIKRING.					
*****	**********	***	***	**********	********** NEXT ASSY **********	**	**********	**********	**********	*****
	1,000	ST		BR444035	POWERAMP 250W PA6150 4810	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TERMA

TITLE: INPUT SPLITT.PA6150 D4309

DOCUMENT NO.: BR442372
(442372)

REV: A2

SHEET NO.: 1 OF 1

A4 Form 200473 FA Rev B

Parts List

PRINTED..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	2,000	ST	61	BR444065	POWERAMP 250W PA6150 4810	1			A1,A2	
2	8,000	ST	53	BR245674	WASHER,NYLON Ø10MM	4			H1	
3	32,000	ST	51	BR273514	SCREW M 3 X 6 CHJ GULCR	4			H2	B
4	12,000	ST	51	BR333514	SCREW M 5 X10 UHJ GULCR	4			H3	
5	4,000	ST	51	BR333522	SCREW M 5 X12 UHJ GULCR	4			H4	
6	1,000	ST	41	BR377120	CHASSIS ASSY PA6150	1			MP1	
7	1,000	ST	41	BR366943	TOP PLATE PA6150	1			MP2	
8	1,000	ST	41	BR376876	FRONT PLATE PA6150	1			MP3	
9	2,000	ST	43	BR216704	HANDLE F.7" 1554M	3			MP4	
10	4,000	ST	51	BR260827	THUMBSCREW,KNURLED M6	3			MP5	
11	4,000	ST	46	BR268682	GUIDE F/THUMBSCREW 260827	2			MP6	
12	4,000	ST	53	BR267015	WASHER,NYLON Ø12MM X154M	3			MP7	
13	2,000	ST	41	BR264251	PLATE,LOCK 7 INCH	1			MP8	
14	2,000	ST	65	BR432288	FILTER,AIR ASSY P-P.CF PA	1			MP9	
15	1,000	ST	48	BR464672	LABEL, DRA TYPE/SER.NO	3				B
16	1,000	ST	30	BR499277	LABEL	1				B1
**********	**********	**	**	**********	*** BILL OF DOCUMENTATION	**********	**********	**********	**********	**********
			AS	201350	WORKMANSHIP					
			PD	BR444057	PANEL ASSY PS6150					
**********	**********	**	**	**********	********* NEXT ASSY **********	**********	**********	**********	**********	**********
	2,000	ST		BR453609	LA 76210 1000W 3F	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TERMA

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
PANEL PA6150-01 EMK PA500	BR444057 (444057)	B1	1 OF 1

A4 Form 200473 FA Rev B

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	60	BR442372	INPUT SPLITT.PA6150 04309	1			A1	
2	1,000	ST	61	BR473896	POWER COMB PA6150 300W	1			A2	
3	1,000	ST	56	BR379077	HEATSINK ASSY RGHT PA6150	1			A3	
4	1,000	ST	56	BR379069	HEATSINK ASSY LEFT PA6150	1			A4	
5	9,000	ST	51	BR275530	SCREW M 3 X10 CHJ GULCR	4			H1	A1
6	26,000	ST	51	BR275038	SCREW M 4 X 8 CHJ GULCR	4			H3	A1
7	9,000	ST	56	BR200337	SPACER Ø3 5X 5MM MEC	3			H4	A1
8	1,000	ST	41	BR371203	FISHPLATE,TOP PA6150	1			MP1	A1
9	1,000	ST	41	BR371181	FISHPLATE,BOTTOM PA6150	1			MP2	A1
10	2,000	ST	40	BR371173	BRACKET F.HEATSINK PA6150	1			MP3	A1
**********	**********	****	***	**********	*** BILL OF DOCUMENTATION	**	********	*****	**********	*****
			AS	201350	WORKMANSHIP					
1001			PD	BR444065	POWERAMP 250W PA6150 4310					
1002			EC	BR4310	OUTPUT COMBINER-300W					
1003			TP	BRQA4645	300W PA.DRA.S76210/S76150					
1004			TP	BRQA6604	MALING AF 300W PA MODUL					
**********	**********	****	***	**********	********* NEXT ASSY *******	**	********	*****	**********	*****
	2,000	ST		BR444057	PANEL PA6150-01 EMK PA300	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TERMA

TITLE: POWERAMP 250W PA6150 4310

DOCUMENT NO.: BR444065 (444065)

REV: A2

SHEET NO.: 1 OF 1

A4 Form 200473 FA Rev B

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/23

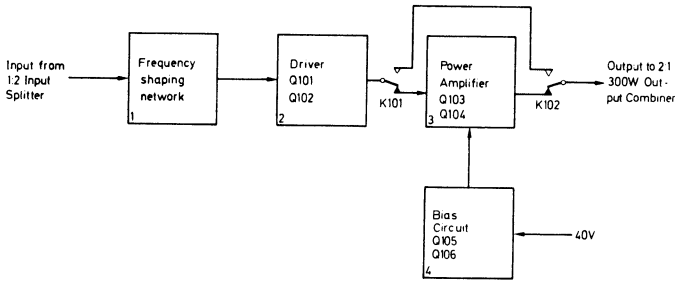
FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	37	BR479888	PWB,POWER COMBINER PA6150	3				
2	2,000	ST	22	BR361909	CAP. PLST 10N 1K K	4			C1,C2	
3	1,000	ST	22	BR462772	CAP. SEM 5-60P TEFLON	4			C3	
4	3,000	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	4			C4,C5,C6	
5	1,000	ST	23	BR228079	DIO SIGN. BAV 10 SI 600MA	4			CR1	
6	1,000	ST	51	BR275514	SCREW M 3 X 6 CHJ GULCR	4			H1	
7	1,000	ST	52	BR327506	NUT M 3 M CU SN	4			H2	
8	1,000	ST	53	BR336874	WASHER,FLAT Ø 3MM CU SN	4			H3	
9	4,000	ST	45	201197-049	STRAP, CABLE, NAT Ø20X2.5	4			H4	A4
10	10,000	ST	31	BR231304	TERMINAL STUD 2,5X7 Ø1,3	4			H5	
11	1,000	ST	25	BR479926	COIL PA6150 COMB. L1	1			L1	
12	1,000	ST	46	BR372277	BRACKET,3XCOAX CON.PA6150	1			MP1	
13	5,000	ST	21	BR362379	RES OXIDE 510R 7J	4			R1,R2,R3,R4,R5	
14	2,000	ST	21	BR2+1628	RES CARB. 4K7 1/2JSFR25H	4			R6,R7	
15	2,000	ST	21	BR2+0400	RES CARB. 1KO 1/4J SFR25	4			R8,R9	
16	1,000	ST	25	BR480061	TRAFO COMB.T1 PA6150	1			T1	
17	1,000	ST	25	BR366447	TRAFO COMB.T2 PA6150	1			T2	
18	1,000	ST	24	BR434555	IC LIN 4N32 OPTOCOUPL.	4			U1	
19	1,000	ST	37	BR462742	CABLE ASSY MR6000-01	1			W1	
*****	**********	***	***	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	*****
			AS	201350	WORKMANSHIP					
			EC	BR479896	POWER COMB PA6150					
			PD	BR479896	POWER COMB PA6150					
			IP	BRQA4523	KVALITETSSIKRING.					
*****	**********	***	***	**********	********* NEXT ASSY *********	**	**********	**********	**********	*****
	1,000	ST		BR444065	POWERAMP 250W PA6150 4810	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TERMA

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
POWER COMB PA6150 300W	BR479896 (479896)	A4	1 OF 1

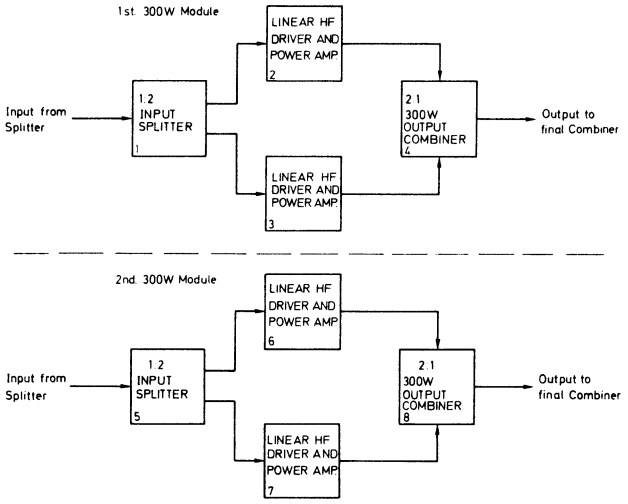
A4 Form 200473 FA Rev B



Block Diagram 150-W Power Amplifier

PA 6150 DIAG No. 4444

Ref. Designation 4444



Block Diagram 500-W PA Panel

PA 6150 DIAG No. 4445

Ref. Designation 4445

Note 1:

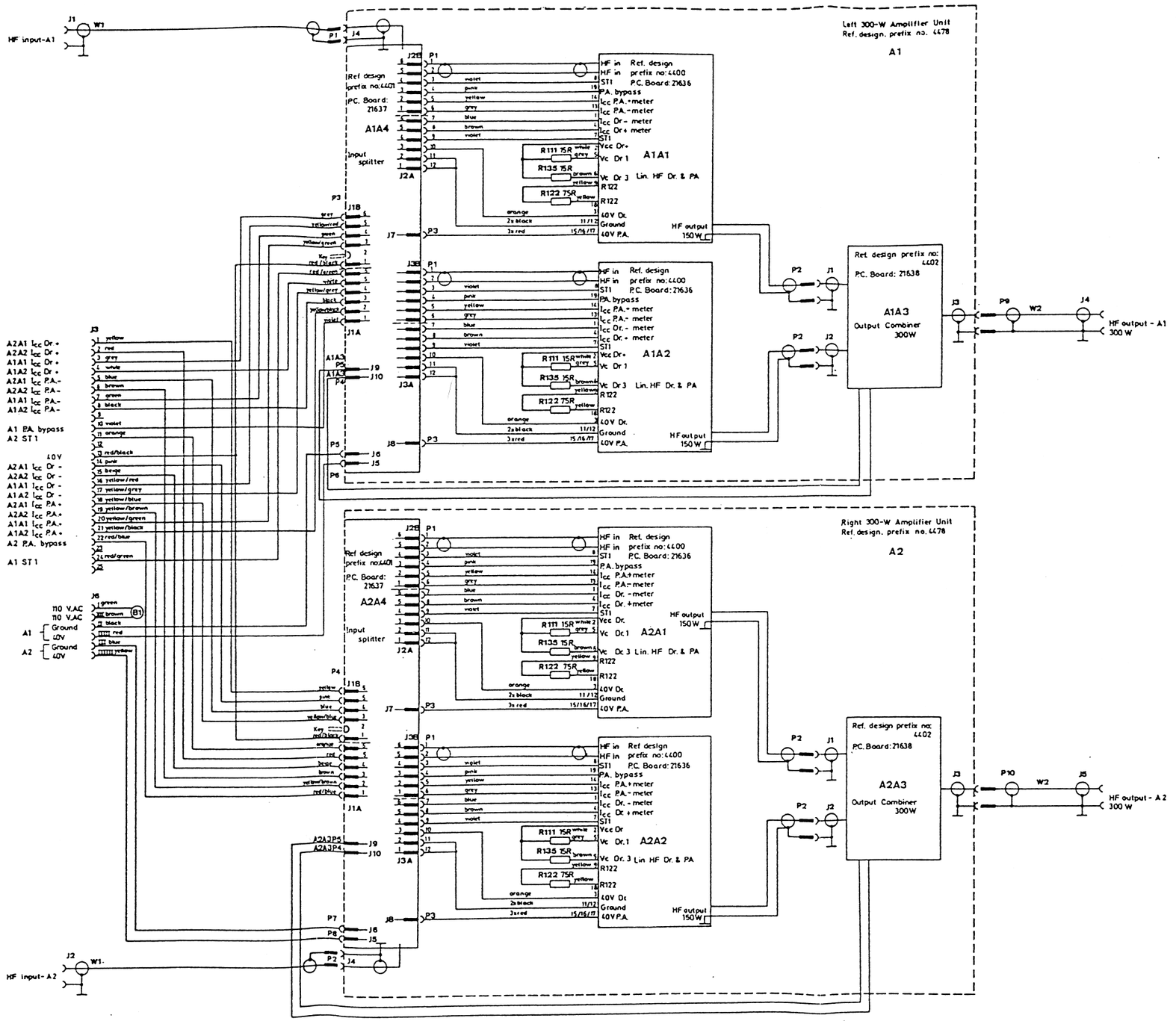
Partial Reference Designations are shown. For complete Designation prefix with Assembly and Subassembly Reference Designations (Circuit Diagram Nos.)

Note 2:

The code system used for indicating resistance values corresponds to that specified in IEC 62, with the exception that decimal fractions are used for values below 1Ω, e.g. 0,47 = 0,47Ω, but 4R7 = 4,7Ω.

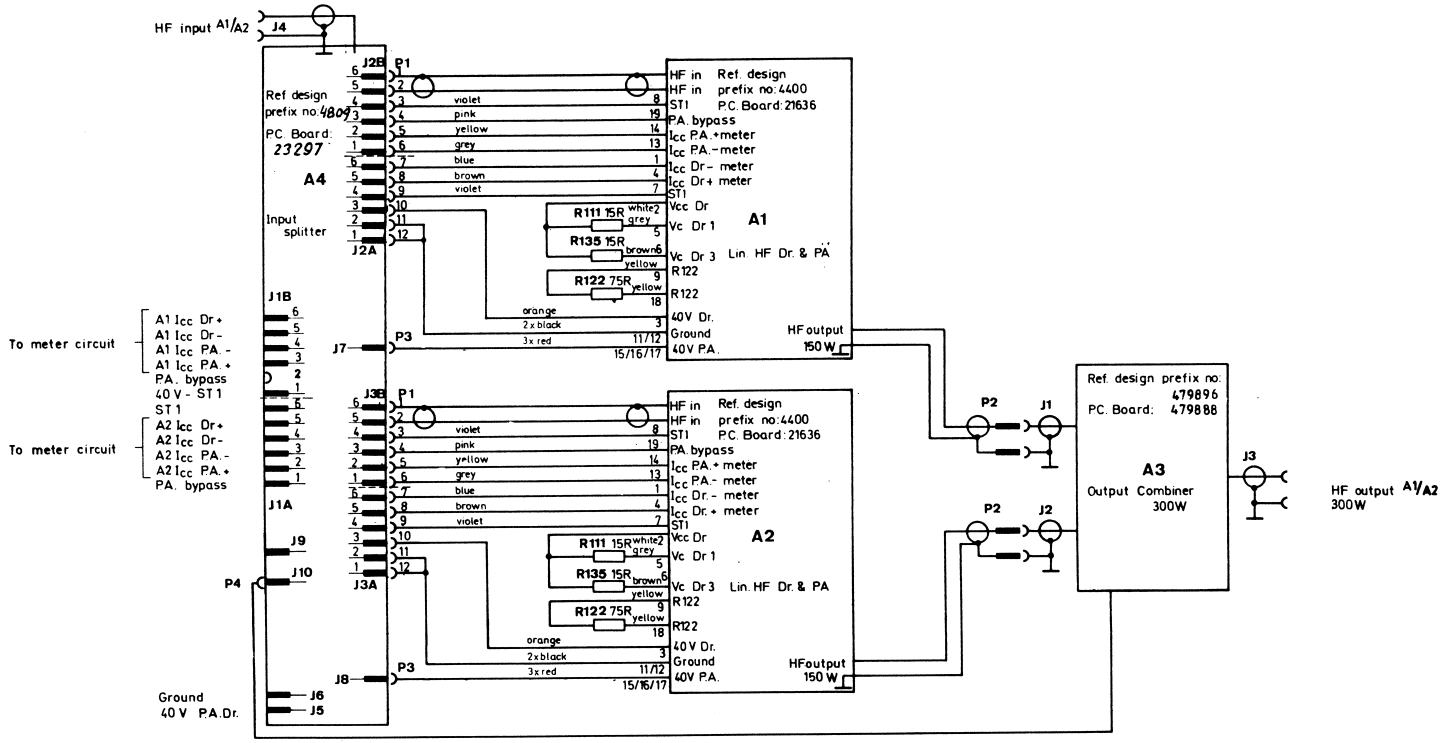
The capacitance units are indicated by means of the international prefixes p, n, and µ, (pF, nF, and µF).

The inductance units are indicated by means of the international prefixes µ, and m, (µH, and mH).



500-W PA Panel

Ref. Designation 4416



300-W Amplifier Unit

Ref. Designation 4478

Note 1:

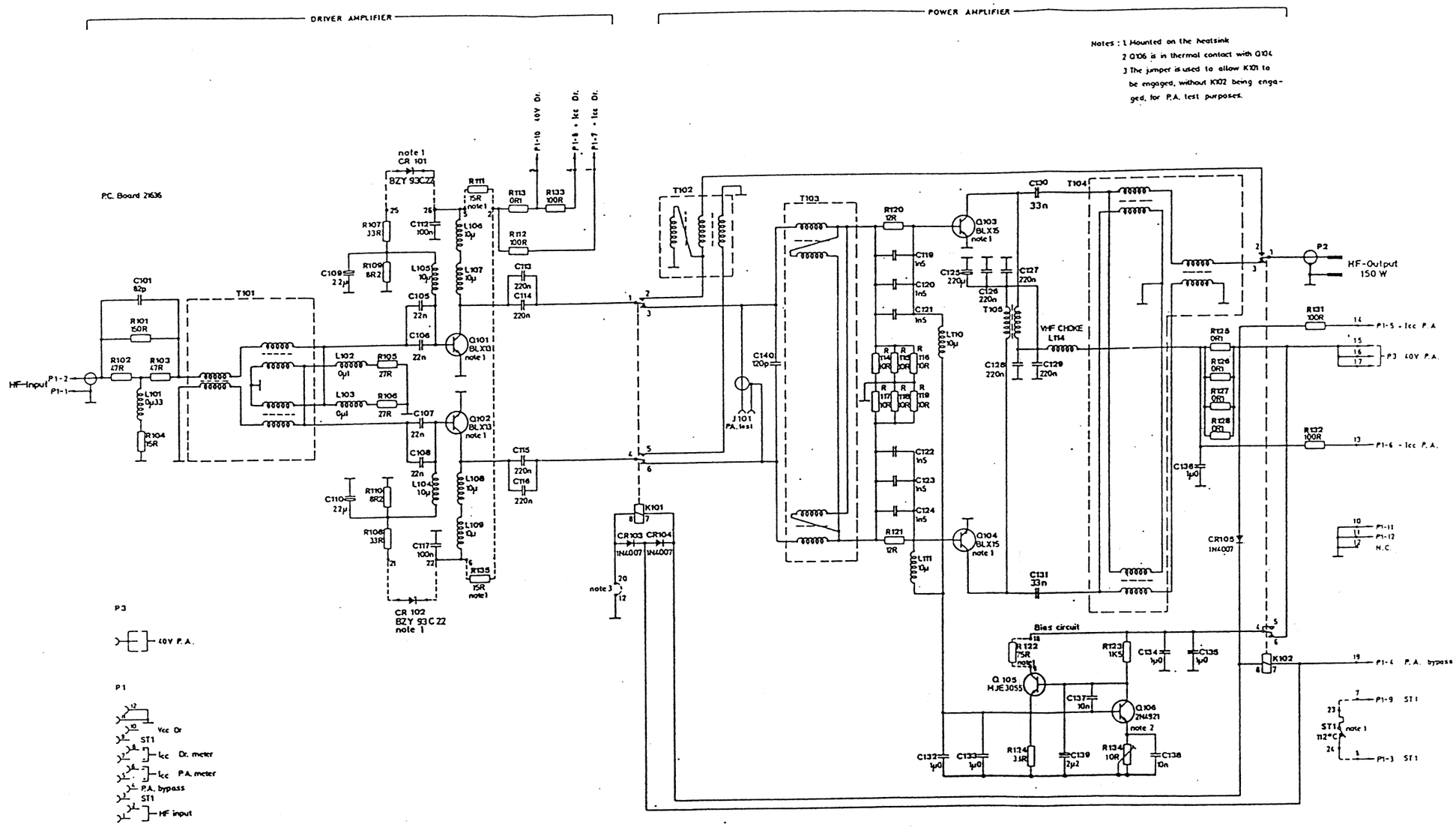
Partial Reference Designations are shown. For complete Designation prefix with Assembly and Subassembly Reference Designations (Circuit Diagram Nos.)

Note 2:

The code system used for indicating resistance values corresponds to that specified in IEC 62, with the exception that decimal fractions are used for values below 1Ω, e.g. 0,47 = 0,47Ω, but 4R7 = 4,7Ω.

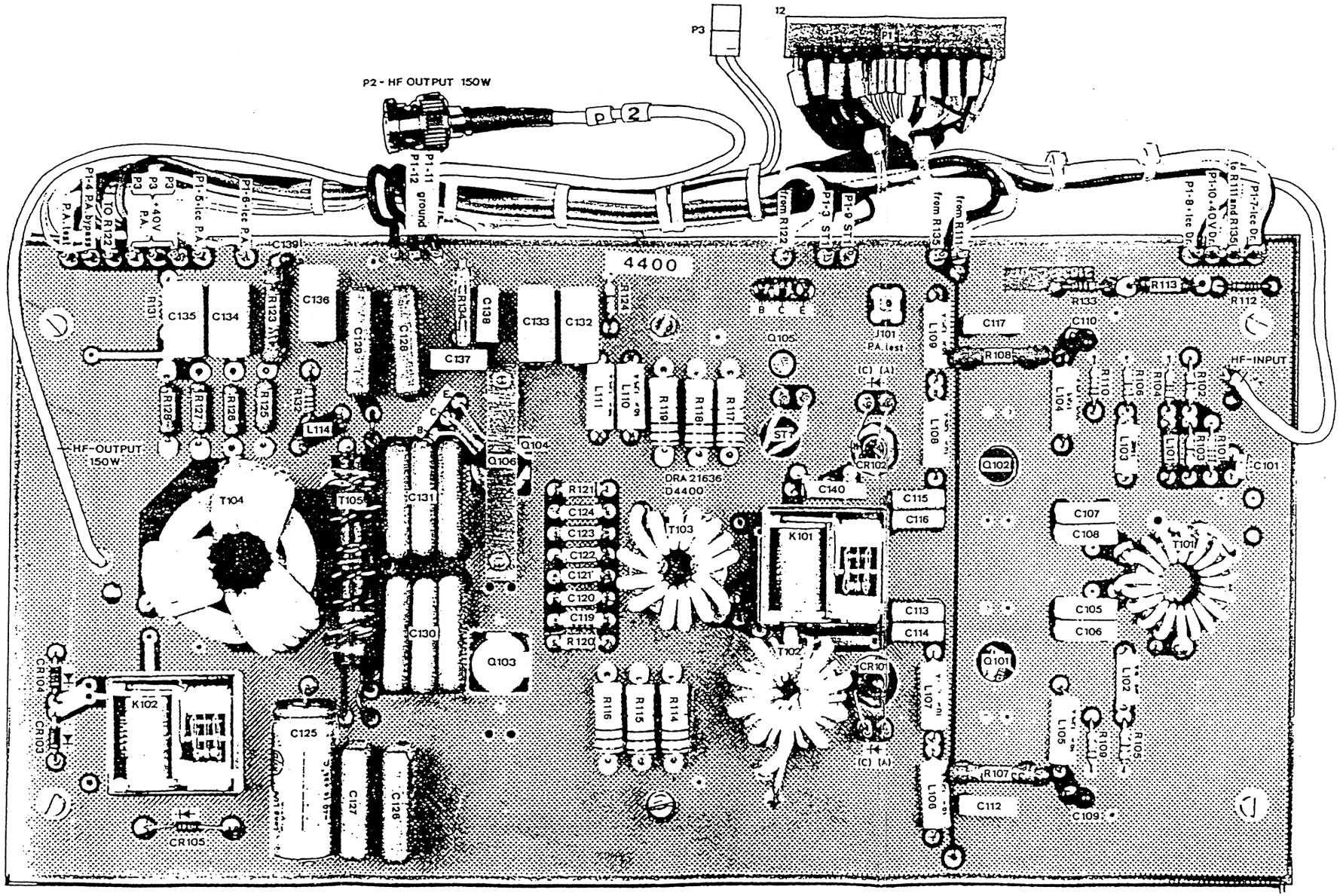
The capacitance units are indicated by means of the international prefixes p, n, and µ, (pF, nF, and µF).

The inductance units are indicated by means of the international prefixes µ, and m, (µH, and mH).

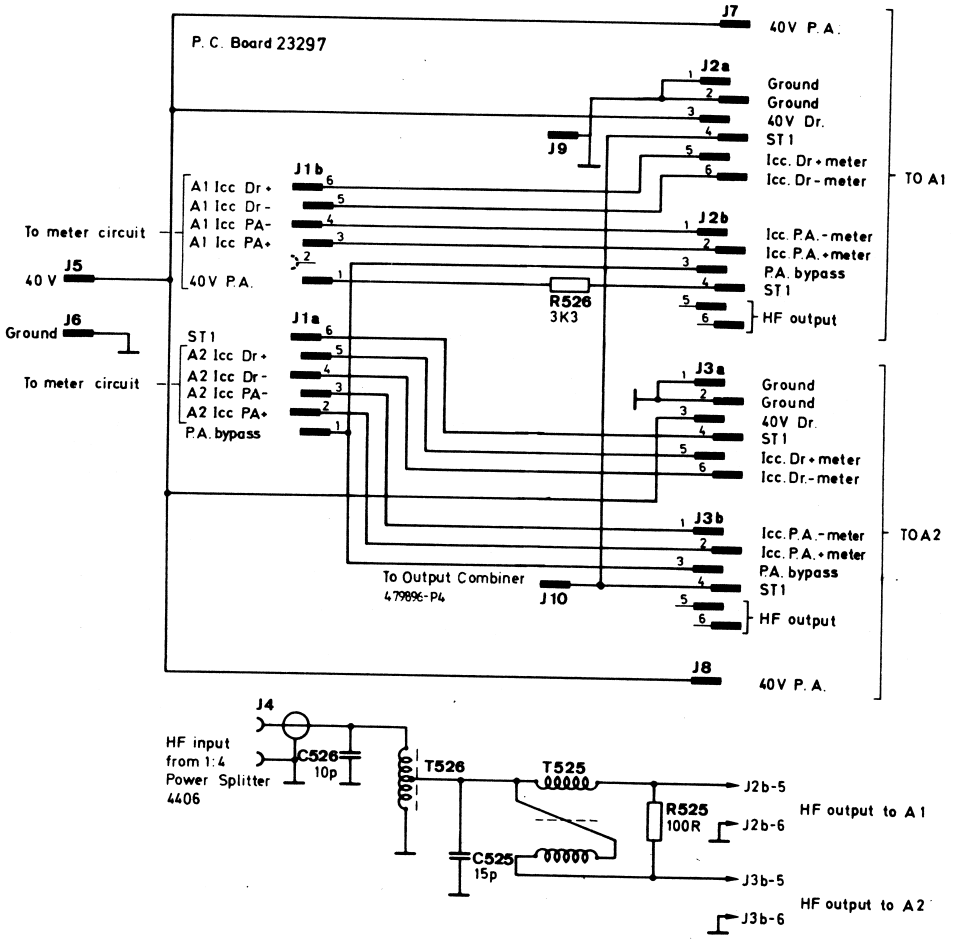


150-W Power Amplifier

Ref. Designation 4400



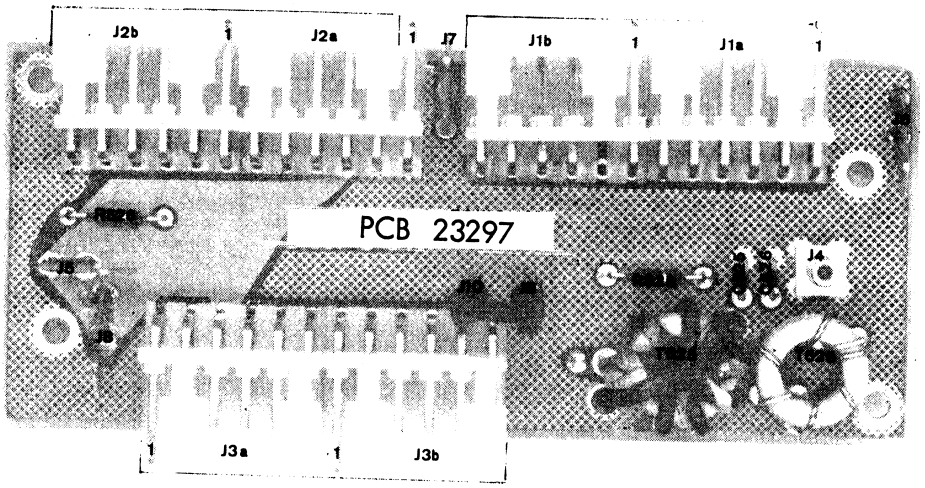
150-W Power Amplifier
Ref. Desig. 4400
Component Location



INPUT SPLITTER

PA 6150 DIAG. No. 4809/ 1985-11

(Ref. Desig. 4809)

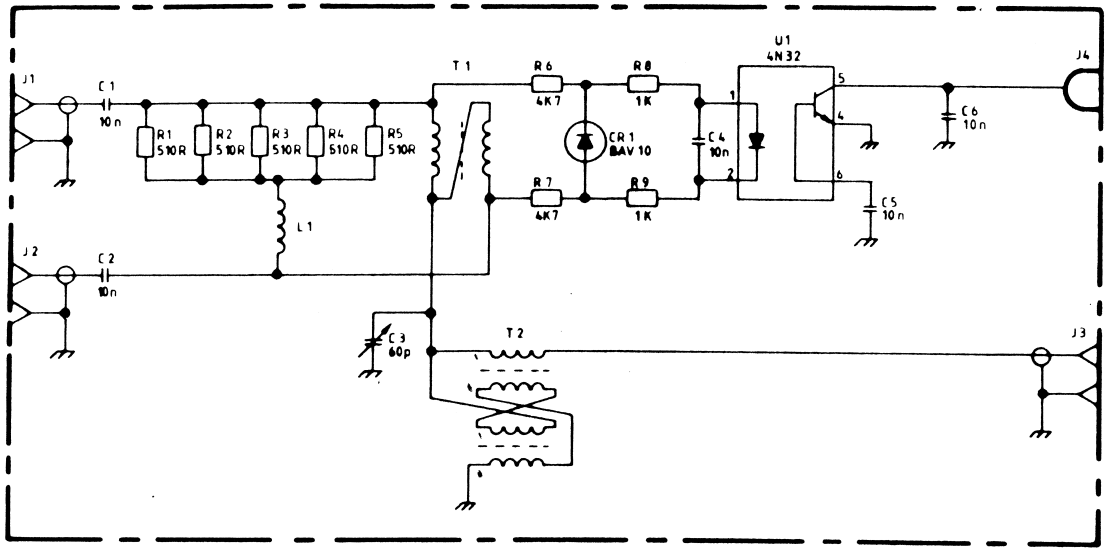


Input Splitter

Ref. Desig. 4809

Component Location

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075	
		ANGLES	
		LIN. DIM.	
44 40 65	PA 6150	MATERIAL	
NEXT ASSY	USED ON		
APPLICATION			

DR.	VH	10. 4 1985
CH.	RW	850410
AP.		
AP		

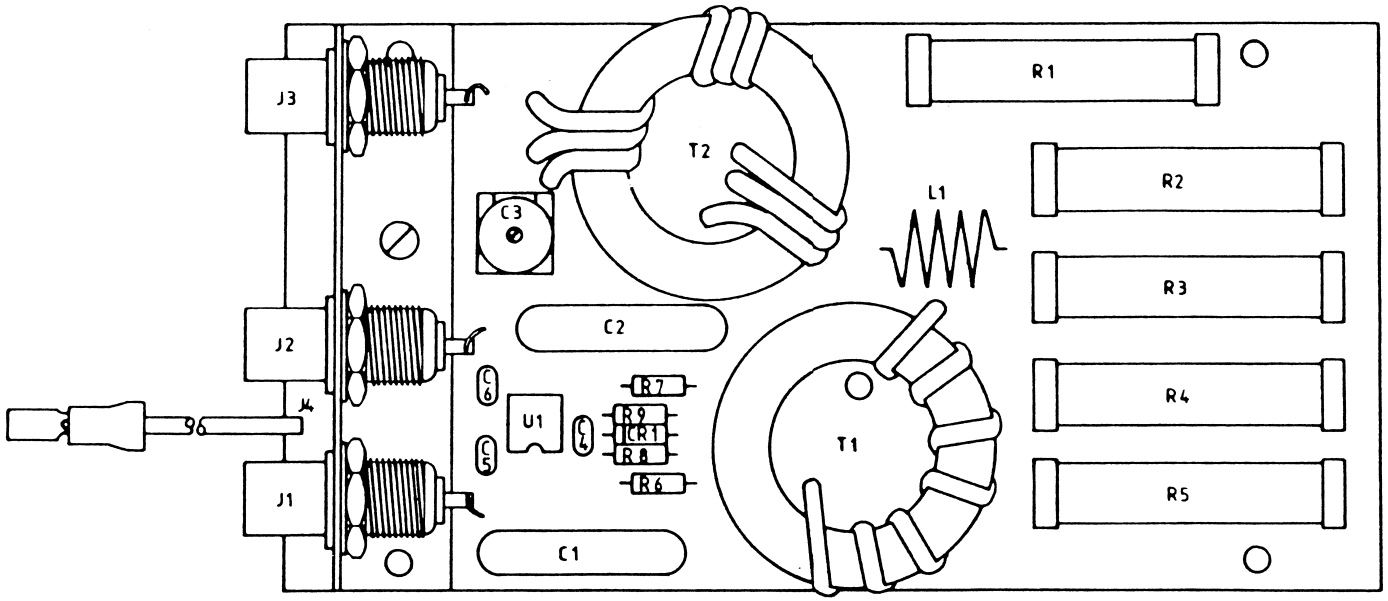
FIRST ANGLE PROJECTION

Dansk Radio AS

TITLE: 300W POWER COMBINER

SIZE	CODE IDENT	DRAWING NO
A2		47 98 96
SCALE		SHEET 1 OF 1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS
			DR. VH 10 4 1985	TITLE: COMPONENT LOCATION 300W POWER COMBINER
		ANGLES	CH. RW 850410	
		LIN. DIM.	AP.	
			AP.	
44 40 65	PA 6150	MATERIAL	FIRST ANGLE PROJECTION	SIZE A2 / CODE IDENT / DRAWING NO. 47 98 96
NEXT ASSY	USED ON			SCALE 2:1 / SHEET 1 OF 1
APPLICATION				

Note 1:

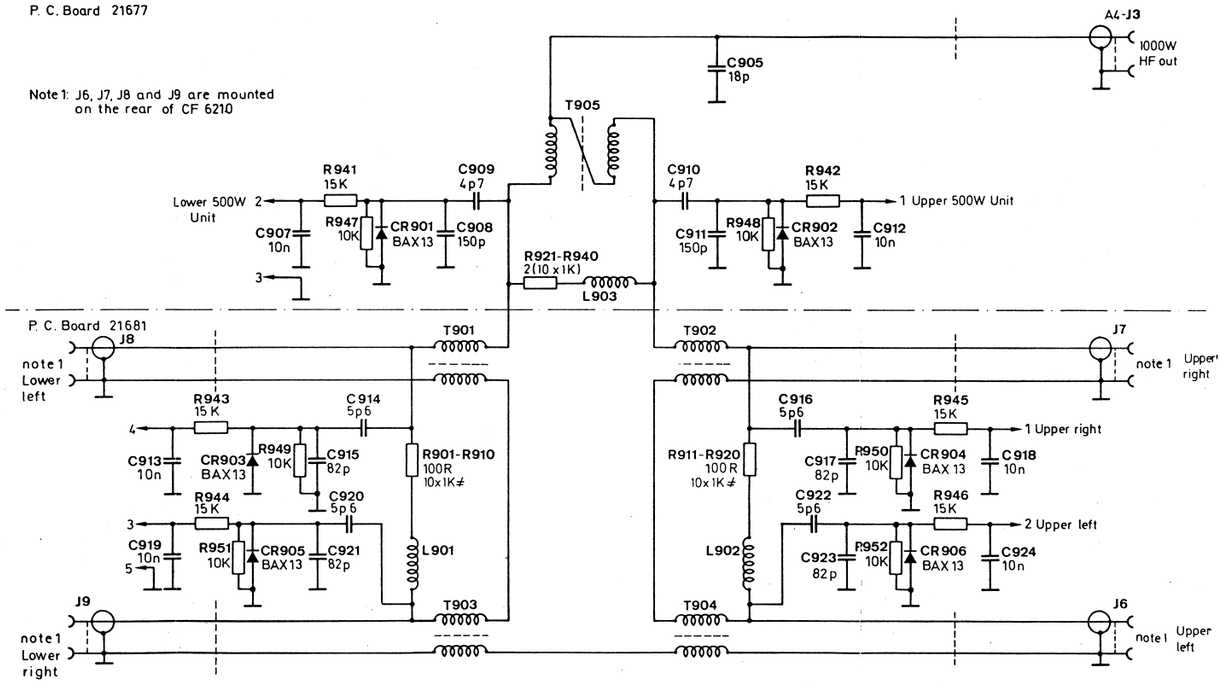
Partial Reference Designations are shown. For complete Designation prefix with Assembly and Subassembly Reference Designations (Circuit Diagram Nos.)

