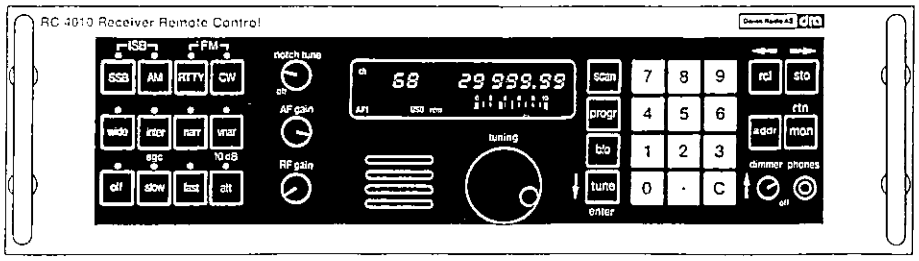
Operating & Service Manual

# RC 4010
## Receiver Remote Control

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# 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

## 1.1 Introduction

This Operating and Service Manual contains information required to install, operate, test, adjust and service the RC4010.

Specifications are listed in paragraph 1.7.
These specifications are the performance standards or limits against which the RC4010 is tested.

Due to the experience obtained from the production and operation of the equipment, minor differences between the RC4010 and the manual can occur.

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

The electrical modules of the RC4010 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 RC4010 in a safe condition.

## 1.3 Description

The RC4010 is a remote control unit for the RX4010 receiver allowing full remote control of all functions of the receiver. The remote control is carried out by means of a serial data bus. Two systems are avaiable one of which must be specified:

1) Serial Remote Control Module DRA part no. 471666. 600/1200 bps, conforms to V24/RS232C and V23, incl. AUX port for remote control of external equipment via the serial remote control system of the RX4010.

2) Serial Remote Control Module DRA part no. 490598. 75 to 9600 bps conforms to RS232C, compatible with RS422 and RS485.

## 1.4 Options

The following extends the usability of the RC4010.

### 1.4.1 8-line monitor

DRA part no. 471941. Up to four 8-line monitor modules can be installed, enabling monitoring of AF signals from up to 16 RX4010. (4 RX4010 pr. 8-line monitor)

### 1.4.2 Power Supply

110/220V AC/24VDC alternative power supply to the standard mains only version DRA part no.448532.

## 1.5 Accessories Supplied.

The following accessories are supplied with the RC4010.

One Operating and Service Manual, DRA part no. 499145
One Power Cord, DRA part no. 490199.

## 1.6 Accessories Available

The following items are available for use with the RC4010.

RC4010 cabinet, DRA part no. 475246

Rack Slides Kit, Slides with lock. DRA part no. 458872

Rack Slides Kit, Slides with lock and tilt. DRA part no. 496146

Connector Kit for Remote Control Module, DRA part no. 485292

Standard Spare Parts Kit, DRA part no. 475076

Depot Spares Kit. Consult factory.

Special Tools Kit, DRA part no. 475033

## 1.7 Specifications

### 1. Modem/Modem Interface Board A9 Assy 471666

Internal Modem : V23 CCITT compatible modem
Input output impedance 600 ohm balanced
Strappable level to -10, -20 or -30 dB
Baudrate 1200/600 bps.
Operates on either 2 wire or 4 wire leased telephone lines

Modem Interface: V24 modem interface for interfacing an external modem. 1200/600 bps.

AUX-port : 8/4 bit input/output AUX-port for external equipment, open collector output max. 15V 100mA.

### 2. Remote Interface A9 Assy 490598

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

Interface Standards:
1) CCITT V24/RS232C
2) RS422 compatible
3) RS485 compatible

Line Output : Balanced 600 ohm/0 dBm adjustable

Connection : Sub-D female, 25 poles.

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

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

INPUT POWER
110-125 V, 220-250 V, +/-10%, 50-60 Hz, 20-30 VA (dependable of options)
Optional Power Supply: 110/220 V, +/-10%, 50-60 Hz, 20-30 VA
24 Vdc +30/-10%, 0.8-1.2 A (dependable of options)

OPERATING ENVIRONMENT

| | | |
|---|---|---|
| Temperature | : | Full performance range 0°C to 50°C<br>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

12.3 kg incl. cabinet excl. options.
Add 0.5 kg when Assy 471666 is installed.
Add 0.25 kg when Assy 490598 is installed.
Add 0.35 kg for each Assy 471941 installed.

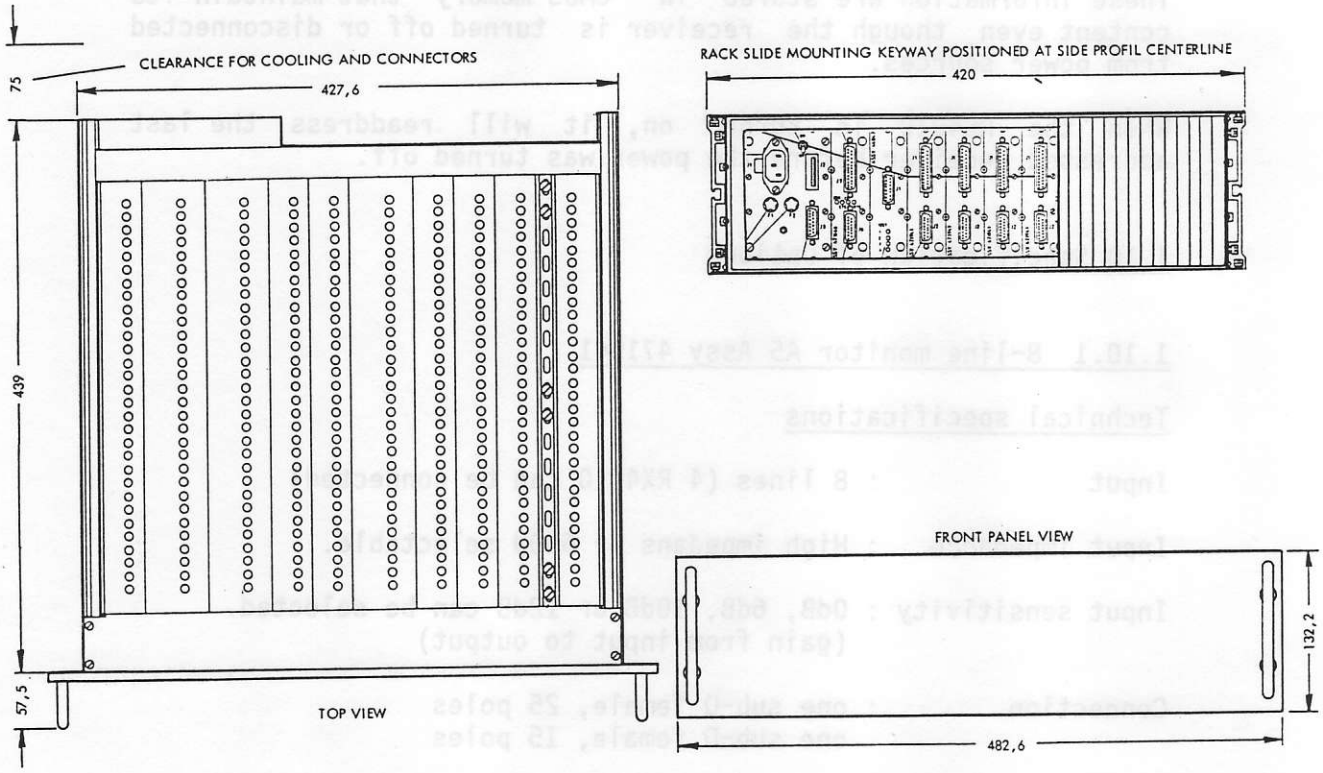
DIMENSIONS

| | | |
|---|---|---|
| Height: | 132.2 mm | INCL. front panel |
| Width: | 482.6 mm | excl. front panel |
| | 427.6 mm | incl. front panel |
| Depth: | 496.5 mm | incl. front panel |
| | 439.0 mm | excl. front panel |

Rear panel clearance for cooling and connectors: min. 75 mm.

RC4010 Cabinet (optional)

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



## 1.8 Operational Features

DIMMER CONTROL
Continuously variable

AUTO RESTART
Readdressing of last addressed receiver during power failure

Automatic remote transmission error log.

## 1.9 User Programmable Features

The RC4010 is equipped with extended user programmable features such as:
- a 24 hours' clock with battery back-up.
- Blank display on addressed receiver.
- System scanning.

These information are stored in CMOS memory that maintain its content even though the receiver is turned off or disconnected from power sources.

When the RC4010 is turned on, it will readdress the last addressed receiver before the power was turned off.

## 1.10 Specification of Options

### 1.10.1 8-line monitor A5 Assy 471941

Technical specifications

| | |
|---|---|
| Input | : 8 lines (4 RX4010 can be connected) |
| Input impedance | : High impedans or 600Ω selectable. |
| Input sensitivity | : 0dB, 6dB, 10dB or 12dB can be selected. (gain from input to output) |
| Connection | : one sub-D female, 25 poles<br>one sub-D female, 15 poles |

# SECTION 2
# INSTALLATION

## 2.1 Introduction

This section of the manual provides installation instructions for the RC4010 . It also includes information about initial inspection and damage claims, preparation for use and repacking 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 RC4010.

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 RC4010 has been checked mechanically and electrically. If the contents are incomplete, if there is a mechanical damage or defect, or if the RC4010 does not pass the performance tests, notify the nearest Dansk Radio 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 agent.

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

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

## 2.3 Storage

The RC4010 may be stored or shipped in temperatures within the limits -40°C to +75°C. It is advisable to protect the RC4010 from extreme temperature variation which can cause excessive condensation.

## 2.4 Repacking for shipment

The shipping container for the RC4010 has been carefully designed to protect the RC4010 and its accessories during shipment. This container and its associated packing material should be used when repacking for shipment. If shipping to Dansk Radio 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 repacking with commercially available materials:

- Wrap the RC4010 in heavy paper or plastic. If shipping to Dansk Radio 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 RC4010 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 RC4010 in the rack mounted configuration requires a standard panel space 5.25 inches high.

The RC4010 may also be mounted in a cabinet for bench operation, part no. 475246. 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 RC4010, provide at least 75 mm of clearance at the rear and at least 7 mm on all sides of the RC4010. Failure to allow adequate air circulation will result in excessive internal temperature, reducing RC4010 reliability.

## 2.6 Power Requirements

110/220V, +/-10%, 50-60 Hz. Optional: 24VDC, +30/-10%

**CAUTION**

The RC4010 is normally set at the factory for 220 Vac.

The selection of 110 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 RC4010.

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 RC4010 side profiles.

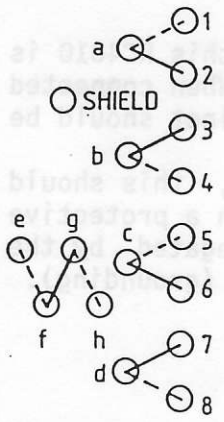
c. Remove the eight screws positioned at the edge of the power supply rear panel A10 and withdraw the power supply assembly.

d. Change connections on A10A2 as appropriate in accordance with Figure 2.1.1 for the AC only version and Figure 2.1.2 for the AC/DC version.

e. Reposition the power supply assembly in the RC4010.

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

g. Connect the input power cord to the RC4010.



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

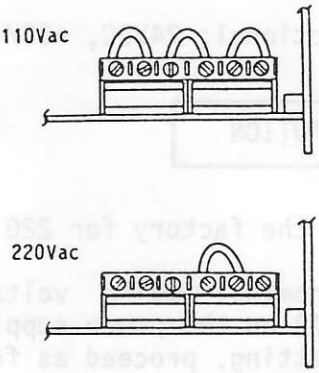



Figure 2.1.2 AC/DC version

## 2.7 Fuses

Table 2.1 Fuse Ratings

| Fuse | | Fuse Rating | |
|---|---|---|---|
| | | AC version | AC/DC version |
| Rear Panel | F1 | 1A T (220 V)<br>2A T (110 V) | 1A T (220 V)<br>2A T (110 V) |
| " " | F2 | 1A T (220 V)<br>2A T (110 V) | 6.3A T (24 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 RC4010 is equipped with a three terminal power connector. When connected with an appropriate power cable, the RC4010 cabinet should be grounded via the power connector center 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

### 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 (later used during simplex A1 keying).

#### 2.9.1.1 Assembly 471720

Sub-D, Female, 15 poles, Screewing 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 centertab | 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 471720.

Note that the outputs will follow the monitored sideband in ISB modes. (As selected by the "mon" pushbutton on the front panel).

The appropriate cable connector may be ordered from Dansk Radio. Part no. 495980.

#### 2.9.1.2 Assembly 448532

Sub-D, Female, 9 poles, Screewing lock.

The audio input/output socket connections are as followa:

| pin | | |
|---|---|---|
| 1 | Sidetone input | 100-500 mV/600 ohms |
| 2 | Sidetone GND | |
| 4,7 | Speaker output | 4 W/4 ohms |
| 5,6 | Speaker GND | |

Figure 2.2.2 Audio Input/Output Plug. Assembly 448532.

The appropriate cable connector may be ordered from Dansk Radio. Part no. 496006.

### 2.9.2 Remote Control RS232/422/485 A9J7

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

The connector provides data signals, mute input (RS232C 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 RS232 |
| 3 | RXD | Received data RS232 |
| 4 | RTS | Request to send RS232 |
| 5 | CTS | Clear to send RS232 |
| 6 | DSR | Data set ready RS232 |
| 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 2.7 Remote Control RS232/422/485

The appropriate cable connector may be ordered from Dansk Radio Part no. 496014.

### 2.9.3 Modem/Modem Interface A9J7

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

The connector provides CCITT V24/RS232 modem interface and CCITT V23 telephone line signals.

The connections are as follows:

| pin | circuit | description |
|---|---|---|
| 9 | Line A | Telephone line 600 ohms Bal. |
| 10 | Line A | " |
| 11 | Line B | Telephone line 600 ohms Bal. |
| 25 | Line B | " |
| 2 | TXD | Transmitted data |
| 3 | RXD | Received data |
| 4 | RTS | Request to send |
| 5 | CTS | Clear to send |
| 6 | DSR | Data set ready |
| 7 | GND | GND |
| 1 | GND | GND |
| 8 | CD | Carrier detect |
| 20 | DTR | Data terminal ready |

Figure 2.8 Modem/Modem Interface.

The appropriate cable connector may be ordered from Dansk Radio Part no. 496014.

### 2.9.4 Auxiliary Input/Output A9J6 (Optional).

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

The Connector provides a 4-bit Input port and an 8-bit Output port.

The Outputs are open collectors max. 15V/50 mA. The Inputs are RS232C level. The $\overline{\text{Enable}}$ is TTL. Input data transfer takes place only when $\overline{\text{Enable}}$ is low.

The connections are as follows:

| pin | |
|---|---|
| 9 | +15 V |
| 14 | $\overline{\text{Enable}}$ |
| 1 | Input 0 |
| 2 | Input 1 |
| 3 | Input 2 |
| 4 | Input 3 |
| 5 | Input 4 |
| 6 | Input 5 |
| 7 | Input 6 |
| 8 | Input 7 |
| 10 | Output 3 |
| 11 | Output 2 |
| 12 | Output 1 |
| 13 | Output 0 |
| 15 | GND |

Figure 2.9 Auxiliary Input/Output.

The appropriate cable connector may be ordered from Dansk Radio Part no. 495980.

### 2.9.5 Control Input/Output, A8J1

Not used.

### 2.9.6 Open Collector Outputs, A8J2

Not used.

## 2.10 Strapping

In order to get a proper function of the RC4010, it is nescessary that some of the assemblies are strapped correctly. Normally the RC4010 is delivered from the factory with the correct strapping. If a module is exchanged, the strapping should be checked.

Strapping of 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 that above mentioned are covered in Section 4 and Section 5.

## 2.11 Installation Check-out

When the installation is complete, refer to section 3 (OPERATION) and fully check the operation of the RC4010.

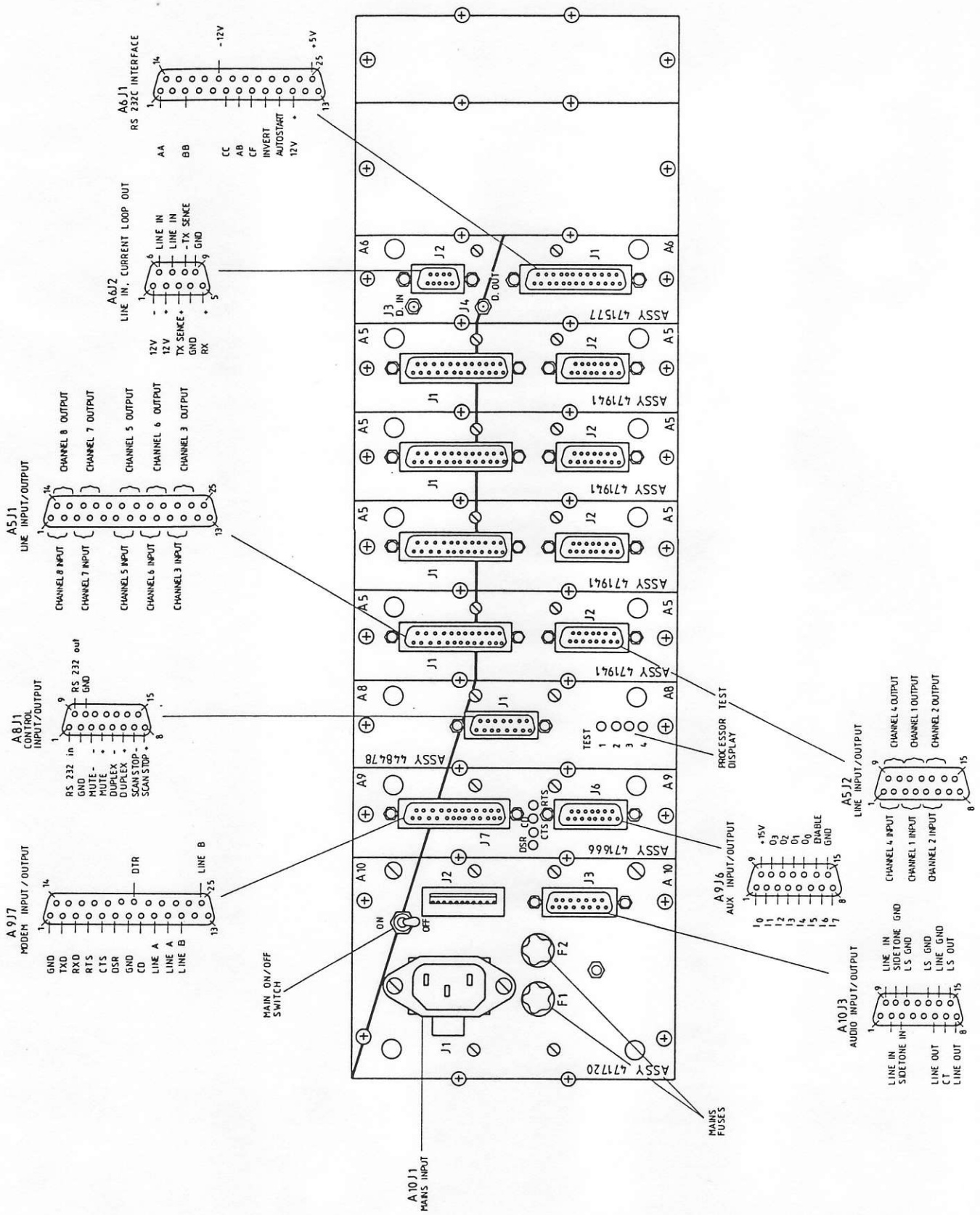



Figure 2.20 Rear Panel View.

