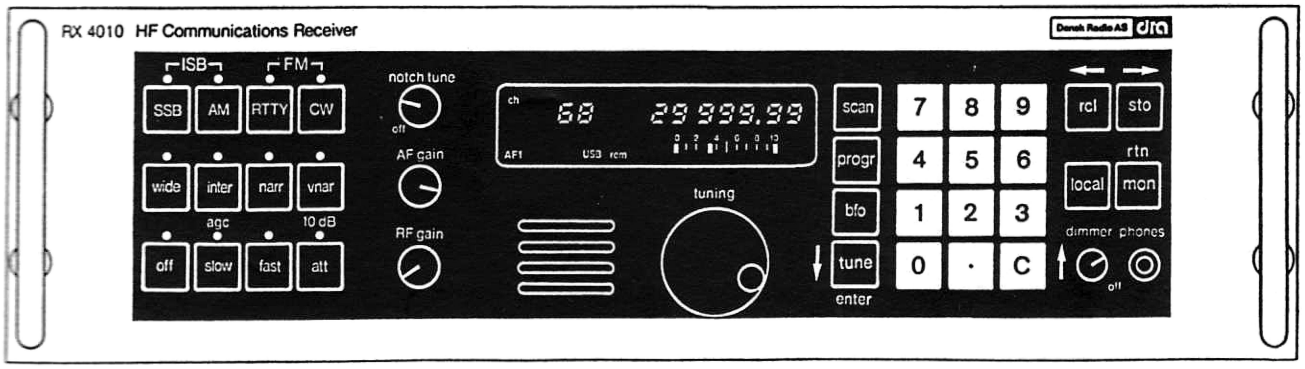
Dansk Radio Comm. ApS

HF Communication.



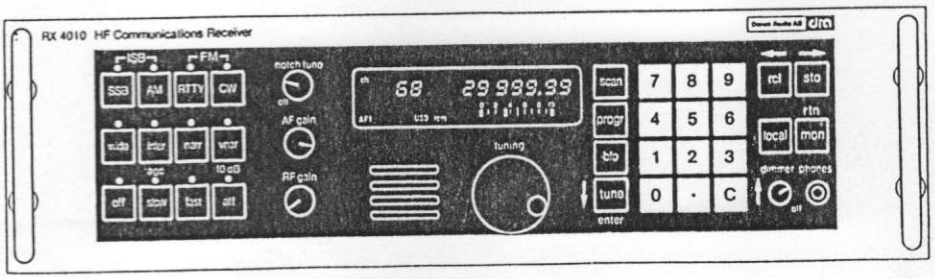
Operating & Service Manual

RX 4010

HF Communications Receiver

Operating & Service Manual

RX 4010
HF Communications Receiver



Dansk Radio Comm. ApS

HF Communication.

Valbyvej 20, DK-2630 Taastrup, Denmark
Int. Phone: +45 43 71 60 45
Int. Fax : +45 43 71 45 04 Telex : 33358 darios dk.

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JAN 1997

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DANSK RADIO Comm. ApS
Valbyvej 20, DK-2630 Taastrup Denmark
Phone: +45 43 71 60 45 Fax: +45 43 71 45 04

SAFETY SUMMARY

The following general safety precautions must be observed during all phases of operation, service, and repair of this equipment. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the equipment. Dansk Radio AS assumes no liability for the customer's failure to comply with these requirements.

GROUND THE EQUIPMENT

To minimize shock hazard, the equipment chassis and cabinet must be connected to an electrical ground. The equipment is equipped with a three-conductor ac power socket. The power cable must either be plugged into an approved three-contact electrical outlet or used with a three-contact to two-contact adapter with the grounding wire (green) firmly connected to an electrical ground (safety ground) at the power outlet.

DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE

Do not operate the equipment in the presence of flammable gases or fumes. Operation of any electrical equipment in such an environment constitutes a definite safety hazard.

KEEP AWAY FROM LIVE CIRCUITS

Operating personnel must not remove equipment covers. Component replacement and internal adjustments must be made by qualified maintenance personnel. Do not replace components with power cable connected. Under certain conditions, dangerous voltages may exist even with the power cable removed. To avoid injuries, always disconnect power and discharge circuits before touching them.

DO NOT SERVICE OR ADJUST ALONE

Do not attempt internal service or adjustment unless another person, capable of rendering first aid and resuscitation, is present.

DO NOT SUBSTITUTE PARTS OR MODIFY EQUIPMENT

Because of the danger of introducing additional hazards, do not install substitute parts or perform any unauthorized modification to the equipment.

DANGEROUS PROCEDURE WARNINGS

Warnings, such as the example below, precede potentially dangerous procedures throughout this manual. Instructions contained in the warnings must be followed.

WARNING

Dangerous voltages, capable of causing death, are present in this equipment. Use extreme caution when handling, testing, and adjusting.

TABLE OF CONTENTS

SECTION 1
GENERAL INFORMATION RX4010 RECEIVER

1.1 Introduction

This Operating and Service Manual contains information required to install, operate, test, adjust and service the receiver.

Receiver specifications are listed in paragraph 1.7.
These specifications are the performance standards or limits against which the receiver is tested.

Due to the experience obtained from the production and operation of the equipment, minor differences between the receiver and the manual can occur.

Wherever possible such differences are covered in Section 7 "MANUAL CHANGES".

The electrical modules of the receiver are listed in Section 6.

1.2 Safety Considerations

This manual contains information, cautions and warnings which must be followed to ensure safe operation and to maintain the receiver in a safe condition.

1.3 Description

The communication receiver is a fully synthesized, dual conversion, superheterodyne receiver. It covers the frequency range 10 kHz to 29.99999 MHz in 10 Hz increments.

Operation modes are AM, CW, RTTY and SSB. Optionally ISB and FM are available.

The receiver is equipped with microprocessor control. This provides intelligence in the form of factory programmed instruction memory that introduces new concepts in communication

receivers, providing improvements in performance, ease of operation and reliability.

The microprocessor control includes features such as:

- Instant pushbutton tuning
- Free tuning in 10 Hz to 1 kHz steps
- Battery back-up memory storage for 99 user programmable frequencies and reception modes (incl. BFO-tuning)
- Automatic selection of all CCIR recommended frequencies for SSB and RTTY communication
- Digital keyed AGC
- AGC hold-time synchronized with SIMPLEX or ARQ burst keying
- Scanning of user-selected and CCIR frequencies
- Built-in diagnostic routines
- Error conditions automatically displayed on front panel
- AGC threshold control
- Fully remote controlled (option)

The receiver controls are arranged in groups enabling the operator easily to identify and control receiver operation with a minimum of switching. Standard settings of the AGC and bandwidth controls are automatically selected when the operator presses the desired reception mode. The operator can override all preset settings and select AGC time constants and receiver bandwidths more suitable for his reception environment.

The receiver has several LED-displays which informs the operator about frequency, channel numbers, BFO, reception mode, receiver signal strength and other status information.

During supply drop-out the receiver settings as well as the information contained in the user programmed memory storage is energized from a built-in battery back-up. When the drop-out is terminated, the receiver settings are automatically recalled to the front panel.

The receiver incorporates scanning facilities. During scanning the dwell time between channels is programmed by means of the normal frequency entry keyboard. Via the

control input/output socket (at the rear panel of the receiver) the scan sequence may be temporarily terminated from an auxiliary decoder, enabling automatic reception of selcall communication.

The Scan sequence may also be temporarily terminated when a signal exceeds a pre-adjustable threshold level.

A detailed operating instruction is contained in section 3 of this manual.

1.4 Options

The following extends the usefulness of the Receiver.

1.4.1 RTTY Demodulator Modules

DRA part no. 210811-001 featuring front-panel programmable center-frequency, shift and baudrate.

1.4.2 Remote Control

from RC4010 unit or a personal computer, to allow control over two pairs of telephone lines.

A) Serial Remote Control Module DRA part no. BR490598 . 75 to 9600 bps conform to EIA-232C, compatible to RS422 and RS485.

1.4.3 Frequency Generator Standard

1) TCXO. DRA part no. BR448184.

2) OCXO with 1 MHz, 5 MHz and 10 MHz external Standard Oscillator input. DRA part no. BR492817 + BR378275.

3) TCXO with 1 MHz, 5 MHz and 10 MHz external Standard Oscillator input. DRA part no. BR493902 + BR378275.

4) OCXO with 5.12 MHz internal Standard Oscillator output. DRA part no. BR488232 + BR378275.

1.4.4 Frequency synthesizer

Ultra fast synthesizer as alternative to the standard version.
DRA part no. BR498629.

1.4.5 IF Modules

1.4.5.1 Independent Sideband

1) DRA part no. BR489913 for SSB bandwidths up to 3400 Hz.

2) DRA part no. BR498599 for 6000 Hz SSB bandwidth.

1.4.5.2 Single Sideband

DRA part no. BR494070

1.4.6 Front-End Modules

1) DRA part no. BR489638 for SSB bandwidths up to 3400 Hz.

2) DRA part no. BR498610 for 6000 Hz SSB bandwidth.

1.4.7 IF Selectivity

Several optional Crystal Filters exist. See paragraph 1.10.

1.5 Accessories Supplied.

The following accessories are supplied with the Receiver.

One Operating and Service Manual, DRA part no. 237843HT
One Power Cord, DRA part no. BR490199.
Connector Kit, basic receiver version, DRA part no. BR475505

1.6 Accessories Available

The following items are available for use with the Receiver.

Receiver Cabinet, DRA part no. 210911-001

Rack Slides Kit, Slides with lock. DRA part no. BR458872

Rack Slides Kit, Slides with lock and tilt. DRA part no. BR496146

Connector Kit for RTTY Demodulator, DRA part no. BR485284

Connector Kit for Remote Control Module,DRA part no. BR485292

Standard Spare Parts Kit, DRA part no. BR475076

Depot Spares Kit. DRA part no. BR455041.

Special Tools Kit, DRA part no. BR493848.

Anx A

1.7 Specifications

FREQUENCY RANGE

10 kHz to 30 MHz in 10 Hz increments.
(10 kHz to 100 kHz with reduced performance)

ANTENNA IMPEDANCE

50 ohm

INPUT PROTECTION

30V EMF continuously
100V EMF for up to 15 minutes

OPERATING MODES

A1A, A2B, H2A, A3E, H3E, R3E, J3E, F1B.
F3E, B8E, B9E, B9W, J7B optional.

FREQUENCY STABILITY

With OCXO:

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

With TCXO:

1 ppm -10 to +40°C
aging (after 30 days power on) < 0.1 ppm/day
< 1 ppm/month
< 2 ppm/year

PHASE JITTER

< 1.5° RMS within 1 Hz to 6 kHz

FREQUENCY TUNE TIME

Typically 10 msec.

INPUT SELECTIVITY

10 fixed filters

IF SELECTIVITY (Crystal Filter Option 01)

(See Paragraph 1.10.6 for other optional filters)
Note that some of the specifications listed in this section might be influenced by selection of Crystal Filter Option.

R3E, J3E, B8E, B9E, J7B-USB:
Passband ripple < 2dB
Passband ripple < 1dB within 575-2910 Hz
Relative att. < 3dB within 300 Hz to 3400 Hz
Stopband att. > 60dB at -450 Hz and + 4150 Hz
Group delay distortion <0.5 msec. within 575-2910 Hz
A1A, A2B, H2A, A3E, H3E, J7B-LSB, F1B:

Wide: -3dB at +/- 3.75 kHz, -60dB at +/-8.5 kHz group delay distortion <0.2 msec. within +/-3 kHz

Inter: -3dB at +/- 1.5 kHz, -60 dB at +/-2.6 kHz group delay distortion <0.5 msec. within +/-1.1 kHz

Narrow: -3dB at +/- 0.5 kHz, -60 dB at +/-1.0 kHz group delay distortion <1 msec. within +/-400 Hz

Very Narrow: -3dB at +/-0.15 kHz, -60 dB at +/-0.6 kHz group delay distortion <2 msec. within +/-100 Hz

SENSITIVITY

0.7 µV EMF for 12 dB SINAD in SSB

2.7 µV EMF for 12 dB SINAD in AM (1 kHz, 50%)

1.5 µV EMF for 10 dB SINAD in FM (1 kHz, 5 kHz deviation, 12 kHz BW). (optional)

INTERMODULATION (Out-of-band)

The third order IM products resulting from two signals at -13 dBm each, spaced at least 30 kHz a part, are less than -73 dBm.

CROSS MODULATION

With a wanted J3E signal of 60 dBµV EMF, an unwanted signal of 110 dBµV EMF 30%-400 Hz produces cross modulation output less than -30dB relative to wanted signal level.

BLOCKING

With a wanted signal of 60 dBµV EMF, an unwanted signal of 110 dBµV EMF causes less than 3dB change in output level.

IMAGE REJECTION

Greater than 100 dB.

IF REJECTION

Greater than 100 dB

SPURIOUS RESPONSE REJECTION

Greater than 80 dB

INTERNALLY GENERATED SPURIOUS RESPONSE

Internally generated spurious signals will not produce a S/N ratio greater than 10 dB (BW=Inter).

SPURIOUS EMISSION

Less than 10 µV/50 ohm at antenna connector.

RF ATTENUATOR

0 dB or 10 dB.

AUTOMATIC GAIN CONTROL

Less than 4 dB change in output for 100 dB input signal variation from 6 dBuV EMF.

Time constants A1A, R3E, J3E, F1B, B8E, B9E, B9W, J7B:

Attack time:	1 msec. for 70 dB signal increase
Debounce time:	12 msec.
Attack-to-hold time:	
Wide:	20 msec.
Inter:	30 msec.
Narr:	50 msec.
Vnarr:	60 msec.
Hold time:	
Short:	30 msec.
Long:	2 sec.
Decay time:	Typical 10 dB per 100 msec.

Time constants A2B, H2A, A3E, H3E, F3E: 200 msec.

BFO RANGE

+/- 6.99 kHz synthesized in 10 Hz steps.

BFO TUNE TIME

Less than 1 msec.

NOTCH TUNE

Typical 30 dB variable from 300 Hz to 3400 Hz.

IF OUTPUT

1.4 MHz, -20 dBm/50 ohm.

LINE OUTPUTS

Level	:	Adjustable up to +10 dBm
Impedance	:	600 ohm balanced, return loss better than 20 dB
Distortion	:	Less than 1% in J3E

TELEX OUTPUT (ISB version only)

Level	:	0 dBm
Impedance	:	600 ohm balanced, return loss better than 20 dB

LINE INTERMODULATION (In-band)

Less than -45 dB relative to either of two 94 dBμV EMF signals (With RF Attenuator in "OFF").

SIDE TONE INPUT

Max. 500 mV/600 ohm.

MONITOR OUTPUT

Speaker	:	4W/4 ohm
Phones	:	10 mW/500 ohm

MUTING

Attenuation	:	60 dB typical
Attack time	:	0.1 msec. typical
Release time	:	0.5 msec. typical

MEMORY

Built-in Lithium battery for appr. 2 years memory back-up

INPUT POWER

110-125 V, 220-250 V, +/-10%, 50-60 Hz, 80-100 VA

OPERATING ENVIRONMENT

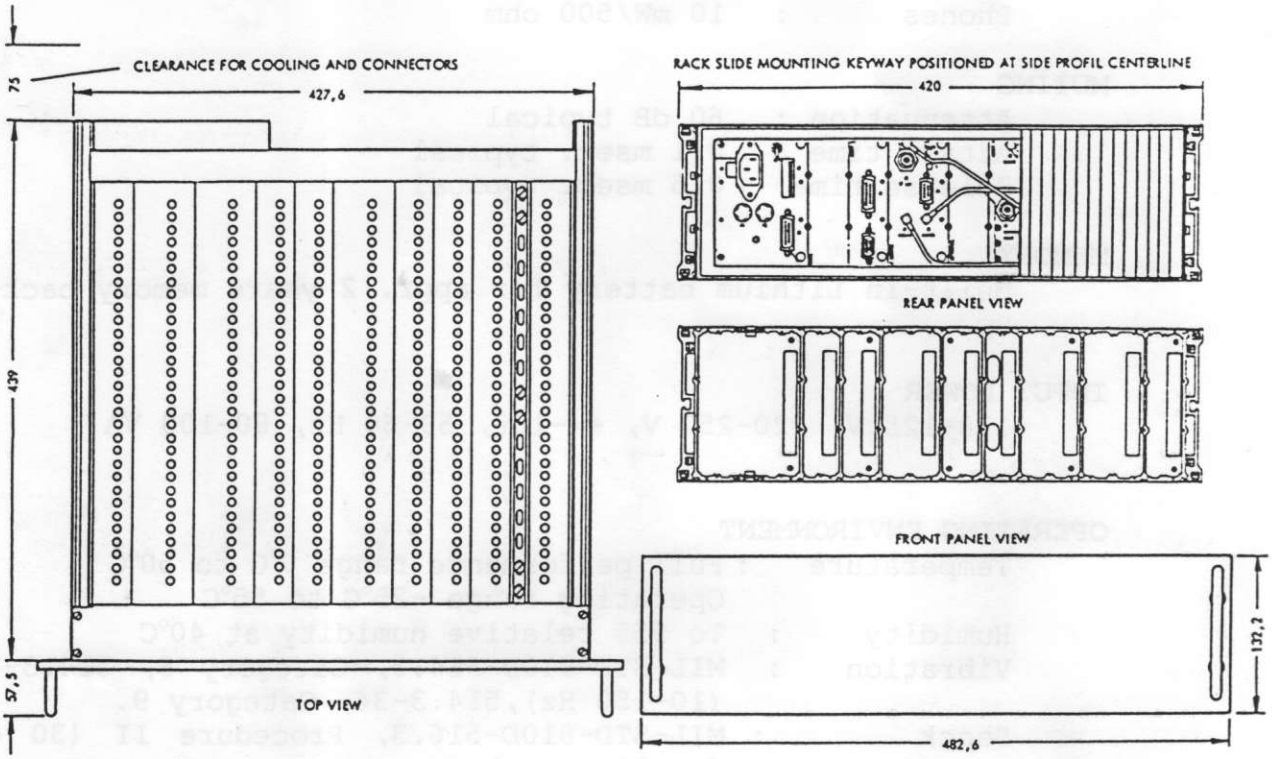
Temperature	:	Full performance range 0°C to 50°C Operating range -25°C to 55°C
Humidity	:	To 95% relative humidity at 40°C
Vibration	:	MIL-STD-810D-514.3, Category 8, 514.3-1 (10-150 Hz),514.3-34, Category 9.
Shock	:	MIL-STD-810D-516.3, Procedure II (30 g for 20 msec.).

WEIGHT

16 kg incl. cabinet of one portion

∴ Total unit 16+3 = 48 kg.

DIMENSIONS



Receiver Cabinet (optional)

Height:	159 mm
Width:	509 mm
Depth:	463 mm

1.8 Operational Features

FREQUENCY TUNING

Numerical frequency keyboard entry plus single knob tuning

99 user programmable channels including mode settings
176 pre-programmed CCIR-SSB channels
257 pre-programmed CCIR-RTTY channels

BFO TUNING

Numerical frequency keyboard entry plus single knob tuning.
Default values automatically recalled when selecting reception modes.

AGC SYNCHRONIZATION

The AGC control is synchronized with the mute command

AGC THRESHOLD CONTROL

Threshold continuously variable

USER PROGRAMMABLE CHANNELS

Number of channels	:	99
Channel information	:	Receive frequency, reception mode, bandwidth, AGC-setting, RF attenuator and BFO frequency
Data storage time	:	Greater than 2 years

PREPROGRAMMED CHANNELS

Number of channels	:	433

SCANNING

Scanning of frequency bands, user programmed channels, CCIR channels and user designed scanning programs

Scan mode	:	Automatically or manually by tune knob
Scan time	:	0.1 to 99.5 sec.
Dwell time	:	0.1 to 99.5 sec.
Scan control	:	By built-in programmable timer or by scan stop (remote or manual) and AGC level

DIMMER CONTROL

Continuously variable

AUTO RESTART
Retention of receiver settings during power failure

USER CREATED SCAN PROGRAMS
Number of programs : 49
Number of programing steps : 6

USER PROGRAMMABLE TIMER
Number of date and clock alarms : 24

1.9 User Programmable Features

The receiver is equipped with extended user programmable features such as:

- 99 addressable user programmable channels that allow the operator to store and recall complete receiver settings.
- 24 addressable date and clock alarms with programmable scanning, muting, demuting, recall UPC or recall PPC.
- 49 user defined scanning programs each containing up to 6 command : Recall UPC, recall PPC, scanning UPC, scanning PPC or frequency sweep, with selectable scan/dwell time.
- a 24 hours' clock with battery back-up.

All these channels, clock alarms and scanning programs are stored in CMOS memory that maintain their content even though the receiver is turned off or disconnected from power sources.

When the receiver is turned on, it will restart at the last receiver settings before the power was turned off.

1.10 Specification of Options

1.10.1 Remote Control Modules

1.10.1.1 Remote Interface A9 Assy BR490598

Technical Specifications

Baudrate : 75/150/300/600/1200/2400/4800/9600 bps.

Interface Standards:
1) CCITT V24/EIA-232C
2) RS422 compatible
3) RS485 compatible

Line Output : Balanced 600 ohm/0 dBm adjustable

Connection : Sub-D female, 25 poles.

1.10.2 Programmable RTTY Demodulator A6 Assy 210811-001

Technical Specifications

External audio input: Balanced input, 600 ohm
level 0, -10 or -20 dBm strappable

Center frequency : 1700 , 2000 Hz programmable

Keying speed : 50, 75, 100, 150, 200, 300, 600 Baud programmable

Deviation : +/-42.5 Hz (max 75Bd), +/-85 Hz (max 150Bd), +/-250 Hz (max 300Bd) or +/-425 Hz programmable

Demodulator output ON/OFF and INVERT : programmable

RS232/ V28 port (J1): 25 pole D-conn.
RS232C data and control signals
5 Volt and +/-12 Volt outputs

Current loop output (J2):
9 pole D-conn.
40, 60, 80 or 120 Volt / 20 or 40 mA, strappable

Diversity input/output (J3/J4):
SMB connector
Two demodulators can be interconnected to perform predetection diversity combining.

1.10.3 Frequency Generator Standards

1.10.3.1 Frequency Generator Standard A2 Assy BR488232

Technical Specifications

OCXO with 5.12 MHz internal Standard Oscillator output.
Level: -7dBm/50 ohm

1.10.3.2 Frequency Generator Standard A2 Assy BR448184

Technical Specifications

TCXO instead of OCXO.

1.10.3.3 Frequency Generator Standard A2 Assy BR492817

Technical Specifications

Internal Standard	:	OCXO
External Input	:	BNC female connector. 1, 5 or 10 MHz (strappable)/ 0 to +20 dBm/50 ohm

Int./ext. Switch: Manual toggle switch on rear plate.

1.10.3.4 Frequency Generator Standard A2 Assy BR493902

Technical Specifications

As 1.10.3.3 but with TCXO instead of OCXO.

1.10.4 Frequency Synthesizer

Frequency Synthesizer A1 Assy BR498629

Technical Specifications

Frequency Tune time:	Less than 5 msec. Less than 1 msec. within defined 1 Mhz band.
Phase jitter:	< 1.5° RMS within 1 Hz to 6 kHz.

1.10.5 IF Modules

1.10.5.1 Independent Sideband A7 Assy BR489919

Technical Specifications

The module enables the following reception modes :
B8E, B9E, B9W, J7B

Outputs :

Line 1:	Adjustable up to +10 dBm/600 ohm/Balanced
	Return loss better than 20 dB
Line 2:	As Line 1
Telex :	0 dBm/600 ohm/Balanced
	Return loss better than 20 dB.
IF:	1.4 MHz, -20 dBm/50 ohm
BW:	Up to 3400 Hz per sideband.

1.10.5.2 Single Sideband A7 Assy BR494070

As 1.10.4.1 but for single sideband and without Line 2 and Telex output.

1.10.5.3 Independent Sideband A7 Assy BR498599

As 1.10.4.1 but for 6000 Hz bandwidth per sideband.

1.10.6 IF SELECTIVITIES

Crystal Filter Option 01, 3400 Hz ISB
Part no BR489921 + BR489204

SSB/USB, ISB/USB:
Passband ripple < 2dB
Passband ripple < 1dB within +575 to +2910 Hz
Relative att. < 3dB within +300 to +3400 Hz
Stopband att. > 60dB at -450 and +4150 Hz
Group delay distortion < 0.5 msec. within +575 to +2910 Hz
Fc at IF output: 1400.000 kHz

SSB/LSB, ISB/LSB:
Passband ripple < 2dB
Passband ripple < 1dB within -575 to -2910 Hz
Relative att. < 3dB within -300 to -3400 Hz
Stopband att. > 60dB at +450 and -4150 Hz

Group delay distortion < 0.5 msec. within -575 to -2910 Hz
Fc at IF output: 1400.000 kHz

Wide:
-3dB at +/-3.75 kHz, -60dB at +/-8.5 kHz

Group delay distortion < 0.2 msec. within +/-3 kHz
Fo at IF output: 1400.000 kHz

Inter:
-3dB at +/-1.5 kHz, -60dB at +/-2.3 kHz
Group delay distortion < 0.5 msec. within +/-1.1 kHz
Fo at IF output: 1401.850 kHz

Narrow:
-3dB at +/-0.5 kHz, -60dB at +/-1.0 kHz
Group delay distortion < 1 msec. within +/-400 Hz
Fo at IF output: 1401.700 kHz

Very Narrow:
-3dB at +/-150 Hz, -60dB at +/-600 Hz
Group delay distortion < 2 msec. within +/-100 Hz
Fo at IF output: 1401.700 kHz

Crystal Filter Option 02, 3400 Hz SSB
Part no BR489921

SSB/USB:
Passband ripple < 2dB
Passband ripple < 1dB within +790 to +2910 Hz
Relative att.   < 3dB within +300 to +3400 Hz
Stopband att.   > 60dB at -450 and +4150 Hz
Group delay distortion < 0.5 msec. within +790 to +2910 Hz
Fc at IF output: 1403.700 kHz

SSB/LSB:
Passband ripple < 2dB
Passband ripple < 1dB within -575 to -2910 Hz
Relative att.   < 3dB within -300 to -3400 Hz
Stopband att.   > 60dB at +450 and -4150 Hz
Group delay distortion < 0.5 msec. within -575 to -2910 Hz
Fc at IF output: 1400.000 kHz

Wide:
-3dB at +/-3.75 kHz, -60dB at +/-8.5 kHz
Group delay distortion < 0.2 msec. within +/-3 kHz
Fo at IF output: 1400.000 kHz

Inter:
-3dB at +/-1.5 kHz, -60dB at +/-2.3 kHz
Group delay distortion < 0.5 msec. within +/-1.1 kHz
Fo at IF output: 1401.850 kHz

Narrow:
-3dB at +/-0.5 kHz, -60dB at 1.0 kHz

Group delay distortion < 1 msec. within +/-400 Hz

Fo at IF output: 1401.700 kHz

Very Narrow:
-3dB at +/-150 Hz, -60dB at +/-600 Hz
Group delay distortion < 2 msec. within +/-100 Hz
Fo at IF output: 1401.700 kHz

Crystal Filter Option 03, 3000 Hz ISB
Part no BR494151 + BR489247

SSB/USB, ISB/USB:
Passband ripple < 2dB
Relative att. < 3dB within +300 to +3000 Hz
Stopband att. > 60dB at -300 and +4400 Hz
Group delay distortion < 0.6 msec. within +700 to +2800 Hz
Fc at IF output: 1400.000 kHz
SSB/LSB, ISB/LSB:
Passband ripple < 2dB
Relative att. < 3dB within -300 to -3000 Hz
Stopband att. > 60dB at +300 and -4400 Hz
Group delay distortion < 0.6 msec. within -700 to -2800 Hz
Fc at IF output: 1400.000 kHz

Wide:
-6dB at +/-2.7 kHz, -60dB at +/-12.5 kHz
Fo at IF output: 1400.000 kHz

Inter:
-3dB at +/-1.1 kHz, -60dB at +/-2.8 kHz
Fo at IF output: 1401.650 kHz

Narrow:
-6dB at +/-0.5 kHz, -60dB at +/-2.5 kHz
Fo at IF output: 1401.700 kHz

Very Narrow:
-6dB at +/-150 Hz, -60dB at +/-1000 Hz
Fo at IF output: 1401.700 kHz

Crystal Filter Option 04, 3000 Hz SSB
Part no BR494151

SSB/USB:
Passband ripple < 2dB
Relative att. < 3dB within +300 to +3000 Hz
Stopband att. > 60dB at -1100 and +4400 Hz
Group delay distortion < 0.6 msec. within +700 to +2600 Hz
Fc at IF output: 1403.300 kHz

SSB/LSB:
Passband ripple < 2dB

Relative att. < 3dB within -300 to -3000 Hz
Stopband att. > 60dB at +300 and -4400 Hz
Group delay distortion < 0.6 msec. within -700 to -2800 Hz
Fc at IF output: 1400.000 kHz

Wide:
-6dB at +/-2.7 kHz, -60dB at +/-12.5 kHz
Fo at IF output: 1400.000 kHz

Inter:
-3dB at +/-1.1 kHz, -60dB at +/-2.8 kHz
Fo at IF output: 1401.650 kHz

Narrow:
-6dB at +/-0.5 kHz, -60dB at +/-2.5 kHz
Fo at IF output: 1401.700 kHz

Very Narrow:
-6dB at +/-150 Hz, -60dB at +/-1000 Hz
Fo at IF output: 1401.700 kHz

Crystal Filter Option 05, 2700 Hz ISB
Part no BR494178 + BR454052

SSB/USB, ISB/USB:
Passband ripple < 2dB
Relative att. < 6dB within +350 to +2700 Hz
Stopband att. > 60dB at -500 and +3700 Hz
Fc at IF output: 1400.000 kHz

SSB/LSB, ISB/LSB:
Passband ripple < 2dB
Relative att. < 6dB within -350 to -2700 Hz
Stopband att. > 60dB at +500 and -3700 Hz
Fc at IF output: 1400.000 kHz

Wide:
-6dB at +/-2.7 kHz, -60dB at +/-12.5 kHz
Fo at IF output: 1400.000 kHz

Inter:
-6dB at +/-1.1 kHz, -60dB at +/-2.2 kHz
Fo at IF output: 1401.525 kHz

Narrow:
-6dB at +/-0.5 kHz, -60dB at +/-2.5 kHz
Fo at IF output: 1401.700 kHz

Very Narrow:
-6dB at +/-150 Hz, -60dB at +/-1000 Hz
Fo at IF output: 1401.700 kHz

Crystal Filter Option 06, 2700 Hz SSB
Part no BR494178

SSB/USB:
Passband ripple < 2dB
Relative att. < 6dB within +350 to +2700 Hz
Stopband att. > 60dB at -500 and +3700 Hz
Fc at IF output: 1403.050 kHz

SSB/LSB:
Passband ripple < 2dB
Relative att. < 6dB within -350 to -2700 Hz
Stopband att. > 60dB at +500 and -3700 Hz
Fc at IF output: 1400.000 kHz

Wide:
-6dB at +/-2.7 kHz, -60dB at +/-12.5 kHz
Fo at IF output: 1400.000 kHz

Inter:
-6dB at +/-1.1 kHz, -60dB at +/-2.2 kHz
Fo at IF output: 1401.525 kHz

Narrow:
-6dB at +/-0.5 kHz, -60dB at +/-2.5 kHz
Fo at IF output: 1401.700 kHz

Very Narrow:
-6dB at +/-150 Hz, -60dB at +/-1000 Hz
Fo at IF output: 1401.700 kHz

Crystal Filter Option 07, 2700 Hz SSB
Part no BR488305

SSB/USB:
Passband ripple < 2dB
Relative att. < 6dB within +350 to +2700 Hz
Stopband att. > 60dB at -400 and +3700 Hz
Fc at IF output: 1400.000 kHz

SSB/LSB:
Passband ripple < 2dB
Relative att. < 6dB within -350 to -2700 Hz
Stopband att. > 60dB at +650 and -3450 Hz
Fc at IF output: 1396.950 kHz

Wide:
-6dB at +/-2.7 kHz, -60dB at +/-10 kHz
Fo at IF output: 1400.000 kHz

Inter:
-6dB at +/-1.1 kHz, -60dB at +/-2.2 kHz
Fo at IF output: 1401.525 kHz

Narrow:
-6dB at +/-0.5 kHz, -60dB at +/-1.8 kHz
Fo at IF output: 1400.000 kHz

Very Narrow:
-6dB at +/-150 Hz, -60dB at +/-1000 Hz
Fo at IF output: 1400.000 kHz

Crystal Filter Option 08, 6000 Hz ISB
Part no BR498646 + BR497185

SSB/USB, ISB/USB:
Passband ripple < 2dB
Relative att. < 3dB within +300 to +6000 Hz
Stopband att. > 60dB at -300 and +7700 Hz
Fc at IF output: 1400.000 kHz

SSB/LSB, ISB/LSB:
Passband ripple < 2dB
Relative att. < 6dB within -300 to -6000 Hz
Stopband att. > 60dB at +300 and -7700 Hz
Fc at IF output: 1400.000 kHz

Wide:
-3dB at +/-2.8 kHz, -60dB at +/-4.6 kHz
Fo at IF output: 1403.150 kHz

Inter:
-6dB at +/-1.1 kHz, -60dB at +/-2.2 kHz
Fo at IF output: 1401.525 kHz

Narrow:
-6dB at +/-0.5 kHz, -60dB at +/-2.5 kHz
Fo at IF output: 1401.700 kHz

Very Narrow:
-6dB at +/-150 Hz, -60dB at +/-1000 Hz
Fo at IF output: 1401.700 kHz

SECTION 2
INSTALLATION

2.1 Introduction

This section of the manual provides installation instructions for the RX4010 communication receiver. It also includes information about initial inspection and damage claims, preparation for use and repackaging for shipment information.

2.2 Initial Inspection

WARNING

To avoid hazardous electrical shock, do not perform electrical tests when there are signs of shipping damage to any portion of the front or rear panel or outer covers. Read the safety summary at the front of this manual before installing or operating the receiver.

Inspect the shipping container for damage. If the shipping container or cushioning material is damaged, it should be kept until the contents of the shipment have been checked for completeness and the receiver has been checked mechanically and electrically. If the contents are incomplete, if there is a mechanical damage or defect, or if the receiver does not pass the performance tests, notify the nearest Dansk Radio Comm. ApS agent. If the shipping container is damaged, or if the cushioning material shows signs of stress, notify the carrier as well as the Dansk Radio Comm. ApS agent.

A full report of the damage should also be forwarded to Dansk Radio Comm. ApS.
Include the following:

- Order number
- Model and serial number
- Name of transportation agency

2.3 Storage

The receiver may be stored or shipped in temperatures within the limits -40°C to +75°C. It is advisable to protect the receiver from extreme temperature variation which can cause excessive condensation.

2.4 Repackaging for shipment

The shipping container for the RX4010 has been carefully designed to protect the receiver and its accessories during shipment. This container and its associated packing material should be used when recapping for shipment. If shipping to Dansk Radio Comm. ApS for service is planned, attach a tag indicating the type of service required, return address, model number and full serial number. Mark the container FRAGILE to ensure careful handling.

If the original shipping container is not available, the following general instructions should be used for repackaging with commercially available materials:

- Wrap the receiver in heavy paper or plastic. If shipping to Dansk Radio Comm. ApS for service, attach a tag indicating the type of service required, return address, model number and full serial number.

- Use a strong shipping container, e.g. a double walled carton of 160 kg. test material.

- Protect the control panel with cardboard and insert a 7 to 10 cm layer of shock absorbing material between all surfaces of the equipment and the sides of the container.

- Seal the shipping container securely.

- Mark the shipping container FRAGILE to ensure careful handling.

2.5 Mounting information

The receiver may be conveniently mounted in a standard 19 inch rack using a pair of rack slides or chassis angles appropriate for the rack system.

The receiver in the rack mounted configuration requires a standard panel space 5.25 inches high.

The receiver may also be mounted in a cabinet for bench operation, part no. 210911-001. The cabinet is designed to be mounted on a table or on a shelf, fastened to the support by means of four bolts.

When operating the receiver, provide at least 75 mm of clearance at the rear and at least 7 mm on all sides of the receiver. Failure to allow adequate air circulation will result in excessive internal temperature, reducing receiver reliability.

2.6 Power Requirements

115/230V, +6%/-15%, 50-60 Hz.

CAUTION

The receiver is normally set at the factory for 230 Vac.

The selection of 115 volt nominal mains voltage is made by changing connections on A10A2 on the power supply assembly A10. To change the mains voltage setting, proceed as follows:
(refer to Fig. 2.1 and Fig. 2.20).

a. Disconnect the input power cord from the receiver.

b. Disconnect the regulation transistor cable from A10J2 and remove the power supply heat sink panel by removing the four retaining screws at the rear end of the receiver side profiles.

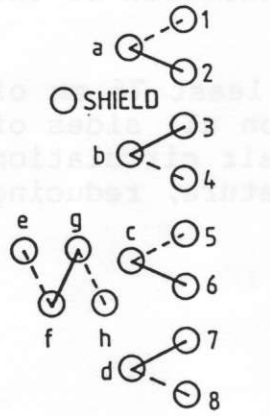
c. Remove the eight screws positioned at the edge of the Power supply rear panel A10 and withdraw the power supply assembly.

d. Change connections on A10A2 as appropriate in accordance with Figure 2.1.1.

e. Reposition the power supply assembly in the receiver.

f. Reposition the power supply heat sink panel and connect the regulation transistor cable to A10J2.

g. Connect the input power cord to the receiver.



Mains strapping 220V

Voltage	Straps
110V	e-f, g-h, a-2, b-3, c-6, d-7
115V	e-f, g-h, a-2, b-4, c-6, d-8
120V	e-f, g-h, a-1, b-3, c-5, d-7
125V	e-f, g-h, a-1, b-4, c-5, d-8
220V	f-g, a-2, b-3, c-6, d-7
225V	f-g, a-2, b-4, c-6, d-7
230V	f-g, a-2, b-4, c-6, d-8
235V	f-g, a-2, b-4, c-5, d-7
240V	f-g, a-1, b-3, c-5, d-7
245V	f-g, a-1, b-4, c-5, d-7
250V	f-g, a-1, b-4, c-5, d-8

Figure 2.1.1 AC version

2.7 Fuses

Table 2.1 Fuse Ratings

Fuse		Fuse Rating
Rear Panel	F1	1A T (230 V) 2A T (115 V)
" "	F2	1A T (230 V) 2A T (115 V)
On A10A2	F3	6.3A T
" "	F4	6.3A T
" "	F5	6.3A T

2.8 Power Cable

In accordance with international safety standards this receiver is equipped with a three terminal power connector. When connected with an appropriate power cable, the receiver cabinet should be grounded via the power connector centre tap.
If the power cable is terminated with a mains plug, this should only be inserted in a socket outlet provided with a protective earth contact. The protective action must not be negated by the use of a power cable without a protective conductor (grounding).

2.9 Inputs/Outputs

(For options that are not mentioned here, refer to chapter 4.)

2.9.1 Audio Input/Output A10J3

The audio input/output socket (refer to Figure 2.2.1 and 2.2.2) provides loudspeaker output and sidetone input (sidetone is used during simplex A1 keying).

2.9.1.1 Assembly BR471720

Sub-D, Female, 15 poles, Screwing lock

The audio input/output socket connections are as follows:

pin		
3	Sidetone input	100-500 mV/600 ohms
10	Sidetone GND	
6	Line output	
7	Line output centretap	600 ohms Balanced
8	Line output	
2	Line input	600 ohms Balanced
9	Line input	
11	Line GND	
14	Speaker output	4 W/4 ohms
13	Speaker GND	

Figure 2.2.1 Audio Input/Output Plug. Assembly BR471720.

Note that the line output will follow the monitored sideband in ISB modes. (As selected by the "mon" push-button on the front panel).

The appropriate cable connector may be ordered from Dansk Radio Comm. ApS. Part no. BR495980.

2.9.2 Line and Telex Output, A7J4

Sub-D, Male, 9 poles, Screwing lock.

The output plug (refer to Fig. 2.3) provides the balanced AF line outputs for auxiliary equipment. The line output level may be adjusted from the A7 rear

panel to a level between +10dBm and -20dBm/600 ohm. The Telex output has a level of 0 dBm/600 ohm.

pin		
1	GND	
6	Telex output	Balanced 600 ohms
2	Telex output	
7	Line 2 output	
3	Line 2 output centretab	Balanced 600 ohms
8	Line 2 output	
4	Line 1 output	
9	Line 1 output centretab	Balanced 600 ohms
5	Line 1 output	

(Note: Line 1 output and Telex output are for ISB versions only)

Figure 2.3 Line and Telex Outputs.

The appropriate cable connector may be ordered from Dansk Radio Comm. ApS. Part no. BR495999.

The signals available at the outputs are shown in Table 2.1.

Mode	Line 1	Telex	Line 2
SSB/USB	+	+	-
SSB/LSB	+	+	+
AM	+	+	+
RTTY	+	+	+
CW	+	+	+
ISB	USB	LSB	LSB
USB + RTTY	USB	RTTY	RTTY
LSB + RTTY	RTTY	RTTY	LSB

Table 2.1

("+" denotes signal present, "-" denotes no signal)
Note: In SSB versions Line 2 carries always the audio signal.

2.9.3 Control Input/Output, A8J1

Sub-D, Female, 15-poles, Screwing lock.

The control input/output socket (refer to Figure 2.4) provides the Mute input, the Scan stop input and an optional Duplex input.

The socket connections are as follows:

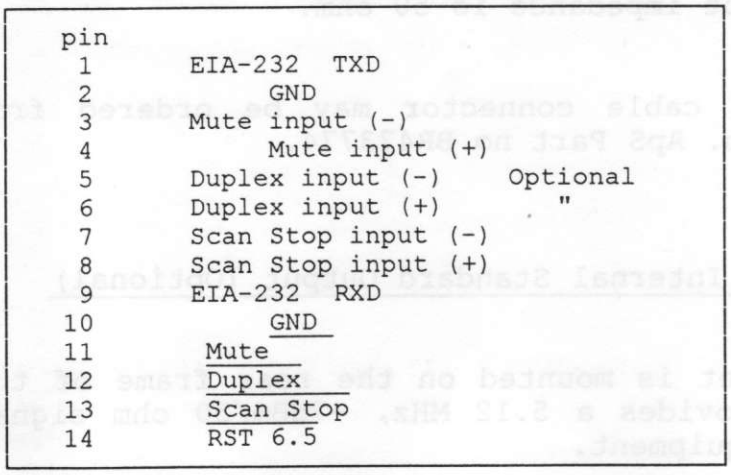


Figure 2.4 Control Input/Output Socket

Inputs pin 3 to pin 8 are floating, isolated and activated by 24Vdc/10mA positive logic.

Inputs pin 11 to pin 13 are active low, internal pulled up to 5 Volts. The inputs must be driven by an RS410 source only, capable to sink 5 mA.

Input pin 14 is active low, internal pulled up to 5 Volts. The input must be driven by a driver capable to sink 5 mA.

The appropriate cable connector may be ordered from Dansk Radio Comm. ApS. Part no. BR495980.

2.9.4 IF Output, A7J1

BNC, Female

The receiver is equipped with a 1.4 MHz IF output socket (BNC) providing a -20 dBm/50 ohm 2nd IF signal for auxiliary equipment (Refer to Figure 2.20). The output signal is bandwidth filtered in accordance with the receiver bandwidth setting. Dependable of Crystal Filter version the centre frequency may be offset from 1.4 MHz.

The appropriate cable connector may be ordered from Dansk Radio Comm. ApS Part no. BR473774.

2.9.5 Antenna Input, A4J1

BNC, Female.

The antenna input socket is protected against 100 V EMF/15 minutes burn-out.
The antenna input impedance is 50 ohm.

The appropriate cable connector may be ordered from Dansk Radio Comm. ApS Part no BR473774.

2.9.6 5.12 MHz Internal Standard Output (Optional)

BNC, Female.

The output socket is mounted on the rear frame of the receiver and provides a 5.12 MHz, -7dBm/50 ohm signal for auxiliary equipment.

2.9.7 Remote Control EIA-232/RS422/485 A9J1 (Optional)

Sub-D, Female, 25 poles, Screwing lock.

The connector provides data signals, mute input (EIA-232C voltage
level, positive logic) and a 0 dBm balanced line output adjustable by means of R12 located on the PCB.

The connections are as follows:

pin	circuit	description
1	GND	Protective GND
2	TXD	Transmitted data EIA-232
3	RXD	Received data EIA-232
4	RTS	Request to send EIA-232
5	CTS	Clear to send EIA-232
6	DSR	Data set ready EIA-232
7	GND	Signal GND
9	Line out	Balanced 600 ohm
10	Line out	"
11	MUTE	Receiver muting
18	TXD/A	Transmitted data RS422
19	TXD/B	Transmitted data RS422
23	RXD/TXD A	Received data RS422/Data RS485
24	RXD/TXD B	Received data RS422/Data RS485

Figure 2.5 Remote Control EIA-232/RS422/485

The appropriate cable connector may be ordered from Dansk Radio Comm. ApS
Part no. BR496014.

2.9.8 External Frequency Standard Input (Optional)

BNC, Female.

The input socket is mounted on the rear frame of the receiver and accepts 1, 5 or 10 MHz (strappable) input from external-frequency standards. The acceptable level is from 0 to +20 dBm/50 ohms.
A switch on the rear plate of the A2 assembly selects internal/
external frequency standard.

2.9.9 Open Collector Outputs A8J2

Sub-D, Female, 9-poles, Screwing lock.
The Connector provides an 8-bit Output port.

The connections are as follows:

pin	
1	OC1
2	OC2
3	OC3
4	OC4
5	OC5
6	OC6
7	OC7
8	OC8
9	GND

Figure 2.8 Open Collector Outputs.

The Outputs are open collectors max. 30V/40 mA.

The appropriate cable connector may be ordered from Dansk Radio Comm. ApS Part no. BR496006.

2.10 Strapping

In order to get a proper function of the receiver, it is necessary that some of the assemblies are strapped correctly.
Normally the receiver is delivered from the factory with the correct strapping. If a module is exchanged, the strapping should be checked.

Strapping of the A7 assembly and the A8 Assembly are covered in the circuit description of the assemblies. See diagram section.
Strapping of the Power Supply is covered in the beginning of this section. Strapping of other assemblies than above mentioned are covered in Section 4, OPTIONS and Section 5, REMOTE CONTROL.

2.11 Installation Check-out

When the installation is complete, refer to section 3 (OPERATION) and fully check the operation of the receiver.

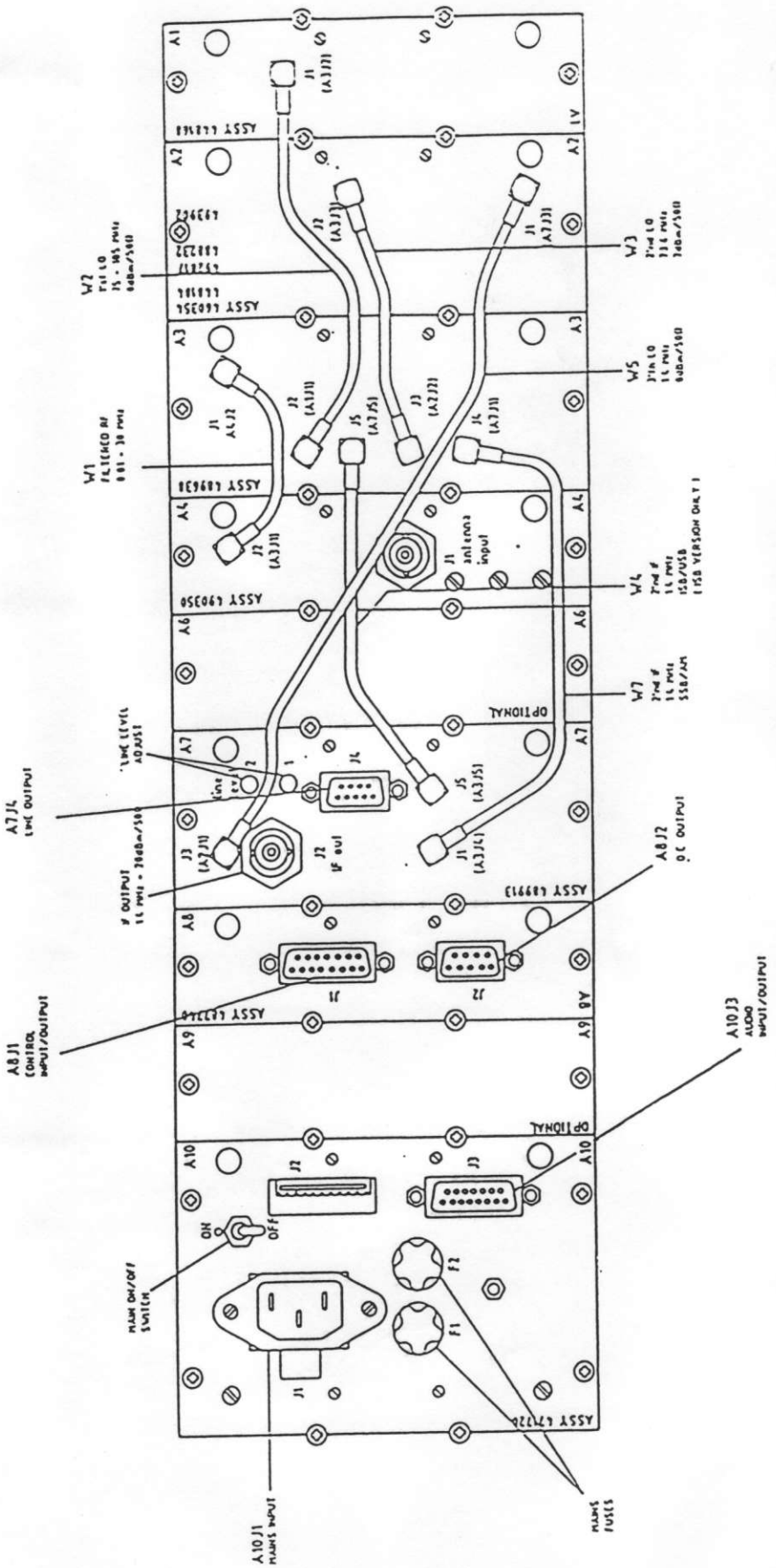


Figure 2.20 Rear Panel View

12 REGISTER group. These keys are used for storing and recalling of user-programmed receiver settings. The recall key is also used for selection of international communication channels.

13 MONITOR connects the speaker to LSB or USB in ISB mode.

14 PHONES output. Connection for head phones. Disconnects the internal speaker.

15 DIMMER/POWER control. Used for control of the light intensity in the front panel indicators. In the OFF position, power is only applied to the oven (optional) and to part of the power supply circuits.

16 LOCAL key. Used to bring the receiver in local mode when operated in a remote system.

17 TUNE key. Enables/disables free tuning by the control knob.

18 BFO key. Enables/disables the BFO control mode.

19 PROGRAM key. Key for entering the program mode.

20 TUNING control. Used for free-tuning of the receiving frequency and the BFO frequency.

21 LOUDSPEAKER

22 RF-GAIN/SQUELCH control. Used during AGC "off" manually to adjust the intermediate frequency gain.

23 AF-GAIN control. Manual adjustment of the audio frequency gain.

24 NOTCH-TUNE control. Manual adjustment of an audio frequency notch filter, tunable in the range 300 Hz to 3400 Hz. Used to attenuate undesired interfering signals in the audio output.

25 LOUDSPEAKER ON/OFF switch mounted on bottom of frontpanel.

3.6 Frequency Selection

The frequency resolution can be selected by pressing (.) to 1 kHz, 100 Hz or 10 Hz an appropriate number of times.

3.6.1 Clear Display

Pressing the (C) key, clears the display to zero. This key is useful when an error is made while entering data.

3.6.2 Keyed Tuning

Key in the desired frequency by pressing numbers in sequence, just as they are written on a piece of paper.
The display immediately shows the number sequence in right entry display format, i.e. the numbers appear in the rightmost display character and are shifted left, one character on each number entry.
The decimal point must be keyed if it is part of the number (unless it has to be right of the last frequency digit in kHz).
For example to key in 7501.65 kHz, simply press the following keys in sequence:

Press	Display
C	0.00
7	7.00
5	75.00
0	750.00
1	7501.00
.	7501.00
6	7501.60
5	7501.65

3.6.3 Free Tuning

The tuning control is activated by pressing (tune) .By rotating the tuning knob the receiving frequency is varied in continuous steps.
Pressing (tune) the second time disables the free tuning.

3.6.4 BFO Control

The BFO-frequency is entered and displayed with 3-digit resolution on the left display . The frequency can be entered from the keyboard and/or tuned by the tuning control knob.

To enter the BFO-frequency from the keyboard:
- Press (BFO)
- Press (0) to select the proper signal (+/-)
- Press the number keys of the applicable BFO-frequency, entering the decimal point in the proper place.

To adjust the BFO-frequency by the frequency tuning knob:
- Press (BFO)
- adjust the BFO-frequency by means of the tuning knob.

Pressing (BFO) the second time disables the BFO-control.
Not active in AM mode.

3.7 Mode Selection

The receiver has a number of function keys that allow the operator to select operating modes.

NOTE

A lighted indicator above any key denotes it as an active entry. For example, if the "wide" key indicator is on, it is not necessary to press that key if this is the desired bandwidth.

The receiver can operate in six modes:
AM, SSB, CW, RTTY and optionally: ISB, SSB+RTTY and FM.
The proper mode is selected by pressing one or two keys labelled
(AM) , (SSB) , (CW) , (RTTY) ,
(SSB) + (AM) (ISB), (SSB) + (RTTY) , (RTTY) + (CW) (FM)
After pressing (SSB) the USB mode is selected.
LSB is selected by pressing (SSB) once more.
After pressing (SSB) + (AM) = ISB the speaker is connected to USB, indicated by AF1-led. Press (mon) to switch to LSB, indicated by AF2-led.
Before pressing (SSB) + (RTTY) the SSB sideband is selected by pressing (SSB) once or twice. The USB-led or LSB-led indicate the SSB sideband. The (mon) key connects speaker to USB or LSB, indicated by AF1-led or AF2-led.

Pressing a mode key automatically selects default values for secondary control keys. However, these default settings can be altered by the operator by manual entry after the mode selection.

The following default settings are used:

Mode	AGC	Bandwidth	BFO	Monitor
AM	slow	wide	----	---
SSB	slow	----	0.00	---
CW	slow	narr	0.80	---
RTTY	fast	narr	1.70	---
ISB	slow	----	0.00	USB(=AF1)
SSB+RTTY (SSB=USB)	slow	narr	0.00	USB(=AF1)
SSB+RTTY (SSB=LSB)	slow	inter	0.00	LSB(=AF2)
FM	slow	----	----	---

3.7.1 AM and FM (optional) Operation

- Key in the desired frequency
- Press the (AM) key for AM reception
- Press (RTTY) + (CW) keys for FM reception
- Adjust AF-GAIN for convenient volume

3.7.2 SSB, CW and RTTY Operation

- Key in the desired frequency
- Press (SSB) ((USB)), (CW) or (RTTY)
- Adjust AF-GAIN for a convenient volume
- For LSB press (SSB) twice

3.7.3 ISB (optional) operation

- Key in the desired frequency.
- Press (SSB) + (AM)
- Adjust AF-GAIN for a convenient volume.
- Use (mon) key to connect the speaker to LSB(AF2) or USB(AF1).

3.7.4 SSB+RTTY (optional) operation

- Key in the desired frequency.
- Select SSB sideband with (SSB) key
- Press (SSB) + (RTTY)
- Adjust AF-GAIN for a convenient volume.
- Use (mon) key to connect the speaker to LSB(AF2) or USB(AF1).

3.7.5 AGC control

The AGC keys control the AGC time constants. Press any of the keys labelled (off), (slow) or (fast) to select the desired mode.
In the AGC "off" mode the gain can be adjusted by means of the RF-GAIN control knob.

NOTE

The MODE keys will affect the time constants of the AGC-circuit. The AGC control keys are used for supplementary control of the AGC time constants. For further information refer to the receiver specifications.
In AM and FM mode you can't change the AGC time constant.

3.7.6 AGC Threshold Control

The AGC threshold control may be activated when the receiver is operated in either of the two automatic gain control modes, i.e. "slow" and "fast".

- Press the key labelled (slow) or (fast) to select the desired AGC time constants.
- Press the active AGC key again to enter the threshold mode. (Not active in AM and FM mode).

3.7.7 Attenuator Control

The Antenna Attenuator is controlled by the (att) key.

3.7.8 Bandwidth Control

The bandwidth keys (wide) , (inter) , (narr) and (vnar) select the IF bandwidth of the receiver. These keys can only be used in the AM, RTTY, CW and SSB(USB)+RTTY receiver modes, and will not respond to commands when the receiver is operated in SSB, ISB , SSB(LSB)+RTTY and FM mode. In SSB(USB)+RTTY wide bandwidth is disabled and it is the RTTY bandwith which is selectable.

3.7.9 RTTY Operation (Optional)

The RTTY-demodulator can be installed in either RX4010 or RC4010. When the RTTY button is activated once, the receiver will enter the RTTY mode and a frequency setup can be entered.

At a second activation of the RTTY button the display of the unit where the demodulator is installed, will show:

---

where the lower and upper segments represent mark/space levels.

Depending on the level, few or many segments will be lit. To ensure proper reception, the two rows must be equal and this can be done by tuning. When a signal is present, the demodulator will be activated and start up the telex printer.

3.8 User Programmable Channels

The receiver contains 99 addressable user programmable channels (UPC) which allow the operator manually to store and recall complete receiver settings.
A complete receiver setting includes reception mode, frequency, AGC mode, bandwidth, BFO and attenuation.

3.8.1 Store a User Programmable Channel.

To store a complete receiver setting

- Press (sto)
- Display will show first free channel no *.
  Example: 'sto FrEE 14' channel no. 14 is first free channel.
  (* if no free channel exists the display shows 'OCCUP.')
- Press (sto) to store at the shown channel number.
- Enter the number of the applicable channel (00-99), if you don't want to store at the shown channel number.

The channel number is shown in left display, frequency in right display. The channel number is shown until receiver mode, frequency, AGC mode, bandwidth, BFO or attenuation are changed. When returning to the last stored or recalled setup, the channel number will be shown again.
To delete a channel store the frequency 0.00 KHz in the channel.

3.8.2 Recall a User Programmable Channel.

- Press (rcl)
- Press (1) to select the UPC
- Enter the applicable channel number (00 through 99)

The channel number is shown in left display, frequency in right display. The channel number is shown until receiver mode, frequency, AGC mode, bandwidth, BFO and attenuation are changed.

When returning to the last stored or recalled setup, the channel number will be shown again.
The error message: 'not. dEF.' indicates that the channel is empty.

3.8.3 Channel 00

The channel 00 always contains the present receiver setting except any free tuned frequency offset.

After a free tuning sequence, simply press
(rcl) (1) (0) (0) to restore the original frequency setting.

If after a re-adjustment the operator wants to update the receiver setting to reflect the current receiving frequency, he should press
(sto) (0) (0) (.)

3.9 Preprogrammed Channels.

The receiver contains information on all CCIR recommended frequencies as 433 preprogrammed channels (PPC) for

- Voice duplex communication in the coaststation bands 4, 6, 8, 12, 16 and 22 MHz
- Telex communication in the coaststation bands 4, 6, 8, 12, 16 and 22 MHz

When preprogrammed channels are selected, the receiver will automatically generate all settings for that particular channel.

The preprogrammed channels are stored in non-volatile memory and it is not possible to change these channels unless done by the factory.

3.9.1 Recall a Preprogrammed Channel.

To recall a preprogrammed channel

- Press (rcl)
- Press (2) to select the PPC
- Press (SSB) or (RTTY) once to select the reception mode (see 3.7.2)
- Enter the desired frequency band (4, 6, 8, 12, 16 or 22)
- Enter the desired channel number

Illegal band and channel selection is ignored by the receiver.

3.9.2 International Calling Channels.
To select an international channel, press the (.) decimalpoint instead of the channel number.

3.10 The SCAN Function
The receiver is equipped with a manual and an automatic scanning function that allows scanning in the following modes:

- Scanning of User Programmable Channels (UPC).
- Scanning of PreProgrammed Channels (PPC).
- Scanning of up to 10 scan programs.
- Scanning of frequency bands.

To initiate the scan function press the (scan) key.
Display shows: "Scn. Cont." if last scanning can be continued or
"Scn. UPC"
Scrolling between the different mode is accomplished, by using "forward arrow" key and "back arrow" key:

Scn. Cont. (scanning continue), Scn. UPC (scanning UPC), Scn. PPC (scanning PPC), Scn. ProG. (scanning scan programs), Scn. Fr. (scanning frequency bands).

The wanted mode is selected by the (enter) key.

Press (rtn) to leave the scan set-up mode.

3.10.1 Scanning continued (Scn Cont).
The last scanning will be continued from the point where it was interrupted.

3.10.2 Scanning of UPC.
After selecting this mode the display shows "Lo. Chn."

The low UPC channel number is entered by the numeric keyboard and accepted by the (enter) key.

The display will then show "Hi. Chn."

The high UPC channel number is entered by the numeric keyboard and accepted by the (enter) key.

Display shows "Scn. ti."

The scanning time (the time the receiver will stay on each channel) is entered by the numeric keyboard. The time should be in step of 0.5 sec. The (C) key selects 0.1 sec. scanning time. Accept with the (enter) key.

Now the scanning is started.

Error message : "Err. Chn." High channel < low channel

Example : scan from UPC channel 2 to 6, scan time 3.5.

keystrokes	display
	12345.60
scan	Scn. UPC
enter	Lo. Chn.
2	Lo. Chn. 2
enter	Hi. Chn.
6	Hi. Chn. 6
enter	Scn. ti.
3	Scn. ti. 3
.	Scn. ti. 3.
5	Scn. ti. 3.5
enter	

3.10.3 Scanning of PPC.

After selecting this mode the display shows "tyP. OF rcPt." (Type of reception).

Press SSB or rtty key to select the mode.

The display then shows "bAnd", after which the band number should be entered by the numeric keyboard and accepted by the enter key.

The display shows "Lo. Chn.". Then the low PPC channel is entered by the numeric keyboard and accepted by the enter key.

The display shows "Hi. Chn.". The high PPC channel is entered and accepted by the enter key.

Then the display shows "Scn. ti.". The scanning time should be selected in steps of 0.5 sec. except from 0.1 sec. scanning time where "0.1" should be keyed in. The enter key accepts the entry.

Now the scanning has started.

Error message : "Err. Chn." Illegal channel number or
high channel < low channel.
"Err. bAnd" Illegal band number.

Example: scan PPC ssb band 4 channel 2 to 5, scan time 0.1 sec.

keystrokes	display
	12345.60
scan	Scn. UPC
-->	Scn. PPC
enter	tyP. OF rcPt.
SSB	bAnd
4	bAnd 4
enter	Lo. Chn.
2	Lo. Chn. 2
enter	Hi. Chn.
5	Hi. Chn. 5
enter	Scn. ti.
.	Scn. ti. 0.
1	Scn. ti. 0.1
enter	

3.10.4 Scanning of scan-programs.

After selecting this mode the display shows "PrG. no.".

Enter the scan-program number by the numeric keyboard and accept with (enter) key.

Enter up to 10 scan-program numbers in this way.

To start scanning press (enter) twice.

If the last scanning has been a program scanning, this mode will show the number of the entered program. A program number can be deleted by pressing (C) or changed by using the numeric keyboard.

Example: scan scan-program no. 3, 5, 2

keystrokes	display
	12345.60
scan	Scn. UPC
-->	Scn. PPC
-->	Scn. PrG.
enter	PrG. no.
3	PrG. no. 3
enter	PrG. no.
5	PrG. no. 5
enter	PrG. no.
2	PrG. no. 2
enter	PrG. no.
enter	

Example: Delete scan-prog. no. 5 and scan only scan-programs 3 and 2.

keystrokes	display
	12345.60
scan	Scn. cont.
-->	Scn. UPC
-->	Scn. PPC
-->	Scn. PrG.
enter	PrG. no. 3
enter	PrG. no. 5
C	PrG. no.
enter	PrG. no. 2
enter	PrG. no.
enter	

3.10.5 Scanning of frequency bands.

After selecting this mode the display will show "Lo."

After the low frequency (start frequency) is entered by the numeric keyboard and accepted by the enter key, the display shows "Hi.".

Then the high frequency (stop frequency) is entered by the numeric keyboard and accepted by the enter key.

Display shows "StP." after which the step frequency is entered by the numeric keyboard (max. step frequency 9999.99 kHz) and accepted by the enter key.

Then the display shows "Scn. ti.". The selected scanning time should be in steps of 0.5 sec. except from 0.1 sec. scanning time, where "0.1" should be keyed in. The entry is accepted by the enter key.

Now the scanning has started.

Example: scan 1000 kHz - 2000 kHz in steps of 100 kHz, with scan time 84 sec.

keystrokes	display
	12345.60
scan	Scn. UPC
-->	Scn. PPC
-->	Scn. PrG.
-->	Scn. Fr.
enter	Lo.
1	Lo. 1.00
0	Lo. 10.00
0	Lo. 100.00
0	Lo. 1000.00
enter	Hi.

2	Hi.	2.00
0	Hi.	20.00
0	Hi.	200.00
0	Hi.	2000.00
enter	StP.	
1	StP.	1.00
0	StP.	10.00
0	StP.	100.00
enter	Scn.	ti.
8	Scn.	ti. 8
4	Scn.	ti. 84
enter		

3.10.6 Change scan/dwell time.

Press (.) to change scan/dwell time.

The display shows "Scn. ti. xx.x" (xx.x = last entered scan time)

Enter the scanning time by the numeric keyboard. The time should be in steps of 0.5 sec. except of 0.1 sec. scanning time which should be entered as "0.1". Accept by the (enter) key.

The scanning now continues.

When in threshold mode, it is the dwell time which is being changed.

Example: change scan time from 84 sec to 5 sec.

keystrokes	display	
	12345.60	
.	Scn.	ti. 84
5	Scn.	ti. 5
enter		

3.10.7 Scan threshold mode.

If the receiver is in scanning threshold mode it will stay for the scan time selected on channels with signal level below the threshold level. If signal level exceeds the threshold level, the receiver stay for the dwell time selected on the channel.

Press (slow) or (fast) key to select threshold mode.

Display shows "dll. ti. xx.x" (xx.x = last entered dwell time)

Enter dwell time by the numeric keyboard. The time should be in step of 0.5 sec. except from 0.1 sec. dwell time which should be entered as "0.1". Accept by the (enter) key.

Scan threshold mode is now selected.

Slow/fast led will flash to indicate threshold mode.

Change dwell time by pressing (.) (see section 3.10.6).

To leave threshold mode press (slow) or (fast) key.

Example: select threshold mode, fast agc and dwell time 10 sec.

keystrokes	display
	12345.60
(fast)	dll. ti. 0.1
(1)	dll. ti. 1
(0)	dll. ti. 10
(enter)	

3.10.8 Manuel scanning.

Press (scan) key to select manual scanning.

Manual scanning is indicated by a flashing scan annunciator.

Manual scanning is carried out by rotating the tuning knob.

Press (scan) key to return to automatic scanning.

3.10.9 Leave scanning.

To leave the scanning press the (C) key.

3.11 Introduction to the Program Function

Selecting the program function.

The program function is selected by pressing the (PROGR) key followed by the program number. The program number is accepted by pressing the (enter) key.

A main menu for the selected program is displayed. By using the horizontal arrow keys, sub menus will be displayed (if any).

A menu (main or sub) is accepted by pressing (enter) (.)
Now the display is scrolled through messages using the vertical arrow buttons. If sub messages exist to a message, these are recalled by the horizontal arrow buttons.

The last message is followed by a return to the former setting of the receiver when the downwards arrow button is pressed.

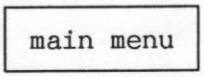
When in a program function the (rtn) key may be used to return to the former setting of the receiver.

Selection of a program function does not effect the setting of the receiver. I.e. the receiver will continue receiving as before the program function was entered.

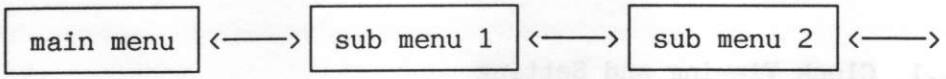
The operation of the programs can be illustrated in this way:

1) Select the program.

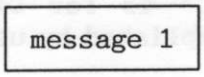
2) The main menu will be displayed.



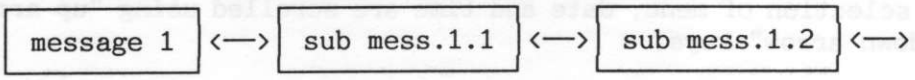
3) The menus are scrolled by <-- and --> keys.



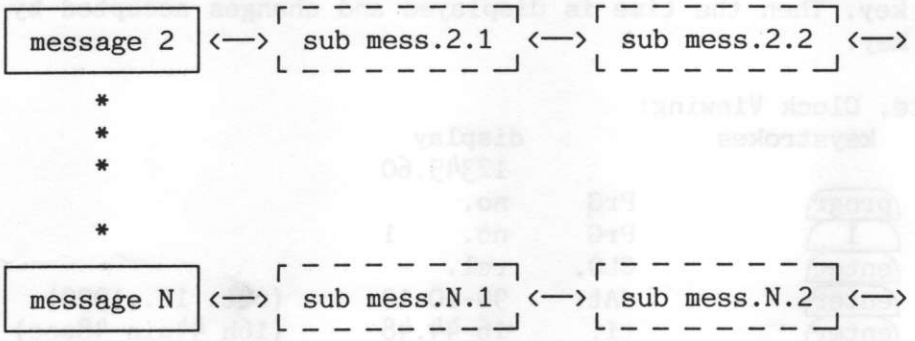
4) The first message is displayed when a menu is selected by pressing enter while the menu is shown.



5) Sub messages may be scrolled using <-- and --> keys.



6) Messages are scrolled using the down arrow and the up arrow keys.



7) Pressing the down-arrow key after the last message returns the receiver to the former setting.

The receiver has several programs:

Program 1 : 24 hours clock.
Program 2 : Alarm programming/clearing.
Program 3 : Scan program programming.
Program 4 : Scan program clearing.
Program 39: Select sunchron or pair mode.
Program 41: ARTEL Automatic Remote Transmission Error Log.
Program 42: Accumulated On-time.
Program 49: Self test (see section 8).

3.11.1 Clock Viewing and Setting

Program 1.

When program 1 is selected "CLO. rcl." will appear on the display. By using "forward arrow" key the display is changed to "CLO. Sto.". "CLO. rcl." is for Clock Viewing and "CLO. Sto." is for Clock Setting. Scrolling between the two displays is accomplished by using "forward arrow" key and "back arrow" key.

The wanted menu is selected by the (enter) key.
Pressing the "up-arrow" key after a menu has been selected, returns display to the menu.
After selection of menu, date and time are scrolled using "up arrow" and "down arrow" keys.

In "clock store" mode a flashing digit indicates the digit which might be changed by entering a new digit by the numeric keyboard. The "forward arrow" and the "back arrow" keys are used to select the digit to be changed. The date is changed first and accepted by the (enter) key. Then the time is displayed and changes accepted by the (enter) key.

Example, Clock Viewing:

keystrokes		display	
		12345.60	
(progr)	PrG	no.	
(1)	PrG	no. 1	
(enter)	CLO.	rcl.	
(enter)	dAt.	90-10.12	(oct. 12. 1990)
(enter)	ti.	16-44.48	(16h 44min 48sec)
(enter)		12345.60	

Example, Clock Setting:
Change date to jan. 14. 1990 and the time to 16.54.00.
(an underline denotes flashing digit).

keystrokes		display
		12345.60
(progr)	PrG	no.
(1)	PrG	no. 1
(enter)	CLO.	rcl.
(-->)	CLO.	Sto.

enter	dAt.	90-10.12
-->	dAt.	90-10.12
-->	dAt.	90-10.12
0	dAt.	90-00.12
1	dAt.	90-01.12
-->	dAt.	90-01.12
4	dAt.	90-01.14
enter	ti.	16-44.48
-->	ti.	16-44.48
-->	ti.	16-44.48
5	ti.	16-54.48
-->	ti.	16-54.48
0	ti.	16-54.08
0	ti.	16-54.08
enter		12345.60

3.11.2 Alarm programming/clearing.

Program 2

The alarm function forces the receiver to carry out a programmed function at a programmed date and/or time. The following functions are possible:

- Scanning a scan-program.
- Mute the receiver (receiver off).
- Demute the receiver (receiver on).
- Recall UPC.
- Recall PPC.

A flashing dot in the rightmost display indicates that an alarm is executed.

When program 2 is selected "Alr. SEt." will appear on the display. By using "forward arrow" key the display is changed to "Alr. CLR.". "Alr. SEt." is for alarm Viewing/setting and "Alr. CLr." is for alarm clearing. Scrolling between the two displays is accomplished by using "forward arrow" key and "back arrow" key.

The wanted menu is selected by the enter key.

If alarm clearing is selected the display shows "CLr. Alr.".

Enter the alarm number by the numeric keyboard and press enter to clear the alarm.

If alarm viewing/setting is selected the display shows "Alr. no.".

Enter the alarm number by the numeric keyboard and accept with the enter key.

The display shows "Alr. dA. xx.xx" where xx.xx is the date.
"__" indicates that this is a don't care.

A flashing digit indicates the digit which might be changed by entering a new digit by the numeric keyboard. The "forward arrow" and the "back arrow" keys are used to select the digit to be changed. Press (C) key to select don't cares. Accept the date by the (enter) key.

Display shows "Alr. ti. xx.xx" where xx.xx is the time. "__" indicates that this is a don't care.

A flashing digit indicates the digit which might be changed by entering a new digit by the numeric keyboard. The "forward arrow" and the "back arrow" keys are used to select the digit to be changed. Press (C) key to select don't cares. Accept the time by the (enter) key.
Note: Minutes can't be don't cares.

Display shows: "Alr. not dEF." if this alarm is not defined or
"Alr. dEF." if this alarm is defined.

If an alarm is not defined the different mode can be scrolled using "forward arrow" key and "back arrow" key :

Scn. PrG. (scan program), rEC OFF (receiver mute),
rEC on (receiver demute), UPC (recall upc), PPC (recall PPC)

The wanted mode is selected by the (enter) key.

If an alarm is defined, the "forward arrow" key can be used to see the mode for this alarm.

To delete the mode press (C) key.
To view the mode press (enter) key.

3.11.2.1 Scan-program mode.
If scan-program mode is selected the display shows "Alr. P.no. xx". (xx = scan-program no.).

Enter the scan-program number by the numeric keyboard. Accept by the (enter) key.

Example: Alarm no. 1: scan scan-program no. 43 every hour at minutes = 15.

keystrokes	display
	12345.60
(progr)	PrG. no.
(2)	PrG. no. 2
(enter)	ALr. SEt
(enter)	ALr. no.
(1)	ALr. no. 1
(enter)	ALr. dA. __.__

enter	ALr. ti. 00.00
C	ALr. ti. __.00
-->	ALr. ti. __.00
-->	ALr. ti. __.00
1	ALr. ti. __.10
5	ALr. ti. __.15
enter	ALr. not. dEF.
-->	ALr. Scn. PrG.
enter	ALr. P.no.
4	ALr. P.no. 4
5	ALr. P.no. 45
enter	ALr. no.
rtn	12345.60

3.11.2.2 Recall UPC mode.

If UPC is selected the display shows "Alr. Chn. xx".
(xx = channel no.)

Enter UPC channel number by the numeric keyboard. Accept by the enter key.

Example: Alarm no. 2: recall UPC 2 every day in july at time = 11.05.

keystrokes	display
	12345.60
progr	PrG. no.
2	PrG. no. 2
enter	ALr. SEt
enter	ALr. no.
2	ALr. no. 2
enter	ALr. dA. __.__
0	ALr. dA. 0_.__
7	ALr. dA. 07.__
enter	ALr. ti. 00.00
1	ALr. ti. 10.00
1	ALr. ti. 11.00
0	ALr. ti. 11.00
5	ALr. ti. 11.05
enter	ALr. not. dEF.
-->	ALr. Scn. PrG.
-->	ALr. rEC. OFF
-->	ALr. rEC. on
-->	ALr. UPC
enter	ALr. Chn.
2	ALr. Chn. 2
enter	ALr. no.
rtn	12345.60

3.11.2.3 Recall PPC mode.
If PPC is selected the display shows "Alr. ty. rcPt.".

Press (SSB) or (rtty) key to select the mode (mode led indicates selected mode). Accept by (enter) key.

Then the display shows "Alr. bAnd xx". (xx = band no.).
Enter band number by the numeric keyboard and accept by the (enter) key.

The display shows "Alr. Chn. xx".(xx = channel no.).
The PPC channel no. is entered by the numeric keyboard and accepted by the (enter) key.

Example: Alarm no. 3: recall PPC, ssb, band no. 4, channel no. 2, every day at time = 15.55.

keystrokes	display	
	12345.60	
(progr)	PrG. no.	
(2)	PrG. no. 2	
(enter)	ALr. SEt	
(enter)	ALr. no.	
(3)	ALr. no. 3	
(enter)	ALr. dA. __.__	
(enter)	ALr. ti. 00.00	
(1)	ALr. ti. 10.00	
(5)	ALr. ti. 15.00	
(5)	ALr. ti. 15.05	
(5)	ALr. ti. 15.55	
(enter)	ALr. not. dEF.	
(-->)	ALr. Scn. PrG.	
(-->)	ALr. rEC. OFF	
(-->)	ALr. rEC. on	
(-->)	ALr. UPC	
(-->)	ALr. PPC	
(enter)	ALr. ty. rcPt.	
(SSB)	ALr. ty. rcPt.	(ssb led on)
(enter)	ALr. bAnd 0	
(4)	ALr. bAnd 4	
(enter)	ALr. Chn. 0	
(2)	ALr. Chn. 2	
(enter)	ALr. no.	
(rtn)	12345.60	

3.11.3 Scan-program programming.
Program 3

This mode is used for creating, revising scanning programs. Each scanning program can contain up to 6 steps of commands, and 49 programs can be created.

Following modes can be used in a scan-program:

- Recall UPC.
- Recall PPC.
- Scanning UPC.
- Scanning PPC.
- Scanning frequency bands.

When program 3 is selected the display shows "Scn. P.no."

Enter the scan-program number by the numeric keyboard.

The display shows "Scn. ti. xx.x", where xx.x is the scan time. Enter scanning time by the numeric keyboard. The time should be selected in steps of 0.5 sec., except from 0.1 sec. scanning time which is entered as "0.1". Accept by the (enter) key.

Display shows: "xx.y not dEF." if this program step is not defined
or
"xx.y dEF." if this program step is defined.

where xx = program number and y = step number.

If a program step is not defined, scrolling between the different modes is accomplished by using "forward arrow" key and "back arrow" key:

UPC (recall UPC), PPC (recall PPC), Scn UPC (scanning UPCs), Scn PPC (scanning PPCs), Scn. Fr. (scanning frequency bands)

The wanted mode is selected by the (enter) key.

If a program step is defined, use the "forward arrow" key to see the mode in this program step, or use the (enter) key to go to the next program step.

To delete the mode press the (C) key.
To view the mode press the (enter) key.

3.11.3.1 Recall UPC.

If UPC is selected the display shows "xx.y Chn. zz".
(zz = channel no.)

Enter UPC channel number by the numeric keyboard. Accept by the (enter) key.

Example: Scan-program 1, step 1 = recall UPC channel no. 2, scan time = 4 sec.

keystrokes	display
	12345.60
progr	PrG. no.
3	PrG. no. 3
enter	Scn. P.no.
1	Scn. P.no. 1
enter	Scn. ti. 0.1
4	Scn. ti. 4
enter	1.1 not dEF.
-->	1.1 UPC
enter	1.1 Chn.
2	1.1 Chn. 2
enter	1.2 not dEF.
rtn	12345.60

3.11.3.2 Recall PPC.

If PPC is selected the display shows "xx.y ty. rcPt.".

Press SSB or rtty key to select the mode (mode led indicates selected mode). Accept by the enter key.

The display shows "xx.y bAnd zz". (zz = band no.). The band number is selected by the numeric keyboard and accepted by the enter key.

The display then shows "xx.y Chn. zz" (zz = channel no.).
Enter PPC channel number by the numeric keyboard. Accept with the enter key.

Example: Scan-program 1, step 1 unchanged, step 2 = recall PPC, rtty, band no. 4, channel no. 4, scan time = 4 sec.

keystrokes	display	
	12345.60	
progr	PrG. no.	
3	PrG. no. 3	
enter	Scn. P.no.	
1	Scn. P.no. 1	
enter	Scn. ti. 4.0	
enter	1.1 dEF.	
enter	1.2 not dEF.	
-->	1.2 UPC	
-->	1.2 PPC	
enter	1.2 ty. rcPt.	
rtty	1.2 ty. rcPt.	(rtty led on)
enter	1.2 bAnd 0	
4	1.2 bAnd 4	
enter	1.2 Chn. 0	
4	1.2 Chn. 4	
enter	1.3 not dEF.	
rtn	12345.60	

3.11.3.3 Scanning UPC.

If scan UPC is selected the display will show "xx.y Lo. zz" (zz = low channel no.).

Enter the low UPC channel number by the numeric keyboard. Accept by the (enter) key.

The display shows "xx.y Hi. zz". (zz = high channel no.).
Enter the high UPC channel number by the numeric keyboard. Accept by the (enter) key.

Example: Scan-program 1, step 1 and 2 unchanged, step 3 = scan UPC channel 1 to 5, scan time = 4 sec.

keystrokes	display
	12345.60
(progr)	PrG. no.
(3)	PrG. no. 3
(enter)	Scn. P.no.
(1)	Scn. P.no. 1
(enter)	Scn. ti. 4.0
(enter)	1.1 dEF.
(enter)	1.2 dEF.
(enter)	1.3 not dEF.
(-->)	1.3 UPC
(-->)	1.3 PPC
(-->)	1.3 Scn. UPC
(enter)	1.3 Lo.
(1)	1.3 Lo. 1
(enter)	1.3 Hi.
(5)	1.3 Hi. 5
(enter)	1.4 not dEF.
(rtn)	12345.60

3.11.3.4 Scanning PPC.

If scan PPC is selected the display will show "xx.y ty. rcPt.".

Press (SSB) or (rtty) key to select mode (mode led indicates selected mode). Accept by the (enter) key.

The display shows "xx.y bAnd zz". (zz = band no.). Enter the band number by the numeric keyboard. Accept by the (enter) key.

The display shows "xx.y Lo. zz". (zz = low channel no.).
Enter the low PPC channel number by the numeric keyboard. Accept by the (enter) key.

The display shows "xx.y Hi. zz". (zz = high channel no.).
Enter the high PPC channel number by the numeric keyboard. Accept by the (enter) key.

Example: Scan-program 1, step 1, 2 and 3 unchanged, step 4 = scan PPC, ssb, band no. 12, channel 2 to 7, scan time = 4 sec.

keystrokes	display	
	12345.60	
progr	PrG. no.	
3	PrG. no. 3	
enter	Scn. P.no.	
1	Scn. P.no. 1	
enter	Scn. ti. 4.0	
enter	1.1 dEF.	
enter	1.2 dEF.	
enter	1.3 dEF.	
enter	1.4 not dEF.	
-->	1.4 UPC	
-->	1.4 PPC	
-->	1.4 Scn. UPC	
-->	1.4 Scn. PPC	
enter	1.4 ty. rcPt.	
SSB	1.4 ty. rcPt.	(ssb led on)
enter	1.4 bAnd 0	
1	1.4 bAnd 1	
2	1.4 bAnd 12	
enter	1.4 Lo. 0	
2	1.4 Lo. 2	
enter	1.4 Hi. 0	
7	1.4 Hi. 7	
enter	1.5 not dEF.	
rtn	12345.60	

3.11.3.5 Scanning frequency bands.

If scan frequency is selected the display shows "xx.y ty. rcPt."

Enter the mode by the mode keys (mode led indicates selected mode). Accept by the (enter) key.

The display shows "Lo. Fr." for 0.5 sec and then the low frequency. (The start frequency). Enter the low frequency by the numeric keyboard and accept by the (enter) key.

The display then shows "Hi. Fr." for 0.5 sec. and then the high frequency. (The stop frequency). Enter the high frequency by the numeric keyboard. Accept by the (enter) key.

The display shows "StEP Fr." for 0.5 sec. and then the step frequency. Enter step frequency by the numeric keyboard (max. step frequency 9999.99 kHz). Accept by the (enter) key.