Note 2:

The code system used for indicating resistance values corresponds to that specified in IEC 62, with the exception that decimal fractions are used for values below 1Ω, e.g. 0,47 = 0,47Ω, but 4R7 = 4,7Ω.

The capacitance units are indicated by means of the international prefixes p, n, and μ, (pF, nF, and μF).

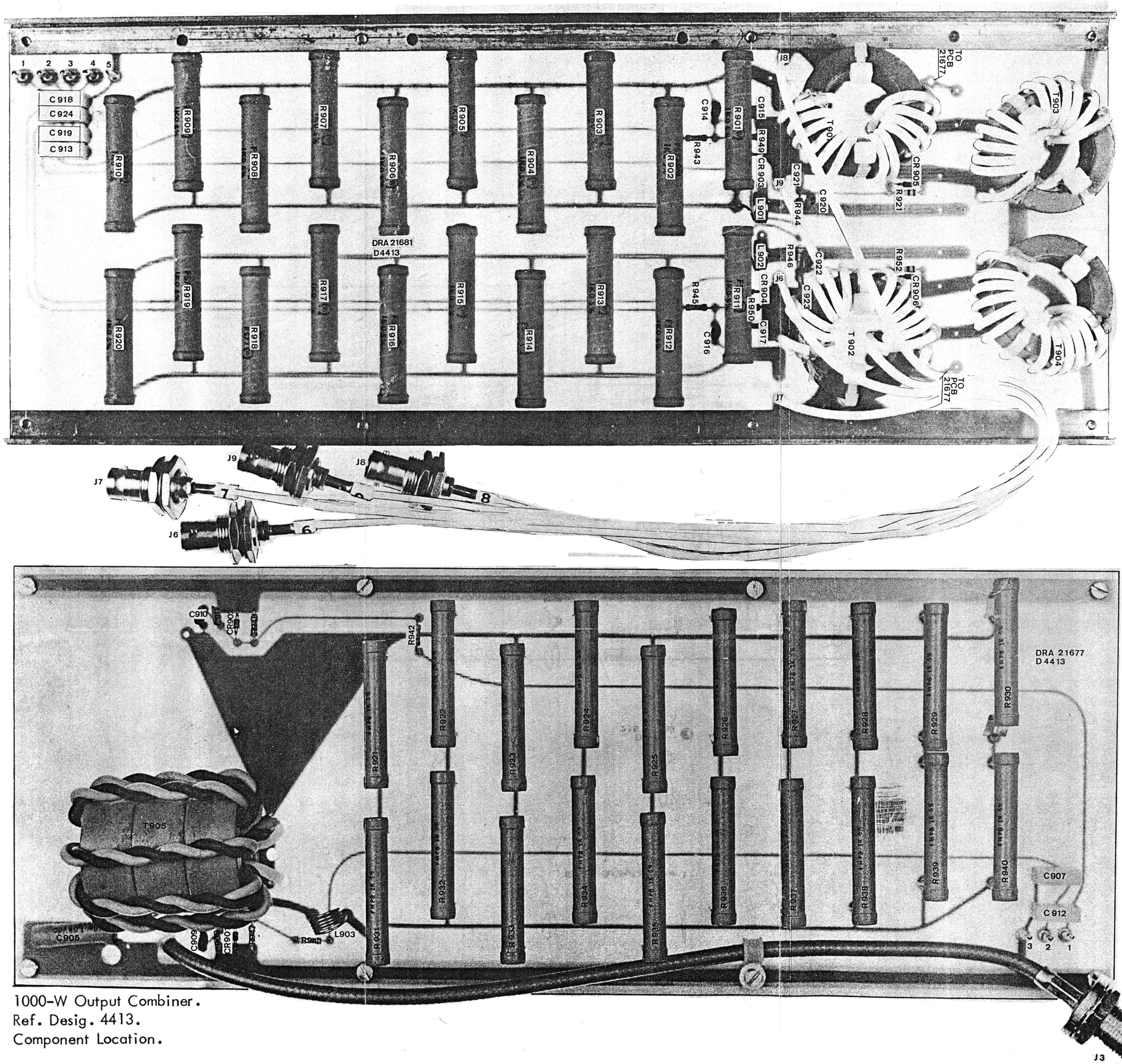
The inductance units are indicated by means of the international prefixes μ, and m, (μH, and mH).



CF 6210 DIAG No. 4413 / **1978-02**

1000-W Output Combiner

Ref. Designation 4413



1000-W Output Combiner.
Ref. Desig. 4413.
Component Location.

1978-02

C O N T E N T S

SECTION 1. - TECHNICAL SPECIFICATION

General:

The CF 6210 is a combination and filter panel designed to be used as part of the HF SSB/ISB transmitter S 76210-1.

The CF 6210 has several functions vital to the transmitter system.

1. Combination of the four 300-W signals to form the 1000 W output.
2. Harmonics filtering of the combined output.
3. 3 dB attenuator in circuit at high SWR and during automatic coupler tuning.
4. Detection of forward and reflected power at the output for standing wave ratio computation and automatic level control system. Computation of the standing wave ratio at the load (antenna).
   These measurements together with the P.A. supply voltage, P.A. output stage current, P.A. driver stage current are displayed by the front panel instruments with associated instrument switches.
5. Necessary interface between the power amplifier part of the transmitter and the synthex SE 4010, i.e. the combined synthesizer and exiter.
6. Error detection of faulted P.A. modules, switching off associated signal and power input lines.

HF Input: 4 x 300 W approx.

Harmonic HF Filters: 8 low-pass filters

Filter Shift freq.: (1.5), 2.3, 3.3, 4.8, 6.8, 10.0, 14.3, 21.0, (30.0) MHz

Harmonic Attenuation:
2nd harmonic more than 25 dB
3rd harmonic more than 40 dB

HF Output: 1000 W

Cooling: Built-in fan with stop detector.

Measurement Outputs:

Forward Power:	1 kW	9.8 V, sq. root law
Reflected Power:	100 W	3.3 V, sq. root law
SWR:	" "	10 V, lin.with refl.coef.

Measurement Inputs:

$I_{CC\ PA}$:	12 A FSD	100 mV/100 ohms
$I_{CC\ Dr}$:	3 A FSD	100 mV/100 ohms
$V_{supp.}$:	60 V FSD	60 V/60 kohms

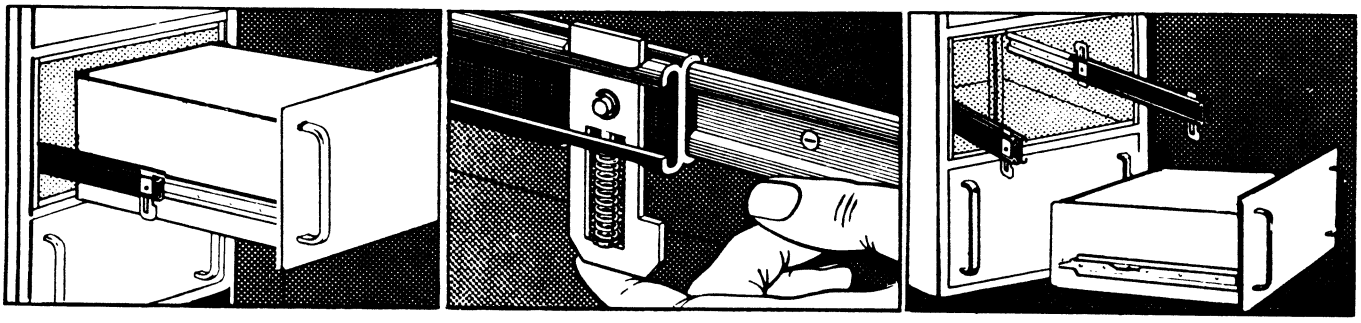
Measurement Accuracy:	Voltage +/- 1.5% FSD +/- 2.5% ASD Current +/- 1.5% FSD +/- 2.5% ASD Power +/- 1.5% FSD +/- 8.5% ASD SWR +/- 1.5% FSD +/- 8.5% ASD
Supply:	+40 V DC from PA supply 115 V AC from PA supply
Environmental conditions:	Operating Temperature: -15°C to +55°C Storage Temperature: -40°C to +70°C Relative Humidity: 95% at 40°C Shock and vibration: According to MIL 810 B
Dimensions:	Panel width: 19" (483 mm) Panel height: 180 mm Panel depth: 470 mm
Weight:	31 kg approx.

SECTION 2. DESCRIPTION

2.1. Mechanical Description

The combination and filter panel-and-chassis assembly (drawer) is designed to be mounted on telescopic slides in a standard 19-inch cabinet rack.

The front panel is fastened to the cabinet rack by means of captive panel-mounting screws. The telescopic slides are fitted with trigger latches which automatically and securely lock the unit in the withdrawn position, when fully extended. The projecting latches are pressed (see drawing) to release the lock so that the drawer can be closed or completely removed from the cabinet rack. Before removing a drawer from the cabinet all plugs on the rear panel should be taken out of their sockets.



The chassis together with the top cover make an extremely rigid construction.

The front panel carries the switches and meters. The air-inlet for the cooling air is located on the right-hand side of the front panel. This filter is removable.

The rear panel carries the fan and input and output connections.

For location of the separate circuits, see chapter 9.3.

2.2. Electrical Description.

2.2.1. Description of Block Diagram.

2.2.1.1. Description of the CF 6210. Block Diagram 4442

In the 1000 W transmitter, S 76210, combination and filter unit, CF 6210 combines the four 300 W inputs, provides filtering and performs a number of logical and monitoring functions.

Signal Path

The block diagram shows how the four 300 W inputs are fed to the 1000 W combiner. The output of the 1000 W combiner is then fed to the filter bank which consists of eight low-pass filters. The filters are switched in according to the frequency transmitted. The filters have an output for termination of third harmonic signal content into a 50 ohm dissipation load, thus preventing third harmonic radiation.

The filtered signal continues to the 3 dB attenuator control. Here are two possibilities, either the signal is fed right through without attenuation or the signal is attenuated 3 dB in the attenuator. During tuning (when the transmitter is used with an automatic antenna tuner) the signal is attenuated.

The attenuator is also used when there is a mismatch at the transmitter output. The 3 dB attenuator is controlled from the synthex.

The signal is fed from the 3 dB attenuator control through the directional coupler to the output terminal.

Control and Monitoring Circuits

Error Logic

The error logic contained in the same block as the SWR computer receives its inputs from the 1000 W output combiner and from four sets of thermo-switches placed on the PA6150 300 W modules.

Six detectors in the 1000 W combiner sense whether all the 300 W modules are providing their share of the total output. If one of the 300 W modules is faulty, the error logic will shut down the DC power to that module via one of the four control lines to the power supply. If the temperature of one of the 300 W modules is too high, the thermo-switch on that 300 W module will inform the error logic, and DC power to that module will shut down.

SWR Computer

The directional coupler feeds two RF-signals to the SWR computer, one which is proportional to the forward part of the output voltage and one which is proportional to the reflected part of the output voltage.

Both are fed to detectors in the SWR computer block, and outputs from both are fed to the meter switch circuits for monitoring. The forward detector output is also fed to the synthex for the ALC. The SWR computer calculates the SWR irrespective of the output level and provides an output voltage analog to the standing wave ratio. This voltage is fed to the meter switch circuits for monitoring the SWR, and to the synthex for control purposes.

Monitoring of Currents and Voltages

Inputs to the meter switch circuits from all the amplifiers and drivers of the two PA 6150's provide monitoring of the current of the driver transistors, the power amplifier transistors and the DC voltage to each 150 W amplifier

Power Regulator

The power regulator supplies the necessary DC voltages to the SWR computer and the meter switch circuits from the +40 V DC input.

Blower Control

The blower control part of the 3 dB attenuator and blower control block provides 110 V AC to the blower in the CF 6210. The 110 V AC is taken from the power supplies. If one power supply is switched off, the blower control ensures that the other power supply delivers 110 V AC to the blower. The 110 V AC lines are not shown in the block diagram.

2.2.1.2. Description of the Filter Bank. Block Diagram 4452

The filter bank is included in the transmitter to suppress second and third harmonics from the output of the transmitter.

The filter bank is made up of 8 low-pass filters which are designed to operate in the ranges described on the block diagram.

To achieve a better suppression of the third harmonics, the filters have been extended to include a high-pass section, which passes the third harmonic on to a 50 ohm load.

The switching of the filters is determined by the frequency selection on the synthex.

2.2.1.3. Description of Front Panel. Block Diagram 4450

The front panel carries a lot of switching functions to make it possible for the operator or technician to obtain information on the status of the transmitter.

Three of the functions are supplied in order to monitor the performance of the transmitter output. That is "Forward Power", "Reflected Power" and "SWR".

In the block diagram the DC voltage analog to the SWR is fed to the meter amplifier U1, the output of which is fed to M1 through one of the meter switches. The output from the meter amplifier is also fed to the synthex where it is used to regulate the output of the transmitter down in case of high standing wave ratios.

Voltages proportional to forward and reflected power are supplied to the meter switches and presented on M2. The active detector U2 used for the forward voltage is necessary because the detector in the SWR computer is fast.

The remaining switches are used for monitoring the voltage, the current in the driver transistors and the current in the PA transistors on each power amplifier printed circuit board. A 1000 W transmitter consists of 8 PA PCBs.

The last block (6) is a fan stop detector. As the name indicates its function is to detect whether the fan is working or not. If the fan stops, the fan stop detector will stop the transmitter.

2.2.1.4. Description of SWR Computer/Error Logic. Block Diagram 4446A

Error Logic

The Error Logic is included in the transmitter to protect the output transistors of the 300 W modules from damage due to output mismatch and excessive temperature.

In this text the 300 W modules are named according to their position in the transmitter. Upper panel refers to the upper PA 6150 panel, etc.

The detectors in the 1000 W Combiner are connected in such a way that four of them provide a DC-output voltage proportional to the output of each of the four 300 W modules. These inputs to the Error Logic are named Upper Left, Upper Right, Lower Left, Lower Right. The two inputs named Upper and Lower are proportional to the two combined 300 W outputs, that is the detectors are connected in such a way that the DC output is proportional to the combined signal from either the Upper or the Lower PA 6150 panel.

During normal conditions all the detector inputs have the same value, approx. +10 V DC at 1000 W out, thus the difference-amplifier outputs are zero. If a difference exists between two inputs the output will differ from zero corresponding to the input difference. When the difference in two corresponding inputs assumes a preset value, the comparator will change state, indicating a fault. Say that the 300 W module Upper Right goes low, then the Upper input will also go "low".

Through the Logic this activates the Upper Right Relay Driver, resulting in the DC power to the 300 W module being shut off.

Included in the Error Logic is protection against excessive temperature in the 300 W modules. The inputs named "Thermo-switch" inputs are connected to thermo switches mounted on the cooling fins of the 300 W modules. The inputs are normally at "1". At excessive temperature the inputs go to "0", this resulting in the corresponding Relay Driver being activated, shutting down the DC power to the 300 W module in question.

SWR Computer

The SWR-Computer is an analogue calculator, which calculates the SWR irrespective of the output level of the transmitter. The HF voltages

corresponding to the forward and reverse voltages are detected in the HF detectors, which are followed by buffers. The DC voltages named Forward output and Reverse output are used for monitoring and for the ALC.

The SWR computer consists of an integrator which integrates the forward DC voltage until the voltage at the output of the integrator is equal to the reverse voltage at the other input of the comparator. When the two inputs are equal the comparator changes state, resetting the flip-flop which in turn resets the integrator.

The clock generator sets the flip-flop, the comparator resets the flip-flop.

Thus it is seen that the time from set to reset depends upon the relative amplitudes of the forward voltage and reverse voltage. This means that the output from the flip-flop is a pulse with modulated square voltage, which is used to drive the output amplifier, the output of which in turn drives the meter amplifier on the Meter Switch Board.

2.2.1.5. Description of the 3 dB Attenuator and Blower Control Circuit. Block Diagram 4454.

The board carries three different circuit blocks.

The interlock block (1) controls the primary power to the two +40 V power supplies. Activation of the "RF on" switch on the synthex results in a connection to the power supplies which deliver +40 V to the power amplifiers. If the fan in the CF 6210 is not functioning, the fan stop detector input to the block switches the power supplies off.

As the fan has to function even if only one power supply is working, a 110 Vac OR-gate has been included. Normally the upper power supply is supplying the fan, but if the upper power supply is switched off the lower power supply will take over.

The 3 dB attenuator control has two functions. During tuning of the automatic antenna tuner the output power is routed via the 3 dB attenuator to protect the output transistors.

In case of very high SWRs the 3 dB attenuator is also switched in series with the output to protect the output transistors. In both cases the 3 dB attenuator control is switched from the synthex.

2.2.1.6. Description of the Power Regulator CF 6210/CF6150 Block Diagram 4453.

The power regulator supplies the necessary DC voltages to the active circuits in the CF 6210 or CF 6150.

The +5 V and the +15 V are supplied from ordinary integrated circuit regulators which in turn are fed from +40 V DC via dropping resistors.

To be able to supply a negative voltage without using a transformer, the -8.5 V DC is derived from the +40 V DC which is chopped by Q1, rectified and finally regulated by Q2.

2.2.2. Description of Circuit Diagram

2.2.2.1. Interconnections. (Reference Designation 4418)

Diagram No. 4418 shows the interconnections in the 1000 W combination and filter panel. Apart from diagram numbers, each block in the diagram has been provided with a letter and figure identification to allow references on the jacks and plugs, i.e. looking at the lower right-hand corner at the block named directional coupler it is marked Reference Designation Prefix 4403, which is also the diagram number. The block is marked with A6, so that the complete reference designation of J1 is A6-J1.

The following jack numbers are located at the rear panel: J1, J2, J3, J4, J5, J6-J9, J10.

To locate the individual blocks of the combination and filter panel, see section 9.3. photos, and for the front and rear panel, see section 3.1 and 3.2.

2.2.2.2. Filter Bank. Reference Designations 4414 and 4415

The filter bank consists of 8 identical filter sections all built-up of one low-pass filter and one high-pass filter. Depending on the frequency one of the 8 sections is switched in series with the output. The sections are used in a range of frequencies indicated on the circuit diagram.

Looking at filter No. 1 the coils L1, L2, L3 and the capacitors C5-C30 form the low-pass filter. Coil L4 and capacitors C1-C4 form the high-pass filter. The low-pass filter has a cut-off frequency of 2.3 MHz, which means that the attenuation of harmonics is high even at the lowest operating frequency. The high-pass filter has its cut-off frequency adjusted in such a way that the third harmonic from the power amplifier can be terminated in a 50-ohm resistor via P3.

The switching in and out of the 8 sections is accomplished by applying a ground to P4 pin 1 to 8. This is normally applied from the Synthex.

The filter bank is mounted in a shielded box which is part of the combination and filter panel assembly.

The filters are mounted on two identical PCBs. The relays are mounted on two pairs of PCBs, one set on either side inside the shielded box, which is divided in two parts, an upper and a lower part.

2.2.2.3. Front Panel Circuits. Reference Designation 4410.

The front panel circuits are shown on diagram No. 4410. The circuits are built up on one PCB and two wired switch assemblies.

Several monitoring functions are included. Current in the transistors on the power amplifier boards are monitored by M1. The shunt resistors are located on the power amplifier PCB. The current measuring inputs, that is 32 leads all in all, are connected to the switches S9-S12, which select the PCB in the PA panel to be measured.

For internal connections in the combination and filter panel, see diagram No. 4418.

Selection of upper or lower PA panel is performed by S7-S8. Selection of whether driver current or power amplifier current is measured is performed by S6 and S5 on PCB No. 22235. Current is monitored by M1. If S3 on PCB 22235 is engaged at the same time, the voltage supplied to the power amplifier in question is monitored by M2.

The SWR voltage from the SWR computer is fed to PCB 22235 pin 7, amlified by U1 and fed to M1 via S4. An output to the synthex is provided from pin No. 4.

By engaging S2 on PCB 22235 it is possible to show the reflected power level on M2.

U1b and associated circuits act as an active detector with a fast attack and slow release time to give a steady reading, when measuring forward power. The output of the circuit is fed to M2 via S1.

2.2.2.4. SWR Computer and Error Logic. (Reference Designation 478865)

The SWR computer and error logic circuits are shown on diagram No.478865.

The circuits are mounted on one PCB which is contained in a shielded box in the combination and filter panel assembly.

The diagram can be divided into two separate functions, one the error logic function, the other the SWR computer function.

The error detector and logic function has ten inputs. Six detector inputs which under normal operation are at the same level, that is at rated transmitter output, approx. 10 V DC coming from the detectors located in the combiner; four inputs from the thermo switches on the 300 W modules in the power amplifier panel. The thermo switch inputs are fed to J1 pins Nos. 6, 18, 5, 17. These inputs are a logic 1 under normal operation. If excessive temperature exists at one of the 300 W modules the input changes to 0, which means that the output of the nand-gate (U5) changes to 1, so that current is supplied to the relay driver (Q1-Q4) and the transistor is able to sink current from the relays in the power supply and the input splitter.

If for example the thermo switch input to pin 6, lower right, goes low this means a logic 0 on pin 2 of U4, pin 1 of U4 is a logic 1, this resulting in logic 1 on pin 3 of U5 and the relay driver Q1 is on.

All the detector inputs are on the same DC level, this means that the output from the differential amplifiers U16, U6a, U6b is at approx. 0 V DC during normal operation. This results in the outputs from the comparators, as measured over the diodes CR10-CR15, over CR10, CR11, CR14, CR15 are logic 0; over CR12, CR13 logic 1.

The logic levels shown following are for normal operation of the upper half of the circuit, these levels are also applicable in regard to the lower circuit half.

U3 pin	1	2	3	4	5	6	8	9	10	11	12	13
Logic level	"0"	"0"	"1"	"0"	"1"	"0"	"0"	"0"	"1"	"0"	"1"	"0"
U4 pin	1	2	3				8	9	10			
Logic level	"1"	"1"	"0"				"1"	"1"	"0"			

If for example the detector connected to J1 pin 23 changes its voltage approx. 4 V compared to the detector connected to pin 11, indicating a fault on the Lower Right 300 W module, the detector connected to pin 24 which measures the combined signal from the lower power amplifier panel, will also change its level by the same voltage.

This means that the table will change as follows, when a fault exists on Lower Right:

U3 pin	1	2	3	4	5	6	8	9	10	11	12	13
Logic level	"0"	"0"	"1"	"0"	"0"	"1"	"1"	"1"	"0"	"1"	"0"	"0"
U4 pin	1	2	3				8	9	10			
Logic level	"1"	"1"	"1"				"1"	"0"	"0"			

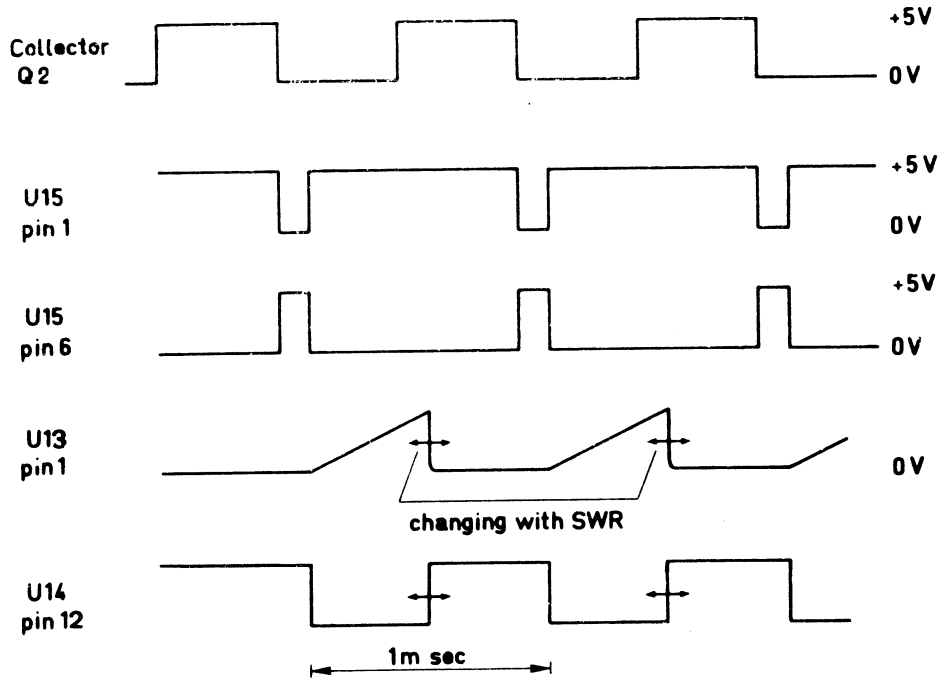
Pin 10 goes to a high level, supplying current to the relay driver Q1, and the relay in the power supply will switch off the +40 V DC to the 300 W module. The same procedure can apply to the rest of the detector inputs. Input and output correlation is shown on the diagram.

Detectors for forward and reflected power consist of U10a, U1a and U12. R1, R2, R6, R7 are 50-ohm terminations for the directional coupler. CR1, CR3 together with the rest of the resistors and capacitors form a peak detector. By using diodes in the feed-back of amplifiers U10a, U1a the transfer-characteristics of the detectors have been made virtually linear. U12a is coupled as an active detector with fast attack, slow release characteristics. U12b is an AF peak detector. Outputs to metering circuits are provided at J1 pins nos. 14 and 1. At rated output from the transmitter the output from the forward detector will be 10 V DC.

The SWR computer consists of the following active elements: U11, U13, U14, U15, Q1, Q2, Q3, Q4, Q5. The forward signal is integrated by the integrator built around U13a and C10 the output of which is compared with the reflected signal at pin 2 of U11. When the two are equal in amplitude U11 will switch from high to zero output. This will reset U14 so that pin 12 goes high resetting the integrator via Q4 and Q3 which operates as a switch across the integrator U13a The transistors Q1 and Q2 are functioning as a clock generator for the computer. U15 is a multivibrator providing the set pulses to the set-reset flip-flop U14.

The output pulses from U14 will thus be pulsewidth modulated, the negative part increasing for a higher standing wave ratio.

Q5 serves to adjust the output level from the computer. Typical waveforms are shown below:



When the output from the transmitter is so low that the SWR computer will not function properly, the input to U13 pin 5 will be low, meaning that pin 7 changes from approx. -9 V to +15 V. This will cut off Q5 by way of CR 9 and R32.

2.2.2.5. 3-dB Attenuator and Blower Control.
(Reference Designation 4412)

The PC board performs three functions, the interlock function, a 110 Vac gate function and a 3-dB attenuator control function.

The interlock function is performed by relay K1 which is activated by +24 V DC, normally obtained from the Synthex. This input is applied to pin No. 9. Pin No. 8a is connected to the Fan Stop Detector, which provides a ground to the base of Q1, if the fan is not working or the air-inlet filter is dirty. This means that relay K1 will release and break the interlock path and thus turn off the transmitter power.

The 110 Vac gate function is performed by relays K2, K3, K4 and associated circuits. The two 110 Vac inputs from the two power supplies, part of a 1000 W transmitter, go to pins, nos. 10, 11 and pins, nos. 14, 15. Under normal operation there is 110 Vac on both inputs. This means that K4 is activated, through contacts nos. 4 and 6 and +40 V DC is fed to and activate relay K2.

110 Vac from the upper power supply is fed through contacts 4,6 and 1,3 of relay K2 to the blower in the combination and filter panel. Of the 110 Vac from the upper supply is switched off, relay K4 disengages which means that contact is made between 4 and 5 providing a dischange path for C4 through the resistor R3 and the diode CR2 to allow for rapid break of K2. Contact is also made between points 1 and 2 of K4, supplying +40 V DC to relay K3 through resistor R7. This resistor together with C5 ensures that K2's make-contact is slow, otherwise the two 110 Vac sources might short to one another.

The 3-dB attenuator control is in fact merely a switch function, this is accomplished by the relays K5 and K6. In case of high standing wave ratios a ground is provided on pin no. 21, activating the relays. The output to the antenna is now fed through pins 1 and 3 of K5 to P3, which is connected to the input end of the 3-dB attenuator, from the 3-dB attenuator through P2 to pin 3 and 1 of K6 and further to the output plug P1.

2.2.2.6 Power Regulator. (Reference Designation 4405)

The purpose of the power regulator is to supply the necessary DC voltages to the SWR computer board Ref. Desig. 478865 and the meter switch board Ref. Desig. 4410. The necessary voltages are +15 V, +5 V, -9 V.

To eliminate the need for a transformer in the circuit, all voltages are taken from the +40 V DC, supplied from the main power supplies.

+15 and +5 V are supplied from ordinary integrated power regulators, the input of which is kept below the maximum allowed value by means of the voltage divider R6, R7, R8, R9. C4-C7 ensure the stability of the integrated regulators.

In order to provide a negative voltage, the +40 V is chopped by Q1. The input to Q1 is taken from a multivibrator on the SWR computer board. The chopped voltage is rectified in voltage doubler CR1, CR2, C1 and C2 and stabilized by an ordinary series stabilizer, Q2.

2.2.2.7. 1000 W Output Combiner. (Reference Designation 4413)

The purpose of the 1000 W combiner is to combine the four 250 W output signals into one signal of 1000 W.

The actual circuit is built-up on two PCB nos. 21681 and 21677, mounted in the combination and filter panel.

The principle of combination is straight forward. The 250 W signals from PA 6150 upper are connected in series by transformers T902 and T904. The 250 W signals from PA 6150 lower are combined in series by transformers T901 and T903. The four 250 W signals are now combined to form two 500 W signals which then are parallel-combined by transformer T905.

The resistors R911-R920 are connected between the two 250-W inputs from PA 6150 upper to provide isolation between the two inputs. When one of the 250-W inputs is missing, one half of the power from the remaining input is dissipated in these resistors. The resistors R901-R910 have the same function. The resistors R921-R940 are connected between the two 500W lines and have the same function as R901-R920.

Each input is monitored by the detectors which provide a DC voltage to the error logic. The detectors consist of a capacitive voltage divider, e.g. C922, C923, in order that the voltage supplied to the diodes is reduced to approximately 10 V peak when the transmitter is working at max. output. The detection is performed by the diode, e.g. CR906, and smoothed by the low-pass filter, e.g. R946, C924.

The two PCBs are mounted in the 1000-W combination channel which is aircooled by the blower in the combination and filter panel. The combiner is rated for drop-out of one or more of the 300-W modules in the power amplifier panels.

2.2.2.8. 3-dB Attenuator and 50-ohm, 50-watt Load. Reference Designation 4408

The 3-dB attenuator and 50-ohm 50-W load circuit performs two functions.

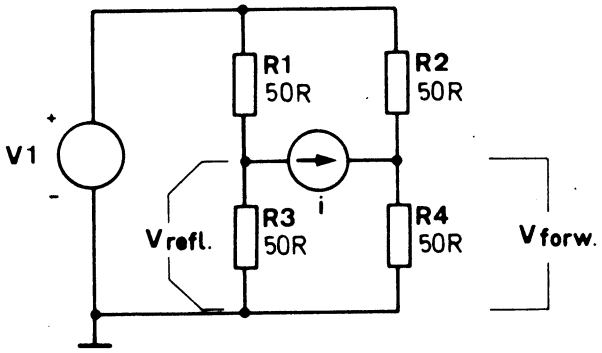
In the first place it functions as a 50-ohm termination for the third harmonic output from the power amplifiers. The third harmonic content in the output is filtered from the output in the filter unit and fed to J6 on the PCB where four resistors in parallel form a 50-ohm load. These are R828-R831. The capacitor C801 provides a high-frequency compensation.

In the second place the circuit functions as a 3-dB attenuator. The input is to J4, the output taken from J5. The power rating of the attenuator is 250 W. In case of high standing wave ratios the attenuator is connected in series with the antenna, which means that the SWR as seen from the output transistors, will never be higher than 3:1.