# SECTION 3
# OPERATION

## 3.1 Introduction

This section of the manual contains instructions for proper operation of the RC4010

## 3.2 Introduction to remote control

For the RX4010 to be remote-controlled, a remote module A9 has to be installed in slot 9. If the remote control system includes more than one RX4010, an optionary 8-line monitor is available. The 8-line monitor module has 8 AF-inputs and one output for the RC4010, making it possible to monitor an addressed RX4010. A RC4010 can be adapted with max. 4 pcs. 8-line monitors to monitor up to 16 RX4010 receivers. When remote controlling a RX4010, the RC4010 should be operated as though the RX4010 was operated locally. See operating manual for the RX4010.

## 3.3 Front Panel Features

Figure 3.1 identifies and describes the functions of the front panel controls, indicators and connectors.

## 3.4 Initial Conditions

After the power has been switched on, the RC4010 will address the same unit as before the power was switched off. If the unit don't answer the display shows e.g. "no rEc 2". If another RC4010 has the command of the line, the display shows "OFF buSy".

### NOTE

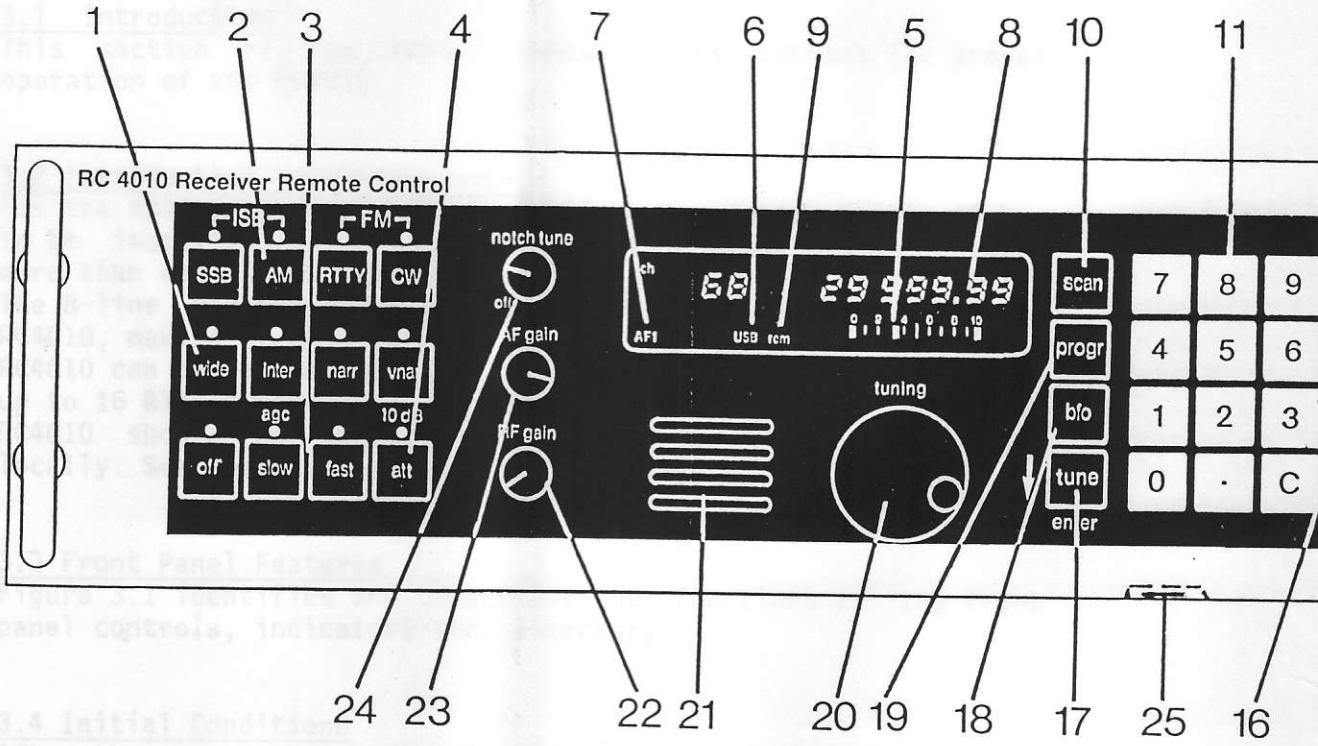
1. If the display reads "Err. bAttEry" the battery backup is faulty and all data is cleared.

2. If the display reads "no Axx" (xx is a twodigit number) the Axx module is not installed or a failure is found on the module.

## 3.5 Self Test

The self test operations are initiated by utilizing a program function. The self test is then carried out by the built-in microprocessor by means of a ROM-based diagnostic program package. For futher information see section 8.

Figure 3.1
Front Panel Features



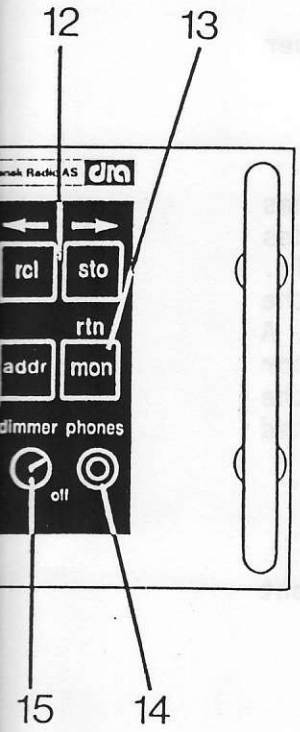

1 BANDWIDTH group. These keys select the IF-bandwidth when the receiver is operated in AM- , RTTY or CW mode.

2 MODE group. These are the primary mode selection keys for reception. Pressing any mode key automatically selects default values for the secondary keys.

3 AGC control group. These keys select the proper AGC time constants. These constants are also affected by the MODE keys. In the "OFF" mode, RF-gain is manually controlled.

4 ATTENUATOR key. Inserts a 10dB attenuator in the receiver front end. Used to further improve the receiver's large-signal response.

5 S-METER. Analogue indication of the received signal strength.




6 LSB/USB indicator.

7 MONITOR indicator.

8 ALPHANUMERIC display. Displays address, the receiving frequency, the BFO-frequency, error codes and failure modes.

9 REMOTE annunciator. Indicates that the receiver is remotely controlled by a master. Flashing indicate that RC 4010 is in local programming mode.

10 SCAN key. Selects the automatic and the manual scanning mode.

11 ENTRY group. This group includes the numeric data keys an the clear key.

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 connect 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.

16 addr key. Used to addressing a receiver

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 AF-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 Addressing

When control of a RX4010 is wanted, the RX4010 has to be addressed.
By pressing (addr) the display shows e.g. "Adr. rEc. 2" where 'rec. 2' is the last addressed RX4010. You can now:

- Select another type of unit with "back arrow" or "forward arrow" keys. The display will then change between: "SE" (SE4010), "rEc." (RX4010), "tc" (TC4010), "rc" (RC4010), "Edp".

- Select another address with the numerics. The address has to be in the interval 1 - 31.

- execute the addressing of the unit shown by pressing enter The last adressed unit will be disaddressed and the new one addressed.

- Leave the mode without addressing by pressing (rtn) .

- Disaddress by pressing (C) . The display will show "dis rECyy", where 'rECyy' is the unit which will be disaddressed if the (enter) key is pressed.

For disaddressing of master RC4010 see paragraph 3.9.

## 3.7 Local mode

Local mode is selected by pushing (addr) and is indicated by a flashing "rem" annunciator. To return to remote mode press (rtn)
In local mode the following operations are possible:

### 3.7.1 Clear all

**WARNING**

This rutine erases all data stored in the programmable memory.
If the rutine is used in remote mode, all data stored in the programmable memory of the addressed RX4010 will be erased.

To clear all user programmable memories:

- press (sto) and agc(off) at the same time.

- the display will show "CLr ALL."

If the (sto) key is pressed within 2.5 sec. the command will be executed.

If no key is pressed within 2.5 sec. or if other key but (sto) is pressed, the program function will be left, and the RC4010 returns to local mode.

### 3.7.2 Introduction to the program function

Selecting the program function.

NOTE: Paragraph 3.7.2 describes program functions of the RC4010 when operated in local mode. For program functions useable in remote mode, please refer to the operating manual of the RX4010.

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 excist to a message, these are recalled by the horizontal arrow buttons.

The last messages is followed by a return to the former setting of RC4010 when the downwards arrow button is pressed.

When in a program function the (rtn) key may be used to return to the address mode.

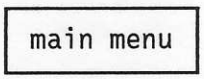
Selection of a program function does not effect the remote communication of the RC4010.

Selecting a local program causes the "rem" annunciator flashing.

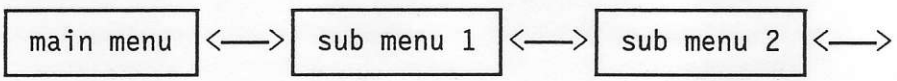
The operation of the programs can be illustrated in this way:

1) Select the program.

2) The main menu will be displayed.

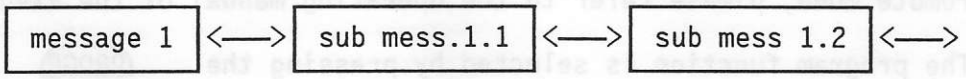



3) The menus are scrolled by (<--) and (-->) keys.

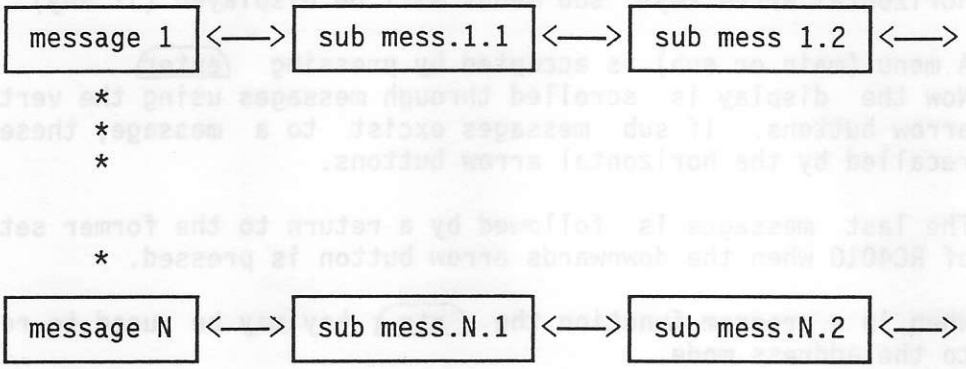


4) The first message is displayed when a menu is selected by pressing (enter) while the menu is shown.


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 keys after the last message returns the RC4010 to the former setting.

The RC4010 has several programs:

Program 1: 24 hours clock
Program 15: System scan programming
Program 16: System scan program start
Program 20: Baudrate selection
Program 21: Blank display setting
Program 41: Automatic Remote Transmission Error Log (ARTEL)
Program 42: Acumulated on-time.
Program 49: Self test (see section 8)

### 3.7.2.1 Clock Viewing and Setting

Program 1.

When program 1 is selected "CLO. rcl." will appear in 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 accompliched 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 entering a new digit by the numeric keyboard.
The "forward arrow" and the "back arrow" keys are used to select the digit which is going to be changed. The date is changed first and accepted by the enter key. Then the time is displayed and changings accepted by the enter key.

Example, Clock Viewing:

| keystrokes | display | | |
|---|---|---|---|
| | Adr. | rEc. 10 | |
| (progr) | PrG | no. | |
| (1) | PrG | no. 1 | |
| (enter) | CLO. | rcl. | |
| (enter) | dAt. | 91-10.12 | (oct. 12. 1991) |
| (enter) | ti. | 16-44.48 | (16h 44min 48sec) |
| (enter) | Adr. | rEc. 10 | |

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

| keystrokes | display | |
|---|---|---|
| | Adr. | rEc. 10 |
| (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 | Adr. | rEc. 10 |

3.7.2.2 System scan programming
program 15

By remote systems with more than one receiver remotely controlled from one RC4010, program 15 enables scanning of the receivers in order to get status information of each receiver in a quasi continous way.

By selecting program 15 the display shows "Adr. rEc. ". Now each of the addresses of the RX4010 which wants to be scanned is keyed-in followed by enter . When all addresses are entered press enter again and the display will show "dll. ti.= ". Key-in the dwell time between 3 and 99 sec. and press enter to finish the program. Note: The dwell time includes 2 sec. displaying of the address.

After the program is entered it can be revised by selecting program 15 again and scroll the program by the "up arrow" and "down arrow" buttons. A RX4010 address is changed by entering a new address. To delete a RX4010 address press addr 0 and enter .

Example 1: Scan receivers with addresses 1, 3, 5, 2 and with dwell time = 10 sec.

| keystrokes | display | comments |
|---|---|---|
| | Adr. rEc. 10 | |
| progr | prG. no. | |
| 1 | prG. no. 1 | |
| 5 | prG. no. 15 | select program 15 |
| enter | Adr. rEc. | |
| 1 | Adr. rEc. 1 | select receiver 1 |
| enter | Adr. rEc. | |
| 3 | Adr. rEc. 3 | select receiver 3 |
| enter | Adr. rEc. | |
| 5 | Adr. rEc. 5 | select receiver 5 |
| enter | Adr. rEc. | |
| 2 | Adr. rEc. 2 | select receiver 2 |
| enter | Adr. rEc. | |
| enter | dll. ti.= | |
| 1 | dll. ti.= 1 | |
| 0 | dll. ti.= 10 | dwell time = 10 |
| enter | Adr. rEc. 10 | |

Example 2: Change program to receiver addresses 1, 5, 7, 11 with dwell time = 5 sec.

| keystroke | display | comments |
|---|---|---|
| | Adr. rEc. 10 | |
| progr | prG. no. | |
| 1 | prG. no. 1 | |
| 5 | prG. no. 15 | select program 15 |
| enter | Adr. rEc. 1 | |
| enter | Adr. rEc. 3 | |
| 0 | Adr. rEc. 0 | delete receiver 3 |
| enter | Adr. rEc. 5 | |
| enter | Adr. rEc. 2 | change receiver 2 |
| 7 | Adr. rEc. 7 | to receiver 7 |
| enter | Adr. rEc. | |
| 1 | Adr. rEc. 1 | |
| 1 | Adr. rEc. 11 | select receiver 11 |
| enter | Adr. rEc. | |
| enter | dll. ti.= 10 | change time = 10 |
| 5 | dll. ti.= 5 | to time = 5 |
| enter | Adr. rEc. 10 | |

### 3.7.2.3 Start system scaning

Program 16

To start system scanning select program 16 and press enter The RC4010 will then start the scanning sequence defined by program 15. The address of the first RX4010 will be shown for 2 sec. followed by the set-up, then the address af the second RX4010 and so on. When the set-up of the last receiver in the sequence has been shown, it will start all over again. The rtn key stops the scanning and returns the RC4010 to addressing mode.

Error message:

| | |
|---|---|
| Err. no proG. | No program is entered. |
| OFF buSy | This RC4010 has not the command over the line. |

Example:

| keystrokes | display | comments |
|---|---|---|
| | Adr. rEc. 10 | |
| progr | prG. no | |
| 1 | prG. no 1 | |
| 6 | prG. no 16 | select program 16 |
| enter | Scn. StArt | start scanning |
| enter | Adr. rEc. 1 | displayed 2 sec. |
| | 1111.11 | displayed 3 sec. |
| | Adr. rEc. 5 | displayed 2 sec. |
| | 5555.55 | displayed 3 sec. |
| | Adr. rEc. 7 | displayed 2 sec. |

```
                    7777.77     displayed 3 sec.
          Adr.  rEc.  11        displayed 2 sec.
                 11000.00       displayed 3 sec.
          Adr.  rEc.   1        displayed 2 sec.
                     1111.11      displayed 3 sec.
                     *
                     *
                     *
```

### 3.7.2.4 Baudrate setting

Program 20

Before using the RC4010, the baudrate must be set. When program 20 is selected the last entered baudrate e.g. "bAu 75" will appear on the display. By using "back arrow" or "forward arrow" keys the baudrate is changed. Baudrate is accepted by (enter) key.

Note: The baudrate selected must equals the baudrate strapped on the A9 module.