Example: Scan-program 1, step 2 = scan frequency, AM mode, 100 kHz to 300 kHz, step freq. 25 kHz, scan time = 4 sec.

keystrokes	display	
	12345.60	
progr	PrG. no.	
3	PrG. no. 3	
enter	Scn. P.no.	
1	Scn. P.no. 1	
enter	Scn. ti. 4.0	
enter	1.1 dEF.	
enter	1.2 dEF.	
-->	1.2 PPC	
C	1.2 not dEF.	
-->	1.2 UPC	
-->	1.2 PPC	
-->	1.2 Scn. UPC	
-->	1.2 Scn. PPC	
-->	1.2 Scn. Fr.	
enter	1.2 ty. rcPt.	
AM	1.2 ty. rcPt.	(AM led on)
enter	1.2 Lo. Fr.	(0.5 sec.)
	1.2 0.00	
1	1.2 1.00	
0	1.2 10.00	
0	1.2 100.00	
enter	1.2 Hi. Fr.	(0.5 sec.)
	1.2 0.00	
3	1.2 3.00	
0	1.2 30.00	
0	1.2 300.00	
enter	1.2 StEP Fr.	(0.5 sec.)
	1.2 0.00	
2	1.2 2.00	
5	1.2 25.00	
enter	1.3 dEF.	
rtn	12345.60	

3.11.4 Scan program clearing.

Program 4

This mode is used for clearing scan-programs.

When program 4 is selected the display shows "Clr. PrG."

Enter scan-program number by the numeric keyboard. Accept by the enter key.

Example: Clear scan-program 1.

keystrokes	display	
	12345.60	
progr	PrG. no.	
4	PrG. no. 4	
enter	Clr. PrG.	

1	Clr. PrG. 1
enter	CLr. PrG.
rtn	12345.60

3.11.5.1 RTTY Demodulator (A6) setting
Program 34

If the optional programmable RTTY Demodulator is installed, the FSK centerfrequency, baudrate and frequency shift can be set using program 34. (for an overview of possible settings see chapter "Specification of Options")

When program 34 is selected, the display shows the actual CENTERFREQUENCY. If this setting must be changed, the "back-arrow" or "forward-arrow" (left or right) are used to scroll between the possible centerfrequencies. The chosen frequency is then accepted by pressing the enter key.

After the wanted centerfrequency has been selected, the display shows the actual BAUDRATE. This setting can now be changed by using back- and forward-arrows and the enter key.
If the selected baudrate is higher than possible with the actual shift-setting, the display will flash. Accepting this baudrate by pressing the enter key will automatically increase the shift-setting to a possible value. The message "Shift changed" will then be displayed.

After the wanted baudrate has been selected, the display shows the actual total SHIFT. (total means here that a shift of +/-85Hz is displayed as 170Hz, +/-42.5Hz as 85Hz and so on).
The shift setting can also be changed with back- and forward- arrows and enter key. (or upward-arrow can be used once or twice to jump back to baudrate or centerfrequency-menu)
If the selected shift is lower than possible with the actual baudrate-setting, the shift will not be accepted. The display shows "Baud too high" and returns to the previous shift setting.
(upward-arrow can be used to jump back for changing baudrate)
After the shift has been selected, program 34 is terminated.

3.11.5.2 RTTY ON/OFF and Invert.
Program 35

When this program is entered, the display shows the actual setting of the demodulator-output ON/OFF .
ON or OFF can be selected with back- and forward-arrows and the enter key. In OFF-mode (and when the receiver is not in RTTY-mode) the output of the modulator is in the Mark-Hold state.

After this selection, the display shows the actual setting of NORMAL/INVERT. Selection can be accomplished by the back- and forward-arrows and enter key. Program 35 terminates upon this.

3.11.7 Select Synchron or Pair Mode.

Program 39

This mode is used to select Synchron or Pair Mode.
(See section 5 for description of Synchron and Pair modes).

When program 39 is selected the display shows:
"OFF SEriAL" when synchron and pair mode is off.
"On Synchrn" when synchron mode is on.
"On PAir" when pair mode is on.

Scrolling between the different modes is accomplished by using "forward arrow" key and "back arrow" key: off serial, on synchron and on pair.

The wanted mode is selected by the (enter) key.

The display on a RX4010 which is controlld by a master RX4010 will only show "On SEriAL".

3.11.8 ARTEL Automatic Remote Transmission Error Log

Program 41

By installations where the equipment is remote-controlled, the quality of the remote transmission is continuously registered.

By recalling program 41 the number of possible transmission errors occurred and the number of correctly received transmissions since the receiver was switched on can be displayed.

The maximum number which can be displayed is 65535. In cases where the number exceeds 65535, counter(s) are reset and the counting proceeds from 0.

After the program has been selected, "down arrow" and "up arrow" keys are used to step through the program.

In Section 8, SERVICE, the codes used in the program are listed.

3.11.9 Accumulated On-time

Program 42
An internal counter in the receiver counts the number of hours for which the receiver has been switched on.
When program 42 is selected the display appears as
"P.on XXXXXXX".

XXXXXXX is the accumulated on-time for the receiver

To leave the program press (enter) or (rtn) (.)

3.11.10 Program Function Error messages.

Err.	P.no	: Illegal scan program number.
Err.	bAnd	: Illegal band no.
Err.	chanEL	: Illegal channel no.
Err.	Lo Hi	: High channel no. < low channel no. or high freq. < low freq.
Err.	FrEq.	: Illegal frequency (10.00 <= freq. < 30000.00).
Err.	StEP Fr.	: Illegal step frequency (step freq. < 10000.00).

3.12 Clear All

WARNING:

This rutine erases all data stored in the programmable memory.
To clear all user programmable channels, scanning programs and clock alarms

- press (sto) and (AGC) (off) at the same time.
- the display will show CLr ALL.

If the (sto) key is pressed down within 2.5 sec., the command will be executed.
If no key is pressed down within 2.5 sec. or if any other key but "sto" is pressed down, the program function will be left and the receiver will return to receive mode.

3.13 Short-form instruction

STO — To store a full set up
key: sto, _ _ (channel no. 00-99)
sto, sto (store at first free chan.)

RCL 1 — To recall a user progr. channel.
key: rcl, 1, _ _ (channel no. 00-99)

RCL 2 — To recall a preprogr. channel
key: rcl, 2, SSB/RTTY, _ _ (band no.), _ _ (ch.no.), (ch.no.= '.': international calling channel)

SCAN UPC — Scanning of user progr. channel.
key: scan,enter, _ _ (lo. chan.),enter, _ _ (hi. chan.),enter,_ _._ (scan time),enter

SCAN PPC — Scanning of preprogrammed channels.
key: scan, -->,enter, SSB/RTTY, _ _ (band no.), enter, _ _(lo.ch.),enter,_ _ (hi. ch.),enter, _ _._ (scan time),enter

SCAN PrG — Scanning of user program.
key: scan,-->,-->,enter, _ _ (prog. no. 01-49), enter,_ _ (prog. no.),enter, ...,_ _ (prog.no.), enter,enter
(up to 10 prog. no.)

SCAN Fr. — Frequency sweep.
key: scan,-->,-->,-->,enter,___.__ (lo.freq.), enter, ___.__ (hi. freq.),enter,___.__ (step.freq.), enter,_ _._(scan time),enter

PROGR. 1 — Clock setting.
key: progr, 1,enter, enter, __.__ (date), enter, __.__(time), enter

Clock viewing.
key: progr, 1, enter, -->, enter, __.__(date), enter, __.__(time),enter

PROGR. 2 — Alarm programming.
key: progr, 2, enter, enter, __(alarm no.), enter, __.__(date), enter,__.__(time), enter, "command"
"command" = scan program no.
receiver off (mute)
receiver on (demute)
recall UPC channel no.
recall PPC channel no.

Alarm clearing.
key: progr, 2, enter, -->, enter,_ _(alarm no.)

PROGR. 3 Scan programming.
key: progr, 3, enter, _ _ (progr. no. 01-49), enter, _ _._(scan time), enter, "command 1", enter, ..."command 6", enter
"command" = recall UPC channel
recall PPC channel
scan UPC channels
scan PPC channels
scan frequency band

PROGR. 4 Scan program clearing.
key: progr, 4, enter, _ _(scan program no. 1-49), enter.

PROGR. 34 RTTY Demodulator Setting.
key: progr, 3, 4, enter, <-- or -->, enter, <-- or -->, enter, <-- or -->, enter.

PROGR. 35 RTTY ON/OFF, INVERT.
key: progr, 3, 5, enter, <-- or -->, enter, <-- or -->, enter.

PROGR. 41 Automatic Remote Transmission Error Log.
key: progr, 4, 1, enter.

PROGR. 42 Accumulated on-time.
key: progr, 4, 2, enter, power on-time shown

SECTION 4
OPTIONS

4.1 Introduction.

This section provides information about optional modules.

5 REMOTE CONTROL

5.1 Introduction

This section provides information on remote control of the RX4010 receiver and the SE4010 Synthex. The RX4010 and SE4010 may be remote controlled by the RC4010 receiver controller and the TC4010 transmitter controller or a remote computer may be used.

5.2 Standard Remote Control

The remote control is obtained via the Standard Remote Interface A9, part No. BR490598. With this assembly the following interface standards are possible: RS232C, RS422 and RS485. Technical specifications of this module are listed in Section 1.

The receiver RX4010 and the exciter SE4010 may be remote controlled in a number of different ways. Section 5.2.2 provides description of the different types of remote configurations.

When a certain configuration for the remote control has been chosen, baudrate and communication setups must be selected via program 20. Also the Standard Remote Interface A9 must be strapped in accordance to the selected interface standard and baud rate.

Section 5.2.1 provides a description of baudrate and communication setups in program 20.

Section 5.2.3 describes strapping of the Standard Remote Interface A9.

5.2.1 Baudrate and Communication Setups

Program 20

Program 20 offers possibility of selection of: number of stop bits, parity control, baudrate and delays. These features can be used where speciel requirements for the remote communication exist. During normal operation where the RX4010 or SE4010 is remote controlled by a RC4010 or TC4010 the recommended standard communication setups will normally result in a succesfull remote communication. The recommended standard communication setups are listed in table 5.1 next page.

Table 5.1 Recommended standard communication setups

strapped baudrate tab.5.10	Program 20 selection					
	Baudrate	Stop bit	Parity	Frame gap	Eto.	dEL.
75	75	1	odd	255	0	0
110	75	1	odd	200*	0	0
150	150	1	odd	147	0	0
300	300	1	odd	074	0	0
600	600	1	odd	037	0	0
1200	1200	1	odd	019	0	0
2400	2400	1	odd	009	0	0
4800	4800	1	odd	006	0	0
9600	9600	1	odd	006	0	0

* Recommended standard frame gap time is automatically selected by pressing the **[RCL]** key. If 110 baud is selected the frame gap time must be selected to 200mS via the numeric keys.

Where speciel requirements for the serial remote communication exist, these requirements may be satisfyed via selection of the wanted parameters in program 20. Selection of baudrate and communication setups in program 20 are described in the following.

The remote protocol defines the use of 8 bits of data. This parameter can not be changed!

When program 20 is selected, the display shows **"SEL. StP.b. X"**, where **"X"** is the number of stopbits. The number of stopbits can be selected between 1, 1.5 and 2 using the **[←]** or **[→]** keys.

The number of stop bits is accepted by pressing the **[enter]** key.

The display will now show **"SEL. PAr. Y"**, where **"Y"** indicates odd, even or no parity displayed by **"odd"**, **"evn"** or **"OFF"**.

The wanted parity is selected using the **[←]** or **[→]** keys.

The selected parity is accepted by pressing the **[enter]** key.

The display will now show **"SEL. bAu. Z"**, where **"Z"** indicates the baud rate.

The possible baud rates are:

Z = 75, 150, 300, 600, 1200, 2400, 4800 or 9600 baud.

The baud rate is selected using the **[←]** or **[→]** keys.

The baud rate is accepted by pressing the **[enter]** key.

If 110 baud remote communication is wanted, Z = 75 must be selected. The actual selection of 110 baud is carried out by hardware strapping of the Standard Remote Interface (refer to table 5.10).

The display will now show **"SEL. FrG. x"**, where **"x"** indicates the "frame gap time" in milli seconds. The frame gap time equals the time from the last received byte to system acception of the total communication frame. The frame gap time can be selected between: 0 - 255mS.

The frame gap time is selected via the **[RCL]** key or the numeric keys. By pressing the **[RCL]** key a standard frame gap time (shown below) for the previous selected baud rate will appear on the display. In case the standard frame gap time is not wanted the frame gap time can be keyed in using the numeric keys. The displayed frame gap time is accepted by pressing the **[enter]** key.

Standard frame gap times:

If 75 Baud then x = 255
If 110 Baud then x = 200*
If 150 Baud then x = 147
If 300 Baud then x = 074
If 600 Baud then x = 037
If 1200 Baud then x = 019
If 2400 Baud then x = 009
If 4800 Baud then x = 006
If 9600 Baud then x = 006

* If 110 baud has been selected the frame gap time must be keyed in via the numeric keys. Standard frame gap time for 110 baud is 200mS.

The frame gap time is accepted by pressing the **[enter]** key.

The display will now show **"SEL. Eto. yyy"**, where **"yyy"** indicates the "extra timeout time".

A unit in the remote control system expects to receive the first byte in an answering frame within the timeout time. The timeout time is normally 1 second (**yyy** = 0). Using program 20 the timeout time can be changed. The total timeout time is calculated as shown below:

Timeout time = (1 + 0.256 * yyy) sec.

Using the numeric keys the extra timeout time **"yyy"** can be selected between 0 and 255.

The extra timeout time is accepted by pressing the **[enter]** key.

The display will now show **"SEL. dEL. z"**, where **"z"** equals the RTS to TxD time. The normal time between raise of RTS line signal to TxD active is approximately 16 mS (if CTS is active). The RTS to TxD time can be increased by selecting **"z"** greater than 16mS. **"z"** can be selected between 0 and 255mS via the numeric keys. If **"z"** is selected below 16 the delay between RTS to TxD time will still equal 16mS.

The selected delay is accepted by pressing the **[enter]** key.

5.2.2 Remote Configurations

The different types of remote configurations are described in the following subsections.

5.2.2.1 RS232C Standard

Only one RX/SE4010 can be controlled directly from the RCU (Remote Control Unit), when using the RS232C (V.24) standard. The RCU may consist of a RC/TC4010 or a remote computer. The RX/SE4010 must have a unique address in the interval 01 to 31. If more than one is to be controlled, a line sharing unit must be placed between the RCU and the RX/SE4010. Note that the cable must be screened and that cable length of more than 25 m cannot be recommended unless a low baudrate is acceptable.

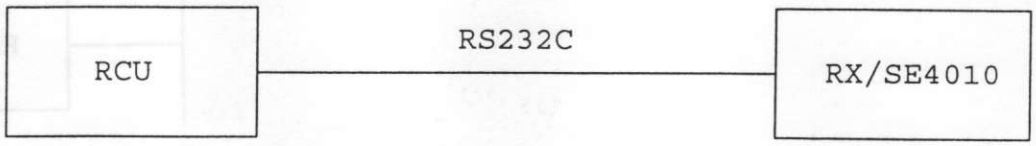


Figure 5.2

5.2.2.2 RS422 Standard

A maximum of 10 RX/SE4010's can be controlled from the RCU (Remote Control Unit), when using the RS422 standard. The RCU may consist of a RC/TC4010 or a remote computer. The RX/SE4010 must have a unique address in the interval 01 to 31. Cable must be screened and twisted and a terminating resistor of approx. 470 ohms should be mounted across each pair in the far end of the cable. Cable length should be limited to approx. 250 m depending on selected baudrate and environmental conditions such as EMC.

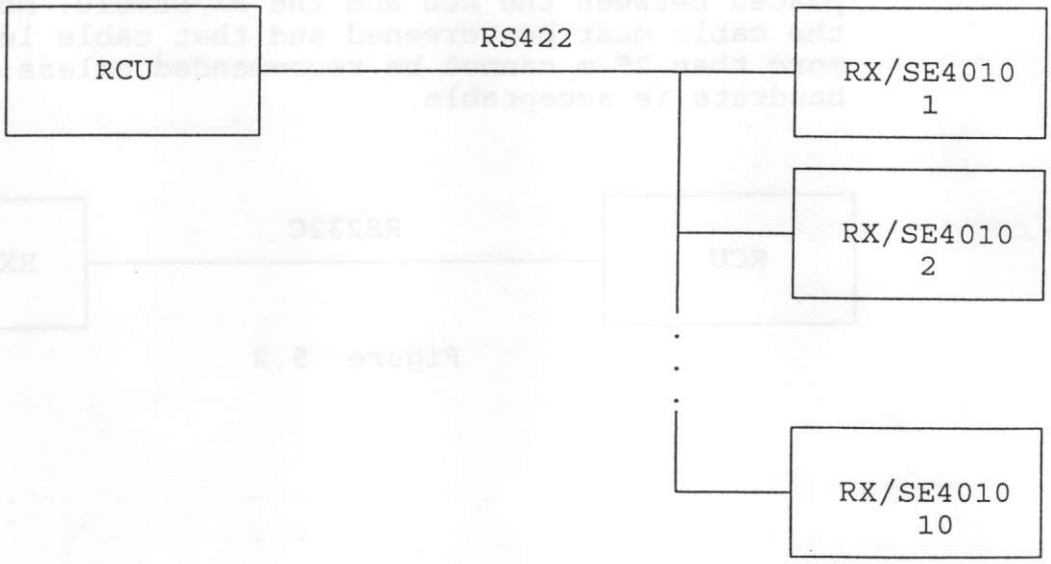


Figure 5.3

5.2.2.3 RS485 Standard

A maximum of 31 RX/SE4010's and 31 RCU's can be connected when using the RS485 standard. All RX/SE4010's and RCU's must have a unique address in the interval 01 to 31 (The RCU with address 31 is called the master controller). The RCU may consist of a RC/TC4010 or a remote computer.

The line must be a screened twisted-pair line terminated in 100 ohms at both ends of the cable. The line must only be loaded with these two 100 ohms resistors. Line B (pin 24) must be connected to ground by a 1 Kohms resister at one location of the line. This is shown on Figure 5.4 below.

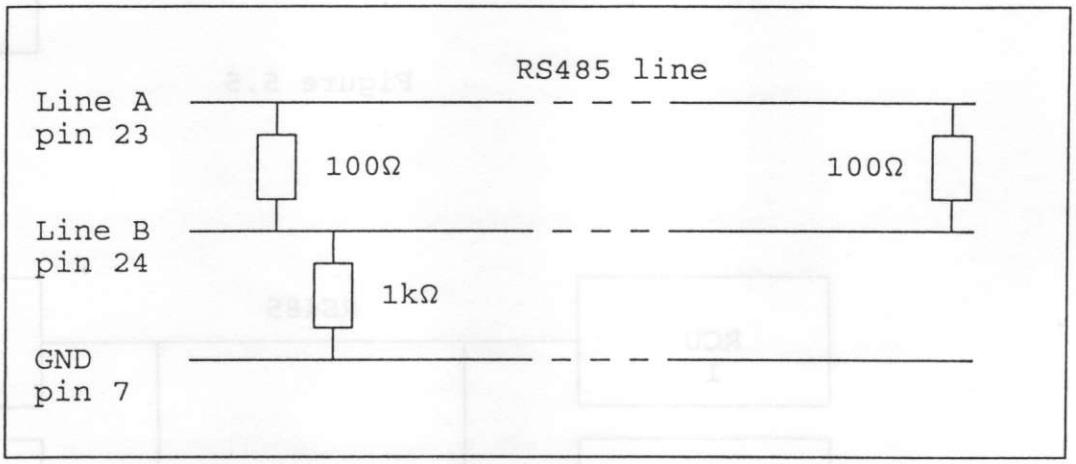


Figure 5.4 Termination of RS485 line

Depending on baudrate and environmental conditions such as EMC, cable length should be limited to approx. 500 m. The network can be established as shown in the following examples, Figure 5.5 to Figure 5.7.

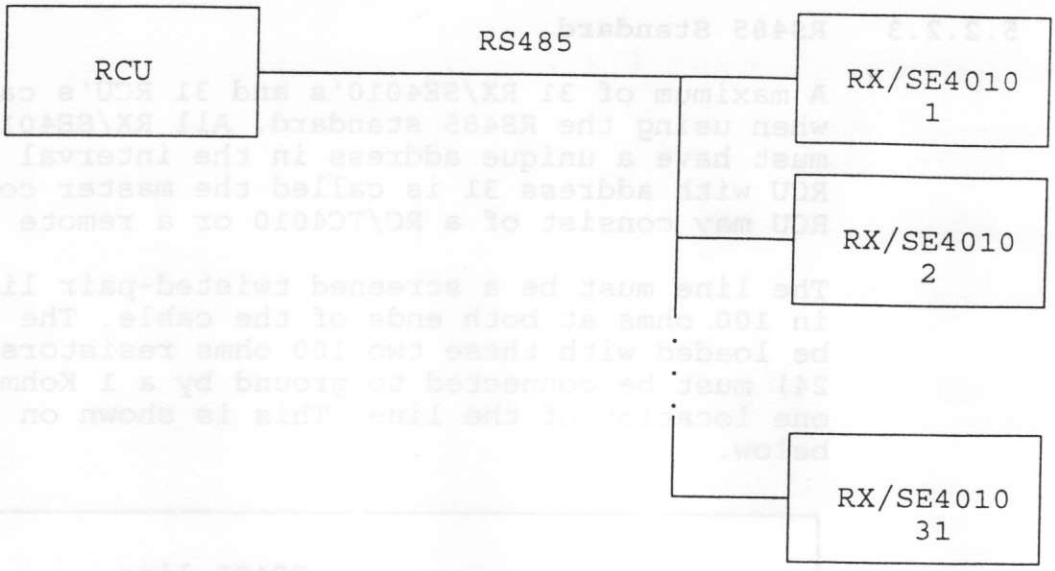


Figure 5.5

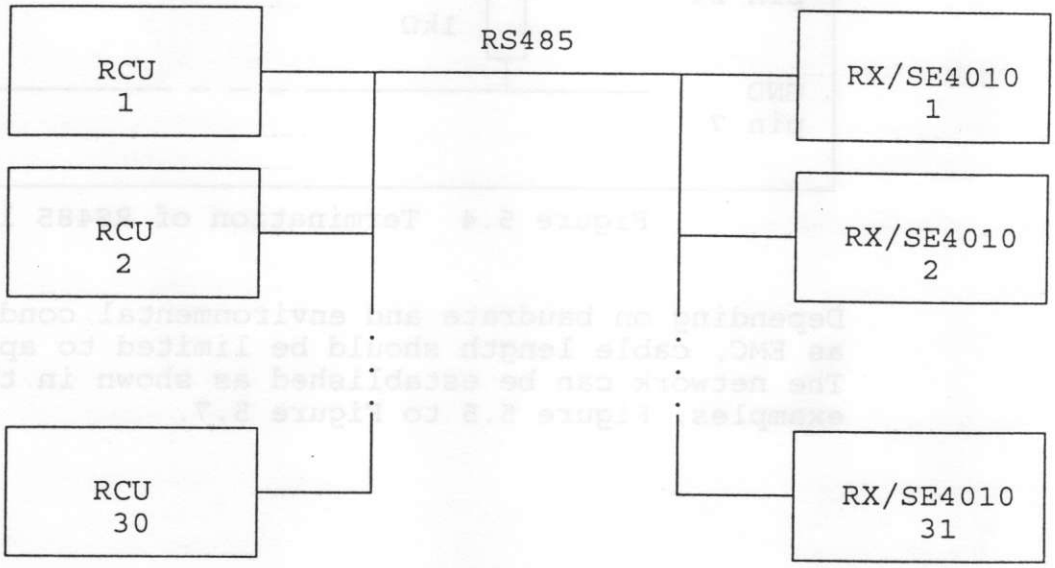


Figure 5.6

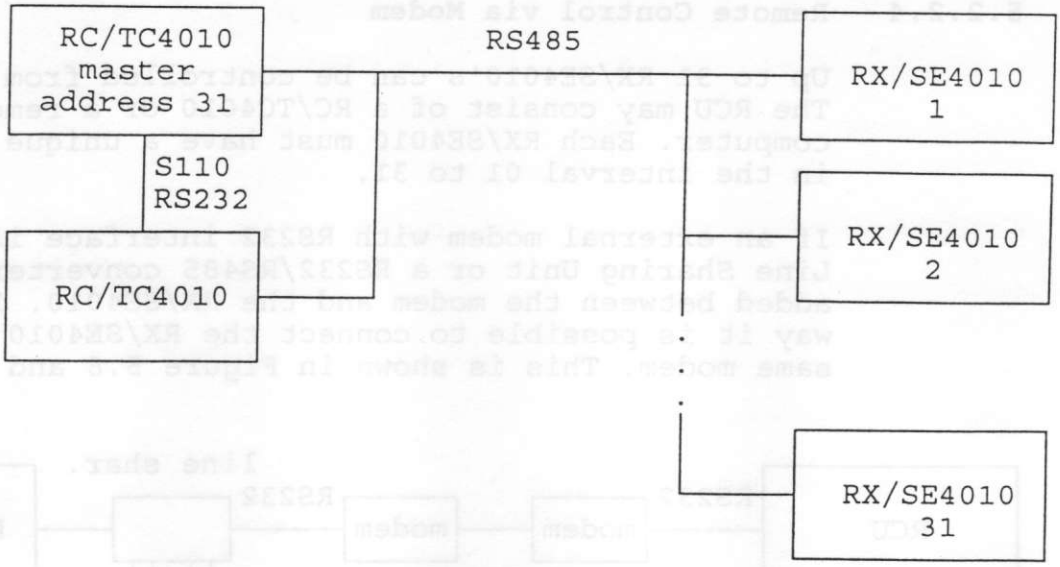


Figure 5.7

The master RC/TC4010 uses the S110/RS232 connection of the A8 module in order to take over the command at any time. Cable length between the two controllers should be limited to 100 m. Screened cable is recommended.

5.2.2.4 Remote Control via Modem

Up to 31 RX/SE4010's can be controlled from one RCU. The RCU may consist of a RC/TC4010 or a remote computer. Each RX/SE4010 must have a unique address in the interval 01 to 31.

If an external modem with RS232 interface is used, a Line Sharing Unit or a RS232/RS485 converter must be added between the modem and the RX/SE4010. In this way it is possible to connect the RX/SE4010's to the same modem. This is shown in Figure 5.8 and 5.9.

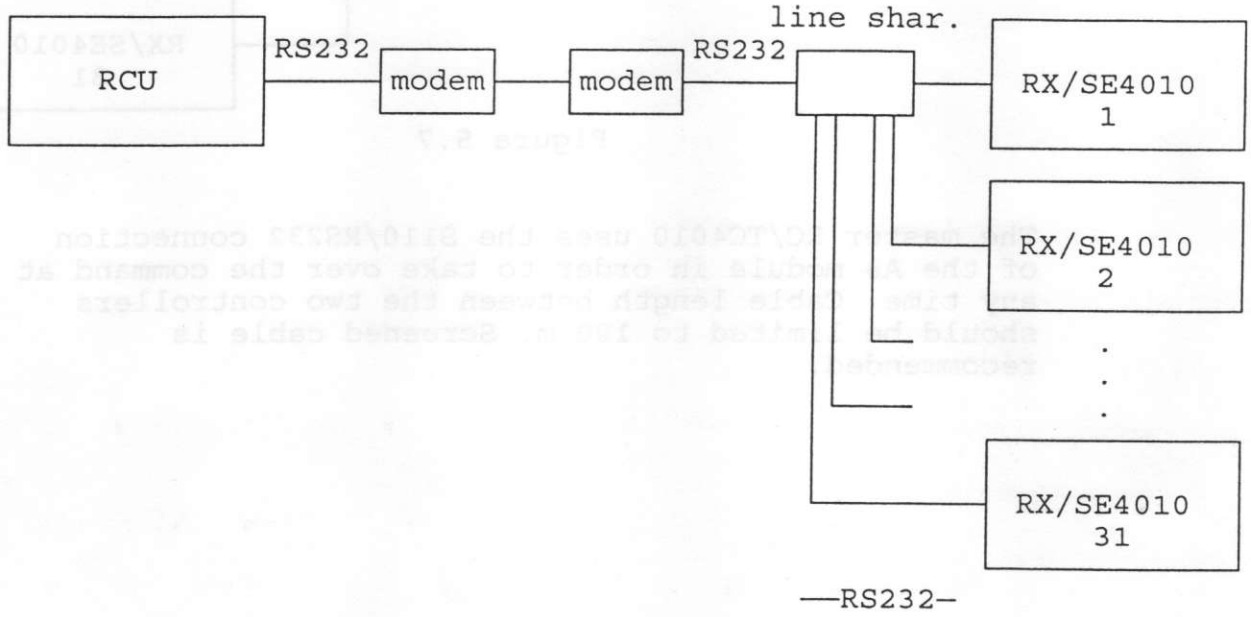


Figure 5.8

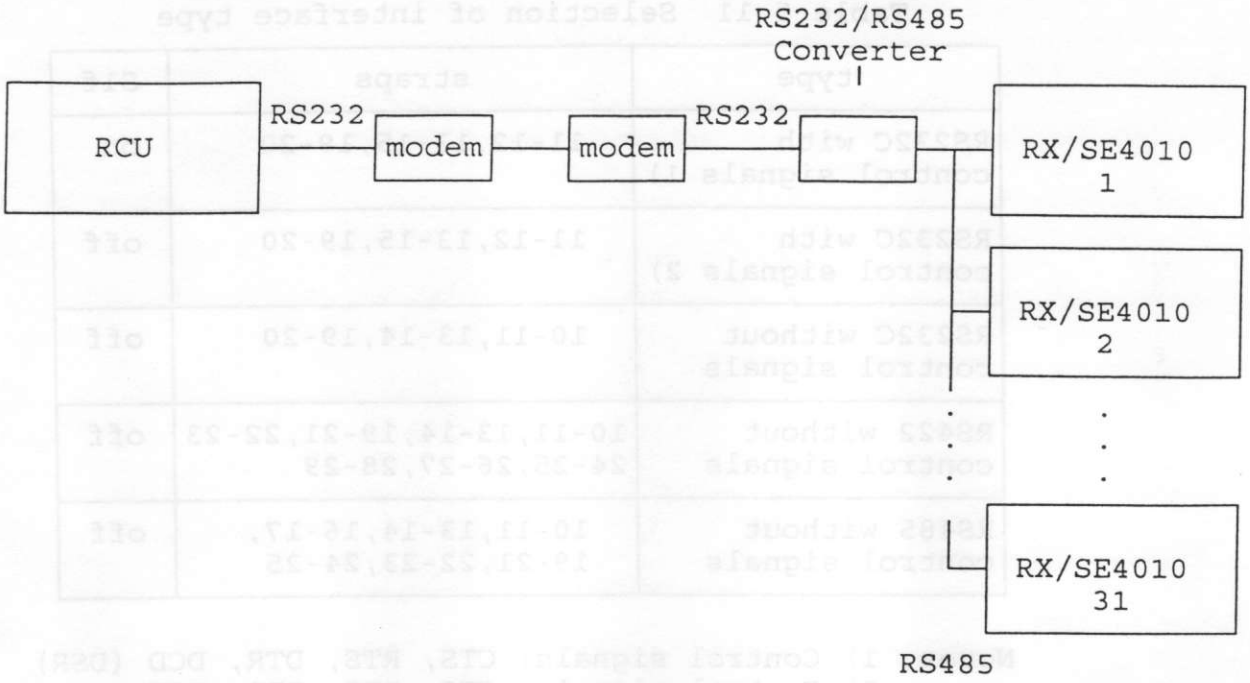


Figure 5.9

5.2.3 Strapping

This subsection describes how to strap the Standard Remote Interface A9, No. 490598.

Selection of baud rate and interface type must be carried out by strapping of the assembly as shown in table 5.10 and 5.11. For location of straps please refer to Section 8.

Table 5.10 Baudrate selection

baudrate	straps
75	3-9
110	3-9,1-2
150	3-8
300	3-9
600	3-8

baudrate	straps
1200	3-7
2400	3-6
4800	3-5
9600	3-4

Table 5.11 Selection of interface type

type	straps	S1f
RS232C with control signals 1)	11-12,13-15,19-20	on
RS232C with control signals 2)	11-12,13-15,19-20	off
RS232C without control signals	10-11,13-14,19-20	off
RS422 without control signals	10-11,13-14,19-21,22-23 24-25,26-27,28-29	off
RS485 without control signals	10-11,13-14,16-17, 19-21,22-23,24-25	off

Notes: 1) Control signals: CTS, RTS, DTR, DCD (DSR)
2) Control signals: CTS, RTS, DTR, DSR.

When using control signals it is recommended to use the case with S1f = on. In this case DSR (pin 6) will be interpreted as DCD.

The remote address must be selected individually for each unit in the remote control system. Table 5.12 shows how to strap the remote unit address of the assembly.

Table 5.12 Selection of remote unit address

S1	off switch value	on switch value
a	1	0
b	2	0
c	4	0
d	8	0
e	16	0

The remote unit address is the sum of the switches.
Example: Strapping of the assembly to address 21.

Switch a, c and e must be OFF and switch b and d must be ON.

Example: Strapping of the assembly to address 7.

Switch a, b and c must be OFF and switch d and e must be ON.

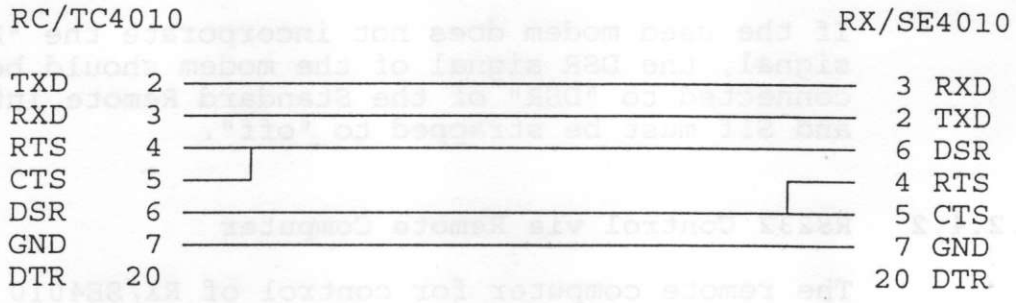
The address must not be set to 0!

5.2.4 Connections

The following subsection describes the connections between the units in the remote system. For identification of pin numbers of the connector please refer to Section 2.

5.2.4.1 RS232C Control via RC4010/TC4010

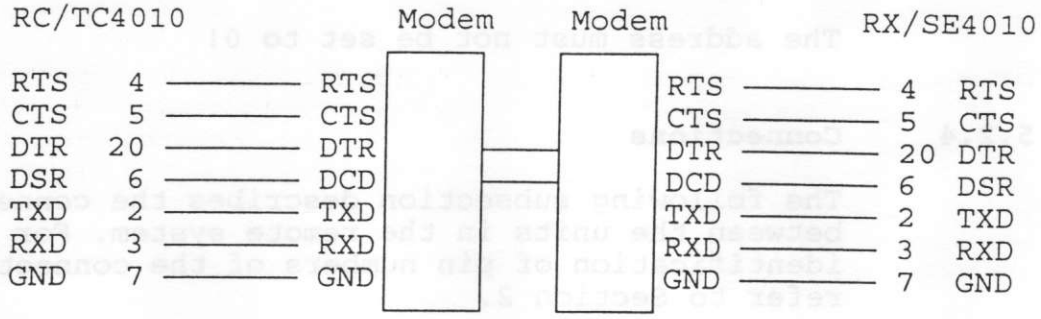
The RS232 remote control of a RX/SE4010 via a RC/TC4010 without modem is shown in Figure 5.13.



Notes: 1. The DSR signal is interpreted as a DCD signal (S1f = on).
2. DTR is not used.
3. The RTS and CTS is internally connected via a strap.

Figure 5.13

The RS232 remote control of a RX/SE4010 via a RC/TC4010 with modem is shown in Figure 5.14.



Notes: 1. The DSR signal is interpreted as a DCD signal (S1f = on).

Figure 5.14

If the used modem does not incorporate the "DCD" signal, the DSR signal of the modem should be connected to "DSR" of the Standard Remote Interface and S1f must be strapped to "off".

5.2.4.2 RS232 Control via Remote Computer

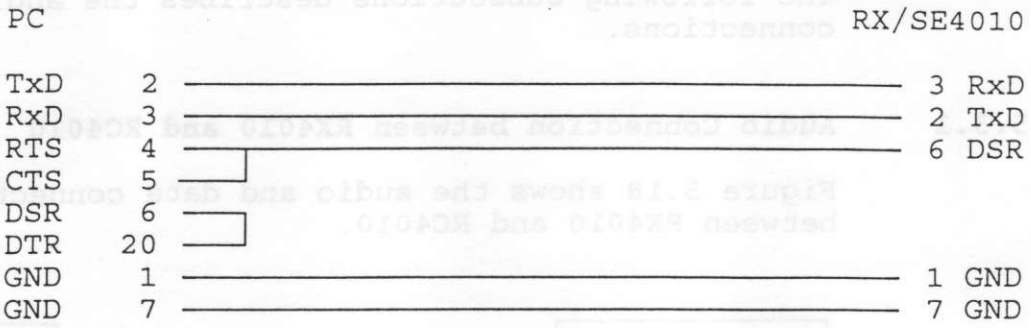
The remote computer for control of RX/SE4010 may consist of a Personal Computer (PC) with a serial RS232 communication port.

In order to control a RX/SE4010 via a remote computer three tasks must be carried out:

- Cable interfacing between remote computer and Standard Remote Interface A9.
- Strapping of the Standard Remote Interface A9.
- Selection of baudrate and communication setups via program 20.

The rest of this subsection describes an example of remote control via a PC. The following serial data format is used: 8 databits, 1 stopbit, no parity, baudrate = 9600, unit address is 1, and DSR signal on the RC/TC4010 is used as DCD.

The cable interface between the PC and the Standard Remote Interface A9 is shown in figure 5.15.



Notes: 1. The pin numbers for the PC is valid for a standard RS232 serial port with 25 pin sub-D connector.

2. The pin numbers for the RX/SE4010 is valid for J1 on the Standard Remote Interface Assembly!

Figure 5.15

Strapping of the Standard Remote Interface A9 is shown in figure 5.16.

type	straps
RS232C with RTS int. gated to CTS, 9600 baud	3-4, 11-12, 13-14, 19-20

Strap S1: A off
B on
C on
D on
E on
F on

Figure 5.16

Selection of baudrate and communication setups via program 20 is shown in figure 5.17.

baudrate	Stop bit	Parity	Frame gap	Eto.	dEL.
9600	1	OFF	9	0	0

Figure 5.17

5.3 Audio Connection

The following subsections describes the audio and key connections.

5.3.1 Audio Connection between RX4010 and RC4010

Figure 5.18 shows the audio and data connections between RX4010 and RC4010.

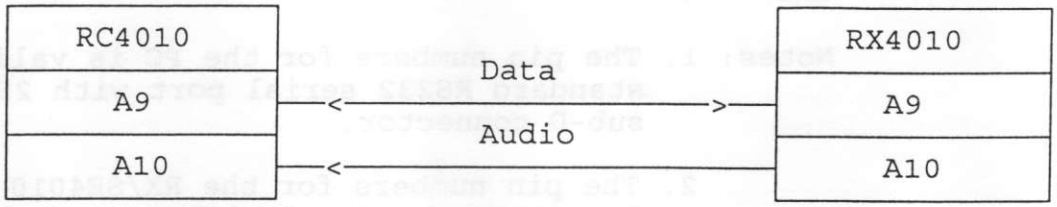


Figure 5.18

The audio connection may be obtained direct or via a two wire telephone line for each audio channel. Two AF lines are required for ISB reception.

When an RC4010 controls more than one receiver and monitoring of the audio channels is wanted, optional 8-line Monitor Modules can be installed in the RC4010. Each 8-line Monitor Module contains eight audio channels for four RX4010's.

5.3.2 Audio and Key Connection between TC4010 and SE4010

Figure 5.19 shows connections between TC4010 and SE4010 when the audio and key signals are transferred via telephone lines.

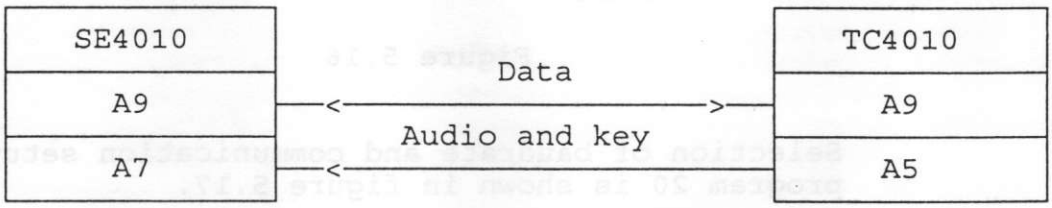


Figure 5.19

To obtain the audio and key inputs for SE4010 at the TC4010 site, optional Audio and Key Modules can be installed in the TC4010 and the SE4010. These modules enables transmission of combined audio and key signals on a two wire telephone line for each audio

channel. Up to five Audio and Key Modules can be installed in one TC4010. Each module contains two audio and key channels for one SE4010.

The audio and key connections may also be obtained directly without the A5 assembly of TC4010.

5.4 Serial Errors

If the display shows **"SEr. OFFLInE"** this indicates that the serial line is off. The master will then go into "off serial" mode.

SECTION 6
REPLACEABLE PARTS

6.1 Introduction

This section contains information for ordering parts.

6.2 Replaceable Parts List

The following pages list replaceable parts and are organized as follows:

a. Electrical assemblies in alphanumerical order by reference designation.

b. Electrical assemblies and their components by alphanumerical order by reference designation.

The information given for each part consists of the following:

a. Complete reference designation.

b. Dansk Radio stock number.

c. Description of part.

d. Total quantity in first higher level.

The total quantity in first higher level for each part is given only once - at the first appearance of the part number per lower level.

6.3 Ordering Information

To order a part listed in the replaceable parts list, quote the DRA part number, indicate the quantity required and address the order to Dansk Radio.

To order a part that is not listed in the replaceable parts list, include the equipment model number, equipment serial number, the description and function of the part, and the number of parts required. Address the order to Dansk Radio.

PARTSLIST

Printet: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	60	BR448168	SYNTHESIZER A1 STANDARD	A1
2	1	ST	60	BR448184	STANDARD TCXO A2	A2
3	1	ST	60	BR489638	FRONT END ASSY A3 3KHZ	A3
4	1	ST	62	BR494070	IF/AF ASSY SSB A7 3 KHZ	A7
5	1	ST	20	BR488305	FILTERS F.A3 2700HZ	FLA3
6	1	ST	61	BR471720	POWER SUPPLY ASSY A10 220	A10
7	1	ST	60	210652-001	CONNECTOR KIT,RX4010 220V	
8	1	ST	60	BR489905	FRONT PANEL RX4010 A11	A11
9	1	ST	60	BR490598	INTERF. RS232 422/485 A9	A9
10	1	ST	60	BR496014	KIT, SUB-D CONN 25P MALE	
11	4	ST	37	BR457868	COAX CA ASSY SMB SMB 120	
12	1	ST	41	BR445991	REAR PLATE DUMMY 1M	
13	1	ST	48	BR496448	LABEL F.REAR PL RX-SE A7	
15	1	ST	48	BR464872	LABEL, DRA TYPE/SER.NO	
16	1	ST	60	BR490350	SUBOCTAV.STANDARD A4 1M	
17	1	ST	60	BR487740	MICROCOMPUTER ASSY A8 RT	
18	1	ST	41	BR489875	CHASSIS ASSY A12 RX4010	
19	1	ST	60	BR475076	KIT,SPARES RX/RC RUNNING	
20	4	ST	51	BR327301	SCREW M 5 X20 CHM CU SN	
21	4	ST	51	BR327255	SCREW M 4 X16 CHM CU SN	
22	40	ST	51	BR450561	SCREW SELFTAP.4X3/8 PH-PL	
23	4	ST	53	BR336777	WASHER,FLAT Ø 4MM CU SN	
24	4	ST	53	BR321966	WASHER,FLAT Ø 5MM CU SN	
25	1	ST	37	BR492655	COAX CA ASSY SMB SMB 210	
27	1	ST	48	221391-011	LABEL, SILVER 25.4X12.7MM	
28	0,2	ST	48	210757-001	LABELS FOR A10	

BR490008-019 RX4010 SSB, A9, 2k7

PARTSLIST

Printet: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR448141	PWB,SYNTHESIZER A1	
2	1	ST	60	BR455490	VCO ASSY A1A1	A1
3	52	ST	22	BR450510	CAP. CER. 100N 63 S	C73
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C52
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C71
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C70
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C69
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C68
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C67
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C51
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C65
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C74
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C64
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C62
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C61
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C60
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C59
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C58
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C56
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C55
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C99
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C66
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C86
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C98
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C97
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C96
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C95
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C94
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C91
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C90
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C72
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C87
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C75
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C85
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C84
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C83
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C82
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C81
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C80
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C79
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C78
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C77
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C76
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C88
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C100
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C53
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C1

BR448168 SYNTHESIZER A1 STANDARD

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
3	52	ST	22	BR450510	CAP. CER. 100N 63 S	C14
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C27
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C33
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C38
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C40
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C48
	52	ST	22	BR450510	CAP. CER. 100N 63 S	C49
4	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C106
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C30
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C105
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C107
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C2
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C28
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C103
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C37
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C39
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C41
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C42
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C43
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C104
	14	ST	22	BR358959	CAP. CER. 1N0 100 K	C35
5	1	ST	22	BR458457	CAP. PLST 330P 160 J	C3
6	1	ST	22	BR359645	CAP. PLST 160P 400 F	C4
7	1	ST	22	BR450839	CAP. PLST 560P 160 J	C5
8	1	ST	22	BR450812	CAP. PLST 1N 160 J	C6
9	1	ST	22	BR202991	CAP. PLST 220N 100 K	C7
10	1	ST	22	BR357553	CAP. CER. 82P 100 C N150	C8
11	1	ST	22	BR209554	CAP. PLST 10N 250 K	C9
12	1	ST	22	BR209562	CAP. PLST 33N 250 K	C10
13	3	ST	22	BR357502	CAP. CER. 33P 100 G N150	C109
	3	ST	22	BR357502	CAP. CER. 33P 100 G N150	C11
	3	ST	22	BR357502	CAP. CER. 33P 100 G N150	C46
14	1	ST	22	235010-001	CAP. ELC 1U0 / 25M	C12
15	7	ST	22	235010-006	CAP. ELC 6U8 / 25M	C57
	7	ST	22	235010-006	CAP. ELC 6U8 / 25M	C54
	7	ST	22	235010-006	CAP. ELC 6U8 / 25M	C50
	7	ST	22	235010-006	CAP. ELC 6U8 / 25M	C45
	7	ST	22	235010-006	CAP. ELC 6U8 / 25M	C36
	7	ST	22	235010-006	CAP. ELC 6U8 / 25M	C29
	7	ST	22	235010-006	CAP. ELC 6U8 / 25M	C13
16	1	ST	22	BR357480	CAP. CER. 22P 100 G N150	C31
17	1	ST	22	BR357472	CAP. CER. 18P 100 G N150	C32
18	5	ST	22	BR451053	CAP. ELEC 68U 6,3 M	C34
	5	ST	22	BR451053	CAP. ELEC 68U 6,3 M	C63
	5	ST	22	BR451053	CAP. ELEC 68U 6,3 M	C89
	5	ST	22	BR451053	CAP. ELEC 68U 6,3 M	C92
	5	ST	22	BR451053	CAP. ELEC 68U 6,3 M	C93

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
19	2	ST	22	BR357537	CAP. CER. 56P 100 C N150	C44
	2	ST	22	BR357537	CAP. CER. 56P 100 C N150	C102
20	1	ST	22	BR357448	CAP. CER. 10P 100 G N150	C47
21	9	ST	23	200352-001	DIODE 1N4148	CR1
	9	ST	23	200352-001	DIODE 1N4148	CR6
	9	ST	23	200352-001	DIODE 1N4148	CR7
	9	ST	23	200352-001	DIODE 1N4148	CR5
	9	ST	23	200352-001	DIODE 1N4148	CR21
	9	ST	23	200352-001	DIODE 1N4148	CR20
	9	ST	23	200352-001	DIODE 1N4148	CR2
	9	ST	23	200352-001	DIODE 1N4148	CR19
	9	ST	23	200352-001	DIODE 1N4148	CR11
22	2	ST	23	BR480681	DIO SCHOT BAT 83 SI 60V	CR4
	2	ST	23	BR480681	DIO SCHOT BAT 83 SI 60V	CR3
23	1	ST	22	BR357405	CAP. CER. 5P6 100 C N150	C101
24	1	ST	22	221220-007	CAP. PLAST 100N / 63K	C108
25	21	ST	51	202185-003	SCREW M2.5X 5SLTD.CYL.BRS	H1
26	5	ST	26	BR392707	TRANS.ACCESS PAD TO-18	H3
27	1	ST	31	200764-002	CONN SMB RECP 50R	J1
28	2	ST	25	BR389609	COIL,CHOKE 47U K	L4
	2	ST	25	BR389609	COIL,CHOKE 47U K	L3
29	4	ST	25	BR357820	COIL,CHOKE 2U2 K	L18
	4	ST	25	BR357820	COIL,CHOKE 2U2 K	L19
	4	ST	25	BR357820	COIL,CHOKE 2U2 K	L17
	4	ST	25	BR357820	COIL,CHOKE 2U2 K	L20
30	1	ST	25	BR405493	COIL,CHOKE 0U47 K	L5
31	1	ST	25	BR393967	COIL,CHOKE 0U15 K	L6
32	4	ST	25	200730-003	COIL,RF	L9
	4	ST	25	200730-003	COIL,RF	L10
	4	ST	25	200730-003	COIL,RF	L7
	4	ST	25	200730-003	COIL,RF	L8
33	4	ST	25	BR355933	COIL,CHOKE 6U8 K	L15
	4	ST	25	BR355933	COIL,CHOKE 6U8 K	L12
	4	ST	25	BR355933	COIL,CHOKE 6U8 K	L11
	4	ST	25	BR355933	COIL,CHOKE 6U8 K	L13
34	1	ST	25	BR372889	COIL,CHOKE 5U6 K	L14
35	1	ST	25	BR394335	COIL,CHOKE 0U1 K	L16
36	1	ST	41	BR460176	REAR PLATE A 1	MP1
37	1	ST	45	210840-001	RETAINER	MP2
38	2	ST	51	210841-001	THUMBSCREW	MP3
39	8	ST	52	BR455571	STAY NUT M2,5X15 Ø4,0-2,9	MP4
40	1	ST	41	BR457612	SCREEN SHIELD A1	MP5
41	1	ST	41	BR457604	SCREEN SHIELD A1	MP6
42	1	ST	41	BR460273	SCREEN SHIELD A1	MP7
43	1	ST	31	BR459364	CONTACT SPRING 2 A1-2-3-4	MP8
44	10	ST	26	BR451320	TRANS.LOPOW 2N3906 SI-P T	Q2
	10	ST	26	BR451320	TRANS.LOPOW 2N3906 SI-P T	Q36

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
44	10	ST	26	BR451320	TRANS.LOPOW 2N3906 SI-P T	Q19
	10	ST	26	BR451320	TRANS.LOPOW 2N3906 SI-P T	Q13
	10	ST	26	BR451320	TRANS.LOPOW 2N3906 SI-P T	Q10
	10	ST	26	BR451320	TRANS.LOPOW 2N3906 SI-P T	Q4
	10	ST	26	BR451320	TRANS.LOPOW 2N3906 SI-P T	Q37
	10	ST	26	BR451320	TRANS.LOPOW 2N3906 SI-P T	Q8
	10	ST	26	BR451320	TRANS.LOPOW 2N3906 SI-P T	Q38
	10	ST	26	BR451320	TRANS.LOPOW 2N3906 SI-P T	Q1
45	11	ST	26	BR455164	TRANS.LOPOW 2N3904 SI-P T	Q32
	11	ST	26	BR455164	TRANS.LOPOW 2N3904 SI-P T	Q11
	11	ST	26	BR455164	TRANS.LOPOW 2N3904 SI-P T	Q9
	11	ST	26	BR455164	TRANS.LOPOW 2N3904 SI-P T	Q6
	11	ST	26	BR455164	TRANS.LOPOW 2N3904 SI-P T	Q7
	11	ST	26	BR455164	TRANS.LOPOW 2N3904 SI-P T	Q15
	11	ST	26	BR455164	TRANS.LOPOW 2N3904 SI-P T	Q31
	11	ST	26	BR455164	TRANS.LOPOW 2N3904 SI-P T	Q16
	11	ST	26	BR455164	TRANS.LOPOW 2N3904 SI-P T	Q12
	11	ST	26	BR455164	TRANS.LOPOW 2N3904 SI-P T	Q3
	11	ST	26	BR455164	TRANS.LOPOW 2N3904 SI-P T	Q18
46	1	ST	26	BR455172	TRANS.JFETN 2N3958 DUAL T	Q5
47	1	ST	26	BR399914	TRANS.JFETN J 309 TO-92	Q14
48	1	ST	26	BR450278	TRANS.MFETN 3N 139	Q17
49	1	ST	26	BR274070	TRANS.JFETN BFW 11 TO-72	Q20
50	3	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q24
	3	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q21
	3	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q25
51	3	ST	26	202373-002	TRANSISTOR, MPS2369	Q23
	3	ST	26	202373-002	TRANSISTOR, MPS2369	Q30
	3	ST	26	202373-002	TRANSISTOR, MPS2369	Q33
52	1	ST	26	BR359157	TRANS.LOPOW BC307B SI-P T	Q26
53	2	ST	26	BR357804	TRANS.UHF BFX 89 SI-N TO-	Q27
	2	ST	26	BR357804	TRANS.UHF BFX 89 SI-N TO-	Q28
54	1	ST	26	BR320668	TRANS.LOPOW BFX 48 SI-P T	Q29
55	2	ST	26	BR389730	TRANS.JFETN J-211-18	Q34
	2	ST	26	BR389730	TRANS.JFETN J-211-18	Q39
56	2	ST	26	BR451290	TRANS.JFETP 2N5460 TO-92	Q35
	2	ST	26	BR451290	TRANS.JFETP 2N5460 TO-92	Q40
57	8	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R118
	8	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R95
	8	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R41
	8	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R36
	8	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R160
	8	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R123
	8	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R119
	8	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R1
58	7	ST	21	BR240354	RES CARB. 510R 1/4J SFR25	R75
	7	ST	21	BR240354	RES CARB. 510R 1/4J SFR25	R2

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
58	7	ST	21	BR240354	RES CARB. 510R 1/4J SFR25	R39
	7	ST	21	BR240354	RES CARB. 510R 1/4J SFR25	R26
	7	ST	21	BR240354	RES CARB. 510R 1/4J SFR25	R3
	7	ST	21	BR240354	RES CARB. 510R 1/4J SFR25	R38
	7	ST	21	BR240354	RES CARB. 510R 1/4J SFR25	R83
59	7	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	R4
	7	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	R43
	7	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	R8
	7	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	R55
	7	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	R12
	7	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	R73
	7	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	R10
60	3	ST	21	BR240265	RES CARB. 200R 1/4J SFR25	R5
	3	ST	21	BR240265	RES CARB. 200R 1/4J SFR25	R24
	3	ST	21	BR240265	RES CARB. 200R 1/4J SFR25	R27
61	2	ST	21	BR240397	RES CARB. 820R 1/4J SFR25	R96
	2	ST	21	BR240397	RES CARB. 820R 1/4J SFR25	R6
62	2	ST	21	BR240125	RES CARB. 22R 1/4J SFR25	R7
	2	ST	21	BR240125	RES CARB. 22R 1/4J SFR25	R22
63	2	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R9
	2	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R13
64	7	ST	21	BR240443	RES CARB. 2K0 1/4J SFR25	R109
	7	ST	21	BR240443	RES CARB. 2K0 1/4J SFR25	R105
	7	ST	21	BR240443	RES CARB. 2K0 1/4J SFR25	R120
	7	ST	21	BR240443	RES CARB. 2K0 1/4J SFR25	R11
	7	ST	21	BR240443	RES CARB. 2K0 1/4J SFR25	R52
	7	ST	21	BR240443	RES CARB. 2K0 1/4J SFR25	R148
	7	ST	21	BR240443	RES CARB. 2K0 1/4J SFR25	R103
65	1	ST	21	600005-177	RES FILM. 619R, 0.6F	R14
66	2	ST	21	BR240583	RES CARB. 12K 1/4J SFR25	R15
	2	ST	21	BR240583	RES CARB. 12K 1/4J SFR25	R115
67	3	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	R16
	3	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	R28
	3	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	R54
68	9	ST	21	BR240184	RES CARB. 47R 1/4J SFR25	R153
	9	ST	21	BR240184	RES CARB. 47R 1/4J SFR25	R161
	9	ST	21	BR240184	RES CARB. 47R 1/4J SFR25	R155
	9	ST	21	BR240184	RES CARB. 47R 1/4J SFR25	R121
	9	ST	21	BR240184	RES CARB. 47R 1/4J SFR25	R150
	9	ST	21	BR240184	RES CARB. 47R 1/4J SFR25	R151
	9	ST	21	BR240184	RES CARB. 47R 1/4J SFR25	R152
	9	ST	21	BR240184	RES CARB. 47R 1/4J SFR25	R154
	9	ST	21	BR240184	RES CARB. 47R 1/4J SFR25	R17
69	2	ST	21	BR240303	RES CARB. 300R 1/4J SFR25	R60
	2	ST	21	BR240303	RES CARB. 300R 1/4J SFR25	R18
70	7	ST	21	BR240389	RES CARB. 680R 1/4J SFR25	R84
	7	ST	21	BR240389	RES CARB. 680R 1/4J SFR25	R143

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
70	7	ST	21	BR240389	RES CARB. 680R 1/4J SFR25	R19
	7	ST	21	BR240389	RES CARB. 680R 1/4J SFR25	R29
	7	ST	21	BR240389	RES CARB. 680R 1/4J SFR25	R82
	7	ST	21	BR240389	RES CARB. 680R 1/4J SFR25	R87
	7	ST	21	BR240389	RES CARB. 680R 1/4J SFR25	R81
71	3	ST	21	BR240486	RES CARB. 3K3 1/4J SFR25	R23
	3	ST	21	BR240486	RES CARB. 3K3 1/4J SFR25	R113
	3	ST	21	BR240486	RES CARB. 3K3 1/4J SFR25	R20
72	6	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R31
	6	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R32
	6	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R30
	6	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R21
	6	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R124
	6	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R65
73	10	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R67
	10	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R108
	10	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R127
	10	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R106
	10	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R25
	10	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R53
	10	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R56
	10	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R77
	10	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R69
	10	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R102
74	2	ST	21	BR240524	RES CARB. 5K6 1/4J SFR25	R33
	2	ST	21	BR240524	RES CARB. 5K6 1/4J SFR25	R116
75	4	ST	21	BR240621	RES CARB. 22K 1/4J SFR25	R34
	4	ST	21	BR240621	RES CARB. 22K 1/4J SFR25	R37
	4	ST	21	BR240621	RES CARB. 22K 1/4J SFR25	R40
	4	ST	21	BR240621	RES CARB. 22K 1/4J SFR25	R117
76	1	ST	21	BR240427	RES CARB. 1K5 1/4J SFR25	R35
77	4	ST	21	BR450979	RES CARB. 360R 1/4J SFR25	R78
	4	ST	21	BR450979	RES CARB. 360R 1/4J SFR25	R42
	4	ST	21	BR450979	RES CARB. 360R 1/4J SFR25	R85
	4	ST	21	BR450979	RES CARB. 360R 1/4J SFR25	R80
78	2	ST	21	BR240419	RES CARB. 1K2 1/4J SFR25	R50
	2	ST	21	BR240419	RES CARB. 1K2 1/4J SFR25	R125
79	1	ST	21	BR372064	RES CARB. 9K1 1/4J SFR25	R51
80	2	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R57
	2	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R74
81	4	ST	21	BR240230	RES CARB. 120R 1/4J SFR25	R162
	4	ST	21	BR240230	RES CARB. 120R 1/4J SFR25	R62
	4	ST	21	BR240230	RES CARB. 120R 1/4J SFR25	R58
	4	ST	21	BR240230	RES CARB. 120R 1/4J SFR25	R64
82	1	ST	21	BR240206	RES CARB. 56R 1/4J SFR25	R59
83	4	ST	21	BR240338	RES CARB. 390R 1/4J SFR25	R86
	4	ST	21	BR240338	RES CARB. 390R 1/4J SFR25	R66

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
83	4	ST	21	BR240338	RES CARB. 390R 1/4J SFR25	R61
	4	ST	21	BR240338	RES CARB. 390R 1/4J SFR25	R79
84	2	ST	21	BR240192	RES CARB. 51R 1/4J SFR25	R70
	2	ST	21	BR240192	RES CARB. 51R 1/4J SFR25	R63
85	4	ST	21	BR324205	RES CARB. 5K1 1/4J SFR25	R110
	4	ST	21	BR324205	RES CARB. 5K1 1/4J SFR25	R71
	4	ST	21	BR324205	RES CARB. 5K1 1/4J SFR25	R142
	4	ST	21	BR324205	RES CARB. 5K1 1/4J SFR25	R141
86	1	ST	21	BR324221	RES CARB. 2K4 1/4J SFR25	R72
87	1	ST	21	BR362913	RES CARB. 15R 1/4J SFR25	R76
88	2	ST	21	BR240257	RES CARB. 180R 1/4J SFR25	R88
	2	ST	21	BR240257	RES CARB. 180R 1/4J SFR25	R90
89	1	ST	21	BR363251	RES CARB. 39R 1/4J SFR25	R91
90	2	ST	21	BR240281	RES CARB. 270R 1/4J SFR25	R94
	2	ST	21	BR240281	RES CARB. 270R 1/4J SFR25	R92
91	2	ST	21	600005-239	RES FILM. 2K49, 0.6F	R98
	2	ST	21	600005-239	RES FILM. 2K49, 0.6F	R97
92	1	ST	21	600005-211	RES FILM. 1K27, 0.6F	R99
93	1	ST	21	BR240311	RES CARB. 330R 1/4J SFR25	R100
94	3	ST	21	BR240494	RES CARB. 3K9 1/4J SFR25	R107
	3	ST	21	BR240494	RES CARB. 3K9 1/4J SFR25	R104
	3	ST	21	BR240494	RES CARB. 3K9 1/4J SFR25	R101
95	2	ST	21	BR324191	RES CARB. 7K5 1/4J SFR25	R111
	2	ST	21	BR324191	RES CARB. 7K5 1/4J SFR25	R147
96	1	ST	21	BR240370	RES CARB. 620R 1/4J SFR25	R112
97	1	ST	21	BR240435	RES CARB. 1K8 1/4J SFR25	R114
98	1	ST	21	BR240346	RES CARB. 470R 1/4J SFR25	R122
99	1	ST	21	600005-287	RES FILM. 7K87, 0.6F	R126
100	1	ST	21	600005-476	RES FILM.604K , 0.6F	R128
101	3	ST	21	600005-101	RES FILM.100R , 0.6F	R136
	3	ST	21	600005-101	RES FILM.100R , 0.6F	R129
	3	ST	21	600005-101	RES FILM.100R , 0.6F	R131
102	1	ST	21	600005-230	RES FILM. 2K00, 0.6F	R130
103	2	ST	21	600005-151	RES FILM.332R , 0.6F	R135
	2	ST	21	600005-151	RES FILM.332R , 0.6F	R132
104	1	ST	21	600005-451	RES FILM. 332K, 0.6F	R133
105	1	ST	21	BR359408	RES SEMIV 50K 1/2K CERM	R134
106	1	ST	21	BR363235	RES SEMIV 5K 1/2K CERM	R137
107	1	ST	21	BR455199	RES FILM 100K 1/4D	R138
108	1	ST	21	BR455180	RES FILM 100R 1/4D	R139
109	1	ST	21	600005-351	RES FILM. 33K2, 0.6F	R140
110	2	ST	21	BR240680	RES CARB. 47K 1/4J SFR25	R144
	2	ST	21	BR240680	RES CARB. 47K 1/4J SFR25	R145
111	1	ST	21	600005-189	RES FILM. 825R, 0.6F	R146
112	3	ST	21	600005-169	RES FILM 511R , 0,6F	R158
	3	ST	21	600005-169	RES FILM 511R , 0,6F	R157
	3	ST	21	600005-169	RES FILM 511R , 0,6F	R156

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
113	1	ST	21	BR240478	RES CARB. 2K7 1/4J SFR25	R159
114	4	ST	31	202168-030	COLLAR SLEEVES Ø1.3X10MM	TP
115	3	ST	24	BR451150	IC DGTL 74LS669N U/D COUN	U1
	3	ST	24	BR451150	IC DGTL 74LS669N U/D COUN	U2
	3	ST	24	BR451150	IC DGTL 74LS669N U/D COUN	U3
116	6	ST	24	200888-095	IC, --74HCT74	U6
	6	ST	24	200888-095	IC, --74HCT74	U18
	6	ST	24	200888-095	IC, --74HCT74	U19
	6	ST	24	200888-095	IC, --74HCT74	U20
	6	ST	24	200888-095	IC, --74HCT74	U4
	6	ST	24	200888-095	IC, --74HCT74	U5
117	1	ST	24	BR365874	IC DGTL 74LS 74N 2X D FF	U7
118	2	ST	24	BR488690	IC DGTL 74HCT174 6X D-FF	U8
	2	ST	24	BR488690	IC DGTL 74HCT174 6X D-FF	U9
119	3	ST	24	207435-095	IC, --74HCT283, ADDERS	U10
	3	ST	24	207435-095	IC, --74HCT283, ADDERS	U12
	3	ST	24	207435-095	IC, --74HCT283, ADDERS	U11
120	1	ST	24	BR473855	IC DGTL 74LS193N U/D COUN	U13
121	2	ST	24	BR488720	IC DGTL 74HCT193 U/D COUN	U15
	2	ST	24	BR488720	IC DGTL 74HCT193 U/D COUN	U14
122	2	ST	24	200463-095	IC, --74HCT02	U35
	2	ST	24	200463-095	IC, --74HCT02	U16
123	1	ST	24	BR488712	IC DGTL 74HCT192 U/D COUN	U17
124	1	ST	24	BR404608	IC DGTL 74S 74N 2X D-FF	U21
125	2	ST	24	BR450367	IC DGTL 10131P ECL D-FF	U22
	2	ST	24	BR450367	IC DGTL 10131P ECL D-FF	U23
126	1	ST	24	BR450383	IC DGTL 10106P ECL NOR	U24
127	1	ST	24	BR451266	IC LIN LM 301A OP.AMP.	U25
128	1	ST	24	BR450375	IC DGTL 10116P ECL BUFFER	U26
129	1	ST	24	BR454753	IC LIN LM 393N VOLT COMP.	U27
130	1	ST	24	BR454745	IC LIN LM 310N OP.AMP.	U28
131	1	ST	24	BR455113	IC LIN LM 308N OP.AMP.	U29
132	1	ST	24	203809-003	IC, LF 356 N	U30
133	1	ST	24	BR357898	IC DGTL 74S112 2X JK-FF	U31
134	1	ST	24	BR451304	IC LIN LM 3046N TRANS.ARR	U32
135	1	ST	24	206072-095	IC, --74HCT138	U33
136	1	ST	24	203469-006	IC, SN7406N	U34
137	1	ST	24	BR451630	IC DGTL 74LS379N 4X D-FF	U36
138	1	ST	24	BR488755	IC DGTL 74HCT365 6XBUSDRI	U37
139	3	ST	24	BR488224	IC DGTL 74HCT377 8X D-FF	U39
	3	ST	24	BR488224	IC DGTL 74HCT377 8X D-FF	U38
	3	ST	24	BR488224	IC DGTL 74HCT377 8X D-FF	U40
140	1	ST	23	203527-006	DIODE ZENER 3V9/0.5W J	VR1
141	2	ST	23	BR454389	DIO ZEN ZPD16 16V 0.5W	VR2
	2	ST	23	BR454389	DIO ZEN ZPD16 16V 0.5W	VR3
142	5	ST	23	BR228850	DIO ZEN ZPD 6,2 6,2V 0,5W	VR5
	5	ST	23	BR228850	DIO ZEN ZPD 6,2 6,2V 0,5W	VR8

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
142	5	ST	23	BR228850	DIO ZEN ZPD 6,2 6,2V 0,5W	VR6
	5	ST	23	BR228850	DIO ZEN ZPD 6,2 6,2V 0,5W	VR4
	5	ST	23	BR228850	DIO ZEN ZPD 6,2 6,2V 0,5W	VR7
143	1	ST	37	BR458775	COAX CA ASSY - - 335MM	W1
144	1	ST	37	BR458783	COAX CA ASSY - - 150MM	W2
145	1	ST	37	BR458791	COAX CA ASSY - - 60MM	W3
146	1	ST	41	BR499749	SCREEN CAN A1A1 MY-META	
147	1	ST	21	235004-097	RES FILM 10K / 0.5 J	R163
148	1	ST	21	235004-057	RES FILM 220R / 0.5 J	R164

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR455482	PWB,VCO A1A1	
2	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C17
	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C18
	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C21
	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C23
	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C24
	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C25
	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C26
3	1	ST	22	BR455148	CAP. CER. 18P 63 J N150	C19
4	1	ST	22	BR455121	CAP. CER. 10P 63 J N150	C20
5	1	ST	22	BR450855	CAP. CER. 47P 63 J N150	C22
6	4	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR13
	4	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR14
	4	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR15
	4	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR16
7	1	ST	23	BR405531	DIO CAP.BB204B SI 37-42PF	CR17
8	1	ST	23	200352-001	DIODE 1N4148	CR22
9	3	ST	22	BR436976	CAP. CER. 100N 100 M	C109
	3	ST	22	BR436976	CAP. CER. 100N 100 M	C110
	3	ST	22	BR436976	CAP. CER. 100N 100 M	C111
10	4	ST	51	BR458287	SCREW M 2,5X 8 CHM CU SN	H1
11	7	ST	31	202168-030	COLLAR SLEEVES Ø1.3X10MM	H2
12	1	ST	26	BR218952	TRANS.ACCESS PAD TO-18	H3
13	1	ST	25	BR455237	COIL A1A1 L1	L1
14	1	ST	25	BR357820	COIL,CHOKE 2U2 K	L2
16	4	ST	52	BR396834	STAY NUT M2,6X15,5 Ø3,9/Ø	MP2
17	1	ST	26	BR455229	TRANS.MFETN MFE131 2XG T	Q22
18	2	ST	21	600005-476	RES FILM.604K , 0.6F	R44
	2	ST	21	600005-476	RES FILM.604K , 0.6F	R45
19	1	ST	21	600005-287	RES FILM. 7K87, 0.6F	R46
20	1	ST	21	600005-373	RES FILM.56K2 , 0.6F	R47
21	2	ST	21	600005-101	RES FILM.100R , 0.6F	R48
	2	ST	21	600005-101	RES FILM.100R , 0.6F	R49
22	1	ST	21	600005-318	RES FILM. 15K0, 0.6F	R149
23	0,2	G	78	204720-005	COMPOUND	

BR455490 VCO ASSY A1A1

PARTSLIST

Printet: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR492809	PWB,STANDARD OSC A2	
2	11	ST	22	235010-006	CAP. ELC 6U8 / 25M	C53
	11	ST	22	235010-006	CAP. ELC 6U8 / 25M	C54
	11	ST	22	235010-006	CAP. ELC 6U8 / 25M	C52
	11	ST	22	235010-006	CAP. ELC 6U8 / 25M	C50
	11	ST	22	235010-006	CAP. ELC 6U8 / 25M	C47
	11	ST	22	235010-006	CAP. ELC 6U8 / 25M	C45
	11	ST	22	235010-006	CAP. ELC 6U8 / 25M	C4
	11	ST	22	235010-006	CAP. ELC 6U8 / 25M	C30
	11	ST	22	235010-006	CAP. ELC 6U8 / 25M	C27
	11	ST	22	235010-006	CAP. ELC 6U8 / 25M	C1
	11	ST	22	235010-006	CAP. ELC 6U8 / 25M	C6
3	1	ST	22	BR450898	CAP. PLST 330N 63 J MET	C2
4	1	ST	22	BR448850	CAP. PLST 2N2 160 H	C3
5	2	ST	22	202542-102	CAP. CER 100P / 100G	C11
	2	ST	22	202542-102	CAP. CER 100P / 100G	C5
6	8	ST	22	BR358959	CAP. CER. 1N0 100 K	C14
	8	ST	22	BR358959	CAP. CER. 1N0 100 K	C20
	8	ST	22	BR358959	CAP. CER. 1N0 100 K	C15
	8	ST	22	BR358959	CAP. CER. 1N0 100 K	C44
	8	ST	22	BR358959	CAP. CER. 1N0 100 K	C7
	8	ST	22	BR358959	CAP. CER. 1N0 100 K	C38
	8	ST	22	BR358959	CAP. CER. 1N0 100 K	C22
	8	ST	22	BR358959	CAP. CER. 1N0 100 K	C28
7	1	ST	22	BR357480	CAP. CER. 22P 100 G N150	C35
8	1	ST	22	BR357545	CAP. CER. 68P 100 C N150	C36
9	1	ST	22	BR390224	CAP. CER. 470P 100 K HI-K	C10
10	6	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C84
	6	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C24
	6	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C83
	6	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C23
	6	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C85
	6	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C12
11	27	ST	22	BR450510	CAP. CER. 100N 63 S	C62
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C75
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C73
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C72
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C71
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C70
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C69
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C68
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C67
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C66
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C65
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C76
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C63
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C57

BR448184 STANDARD TCXO A2

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
11	27	ST	22	BR450510	CAP. CER. 100N 63 S	C61
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C60
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C59
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C58
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C56
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C49
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C46
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C37
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C26
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C21
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C17
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C64
	27	ST	22	BR450510	CAP. CER. 100N 63 S	C55
12	1	ST	22	BR451053	CAP. ELEC 68U 6,3 M	C18
13	1	ST	22	BR357510	CAP. CER. 39P 100 G N150	C19
14	2	ST	22	BR209570	CAP. PLST 47N 250 K	C25
	2	ST	22	BR209570	CAP. PLST 47N 250 K	C32
15	1	ST	22	BR448885	CAP. PLST 4N7 160 H	C29
16	1	ST	22	BR448877	CAP. PLST 3N3 160 H	C31
17	1	ST	22	BR209554	CAP. PLST 10N 250 K	C33
18	1	ST	22	BR450804	CAP. PLST 3N 160 F	C34
19	3	ST	22	BR450812	CAP. PLST 1N 160 J	C39
	3	ST	22	BR450812	CAP. PLST 1N 160 J	C43
	3	ST	22	BR450812	CAP. PLST 1N 160 J	C42
20	1	ST	22	BR450820	CAP. PLST 220P 630 J	C40
21	1	ST	22	BR357650	CAP. CER. 22N 63 A HI-K	C41
22	1	ST	22	BR450839	CAP. PLST 560P 160 J	C48
23	1	ST	22	BR357596	CAP. CER. 150P 100 G N150	C51
24	1	ST	22	BR357499	CAP. CER. 27P 100 G N150	C74
25	1	ST	22	235010-001	CAP. ELC 1U0 / 25M	C81
26	1	ST	22	BR459410	CAP. ELEC 10U 10 M	C82
27	1	ST	23	BR451061	DIO CAP.BB 405B SI 2-17PF	CR1
28	9	ST	23	200352-001	DIODE 1N4148	CR4
	9	ST	23	200352-001	DIODE 1N4148	CR12
	9	ST	23	200352-001	DIODE 1N4148	CR10
	9	ST	23	200352-001	DIODE 1N4148	CR13
	9	ST	23	200352-001	DIODE 1N4148	CR14
	9	ST	23	200352-001	DIODE 1N4148	CR5
	9	ST	23	200352-001	DIODE 1N4148	CR6
	9	ST	23	200352-001	DIODE 1N4148	CR11
	9	ST	23	200352-001	DIODE 1N4148	CR7
29	2	ST	23	BR405531	DIO CAP.BB204B SI 37-42PF	CR8
	2	ST	23	BR405531	DIO CAP.BB204B SI 37-42PF	CR9
30	5	ST	51	202185-003	SCREW M2.5X 5SLTD.CYL.BRS	H1
31	2	ST	25	BR450065	COIL,ACCESS SCREEN,CAN	H2
32	2	ST	31	200764-002	CONN SMB RECP 50R	J1
	2	ST	31	200764-002	CONN SMB RECP 50R	J2

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
33	1	ST	31	BR477052	CONN MOLEX 6P MALE	J3
34	1	ST	25	BR454524	COIL M 3000 A2 L1	L1
35	2	ST	25	BR450405	COIL,CHOKE 0U68 K	L3
	2	ST	25	BR450405	COIL,CHOKE 0U68 K	L2
36	3	ST	25	BR394343	COIL,CHOKE 1U0 K	L9
	3	ST	25	BR394343	COIL,CHOKE 1U0 K	L4
	3	ST	25	BR394343	COIL,CHOKE 1U0 K	L8
37	2	ST	25	BR363294	COIL,CHOKE 47U J	L17
	2	ST	25	BR363294	COIL,CHOKE 47U J	L5
38	2	ST	25	BR375330	COIL,CHOKE 0U22 K	L6
	2	ST	25	BR375330	COIL,CHOKE 0U22 K	L7
39	6	ST	25	200730-003	COIL,RF	L10
	6	ST	25	200730-003	COIL,RF	L11
	6	ST	25	200730-003	COIL,RF	L12
	6	ST	25	200730-003	COIL,RF	L13
	6	ST	25	200730-003	COIL,RF	L14
	6	ST	25	200730-003	COIL,RF	L21
40	1	ST	25	BR450413	COIL,CHOKE 1M0 K	L16
41	1	ST	25	BR454532	COIL M 3000 A2 L18	L18
42	1	ST	25	BR450774	COIL,CHOKE 33U K	L19
43	1	ST	25	BR450782	COIL,CHOKE 82U K	L20
44	1	ST	25	BR450766	COIL,CHOKE 27U J	L22
45	1	ST	41	BR460184	REAR PLATE A 2	MP1
46	1	ST	45	210840-001	RETAINER	MP2
47	2	ST	51	210841-001	THUMBSCREW	MP3
48	1	ST	31	BR459356	CONTACT SPRING 1 A2-3-4	MP5
49	1	ST	31	BR459364	CONTACT SPRING 2 A1-2-3-4	MP4
51	1	ST	26	BR399914	TRANS.JFETN J 309 TO-92	Q1
52	2	ST	26	BR359157	TRANS.LOPOW BC307B SI-P T	Q2
	2	ST	26	BR359157	TRANS.LOPOW BC307B SI-P T	Q13
53	6	ST	26	202373-002	TRANSISTOR, MPS2369	Q7
	6	ST	26	202373-002	TRANSISTOR, MPS2369	Q16
	6	ST	26	202373-002	TRANSISTOR, MPS2369	Q3
	6	ST	26	202373-002	TRANSISTOR, MPS2369	Q15
	6	ST	26	202373-002	TRANSISTOR, MPS2369	Q18
	6	ST	26	202373-002	TRANSISTOR, MPS2369	Q19
54	2	ST	26	BR451320	TRANS.LOPOW 2N3906 SI-P T	Q5
	2	ST	26	BR451320	TRANS.LOPOW 2N3906 SI-P T	Q4
55	5	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q12
	5	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q10
	5	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q17
	5	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q6
	5	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q14
56	1	ST	26	BR451290	TRANS.JFETP 2N5460 TO-92	Q8
57	1	ST	26	BR389730	TRANS.JFETN J-211-18	Q9
58	1	ST	26	BR451312	TRANS.LOPOW BF 199 SI-N T	Q11
59	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R105

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
59	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R1
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R99
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R100
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R92
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R91
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R90
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R84
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R80
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R79
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R73
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R50
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R46
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R107
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R2
	16	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R30
60	2	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	R108
	2	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	R3
61	3	ST	21	BR240125	RES CARB. 22R 1/4J SFR25	R88
	3	ST	21	BR240125	RES CARB. 22R 1/4J SFR25	R4
	3	ST	21	BR240125	RES CARB. 22R 1/4J SFR25	R31
62	1	ST	21	600005-255	RES FILM. 3K65, 0.6F	R5
63	3	ST	21	600005-281	RES FILM. 6K81, 0.6F	R6
	3	ST	21	600005-281	RES FILM. 6K81, 0.6F	R66
	3	ST	21	600005-281	RES FILM. 6K81, 0.6F	R67
64	3	ST	21	600005-266	RES FILM.4K75 , 0.6F	R9
	3	ST	21	600005-266	RES FILM.4K75 , 0.6F	R7
	3	ST	21	600005-266	RES FILM.4K75 , 0.6F	R10
65	2	ST	21	600005-301	RES FILM. 10K0, 0.6F	R13
	2	ST	21	600005-301	RES FILM. 10K0, 0.6F	R8
66	1	ST	21	600005-371	RES FILM.53K6 , 0.6F	R11
67	1	ST	21	600005-358	RES FILM. 39K2, 0.6F	R12
68	1	ST	21	600005-401	RES FILM. 100K, 0.6F	R14
69	1	ST	21	BR240281	RES CARB. 270R 1/4J SFR25	R15
70	2	ST	21	600005-343	RES FILM. 27K4, 0.6F	R16
	2	ST	21	600005-343	RES FILM. 27K4, 0.6F	R18
71	1	ST	21	600005-201	RES FILM. 1K00, 0.6F	R19
72	7	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R20
	7	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R33
	7	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R87
	7	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R37
	7	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R89
	7	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R32
	7	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R23
73	4	ST	21	BR240338	RES CARB. 390R 1/4J SFR25	R35
	4	ST	21	BR240338	RES CARB. 390R 1/4J SFR25	R36
	4	ST	21	BR240338	RES CARB. 390R 1/4J SFR25	R22
	4	ST	21	BR240338	RES CARB. 390R 1/4J SFR25	R21

BR448184 STANDARD TCXO A2

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
74	3	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R106
	3	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R110
	3	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R24
75	2	ST	21	BR240494	RES CARB. 3K9 1/4J SFR25	R86
	2	ST	21	BR240494	RES CARB. 3K9 1/4J SFR25	R25
76	1	ST	21	BR240273	RES CARB. 240R 1/4J SFR25	R26
77	1	ST	21	BR363251	RES CARB. 39R 1/4J SFR25	R27
78	1	ST	21	BR359572	RES CARB. 110R 1/4J SFR25	R28
79	5	ST	21	BR240362	RES CARB. 560R 1/4J SFR25	R34
	5	ST	21	BR240362	RES CARB. 560R 1/4J SFR25	R83
	5	ST	21	BR240362	RES CARB. 560R 1/4J SFR25	R39
	5	ST	21	BR240362	RES CARB. 560R 1/4J SFR25	R29
	5	ST	21	BR240362	RES CARB. 560R 1/4J SFR25	R76
80	1	ST	21	BR240257	RES CARB. 180R 1/4J SFR25	R38
81	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R97
	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R95
	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R82
	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R98
	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R78
	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R54
	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R44
	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R42
	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R40
	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R104
	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R102
	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R101
	13	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R64
82	3	ST	21	BR240540	RES CARB. 6K8 1/4J SFR25	R96
	3	ST	21	BR240540	RES CARB. 6K8 1/4J SFR25	R51
	3	ST	21	BR240540	RES CARB. 6K8 1/4J SFR25	R41
83	2	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R74
	2	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R43
84	1	ST	21	BR372137	RES CARB. 20K 1/4J SFR25	R45
85	5	ST	21	BR240478	RES CARB. 2K7 1/4J SFR25	R47
	5	ST	21	BR240478	RES CARB. 2K7 1/4J SFR25	R48
	5	ST	21	BR240478	RES CARB. 2K7 1/4J SFR25	R75
	5	ST	21	BR240478	RES CARB. 2K7 1/4J SFR25	R77
	5	ST	21	BR240478	RES CARB. 2K7 1/4J SFR25	R93
86	8	ST	21	BR451096	RES FILM 4K75 1/4D MPR24	R58
	8	ST	21	BR451096	RES FILM 4K75 1/4D MPR24	R52
	8	ST	21	BR451096	RES FILM 4K75 1/4D MPR24	R53
	8	ST	21	BR451096	RES FILM 4K75 1/4D MPR24	R55
	8	ST	21	BR451096	RES FILM 4K75 1/4D MPR24	R57
	8	ST	21	BR451096	RES FILM 4K75 1/4D MPR24	R60
	8	ST	21	BR451096	RES FILM 4K75 1/4D MPR24	R70
	8	ST	21	BR451096	RES FILM 4K75 1/4D MPR24	R56
87	1	ST	21	600005-243	RES FILM. 2K74, 0.6F	R59