The 3-dB attenuator and 50-ohm, 50-W load circuit is inserted in the combination channel of the combination and filter panel.

2.2.2.9. Directional Coupler. Reference Designation 4403

The function of the coupler is easiest to understand when using an equivalent diagram, but first it is necessary to tell that T601 is a voltage transformer and that the winding of T602 is placed around the output lead which means that the transformer is a current transformer. The degree of coupling is approximately 1:30, (- 30 dB).



In the equivalent diagram the voltage generator is the voltage transformer T601 and the current generator is the current transformer. R1 and R2 are the built-in 50-ohms resistances, R3 and R4 are external 50-ohms resistances. Since the degree of coupling is approx. 1:30 we find that

$$V_1 = \frac{V_{out}}{30} \quad ; \quad i = \frac{i_{load}}{30}$$

If the transmitter is operated at rated output power and connected to a 50-ohm load, we find that the output voltage is approx. 224 V_{rms}, which means that V_1 is

$$V_1 = \frac{224}{30} = 7,47\ V_{rms}$$

The load current, i_{load}, is approx. 4,47 Amp, which means that:

$$i = \frac{4,47}{30} = 0,15\ A$$

If we use superposition we find that

$$V_{refl} = V_1 \times \frac{50}{50+50} - \frac{i}{2} \times 50 =$$

$$7,47 \times \frac{1}{2} - \frac{0,15}{2} \times 50 = 0$$

and that

$$V_{forw} = V_1 \times \frac{50}{50+50} + \frac{i}{2} \times 50 =$$

$$7,47 \times \frac{1}{2} + \frac{0,15}{2} \times 50 = 7,49\ V_{rms}$$

If the load impedance was say 25 ohms we would find:

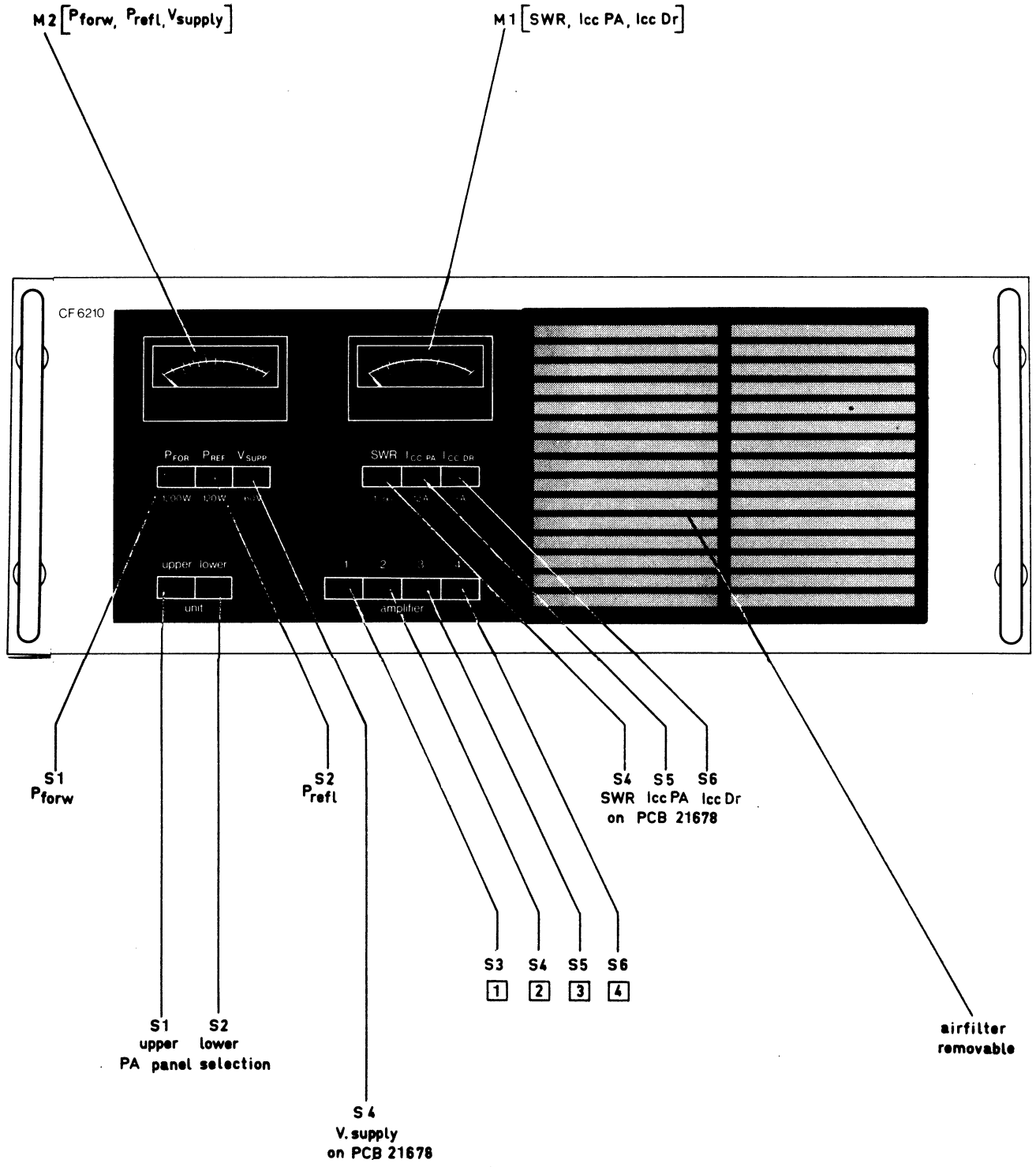
$V_l = \sqrt{\frac{1000}{25}} / 30 = 5.27\ V_{rms}$ and

$i = \frac{1000}{25} / 30 \quad 0.21$ A this resulting in:

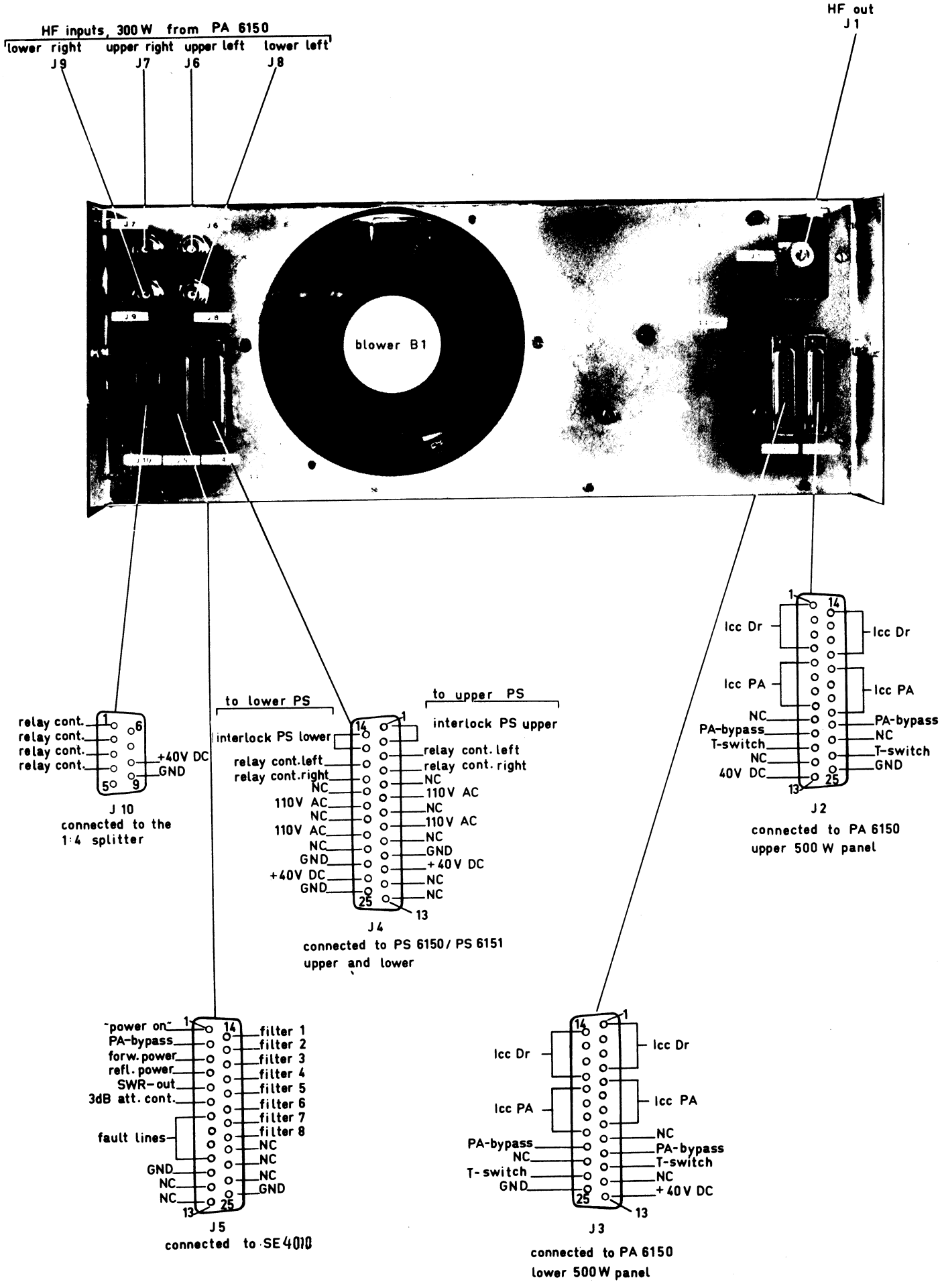
$$V_{refl} = 5.27 \times \frac{1}{2} - 0.21 \times \frac{1}{2} \times 50 = -2.62\ V_{rms}$$

$$V_{forw} = 5.27 \times \frac{1}{2} + 0.21 \times \frac{1}{2} \times 50 = 7.89\ V_{rms}$$

which is a voltage ratio approx. equal to 10 dB:
a return loss equivalent to a standing wave ratio of 2:1.



Front Panel
Ref. Desig. 4410



Rear Panel
Ref. Desig. 4418

SECTION 4. - INSTALLATION.

Please refer to section 4 - S76210.

SECTION 5. OPERATING INSTRUCTIONS

The front panel is shown in section 3.1.

The operation of the CF 6210 is limited to monitoring functions.

M1	Shows the standing wave ratio, the current in the selected PA transistors I_{cc} PA, or the current in the driver transistors I_{cc} Dr. Range for SWR is from 1-∞, range for I_{cc} PA is from 0 to 12 Amps, range for I_{cc} Dr is from 0 to 3 Amps.
M2	Shows the output forward power, P_{for}, the reflected power P_{ref}, or the DC voltage supplied to the selected power amplifier printed circuit board.
P_{for}	Selects indication of antenna forward power on M2.
P_{ref}	Selects indication of antenna reflected power on M2.
V_{supp}	Selects indication of DC voltage supplied to the power amplifier printed circuit board on M2.
SWR	Selects standing wave ratio indication on M1.
I_{cc} PA	PA transistor current measured on M1.
I_{cc} Dr	Driver transistor current measured on M1.
Upper	Current and voltage measurements are performed on the upper power amplifier panel.
Lower	Current and voltage measurements are performed on the lower power amplifier panel.
1 2 3 4	The button pressed indicates the power amplifier printed circuit board on which measurements are performed.

SECTION 6. MAINTENANCE

General

The combination and filter panel is delivered properly adjusted from the factory. This factory-adjustment will last for a considerable time and a complete new realignment should not be necessary unless a fault has been rectified. Only qualified personnel with use of adequate test equipment must perform this adjustment.

WARNING: High voltage hazard exist when the top cover is removed.

6.1. Alignment Procedure

4414/15 Filter Bank

Test equipment:
Network analyzer or spectrum analyzer with tracking generator and directional coupler, frequency range 100 KHz to 110 MHz.

40 V Power Supply.

Step 1.

The filter bank is removed from the combination and filter panel. +40 V DC is connected to P4, pin 9. Now the filter that needs adjustment can be activated by connection the other lead from the power supply to pin Nos. 1-8.

Step 2.

The tracking generator output is connected to the input plug, P1. The input jack of the spectrum analyzer is connected to the output plug, P2. P3, which is the 3rd harmonic output plug, is terminated in a 50-ohm resistor.

Step 3.

Depending on which filter is adjusted the two frequencies of very high attenuation is adjusted to the frequencies given below. The highest frequency is adjusted by one of the following coils, L3,7,11, 15,19,23,27,31. The lower frequency by L2,6,10,14,18,22,26,30.

Filter No.	Higher Freq. (MHz)	Lower Freq. (MHz)
1	4,3	3,4
2	6,1	4,95
3	8,3	7,15
4	12,0	10,0
5	17,7	14,5
6	26,6	21,7
7	38,7	31,7
8	48,6	48,6

The coils of the low range filters are adjusted by moving the tap on the coil. The higher ranged filter coils are simply pulled more or less apart.

Step 4.

The test equipment is connected to measure return loss on the input plug of the filter bank. The output plug of the filter bank is terminated in a 50-ohm resistor, with a return loss of at least 40 dB. As measured at the input the return loss in the pass-band of the appropriate filter must be at least 22 dB. The pass-band is given in the table below. If the values shown do not hold, coils L1,5,9,13, 17,21,25,29 must be adjusted. It may be necessary to readjust the two coils already adjusted to reach the 22 dB return loss.

The third harmonic range must have a min. return loss of 10 dB. If this is not the case coils L4,8,12,16,20,24,28,32 must be adjusted. The third harmonic output range is also shown in the table below.

Filter No.	Pass-band (MHz)	Third harm. (MHz)
1	1.5 - 2.3	4.5 - 6.9
2	2.3 - 3.3	6.9 - 9.9
3	3.3 - 4.8	9.9 - 14.4
4	4.8 - 6.8	14.4 - 20.4
5	6.8 - 10.0	20.4 - 30.0
6	10.0 - 14.3	30.0 - 42.9
7	14.3 - 21.0	42.9 - 63.0
8	21.0 - 30.0	63.0 - 90.0

Step 5.

The test equipment is reconnected for measurement of transmission content. Attenuation on the lowest second harmonic frequency is checked for a min. of 25 dB. A table of lowest second harmonics is given below.

Filter No.	Second harm. (MHz)
1	3.0
2	4.6
3	6.6
4	9.6
5	13.6
6	20.0
7	28.6
8	42.0

If the table values do not hold, adjustment for the lower high attenuation frequency must be repeated.

478865 SWR Computer.

Test equipment:
Signal generator 1-30 MHz.
Amplifier capable of delivering 1 W 1-30 MHz.
Power splitter 1:2.
Calibrated attenuator.

Step 1.

The SWR-computer is left in the combination and filter panel, this means that no external power supply is needed because the built-in panel supply provides the necessary DC voltages.

The signal generator is connected to the amplifier which feeds the 1:2 power splitter. One output from the power splitter is fed to the forward input jack of the SWR-computer, J2. The other output is fed via the calibrated attenuator to the reflected input jack, J1.

Step 2.

The transmitter is switched on, without being keyed. RF is applied to J1 and J2, the attenuator is set to 0 dB, the meter on the front panel must show ∞ , if this is not the case R25 should be adjusted.

Step 3.

The attenuator is switched to 20 dB, the meter must show 1.2, if this is not the case, R42 must be adjusted.

Step 4.

The attenuator is switched to 6 dB. The meter shall now show 3.0. If this is the case, adjustment is concluded, if not, a fine adjustment of R25 may be necessary.

4403 Directional Coupler

Test equipment:
None for on-site adjustment. This adjustment is used on-site if a misalignment is suspected on the directional coupler.

Step 1.

Run the transmitter with continuous output, read reflected power on the meter, adjust C603 for min. reading with the transmitter operating into a suitable dummy load.

The trimmer capacitor C603 can be reached through a hole in the rear panel of the combination and filter panel.

6.2. Preventive Maintenance

The preventive maintenance on the CF 6210/CF 6150 is limited to renewing the air-inlet filters when necessary or every 3000 hours.

If the filter is too dirty, the fan stop detector will switch off the power supply.

REFERENCE LIST

MODULES CF 6210

Dansk Radio AS dra

P.C. nr.	Diagram nr.	Description	Component nr.
21677	D 4413	Outpcombiner 1KW CF6210	364800
21681	D 4413	Outpcombiner 1KW CF6210	364819
21676	D 4408	Ant.Attenuator CF6210	364827
21641	D 4405	Power reg. CF6210	364886
	D 4414/4415	Filter Bank CF6210	364878
21679	D 4412	Att+Blow,Ctrl CF6210	364924
	D 4403	DR.C. Coupler CF6210	365025
22235	D 4410	M-SW 1 CF6210	378844
478857	D 478865	SWR Comp. CF6150-6210	478865

SECTION 8. PARTS LISTS AND COMPONENT SPECIFICATIONS.

8.1. Parts Lists.

This section gives for each module all components used. The parts lists are arranged in order of module (= diagram) numbers. The components are identified by their DRA code numbers.

REFERENCE DESIGNATIONS

A ..... assembly
AT .. attenuator; isolator; termination
B ..... fan; motor
BT ..... battery
C ..... capacitor
CP ..... coupler
CR ..... diode; diode thyristor; varactor
DC ... directional coupler
DL ..... delay line
DS ..... annunciator; signaling device (audible or visual); lamp; LED
E ..... miscellaneous electrical part
F ..... fuse
FL ..... filter
H ..... hardware
HY ..... circulator
J ... electrical connector (stationary portion); jack
K ..... relay
L ..... coil; inductor
M ..... meter
MP ..... miscellaneous mechanical part
P ... electrical connector (movable portion); plug
Q ..... transistor; SCR; triode thyristor
R ..... resistor
RT ..... thermistor
S ..... switch
T ..... transformer
TB ..... terminal board
TC ..... thermocouple
TP ..... test point
U ..... integrated circuit; microcircuit
V ..... electron tube
VR .... voltage regulator; breakdown diode
W .... cable; transmission path; wire
X ..... socket
Y .... crystal unit (piezo-electric or quartz)
Z .... tuned cavity; tuned circuit

ABBREVIATIONS

A ..... ampere
ac .... alternating current
ACCESS ..... accessory
ADJ ..... adjustment
A/D .... analog-to-digital
AF ..... audio frequency
AFC ..... automatic frequency control
AGC ..... automatic gain control
AL ..... aluminum
ALC ..... automatic level control
AM ... amplitude modulation
AMPL ..... amplifier
APC .... automatic phase control
ASSY ..... assembly
AUX ..... auxiliary
avg ..... average
AWG .... American wire gauge
BAL ..... balance
BCD ..... binary coded decimal
BD ..... board
BE CU ..... beryllium copper
BFO ..... beat frequency oscillator
BH ..... binder head
BKDN ..... breakdown
BP ..... bandpass
BPF ..... bandpass filter
BRS ..... brass
BWO ..... backward-wave oscillator
CAL ..... calibrate
ccw .. counter-clockwise
CER ..... ceramic
CHAN ..... channel
cm ..... centimeter
CMO .. cabinet mount only
COAX ..... coaxial
COEF ..... coefficient
COM ..... common
COMP ..... composition
COMPL ..... complete
CONN ..... connector
CP ..... cadmium plate
CRT ... cathode-ray tube
CTL .... complementary transistor logic
CW ..... continuous wave
cw ..... clockwise
cm ..... centimeter
D/A .... digital-to-analog
dB ..... decibel
dBm .... decibel referred to 1 mW
dc ..... direct current
deg .. degree (temperature interval or difference)
° ..... degree (plane angle)
°C ..... degree Celsius (centigrade)
°F .... degree Fahrenheit
°K ..... degree Kelvin
DEPC .. deposited carbon
DET ..... detector
diam ..... diameter
DIA ... diameter (used in parts list)
DIFF AMPL .. differential amplifier
div ..... division
DPDT ..... double-pole, double-throw
DR ..... drive
DSB .... double sideband
DTL .... diode transistor logic
DVM ... digital voltmeter
ECL .... emitter coupled logic
EMF .. electromotive force
EDP ..... electronic data processing
ELECT ..... electrolytic
ENCAP .... encapsulated
EXT ..... external
F ..... farad
FET ..... field-effect transistor
F/F ..... flip-flop
FH ..... flat head
FIL H ..... fillister head
FM .. frequency modulation
FP ..... front panel
FREQ ..... frequency
FXD ..... fixed
g ..... gram
GE ..... germanium
GHz ..... gigahertz
GL ..... glass
GRD ..... ground(ed)
H ..... henry
h ..... hour
HET ..... heterodyne
HEX ..... hexagonal
HD ..... head
HDW ..... hardware
HF ..... high frequency
HG ..... mercury
HI ..... high
HPF ..... high pass filter
HR ..... hour (used in parts list)
HV ..... high voltage
Hz ..... Hertz
IC .... integrated circuit
ID ..... inside diameter
IF ..... intermediate frequency
IMPG ..... impregnated
in ..... inch
INCD ..... incandescent
INCL ..... include(s)
INP ..... input
INS ..... insulation
INT ..... internal
kg ..... kilogram
kHz ..... kilohertz
kΩ ..... kilohm
kV ..... kilovolt
lb ..... pound
LC ..... inductance-capacitance
LED .. light-emitting diode
LF ..... low frequency
LG ..... long
LH ..... left hand
LIM ..... limit
LIN ... linear taper (used in parts list)
lin ..... linear
LK WASH ... lock washer
LO ... low; local oscillator
LOG .... logarithmic taper (used in parts list)
log ..... logrithm(ic)
LPF ..... low pass filter
LV ..... low voltage
m ..... meter (distance)
mA ..... milliampere
MAX ..... maximum
MΩ ..... megohm
MEG .... meg (10^6) (used in parts list)
MET FLM .... metal film
MET OX .. metallic oxide
MF ... medium frequency; microfarad (used in parts list)
MFR ..... manufacturer
mg ..... milligram
MHz ..... megahertz
mH ..... millihenry
mho ..... mho
MIN ..... minimum
min ..... minute (time)
... ' ..... minute (plane angle)
MINAT ..... miniature
mm ..... millimeter
MOD ..... modulator
MOM ..... momentary
MOS ..... metal-oxide semiconductor
ms ..... millisecond
MTG ..... mounting
MTR ... meter (indicating device)
mV ..... millivolt
mVac ..... millivolt, ac
mVdc ..... millivolt, dc
mVpk .... millivolt, peak

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	37	BR365726	PWB,OUTP.COMBINER 1 CF621	3				
2	2,000	ST	23	200352-001	DIODE 1N4148	4			CR01,CR02	B2
3	1,000	ST	22	232498-020	CAP. CER 18P / 2500D	4			C905	B1
4	2,000	ST	22	BR209554	CAP. PLST 10N 250 K	4			C907,C912	
5	2,000	ST	22	BR357596	CAP. CER. 150P 100 G N150	4			C908,C911	
6	2,000	ST	22	BR366331	CAP. CER. 4P7 1K J NP0	4			C909,C910	
7	1,000	ST	22	BR357480	CAP. CER. 22P 100 G N150	4			C906	A1
8	8,000	ST	51	BR275514	SCREW M 3 X 6 CHJ GULCR	4			H1	
9	2,000	ST	31	BR231103	TERMINAL LUG 3,25MM 2F	4			H2	
10	3,000	ST	45	BR354354	STRAP,CABLE L191XB3,6	4			H3	
11	40,000	ST	31	BR231304	TERMINAL STUD 2,5X7 Ø1,3	4			H4	
12	3,000	ST	31	BR369276	CONN TAB F/PWB	4			H5	
13	1,000	ST	25	BR366412	COIL CF6210 D4413	1			L903	
14	2,000	ST	46	BR365793	BRACKET,MOUNT CF6150-621	1			MP1	
15	20,000	ST	21	BR362387	RES OXIDE 1K 7J	4			R921,R922,R923,R924,R925,	
									R926,R927,R928,R929,R930, R931,R932,R933,R934,R935, R936,R937,R938,R939,R940	
16	2,000	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	4			R941,R942	
17	2,000	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	4			R947,R948	
18	1,000	ST	25	BR366374	TRAFO F/PWB21677 CF6210	1			T905	
19	1,000	ST	37	BR369020	COAX CA ASSY CF6210	3			W	
20	0,300	M	34	200372-003	TAPE,LACING STYLE 35	4				A1
21	1,000	ST	54	BR261238	RIVET,TUBULAR	4				B
**********	**********	**	**	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	**********
			AS	201350	WORKMANSHIP					
			EC	BR4413	1000 W OUTPUT COMBINER.					
			PD	BR364800	OUTPUT COMBINER 1					
**********	**********	**	**	**********	********* NEXT ASSY ******	**	**********	**********	**********	**********
	1,000	ST		BR364835	COMBINER/ANT.ATT. CF6210	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
OUTP.COMB. 1 CF621 D4413	BR364800 (364800)	B2	1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	37	BR365734	PWB,OUTP.COMBINER 2 CF621	3				
2	4,000	ST	23	200352-001	DIODE 1N4148	4			CR03,CR04,CR05,CR06	C2
3	4,000	ST	22	BR209554	CAP. PLST 10N 250 K	4			C913,C918,C919,C924	
4	4,000	ST	22	BR366403	CAP. CER. 5P6 1K J NP0	4			C914,C916,C920,C922	
5	2,000	ST	22	BR357553	CAP. CER. 82P 100 C N150	4			C915,C917	B
6	8,000	ST	51	BR275514	SCREW M 3 X 6 CHJ GULCR	4			H1	
8	40,000	ST	31	BR231304	TERMINAL STUD 2,5X7 Ø1,3	4			H3	
9	9,000	ST	45	201197-049	STRAP, CABLE, NAT Ø20X2.5	4			H4	C1
10	5,000	ST	31	BR369276	CONN TAB F/PWB	4			H5	
11	2,000	ST	25	BR366412	COIL CF6210 D4413	1			L901,L902	
12	2,000	ST	46	BR365793	BRACKET,MOUNT CF6150-621	1			MP1	
13	20,000	ST	21	BR362387	RES OXIDE 1K 7J	4			R901,R902,R903,R904,R905,	
									R906,R907,R908,R909,R910, R911,R912,R913,R914,R915, R916,R917,R918,R919,R920	
14	4,000	ST	21	BR243605	RES CARB. 15K 1/4J SFR25	4			R943,R944,R945,R946	
15	4,000	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	4			R949,R950,R951,R952	
16	2,000	ST	25	BR373913	TRAFO F/PWB21681 CF6210	1			T901,T904	
17	2,000	ST	25	BR366423	TRAFO F/PWB21681 CF6210	1			T902,T903	
18	4,000	ST	37	BR369039	COAX CA ASSY CF6210	3				A1
19	2,000	ST	22	BR357553	CAP. CER. 82P 100 C N150	4			C921,C923	C
20	2,000	ST	22	BR357421	CAP. CER. 8P2 100 C N150	4			C925,C926	C
**********	**********	**	***	**********	*** BILL OF DOCUMENTATION	********	*****	*****	**********	*****
			AS	201350	WORKMANSHIP					
			EC	BR4413	1000 W OUTPUT COMBINER.					
			PD	BR364819	OUTPUT COMBINER 2 CF6210					
**********	**********	**	***	**********	********* NEXT ASSY *********	********	*****	*****	**********	*****
	1,000	ST		BR364835	COMBINER/ANT.ATT. CF6210	1				

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TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
OUTP.COMB.2 CF6210 D4413	BR364819 (364819)	C2	1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	37	BR365742	PAB,ANT ATT. CF6150-621	3				
2	1,000	ST	22	232498-015	CAP. CER 12P / 2500D	4			C801	B
3	6,000	ST	51	BR275514	SCREW M 3 X 6 CHJ GULCR	4			H1	A1
4	4,000	ST	31	BR261270	TERMINAL STUD	4			H2	
5	02,000	ST	31	BR231304	TERMINAL STUD 2,5X7 Ø1,3	4			H3	
6	2,000	ST	46	BR365807	BRACKET,MOUNT CF6150-621	1			MP1	
7	15,000	ST	21	BR362350	RES OXIDE 220R 7J	4			R801,R802,R803,R804,R805, R806,R807,R808,R809,R810, R811,R812,R813,R814,R815	
8	12,000	ST	21	BR362395	RES OXIDE 1K5 7J	4			R816,R817,R818,R819,R820, R821,R822,R823,R824,R825, R826,R827	
9	4,000	ST	21	BR362352	RES OXIDE 200R 7J	4			R828,R829,R830,R831	
**********	**********	**	**	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	******
			AS	201350	WORKMANSHIP					
			EC	BR4408	CF621C/CF6150					
**********	**********	**	**	**********	********** NEXT ASSY **********	**	**********	**********	**********	******
	1,000	ST		BR364835	COMBINER/ANT.ATT. CF6210	1				

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TITLE: ANT.ATTENUAT.CF6... D4408

DOCUMENT NO.: BR364827 (364827)

REV: B

SHEET NO.: 1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	60	BR364827	ANT.ATTENUAT.CF6... D4408	1			A1	
2	1,000	ST	60	BR364800	OUTP.COMB. 1 CF621 D4413	1			A2	
3	1,000	ST	60	BR364819	OUTP.COMB.2 CF6210 D4413	1			A3	
4	1,000	ST	61	BR364385	POWER REGL. CF6... D4405	1			A4	
5	32,000	ST	51	BR275514	SCREW M 3 X 6 CHJ GULCR	4			H1	
6	6,000	ST	51	BR275638	SCREW M 4 X 8 CHJ GULCR	4			H2	
7	2,000	ST	51	BR333271	SCREW M 3 X10 UHJ GULCR	4			H3	A1
8	2,000	ST	52	BR327506	NUT M 3 M CJ SN	4			H4	B1
9	6,000	ST	59	202232-003	WASHER,SPRING 3,1X 0,2	4			H5	B
10	1,000	ST	75	BR217832	RUBBER SLV 8X10X14X8	4			H6	
11	1,000	ST	31	BR230251	CONN D ACCESS. LOCK SCREW	4			H7	A2
12	2,000	ST	31	BR368210	COAX CONN BNC FEM-CHASS.	4			J	
13	1,000	ST	41	BR367540	CHASSIS COMB.UNIT CF6150	1			MP1	
14	1,000	ST	46	BR367516	BRACKET F.CONN CF6150-621	1			MP2	
15	1,000	ST	46	BR367559	BRACKET COMB.UNIT CF6150	1			MP3	
16	1,000	ST	46	BR367567	BRACKET F.SWR COMP.CF6150	1			MP4	
17	4,000	ST	52	BR367681	STAY NUT M3 X10 N5	3			MP5	
18	1,000	ST	37	BR369047	COAX CA ASSY CF6150-621	3			W	
20	1,000	ST	37	BR378429	CABLE ASSY CF6210	1			W	
21	0,120	M	32	BR329940	WIRE,ELEC 0,75 RED	4				A2
*****	**********	***	***	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	*****
			AS	201350	WORKMANSHIP					
			PD	BR364835	COMBINER/ANT.ATT. CF6210					
			TP	BRJA4627	1 Kw POWER COMBINER					
*****	**********	***	***	**********	********* NEXT ASSY ******	**	**********	**********	**********	*****
	1,000	ST		BR444030	PANEL CF6210-01 COMB.& FL	1				

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FSCM R0567
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TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
COMBINER/ANT.ATT. CF6210	BR364835 (364835)	B1	1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	65	BR366579	FILTER 1-4-5-8 CF6- D4414	1			A1	
2	2,000	ST	69	BR364851	RELAY B CF6... D4415	1			A2,A5	
3	2,000	ST	69	BR364843	RELAY A CF6... D4414	1			A3,A6	
4	1,000	ST	65	BR366587	FILTER 2-3-6-7 CF6- D4415	1			A4	
5	102,000	ST	51	BR275514	SCREW M 3 X 6 CHJ GULCR	4			H1	A2
6	3,000	ST	51	BR275530	SCREW M 3 X10 CHJ GULCR	4			H2	
7	2,000	ST	51	BR275646	SCREW M 4 X10 CHJ GULCR	4			H3	
8	2,000	ST	52	BR327506	NUT M 3 M CU SN	4			H4	
9	1,000	ST	31	BR231118	TERMINAL LUG 3,25MM	4			H5	
11	14,000	ST	75	BR217832	RUBBER SLV 8X10X14X8	4			H7	
14	2,000	ST	56	BR210862	CLAMP	4			H10	B
15	1,000	ST	56	BR211192	CLAMP 3MM	4			H11	
16	2,000	ST	41	BR366927	PLATE F.FILTER CF6150-621	1			MP1	
17	2,000	ST	46	BR365785	BAR F.FILTER CF6150-621	1			MP2	
18	1,000	ST	46	BR373834	U-BAR F. FILTER CF6150-62	1			MP3	
19	1,000	ST	46	BR373842	U-BAR F.FILTER CF6510-621	1			MP4	
20	40,000	ST	56	BR375098	SPACER F.HF-FILTER CF6150	3			MP5	
21	2,000	ST	46	BR373826	U-BAR F.FILTER CF6150-621	1			MP6	
22	2,000	ST	41	BR367486	FRONT/BACK F.FL CF6150	1			MP7	
23	2,000	ST	41	BR367494	SIDE PLATE F.FILTER CF615	1			MP8	
24	1,000	ST	41	BR367508	TOP PLATE F.FILTER CF6150	1			MP9	
25	36,000	ST	52	BR269611	STAY NUT M3 X10 N7	3			MP10	C
26	1,000	ST	37	BR368970	COAX CA ASSY CF6150-621	3			W	
27	1,000	ST	37	BR368997	COAX CA ASSY CF6150-621	3			W	
28	1,000	ST	37	BR369012	COAX CA ASSY CF6150-621	3			W	
29	1,000	ST	37	BR378666	CABLE ASSY CF6150-6210	1			W	
30	1,000	ST	56	BR211230	CLAMP	4				A2
31	2,000	ST	31	BR327646	KABELSKO 4MM2	4				A2
32	1,000	ST	56	BR211192	CLAMP 3MM	4				A2
33	3,000	ST	56	BR211214	CLAMP 4,54M	4				B
34	8,000	ST	52	237990-001	STAY NUT	3				C
**********	**********	**	**********	**********	*** BILL OF DOCUMENTATION	**********	**********	**********	**********	**********
			AS	201350	WORKMANSHIP					
			PD	BR364878	FILTER BANK CF6150-621					

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: FILTER BANK CF6150-621

DOCUMENT NO.: BR364878
(364878)

REV: C

SHEET NO.: 1 OF 2

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
			TP TP	BRJA4051 BRJA5001	4415/4416 S76210/S76150 MÅLESKEMA FOR FILTERBANK					
*****	**********	****	**********	**********	********* NEXT ASSY ******	**	*******	*****	**********	*****
	1,000	ST		BR444030	PANEL CF6210-01 COMB.8 FL	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: FILTER BANK CF6150-021