Example:

| keystrokes | display | comments |
|---|---|---|
| | Adr. rEc. 10 | |
| (progr) | prG. no | |
| (2) | prG. no 2 | |
| (0) | prG. no 20 | select program 20 |
| (enter) | bAu 75 | |
| (-->) | bAu 150 | |
| (-->) | bAu 300 | |
| (-->) | bAu 600 | select 600 bit/sec. |
| (enter) | Adr. rEc. 10 | |

### 3.7.2.5 Blank display setting

Program 21

Blanking of the display of the addressed RX4010 can be carried out by program 21. "SEt. diSP" will appear on the display when the program is selected. "Back arrow" or "forward arrow" keys change the display to "SEt no diSP." Press enter key to accept. The following addressed receivers will blank the display except the "rem" annunciator. To switch on the display, address the receiver with program 21. Set to "SEt diSP." or switch the receiver off and on.

Example:

| keystrokes | display | comments |
|---|---|---|
| | Adr. rEc. 10 | |
| progr | prG. no | |
| 2 | prG. no 2 | |
| 1 | prG. no 21 | select program 21 |
| enter | SEt diSP. | |
| --> | SEt no diSP. | blank display select |
| enter | Adr. rEc. 10 | |

3.7.2.6 ARTEL Automatic Remote Transmission Error Log
Program 41

By recalling program 41 information about remote transmission since the RC4010 has been switched on will be displayed. The maximum number which can be displayed is 65535. In cases where the number exceeds 65535, the counter(s) are reset and the counting proceeds from 0.

When program 41 is selected the display shows "r.Fr. 823". The information are now scrolled using the "down arrow" and the "up arrow" keys. For explanation of remote transmission codes see section 8. Press rtn to leave program 41 or "down arrow" when the last code is displayed.

Example:

| keystrokes | display |
|---|---|
| | Adr. rEc. 10 |
| progr | PrG no. |
| 4 | PrG no. 4 |
| 1 | PrG no. 41 |
| enter | r.Fr. 111 |
| enter | r.bt. 222 |
| enter | Syn. 333 |
| enter | Hd.E. 444 |
| enter | to.E. 555 |
| enter | Fr.E. 666 |
| enter | or.E. 777 |
| enter | Pt.E. 888 |
| enter | to.S. 999 |
| enter | Adr. rEc. 10 |

3.7.2.7 Acumulated on-time.
Program 42

An internal counter in the RC4010 counts the number of hours during which the RC4010 has been switched on.

When program 42 is selected the display will appear as "P.on XXXXXXX". XXXXXXX is accumulated on-time for the RC4010.

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

## 3.8 Give command to another RC 4010

If there is more than one RC4010 connected to the line, the command can be given to another RC4010. This is done at the same way as addressing of a RX4010 see section 3.6. After addressing another RC4010 the display will show e.g. "OFF rc 4", which indicates that the command has been given to the Receiver Control Unit with address 4. The command can only be returned if the RC4010 is addressed by the equipment which presently has the command or if the mains is switched off and on.

Note: If the RC4010 is off the adressing mode can not be used.

Example: Give the command to RC4010 address 4.

| keystrokes | display |
|---|---|
| | 1234.56 |
| (addr) | Adr. rEc. 1 |
| (-->) | Adr. tc 1 |
| (-->) | Adr. rc 1 |
| (4) | Adr. rc 4 |
| (enter) | OFF rc 4 |

## 3.9 Master RC4010 (address 31):

When a master RC4010 is switched on, the communication on the line will be shown. When an addressing is executed on the line the address will be displayed for 2 sec.. If the (addr) key is pressed the last executed addressing on the line will be shown.

A master RC4010 can interrupt the communication and take over the command. This is done by normal addressing see section 3.6.
When disaddressing, two modes are available by toggling the (C) key:

1) "diS LinE": Disconnects the line and returns the command to the RC4010 which was interrupted.

2) "diS rECyy": Disconnects unit 'rECyy'.

The disconnecting is accepted by pressing (enter) .

## 3.10 Error message:

| | |
|---|---|
| OFF buSy | Another RC4010 is communicating on the line.<br>No address can be entered. |
| OFF rc xx | RC4010 has given the command to RC4010 address xx. |
| no rEc. xx | RC4010 tries to address RX4010 address xx, but no answer is received. |
| Err. OFFLinE | Error on line or some of the addressed unit is switched off. |
| no Adr. | No valid address. |
| Err. no ProG. | No system scan program is entered. |

# SECTION 4
# OPTIONS

## 4.1 Introduction.

This section provides information about optional modules.

## 4.2 8-line Monitor assembly A5, assy 471941

The 8-line monitor is used when more than one RX4010 is connected to the RC4010, in order to monitor audio signals from the current controlled receiver.

### 4.2.1 Description

The functional blockdiagram of the 8-line monitor is shown in figure 4.1
Each of the eight input lines are furnished with a protection circuit. The microprocessor select one of the lines through an analog switch. The signal from the selected line is transformed from balanced to an unbalanced signal and filtred before it is send to the AF output pin.

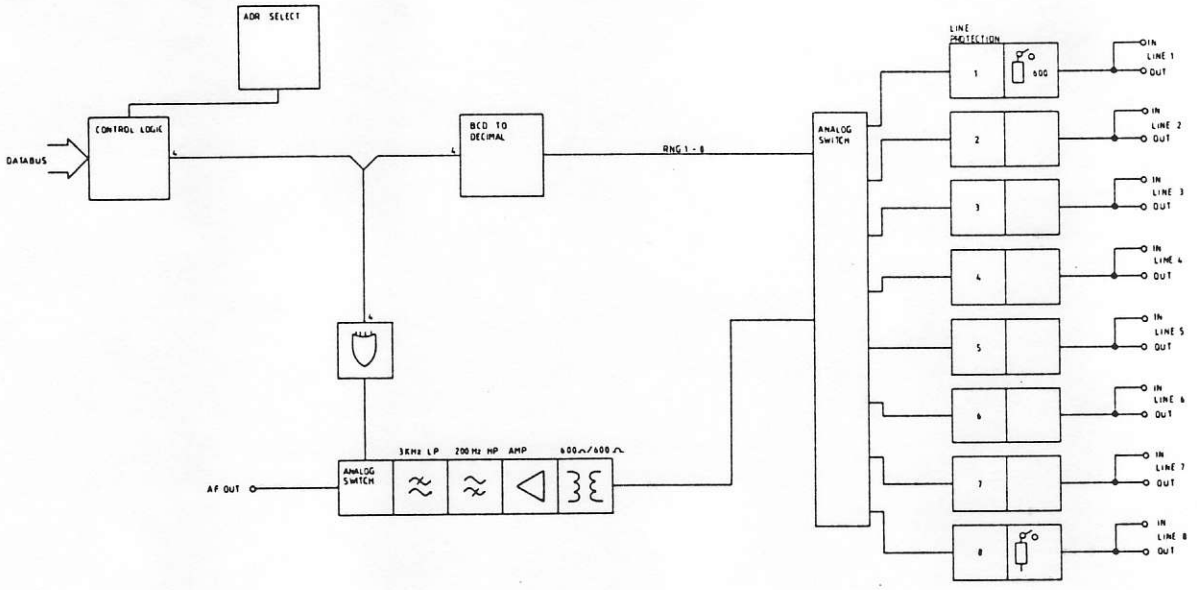



fig 4.1
blockdiagram 8-line monitor

### 4.2.2 Inputs

A. Monitor channels 4 - 8, A5J1
Sub-D, female, 25 poles.

The socket A5J1 provides inputs and outputs for monitor channels 4, 5, 6, 7 and 8. The inputs and outputs are coupled in parallel.

The connections are as follows:

| pin | description |
|---|---|
| 1 | channel 7.a in |
| 2 | channel 7.b in |
| 3 | channel 8.a in |
| 4 | channel 8.b in |
| 5 | not used |
| 6 | channel 6.a in |
| 7 | channel 6.b in |
| 8 | channel 5.a in |
| 9 | channel 5.b in |
| 10 | channel 4.a in |
| 11 | channel 4.b in |
| 12 | not used |
| 13 | not used |
| 14 | channel 7.a out |
| 15 | channel 7.b out |
| 16 | channel 8.a out |
| 17 | channel 8.b out |
| 18 | not used |
| 19 | channel 6.a out |
| 20 | channel 6.b out |
| 21 | channel 5.a out |
| 22 | channel 5.b out |
| 23 | channel 4.a out |
| 24 | channel 4.b out |
| 25 | not used |

fig 4.2
connections A5J1

B. Monitor channel 1 - 3, A5J2
Sub-D, female, 15 poles.

The socket A5J2 provides inputs and outputs for monitor channels 1, 2 and 3. The inputs and outputs are coupled in parallel.

The connections are as follows:

| pin | description |
|---|---|
| 1 | channel 3.a in |
| 2 | channel 3.b in |
| 3 | channel 2.a in |
| 4 | channel 2.b in |
| 5 | channel 1.a in |
| 6 | channel 1.b in |
| 7 | not used |
| 8 | not used |
| 9 | channel 3.a out |
| 10 | channel 3.b out |
| 11 | channel 2.a out |
| 12 | channel 2.b out |
| 13 | channel 1.a out |
| 14 | channel 1.b out |
| 15 | not used |

fig 4.3
connections A5J2

### 4.2.3 Connection between RX4010 and 8-line monitor

Up to four 8-line monitors can be installed in the RC4010. The 8-line monitor(s) shall be strapped to the correct address range, as shown in section 4.2.4. Connections between RX4010 and 8-line monitor are shown on fig 4.4 (RX4010 ISB version) and fig 4.5 (RX 4010 SSB version).

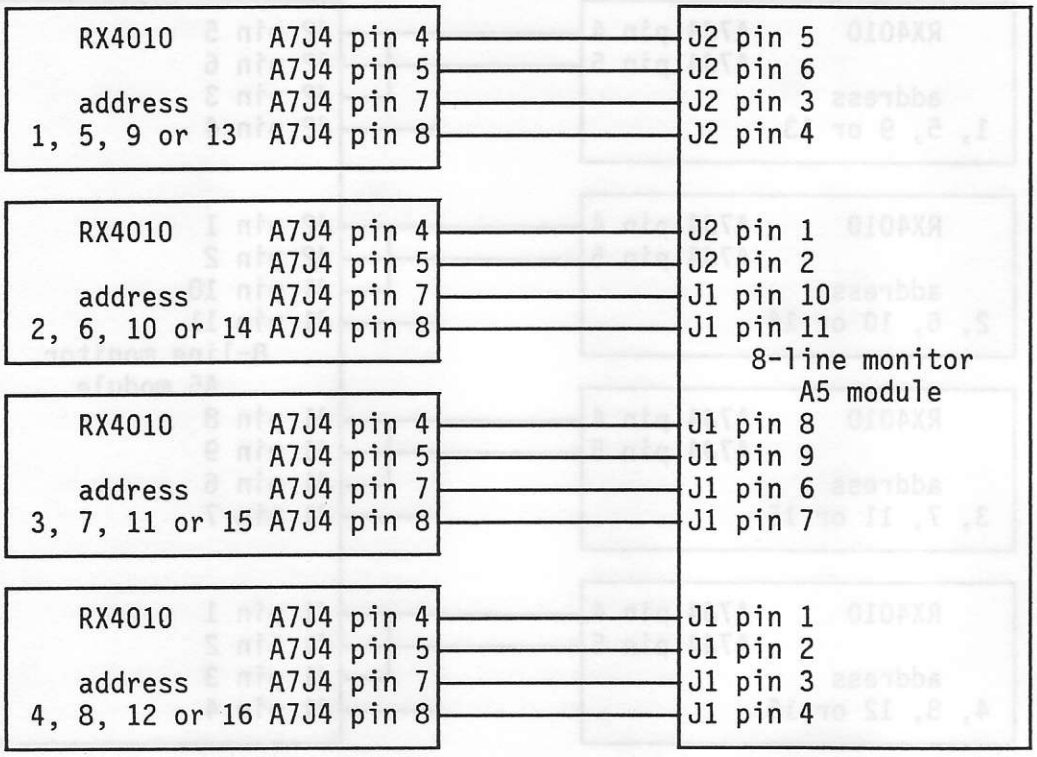



fig 4.4
Connection between RX4010 (ISB version) and 8-line monitor

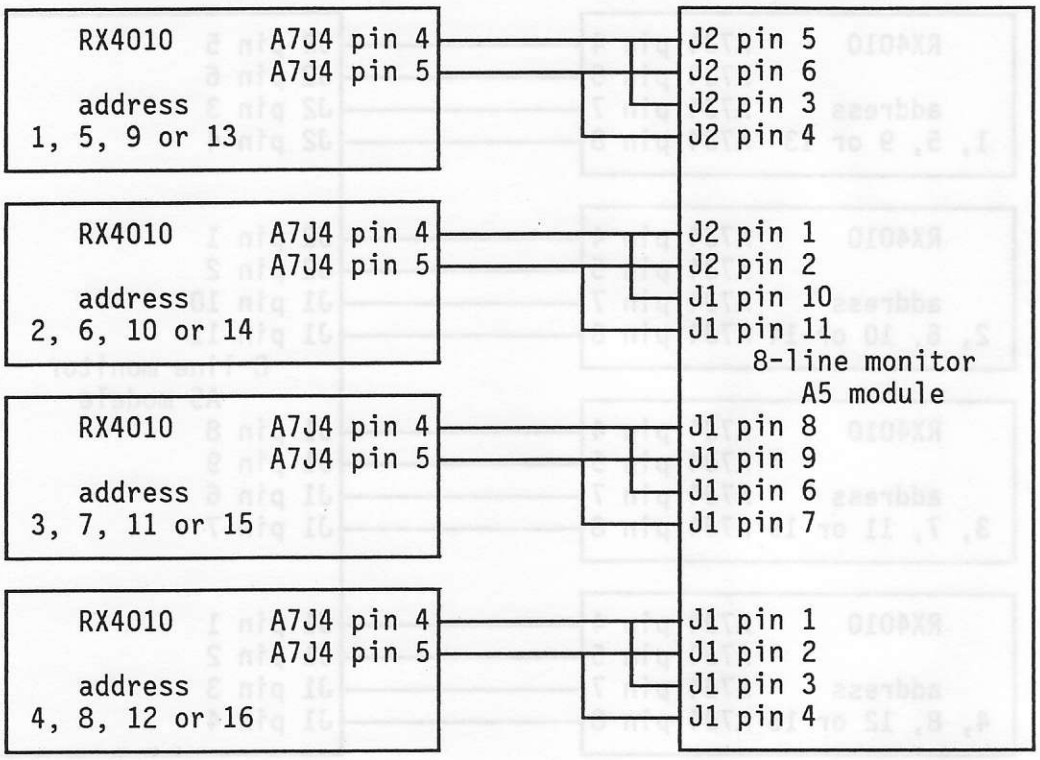



fig 4.5
Connection between RX 4010 (SSB version) and 8-line monitor

## 4.2.4 strapping

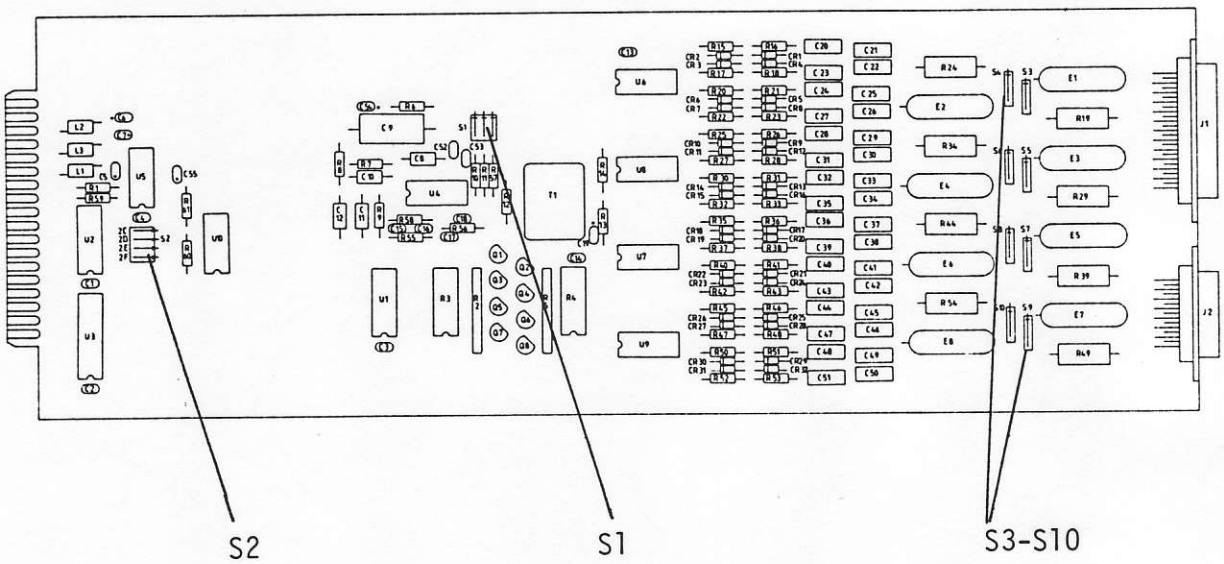



fig 4.5
Switch on A5 modul

The A5 modul are given a dedicated address strapped at S2.

| modul | address area | strap |
|---|---|---|
| A5.1 | 1- 4 | S2 A |
| A5.2 | 5- 8 | S2 B |
| A5.3 | 9-12 | S2 C |
| A5.4 | 13-16 | S2 D |

Input sensitivity ie. amplifier gain is adjusted by S1. Maximum sensitivity is obtained by switching all straps "on". For Minimum sensitivity all switches shall be "off".
Gainselection:

no swithes "on" : 0 dB
1 switch "on" : 6 dB
2 switches "on" : 10 dB
3 switches "on" : 12 dB

Line impedance is selectable with switches S3 to S10.
when "off" high impedance is selected
when "on" 600 ohm is selected.