BR448184 STANDARD TCXO A2

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
88	1	ST	21	BR451118	RES FILM 560R 1/4D	R61
89	1	ST	21	BR451126	RES FILM 10K0 1/4D	R62
90	1	ST	21	BR240583	RES CARB. 12K 1/4J SFR25	R63
91	1	ST	21	600005-326	RES FILM. 18K2, 0.6F	R65
92	1	ST	21	BR365831	RES CARB. 680K 1/4J SFR25	R68
94	1	ST	21	600005-329	RES FILM. 19K6, 0.6F	R71
95	2	ST	21	BR436879	RES SEMIV 20K 3/4K CERM	R49
	2	ST	21	BR436879	RES SEMIV 20K 3/4K CERM	R72
96	1	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	R81
97	1	ST	21	BR240214	RES CARB. 82R 1/4J SFR25	R85
98	1	ST	21	BR240346	RES CARB. 470R 1/4J SFR25	R94
99	1	ST	21	BR240656	RES CARB. 33K 1/4J SFR25	R109
100	1	ST	21	BR368598	RES SEMIV 500R 1/2K CERM	R111
101	3	ST	31	202168-030	COLLAR SLEEVES Ø1.3X10MM	TP
102	4	ST	24	BR488143	IC DGTL 74HCT163 BIN.COUN	U1
	4	ST	24	BR488143	IC DGTL 74HCT163 BIN.COUN	U2
	4	ST	24	BR488143	IC DGTL 74HCT163 BIN.COUN	U14
	4	ST	24	BR488143	IC DGTL 74HCT163 BIN.COUN	U13
103	4	ST	24	200888-095	IC, --74HCT74	U36
	4	ST	24	200888-095	IC, --74HCT74	U15
	4	ST	24	200888-095	IC, --74HCT74	U3
	4	ST	24	200888-095	IC, --74HCT74	U18
104	1	ST	24	BR451231	IC LIN LM 723C VOLT REGL.	U5
105	3	ST	24	203809-003	IC, LF 356 N	U6
	3	ST	24	203809-003	IC, LF 356 N	U20
	3	ST	24	203809-003	IC, LF 356 N	U19
106	1	ST	24	BR488763	IC DGTL 74HCT393 2XBIN.CO	U7
107	1	ST	24	200462-095	IC, --74HCT00, NAND GATE	U9
108	1	ST	24	BR450375	IC DGTL 10116P ECL BUFFER	U10
109	1	ST	24	BR357898	IC DGTL 74S112 2X JK-FF	U11
110	1	ST	24	BR451177	IC DGTL 74LS290N DEC.COUN	U12
111	1	ST	24	200464-026	IC, SN74LS04N	U16
112	1	ST	24	BR451258	IC LIN LM 2901N VOLT COMP	U17
113	1	ST	24	BR451266	IC LIN LM 301A OP.AMP.	U21
114	1	ST	24	BR451215	IC LIN DAC-08EN D/A CONV.	U22
115	1	ST	24	BR451304	IC LIN LM 3046N TRANS.ARR	U23
116	1	ST	24	206072-095	IC, --74HCT138	U24
117	1	ST	24	200463-095	IC, --74HCT02	U25
118	1	ST	24	BR488755	IC DGTL 74HCT365 6XBUSDRI	U27
119	2	ST	24	BR488224	IC DGTL 74HCT377 8X D-FF	U29
	2	ST	24	BR488224	IC DGTL 74HCT377 8X D-FF	U28
120	3	ST	24	BR488704	IC DGTL 74HCT175 4X D-FF	U34
	3	ST	24	BR488704	IC DGTL 74HCT175 4X D-FF	U30
	3	ST	24	BR488704	IC DGTL 74HCT175 4X D-FF	U31
121	3	ST	24	207435-095	IC, --74HCT283, ADDERS	U32
	3	ST	24	207435-095	IC, --74HCT283, ADDERS	U35
	3	ST	24	207435-095	IC, --74HCT283, ADDERS	U33

BR448184 STANDARD TCXO A2

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
122	2	ST	24	BR451150	IC DGTL 74LS669N U/D COUN	U38
	2	ST	24	BR451150	IC DGTL 74LS669N U/D COUN	U37
123	1	ST	24	BR375349	IC LIN 78L05 VOLT REGL.	U39
124	1	ST	23	BR228818	DIO ZEN ZPD 2.7 2.7V 0.5W	VR1
125	1	ST	23	BR451223	DIO ZEN. BZX792V4 2.4V	VR2
126	2	ST	23	203527-010	DIODE ZENER 5V6/0.5W J	VR4
	2	ST	23	203527-010	DIODE ZENER 5V6/0.5W J	VR3
127	1	ST	33	BR216070	FUSE ACCESS CLIPS	XY1
128	2	ST	31	BR486825	CONN 1P FEMALE	XY1
129	1	ST	20	BR496189	CRYSTAL 73,60000MHZ HC42-	Y1
130	1	ST	20	BR451142	CRYSTALOSC 10,24MHZ TCXO	Y2
132	1	ST	22	202542-016	CAP. CER 68P / 100G	C9
133	1	ST	21	BR240109	RES CARB. 10R 1/4J SFR25	R17
134	1	ST	41	210896-001	SHIELD	

BR448184 STANDARD TCXO A2

PARTSLIST

Printet: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR448192	PWB,FRONT END ASSY A3	
2	1	ST	60	BR448222	INPUT AMPLIFIER A3A1	A1
3	1	ST	68	BR495824	1.MIXER ASSY A3A2	A2
4	1	ST	62	BR495794	LO AMPLIFIER ASSY A3A3	A3
5	1	ST	61	BR495778	1.IF AMPLIFIER ASSY A3A4	A4
6	1	ST	60	BR448311	75 MHZ AGC ASSY A3A5	A5
7	1	ST	68	BR448346	2.MIXER ASSY A3A6	A6
8	1	ST	61	BR489948	2.IF AMPLIFIER ASSY A3A7	A7
9	1	ST	22	BR450952	CAPFEED THROUGH 82P250 J	C1
10	22	ST	22	BR450510	CAP. CER. 100N 63 S	C84
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C87
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C88
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C89
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C91
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C81
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C93
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C73
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C94
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C92
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C95
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C74
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C85
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C72
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C71
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C70
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C69
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C68
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C67
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C123
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C80
	22	ST	22	BR450510	CAP. CER. 100N 63 S	C83
11	10	ST	22	221220-007	CAP. PLAST 100N / 63K	C110
	10	ST	22	221220-007	CAP. PLAST 100N / 63K	C111
	10	ST	22	221220-007	CAP. PLAST 100N / 63K	C121
	10	ST	22	221220-007	CAP. PLAST 100N / 63K	C122
	10	ST	22	221220-007	CAP. PLAST 100N / 63K	C124
	10	ST	22	221220-007	CAP. PLAST 100N / 63K	C125
	10	ST	22	221220-007	CAP. PLAST 100N / 63K	C75
	10	ST	22	221220-007	CAP. PLAST 100N / 63K	C76
	10	ST	22	221220-007	CAP. PLAST 100N / 63K	C77
	10	ST	22	221220-007	CAP. PLAST 100N / 63K	C78
12	1	ST	22	BR448834	CAP. PLST 1N5 160 H	C79
13	3	ST	22	235010-006	CAP. ELC 6U8 / 25M	C86
	3	ST	22	235010-006	CAP. ELC 6U8 / 25M	C90
	3	ST	22	235010-006	CAP. ELC 6U8 / 25M	C82
14	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C98
	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C99

BR489638 FRONT END ASSY A3 3KHZ

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
14	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C96
	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C97
	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C102
	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C101
	7	ST	22	BR358959	CAP. CER. 1N0 100 K	C100
15	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR19
	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR4
	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR18
	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR17
	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR16
	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR5
	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR15
	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR10
	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR6
	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR7
	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR8
	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR11
	13	ST	23	BR450944	DIO SIGN. 1S 921 SI 200MA	CR9
16	1	ST	22	BR209791	CAP. TAN. 2U2 35 S	C104
17	5	ST	22	BR357545	CAP. CER. 68P 100 C N150	C119
	5	ST	22	BR357545	CAP. CER. 68P 100 C N150	C126
	5	ST	22	BR357545	CAP. CER. 68P 100 C N150	C120
	5	ST	22	BR357545	CAP. CER. 68P 100 C N150	C118
	5	ST	22	BR357545	CAP. CER. 68P 100 C N150	C117
18	12	ST	25	BR375314	COIL,ACCESS FERRITCORE	E7
	12	ST	25	BR375314	COIL,ACCESS FERRITCORE	E1
	12	ST	25	BR375314	COIL,ACCESS FERRITCORE	E3
	12	ST	25	BR375314	COIL,ACCESS FERRITCORE	E12
	12	ST	25	BR375314	COIL,ACCESS FERRITCORE	E13
	12	ST	25	BR375314	COIL,ACCESS FERRITCORE	E2
	12	ST	25	BR375314	COIL,ACCESS FERRITCORE	E9
	12	ST	25	BR375314	COIL,ACCESS FERRITCORE	E11
	12	ST	25	BR375314	COIL,ACCESS FERRITCORE	E4
	12	ST	25	BR375314	COIL,ACCESS FERRITCORE	E6
	12	ST	25	BR375314	COIL,ACCESS FERRITCORE	E8
	12	ST	25	BR375314	COIL,ACCESS FERRITCORE	E5
19	1	ST	20	BR363367	FILTER,XTAL 75MHZ 12KHZ	FL1
20	7	ST	20	BR450960	FILTER,CER-PHI 0U5	FL11
	7	ST	20	BR450960	FILTER,CER-PHI 0U5	FL10
	7	ST	20	BR450960	FILTER,CER-PHI 0U5	FL12
	7	ST	20	BR450960	FILTER,CER-PHI 0U5	FL9
	7	ST	20	BR450960	FILTER,CER-PHI 0U5	FL7
	7	ST	20	BR450960	FILTER,CER-PHI 0U5	FL6
	7	ST	20	BR450960	FILTER,CER-PHI 0U5	FL13
21	28	ST	51	BR276758	SCREW M 2 X 6 CHM CU SN	H1
22	5	ST	51	202185-003	SCREW M2.5X 5SLTD.CYL.BRS	H2
23	0,2	M	34	BR438227	FLEX TEFLON Ø0,7X Ø1,2	H3

BR489638 FRONT END ASSY A3 3KHZ

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
24	4	ST	51	BR325619	SCREW SELFTA.4X3/16 RPPX	H4
25	1	ST	25	BR450065	COIL,ACCESS SCREEN,CAN	H5
26	1	ST	31	200764-002	CONN SMB RECP 50R	J1
27	5	ST	25	BR450413	COIL,CHOKE 1M0 K	L33
	5	ST	25	BR450413	COIL,CHOKE 1M0 K	L47
	5	ST	25	BR450413	COIL,CHOKE 1M0 K	L34
	5	ST	25	BR450413	COIL,CHOKE 1M0 K	L32
	5	ST	25	BR450413	COIL,CHOKE 1M0 K	L31
28	3	ST	25	200730-003	COIL,RF	L36
	3	ST	25	200730-003	COIL,RF	L38
	3	ST	25	200730-003	COIL,RF	L37
29	1	ST	41	BR489611	REAR PLATE A 3	MP1
30	1	ST	45	210840-001	RETAINER	MP2
31	2	ST	51	210841-001	THUMBSCREW	MP3
32	1	ST	41	BR460001	SCREEN BOX ASSY A3	MP4
33	1	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q12
34	5	ST	21	BR240435	RES CARB. 1K8 1/4J SFR25	R63
	5	ST	21	BR240435	RES CARB. 1K8 1/4J SFR25	R62
	5	ST	21	BR240435	RES CARB. 1K8 1/4J SFR25	R61
	5	ST	21	BR240435	RES CARB. 1K8 1/4J SFR25	R60
	5	ST	21	BR240435	RES CARB. 1K8 1/4J SFR25	R93
35	5	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R97
	5	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R65
	5	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R64
	5	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R67
	5	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R66
36	2	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R68
	2	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R69
37	2	ST	21	BR240486	RES CARB. 3K3 1/4J SFR25	R92
	2	ST	21	BR240486	RES CARB. 3K3 1/4J SFR25	R95
38	2	ST	21	BR359564	RES CARB. 160R 1/4J SFR25	R94
	2	ST	21	BR359564	RES CARB. 160R 1/4J SFR25	R96
39	1	ST	25	BR451908	TRAFO A3T7	T7
40	2	ST	31	202168-030	COLLAR SLEEVES Ø1.3X10MM	TP
41	1	ST	24	203469-006	IC, SN7406N	U4
42	1	ST	24	206072-095	IC, --74HCT138	U5
43	1	ST	24	BR488224	IC DGTL 74HCT377 8X D-FF	U6
44	1	ST	37	BR458805	COAX CA ASSY SMB - 190MM	W1
45	2	ST	37	BR458813	COAX CA ASSY SMB - 245MM	W2
	2	ST	37	BR458813	COAX CA ASSY SMB - 245MM	W5
46	1	ST	37	BR458821	COAX CA ASSY SMB - 235MM	W3
47	0,5	ML	76	205254-001	ADHESIVE SILICONE, RTV	
48	1	ST	48	214073-004	LABEL, ADHESIVE, ESD	
49	8	ST	53	200556-003	WASHER FLAT 3.2X0.5MM	
50	0,25	ST	32	200843-009	WIRE COP TIN-CTD Ø0.6MM	
51	2	ST	25	200351-015	COIL, RF 22U / 65K	L39
	2	ST	25	200351-015	COIL, RF 22U / 65K	L40

BR489638 FRONT END ASSY A3 3KHZ

PARTSLIST

Printed: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR448214	PWB,INPUT AMPLIFIER A3A1	
2	1	ST	22	BR357553	CAP. CER. 82P 100 C N150	C2
3	5	ST	22	235010-006	CAP. ELC 6U8 / 25M	C7
	5	ST	22	235010-006	CAP. ELC 6U8 / 25M	C6
	5	ST	22	235010-006	CAP. ELC 6U8 / 25M	C3
	5	ST	22	235010-006	CAP. ELC 6U8 / 25M	C106
	5	ST	22	235010-006	CAP. ELC 6U8 / 25M	C9
4	1	ST	22	BR491349	CAP. PLST 330N 63 K	C4
5	2	ST	22	BR357391	CAP. CER. 4P7 100 C N150	C5
	2	ST	22	BR357391	CAP. CER. 4P7 100 C N150	C105
6	1	ST	22	221220-007	CAP. PLAST 100N / 63K	C8
7	1	ST	22	BR357480	CAP. CER. 22P 100 G N150	C103
8	1	ST	26	BR349135	TRANS.ACCESS HEATSI.TO5	H1
9	1	ST	26	BR218944	TRANS.ACCESS PAD TO-5	H2
10	1	ST	25	BR375330	COIL,CHOKE 0U22 K	L1
11	1	ST	25	BR363308	COIL,CHOKE 470U	L3
12	4	ST	52	BR394742	STAY NUT M2 X 5 Ø4 F/PWB	MP1
13	1	ST	26	BR362514	TRANS.HIPOW 2N5109 SI-N T	Q1
14	1	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q9
15	1	ST	21	600005-080	RES FILM. 66R5, 0.6F	R1
16	1	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	R2
17	1	ST	21	BR240419	RES CARB. 1K2 1/4J SFR25	R3
18	1	ST	21	BR240265	RES CARB. 200R 1/4J SFR25	R4
19	1	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R74
20	1	ST	21	BR240575	RES CARB. 11K 1/4J SFR25	R75
21	1	ST	25	BR495840	TRAFO A3A1T1	T1

BR448222 INPUT AMPLIFIER A3A1

PARTSLIST

Printed: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR495816	PWB,1.MIXER ASSY A3A2	
2	1	ST	22	BR358959	CAP. CER. 1N0 100 K	C23
3	1	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C24
4	1	ST	22	BR357553	CAP. CER. 82P 100 C N150	C27
5	1	ST	22	BR357472	CAP. CER. 18P 100 G N150	C28
6	1	ST	22	BR357480	CAP. CER. 22P 100 G N150	C29
7	1	ST	22	BR357588	CAP. CER. 120P 100 G N150	C30
8	1	ST	22	BR357596	CAP. CER. 150P 100 G N150	C31
9	1	ST	25	BR393975	COIL,CHOKE 5U6 K	L12
10	1	ST	25	BR393967	COIL,CHOKE 0U15 K	L14
11	1	ST	25	BR450391	COIL,CHOKE 0U39 K	L15
12	1	ST	25	BR450405	COIL,CHOKE 0U68 K	L16
13	1	ST	25	BR357820	COIL,CHOKE 2U2 K	L17
14	4	ST	52	BR394742	STAY NUT M2 X 5 Ø4 F/PWB	MP1
15	1	ST	21	BR240192	RES CARB. 51R 1/4J SFR25	R22
16	1	ST	24	BR362530	IC HYBRID SRA 3H BAL.MIXE	U1
17	2	ST	21	BR394602	RES CARB. 5R6 1/4J SFR25	R13
	2	ST	21	BR394602	RES CARB. 5R6 1/4J SFR25	R9
18	1	ST	21	600005-133	RES FILM.215R , 0.6F	R21

BR495824 1.MIXER ASSY A3A2

PARTSLIST

Printed: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR495786	PWB,LO AMPL.ASSY A3A3	
2	9	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C18
	9	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C11
	9	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C12
	9	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C13
	9	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C17
	9	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C10
	9	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C20
	9	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C22
	9	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C16
3	3	ST	22	221220-007	CAP. PLAST 100N / 63K	C23
	3	ST	22	221220-007	CAP. PLAST 100N / 63K	C14
	3	ST	22	221220-007	CAP. PLAST 100N / 63K	C19
4	1	ST	22	BR385506	CAP. CER. 47P 100 G N150	C21
5	4	ST	25	BR357820	COIL,CHOKE 2U2 K	L4
	4	ST	25	BR357820	COIL,CHOKE 2U2 K	L5
	4	ST	25	BR357820	COIL,CHOKE 2U2 K	L6
	4	ST	25	BR357820	COIL,CHOKE 2U2 K	L7
6	1	ST	25	200730-003	COIL,RF	L13
7	4	ST	52	BR394742	STAY NUT M2 X 5 Ø4 F/PWB	MP1
8	2	ST	26	BR373575	TRANS.UHF BFR 96 SI-N SOT	Q2
	2	ST	26	BR373575	TRANS.UHF BFR 96 SI-N SOT	Q3
9	1	ST	21	BR240435	RES CARB. 1K8 1/4J SFR25	R6
11	1	ST	21	BR240478	RES CARB. 2K7 1/4J SFR25	R8
12	1	ST	21	BR240273	RES CARB. 240R 1/4J SFR25	R10
13	2	ST	21	BR240265	RES CARB. 200R 1/4J SFR25	R19
	2	ST	21	BR240265	RES CARB. 200R 1/4J SFR25	R11
14	2	ST	21	BR240109	RES CARB. 10R 1/4J SFR25	R17
	2	ST	21	BR240109	RES CARB. 10R 1/4J SFR25	R12
15	1	ST	21	BR240443	RES CARB. 2K0 1/4J SFR25	R14
16	1	ST	21	BR240419	RES CARB. 1K2 1/4J SFR25	R15
17	1	ST	21	600005-021	RES FILM.16R2 , 0.6F	R18
18	1	ST	21	BR240362	RES CARB. 560R 1/4J SFR25	R20
19	2	ST	21	BR240281	RES CARB. 270R 1/4J SFR25	R7
	2	ST	21	BR240281	RES CARB. 270R 1/4J SFR25	R16

BR495794 LO AMPLIFIER ASSY A3A3

PARTSLIST

Printed: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR495751	PWB,1.IF AMPL.ASSY A3A4	
2	1	ST	22	BR357502	CAP. CER. 33P 100 G N150	C32
3	1	ST	22	BR357456	CAP. CER. 12P 100 G N150	C33
4	1	ST	22	BR202797	CAP. SEM 18P PLST.FOIL	C34
5	1	ST	22	BR357499	CAP. CER. 27P 100 G N150	C35
6	5	ST	22	221220-007	CAP. PLAST 100N / 63K	C40
	5	ST	22	221220-007	CAP. PLAST 100N / 63K	C41
	5	ST	22	221220-007	CAP. PLAST 100N / 63K	C45
	5	ST	22	221220-007	CAP. PLAST 100N / 63K	C46
	5	ST	22	221220-007	CAP. PLAST 100N / 63K	C47
7	1	ST	31	BR358665	COAX CONN SMB FEM-PWB	J5
8	4	ST	25	BR375330	COIL,CHOKE 0U22 K	L21
	4	ST	25	BR375330	COIL,CHOKE 0U22 K	L20
	4	ST	25	BR375330	COIL,CHOKE 0U22 K	L19
	4	ST	25	BR375330	COIL,CHOKE 0U22 K	L18
9	1	ST	25	BR478725	COIL, CHOKE 0U47 J	L23
10	4	ST	52	BR394742	STAY NUT M2 X 5 Ø4 F/PWB	MP1
11	1	ST	26	BR373575	TRANS.UHF BFR 96 SI-N SOT	Q6
12	1	ST	21	600005-067	RES FILM. 48R7, 0.6F	R23
13	2	ST	21	600005-001	RES FILM.10R0 , 0.6F	R33
	2	ST	21	600005-001	RES FILM.10R0 , 0.6F	R25
14	2	ST	21	600005-162	RES FILM.432R , 0.6F	R27
	2	ST	21	600005-162	RES FILM.432R , 0.6F	R28
15	1	ST	21	600005-169	RES FILM 511R , 0,6F	R30
16	1	ST	21	600005-101	RES FILM.100R , 0.6F	R31
17	1	ST	21	600005-205	RES FILM. 1K10, 0.6F	R32
18	1	ST	21	600005-112	RES FILM.130R , 0.6F	R34
19	1	ST	21	600005-219	RES FILM. 1K54, 0.6F	R35
20	1	ST	21	600005-065	RES FILM. 46R4, 0.6F	R36
21	1	ST	22	BR385549	CAP. CER. 1P 100C P100	C126

BR495778 1.IF AMPLIFIER ASSY A3A4

PARTSLIST

Printed: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR448303	PWB,75 MHZ AGC A3A5	
2	5	ST	22	BR358959	CAP. CER. 1N0 100 K	C48
	5	ST	22	BR358959	CAP. CER. 1N0 100 K	C103
	5	ST	22	BR358959	CAP. CER. 1N0 100 K	C55
	5	ST	22	BR358959	CAP. CER. 1N0 100 K	C62
	5	ST	22	BR358959	CAP. CER. 1N0 100 K	C63
3	5	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C64
	5	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C49
	5	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C50
	5	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C53
	5	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C59
4	1	ST	22	202542-067	CAP. CER 3P9 / 100C	C54
5	2	ST	22	202542-102	CAP. CER 100P / 100G	C57
	2	ST	22	202542-102	CAP. CER 100P / 100G	C56
6	1	ST	22	BR357472	CAP. CER. 18P 100 G N150	C58
7	1	ST	22	BR357480	CAP. CER. 22P 100 G N150	C60
8	1	ST	22	BR202797	CAP. SEM 18P PLST.FOIL	C61
9	3	ST	23	200352-001	DIODE 1N4148	CR3
	3	ST	23	200352-001	DIODE 1N4148	CR2
	3	ST	23	200352-001	DIODE 1N4148	CR12
10	1	ST	23	BR452238	DIO PIN BA 389 USORTERET	CR13
11	1	ST	23	203527-004	DIODE ZENER 3V3/0.5W J	CR14
12	1	ST	22	200514-204	CAP. CER 100N / 50K	C107
13	1	ST	25	BR376213	COIL,ACCESS FERRITBEAD	E10
14	1	ST	25	BR450073	COIL,ACCESS SCREEN,CAN	H2
15	2	ST	25	BR375330	COIL,CHOKE 0U22 K	L24
	2	ST	25	BR375330	COIL,CHOKE 0U22 K	L25
16	1	ST	25	BR451983	COIL A3A5 L41	L41
17	1	ST	25	BR355933	COIL,CHOKE 6U8 K	L42
18	4	ST	52	BR394742	STAY NUT M2 X 5 Ø4 F/PWB	MP1
19	1	ST	26	BR478695	TRANS.MFETN BF 981 2XG SO	Q7
20	1	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q9
21	1	ST	26	BR357901	TRANS.JFETN J 310 TO-92	Q10
22	1	ST	21	BR324191	RES CARB. 7K5 1/4J SFR25	R37
23	1	ST	21	600005-130	RES FILM.200R , 0.6F	R38
24	1	ST	21	600005-192	RES FILM. 887R, 0.6F	R39
25	2	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R82
	2	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R40
26	2	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R48
	2	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R41
27	1	ST	21	BR372064	RES CARB. 9K1 1/4J SFR25	R42
28	1	ST	21	BR487902	RES SEMIV 2K 1/2K CERM	R43
29	1	ST	21	BR240443	RES CARB. 2K0 1/4J SFR25	R44
30	1	ST	21	BR324213	RES CARB. 3K0 1/4J SFR25	R45
31	1	ST	21	600005-226	RES FILM.1K82 , 0.6F	R46
32	2	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R80
	2	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R47

BR448311 75 MHZ AGC ASSY A3A5

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
33	1	ST	21	BR240591	RES CARB. 13K 1/4J SFR25	R49
34	3	ST	21	BR240141	RES CARB. 27R 1/4J SFR25	R75
	3	ST	21	BR240141	RES CARB. 27R 1/4J SFR25	R51
	3	ST	21	BR240141	RES CARB. 27R 1/4J SFR25	R50
35	1	ST	21	BR240648	RES CARB. 27K 1/4J SFR25	R70
36	3	ST	21	BR240230	RES CARB. 120R 1/4J SFR25	R78
	3	ST	21	BR240230	RES CARB. 120R 1/4J SFR25	R76
	3	ST	21	BR240230	RES CARB. 120R 1/4J SFR25	R71
37	1	ST	21	BR240397	RES CARB. 820R 1/4J SFR25	R72
38	1	ST	21	BR324221	RES CARB. 2K4 1/4J SFR25	R73
39	1	ST	21	BR240265	RES CARB. 200R 1/4J SFR25	R74
40	1	ST	21	BR240427	RES CARB. 1K5 1/4J SFR25	R77
41	1	ST	21	BR240192	RES CARB. 51R 1/4J SFR25	R79
42	1	ST	21	BR357693	RES CARB. 150K 1/4J SFR25	R81
43	1	ST	21	BR240583	RES CARB. 12K 1/4J SFR25	R83
44	1	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R84
45	1	ST	21	BR240656	RES CARB. 33K 1/4J SFR25	R85
46	1	ST	21	BR458252	RES NTC 4K7 K M822	RT1
47	1	ST	25	BR499609	TRAFO A3A5T4	T4
48	1	ST	24	236675-002	IC, TL084, OP AMP. QUAD	U2

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Printed: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR448338	PWB,2.MIXER A3A6	
2	2	ST	22	BR357510	CAP. CER. 39P 100 G N150	C60
	2	ST	22	BR357510	CAP. CER. 39P 100 G N150	C59
3	2	ST	25	BR394335	COIL,CHOKE 0U1 K	L28
	2	ST	25	BR394335	COIL,CHOKE 0U1 K	L27
4	4	ST	52	BR394742	STAY NUT M2 X 5 Ø4 F/PWB	MP1
5	2	ST	21	BR240192	RES CARB. 51R 1/4J SFR25	R53
	2	ST	21	BR240192	RES CARB. 51R 1/4J SFR25	R52
6	1	ST	24	BR362522	IC HYBRID SRA 1 BAL.MIXER	U3

BR448346 2.MIXER ASSY A3A6

PARTSLIST

Printed: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR489271	PWB,2.IF AMPLIFIER A3A7	
2	2	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C62
	2	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C61
3	1	ST	22	BR358932	CAP. PLST 200P 400 F	C63
4	6	ST	22	200514-204	CAP. CER 100N / 50K	C65
	6	ST	22	200514-204	CAP. CER 100N / 50K	C64
	6	ST	22	200514-204	CAP. CER 100N / 50K	C116
	6	ST	22	200514-204	CAP. CER 100N / 50K	C108
	6	ST	22	200514-204	CAP. CER 100N / 50K	C112
	6	ST	22	200514-204	CAP. CER 100N / 50K	C109
5	1	ST	22	BR458457	CAP. PLST 330P 160 J	C113
6	1	ST	22	BR359599	CAP. PLST 390P 400 F	C114
7	1	ST	22	BR475386	CAP. PLST 3N0 250 F	C115
8	1	ST	25	BR450065	COIL,ACCESS SCREEN,CAN	H1
9	2	ST	25	BR393975	COIL,CHOKE 5U6 K	L29
	2	ST	25	BR393975	COIL,CHOKE 5U6 K	L30
10	2	ST	25	232311-023	CHOKE, EMI 100 UH	L46
	2	ST	25	232311-023	CHOKE, EMI 100 UH	L44
11	1	ST	25	BR488887	COIL,CHOKE 22U K	L45
12	4	ST	52	BR394742	STAY NUT M2 X 5 Ø4 F/PWB	MP1
13	2	ST	26	BR357901	TRANS.JFETN J 310 TO-92	Q11
	2	ST	26	BR357901	TRANS.JFETN J 310 TO-92	Q8
14	2	ST	21	BR240192	RES CARB. 51R 1/4J SFR25	R55
	2	ST	21	BR240192	RES CARB. 51R 1/4J SFR25	R54
15	2	ST	21	BR240168	RES CARB. 33R 1/4J SFR25	R88
	2	ST	21	BR240168	RES CARB. 33R 1/4J SFR25	R56
16	1	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R57
17	2	ST	21	BR240109	RES CARB. 10R 1/4J SFR25	R87
	2	ST	21	BR240109	RES CARB. 10R 1/4J SFR25	R58
18	3	ST	21	BR240230	RES CARB. 120R 1/4J SFR25	R59
	3	ST	21	BR240230	RES CARB. 120R 1/4J SFR25	R86
	3	ST	21	BR240230	RES CARB. 120R 1/4J SFR25	R90
19	1	ST	21	BR240443	RES CARB. 2K0 1/4J SFR25	R89
20	1	ST	25	BR489581	TRAFO A3A7T5	T5

BR489948 2.IF AMPLIFIER ASSY A3A7

PARTSLIST

Printed: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR464155	PWB SUBOKT.FL.	
2	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C7
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C92
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C70
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C69
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C5
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C49
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C41
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C40
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C20
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C16
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C115
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C112
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C109
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C77
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C1
	16	ST	22	221220-007	CAP. PLAST 100N / 63K	C2
3	4	ST	22	BR202975	CAP. PLST 1U 100 K	C3
	4	ST	22	BR202975	CAP. PLST 1U 100 K	C42
	4	ST	22	BR202975	CAP. PLST 1U 100 K	C48
	4	ST	22	BR202975	CAP. PLST 1U 100 K	C4
4	1	ST	22	BR448745	CAP. PLST 56P 630 H	C6
5	2	ST	22	BR359688	CAP. PLST 270P 400 F	C8
	2	ST	22	BR359688	CAP. PLST 270P 400 F	C9
6	1	ST	22	BR385514	CAP. CER. 100P 100 G N150	C10
7	11	ST	22	221220-012	CAP. PLAST 680N / 50K	C100
	11	ST	22	221220-012	CAP. PLAST 680N / 50K	C59
	11	ST	22	221220-012	CAP. PLAST 680N / 50K	C57
	11	ST	22	221220-012	CAP. PLAST 680N / 50K	C56
	11	ST	22	221220-012	CAP. PLAST 680N / 50K	C52
	11	ST	22	221220-012	CAP. PLAST 680N / 50K	C50
	11	ST	22	221220-012	CAP. PLAST 680N / 50K	C21
	11	ST	22	221220-012	CAP. PLAST 680N / 50K	C15
	11	ST	22	221220-012	CAP. PLAST 680N / 50K	C11
	11	ST	22	221220-012	CAP. PLAST 680N / 50K	C62
	11	ST	22	221220-012	CAP. PLAST 680N / 50K	C13
8	3	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C19
	3	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C12
	3	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C114
9	1	ST	22	BR466786	CAP. PLST 91P 630 F	C14
10	3	ST	22	BR359599	CAP. PLST 390P 400 F	C18
	3	ST	22	BR359599	CAP. PLST 390P 400 F	C17
	3	ST	22	BR359599	CAP. PLST 390P 400 F	C72
11	2	ST	22	BR357545	CAP. CER. 68P 100 C N150	C47
	2	ST	22	BR357545	CAP. CER. 68P 100 C N150	C43
12	2	ST	22	BR357464	CAP. CER. 15P 100 G N150	C44
	2	ST	22	BR357464	CAP. CER. 15P 100 G N150	C46

BR490350 SUBOCTAV.STANDARD A4 1M

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
13	1	ST	22	BR357596	CAP. CER. 150P 100 G N150	C45
14	1	ST	22	BR446165	CAP. PLST 150P 400 F	C51
15	2	ST	22	BR359629	CAP. PLST 560P 400 F	C54
	2	ST	22	BR359629	CAP. PLST 560P 400 F	C55
16	2	ST	22	BR448761	CAP. PLST 240P 630 H	C58
	2	ST	22	BR448761	CAP. PLST 240P 630 H	C64
17	3	ST	22	BR209651	CAP. PLST 910P 400 F	C60
	3	ST	22	BR209651	CAP. PLST 910P 400 F	C95
	3	ST	22	BR209651	CAP. PLST 910P 400 F	C61
18	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C101
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C76
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C84
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C89
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C94
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C97
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C83
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C80
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C86
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C78
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C102
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C73
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C71
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C68
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C65
	16	ST	22	221220-009	CAP. PLAST 220N / 63K	C63
19	2	ST	22	BR487937	CAP. PLST 1N2 250 F	C66
	2	ST	22	BR487937	CAP. PLST 1N2 250 F	C67
20	2	ST	22	BR371092	CAP. PLST 2N0 250 F	C74
	2	ST	22	BR371092	CAP. PLST 2N0 250 F	C75
21	1	ST	22	BR359661	CAP. PLST 680P 400 F	C79
22	5	ST	22	BR367850	CAP. PLST 3N3 250 F	C88
	5	ST	22	BR367850	CAP. PLST 3N3 250 F	C87
	5	ST	22	BR367850	CAP. PLST 3N3 250 F	C85
	5	ST	22	BR367850	CAP. PLST 3N3 250 F	C81
	5	ST	22	BR367850	CAP. PLST 3N3 250 F	C82
23	1	ST	22	BR450510	CAP. CER. 100N 63 S	C111
24	2	ST	22	235010-006	CAP. ELC 6U8 / 25M	C90
	2	ST	22	235010-006	CAP. ELC 6U8 / 25M	C108
25	1	ST	22	BR203165	CAP. PLST 1N5 250 G	C96
26	3	ST	22	BR448923	CAP. PLST 15N 63 F	C105
	3	ST	22	BR448923	CAP. PLST 15N 63 F	C98
	3	ST	22	BR448923	CAP. PLST 15N 63 F	C99
27	1	ST	23	BR454389	DIO ZEN ZPD16 16V 0.5W	CR1
28	2	ST	23	BR496294	DIO POW.BY3591000 1000V	CR2
	2	ST	23	BR496294	DIO POW.BY3591000 1000V	CR3
29	2	ST	23	200352-001	DIODE 1N4148	CR5
	2	ST	23	200352-001	DIODE 1N4148	CR4

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
30	1	ST	23	203527-008	DIODE ZENER 4V7/0.5W J	CR6
31	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR26
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR19
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR8
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR7
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR31
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR30
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR29
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR27
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR15
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR25
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR24
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR9
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR23
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR10
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR14
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR22
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR21
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR20
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR18
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR16
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR28
	22	ST	23	BR358614	DIO SWTCH BA 482 SI 100MA	CR17
32	1	ST	23	203527-006	DIODE ZENER 3V9/0.5W J	CR11
33	2	ST	23	BR450987	DIO SIGN. 1N4150 SI 400MA	CR13
	2	ST	23	BR450987	DIO SIGN. 1N4150 SI 400MA	CR12
34	2	ST	22	BR396079	CAP. PLST 6N8 63 F	C103
	2	ST	22	BR396079	CAP. PLST 6N8 63 F	C107
35	2	ST	22	BR448842	CAP. PLST 1N8 160 H	C104
	2	ST	22	BR448842	CAP. PLST 1N8 160 H	C106
36	1	ST	22	BR357413	CAP. CER. 6P8 100 C N150	C116
37	2	ST	22	BR448850	CAP. PLST 2N2 160 H	C119
	2	ST	22	BR448850	CAP. PLST 2N2 160 H	C117
38	1	ST	22	BR466794	CAP. PLST 15P 630 F	C118
39	1	ST	22	BR357421	CAP. CER. 8P2 100 C N150	C120
40	1	ST	22	BR357405	CAP. CER. 5P6 100 C N150	C121
41	1	ST	23	BR267139	SURGE ARRESTER 90V	E1
42	5	ST	51	202185-003	SCREW M2.5X 5SLTD.CYL.BRS	H1
43	3	ST	52	200560-003	NUT, PLAIN HEX M 3	H4
44	3	ST	51	BR276804	SCREW M 3 X 8 CHM CU SN	H5
45	3	ST	53	BR380105	WASHER,FLAT Ø 3MM CU SN	H6
46	3	ST	26	BR391387	TRANS.ACCESS ISOLAT.PLD	H7
47	3	ST	26	BR489026	TRANS.ACCESS INSL.BUSH	H8
48	1	ST	31	BR368210	COAX CONN BNC FEM-CHASS.	J2
49	1	ST	31	200764-002	CONN SMB RECP 50R	J1
50	1	ST	33	BR488666	RELAY REED 12VDC 500 1XCH	K5
51	1	ST	25	BR457590	COIL A4	L1

BR490350 SUBOCTAV.STANDARD A4 1M

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
52	2	ST	25	BR364045	COIL,CHOKE 10M J	L10
	2	ST	25	BR364045	COIL,CHOKE 10M J	L17
53	3	ST	25	BR357766	COIL,CHOKE 0U68 J	L11
	3	ST	25	BR357766	COIL,CHOKE 0U68 J	L26
	3	ST	25	BR357766	COIL,CHOKE 0U68 J	L25
54	2	ST	25	BR357782	COIL,CHOKE 0U15 M	L12
	2	ST	25	BR357782	COIL,CHOKE 0U15 M	L13
55	2	ST	25	BR362921	COIL,CHOKE 33U M	L14
	2	ST	25	BR362921	COIL,CHOKE 33U M	L15
56	9	ST	25	BR493694	COIL,CHOKE 1U K	L39
	9	ST	25	BR493694	COIL,CHOKE 1U K	L38
	9	ST	25	BR493694	COIL,CHOKE 1U K	L21
	9	ST	25	BR493694	COIL,CHOKE 1U K	L20
	9	ST	25	BR493694	COIL,CHOKE 1U K	L16
	9	ST	25	BR493694	COIL,CHOKE 1U K	L45
	9	ST	25	BR493694	COIL,CHOKE 1U K	L27
	9	ST	25	BR493694	COIL,CHOKE 1U K	L28
	9	ST	25	BR493694	COIL,CHOKE 1U K	L46
57	2	ST	25	BR363278	COIL,CHOKE 0U33 M	L19
	2	ST	25	BR363278	COIL,CHOKE 0U33 M	L18
58	2	ST	25	BR446521	COIL,CHOKE U27 K	L22
	2	ST	25	BR446521	COIL,CHOKE U27 K	L23
59	5	ST	25	BR462780	COIL,CHOKE 1U5 K	L61
	5	ST	25	BR462780	COIL,CHOKE 1U5 K	L32
	5	ST	25	BR462780	COIL,CHOKE 1U5 K	L31
	5	ST	25	BR462780	COIL,CHOKE 1U5 K	L24
	5	ST	25	BR462780	COIL,CHOKE 1U5 K	L60
60	2	ST	25	BR466816	COIL,CHOKE 2U2 K	L29
	2	ST	25	BR466816	COIL,CHOKE 2U2 K	L71
61	1	ST	25	BR372889	COIL,CHOKE 5U6 K	L43
62	6	ST	25	BR357723	COIL,CHOKE 100U J	L70
	6	ST	25	BR357723	COIL,CHOKE 100U J	L69
	6	ST	25	BR357723	COIL,CHOKE 100U J	L47
	6	ST	25	BR357723	COIL,CHOKE 100U J	L63
	6	ST	25	BR357723	COIL,CHOKE 100U J	L62
	6	ST	25	BR357723	COIL,CHOKE 100U J	L48
63	9	ST	25	BR450782	COIL,CHOKE 82U K	L56
	9	ST	25	BR450782	COIL,CHOKE 82U K	L53
	9	ST	25	BR450782	COIL,CHOKE 82U K	L49
	9	ST	25	BR450782	COIL,CHOKE 82U K	L52
	9	ST	25	BR450782	COIL,CHOKE 82U K	L55
	9	ST	25	BR450782	COIL,CHOKE 82U K	L57
	9	ST	25	BR450782	COIL,CHOKE 82U K	L51
	9	ST	25	BR450782	COIL,CHOKE 82U K	L50
	9	ST	25	BR450782	COIL,CHOKE 82U K	L54
64	1	ST	25	BR450413	COIL,CHOKE 1M0 K	L58
65	1	ST	25	BR466840	COIL,CHOKE 8U2 K	L59

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
66	1	ST	25	BR363286	COIL,CHOKE 10U K	L64
67	1	ST	25	BR466867	COIL,CHOKE 0U82 K	L90
68	2	ST	25	BR466824	COIL,CHOKE 3U3 K	L68
	2	ST	25	BR466824	COIL,CHOKE 3U3 K	L66
69	2	ST	25	BR357758	COIL,CHOKE 4U7 K	L67
	2	ST	25	BR357758	COIL,CHOKE 4U7 K	L65
70	1	ST	25	BR466832	COIL,CHOKE 6U8 K	L89
71	4	ST	25	BR357774	COIL,CHOKE 15U K	L79
	4	ST	25	BR357774	COIL,CHOKE 15U K	L73
	4	ST	25	BR357774	COIL,CHOKE 15U K	L72
	4	ST	25	BR357774	COIL,CHOKE 15U K	L80
72	2	ST	25	BR363294	COIL,CHOKE 47U J	L74
	2	ST	25	BR363294	COIL,CHOKE 47U J	L75
74	1	ST	25	BR450049	COIL,CHOKE 56U J	L76
75	2	ST	25	BR357731	COIL,CHOKE 22U K	L78
	2	ST	25	BR357731	COIL,CHOKE 22U K	L77
76	2	ST	25	BR466808	COIL,CHOKE 27U K	L82
	2	ST	25	BR466808	COIL,CHOKE 27U K	L81
77	2	ST	25	BR359289	COIL,CHOKE 220U J	L84
	2	ST	25	BR359289	COIL,CHOKE 220U J	L83
78	2	ST	25	BR212709	COIL,CHOKE 220U K	L85
	2	ST	25	BR212709	COIL,CHOKE 220U K	L86
79	1	ST	25	200730-003	COIL,RF	L88
80	1	ST	41	BR490369	REAR PLATE A 4 1M	MP1
81	1	ST	45	210840-001	RETAINER	MP2
82	2	ST	51	210841-001	THUMBSCREW	MP3
83	1	ST	31	BR459356	CONTACT SPRING 1 A2-3-4	MP4
84	1	ST	31	BR459364	CONTACT SPRING 2 A1-2-3-4	MP5
85	1	ST	26	BR488623	TRANS.DARLN BDX 53F SI-N	Q1
86	1	ST	26	BR488658	TRANS.SCR BT 149B 200V 0,	Q2
87	1	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R1
88	1	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R2
89	4	ST	21	BR240745	RES CARB. 100K 1/4J SFR25	R3
	4	ST	21	BR240745	RES CARB. 100K 1/4J SFR25	R5
	4	ST	21	BR240745	RES CARB. 100K 1/4J SFR25	R25
	4	ST	21	BR240745	RES CARB. 100K 1/4J SFR25	R6
90	2	ST	21	BR240362	RES CARB. 560R 1/4J SFR25	R4
	2	ST	21	BR240362	RES CARB. 560R 1/4J SFR25	R10
91	1	ST	21	BR240389	RES CARB. 680R 1/4J SFR25	R7
92	1	ST	21	BR241229	RES CARB. 120R 1/2JSFR25H	R8
93	10	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R37
	10	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R33
	10	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R38
	10	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R30
	10	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R36
	10	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R34
	10	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R32

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
93	10	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R31
	10	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R29
	10	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R35
94	1	ST	21	BR241458	RES CARB. 1K0 1/2JSFR25H	R9
95	1	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R11
96	1	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R19
97	1	ST	21	BR240109	RES CARB. 10R 1/4J SFR25	R20
98	6	ST	21	BR380393	RES CARB. 270K 1/4J SFR25	R28
	6	ST	21	BR380393	RES CARB. 270K 1/4J SFR25	R24
	6	ST	21	BR380393	RES CARB. 270K 1/4J SFR25	R27
	6	ST	21	BR380393	RES CARB. 270K 1/4J SFR25	R22
	6	ST	21	BR380393	RES CARB. 270K 1/4J SFR25	R21
	6	ST	21	BR380393	RES CARB. 270K 1/4J SFR25	R23
99	1	ST	21	BR467162	RES NETW 9XM10 1/5G	R26
100	2	ST	21	BR241245	RES CARB. 150R 1/2JSFR25H	R40
	2	ST	21	BR241245	RES CARB. 150R 1/2JSFR25H	R39
101	1	ST	21	BR240230	RES CARB. 120R 1/4J SFR25	R41
102	1	ST	24	BR404586	IC DGTL 74 45N BCD-DECIMA	U1
103	1	ST	24	BR488224	IC DGTL 74HCT377 8X D-FF	U2
104	1	ST	24	206072-095	IC, --74HCT138	U3
105	2	ST	24	BR393622	IC DGTL 74 07N 6X BUF.OC.	U6
	2	ST	24	BR393622	IC DGTL 74 07N 6X BUF.OC.	U4
106	1	ST	24	200462-095	IC, --74HCT00, NAND GATE	U5
107	0,2	ML	76	205254-001	ADHESIVE SILICONE, RTV	
108	1	ST	48	214073-004	LABEL, ADHESIVE, ESD	
109	0,05	ST	32	200843-009	WIRE COP TIN-CTD Ø0.6MM	
110	0,04	XX	99	205077-007	XX	

PARTSLIST

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR491640	PWB,IF/AF ASSY A7 ISB/SSB	
2	1	ST	62	BR491969	IF AMPLIFIER A7A1&A2	A1
3	1	ST	22	221220-007	CAP. PLAST 100N / 63K	C1
4	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C152
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C99
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C74
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C73
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C64
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C153
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C71
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C151
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C147
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C146
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C125
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C123
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C111
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C110
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C2
	16	ST	22	BR203378	CAP. TAN. 10U 16 S	C4
5	34	ST	22	200514-204	CAP. CER 100N / 50K	C104
	34	ST	22	200514-204	CAP. CER 100N / 50K	C159
	34	ST	22	200514-204	CAP. CER 100N / 50K	C160
	34	ST	22	200514-204	CAP. CER 100N / 50K	C97
	34	ST	22	200514-204	CAP. CER 100N / 50K	C3
	34	ST	22	200514-204	CAP. CER 100N / 50K	C5
	34	ST	22	200514-204	CAP. CER 100N / 50K	C158
	34	ST	22	200514-204	CAP. CER 100N / 50K	C65
	34	ST	22	200514-204	CAP. CER 100N / 50K	C63
	34	ST	22	200514-204	CAP. CER 100N / 50K	C67
	34	ST	22	200514-204	CAP. CER 100N / 50K	C68
	34	ST	22	200514-204	CAP. CER 100N / 50K	C96
	34	ST	22	200514-204	CAP. CER 100N / 50K	C69
	34	ST	22	200514-204	CAP. CER 100N / 50K	C95
	34	ST	22	200514-204	CAP. CER 100N / 50K	C70
	34	ST	22	200514-204	CAP. CER 100N / 50K	C94
	34	ST	22	200514-204	CAP. CER 100N / 50K	C62
	34	ST	22	200514-204	CAP. CER 100N / 50K	C122
	34	ST	22	200514-204	CAP. CER 100N / 50K	C103
	34	ST	22	200514-204	CAP. CER 100N / 50K	C101
	34	ST	22	200514-204	CAP. CER 100N / 50K	C106
	34	ST	22	200514-204	CAP. CER 100N / 50K	C66
	34	ST	22	200514-204	CAP. CER 100N / 50K	C157
	34	ST	22	200514-204	CAP. CER 100N / 50K	C121
	34	ST	22	200514-204	CAP. CER 100N / 50K	C124
	34	ST	22	200514-204	CAP. CER 100N / 50K	C126
	34	ST	22	200514-204	CAP. CER 100N / 50K	C105
	34	ST	22	200514-204	CAP. CER 100N / 50K	C98

BR494070 IF/AF ASSY SSB A7 3 KHZ

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
5	34	ST	22	200514-204	CAP. CER 100N / 50K	C135
	34	ST	22	200514-204	CAP. CER 100N / 50K	C145
	34	ST	22	200514-204	CAP. CER 100N / 50K	C156
	34	ST	22	200514-204	CAP. CER 100N / 50K	C155
	34	ST	22	200514-204	CAP. CER 100N / 50K	C154
	34	ST	22	200514-204	CAP. CER 100N / 50K	C130
6	1	ST	22	BR357588	CAP. CER. 120P 100 G N150	C72
7	1	ST	22	235010-007	CAP. ELC 10U / 25M	C86
8	2	ST	22	BR209783	CAP. TAN. 1U 35 S	C131
	2	ST	22	BR209783	CAP. TAN. 1U 35 S	C93
9	8	ST	23	200352-001	DIODE 1N4148	CR1
	8	ST	23	200352-001	DIODE 1N4148	CR4
	8	ST	23	200352-001	DIODE 1N4148	CR25
	8	ST	23	200352-001	DIODE 1N4148	CR3
	8	ST	23	200352-001	DIODE 1N4148	CR16
	8	ST	23	200352-001	DIODE 1N4148	CR12
	8	ST	23	200352-001	DIODE 1N4148	CR2
	8	ST	23	200352-001	DIODE 1N4148	CR15
10	1	ST	23	203527-008	DIODE ZENER 4V7/0.5W J	CR14
11	3	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C107
	3	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C108
	3	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C102
12	1	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C109
13	1	ST	22	BR373176	CAP. PLST 5N1 160 F	C127
14	1	ST	22	BR359688	CAP. PLST 270P 400 F	C128
15	1	ST	22	BR367850	CAP. PLST 3N3 250 F	C129
16	1	ST	22	BR384895	CAP. PLST 22N 63 F	C132
18	1	ST	22	BR448923	CAP. PLST 15N 63 F	C134
19	1	ST	22	BR357596	CAP. CER. 150P 100 G N150	C162
20	9	ST	31	BR492205	CONN AMP PWB 1P FEMALE	H1
21	1	ST	31	222836-140	CONN D ACCESS. JACK SOCKT	H2
22	5	ST	51	202185-003	SCREW M2.5X 5SLTD.CYL.BRS	H4
23	2	ST	51	BR325619	SCREW SELFTA.4X3/16 RPPX	H5
24	1	ST	25	BR450065	COIL,ACCESS SCREEN,CAN	H6
25	1	ST	31	212654-026	CONN D-TYPE 9P/ANGLE	J4
26	3	ST	25	200730-003	COIL,RF	L9
	3	ST	25	200730-003	COIL,RF	L8
	3	ST	25	200730-003	COIL,RF	L7
27	1	ST	25	BR494992	COIL A7 L10	L10
28	1	ST	41	BR494062	REAR PLATE A 7 RX4010 SSB	MP1
29	1	ST	45	210840-001	RETAINER	MP2
30	2	ST	51	210841-001	THUMBSCREW	MP3
31	1	ST	41	BR491977	SCREEN BOX ASSY A7	MP4
32	1	ST	48	BR496448	LABEL F.REAR PL RX-SE A7	MP5
33	1	ST	26	BR451312	TRANS.LOPOW BF 199 SI-N T	Q1
34	1	ST	26	BR478695	TRANS.MFETN BF 981 2XG SO	Q2
35	1	ST	26	BR357901	TRANS.JFETN J 310 TO-92	Q13

BR494070 IF/AF ASSY SSB A7 3 KHZ

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
36	3	ST	26	235024-002	TRANSISTOR, BC557B	Q15
	3	ST	26	235024-002	TRANSISTOR, BC557B	Q19
	3	ST	26	235024-002	TRANSISTOR, BC557B	Q32
37	5	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q20
	5	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q21
	5	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q22
	5	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q24
	5	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q31
38	1	ST	21	235004-037	RES FILM 33R / 0.5 J	R1
39	10	ST	21	235004-081	RES FILM 2K2 / 0.5 J	R100
	10	ST	21	235004-081	RES FILM 2K2 / 0.5 J	R187
	10	ST	21	235004-081	RES FILM 2K2 / 0.5 J	R166
	10	ST	21	235004-081	RES FILM 2K2 / 0.5 J	R186
	10	ST	21	235004-081	RES FILM 2K2 / 0.5 J	R215
	10	ST	21	235004-081	RES FILM 2K2 / 0.5 J	R219
	10	ST	21	235004-081	RES FILM 2K2 / 0.5 J	R79
	10	ST	21	235004-081	RES FILM 2K2 / 0.5 J	R93
	10	ST	21	235004-081	RES FILM 2K2 / 0.5 J	R2
	10	ST	21	235004-081	RES FILM 2K2 / 0.5 J	R218
40	3	ST	21	235004-065	RES FILM 470R / 0,4 J	R101
	3	ST	21	235004-065	RES FILM 470R / 0,4 J	R3
	3	ST	21	235004-065	RES FILM 470R / 0,4 J	R88
41	6	ST	21	235004-077	RES FILM 1K50 / 0,4 J	R281
	6	ST	21	235004-077	RES FILM 1K50 / 0,4 J	R280
	6	ST	21	235004-077	RES FILM 1K50 / 0,4 J	R5
	6	ST	21	235004-077	RES FILM 1K50 / 0,4 J	R184
	6	ST	21	235004-077	RES FILM 1K50 / 0,4 J	R182
	6	ST	21	235004-077	RES FILM 1K50 / 0,4 J	R104
42	3	ST	21	235004-061	RES FILM 330R / 0,4 J	R279
	3	ST	21	235004-061	RES FILM 330R / 0,4 J	R278
	3	ST	21	235004-061	RES FILM 330R / 0,4 J	R6
43	4	ST	21	235004-101	RES FILM 15K / 0.5 J	R71
	4	ST	21	235004-101	RES FILM 15K / 0.5 J	R274
	4	ST	21	235004-101	RES FILM 15K / 0.5 J	R9
	4	ST	21	235004-101	RES FILM 15K / 0.5 J	R103
44	2	ST	21	235004-057	RES FILM 220R / 0.5 J	R90
	2	ST	21	235004-057	RES FILM 220R / 0.5 J	R11
45	6	ST	21	235004-049	RES FILM 100R / 0.5 J	R97
	6	ST	21	235004-049	RES FILM 100R / 0.5 J	R83
	6	ST	21	235004-049	RES FILM 100R / 0.5 J	R181
	6	ST	21	235004-049	RES FILM 100R / 0.5 J	R179
	6	ST	21	235004-049	RES FILM 100R / 0.5 J	R13
	6	ST	21	235004-049	RES FILM 100R / 0.5 J	R110
46	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R174
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R288
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R84
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R269

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
46	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R270
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R282
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R283
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R211
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R209
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R190
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R188
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R85
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R173
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R170
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R293
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R146
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R73
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R145
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R106
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R171
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R292
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R167
	23	ST	21	235004-097	RES FILM 10K / 0.5 J	R177
47	3	ST	21	BR363227	RES SEMIV 10K 1/2K CERM	R77
	3	ST	21	BR363227	RES SEMIV 10K 1/2K CERM	R75
	3	ST	21	BR363227	RES SEMIV 10K 1/2K CERM	R185
48	1	ST	21	235004-083	RES FILM 2K70 / 0,4 J	R81
49	12	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R164
	12	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R217
	12	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R105
	12	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R142
	12	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R189
	12	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R82
	12	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R183
	12	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R272
	12	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R172
	12	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R180
	12	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R176
	12	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R175
50	5	ST	21	235004-067	RES FILM 560R / 0.5 J	R94
	5	ST	21	235004-067	RES FILM 560R / 0.5 J	R87
	5	ST	21	235004-067	RES FILM 560R / 0.5 J	R86
	5	ST	21	235004-067	RES FILM 560R / 0.5 J	R102
	5	ST	21	235004-067	RES FILM 560R / 0.5 J	R95
51	1	ST	21	235004-087	RES FILM 3K90 / 0,4 J	R89
52	5	ST	21	235004-025	RES FILM 10R / 0.5 J	R98
	5	ST	21	235004-025	RES FILM 10R / 0.5 J	R92
	5	ST	21	235004-025	RES FILM 10R / 0.5 J	R91
	5	ST	21	235004-025	RES FILM 10R / 0.5 J	R99
	5	ST	21	235004-025	RES FILM 10R / 0.5 J	R96
53	2	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R143

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
53	2	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R107
54	1	ST	21	BR376310	RES SEMIV 200R 1/2K CERM	R108
55	1	ST	21	235004-079	RES FILM 1K80 / 0,4 J	R109
56	1	ST	21	235004-129	RES FILM 220K / 0.5 J	R111
57	1	ST	21	BR493651	RES FILM 75K0 0,5JSFR16T	R144
58	1	ST	21	235004-095	RES FILM 8K20 / 0,4 J	R165
59	4	ST	21	235004-089	RES FILM 4K7 / 0.5 J	R168
	4	ST	21	235004-089	RES FILM 4K7 / 0.5 J	R10
	4	ST	21	235004-089	RES FILM 4K7 / 0.5 J	R221
	4	ST	21	235004-089	RES FILM 4K7 / 0.5 J	R220
60	4	ST	21	235004-112	RES FILM 470R / 0,4 J	R213
	4	ST	21	235004-112	RES FILM 470R / 0,4 J	R228
	4	ST	21	235004-112	RES FILM 470R / 0,4 J	R212
	4	ST	21	235004-112	RES FILM 470R / 0,4 J	R169
61	1	ST	21	235004-043	RES FILM 56R0 / 0,4 J	R178
62	6	ST	21	235004-107	RES FILM 27K0 / 0,4 J	R214
	6	ST	21	235004-107	RES FILM 27K0 / 0,4 J	R205
	6	ST	21	235004-107	RES FILM 27K0 / 0,4 J	R207
	6	ST	21	235004-107	RES FILM 27K0 / 0,4 J	R204
	6	ST	21	235004-107	RES FILM 27K0 / 0,4 J	R208
	6	ST	21	235004-107	RES FILM 27K0 / 0,4 J	R206
63	5	ST	21	235004-121	RES FILM 100K / 0.5 J	R210
	5	ST	21	235004-121	RES FILM 100K / 0.5 J	R275
	5	ST	21	235004-121	RES FILM 100K / 0.5 J	R271
	5	ST	21	235004-121	RES FILM 100K / 0.5 J	R216
	5	ST	21	235004-121	RES FILM 100K / 0.5 J	R291
64	1	ST	21	BR359165	RES SEMIV 10K 1/2K CERM	R273
65	1	ST	21	235004-055	RES FILM 180R / 0,4 J	R276
66	1	ST	21	235004-033	RES FILM 22R0 / 0,4 J	R277
67	1	ST	21	BR475815	RES NETW 8X10K 1/8J	R287
68	1	ST	25	BR362859	TRAFO,LINE 600:600R	T5
69	9	ST	31	202168-030	COLLAR SLEEVES Ø1.3X10MM	TP
70	3	ST	31	BR261270	TERMINAL STUD	TP
71	1	ST	24	236675-002	IC, TL084, OP AMP. QUAD	U3
72	1	ST	24	BR492167	IC LIN LM 317L VOLT REGL.	U4
73	1	ST	24	BR450308	IC LIN CA 3083 TRANS ARR.	U5
74	6	ST	24	BR450294	IC LIN TL 082CP OP.AMP.	U21
	6	ST	24	BR450294	IC LIN TL 082CP OP.AMP.	U22
	6	ST	24	BR450294	IC LIN TL 082CP OP.AMP.	U23
	6	ST	24	BR450294	IC LIN TL 082CP OP.AMP.	U25
	6	ST	24	BR450294	IC LIN TL 082CP OP.AMP.	U30
	6	ST	24	BR450294	IC LIN TL 082CP OP.AMP.	U6
75	3	ST	24	BR492175	IC LIN TLC 272A 2X OP.AMP	U9
	3	ST	24	BR492175	IC LIN TLC 272A 2X OP.AMP	U12
	3	ST	24	BR492175	IC LIN TLC 272A 2X OP.AMP	U10
76	1	ST	24	BR354821	IC DGTL 4066B 4X ANA.SW.	U13
77	1	ST	24	BR378291	IC LIN 78L12 VOLT REGL.	U14

BR494070 IF/AF ASSY SSB A7 3 KHZ

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
78	1	ST	30	BR460613	IC MODIFIED	U15
79	1	ST	24	BR491446	IC LIN MC 1496P MOD-DEMOD	U16
80	1	ST	24	235071-095	IC, -- 74HCT4316	U18
81	1	ST	24	BR375349	IC LIN 78L05 VOLT REGL.	U19
82	1	ST	24	BR482676	IC LIN 79L05 VOLT REGL.	U20
83	2	ST	24	BR488224	IC DGTL 74HCT377 8X D-FF	U33
	2	ST	24	BR488224	IC DGTL 74HCT377 8X D-FF	U31
84	1	ST	24	206072-095	IC, --74HCT138	U32
85	1	ST	24	BR488755	IC DGTL 74HCT365 6XBUSDRI	U34
86	1	ST	24	BR465658	IC DGTL 2003A 7XDARLINGT	U35
87	1	ST	24	200463-095	IC, --74HCT02	U36
88	1	ST	24	200497-095	IC, --74HCT32	U37
89	1	ST	24	200462-095	IC, --74HCT00, NAND GATE	U38
90	1	ST	24	203469-006	IC, SN7406N	U39
91	1	ST	37	BR492248	COAX CA ASSY BNC - 72MM	W1
92	1	ST	37	BR492159	COAX CA ASSY SMB - 171MM	W2
93	1	ST	37	BR492299	COAX CA ASSY SMB - 205MM	W3

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR491659	PWB,IF AMPLIFIER A7A1&A2	
2	2	ST	22	200514-204	CAP. CER 100N / 50K	C30
	2	ST	22	200514-204	CAP. CER 100N / 50K	C12
3	3	ST	22	BR203165	CAP. PLST 1N5 250 G	C13
	3	ST	22	BR203165	CAP. PLST 1N5 250 G	C18
	3	ST	22	BR203165	CAP. PLST 1N5 250 G	C24
4	6	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C19
	6	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C14
	6	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C21
	6	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C25
	6	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C26
	6	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C36
5	2	ST	22	221220-003	CAP. PLAST 22N / 63K	C20
	2	ST	22	221220-003	CAP. PLAST 22N / 63K	C15
6	9	ST	22	221220-007	CAP. PLAST 100N / 63K	C16
	9	ST	22	221220-007	CAP. PLAST 100N / 63K	C35
	9	ST	22	221220-007	CAP. PLAST 100N / 63K	C33
	9	ST	22	221220-007	CAP. PLAST 100N / 63K	C32
	9	ST	22	221220-007	CAP. PLAST 100N / 63K	C29
	9	ST	22	221220-007	CAP. PLAST 100N / 63K	C28
	9	ST	22	221220-007	CAP. PLAST 100N / 63K	C23
	9	ST	22	221220-007	CAP. PLAST 100N / 63K	C22
	9	ST	22	221220-007	CAP. PLAST 100N / 63K	C17
7	2	ST	22	BR357650	CAP. CER. 22N 63 A HI-K	C34
	2	ST	22	BR357650	CAP. CER. 22N 63 A HI-K	C27
8	1	ST	22	BR203378	CAP. TAN. 10U 16 S	C31
9	3	ST	25	BR450065	COIL,ACCESS SCREEN,CAN	H1
10	0,5	ST	31	BR492213	CONN PWB ANGEL 18P MALE	H2
11	2	ST	25	BR492027	COIL RX4010 A7A1&2 L1&2	L1
	2	ST	25	BR492027	COIL RX4010 A7A1&2 L1&2	L2
12	1	ST	25	BR394270	COIL,CHOKE 220U K	L5
13	3	ST	26	BR478695	TRANS.MFETN BF 981 2XG SO	Q7
	3	ST	26	BR478695	TRANS.MFETN BF 981 2XG SO	Q6
	3	ST	26	BR478695	TRANS.MFETN BF 981 2XG SO	Q5
14	1	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q8
15	1	ST	21	235004-081	RES FILM 2K2 / 0.5 J	R19
16	4	ST	21	235004-097	RES FILM 10K / 0.5 J	R40
	4	ST	21	235004-097	RES FILM 10K / 0.5 J	R27
	4	ST	21	235004-097	RES FILM 10K / 0.5 J	R41
	4	ST	21	235004-097	RES FILM 10K / 0.5 J	R20
17	2	ST	21	235004-112	RES FILM 470R / 0,4 J	R22
	2	ST	21	235004-112	RES FILM 470R / 0,4 J	R21
18	2	ST	21	235004-089	RES FILM 4K7 / 0.5 J	R26
	2	ST	21	235004-089	RES FILM 4K7 / 0.5 J	R23
19	2	ST	21	235004-055	RES FILM 180R / 0,4 J	R24
	2	ST	21	235004-055	RES FILM 180R / 0,4 J	R31
20	3	ST	21	235004-041	RES FILM 47R0 / 0,4 J	R37

BR491969 IF AMPLIFIER A7A1&A2

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
20	3	ST	21	235004-041	RES FILM 47R0 / 0,4 J	R30
	3	ST	21	235004-041	RES FILM 47R0 / 0,4 J	R25
21	2	ST	21	235004-077	RES FILM 1K50 / 0,4 J	R33
	2	ST	21	235004-077	RES FILM 1K50 / 0,4 J	R28
22	1	ST	21	235004-107	RES FILM 27K0 / 0,4 J	R29
23	1	ST	21	235004-121	RES FILM 100K / 0.5 J	R32
24	1	ST	21	235004-101	RES FILM 15K / 0.5 J	R34
25	1	ST	21	235004-095	RES FILM 8K20 / 0,4 J	R35
26	1	ST	21	BR359165	RES SEMIV 10K 1/2K CERM	R36
27	1	ST	21	235004-065	RES FILM 470R / 0,4 J	R38
28	1	ST	21	235004-051	RES FILM 120R / 0.5 J	R39
29	1	ST	21	235004-043	RES FILM 56R0 / 0,4 J	R42
30	1	ST	21	235004-057	RES FILM 220R / 0.5 J	R43
31	1	ST	21	235004-025	RES FILM 10R / 0.5 J	R44
32	1	ST	25	BR492043	TRAFO A7A1&2 T2 RX4010	T2
33	1	ST	24	BR378291	IC LIN 78L12 VOLT REGL.	U1

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR487848	PWB,MICROCOMP.RTC A8	
2	1	ST	20	BR391921	BATTERY 3V LITHIUM	BT1
3	2	ST	22	BR459410	CAP. ELEC 10U 10 M	C47
	2	ST	22	BR459410	CAP. ELEC 10U 10 M	C1
4	1	ST	22	BR451339	CAP. ELEC 15U 10 M	C2
5	1	ST	22	BR357650	CAP. CER. 22N 63 A HI-K	C3
6	1	ST	22	BR437395	CAP. CER. 220P 100 G N750	C4
7	6	ST	22	BR450510	CAP. CER. 100N 63 S	C7
	6	ST	22	BR450510	CAP. CER. 100N 63 S	C6
	6	ST	22	BR450510	CAP. CER. 100N 63 S	C54
	6	ST	22	BR450510	CAP. CER. 100N 63 S	C52
	6	ST	22	BR450510	CAP. CER. 100N 63 S	C5
	6	ST	22	BR450510	CAP. CER. 100N 63 S	C28
8	3	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C9
	3	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C11
	3	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C15
9	1	ST	22	221220-004	CAP. PLAST 33N / 63K	C10
10	1	ST	22	BR349070	CAP. PLST 680N 100 K	C12
11	1	ST	22	BR202991	CAP. PLST 220N 100 K	C13
12	1	ST	22	BR454117	CAP. PLST 68N 250 K	C14
13	3	ST	22	235010-006	CAP. ELC 6U8 / 25M	C18
	3	ST	22	235010-006	CAP. ELC 6U8 / 25M	C17
	3	ST	22	235010-006	CAP. ELC 6U8 / 25M	C16
14	1	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C42
15	3	ST	23	BR228001	DIO SCHOT BAT 85 SI 200MA	CR11
	3	ST	23	BR228001	DIO SCHOT BAT 85 SI 200MA	CR19
	3	ST	23	BR228001	DIO SCHOT BAT 85 SI 200MA	CR1
16	9	ST	23	200352-001	DIODE 1N4148	CR10
	9	ST	23	200352-001	DIODE 1N4148	CR9
	9	ST	23	200352-001	DIODE 1N4148	CR14
	9	ST	23	200352-001	DIODE 1N4148	CR4
	9	ST	23	200352-001	DIODE 1N4148	CR5
	9	ST	23	200352-001	DIODE 1N4148	CR6
	9	ST	23	200352-001	DIODE 1N4148	CR7
	9	ST	23	200352-001	DIODE 1N4148	CR8
	9	ST	23	200352-001	DIODE 1N4148	CR12
17	10	M	34	222837-004	TAPE, DOUBLE-SIDED 1.6MM	
18	1	ST	23	BR328324	DIO SIGN. AAZ 15 GE 140MA	CR23
19	5	ST	51	202185-003	SCREW M2.5X 5SLTD.CYL.BRS	H1
20	4	ST	31	222836-140	CONN D ACCESS. JACK SOCKT	H2
21	5	ST	26	BR392707	TRANS.ACCESS PAD TO-18	H3
23	1	ST	45	201197-049	STRAP, CABLE, NAT Ø20X2.5	H6
24	1	ST	31	212654-022	CONN D-TYPE 15S/PWB ANGL	J1
25	3	ST	25	200730-003	COIL,RF	L2
	3	ST	25	200730-003	COIL,RF	L1
	3	ST	25	200730-003	COIL,RF	L3
26	1	ST	41	BR489808	REAR PLATE A 8 MICROC.RTC	MP1

BR487740 MICROCOMPUTER ASSY A8 RTC

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
27	1	ST	45	210840-001	RETAINER	MP2
28	2	ST	51	210841-001	THUMBSCREW	MP3
29	3	ST	26	BR392820	TRANS.LOPOW 2N2222A SI-N	Q3
	3	ST	26	BR392820	TRANS.LOPOW 2N2222A SI-N	Q2
	3	ST	26	BR392820	TRANS.LOPOW 2N2222A SI-N	Q1
30	1	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q8
31	1	ST	26	BR273910	TRANS.LOPOW BC 177 SI-P T	Q9
32	1	ST	26	BR392839	TRANS.LOPOW 2N2907A SI-P	Q11
33	1	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	R1
34	3	ST	21	BR240745	RES CARB. 100K 1/4J SFR25	R3
	3	ST	21	BR240745	RES CARB. 100K 1/4J SFR25	R78
	3	ST	21	BR240745	RES CARB. 100K 1/4J SFR25	R2
35	1	ST	21	BR357693	RES CARB. 150K 1/4J SFR25	R4
36	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R7
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R82
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R88
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R89
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R98
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R99
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R51
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R97
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R27
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R10
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R103
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R11
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R12
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R13
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R19
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R21
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R33
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R25
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R5
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R34
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R36
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R39
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R40
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R41
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R42
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R47
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R48
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R35
	29	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R49
37	3	ST	21	BR372137	RES CARB. 20K 1/4J SFR25	R59
	3	ST	21	BR372137	RES CARB. 20K 1/4J SFR25	R62
	3	ST	21	BR372137	RES CARB. 20K 1/4J SFR25	R6
38	2	ST	21	BR240699	RES CARB. 51K 1/4J SFR25	R8
	2	ST	21	BR240699	RES CARB. 51K 1/4J SFR25	R9

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
39	4	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R71
	4	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R15
	4	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R14
	4	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R102
40	6	ST	21	BR241458	RES CARB. 1K0 1/2JSFR25H	R29
	6	ST	21	BR241458	RES CARB. 1K0 1/2JSFR25H	R16
	6	ST	21	BR241458	RES CARB. 1K0 1/2JSFR25H	R28
	6	ST	21	BR241458	RES CARB. 1K0 1/2JSFR25H	R17
	6	ST	21	BR241458	RES CARB. 1K0 1/2JSFR25H	R22
	6	ST	21	BR241458	RES CARB. 1K0 1/2JSFR25H	R23
41	3	ST	21	BR240257	RES CARB. 180R 1/4J SFR25	R30
	3	ST	21	BR240257	RES CARB. 180R 1/4J SFR25	R24
	3	ST	21	BR240257	RES CARB. 180R 1/4J SFR25	R18
42	3	ST	21	BR240494	RES CARB. 3K9 1/4J SFR25	R20
	3	ST	21	BR240494	RES CARB. 3K9 1/4J SFR25	R26
	3	ST	21	BR240494	RES CARB. 3K9 1/4J SFR25	R32
44	2	ST	21	BR324205	RES CARB. 5K1 1/4J SFR25	R66
	2	ST	21	BR324205	RES CARB. 5K1 1/4J SFR25	R64
45	6	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R83
	6	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R81
	6	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R79
	6	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R77
	6	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R65
	6	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R96
46	1	ST	21	BR391093	RES SEMIV 20K 1/2K CERM	R67
47	7	ST	21	BR240702	RES CARB. 56K 1/4J SFR25	R93
	7	ST	21	BR240702	RES CARB. 56K 1/4J SFR25	R87
	7	ST	21	BR240702	RES CARB. 56K 1/4J SFR25	R86
	7	ST	21	BR240702	RES CARB. 56K 1/4J SFR25	R84
	7	ST	21	BR240702	RES CARB. 56K 1/4J SFR25	R72
	7	ST	21	BR240702	RES CARB. 56K 1/4J SFR25	R73
	7	ST	21	BR240702	RES CARB. 56K 1/4J SFR25	R68
48	1	ST	21	BR240869	RES CARB. 1M0 1/4J SFR25	R69
49	1	ST	21	BR240583	RES CARB. 12K 1/4J SFR25	R70
51	2	ST	21	BR240338	RES CARB. 390R 1/4J SFR25	R75
	2	ST	21	BR240338	RES CARB. 390R 1/4J SFR25	R95
52	1	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R80
53	2	ST	21	BR240443	RES CARB. 2K0 1/4J SFR25	R85
	2	ST	21	BR240443	RES CARB. 2K0 1/4J SFR25	R90
54	1	ST	21	BR380393	RES CARB. 270K 1/4J SFR25	R100
55	1	ST	21	BR240508	RES CARB. 4K3 1/4J SFR25	R101
57	1	ST	24	230988-002	IC, --80C85	U1
58	1	ST	24	BR488119	IC DGTL 74HCT123 2XMONOST	U2
59	3	ST	24	200464-095	IC, --74HCT04, HEX INVERT	U10
	3	ST	24	200464-095	IC, --74HCT04, HEX INVERT	U3
	3	ST	24	200464-095	IC, --74HCT04, HEX INVERT	U5
60	1	ST	24	203927-095	IC, --74HCT14, INVERTERS	U4

BR487740 MICROCOMPUTER ASSY A8 RTC

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
61	4	ST	24	203469-006	IC, SN7406N	U6
	4	ST	24	203469-006	IC, SN7406N	U56
	4	ST	24	203469-006	IC, SN7406N	U37
	4	ST	24	203469-006	IC, SN7406N	U47
62	1	ST	24	200466-095	IC, --74HCT08, AND GATES	U7
63	2	ST	24	200462-095	IC, --74HCT00, NAND GATE	U8
	2	ST	24	200462-095	IC, --74HCT00, NAND GATE	U15
64	4	ST	24	213541-095	IC, CD74HCT161E	U40
	4	ST	24	213541-095	IC, CD74HCT161E	U9
	4	ST	24	213541-095	IC, CD74HCT161E	U39
	4	ST	24	213541-095	IC, CD74HCT161E	U38
65	2	ST	24	200497-095	IC, --74HCT32	U11
	2	ST	24	200497-095	IC, --74HCT32	U20
66	1	ST	24	BR451614	IC DGTL 74LS373N 8X D LAT	U12
67	1	ST	24	BR451169	IC DGTL 74LS365N 6X BUSDR	U13
68	2	ST	24	200888-095	IC, --74HCT74	U28
	2	ST	24	200888-095	IC, --74HCT74	U14
69	2	ST	24	BR451592	IC DGTL 74LS240N 8X BUF.I	U41
	2	ST	24	BR451592	IC DGTL 74LS240N 8X BUF.I	U16
70	2	ST	24	207432-026	IC, -- 74LS245N	U17
	2	ST	24	207432-026	IC, -- 74LS245N	U27
71	1	ST	24	BR488054	IC DGTL 74HCT 11 3X3IN AN	U18
72	2	ST	24	206072-095	IC, --74HCT138	U21
	2	ST	24	206072-095	IC, --74HCT138	U19
73	2	ST	24	BR488674	IC DGTL 74HCT 21 4X2IN AN	U48
	2	ST	24	BR488674	IC DGTL 74HCT 21 4X2IN AN	U22
74	1	ST	24	BR487503	IC DGTL 62421B RT CLOCK	U26
75	3	ST	24	BR404551	IC DGTL 74 37N 4X2IN NAND	U31
	3	ST	24	BR404551	IC DGTL 74 37N 4X2IN NAND	U29
	3	ST	24	BR404551	IC DGTL 74 37N 4X2IN NAND	U30
76	1	ST	24	BR390909	IC DGTL 1488L 4XLINEDRIV	U32
77	1	ST	24	BR390917	IC DGTL 1489A 4XLIN RCVR	U33
78	3	ST	24	BR433632	IC LIN MCA 255 OPTO ISOL	U36
	3	ST	24	BR433632	IC LIN MCA 255 OPTO ISOL	U34
	3	ST	24	BR433632	IC LIN MCA 255 OPTO ISOL	U35
79	1	ST	24	BR488739	IC DGTL 74HCT259 8X LATCH	U42
80	1	ST	24	207437-095	IC, --74HCT374	U43
81	1	ST	24	BR451568	IC DGTL 74LS145N BCD-DEC	U44
82	1	ST	24	BR487511	IC DGTL 6264 8KX8 SRAM	U46
83	1	ST	24	BR355003	IC DGTL 4049B 6X INV-BUF	U49
84	1	ST	24	BR354899	IC DGTL 4027A 2X JK FF	U50
85	1	ST	24	BR355046	IC DGTL 4071B 4X2 INP OR	U51
86	1	ST	24	BR451029	IC DGTL 74LS377N 8X D-FF	U52
87	1	ST	24	BR451215	IC LIN DAC-08EN D/A CONV.	U53
88	2	ST	24	BR450294	IC LIN TL 082CP OP.AMP.	U55
	2	ST	24	BR450294	IC LIN TL 082CP OP.AMP.	U54
89	2	ST	24	BR354821	IC DGTL 4066B 4X ANA.SW.	U57

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
89	2	ST	24	BR354821	IC DGTL 4066B 4X ANA.SW.	U58
90	1	ST	24	BR455474	IC LIN LM 3302N VOLT COMP	U59
91	2	ST	23	203527-009	DIODE ZENER 5V1 / 0.5W	VR2
	2	ST	23	203527-009	DIODE ZENER 5V1 / 0.5W	VR1
92	1	ST	23	203527-008	DIODE ZENER 4V7/0.5W J	VR3
94	1	ST	31	BR451452	IC ACCESS 40 PIN SOCKET	XU1
95	4	ST	31	BR435120	IC ACCESS 28 PIN SOCKET	XU45
	4	ST	31	BR435120	IC ACCESS 28 PIN SOCKET	XU24
	4	ST	31	BR435120	IC ACCESS 28 PIN SOCKET	XU25
	4	ST	31	BR435120	IC ACCESS 28 PIN SOCKET	XU23
98	1	ST	20	BR433853	CRYSTAL 6,14400MHZ HC49-U	Y1
101	1	ST	21	BR451398	RES NETW 9X4K7 1/5G	R104
102	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C53
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C48
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C40
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C49
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C31
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C51
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C57
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C58
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C59
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C50
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C32
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C30
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C29
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C27
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C26
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C25
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C24
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C23
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C22
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C21
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C19
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C39
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C34
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C35
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C36
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C37
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C38
	28	ST	22	221220-007	CAP. PLAST 100N / 63K	C20
104	1	ST	31	212654-021	CONN D-TYPE 9S/PWB ANGLE	J2
105	1,62	ST	31	208801-001	CONN MINI-JUMP 36 PIN	TP16-29
	1,62	ST	31	208801-001	CONN MINI-JUMP 36 PIN	TP1-14
	1,62	ST	31	208801-001	CONN MINI-JUMP 36 PIN	S1-S7
108	1	ST	48	214073-004	LABEL, ADHESIVE, ESD	
109	0,08	ST	32	200843-009	WIRE COP TIN-CTD Ø0.6MM	
110	7	ST	31	208802-002	CONN B-JUMP	

BR487740 MICROCOMPUTER ASSY A8 RTC

PARTSLIST

Printed: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR490563	PWB,INTERFACE RS232 422/4	
2	2	ST	22	BR454117	CAP. PLST 68N 250 K	C1
	2	ST	22	BR454117	CAP. PLST 68N 250 K	C33
3	7	ST	22	BR477176	CAP. CER. 330P 100 K	C7
	7	ST	22	BR477176	CAP. CER. 330P 100 K	C2
	7	ST	22	BR477176	CAP. CER. 330P 100 K	C3
	7	ST	22	BR477176	CAP. CER. 330P 100 K	C4
	7	ST	22	BR477176	CAP. CER. 330P 100 K	C6
	7	ST	22	BR477176	CAP. CER. 330P 100 K	C8
	7	ST	22	BR477176	CAP. CER. 330P 100 K	C5
4	3	ST	22	235010-006	CAP. ELC 6U8 / 25M	C9
	3	ST	22	235010-006	CAP. ELC 6U8 / 25M	C11
	3	ST	22	235010-006	CAP. ELC 6U8 / 25M	C13
5	19	ST	22	BR450510	CAP. CER. 100N 63 S	C16
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C15
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C26
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C12
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C10
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C19
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C17
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C20
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C18
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C22
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C23
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C24
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C25
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C21
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C28
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C29
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C36
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C14
	19	ST	22	BR450510	CAP. CER. 100N 63 S	C27
6	1	ST	22	BR437395	CAP. CER. 220P 100 G N750	C30
7	3	ST	22	BR357529	CAP. CER. 47P 100 C N150	C31
	3	ST	22	BR357529	CAP. CER. 47P 100 C N150	C35
	3	ST	22	BR357529	CAP. CER. 47P 100 C N150	C34
8	1	ST	22	BR451053	CAP. ELEC 68U 6,3 M	C32
9	1	ST	23	200352-001	DIODE 1N4148	CR1
10	4	ST	51	202185-003	SCREW M2.5X 5SLTD.CYL.BRS	H1
11	1	ST	31	222836-140	CONN D ACCESS. JACK SOCKT	H2
13	1	ST	31	212654-023	CONN D-TYPE 25S/ANGLE	J1
14	3	ST	25	200730-003	COIL,RF	L1
	3	ST	25	200730-003	COIL,RF	L3
	3	ST	25	200730-003	COIL,RF	L2
15	1	ST	41	BR491829	REAR PLATE A 9 INTERFACE	MP1
16	1	ST	45	210840-001	RETAINER	MP2
17	2	ST	51	210841-001	THUMBSCREW	MP3