DOCUMENT NO.: BR364878
(364878)

REV: C

SHEET NO.: 2 OF 2

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	37	BR365750	PWB,POWER REGL. CF6150-62	3				
2	2,000	ST	22	BR203572	CAP. ELEC 22U 64 T LL	4			C1,C2	
3	1,000	ST	22	BR209317	CAP. ELEC 10U 64 T LL	4			C3	
4	2,000	ST	22	BR209503	CAP. PLST 470N 100 K	4			C4,C6	
5	2,000	ST	22	BR202967	CAP. PLST 100N 100 K	4			C5,C7	
6	2,000	ST	23	BR228141	DIO POW. 1N4007 SI 1KV 1A	4			CR1,CR2	
7	1,000	ST	23	BR228788	DIO ZEN ZPD10 10V 0.5W	4			CR3	
8	2,000	ST	51	BR275522	SCREW M 3 X 8 CHJ GULCR	4			H1	
9	2,000	ST	52	BR327506	NUT M 3 M CU SN	4			H2	
10	2,000	ST	53	BR33687+	WASHER,FLAT Ø 3MM CU SN	4			H3	
11	1,000	ST	56	BR331449	TRANS.ACCESS HEATSINK	4			H4	
12	2,000	ST	24	BR362069	IC ACCESS HEATSINK	4			H5	
13	2,000	ST	26	BR391387	TRANS.ACCESS ISOLAT.PLD	4			H6	
14	1,000	ST	26	BR218944	TRANS.ACCESS PAD TO-5	4			H7	
15	8,000	ST	31	BR231304	TERMINAL STUD 2,5X7 Ø1,3	4			H8	
16	7,000	ST	31	BR369270	CONN TAB F/PWB	4			H9	
17	1,000	ST	25	BR351723	COIL,CHOKE 100U J	4			L1	
18	1,000	ST	26	BR359440	TRANS.DARLN BD 677 SI-N T	4			Q1	
19	1,000	ST	26	BR273570	TRANS.HIPOW 2N4036 SI-P T	4			Q2	
20	1,000	ST	21	BR324221	RES CARB. 2K4 1/4J SFR25	4			R1	
21	2,000	ST	21	BR357982	RES OXIDE 430R 7J	4			R2,R11	A1
22	1,000	ST	21	BR240109	RES CARB. 10R 1/4J SFR25	4			R4	
23	1,000	ST	21	BR240427	RES CARB. 1K5 1/4J SFR25	4			R5	
24	2,000	ST	21	BR367990	RES OXIDE 390R 7J	4			R6,R7	
25	2,000	ST	21	BR242381	RES FILM 510R 1.6J PR37	4			R8,R9	
26	1,000	ST	21	BR240303	RES CARB. 300R 1/4J SFR25	4			R10	
27	1,000	ST	24	BR352115	IC LIN 78 15 VOLT REGL.	4			U1	
28	1,000	ST	24	BR362085	IC LIN 78 05 VOLT REGL.	4			U2	
29	5,000	MM	34	200373-007	SLEEVING TUBE, PTFE,AWG18	4				A2
**********	**********	***	***	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	**********
			AS	201350	WORKMANSHIP					
			EC	BR++05	POWER REGULATOR					
**********	**********	***	***	**********	********* NEXT ASSY *********	**********	**********	**********	**********	**********

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
POWER REGL. CF6... D4405	BR364886 (364886)	A2	1 OF 2

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
	1,000	ST		BR364835	COMBINER/ANT.ATT. CF6210	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: POWER REGL. CF6... 04405

DOCUMENT NO.: BR364886
(364886)

REV: A2

SHEET NO.: 2 OF 2

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	37	BR365769	PWB,COUPLER 1 CF6150-621	3				
2	1,000	ST	22	BR366639	CAP. GLAS 5P6 1K J 3A	4			C601	
3	1,000	ST	31	BR261270	TERMINAL STUD	4			H1	
4	2,000	ST	45	201197-049	STRAP, CABLE, NAT Ø20X2.5	4			H2	A1
5	1,000	ST	54	BR261233	RIVET,TUBULAR	4			H3	
6	1,000	ST	25	BR366528	TRAFO F/PWB21639 CF6210	1			T601	
**********	**********	**	***	**********	*** BILL OF DOCUMENTATION	**	********	*****	**********	*****
			AS	201350	WORKMANSHIP					
			EC	BR4403	DIRECT. COUPLER CF6210					
**********	**********	**	***	**********	********* NEXT ASSY ********	**	********	*****	**********	*****
	1,000	ST		BR365025	DIRECTION COUPLER CF6210	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: COUPLER 1 CF6210 D4403

DOCUMENT NO.: BR364908
(364908)

REV: A1

SHEET NO.: 1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	11	BR355777	PNB,COUPLER 2 CF6150-621	3				
2	2,000	ST	22	BR364509	CAP. SEM 6-60P TEFLON	4			C602,C603	
3	4,000	ST	31	BR261270	TERMINAL STUD	4			H1	
4	4,000	ST	21	BR242349	RES FILM 100R 1.0J PR37	4			R601,R602,R603,R604	
**********	**********	**	***	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	*****
			AS	201350	WORKMANSHIP					
			EC	BR364403	DIRECT. COUPLER CF6210					
**********	**********	**	***	**********	********* NEXT ASSY *********	**	**********	**********	**********	*****
	1,000	ST		BR355025	DIRECTION COUPLER CF6210	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: COUPLER 2 CF6... D4403

DOCUMENT NO.: BR364916
(364916)

REV: A

SHEET NO.: 1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	37	BR365661	PNB,ATT.+BLOW.CTRL.CF6210	3				
2	1,000	ST	69	BR47995C	RELAY BD CF6210	1			A1	
3	3,000	ST	22	BR209678	CAP. PLST 100N 400 K	4			C1,C2,C3	
4	2,000	ST	22	BR366471	CAP. ELEC 1M 40 T T	4			C4,C5	
5	6,000	ST	23	BR228141	DIO POW. 1N4007 SI 1KV 1A	4			CR1,CR2,CR3,CR4,CR5,CR6	
6	4,000	ST	56	BR200337	SPACER Ø3 5X 5MM MEC	3			H1	
7	1,000	ST	26	BR218944	TRANS.ACCESS PAD TO-5	4			H2	
9	4,000	ST	51	BR275549	SCREW M 3 X12 CHJ GULCR	4			H4	
10	4,000	ST	52	BR327506	NUT M 3 M CU SN	4				B1
11	4,000	ST	53	BR336874	WASHER,FLAT Ø 3MM CU SN	4				B1
12	22,000	ST	31	BR369275	CONN TAB F/PNB	4			H7	
13	1,000	ST	31	BR259304	COAX CONN N FEM-CHASS.	4			J1	
14	3,000	ST	33	BR363170	RELAY 24V 740 2XCHG.	4			K1,K2,K3	
15	2,000	ST	33	BR363162	RELAY 42V 2K8 1XCHG.	4			K5,K6	
16	1,000	ST	26	BR369462	TRANS.LOPOW 2N2219A SI-N	4			Q1	
17	3,000	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	4			R1,R2,R5	
18	2,000	ST	21	BR240109	RES CARB. 10R 1/4J SFR25	4			R3,R6	
19	2,000	ST	21	BR242403	RES FILM 560R 1.6J PR37	4			R4,R7	
20	1,000	ST	21	BR328536	RES CARB. 24K 1/4J SFR25	4			R9	
21	1,000	ST	37	BR368989	COAX CA ASSY CF6150-621	3			W1	
22	2,000	ST	37	BR368962	COAX CA ASSY CF6150-621	3			W2,W3	C
24	0,020	M	32	2008+3-009	WIRE CCP TIN-CTD Ø0.6 4M	4				B
25	1,000	ST	54	BR261233	RIVET,TUBULAR	4				C
**********	**********	**	**	**********	*** BILL OF DOCUMENTATION	**	********	*****	**********	*****
			AS	201350	WORKMANSHIP					
			EC	BR4412	3DB ATT-& BLOWER CONTROL					
			PD	BR364924	ATT+BL.W.CTRL.CF6210					
**********	**********	**	**	**********	********* NEXT ASSY ******	**	********	*****	**********	*****
	1,000	ST		BR444030	PANEL CF6210-01 COMB.& FL	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TERMA

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
ATT+BLW.CTRL CF6210 D4412	BR364924 (364924)	C	1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	60	BR364908	COUPLER 1 CF6210 D4403	1			A1	
2	1,000	ST	60	BR364915	COUPLER 2 CF6... D4403	1			A2	
3	12,000	ST	51	BR275514	SCREW M 3 X 6 CHJ GULCR	4			H1	C
4	9,000	ST	51	BR275530	SCREW M 3 X10 CHJ GULCR	4			H2	
6	29,000	ST	52	BR327503	NUT M 3 M CU SN	4			H4	
7	8,000	ST	56	224537-001	SPACER, THREADED M3X5 MM	4			H5	B
8	1,000	ST	56	BR210730	CLAMP NYLON	4			H6	
9	1,000	ST	75	BR217824	RUBBER SLV 6X9.5X12X8	4			H7	
10	1,000	ST	31	BR368283	COAX CONN N FEM-CH-ANG	4			J1	
11	1,000	ST	41	BR365157	BOX F/DIR COUPLER CF6150-	1			MP1	
12	1,000	ST	41	BR365165	SCREEN BOX F.COUPL. CF515	1			MP2	
13	1,000	ST	25	BR366595	TRAFO F/PWB21640 CF6210	1			T602	
14	2,000	ST	37	BR378380	COAX CA ASSY CF6150-62	3			W1,W2	B
15	1,000	ST	37	BR373063	COAX CA ASSY W3 CF6150-62	3			W3	
17	0,080	M	32	BR33303+	WIRE,ELEC 0,75 WHITE	4				A1
18	0,080	M	32	BR438227	FLEX TEFLON Ø0,7X Ø1,2	4				A1
19	0,120	M	32	BR220116	FLEX SILICONE 3 YEL	4				A1
20	30,000	MM	34	201701-003	SLEEVING, SHRINK. 12.7MM	4				B
21	8,000	ST	51	BR275506	SCREW M 3 X 5 CHJ GULCR	4				C
**********	**********	**	**	**********	*** BILL OF DOCUMENTATION	**********	**********	**********	**********	**********
			AS	201350	WORKMANSHIP					
			PD	BR365025	DIRECTION COUPLER CF6150					
			TP	BRJA4011	FOR 1KW DIR. COUP. S76210					
**********	**********	**	**	**********	********** NEXT ASSY **********	**********	**********	**********	**********	**********
	1,000	ST		BR378372	REAR PLATE ASSY CF6210	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: DIRECTION COUPLER CF6210

DOCUMENT NO.: BR365025
(365025)

REV: C

SHEET NO.: 1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	37	BR371920	PNB,FILTER CF6150-621	3				
2	1,000	ST	22	232467-078	CAP. MICA 402P / 1000F	4			C1	B
3	2,000	ST	22	232467-093	CAP. MICA 825P / 1000F	4			C5,C6	B
4	4,000	ST	22	232467-064	CAP. MICA 205P / 1000F	4			C12,C13,C14,C107	B
5	2,000	ST	22	232467-091	CAP. MICA 750P / 1000F	4			C17,C18	B
6	2,000	ST	22	232467-083	CAP. MICA 511P / 1000F	4			C25,C28	B
7	1,000	ST	22	232467-049	CAP. MICA 100P / 1000F	4			C31	B
8	4,000	ST	22	232467-060	CAP. MICA 169P / 1000F	4			C34,C35,C44,C104	B
9	2,000	ST	22	232467-052	CAP. MICA 44P2 / 1000F	4			C39,C40	B
10	1,000	ST	22	232467-033	CAP. MICA 46P4 / 1000F	4			C41	B
11	1,000	ST	22	232467-061	CAP. MICA 178P / 1000F	4			C45	B
12	1,000	ST	22	232467-052	CAP. MICA 115P / 1000F	4			C52	B
13	1,000	ST	22	232467-056	CAP. MICA 140P / 1000F	4			C55	B
14	2,000	ST	22	232467-029	CAP. MICA 38P3 / 1000F	4			C57,C78	B
15	1,000	ST	22	232467-051	CAP. MICA 110P / 1000F	4			C60	B
16	3,000	ST	22	232467-014	CAP. MICA 18P7 / 1000F	4			C65,C66,C67	B
17	2,000	ST	22	232467-041	CAP. MICA 68P1 / 1000F	4			C70,C71	B
18	1,000	ST	22	232467-039	CAP. MICA 61P9 / 1000F	4			C81	B
19	1,000	ST	22	232467-058	CAP. MICA 154P / 1000F	4			C83	B
20	1,000	ST	22	232467-067	CAP. MICA 237P / 1000F	4			C86	B
21	1,000	ST	22	232467-068	CAP. MICA 249P / 1000F	4			C87	B
22	3,000	ST	22	232467-040	CAP. MICA 64P9 / 1000F	4			C91,C92,C93	B
23	2,000	ST	22	232467-070	CAP. MICA 274P / 1000F	4			C96,C97	B
24	1,000	ST	22	232469-042	CAP. PORC 520P / 500G	4			C3	B
25	1,000	ST	22	232469-027	CAP. PORC 120P / 500G	4			C33	B
26	1,000	ST	22	232469-016	CAP. PORC 43P / 500G	4			C59	B
27	1,000	ST	22	232469-031	CAP. PORC 180P / 500G	4			C85	B
28	32,000	ST	54	BR47?064	RIVET,TUBULAR 2,25X3,6MM	4			H1	A1
29	2,000	ST	51	BR327174	SCREW M 3 X12 CHM CU SN	4			H2	
30	6,000	ST	51	BR327247	SCREW M 4 X12 CHM CU SN	4			H3	
31	2,000	ST	52	BR327506	NUT M 3 M CU SN	4			H4	
32	18,000	ST	52	BR321060	NUT M 4 M CU SN	4			H5	
33	2,000	ST	53	BR3?2?25	WASHER,PRESSP.Ø 3,2 X 5,0	4			H6	
34	6,000	ST	53	BR341762	WASHER,PRESSP.Ø 5,0 X14,0	4			H7	
35	12,000	ST	53	BR336777	WASHER,FLAT Ø 4MM CU SN M	4			H8	
36	3,000	ST	25	BR365440	COIL CF6... D4414 D4415	1			L1,L2,L3	

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: FILTER 1-4-5-8 CF6- D4414

DOCUMENT NO.: BR366579
(366579)

REV: D

SHEET NO.: 1 OF 2

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
37	1,000	ST	25	BR365459	COIL CF6... D4414 1043	1			L4	
38	3,000	ST	25	BR365521	COIL CF6... D4414 U72	1			L5,L6,L7	
39	1,000	ST	25	BR365548	COIL CF6... D4414 U33	1			L8	
40	3,000	ST	25	BR365599	COIL CF6... D4414 U24	1			L9,L10,L11	
41	1,000	ST	25	BR365602	COIL CF6... D4414 U11	1			L12	
42	3,000	ST	25	BR365483	COIL CF6... D4414 D4415	1			L13,L14,L15	
43	1,000	ST	25	BR365512	COIL CF6... D4414 U43	1			L16	
44	1,020	M	32	200343-005	WIRE COP TIN-CTD Ø1.5 MM	4				C
45	1,000	ML	76	205254-001	ADHESIVE SILICONE, RTV	4				D
46	6,000	ST	53	200558-005	WASHER FLAT NYLON M 5	4				D
**********	**********	**	***	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	*****
			AS	201350	WORKMANSHIP					
			EC	BR4414/4415	FILTER BANK CF6210					
			PD	BR4414	FILTER BANK					
**********	**********	**	***	**********	********* NEXT ASSY ******	**	**********	**********	**********	*****
	1,000	ST		BR364878	FILTER BANK CF6150-621	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: FILTER 1-4-5-8 CF6- D4414

DOCUMENT NO.: BR366579
(366579)

REV: D

SHEET NO.: 2 OF 2

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	37	BR371022	PWB,FILTER CF6150-621	3				
2	2,000	ST	22	232467-072	CAP. MICA 301P / 1000F	4			C109,C213	B
3	2,000	ST	22	232467-083	CAP. MICA 511P / 1000F	4			C113,C123	B
4	1,000	ST	22	232467-082	CAP. MICA 487P / 1000F	4			C114	B
5	2,000	ST	22	232467-056	CAP. MICA 140P / 1000F	4			C118,C119	B
6	1,000	ST	22	232467-057	CAP. MICA 147P / 1000F	4			C120	B
7	1,000	ST	22	232467-084	CAP. MICA 536P / 1000F	4			C124	B
8	1,000	ST	22	232467-075	CAP. MICA 348P / 1000F	4			C131	B
9	1,000	ST	22	232467-079	CAP. MICA 422P / 1000F	4			C134	B
10	1,000	ST	22	232467-040	CAP. MICA 64P9 / 1000F	4			C137	B
11	4,000	ST	22	232467-049	CAP. MICA 100P / 1000F	4			C140,C151,C197,C198	B
12	3,000	ST	22	232467-055	CAP. MICA 133P / 1000F	4			C141,C150,C151	B
13	3,000	ST	22	232467-025	CAP. MICA 31P6 / 1000F	4			C145,C146,C147	B
14	2,000	ST	22	232467-045	CAP. MICA 82P5 / 1000F	4			C158,C176	B
15	1,000	ST	22	232467-034	CAP. MICA 48P7 / 1000F	4			C163	B
16	2,000	ST	22	232467-043	CAP. MICA 75P0 / 1000F	4			C166,C167	B
17	1,000	ST	22	232467-014	CAP. MICA 18P7 / 1000F	4			C171	B
18	1,000	ST	22	232467-017	CAP. MICA 21P5 / 1000F	4			C172	B
19	1,000	ST	22	232467-022	CAP. MICA 27P4 / 1000F	4			C173	B
20	2,000	ST	22	232467-043	CAP. MICA 95P3 / 1000F	4			C177,C199	B
21	1,000	ST	22	232467-030	CAP. MICA 53P6 / 1000F	4			C184	B
22	1,000	ST	22	232467-041	CAP. MICA 68P1 / 1000F	4			C187	B
23	1,000	ST	22	232467-064	CAP. MICA 205P / 1000F	4			C189	B
24	2,000	ST	22	232467-077	CAP. MICA 383P / 1000F	4			C192,C202	B
25	2,000	ST	22	232467-078	CAP. MICA 402P / 1000F	4			C193,C203	B
26	1,000	ST	22	232467-068	CAP. MICA 249P / 1000F	4			C210	B
27	32,000	ST	54	BR499064	RIVET,TUBULAR 2,25X3,6MM	4			H1	A1
28	2,000	ST	51	BR327174	SCREW M 3 X12 CHM CU SN	4			H2	
29	6,000	ST	51	BR327247	SCREW M 4 X12 CHM CU SN	4			H3	
30	2,000	ST	52	BR327506	NUT M 3 M CU SN	4			H4	
31	18,000	ST	52	BR321060	NUT M 4 M CU SN	4			H5	
32	2,000	ST	53	BR345725	WASHER,PRESSP.Ø 3,2 X 6,0	4			H6	
33	12,000	ST	53	BR336777	WASHER,FLAT Ø 4MM CU SN M	4			H7	
34	3,000	ST	25	BR365440	COIL CF6... D4414 D4415	1			L17,L18,L19	
35	1,000	ST	25	BR365475	COIL CF6... D4415 103	1			L20	
36	3,000	ST	25	BR365556	COIL CF6... D4415 U52	1			L21,L22,L23	

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: FILTER 2-3-6-7 CF6- D4415

DOCUMENT NO.: BR366587
(366587)

REV: D

SHEET NO.: 1 OF 2

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
37	1,000	ST	25	BR3,5564	COIL CF6... D4415 U23	1			L24	
38	3,000	ST	25	BR365572	COIL CF6... D4415 U343	1			L25,L26,L27	
39	1,000	ST	25	BR3,5580	COIL CF6... D4415 U137	1			L28	
40	3,000	ST	25	BR3,5483	COIL CF6... D4414 D4415	1			L29,L30,L31	
41	1,000	ST	25	BR365491	COIL CF6... D4415 U69	1			L32	
42	1,000	ST	22	232+69-039	CAP. PCRC 380P / 500G	4			C111	B
43	1,000	ST	22	232+69-023	CAP. PCRC 82P / 500G	4			C139	B
44	1,000	ST	22	232+69-024	CAP. PCRC 95P / 500G	4			C165	B
45	1,000	ST	22	232+69-034	CAP. PCRC 240P / 500G	4			C191	B
46	6,000	ST	53	BR3+1762	WASHER,PRESSP.Ø 5,0 X14,0	4				B
47	1,020	M	32	200343-005	WIRE COP TIN-CTD Ø1.5 MM	4				C
48	1,000	ML	76	205254-001	ADHESIVE SILICONE, RTV	4				D
49	6,000	ST	53	200358-005	WASHER FLAT NYLON M 5	4				D
*****	**********	***	***	**********	*** BILL OF DOCUMENTATION	**	**********		**********	*****
			AS	201350	WORKMANSHIP					
			EC	BR4+14/4+15	FILTER BANK CF6210					
			PC	BR4+15	FILTER BANK					
*****	**********	***	***	**********	********* NEXT ASSY ********	**	**********		**********	*****
	1,000	ST		BR364378	FILTER BANK CF6150-621	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: FILTER 2-3-6-7 CF6- D4+15

DOCUMENT NO.: BR366587
(366587)

REV: D

SHEET NO.: 2 OF 2

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	21,000	ST	25	BR337725	COIL,CHOKE 1000 J	4				
2	21,000	ST	22	BR333332	CAPFEED THROUGH 1N5 Z	4				
3	300,000	MM	34	201701-004	SLEEVING, SHRINK, 3.2MM B	4				A1
4	1,000	ST	41	BR365890	MOUNT.PL F.CAP CF6150-621	1				
5	1,700	M	32	200824-010	WIRE, ELEC, AWG-24 BLK	4				A2
*****	**********	**	***	**********	*** BILL OF DOCUMENTATION	**	********	******	**********	*****
			AS	201350	WORKMANSHIP					
*****	**********	**	***	**********	********* NEXT ASSY ********	**	********	******	**********	*****
	1,000	ST		BR478873	SMR COM.CF6150-6210 D4788	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: CAP. ASSY CF6150-621

DOCUMENT NO.: BR379107
(379107)

REV: A2

SHEET NO.: 1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	60	BR364924	ATT+BLK.CTRL CF6210 D4412	1			A1	
2	1,000	ST	41	BR378372	REAR PLATE ASSY CF6210	1			A2	
3	1,000	ST	60	210703-001	METER-SWITCH1 CF6150/6210	1				B
4	1,000	ST	65	BR364378	FILTER BANK CF6150-621	1			A4	
5	1,000	ST	60	BR364335	COMBINER/ANT.ATT. CF6210	1			A5	
6	1,000	ST	60	BR478673	SMR COM.CF6150-6210 D4783	1			A6	
7	1,000	ST	41	BR389625	FAN ALARM CF6150-621	1			A7	
8	2,000	ST	56	BR230417	SPACER Ø3 5X 7MM MES	3			H1	
9	2,000	ST	56	201537-009	CLAMP, LOOP, NYLON 12.0	4			H2	D1
10	4,000	ST	56	BR210765	CLAMP NYLON	4			H3	B2
11	8,000	ST	53	BR245674	WASHER,NYLON Ø10MM	4			H4	
12	2,000	ST	51	BR275360	SCREW M 2 X 5 CHJ GULCR	4			H5	
13	72,000	ST	51	BR275514	SCREW M 3 X 6 CHJ GULCR	4			H6	D
14	8,000	ST	51	BR275549	SCREW M 3 X12 CHJ GULCR	4			H7	B2
15	1,000	ST	51	BR275557	SCREW M 3 X16 CHJ GULCR	4			H8	
16	12,000	ST	51	BR275611	SCREW M 4 X 5 CHJ GULCR	4			H9	D
17	12,000	ST	51	BR333355	SCREW M 4 X 6 UHJ GULCR	4			H10	B2
18	13,000	ST	51	BR275638	SCREW M 4 X 8 CHJ GULCR	4			H11	
19	9,000	ST	51	BR275646	SCREW M 4 X10 CHJ GULCR	4			H12	B2
20	17,000	ST	51	BR333417	SCREW M 4 X10 UHJ GULCR	4			H13	B2
21	4,000	ST	51	BR333522	SCREW M 5 X12 UHJ GULCR	4			H14	
22	11,000	ST	52	BR327506	NUT M 3 M CU SN	4			H15	D
23	2,000	ST	52	BR333534	NUT M 3 SPECIAL M CU SN	4			H16	
24	3,000	ST	55	202232-005	WASHER,SPRING 3,1X 6,2	4			H17	C
25	3,000	ST	31	BR368493	CONN D ACCESS. LOCK.HOOK	4			H18	B2
26	2,000	ST	31	BR368512	CONN D ACCESS. LATCH	4			H19	
27	6,000	ST	45	201197-049	STRAP, CABLE, NAT Ø20X2.5	4			H20	D2
28	1,000	ST	45	BR373265	TELESCOP.SLIDE,PAIR 17 3/	4			H21	
29	1,000	ST	36	BR366730	METER MC 28 1MA 100	3			M1	
30	1,000	ST	38	BR366749	METER MC 28 1MA 100	3			M2	
31	1,000	ST	41	BR367478	CHASSIS CF6150-621	1			MP1	
32	1,000	ST	46	BR373885	BRACKET,BOTTOM CF6150-621	1			MP2	
33	1,000	ST	46	210774-001	BRACKET,BOTTOM CF6...	1				B
34	1,000	ST	41	210775-001	MOUNT.PLATE,FRONT CF6...	1				B
35	1,000	ST	46	BR375128	BRACKET F.15P CONN CF6150	1			MP5	
36	1,000	ST	41	210777-001	FRONT PLATE CF6210 ENG.	1				B

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: PANEL CF6210-01 COMB.& FL

DOCUMENT NO.: BR444030
(444030)

REV: E

SHEET NO.: 1 OF 2

Parts List

PRINTET......... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
38	2,000	ST	41	BR254251	PLATE,LOCK 7 INCH	1			MP8	
39	4,000	ST	46	BR258582	GUIDE F/THUMBSCREW 260827	2			MP9	
40	4,000	ST	53	BR257015	WASHER,NYLON Ø12MM X15MM	3			MP10	
41	4,000	ST	51	BR260827	THUMBSCREW,KNURLED M6	3			MP11	
42	2,000	ST	43	BR216734	HANDLE F.7" 155MM	3			MP12	
43	1,000	ST	41	BR357524	TOP PLATE CF6150-621	1			MP13	
44	1,000	ST	46	BR373869	BRACKET,TOP CF6150-621	1			MP14	
45	1,000	ST	46	BR373877	BRACKET,TOP CF6150-621	1			MP15	
46	1,000	ST	65	BR432238	FILTER,AIR ASSY P-P.CF PA	1			MP16	
47	1,000	ST	56	BR375144	SPACER F.TOP PLATE CF6150	1			MP17	
51	5,000	ST	52	BR269611	STAY NUT M3 X10 N7	3			MP21	
52	1,000	ST	46	BR373850	U-BAR F.FRONT PLATE CF615	1			MP22	
53	1,000	ST	33	235412-C02	SWITCH, 2XF15FSB-BK-40-GR	4			S7	B
54	1,000	ST	33	235412-124	SWITCH, 4X015FSB-BK-80-GR	4			S9	B
55	1,000	ST	37	BR378364	CABLE ASSY CF6210	1			W1	
56	1,000	ST	48	BR426039	LABEL J1 T 36 J NR.	3				B2
57	1,000	ST	48	BR426047	LABEL J1-J2 J7 T J1 J NR.	4				B2
58	1,000	ST	48	BR375337	LABEL HIGH VOLT.	3				B2
59	1,000	ST	30	BR433293	LABEL	1				B1
60	1,000	ST	48	BR464872	LABEL, DRA TYPE/SER.NO	3				B1
61	4,000	ST	51	202176-416	SCREW M 4X16 SLTD A2	4				E
					*** BILL OF DOCUMENTATION ***					
			AS	201350	WORKMANSHIP					
1001			PD	BR444030	COMBINER & FILTER CF6210					
1002			EC	BR4418	COMBINER & FILTER CF6210					
1003			TP	BRJA4555	COMP.FIL.P. S76210/S76150					
					*** NEXT ASSY ***					
	1,000	ST		BR433009	LA 76210 1000W 3F	1				

TERMA Elektronik AS FSCM R0567 Hovmarken 4, DK-8520 Lystrup, Denmark	TITLE: PANEL CF6210-01 COMB.& FL	DOCUMENT NO.: BR444030 (444030)	REV: E	SHEET NO.: 2 OF 2

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	31	BR478857	PWB,SMR COMPUTER CF6150-6	3				
2	2,000	ST	22	BR363340	CAP. CER. 1N2 100 K HI-K	4			C1,C4	
3	3,000	ST	22	BR450359	CAP. ELEC 1U 25 M	4			C2,C6,C19	
4	3,000	ST	22	BR357342	CAP. CER. 10N 100 S HI-K	4			C7,C9,C11	
5	1,000	ST	22	BR451339	CAP. ELEC 15U 10 M	4			C8	
6	1,000	ST	22	BR209570	CAP. PLST 47N 250 K	4			C10	
7	1,000	ST	22	BR359470	CAP. PLST 4N7 160 F	4			C12	
8	2,000	ST	22	BR344273	CAP. PLST 22N 250 K	4			C13,C14	
9	8,000	ST	22	BR209554	CAP. PLST 10N 250 K	4			C15,C29,C31,C33,C35,C37, C39,C41	
10	1,000	ST	22	BR203572	CAP. ELEC 22U 64 T LL	4			C16	
11	3,000	ST	22	BR202367	CAP. PLST 100N 100 K	4			C17,C23,C26	
12	2,000	ST	22	BR209503	CAP. PLST 470N 100 K	4			C21,C25	
13	1,000	ST	22	BR458708	CAP. ELEC 2U2 25 M	4			C22	
14	4,000	ST	22	BR479330	CAP. ELEC 4U7 25 M	4			C42,C43,C44,C45	
15	4,000	ST	23	BR363758	DIO SCHOT MBD701 HOT CARR	4			CR1,CR2,CR3,CR4	
16	11,000	ST	23	200352-001	DIODE 1N4148	4			CR5,CR6,CR7,CR8,CR9,CR10, CR11,CR12,CR13,CR14,CR15	A3
17	23,000	ST	31	BR261270	TERMINAL STUD	4			TP1-23	A1
18	2,000	ST	26	BR274097	TRANS.LOPOW BC 547C SI-N	4			Q1,Q2	
19	1,000	ST	26	BR357901	TRANS.JFETN J 310 TO-92	4			Q3	
20	2,000	ST	26	BR359157	TRANS.LOPOW BC307B SI-P T	4			Q4,Q5	
21	4,000	ST	26	BR355704	TRANS.DARLN BD 679 SI-N T	4			Q6,Q7,Q8,Q9	
22	2,000	ST	21	BR241202	RES CARB. 100R 1/2JSFR25H	4			R1,R2	
23	11,000	ST	21	BR240745	RES CARB. 100K 1/4J SFR25	4			R3,R4,R8,R9,R18,R54,R55, R58,R59,R62,R63	
24	2,000	ST	21	BR240648	RES CARB. 27K 1/4J SFR25	4			R5,R10	
25	2,000	ST	21	BR242349	RES FILM 100R 1.6J PR37	4			R6,R7	
26	8,000	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	4			R11,R26,R76,R77,R78,R79, R80,R81	
27	2,000	ST	21	BR240699	RES CARB. 51K 1/4J SFR25	4			R12,R14	
28	5,000	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	4			R13,R34,R37,R39,R40	
29	1,000	ST	21	BR371930	RES SEMIV 2K 1/2K CERM	4			R15	
30	6,000	ST	21	BR240613	RES CARB. 18K 1/4J SFR25	4			R16,R27,R90,R91,R92,R93	
31	2,000	ST	21	BR240664	RES CARB. 39K 1/4J SFR25	4			R17,R23	
32	3,000	ST	21	BR240702	RES CARB. 56K 1/4J SFR25	4			R19,R20,R30	

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TERMA

TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
SMR COMP.ASSY CF6.. D4738	BR478865 (478865)	A3	1 OF 3

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
33	5,000	ST	21	BR2+0729	RES CARB. 75K 1/4J SFR25	4			R21,R86,R87,R88,R89	
34	1,000	ST	21	BR2+0680	RES CARB. 47K 1/4J SFR25	4			R22	
35	1,000	ST	21	BR2+0605	RES CARB. 15K 1/4J SFR25	4			R24	
36	1,000	ST	21	BR353227	RES SEMIV 10K 1/2K CERM	4			R25	
37	6,000	ST	21	BR2+0427	RES CARB. 1K5 1/4J SFR25	4			R28,R46,R82,R83,R84,R85	
38	1,000	ST	21	BR357693	RES CARB. 150K 1/4J SFR25	4			R29	
39	5,000	ST	21	BR2+0540	RES CARB. 6K8 1/4J SFR25	4			R31,R33,R64,R70,R72	
40	5,000	ST	21	BR2+0516	RES CARB. 4K7 1/4J SFR25	4			R32,R44,R45,R51,R95	
41	2,000	ST	21	BR2+0656	RES CARB. 33K 1/4J SFR25	4			R35,R36	
42	1,000	ST	21	BR240521	RES CARB. 22K 1/4J SFR25	4			R38	
43	1,000	ST	21	BR240168	RES CARB. 33R 1/4J SFR25	4			R41	
44	1,000	ST	21	BR353235	RES SEMIV 5K 1/2K CERM	4			R42	
45	1,000	ST	21	BR2+0524	RES CARB. 5K6 1/4J SFR25	4			R43	
46	7,000	ST	21	BR2+0478	RES CARB. 2K7 1/4J SFR25	4			R47,R65,R67,R69,R71,R73, R75	A2
47	1,000	ST	21	BR240339	RES CARB. 680R 1/4J SFR25	4			R48	
48	1,000	ST	21	BR2+0311	RES CARB. 330R 1/4J SFR25	4			R49	
49	2,000	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	4			R50,R96	
50	6,000	ST	21	BR240737	RES CARB. 82K 1/4J SFR25	4			R52,R53,R56,R57,R60,R61	
51	3,000	ST	21	BR2+0436	RES CARB. 3K3 1/4J SFR25	4			R66,R68,R74	
52	1,000	ST	21	BR2+0494	RES CARB. 3K9 1/4J SFR25	4			R94	
53	1,000	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	4			R97	
54	8,000	ST	24	BR357707	IC LIN MC 1458P OP.AMPL.	4			U1,U2,U6,U7,U8,U10,U12, U13	
55	2,000	ST	24	BR353014	IC DGTL 40018 4X2 IN NOR	4			U3,U9	
56	1,000	ST	24	BR355054	IC DGTL 40818 4X2 IN AND	4			U4	
57	1,000	ST	24	BR357672	IC DGTL 40938 4X2IN NAND	4			U5	
58	1,000	ST	24	BR357753	IC LIN LM 311N VOLT COMP.	4			U11	
59	1,000	ST	24	BR227412	IC DGTL 74 10N 3X3IN NAND	4			U14	
60	1,000	ST	24	BR353243	IC DGTL 74121N MONOSTAB.	4			U15	
**********	**********	**	**	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	*****
			AS	201350	WORKMANSHIP					
			EC	BR478865	SWR COMP.ASSY CF6					
			PD	BR478865	SWR COMP.ASSY CF6.. D4738					