# 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.

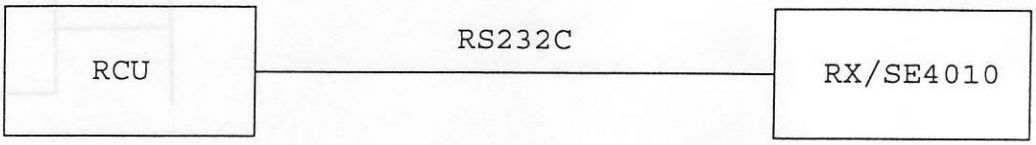



Figure 5.2

### 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.

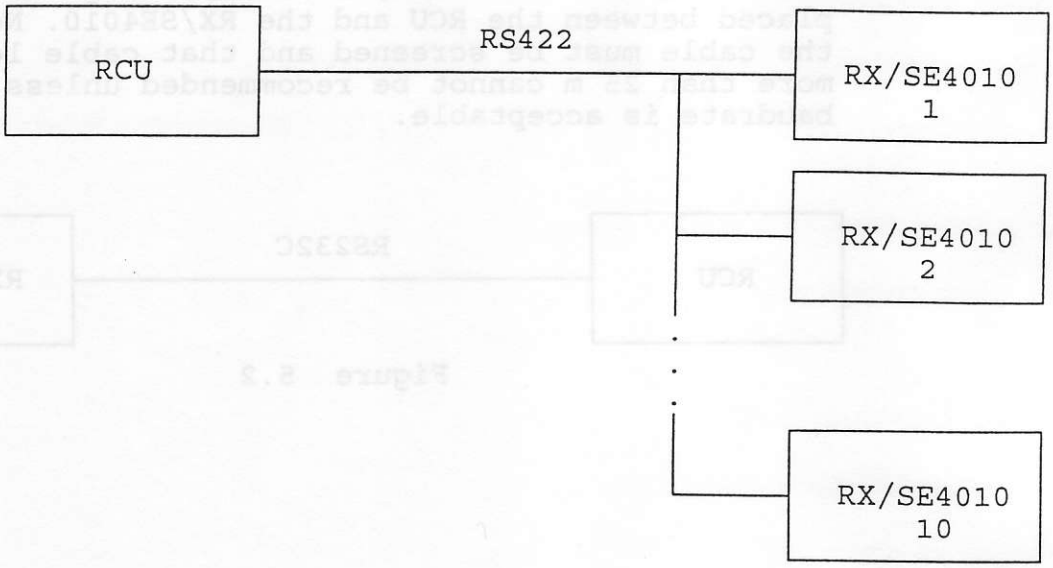



Figure 5.3

### 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.

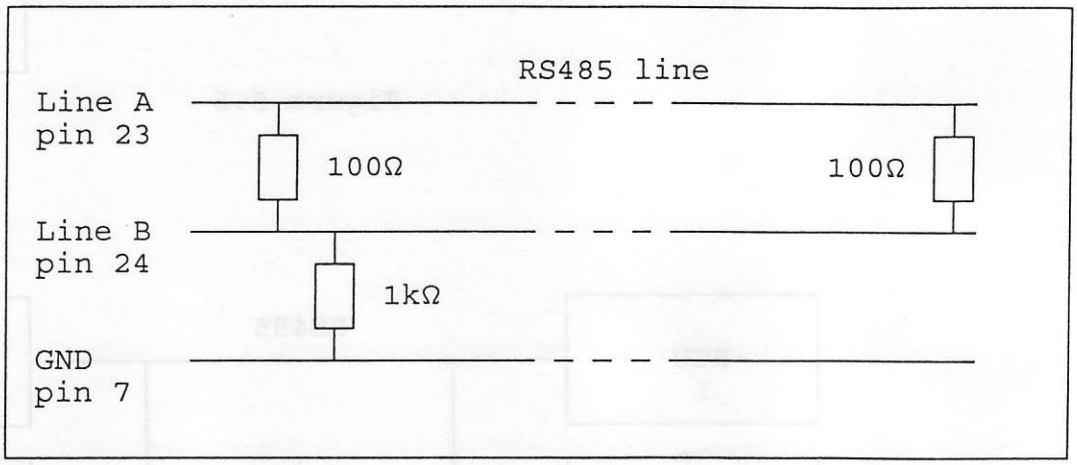



Figure 5.4 Termination of RS485 line

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.

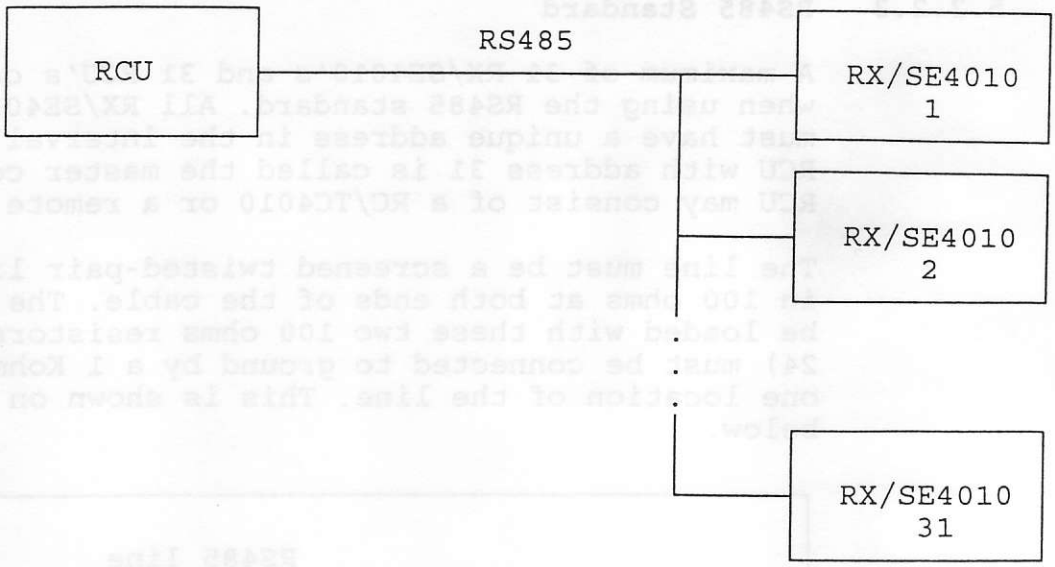



Figure 5.5

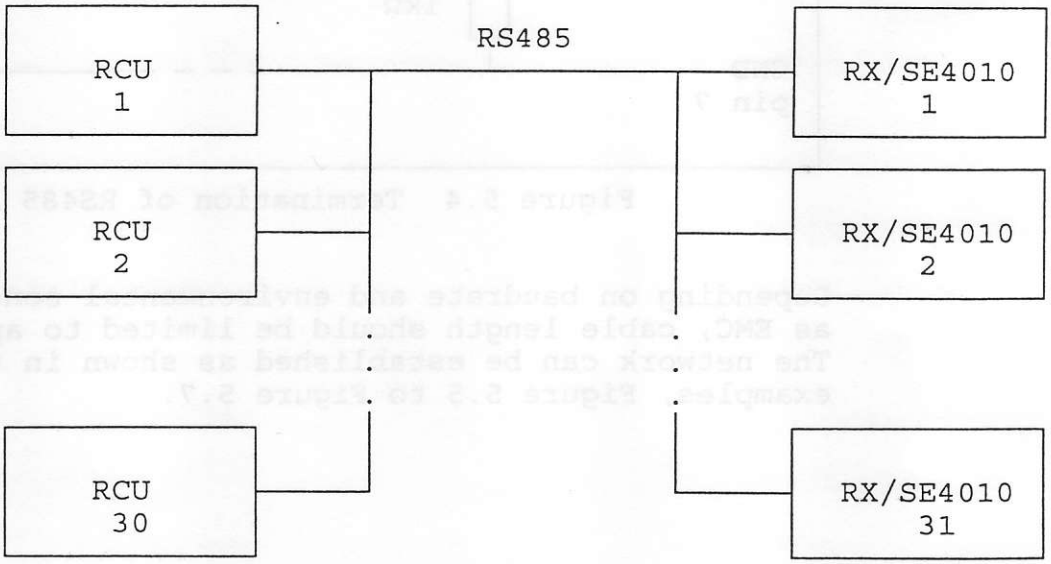



Figure 5.6

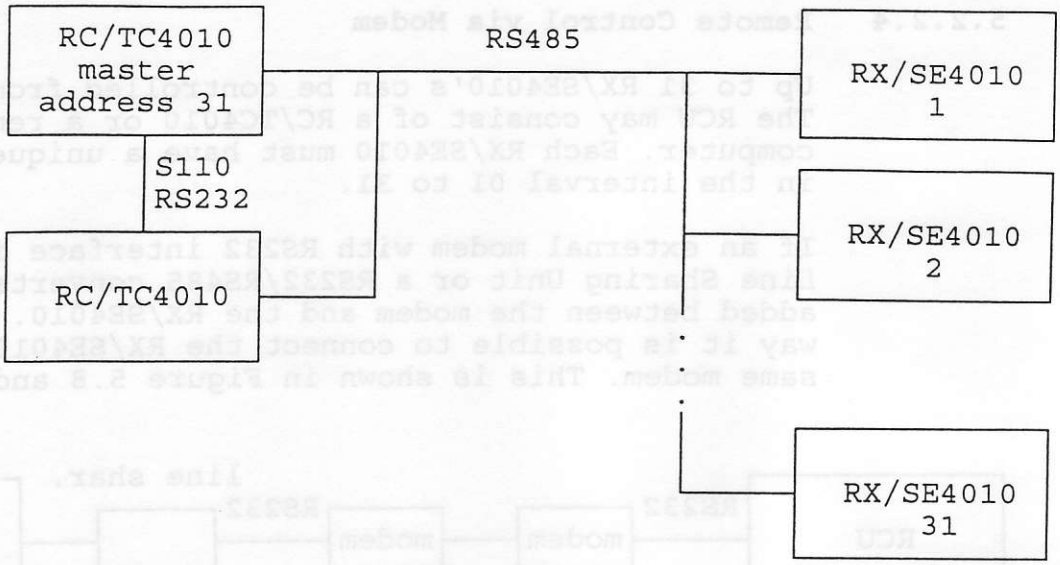



Figure 5.7

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.

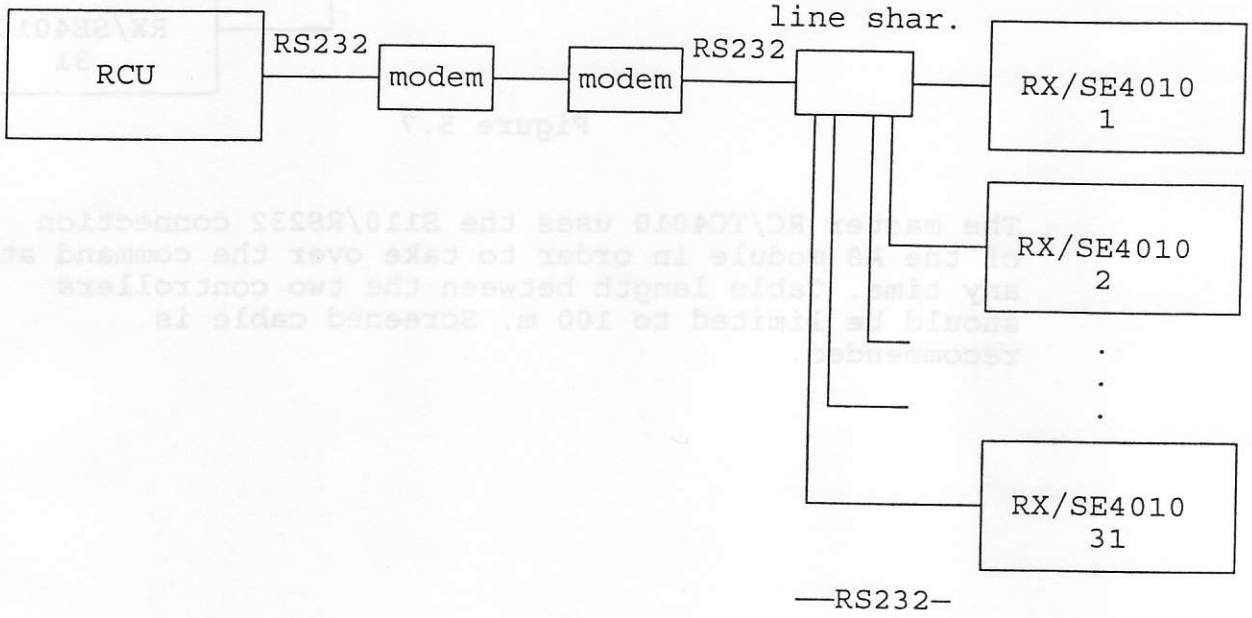



Figure 5.8

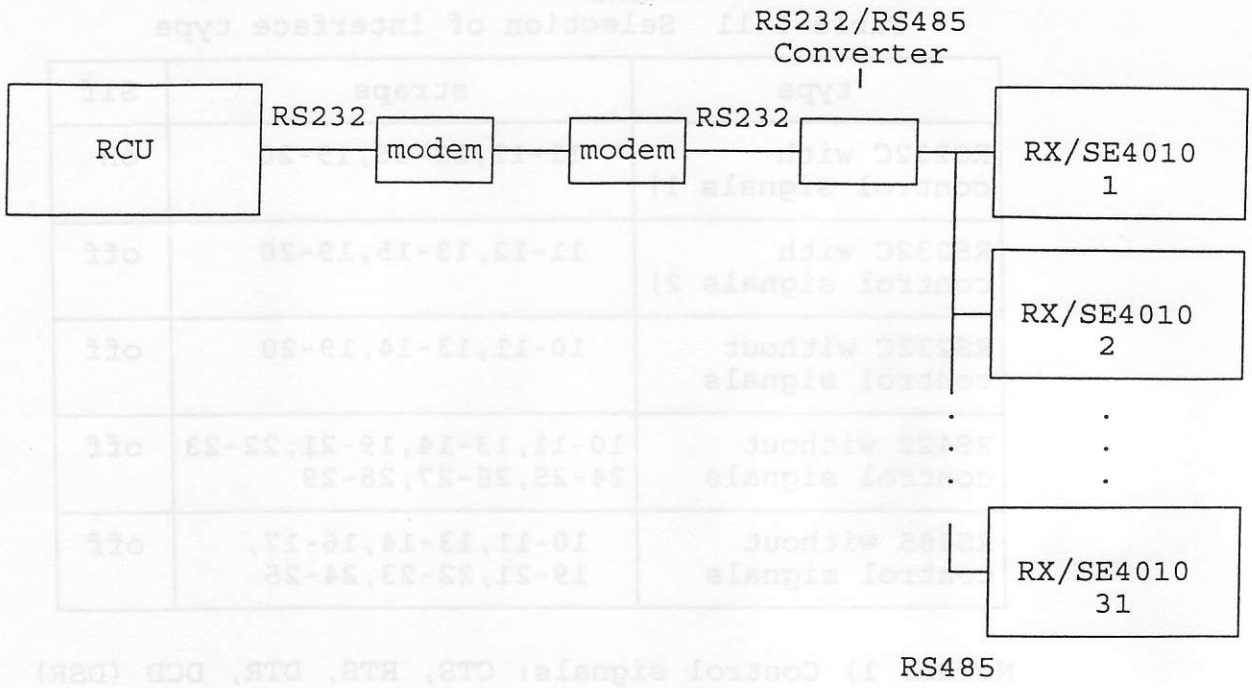



Figure 5.9

### 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.

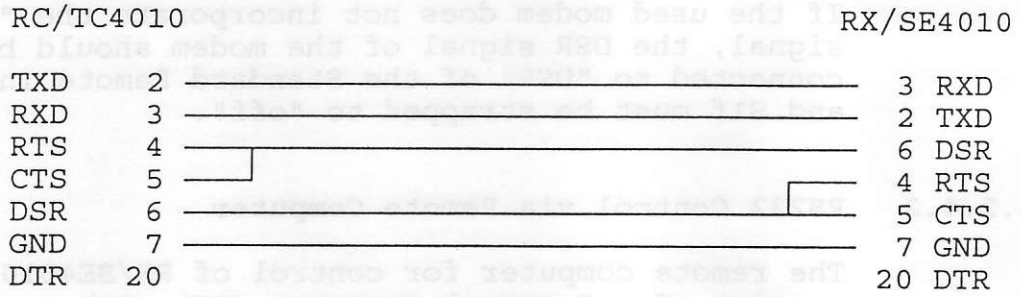
The address must not be set to 0!

### 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

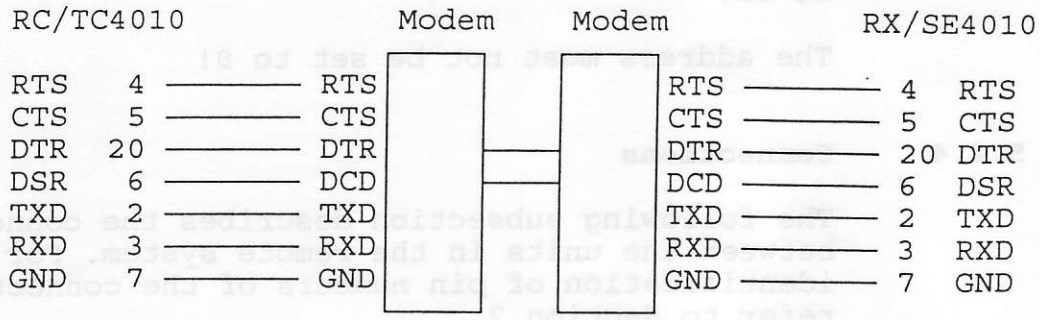
The RS232 remote control of a RX/SE4010 via a RC/TC4010 without modem is shown in Figure 5.13.