BR490598 INTERF. RS232 422/485 A9

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
18	1	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q2
19	1	ST	26	BR359157	TRANS.LOPOW BC307B SI-P T	Q3
20	2	ST	21	BR240354	RES CARB. 510R 1/4J SFR25	R10
	2	ST	21	BR240354	RES CARB. 510R 1/4J SFR25	R1
21	1	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R2
22	2	ST	21	BR240397	RES CARB. 820R 1/4J SFR25	R7
	2	ST	21	BR240397	RES CARB. 820R 1/4J SFR25	R8
23	1	ST	21	BR240648	RES CARB. 27K 1/4J SFR25	R11
24	1	ST	21	BR359165	RES SEMIV 10K 1/2K CERM	R12
25	1	ST	21	BR240419	RES CARB. 1K2 1/4J SFR25	R13
26	1	ST	21	BR240621	RES CARB. 22K 1/4J SFR25	R14
27	2	ST	21	BR240125	RES CARB. 22R 1/4J SFR25	R15
	2	ST	21	BR240125	RES CARB. 22R 1/4J SFR25	R16
28	2	ST	21	206088-001	RES NETW 7 X 10KOHM	R18
	2	ST	21	206088-001	RES NETW 7 X 10KOHM	R17
30	1	ST	25	BR362859	TRAFO,LINE 600:600R	T1
31	1	ST	24	200464-026	IC, SN74LS04N	U1
32	1	ST	24	BR404780	IC DGTL 74LS90N DEC.COUNT	U2
33	2	ST	24	213541-095	IC, CD74HCT161E	U4
	2	ST	24	213541-095	IC, CD74HCT161E	U3
34	1	ST	24	207432-095	IC, --74HCT245E	U5
35	1	ST	24	206072-095	IC, --74HCT138	U6
36	1	ST	24	200464-095	IC, --74HCT04, HEX INVERT	U7
37	1	ST	24	200497-095	IC, --74HCT32	U8
38	1	ST	24	203469-006	IC, SN7406N	U9
39	1	ST	24	BR462489	IC DGTL 8251A USART	U10
40	1	ST	24	BR390909	IC DGTL 1488L 4XLINEDRIV	U11
41	1	ST	24	BR390917	IC DGTL 1489A 4XLIN RCVR	U12
42	1	ST	24	BR357707	IC LIN MC 1458P OP.AMPL.	U13
43	1	ST	24	BR488755	IC DGTL 74HCT365 6XBUSDRI	U14
44	2	ST	24	221579-001	IC, --75176, TRANSCEIVER	U15
	2	ST	24	221579-001	IC, --75176, TRANSCEIVER	U16
45	2	ST	23	BR362727	DIO ZEN ZPD13 13V 0.5W	VR2
	2	ST	23	BR362727	DIO ZEN ZPD13 13V 0.5W	VR3
46	1	ST	20	BR433853	CRYSTAL 6,14400MHZ HC49-U	Y1
47	15	M	34	222837-004	TAPE, DOUBLE-SIDED 1.6MM	
48	0,02	ST	32	200843-009	WIRE COP TIN-CTD Ø0.6MM	
49	1,5	ST	31	208801-001	CONN MINI-JUMP 36 PIN	E1-E10
50	16	ST	31	208802-002	CONN B-JUMP	

BR490598 INTERF. RS232 422/485 A9

PARTSLIST

Printed: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	61	BR471534	REGULATOR-AF,ASSY A10A1	A1
2	1	ST	25	BR471550	TRAFO ASSY A10A2	A2
3	1	ST	56	BR458341	HEATSINK ASSY A10A3	A3
4	2	ST	51	202185-003	SCREW M2.5X 5SLTD.CYL.BRS	H1
5	4	ST	51	BR275638	SCREW M 4 X 8 CHJ GULCR	H3
6	1	ST	31	222836-140	CONN D ACCESS. JACK SOCKT	H4
7	2	ST	51	210841-001	THUMBSCREW	MP1
8	1	ST	31	212654-022	CONN D-TYPE 15S/PWB ANGL	
9	7	M	34	201701-009	SLEEVING, SHRINK. 19.0MM	

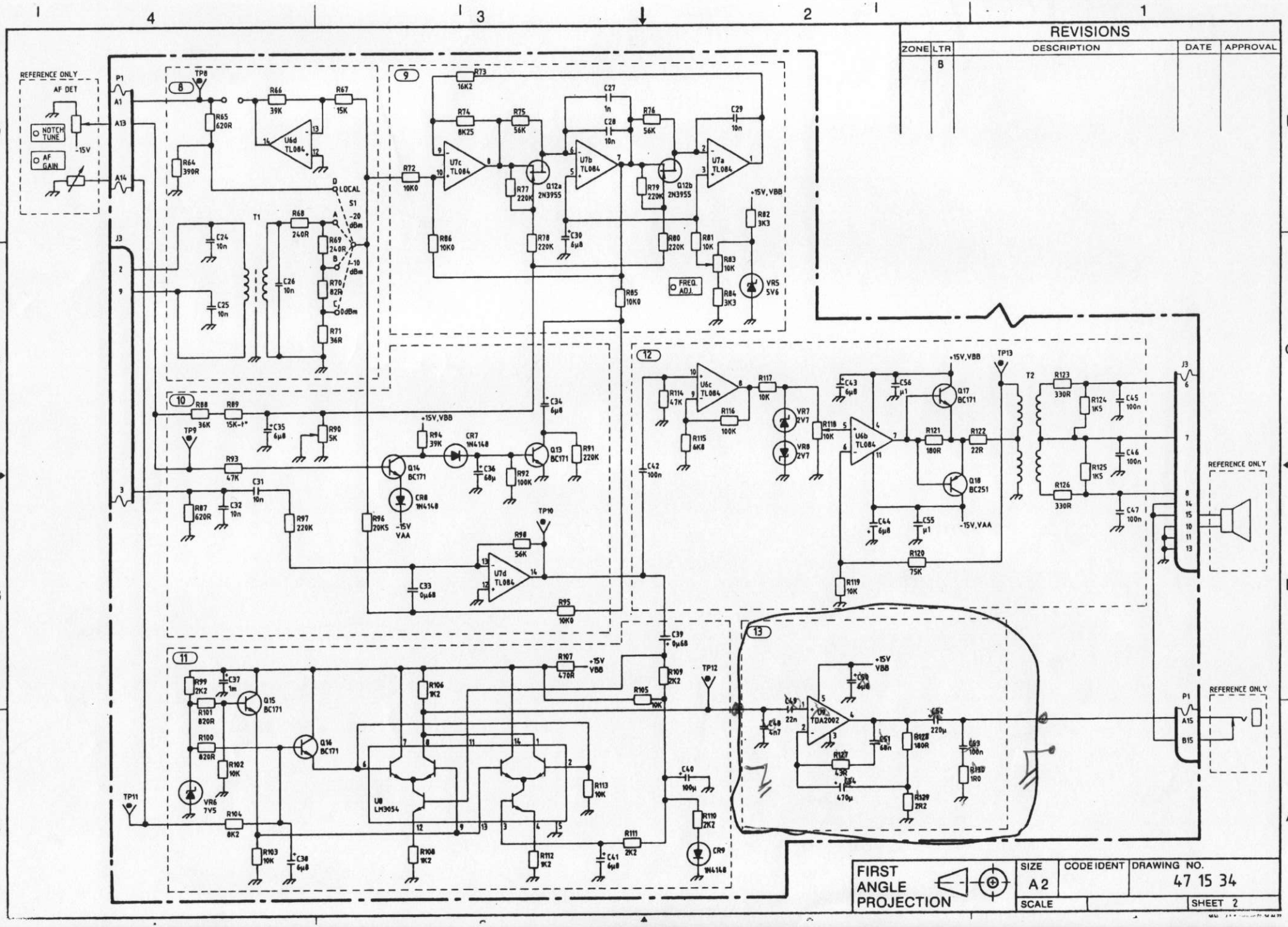
BR471720 POWER SUPPLY ASSY A10 220

PARTSLIST

Printed: 1996-11-08

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR471526	PWB,REGULATOR & AF A10A1	
2	4	ST	22	BR454265	CAP. ELEC 100U 25 T	C21
	4	ST	22	BR454265	CAP. ELEC 100U 25 T	C17
	4	ST	22	BR454265	CAP. ELEC 100U 25 T	C1
	4	ST	22	BR454265	CAP. ELEC 100U 25 T	C40
3	5	ST	22	BR202967	CAP. PLST 100N 100 K	C47
	5	ST	22	BR202967	CAP. PLST 100N 100 K	C46
	5	ST	22	BR202967	CAP. PLST 100N 100 K	C45
	5	ST	22	BR202967	CAP. PLST 100N 100 K	C22
	5	ST	22	BR202967	CAP. PLST 100N 100 K	C2
4	12	ST	22	BR450510	CAP. CER. 100N 63 S	C6
	12	ST	22	BR450510	CAP. CER. 100N 63 S	C56
	12	ST	22	BR450510	CAP. CER. 100N 63 S	C55
	12	ST	22	BR450510	CAP. CER. 100N 63 S	C53
	12	ST	22	BR450510	CAP. CER. 100N 63 S	C4
	12	ST	22	BR450510	CAP. CER. 100N 63 S	C23
	12	ST	22	BR450510	CAP. CER. 100N 63 S	C3
	12	ST	22	BR450510	CAP. CER. 100N 63 S	C18
	12	ST	22	BR450510	CAP. CER. 100N 63 S	C13
	12	ST	22	BR450510	CAP. CER. 100N 63 S	C10
	12	ST	22	BR450510	CAP. CER. 100N 63 S	C42
	12	ST	22	BR450510	CAP. CER. 100N 63 S	C16
5	9	ST	22	235010-006	CAP. ELC 6U8 / 25M	C41
	9	ST	22	235010-006	CAP. ELC 6U8 / 25M	C30
	9	ST	22	235010-006	CAP. ELC 6U8 / 25M	C50
	9	ST	22	235010-006	CAP. ELC 6U8 / 25M	C5
	9	ST	22	235010-006	CAP. ELC 6U8 / 25M	C44
	9	ST	22	235010-006	CAP. ELC 6U8 / 25M	C43
	9	ST	22	235010-006	CAP. ELC 6U8 / 25M	C38
	9	ST	22	235010-006	CAP. ELC 6U8 / 25M	C35
	9	ST	22	235010-006	CAP. ELC 6U8 / 25M	C34
6	2	ST	22	BR451053	CAP. ELEC 68U 6,3 M	C7
	2	ST	22	BR451053	CAP. ELEC 68U 6,3 M	C36
7	2	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C8
	2	ST	22	BR357634	CAP. CER. 2N2 100 K HI-K	C14
8	7	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C32
	7	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C15
	7	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C24
	7	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C25
	7	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C20
	7	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C26
	7	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C9
9	1	ST	22	BR357499	CAP. CER. 27P 100 G N150	C11
10	2	ST	22	BR454273	CAP. ELEC 220U 25 T	C12
	2	ST	22	BR454273	CAP. ELEC 220U 25 T	C52
11	2	ST	22	BR385123	CAP. CER. 4N7 100 K HI-K	C19
	2	ST	22	BR385123	CAP. CER. 4N7 100 K HI-K	C48

BR471534 REGULATOR-AF,ASSY A10A1



Service Sheet A10A

1 ✓ 22 450510
2 ✓ 22 235010-006
✓ 3 22 454273
~~B~~
✓ 4 22 3851283
✓ 5 22 344273
✓ 6 22 454117
7 22 209376-454323
8 21 240257
9 21 240176
10 21 364029
11 21 462004
✓ 12 24 443964

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
12	1	ST	22	BR450812	CAP. PLST 1N 160 J	C27
13	2	ST	22	BR448907	CAP. PLST 10N 160 F	C28
	2	ST	22	BR448907	CAP. PLST 10N 160 F	C29
14	1	ST	22	BR203246	CAP. PLST 10N 400 K	C31
15	3	ST	22	221220-012	CAP. PLAST 680N / 50K	C39
	3	ST	22	221220-012	CAP. PLAST 680N / 50K	C33
	3	ST	22	221220-012	CAP. PLAST 680N / 50K	C57
16	1	ST	22	BR454281	CAP. ELEC 1M 25 T	C37
17	1	ST	22	BR344273	CAP. PLST 22N 250 K	C49
18	1	ST	22	BR454117	CAP. PLST 68N 250 K	C51
19	1	ST	22	BR209376	CAP. ELEC 470U 16 T LL	C54
20	9	ST	23	200352-001	DIODE 1N4148	CR5
	9	ST	23	200352-001	DIODE 1N4148	CR2
	9	ST	23	200352-001	DIODE 1N4148	CR3
	9	ST	23	200352-001	DIODE 1N4148	CR4
	9	ST	23	200352-001	DIODE 1N4148	CR7
	9	ST	23	200352-001	DIODE 1N4148	CR9
	9	ST	23	200352-001	DIODE 1N4148	CR6
	9	ST	23	200352-001	DIODE 1N4148	CR1
	9	ST	23	200352-001	DIODE 1N4148	CR8
21	6	ST	51	202185-003	SCREW M2.5X 5SLTD.CYL.BRS	H1
22	5	ST	51	BR276790	SCREW M 3 X 5 CHM CU SN	H2
23	1	ST	51	BR276804	SCREW M 3 X 8 CHM CU SN	H3
24	6	ST	52	BR327514	NUT M 3 CONTRA M CU SN	H4
25	1	ST	24	BR362069	IC ACCESS HEATSINK	H5
26	1	ST	26	BR391387	TRANS.ACCESS ISOLAT.PLD	H6
27	16	ST	56	202152-002	INSULATOR PEARL, \ 4.19X1	H10
	16	ST	56	202152-002	INSULATOR PEARL, \ 4.19X1	H7
28	4	ST	31	BR442399	TERMINAL STUD 140-1785-2	H8
29	1	ST	45	BR354554	STRAP,CABLE L191XB3,6	H9
30	1	ST	31	BR458481	CONN MOLEX 11P MALE	J2
32	1	ST	31	BR454168	CONN MOLEX 2P MALE	J4
33	1	ST	41	BR458384	SCREEN SHIELD CAN A10A1	MP1
34	1	ST	45	210840-001	RETAINER	MP2
35	2	ST	52	BR455571	STAY NUT M2,5X15 Ø4,0-2,9	MP3
36	5	ST	26	BR359157	TRANS.LOPOW BC307B SI-P T	Q8
	5	ST	26	BR359157	TRANS.LOPOW BC307B SI-P T	Q18
	5	ST	26	BR359157	TRANS.LOPOW BC307B SI-P T	Q1
	5	ST	26	BR359157	TRANS.LOPOW BC307B SI-P T	Q3
	5	ST	26	BR359157	TRANS.LOPOW BC307B SI-P T	Q9
37	8	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q13
	8	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q15
	8	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q14
	8	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q16
	8	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q4
	8	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q6
	8	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q17

BR471534 REGULATOR-AF,ASSY A10A1

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
37	8	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q11
38	3	ST	26	BR454206	TRANS.SCR 2N6402 200V16A	Q7
	3	ST	26	BR454206	TRANS.SCR 2N6402 200V16A	Q5
	3	ST	26	BR454206	TRANS.SCR 2N6402 200V16A	Q10
39	1	ST	26	BR454605	TRANS.JFETN 2N3955 DUAL T	Q12
40	1	ST	21	BR240583	RES CARB. 12K 1/4J SFR25	R1
41	1	ST	21	BR324221	RES CARB. 2K4 1/4J SFR25	R3
42	11	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R17
	11	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R4
	11	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R119
	11	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R81
	11	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R15
	11	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R14
	11	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R117
	11	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R103
	11	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R102
	11	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R105
	11	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R113
43	2	ST	21	BR240621	RES CARB. 22K 1/4J SFR25	R16
	2	ST	21	BR240621	RES CARB. 22K 1/4J SFR25	R5
44	1	ST	21	600005-347	RES FILM. 30K1, 0.6F	R6
45	1	ST	21	600005-401	RES FILM. 100K, 0.6F	R7
46	3	ST	21	BR240427	RES CARB. 1K5 1/4J SFR25	R125
	3	ST	21	BR240427	RES CARB. 1K5 1/4J SFR25	R124
	3	ST	21	BR240427	RES CARB. 1K5 1/4J SFR25	R8
47	2	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R10
	2	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R134
48	1	ST	21	BR240478	RES CARB. 2K7 1/4J SFR25	R11
49	4	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	R61
	4	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	R12
	4	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	R41
	4	ST	21	BR240222	RES CARB. 100R 1/4J SFR25	R49
50	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R43
	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R28
	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R29
	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R133
	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R42
	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R37
	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R51
	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R35
	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R52
	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R135
	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R18
	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R20
	13	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R53
51	2	ST	21	BR240494	RES CARB. 3K9 1/4J SFR25	R36
	2	ST	21	BR240494	RES CARB. 3K9 1/4J SFR25	R19

BR471534 REGULATOR-AF,ASSY A10A1

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
52	6	ST	21	BR240524	RES CARB. 5K6 1/4J SFR25	R21
	6	ST	21	BR240524	RES CARB. 5K6 1/4J SFR25	R22
	6	ST	21	BR240524	RES CARB. 5K6 1/4J SFR25	R38
	6	ST	21	BR240524	RES CARB. 5K6 1/4J SFR25	R39
	6	ST	21	BR240524	RES CARB. 5K6 1/4J SFR25	R55
	6	ST	21	BR240524	RES CARB. 5K6 1/4J SFR25	R54
53	2	ST	21	BR240192	RES CARB. 51R 1/4J SFR25	R40
	2	ST	21	BR240192	RES CARB. 51R 1/4J SFR25	R23
54	2	ST	21	BR371963	RES CARB. 62K 1/4J SFR25	R59
	2	ST	21	BR371963	RES CARB. 62K 1/4J SFR25	R24
55	1	ST	21	BR240648	RES CARB. 27K 1/4J SFR25	R25
56	5	ST	21	BR454184	RES WIREW 0R1 4J	R58
	5	ST	21	BR454184	RES WIREW 0R1 4J	R57
	5	ST	21	BR454184	RES WIREW 0R1 4J	R44
	5	ST	21	BR454184	RES WIREW 0R1 4J	R27
	5	ST	21	BR454184	RES WIREW 0R1 4J	R26
57	3	ST	21	600005-269	RES FILM.5K11 , 0.6F	R30
	3	ST	21	600005-269	RES FILM.5K11 , 0.6F	R31
	3	ST	21	600005-269	RES FILM.5K11 , 0.6F	R32
58	5	ST	21	BR240311	RES CARB. 330R 1/4J SFR25	R33
	5	ST	21	BR240311	RES CARB. 330R 1/4J SFR25	R34
	5	ST	21	BR240311	RES CARB. 330R 1/4J SFR25	R62
	5	ST	21	BR240311	RES CARB. 330R 1/4J SFR25	R126
	5	ST	21	BR240311	RES CARB. 330R 1/4J SFR25	R123
59	2	ST	21	BR240249	RES CARB. 150R 1/4J SFR25	R45
	2	ST	21	BR240249	RES CARB. 150R 1/4J SFR25	R132
60	1	ST	21	BR324183	RES CARB. 30K 1/4J SFR25	R46
61	1	ST	21	600005-425	RES FILM. 178K, 0.6F	R47
62	1	ST	21	600005-377	RES FILM. 61K9, 0.6F	R48
63	1	ST	21	BR328545	RES CARB. 220R 1/4J SFR25	R50
64	1	ST	21	BR240265	RES CARB. 200R 1/4J SFR25	R56
65	2	ST	21	BR240540	RES CARB. 6K8 1/4J SFR25	R60
	2	ST	21	BR240540	RES CARB. 6K8 1/4J SFR25	R115
66	1	ST	21	BR454192	RES WIREW 0R22 4J	R63
67	1	ST	21	BR240338	RES CARB. 390R 1/4J SFR25	R64
68	2	ST	21	BR240370	RES CARB. 620R 1/4J SFR25	R87
	2	ST	21	BR240370	RES CARB. 620R 1/4J SFR25	R65
69	2	ST	21	BR240664	RES CARB. 39K 1/4J SFR25	R94
	2	ST	21	BR240664	RES CARB. 39K 1/4J SFR25	R66
70	1	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R67
71	2	ST	21	BR240273	RES CARB. 240R 1/4J SFR25	R69
	2	ST	21	BR240273	RES CARB. 240R 1/4J SFR25	R68
72	1	ST	21	BR240214	RES CARB. 82R 1/4J SFR25	R70
73	1	ST	21	BR489387	RES CARB. 36R 0,4J SFR25	R71
74	4	ST	21	600005-301	RES FILM. 10K0, 0.6F	R85
	4	ST	21	600005-301	RES FILM. 10K0, 0.6F	R86
	4	ST	21	600005-301	RES FILM. 10K0, 0.6F	R72

BR471534 REGULATOR-AF,ASSY A10A1

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
74	4	ST	21	600005-301	RES FILM. 10K0, 0.6F	R95
75	1	ST	21	600005-321	RES FILM. 16K2, 0.6F	R73
76	1	ST	21	600005-289	RES FILM. 8K25, 0.6F	R74
77	3	ST	21	BR240702	RES CARB. 56K 1/4J SFR25	R75
	3	ST	21	BR240702	RES CARB. 56K 1/4J SFR25	R76
	3	ST	21	BR240702	RES CARB. 56K 1/4J SFR25	R98
78	6	ST	21	BR328626	RES CARB. 220K 1/4J SFR25	R78
	6	ST	21	BR328626	RES CARB. 220K 1/4J SFR25	R97
	6	ST	21	BR328626	RES CARB. 220K 1/4J SFR25	R79
	6	ST	21	BR328626	RES CARB. 220K 1/4J SFR25	R80
	6	ST	21	BR328626	RES CARB. 220K 1/4J SFR25	R91
	6	ST	21	BR328626	RES CARB. 220K 1/4J SFR25	R77
79	2	ST	21	BR240486	RES CARB. 3K3 1/4J SFR25	R82
	2	ST	21	BR240486	RES CARB. 3K3 1/4J SFR25	R84
80	3	ST	21	BR359165	RES SEMIV 10K 1/2K CERM	R118
	3	ST	21	BR359165	RES SEMIV 10K 1/2K CERM	R83
	3	ST	21	BR359165	RES SEMIV 10K 1/2K CERM	R90
81	1	ST	21	BR324175	RES CARB. 36K 1/4J SFR25	R88
82	1	ST	21	BR450251	RES NTC 15K K M822	R89
83	2	ST	21	BR240745	RES CARB. 100K 1/4J SFR25	R92
	2	ST	21	BR240745	RES CARB. 100K 1/4J SFR25	R116
84	2	ST	21	BR240680	RES CARB. 47K 1/4J SFR25	R114
	2	ST	21	BR240680	RES CARB. 47K 1/4J SFR25	R93
85	1	ST	21	600005-331	RES FILM. 20K5, 0.6F	R96
86	4	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	R110
	4	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	R109
	4	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	R99
	4	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	R111
87	2	ST	21	BR240397	RES CARB. 820R 1/4J SFR25	R101
	2	ST	21	BR240397	RES CARB. 820R 1/4J SFR25	R100
88	1	ST	21	BR240559	RES CARB. 8K2 1/4J SFR25	R104
89	3	ST	21	BR240419	RES CARB. 1K2 1/4J SFR25	R112
	3	ST	21	BR240419	RES CARB. 1K2 1/4J SFR25	R106
	3	ST	21	BR240419	RES CARB. 1K2 1/4J SFR25	R108
90	1	ST	21	BR240346	RES CARB. 470R 1/4J SFR25	R107
91	1	ST	21	BR240729	RES CARB. 75K 1/4J SFR25	R120
92	2	ST	21	BR240257	RES CARB. 180R 1/4J SFR25	R128
	2	ST	21	BR240257	RES CARB. 180R 1/4J SFR25	R121
93	1	ST	21	BR240125	RES CARB. 22R 1/4J SFR25	R122
94	1	ST	21	BR240176	RES CARB. 43R 1/4J SFR25	R127
95	1	ST	21	BR364029	RES CARB. 2R2 1/4J SFR25	R129
96	1	ST	21	BR462004	RES WIREW 1R0 5J	R130
97	1	ST	21	BR458686	RES WIREW 4R7 4J	R131
98	1	ST	33	BR471798	SW,PCP DIP-FIX 8X ON/OFF	S1
99	2	ST	25	BR362859	TRAFO,LINE 600:600R	T1
	2	ST	25	BR362859	TRAFO,LINE 600:600R	T2
100	13	ST	31	202168-030	COLLAR SLEEVES Ø1.3X10MM	TP

BR471534 REGULATOR-AF,ASSY A10A1

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
101	1	ST	24	BR454370	IC LIN 79MGU1 VOLT REGL.	U1
102	1	ST	24	BR451231	IC LIN LM 723C VOLT REGL.	U2
103	1	ST	24	203809-003	IC, LF 356 N	U3
104	1	ST	24	BR451266	IC LIN LM 301A OP.AMP.	U4
105	1	ST	24	BR454222	IC LIN LM 324N 4X OP.AMP.	U5
106	2	ST	24	236675-002	IC, TL084, OP AMP. QUAD	U7
	2	ST	24	236675-002	IC, TL084, OP AMP. QUAD	U6
107	1	ST	24	BR454230	IC LIN LM 3054N TRANS.ARR	U8
108	1	ST	24	BR443964	IC LIN TDA2002 POW. AMPL	U9
109	2	ST	23	203527-010	DIODE ZENER 5V6/0.5W J	VR5
	2	ST	23	203527-010	DIODE ZENER 5V6/0.5W J	VR4
110	2	ST	23	BR454389	DIO ZEN ZPD16 16V 0.5W	VR2
	2	ST	23	BR454389	DIO ZEN ZPD16 16V 0.5W	VR3
111	1	ST	23	BR228869	DIO ZEN ZPD 7.5 7.5V 0.5W	VR6
112	2	ST	23	BR228818	DIO ZEN ZPD 2.7 2.7V 0.5W	VR7
	2	ST	23	BR228818	DIO ZEN ZPD 2.7 2.7V 0.5W	VR8
113	1	ST	23	203527-006	DIODE ZENER 3V9/0.5W J	VR9
114	1	ST	26	235032-003	TRANSISTOR, PNP, BC327-25	Q2
115	1	ST	21	BR362913	RES CARB. 15R 1/4J SFR25	R136
116	1	ST	37	BR464902	FLATCABL.ASSY W1 A10	
117	1	ST	48	214073-004	LABEL, ADHESIVE, ESD	
118	1	ST	22	235010-001	CAP. ELC 1U0 / 25M	C58

BR471534 REGULATOR-AF,ASSY A10A1

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR471542	PWB,TRANSFORMER AS. A10A	
2	1	ST	31	BR471968	TERMINAL ASSY A10A2A1	A1
3	3	ST	22	BR385190	CAP. CER. 4N7 5KV M HI-K	C3
	3	ST	22	BR385190	CAP. CER. 4N7 5KV M HI-K	C2
	3	ST	22	BR385190	CAP. CER. 4N7 5KV M HI-K	C1
4	1	ST	22	BR458511	CAP. PLST 100N 630 K	C4
5	3	ST	22	BR202967	CAP. PLST 100N 100 K	C6
	3	ST	22	BR202967	CAP. PLST 100N 100 K	C7
	3	ST	22	BR202967	CAP. PLST 100N 100 K	C5
6	1	ST	22	BR450510	CAP. CER. 100N 63 S	C8
7	1	ST	22	235010-006	CAP. ELC 6U8 / 25M	C9
8	5	ST	22	BR366471	CAP. ELEC 1M 40 T T	C14
	5	ST	22	BR366471	CAP. ELEC 1M 40 T T	C13
	5	ST	22	BR366471	CAP. ELEC 1M 40 T T	C12
	5	ST	22	BR366471	CAP. ELEC 1M 40 T T	C11
	5	ST	22	BR366471	CAP. ELEC 1M 40 T T	C10
9	6	ST	22	BR373516	CAP. ELEC 2M2 25 T LL	C20
	6	ST	22	BR373516	CAP. ELEC 2M2 25 T LL	C19
	6	ST	22	BR373516	CAP. ELEC 2M2 25 T LL	C18
	6	ST	22	BR373516	CAP. ELEC 2M2 25 T LL	C17
	6	ST	22	BR373516	CAP. ELEC 2M2 25 T LL	C15
	6	ST	22	BR373516	CAP. ELEC 2M2 25 T LL	C16
10	4	ST	23	BR373524	DIO POW. MR 501 SI100V 3A	CR2
	4	ST	23	BR373524	DIO POW. MR 501 SI100V 3A	CR4
	4	ST	23	BR373524	DIO POW. MR 501 SI100V 3A	CR3
	4	ST	23	BR373524	DIO POW. MR 501 SI100V 3A	CR1
11	3	ST	33	BR394629	FUSE 20X5MM 6,3A T	F2
	3	ST	33	BR394629	FUSE 20X5MM 6,3A T	F3
	3	ST	33	BR394629	FUSE 20X5MM 6,3A T	F1
12	5	ST	51	202185-003	SCREW M2.5X 5SLTD.CYL.BRS	H1
13	4	ST	51	BR327239	SCREW M 4 X10 CHM CU SN	H2
14	1	ST	51	BR446793	SCREW M 3 X10 CHN NYLON	H3
16	1	ST	52	BR327549	NUT M 5 M CU SN	H5
17	1	ST	52	BR482978	STAY NUT M3 X 6 W/TAB 5MM	H6
18	18	ST	31	BR442399	TERMINAL STUD 140-1785-2	H7
19	1	ST	53	200558-003	WASHER NYLON Ø3.2X0.5	H8
20	1	ST	45	BR475343	STRAP,CABLE L292XB4,8	H9
21	2	ST	25	BR454125	COIL,CHOKE 25U 1,5A INS	L1
	2	ST	25	BR454125	COIL,CHOKE 25U 1,5A INS	L2
22	1	ST	45	210840-001	RETAINER	MP1
23	2	ST	52	BR458120	STAY NUT M4 X62 N7	MP2
24	2	ST	52	BR458139	STAY NUT M4 X64 N7	MP3
25	1	ST	56	BR458430	HEAT SINK A10A2 M 3000	MP4
26	1	ST	21	235005-247	RES FILM 3K01 / 0.4 F	R1
27	1	ST	21	235005-138	RES. FILM 243R 0.4F	R2
28	1	ST	25	BR471976	TRAFO,MAINS 125/125 9,7/2	T1
29	1	ST	24	211176-007	IC, LM317, ADJ. VOLTAGE RE	U1

BR471550 TRAFO ASSY A10A2

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
31	6	ST	33	BR216070	FUSE ACCESS CLIPS	XF3
	6	ST	33	BR216070	FUSE ACCESS CLIPS	XF1
	6	ST	33	BR216070	FUSE ACCESS CLIPS	XF2
32	2	ST	51	BR276790	SCREW M 3 X 5 CHM CU SN	
33	2	ST	51	BR327220	SCREW M 4 X 8 CHM CU SN	
34	0,01	ST	32	200843-009	WIRE COP TIN-CTD Ø0.6MM	
35	1	ST	48	214073-004	LABEL, ADHESIVE, ESD	
36	10	ML	76	205254-001	ADHESIVE SILICONE, RTV	
37	0,08	M	44	BR377503	EDGING KANTLIST F/2,1-3MM	

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	23	206155-003	DIODE BRIDGE 220V 15A CRS	CR5
2	2	ST	33	201270-017	FUSE 5X20 SLOW 1,0A	F1
	2	ST	33	201270-017	FUSE 5X20 SLOW 1,0A	F2
3	2	ST	51	BR403377	SCREW SELFT.4X5/16UHPX-AB	H1
5	1	ST	31	BR457736	CONN MAINS 3P MALE	J1
6	1	ST	41	BR476102	REAR PLATE A10	MP1
7	1	ST	33	BR248312	SW,TOGGLE DPDT 2A	S1
8	2	ST	33	BR358975	FUSE ACCES.HLDR 5X20 6,3A	XF2
	2	ST	33	BR358975	FUSE ACCES.HLDR 5X20 6,3A	XF1
9	0,11	M	32	BR329932	WIRE,ELEC 0,75 BROWN	
10	0,11	M	32	BR329983	WIRE,ELEC 0,75 GREEN	
11	0,11	M	32	BR329967	WIRE,ELEC 0,75 YELLOW	
12	0,11	M	32	BR329940	WIRE,ELEC 0,75 RED	
13	0,18	M	32	BR329924	WIRE,ELEC 0,75 BLACK	
14	0,22	M	32	BR329991	WIRE,ELEC 0,75 BLUE	
15	0,11	M	32	BR333034	WIRE,ELEC 0,75 WHITE	
16	0,28	M	32	BR333018	WIRE,ELEC 0,75 VIOLET	
18	1	G	78	200799-001	COMPOUND.THERMAL,SILICO	
19	0,18	M	32	BR329959	WIRE,ELEC 0,75 ORANGE	

BR471968 TERMINAL ASSY A10A2A1

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	3	ST	26	BR458546	TRANS.ACCESS ISOLATIONS	H1
2	3	ST	26	BR391387	TRANS.ACCESS ISOLAT.PLD	H2
3	4	ST	51	BR327220	SCREW M 4 X 8 CHM CU SN	H3
4	6	ST	51	BR276790	SCREW M 3 X 5 CHM CU SN	H4
5	7	ST	53	BR336874	WASHER,FLAT Ø 3MM CU SN	H5
6	7	ST	54	BR436518	RIVET,TUBULAR 3.3/4.8	H6
7	3	ST	56	BR458465	CLAMP,CABLE CV3 3MMX7	H7
8	7	ST	56	BR458473	CLAMP,CABLE CV6 6MMX7	H8
9	0,1	M	34	BR220108	FLEX SILICONE 1,6 WHT	H9
10	1	ST	41	BR458147	BACK-SPACE A10A3	MP1
11	1	ST	56	BR458244	HEAT SINK A10A3	MP2
12	2	ST	26	BR454400	TRANS.DARLN BDX 54A SI-P	Q3
	2	ST	26	BR454400	TRANS.DARLN BDX 54A SI-P	Q1
13	1	ST	26	235035-004	TRANSISTOR NPN DARLINGTO	Q2
14	1	ST	37	BR458910	CABLE ASSY W1 A10A3	W1

BR458341 HEATSINK ASSY A10A3

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	60	BR489891	FR PAN CKT A11A1 RX4010	A1
2	4	ST	51	202185-003	SCREW M2.5X 5SLTD.CYL.BRS	H1
3	8	ST	51	BR276790	SCREW M 3 X 5 CHM CU SN	H2
4	4	ST	51	BR450545	SCREW M 5 X12 UHR	H3
5	8	ST	51	BR475785	SCREW SELFTAP.2X1/8 PHPX-	H4
6	8	ST	53	BR245674	WASHER,NYLON Ø10MM	H6
7	2	ST	51	BR403342	SCREW PINOL M 3 X 6 R UNB	H7
8	1	ST	43	BR454443	KNOB Ø10MM BLCK	H8
9	1	ST	43	BR454435	KNOB,CAB 3,3X Ø7,2	H9
10	1	ST	43	BR452971	KNAP SOØ44.5 ØB.2	H10
11	3	ST	43	BR454478	KNOB 17X Ø14,5	H12
12	3	ST	43	BR454451	KNOB,CAB 4,8X Ø11	H13
13	1	ST	53	BR230278	WASHER,LOCK Ø 5MM X0,7M	H14
15	2	ST	51	BR494380	SCREW M 3 X 4 CHM CU SN	
17	4	ST	51	BR333255	SCREW M 3 X 6 UHJ GULCR	H18
18	2	ST	54	BR436518	RIVET,TUBULAR 3.3/4.8	H20
19	1	ST	52	BR321486	NUT M10F 10X14X3MM	H21
20	0,36	D2	20	BR475289	CLOTH,LOUDSPEAK BLK 60X6	H22
21	1	ST	53	BR402923	WASHER,FLAT Ø10MM GULCR	H23
22	1	ST	31	206165-002	CONN, JACK, SWITCH, 6.3MM	J1
23	1	ST	20	BR474924	LOUDSPEAKER 8R 10W 60X60	LS1
24	2	ST	43	BR216674	HANDLE F.5 1/4" 111MM	MP1
25	4	ST	51	BR260827	THUMBSCREW,KNURLED M6	MP2
26	4	ST	46	BR268682	GUIDE F/THUMBSCREW 260827	MP3
27	1	ST	41	BR490040	FRONT PLATE RX4010	MP4
28	1	ST	46	BR471453	GUIDE SHEET A11	MP5
29	2	ST	46	BR445827	BRACKET,FRONTPLATE A11	MP6
30	1	ST	57	BR458015	BUSHING,PILOT A11	MP7
31	1	ST	42	BR457728	CODE WHEEL A11	MP9
32	1	ST	42	BR458023	FLY WHEEL A11	MP10
33	1	ST	42	BR458007	SHAFT F/CODE WHEEL A11	MP11
34	1	ST	41	BR457957	SCREEN A11	MP12
35	4	ST	53	BR267015	WASHER,NYLON Ø12MM X15	MP13
36	1	ST	48	BR490377	WINDOW,DSPL RX4010	MP14
37	1	ST	41	BR471690	MOUNTING F/LOUDSP. A11A1	MP16
38	2	ST	52	BR377104	STAY NUT M3 X 5,5 N5	MP17
39	1	ST	21	BR454516	RES VAR. 10K CERM LIN	R1
40	2	ST	21	BR454508	RES VAR. 1K0 CERM LIN	R2
	2	ST	21	BR454508	RES VAR. 1K0 CERM LIN	R3
41	1	ST	21	BR459313	RES VAR. 4K7 A11R4	R4
42	1	ST	21	BR377538	RES CARB. 30R 1/4J SFR25	R5
43	1	ST	37	BR458937	CABLE ASSY W1 A11	W1
44	1	ST	37	BR458945	CABLE ASSY W2 A11	W2
45	1	ST	37	BR458953	CABLE ASSY W3 A11	W3
46	8	ST	53	221387-135	WASHER LOCK 2.8X5.3X0.6MM	
47	1	ST	53	BR321664	WASHER,FLAT Ø 8,0 M CU SN	
48	1	ST	53	BR499161	WASHER, PS7X13X0,1	

BR489905 FRONT PANEL RX4010 A11

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
49	2	ST	53	202232-005	WASHER,SPRING 3,1X 6,2	
50	0,3	M	34	BR490075	TAPE,DOUBLE SIDE 0,13X10	
51	2	ST	45	201197-049	STRAP, CABLE, NAT Ø20X2.5	

BR489905 FRONT PANEL RX4010 A11

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR471437	PWB,FRONT PANEL CIR A11A1	
2	1	ST	60	BR489883	DSPL BD A11A1A1 RX/RC4010	A1
3	4	ST	22	235010-006	CAP. ELC 6U8 / 25M	C3
	4	ST	22	235010-006	CAP. ELC 6U8 / 25M	C1
	4	ST	22	235010-006	CAP. ELC 6U8 / 25M	C5
	4	ST	22	235010-006	CAP. ELC 6U8 / 25M	C15
4	5	ST	22	200514-204	CAP. CER 100N / 50K	C4
	5	ST	22	200514-204	CAP. CER 100N / 50K	C8
	5	ST	22	200514-204	CAP. CER 100N / 50K	C2
	5	ST	22	200514-204	CAP. CER 100N / 50K	C11
	5	ST	22	200514-204	CAP. CER 100N / 50K	C6
5	4	ST	22	BR450510	CAP. CER. 100N 63 S	C9
	4	ST	22	BR450510	CAP. CER. 100N 63 S	C10
	4	ST	22	BR450510	CAP. CER. 100N 63 S	C19
	4	ST	22	BR450510	CAP. CER. 100N 63 S	C7
6	1	ST	22	BR451053	CAP. ELEC 68U 6,3 M	C12
7	1	ST	22	BR203378	CAP. TAN. 10U 16 S	C13
8	1	ST	22	BR357642	CAP. CER. 10N 100 S HI-K	C14
9	1	ST	22	235010-006	CAP. ELC 6U8 / 25M	C16
10	2	ST	22	BR357650	CAP. CER. 22N 63 A HI-K	C17
	2	ST	22	BR357650	CAP. CER. 22N 63 A HI-K	C18
11	12	ST	23	BR450480	DIO LED HLMP1000 RED Ø3	CR6
	12	ST	23	BR450480	DIO LED HLMP1000 RED Ø3	CR9
	12	ST	23	BR450480	DIO LED HLMP1000 RED Ø3	CR8
	12	ST	23	BR450480	DIO LED HLMP1000 RED Ø3	CR7
	12	ST	23	BR450480	DIO LED HLMP1000 RED Ø3	CR5
	12	ST	23	BR450480	DIO LED HLMP1000 RED Ø3	CR4
	12	ST	23	BR450480	DIO LED HLMP1000 RED Ø3	CR3
	12	ST	23	BR450480	DIO LED HLMP1000 RED Ø3	CR2
	12	ST	23	BR450480	DIO LED HLMP1000 RED Ø3	CR12
	12	ST	23	BR450480	DIO LED HLMP1000 RED Ø3	CR11
	12	ST	23	BR450480	DIO LED HLMP1000 RED Ø3	CR10
	12	ST	23	BR450480	DIO LED HLMP1000 RED Ø3	CR1
12	2	ST	23	200352-001	DIODE 1N4148	CR17
	2	ST	23	200352-001	DIODE 1N4148	CR16
13	2	ST	51	BR465402	SCREW M 2,5X 6 CHM CU SN	H1
14	20	ST	51	BR276790	SCREW M 3 X 5 CHM CU SN	H2
15	1	ST	51	BR276804	SCREW M 3 X 8 CHM CU SN	H3
16	2	ST	53	BR321540	WASHER,FLAT Ø 2,5 M CU SN	H5
17	1	ST	52	200560-003	NUT, PLAIN HEX M 3	H6
18	2	ST	52	BR375209	NUT M 2,5 M CU SN	H7
20	28	ST	53	BR380105	WASHER,FLAT Ø 3MM CU SN	H9
21	1	ST	31	BR452688	TRANS.ACCESS TALLFJEDER	H10
22	0,48	M	34	BR220140	FLEX SILICONE 0,5/1 TRAN	H11
23	16	ST	51	BR494380	SCREW M 3 X 4 CHM CU SN	H12
24	3	ST	25	200730-003	COIL,RF	L1
	3	ST	25	200730-003	COIL,RF	L3

BR489891 FR PAN CKT A11A1 RX4010

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
24	3	ST	25	200730-003	COIL,RF	L2
25	1	ST	43	BR458961	KNOB,BLK,WHT.TEXT "SLOW"	MP1
26	1	ST	43	BR458988	KNOB,BLK,WHT.TEXT "INTER"	MP2
27	1	ST	43	BR458996	KNOB,BLACK,WHT.TEXT "AM"	MP3
28	1	ST	43	BR459003	KNOB,BLACK,WHT.TEXT "BFO	MP4
29	1	ST	43	BR459011	KNOB,WHITE,BLK.TEXT "9"	MP5
30	1	ST	43	BR459038	KNOB,WHITE,BLK.TEXT "6"	MP6
31	1	ST	43	BR459046	KNOB,WHITE,BLK.TEXT "3"	MP7
32	1	ST	43	BR474959	KNOB,WHITE,BLK.TEXT "C"	MP8
33	1	ST	43	BR459062	KNOB,BLACK,WHT.TEXT "ATT	MP9
34	1	ST	43	BR459070	KNOB,BLK,WHT.TEXT "VNAR"	MP10
35	1	ST	43	BR459089	KNOB,BLACK,WHT.TEXT "CW"	MP11
36	1	ST	43	BR459097	KNOB,BLK,WHT.TEXT "SCAN"	MP12
37	1	ST	43	BR459100	KNOB,WHITE,BLK.TEXT "7"	MP13
38	1	ST	43	BR459119	KNOB,WHITE,BLK.TEXT "4"	MP14
39	1	ST	43	BR459127	KNOB,WHITE,BLK.TEXT "1"	MP15
40	1	ST	43	BR459135	KNOB,WHITE,BLK.TEXT "0"	MP16
41	1	ST	43	BR459143	KNOB,BLACK.WHT.TEXT "OFF	MP17
42	1	ST	43	BR459151	KNOB,BLK,WHT.TEXT "WIDE"	MP18
43	1	ST	43	BR459178	KNOB,BLACK,WHT.TEXT "SSB	MP19
44	1	ST	43	BR459186	KNOB,BLACK,WHT.TEXT "RCL	MP20
45	1	ST	43	BR459194	KNOB,BLACK,WHT.TEXT "STO	MP21
46	1	ST	43	BR471410	KNOB,BLK,WHT.TEXT "LOCAL	MP22
47	1	ST	43	BR490385	KNOB,BLACK,WHT.TEXT "MO	MP23
48	1	ST	43	BR459224	KNOB,BLK,WHT.TEXT "FAST"	MP24
49	1	ST	43	BR459232	KNOB,BLK,WHT.TEXT "NARR"	MP25
50	1	ST	43	BR459240	KNOB,BLK,WHT.TEXT "RTTY"	MP26
51	1	ST	43	BR459259	KNOB,BLK,WHT.TEXT "TUNE"	MP27
52	1	ST	43	BR459267	KNOB,WHITE,BLK.TEXT "8"	MP28
53	1	ST	43	BR459275	KNOB,WHITE,BLK.TEXT "5"	MP29
54	1	ST	43	BR459283	KNOB,WHITE,BLK.TEXT "2"	MP30
55	1	ST	43	BR459291	KNOB,WHITE,BLK.TEXT "."	MP31
56	1	ST	46	BR448117	GUIDE SHEET 1 A11	MP32
57	1	ST	46	BR471461	GUIDE SHEET 2 A11	MP33
58	8	ST	52	BR453129	STAY NUT M3 X 7 N5	MP34
59	6	ST	56	224537-009	SPACER, THREADED M3X15M	MP36
60	8	ST	52	BR460338	STAY NUT M3 X13,3 N5	MP37
61	1	ST	43	BR471402	KNOB,BLK,WHT.TEXT "PROGR	MP38
62	11	ST	26	BR392839	TRANS.LOPOW 2N2907A SI-P	Q3
	11	ST	26	BR392839	TRANS.LOPOW 2N2907A SI-P	Q4
	11	ST	26	BR392839	TRANS.LOPOW 2N2907A SI-P	Q5
	11	ST	26	BR392839	TRANS.LOPOW 2N2907A SI-P	Q7
	11	ST	26	BR392839	TRANS.LOPOW 2N2907A SI-P	Q1
	11	ST	26	BR392839	TRANS.LOPOW 2N2907A SI-P	Q8
	11	ST	26	BR392839	TRANS.LOPOW 2N2907A SI-P	Q6
	11	ST	26	BR392839	TRANS.LOPOW 2N2907A SI-P	Q2
	11	ST	26	BR392839	TRANS.LOPOW 2N2907A SI-P	Q17

BR489891 FR PAN CKT A11A1 RX4010

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
62	11	ST	26	BR392839	TRANS.LOPOW 2N2907A SI-P	Q10
	11	ST	26	BR392839	TRANS.LOPOW 2N2907A SI-P	Q16
63	1	ST	26	BR362980	TRANS.HIPOW MJE243	Q9
64	3	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q13
	3	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q12
	3	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q11
65	1	ST	26	BR399914	TRANS.JFETN J 309 TO-92	Q14
66	1	ST	26	BR392820	TRANS.LOPOW 2N2222A SI-N	Q15
67	2	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q18
	2	ST	26	235031-003	TRANSISTOR, NPN, BC547B	Q19
68	6	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R1
	6	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R46
	6	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R49
	6	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R52
	6	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R42
	6	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R45
69	1	ST	21	BR457663	RES NETW 8X1K5 1/4G	R2
70	1	ST	21	BR457647	RES NETW 9X10K 1/5G	R3
71	8	ST	21	BR241040	RES CARB. 15R 1/2JSFR25H	R11
	8	ST	21	BR241040	RES CARB. 15R 1/2JSFR25H	R7
	8	ST	21	BR241040	RES CARB. 15R 1/2JSFR25H	R6
	8	ST	21	BR241040	RES CARB. 15R 1/2JSFR25H	R4
	8	ST	21	BR241040	RES CARB. 15R 1/2JSFR25H	R5
	8	ST	21	BR241040	RES CARB. 15R 1/2JSFR25H	R9
	8	ST	21	BR241040	RES CARB. 15R 1/2JSFR25H	R10
	8	ST	21	BR241040	RES CARB. 15R 1/2JSFR25H	R8
72	1	ST	21	BR240419	RES CARB. 1K2 1/4J SFR25	R12
73	1	ST	21	BR240613	RES CARB. 18K 1/4J SFR25	R13
74	3	ST	21	BR324221	RES CARB. 2K4 1/4J SFR25	R14
	3	ST	21	BR324221	RES CARB. 2K4 1/4J SFR25	R50
	3	ST	21	BR324221	RES CARB. 2K4 1/4J SFR25	R47
75	1	ST	21	BR240702	RES CARB. 56K 1/4J SFR25	R15
76	3	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R16
	3	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R17
	3	ST	21	BR240516	RES CARB. 4K7 1/4J SFR25	R19
77	1	ST	21	BR457639	RES NETW 7X4K7 1/5G	R18
78	3	ST	21	BR240486	RES CARB. 3K3 1/4J SFR25	R22
	3	ST	21	BR240486	RES CARB. 3K3 1/4J SFR25	R20
	3	ST	21	BR240486	RES CARB. 3K3 1/4J SFR25	R21
79	1	ST	21	BR451355	RES NETW 5X1K0 1/5G	R23
80	1	ST	21	BR433470	RES NETW 9X1K0 1/5G	R24
81	1	ST	21	BR457671	RES NETW 8X15K 1/4G	R25
82	1	ST	21	600005-318	RES FILM. 15K0, 0.6F	R26
83	8	ST	21	600005-285	RES FILM. 7K50, 0.6F	R32
	8	ST	21	600005-285	RES FILM. 7K50, 0.6F	R28
	8	ST	21	600005-285	RES FILM. 7K50, 0.6F	R29
	8	ST	21	600005-285	RES FILM. 7K50, 0.6F	R31

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
83	8	ST	21	600005-285	RES FILM. 7K50, 0.6F	R27
	8	ST	21	600005-285	RES FILM. 7K50, 0.6F	R33
	8	ST	21	600005-285	RES FILM. 7K50, 0.6F	R34
	8	ST	21	600005-285	RES FILM. 7K50, 0.6F	R30
84	1	ST	21	BR240745	RES CARB. 100K 1/4J SFR25	R35
85	1	ST	21	BR240605	RES CARB. 15K 1/4J SFR25	R36
86	1	ST	21	BR240338	RES CARB. 390R 1/4J SFR25	R37
87	5	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R53
	5	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R44
	5	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R43
	5	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R38
	5	ST	21	BR240567	RES CARB. 10K 1/4J SFR25	R54
88	1	ST	21	BR324205	RES CARB. 5K1 1/4J SFR25	R39
89	2	ST	21	BR240621	RES CARB. 22K 1/4J SFR25	R51
	2	ST	21	BR240621	RES CARB. 22K 1/4J SFR25	R48
90	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S14
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S30
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S25
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S26
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S27
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S28
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S24
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S3
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S31
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S32
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S12
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S5
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S6
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S7
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S8
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S9
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S29
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S1
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S4
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S23
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S10
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S11
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S13
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S15
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S16
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S22
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S18
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S19
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S2
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S20
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S21
	32	ST	33	BR450421	SW,PUSH BU.SPST NO	S17

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
91	1	ST	33	BR471992	SW,SLIDE SPDT F/PWB	S33
92	1	ST	24	206072-095	IC, --74HCT138	U1
93	1	ST	24	200463-095	IC, --74HCT02	U2
94	3	ST	24	203469-006	IC, SN7406N	U12
	3	ST	24	203469-006	IC, SN7406N	U10
	3	ST	24	203469-006	IC, SN7406N	U3
95	1	ST	24	203927-095	IC, --74HCT14, INVERTERS	U4
96	1	ST	24	213289-095	IC, CD74HCT373E	U5
97	1	ST	24	BR450294	IC LIN TL 082CP OP.AMP.	U6
98	2	ST	24	BR488151	IC DGTL 74HCT164 SHIFT RE	U7
	2	ST	24	BR488151	IC DGTL 74HCT164 SHIFT RE	U8
99	1	ST	24	BR488178	IC DGTL 74HCT240 8XBUF.IN	U9
100	1	ST	24	BR365874	IC DGTL 74LS 74N 2X D FF	U11
101	1	ST	24	BR473928	IC HYBRID OPB822SD OPTO S	U13
102	1	ST	37	BR459550	FLATCABL.ASSY W1 A11	W1
103	3	ST	31	BR451479	CONN AMP MODU2 10P FEMAL	XP1
	3	ST	31	BR451479	CONN AMP MODU2 10P FEMAL	XP2
	3	ST	31	BR451479	CONN AMP MODU2 10P FEMAL	XP3
104	1	G	78	200799-001	COMPOUND.THERMAL,SILICO	
105	1	ST	48	214073-004	LABEL, ADHESIVE, ESD	

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR489840	PWB,DSPL BD A11A1A1	
2	2	ST	23	200352-001	DIODE 1N4148	CR2
	2	ST	23	200352-001	DIODE 1N4148	CR1
3	1	ST	23	BR497029	DIO LED HLMPQ101 RED MINI	CR3
4	3	ST	31	BR490458	CONN AMP MODU2 10P MALE	P3
	3	ST	31	BR490458	CONN AMP MODU2 10P MALE	P2
	3	ST	31	BR490458	CONN AMP MODU2 10P MALE	P1
5	11	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q2
	11	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q7
	11	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q5
	11	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q9
	11	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q3
	11	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q8
	11	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q11
	11	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q10
	11	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q1
	11	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q4
	11	ST	26	BR369454	TRANS.DARLN MPSA13 SI-N T	Q6
6	11	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R12
	11	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R2
	11	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R19
	11	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R18
	11	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R17
	11	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R16
	11	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R15
	11	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R13
	11	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R11
	11	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R1
	11	ST	21	235004-085	RES FILM 3K3 / 0.5 J	R14
7	1	ST	21	235004-073	RES FILM 1K0 / 0.5 J	R3
8	1	ST	21	235004-082	RES FILM 2K40 / 0,4 J	R4
9	2	ST	21	235004-084	RES FILM 3K00 / 0,4 J	R6
	2	ST	21	235004-084	RES FILM 3K00 / 0,4 J	R5
10	1	ST	21	235004-106	RES FILM 24K0 / 0,4 J	R7
11	1	ST	21	235004-097	RES FILM 10K / 0.5 J	R8
12	2	ST	21	235004-065	RES FILM 470R / 0,4 J	R9
	2	ST	21	235004-065	RES FILM 470R / 0,4 J	R10
13	1	ST	21	235004-057	RES FILM 220R / 0.5 J	R20
14	10	ST	24	BR489859	IC DSPL HD1077R 7 SEGM.RE	U7
	10	ST	24	BR489859	IC DSPL HD1077R 7 SEGM.RE	U9
	10	ST	24	BR489859	IC DSPL HD1077R 7 SEGM.RE	U6
	10	ST	24	BR489859	IC DSPL HD1077R 7 SEGM.RE	U5
	10	ST	24	BR489859	IC DSPL HD1077R 7 SEGM.RE	U4
	10	ST	24	BR489859	IC DSPL HD1077R 7 SEGM.RE	U3
	10	ST	24	BR489859	IC DSPL HD1077R 7 SEGM.RE	U2
	10	ST	24	BR489859	IC DSPL HD1077R 7 SEGM.RE	U10
	10	ST	24	BR489859	IC DSPL HD1077R 7 SEGM.RE	U1

BR489883 DSPL BD A11A1A1 RX/RC4010

FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
14	10	ST	24	BR489859	IC DSPL HD1077R 7 SEGM.RE	U8
15	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U25
	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U17
	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U21
	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U22
	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U16
	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U24
	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U12
	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U23
	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U15
	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U13
	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U26
	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U11
	13	ST	24	BR471380	IC DSPL HLMP2300 LGHT BAR	U14
16	1	ST	24	BR446327	IC LIN UAA 170 LED DRIVER	U18
17	2	ST	24	BR474916	IC DSPL HDSP4820 LGHT BAR	U19
	2	ST	24	BR474916	IC DSPL HDSP4820 LGHT BAR	U20

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	60	BR489174	MOTHERB ASSY A12A1 RX4010	A1
2	16	ST	52	BR450588	NUT M 3 SQUARE 3X7X2,2MM	H2
3	12	ST	51	BR276723	SCREW M 3 X 8 UHM CU SN	H3
4	4	ST	51	BR436909	SCREW UNBRAK M 3X 8 UHR	H4
5	40	ST	51	BR450561	SCREW SELFTAP.4X3/8 PH-PL	H5
6	20	ST	51	BR276790	SCREW M 3 X 5 CHM CU SN	H6
7	12	ST	51	BR495239	SCREW M 4 X 4 CHJ Z	H7
8	1	ST	41	BR489182	PLATE,JUNCTION A12	MP1
9	5	ST	41	BR445886	PROFILE,PC 1M	MP2
10	2	ST	41	BR445894	PROFILE,PC 1M DRILL	MP3
11	3	ST	41	BR445908	PROFILE,PC 1,5M	MP4
12	2	ST	41	BR490393	PROFILE,SIDE DRILL. F/SLI	MP5
13	2	ST	41	BR458600	RAIL SECTION A12	MP6
14	6	ST	41	BR495026	SPLICE-PIECE A12	MP7
15	10	ST	52	BR387681	STAY NUT M3 X10 N5	MP8
16	16	ST	51	BR333417	SCREW M 4 X10 UHJ GULCR	H8
17	5	ST	46	BR497266	BRACKET FOR 1M PROFILE	MP9
18	3	ST	46	BR497274	BRACKET FOR 1,5M PROFILE	MP10
19	8	ST	46	BR497282	FISHPLATE A12	MP11
20	12	ST	53	221387-135	WASHER LOCK 2.8X5.3X0.6MM	
22	10	ST	53	BR380105	WASHER,FLAT Ø 3MM CU SN	
23	1	G	78	204729-001	GREASE, WHITE	

BR489875 CHASSIS ASSY A12 RX4010

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FN NO	QTY	U M	CLASS	Item Number	Description:	REF. DES.
1	1	ST	37	BR489166	PWB,MOTHERBD A12A1	
2	2	ST	22	200514-204	CAP. CER 100N / 50K	C2
	2	ST	22	200514-204	CAP. CER 100N / 50K	C1
3	18	ST	31	BR454419	CONN PWB ACCES CODE PIN	H1
4	0,25	M	31	BR459429	CONTACT STRIP 0,58X0,5IN	H2
5	1	ST	21	BR240451	RES CARB. 2K2 1/4J SFR25	R6
6	5	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R12
	5	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R13
	5	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R7
	5	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R8
	5	ST	21	BR240400	RES CARB. 1K0 1/4J SFR25	R9
7	1	ST	21	BR451371	RES NETW 9X2K2 1/5G	R10
8	1	ST	21	BR451363	RES NETW 5X2K2 1/5G	R11
9	2	ST	24	207432-095	IC, --74HCT245E	U2
	2	ST	24	207432-095	IC, --74HCT245E	U1
10	1	ST	24	BR404551	IC DGTL 74 37N 4X2IN NAND	U3
11	9	ST	31	BR451509	CONN PWB EDGE 36P FEMALE	XA1
	9	ST	31	BR451509	CONN PWB EDGE 36P FEMALE	XA10
	9	ST	31	BR451509	CONN PWB EDGE 36P FEMALE	XA2
	9	ST	31	BR451509	CONN PWB EDGE 36P FEMALE	XA3
	9	ST	31	BR451509	CONN PWB EDGE 36P FEMALE	XA4
	9	ST	31	BR451509	CONN PWB EDGE 36P FEMALE	XA6
	9	ST	31	BR451509	CONN PWB EDGE 36P FEMALE	XA7
	9	ST	31	BR451509	CONN PWB EDGE 36P FEMALE	XA8
	9	ST	31	BR451509	CONN PWB EDGE 36P FEMALE	XA9

BR489174 MOTHERB ASSY A12A1 RX4010

SECTION 7
MANUAL CHANGES

7.1 Introduction

This section normally contains information for adapting this manual to equipment which the contents does not apply directly.

7.2 Changes

7.2.1 Control of Tape Recorder, Software option 1.

When software option 1 is installed, a tape recorder can be controlled by means of an open collector output A8J8, OC8 (pin 8). Please refer to section 2 for specification of A8J8.

If one of the alarms "scan-prg.", "demute", "recall UPC" or "recall PPC" is executed, OC8 is switched on (grounded).
When the alarm "mute" is executed OC8 is switched off.
(See section 3 for description of Alarm programming/clearing.

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SECTION 8
SERVICE

8.1 Introduction

This section provides information for servicing the receiver.

8.2 Theory of Operation

The overall theory of operation is explained beginning with paragraph 8.11. Each paragraph explains with the aid of block diagrams the operation of functional assemblies.

Detailed theory of operation is located opposite the schematics.

8.3 Trouble Shooting

WARNING

Read the Safety Summary at the front of this manual before trouble shooting the receiver.

By the use of front-panel controls, note as many symptoms of the malfunction as possible. From these symptoms it can usually be determined which assembly is malfunctioning. The Self-Test Program and the Fault Analysis Table (table 8.3) can be used as a guide.

When a problem has been isolated to a particular assembly or circuit, the faulty component(s) may be located using the detailed theory of operation shown on the page opposing the appropriate schematic.

8.4 Self-Test Program

Receiver Test Program. (See also table 8.2 and 8.3).

Self-test program is activated by pressing (progr) (4) (9) and (enter). The built-in test program goes through the folowing sequence:

a) Assembly test. The µP addresses modul A1 - A11 to see whether they are present. If any modul does not acknowledge the call, the µP displays e.g. "no A3" and then continues the test.

b) Real time clock test. the µp test the real time clock, and display "no CLOC" if something wrong with the real time clock.

c) Synthesizer lock test. The synthesizer is set up near the boundaries of the VCO ranges, which are equivalent to the receiving frequencies 5990, 6010, 11990, 12010, 19990, 20010· 29999.99 and 0. If the synthesizer does not lock up within 200 msec., the error message will be:

Frequency	Display
5990.00	Err. OSC.1 1
6010.00	Err. OSC.1 2
11990.00	Err. OSC.1 3
12010.00	Err. OSC.1 4
19990.00	Err. OSC.1 5
20010.00	Err. OSC.1 6
29999.99	Err. OSC.1 7
0.00	Err. OSC.1 8

d) BFO lock test. The BFO is set up to different frequencies. If the BFO does not lock up the error message will be:

Frequency	Display
3.00	Err. OSC.3 1
2.00	Err. OSC.3 2
1.00	Err. OSC.3 3
1.50	Err. OSC.3 4
0.80	Err. OSC.3 5
0.00	Err. OSC.3 6

e) Gain test. The synthesizer is set to 75 MHz and the feed-through in the signal path is measured at the AGC to be above a reasonable level.
Also the presence of audio output from the detector is examined. The test is repeated with different BFO frequencies and crystal filters.
If the BFO level is low or an error is present in the AGC or the detector, the display shows "no Audio".
If the gain in the signal path is low, or the synthesizer level is low, the display shows "GAin Lo".

E.g. a fault in one of the crystal filters or in an interconnecting cable will result in "GAin Lo".
An AGC fault can also cause this read-out.

Mode	BFO	BW	AGC	Display
CW	0.80	narr	fast	Err. no Audio 1 or Err. GAIn LO 1
RTTY	1.50	wide	fast	Err. no Audio 2 or Err. GAIn LO 2
RTTY	1.00	Inter	fast	Err. no Audio 3 or Err. GAIn LO 3
RTTY	2.00	narr	fast	Err. no Audio 4 or Err. GAIn LO 4

RTTY	3.00	Vnar	fast	Err. no Audio 5 or Err. GAIn LO 5
ISB	0.00	narr	fast	Err. no Audio 6 or Err. GAin LO 6

f) Display and led test. All LED's and segment's are lit.
   Press (C) to continue.

g) The remote address and software version number is displayed.
   Press (C) to continue.

h) Option displayed. "0000000" indicate no option.

i) Key test. Pressing any key but "C" results in the hexadecimal value of the key being shown.
   See table 8.2.
   Press (C) to leave test.

8.5 Preventive Maintenance

Painted surfaces can be cleaned with a commercial, spray-type window cleaner or with a mild soap and water solution.

CAUTION

Avoid the use of chemical cleaning agents that might damage the plastics used in this receiver

The pushbutton switches in this receiver were designed for long, troublefree service. If one of these switches should become defective, replacement rather than repair is recommended.

8.6 Front Panel Assembly Removal

To remove the front panel assembly proceed as follows:

a) remove the four screws holding the front panel. The four screws are located at the exterior side of the receiver side profiles.
b) carefully withdraw the front panel assembly and disconnect the ribbon cable connector from the mother-board.
c) to reinstall the front panel assembly, reverse removal procedure.

8.7 PC-Board Assembly Removal.

To remove a PC-board assembly, proceed as follows:

a) Disconnect the regulation transistor cable from A10J2 and remove the power supply heat sink panel by removing the four screws holding the panel. The four screws are located on the

exterior side of the receiver side profiles.

b) Disconnect all cables running to the concerned assembly.

c) Remove the six (eight) screws positioned at the edge of the concerned assembly rear panel and withdraw the assembly. If the assembly is stuck in the chassis frame, it may be necessary carefully to release the assembly by keying a screwdriver in between the rear panel and the main frame.

d) To reinstall the assembly, reverse removal procedure. Due to the use of self tapping screws holding the assembly rear panel to the chassis frame, carefully reinsert the screws in the threads when reversing step d above.

8.8 Servicing PC-Boards

All the PC-boards have plated-through component holes. This allows components to be removed or replaced by unsoldering or soldering from either side of the board. When removing large components,rotate the soldering iron tip from lead to lead while applying pressure to the part to lift it from the board.

8.9 MOS Handling Precautions

All MOS devices are subject to damage from static charge build-up. The generation of static charges is not a problem, but the accumulation of static charges is. In general, any device not connected directly to ground can accumulate static charges. Electrical discharge can occur to ground or to any object or person having a lower potential. Therefore, handling precautions are recommended for all personnel coming into contact with MOS devices.

When handling or testing MOS devices, observe the following precautions.

a) Ground test equipment and tools used in testing or handling MOS devices.

b) Apply no power to board assembly while MOS device is being installed. This permits accumulated static charges on MOS device safely to be removed before power is applied.

c) When not in use, short all MOS leads. This prevents voltage differences from occurring on leads

WARNING

When accomplishing step d, never expose

personnel directly to hard electrical ground. For safety reasons, resistance of at least 100 Kohms should be placed between using personnel and hard electrical ground.

d) Do not handle MOS devices by their leads. Before handling any MOS device, personnel should touch electrical ground to discharge accumulate static charges.

e) Avoid use of plastics, rubber, and silk in MOS areas. Do not use any material susceptible to static charge accumulation.

f) Handle circuit boards and modules containing MOS devices in the same manner as individual MOS devices. Regardless of configuration, whenever leads of MOS devices are exposed, damage due to static-charge build-up can occur.

g) Use conductive, grounded table tops in MOS work area.

h) Humidity in work area should be maintained above 50%. Static charge generation increases exponentially as relative humidity decreases.

8.10 Logic Devices

This receiver uses three different families of logic circuits: MOS, TTL and ECL. Most of the logic devices used in this receiver are TTL and are represented by unmarked logic symbols on the schematics. Logic elements, not belonging to the TTL Logic family, are so indicated on the schematics.
Table 8.1 below lists typical voltage levels associated with each family used in this receiver.

Table 8.1 Typical Logic Levels

Logic Family	High Level	Low Level
TTL	3 - 5V	0.2V
ECL	4.3 - 4.7V	3.4 - 3.7V
MOS	5 - 15V	0V

8.11 Basic Principles of Operation

The following paragraphs contain funcional descriptions keyed to the block diagrams. The block diagrams are drawn for function and do not show circuit details. Schematic and detailed descriptions of each circuit are located on subsequent service sheets.

8.12 Overall Operation

The overall functional block diagram of the receiver is shown in Figure 8.1.
The antenna signal is connected to the sub-octave filter assembly A4, which serves two objects, matching the 50 ohm antenna impedance and rejecting undesired signals.

From A4 the filtered signal is routed to the Front-End Assembly A3, where the signal is up-converted to the first intermediate frequency of 75 MHz and crystal filtered to approx. 12 kHz.
Following the first AGC-amplifier, the signal then is down-converted to the second intermediate frequency of 1.4 MHz and crystal filtered to the final information bandwidth.

In ISB versions an unfiltered signal is fed directly to the IF/AF assembly A7.

On the IF/AF assembly A7 the unfiltered signal is filtered, and final amplification with subsequent SSB/CW or AM demodulation is performed. An AGC-leveled IF output is accessible at the rear panel of the assembly.
The Power Supply Assembly A10 incorporates AF notch Filter and output amplifier for driving the operators headphone or loudspeaker.
The Power Supply Assembly accepts 110-125, 220-250 Vac.

The Syntheziser Assembly A1, generates the first local oscillator signal tunable from 75 MHz to 105 MHz in 10 Hz increments.

The Standard Assembly A2 generates the second local oscillator signal at 73.6 MHz, the Synthesizer Assembly reference signal, and the synthesized beat frequency oscillator signal tunable from 1.393 MHz to 1.407 MHz in 10 Hz increments.

The Microcomputer Assembly A8 performs the overall control of the receiver.
Typical tasks handled by the assembly:

- Control of the individual assemblies
- Keyboard and steptune reading
- Display refreshing
- AGC/MGC through multiplexed D/A-A/D conversion
- Programmable memory set-ups
- Scanning
- Channel stepping
- Squelch control
- Remote control
- Diagnostic routines

Communication between the Microcomputer Assembly and the remaining assemblies is conducted over an internal bus running on the mother PC-board and the front panel ribbon cable.

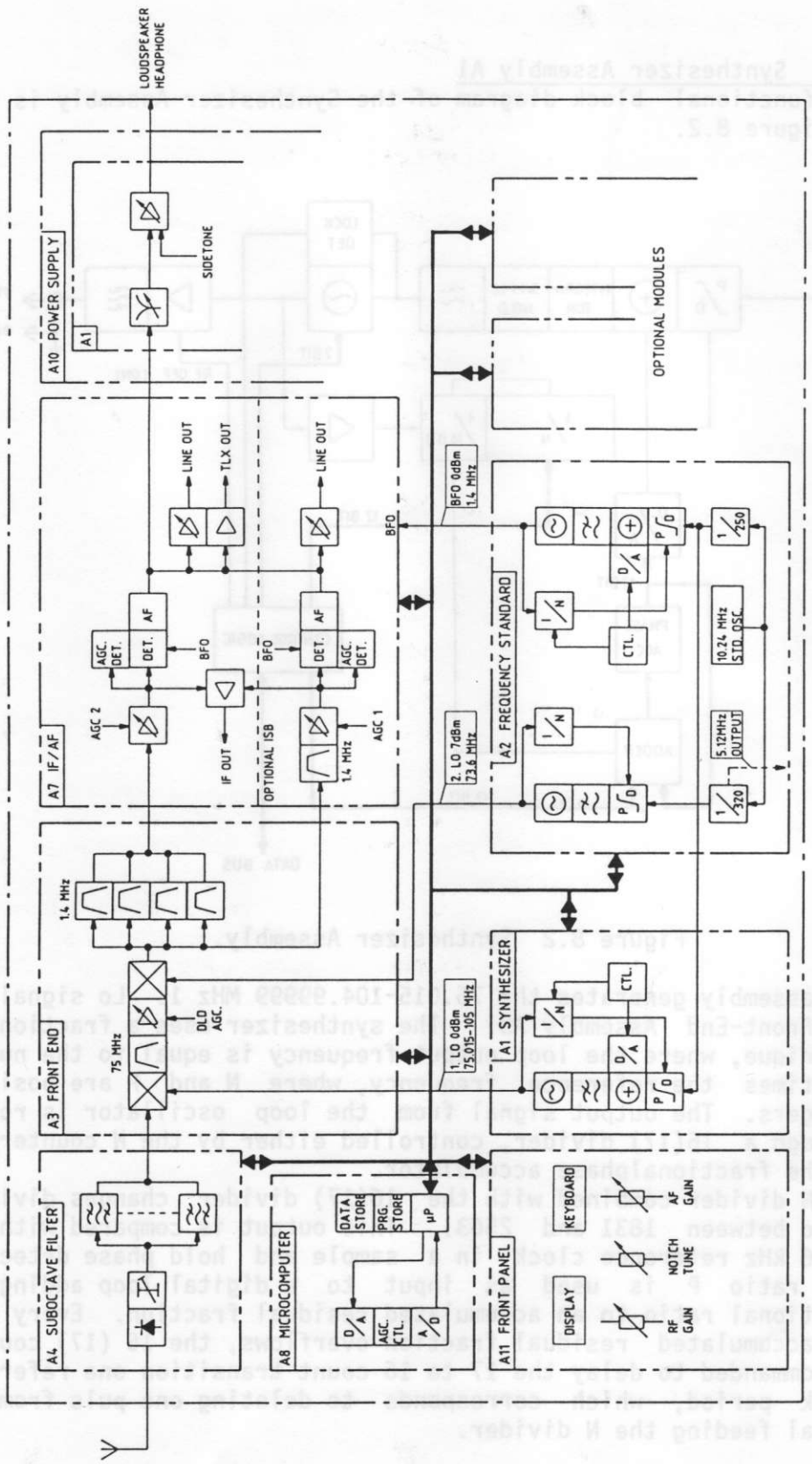


Figure 8.1 Overall Functional Block Diagram.

8.13 Synthesizer Assembly A1

The functional block diagram of the Synthesizer Assembly is show in Figure 8.2.

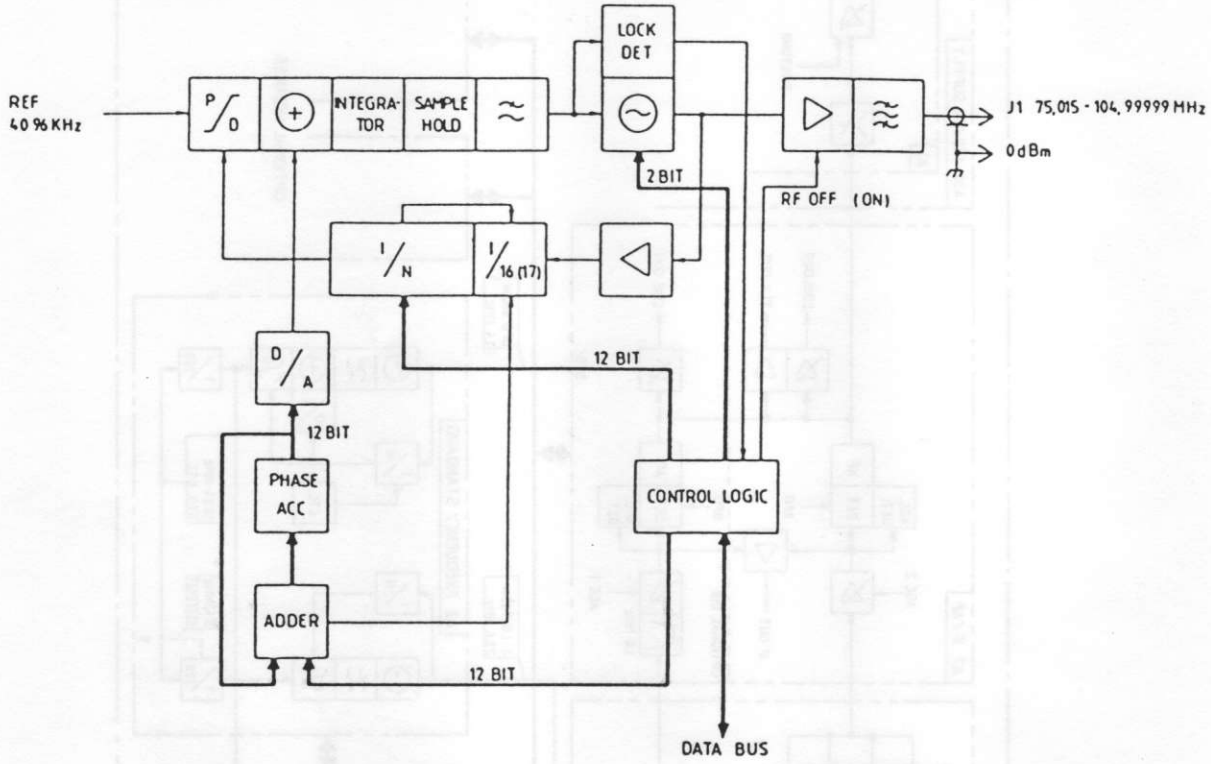


Figure 8.2 Synthesizer Assembly.

The assembly generates the 75.015-104.99999 MHz 1. Lo signal for the Front-End Assembly A3. The synthesizer uses a fractional N technique, where the loop output frequency is equal to the number N.P times the reference frequency, where N and P are positive integers. The output signal from the loop oscillator is routed through a 16(17) divider, controlled either by the N counter, or by the fractionalphase accumulator.
The N divider combined with the 16(17) divider changes division ratio between 1831 and 2563. This output is compared with the 40.96 kHz reference clock in a sample and hold phase detector. The ratio P is used as input to a digital loop adding the fractional ratio to an accumulated residual fraction. Every time the accumulated residual fraction overflows, the 16 (17) counter is commanded to delay the 17 to 16 count transition one reference clock period, which corresponds to deleting one puls from the signal feeding the N divider.

To compensate for puls delete sidebands on the synthesizer output signal, the residual fraction is converted to an analog signal and added to the error signal from the phase detector. The composed error signal is filtered before entering the control input of the voltage controlled oscillator.

8.14 Standard Assembly A2

the functional block diagram of the Standard Assembly is show in Figure 8.3.

The assembly holds three basic functions:

- 10.24 MHz stable master oscillator
- 73.6 MHz synthesized second LO
- 1.4 MHz synthezised BFO

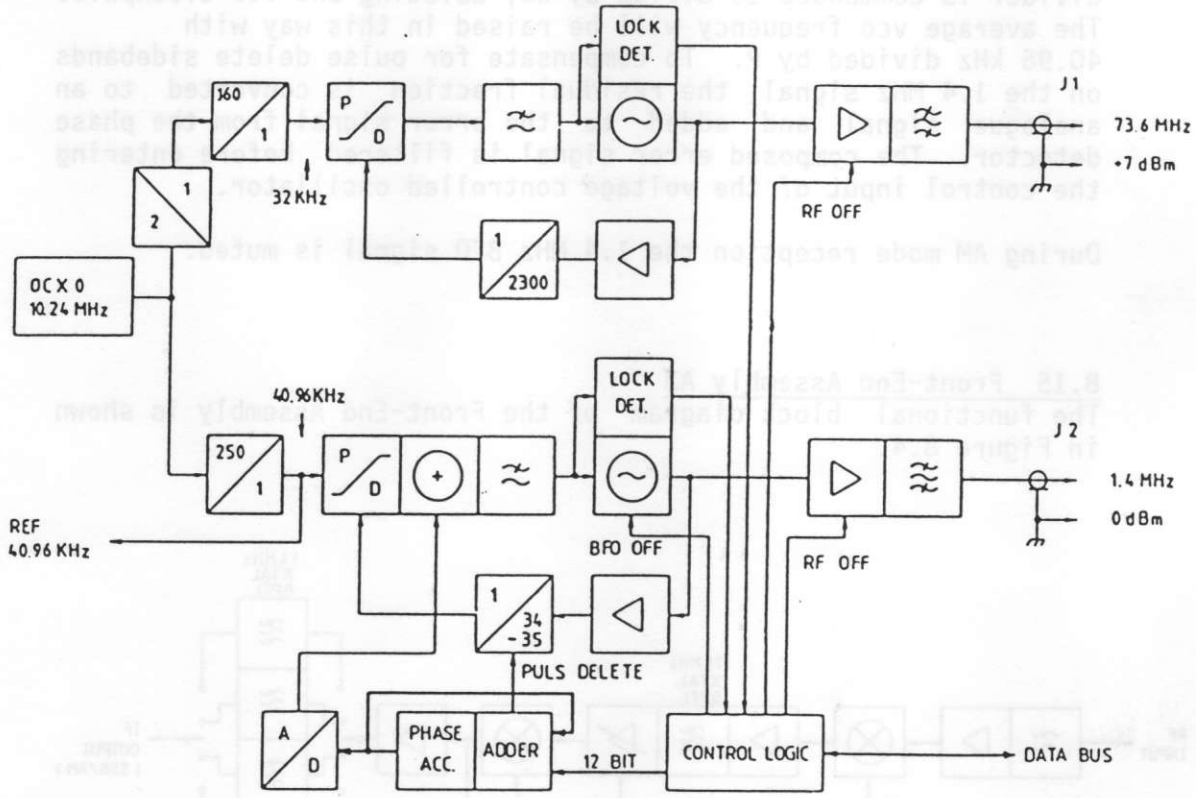


Figure 8.3 Standard Assembly.

The output signal from the temperature compensated crystal oscillator is applied to two divider chains. One generating 32 kHz reference clock for the 73.6 MHz loop, and one generating 40.96 kHz reference clock for the 1.4 MHz loop and the Syntheziser Assembly.

The 73.6 MHz oscillator is formed by a voltage controlled crystal oscillator ensuring low side-band noise. The loop has a 10 Hz bandwidth compensating for frequency drift.

The 1.4 MHz synthesizer is tunable in 10 Hz increments. The loop reference frequency is 40.96 kHz and the corresponding loop bandwidth approx. 800 Hz.

The loop uses a fractional N technique, where the loop output frequency is equal to the number of N.P. times the reference frequency, where N and P are positive integers. Due to the limited tuning requirements for the loop, the N number is fixed 34. The programmed number P is used as input to a digital loop adding the fractional ratio to an accumulated residual fraction.

Every time the accumulated residual fraction overflows, the N divider is commanded to divide by 35, deleting one vco clockpuls. The average vco frequency will be raised in this way with 40.96 kHz divided by P. To compensate for pulse delete sidebands on the 1.4 MHz signal, the residual fraction is converted to an analogue signal and added to the error signal from the phase detector. The composed error signal is filtered before entering the control input of the voltage controlled oscillator.

During AM mode reception the 1.4 MHz BFO signal is muted.

8.15 Front-End Assembly A3

The functional block diagram of the Front-End Assembly is shown in Figure 8.4.

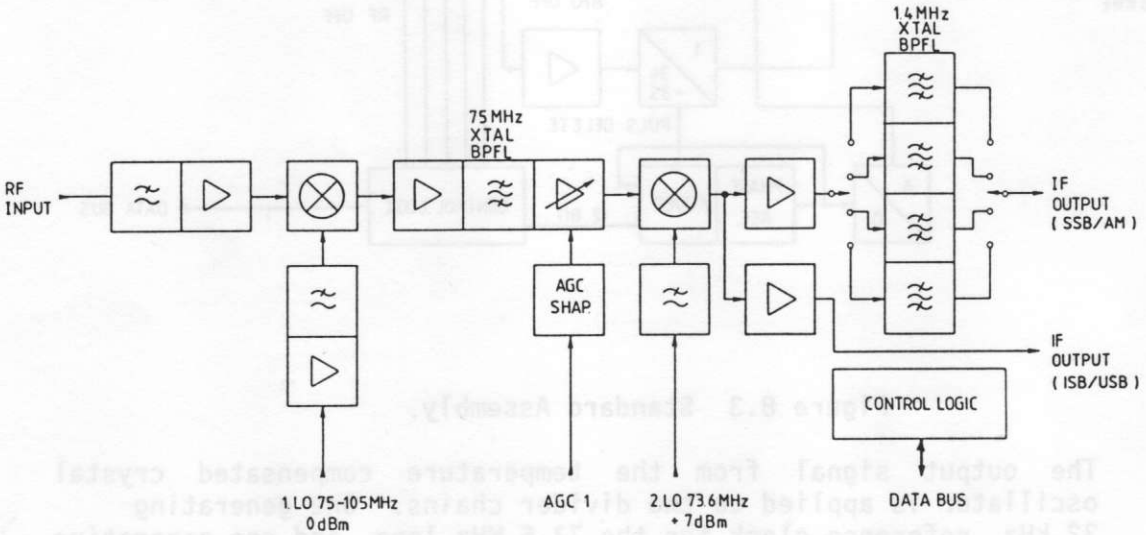


Figure 8.4 Front-End Assembly

The Front-End Assembly contains the RF preamplifier, the first and second mixer with associated injection amplifiers, the 75 MHz IF amplifier and the information crystal filters.

The 15 kHz to 30 MHz input signal is first preamplified approx. 6 dB before entering a high LO injection (+17 dBm) up-converting mixer. The high LO signal is derived from a broadband amplifier placed close to the mixer.

The up-converted 75 MHz first IF signal then is amplified 14 dB in a parallel FET circuit and crystal filtered to a bandwidth of approx. 12 kHz. The AGC1 amplifier following the crystal filter further amplifies the signal 9 dB with a 50 dB delayed AGC.

Delayed AGC is brought into operation when the received input level reaches about 30 dB above 1 microvolt.

The second mixer down-converts the signal to the second IF frequency of 1.4 MHz. The down-converted signal is amplified 23 dB and impedance matched to the four information crystal filters.

These filters determine the overall receiver selectivity.
The filters are switched by means of serie-diodes.
The unfiltered 1.4 MHz output is used in the ISB version.

8.16 Sub-Octave Filter Assembly A4

The functional block diagram of the Sub-Octave Filter Assembly is shown in Figure 8.5.