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: SWR COMP.ASSY CF6.. D4738

DOCUMENT NO.: BR473865 (478865)

REV: A3

SHEET NO.: 2 OF 3

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
			IP	BRQA4522	SMR COMPAR.S76210/S76150					
**********	**********	**	*****	**********	********** NEXT ASSY **********	**********	**********	**********	**********	*****
	1.000	ST		BR478873	SMR COM.CF6150-6210 D4788	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

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TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
SMR COMP.ASSY CF6.. D4788	BR478865 (478865)	A3	3 OF 3

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	60	BR478865	SWR COMP.ASSY CF6.. D4788	1			A1	
2	1,000	ST	60	BR379107	CAP. ASSY CF6150-021	1			A2	
3	2,000	ST	51	BR275514	SCREW M 3 X 6 CHJ GULCR	4			H1	A2
4	4,000	ST	52	BR327506	NUT M 3 M CU SN	4			H2	
5	2,000	ST	31	BR231095	TERMINAL LUG 3,25MM 1F	4			H4	A2
7	1,000	ST	31	BR226904	CONN D SOLDER 25P FEMALE	4			J1	
8	1,000	ST	41	BR379417	CASSETTE SWR COMP CF....	1			MP1	
9	1,000	ST	41	BR213500	COVER F.CASSETTE MINIRACK	1			MP2	
10	1,000	ST	46	BR355882	BRACKET F.25P CONN.CF6150	1			MP3	
11	1,000	ST	37	BR337532	CABLE ASSY SWR CF6150-621	1			W1	
12	0,190	M	32	BR223115	COAX CABLE 50R TEFLON	4			W2	A6
16	2,000	ST	51	BR275522	SCREW M 3 X 8 CHJ GULCR	4				A2
17	0,250	M	34	205076-001	SLEEVING HEAT SHRINKABLE	4				A2
18	0,050	M	34	205076-003	SLEEVING HEAT SHRINKABLE	4				A2
**********	**********	**	**	**********	*** BILL OF DOCUMENTATION	**	********	********	**********	*****
			AS	201350	WORKMANSHIP					
			PD	BR478865	SWR COMP.ASSY CF6.. D4788					
			PD	BR478873	SWR COM.CF6150-6210					
**********	**********	**	**	**********	********** NEXT ASSY **********	**	********	********	**********	*****
	1,000	ST		BR444030	PANEL CF6210-01 COMB.& FL	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TERMA

TITLE: SWR COM.CF6150-6210 D4788

DOCUMENT NO.: BR478873
(478873)

REV: A6

SHEET NO.: 1 OF 1

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	31	BR479942	PNB,RELAY CF6210	3				
2	1,000	ST	22	200512-013	CAP. ELC 100 / 63T	4			C1	A2
3	1,000	ST	23	BR223141	DIO POW. 1N4007 SI 1KV 1A	4			CR1	
4	6,000	ST	31	232310-003	TERMINAL PIN WRAP	4			H1	A1
5	1,000	ST	33	BR363588	RELAY 24V 1950R 2XCHG.	4			K1	
6	1,000	ST	21	BR479969	RES WIREW 2K7 5J AC05	4			R1	
*****	**********	***	***	**********	*** BILL OF DOCUMENTATION	**	********	********	**********	*****
			AS	201350	WORKMANSHIP					
			EC	BR479950	RELAY BD CF6210					
			PD	BR479950	RELAY BD CF6210					
*****	**********	***	***	**********	********* NEXT ASSY ******	**	********	********	**********	*****
	1,000	ST		BR364924	ATT+BLK.CTRL CF6210 D4+12	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

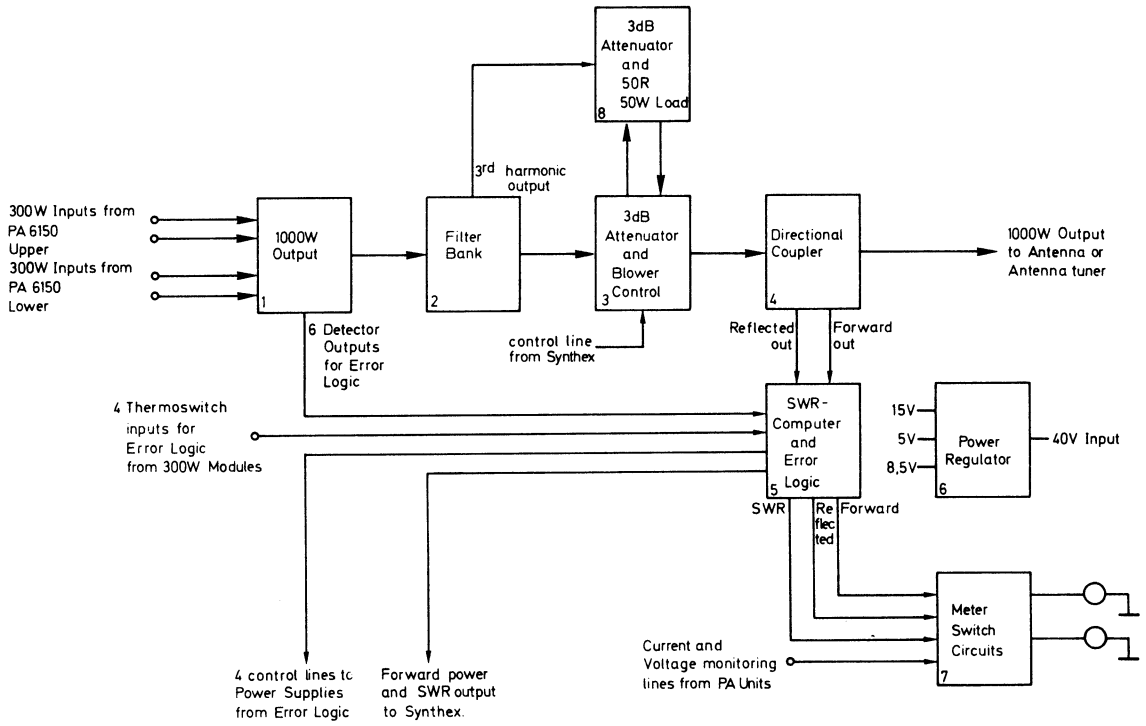
TITLE: RELAY BD CF6210

DOCUMENT NO.: BR479950
(479950)

REV: A2

SHEET NO.: 1 OF 1

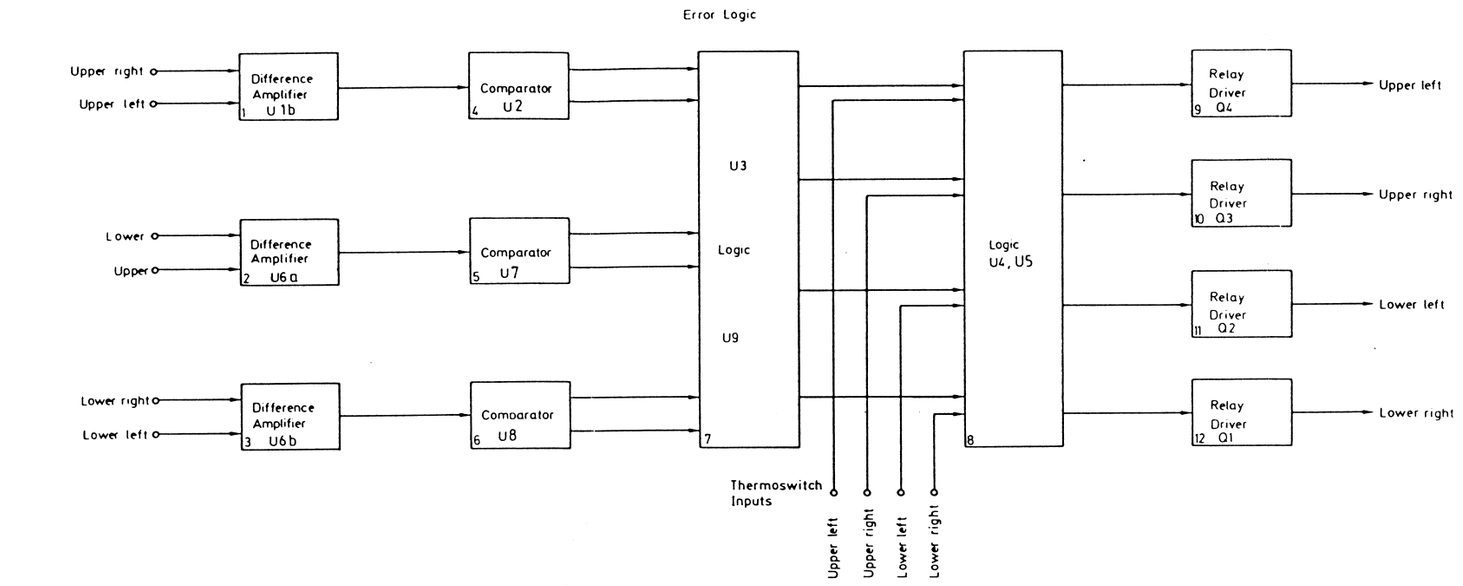
A4 Form 200473 FA Rev B

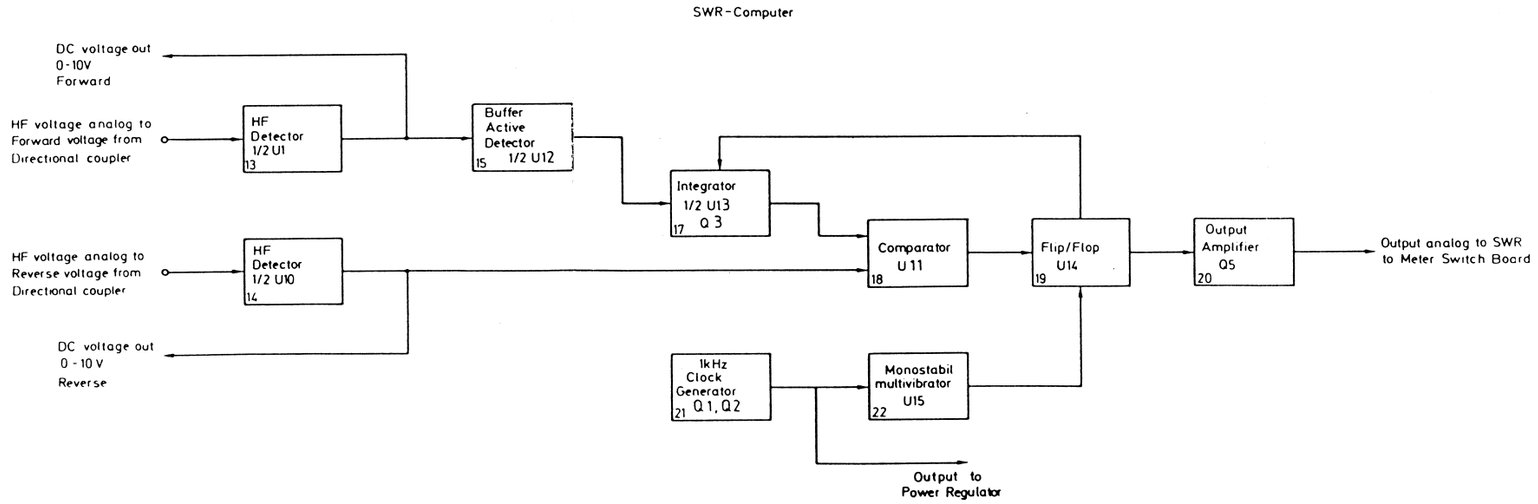


Block Diagram of Combination and Filter Panel

CF6210 DIAG No. 4442

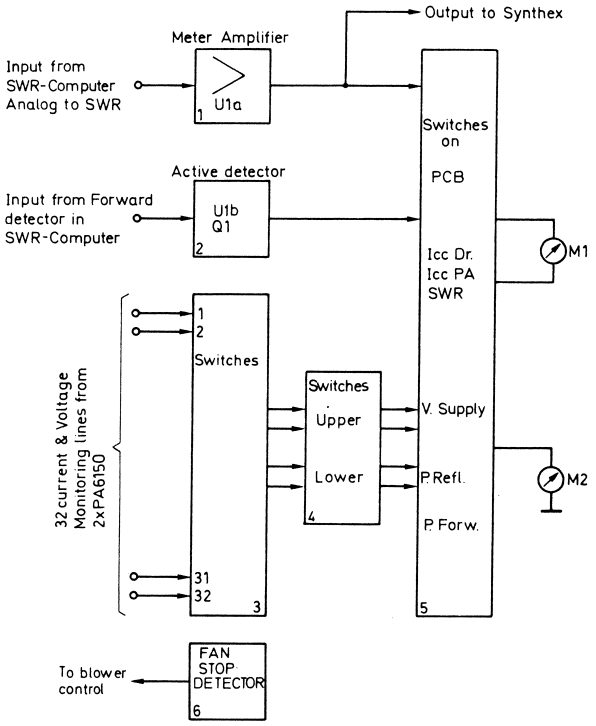
Ref. Designation 4442





BLOCK DIAGRAM SWR-COMPUTER

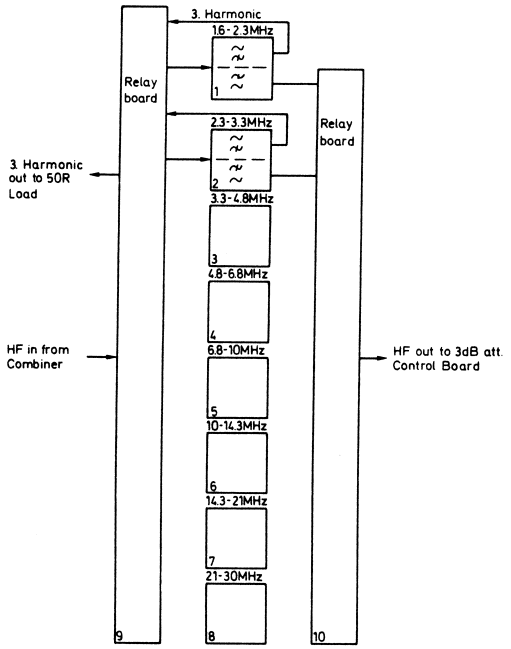
(Ref. Desig. 4446A)



Block Diagram Front Panel Circuits

CF 6210 DIAG No. 4450

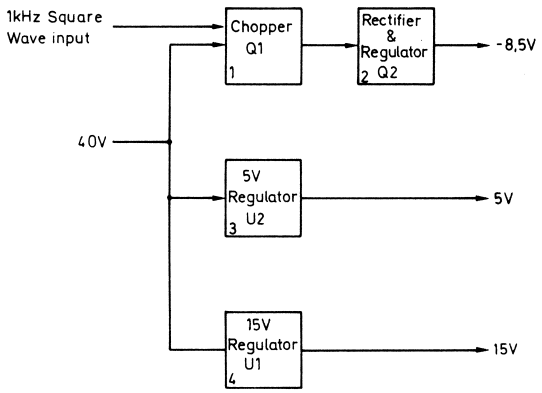
Ref. Designation 4450



Block Diagram Filter Bank

CF6150/CF6210 DIAG No. 4452

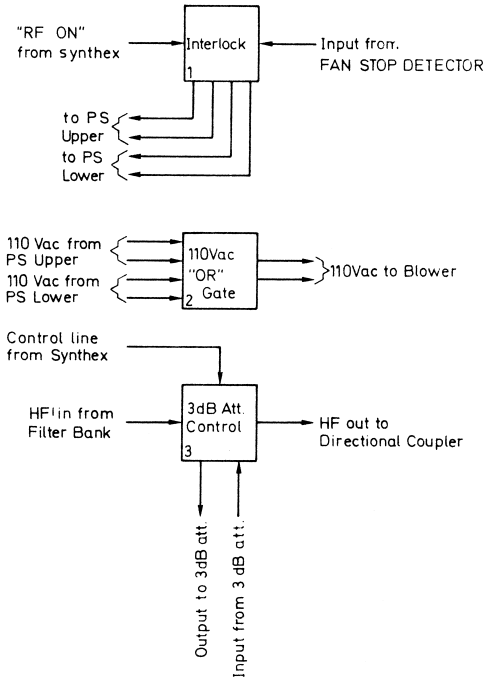
Ref. Designation 4452



Block Diagram Power Regulator

CF6150/CF6210 DIAG No. 4453

Ref. Designation 4453



Block Diagram of 3-dB Attenuator and Blower Control

CF6210 DIAG No. 4454

Ref. Designation 4454

Note 1:

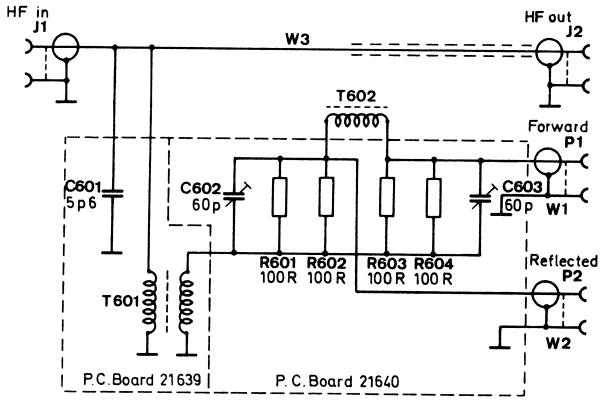
Partial Reference Designations are shown. For complete Designation prefix with Assembly and Subassembly Reference Designations (Circuit Diagram Nos.)

Note 2:

The code system used for indicating resistance values corresponds to that specified in IEC 62, with the exception that decimal fractions are used for values below 1Ω, e.g. 0,47 = 0,47Ω, but 4R7 = 4,7Ω.

The capacitance units are indicated by n
ternational prefixes p, n, and μ, (pF, nl

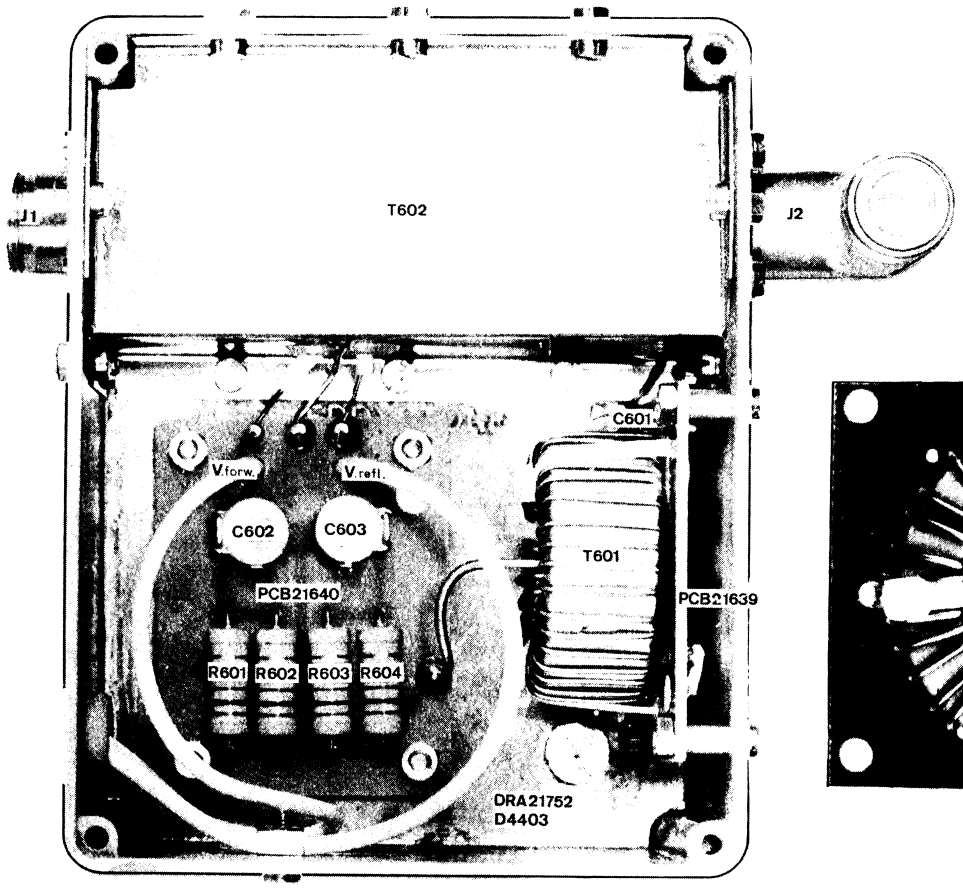
The inductance units are indicated by m
national prefixes μ, and m, (μH, and m

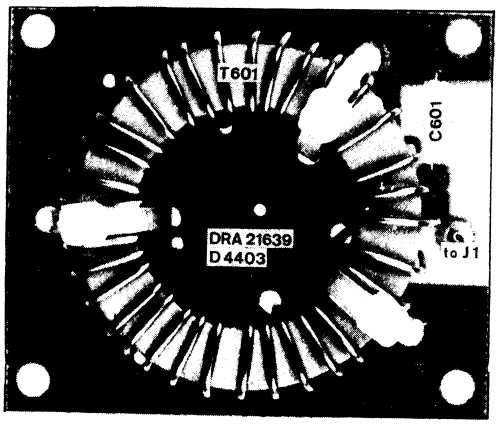


Directional Coupler

CF6210 DIAG No. 4403

Ref. Designation 4403

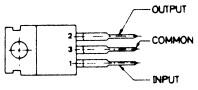




Directional Coupler
Ref. Desig. 4403
Component Location

µA 7815 UC

TO-220 PACKAGE
(TOP VIEW)

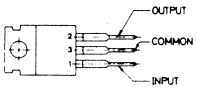


OUTPUT VOLTAGE	PART NO.
5V	µA7805UC
15V	µA7815UC

U 1

µA 7805 UC

TO-220 PACKAGE
(TOP VIEW)



OUTPUT VOLTAGE	PART NO.
5V	µA7805UC
15V	µA7815UC

U 2

Note 1:

Partial Reference Designations are shown. For complete Designation prefix with Assembly and Subassembly Reference Designations (Circuit Diagram Nos.)

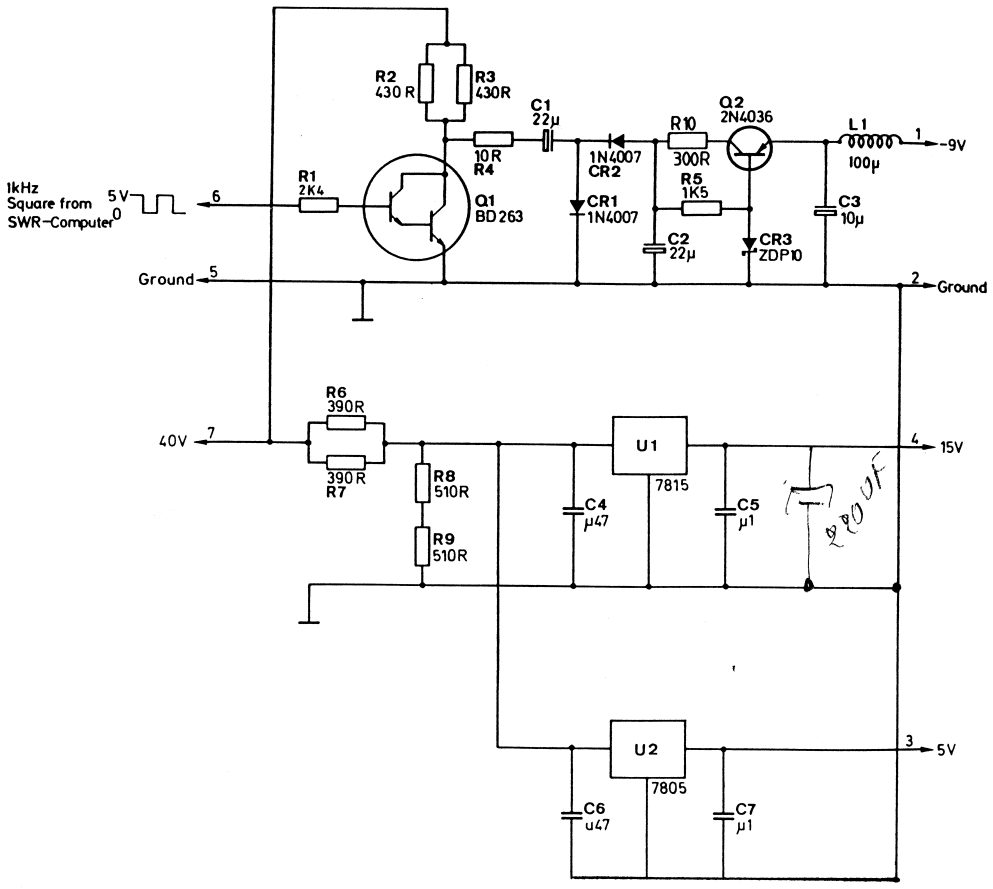
Note 2:

The code system used for indicating resistance values corresponds to that specified in IEC 62, with the exception that decimal fractions are used for values below 1Ω, e.g. 0,47 = 0,47Ω, but 4R7 = 4,7Ω.

The capacitance units are indicated by means of the international prefixes p, n, and µ, (pF, nF, and µF).

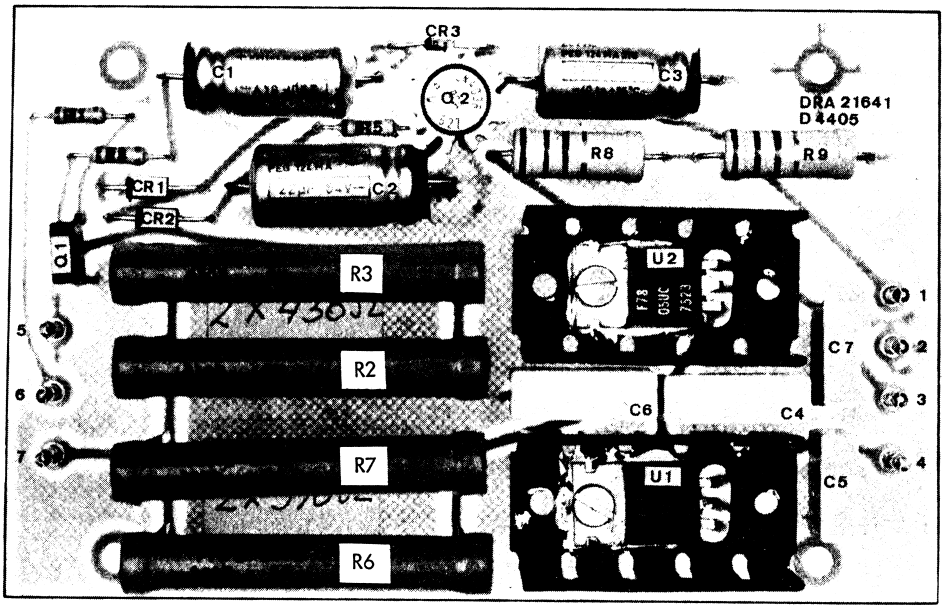
The inductance units are indicated by means of the international prefixes µ, and m, (µH, and mH).

P. C. Board 21641



Power Regulator

Ref. Designation 4405



Power Regulator
Ref. Desig. 4405
Component Location

Note 1:

Partial Reference Designations are shown. For complete Designation prefix with Assembly and Subassembly Reference Designations (Circuit Diagram Nos.)

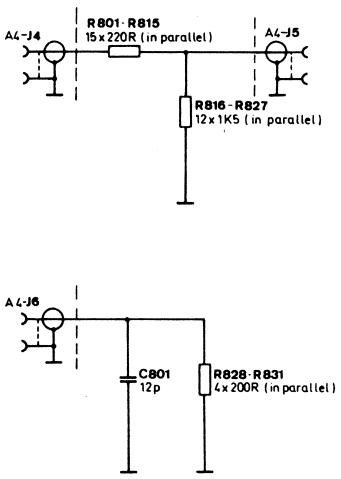
Note 2:

The code system used for indicating resistance values corresponds to that specified in IEC 62, with the exception that decimal fractions are used for values below 1Ω, e.g. 0,47 = 0,47Ω, but 4R7 = 4,7Ω.

The capacitance units are indicated by means of the international prefixes p, n, and µ, (pF, nF, and µF).

The inductance units are indicated by means of the international prefixes µ, and m, (µH, and mH).

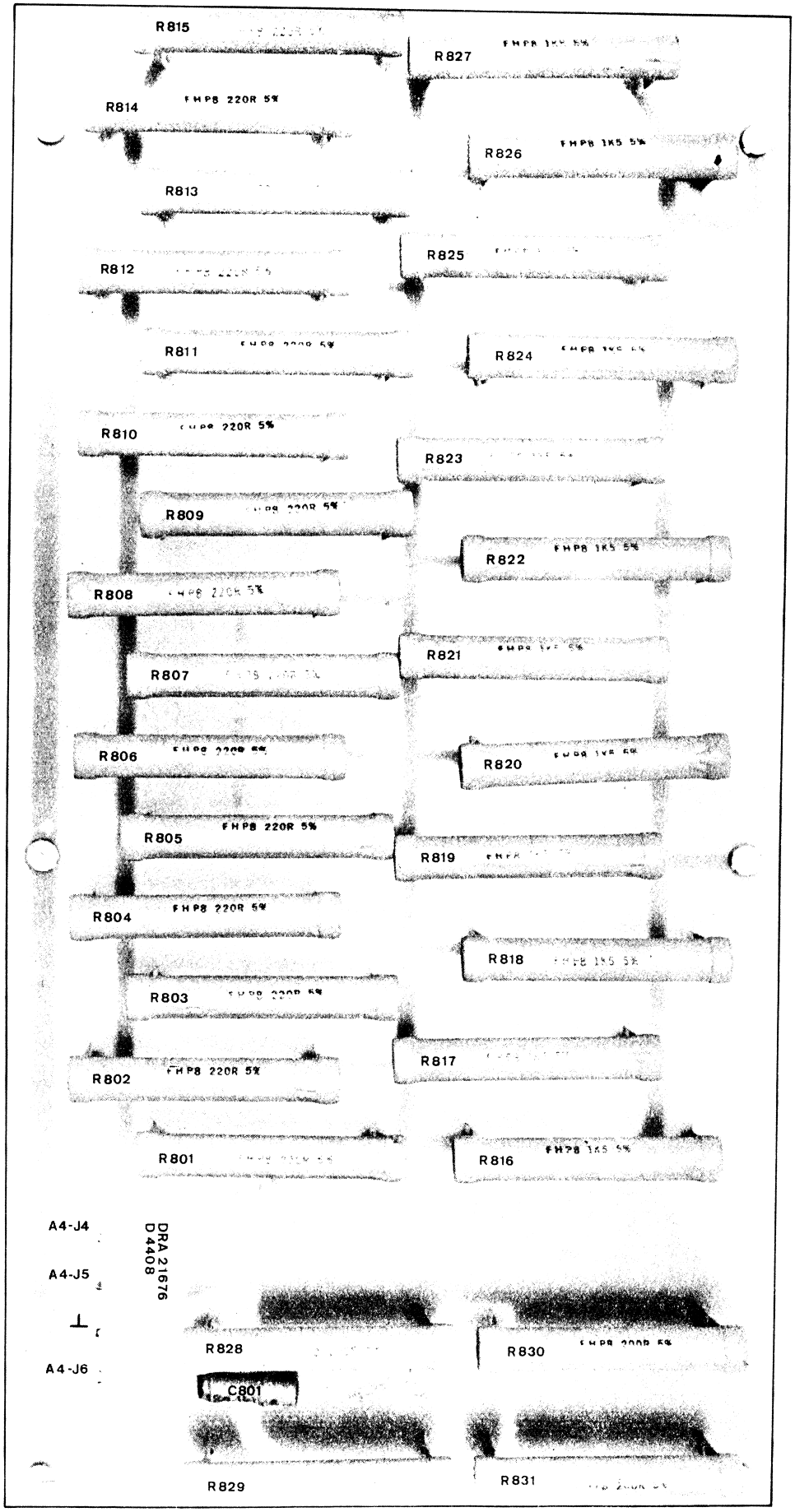
P. C. Board 21676



3-dB Attenuator and 50 ohm/ 50-W Load

CF6150/CF6210 DIAG No. 4408

Ref. Designation 4408

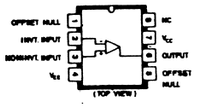


3-dB Attenuator and 50-Ω/50-W Load.

Ref. Desig. 4408.

Component Location.