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

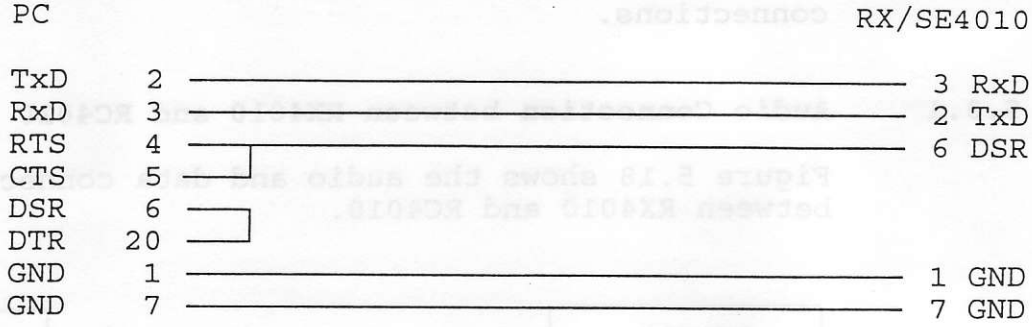
The remote computer for control of RX/SE4010 may consist of a Personal Computer (PC) with a serial RS232 communication port.

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.

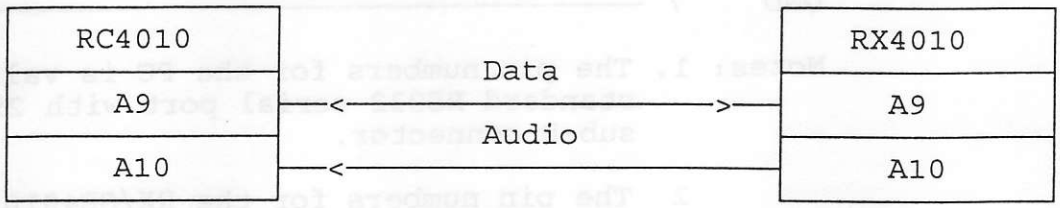



Figure 5.18

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.

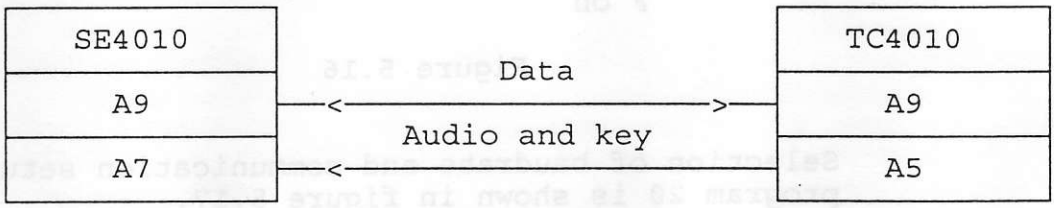



Figure 5.19

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.

# 6 REPLACEABLE PARTS

## 6.1 Introduction

This section contains information for ordering parts.

## 6.2 Replaceable Parts List

The following pages contain parts lists of the assemblies. The parts are listed in order of part number of the assemblies.

To order a part listed in the parts lists, quote the quantity and the part number of the wanted part and address the order to:

Dansk Radio Comm. ApS
Valbyvej 20
2630 Taastrup
Denmark

Telephone : +45 43 71 60 45
Fax: +45 43 71 45 04

If the wanted part is a component in an assembly which is not produced by Dansk Radio, please also inform about the name of the external producer.

To order a part that is not listed in the parts lists, please inform about the equipment model number, equipment serial number and function of the part.

# PARTSLIST

Printed: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 1 | 1 | ST | 60 | BR471941 | 8-LINE MONITOR A5 | A5 |
| 2 | 1 | ST | 60 | BR487740 | MICROCOMPUTER ASSY A8 RT | A8 |
| 4 | 1 | ST | 61 | BR471720 | POWER SUPPLY ASSY A10 220 | A10 |
| 5 | 1 | ST | 60 | BR495131 | FRONT PANEL RC4010 A11 | A11 |
| 6 | 1 | ST | 41 | BR476056 | CHASSIS ASSY A12 RC40.. | A12 |
| 7 | 4 | ST | 51 | BR327301 | SCREW M 5 X20 CHM CU SN | H1 |
| 8 | 4 | ST | 51 | BR327255 | SCREW M 4 X16 CHM CU SN | H2 |
| 9 | 40 | ST | 51 | 232495-011 | SCREW M 3 X 8 TP.POZIDR.A2 | H3 |
| 10 | 4 | ST | 51 | 232495-011 | SCREW M 3 X 8 TP.POZIDR.A2 | H4 |
| 11 | 4 | ST | 53 | BR321966 | WASHER FLAT Ø 5MM CU SN | H5 |
| 12 | 5 | ST | 41 | BR445991 | REAR PLATE DUMMY 1M | MP1 |
| 13 | 1 | ST | 41 | BR475149 | REAR PLATE DUMMY 1,5M | MP2 |
| 15 | 1 | ST | 60 | BR475076 | KIT,SPARES RX/RC RUNNING | |
| 18 | 1 | ST | 60 | BR490598 | INTERF. RS232 422/485 A9 | |
| 19 | 1 | ST | 48 | 221391-011 | LABEL, SILVER 25.4X12.7MM | |
| 20 | 1 | ST | 48 | BR464872 | LABEL, DRA TYPE/SER.NO | |
| 22 | 0,200 | ST | 48 | 210757-001 | LABELS FOR A10 | |
| 23 | 2 | ST | 60 | BR495980 | KIT, SUB-D CONN 15P MALE | |
| 24 | 1 | ST | 32 | 229330-002 | CABLE ASSEMBLY, POWER/GR | |
| 25 | 1 | ST | 60 | BR496014 | KIT, SUB-D CONN 25P MALE | |

**BR495123-001 RC4010 INCL. A5,A9 490598**

# PARTSLIST

Printed: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 1 | 1 | ST | 37 | BR471933 | PWB 8-LINE MO. | |
| 2 | 11 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C3 |
| | 11 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C2 |
| | 11 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C4 |
| | 11 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C53 |
| | 11 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C13 |
| | 11 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C1 |
| | 11 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C14 |
| | 11 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C16 |
| | 11 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C17 |
| | 11 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C52 |
| | 11 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C15 |
| 3 | 6 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C55 |
| | 6 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C7 |
| | 6 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C5 |
| | 6 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C19 |
| | 6 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C54 |
| | 6 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C6 |
| 4 | 1 | ST | 22 | BR446254 | CAP. POLYPRO. 5N6 / 160 F | C8 |
| 5 | 1 | ST | 22 | 200327-068 | CAP. POLYPRO. 33N / 63 F | C9 |
| 6 | 1 | ST | 22 | 200327-011 | CAP. POLYPRO. 120P / 630 F | C10 |
| 7 | 1 | ST | 22 | 200327-050 | CAP. POLYPRO. 5N1 / 160 F | C11 |
| 8 | 1 | ST | 22 | 200327-031 | CAP. POLYPRO. 820P / 630 F | C12 |
| 9 | 1 | ST | 22 | 202542-012 | CAP. CER. 33P / 100G | C18 |
| 10 | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C51 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C27 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C40 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C43 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C44 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C36 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C47 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C39 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C20 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C48 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C32 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C28 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C24 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C23 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C31 |
| | 16 | ST | 22 | BR202991 | CAP. PLST 220N 100 K | C35 |
| 11 | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C21 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C22 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C41 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C42 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C46 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C50 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C45 |

**BR471941 8-LINE MONITOR A5**

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 11 | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C34 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C33 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C30 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C26 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C25 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C49 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C38 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C29 |
| | 16 | ST | 22 | BR450863 | CAP. PLST 10N 400 J | C37 |
| 12 | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR30 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR6 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR3 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR4 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR9 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR2 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR10 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR29 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR11 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR31 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR18 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR7 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR1 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR25 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR24 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR8 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR26 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR19 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR20 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR28 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR21 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR32 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR5 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR22 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR12 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR17 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR16 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR27 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR15 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR14 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR13 |
| | 32 | ST | 23 | 200352-001 | DIODE 1N4148 | CR23 |
| 13 | 5 | ST | 51 | 202185-003 | SCREW M 2.5X 5 SLTD. CYL. BR | H1 |
| 14 | 1 | ST | 31 | 212654-023 | CONN D 25 S/PCB ANGLE | J1 |
| 15 | 1 | ST | 31 | 212654-022 | CONN D 15 S/PCB ANGLE | J2 |
| 16 | 3 | ST | 25 | 200730-003 | COIL,RF | L1 |
| | 3 | ST | 25 | 200730-003 | COIL,RF | L3 |
| | 3 | ST | 25 | 200730-003 | COIL,RF | L2 |

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 17 | 1 | ST | 41 | BR476072 | REAR PLATE A 5 RC4000 | MP1 |
| 18 | 1 | ST | 45 | 210840-001 | RETAINER | MP2 |
| 19 | 2 | ST | 51 | 210841-001 | THUMBSCREW | MP3 |
| 20 | 8 | ST | 26 | BR359157 | TRANS.LOPOW BC307B SI-P T | Q2 |
| | 8 | ST | 26 | BR359157 | TRANS.LOPOW BC307B SI-P T | Q8 |
| | 8 | ST | 26 | BR359157 | TRANS.LOPOW BC307B SI-P T | Q5 |
| | 8 | ST | 26 | BR359157 | TRANS.LOPOW BC307B SI-P T | Q1 |
| | 8 | ST | 26 | BR359157 | TRANS.LOPOW BC307B SI-P T | Q6 |
| | 8 | ST | 26 | BR359157 | TRANS.LOPOW BC307B SI-P T | Q7 |
| | 8 | ST | 26 | BR359157 | TRANS.LOPOW BC307B SI-P T | Q4 |
| | 8 | ST | 26 | BR359157 | TRANS.LOPOW BC307B SI-P T | Q3 |
| 21 | 3 | ST | 21 | 600004-085 | RES CARB. 3K3, 0.5J | R55 |
| | 3 | ST | 21 | 600004-085 | RES CARB. 3K3, 0.5J | R59 |
| | 3 | ST | 21 | 600004-085 | RES CARB. 3K3, 0.5J | R1 |
| 22 | 1 | ST | 21 | 206088-017 | RES NETW 9 X 10K 1/5G | R2 |
| 23 | 2 | ST | 21 | 203237-026 | RES NETW 8 X 15K 1/4G | R4 |
| | 2 | ST | 21 | 203237-026 | RES NETW 8 X 15K 1/4G | R3 |
| 24 | 1 | ST | 21 | 206088-018 | RES NETW 9 X 47K 1/8M | R5 |
| 25 | 1 | ST | 21 | 600004-041 | RES CARB. 47R, 0.5J | R6 |
| 26 | 3 | ST | 21 | 600005-338 | RES FILM 24K3 / 0.6F | R7 |
| | 3 | ST | 21 | 600005-338 | RES FILM 24K3 / 0.6F | R8 |
| | 3 | ST | 21 | 600005-338 | RES FILM 24K3 / 0.6F | R9 |
| 27 | 4 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R56 |
| | 4 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R11 |
| | 4 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R10 |
| | 4 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R57 |
| 28 | 1 | ST | 21 | 600004-068 | RES CARB. 620R, 0.5J | R12 |
| 29 | 2 | ST | 21 | 600004-113 | RES CARB. 47K, 0.5J | R13 |
| | 2 | ST | 21 | 600004-113 | RES CARB. 47K, 0.5J | R14 |
| 30 | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R15 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R17 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R32 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R52 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R27 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R30 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R40 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R35 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R37 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R20 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R47 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R22 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R50 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R45 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R25 |
| | 16 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R42 |
| 31 | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R41 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R38 |

# PARTSLIST

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| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 31 | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R43 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R46 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R31 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R51 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R36 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R16 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R48 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R28 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R53 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R26 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R23 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R18 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R33 |
| | 16 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R21 |
| 32 | 8 | ST | 21 | 229324-030 | RES FILM 560R / 2.0 J | R29 |
| | 8 | ST | 21 | 229324-030 | RES FILM 560R / 2.0 J | R19 |
| | 8 | ST | 21 | 229324-030 | RES FILM 560R / 2.0 J | R54 |
| | 8 | ST | 21 | 229324-030 | RES FILM 560R / 2.0 J | R24 |
| | 8 | ST | 21 | 229324-030 | RES FILM 560R / 2.0 J | R49 |
| | 8 | ST | 21 | 229324-030 | RES FILM 560R / 2.0 J | R34 |
| | 8 | ST | 21 | 229324-030 | RES FILM 560R / 2.0 J | R44 |
| | 8 | ST | 21 | 229324-030 | RES FILM 560R / 2.0 J | R39 |
| 33 | 1 | ST | 21 | 600004-102 | RES CARB. 16K, 0.5J | R58 |
| 34 | 2 | ST | 21 | 600004-121 | RES CARB. 100K, 0.5J | R61 |
| | 2 | ST | 21 | 600004-121 | RES CARB. 100K, 0.5J | R60 |
| 35 | 2 | ST | 33 | BR471798 | SWITCH, PCP DIP-FIX 8X ON/OF | S8 |
| | 2 | ST | 33 | BR471798 | SWITCH, PCP DIP-FIX 8X ON/OF | S2 |
| | 2 | ST | 33 | BR471798 | SWITCH, PCP DIP-FIX 8X ON/OF | S6 |
| | 2 | ST | 33 | BR471798 | SWITCH, PCP DIP-FIX 8X ON/OF | S7 |
| | 2 | ST | 33 | BR471798 | SWITCH, PCP DIP-FIX 8X ON/OF | S5 |
| | 2 | ST | 33 | BR471798 | SWITCH, PCP DIP-FIX 8X ON/OF | S4 |
| | 2 | ST | 33 | BR471798 | SWITCH, PCP DIP-FIX 8X ON/OF | S3 |
| | 2 | ST | 33 | BR471798 | SWITCH, PCP DIP-FIX 8X ON/OF | S1 |
| | 2 | ST | 33 | BR471798 | SWITCH, PCP DIP-FIX 8X ON/OF | S9 |
| | 2 | ST | 33 | BR471798 | SWITCH, PCP DIP-FIX 8X ON/OF | S10 |
| 36 | 1 | ST | 25 | BR373206 | TRAFO,LINE 600:600R | T1 |
| 37 | 1 | ST | 24 | 200886-006 | IC, --74 45N BCD-DECIMA | U1 |
| 38 | 1 | ST | 24 | 206072-095 | IC, --74HCT138, DECODER | U2 |
| 39 | 1 | ST | 24 | 235049-026 | IC, --74LS377N 8X D-FF | U3 |
| 40 | 1 | ST | 24 | 236675-002 | IC, TL084, OP AMP. QUAD | U4 |
| 41 | 1 | ST | 24 | 203469-006 | IC, --74 06N | U5 |
| 42 | 5 | ST | 24 | 211620-002 | IC, --4066BC, 6XANALOG SWIT | U7 |
| | 5 | ST | 24 | 211620-002 | IC, --4066BC, 6XANALOG SWIT | U9 |
| | 5 | ST | 24 | 211620-002 | IC, --4066BC, 6XANALOG SWIT | U10 |
| | 5 | ST | 24 | 211620-002 | IC, --4066BC, 6XANALOG SWIT | U8 |
| | 5 | ST | 24 | 211620-002 | IC, --4066BC, 6XANALOG SWIT | U6 |
| 43 | 2 | ST | 31 | 222836-140 | CONN D ACCESS. JACK SOCKT | |

**BR471941 8-LINE MONITOR A5**

# PARTSLIST

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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 | C1 |
| | 2 | ST | 22 | BR459410 | CAP. ELEC 10U / 10 M | C47 |
| 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 | C54 |
| | 6 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C5 |
| | 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 | C28 |
| | 6 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C52 |
| 8 | 3 | ST | 22 | BR357642 | CAP. CER. 10N 100 S HI-K | C9 |
| | 3 | ST | 22 | BR357642 | CAP. CER. 10N 100 S HI-K | C15 |
| | 3 | ST | 22 | BR357642 | CAP. CER. 10N 100 S HI-K | C11 |
| 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. ELEC 6U8 / 25M | C16 |
| | 3 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C17 |
| | 3 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C18 |
| 14 | 1 | ST | 22 | BR357634 | CAP. CER. 2N2 100 K HI-K | C42 |
| 15 | 3 | ST | 23 | BR228001 | DIO SCHOT BAT 85 SI 200MA | CR19 |
| | 3 | ST | 23 | BR228001 | DIO SCHOT BAT 85 SI 200MA | CR1 |
| | 3 | ST | 23 | BR228001 | DIO SCHOT BAT 85 SI 200MA | CR11 |
| 16 | 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 | CR9 |
| | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR14 |
| | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR8 |
| | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR12 |
| | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR10 |
| 17 | 10 | mm | 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 M 2.5X 5 SLTD. CYL. BR | 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 |
| 25 | 3 | ST | 25 | 200730-003 | COIL,RF | L3 |
| | 3 | ST | 25 | 200730-003 | COIL,RF | L2 |
| | 3 | ST | 25 | 200730-003 | COIL,RF | L1 |
| 26 | 1 | ST | 41 | BR489808 | REAR PLATE A8 MICROC.RTC | MP1 |
| 27 | 1 | ST | 45 | 210840-001 | RETAINER | MP2 |