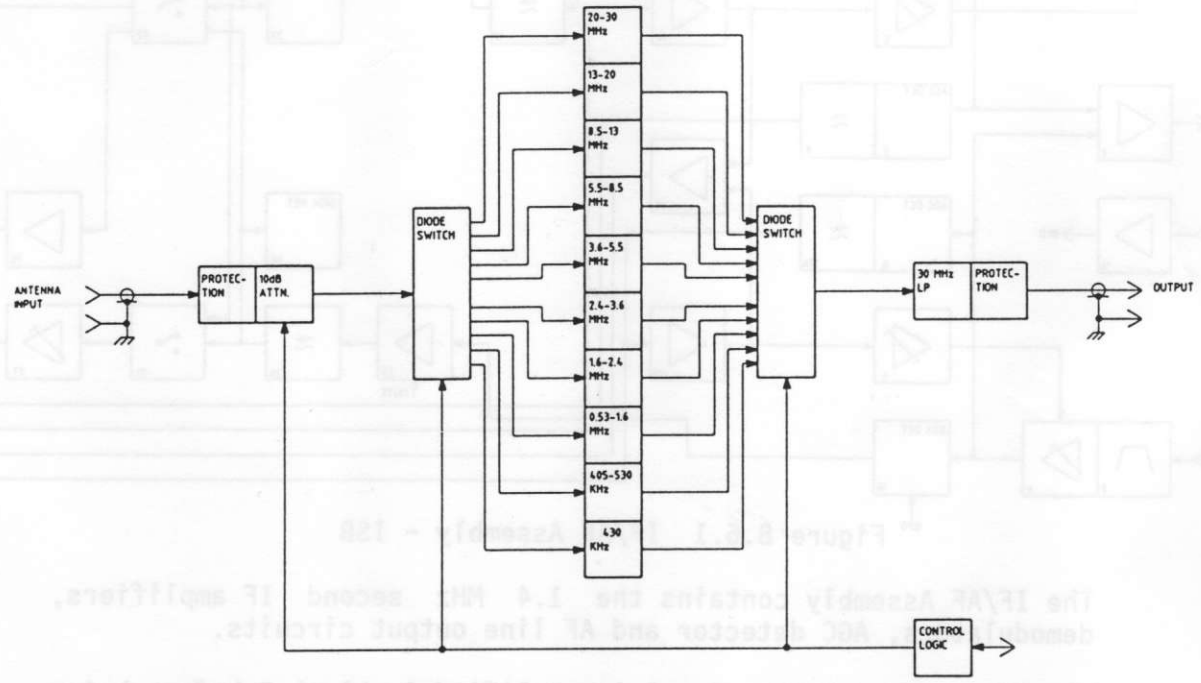


Figure 8.5 Sub-Octave Filter Assembly

The primary function of the Sub-Octave Filter Assembly is to provide selectivity ahead of the front-end preamplifier.

The frequency range 15 kHz to 30 MHz is covered by 10 fixed bandpass filters. The 7 filters covering the frequency range 1.6 - 30 MHz are all less than one octave wide.

To reduce interference from adjacent and/or high power transmitters, a 10 dB switchable pad is incorporated to attenuate incoming signals.
An input overload circuit protects the receiver against extreme antenna signals.

An output protection circuit prevents spike products from the switch circuits to reach the Front-End Assembly.

8.17 IF/AF Assembly A7

The functional block diagram of the IF/AF Assembly is shown in Fig. 8.6.1 for the ISB version.

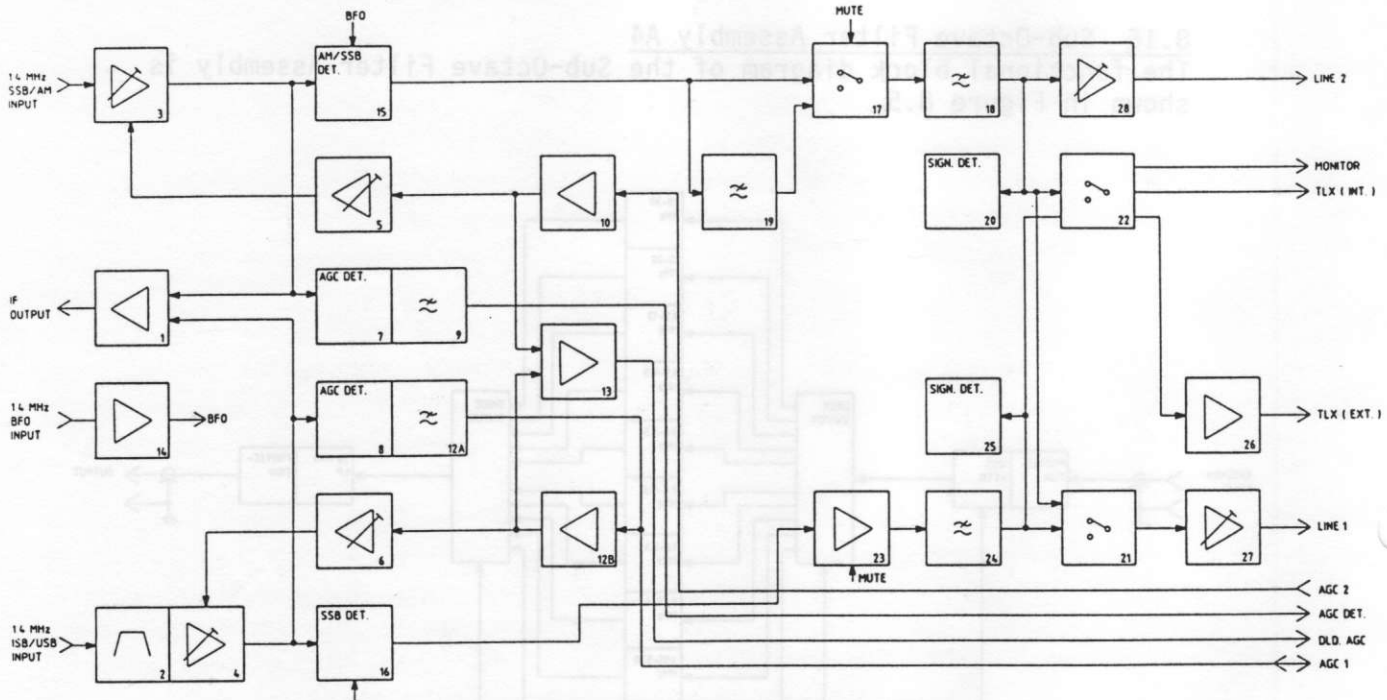


Figure 8.6.1 IF/AF Assembly - ISB

The IF/AF Assembly contains the 1.4 MHz second IF amplifiers, demodulators, AGC detector and AF line output circuits.

The filtered 1.4 MHz signal is amplified in block 3 before being fed to the AM/SSB demodulator, the age detector and the isolation amplifier for the IF output. The gain from the input of block 3 to the IF output is between approx. -15 dB and +75 dB controlled by the agc circuit.

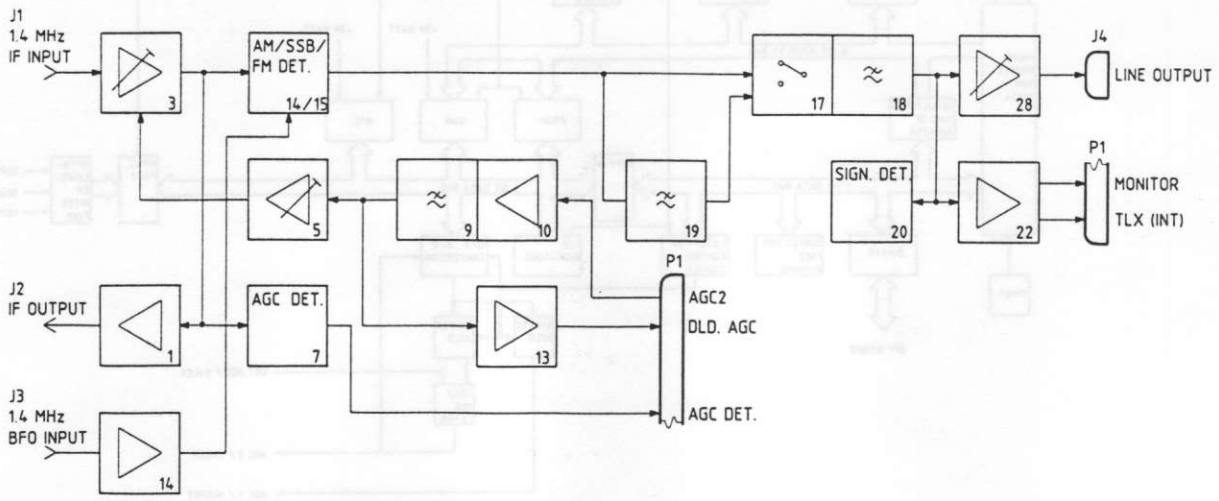


Figure 8.6.2 IF/AF Assembly - SSB

The output signal from the demodulator is routed through a 1.4 kHz low-pass filter in CW/narr and vnar.
The mute circuit in block 17 enables the Microcomputer Assembly to mute the AF signal during simplex transmission, switch sequences and squelch operation.

Before the final amplification the signal is 4 kHz low-pass filtered. The signal level of the Line Output is adjustable up to +10 dBm/600 ohm. The signal level of the TLX Output is 0 dBm/600 ohm.

The signal detection in block 20 is used in self-test mode.

The AGC-detection is performed in the logarithmic detector in block 7. The output signal from the AGC-detector is routed to the Microcomputer Assembly for digitizing.

Block 13 contains circuit for the Front-End AGC.

In the ISB version the unfiltered 1.4 MHz signal is applied to a crystal filter in block 2. The now filtered signal is amplified and fed to the SSB demodulator, the AGC detector and the isolation amplifier for the IF output. The gain from the input of block 3 to the IF Output is between approx. -15 dB and +75 dB controlled by the AGC circuit.

The output signal from the demodulator is amplified, low-pass filtered and fed to the AF output.

8.18 Microcomputer Assembly A8

The functional block diagram of the Microcomputer Assembly is shown in Figure 8.7.

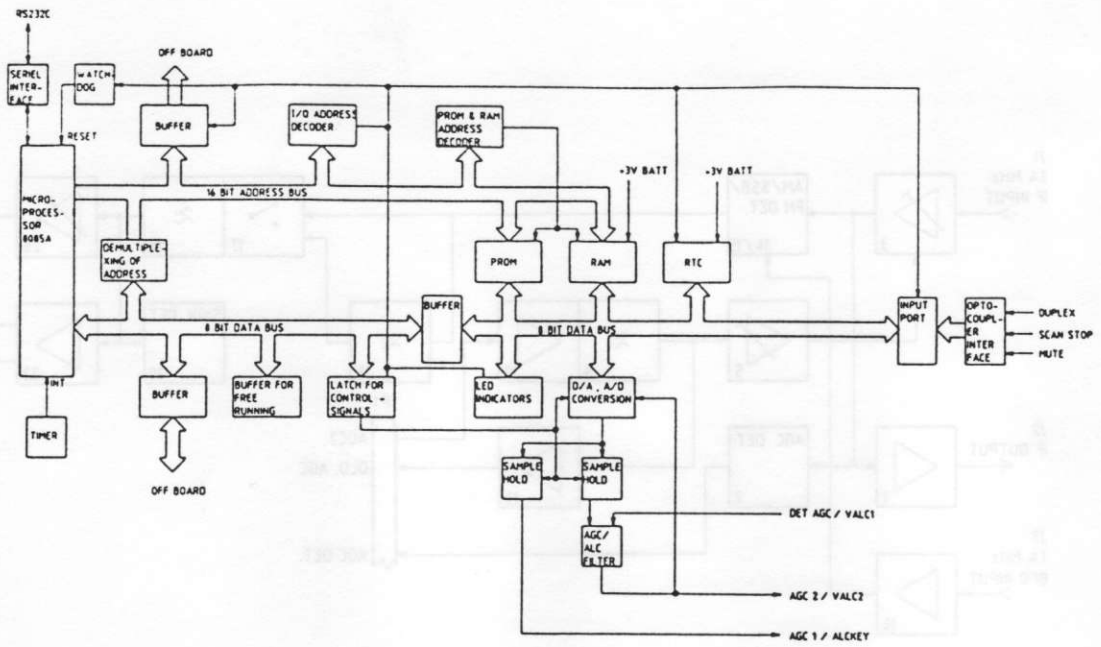


Figure 8.7 Microcomputer Assembly

The assembly consists of a 8085 microprocessor largescale integrated circuit that controls all basic functions within the receiver.

The operating system software for the microcomputer is stored in three programmable read-only memories (PROM's). Each PROM is capable of storing 16K x 8-bit words.

A random access memory chip (RAM), capable of storing 8k x 8-bit words, is required for the temporary storage and manipulation of input and output data. During power failure and receiver standby, the RAM is powered from a 3V battery backup preventing interruptions from disturbing the stored data.

Various buffers and decoders assure proper drive levels and timing to and from various circuits and input/output ports.

A battery back-uped real time clock integrated circuit is mounted to ensure correct time keeping even during power failure or receiver standby.

Timing of the assembly is via a 6.144 MHz crystal oscillator contained in the CPU.

The Microprocessor Assembly performs the automatic gain control. Analogue loops provides fast attack AGC-levels for the IF/AF Assembly. A digital AGC2- and AGC1-levels are formed by an A/D conversion (Successive approximation by D/A-conversion) of the analogue AGC2-and AGC1-levels and controls the hold and decay parameters.

8.19 Power Supply Assembly A10

The functional block diagram of the Power Supply Assembly is shown in Figure 8.8.1 for the AC only version and in Figure 8.8.2 for the AC/DC version.

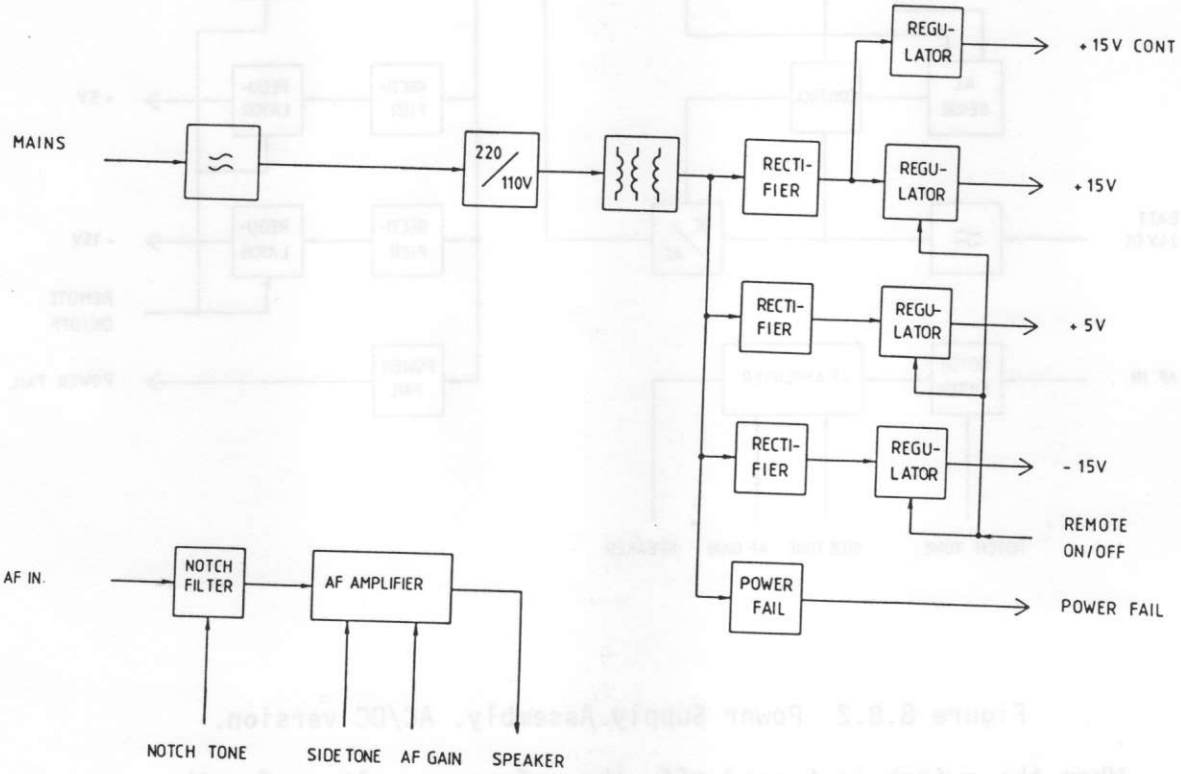


Figure 8.8.1 Power Supply Assembly. AC only version.

Part of the AF circuits, the notch filter and the AF power amplifier, are included in the assembly.

The AC mains is transformer-coupled to bridge rectifiers, followed by current limited voltage regulators (fold-back limited) delivering +5V, -15V and +15V.

The AC/DC version (Figure 8.8.2) incorporates a floating inverter enabling the receiver to be driven by a 24Vdc source. The DC supply is converted to 80 Hz ac and applied to a tertiary winding on the mains transformer.

The changeover between the mains supply and the DC supply is performed by a relay, controlled by an optocoupler sensing mains drop-out. The DC to AC converter is released to operate in the same instance the relay is open.

The regulated output voltages are controlled by the front panel ON/OFF switch.

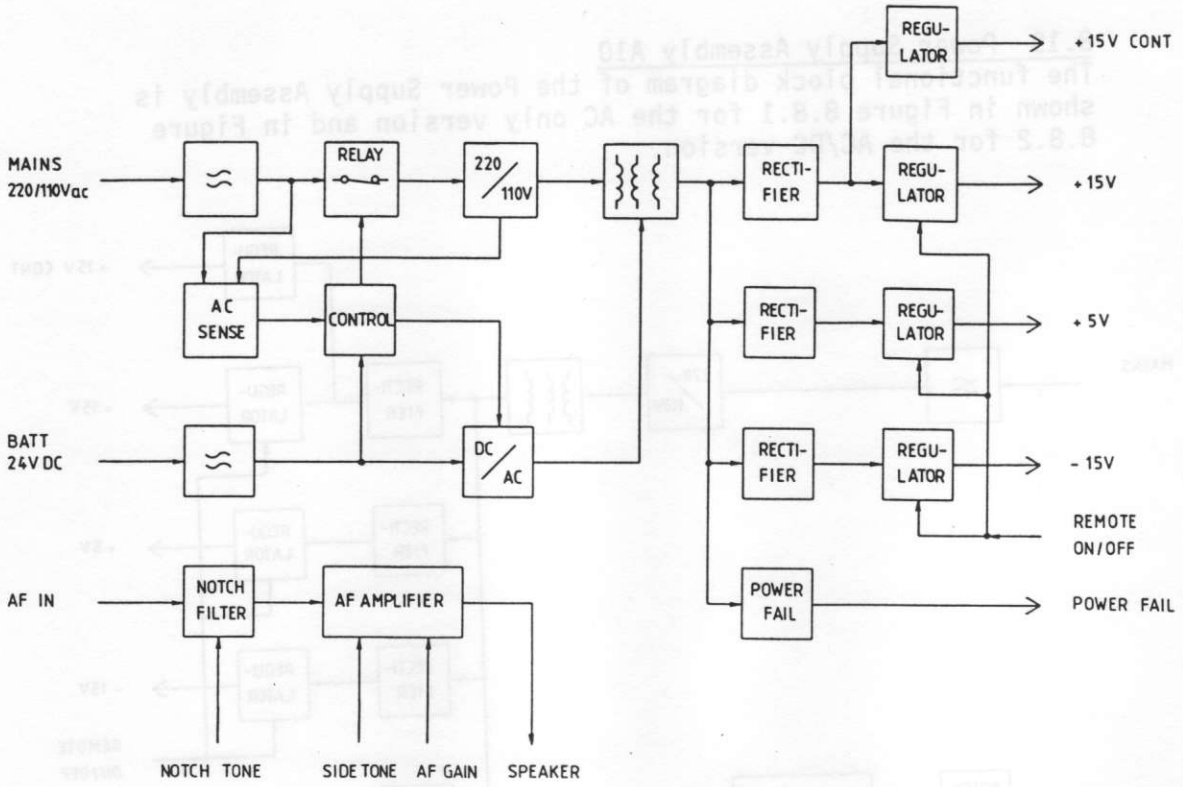


Figure 8.8.2 Power Supply Assembly. AC/DC version.

When the switch is turned off, the reference voltage for the regulators is grounded, causing the output voltages to be removed, while the remaining part of the assembly will continue to energize. An extra +15V regulator, servicing the oven-stabilized reference oscillator, is bypassed by the front panel ON/OFF switch.

By means of an on/off switch positioned on the assembly rear panel the receiver may be de-energized. To avoid information loss during supply drop-out, a power failure circuit sensing the mains transformer secondary voltage, generates a look-ahead warning for the Microcomputer Assembly.

The AF part of the assembly contains a voltage controlled notch filter covering the range 300 to 3400 Hz, a voltage controlled gain variable preamplifier and a 4W/4 ohm loudspeaker amplifier. A sidetone input, used during CW/SIMPLEX operation is mixed to the preamplifier AF signal.

8.20 Front Panel Assembly A11A1

The Front Panel Assembly mounts and interconnects most of the front panel controls, including power ON/OFF dimmer control, RF gain, AF gain, notch tune, mode select, bandwidth select, and receiver frequency/BFO tune. The LEDs, meter read-out, and phone connector are also mounted on this assembly.

All digital controlled pushbuttons, the tuning knob information and the digitized RF-gain setting are scanned by the Microcomputer Assembly. Synchronous the LED read-outs and the front panel meter are updated. The assembly incorporates A/D-D/A converters for converting the analogue RF-gain and meter information.

The only analogue signals routed to and from the assembly are the DC-voltages controlling the notch tune and gain setting of the AF circuits, and the phone signal for the front panel mounted phone jack.

A single ribbon cable interconnects the asembly to the receiver mother board.

8.21 Mother Board A12A1

The receiver mother board ties all parts of the receiver together. It routes the front panel controls, the microcomputer controls and the stabilized voltage to the remaining assemblies.

Table 8.2 Key Values During Self-Test

KEY DEPRESSED	VALUE DISPLAYED
SSB	11
AM	10
RTTY	12
CW	13
wide	18
inter	19
narr	1A
vnar	1B
off	20
slow	21
fast	22
att	24
scan	36
bfo	35
tune	34
C	37
.	8A
0	80
1	81
2	82
3	83
4	84
5	85
6	86
7	87
8	88
9	89
rcl	31
sto	30
local	32
mon	33
progr	38

a

Table 8.3 Fault Analysis Procedures

Find the symptoms below that match the fault condition and follow the hints.

SYMPTOM	POSSIBLE CAUSE
1. Receiver dead. Mains OK Fuse not blown. No LEDs lit.	A10 Power Supply. A11 Front Panel. on/off switch.
2. Receiver dead. Mains OK. Fuse blown and new fuse also blows	A10 Power Supply Diodes, seriestransistors, 75V Z-diodes
3. Front Panel dead. Noise is heard in the loudspeaker during power-up. No LEDs flashing on A8 back plane.	A8 Microcomputer A10 Power Supply 5V missing
4. Front Panel dead. Some LEDs flashing on A8 backplane	All Front Panel
5. Display very Weak. Receiver else OK	All Front Panel Dimmer Circuit A10 Power Supply 8V missing
6. Part of Display lights extremely bright while the rest do not lit. Receiver stops operation.	A8 Microcomputer 8085
7. The same display segment is missing in all figures.	All Front Panel Driver transistor Interconnection cable to motherboard
8. Display shows "bAt.FAIL" steadyly or periodically. Pressing a key can cause an "OSC 1 Err" read-out.	A10 Power Supply VBB, VEE or VFF drifting or incorrectly adjusted
9. The Display shows "An FAIL" during power-up or during keyboard operation.	Microcomputer interface on An is faulty

Table 8.3 continued

SYMPTOM	POSSIBLE CAUSE
10. "OSC 1 Err" during frequency or mode changes	A1 Synthesizer VCO out of lock
11. "OSC 3 Err"	A2 Standard 1.4 MHz oscillator out of lock
12. Receiving Frequency incorrect No error read-outs	A1 Synthesizer Digital circuits A2 Standard 40.96 kHz reference
13. Sensitivity poor	Signal path Oscillator levels
14. Sensitivity poor. Receiver runs test program without error read-outs	Antenna cable A4 Preselector Input Protection Range switches
15. "An FAIL" during test program	Microcomputer interface on An is faulty
16. "OSC 1 Err" during test program No errors during normal operation	A1 Synthesizer VCO range switch VCO adjustment
17. "GAin Lo" several times during test program	The signal path gain A3 Front-end A7 IF/AF A1 Synthesizer output level A2 Standard 73.6 MHz level Interconnection cables
18. "GAin Lo" and "no Audio" several times during test program	Same as 18.
19. "GAin Lo" and "no Audio" several times during test program	A1 Synthesizer Frequency wrong Digital error

a

Table 8.3 continued

SYMPTOM	POSSIBLE CAUSE
20. "no Audio" during test program. The loudspeaker output is weak and distorted	A2 Standard. 1.4 MHz level or frequency. A7 IF/AF demodulator Interconnection cable
21. "GAin Lo" in one of the bandwidth during test program	A3 Front End crystal filter
22. "no Audio" during test program Receiver operates normally	Same as 21. + A7 IF/AF AGC detector not adjusted for -20 dBm IF output Audio detector
23. Audio distorted in AM	A7 IF/AF demodulator AGC detector not adjusted for -20 dBm IF output
24. Audio missing or weak No error read-outs during test program	A10 Power Supply Audio amplifier A11 Front Panel AF potentiometer Interconnection cable to motherboard
25. Receiver acts strange when pressing certain keys	A8 Microcomputer 8085 or EPROMs
26. Receiver looses user-programmed channels	A8 Microcomputer Battery run out CMOS RAM faulty
27. "bAt.FAIL" during power-up	As 26.

INTERCONNECTION DIAGRAM RX 4010

DWG. NO. 49 00 08

ASSY 448168, SYNTHESIZER ASSEMBLY

Service Sheet A1

1. Phase Detector

The J-k flip-flop forms a set-reset phase detector, switching the differential transistor pair Q_1 and Q_2. U31 is clocked by the reference signal, 40.96kHz negative going impulses, turning the diode switch CR4 "ON". CR4 is connected to a constant current generator, making the ramp generator ramp up. U31 is preset by the frequency divided signal from the VCO, terminating the ramp up period.

2. Ramp Down Switch

The ramp down period is controlled by the diode switch and has the length of 832 VCO-cycles. The voltage at TP2 is 2.0V in the ramp down period and -1.2V in the remaining.

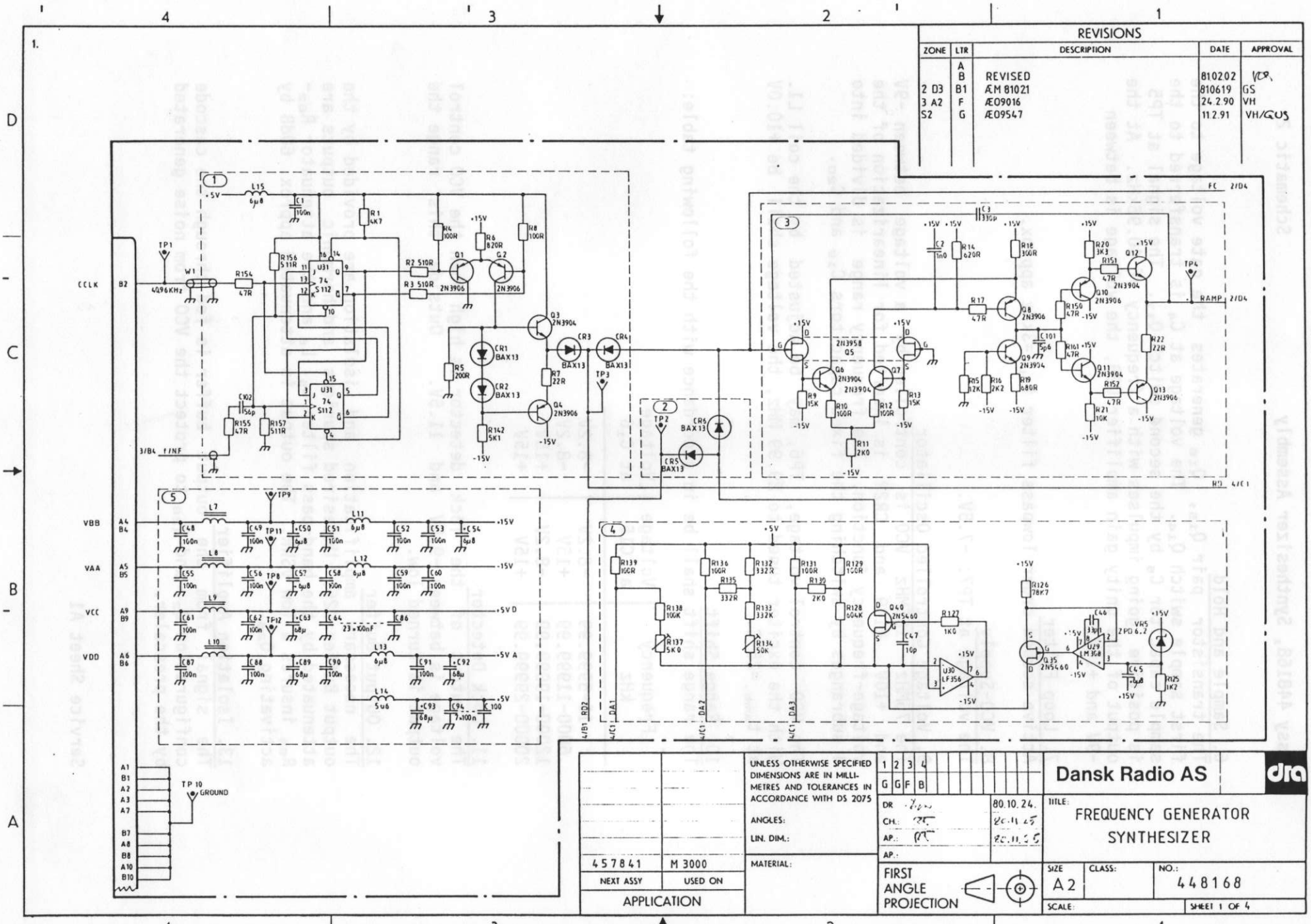
3. Ramp Generator

The ramp generator is an inverting current integrator built with discrete components ensuring fast response and low noise.

4. Summing Amplifier

The current from the constant current generator U29, Q35 is added to the current from the reistance network R128-R139 by the summing Amplifier U30, Q40. The current from R128-R139 is controlled by the diode switches CR19-CR21.

5. Supply Filtering


REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVAL
A
B REVISED 810202 VCP
2 D3 B1 ÆM 81021 810619 GS
3 A2 F ÆO9016 24.2.90 VH
S2 G ÆO9547 11.2.91 VH/GUS
Dansk Radio AS
TITLE: FREQUENCY GENERATOR SYNTHESIZER
457841 M 3000
NEXT ASSY USED ON
APPLICATION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES IN ACCORDANCE WITH DS 2075
ANGLES:
LIN. DIM.:
MATERIAL:
DR 80.10.24.
CH. 90.11.05
AP. 90.11.05
FIRST ANGLE PROJECTION
SIZE A2
CLASS:
NO.: 448168
SCALE:
SHEET 1 OF 4
Service Sheet A1

6. Sample and Hold

The transistor pair Q_{15}, Q_{16} generates the gate voltage to the first sample switch Q_{14}. The voltage at C_4 is transferred to the sample capacitor C_5 by the second switch Q_{17}. The signal at TP5 is positive going impulses with a frequency of 40.96kHz. At the output of the unity gain amplifier U28, the voltage is between -9V and +10V.

7. Loop Filter

Active second order lowpass filter f_{cut}=3kHz approx.

8. VCO-Supply

The voltage at TP7: -7.5V.

9. Voltage Controlled Oscillator

The 75MHz - 105MHz VCO is controlled by a voltage between -9V and +10V. R149 and CR22 is inserted for linearization of the voltage-frequency function. The frequency range is divided into 4 subranges by switching the fixed capacitors C_{19} and C_{20}.

The VCO control voltage, TP6, may be adjusted by the coil L1. With the exciter tuned to 29.99 MHz, the voltage shall be +10.0V at $t_{amb.}$=25°C.

10. Range Shift

The range shift shall be in accordance with the following table:

Frequency kHz	Voltage at C15	Voltage at C_16
15-5999.99	-8.2V	-8.2V
6000-11999.99	+15V	-8.2V
12000-19999.99	-8.2V	+15V
20000-29999.99	+15V	+15V

11. Lock Detector

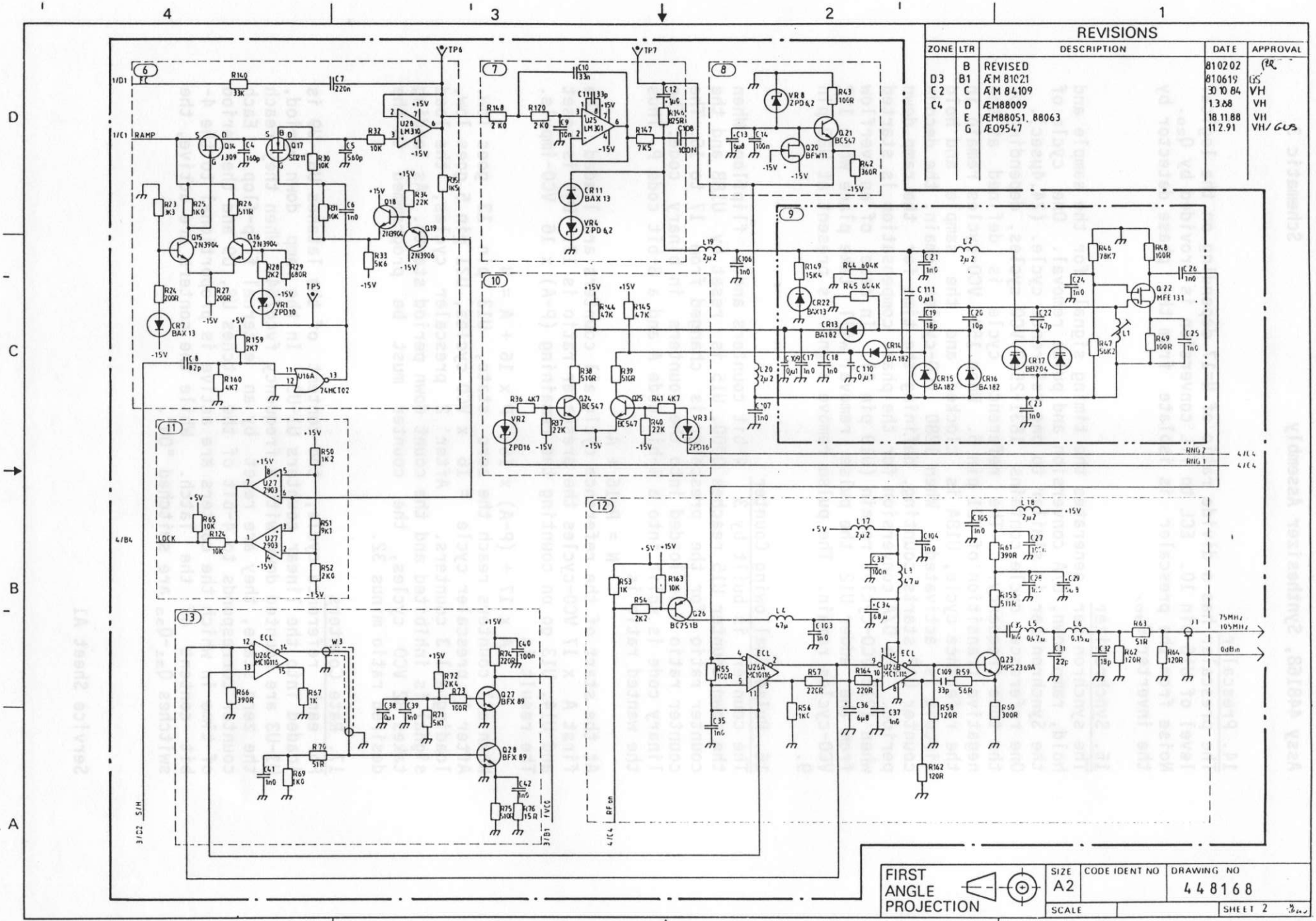
The output of the lock detector is high when the VCO control voltage is between -9.5V and 11.5V. Outside this range the output is turned low.

12. Output Buffer

The necessary amplification and isolation are provided by the output Buffer U26. Undesired spurious and harmonic outputs are attenuated by the band-pass filter L_5, L_6 and the attenuator R_{62}-R_{64} insures a low VSWR. The output is attenuated approx. 60dB by activating Q_{26}.

13. Isolation Amplifier

The signal from the output buffer is fed through the cascode configuration Q_{27} and Q_{28} to protect the VCO from noise generated by the prescaler.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D3 | B1 | ÆM 81021 | 810619 | GS
C2 | C | ÆM 84109 | 30 10 84 | VH
C4 | D | ÆM88009 | 1 3 88 | VH
E | ÆM88051, 88063 | 18 11 88 | VH
G | ÆO9547 | 11 2 91 | VH/GUS
FIRST ANGLE PROJECTION
SIZE A2
CODE IDENT NO
DRAWING NO 448168
SCALE
SHEET 2
Service Sheet A1

14. Prescaler

The prescaler has a divide ratio of N=17 depending on the logical level of U16 pin 10. ECL to TTL conversion is provided by Q_{29}. Noise from the prescaler is isolate from the phase detector by the inverter Q_{30}.

15. Synchronizer

The synchronizer generates the timing signals for the sample and hold, ramp down, D/A conversion and pulse removal. One cycle of the Synchronizer is similar to one reference cycle. (24.4µsec). One reference cycle contains 1831-2563 VCO cycles, depending on the tune frequency. The reference cycle is defined at the negative transition of U21 pin 5. When 1536 VCO-cycles remain in the reference cycle, U18A is clocked and the sample and hold circuit is activated. When 1280 VCO-cycles remain, the decode counter U17 starts counting, defining the time for the ramp down period. The D/A conversion for the phase compensation is started when 1216 VCO-cycles remain (U19 pin 9). In case of an overflow from the adder U12 the pulse removal will take place when 192 VCO-cycles remain. The pulse remove signal is present at U20 pin 9.

16. Pulse Swallowing Counter

The counter is built by 3 4-bit counters and 1 flipflop. When the down counter U15 reaches 0000, U15 is reset by U18B and the counter ratio for the prescaler is changed from 17 to 16. The counter ratio N is loaded into the counters in binary code. The linary code is split into a 4-bit code A and a 8-bit code P. Thus the wanted ratio is

$$N = Px16 + A$$

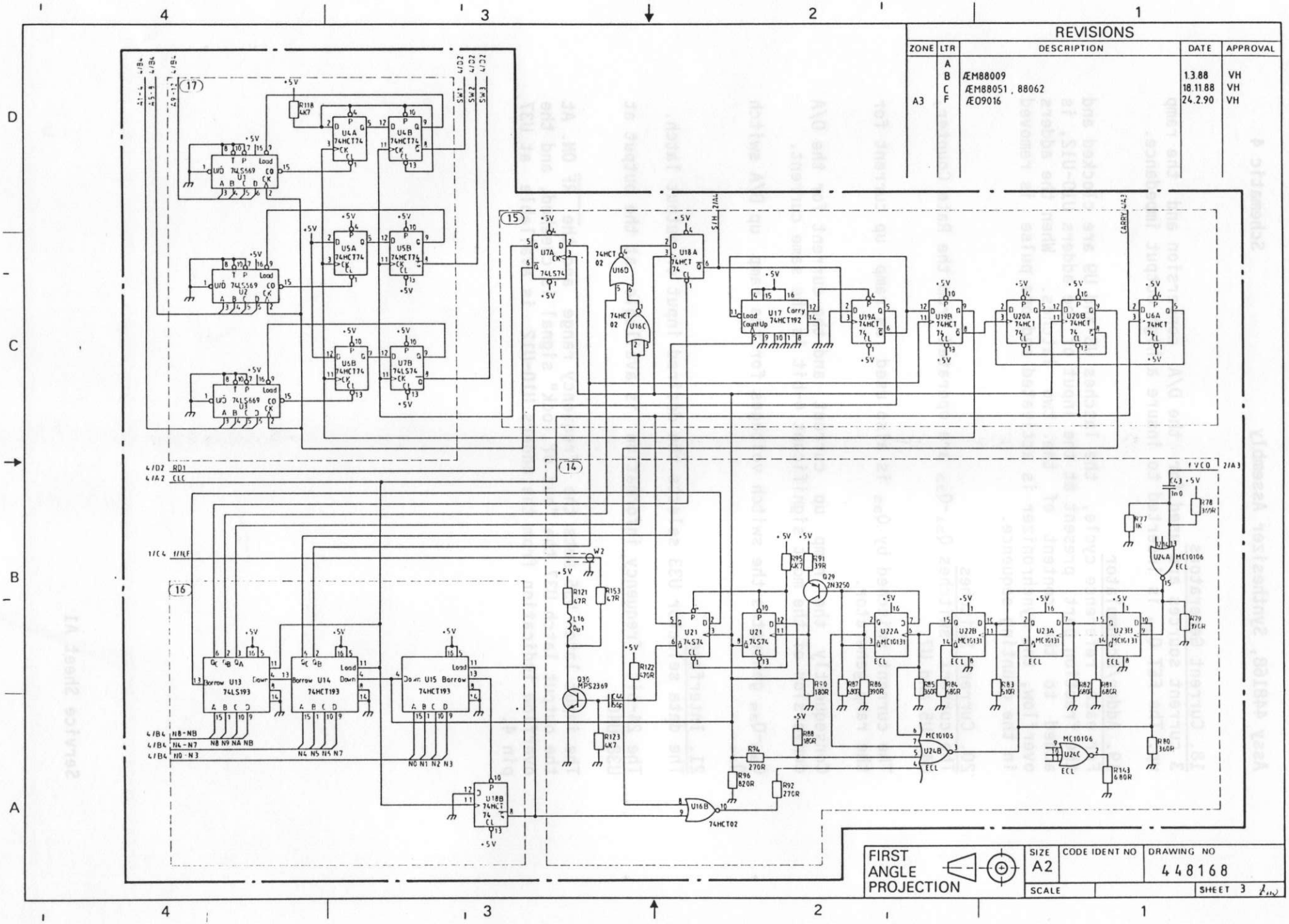
At the start of the reference cycle all counters are loaded. The first A x 17 VCO-cycles the prescaler ratio is 17. U15 is reset and U14, U13 go on counting the remaining (P-A) x 16 VCO-impuls. The result is

$$A \times 17 + (P-A) \times 16 = P \times 16 + A = N$$

When all counters reach the zero state, U13 pin 13 goes low. After 1 prescaler cycle = 16 x VCO cycles, U21 pin 5 goes low, loading all 3 counters. After 2 prescaler cycles, the load signal is inhibited and the count down period starts. As loading takes 32 VCO cycles, the counter must be programmed to the desired ratio minus 32.

17. Rate Counters

For each reference cycle, the content of the latches U8, U9 is loaded into the linear counters U1-U3. In the ramp down period, U1-U3 are counted down with a frequency fvco/64. When they reach the zero state, they are reset by an external flip-flop. Each counter corresponds to 4-bit of the latches U8, U9 and the period of time in which the conters are active is proportional to the 4-bit content of the latch. While the conters are active, the switches Q_{31}-Q_{33} are switched "ON".



Service Sheet A1

18. Current Generators

3 current sources are used for the D/A conversion and the ramp up. The FET Q_{39} is inserted to insure a high output impedance.

19. Adder/Accumulator

For each reference cycle, the latches U8 and U9 are clocked and the fraction part, present at the input of the adders U10-U12, is added to the content of the two latches. When the adders overflow, the synchronizer is activated and one pulse is removed in the counting sequence.

20. Current Switches

The current switches Q_{31}-Q_{33} are operated from the Rate Counter, U4, U5 and U7.

The current switched by Q_{33} is also used as ramp up current for the ramp generator.

Consequently the ramp up current and the current for the D/A conversion of the most significant 4-bit is the same current.

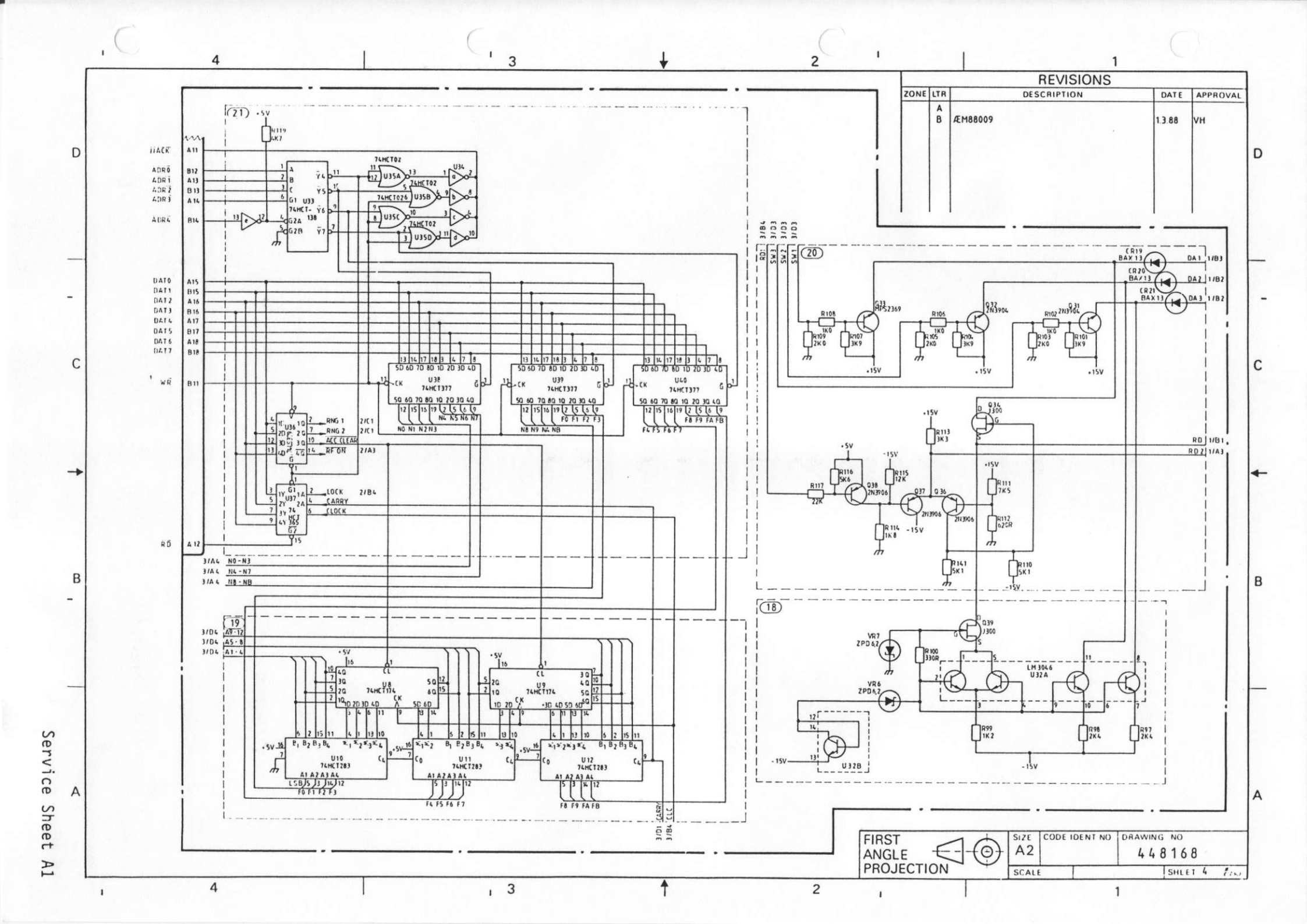
Q_{36}-Q_{38} generates the switch voltages for the ramp up D/A switch Q_{34}.

21. Interface

The data selector U33 selects the desired input or output latch.

The 24-bit frequency information is available at the output at U38-U40.

The input latch U36 sets the frequency range and the $\overline{\text{RF ON}}$. At the output latch U37 the "out of lock" signal is cheched, and the overflow indication from the adders U10-U12 is available at U37 pin 4.

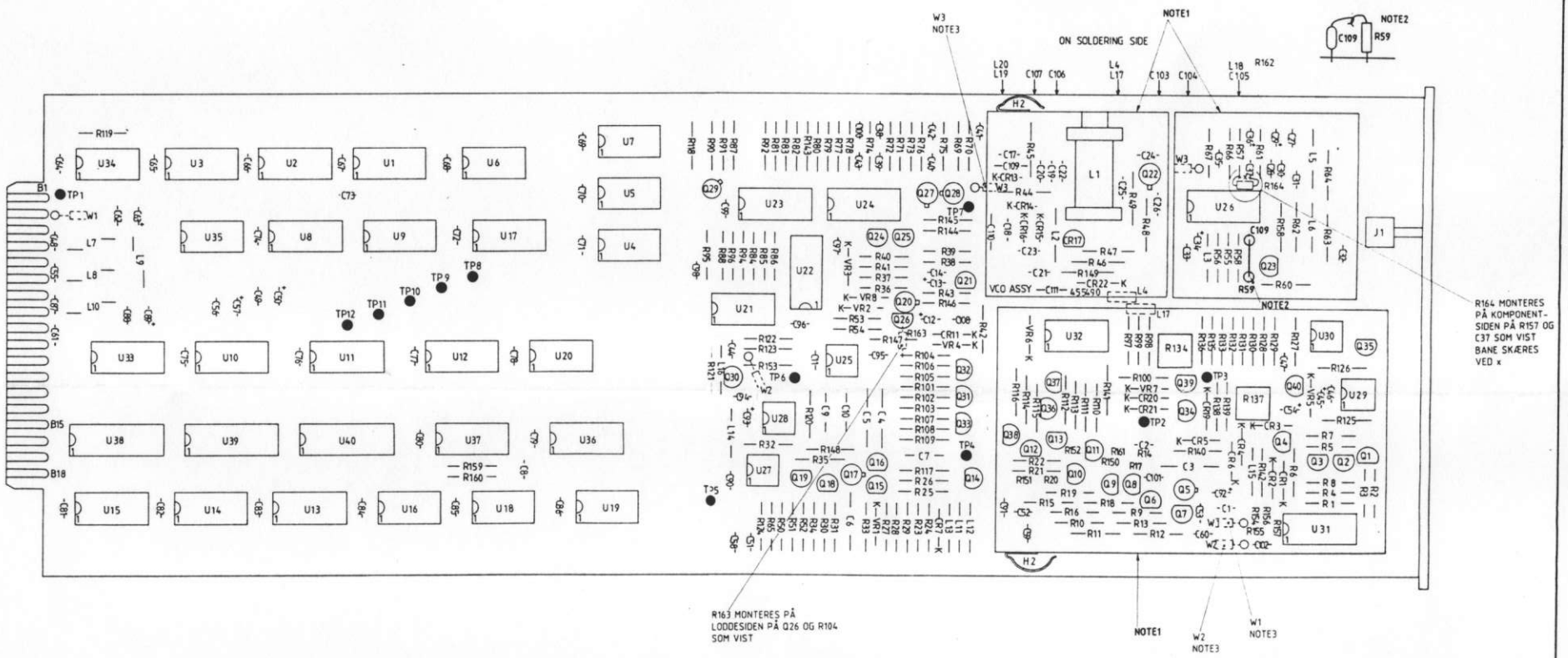


Service Sheet A1

NOTE1: max Komponenthøjde: 12,5mm
NOTE2: R59 + C109 monteres på komponentside.
NOTE 3: KORT AFISOLERING

(114) NITTES I TP4, 6, 7, 10

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	H	AE09547	11 2 91	VH/GOS
	J	AE013615	4 11 92	VH



457841	M3000	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 3021	Dansk Radio AS
NEXT ASSY	USED ON	ANGLES LIN DIM MATERIAL	DR Barbara 80.11.26 CH AP AP
APPLICATION			FIRST ANGLE PROJECTION

TITLE: FREQUENCY GENERATOR SYNTHESIZER

SIZE	CODE IDENT	DRAWING NO.
A1		448168

SCALE 2:1 — SHEET 1 OF 1

Service Sheet A1

ASSY 448184, STANDARD ASSEMBLY

Service Sheet A2

1. Phase-Frequency Detector

U23 generates a matched set of currents. One for the current translator U19, Q8, twice this current to Q9, and a reference current to the D/A converter U22. The current from Q8 acts as a ramp up current for C29. R60, R61 and R62 limiting this function. The ramp down current from Q9 is controlled by the switches CR5 and CR6. The ramp down time is dependent on the count down VCO signal. This is performed by a set-reset function, U18a and Q7. The wave form in TP10 is an approx. triangle. This is fed to the loop integrator U20, C31, C32 and R65 by R62. The loop bandwidth is approx. 800Hz. The diodes CR7 and VR3 reduce saturation time in the loop. To reduce 40.96kHz sidebands a second order low pass filter with a cut-off frequency at 2.5kHz is added U21, R66, R67, C33 and C34.

2. 1.4MHz VCO

Q11 and Q12 perform as an oscillator with tuned circuit, L17, L18, C39 and C40 in the collector of Q11. The feedback path is formed between the emitters of Q11 and Q12. A buffered output is taken from Q12 via a low Q tuned circuit L22, C42 and C43. The voltage controlled capacitor diodes CR8 and CR9 allow a tuning range at approx. 6.8kHz/V. The nominal DC voltage in TR11 is +3V at 1.400MHz adjusted by L18 at 25°C room temperature.

3. Output Amplifier

0dBm/50Ω output is performed by Q13 with the tuned circuit L19, C48 and L20. R87, R88 and R89 is a 3dB attenuator which gives a more exact 50Ω output impedance.
The output level is adjusted to 0dBm +-0.5dB by means of R111
Q14 allows RF ON/OFF switching, with approx. 50dB attenuation.

4. Buffer-Translator

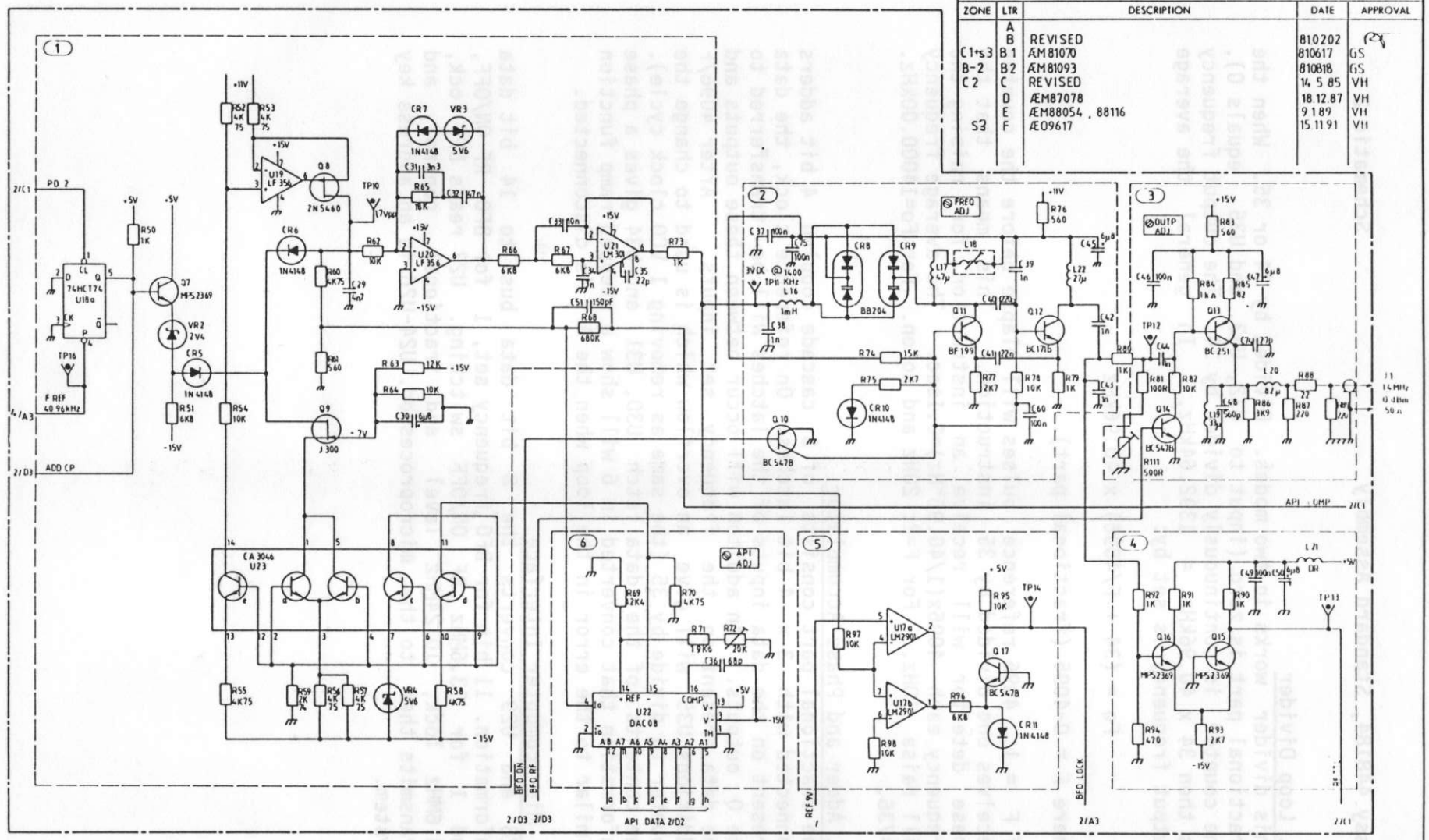
Q15 and Q16 is an emitter coupled amplifier which gives excellent isolation between the counter and the VCO. The output level is a 0-5V square wave.

5. Lock Detector

The control voltage to the VCO is fed to a window detector U17a-b. The loop is within proper conditions if the voltage at TP11 is between 0V and +6V. Under this condition Q17 gives a HIGH, TP14.

6. API Generator

The D/A converter (U22), forms a part of the API system (analogue phase interpolator). It converts an 8-bit phase information from the adder in 8 to a ramp current. This current is converted to a voltage by R61, and injected to the loop by R60. It is adjusted to eliminate the stepped ramp error signal arising from the factional system.



Service Sheet A2

7. Loop Divider

This divider works in two modes. Divided by 34 or 35. When the fractional part is zero (input to U32, U33 and U35 equals 0), the counter is continuously divided by 34. The output frequency is then 34 x 40.96kHz = 1392.64kHz. In general the average output frequency is set by:

$$Fo = (34 + F/4096) \times 40.96kHz$$

where F = 0-4095 (fractional part).

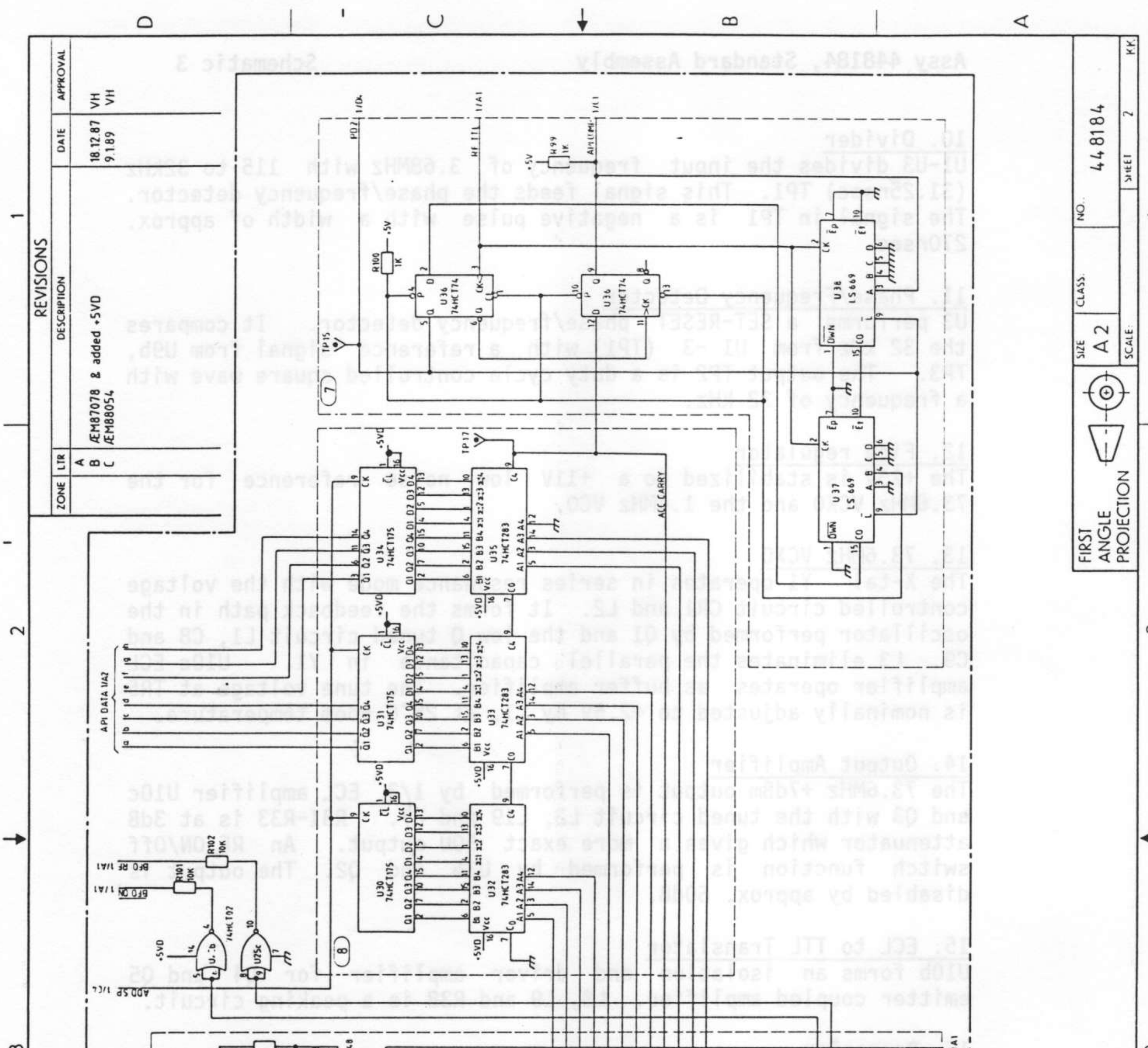
If F = 1, 4096 reference pulses will elapse before the counter receives one divided by 35 instruction. This means that the phase detector will receive an instruction for raising the frequency each $4096x(1/40.96^{k}Hz)=0.1sec$. The average frequency will raise 10Hz. For F=2: 20Hz and so on. For Fo=14000.00kHz. F=736.

8. Adder and Phase Accumulator

The fractional part consists of 3 cascade coupled 4 bit adders connected with 3 x 4 bit latches. On reference clock, the data present on the data inputs of the latches will be transferred to the Q outputs. An additon will occur between these outputs and the data present on the frequency set inputs. After 4096/F additions U35 will give an overflow which is used to change the counter to divide by 35 (the same as removing 1 VCO clock cycle). The contents of the data latch U30, U31 and U34 gives a phase information that converted in 6 will show a stepped ramp function similar to the error in the loop when the API is disconnected.

9. Microcomputer Interface

U28 and U29 converts the 8 bit data bus to 14 bit data information. 11 bit for BFO frequency set, 1 for BFO RF ON/OFF, and 1 for 73.6MHz RF ON/OFF switching. U27 reads BFO lock, 73.6MHz lock, 10.24MHz level and fractional control, and transmits them to the microprocessor. U24-U26 is an address key system.



REVISIONS
ZONE LTR DESCRIPTION DATE APPROVAL
A
B ÆM87078 & added +SVD 18.12.87 VH
C ÆM88054 9.1.89 VH
FIRST ANGLE PROJECTION
SIZE A2
NO. 448184
SHEET 2

10. Divider
U1-U3 divides the input frequency of 3.68MHz with 115 to 32kHz (31.25nsec) TP1. This signal feeds the phase/frequency detector. The signal in TP1 is a negative pulse with a width of approx. 270nsec.

11. Phase/Frequency Detector
U3 performs a SET-RESET phase/frequency detector. It compares the 32 kHz from U1 -3 (TP1) with a reference signal from U9b, TP3. The output TP2 is a duty cycle controlled square wave with a frequency of 32 kHz.

12. Fine regulator
The +15V is stabilized to a +11V low noise reference for the 73.6MHz VCXO and the 1.4MHz VCO.

13. 73.6MHz VCXO
The X-tal Y1 operates in series resonance mode with the voltage controlled circuit CR1 and L2. It forms the feedback path in the oscillator performed by Q1 and the low Q tuned circuit L1, C8 and C9. L3 eliminates the parallel capacitance in Y1. U10c ECL amplifier operates as buffer amplifier. The tune voltage at TR5 is nominally adjusted to +2.5V by L1, at 25°C room temperature.

14. Output Amplifier
The 73.6MHz +7dBm output is performed by 1/3 ECL amplifier U10c and Q3 with the tuned circuit L2, L19 and L7. R31-R33 is at 3dB attenuator which gives a more exact 50Ω output. An RF ON/Off switch function is performed by U16 and Q2. The output is disabled by approx. 60dB.

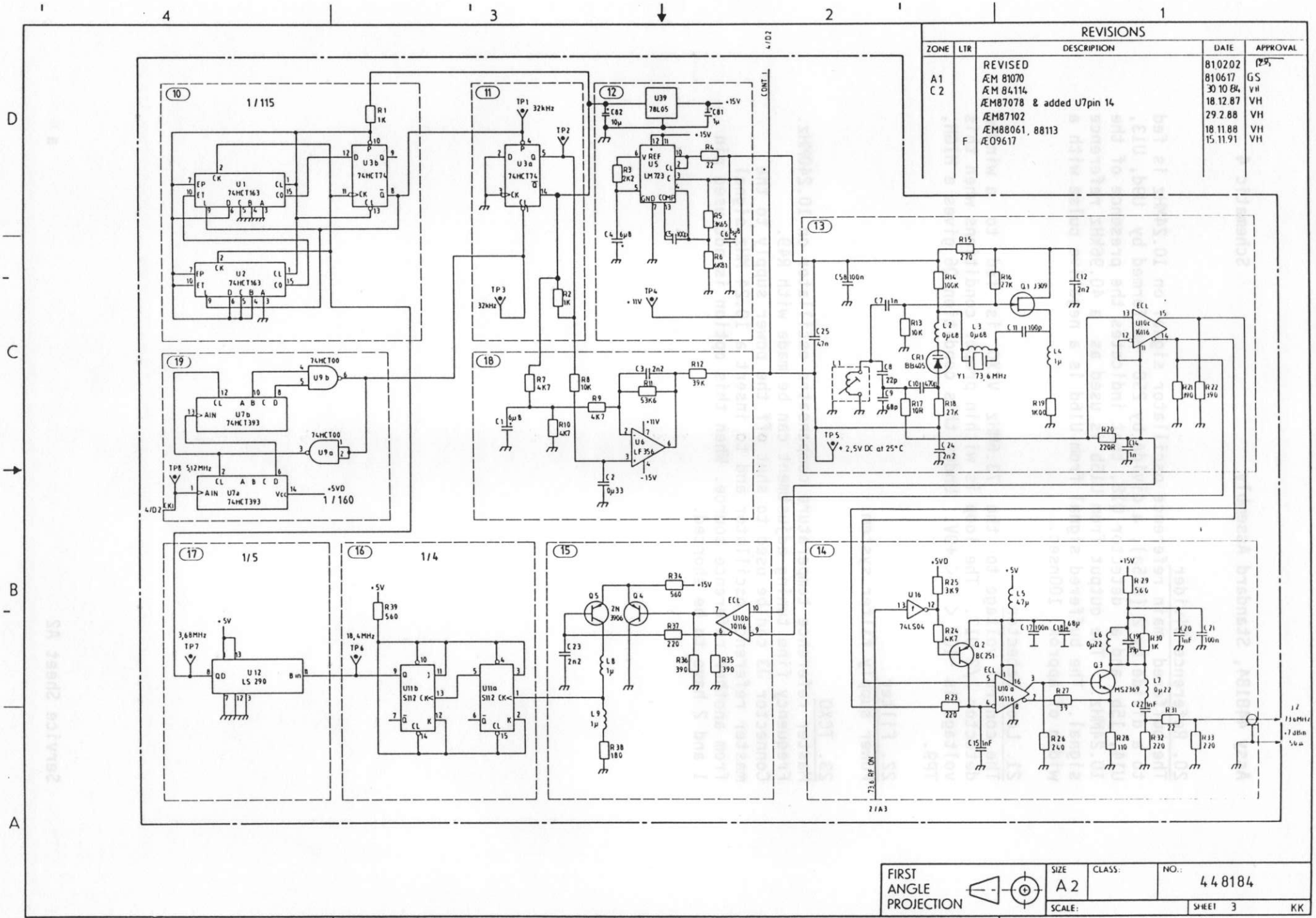
15. ECL to TTL Translator
U10b forms an isolation and driver amplifier for Q4 and Q5 emitter coupled amplifier. L8, L9 and R38 is a peaking circuit.

16. Prescaler
U11 divides by 4. The output is 18.4MHz, TP6.

17. Divider
U12 divides the 18.4MHz by 5. The output is 3.68MHz, TP7.

18. Loop Filter
The square-wave from the phase detector is integrated by R8 and C2. U6 is an amplifier-filter removing the 32kHz from the control voltage to the VCXO. The loop bandwidth is approx. 10Hz.

19. Divider
U7-U9 divides the input frequency on 5.12MHz (TP8) with 160. The output TP3 is a negative pulse with a width of 150nsec. The signal is used as input to the phase detector.


REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVAL
REVISED 810202
A1 ÆM 81070 810617 GS
C2 ÆM 84114 30 10 84 VH
ÆM87078 & added U7pin 14 18.12.87 VH
ÆM87102 29.2.88 VH
ÆM88061, 88113 18.11.88 VH
F ÆO9617 15.11.91 VH
10
1/115
11
12
13
14
15
16
1/4
17
1/5
18
19
1/160
FIRST ANGLE PROJECTION
SIZE A2
CLASS:
NO.: 448184
SCALE:
SHEET 3
KK
Service Sheet A2

20. Reference Divider

The buffered main reference oscillator signal on 10.24MHz is fed to a divide by 2 (U15a), a divide by 250 performed by U9d, U13, U14, 15b and a detector Q18, that indicates the presence of the 10.24MHz. The output from U15b is used as a 40.96kHz reference signal. The buffered signal from U16d is a negative pulse with a width of approx. 100nsec.

21. Loop Detector

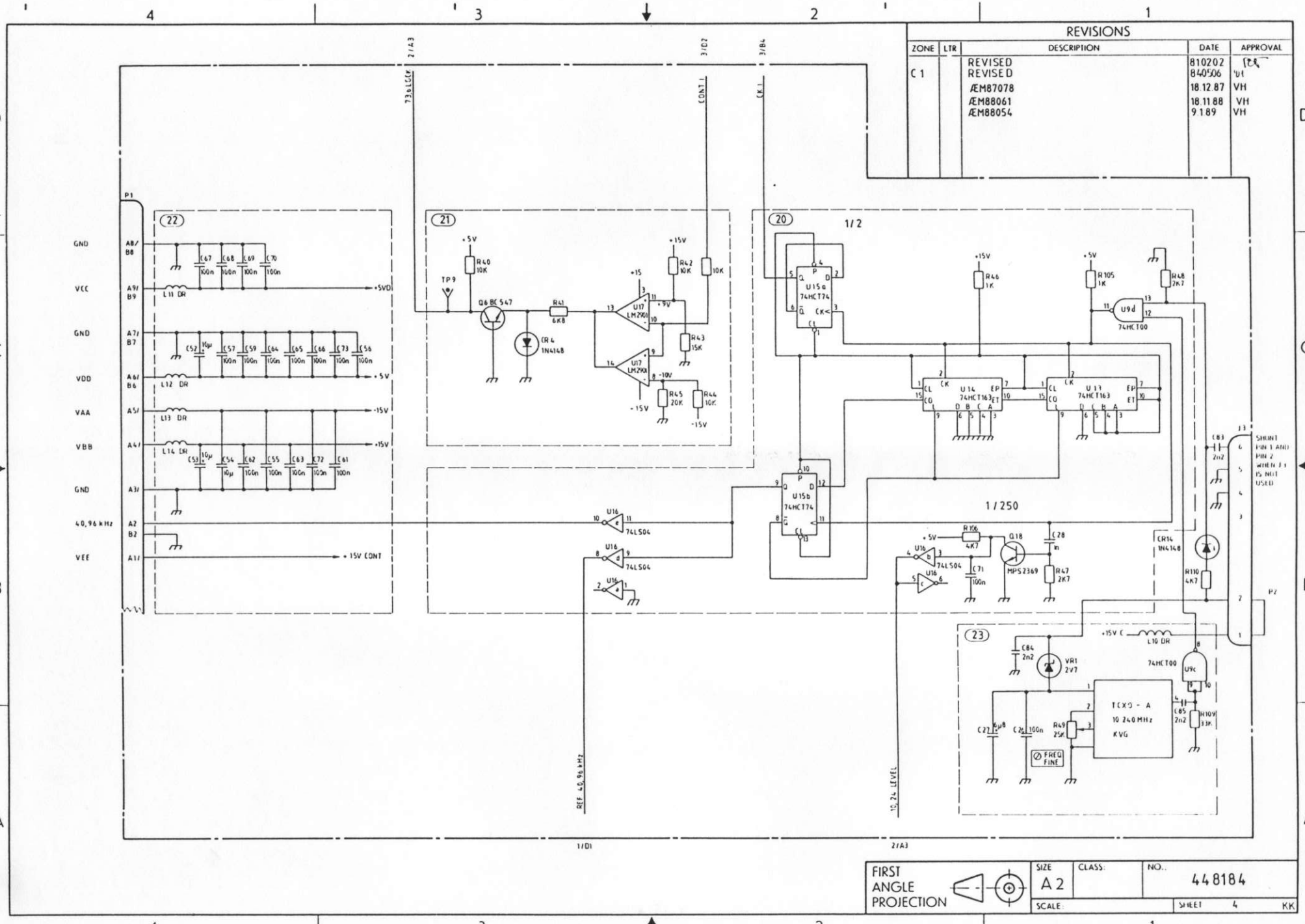
The control voltage to the 73.6MHz VCXO is fed to a window detector 1/2 U17. The loop is within proper conditions when this voltage is $-10V < V < +9V$. Under this condition Q6 gives a HIGH, TP9.

22. Filter

Power supply filter system.

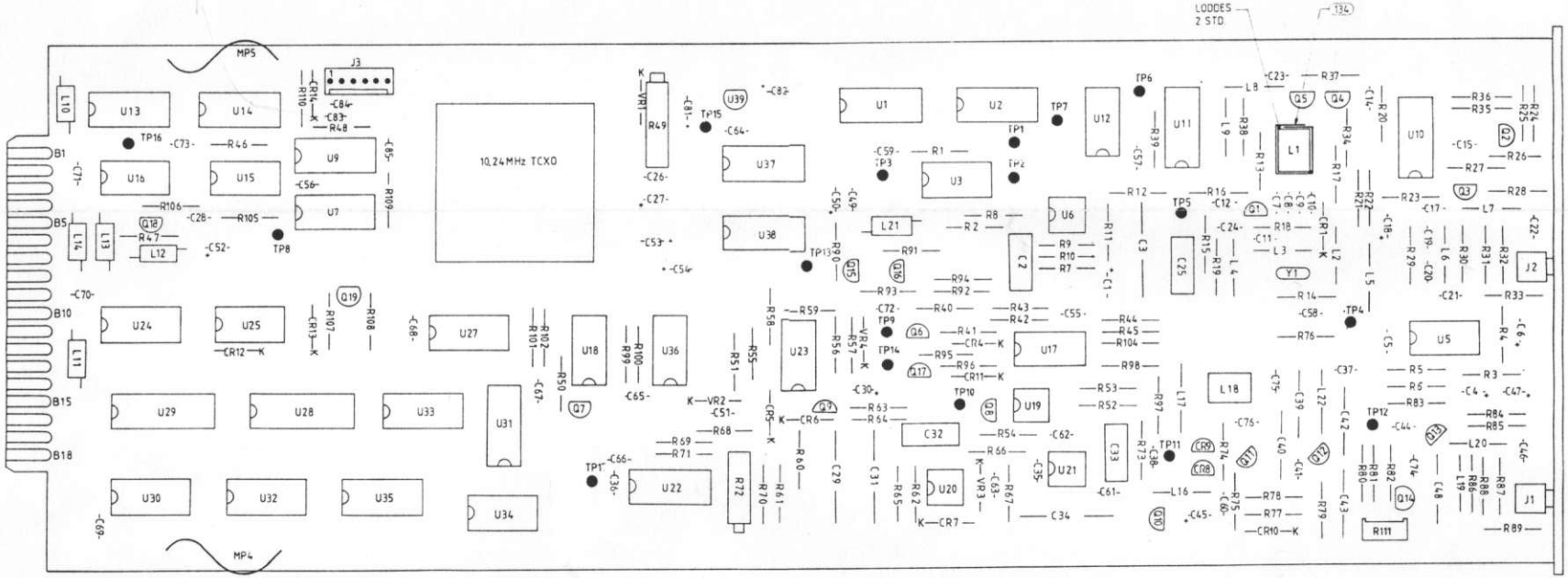
23. TCXO

Master reference temperature compensated oscillator on 10.240MHz. Frequency fine tuning adjustment can be made with R49.
Connector J3 can be used to shut off the power supply to the master reference oscillator and to insert a 10.24 MHz signal from another reference source. When this option is not used pin 1 and 2 have to be shorted.


REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVAL
C 1 | REVISED | 810202 | [illegible]
REVISED | 840506 | VH
ÆM87078 | 18.12.87 | VH
ÆM88061 | 18.11.88 | VH
ÆM88054 | 9.1.89 | VH
P1
GND
VCC
GND
VDD
VAA
VBB
GND
40,96 kHz
VEE
+5VD
+5V
-15V
+15V
+15V CONT
22
21
20
23
1/2
1/250
U15a 74HCT74
U15b 74HCT74
U14 74HCT163
U13 74HCT163
U9d 74HCT00
U9c 74HCT00
U16 74LS04
U17 LM2901
Q6 BC 547
Q18 MPS2369
CR4 1N4148
CR14 1N4148
VR1 2V7
TCXO - A 10 240 MHz KVG
FREQ FINE
REF 40,96 kHz
10,24 LEVEL
SHUNT PIN 1 AND PIN 2 WHEN J3 IS NOT USED
FIRST ANGLE PROJECTION
SIZE A2
CLASS:
NO.. 448184
SCALE:
SHEET 4
KK
Service Sheet A2

1. (101) NITTES I TP5, 8 OG 11

REVISIONS			
ZONE LTR	DESCRIPTION	DATE	APPROVAL
E	ÆM88113	18 11 88	VH
F	ÆM88054 , 88116	10 1 89	VH
G	ÆO4536	24 2 90	VH
H	ÆO9617	18 11 91	VH
J	ÆO13615	4 11 92	VH



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS	dra
477885	RX3000	ANGLES	DR Bjn 80 09 26	TITLE	
475467	OCEANIC	LIN DIM	CH F Walter 80 10 09	FREQUENCY GENERATOR STANDARD	
465429	M 3000	MATERIAL	AP	SIZE A1	CODE IDENT
NEXT ASSY	USED ON		AP	DRAWING NO 448184	
APPLICATION			FIRST ANGLE PROJECTION	SCALE	SHEET 1 OF 1

Service Sheet A2

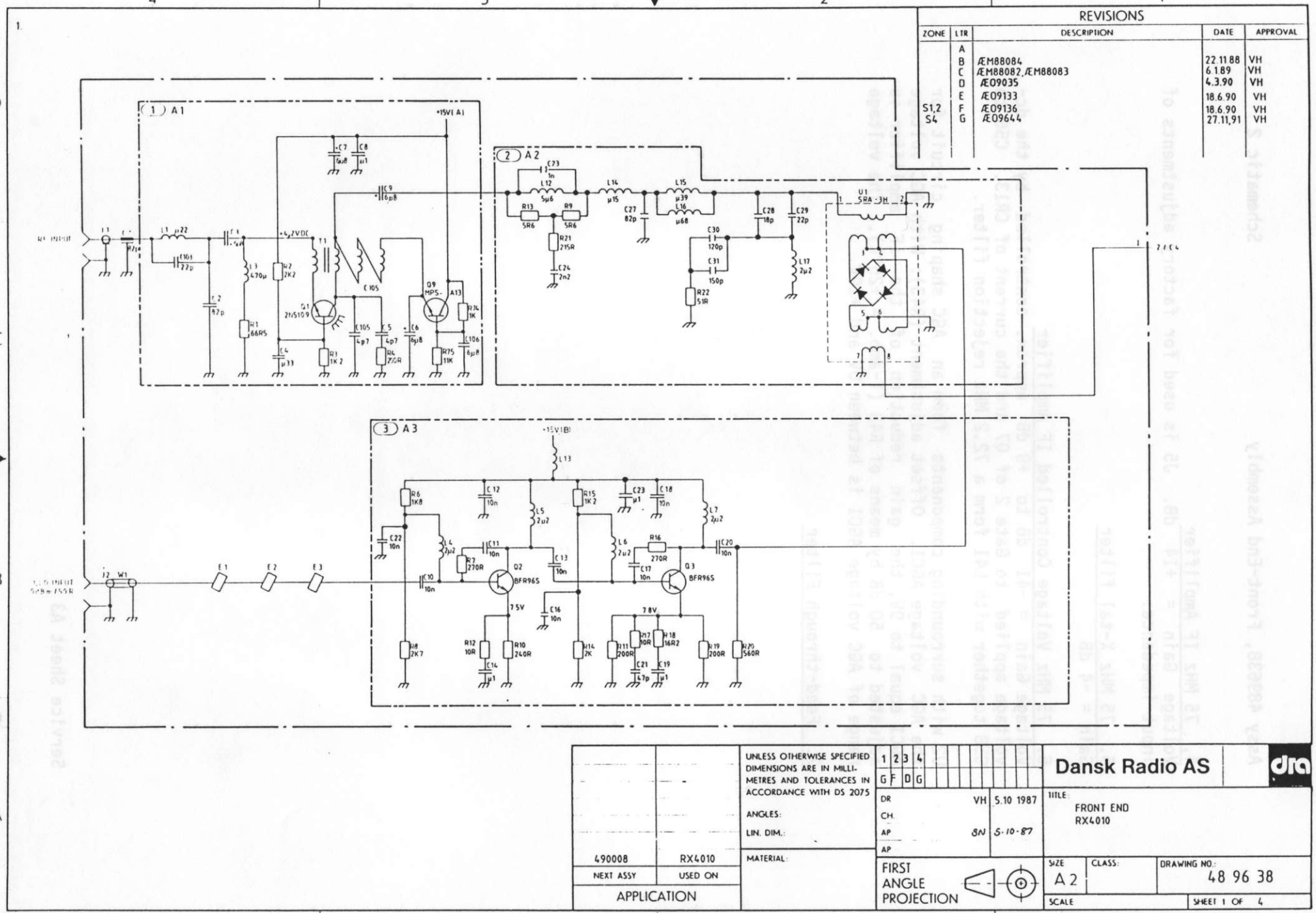
Assy 489638, FRONT-END ASSEMBLY

Service Sheet A3

1. RF Preamplifier.
Gain = +6 dB

2. First Mixer.
Gain = -6 dB

3. 1.LO Amplifier.
Gain = +17 dB



Service Sheet A3

4. 75 MHz IF Amplifier

Voltage Gain = +14 dB. J5 is used for factory adjustments of input impedance.