MC 1741 CP1



U1–U2

Note 1:

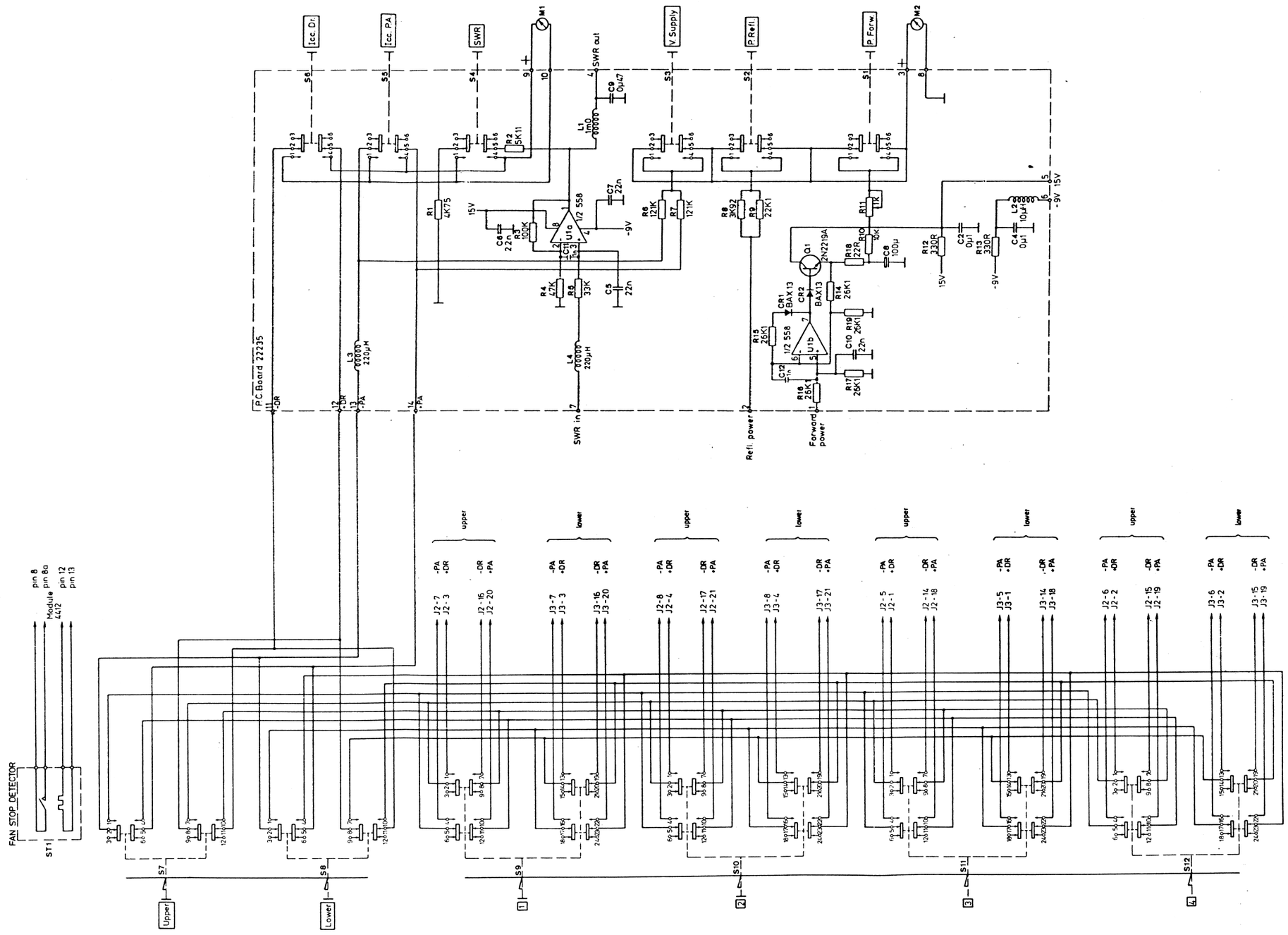
Partial Reference Designations are shown. For complete Designation prefix with Assembly and Subassembly Reference Designations (Circuit Diagram Nos.)

Note 2:

The code system used for indicating resistance values corresponds to that specified in IEC 62, with the exception that decimal fractions are used for values below 1Ω, e.g. 0,47 = 0,47Ω, but 4R7 = 4,7Ω.

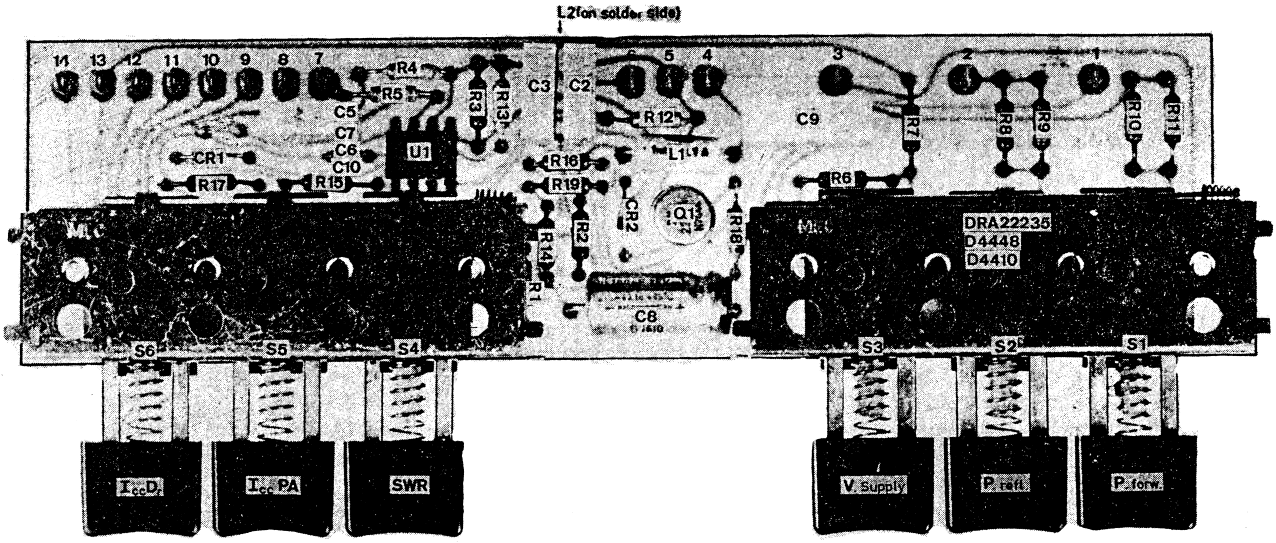
The capacitance units are indicated by means of the international prefixes p, n, and µ, (pF, nF, and µF).

The inductance units are indicated by means of the international prefixes µ, and m, (µH, and mH).



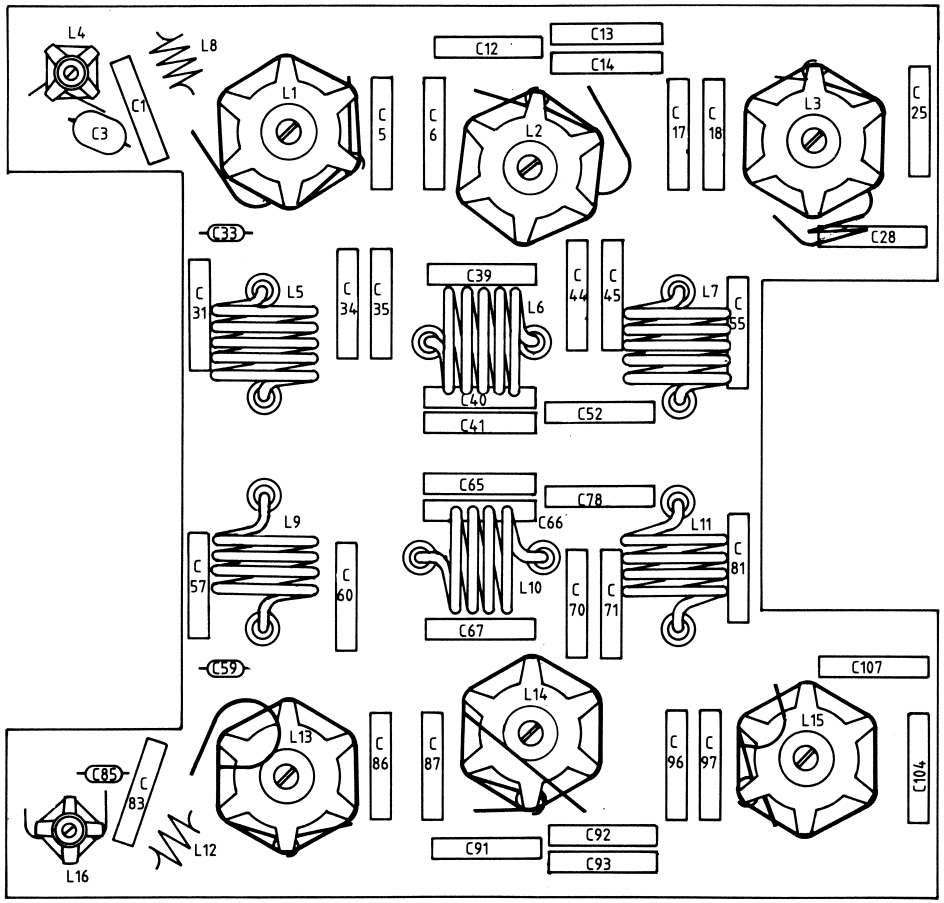
Front Panel

Ref. Designation 4410



Front Panel Circuits.
Ref. Desig. 4410.
Component Location.

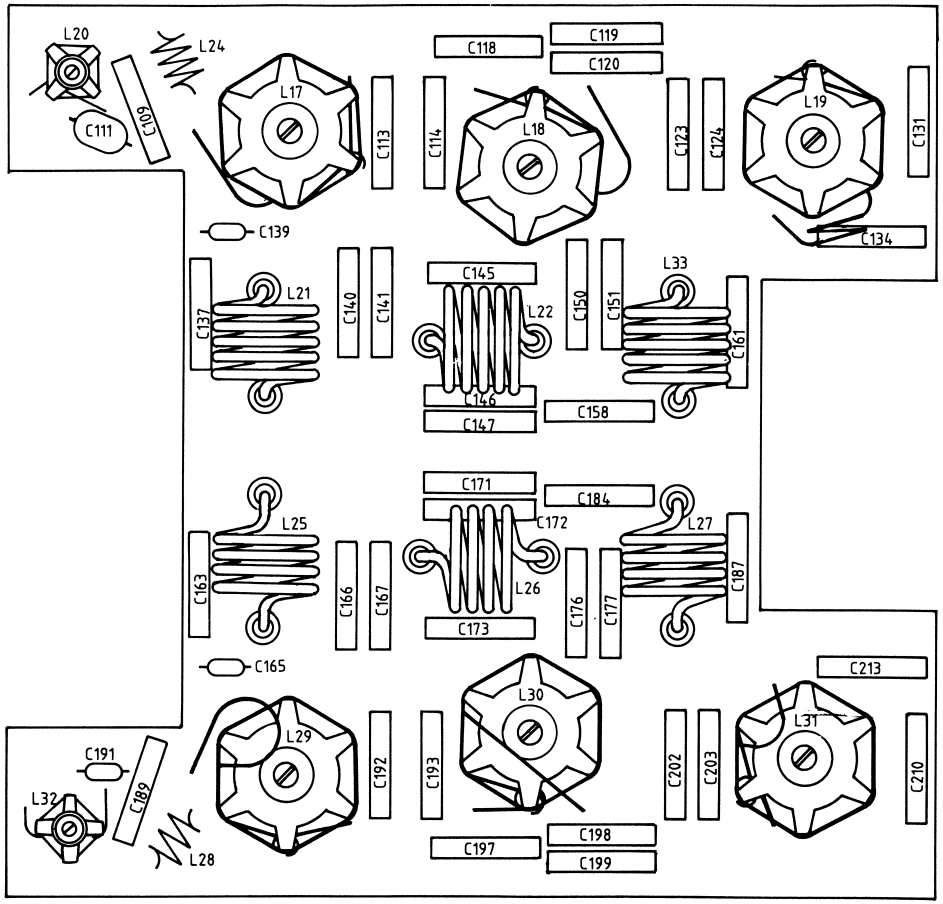
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A	OPRETTET IFLG. ÆO 4564	15.2.90	VH



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075	VR. NR. 366579 PWB NR. 21913	**Dansk Radio AS**
		ANGLES	DR. VH 15.2.90	TITLE COMPONENT LOCATION FILTER BANK
		LIN. DIM.	CH.	
			AP. SN 16.2-90	
	CF6210	MATERIAL	AP.	
NEXT ASSY	USED ON		FIRST ANGLE PROJECTION	SIZE A2 / CODE IDENT / DRAWING NO. 4414
APPLICATION				SCALE 1:1 / SHEET 1 OF 1

1.

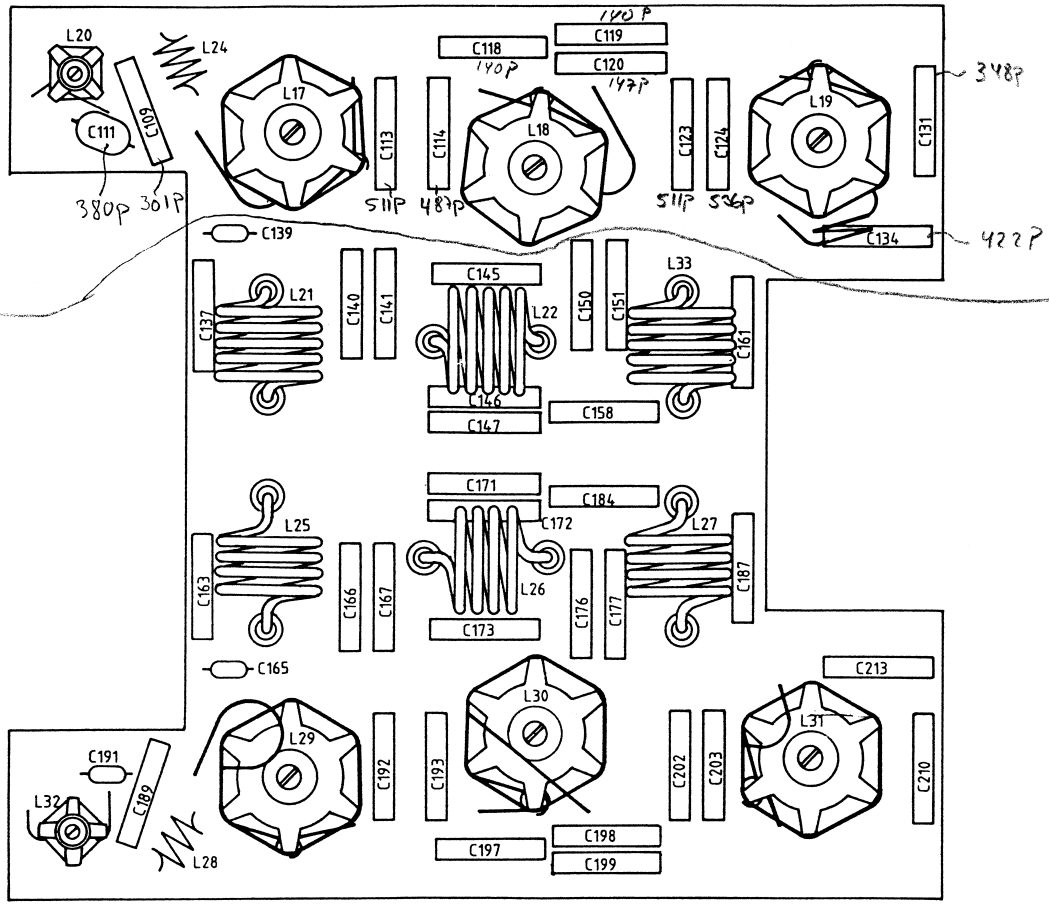
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A	OPRETTET IFLG. Æ04564	15.2.90	VH



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075	VR. NR. 366587 PWB NR. 21913	**Dansk Radio AS**
		ANGLES	DR. VH 15.2.90	TITLE COMPONENT LOCATION FILTER BANK
		LIN. DIM.	CH.	
			AP. SN 16-2-90	
			AP.	
	CF6210	MATERIAL	FIRST ANGLE PROJECTION	SIZE A2 / CODE IDENT / DRAWING NO. 4415
NEXT ASSY	USED ON			SCALE 1:1 / SHEET 1 OF 1
APPLICATION				

EWJ 90/95 plot (05) 81 45 99

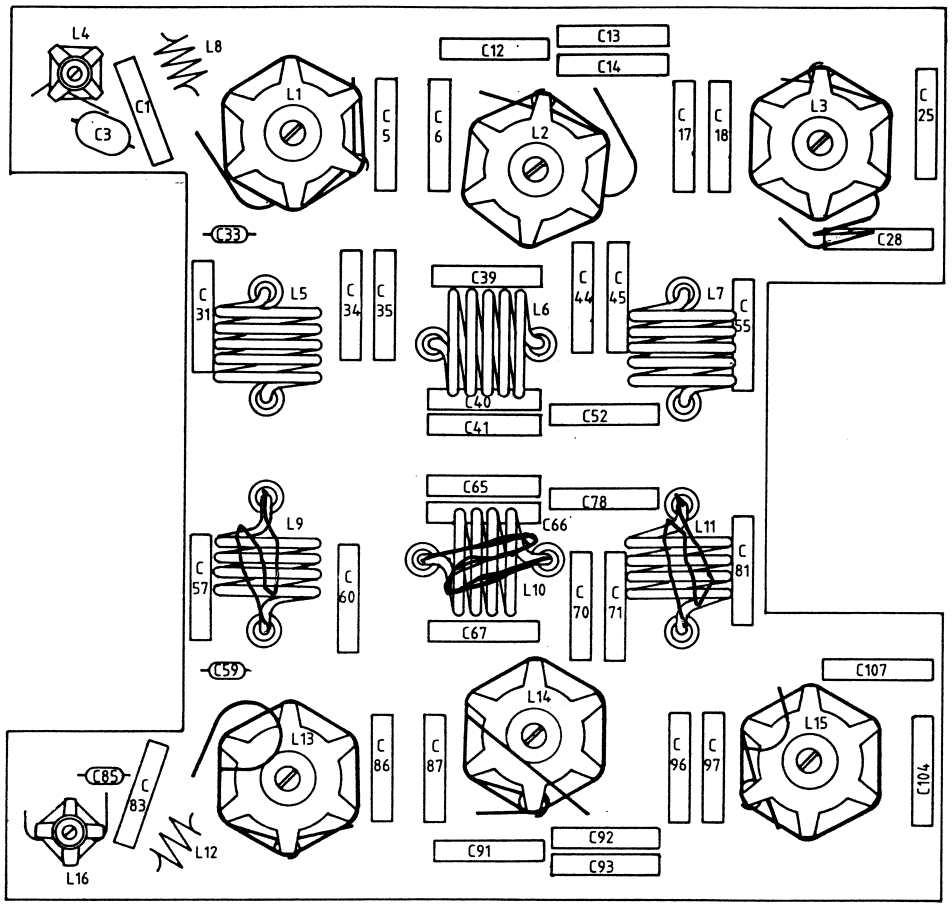
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A	OPRETTET IFLG. Æ04564	15.2.90	VH



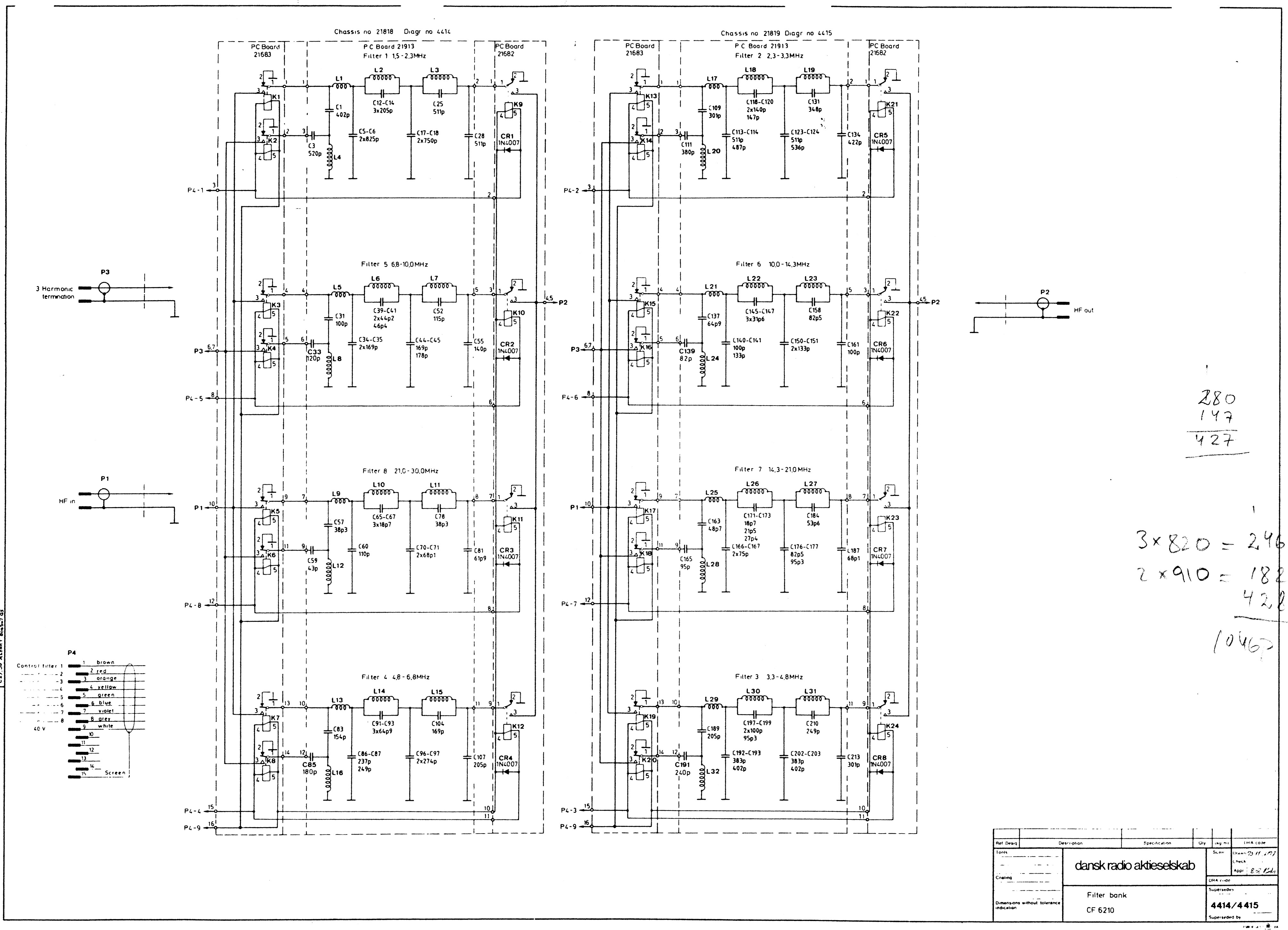
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075	VR. NR. 366587 PWB NR. 21913	**Dansk Radio AS**
		ANGLES	DR. VH 15.2.90	TITLE COMPONENT LOCATION FILTER BANK
		LIN. DIM.	CH.	
			AP. SN 16-2.90	
			AP.	
	CF6210	MATERIAL	FIRST ANGLE PROJECTION	SIZE A2 / CODE IDENT / DRAWING NO. 4415
NEXT ASSY	USED ON			SCALE 1:1 / SHEET 1 OF 1
APPLICATION				

EWJ 90/95 plot (05) 81 45 99

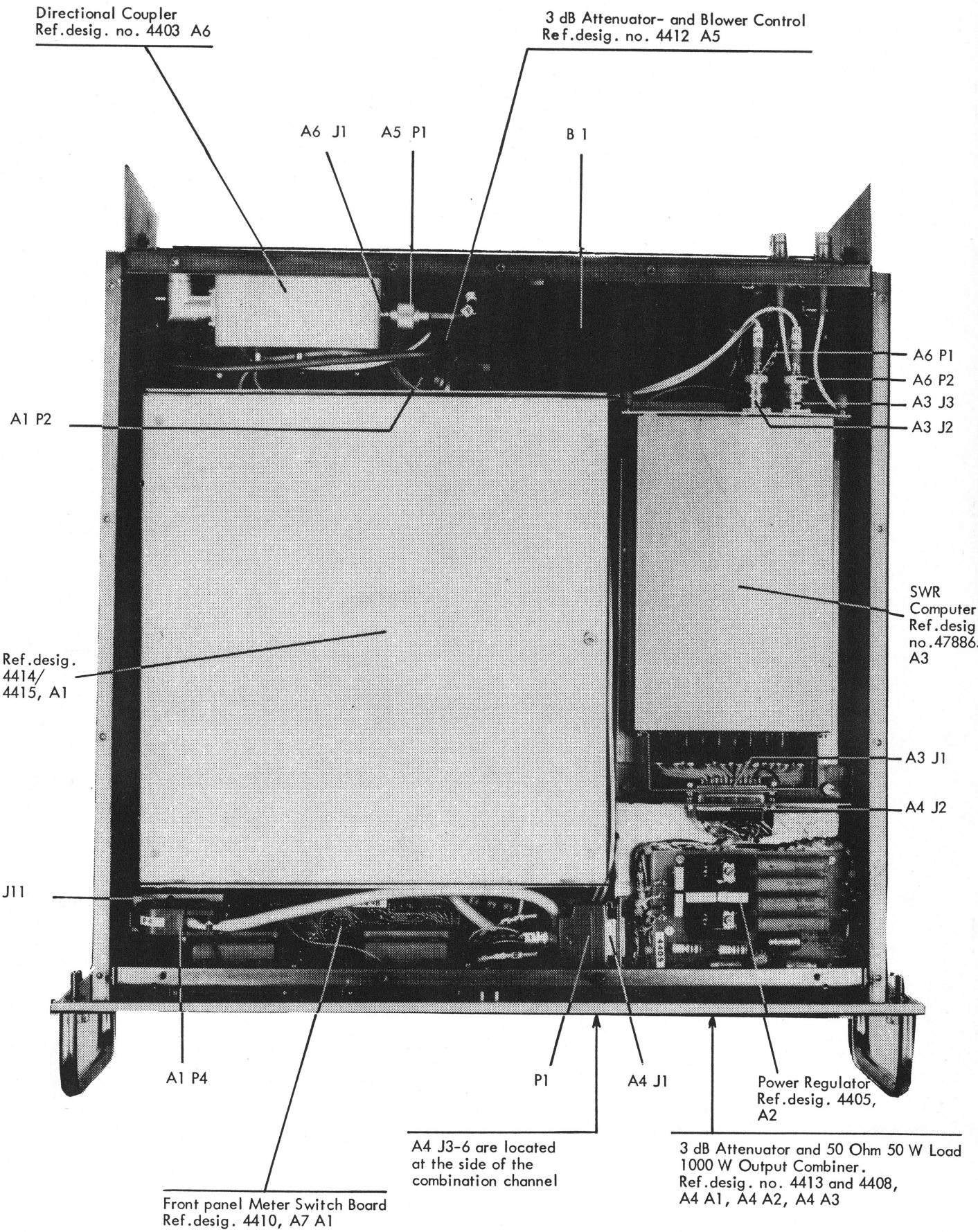
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A	OPRETTET IFLG. ÆO 4564	15.2.90	VH



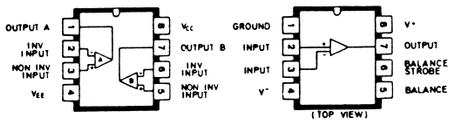
		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075	VR. NR. 366579 PWB NR. 21913	**Dansk Radio AS**
		ANGLES	DR. VH 15.2.90	TITLE COMPONENT LOCATION FILTER BANK
		LIN. DIM	CH.	
			AP. SN 16.2-90	
			AP.	
	CF6210	MATERIAL	FIRST ANGLE PROJECTION	SIZE A2 / CODE IDENT / DRAWING NO. 4414
NEXT ASSY	USED ON			SCALE 1:1 / SHEET 1 OF 1
APPLICATION				



Chassis no 21818 Diagr no 4414
Chassis no 21819 Diagr no 4415
PC Board 21683
P C Board 21913
PC Board 21682
Filter 1 1,5-2,3MHz
Filter 2 2,3-3,3MHz
Filter 3 3,3-4,8MHz
Filter 4 4,8-6,8MHz
Filter 5 6,8-10,0MHz
Filter 6 10,0-14,3MHz
Filter 7 14,3-21,0MHz
Filter 8 21,0-30,0MHz
3 Harmonic termination
HF in
HF out
P1
P2
P3
P4
Control filter 1
40 V
brown
red
orange
yellow
green
blue
violet
grey
white
Screen
dansk radio aktieselskab
Filter bank
CF 6210
4414/4415
280
147
427
3×820 = 2460
2×910 = 1820
428
1046

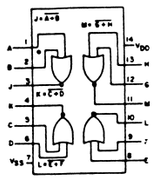


COMBINATION AND FILTER PANEL
Ref. desig. 4418
COMPONENT LOCATION

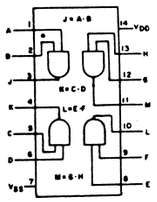


MC 1458

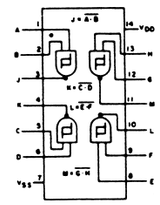
LM 311



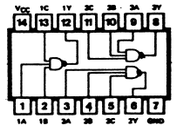
CD 4001



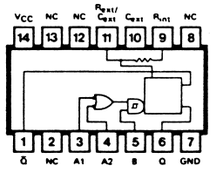
CD 4081



CD 4093



SN 7410 N



SN 74121 N

Note 1:

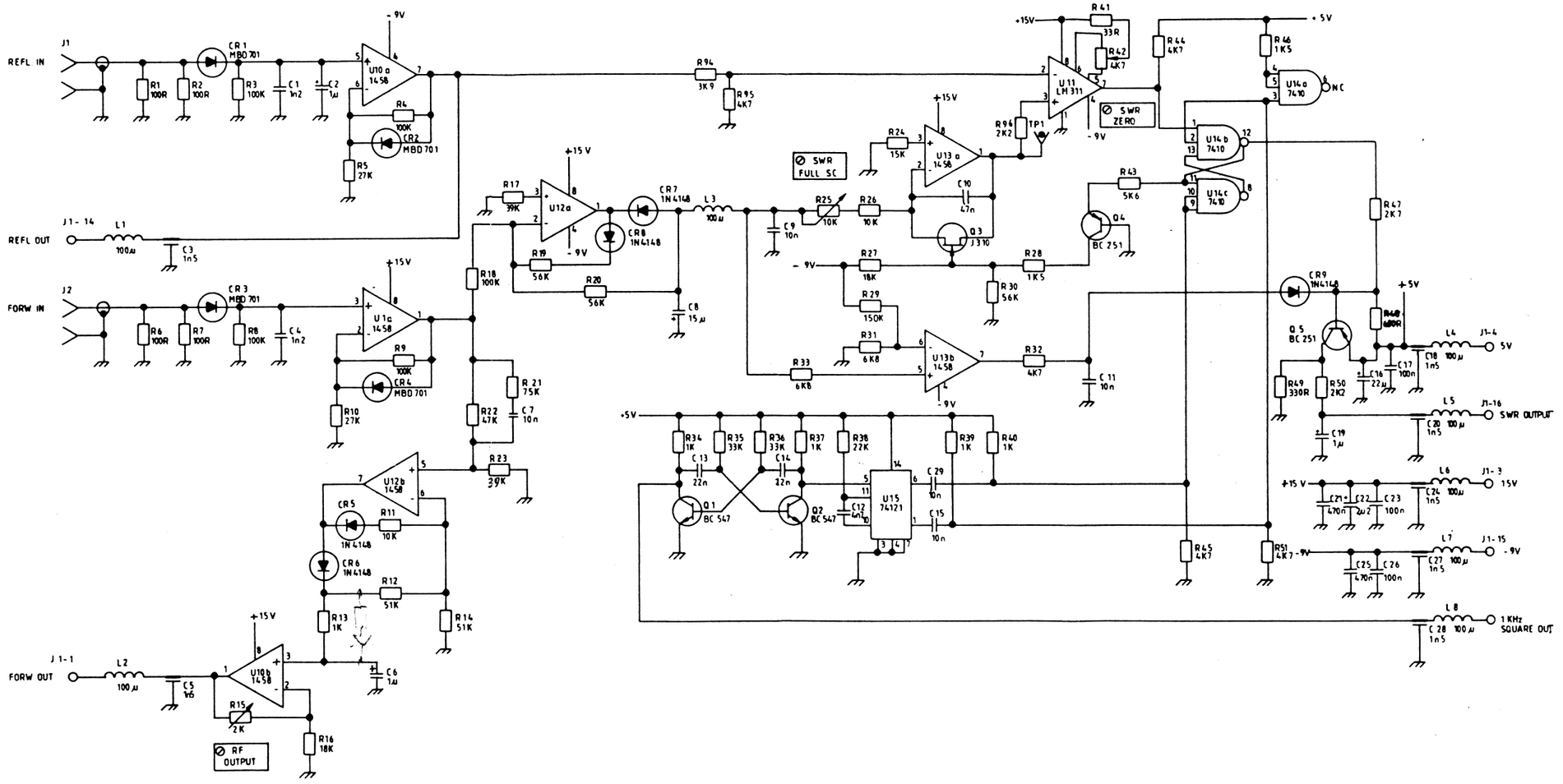
Partial Reference Designations are shown. For complete Designation prefix with Assembly and Subassembly Reference Designations (Circuit Diagram Nos.)

Note 2:

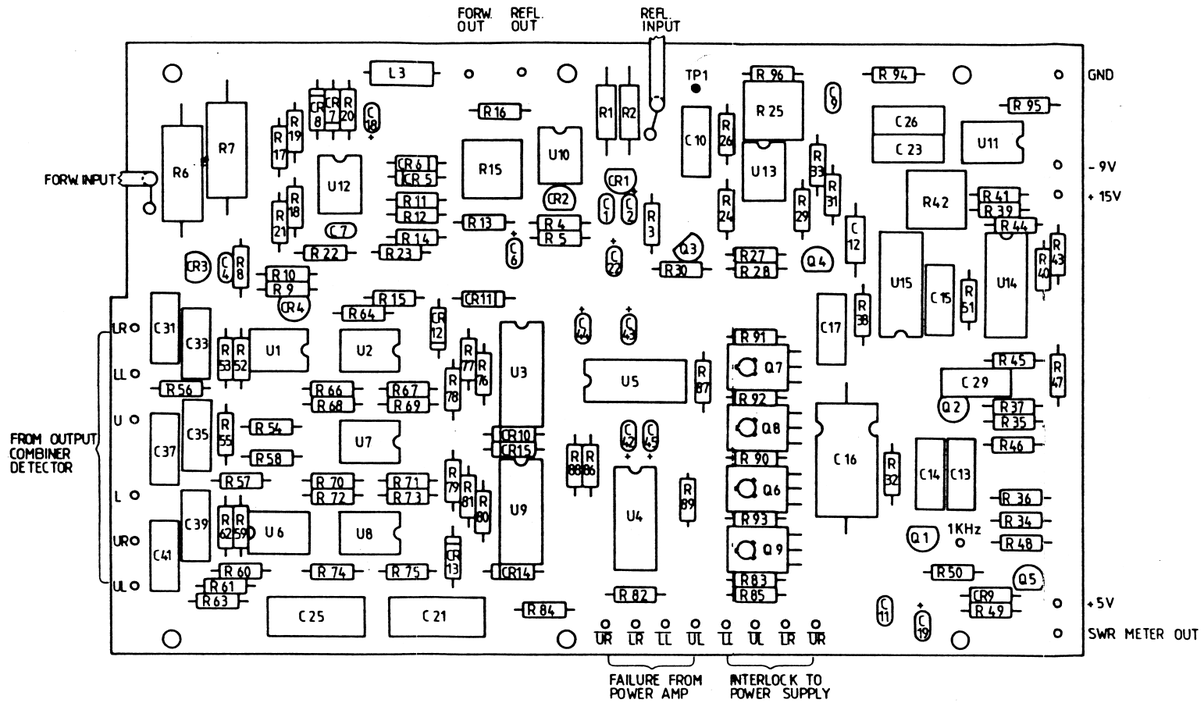
The code system used for indicating resistance values corresponds to that specified in IEC 62, with the exception that decimal fractions are used for values below 1Ω, e.g. 0,47 = 0,47Ω, but 4R7 = 4,7Ω.