**BR487740 MICROCOMPUTER ASSY A8 RTC**

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 28 | 2 | ST | 51 | 210841-001 | THUMBSCREW | MP3 |
| 29 | 3 | ST | 26 | BR392820 | TRANS.LOPOW 2N2222A SI-N | Q2 |
| | 3 | ST | 26 | BR392820 | TRANS.LOPOW 2N2222A SI-N | Q3 |
| | 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 | 600004-081 | RES CARB. 2K2, 0.5J | R1 |
| 34 | 3 | ST | 21 | 600004-121 | RES CARB. 100K, 0.5J | R2 |
| | 3 | ST | 21 | 600004-121 | RES CARB. 100K, 0.5J | R78 |
| | 3 | ST | 21 | 600004-121 | RES CARB. 100K, 0.5J | R3 |
| 35 | 1 | ST | 21 | 600004-125 | RES CARB. 150K, 0.5J | R4 |
| 36 | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R5 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R10 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R11 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R12 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R13 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R19 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R21 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R7 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R36 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R34 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R49 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R42 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R27 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R25 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R89 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R88 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R33 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R103 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R39 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R51 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R98 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R40 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R97 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R48 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R35 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R99 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R47 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R41 |
| | 29 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R82 |
| 37 | 3 | ST | 21 | 600004-104 | RES CARB. 20K, 0.5J | R59 |
| | 3 | ST | 21 | 600004-104 | RES CARB. 20K, 0.5J | R6 |
| | 3 | ST | 21 | 600004-104 | RES CARB. 20K, 0.5J | R62 |
| 38 | 2 | ST | 21 | 600004-114 | RES CARB. 51K, 0.5J | R9 |
| | 2 | ST | 21 | 600004-114 | RES CARB. 51K, 0.5J | R8 |
| 39 | 4 | ST | 21 | 600004-089 | RES CARB. 4K7, 0.5J | R71 |

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| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 39 | 4 | ST | 21 | 600004-089 | RES CARB. 4K7, 0.5J | R102 |
| | 4 | ST | 21 | 600004-089 | RES CARB. 4K7, 0.5J | R14 |
| | 4 | ST | 21 | 600004-089 | RES CARB. 4K7, 0.5J | R15 |
| 40 | 6 | ST | 21 | BR241458 | RES CARB. 1K0 1/2JSFR25H | R23 |
| | 6 | ST | 21 | BR241458 | RES CARB. 1K0 1/2JSFR25H | R29 |
| | 6 | ST | 21 | BR241458 | RES CARB. 1K0 1/2JSFR25H | R22 |
| | 6 | ST | 21 | BR241458 | RES CARB. 1K0 1/2JSFR25H | R17 |
| | 6 | ST | 21 | BR241458 | RES CARB. 1K0 1/2JSFR25H | R28 |
| | 6 | ST | 21 | BR241458 | RES CARB. 1K0 1/2JSFR25H | R16 |
| 41 | 3 | ST | 21 | 600004-055 | RES CARB. 180R, 0.5J | R24 |
| | 3 | ST | 21 | 600004-055 | RES CARB. 180R, 0.5J | R18 |
| | 3 | ST | 21 | 600004-055 | RES CARB. 180R, 0.5J | R30 |
| 42 | 3 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R32 |
| | 3 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R26 |
| | 3 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R20 |
| 44 | 2 | ST | 21 | 600004-090 | RES CARB. 5K1, 0.5J | R66 |
| | 2 | ST | 21 | 600004-090 | RES CARB. 5K1, 0.5J | R64 |
| 45 | 6 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R65 |
| | 6 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R77 |
| | 6 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R79 |
| | 6 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R81 |
| | 6 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R83 |
| | 6 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R96 |
| 46 | 1 | ST | 21 | BR391093 | RES VAR 20K 1/2K CERM | R67 |
| 47 | 7 | ST | 21 | 235004-115 | RES FILM 56K / 0.4 J | R86 |
| | 7 | ST | 21 | 235004-115 | RES FILM 56K / 0.4 J | R84 |
| | 7 | ST | 21 | 235004-115 | RES FILM 56K / 0.4 J | R73 |
| | 7 | ST | 21 | 235004-115 | RES FILM 56K / 0.4 J | R68 |
| | 7 | ST | 21 | 235004-115 | RES FILM 56K / 0.4 J | R87 |
| | 7 | ST | 21 | 235004-115 | RES FILM 56K / 0.4 J | R93 |
| | 7 | ST | 21 | 235004-115 | RES FILM 56K / 0.4 J | R72 |
| 48 | 1 | ST | 21 | 600004-145 | RES CARB. 1M0, 0.5J | R69 |
| 49 | 1 | ST | 21 | 600004-099 | RES CARB. 12K, 0.5J | R70 |
| 51 | 2 | ST | 21 | 600004-063 | RES CARB. 390R, 0.5J | R75 |
| | 2 | ST | 21 | 600004-063 | RES CARB. 390R, 0.5J | R95 |
| 52 | 1 | ST | 21 | 600004-101 | RES CARB. 15K, 0.5J | R80 |
| 53 | 2 | ST | 21 | 600004-080 | RES CARB. 2K0, 0.5J | R90 |
| | 2 | ST | 21 | 600004-080 | RES CARB. 2K0, 0.5J | R85 |
| 54 | 1 | ST | 21 | 600004-131 | RES CARB. 270K, 0.5J | R100 |
| 55 | 1 | ST | 21 | 600004-088 | RES CARB. 4K3, 0.5J | R101 |
| 57 | 1 | ST | 24 | 230988-002 | IC, --80C85 | U1 |
| 58 | 1 | ST | 24 | 200499-095 | IC, --74HCT123 2XMONOST | U2 |
| 59 | 3 | ST | 24 | 200464-095 | IC, --74HCT 04, HEX INVERT | U3 |
| | 3 | ST | 24 | 200464-095 | IC, --74HCT 04, HEX INVERT | U5 |
| | 3 | ST | 24 | 200464-095 | IC, --74HCT 04, HEX INVERT | U10 |
| 60 | 1 | ST | 24 | 203927-095 | IC, --74HCT 14, INVERTERS | U4 |
| 61 | 4 | ST | 24 | 203469-006 | IC, --74 06N | U37 |

**BR487740 MICROCOMPUTER ASSY A8 RTC**

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 61 | 4 | ST | 24 | 203469-006 | IC, --74 06N | U6 |
| | 4 | ST | 24 | 203469-006 | IC, --74 06N | U56 |
| | 4 | ST | 24 | 203469-006 | IC, --74 06N | U47 |
| 62 | 1 | ST | 24 | 200466-095 | IC, --74HCT 08, AND GATES | U7 |
| 63 | 2 | ST | 24 | 200462-095 | IC, --74HCT 00, NAND GATE | U8 |
| | 2 | ST | 24 | 200462-095 | IC, --74HCT 00, NAND GATE | U15 |
| 64 | 4 | ST | 24 | 213541-095 | IC, --74HCT161E | U39 |
| | 4 | ST | 24 | 213541-095 | IC, --74HCT161E | U38 |
| | 4 | ST | 24 | 213541-095 | IC, --74HCT161E | U40 |
| | 4 | ST | 24 | 213541-095 | IC, --74HCT161E | U9 |
| 65 | 2 | ST | 24 | 200497-095 | IC, --74HCT 32, OR | U20 |
| | 2 | ST | 24 | 200497-095 | IC, --74HCT 32, OR | U11 |
| 66 | 1 | ST | 24 | 213289-026 | IC, --74LS373N 8X D LAT | U12 |
| 67 | 1 | ST | 24 | 207749-026 | IC, --74LS365N 6X BUSDR | U13 |
| 68 | 2 | ST | 24 | 200888-095 | IC, --74HCT 74, 2X D FF | U14 |
| | 2 | ST | 24 | 200888-095 | IC, --74HCT 74, 2X D FF | U28 |
| 69 | 2 | ST | 24 | 211115-026 | IC, --74LS240N 8X BUF.I | U41 |
| | 2 | ST | 24 | 211115-026 | IC, --74LS240N 8X BUF.I | U16 |
| 70 | 2 | ST | 24 | 207432-026 | IC, --74LS245N | U27 |
| | 2 | ST | 24 | 207432-026 | IC, --74LS245N | U17 |
| 71 | 1 | ST | 24 | 203515-095 | IC, --74HCT 11 3X3IN AN | U18 |
| 72 | 2 | ST | 24 | 206072-095 | IC, --74HCT138, DECODER | U19 |
| | 2 | ST | 24 | 206072-095 | IC, --74HCT138, DECODER | U21 |
| 73 | 2 | ST | 24 | 204494-095 | IC, --74HCT 21 4X2IN AN | U22 |
| | 2 | ST | 24 | 204494-095 | IC, --74HCT 21 4X2IN AN | U48 |
| 74 | 1 | ST | 24 | BR487503 | IC, --62421B RT CLOCK | U26 |
| 75 | 3 | ST | 24 | 200498-006 | IC, --74 37N 4X2IN NAND | U31 |
| | 3 | ST | 24 | 200498-006 | IC, --74 37N 4X2IN NAND | U29 |
| | 3 | ST | 24 | 200498-006 | IC, --74 37N 4X2IN NAND | U30 |
| 76 | 1 | ST | 24 | 208798-001 | IC, --1488L 4XLINEDRIV | U32 |
| 77 | 1 | ST | 24 | 208799-001 | IC, --75189AJ, LINE RECEIVER | U33 |
| 78 | 3 | ST | 24 | BR433632 | IC, MCA 255 OPTO ISOL | U34 |
| | 3 | ST | 24 | BR433632 | IC, MCA 255 OPTO ISOL | U35 |
| | 3 | ST | 24 | BR433632 | IC, MCA 255 OPTO ISOL | U36 |
| 79 | 1 | ST | 24 | 207659-095 | IC, --74HCT259 8X LATCH | U42 |
| 80 | 1 | ST | 24 | 207437-095 | IC, --74HCT374 | U43 |
| 81 | 1 | ST | 24 | 235243-026 | IC, --74LS145N BCD-DEC | U44 |
| 82 | 1 | ST | 24 | 213585-001 | IC, SRAM 8KX8BIT | U46 |
| 83 | 1 | ST | 24 | 211617-002 | IC, --4049B 6X INV-BUF | U49 |
| 84 | 1 | ST | 24 | 211608-002 | IC, --4027A 2X JK FF | U50 |
| 85 | 1 | ST | 24 | 212010-004 | IC, --4071B 4X2 INP OR | U51 |
| 86 | 1 | ST | 24 | 235049-026 | IC, --74LS377N 8X D-FF | U52 |
| 87 | 1 | ST | 24 | 207485-002 | IC, DAC08BC | U53 |
| 88 | 2 | ST | 24 | BR450294 | IC, TL 082CP OP.AMP. | U54 |
| | 2 | ST | 24 | BR450294 | IC, TL 082CP OP.AMP. | U55 |
| 89 | 2 | ST | 24 | 211620-002 | IC, --4066BC, 6XANALOG SWIT | U58 |
| | 2 | ST | 24 | 211620-002 | IC, --4066BC, 6XANALOG SWIT | U57 |

**BR487740 MICROCOMPUTER ASSY A8 RTC**

# PARTSLIST

Printed: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 90 | 1 | ST | 24 | BR455474 | IC, LM3302N VOLT COMP | U59 |
| 91 | 2 | ST | 23 | 203527-009 | DIODE ZENER 5V1 / 0.5W J | VR1 |
| | 2 | ST | 23 | 203527-009 | DIODE ZENER 5V1 / 0.5W J | VR2 |
| 92 | 1 | ST | 23 | 203527-008 | DIODE ZENER 4V7 / 0.5W J | VR3 |
| 94 | 1 | ST | 24 | 206133-008 | SOCKET, 40PIN | XU1 |
| 95 | 5 | ST | 24 | 206133-007 | SOCKET, 28PIN | XU24 |
| | 5 | ST | 24 | 206133-007 | SOCKET, 28PIN | XU25 |
| | 5 | ST | 24 | 206133-007 | SOCKET, 28PIN | XU45 |
| | 5 | ST | 24 | 206133-007 | SOCKET, 28PIN | XU23 |
| 98 | 1 | ST | 20 | BR433853 | CRYSTAL 6,14400MHZ HC49-U | Y1 |
| 101 | 1 | ST | 21 | 206088-042 | RES NETW 9 X 4K7 1/5G | R104 |
| 102 | 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 | C37 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C40 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C38 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C39 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C48 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C49 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C36 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C53 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C19 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C35 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C51 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C23 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C20 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C50 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C22 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C34 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C24 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C25 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C26 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C27 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C29 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C30 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C31 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C32 |
| | 28 | ST | 22 | 221220-007 | CAP. PLAST 100N / 63K | C21 |
| 104 | 1 | ST | 31 | 212654-021 | CONN D 9 S/PCB ANGLE | J2 |
| 105 | 1,56 | ST | 31 | 208801-001 | CONN MINI-JUMP 36 PIN | TP16-29 |
| | 1,56 | ST | 31 | 208801-001 | CONN MINI-JUMP 36 PIN | TP1-14 |
| | 1,56 | ST | 31 | 208801-001 | CONN MINI-JUMP 36 PIN | S1-S7 |
| 108 | 1 | ST | 48 | 214073-004 | LABEL, ADHESIVE, ESD | |
| 109 | 0,08 | M | 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: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 1 | 1 | ST | 37 | BR490563 | PWB,INTERFACE RS232 422/485 | |
| 2 | 2 | ST | 22 | BR454117 | CAP. PLST 68N 250 K | C33 |
| | 2 | ST | 22 | BR454117 | CAP. PLST 68N 250 K | C1 |
| 3 | 7 | ST | 22 | BR477176 | CAP. CER. 330P 100 K | C4 |
| | 7 | ST | 22 | BR477176 | CAP. CER. 330P 100 K | C3 |
| | 7 | ST | 22 | BR477176 | CAP. CER. 330P 100 K | C2 |
| | 7 | ST | 22 | BR477176 | CAP. CER. 330P 100 K | C6 |
| | 7 | ST | 22 | BR477176 | CAP. CER. 330P 100 K | C7 |
| | 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. ELEC 6U8 / 25M | C9 |
| | 3 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C11 |
| | 3 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C13 |
| 5 | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C20 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C25 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C26 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C23 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C27 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C28 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C36 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C22 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C10 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C12 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C29 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C21 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C24 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C14 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C15 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C16 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C17 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C18 |
| | 19 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C19 |
| 6 | 1 | ST | 22 | BR437395 | CAP. CER. 220P 100 G N750 | C30 |
| 7 | 3 | ST | 22 | 202542-014 | CAP. CER. 47P / 100G | C31 |
| | 3 | ST | 22 | 202542-014 | CAP. CER. 47P / 100G | C35 |
| | 3 | ST | 22 | 202542-014 | CAP. CER. 47P / 100G | 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 M 2.5X 5 SLTD. CYL. BR | H1 |
| 11 | 1 | ST | 31 | 222836-140 | CONN D ACCESS. JACK SOCKT | H2 |
| 13 | 1 | ST | 31 | 212654-023 | CONN D 25 S/PCB ANGLE | J1 |
| 14 | 3 | ST | 25 | 200730-003 | COIL,RF | L3 |
| | 3 | ST | 25 | 200730-003 | COIL,RF | L2 |
| | 3 | ST | 25 | 200730-003 | COIL,RF | L1 |
| 15 | 1 | ST | 41 | BR491829 | REAR PLATE A9 INTERFACE | MP1 |
| 16 | 1 | ST | 45 | 210840-001 | RETAINER | MP2 |
| 17 | 2 | ST | 51 | 210841-001 | THUMBSCREW | MP3 |

**BR490598 INTERF. RS232 422/485 A9**

# PARTSLIST

Printed: 1999-02-10

| 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 | 600004-066 | RES CARB. 510R, 0.5J | R10 |
| | 2 | ST | 21 | 600004-066 | RES CARB. 510R, 0.5J | R1 |
| 21 | 1 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R2 |
| 22 | 2 | ST | 21 | 600004-071 | RES CARB. 820R, 0.5J | R8 |
| | 2 | ST | 21 | 600004-071 | RES CARB. 820R, 0.5J | R7 |
| 23 | 1 | ST | 21 | 600004-107 | RES CARB. 27K, 0.5J | R11 |
| 24 | 1 | ST | 21 | BR359165 | RES VAR 10K 1/2K CERM | R12 |
| 25 | 1 | ST | 21 | 600004-075 | RES CARB. 1K2, 0.5J | R13 |
| 26 | 1 | ST | 21 | 600004-105 | RES CARB. 22K, 0.5J | R14 |
| 27 | 2 | ST | 21 | 600004-033 | RES CARB. 22R, 0.5J | R16 |
| | 2 | ST | 21 | 600004-033 | RES CARB. 22R, 0.5J | R15 |
| 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, --74LS 04N, 6XINV. | U1 |
| 32 | 1 | ST | 24 | 200488-026 | IC, --74LS 90N DEC.COUNT | U2 |
| 33 | 2 | ST | 24 | 213541-095 | IC, --74HCT161E | U4 |
| | 2 | ST | 24 | 213541-095 | IC, --74HCT161E | U3 |
| 34 | 1 | ST | 24 | 207432-095 | IC, --74HCT245E | U5 |
| 35 | 1 | ST | 24 | 206072-095 | IC, --74HCT138, DECODER | U6 |
| 36 | 1 | ST | 24 | 200464-095 | IC, --74HCT 04, HEX INVERT | U7 |
| 37 | 1 | ST | 24 | 200497-095 | IC, --74HCT 32, OR | U8 |
| 38 | 1 | ST | 24 | 203469-006 | IC, --74 06N | U9 |
| 39 | 1 | ST | 24 | 230989-002 | IC, USARD, MSM82C51ARS | U10 |
| 40 | 1 | ST | 24 | 208798-001 | IC, --1488L 4XLINEDRIV | U11 |
| 41 | 1 | ST | 24 | 208799-001 | IC, --75189AJ, LINE RECEIVER | U12 |
| 42 | 1 | ST | 24 | BR357707 | IC, MC1458P OP.AMPL. | U13 |
| 43 | 1 | ST | 24 | 207749-095 | IC, --74HCT365 6XBUSDRI | U14 |
| 44 | 2 | ST | 24 | 221579-001 | IC, --75 176, TRANSCEIVER | U16 |
| | 2 | ST | 24 | 221579-001 | IC, --75 176, TRANSCEIVER | U15 |
| 45 | 2 | ST | 23 | 203527-019 | DIODE ZENER 13V0 / 0.5W J | VR3 |
| | 2 | ST | 23 | 203527-019 | DIODE ZENER 13V0 / 0.5W J | VR2 |
| 46 | 1 | ST | 20 | BR433853 | CRYSTAL 6,14400MHZ HC49-U | Y1 |
| 47 | 15 | mm | 34 | 222837-004 | TAPE, DOUBLE-SIDED 1.6MM | |
| 48 | 0,015 | M | 32 | 200843-009 | WIRE COP TIN-CTD Ø0.6MM | |
| 49 | 2 | 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: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 1 | 1 | ST | 61 | BR471534 | REGULATOR-AF,ASSY A10A1 | A1 |
| 2 | 1 | ST | 61 | BR471550 | TRAFO ASSY A10A2 | A2 |
| 3 | 1 | ST | 56 | BR458341 | HEATSINK ASSY A10A3 | A3 |
| 4 | 2 | ST | 51 | 202185-003 | SCREW M 2.5X 5 SLTD. CYL. BR | 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 15 S/PCB ANGLE | |
| 9 | 7 | MM | 34 | 201701-009 | SLEEVING, SHRINK. 19.0MM B | |