5. 75 MHz X-tal filter

Gain = -4 dB

6. 75 MHz Voltage Controlled IF Amplifier

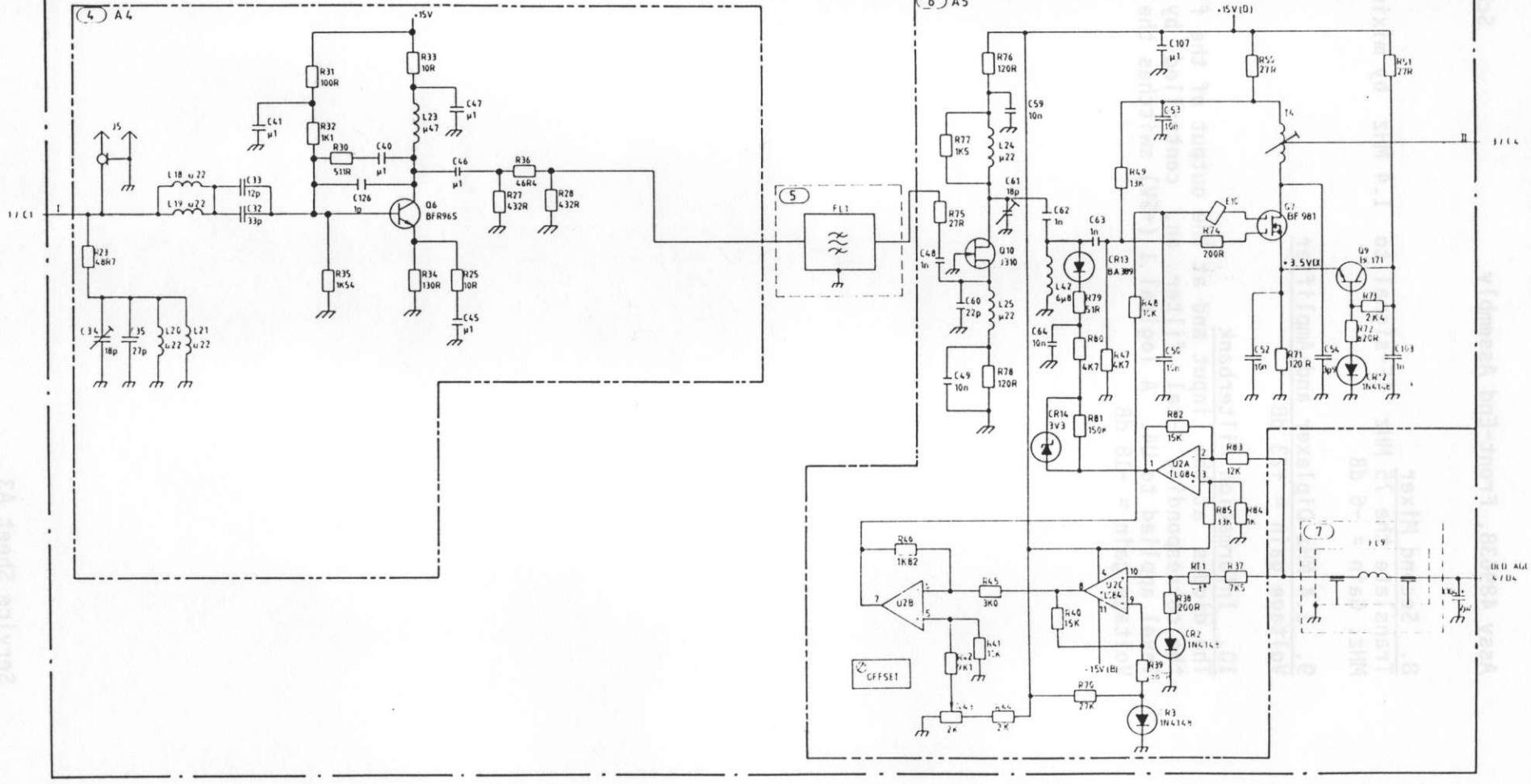
Voltage Gain = -41 dB to +9 dB approx. controlled by the dc-voltage applied to Gate 2 of Q7 and the current of CR13. C56 to C58 together with L41 form a 72.2 MHz rejection filter.

U2 with surrounding components form an AGC shaping circuit for the AGC voltage AGC1. Offset adjustment (R43): With AGC voltage AGC1 equal to 9V, the gain reduction of the IF amplifier is adjusted to 50 dB by means of R43 (T-amb. = +25°C). The voltage range of AGC voltage AGC1 is between OV and +10V.

7. Feed-through Filter

REVISIONS

ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
		ÆM87090-93-96	19 1 88	VH
		REVISED	10 2 88	VH
		ÆM88078	22 11 88	VH
		ÆM88081	6 1 89	VH
	E	ÆO9133	18 6 90	VH
	F	ÆO9136	18 6 90	VH



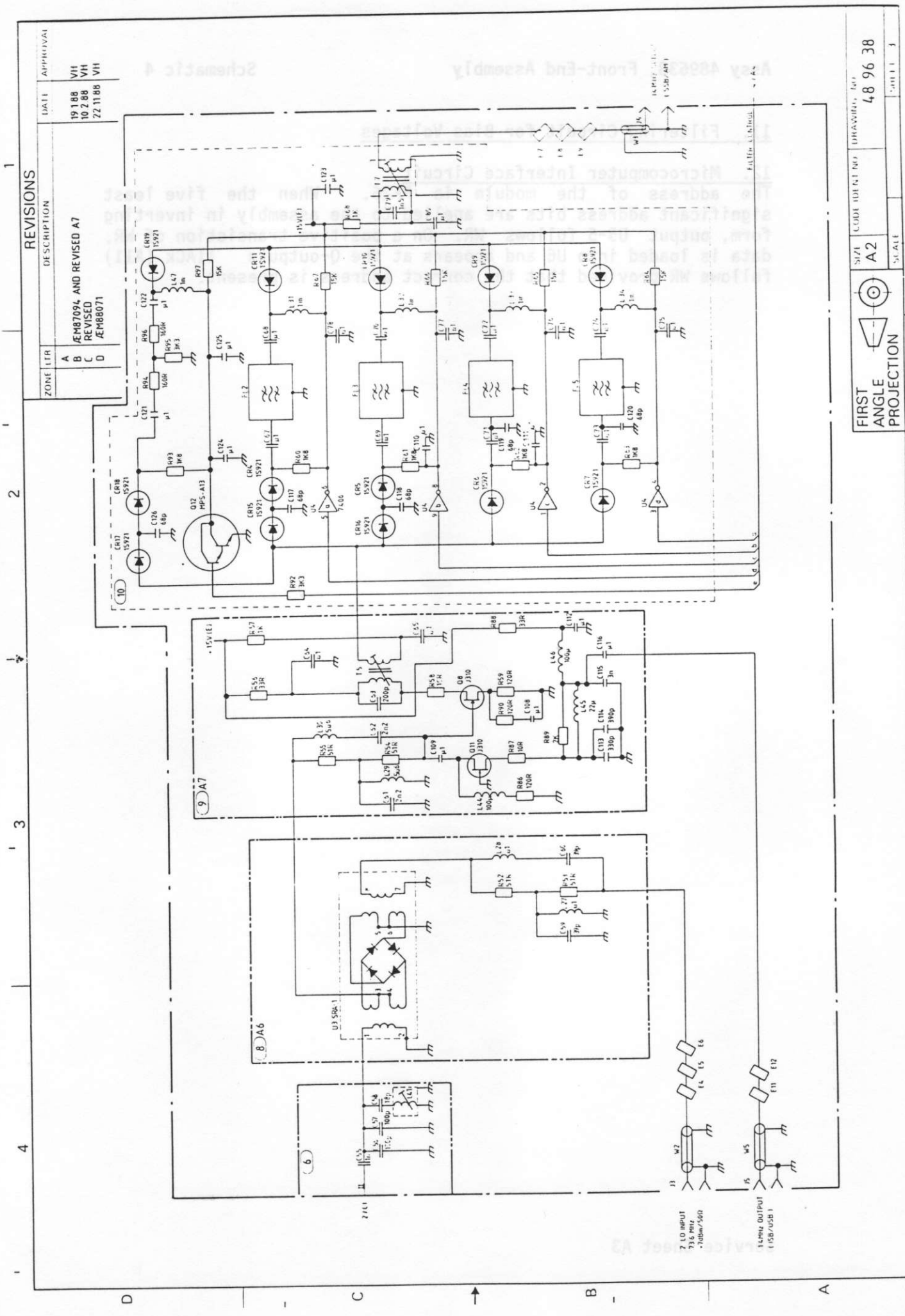
FIRST ANGLE PROJECTION	SIZE A2	CODE IDENT NO	DRAWING NO 48 96 38
	SCALE		SHEET 2

Service Sheet A3

8. Second Mixer
Translate the 75 MHz IF-signal to 1.4 MHz by mixing with 73.6 MHz. Gain = -6 dB

9. 1.4 MHz Diplexer and Amplifier
Voltage gain = +23 dB

10. Information Filterbank
The diodes at the input and at the output of the filters switch the corresponding X-tal filter on, controlled by the logical level applied to U4. A logical 1 (+5V) switches the filter on.
Voltage gain = -18 dB

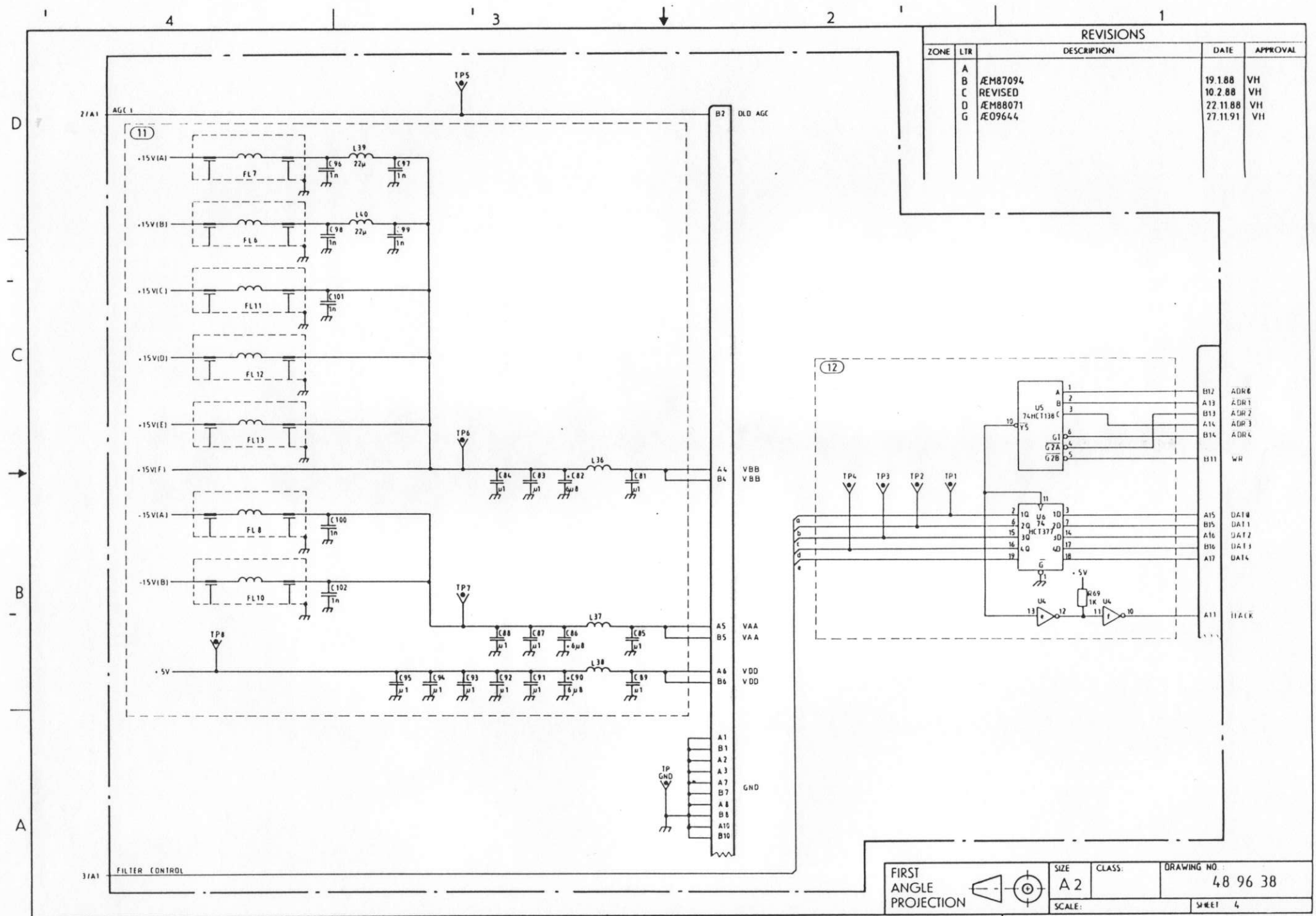


Service Sheet A3

11. Filtering Circuit for Bias Voltages

12. Microcomputer Interface Circuit

The address of the module is FF26. When the five least significant address bits are applied to the assembly in inverting form, output U5-5 follows WR. On a positive transistion of WR, data is loaded into U6 and appears at the Q-outputs IIACk (A11) follows WR provided that the correct address is present.



Service Sheet A3

Service Sheet A3

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	I	Æ09546	11.2.91	VH/KOS
	J	Æ09556	28.11.91	VH
	K	Æ08954		
	L	Æ013615	5.11.92	VH

1.

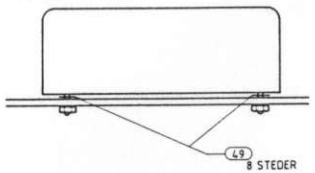
ESD BESKYTTELSE PER (100)

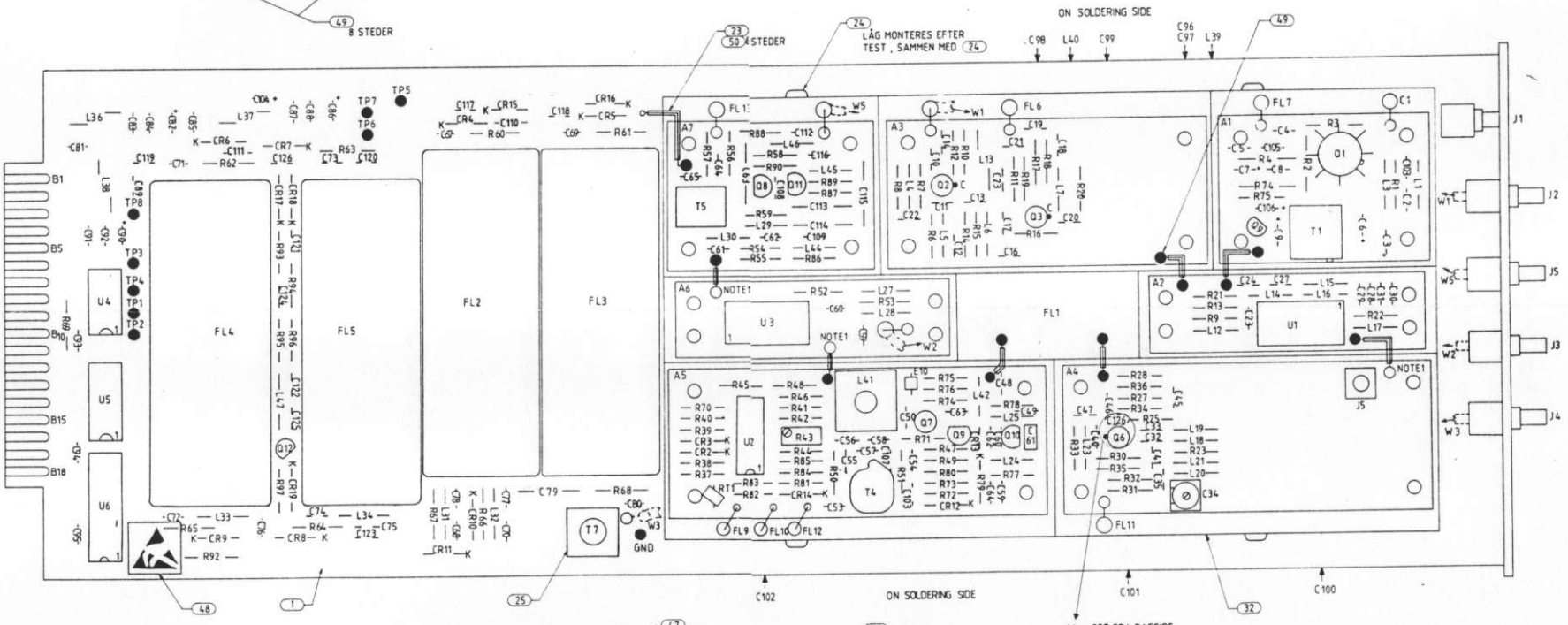
CAUTION
DEVICES ARE SUBJECT TO DAMAGE BY STATIC ELECTRICITY

NOTE1: VEDR. (23) (50)
SKAL IKKE LODDES DE 3 STEDER DER ER MARKERET MED ÅBEN RING.

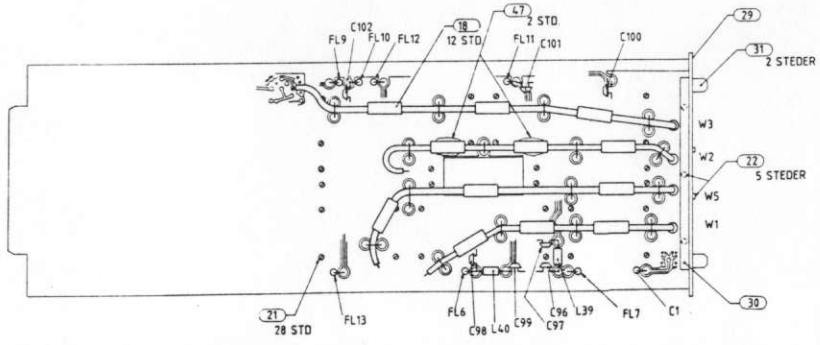
(40) NITTES I TP5 OG GND.

DETAIL AF FL2,3,4 OG FL5





NOTE
E1 - E3 MOUNTED ON W1
E4 - E6 " " W2
E7 - E9 " " W3
E11 - E12 " " W5



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS
			DR VH 6.10.1987	TITLE COMPONENT LOCATION FRONT-END RX4010
		ANGLES	CH	
		LIN DIM	AP S.N 6-10-87	
			AP	
49 00 08	RX4010	MATERIAL	FIRST ANGLE PROJECTION	SIZE A1 / CODE IDENT / DRAWING NO 48 96 38
NEXT ASSY	USED ON			SCALE 2:1 / SHEET 1 OF 1
APPLICATION				

ASSY 490350, SUBOCTAVE FILTER

Service Sheet A4

1. Input Protection Clipper

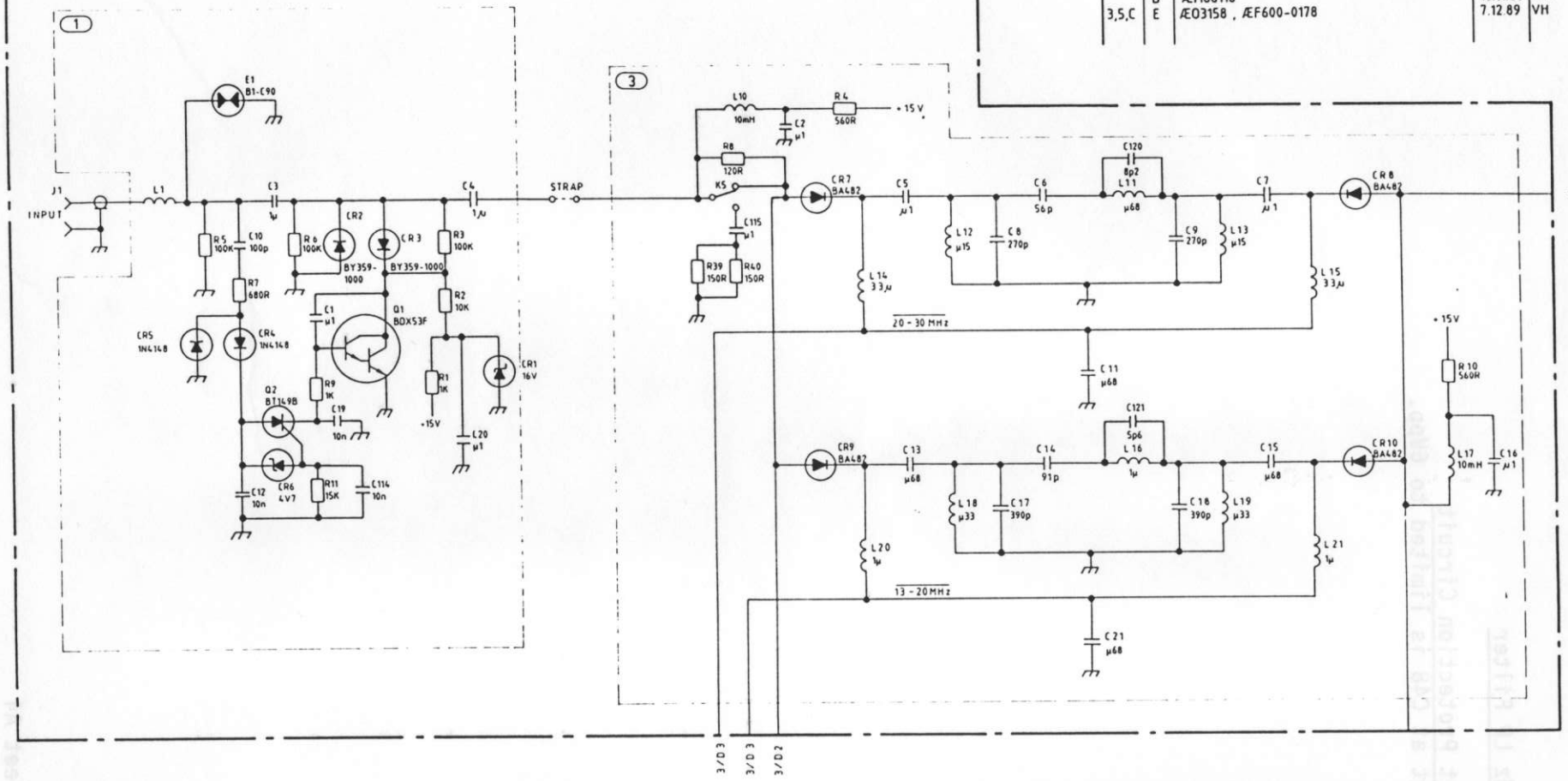
The output signal at C4 is limited to 10Vpp by CR2 and CR3. At frequencies above 5 MHz Q1 will conduct when the RF voltage at C3 exceeds 10Vpp, thereby lowering the bias voltage at CR2 and CR3. This tends to make the clipping level frequency independent, as CR4 and CR5 are fast switching diodes.

3. Attenuator, Filters 13-20 MHz and 20-30 MHz

Relay K5 switches the 10 dB attenuator R8. Current to all range-switching diodes is supplied through resistors R4 (filter inputs) or R10 (filter outputs). A filter is switched in by a low level at the control line.

1.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
	B	ÆM87097	8.2.88	VH
	C	REVISED	20.4.88	VH
	D	ÆM88118	18.11.88	VH
3,5,C	E	ÆO3158 , ÆF600-0178	7.12.89	VH



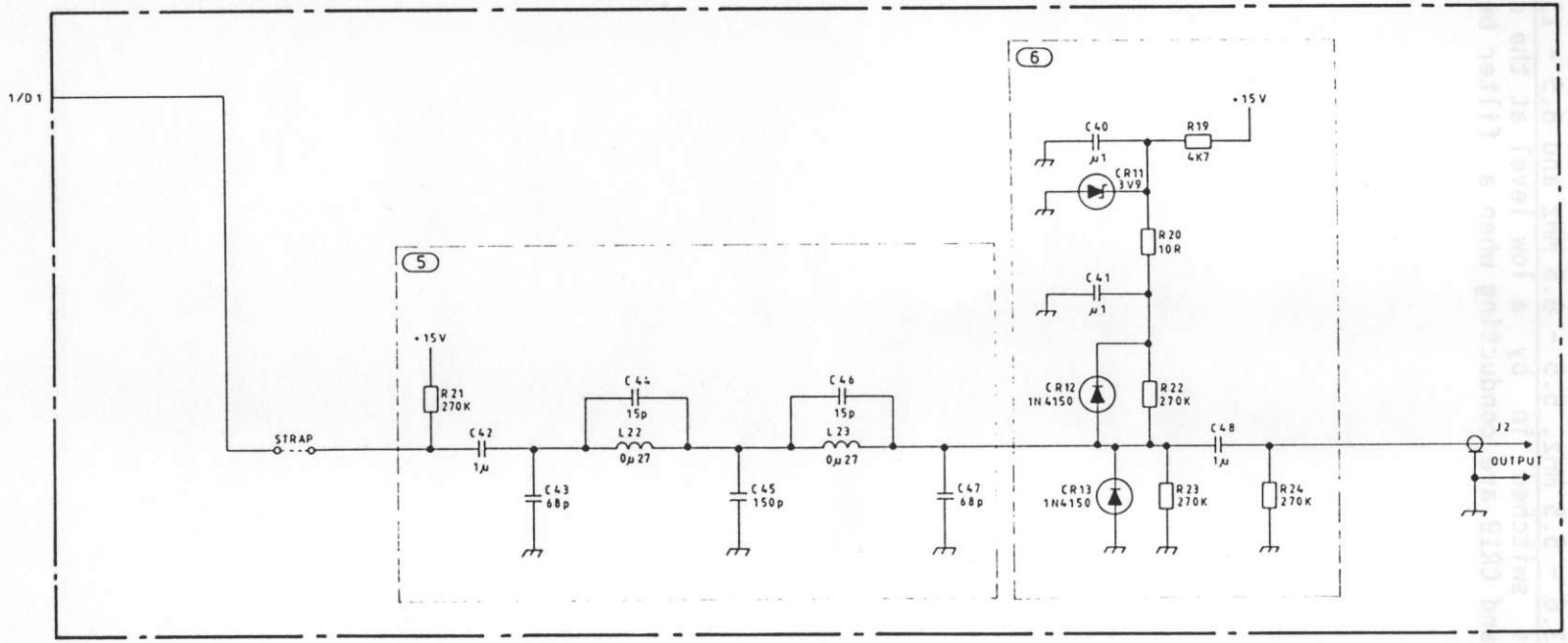
49 00 08	RX4010	UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075	1 2 3 4 5 C B / E B D D D C B	Dansk Radio AS
NEXT ASSY	USED ON	ANGLES	DR. VH 22.10 1987	TITLE SUBOCTAVE FILTER WITHOUT DUPLEX RX4010
APPLICATION		LIN. DIM.	CH.	
		MATERIAL	AP. SN 22.10.87	
			AP.	
			FIRST ANGLE PROJECTION	SIZE A2 / CODE IDENT / DRAWING NO. 49 03 50
				SCALE / SHEET 1 OF 5

Service Sheet A4

5. 30 MHz LP Filter

6. Output Protection Circuit
The output at C48 is limited to 6Vpp.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
	B			



FIRST ANGLE PROJECTION	SIZE	CODE IDENT	DRAWING NO
	A2		49 03 50
	SCALE		SHEET 2

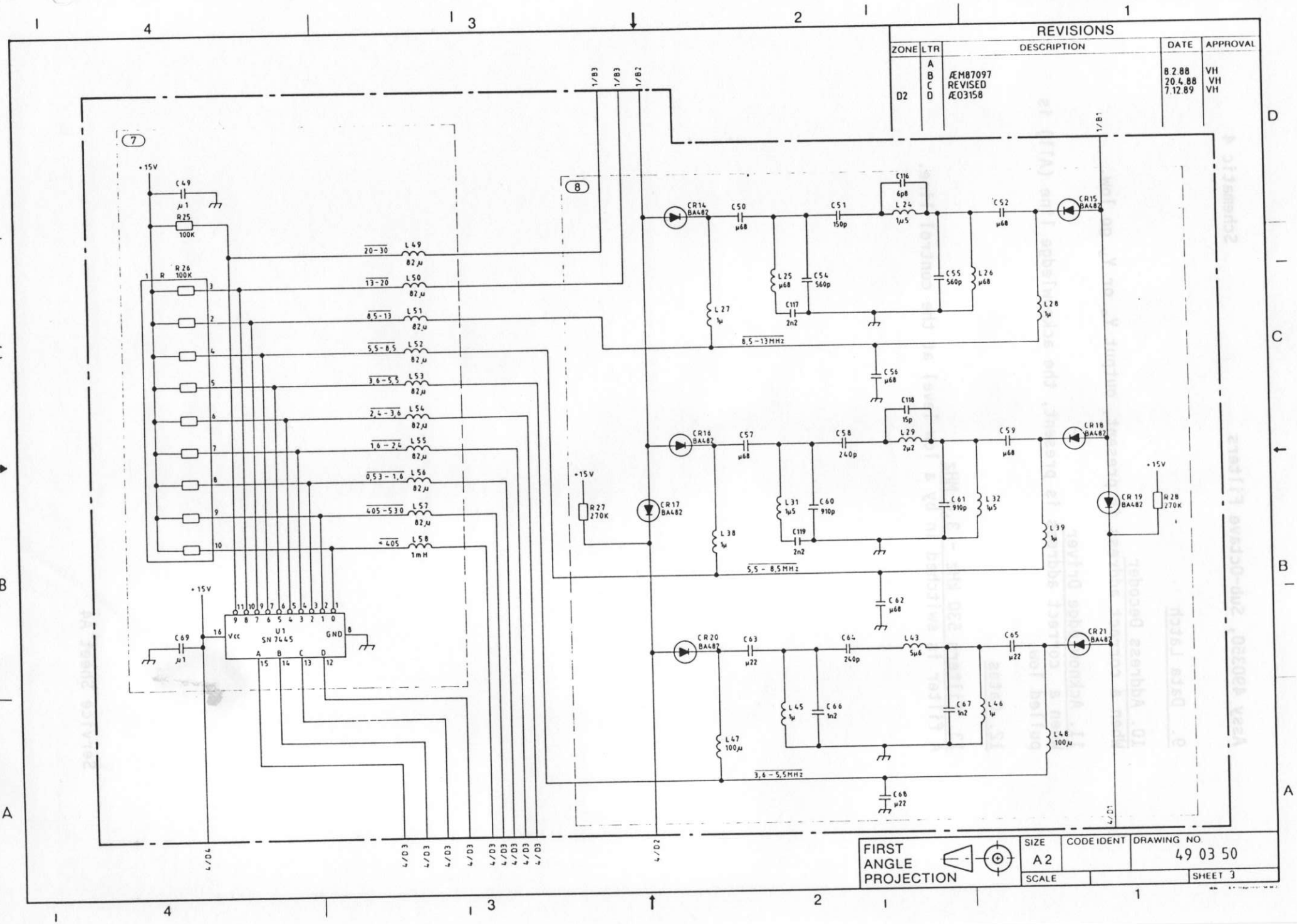
Service Sheet A4

7. Range Decoder

U1 is a BCD to 1 of 10 decoders with open collector outputs.

8. Filters 3.6 - 5.5 MHz, 5.5 - 8.5 MHz and 8.5 - 13 MHz

A filter is switched in by a low level at the control line. Diodes CR17 and CR19 are conducting when a filter below 5.5 MHz is selected.


REVISIONS
ZONE LTR DESCRIPTION DATE APPROVAL
D2 A
B ÆM87097 8.2.88 VH
C REVISED 20.4.88 VH
D ÆO3158 7.12.89 VH
+15V
C49 µ1
R25 100K
R26 100K
20-30 L49 82µ
13-20 L50 82µ
8,5-13 L51 82µ
5,5-8,5 L52 82µ
3,6-5,5 L53 82µ
2,4-3,6 L54 82µ
1,6-2,4 L55 82µ
0,53-1,6 L56 82µ
405-530 L57 82µ
+405 L58 1mH
U1 SN 7445
VCC GND
A B C D
C69 µ1
CR14 BA482
C50 µ68
C51 150p
C116 6p8
L24 1µ5
C52 µ68
CR15 BA482
L25 µ68
C54 560p
C55 560p
L26 µ68
C117 2n2
L27 1µ
L28 1µ
8,5-13MHz
C56 µ68
C118 15p
CR16 BA482
C57 µ68
C58 240p
L29 2µ2
C59 µ68
CR18 BA482
R27 270K
CR17 BA482
L31 1µ5
C60 910p
C61 910p
L32 1µ5
C119 2n2
L38 1µ
L39 1µ
CR19 BA482
R28 270K
5,5-8,5MHz
C62 µ68
CR20 BA482
C63 µ22
C64 240p
L43 5µ6
C65 µ22
CR21 BA482
L45 1µ
C66 1n2
C67 1n2
L46 1µ
L47 100µ
L48 100µ
3,6-5,5MHz
C68 µ22
FIRST ANGLE PROJECTION
SIZE A2
CODE IDENT
DRAWING NO 49 03 50
SCALE
SHEET 3
Service Sheet A4

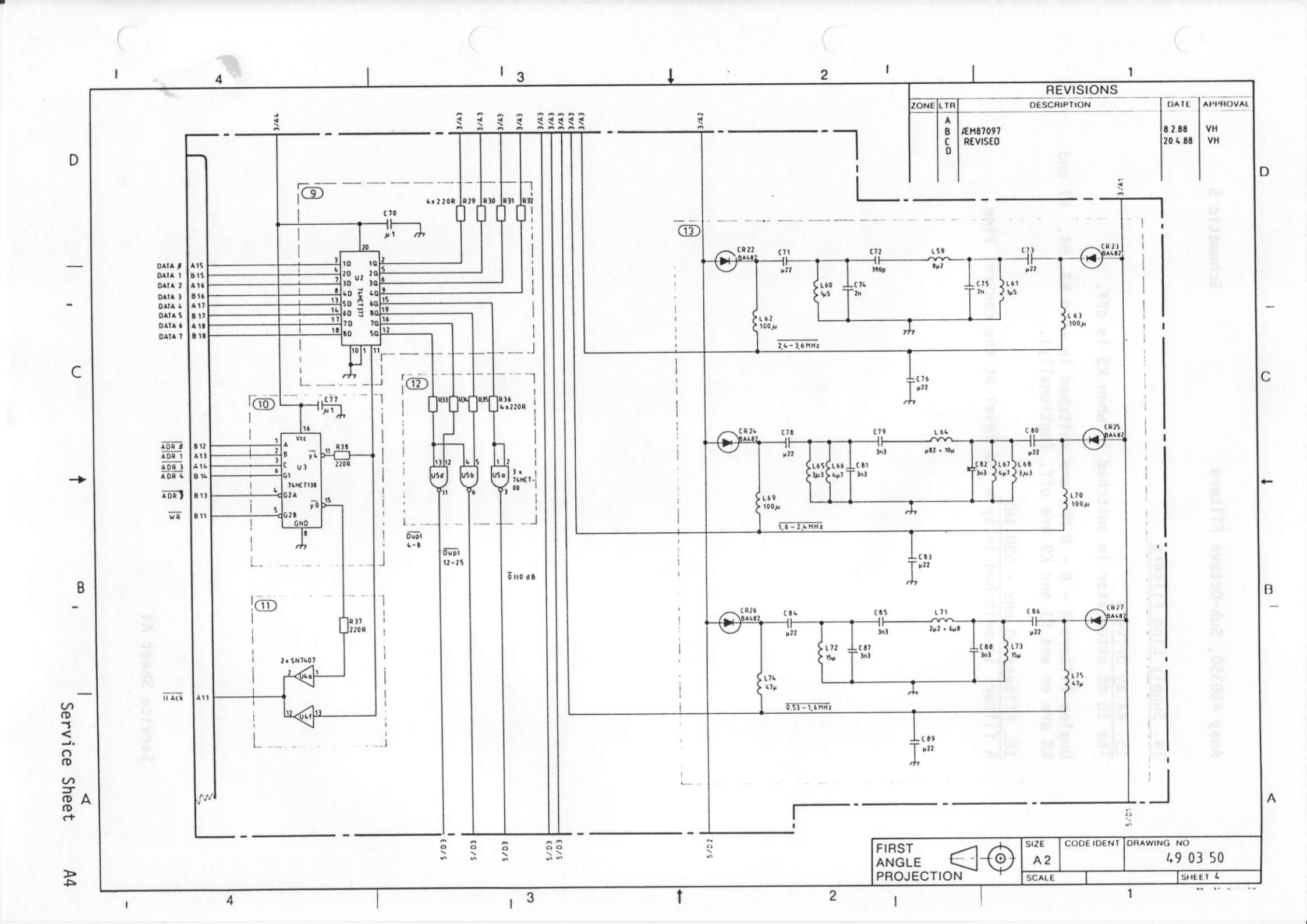
9. Data Latch

10. Address Decoder
When a correct address is present, output Y_o or Y_y go low.

11. Acknowledge Driver
When a correct address is present, the acknowledge line (All) is pulled low.

12. Gates

13. Filters 530 kHz - 3.6 MHz
A filter is switched in by a low level at the control line.


REVISIONS
ZONE | LTR | DESCRIPTION | DATE | APPROVAL
A | ÆM87097 | 8.2.88 | VH
B | REVISED | 20.4.88 | VH
C
D
DATA 0
DATA 1
DATA 2
DATA 3
DATA 4
DATA 5
DATA 6
DATA 7
ADR 0
ADR 1
ADR 2
ADR 3
ADR
WR
11 Ack
4x220R R29 R30 R31 R32
C70 µ1
U2 74HCT377
C77 µ1
U3 74HCT138
R38 220R
R33 R34 R35 R36 4x220R
U5d U5b U5a 3 x 74HCT-00
Dupl 4-8
Dupl 12-25
0 110 dB
R37 220R
2x SN7407 U4a U4f
CR22 BA482
C71 µ22
C72 390p
L59 8µ2
C73 µ22
CR23 BA482
L60 1µ5
C74 2n
C75 2n
L61 1µ5
L62 100µ
L63 100µ
2,4 – 3,6 MHz
C76 µ22
CR24 BA482
C78 µ22
C79 3n3
L64 µ82 + 10µ
C80 µ22
CR25 BA482
L65 3µ3
L66 4µ7
C81 3n3
C82 3n3
L67 4µ7
L68 3µ3
L69 100µ
L70 100µ
1,6 – 2,4 MHz
C83 µ22
CR26 BA482
C84 µ22
C85 3n3
L71 2µ2 + 4µ8
C86 µ22
CR27 BA482
L72 15µ
C87 3n3
C88 3n3
L73 15µ
L74 47µ
L75 47µ
0,53 – 1,6 MHz
C89 µ22
FIRST ANGLE PROJECTION
SIZE A2
CODE IDENT
DRAWING NO 49 03 50
SCALE
SHEET 4
Service Sheet A4

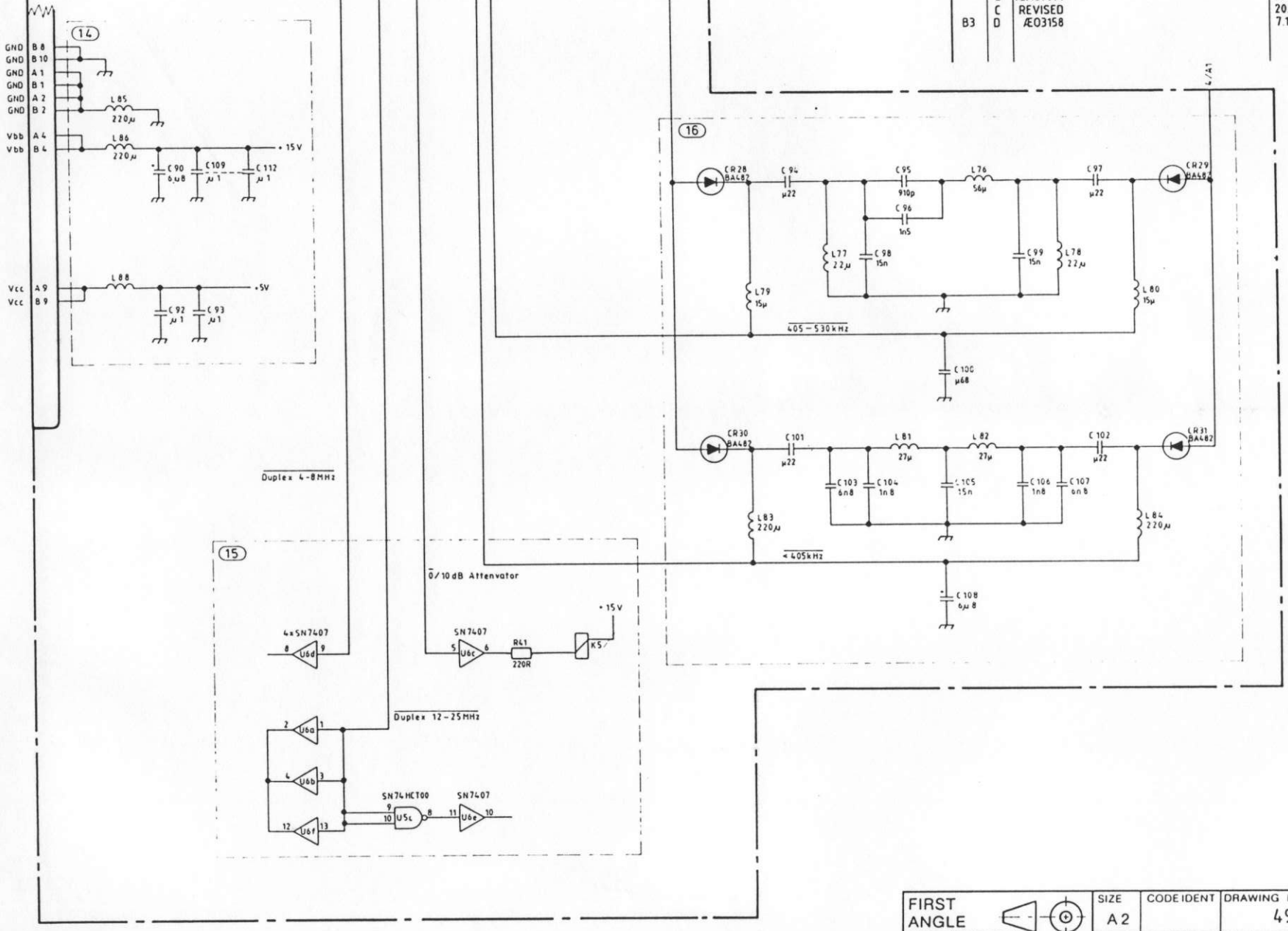
14. Supply Line Filters

15. Relay Drivers
The 10 dB attenuator is switched in when K5 is off.

Duplex filters 4 - 6 - 8 MHz are switched in when K3, K4, K7 and K8 are on and K1 and K9 are off. (optionally).

16. Filters 10 kHz - 530 kHz
A filter is switched in by a low level at the control line.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
	B	ÆM87097	8.2.88	VH
	C	REVISED	20.4.88	VH
B3	D	ÆO3158	7.12.89	VH

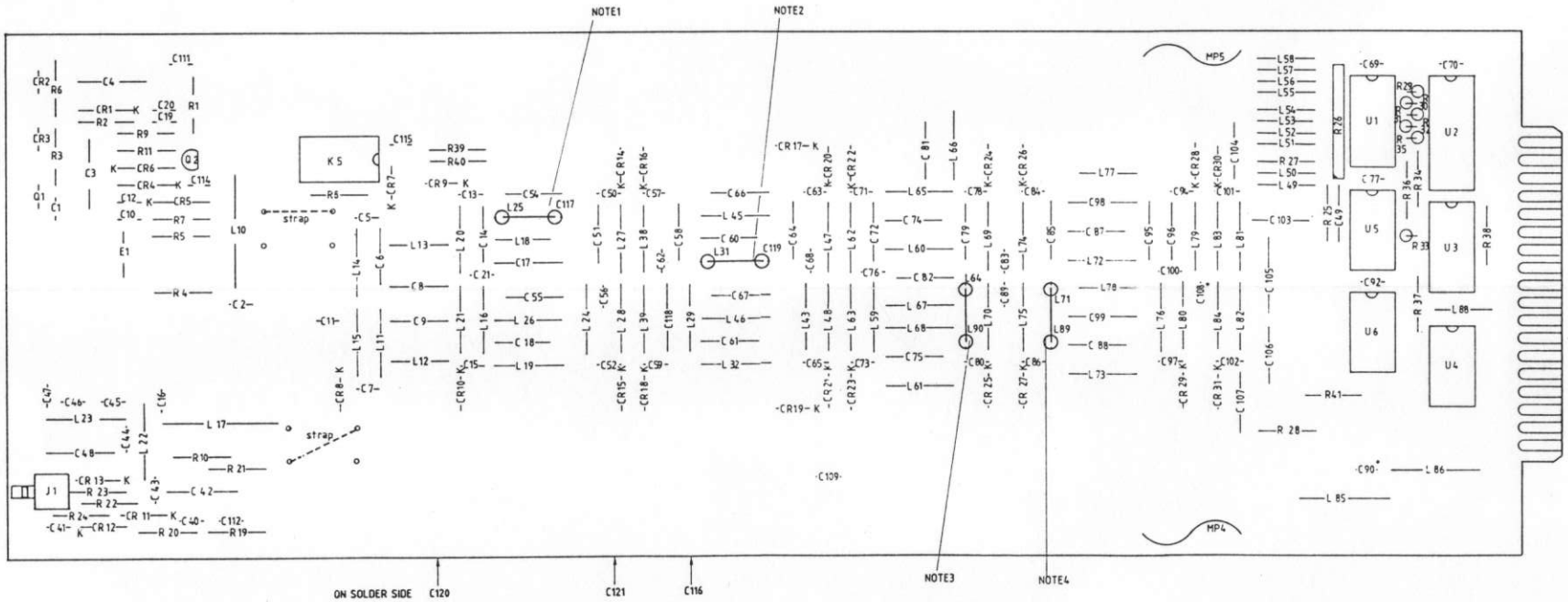


FIRST ANGLE PROJECTION	SIZE	CODE IDENT	DRAWING NO.
	A2		49 03 50
	SCALE		SHEET 5

Service Sheet A4

1. NOTE1: C117 MONTERES STÅENDE, SNOET SAMMEN MED L25
NOTE2: C119 MONTERES STÅENDE, SNOET SAMMEN MED L31
NOTE3: L90 MONTERES STÅENDE, SNOET SAMMEN MED L64
NOTE4: L89 MONTERES STÅENDE, SNOET SAMMEN MED L71
NOTE5: ALLE SPOLER MONTERES OPRETSTÅENDE, PANÆR L10,17,22 OG 23
NOTE6: L10+L17 LIMES MED (107) EFTER TEST

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
	B	REVISED*	20.4.88	VH
	C	Æ03158, ÆF600-0178	6.12.89	VH
	D	Æ09043	4.3.90	VH
	E	Æ09418	13.9.90	VH/QUS
	E1	Æ08987	4.10.91	VH



49 00 08	RX4010	MATERIAL	
NEXT ASSY	USED ON		
APPLICATION			

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

ANGLES

LIN DIM

DR	VH	22.10.1987
CH		
AP	SW	22.10.87
AP		

FIRST ANGLE PROJECTION

Dansk Radio AS

TITLE
COMPONENT LOCATION
SUBOCTAVE FILTER , WITHOUT DUPLEX
RX4010

SIZE	CODE IDENT	DRAWING NO.
A1		49 03 50

SCALE 2:1 SHEET 1 OF 1

Service Sheet A4

ASSY 210523, LO AMPLIFIER

Service Sheet A6

Assy 210523, LO AMPLIFIER

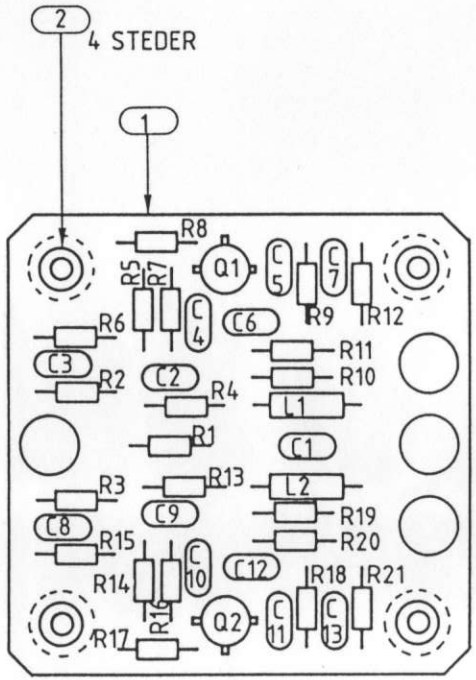
Schematic 1

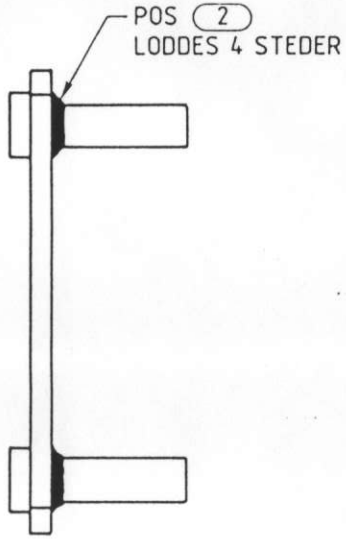
The Assy consists of two identical Amplifiers A6A1 and A6A2 mounted as separate modules.

Each of the amplifiers separate an applied LO signal into two outputs. The gain from the input to each of the two outputs is approx. 0 dB/50 ohms.

1. Q1 MONTERES MED
   TEKSTSIDEN NEDAD.
2. MAX HØJDE UNDER PRINT: 0,8mm

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVAL
A		9.5.90	VH



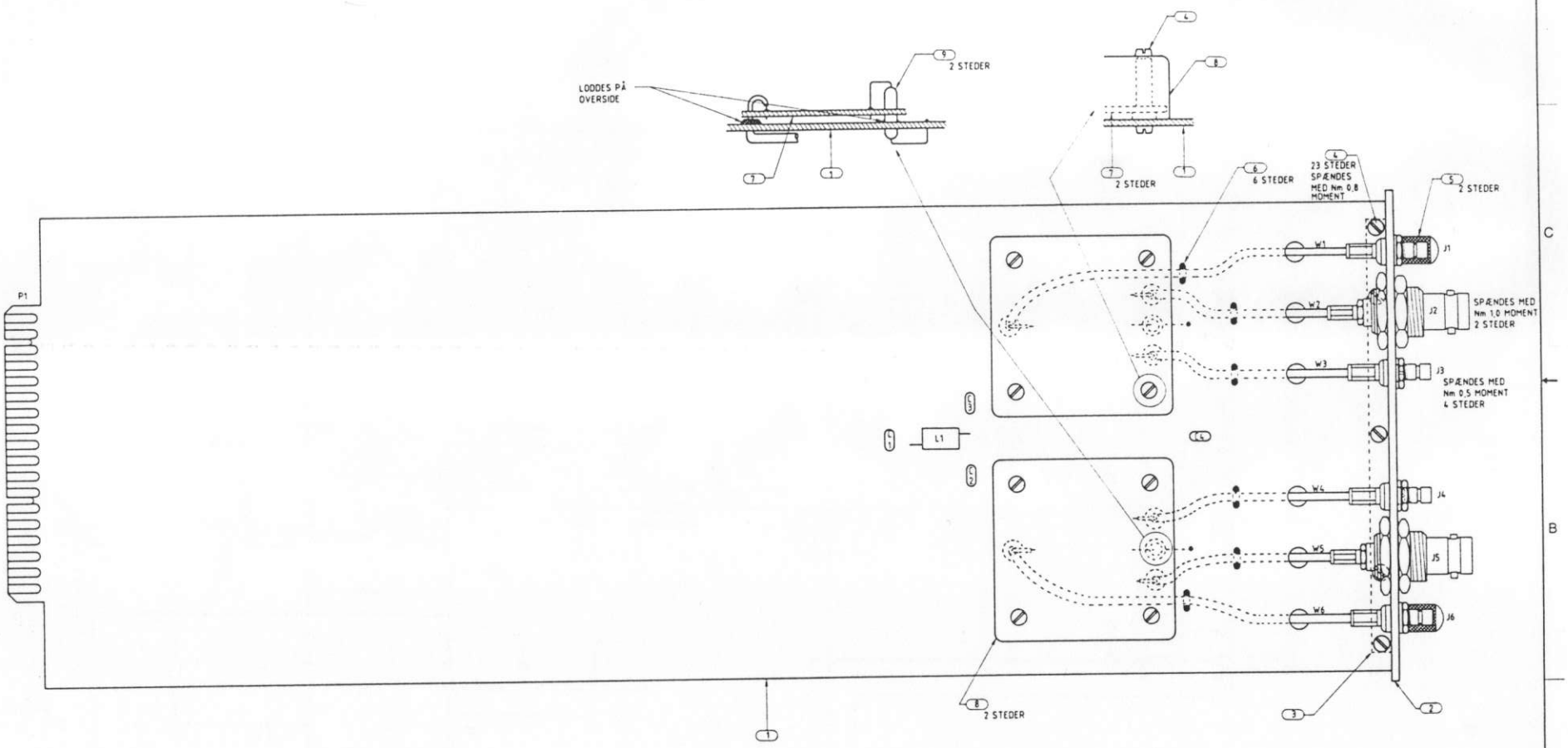


		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS	dra
		ANGLES	DR. VH 30.4.90	TITLE	
		LIN. DIM.	CH. SN 9-5-90	COMPONENT LOCATION	
		MATERIAL	AP. BJS 10-5-90	L.O. AMPLIFIER A6A1	
	RX4010	PL	AP.		
NEXT ASSY	USED ON		FIRST ANGLE PROJECTION	SIZE A3 / CODE IDENT NO / DRAWING NO. 210660-PD	
APPLICATION				SCALE 2:1 / SHEET 1 OF 1	

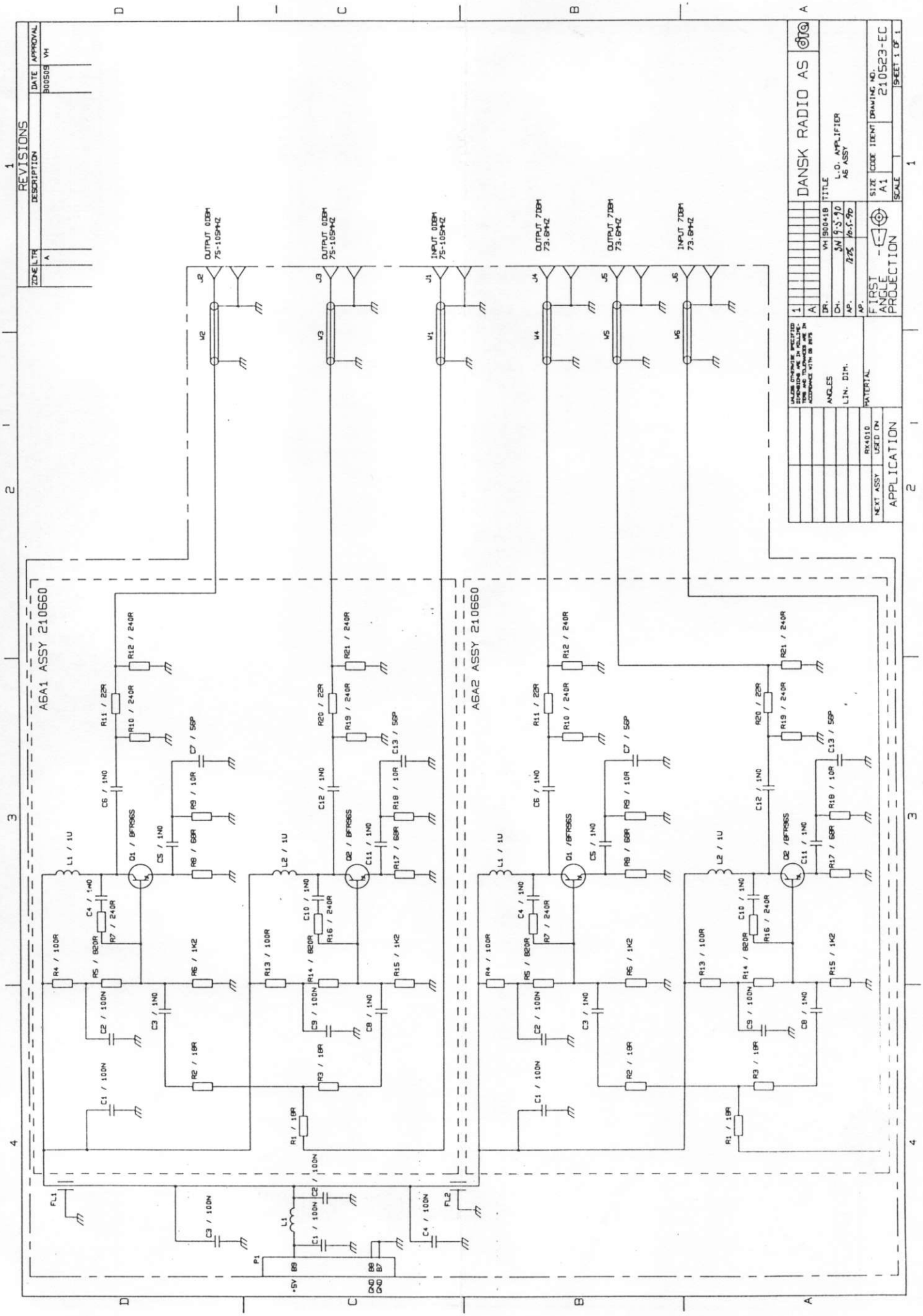
Service Sheet A6

1 MAX HØJDE UNDER PRINT 4mm
2 KOMPONENTER MONTERES PÅ KOBBERSIDE

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A		9.5.90	VH



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2073		Dansk Radio AS TERMA dra	
		ANGLES	DR VH 4.5.1990	TITLE COMPONENT LOCATION L.O. AMPLIFIER A6	
		LIN DIM	CH [signature] 9-5-90		
			AP [signature] 10-5-90		
			AP		
	RX4010	MATERIAL	FIRST ANGLE PROJECTION	SIZE A1	CODE IDENT	DRAWING NO 210523-PD
NEXT ASSY	USED ON	PL		SCALE		SHEET 1 OF 1
APPLICATION						



Service Sheet A6

ASSY 210524, CONNECTION

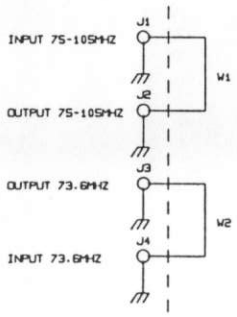
Service Sheet A6

Assy 210524, CONNECTION

Schematic 1

The Assy consists of two interconnections each of which receives an external LO signal on a BNC Connector and routes the signal to a SMB connector for further distribution in the receiver.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A		900509	VH



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETERS AND TOLERANCES ARE IN ACCORDANCE WITH DS 2875	1	DANSK RADIO AS		
			A			
		ANGLES	DR. VH 900418	TITLE		
		LIN. DIM.	CH. SN 9-5-90	CONNECTION A6		
			AP. NJS 10-5-90			
		MATERIAL	AP.			
	RX4010		FIRST ANGLE PROJECTION	SIZE	CODE IDENT	DRAWING NO.
NEXT ASSY	USED ON			A1		210524-EC
APPLICATION				SCALE		SHEET 1 OF 1

Service Sheet A6

ASSY 210522, IF/AF ASSEMBLY

Service Sheet A7

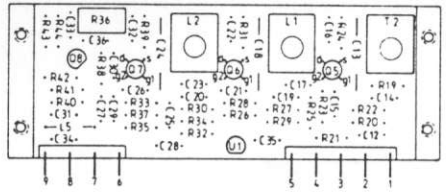
1. Amplifier
for IF-Output Level -20 dBm/50 ohm.

3. 1.4 MHz Gain Controlled Tuned Amplifier
with 50 ohm input and output impedance.

Maximum gain from IF-input to IF-output is adjusted by means of R36 to 75 dB with IF-input equal to -100 dBm, AGC2 equal to OV and R75 set to 1 dB signal attenuation. Minimum gain is adjusted by means of R77 to 0 dB with IF-input equal to -15 dBm and AGC2 equal to 9V.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A		20 5 90	VH

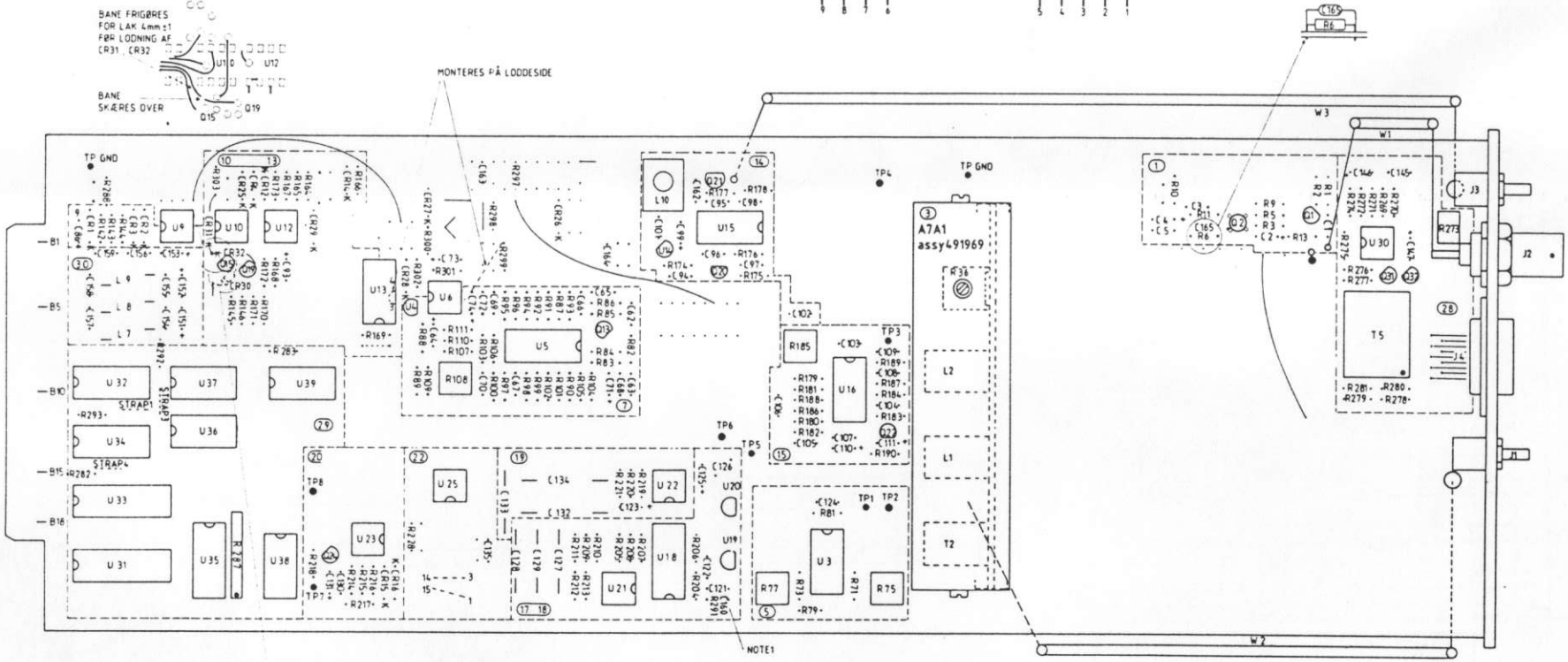
A7A1
assy 491969



BANE FRIGØRES
FOR LAK 4mm ±1
FØR LODNING AF
CR31, CR32

BANE
SKÆRES OVER

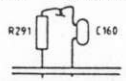
MONTERES PÅ LODDESIDE



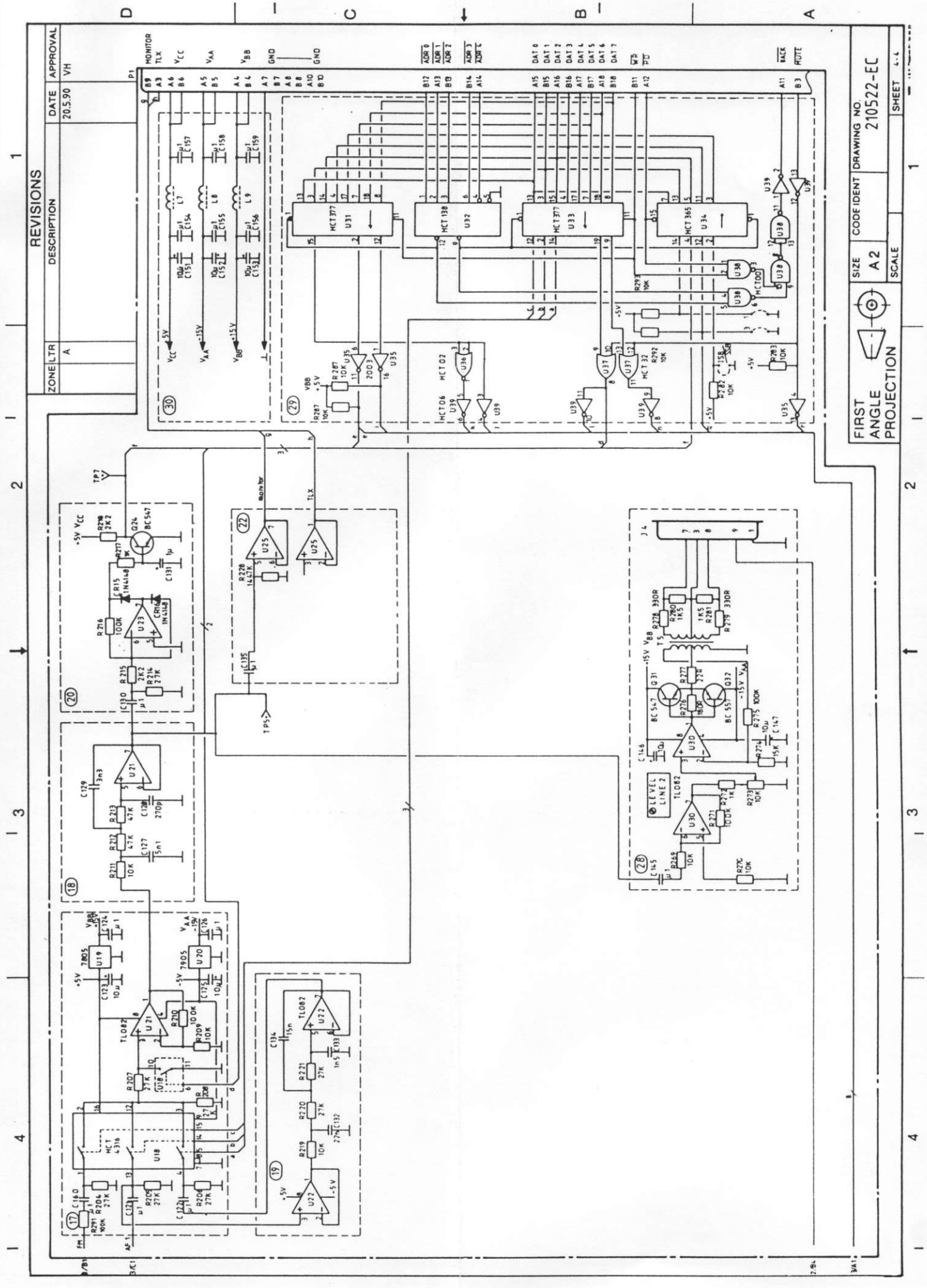
SET FRA LODDESIDE

BANE SKÆRES OVER

NOTE1 KROGES OG LODDES



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 3075		Dansk Radio AS	dra
		ANGLES	DR VH 10.5.1990	TITLE	
		LIN. DIM	CH SN 23.5.90	COMPONENT LOCATION SIGNAL PROCESSING, SSB IF - 2ND, AUDIO A7 RX4010	
			AP 65 23-5-90		
490008	RX4010	MATERIAL	AP		
NEXT ASSY	USED ON		FIRST ANGLE PROJECTION	SIZE A1	CODE IDENT
APPLICATION				SCALE	DRAWING NO. 210522-PD
					SHEET 1 OF 1



Service Sheet A7

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
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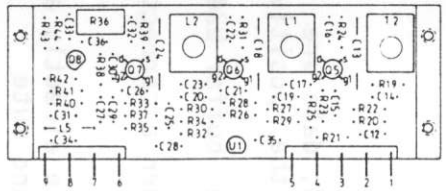
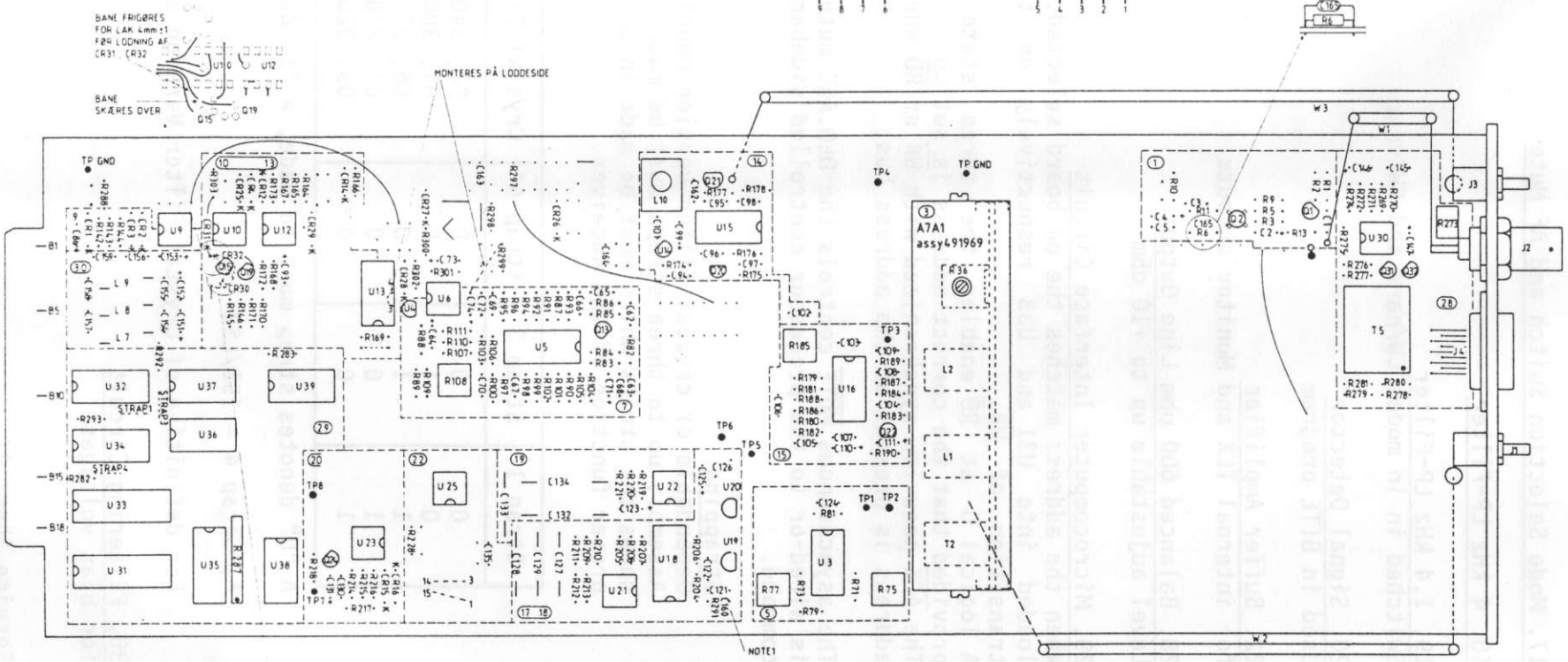
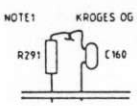
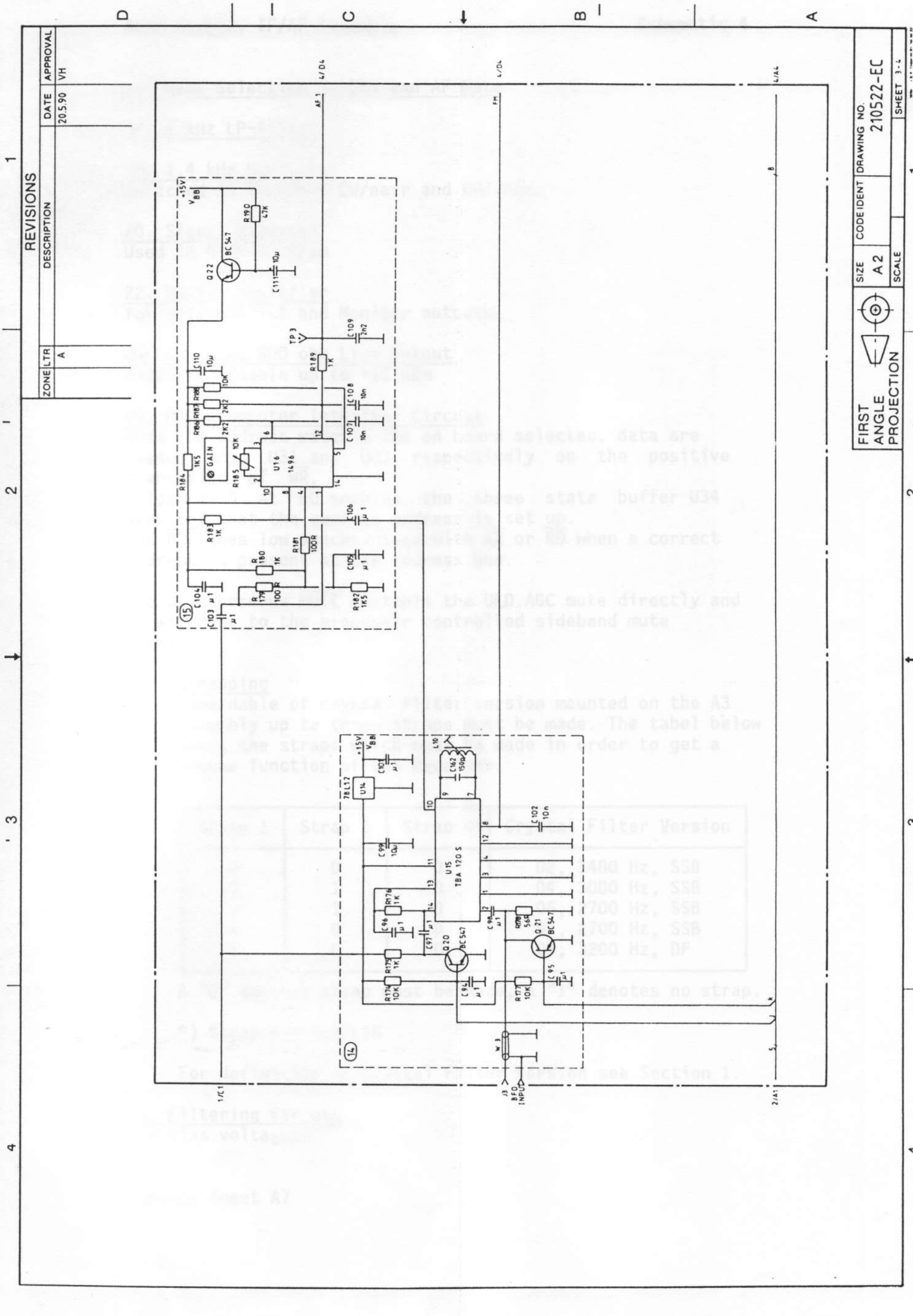
A7A1
assy 491969







		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS	dra
		ANGLES	DR VH 10.5.1990	TITLE	
		LIN. DIM	CH SW 23.5.90	COMPONENT LOCATION SIGNAL PROCESSING, SSB IF - 2ND, AUDIO A7 RX4010	
			AP 6VS 23.5.90		
			AP		
490008	RX4010	MATERIAL	FIRST ANGLE PROJECTION	SIZE A1	CODE IDENT
NEXT ASSY	USED ON			SCALE	DRAWING NO. 210522-PD
APPLICATION					SHEET 1 OF 1


REVISIONS
ZONE LTR
DESCRIPTION
DATE
APPROVAL
A
20.5.90
VH
FIRST ANGLE PROJECTION
SIZE
A2
CODE IDENT
DRAWING NO.
210522-EC
SCALE
SHEET 3-4
U15
TBA 120 S
U16
1496
U14
78L12
Q20
BC547
Q21
BC547
Q22
BC547
GAIN
TP 3
J3
BFO
INPUT
AF 1
FM
+15V
VBB
4/D4
2/A1
4/A4
1/C1

17. Mode Selection Switch and AF Mute

18. 4 kHz LP-Filter

19. 1.4 kHz LP-Filter
Switched in in modes CW/narr and CW/vnar.

20. Signal Detector
Used in BITE program

22. Buffer Amplifier
for internal TLX and Monitor outputs.

28. Balanced 600 ohm Line Output
Level adjustable up to +10 dBm

29. Microcomputer Interface Circuit
When the address matches the on board selected, data are loaded into U31 and U33 respectively on the positive transition of $\overline{WR}$.
A logical 0 at $\overline{RD}$ enables the three state buffer U34 provided that the correct address is set up.
The $\overline{ACK}$ goes low synchronized with $\overline{WR}$ or $\overline{RD}$ when a correct address is present at the address bus.

The asynchronous $\overline{MUTE}$ controls the DLD.AGC mute directly and is wired-or to the processor controlled sideband mute command.

Strapping
Dependable of crystal filter version mounted on the A3 Assembly up to three straps must be made. The tabel below shows the straps which must be made in order to get a proper function of the Receiver.

Strap 1	Strap 3	Strap 4*	Crystal Filter Version
0	0	0	02, 3400 Hz, SSB
0	1	0	04, 3000 Hz, SSB
1	1	0	06, 2700 Hz, SSB
1	0	0	07, 2700 Hz, SSB
1	0	0	09, 3200 Hz, DF

A "0" denotes strap must be made, a "1" denotes no strap.

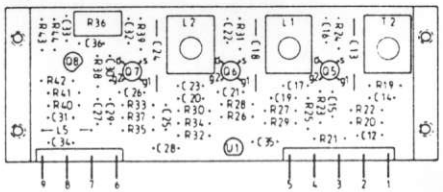
*) Strap 4 = ISB/LSB

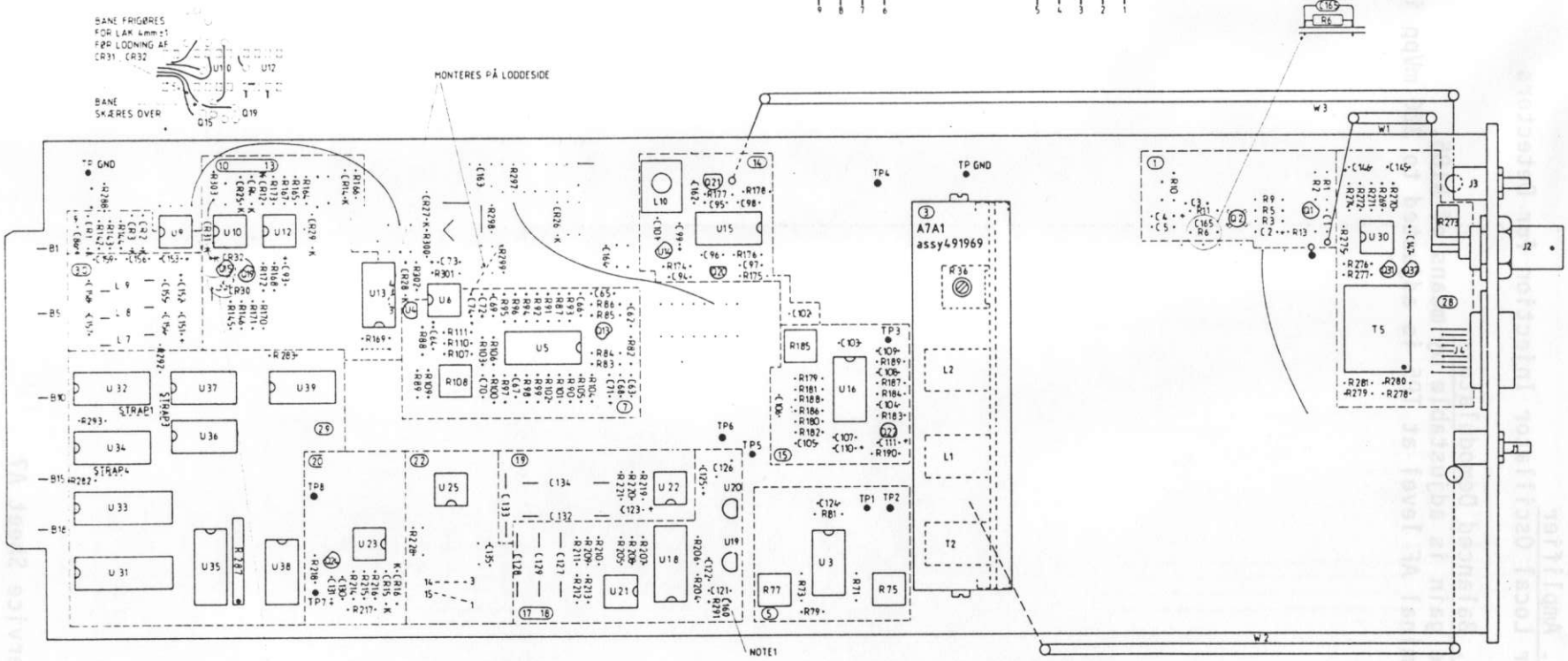
For definition of Crystal Filter Version see Section 1.

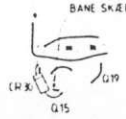
30. Filtering Circuit
for bias voltages.

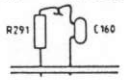
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A		20 5 90	VH

A7A1
assy 491969

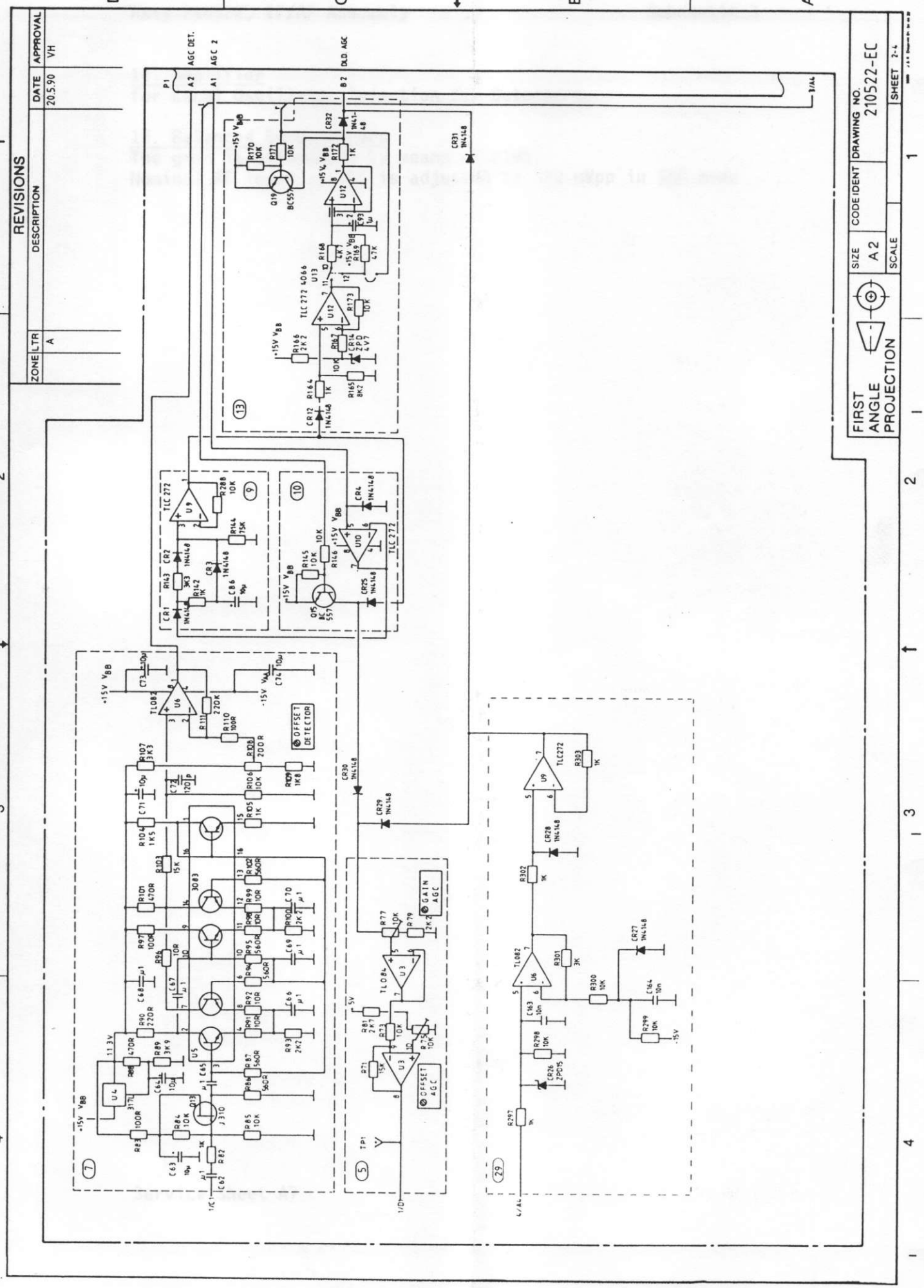








		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS	A
		ANGLES	DR VH 10 5 1990	TITLE COMPONENT LOCATION SIGNAL PROCESSING, SSB IF - 2ND. AUDIO A7 RX4010	
		LIN DIM	CH SN 23 5 90		
			AP 23-5-90		
490008	RX4010	MATERIAL	AP		
NEXT ASSY	USED ON		FIRST ANGLE PROJECTION	SIZE A1	CODE IDENT
APPLICATION				SCALE	DRAWING NO. 210522-PD
					SHEET 1 OF 1



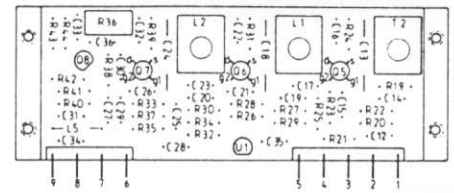
Service Sheet A7

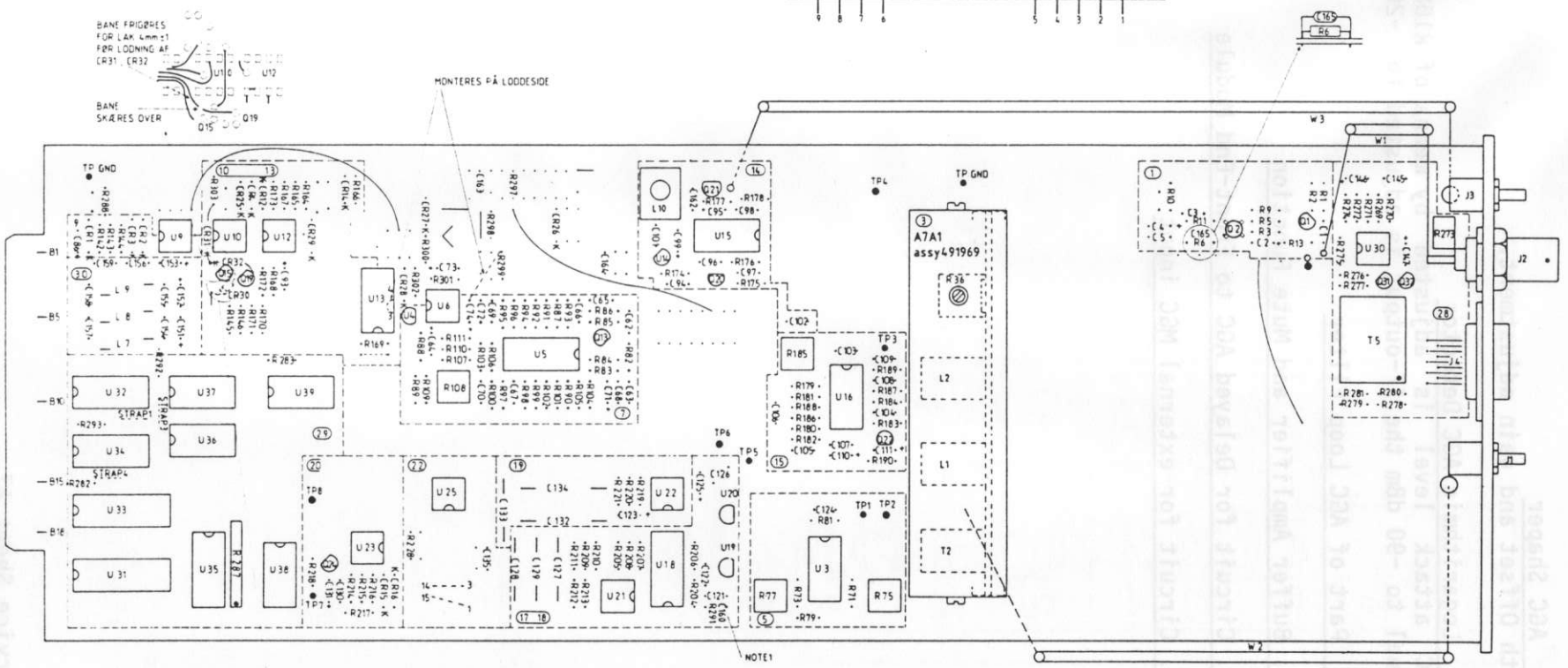
14. Amplifier
for Local Oscillator Injection for Detectors

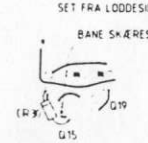
15. Balanced Demodulators
The gain is adjustable by means of R185.
Nominal AF level at TP5 is adjusted to 320 mVpp in SSB mode.