The capacitance units are indicated by means of the international prefixes p, n, and μ, (pF, nF, and μF).

The inductance units are indicated by means of the international prefixes μ, and m, (μH, and mH).



SWR COMPUTER AND ERROR LOGIC

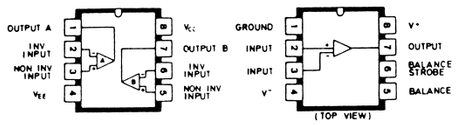


SWR-COMPUTER AND ERROR LOGIC

(Ref.Desig. 478865)

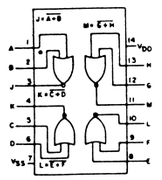
Component Location

1985-02

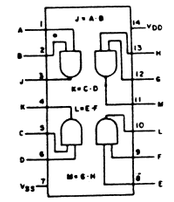


MC 1458

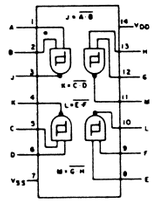
LM 311



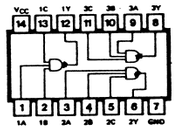
CD 4001



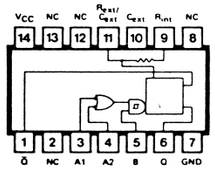
CD 4081



CD 4093



SN 7410 N



SN 74121 N

Note 1:

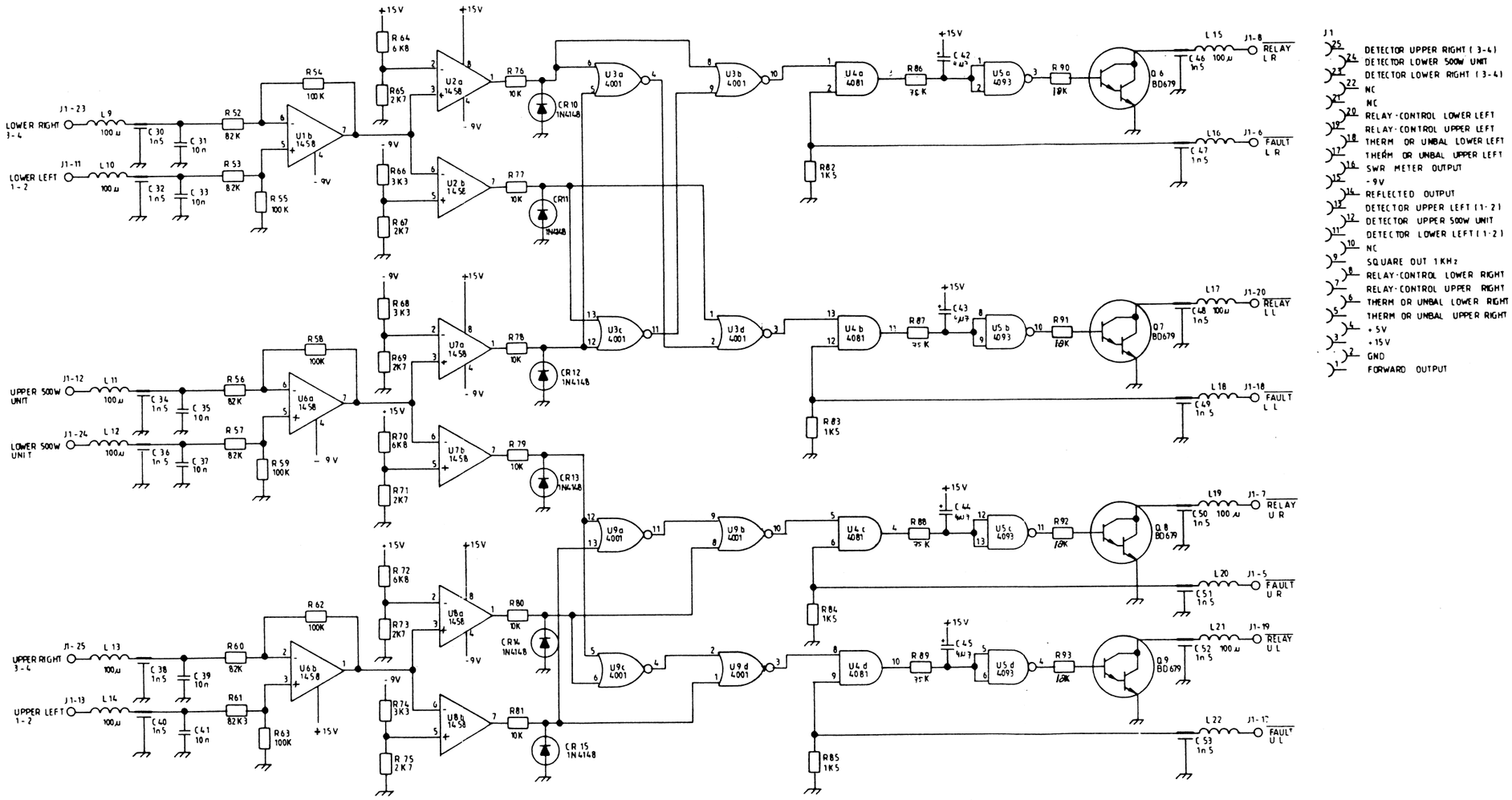
Partial Reference Designations are shown. For complete Designation prefix with Assembly and Subassembly Reference Designations (Circuit Diagram Nos.)

Note 2:

The code system used for indicating resistance values corresponds to that specified in IEC 62, with the exception that decimal fractions are used for values below 1Ω, e.g. 0,47 = 0,47Ω, but 4R7 = 4,7Ω.

The capacitance units are indicated by means of the international prefixes p, n, and µ, (pF, nF, and µF).

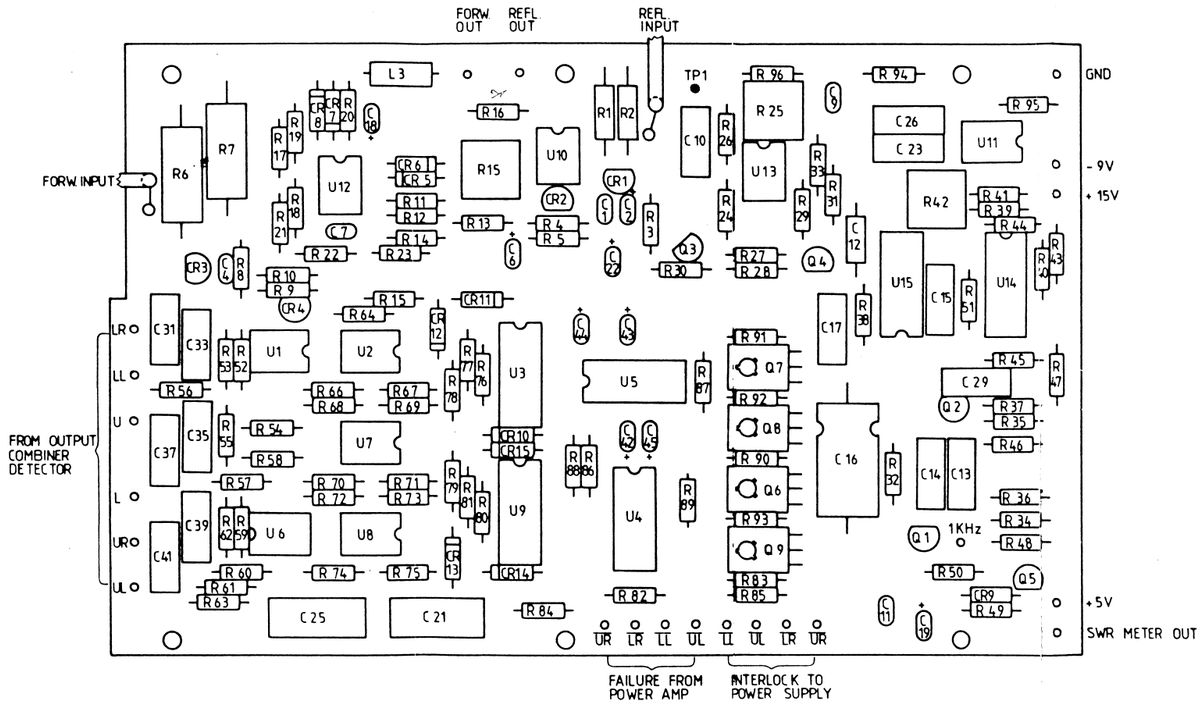
The inductance units are indicated by means of the international prefixes µ, and m, (µH, and mH).



J1

25 DETECTOR UPPER RIGHT (3-4)
24 DETECTOR LOWER 500W UNIT
23 DETECTOR LOWER RIGHT (3-4)
22 NC
21 NC
20 RELAY-CONTROL LOWER LEFT
19 RELAY-CONTROL UPPER LEFT
18 THERM OR UNBAL LOWER LEFT
17 THERM OR UNBAL UPPER LEFT
16 SWR METER OUTPUT
15 -9V
14 REFLECTED OUTPUT
13 DETECTOR UPPER LEFT (1-2)
12 DETECTOR UPPER 500W UNIT
11 DETECTOR LOWER LEFT (1-2)
10 NC
9 SQUARE OUT 1 KHz
8 RELAY-CONTROL LOWER RIGHT
7 RELAY-CONTROL UPPER RIGHT
6 THERM OR UNBAL LOWER RIGHT
5 THERM OR UNBAL UPPER RIGHT
4 +5V
3 +15V
2 GND
1 FORWARD OUTPUT

SWR COMPUTER AND ERROR LOGIC



SWR-COMPUTER AND ERROR LOGIC

(Ref.Desig. 478865)

Component Location

1985-02

Table of contents

SECTION 1. - TECHNICAL SPECIFICATIONS

General:

The 3-phase power supply PS 6151 is a 40 V DC supply designed to meet the DC power requirements of the ISB/SSB transmitter S 76210-1 and S 76150-1.
Its unique construction and reliability makes it attractive in other connections where a 40 V DC, 1500 W power supply is needed.

The power supply employs a magnetic AC voltage stabilizer, a 3-phase rectifier bridge and an LC ripple filter to reach the specifications below.

The built-in mains switch relay is controlled by an external switch.

Two 40 V DC/37A outputs are provided, each of which can be turned off independent of the other by means of two built-in relays controlled by 50 ms ground pulses.

Front panel push-buttons for reset of the two outputs are provided.

Outputs for two external blowers are provided as two 115 V AC outputs.

The PS 6151 is designed to operate on either 50 Hz or 60 Hz.

Inputs and outputs are all protected by means of built-in fuses.

The power supply is protected against blower failure by means of a fan stop detector circuit resetable from the front panel by a push-button.

Mains Voltages:
(phase to phase)

Delta coupled	Star coupled
200 V +/- 10%	350 V +/- 10%
220 V +/- 10%	380 V +/- 10%
230 V +/- 10%	400 V +/- 10%
240 V +/- 10%	415 V +/- 10%
254 V +/- 10%	440 V +/- 10%

Output voltage:

Max. 45 V DC at 0% load
max. 44 V DC at 3.8 A
41.5 V DC +/- 1 V at 28 A
40.5 V DC +/- 1 V at 37.5 A (full load)

Ripple voltage:

Max. 250 mVp-p

Blower outputs:

2 x 115 V AC +/- 10%, 60 VA cos phi 0.6

Mains Power Consumption at full load:

2 kW cos phi 0.9 at nominal mains voltage change proportional to mains variations.

Mains frequency:	45-55 Hz or 54-66 Hz, strappable.	
Mains transient supression:	30 dB	
Cooling:	Built-in blower with stop detector	
Environmental Conditions:	Operating Temperature:	$-15^{o}C$ to $+55^{o}C$
	Storage Temperature:	$-40^{o}C$ to $+70^{o}C$
	Relative Humidity:	95% at $40^{o}C$
	Shock and vibration according to MIL 810 B.	
Dimensions:	Panel Width:	19" (483 mm)
	Panel Height:	220 mm
	Panel Depth:	470 mm
Weight:	Approx. 60 kg	

2.2.2.1. Power Supply. Reference Designation 4422

The power supply consists of three magnetically regulated transformers T1,2,3, rectifiers and the necessary filtering circuits. In addition circuits for interface to the rest of the transmitters S 76210 and S 76150.

The primary voltage is applied to the transformers T1, T2, T3 through a contactor K4 and a thermo switch ST1. The contactor K4 is activated by a shortcircuit between J2 pins 1 and 2. The necessary voltage to the contactor is taken from transformer T4.

The transformers T1-T3 accept primary voltages as indicated in the diagram which means mains voltages from 200 V phase-to-phase up to 440 V phase-to-phase. The capacitors C3-C8 are coupled in parallel to the resonance windings of transformers T1-T3 together with which they form a parallel resonance circuit. The regulation is based on the parallel resonance circuit which is either providing in-phase or out-of-phase current compared with the load current.

The AC output, now stabilized, is rectified by the three-phase rectifier bridge CR2 through CR7, smoothed by the filter components C1, C2, L1.

The 40 V DC output is fed to J3 via two fuses and two relays. The relays K2 and K3 are in turn controlled from an external fault detection circuit, which in case of faults applies a ground to J2 pins 3 or 4. Once the relays have broken they are held by contacts Nos. 7 and 6, and the lamps DS1 or DS2 will light. If the fuses F1 or F2 are blown the lamps will also light. When the fault has been corrected the relays can be reset by the "Fuse Reset" knobs S2 and S3.

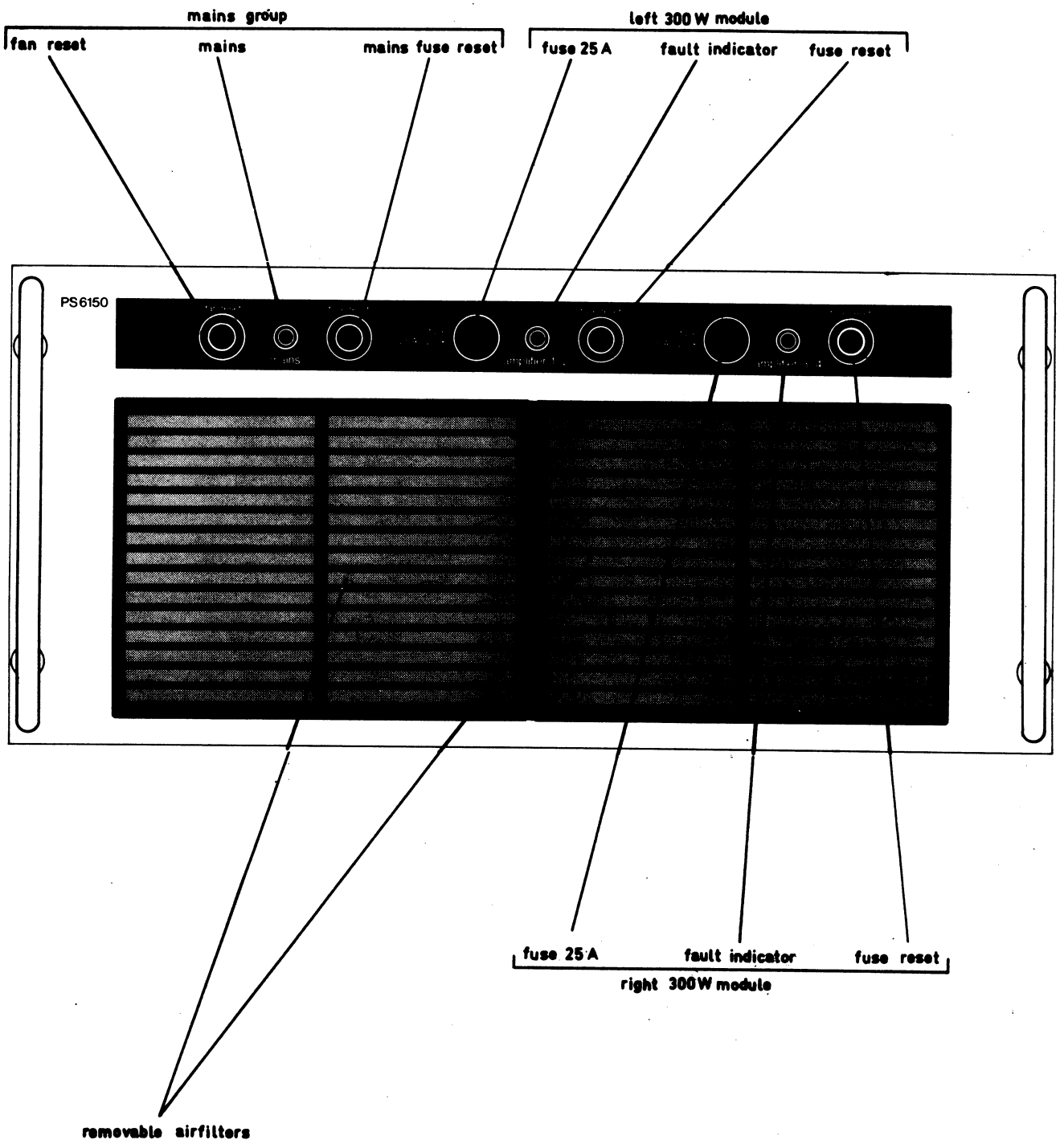
The transformers T1-T3 provide 110 V AC for blowers. One output is taken from T1 through F5 on the fuse board to B1, which is the blower in the PS itself. One output is taken from T3 via TB5 pin 5 through F6 to J3 pin I. This output is normally used in the PA 6150 panel. This output is also used to supply the heating element in the "Fan Stop Detector" ST2.

The third 110 V AC output is provided by transformer T3 via TB5 pin 9 through F4 to J2 pin 6. This output is normally used to supply the blower in the CF 6210/CF 6150 panel.

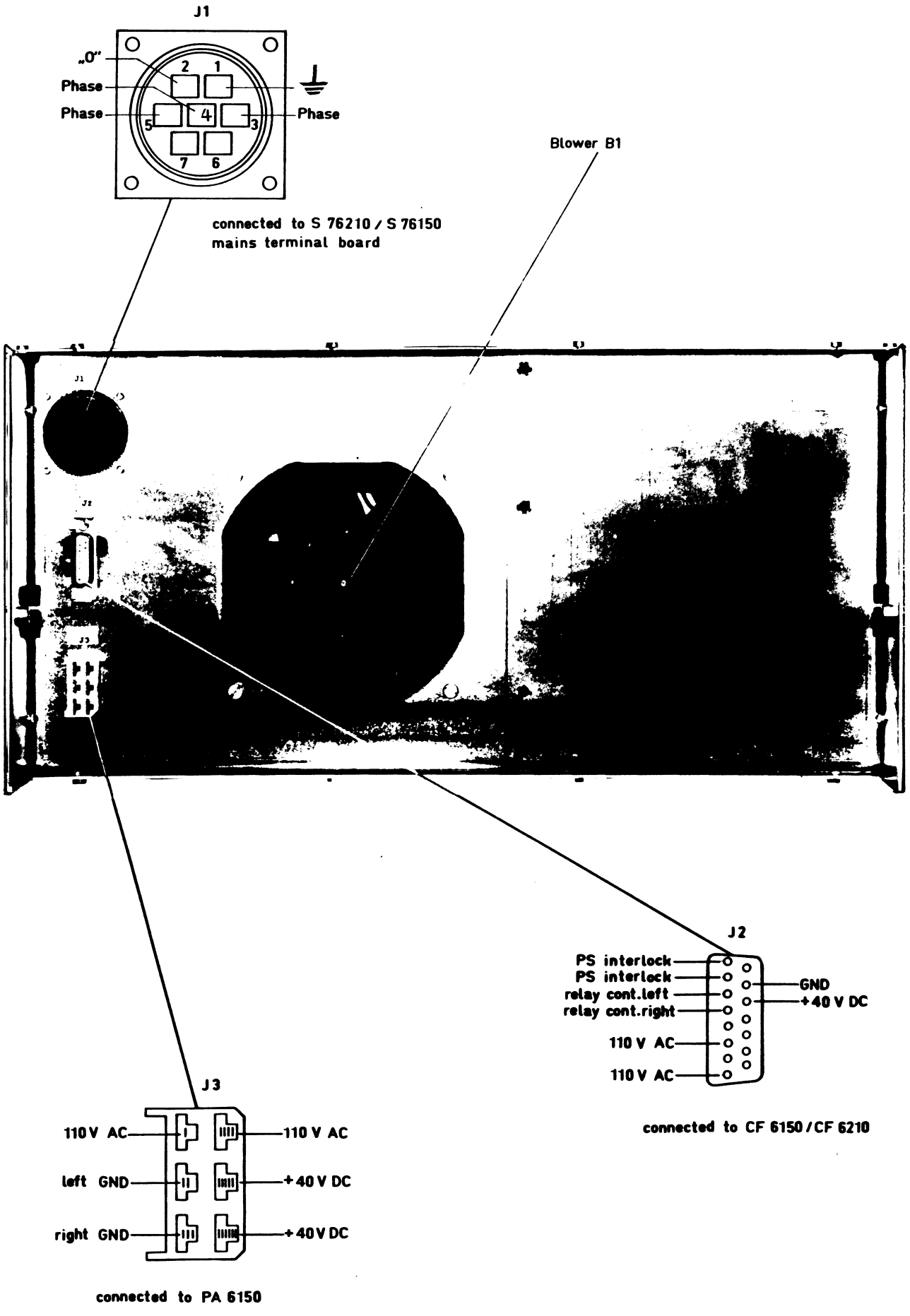
The CF 6210/CF 6150 must be supplied with a +40 V DC. This is taken from a position before the fuses F1 and F2 via F7 on the fuse board to J2 pin 11.

The transformer T4 is fused by F3. The output from this transformer is also used on the fuse board to provide the necessary DC voltage for the relay K1, which form part of the interlock circuit.

The interlock path is, starting at one side of the contacter coil, through pins Nos. 96 to 95 on ST1, contact Nos. 1 and 2 of K1 to J2 pin 2. The return is on J2 pin 1. In case of blower failure in the PS itself, the contact in the "Fan Stop Detector" will close activating K1 which means that the interlock path is broken, and the PS is switched off. When the fault has been corrected the "Fan Reset" push button must be pressed.



Front Panel
Ref. Desig. 4422



Rear Panel
Ref. Desig. 4422

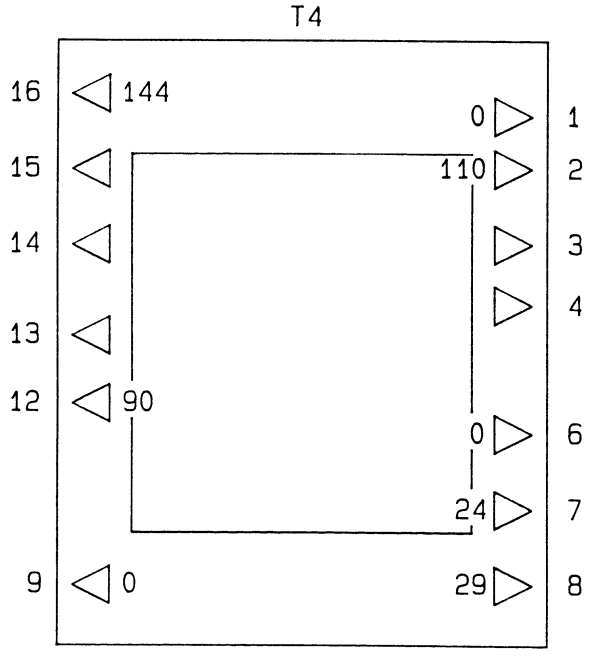
SECTION 4 - INSTRUCTIONS FOR INSTALLATION

SERIAL NO.: 0 TO 376660-010

The 3-phase power supply PS 6151, which can be used to deliver the necessary voltage to the transmitters LA76210 and LA76150 has a built-in possibility for operation on a number of mains voltages. The only caution that has to be exercised is to make certain that a number of connections have been made to various terminal boards according to the mains supply. TB1, TB2, TB3 control the input to transformers T1-T3. Change of voltage on T4 is performed on the transformer itself, together with the green lead on TB3. Below is a table of possible mains voltages and the necessary connections:

Mains Voltage		TB1 Pin No.			TB2 Pin No.					TB3 Pin No.				T4 Primary
phase to zero	phase to phase	red	brown	white	yellow	white	red	grey	red	brown	yellow	black	green	brown
115	200	2	1	2	2	1	2	2	1	2	7	8	7	12
127	220	3	1	3	3	1	3	3	1	3	7	8	7	13
133	230	4	1	4	4	1	4	4	1	4	7	8	7	14
139	240	5	1	5	5	1	5	5	1	5	7	8	7	15
149	256	6	1	6	6	1	6	6	1	6	7	8	7	16
200	346	2	1	1	2	1	1	2	1	8	7	8	1	12
220	380	3	1	1	3	1	1	3	1	8	7	8	1	13
230	400	4	1	1	4	1	1	4	1	8	7	8	1	14
240	416	5	1	1	5	1	1	5	1	8	7	8	1	15
256	440	6	1	1	6	1	1	6	1	8	7	8	1	16

Note that transformers T1, T2 and T3 are delta-coupled by the first five voltages and star-coupled by the last five voltages.



In case of 60Hz mains supply the connections on TB6 pins Nos. 1, 3 and 5 must be moved to pins Nos. 2, 4 and 6. On T4 the connection to pin No. 7 must be moved to pin No. 8, i.e. the brown secondary lead is connected to the same pin as the blue one.

The capacitors C3-C8, which act as part of the magnetic regulation must have one of their connections on TB5 moved in case of 60Hz mains. The connections to pins Nos. 3, 7 and 11 must be moved to 2, 6 and 10, respectively.

The power supply will normally be factory-wired for the appropriate mains voltage and frequency. It is always necessary to specify the mains voltage when ordering.

FROM SERIAL NO.: 376660-011

The 3-phase power supply PS 6151, which can be used to deliver the necessary voltage to the transmitters LA76210 and LA76150 has a built-in possibility for operation on a number of mains voltages. The only caution that has to be exercised is to make certain that a number of connections have been made to various terminal boards according to the mains supply. TB1, TB2, TB3 control the input to transformers T1-T3. Change of voltage on T4 is performed on the transformer itself, together with the green lead on TB3. Below are two tables of possible mains voltages and the necessary connections:

50Hz

Mains Voltage		TB1 Pin No.			TB2 Pin No.					TB3 Pin No.				T4 Primary
phase to zero	phase to phase	red	brown	white	yellow	white	red	yellow	green	grey	red	brown	black	green	brown
115	200	3	2	3	3	2	3	8	8	3	2	3	8	-	12
127	220	4	2	4	4	2	4	8	8	4	2	4	8	-	13
133	230	5	2	5	5	2	5	8	8	5	2	5	8	-	14
139	240	6	2	6	6	2	6	8	8	6	2	6	8	-	15
149	256	7	2	7	7	2	7	8	8	7	2	7	8	-	16
200	346	3	2	2	3	2	2	8	-	3	2	8	8	8	12
220	380	4	2	2	4	2	2	8	-	4	2	8	8	8	13
230	400	5	2	2	5	2	2	8	-	5	2	8	8	8	14
240	416	6	2	2	6	2	2	8	-	6	2	8	8	8	15
256	440	7	2	2	7	2	2	8	-	7	2	8	8	8	16

Note that transformers T1, T2 and T3 are delta-coupled by the first five voltages and star-coupled by the last five voltages.

60Hz

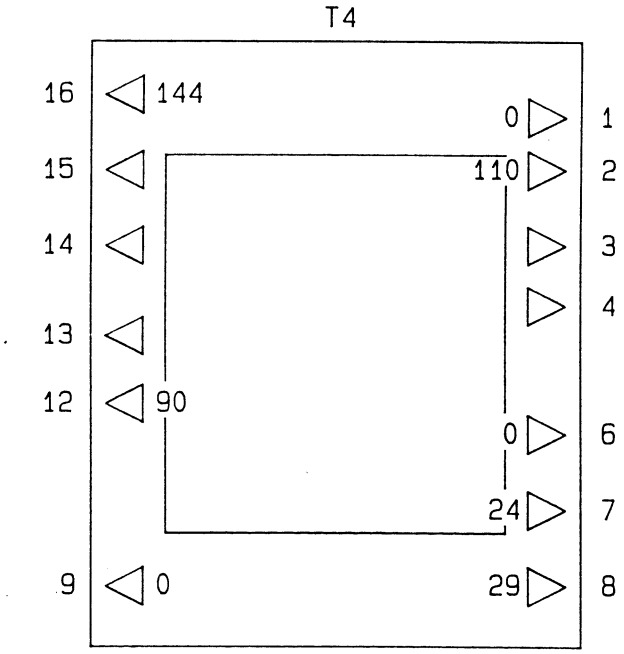
Mains Voltage		TB1 Pin No.			TB2 Pin No.					TB3 Pin No.				T4 Primary
phase to zero	phase to phase	red	brown	white	yellow	white	red	yellow	green	grey	red	brown	black	green	brown
115	200	3	1	3	3	1	3	8	8	3	1	3	8	-	12
127	220	4	1	4	4	1	4	8	8	4	1	4	8	-	13
133	230	5	1	5	5	1	5	8	8	5	1	5	8	-	14
139	240	6	1	6	6	1	6	8	8	6	1	6	8	-	15
149	256	7	1	7	7	1	7	8	8	7	1	7	8	-	16
200	346	3	1	1	3	1	1	8	-	3	1	8	8	8	12
220	380	4	1	1	4	1	1	8	-	4	1	8	8	8	13
230	400	5	1	1	5	1	1	8	-	5	1	8	8	8	14
240	416	6	1	1	6	1	1	8	-	6	1	8	8	8	15
256	440	7	1	1	7	1	1	8	-	7	1	8	8	8	16

Note that transformers T1, T2 and T3 are delta-coupled by the first five voltages and star-coupled by the last five voltages.

In case of 60Hz mains supply the connections on TB6 must be changed to TB4.

The capacitors C3-C8, which act as part of the magnetic regulation must have one of their connections on TB5 moved in case of 60Hz mains. The connections to pins Nos. 3, 7 and 11 must be moved to 2, 6 and 10, respectively.

The power supply will normally be factory-wired for the appropriate mains voltage and frequency. It is always necessary to specify the mains voltage when ordering.



SECTION 5. OPERATING INSTRUCTIONS

The operation of the PS 6151/PS 6150 is limited to some "reset" functions.

The switching on and off is performed via connections to J2 pins 1 and 2.

The front panel photo in Section 3.1 of this manual shows the location of push-buttons, fuses and control lamps.

MAINS GROUP	FAN RESET	Resets the fan stop detector circuit.
	MAINS LAMP	Lights when the PS is on. The light is off due to PS not on, blower failure, thermo switch off, lamp burnt out.
	FUSE RESET	Resets the thermo switch.
	FUSE 25 A	Fuses the +40 V DC to left 300-W PA module.
LEFT 300 W MODULE	FAULT INDICATOR	Lamp lights if the automatic fault detection circuit has switched the +40 V DC off to the left 300-W PA module, or the 25 A fuse is blown.
	FUSE RESET	Resets the +40 V DC to the left 300-W PA module.
	FUSE 25 A	Fuses the +40 V DC to the right 300-W PA module.
RIGHT 300 W MODULE	FAULT INDICATOR	Lamp lights if the automatic fault detection circuit has switched the +40 V DC off the right 300-W PA module, or the 25 A fuse is blown.
	FUSE RESET	Resets the +40 V DC to the right 300-W PA module.

SECTION 6. MAINTENANCE

6.1. Alignment Procedure.

The alignment of the PS 6151 is limited to adjustment of the thermo switch ST1, when a change of mains voltage has taken place. The thermo switch can be adjusted to operate for currents from 2.7 A to 4.2 A. The table below shows the correct setting for the mentioned voltage, which the power supply can accept.

Delta-coupled	Star-coupled	ST1
200 V	350 V	4.2 A
220 V	380 V	4.0 A
230 V	400 V	3.9 A
240 V	415 V	3.8 A
256 V	440 V	3.6 A

6.2. Preventive Maintenance.

The preventive maintenance on the PS 6151 is limited to renewing the air-inlet filters when necessary or every 3000 hours.

If the filters are too dirty the fan stop detector will switch off the power supply.

SECTION 8. PARTS LISTS AND COMPONENT SPECIFICATIONS.

8.1. Parts Lists.

This section gives for each module all components used. The parts lists are arranged in order of module (= diagram) numbers. The components are identified by their DRA code numbers.