**BR471720 POWER SUPPLY ASSY A10 220**

# PARTSLIST

Printed: 1999-02-10

| 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 | C17 |
| | 4 | ST | 22 | BR454265 | CAP. ELEC 100U / 25 T | C1 |
| | 4 | ST | 22 | BR454265 | CAP. ELEC 100U / 25 T | C21 |
| | 4 | ST | 22 | BR454265 | CAP. ELEC 100U / 25 T | C40 |
| 3 | 5 | ST | 22 | BR202967 | CAP. PLST 100N 100 K | C45 |
| | 5 | ST | 22 | BR202967 | CAP. PLST 100N 100 K | C47 |
| | 5 | ST | 22 | BR202967 | CAP. PLST 100N 100 K | C22 |
| | 5 | ST | 22 | BR202967 | CAP. PLST 100N 100 K | C2 |
| | 5 | ST | 22 | BR202967 | CAP. PLST 100N 100 K | C46 |
| 4 | 12 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C10 |
| | 12 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C23 |
| | 12 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C53 |
| | 12 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C16 |
| | 12 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C18 |
| | 12 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C42 |
| | 12 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C55 |
| | 12 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C13 |
| | 12 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C6 |
| | 12 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C3 |
| | 12 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C56 |
| | 12 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C4 |
| 5 | 9 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C44 |
| | 9 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C41 |
| | 9 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C34 |
| | 9 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C50 |
| | 9 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C5 |
| | 9 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C30 |
| | 9 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C43 |
| | 9 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C38 |
| | 9 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C35 |
| 6 | 2 | ST | 22 | BR451053 | CAP. ELEC 68U / 6,3 M | C36 |
| | 2 | ST | 22 | BR451053 | CAP. ELEC 68U / 6,3 M | C7 |
| 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 | C26 |
| | 7 | ST | 22 | BR357642 | CAP. CER. 10N 100 S HI-K | C15 |
| | 7 | ST | 22 | BR357642 | CAP. CER. 10N 100 S HI-K | C25 |
| | 7 | ST | 22 | BR357642 | CAP. CER. 10N 100 S HI-K | C32 |
| | 7 | ST | 22 | BR357642 | CAP. CER. 10N 100 S HI-K | C20 |
| | 7 | ST | 22 | BR357642 | CAP. CER. 10N 100 S HI-K | C24 |
| | 7 | ST | 22 | BR357642 | CAP. CER. 10N 100 S HI-K | C9 |
| 9 | 1 | ST | 22 | 202542-011 | CAP. CER. 27P / 100G | C11 |
| 10 | 2 | ST | 22 | BR454273 | CAP. ELEC 220U / 25 T | C52 |
| | 2 | ST | 22 | BR454273 | CAP. ELEC 220U / 25 T | C12 |
| 11 | 2 | ST | 22 | 200514-004 | CAP. CER 4N7 / 100K | C19 |
| | 2 | ST | 22 | 200514-004 | CAP. CER 4N7 / 100K | C48 |

**BR471534 REGULATOR-AF,ASSY A10A1**

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 12 | 1 | ST | 22 | 200327-033 | CAP. POLYPRO. 1N0 / 400 F | C27 |
| 13 | 2 | ST | 22 | 200327-057 | CAP. POLYPRO. 10N / 63 F | C28 |
| | 2 | ST | 22 | 200327-057 | CAP. POLYPRO. 10N / 63 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 | BR454303 | CAP. ELEC 470U / 16 T LL | C54 |
| 20 | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR7 |
| | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR6 |
| | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR5 |
| | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR4 |
| | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR3 |
| | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR2 |
| | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR9 |
| | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR8 |
| | 9 | ST | 23 | 200352-001 | DIODE 1N4148 | CR1 |
| 21 | 6 | ST | 51 | 202185-003 | SCREW M 2.5X 5 SLTD. CYL. BR | H1 |
| 22 | 5 | ST | 51 | BR321494 | 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 | 56 | 216041-001 | HEAT SINK TO-220 V-5630 | H5 |
| 26 | 1 | ST | 56 | 200515-013 | TRANS.ACCESS ISOLAT.PLD | H6 |
| 27 | 16 | ST | 56 | 202152-002 | INSULATOR PEARL, \ 4.19X1 | H7 |
| | 16 | ST | 56 | 202152-002 | INSULATOR PEARL, \ 4.19X1 | H10 |
| 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 | Q18 |
| | 5 | ST | 26 | BR359157 | TRANS.LOPOW BC307B SI-P T | Q9 |
| | 5 | ST | 26 | BR359157 | TRANS.LOPOW BC307B SI-P T | Q3 |
| | 5 | ST | 26 | BR359157 | TRANS.LOPOW BC307B SI-P T | Q8 |
| | 5 | ST | 26 | BR359157 | TRANS.LOPOW BC307B SI-P T | Q1 |
| 37 | 8 | ST | 26 | 235031-003 | TRANSISTOR, NPN, BC547B | Q14 |
| | 8 | ST | 26 | 235031-003 | TRANSISTOR, NPN, BC547B | Q6 |
| | 8 | ST | 26 | 235031-003 | TRANSISTOR, NPN, BC547B | Q17 |
| | 8 | ST | 26 | 235031-003 | TRANSISTOR, NPN, BC547B | Q4 |
| | 8 | ST | 26 | 235031-003 | TRANSISTOR, NPN, BC547B | Q13 |
| | 8 | ST | 26 | 235031-003 | TRANSISTOR, NPN, BC547B | Q11 |
| | 8 | ST | 26 | 235031-003 | TRANSISTOR, NPN, BC547B | Q15 |

**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 | Q16 |
| 38 | 3 | ST | 26 | BR454206 | TRANS.SCR 2N6402 200V16A | Q10 |
| | 3 | ST | 26 | BR454206 | TRANS.SCR 2N6402 200V16A | Q7 |
| | 3 | ST | 26 | BR454206 | TRANS.SCR 2N6402 200V16A | Q5 |
| 39 | 1 | ST | 26 | BR454605 | TRANS.JFETN 2N3955 DUAL T | Q12 |
| 40 | 1 | ST | 21 | 600004-099 | RES CARB. 12K, 0.5J | R1 |
| 41 | 1 | ST | 21 | 600004-082 | RES CARB. 2K4, 0.5J | R3 |
| 42 | 11 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R4 |
| | 11 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R14 |
| | 11 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R15 |
| | 11 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R17 |
| | 11 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R102 |
| | 11 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R103 |
| | 11 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R113 |
| | 11 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R105 |
| | 11 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R119 |
| | 11 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R117 |
| | 11 | ST | 21 | 600004-097 | RES CARB. 10K, 0.5J | R81 |
| 43 | 2 | ST | 21 | 600004-105 | RES CARB. 22K, 0.5J | R16 |
| | 2 | ST | 21 | 600004-105 | RES CARB. 22K, 0.5J | 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 | 600004-077 | RES CARB. 1K5, 0.5J | R8 |
| | 3 | ST | 21 | 600004-077 | RES CARB. 1K5, 0.5J | R124 |
| | 3 | ST | 21 | 600004-077 | RES CARB. 1K5, 0.5J | R125 |
| 47 | 2 | ST | 21 | 600004-089 | RES CARB. 4K7, 0.5J | R10 |
| | 2 | ST | 21 | 600004-089 | RES CARB. 4K7, 0.5J | R134 |
| 48 | 1 | ST | 21 | 600004-083 | RES CARB. 2K7, 0.5J | R11 |
| 49 | 4 | ST | 21 | 600004-049 | RES CARB. 100R, 0.5J | R12 |
| | 4 | ST | 21 | 600004-049 | RES CARB. 100R, 0.5J | R61 |
| | 4 | ST | 21 | 600004-049 | RES CARB. 100R, 0.5J | R41 |
| | 4 | ST | 21 | 600004-049 | RES CARB. 100R, 0.5J | R49 |
| 50 | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R18 |
| | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R37 |
| | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R53 |
| | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R43 |
| | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R135 |
| | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R52 |
| | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R35 |
| | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R51 |
| | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R29 |
| | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R28 |
| | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R20 |
| | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R42 |
| | 13 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R133 |
| 51 | 2 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R19 |
| | 2 | ST | 21 | 600004-087 | RES CARB. 3K9, 0.5J | R36 |

**BR471534 REGULATOR-AF,ASSY A10A1**

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 52 | 6 | ST | 21 | 600004-091 | RES CARB. 5K6, 0.5J | R21 |
| | 6 | ST | 21 | 600004-091 | RES CARB. 5K6, 0.5J | R38 |
| | 6 | ST | 21 | 600004-091 | RES CARB. 5K6, 0.5J | R39 |
| | 6 | ST | 21 | 600004-091 | RES CARB. 5K6, 0.5J | R55 |
| | 6 | ST | 21 | 600004-091 | RES CARB. 5K6, 0.5J | R22 |
| | 6 | ST | 21 | 600004-091 | RES CARB. 5K6, 0.5J | R54 |
| 53 | 2 | ST | 21 | 600004-042 | RES CARB. 51R, 0.5J | R40 |
| | 2 | ST | 21 | 600004-042 | RES CARB. 51R, 0.5J | R23 |
| 54 | 2 | ST | 21 | 600004-116 | RES CARB. 62K, 0.5J | R24 |
| | 2 | ST | 21 | 600004-116 | RES CARB. 62K, 0.5J | R59 |
| 55 | 1 | ST | 21 | 600004-107 | RES CARB. 27K, 0.5J | R25 |
| 56 | 5 | ST | 21 | BR454184 | RES WW 0R1 / 4J | R58 |
| | 5 | ST | 21 | BR454184 | RES WW 0R1 / 4J | R26 |
| | 5 | ST | 21 | BR454184 | RES WW 0R1 / 4J | R27 |
| | 5 | ST | 21 | BR454184 | RES WW 0R1 / 4J | R57 |
| | 5 | ST | 21 | BR454184 | RES WW 0R1 / 4J | R44 |
| 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 | 600004-061 | RES CARB. 330R, 0.5J | R123 |
| | 5 | ST | 21 | 600004-061 | RES CARB. 330R, 0.5J | R62 |
| | 5 | ST | 21 | 600004-061 | RES CARB. 330R, 0.5J | R126 |
| | 5 | ST | 21 | 600004-061 | RES CARB. 330R, 0.5J | R34 |
| | 5 | ST | 21 | 600004-061 | RES CARB. 330R, 0.5J | R33 |
| 59 | 2 | ST | 21 | 600004-053 | RES CARB. 150R, 0.5J | R45 |
| | 2 | ST | 21 | 600004-053 | RES CARB. 150R, 0.5J | R132 |
| 60 | 1 | ST | 21 | 600004-108 | RES CARB. 30K, 0.5J | 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 | 600004-057 | RES CARB. 220R, 0.5J | R50 |
| 64 | 1 | ST | 21 | 600004-056 | RES CARB. 200R, 0.5J | R56 |
| 65 | 2 | ST | 21 | 600004-093 | RES CARB. 6K8, 0.5J | R60 |
| | 2 | ST | 21 | 600004-093 | RES CARB. 6K8, 0.5J | R115 |
| 66 | 1 | ST | 21 | BR454192 | RES WW 0R22 / 4J | R63 |
| 67 | 1 | ST | 21 | 600004-063 | RES CARB. 390R, 0.5J | R64 |
| 68 | 2 | ST | 21 | 600004-068 | RES CARB. 620R, 0.5J | R65 |
| | 2 | ST | 21 | 600004-068 | RES CARB. 620R, 0.5J | R87 |
| 69 | 2 | ST | 21 | 600004-111 | RES CARB. 39K, 0.5J | R94 |
| | 2 | ST | 21 | 600004-111 | RES CARB. 39K, 0.5J | R66 |
| 70 | 1 | ST | 21 | 600004-101 | RES CARB. 15K, 0.5J | R67 |
| 71 | 2 | ST | 21 | 600004-058 | RES CARB. 240R, 0.5J | R68 |
| | 2 | ST | 21 | 600004-058 | RES CARB. 240R, 0.5J | R69 |
| 72 | 1 | ST | 21 | 600004-047 | RES CARB. 82R, 0.5J | R70 |
| 73 | 1 | ST | 21 | 600004-038 | RES CARB. 36R, 0.5J | R71 |
| 74 | 4 | ST | 21 | 600005-301 | RES FILM 10K0 / 0.6F | R95 |
| | 4 | ST | 21 | 600005-301 | RES FILM 10K0 / 0.6F | R72 |
| | 4 | ST | 21 | 600005-301 | RES FILM 10K0 / 0.6F | R86 |

**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 | R85 |
| 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 | 235004-115 | RES FILM 56K / 0.4 J | R98 |
| | 3 | ST | 21 | 235004-115 | RES FILM 56K / 0.4 J | R75 |
| | 3 | ST | 21 | 235004-115 | RES FILM 56K / 0.4 J | R76 |
| 78 | 6 | ST | 21 | 600004-129 | RES CARB. 220K, 0.5J | R77 |
| | 6 | ST | 21 | 600004-129 | RES CARB. 220K, 0.5J | R79 |
| | 6 | ST | 21 | 600004-129 | RES CARB. 220K, 0.5J | R97 |
| | 6 | ST | 21 | 600004-129 | RES CARB. 220K, 0.5J | R78 |
| | 6 | ST | 21 | 600004-129 | RES CARB. 220K, 0.5J | R91 |
| | 6 | ST | 21 | 600004-129 | RES CARB. 220K, 0.5J | R80 |
| 79 | 2 | ST | 21 | 600004-085 | RES CARB. 3K3, 0.5J | R82 |
| | 2 | ST | 21 | 600004-085 | RES CARB. 3K3, 0.5J | R84 |
| 80 | 3 | ST | 21 | BR359165 | RES VAR 10K 1/2K CERM | R83 |
| | 3 | ST | 21 | BR359165 | RES VAR 10K 1/2K CERM | R90 |
| | 3 | ST | 21 | BR359165 | RES VAR 10K 1/2K CERM | R118 |
| 81 | 1 | ST | 21 | 600004-110 | RES CARB. 36K, 0.5J | R88 |
| 82 | 1 | ST | 21 | BR450251 | RES NTC 15K K M822 | R89 |
| 83 | 2 | ST | 21 | 600004-121 | RES CARB. 100K, 0.5J | R116 |
| | 2 | ST | 21 | 600004-121 | RES CARB. 100K, 0.5J | R92 |
| 84 | 2 | ST | 21 | 600004-113 | RES CARB. 47K, 0.5J | R114 |
| | 2 | ST | 21 | 600004-113 | RES CARB. 47K, 0.5J | R93 |
| 85 | 1 | ST | 21 | 600005-331 | RES FILM 20K5 / 0.6F | R96 |
| 86 | 4 | ST | 21 | 600004-081 | RES CARB. 2K2, 0.5J | R109 |
| | 4 | ST | 21 | 600004-081 | RES CARB. 2K2, 0.5J | R99 |
| | 4 | ST | 21 | 600004-081 | RES CARB. 2K2, 0.5J | R110 |
| | 4 | ST | 21 | 600004-081 | RES CARB. 2K2, 0.5J | R111 |
| 87 | 2 | ST | 21 | 600004-071 | RES CARB. 820R, 0.5J | R101 |
| | 2 | ST | 21 | 600004-071 | RES CARB. 820R, 0.5J | R100 |
| 88 | 1 | ST | 21 | 600004-095 | RES CARB. 8K2, 0.5J | R104 |
| 89 | 3 | ST | 21 | 600004-075 | RES CARB. 1K2, 0.5J | R112 |
| | 3 | ST | 21 | 600004-075 | RES CARB. 1K2, 0.5J | R108 |
| | 3 | ST | 21 | 600004-075 | RES CARB. 1K2, 0.5J | R106 |
| 90 | 1 | ST | 21 | 600004-065 | RES CARB. 470R, 0.5J | R107 |
| 91 | 1 | ST | 21 | 600004-118 | RES CARB. 75K, 0.5J | R120 |
| 92 | 2 | ST | 21 | 600004-055 | RES CARB. 180R, 0.5J | R121 |
| | 2 | ST | 21 | 600004-055 | RES CARB. 180R, 0.5J | R128 |
| 93 | 1 | ST | 21 | 600004-033 | RES CARB. 22R, 0.5J | R122 |
| 94 | 1 | ST | 21 | 600004-040 | RES CARB. 43R, 0.5J | R127 |
| 95 | 1 | ST | 21 | 600004-009 | RES CARB. 2R2, 0.5J | R129 |
| 96 | 1 | ST | 21 | BR462004 | RES WW 1R0 / 5J | R130 |
| 97 | 1 | ST | 21 | BR458686 | RES WW 4R7 / 4J | R131 |
| 98 | 1 | ST | 33 | BR471798 | SWITCH, PCP DIP-FIX 8X ON/OF | 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**