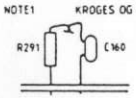
REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A		20 5 90	VH

A7A1
assy 491969

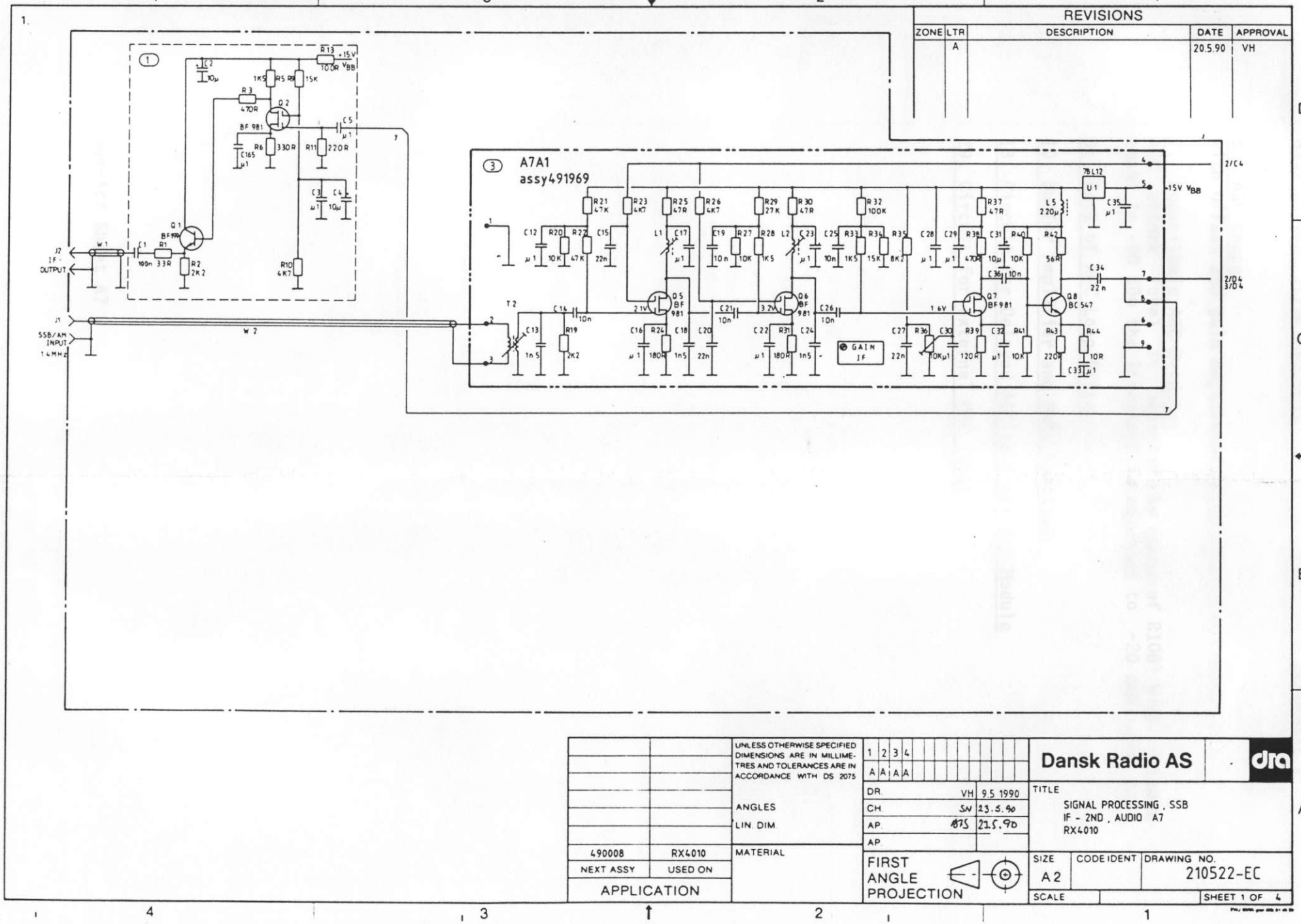








		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075			Dansk Radio AS	dra
		ANGLES	DR	VH 10 5 1990	TITLE	
		LIN. DIM	CH	SN 23.5.90	COMPONENT LOCATION SIGNAL PROCESSING, SSB IF - 2ND. AUDIO A7 RX4010	
			AP	ES 23-5-90		
490008	RX4010	MATERIAL	AP			
NEXT ASSY	USED ON		FIRST ANGLE PROJECTION		SIZE A1	CODE IDENT
APPLICATION					SCALE	DRAWING NO. 210522-PD
						SHEET 1 OF 1



Service Sheet A7

5. AGC Shaper
with Offset and gain adjustment.

7. Logarithmic AGC Detector
AGC attack level is adjusted by means of R108: With IF-input equal to -90 dBm the IF-output is adjusted to -20 dBm. (AGC on).

9. Part of AGC Loop Filter

10. Buffer Amplifier and Mute Function

13. Circuit for Delayed AGC to Front-End Module

29. Circuit for external MGC input

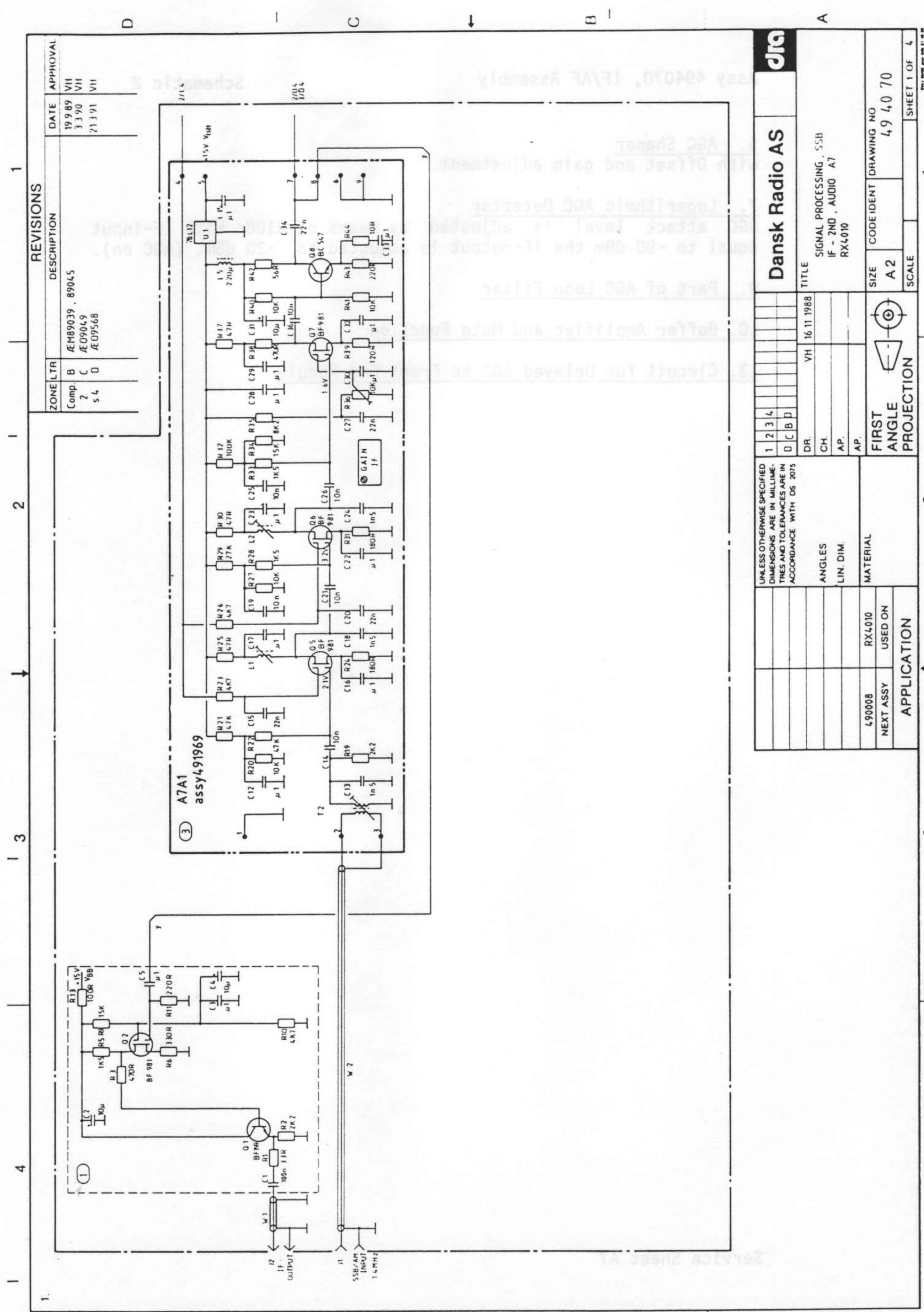
ASSY 494070, IF/AF ASSEMBLY

Service Sheet A7

1. Amplifier
for IF-Output Level -20 dBm/50 ohm.

3. 1.4 MHz Gain Controlled Tuned Amplifier
with 50 ohm input and output impedance.

Maximum gain from IF-input to IF-output is adjusted by means of R36 to 75 dB with IF-input equal to -100 dBm, AGC2 equal to 0V and R75 set to 1 dB signal attenuation. Minimum gain is adjusted by means of R77 to 0 dB with IF-input equal to -15 dBm and AGC2 equal to 9V.



REVISIONS
A7A1
assy491969
Dansk Radio AS
SIGNAL PROCESSING, SSB
IF - 2ND, AUDIO A7
RX4010
49 40 70
FIRST ANGLE PROJECTION
APPLICATION

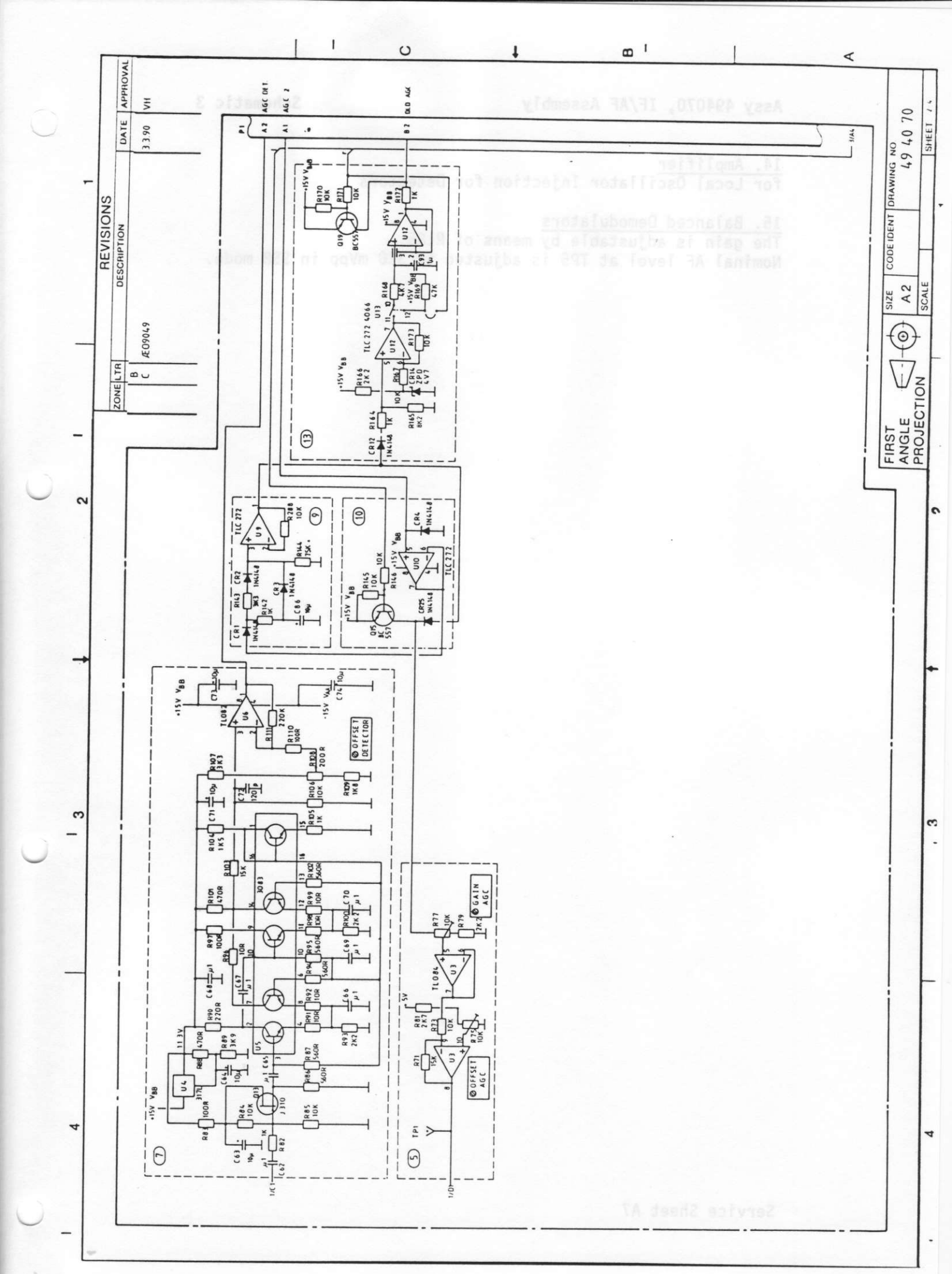
5. AGC Shaper
with Offset and gain adjustment.

7. Logarithmic AGC Detector
AGC attack level is adjusted by means of R108: With IF-input equal to -90 dBm the IF-output is adjusted to -20 dBm. (AGC on).

9. Part of AGC Loop Filter

10. Buffer Amplifier and Mute Function

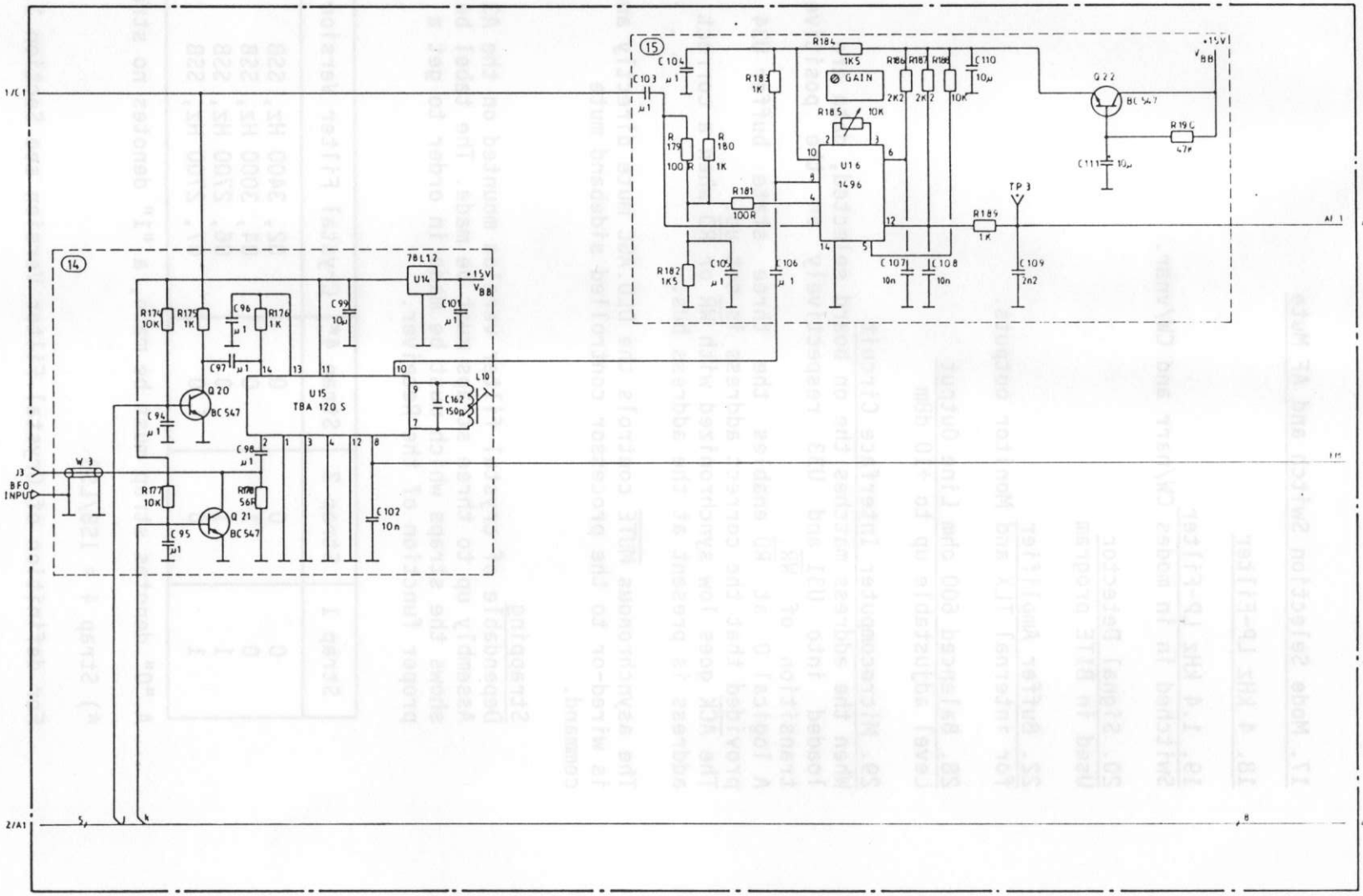
13. Circuit for Delayed AGC to Front-End Module


REVISIONS
ZONE
LTR
DESCRIPTION
DATE
APPROVAL
B
C
AE09049
3390
VII
AGC OUT
AGC 2
OLD AGC
FIRST ANGLE PROJECTION
SIZE
A2
CODE IDENT
DRAWING NO
49 40 70
SCALE
SHEET
TLC 272
TLC 272 4066
TL084
TL082
OFFSET DETECTOR
GAIN AGC
OFFSET AGC

14. Amplifier
for Local Oscillator Injection for Detectors

15. Balanced Demodulators
The gain is adjustable by means of R185.
Nominal AF level at TP5 is adjusted to 320 mVpp in SSB mode.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	B			



FIRST ANGLE PROJECTION	SIZE	CODE IDENT	DRAWING NO
	A2		49 40 70
	SCALE		SHEET

17. Mode Selection Switch and AF Mute

18. 4 kHz LP-Filter

19. 1.4 kHz LP-Filter
Switched in in modes CW/narr and CW/vnar.

20. Signal Detector
Used in BITE program

22. Buffer Amplifier
for internal TLX and Monitor outputs.

28. Balanced 600 ohm Line Output
Level adjustable up to +10 dBm

29. Microcomputer Interface Circuit
When the address matches the on board selected, data are loaded into U31 and U33 respectively on the positive transition of $\overline{WR}$.
A logical 0 at $\overline{RD}$ enables the three state buffer U34 provided that the correct address is set up.
The $\overline{ACK}$ goes low synchronized with $\overline{WR}$ or $\overline{RD}$ when a correct address is present at the address bus.

The asynchronous $\overline{MUTE}$ controls the DLD.AGC mute directly and is wired-or to the processor controlled sideband mute command.

Strapping
Dependable of crystal filter version mounted on the A3 Assembly up to three straps must be made. The tabel below shows the straps which must be made in order to get a proper function of the Receiver.

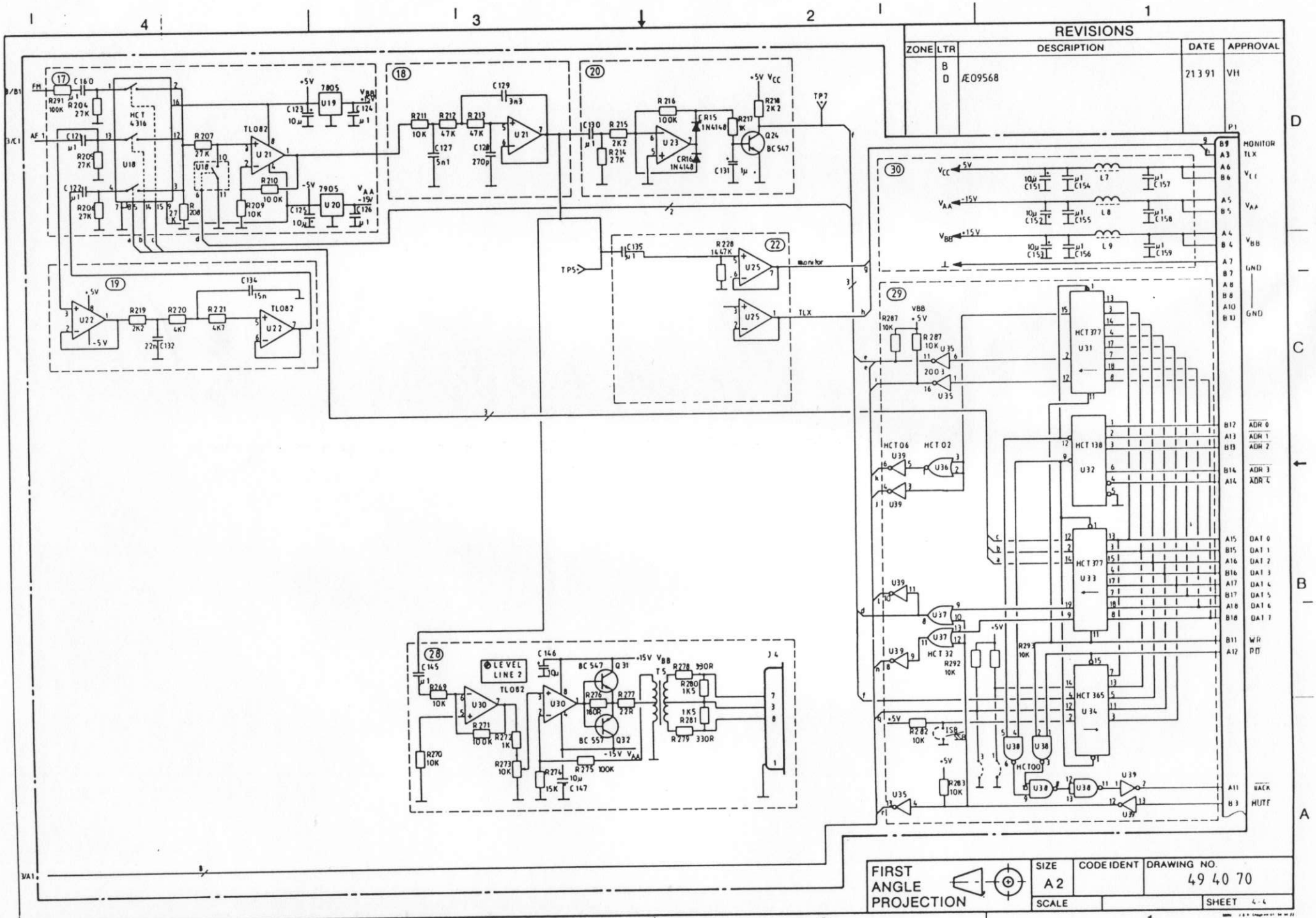
Strap 1	Strap 3	Strap 4*	Crystal Filter Version
0	0	0	02, 3400 Hz, SSB
0	1	0	04, 3000 Hz, SSB
1	1	0	06, 2700 Hz, SSB
1	0	0	07, 2700 Hz, SSB

A "0" denotes strap must be made, a "1" denotes no strap.

*) Strap 4 = ISB/LSB

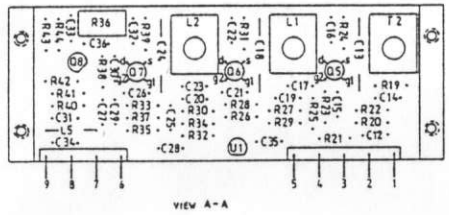
For definition of Crystal Filter Version see Section 1.

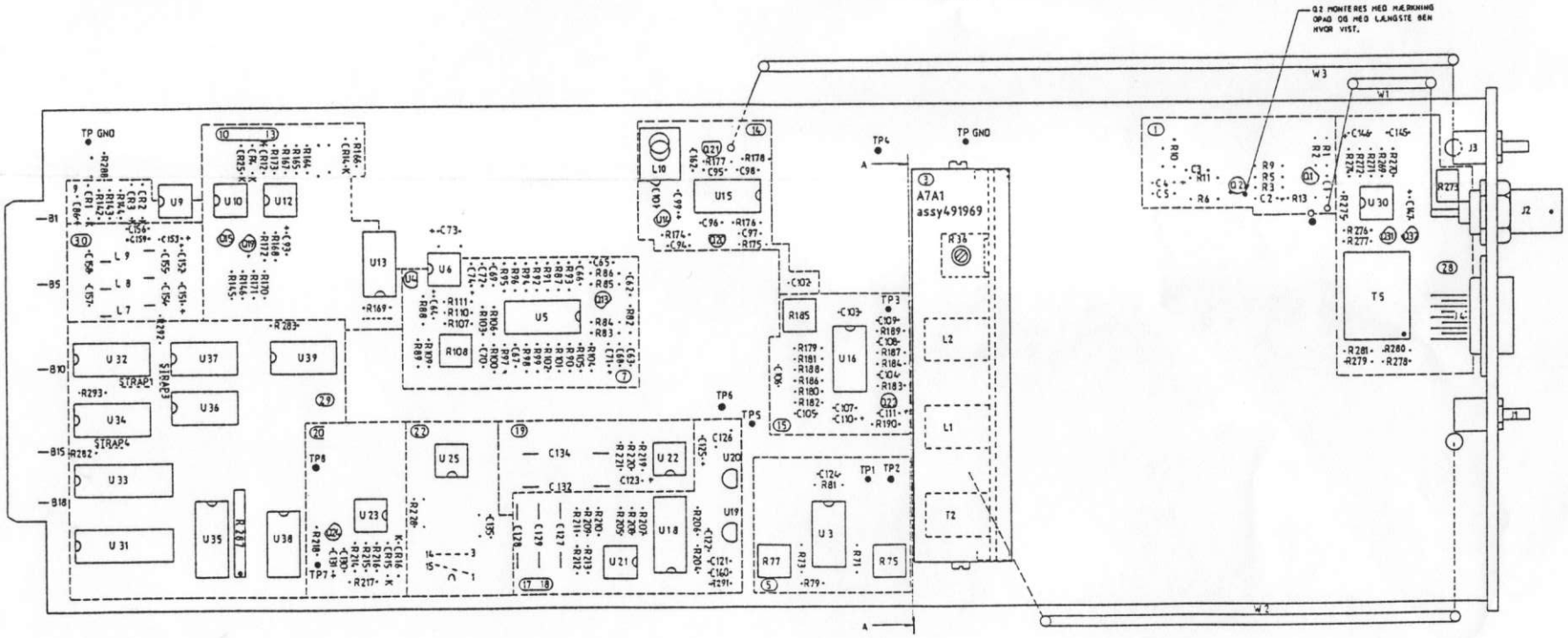
30. Filtering Circuit
for bias voltages.


REVISIONS
ZONE LTR DESCRIPTION DATE APPROVAL
B
D ÆO9568 21 3 91 VH
FIRST ANGLE PROJECTION
SIZE A2
CODE IDENT
DRAWING NO. 49 40 70
SCALE
SHEET 4-4
Service Sheet A7

Service Sheet A7

REVISIONS			
ZONE/LTR	DESCRIPTION	DATE	APPROVAL
B	ÆM89039 , 89045	19.9.89	VH
C	ÆØ9049	3.3.90	VH
D	ÆØ9568	21.3.91	VH
D1	17310	940910	
D2	17322	940910	
E	ÆØ 16113	941215	





UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 3079

ANGLES

LIN. DIM.

490008	RX4010	MATERIAL
NEXT ASSY	USED ON	
APPLICATION		

DR.	VH 17.11.1988	
CH.		
AP.		
AP		

FIRST ANGLE PROJECTION

Dansk Radio AS

TITLE: COMPONENT LOCATION SIGNAL PROCESSING, SSB IF - 2ND . AUDIO A7 RX4010

SIZE	CODE IDENT	DRAWING NO.
A1		49 40 70 P0

SCALE | SHEET 1 OF 1

ASSY 487740, MICROCOMPUTER ASSEMBLY

Service Sheet A8

The assembly consists of an 8085 microprocessor large scale integrated circuit that controls all basic functions within the exciter.

The operating system software for the microcomputer is stored in three programmable read-only memories (PROM's). Each PROM is capable of storing 16K x 8-bit words.

A random access memory chip (RAM), capable of storing 8k x 8-bit words, is required for the temporary storage and manipulation of input and output data. During power failure and receiver standby, the RAM is powered from a 3V battery back-up preventing interruptions from disturbing the stored data.

Various buffers and decoders assure proper drive levels and timing to and from various circuits and input/output ports.

A battery back-upped real time clock integrated circuit is mounted to ensure correct time keeping even during power failure or exciter standby.

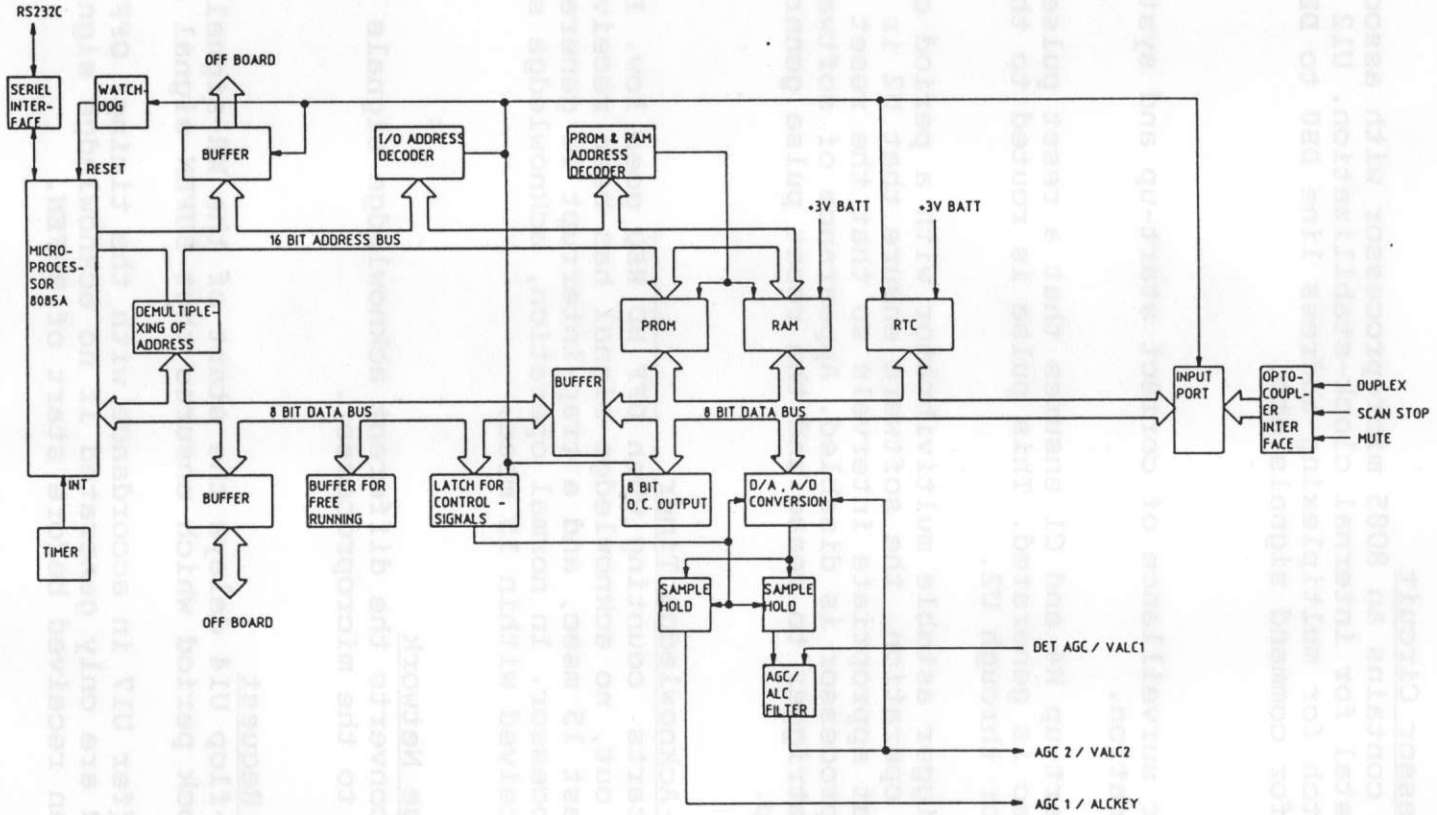
Timing of the assembly is via a 6.144MHz crystal oscillator contained in the CPU.

The Microprocessor Assembly performs the automatic level control ALC. Analogue loops provides fast attack ALC-levels for the IF assembly. The peak voltage of **VALC1** is held by a sample and hold circuit. As long as **ALCKEY** is a logical "1", the microcomputer will approach **VALC2** to **VALC1**.

Service Sheet A8

1.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
		ÆM88110	18.11.88	VH
		ÆM89032	9.5.89	VH



471909	RC4000
471712	RX4000
488240	RX4009
488100	SE4010
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	22.5.87
CH.		
AP.	MØF	22.5.87
AP.		

FIRST ANGLE PROJECTION

Dansk Radio AS

TITLE
CONFIGURATION
MPU BOARD
RC4000, RX4000, RX4009, SE4010

SIZE	CODE IDENT	DRAWING NO.
A2		48 77 40
SCALE		SHEET 1 OF 1

1. Microprocessor Circuit

This circuit contains an 8085 microprocessor with associated 6.144MHz crystal for internal clock-stabilization. U12 is an eight bit latch for multiplexing address line **DB0** to **DB7**. U13 is a buffer for command signals etc.

2. Watch-Dog

Watch-dog for surveillance of correct start-up and system software operation.

At system start-up R4 and C1 ensures that a reset pulse of approx. 10msec is generated. This pulse is routed to the microprocessor through U2.

U2 is a retrigger astable multivibrator with a period of 1sec. Under normal operation, the software ensure that U2 is retriggered at appropriate intervals so that the reset signal to the microprocessor is disabled. Appearance of software error causes the retrigger to cease and the reset pulse generation will start-up.

3. 15msec No-Acknowledge Timer

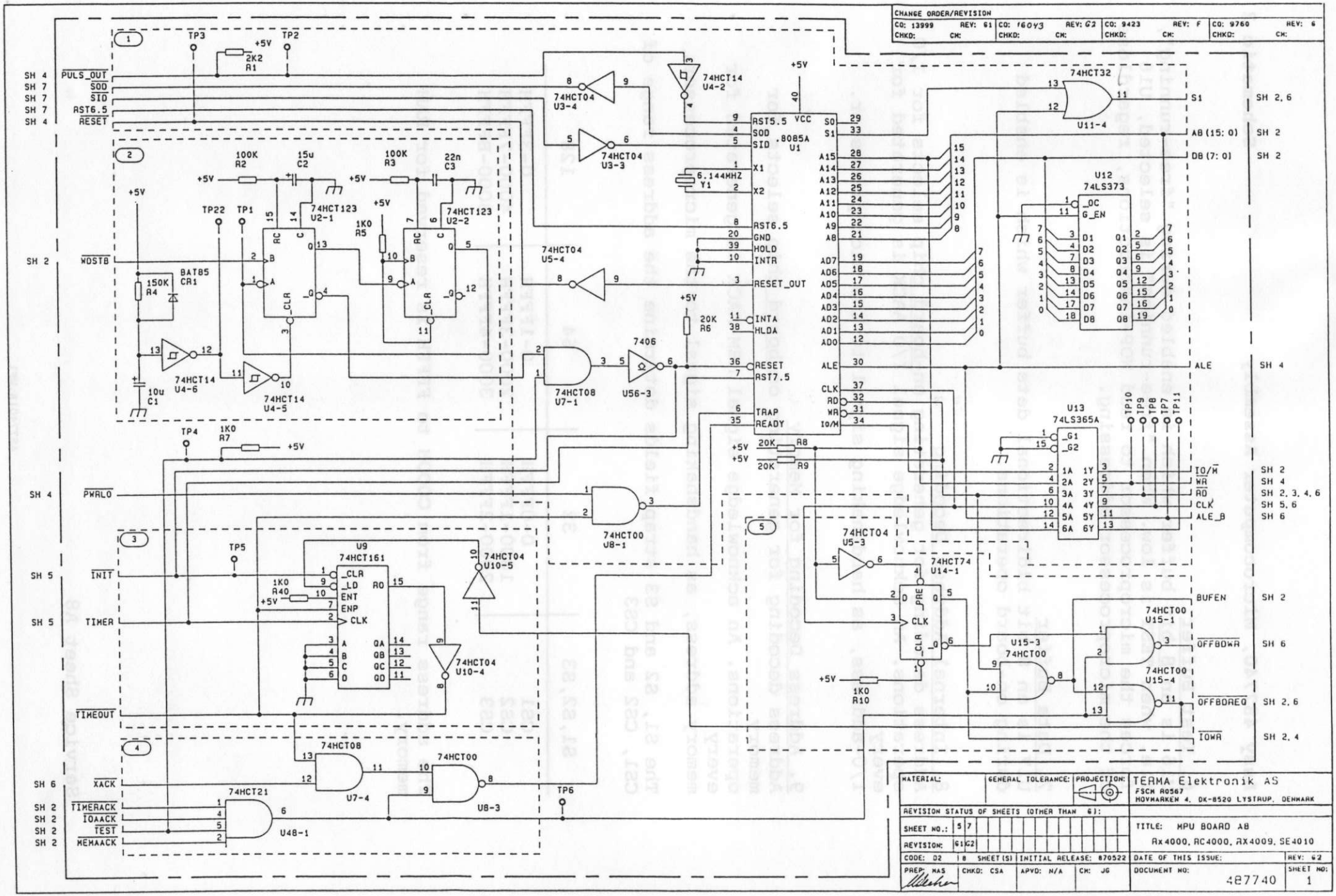
This timer starts counting when **OFF BD REQ** goes low. If the timer counts out, no acknowledge signal has been received within the last 15 msec, and a trap-interrupt is generated to the micro-processor. In normal operation, acknowledge signals should be received within 15 msec.

4. Acknowledge Network

The circuit converts the different acknowledge signals to a ready-signal to the microprocessor.

5. OFF Board Request

The J/K flip-flop U14 delays the start of the **WR**-signal one half of a clock period which ensures that **BUFEN**-signal delays the enable of buffer U17 in accordance with the timing. **OFF BD REQ** and **OFF BD WR** are only generated if no acknowledge signal on board has been received before start of **BUFEN**.



Service Sheet A8

6. Test Buffer

U16 is an 8 bit buffer which is enabled during "free-running", i.e. when **TEST** is low. When "free-running" is selected, U16 forces the microprocessor to read NOP-instructions, regardless of the microprocessor addressing.

7. Data Buffer

U17 is an 8 bit bidirectional data buffer which is enabled during on-board operations.

8. Internal Address Decoding

Address decoding for generating on-board chip selects for I/O operations. An acknowledge signal I/O AACK is generated for every
I/O-address, as handshaking signal to the microprocessor.

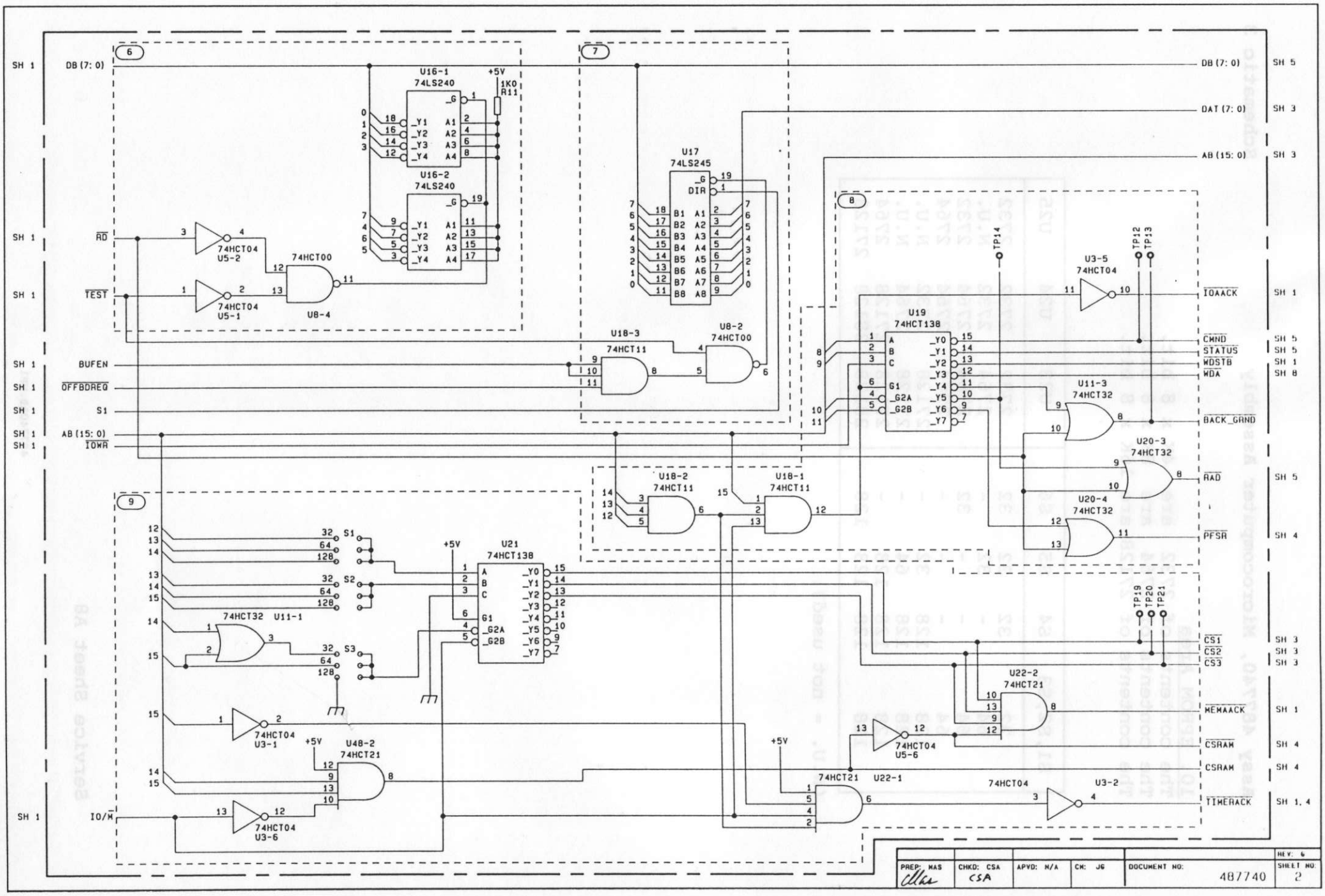
9. Address Decoding for Memory

Address decoding for generating on-board chip selects for memory
operations. An acknowledge signal MEM-AACK is generated for every
memory address, as handshaking signal to the microprocessor.

The S1, S2 and S3 strap fields determine the address range of CS1, CS2 and CS3

S1,S2,S3	32	64	128
CS1	0-0FFFH	0-1FFFH	0-3FFFH
CS2	1000-1FFFH	2000-3FFFH	4000-7FFFH
CS3	2000-2FFFH	3000-4FFFH	8000-BFFFH

The address range from C000H to FFFFH is reserved for RAM memory.



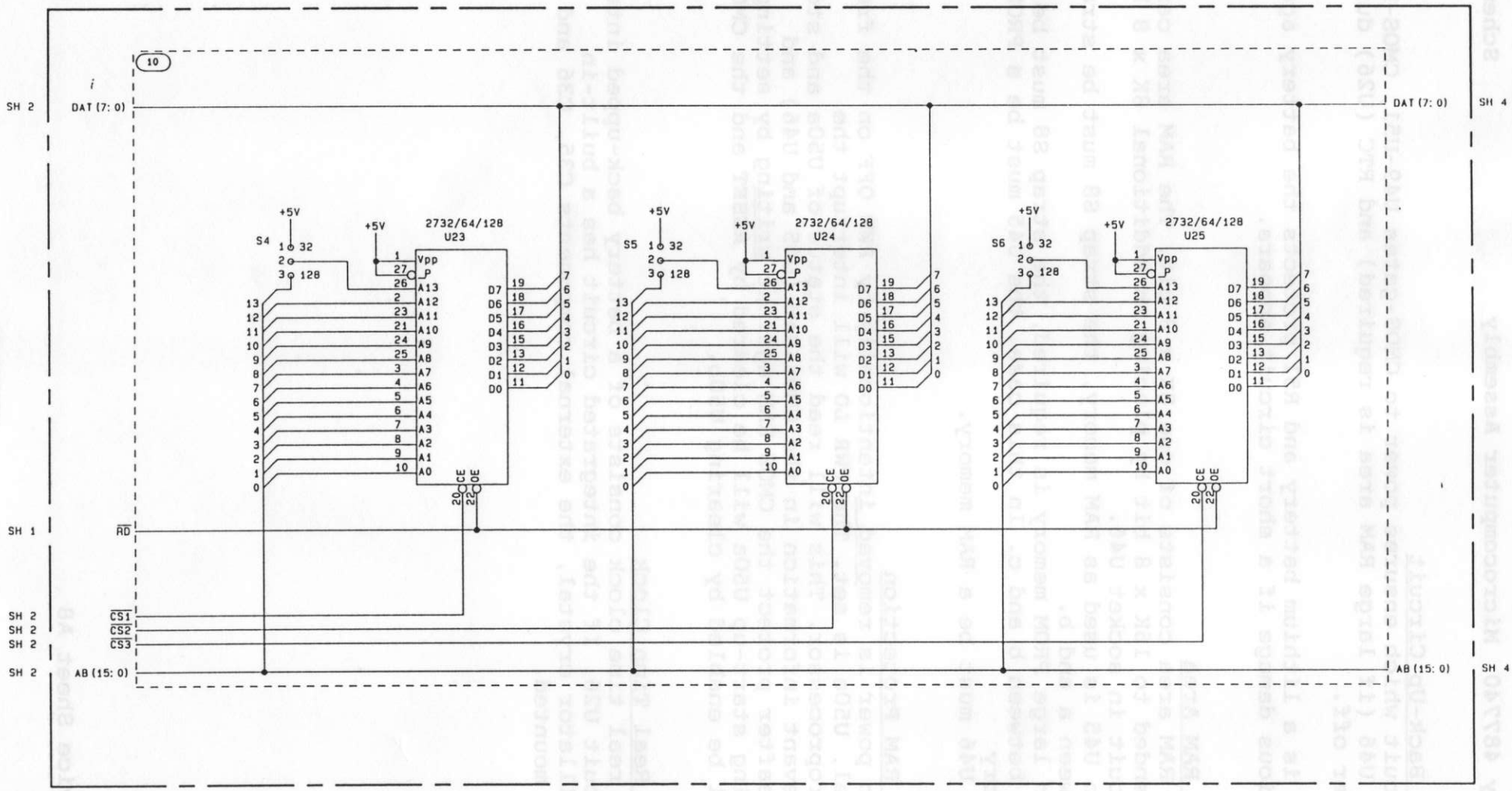
Service Sheet A8

10. EPROM Area

The contents of 2732 are 4K x 8 bit.
The contents of 2764 are 8K x 8 bit.
The contents of 27128 are 16K x 8 bit.

S1,S2,S3	S4	S5	S6	U23	U24	U25
32	32	32	32	2732	2732	2732
64	-	32	-	2764	2732	N.U.
64	-	-	32	2764	2764	2732
64	-	-	-	2764	2764	2764
128	128	32	-	27128	2732	N.U.
128	128	64	-	27128	2764	N.U.
128	128	128	-	27128	27128	2764
128	128	128	128	28128	28128	27128

(N.U. = not used).



STRAPPING:	S4	S5	S6
2732	1-2	1-2	1-2
2764	NA	NA	NA
27128	2-3	2-3	2-3

					REV G
PREP: NAS	CHKD: CSA	APVD: N/A	CM: JG	DOCUMENT NO: 487740	SHEET NO: 3

Service Sheet A8

11. Back-Up Circuit

Circuit which ensures power to CMOS-gates U49-U51, CMOS-RAM U45 and U46 (if large RAM area is required) and RTC (U26) during power off.

BT1 is a lithium battery and R51 protects the battery against serious damage if a short circuit appears.

12. RAM Area

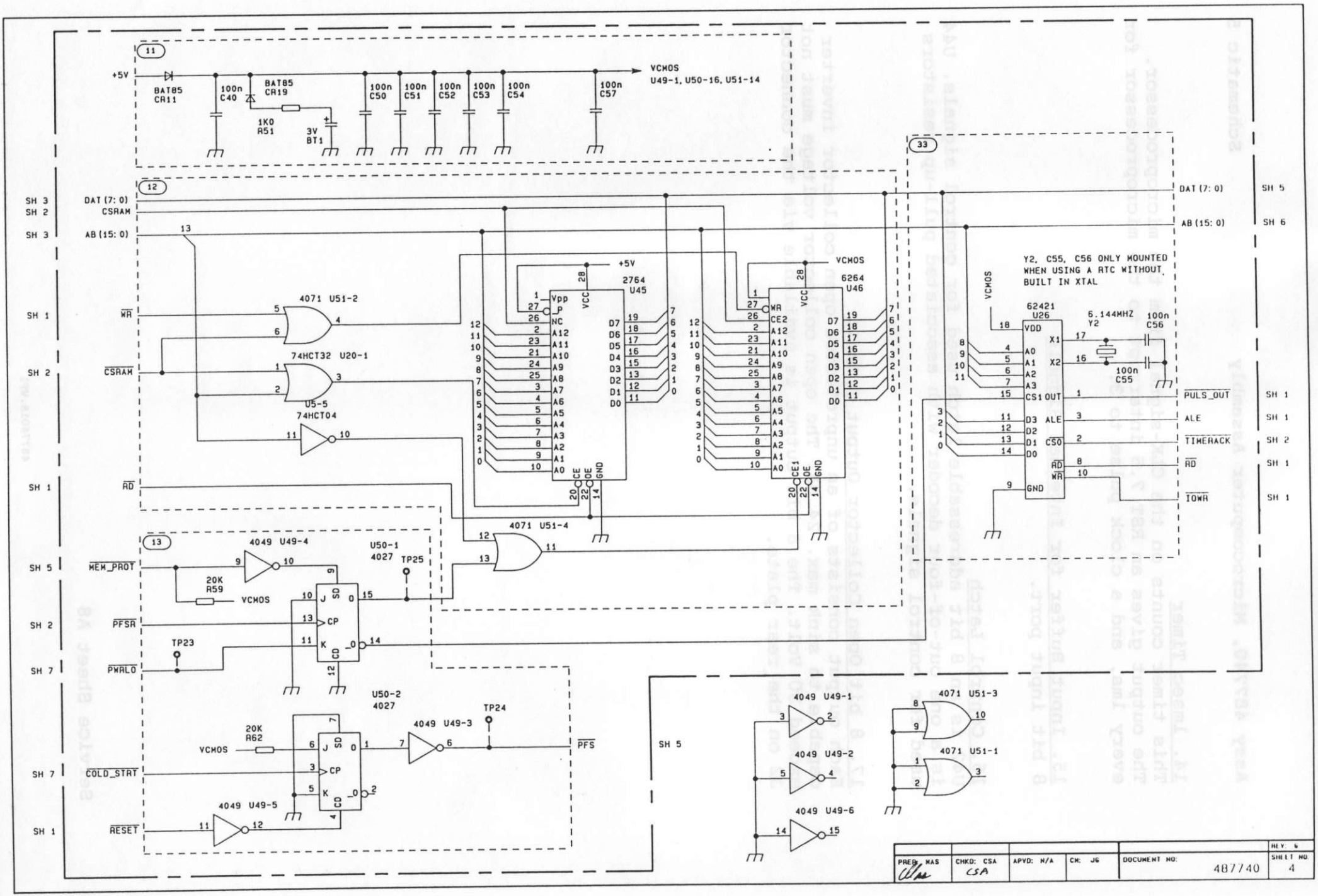
The RAM area consists of one 8K x 8 bit. The RAM area can be extended to 16K x 8 bit by placing an additional 8K x 8 bit RAM circuit in socket U46.
When U45 is used as RAM memory, the strap S8 must be strapped between a and b.
When large PROM memory is required, the strap S8 must be strapped between b and c. In this case, the U45 must be a PROM memory
and U46 must be a RAM memory.

13. RAM Protection

When power is removed intentionally by PWR OFF on the front panel, U50a is set. The **PWR LO** will interrupt the microprocessor. This will read the status of U50a and store relevant information in the CMOS RAM (U45 and U46) and hereafter protect the CMOS RAM against writing by setting U50b. During start-up U50a will be cleared by **RESET** and the CMOS RAM will be enabled by clearing U50b.

33. Real Time Clock

The real time clock consists of a battery back-upped integrated circuit U26. If the integrated circuit has a built-in oscillator crystal, the external components C35, C36 and Y2 are not mounted.


11
+5V
BAT85 CR11
100n C40
BAT85 CR19
1K0 R51
3V BT1
100n C50
100n C51
100n C52
100n C53
100n C54
100n C57
VCMOS U49-1, U50-16, U51-14
12
SH 3 DAT (7: 0)
SH 2 CSRAM
SH 3 AB (15: 0)
SH 1 WR
SH 2 CSRAM
SH 1 AD
4071 U51-2
74HCT32 U20-1
U5-5
74HCT04
+5V
2764 U45
VCMOS
6264 U46
4071 U51-4
13
SH 5 WEN_PROT
4049 U49-4
20K R59
VCMOS
U50-1 4027
TP25
SH 2 PFSR
SH 7 PWRLO
TP23
U50-2 4027
20K R62
VCMOS
4049 U49-3
TP24
PFS
SH 7 COLD_STRT
SH 1 RESET
4049 U49-5
33
DAT (7: 0)
AB (15: 0)
Y2, C55, C56 ONLY MOUNTED WHEN USING A RTC WITHOUT BUILT IN XTAL
62421 U26
6.144MHZ Y2
100n C56
100n C55
PULS_OUT
ALE
TIMERACK
RD
IOWR
SH 5
SH 6
SH 1
SH 1
SH 2
SH 1
SH 1
SH 5
4049 U49-1
4049 U49-2
4049 U49-6
4071 U51-3
4071 U51-1
PREP: MAS
CHKD: CSA
APVD: N/A
CM: JG
DOCUMENT NO: 487740
REV: G
SHEET NO. 4

14. 1msec Timer

This timer counts on the **CLK**-signal from the microprocessor. The output gives an RST 7.5 interrupt to the microprocessor for every 1ms, and a clock pulse to 3.

15. Input Buffer for Internal Signals

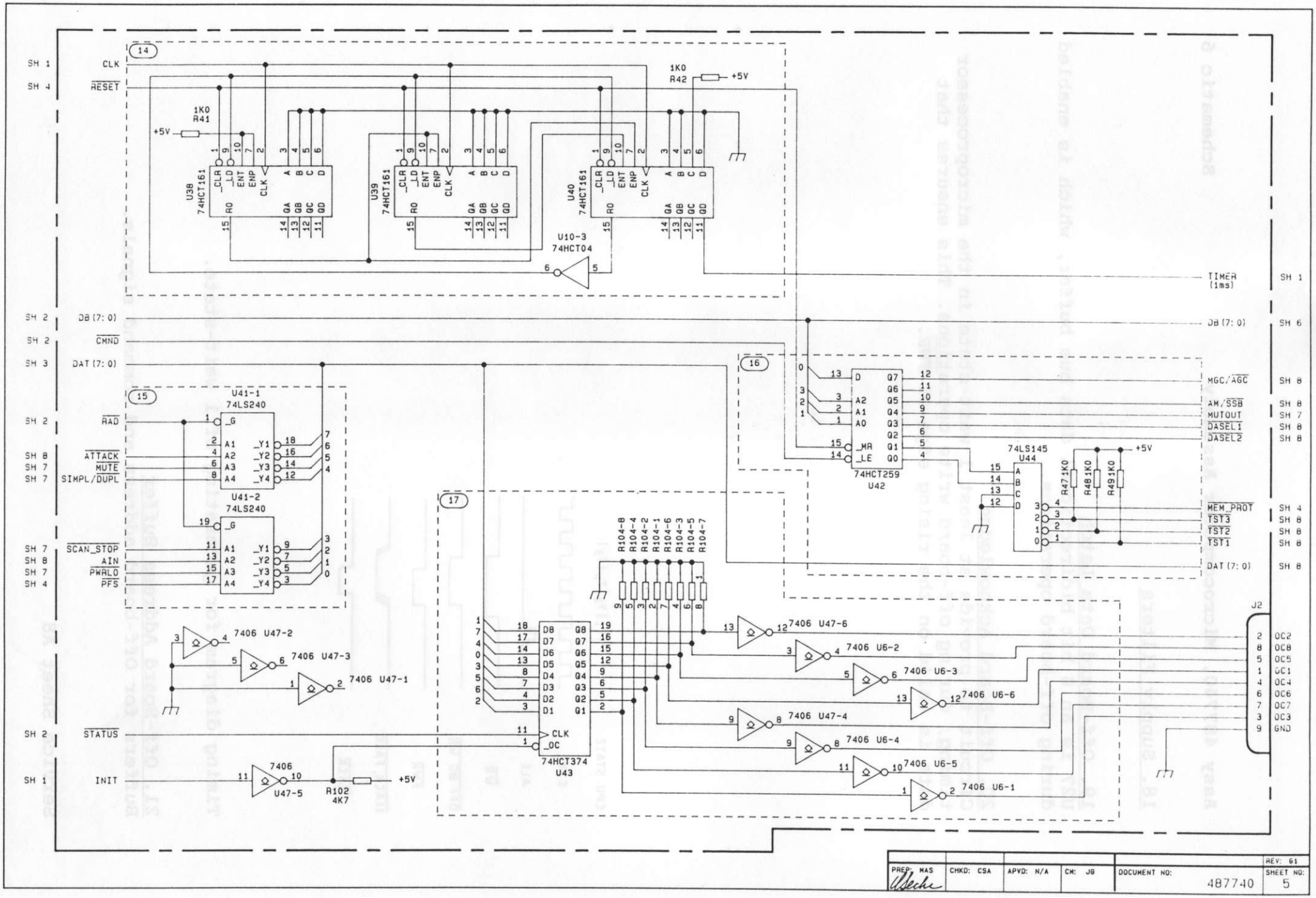
8 bit input port.

16. Control Latch

U42 is an 8 bit addressable latch used for control signals. U44 is a one out-of-four decoder with associated pull-up resistors used for control signals.

17. 8 bit Open Collector Output Circuit

Each output consists of an unprotected open collector inverter capable to sink max. 24 mA. The open collector voltage must not exceed 30 Volt. The 8 bit output is available via the connector J2 on the rear plate.



PREP: MAS	CHKD: CSA	APVD: N/A	CM: JG	DOCUMENT NO: 487740	REV: G1 SHEET NO: 5

Service Sheet A8

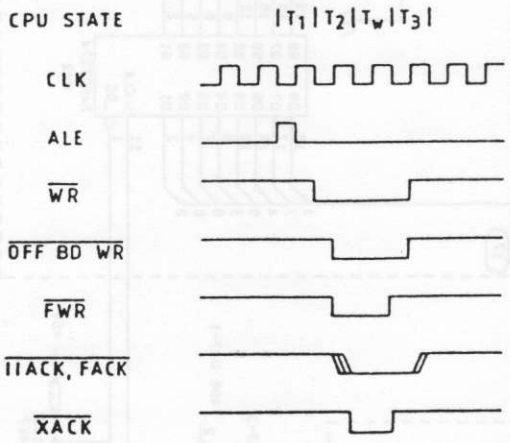
18. Supply Filters

19. Off-Board Data Latch

U27 is an 8 bit bidirectional data bus buffer, which is enabled during off-board operations.

20. Off-Board Acknowledge

Circuit to provide at least 1 wait-state in the microprocessor timing, during off-board write operations. This ensures that data is valid on the rising edge of **FWR**.

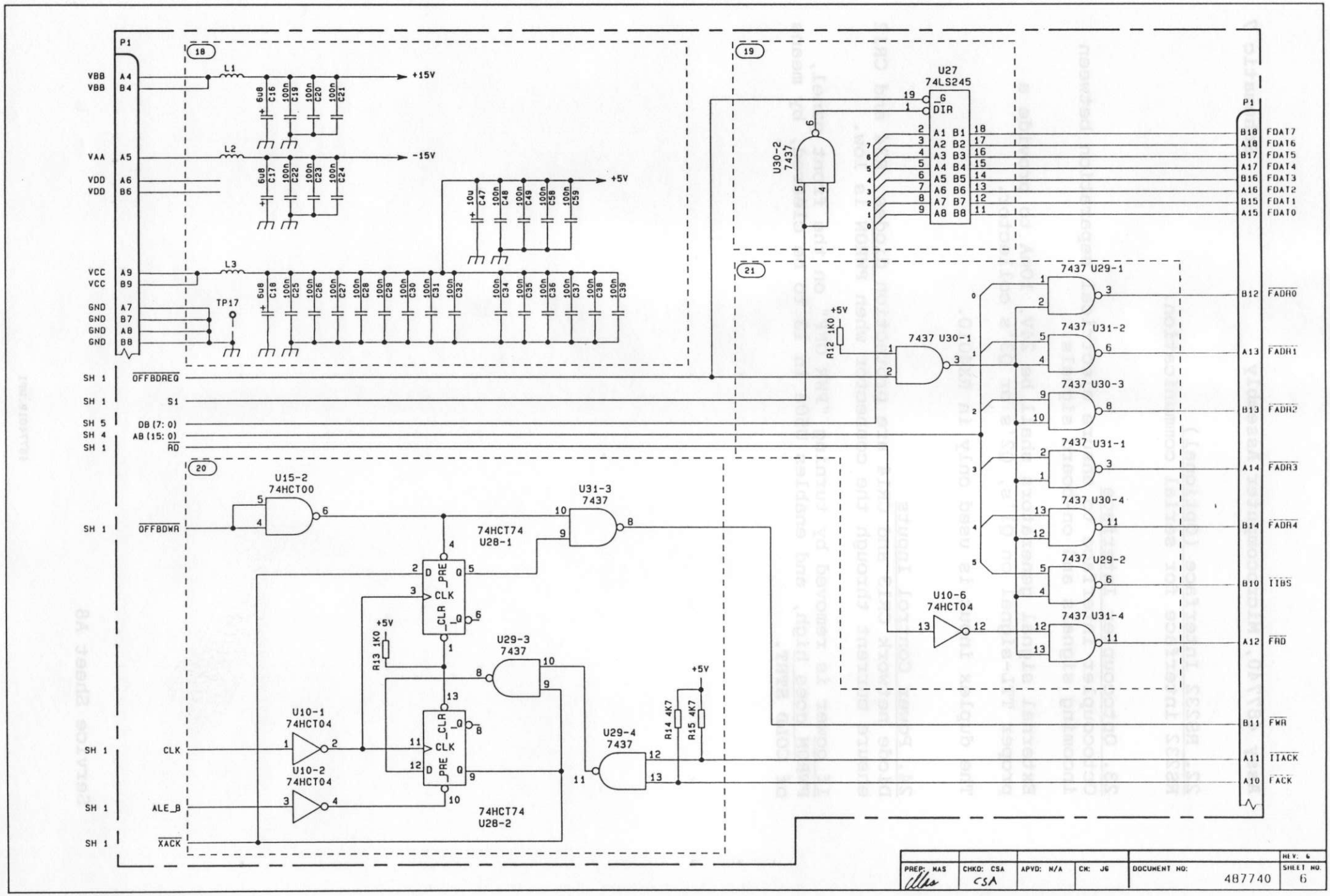


Timing diagram for generating of 1 wait-state.

21. Off-Board Address Buffer

Buffers for Off-board address and command signals.

Service Sheet A8



PREP: NAS	CHKD: CSA	APVD: N/A	CM: JG	DOCUMENT NO: 487740	REV: G SHEET NO: 6

Service Sheet A8

22. RS232 Interface (Optional)
RS232 interface for serial communication.

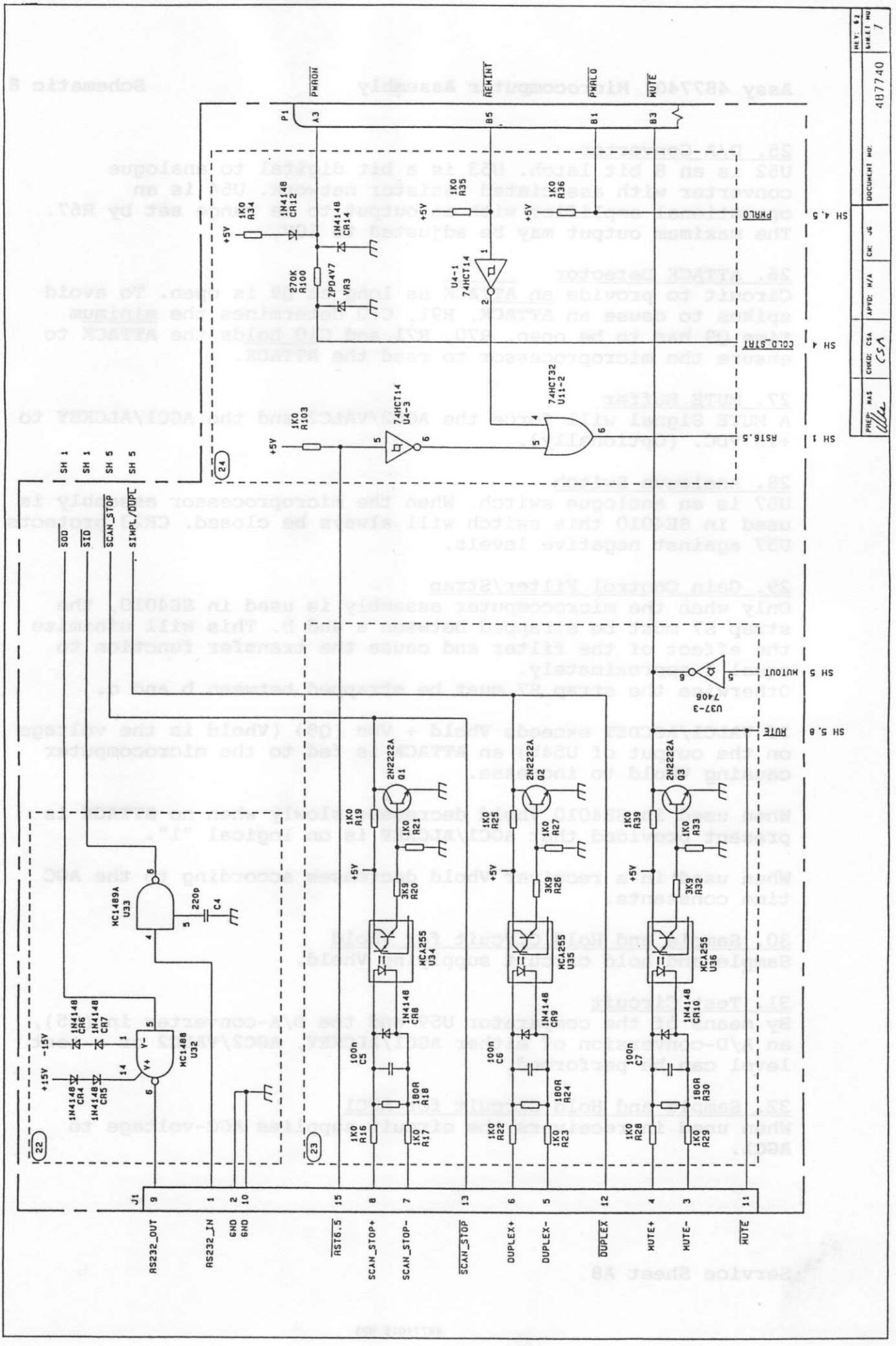
23. Optocoupler Interface
Octocoupler interface to ensure electrical separation between incoming signals and on-board signals.

External signal generators shall be 24V, 10mA to provide a proper TTL-signal on Q1's, Q2's or Q3's collector.

The duplex input is used only in RX4010.

24. Power Control Inputs
Diode network CR13 and CR14 are protection diodes. R34 and CR12 ensure current through the connector when **PWRON** is low.

If power is removed by turning "PWR OFF" on the front panel, **PWRON** goes high, and enables U50a in 13 to be cleared, by means of **COLD STRT**.



Service Sheet A8

25. D/A Converter
U52 is an 8 bit latch. U53 is a bit digital to analogue converter with associated resistor network. U54 is an operational amplifier with an output to be range set by R67. The maximum output may be adjusted to 10V.

26. ATTACK Detector
Circuit to provide an **ATTACK** as long as Q9 is open. To avoid spikes to cause an **ATTACK**, R91, C10 determines the minimum time Q9 has to be open. R70, R71 and C10 holds the **ATTACK** to ensure the microprocessor to read the **ATTACK**.

27. MUTE Buffer
A MUTE Signal will force the AGC2/VALC2 and the AGC1/ALCKEY to +15 VDC. (Optionally).

28. Analogue Switch
U57 is an analogue switch. When the microprocessor assembly is used in SE4010 this switch will always be closed. CR23 protects U57 against negative levels.

29. Gain Control Filter/Strap
Only when the microcomputer assembly is used in SE4010, the strap S7 must be strapped between a and b. This will minimize the effect of the filter and cause the transfer function to equal 1 approximately.
Otherwise the strap S7 must be strapped between b and c.

If **VALC1/AGCDET** exceeds **Vhold** + Vbe (Q8) (**Vhold** is the voltage on the output of U54b) an **ATTACK** is fed to the microcomputer causing **Vhold** to increase.

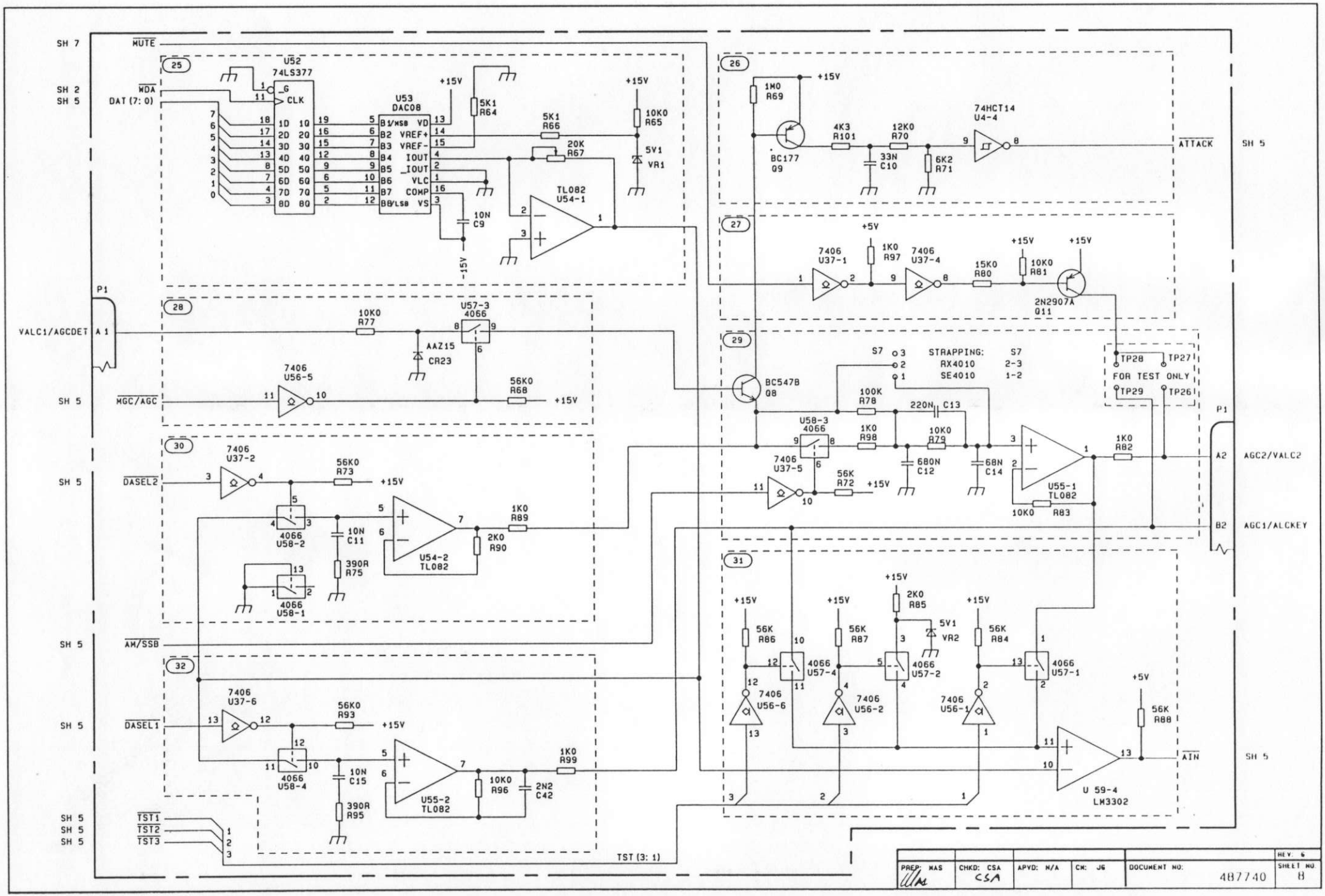
When used in SE4010 **Vhold** decreases slowly when no **ATTACK** is present provided that **AGC1/ALCKEY** is on logical "1".

When used in a receiver **Vhold** decreases according to the AGC time constants.

30. Sample and Hold Circuit for Vhold
Sample and hold circuit supplying **Vhold**.

31. Test Circuit
By means of the comparator U59 and the D/A-converter in (25), an A/D-conversion of either **AGC1/ALCKEY**, **AGC2/VALC2** or a test level can be performed.

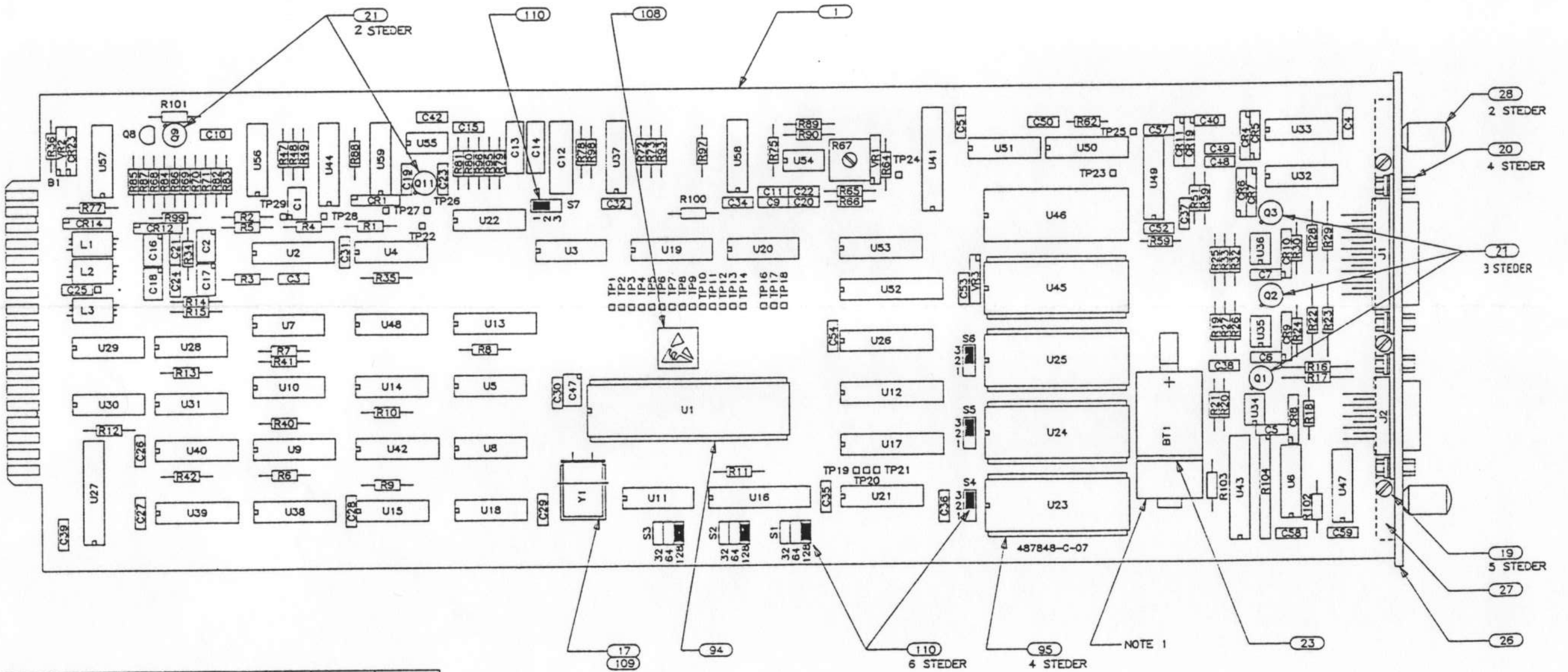
32. Sample and Hold Circuit for AGC1
When used in receivers the circuit supplies AGC-voltage to **AGC1**.



Service Sheet A8

CHANGE ORDER/REVISION			
CO: 13999 REV: K2 CHKD: CM: CSA	CO: 17510 REV: K3 CHKD: CM: JG	CO: 17613 REV: K4 CHKD: CM: JS	CO: 18076 REV: K5 CHKD: CM: JS

1. BT1 (BATTERY) LODDES PA – POL
   + POL MA IKKE HAVE FORBINDELSE.
   + POL PALODDES NAR MODUL MONTERES I UNIT.
   THE + POLE OF THE BATTERY IS SOLDERED
   TO THE CIRCUIT AT DELIVERY.



PROM	S1	S2	S3	S4	S5	S6
2732	POS 32	POS 32	POS 32	POS 1-2	POS 1-2	POS 1-2
2764	POS 64	POS 64	POS 64	-	-	-
27128	POS 128	POS 128	POS 128	POS 2-3	POS 2-3	POS 2-3

* STANDARD STRAP

STRAPPING OF S7	
SE4010	POS 1-2
RX4010	POS 2-3

* STANDARD STRAP

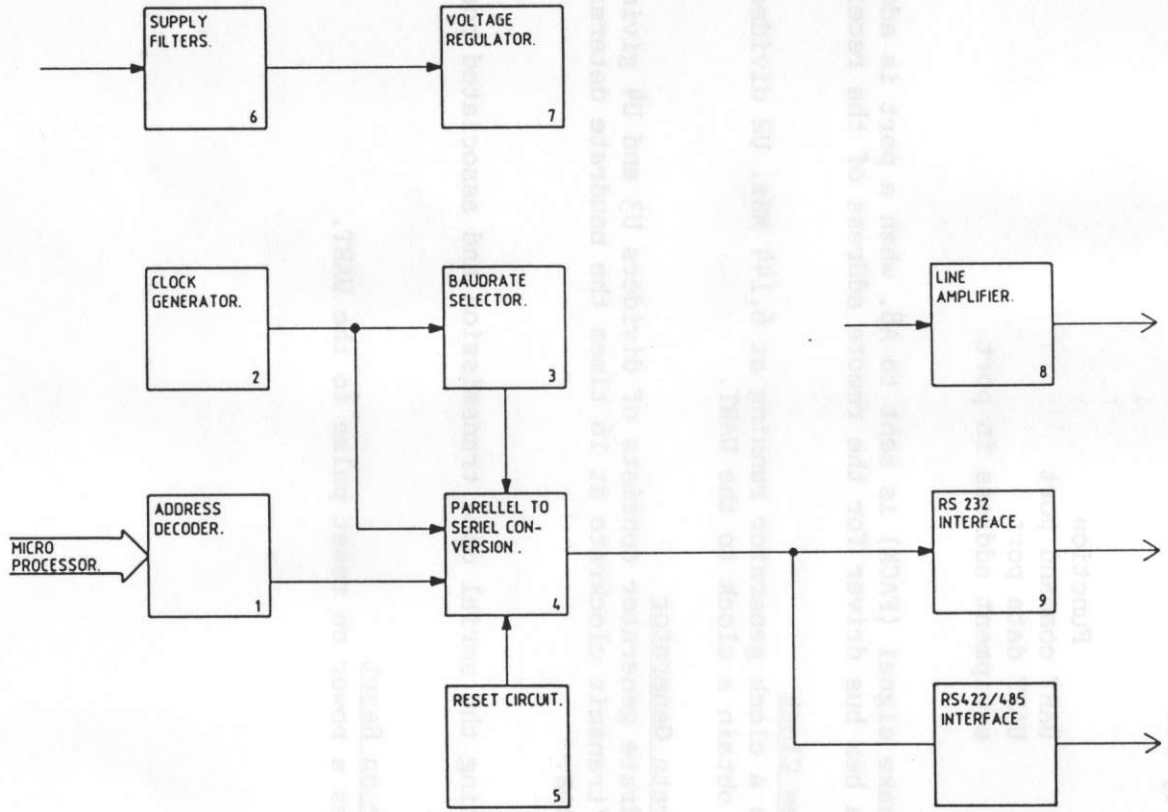
MATERIAL:	GENERAL TOLERANCE:	PROJECTION:	TERMA Elektronik AS FSCM R0567 HOVMARKEN 4, DK-8520 LYSTRUP, DENMARK
REVISION STATUS OF SHEETS (OTHER THAN K1): SHEET NO.: REVISION:			TITLE: COMPONENT LOCATION MPU BOARD A8
CODE: D2	1 SHEET(S)	INITIAL RELEASE: 900118	DATE OF LATEST REV.: 940628 REV.: K5
PREP: IN CHKD: CSA	APVD: N/A	CM: JG	DOCUMENT NO.: 487740 SHEET NO.: 1

ASSY 490598, INTERFACE RS232/422/485

Service Sheet A9

The clock generator (2) running at 6.144 MHz delivers clock pulses to the parallel to serial conversion circuit (4) with a frequency of 1.2288 MHz. The baudrate generator (3) controls the baudrate of the remote communication. The parallel to serial conversion circuit (4) interfaces the serial data bus to an 8-bit data bus which is controlled by the microprocessor of the equipment via the address decoder (1). The serial data bus is converted to RS232C, RS422 or RS485 levels in the interface circuits. A balanced line output (8) is available when the module is installed in an RX4010 receiver.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS	dra
		ANGLES	DR. VH 11.1 1988	TITLE MODULE CONFIGURATION INTERFACE RS232/422/485	
		LIN. DIM.	CH.		
			AP. JS 11.1.1988		
		MATERIAL	AP.		
NEXT ASSY	USED ON		FIRST ANGLE PROJECTION	SIZE A2 / CODE IDENT / DRAWING NO. 49 05 98-A	
APPLICATION				SCALE / SHEET 1 OF 1	

Service Sheet A9

Assy 490598, Interface RS232/422/485 **Schematic 1**

1. Control/Data Interface

This circuit controls the data transmission between the CPU card (A8) and the interface card (A9).
The card is controlled through 3 ports, each having an address decoded by U6.