REFERENCE DESIGNATIONS

A . . . . . assembly
AT . . attenuator; isolator; termination
B . . . . . fan; motor
BT . . . . . battery
C . . . . . capacitor
CP . . . . . coupler
CR . . . . . diode; diode thyristor; varactor
DC . . . directional coupler
DL . . . . . delay line
DS . . . . . annunciator; signaling device (audible or visual); lamp; LED
E . . . . . miscellaneous electrical part
F . . . . . fuse
FL . . . . . filter
H . . . . . hardware
HY . . . . . circulator
J . . . electrical connector (stationary portion); jack
K . . . . . relay
L . . . . . coil; inductor
M . . . . . meter
MP . . . . . miscellaneous mechanical part
P . . . electrical connector (movable portion); plug
Q . . . . . transistor; SCR; triode thyristor
R . . . . . resistor
RT . . . . . thermistor
S . . . . . switch
T . . . . . transformer
TB . . . . . terminal board
TC . . . . . thermocouple
TP . . . . . test point
U . . . . . integrated circuit; microcircuit
V . . . . . electron tube
VR . . . . voltage regulator; breakdown diode
W . . . . cable; transmission path; wire
X . . . . . socket
Y . . . . crystal unit (piezo-electric or quartz)
Z . . . . tuned cavity; tuned circuit

ABBREVIATIONS

A . . . . . ampere
ac . . . . alternating current
ACCESS . . . . . accessory
ADJ . . . . . adjustment
A/D . . . . analog-to-digital
AF . . . . . audio frequency
AFC . . . . . automatic frequency control
AGC . . . . . automatic gain control
AL . . . . . aluminum
ALC . . . . . automatic level control
AM . . . amplitude modulation
AMPL . . . . . amplifier
APC . . . . automatic phase control
ASSY . . . . . assembly
AUX . . . . . auxiliary
avg . . . . . average
AWG . . . . American wire gauge
BAL . . . . . balance
BCD . . . . . binary coded decimal
BD . . . . . board
BE CU . . . . . beryllium copper
BFO . . . . . beat frequency oscillator
BH . . . . . binder head
BKDN . . . . . breakdown
BP . . . . . bandpass
BPF . . . . . bandpass filter
BRS . . . . . brass
BWO . . . . . backward-wave oscillator
CAL . . . . . calibrate
ccw . . counter-clockwise
CER . . . . . ceramic
CHAN . . . . . channel
cm . . . . . centimeter
CMO . . cabinet mount only
COAX . . . . . coaxial
COEF . . . . . coefficient
COM . . . . . common
COMP . . . . . composition
COMPL . . . . . complete
CONN . . . . . connector
CP . . . . . cadmium plate
CRT . . . cathode-ray tube
CTL . . . . complementary transistor logic
CW . . . . . continuous wave
cw . . . . . clockwise
cm . . . . . centimeter
D/A . . . . digital-to-analog
dB . . . . . decibel
dBm . . . . decibel referred to 1 mW
dc . . . . . direct current
deg . . degree (temperature interval or difference)
^{o} . . . . . degree (plane angle)
^{o}C . . . . . degree Celsius (centigrade)
^{o}F . . . . degree Fahrenheit
^{o}K . . . . . degree Kelvin
DEPC . . deposited carbon
DET . . . . . detector
diam . . . . . diameter
DIA . . . diameter (used in parts list)
DIFF AMPL . . differential amplifier
div . . . . . division
DPDT . . . . . double-pole, double-throw
DR . . . . . drive
DSB . . . . double sideband
DTL . . . . diode transistor logic
DVM . . . digital voltmeter
ECL . . . . emitter coupled logic
EMF . . electromotive force
EDP . . . . . electronic data processing
ELECT . . . . . electrolytic
ENCAP . . . . encapsulated
EXT . . . . . external
F . . . . . farad
FET . . . . . field-effect transistor
F/F . . . . . flip-flop
FH . . . . . flat head
FIL H . . . . . fillister head
FM . . frequency modulation
FP . . . . . front panel
FREQ . . . . . frequency
FXD . . . . . fixed
g . . . . . gram
GE . . . . . germanium
GHz . . . . . gigahertz
GL . . . . . glass
GRD . . . . . ground(ed)
H . . . . . henry
h . . . . . hour
HET . . . . . heterodyne
HEX . . . . . hexagonal
HD . . . . . head
HDW . . . . . hardware
HF . . . . . high frequency
HG . . . . . mercury
HI . . . . . high
HPF . . . . . high pass filter
HR . . . . . hour (used in parts list)
HV . . . . . high voltage
Hz . . . . . Hertz
IC . . . . integrated circuit
ID . . . . . inside diameter
IF . . . . . intermediate frequency
IMPG . . . . . impregnated
in . . . . . inch
INCD . . . . . incandescent
INCL . . . . . include(s)
INP . . . . . input
INS . . . . . insulation
INT . . . . . internal
kg . . . . . kilogram
kHz . . . . . kilohertz
kΩ . . . . . kilohm
kV . . . . . kilovolt
lb . . . . . pound
LC . . . . . inductance-capacitance
LED . . light-emitting diode
LF . . . . . low frequency
LG . . . . . long
LH . . . . . left hand
LIM . . . . . limit
LIN . . . linear taper (used in parts list)
lin . . . . . linear
LK WASH . . . lock washer
LO . . . low; local oscillator
LOG . . . . logarithmic taper (used in parts list)
log . . . . . logrithm(ic)
LPF . . . . . low pass filter
LV . . . . . low voltage
m . . . . . meter (distance)
mA . . . . . milliampere
MAX . . . . . maximum
MΩ . . . . . megohm
MEG . . . . meg (10^6) (used in parts list)
MET FLM . . . . metal film
MET OX . . metallic oxide
MF . . . medium frequency; microfarad (used in parts list)
MFR . . . . . manufacturer
mg . . . . . milligram
MHz . . . . . megahertz
mH . . . . . millihenry
mho . . . . . mho
MIN . . . . . minimum
min . . . . . minute (time)
. . . ' . . . . . minute (plane angle)
MINAT . . . . . miniature
mm . . . . . millimeter
MOD . . . . . modulator
MOM . . . . . momentary
MOS . . . . . metal-oxide semiconductor
ms . . . . . millisecond
MTG . . . . . mounting
MTR . . . meter (indicating device)
mV . . . . . millivolt
mVac . . . . . millivolt, ac
mVdc . . . . . millivolt, dc
mVpk . . . . millivolt, peak

Parts List

PRINTED..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	25	BR373613	TRAFO ASSY PS6151 D4422	1			A1	
2	1,000	ST	60	BR373605	FUSE BRD. PS6150/51 D4422	1			A2	
3	1,000	ST	41	BR373931	REAR PLATE ASSY PS6150/51	1			A3	
4	1,000	ST	60	BR373591	BOTTOM MOUNTED PS6151	1			A4	
5	1,000	ST	60	BR373621	CONTACTOR ASSY PS6151	1			A5	
6	2,000	ST	23	BR228141	DIO POW. 1N4007 SI 1KV 1A	4			CR9,CR10	
7	3,000	ST	28	BR373230	LAMP INCAND 24V 20MA	4			DS1,DS2,DS3	
8	2,000	ST	33	BR253214	FUSE 32X6,3MM 25A	4			F1,F2	
9	5,000	ST	33	BR252706	FUSE 20X5MM 1A TT	4			F3,F4,F5,F6,F7	
10	4,000	ST	51	BR275506	SCREW M 3 X 5 CHJ GULCR	4			H1	C
11	51,000	ST	51	BR275611	SCREW M 4 X 5 CHJ GULCR	4			H2	C
12	18,000	ST	51	BR333395	SCREW M 4 X 6 UHJ GULCR	4			H3	
13	4,000	ST	51	BR275638	SCREW M 4 X 8 CHJ GULCR	4			H4	
14	14,000	ST	51	BR333409	SCREW M 4 X 8 UHJ GULCR	4			H5	
15	1,000	ST	51	BR333654	SCREW M 4 X40 CHJ GULCR	4			H7	
16	4,000	ST	51	BR447935	SCREW M 5 X12 HEX RUSTFRE	4			H8	
17	3,000	ST	52	BR327522	NUT M 4 M CU SN	4			H9	G
18	2,000	ST	53	202232-005	WASHER,SPRING 3,1X 6,2	4			H10	E
19	5,000	ST	53	202232-007	WASHER,SPRING 4,1X 7,6	4			H11	E
20	8,000	ST	53	BR250674	WASHER,NYLON Ø10MM	4			H12	
21	2,000	ST	31	BR231134	TERMINAL LUG 4,20MM 1F	4			H13	
22	1,000	SA	45	BR373265	TELESCOP.SLIDE,PAIR 17 3/	4			H15	
23	2,000	ST	31	BR368490	CONN D ACCESS. LOCK.HOOK	4			H16	
24	2,000	ST	33	227556-001	RELÆ, JUSTERET 21V	1			K2,K3	A1
25	1,000	ST	41	BR369292	CHASSIS PS6151	1			MP1	
27	1,000	ST	41	BR368520	MOUNT.PL,FRONT PS6150/51	1			MP3	
28	1,000	ST	41	BR370866	FRONT PLATE PS6151	1			MP4	
29	4,000	ST	46	BR260832	GUIDE F/THUMBSCREW 260827	2			MP5	
30	4,000	ST	53	BR267015	WASHER,NYLON Ø12MM X154M	3			MP6	
31	4,000	ST	51	BR260827	THUMBSCREW,KNURLED M6	3			MP7	
32	2,000	ST	43	BR359175	HANDLE F.8 3/4" 200MM	3			MP8	
33	1,000	ST	41	BR371832	TOP PLATE PS6150/51	1			MP9	
34	2,000	ST	65	BR432283	FILTER,AIR ASSY P-P.CF PA	1			MP10	
35	2,000	ST	21	BR328750	RES FILM 1K00 1,6J PR37	4			R1,R2	
36	3,000	ST	33	BR373958	PUSH BTN SW SPST	4			S1,S2,S3	
37	1,000	ST	33	BR373966	PUSH BOTTON SW	4			S4	

TERMA Elektronik AS
FSCM R0567
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TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
PANEL PS6151 F3/380-440	BR358231 (358231)	G	1 OF 3

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
38	1,000	ST	37	BR372552	CABLE ASSY PS6151	1			W	
39	6,000	ST	37	BR377724	CABLE ASSY PS6151	1			W	
40	8,000	ST	37	BR377732	CABLE ASSY PS6151	1			W	
41	2,000	ST	37	BR447072	CABLE ASSY PS6150/51	1			W	
42	2,000	ST	37	BR447080	CABLE ASSY PS6150/51	1			W	
43	2,000	ST	28	BR373974	LAMP ACCESS SOCKT T4.6	4			XDS1,XDS2	
46	1,000	ST	28	BR373990	LAMP ACCESS SOCKT T4.6	4			XDS3	
47	2,000	ST	33	BR368199	FUSE ACCES. HOLDER 6,3X32	4			XF	
48	5,000	ST	33	BR373389	FUSE ACCES. HOLDER CAP	4			XF	
49	4,000	ST	51	BR333263	SCREW M 3 X 8 UHJ GULCR	4				A2
50	4,000	ST	45	BR354534	STRAP,CABLE L191XB3,6	4				A2
51	4,000	ST	31	BR231096	TERMINAL LUG 3,25MM 1F	4				A4
56	1,000	ST	41	BR476852-001	LOCKSPRING	2				B
57	1,000	ST	48	BR375837	LABEL HIGH VOLT.	3				A6
58	1,000	ST	48	BR404872	LABEL, DRA TYPE/SER.NO	3				A6
59	1,000	ST	30	BR499242	LABEL	1				A7
60	1,000	ST	30	BR499269	LABEL	1				A7
61	1,000	ST	48	BR404872	LABEL, DRA TYPE/SER.NO	3				A7
62	2,000	ST	51	BR275530	SCREW M 3 X10 CHJ GULCR	4				C
63	2,000	ST	52	BR327506	NUT M 3 M CU SN	4				C
64	1,000	ST	30	BR499277	LABEL	1				C
65	1,000	ST	41	237553-001	ACTIVATOR, BUSHING	2				D
66	4,000	ST	51	202176-416	SCREW M 4X16 SLTD A2	4				G
67	5,000	ST	51	200634-033	SCREW M 4X10 SLTD.COU. ST	4				G
68	9,000	ST	51	200668-032	SCREW M 4X 8 SLTD.CYL. ST	4				G
**********	**********	**	**	**********	*** BILL OF DOCUMENTATION	**********	**********	**********	**********	******
			AS	201350	WORKMANSHIP					
1001			PD	BR358231	POWER SUPPLY PANEL PS6151					
1002			EC	BR4422	3 PHASE POWER SUPPLY					
1004			TP	BRQA2001	POWER SUPPLY 40_5 V 37_5A					
1005			TP	BRQA4614	500W POWER S76210/S76150					
**********	**********	**	**	**********	********* NEXT ASSY *********	**********	**********	**********	**********	******

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: PANEL PS6151 F3/380-440

DOCUMENT NO.: BR358231 (358231)

REV: G

SHEET NO.: 2 OF 3

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
	2.000	ST		BR453609	LA 76210 1000W 3F	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: PANEL PS6151 F3/380-440

DOCUMENT NO.: BR358231
(358231)

REV: G

SHEET NO.: 3 OF 3

A4 Form 200473 FA Rev B

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	2,000	ST	22	BR++3633	CAP. ELEC 33M 63 T	4			C1,C2	
2	6,000	ST	23	BR369333	DIO POW.1N1186A SI200V 40	4			CR2-7	D
+	2,000	ST	51	BR333253	SCREW M 3 X 6 UHJ GULCR	4				A2
5	8,000	ST	51	BR273322	SCREW M 3 X 8 CHJ GULCR	4			H2	
6	6,000	ST	51	BR327247	SCREW M 4 X12 CHM CU SN	4			H3	E
7	4,000	ST	51	BR275337	SCREW M 4 X25 CHJ GULCR	4			H4	
8	12,000	ST	51	BR275338	SCREW M 4 X 8 CHJ GULCR	4			H5	
9	1,000	ST	51	BR327298	SCREW M 5 X 8 CHM CU SN	4			H6	D
10	6,000	ST	52	BR321060	NUT M 4 M CU SN	4			H7	
11	14,000	ST	53	202232-001	WASHER,SPRING 4,1X 7,6	4			H8	C
12	2,000	ST	31	BR333833	TERMINAL LUG 5,20MM 1F	4			H9	
13	4,000	ST	23	BR371777	DIO ACCESS HOLDER ISO	4			H10	
14	2,000	ST	22	BR375780	CAP. ACCESS NUT	4			H11	
15	2,000	ST	22	BR375799	CAP. ACCESS WASH.RUBB.	4			H12	
16	1,000	ST	25	BR373222	COIL,CHOKE PS6151 0,8MH	4			L1	
17	1,000	ST	41	BR3381B0	PLATE,BOTTOM PS6151	1			MP1	
18	1,000	ST	41	BR371823	SAFETY PLATE PS6151	3			MP3	
20	2,000	ST	56	BR371807	HEATSINK F/ DIO PS6150/51	2			MP4	
21	1,000	ST	31	BR371793	CONN BAR PS6151	1			MP5	
22	1,000	ST	48	BR375837	LABEL HIGH VOLT.	3			MP6	
23	1,000	ST	21	BR373012	RES WIREW 1K5 11J	4			R3	
24	1,000	ST	25	BR373214	TRAFO,MAINS 110/110 24/29	4			T4	
25	1,000	ST	37	BR377767	CABLE ASSY PS5151	1			W2	
27	2,000	ST	37	BR377775	CABLE ASSY PS6151	1			W3	E
28	1,000	ST	31	BR373583	CONN FLAT 6,3X0,8X3	4				A2
29	4,000	ST	51	BR495247	SCREW PINOL M 5 X20 S UNB	4				A2
30	4,000	ST	52	BR333980	NUT M 5 J GULCR	4				A2
35	3,000	ST	22	223803-019	CAP. ELEC 10U / 640K	4			C3,C5,C7	B
36	3,000	ST	22	223803-020	CAP. ELEC 12U / 640K	4			C4,C6,C8	B
37	2,000	ST	51	202476-010	SCREW M 4X 6 SLTD CYL A4	4				B
38	4,000	ST	53	200357-001	WASHER FLAT 5.3X10.0X1.0M	4				B
39	4,000	ST	53	200359-004	WASHER LOCK 5.1X1.2MM	4				B
40	1,000	ST	31	BR373583	CONN FLAT 6,3X0,8X3	4				B
44	6,000	ST	53	200359-003	WASHER LOCK 4.1X0.9MM	4				B
47	2,000	ST	53	200359-003	WASHER LOCK 4.1X0.9MM	4				D
43	2,000	ST	51	222790-020	SCREW M 4X12 POZIDR. A2	4				D

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

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TITLE: BOTTOM MOUNTED PS6151

DOCUMENT NO.: BR373591
(373591)

REV: E

SHEET NO.: 1 OF 2

A4 Form 200473 FA Rev B

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
49	1,000	ST	41	237561-001	THREAD BUSHING	2				0
50	2,000	ST	53	200556-004	WASHER FLAT 4.3X0.8MM	4				0
51	6,000	ST	22	213589-015	NUT M 8 NYLON CAP	4				0
**********	**********	**	****	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	*****
1001			AS PD	201350 BR373591	WORKMANSHIP BOTTOM MOUNTED PS6151					
**********	**********	**	****	**********	********* NEXT ASSY *********	**	**********	**********	**********	*****
	1,000	ST		BR358231	PANEL PS6151 F3/380-440	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: BOTTOM MOUNTED PS6151

DOCUMENT NO.: BR373591 (373591)

REV: E

SHEET NO.: 2 OF 2

A4 Form 200473 FA Rev B

Parts List

PRINTET......... 94/09/30
PARTS LIST PER.. 94/09/29

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1	1,000	ST	37	BR371955	PWB,FUSE BD PS6150/51	3				
2	1,000	ST	23	BR214512	DIO BRDG.B80C 800 SI 800M	4			CR1	
3	1,000	ST	23	BR228141	DIO POW. 1N4007 SI 1KV 1A	4			CR8	
4	4,000	ST	51	BR275505	SCREW M 3 X 5 CHJ GULCR	4			H1	
5	1,000	ST	31	BR387274	CONN MOLEX 12P MALE	4			J4	
6	1,000	ST	31	BR387232	CONN MOLEX 15P MALE	4			J5	
7	1,000	ST	33	BR363170	RELAY 24V 740 2XCHG.	4			K1	
8	4,000	ST	52	BR337681	STAY NUT M3 X10 N5	3			MP1	
9	5,000	ST	33	BR373370	FUSE ACCES. HLDR 5X20 PWB	4			XF	
************************************ BILL OF DOCUMENTATION ************************************										
			AS	201350	WORKMANSHIP					
1001			PD	BR373605	FUSE BRD PS6150-6151					
1003			EC	BR4422	3 PHASE POWER SUPPLY					
************************************ NEXT ASSY ************************************										
	1,000	ST		BR358231	PANEL FS6151 F3/380-440	1				

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TITLE: FUSE BRD. PS6150/51 D4422

DOCUMENT NO.: BR373605 (373605)

REV: A

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PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	2,000	ST	51	BR275514	SCREW M 3 X 6 CHJ GULCR	4			H1	A1
2	2,000	ST	51	BR447935	SCREW M 5 X12 HEX RUSTFRE	4				C1
3	10,000	ST	51	BR275549	SCREW M 3 X12 CHJ GULCR	4			H3	E
6	22,000	ST	51	BR321521	SCREW UNBRAK M 5X12 CHJ G	4			H6	B
8	1,000	ST	52	BR321508	NUT M 5 TOP M NI	4			H8	
9	1,000	ST	52	BR332461	NUT M 5 CONTRA M CU SN	4			H9	
11	24,000	ST	53	202232-008	WASHER,SPRING 5,1X 9,2	4			H11	D
12	40,000	ST	45	201197-049	STRAP, CABLE, NAT Ø20X2.5	4			H12	G1
13	0,800	M	44	BR377503	EDGING KANTLIST F/2.1-34M	4			H13	
14	1,000	ST	36	BR403965	BLOWER ACCESS FANSTOPDET	4			ST2	B
15	37,000	ST	31	BR223263	CONN CRIMPFLAT 1,5MM2 6,3	4			H15	E
17	1,000	ST	31	BR327097	KABELSKO 6MM2Xo.3	4				E1
18	12,000	ST	31	BR223255	CONN CRIMPFLAT 2,5MM2 6,3	4			H18	E
19	1,000	ST	51	BR435247	SCREW PINOL M 5 X20 S JN8	4			H19	A1
21	2,000	ST	41	BR368474-001	MOUNT.PL.FRONT-BCK PS6151	1			MP1	F
24	3,000	ST	31	BR373751	TERMINAL BD 8P 6,3X0,8	4			TB1-3	E
26	1,000	ST	31	BR373736	TERMINAL BD 12P 6,3X0,8	4			TB5	
27	3,000	ST	31	BR373618	TERMINAL BD 6P 6,3X0,8	4			TB4,TB6,TB7	E
28	3,000	ST	25	237676-001	TRAFO, MAINS, 500VA	3			T1-3	E
30	24,000	ST	53	202227-003	WASHER, FLAT 3/16	4				A2
31	1,000	ML	76	205254-001	ADHESIVE SILICONE, RTV	4				B
32	1,000	ST	30	BR300372	LABEL, TRAFO ASSY	1				C
33	2,000	ST	51	222790-050	SCREW M 3X30 POZIDR. A2	4				E
34	1,000	ST	41	237992-001	COVER TOP	1				F
35	1,000	ST	41	237991-001	COVER BOTTOM	1				F
36	1,000	ST	41	BR389617-001	SCREEN F.FAN ALARM CF6150	1				F
37	2,000	ST	52	235019-003	NUT, SQUARE M 3	4				F
38	4,000	ST	51	200634-018	SCREW M 3X 6 SLTD.COU. ST	4				F
39	4,000	ST	51	202175-416	SCREW M 4X16 SLTD A2	4				F
40	1,000	ST	21	202110-004	RES WW 1K2 / 5.8 J	4			R4	G
41	1,000	ST	21	202110-014	RES WW 1K5 / 5.3 J	4			R5	G
42	2,000	ST	31	BR369266	CONN CRIMPFLAT 1,0MM2 2,8	4				G
*****	**********	***	***	**********	*** BILL OF DOCUMENTATION	**	*******	*****	**********	*****
			AS	201350	WORKMANSHIP					

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

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TITLE:	DOCUMENT NO.:	REV:	SHEET NO.:
TRAFO ASSY PS6151 04422	BR373613 (373613)	G1	1 OF 2

A4 Form 200473 FA Rev B

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
			EC PD	BR4422 BR373613	3 PHASE POWER SUPPLY TRAFO ASSY PS6151 D4422					
**********	**********	**	**********	**********	********* NEXT ASSY *********	**********	**********	**********	**********	******
	1.000	ST		BR353231	PANEL PS6151 F3/380-440	1				

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FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: TRAFO ASSY PS6151 D4422

DOCUMENT NO.: BR373613
(373613)

REV: G1

SHEET NO.: 2 OF 2

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Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

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1	1,000	ST	51	BR275638	SCREW M 4 X 8 CHJ GULCR	4			H1	
2	4,000	ST	51	BR275654	SCREW M 4 X12 CHJ GULCR	4			H2	A1
3	5,000	ST	53	BR336777	WASHER,FLAT Ø 4MM CU SN M	4			H3	
4	1,000	ST	33	BR358113	CONTACTOR CI12 24VAC 50HZ	4			K4	
5	1,000	ST	46	BR371769	BRACKET F.CONTACT PS6150	1			MP1	
6	1,000	ST	41	BR373729	MOUNTING PLATE PS6151-S12	1			MP2	
7	1,000	ST	33	223993-108	CIRCUIT BREAKER 2.7-4.2A	4			ST1	C
8	0,130	M	32	BR329924	WIRE,ELEC 0,75 BLACK	4				B
*****	**********	****	****	**********	*** BILL OF DOCUMENTATION	**********	**********	**********	**********	******
			AS	201350	WORKMANSHIP					
1001			PD	BR373621	CONTACTOR ASSY PS6151					
1003			EC	BR4422	3 PHASE POWER SUPPLY					
*****	**********	****	****	**********	********** NEXT ASSY **********	**********	**********	**********	**********	******
	1,000	ST		BR358231	PANEL PS6151 F3/380-440	1				

TERMA Elektronik AS
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TITLE: CONTACTOR ASSY PS6151

DOCUMENT NO.: BR373621 (373621)

REV: C

SHEET NO.: 1 OF 1

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Parts List

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PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	36	201389-C01	BLOWER 115V 3250RPM/ 60HZ	4			B1	B
2	2,000	ST	22	BR449695	CAP. ELEC 33M 63 T	4			C9,C10	A4
3	4,000	ST	52	BR321060	NUT M 4 M CJ SN	4			H1	
4	4,000	ST	51	BR275638	SCREW M 4 X 8 CHJ GULCR	4			H2	A3
5	4,000	ST	51	BR333468	SCREW M 4 X16 UHJ GULCR	4			H3	
6	0,135	M	46	BR250843	PAD,RUBBER ADHESIV 3,2X19	4			H6	
7	2,000	ST	22	BR375780	CAP. ACCESS NUT	4			H8	
8	2,000	ST	22	BR375739	CAP. ACCESS WASH.RUBB.	4			H9	
10	1,000	ST	41	BR359284	REAR PLATE PS6150/51	1			MP1	
11	2,000	ST	46	BR330946	BRACKET PS6150	1			MP2	
12	2,000	ST	56	BR452733	SPACER,PLATE PS6151/51	1			MP3	
13	2,000	ST	31	BR452807	CONTACT PIECE PS6150/51	1				A2
14	1,000	ST	37	BR452815	CABLE ASSY PS6150/51	1				A2
15	1,000	ST	37	BR452823	CABLE ASSY PS6150/51	1				A2
**********	**********	**	**	**********	*** BILL OF DOCUMENTATION	**	**********	**********	**********	******
			AS	201350	WORKMANSHIP					
			PD	BR373931	REAR PLATE ASSY 3P PS615X					
**********	**********	**	**	**********	********** NEXT ASSY **********	**	**********	**********	**********	******
	1,000	ST		BR358231	PANEL PS6151 F3/380-440	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: REAR PLATE ASSY PS6150/51

DOCUMENT NO.: BR373931
(373931)

REV: B

SHEET NO.: 1 OF 1

A4 Form 200473 FA Rev B

Parts List

PRINTET..... 94/09/30
PARTS LIST PER.. 94/09/29

FIND NO.	QTY RQD	U M	CL NO.	ITEM OR DOCUMENT NUMBER	NOMENCLATURE	I T	PREP NO.	BIN	REFERENCE DESIGNATION	LINE REV
1	1,000	ST	36	BR357214	BLOWER 115V 50/60HZ	4			B1	
2	2,000	ST	51	BR275530	SCREW M 3 X10 CHJ GULCR	4			H1	A3
3	2,000	ST	51	BR275514	SCREW M 3 X 6 CHJ GULCR	4			H2	A1
4	2,000	ST	51	BR333425	SCREW M 4 X12 UHJ GULCR	4			H3	
5	2,000	ST	52	BR327506	NUT M 3 M CU SN	4			H4	
6	2,000	ST	52	BR321060	NUT M 4 M CU SN	4			H5	A1
7	2,000	ST	31	BR368490	CONN D ACCESS. LOCK.HOOK	4			H6	
8	1,000	ST	41	BR360931	REAR PLATE PA6150	1			MP1	
9	1,000	ST	41	BR476802-001	LOCKSPRING	2				B
10	2,000	ST	37	BR369071	COAX CA ASSY W1 PA6150401	3			W1	
11	2,000	ST	37	BR369093	COAX CA ASSY W2 PA6150401	3			W2	
12	1,000	ST	37	BR377171	CABLE ASSY PA6150 1	1			W3	
13	1,000	ST	37	BR377198	CABLE ASSY PA6150 2	1			W4	
14	2,000	ST	53	BR380105	WASHER.FLAT Ø 3MM CU SN M	4				A2
*****	**********	***	***	**********	*** BILL OF DOCUMENTATION	**	********	*****	**********	*****
			AS	201350	WORKMANSHIP					
			PD	BR377163	REAR PLATE ASSY PA6150					
*****	**********	***	***	**********	********* NEXT ASSY *****	**	********	*****	**********	*****
	1,000	ST		BR377120	CHASSIS ASSY PA6150	1				

TERMA Elektronik AS
FSCM R0567
Hovmarken 4, DK-8520 Lystrup, Denmark

TITLE: REAR PLATE ASSY PA6150

DOCUMENT NO.: BR377163
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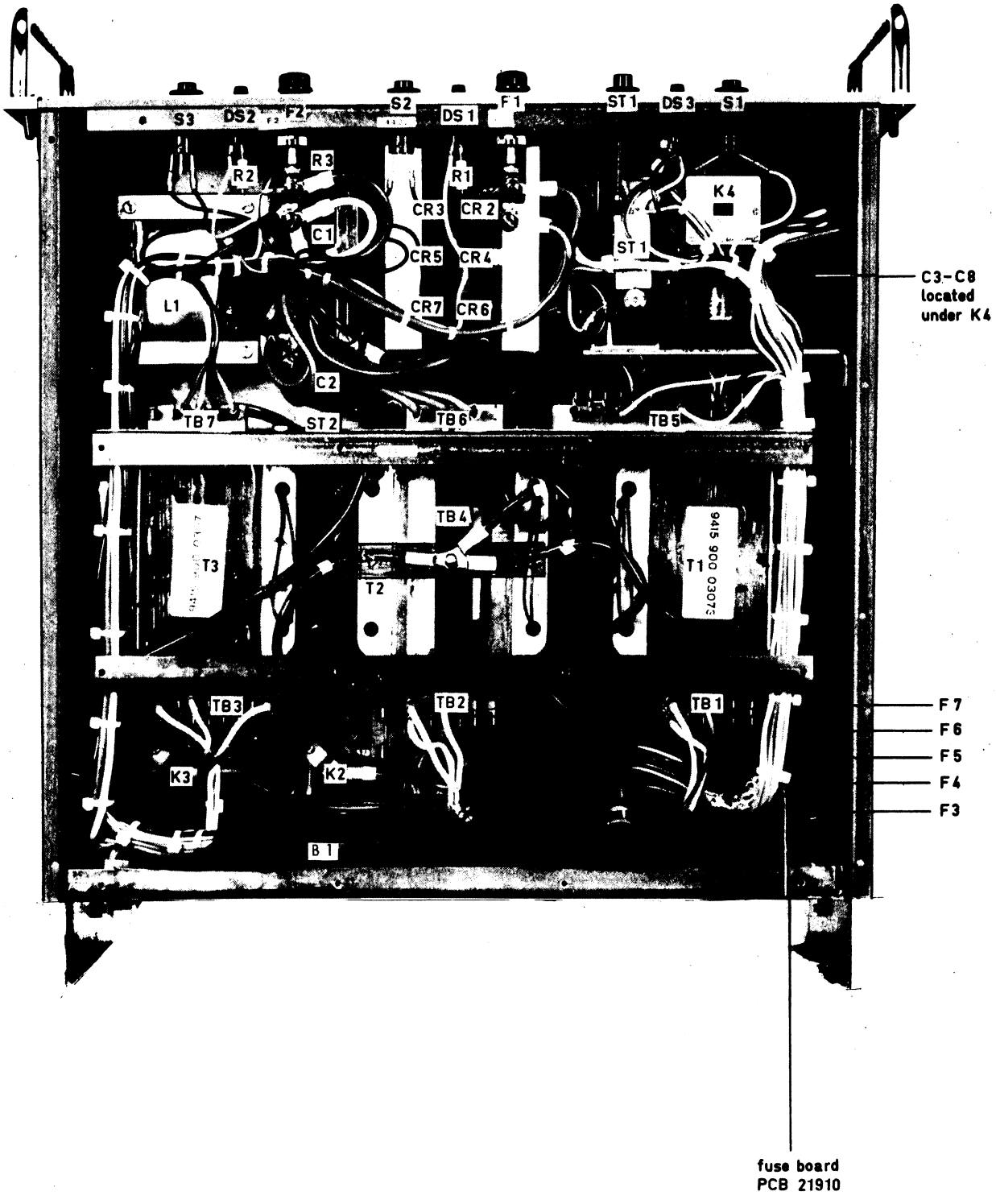
REV: B

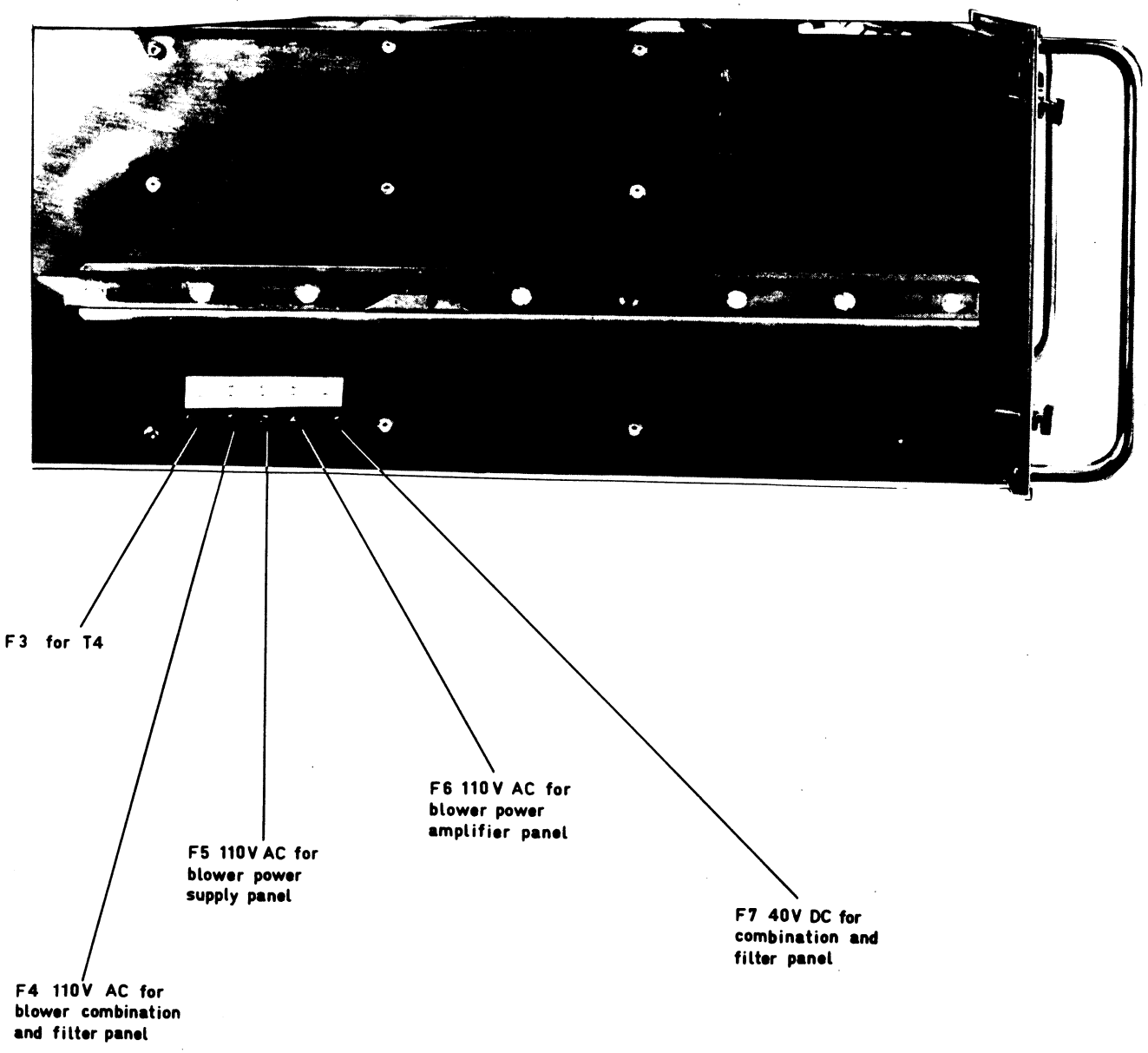
SHEET NO.: 1 OF 1

A4 Form 200473 FA Rev B



Power Supply
Ref. Desig. 4422
Component Location

Left hand side of PS 6151



Power Supply Panel
Ref. Designation 4422
Component Location