Address	Function
02H	UART command port
03H	UART data port
0CH	equipment address in port

A handshake signal (FACK) is sent to A8, when a port is addressed.
U14 is a hex bus driver for the remote address of the receiver.

2. System Clock

U1 forms a clock generator running at 6.144 MHz. U2 divides this by 5 to obtain a clock to the UART.

3. Baudrate Generator

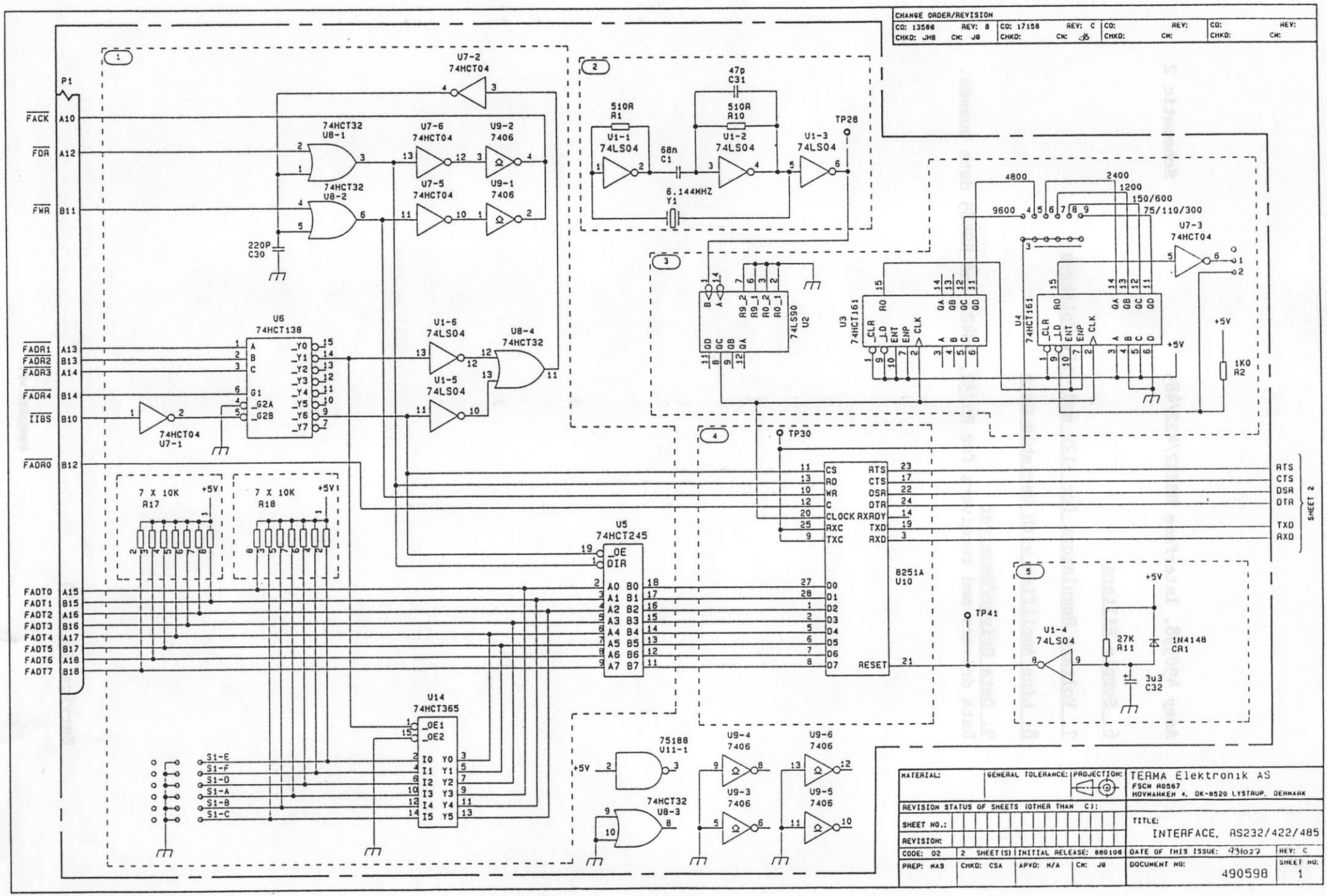
The baudrate generator consists of dividers U3 and U4 giving the receive/transmit clockrate at 16 times the baudrate determined by the straps.

4. UART

Controlling the serial data transmission and associated control signals.

5. Power on Reset

Generates a power on reset pulse to the UART.



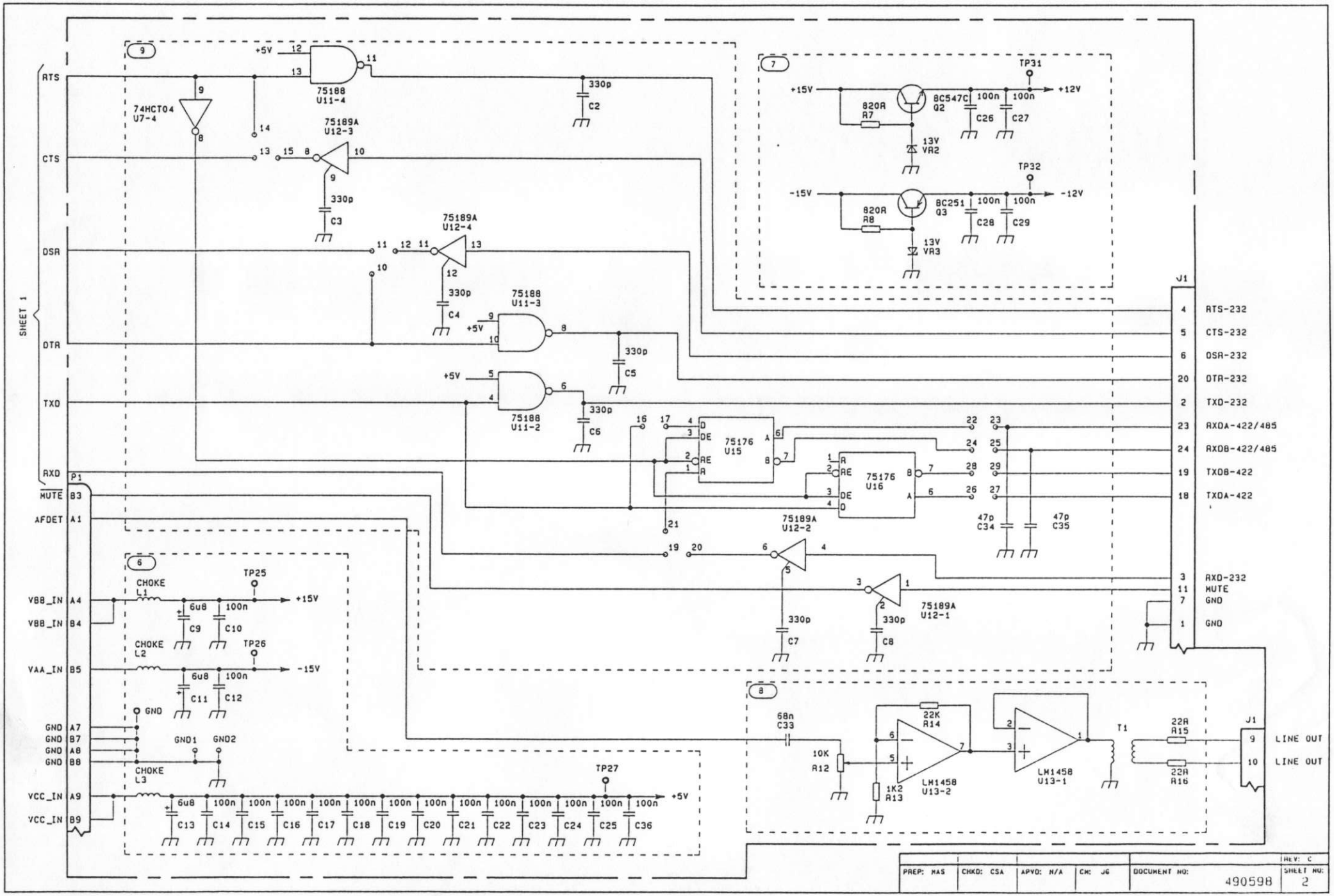
Service Sheet A9

6. Supply Filters

7. Voltage Regulators for +12V and -12V Voltages

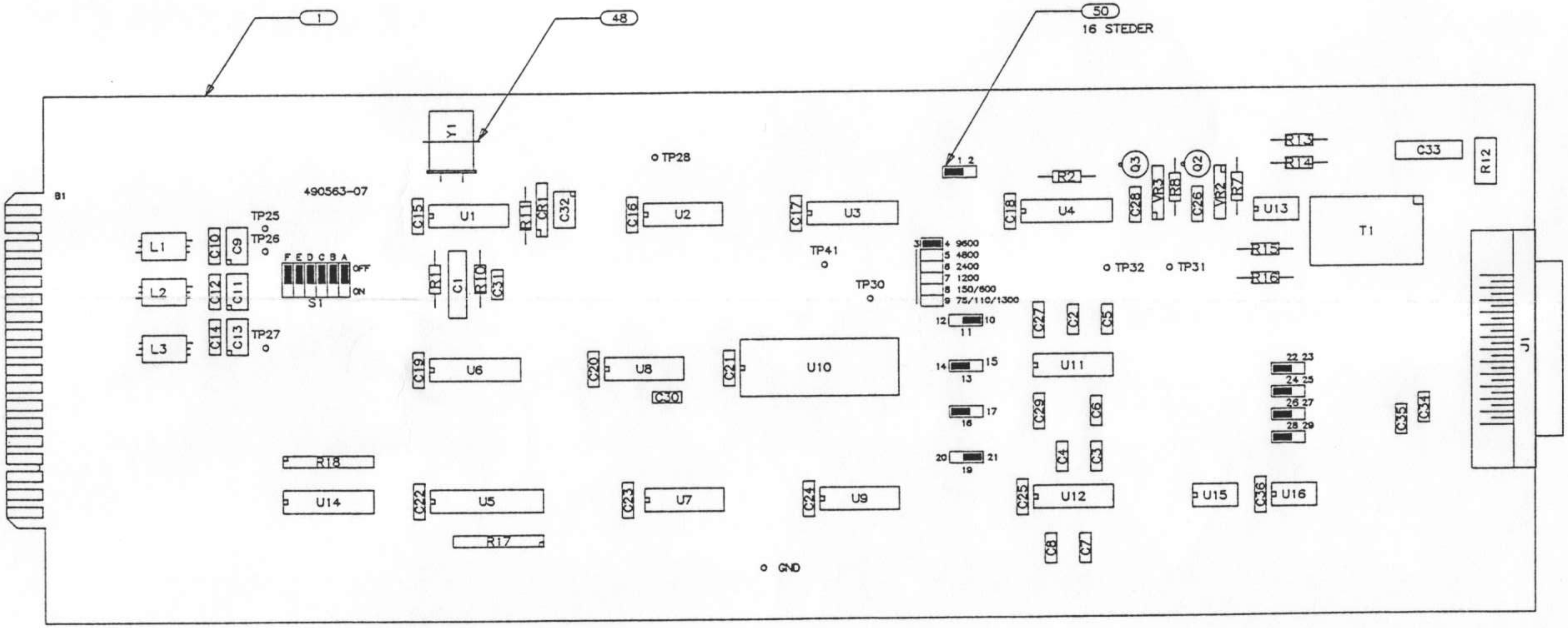
8. Line Amplifier with Variable Gain

9. Data Driver/Receiver
Data drivers and receivers for RS232, RS422 and RS485 data busses.



Service Sheet A9

CHANGE ORDER/REVISION			
CO: 13586 REV: E AUT: CM:	CO: 9796 REV: F AUT: CM: JG	CO: 17156 REV: G AUT: CM: JG	CO: 17307 REV: G1 AUT: CM: JG

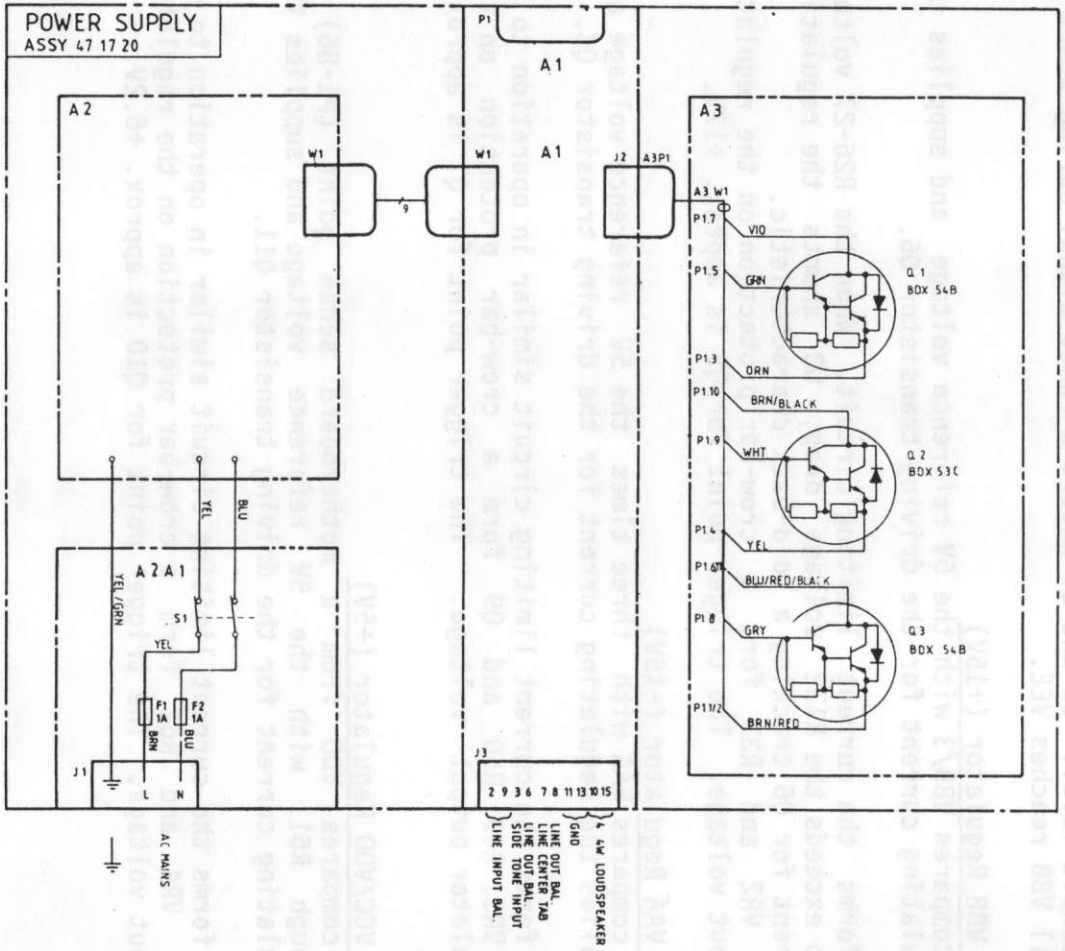


MATERIAL:	GENERAL TOLERANCE:	PROJECTION:	TERMA Elektronik AS FSCM R0567 HOVMARKEN 4, DK-8520 LYSTRUP, DENMARK	
REVISION STATUS OF SHEETS (OTHER THAN G):				
SHEET NO.:			TITLE: COMPONENT LOCATION INTERFACE RS232/422/485	
REVISION:				
CODE: D2	1 SHEET(S)	INITIAL RELEASE: 890807	DATE OF LATEST REV.: 94 08 19	REV.: G1
PREP: IN CHKD: CSA	APVD: N/A	CM: JG	DOCUMENT NO.: 490598 PD	SHEET NO.: 1

ASSY 471720, 471534, 471550, POWER SUPPLY ASSEMBLY

Service Sheet A10A1 and A10A2

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. FP 8-11-83	TITLE POWER SUPPLY
		ANGLES	CH.	
		LIN. DIM.	AP.	
47 19 09	RC4000		AP.	
47 17 12	RX4000	MATERIAL	FIRST ANGLE PROJECTION	SIZE A2 / CODE IDENT / DRAWING NO. 47 17 20
NEXT ASSY	USED ON			SCALE / SHEET 1 OF 1
APPLICATION				

Service Sheet A10

Assy 471534, Power Supply Assembly (A10A1) Schematic 1

1. VEE Supply Filter

2. -15V Reference Voltage Regulator
The reference voltage is adjusted to -15, 3V at 25°C by means of R2.

3. Standby/ON Switch Circuit
When P1-A3 is grounded, Q1 is switched on supplying +15V to 4.

4. U2
Forms part of the PWRLO detector. R6 and R7 generate a reference ripple from the unregulated 8V.
The reference ripple is compared with a threshold level (R8, R9), holding Q2 in the off-state when the reference ripple exceeds the threshold level. Q3 and Q4 ensure a PWRLO signal during start-up until VBB reaches VEE.

5. VBB Regulator (+15V)
U4 compares VBB/3 with the 5V reference voltage and supplies the regulating current for the driving transistor Q6.

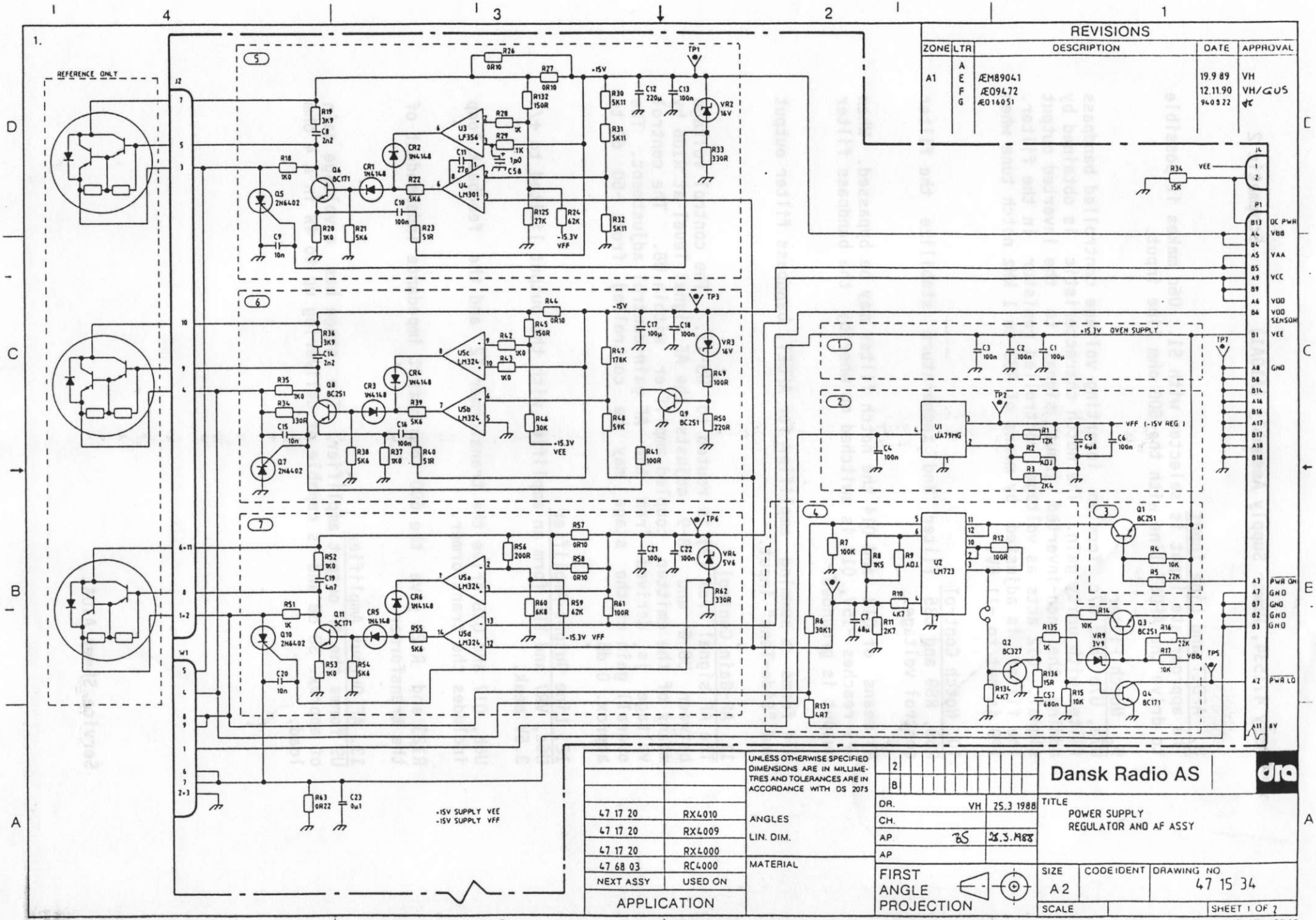
U3 forms the current limiting circuit. When the R26-27 voltage drop exceeds the R132 voltage drop, U3 shunts the regulating current for Q6 tracking a fold-back characteristic.
Q5, VR2 and R33 form a crow-bar protection on the regulator output voltage. The trigger point for Q5 is approx. +17V.

6. VAA Regulator (-15V)
U5B compares VAA with three times the 5V reference voltage and supplies the regulating current for the driving transistor Q8.

U4B forms the current limiting circuit similar in operation to 5. Q7, VR3, R49, R50 and Q9 form a crow-bar protection on the regulator output voltage. The trigger point for Q7 is approx.-17V.

7. VCC/VDD Regulator (+5V)
U5d compares VDD from a motherboard sense point (P1-B6) or through R61, with the 5V reference voltage and supplies the regulating current for the driving transistor Q11.

U5a forms the current limiting circuit similar in operation to 5. Q10, VR4 and R62 form a crow-bar protection on the regulated output voltage. The trigger point for Q10 is approx. +6.2V.



Service Sheet A10A1

8. AFDET and Line Input

The appropriate input is selected with S1. U6d makes it possible to drive the AFDET line with the 600 ohm line input.

9. Notch Filter

U7a, U7b and U7c form an inverting voltage controlled bandpass filter with unity gain. The notch characteristic is obtained by adding the non-inverted input signal to the inverted output signal. Q12 acts as voltage controlled resistor in the filter. The filter is adjusted by means of R83 to 1 kHz notch tune when TP9 is set to -11.5V.

10. Notch Control

R88, R89 and C35 filter and temperature stabilize the filter control voltage.

By means of Q13 and Q14 the notch filter may be bypassed. When TP9 reaches -15V, Q13 is switched on whereby the bandpass filter output is grounded.

U7d forms a summing amplifier for AFDET, bandpass filter output and "Side-Tone" input.

11. AF-Gain Control

The AF signal from (9) is routed to U8-11. The control voltage between U8-6 and U8-9 adjusts the AF signal level at R106 by means of the emitter coupled amplifier within U8. The control voltage is derived from the AF gain control adjustment. The overall gain of the stage may be controlled from -60 dB to approx. 0 dB.

12. Line Output Amplifier

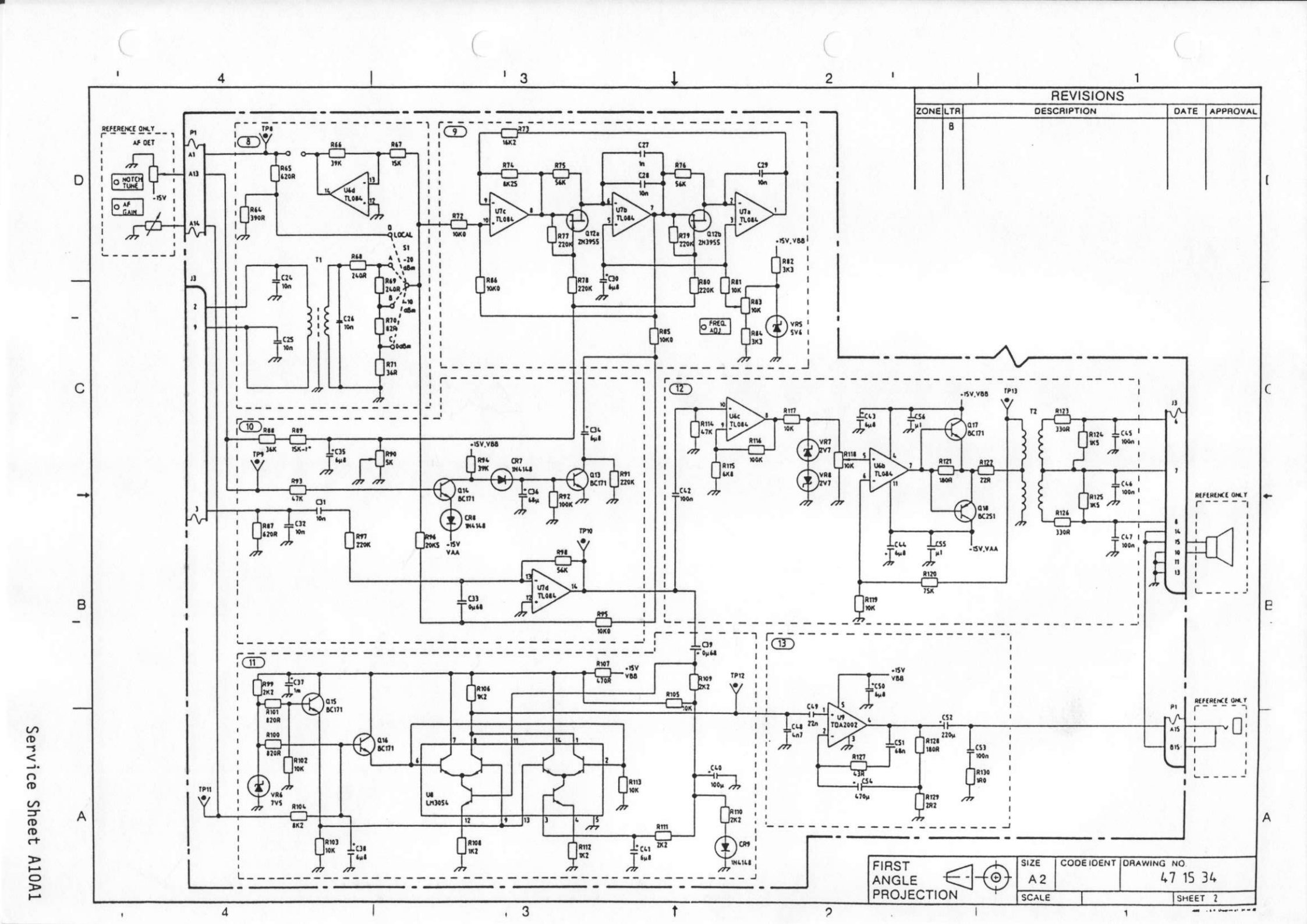
U6c, VR7 and VR8 form an amplifier with the output limited to +/- 3.5V peak.

U6b, Q17 and Q18 drive the transformer T2 and the feedback loop includes the transformer.

R123 and R126 give the 600 ohm output impedance independent of the transformer.

13. AF Output Amplifier

U9 forms the AF output amplifier. The stage has a voltage gain of approx. 38 dB and is capable of delivering up to 4W in a 4 ohm load.



Service Sheet A10A1

Service Sheet A10A1

Assy 471550, Power Supply Assembly (A10A2) **Schematic 1**

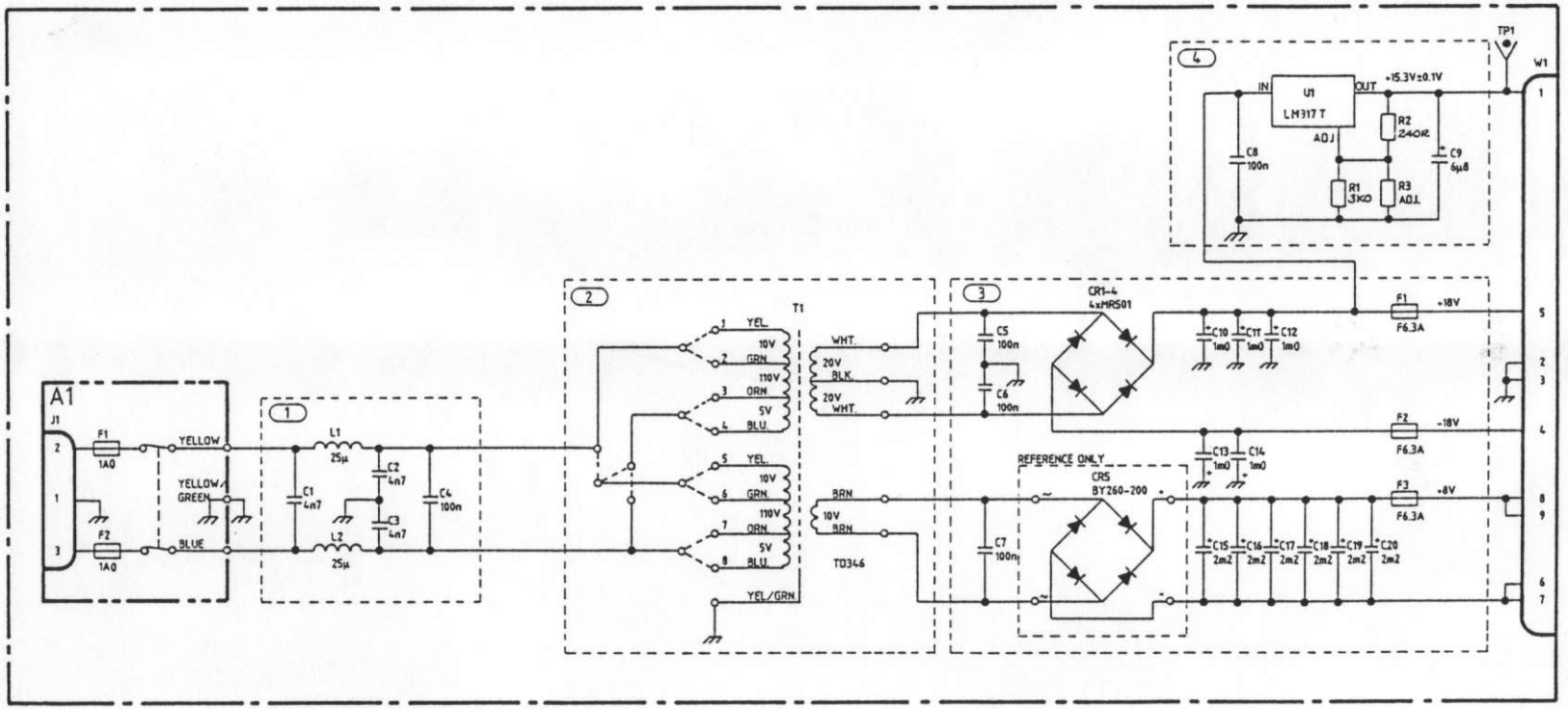
1. EMI Filter for AC Mains Supply

2. Mains Transformer
with 110V to 125V and 220V to 250V in 5V steps.

3. Rectifiers and Filters

4. +15V Regulator for Standby Supply
By means of R3 the voltage is adjusted to +15.3V at 25°C.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
	B	ÆO9057	4.3.90	VH
	C	ÆO 16105	ANK 941216	
	C1	ÆO 22051	TGP 930117	



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS	dra
			DR. VH 21.3 1988	TITLE POWER SUPPLY , 220V TRAFO ASSY	
		ANGLES	CH.		
471720	RX4010	LIN. DIM.	AP. 21.3.88		
471720	RX4009		AP.		
471720	RX4000	MATERIAL	FIRST ANGLE PROJECTION	SIZE A2 / CODE IDENT / DRAWING NO. BR 47 15 50 EC	
NEXT ASSY	USED ON			SCALE / SHEET 1 OF 1	
APPLICATION					

Service Sheet A10A2

Service Sheet A10A2

1.

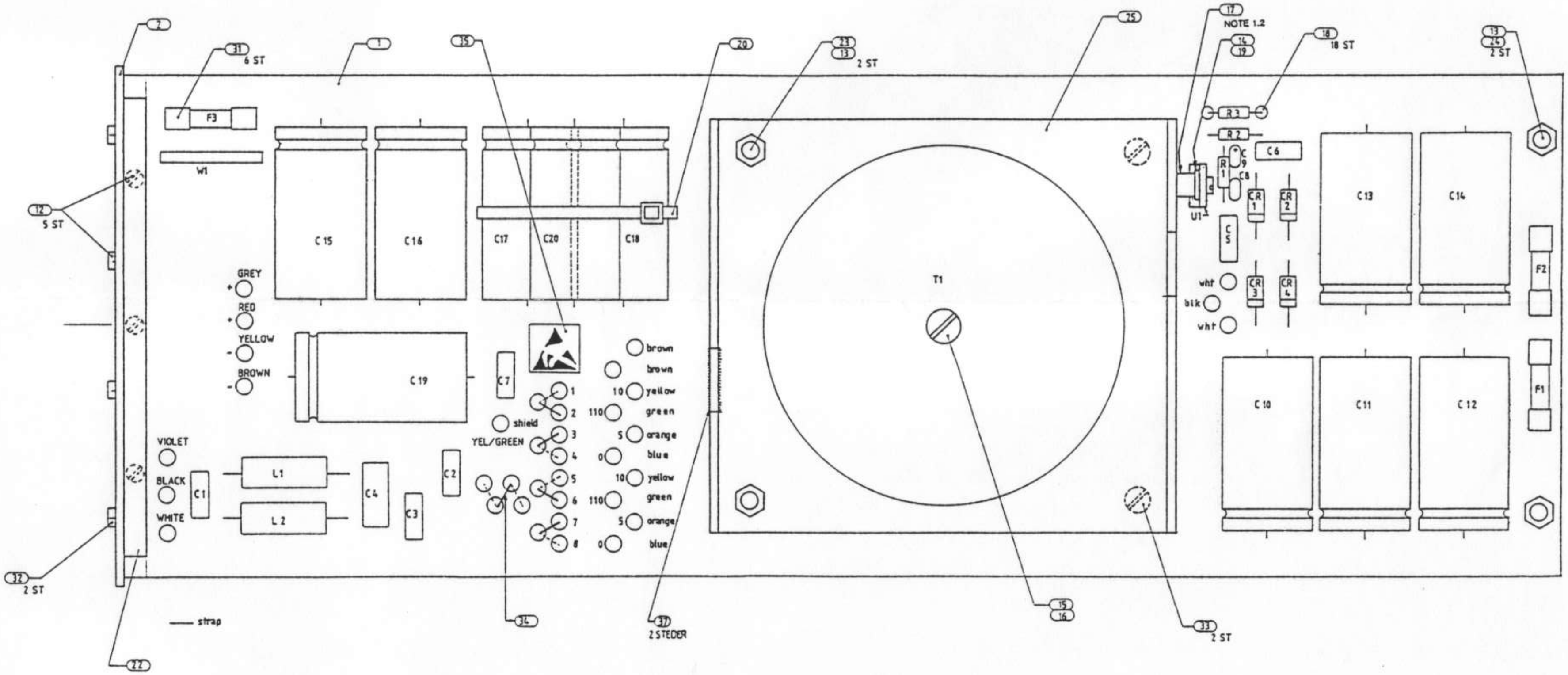
ESD BESKYTTELSE PER (1984)

CAUTION
DEVICES ARE SUBJECT TO DAMAGE BY STATIC ELECTRICITY

1.1 : C10 - C20 LIMES MED (36) EFTER TEST.

1.2 U1 VENDES MED KØLESIDEN MOD R1. PWB-HUL NÆRMEST CS BENYTTES IKKE.

ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
C3	B	ÆM87101	29.2.88	VH
	C	Æ09057	4.3.90	VH
	D	Æ09417	14.9.90	VH/GUS
	E	Æ08860	22.8.91	VH
	E1	Æ013448	930106	VH/GLA
	F	17551	940607	JS
	G	Æ016165	AHK 941215	JS



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS
		ANGLES	DR.	TITLE COMPONENT LOCATION POWER SUPPLY, 220V TRAFO ASSY
47 17 20	RX4010	LIN. DIM.	CH.	
47 17 20	RX4009		AP.	
47 17 20	RX4000	MATERIAL	AP.	SIZE A1 / CODE IDENT / DRAWING NO. BR 47 15 50 PD
NEXT ASSY	USED ON	PARTS LIST	FIRST ANGLE PROJECTION	SCALE 2:1 / SHEET 1 OF 1
APPLICATION				

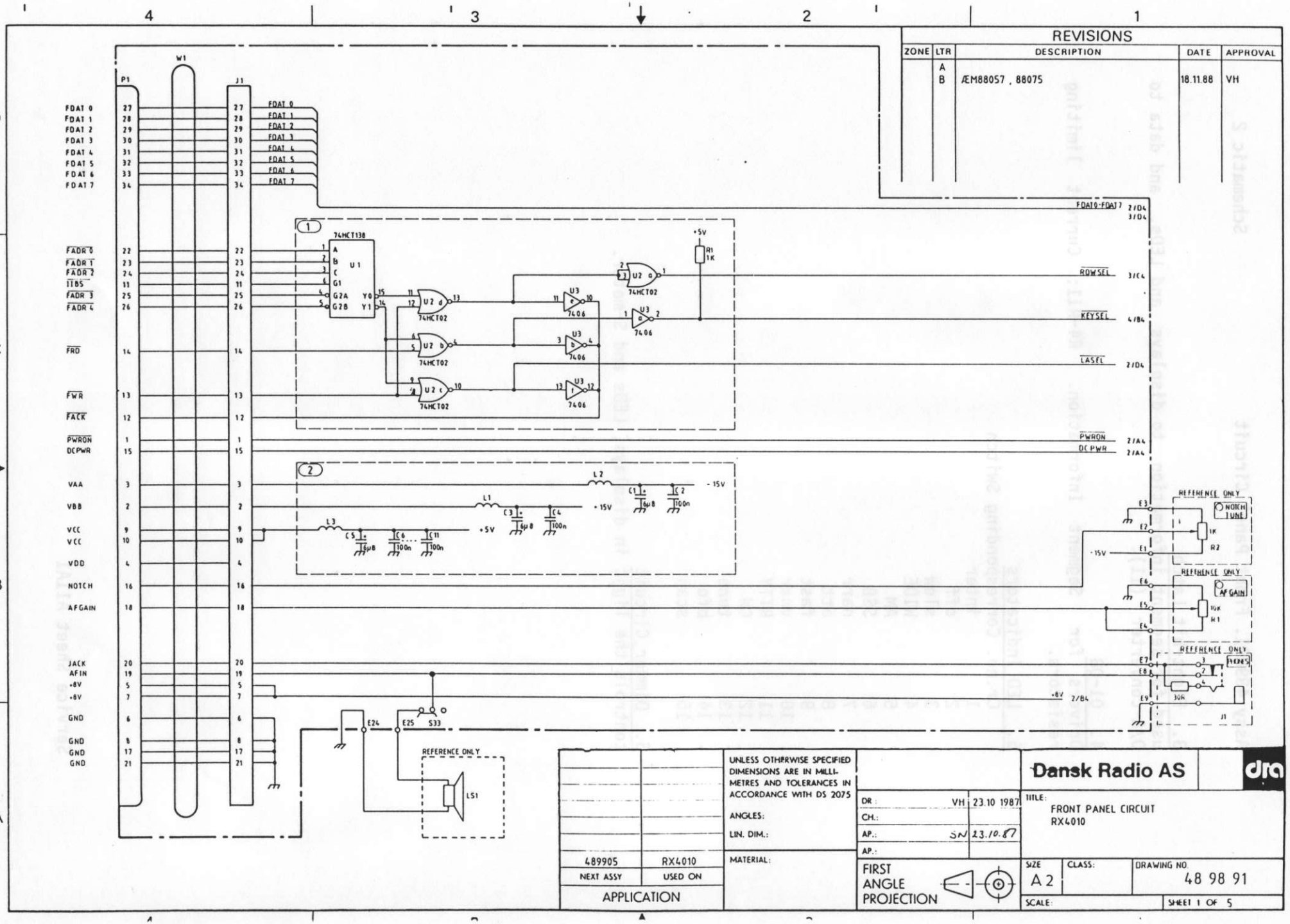
ASSY 489891, FRONT PANEL CIRCUIT
ASSY 489883, DISPLAY BOARD ASSEMBLY

Service Sheet A11A1 and A11A1A1

Assy 489891, Front Panel Circuit Schematic 1

1. Address Decoding
with associated gates for generation of acknowledge FACK, as handshaking signal for the microcomputer

2. Supply Filters



Service Sheet A11A1

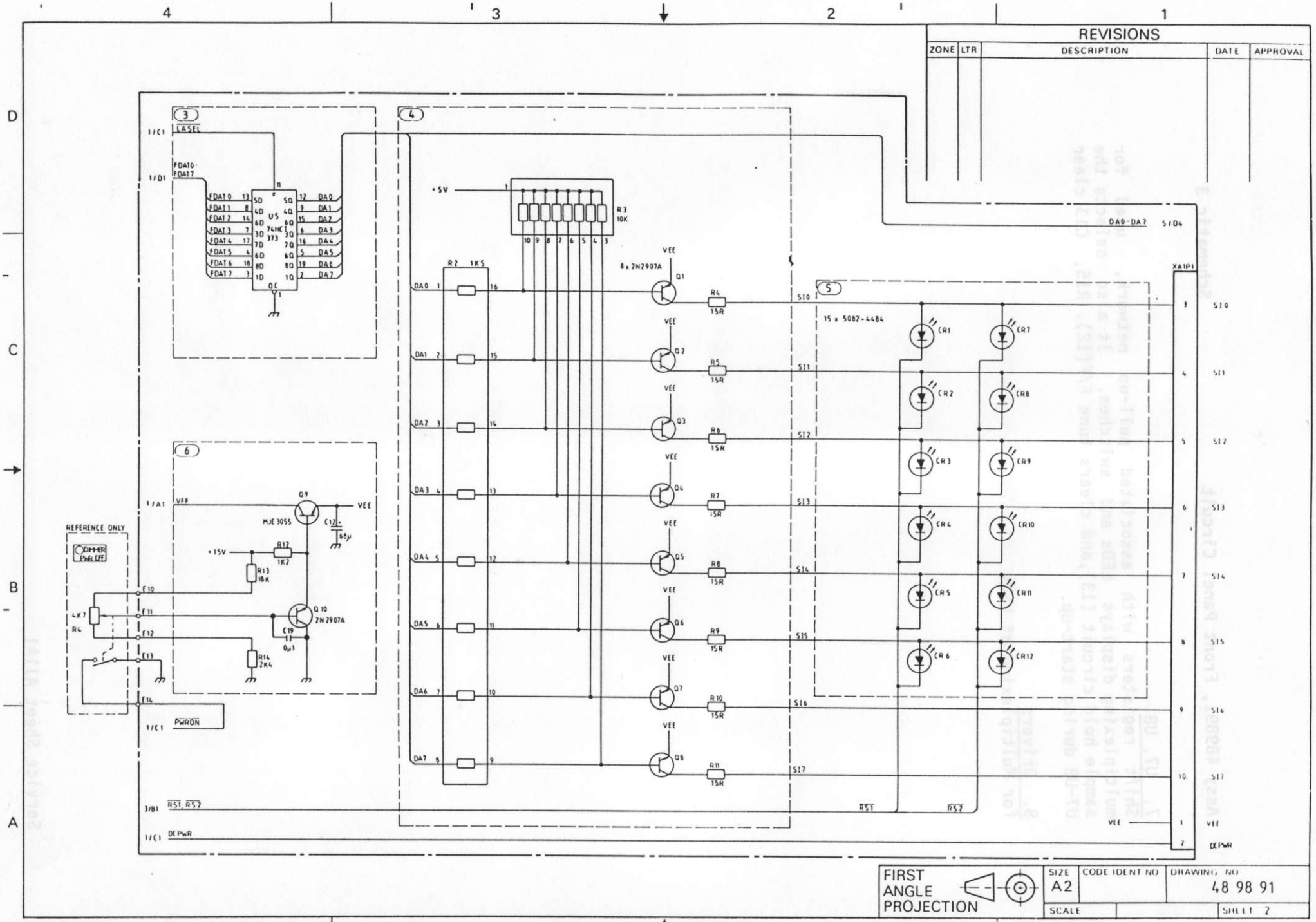
3. Eight-bit Latch
used for segment information to displays and LEDs, and data to D/A-converter (11).

4. Q1-Q8
Drivers for Segment Information. R4-R11: Current limiting resistors.

5. LED Indicators

Cr.no.	Corresponding Switch
1	inter
2	off
3	slow
4	WIDE
5	AM
6	SSB
7	narr
8	att
9	fast
10	vnar
11	RTTY
12	CW
13	tune
14	bfo
15	scan

6. Dimmer Circuit
controls the light in displays, LEDs and S-meter.

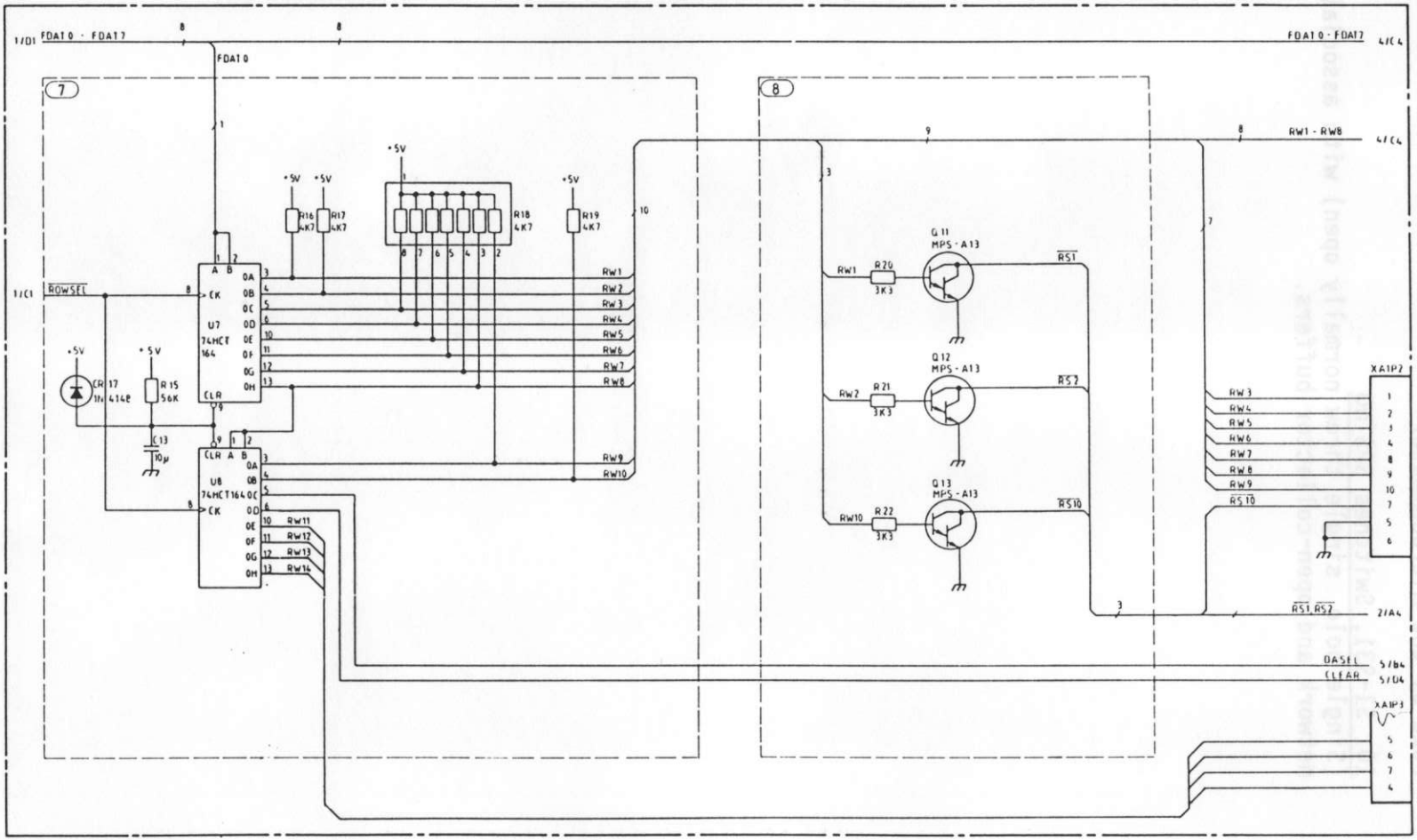


Service Sheet A11A1

7. U7, U8
Shift registers with associated pull-up network, used for multiplexing displays LEDs and switches. It also selects the sample hold circuit (13),and clears tune F/F(12). R15, C13 clear U7-U8 during start-up.

8. Drivers
for Multiplexing of LEDs

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL



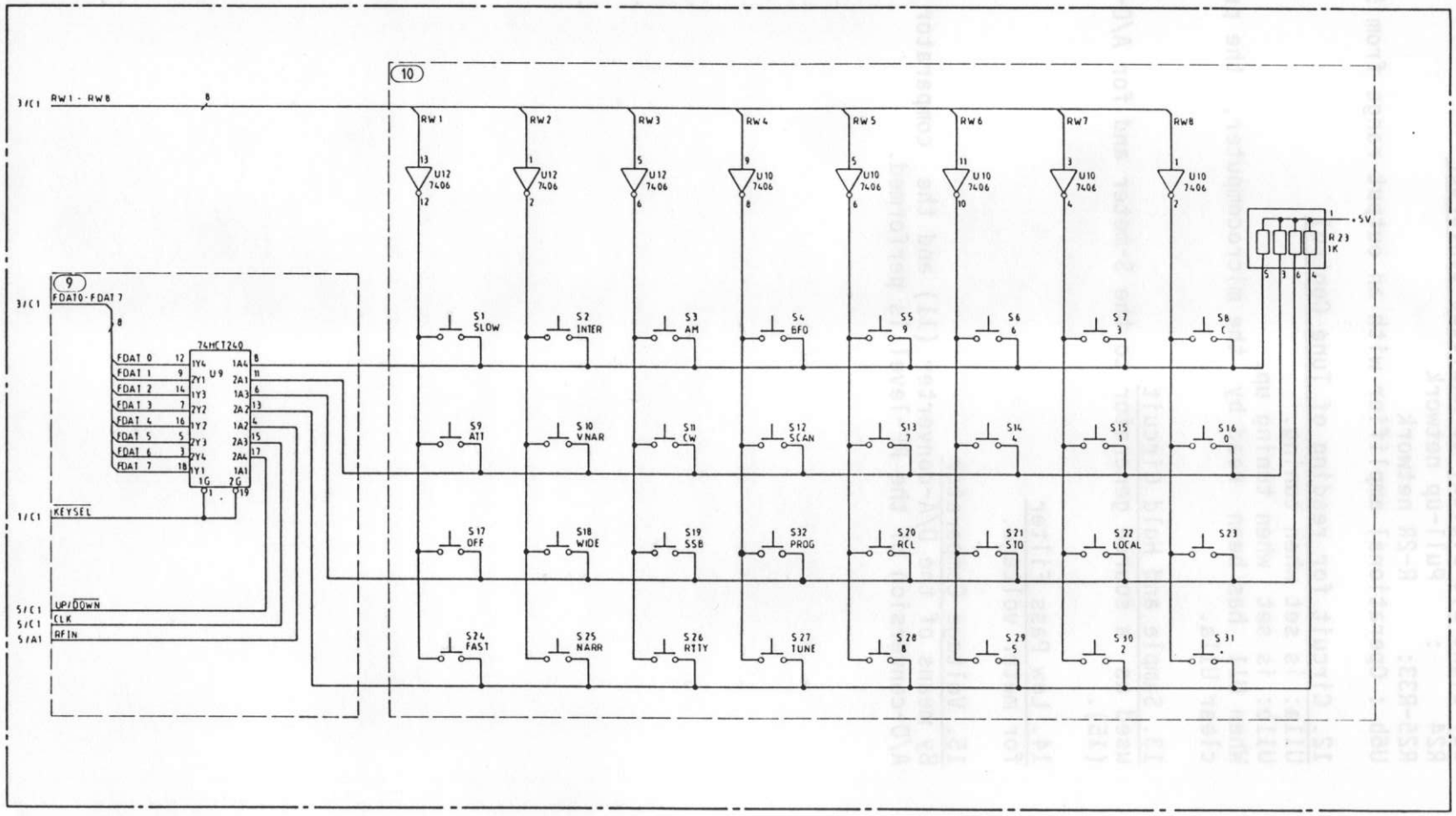
FIRST ANGLE PROJECTION	SIZE A2	CODE IDENT NO	DRAWING NO 48 98 91
	SCALE		SHEET 3

Service Sheet A11A1

9. Eight-bit Output Buffer
read by the microcomputer

10. S1-S31, Switches SPSTNO
(Single pole single throw normally open) with associated pull-up network and open-collector buffers.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL



FIRST ANGLE PROJECTION	SIZE	CODE IDENT NO	DRAWING NO
	A2		48 98 91
	SCALE		SHEET 4

Service Sheet A11A1

11. Eight-bit Digital to Analogue Converter

R24 : Pull-up network
R25-R33: R-2R network
U6b : Operational amplifier with an output range from 5V to 10V.

12. Circuit for reading of Tune Control

U11a: is set when tuning.
U11b: is set when tuning up.
When U11 has been read by the microcomputer, the program will clear U11a.

13. Sample and Hold Circuit

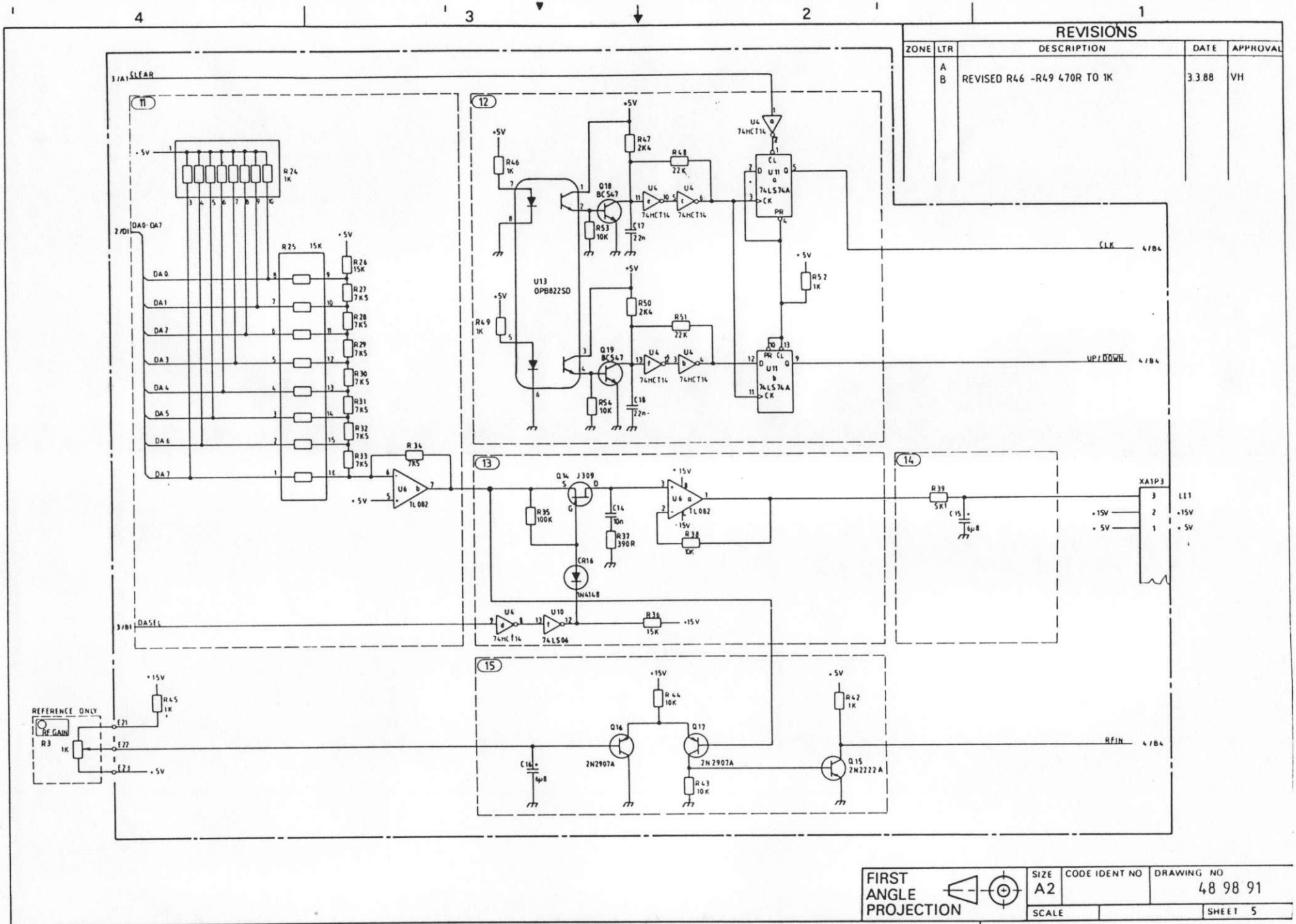
used as a source generator to the S-meter and for A/D-conversion (15).

14. Low Pass Filter

for meter voltage.

15. Voltage Comparator

By means of the D/A-converter (11) and the comparator circuit an A/D-conversion of the RF-level is performed.



Service Sheet A11A1

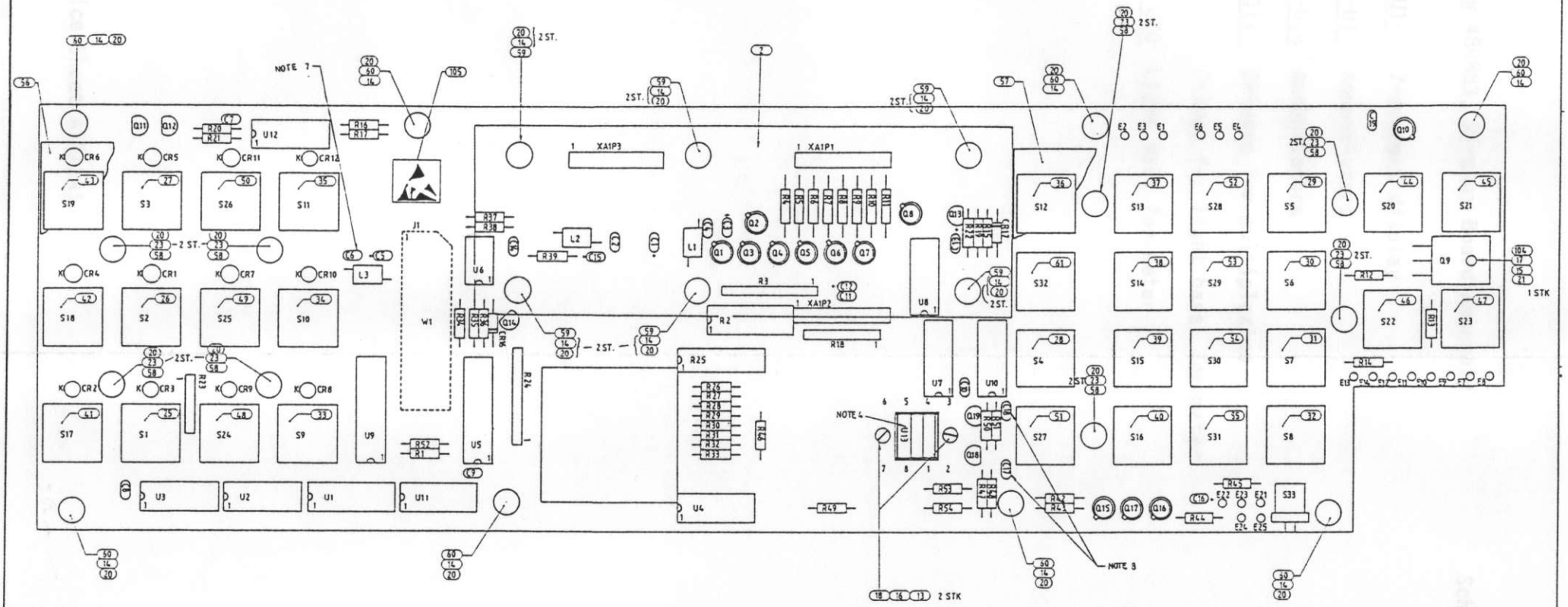
1. ALLE SKRUEHOVEDER MOD PRINT.
2. MONTERES MED FLADSKIVE (20)
3. ALLE LYSDIODER MONTERES MED (22) LÆNGDE 2,1cm
4. DE 4 MIDTERBEN PÅ U13 MONTERES MED (22) LÆNGDE 9mm.

4. MONTERES FRA LODDESIDEN. LODDES IKKE. BEN 1 MÆRKET MED HVIDT.
5. TRYKKNAPPER LODDES IKKE.
6. (2) OG (57) MONTERES LØST.
7. C6 SKAL IKKE MONTERES, SÅ DEN FÅR EN VINKEL PÅ 45°. DER HÆLDER MOD R17
8. C17 OG C18 SKAL IKKE MONTERES, SÅ DE FÅR EN VINKEL PÅ 45°. DER HÆLDER MOD U13.

ESD BESKYTTELSE PER (103)

CAUTION
DEVICES ARE SUBJECT TO DAMAGE BY STATIC ELECTRICITY

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
	B	ÆM87077	17.12.87	VH
	C	ÆO9061	4.3.90	VH
	D	ÆO9420	14.9.90	VH/GUS
	E	ÆO9426	17.1.91	VH/GUS
	F	ÆO 17583	1-4-98	dk
	G	ÆO 22255	21.03.99	GRR/



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS
		ANGLES	DR VH 23.10.1987	TITLE COMPONENT LOCATION FRONT PANEL CIRCUIT RX4010
		LIN. DIM.	CH	
			AP SM 23./10 87	
			AP	
489905	RX4010	MATERIAL	FIRST ANGLE PROJECTION	SIZE A1 / CODE IDENT / DRAWING NO. 48 98 91
NEXT ASSY	USED ON			SCALE 2:1 / SHEET 1 OF 1
APPLICATION				

Service Sheet A11A1

Assy 489883, Display Board Assembly Schematic 1

U1-U10 7-segment display

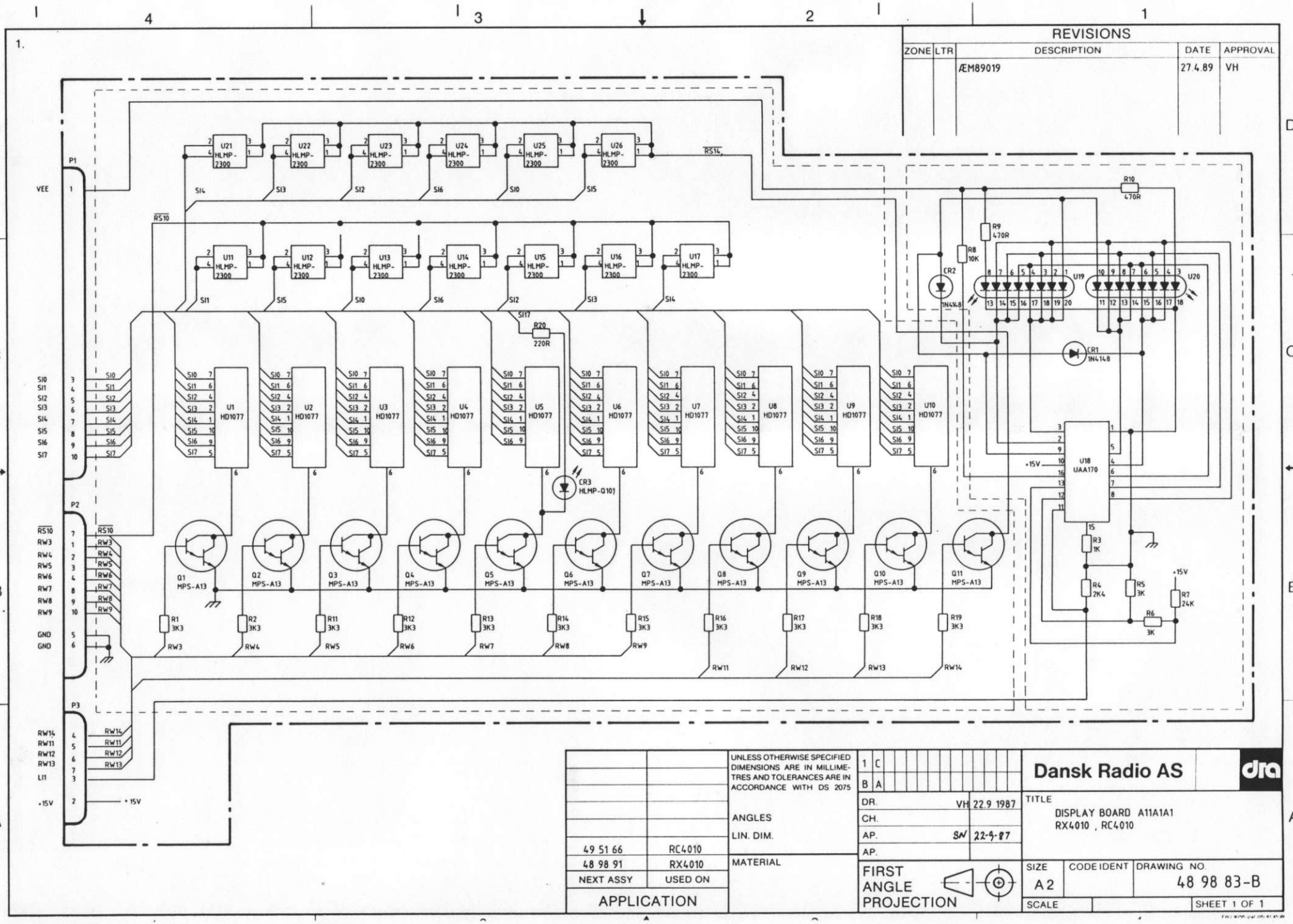
U11-U17 Annunciators

U21-U26 Annunciators

Q1-Q11 Drivers for multiplexing

U18 Driver for light bars for meter

U19-U20 Light bars for meter



49 51 66	RC4010
48 98 91	RX4010
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	22.9 1987
CH.		
AP.	SN	22-9-87
AP.		

FIRST ANGLE PROJECTION

Dansk Radio AS

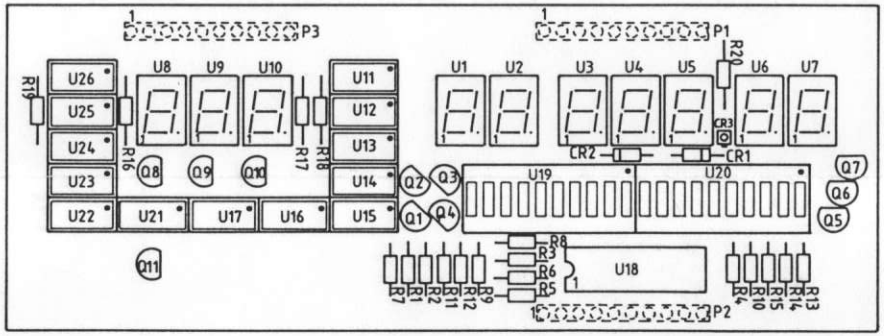
TITLE
DISPLAY BOARD A11A1A1
RX4010 , RC4010

SIZE	CODE IDENT	DRAWING NO.
A2		48 98 83-B
SCALE		SHEET 1 OF 1

Service Sheet A11A1A1

1. NOTE: U1-2-3-4-5-6-7 SKAL HAVE SAMME BOGSTAVKODE.
U8-9-10 SKAL HAVE SAMME BOGSTAVKODE.
U19-20 SKAL HAVE SAMME BOGSTAVKODE.
U11 TIL OG MED U26 SKAL HAVE SAMME BOGSTAVKODE.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
	B	REVISED	22.3.88	VH
	C	Æ08984	3.9.91	VH



		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS
			DR. VH 22.9 1987	TITLE COMPONENT LOCATION DISPLAY BOARD RX4010
		ANGLES	CH.	
		LIN. DIM.	AP. GN 22-9-87	
			AP.	
489891	RX4010	MATERIAL	FIRST ANGLE PROJECTION	SIZE A2 / CODE IDENT / DRAWING NO. 48 98 83
NEXT ASSY	USED ON			SCALE 2:1 / SHEET 1 OF 1
APPLICATION				

Copyright Chart A11A1A1

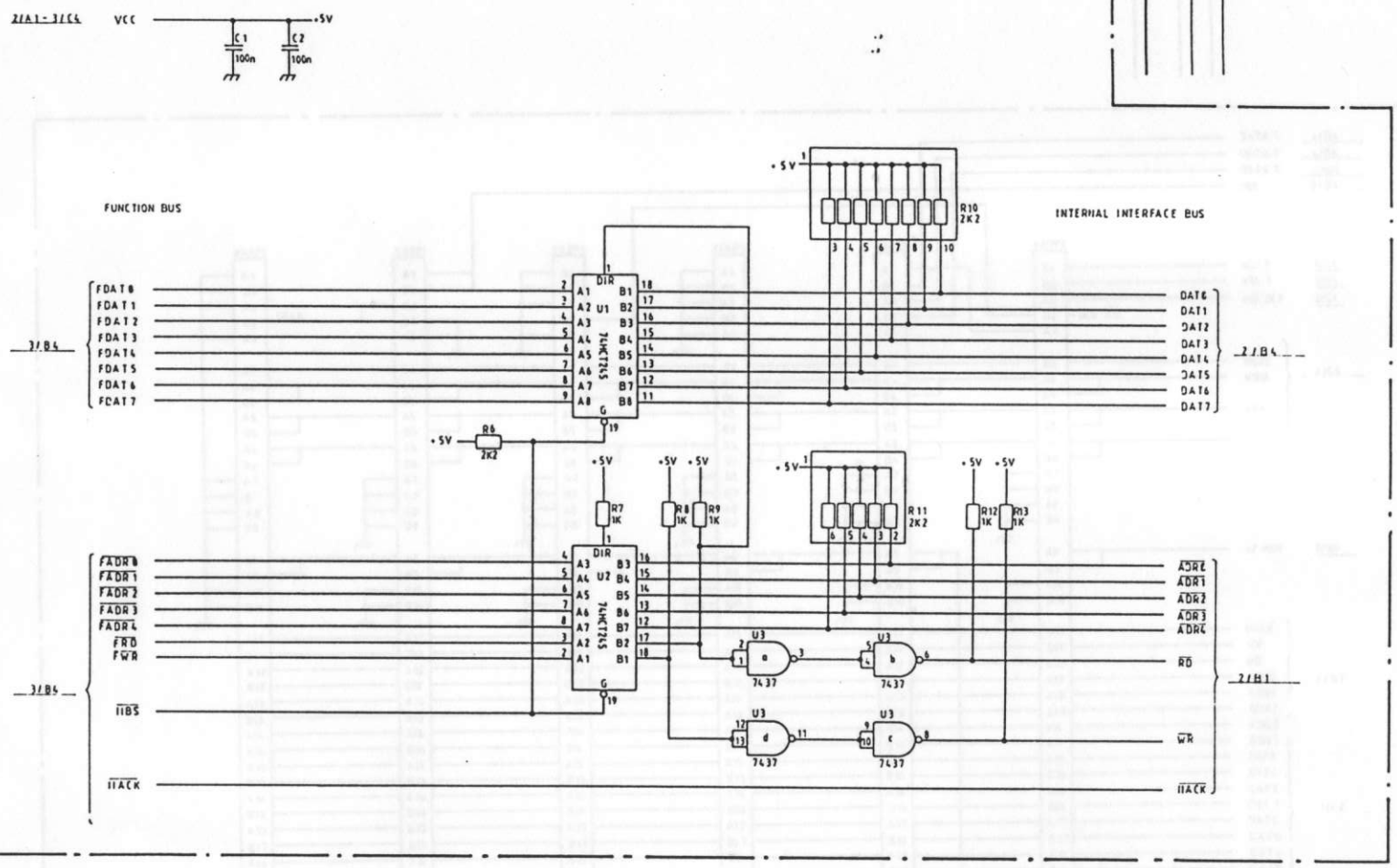
ASSY 489174, MOTHERBOARD ASSEMBLY

Service Sheet A12A1

Assy 489174, Motherboard Assembly

To avoid noise in the more sensitive parts of the receiver, two buffers U1 and U2 separate the internal interface bus from the function bus. The internal interface bus is only activated when necessary.

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
	B	REMOVED R14	3.3.88	VH



48 98 75	RX4010	MATERIAL:	
NEXT ASSY	USED ON		
APPLICATION			

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

ANGLES:

LIN. DIM.:

DR	VH	19.1 1988
CH.		
AP.	SN	20.1.88
AP.		

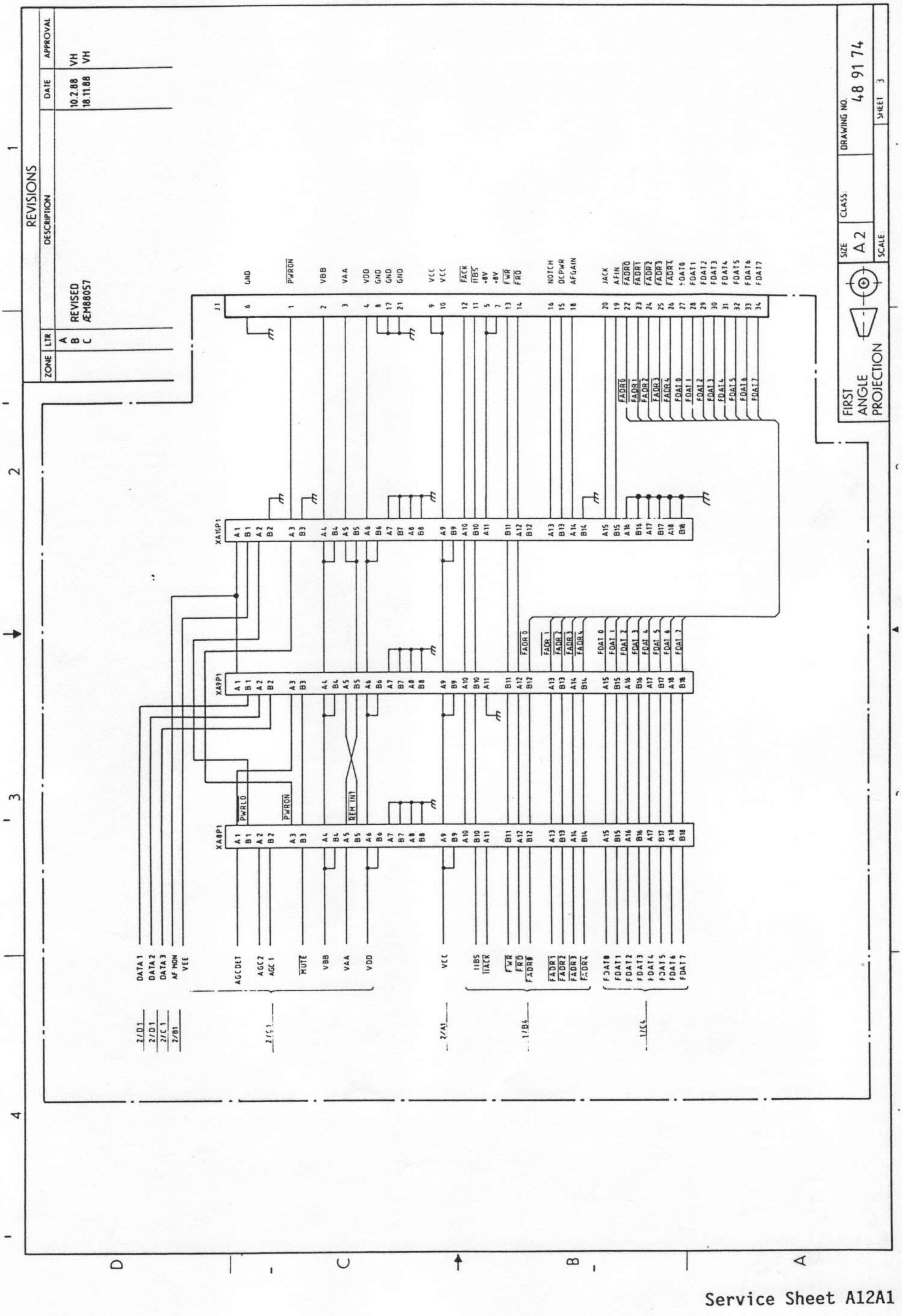
FIRST ANGLE PROJECTION

Dansk Radio AS

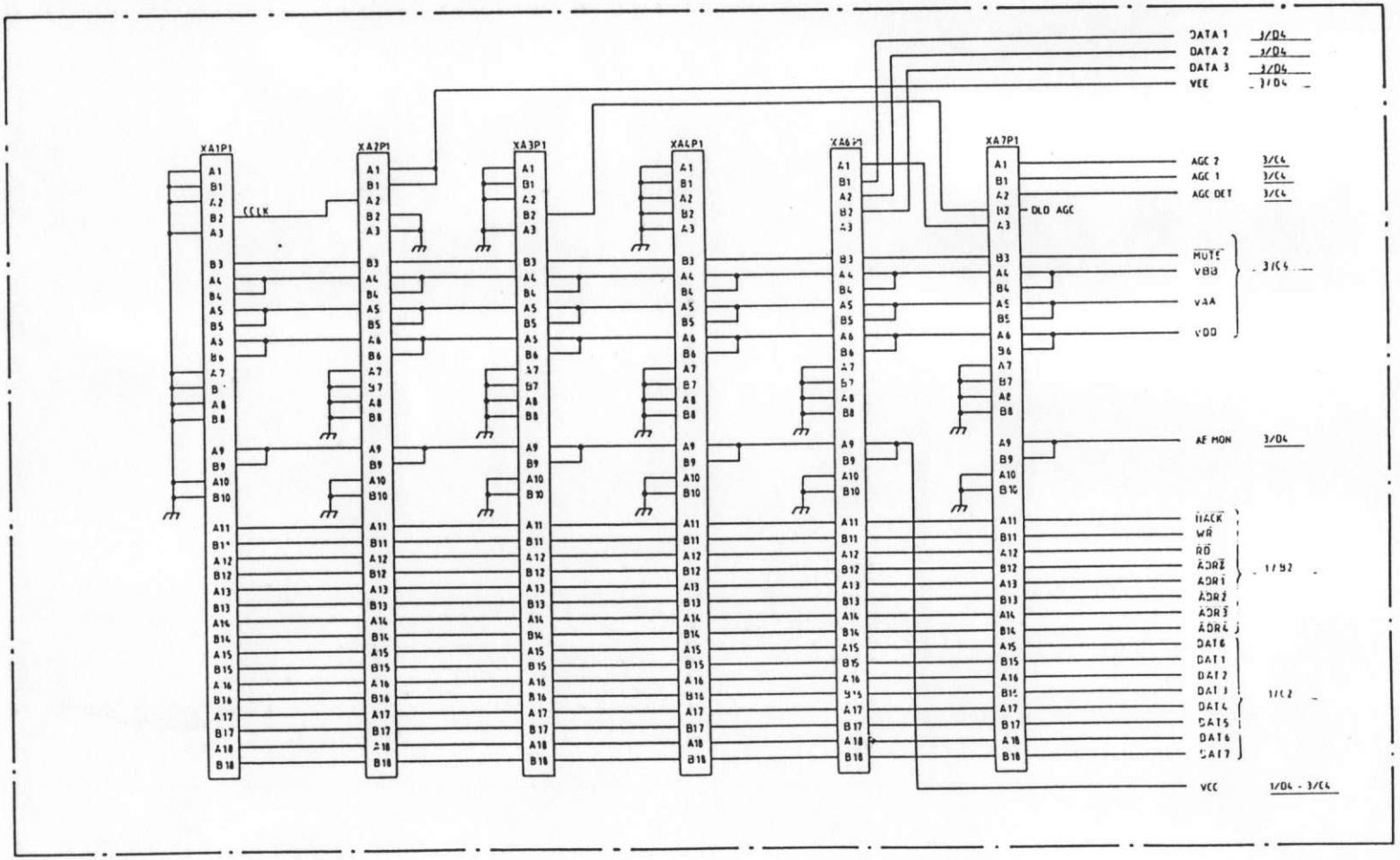
TITLE
MOTHERBOARD
RX4010

SIZE	CLASS	DRAWING NO.
A2		48 91 74
SCALE		SHEET 1 OF 3

Service Sheet A12A1


REVISIONS
ZONE LTR DESCRIPTION DATE APPROVAL
A REVISED 10.2.88 VH
B ÆM88057 18.11.88 VH
FIRST ANGLE PROJECTION
SIZE A 2
DRAWING NO. 48 91 74
SHEET 3

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
	B	REVISED	10.2.88	VH



FIRST ANGLE PROJECTION	SIZE A2	CLASS	DRAWING NO. 48 91 74
	SCALE		SHEET 2

Service Sheet A12A1

REVISIONS				
ZONE	LTR	DESCRIPTION	DATE	APPROVAL
	A			
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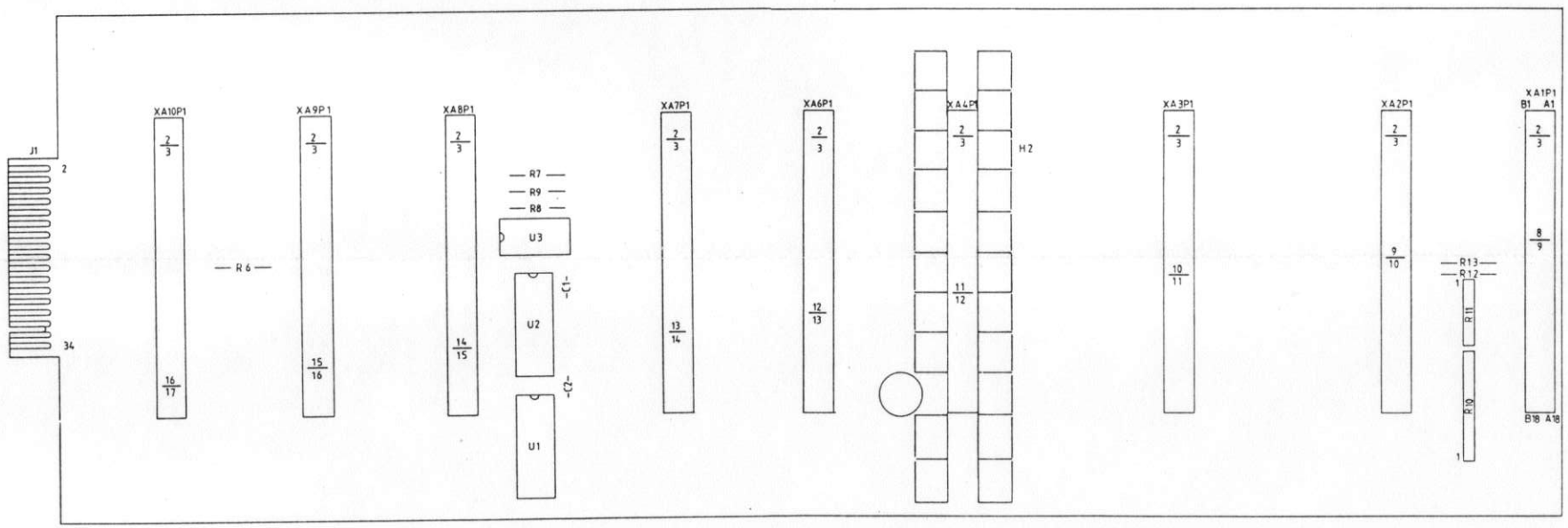
	C	REVISED	28.3.88	VH
	D	ÆO9064	4.3.90	VH



— Codepin

		UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075		Dansk Radio AS
		ANGLES	DR VH 19.1.1988	TITLE COMPONENT LOCATION MOTHER BOARD RX4010
		LIN DIM	CH —	
			AP SN 20/11	
48 98 75	RX4010	MATERIAL	AP	
NEXT ASSY	USED ON		FIRST ANGLE PROJECTION	SIZE A1 / CODE IDENT / DRAWING NO. 48 91 74
APPLICATION				SCALE 2:1 / SHEET 1 OF 1

Service Sheet A12A1