# PARTSLIST

Printed: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 101 | 1 | ST | 24 | BR454370 | IC, 79MGU1 VOLT REGL. | U1 |
| 102 | 1 | ST | 24 | 200518-003 | IC, LM723CN, REG | U2 |
| 103 | 1 | ST | 24 | 203809-003 | IC, LF 356 N, OP. AMP. | U3 |
| 104 | 1 | ST | 24 | 200394-003 | IC, LM301A OP.AMP. | U4 |
| 105 | 1 | ST | 24 | 207287-001 | IC, LM324N 4X OP.AMP. | U5 |
| 106 | 2 | ST | 24 | 236675-002 | IC, TL084, OP AMP. QUAD | U6 |
| | 2 | ST | 24 | 236675-002 | IC, TL084, OP AMP. QUAD | U7 |
| 107 | 1 | ST | 24 | BR454230 | IC, LM3054N TRANS.ARR | U8 |
| 108 | 1 | ST | 24 | BR443964 | IC, 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 | 203527-021 | DIODE ZENER 16V0 / 0.5W J | VR2 |
| | 2 | ST | 23 | 203527-021 | DIODE ZENER 16V0 / 0.5W J | 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 | VR8 |
| | 2 | ST | 23 | BR228818 | DIO ZEN ZPD 2.7 2.7V 0.5W | VR7 |
| 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 | 600004-029 | RES CARB. 15R, 0.5J | R136 |
| 116 | 1 | ST | 37 | BR464902 | FLATCABLE.ASSY W1 A10 | |
| 117 | 1 | ST | 48 | 214073-004 | LABEL, ADHESIVE, ESD | |
| 118 | 1 | ST | 22 | 235010-001 | CAP. ELEC 1U0 / 25M | C58 |

**BR471534 REGULATOR-AF,ASSY A10A1**

# PARTSLIST

Printed: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 1 | 1 | ST | 37 | BR471542 | PWB,TRANSFORMER AS. A10A | |
| 2 | 1 | ST | 60 | BR471968 | TERMINAL ASSY A10A2A1 | A1 |
| 3 | 3 | ST | 22 | BR385190 | CAP. CER. 4N7 5KV M HI-K | C2 |
| | 3 | ST | 22 | BR385190 | CAP. CER. 4N7 5KV M HI-K | C1 |
| | 3 | ST | 22 | BR385190 | CAP. CER. 4N7 5KV M HI-K | C3 |
| 4 | 1 | ST | 22 | BR458511 | CAP. PLST 100N 630 K | C4 |
| 5 | 3 | ST | 22 | BR202967 | CAP. PLST 100N 100 K | C5 |
| | 3 | ST | 22 | BR202967 | CAP. PLST 100N 100 K | C6 |
| | 3 | ST | 22 | BR202967 | CAP. PLST 100N 100 K | C7 |
| 6 | 1 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C8 |
| 7 | 1 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C9 |
| 8 | 5 | ST | 22 | BR366471 | CAP. ELEC 1M / 40 T T | C10 |
| | 5 | ST | 22 | BR366471 | CAP. ELEC 1M / 40 T T | C11 |
| | 5 | ST | 22 | BR366471 | CAP. ELEC 1M / 40 T T | C12 |
| | 5 | ST | 22 | BR366471 | CAP. ELEC 1M / 40 T T | C14 |
| | 5 | ST | 22 | BR366471 | CAP. ELEC 1M / 40 T T | C13 |
| 9 | 6 | ST | 22 | BR373516 | CAP. ELEC 2M2 / 25 T LL | C17 |
| | 6 | ST | 22 | BR373516 | CAP. ELEC 2M2 / 25 T LL | C18 |
| | 6 | ST | 22 | BR373516 | CAP. ELEC 2M2 / 25 T LL | C16 |
| | 6 | ST | 22 | BR373516 | CAP. ELEC 2M2 / 25 T LL | C15 |
| | 6 | ST | 22 | BR373516 | CAP. ELEC 2M2 / 25 T LL | C19 |
| | 6 | ST | 22 | BR373516 | CAP. ELEC 2M2 / 25 T LL | C20 |
| 10 | 4 | ST | 23 | 222210-003 | DIODE MR502 | CR3 |
| | 4 | ST | 23 | 222210-003 | DIODE MR502 | CR1 |
| | 4 | ST | 23 | 222210-003 | DIODE MR502 | CR2 |
| | 4 | ST | 23 | 222210-003 | DIODE MR502 | CR4 |
| 11 | 3 | ST | 33 | BR394629 | FUSE 20X5MM 6,3A T | F3 |
| | 3 | ST | 33 | BR394629 | FUSE 20X5MM 6,3A T | F1 |
| | 3 | ST | 33 | BR394629 | FUSE 20X5MM 6,3A T | F2 |
| 12 | 5 | ST | 51 | 202185-003 | SCREW M 2.5X 5 SLTD. CYL. BR | H1 |
| 13 | 4 | ST | 51 | BR327239 | SCREW M 4 X10 CHM CU SN | H2 |
| 14 | 1 | ST | 51 | BR321494 | SCREW M 3 X 5 CHM CU SN | H3 |
| 15 | 1 | ST | 51 | 200668-054 | SCREW M5 X 60 | H4 |
| 16 | 1 | ST | 52 | BR327549 | NUT M 5 M CU SN | H5 |
| 17 | 1 | ST | 52 | BR482978 | STAY NUT, M3 X 6 N5 W/TAB | H6 |
| 18 | 18 | ST | 31 | BR442399 | TERMINAL STUD 140-1785-2 | H7 |
| 20 | 1 | ST | 45 | BR475343 | STRAP,CABLE L292XB4,8 | H9 |
| 21 | 2 | ST | 25 | 232316-005 | CHOKES 1.5A / 25 H | L2 |
| | 2 | ST | 25 | 232316-005 | CHOKES 1.5A / 25 H | L1 |
| 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 | 41 | BR458430 | HEAT SINK A10A2 M 3000 | MP4 |
| 26 | 1 | ST | 21 | 235005-247 | RES FILM 3K01 / 0.4F | 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**

# PARTSLIST

Printed: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 31 | 6 | ST | 31 | 201268-001 | CLIP ELEC | XF1 |
| | 6 | ST | 31 | 201268-001 | CLIP ELEC | XF2 |
| | 6 | ST | 31 | 201268-001 | CLIP ELEC | XF3 |
| 32 | 2 | ST | 51 | BR321494 | SCREW M 3 X 5 CHM CU SN | |
| 33 | 2 | ST | 51 | BR327220 | SCREW M 4 X 8 CHM CU SN | |
| 34 | 0,01 | M | 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 | |

# PARTSLIST

Printed: 1999-02-10

| 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 | F2 |
| | 2 | ST | 33 | 201270-017 | FUSE 5X20 SLOW 1,0A | F1 |
| 3 | 2 | ST | 51 | BR403377 | SCREW SELFT.4X5/16UHPX-AB | H1 |
| 4 | 1 | ST | 51 | BR327174 | SCREW M 3 X12 CHM CU SN | H2 |
| 5 | 1 | ST | 31 | BR457736 | CONN MAINS 3P MALE | J1 |
| 6 | 1 | ST | 41 | BR476102 | REAR PLATE A10 | MP1 |
| 7 | 1 | ST | 33 | BR248312 | SWITCH, 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 | 0,180 | 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 | 0,280 | M | 32 | BR333018 | WIRE,ELEC 0,75 VIOLET | |
| 17 | 0,050 | MM | 34 | 201701-004 | SLEEVING, SHRINK. 3.2MM B | |
| 18 | 1 | G | 78 | 200799-001 | COMPOUND.THERMAL,SILICO | |
| 19 | 0,180 | M | 32 | BR329959 | WIRE,ELEC 0,75 ORANGE | |
| 20 | 1 | ST | 53 | 200559-002 | WASHER LOCK 3.1X0.8MM | |

**BR471968 TERMINAL ASSY A10A2A1**

# PARTSLIST

Printed: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 1 | 3 | ST | 26 | BR458546 | TRANS.ACCESS ISOLATIONS | H1 |
| 2 | 3 | ST | 56 | 200515-013 | TRANS.ACCESS ISOLAT.PLD | H2 |
| 3 | 4 | ST | 51 | BR327220 | SCREW M 4 X 8 CHM CU SN | H3 |
| 4 | 6 | ST | 51 | BR321494 | 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, BLIND 3.3/4.8 | H6 |
| 7 | 3 | ST | 45 | BR458465 | CLAMP,CABLE CV3 3MMX7 | H7 |
| 8 | 7 | ST | 45 | BR458473 | CLAMP,CABLE CV6 6MMX7 | H8 |
| 9 | 0,100 | MM | 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 | Q1 |
|  | 2 | ST | 26 | BR454400 | TRANS.DARLN BDX 54A SI-P | Q3 |
| 13 | 1 | ST | 26 | 235035-004 | TRANSISTOR NPN DARL, BDX5 | Q2 |
| 14 | 1 | ST | 37 | BR458910 | CABLE ASSY W1 A10A3 | W1 |

**BR458341 HEATSINK ASSY A10A3**

**Dansk Radio Comm ApS**

# PARTSLIST

Printed: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 1 | 1 | ST | 60 | 600135-001 | FR PAN CKT RX/RC4010, A11A1 | A1 |
| 2 | 4 | ST | 51 | 202185-003 | SCREW M 2.5X 5 SLTD. CYL. BR | H1 |
| 3 | 8 | ST | 51 | BR321494 | 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 SELFT.2X1/8 PHPX- | H4 |
| 6 | 8 | ST | 53 | BR245674 | WASHER NYLON Ø10MM | H6 |
| 7 | 2 | ST | 51 | BR403342 | SCREW M 3 X 6 R UNB PINOL | 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 |
| 14 | 2 | ST | 45 | 201197-049 | STRAP, CABLE, NAT Ø20X2.5 | |
| 16 | 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 |
| 19 | 2 | ST | 54 | BR436518 | RIVET, BLIND 3.3/4.8 | H20 |
| 20 | 1 | ST | 52 | BR321486 | NUT M10F 10X14X3MM | H21 |
| 21 | 0,360 | D2 | 20 | BR475289 | CLOTH, LOUDSPEAK BLK 60X6 | H22 |
| 22 | 1 | ST | 53 | BR402923 | WASHER FLAT Ø10MM GULCR | H23 |
| 23 | 1 | ST | 31 | 206165-002 | CONN JACK, SWITCH, 6.3MM | J1 |
| 24 | 1 | ST | 20 | BR474924 | LOUDSPEAKER 8R 10W 60X60 | LS1 |
| 25 | 2 | ST | 43 | BR216674 | HANDLE FOR 5 1/4" 111MM | MP1 |
| 26 | 4 | ST | 51 | BR260827 | THUMBSCREW,KNURLED M6 | MP2 |
| 27 | 4 | ST | 46 | BR268682 | GUIDE F/THUMBSCREW 260827 | MP3 |
| 28 | 1 | ST | 41 | 600129-001 | FRONT PLATE RC4010 | MP4 |
| 29 | 1 | ST | 41 | 600128-001 | GUIDE SHEET A11 | MP5 |
| 30 | 2 | ST | 46 | BR445827 | BRACKET,FRONTPLATE A11 | MP6 |
| 31 | 1 | ST | 57 | BR458015 | BUSHING, PILOT A11 | MP7 |
| 32 | 1 | ST | 42 | BR457728 | CODE WHEEL A11 | MP9 |
| 33 | 1 | ST | 42 | BR458023 | FLY WHEEL A11 | MP10 |
| 34 | 1 | ST | 42 | BR458007 | SHAFT F/CODE WHEEL A11 | MP11 |
| 35 | 1 | ST | 41 | BR457957 | SCREEN A11 | MP12 |
| 36 | 4 | ST | 53 | BR267015 | WASHER NYLON 12MM x15MM | MP13 |
| 37 | 1 | ST | 48 | BR490377 | WINDOW,DSPL RX4010 | MP14 |
| 38 | 1 | ST | 41 | BR471690 | MOUNTING F/LOUDSP. A11A1 | MP16 |
| 39 | 2 | ST | 52 | BR377104 | STAY NUT, M3 X 5,5 N5 | MP17 |
| 41 | 1 | ST | 21 | BR454516 | RES VAR 10K CERM LIN | R1 |
| 42 | 2 | ST | 21 | BR454508 | RES VAR 1K0 CERM LIN | R3 |
| | 2 | ST | 21 | BR454508 | RES VAR 1K0 CERM LIN | R2 |
| 43 | 1 | ST | 21 | BR459313 | RES VAR 4K7 A11R4 | R4 |
| 44 | 1 | ST | 21 | 600004-036 | RES CARB. 30R, 0.5J | R5 |
| 45 | 1 | ST | 37 | BR458937 | CABLE ASSY W1 A11 | W1 |
| 46 | 1 | ST | 37 | BR458945 | CABLE ASSY W2 A11 | W2 |
| 47 | 1 | ST | 37 | BR458953 | CABLE ASSY W3 A11 | W3 |
| 48 | 1 | ST | 53 | BR499161 | WASHER PS7X13X0,1 | |
| 49 | 8 | ST | 53 | 221387-135 | WASHER LOCK 2.8X5.3X0.6MM | |

**BR495131 FRONT PANEL RC4010 A11**

# PARTSLIST

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| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 50 | 0,300 | M | 34 | BR490075 | TAPE,DOUBLE SIDE 0,13X10 | |
| 51 | 2 | ST | 53 | 200559-002 | WASHER LOCK 3.1X0.8MM | |
| 53 | 1 | ST | 43 | 600081-014 | KNOB,BLACK,WHT.TEXT "ADR | |

**BR495131 FRONT PANEL RC4010 A11**

# PARTSLIST

Printed: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 1 | 1 | ST | 37 | 600136-001 | PWB, A11A1 | |
| 2 | 1 | ST | 60 | BR489883 | DSPL BD A11A1A1 RX/RC4010 | A1 |
| 3 | 5 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C15 |
| | 5 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C3 |
| | 5 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C5 |
| | 5 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C1 |
| | 5 | ST | 22 | 235010-006 | CAP. ELEC 6U8 / 25M | C16 |
| 4 | 5 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C11 |
| | 5 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C2 |
| | 5 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C4 |
| | 5 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C6 |
| | 5 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C8 |
| 5 | 4 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C9 |
| | 4 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C7 |
| | 4 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C19 |
| | 4 | ST | 22 | BR450510 | CAP. CER. 100N 63 S | C10 |
| 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 |
| 10 | 2 | ST | 22 | BR357650 | CAP. CER. 22N 63 A HI-K | C18 |
| | 2 | ST | 22 | BR357650 | CAP. CER. 22N 63 A HI-K | C17 |
| 12 | 2 | ST | 23 | 200352-001 | DIODE 1N4148 | CR16 |
| | 2 | ST | 23 | 200352-001 | DIODE 1N4148 | CR17 |
| 13 | 2 | ST | 51 | BR465402 | SCREW M 2.5X 6 CHM CU SN | H1 |
| 14 | 20 | ST | 51 | BR321494 | 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 | MM | 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 |
| | 3 | ST | 25 | 200730-003 | COIL,RF | L2 |
| 59 | 14 | ST | 56 | 224537-009 | STAY NUT, M3 X15 N5 | MP34,MP36 |
| 60 | 8 | ST | 52 | BR460338 | STAY NUT, M3 X13,3 N5 | MP37 |
| 63 | 1 | ST | 26 | BR362980 | TRANS.HIPOW MJE243 | Q9 |
| 64 | 3 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q11 |
| | 3 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q13 |
| | 3 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q12 |
| 65 | 1 | ST | 26 | BR399914 | TRANS.JFETN J 309 TO-92 | Q14 |
| 66 | 11 | ST | 26 | 235024-002 | TRANSISTOR, BC557B | Q3 |
| | 11 | ST | 26 | 235024-002 | TRANSISTOR, BC557B | Q2 |
| | 11 | ST | 26 | 235024-002 | TRANSISTOR, BC557B | Q4 |
| | 11 | ST | 26 | 235024-002 | TRANSISTOR, BC557B | Q7 |

**600135-001 FR PAN CKT RX/RC4010, A11A1**

# PARTSLIST

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| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 66 | 11 | ST | 26 | 235024-002 | TRANSISTOR, BC557B | Q5 |
| | 11 | ST | 26 | 235024-002 | TRANSISTOR, BC557B | Q17 |
| | 11 | ST | 26 | 235024-002 | TRANSISTOR, BC557B | Q16 |
| | 11 | ST | 26 | 235024-002 | TRANSISTOR, BC557B | Q10 |
| | 11 | ST | 26 | 235024-002 | TRANSISTOR, BC557B | Q6 |
| | 11 | ST | 26 | 235024-002 | TRANSISTOR, BC557B | Q8 |
| | 11 | ST | 26 | 235024-002 | TRANSISTOR, BC557B | Q1 |
| 67 | 3 | ST | 26 | 235031-003 | TRANSISTOR, NPN, BC547B | Q15 |
| | 3 | ST | 26 | 235031-003 | TRANSISTOR, NPN, BC547B | Q19 |
| | 3 | ST | 26 | 235031-003 | TRANSISTOR, NPN, BC547B | Q18 |
| 68 | 6 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R46 |
| | 6 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R52 |
| | 6 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R49 |
| | 6 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R45 |
| | 6 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R1 |
| | 6 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R42 |
| 69 | 1 | ST | 21 | 203237-022 | RES NETW 8 X 1K5 1/4G | R2 |
| 70 | 1 | ST | 21 | 206088-017 | RES NETW 9 X 10K 1/5G | R3 |
| 71 | 8 | ST | 21 | BR241040 | RES CARB. 15R 1/2JSFR25H | R11 |
| | 8 | ST | 21 | BR241040 | RES CARB. 15R 1/2JSFR25H | R9 |
| | 8 | ST | 21 | BR241040 | RES CARB. 15R 1/2JSFR25H | R8 |
| | 8 | ST | 21 | BR241040 | RES CARB. 15R 1/2JSFR25H | R7 |
| | 8 | ST | 21 | BR241040 | RES CARB. 15R 1/2JSFR25H | R10 |
| | 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 | R6 |
| 72 | 1 | ST | 21 | 235004-075 | RES FILM 1K2 / 0.4 J | R12 |
| 73 | 1 | ST | 21 | 235004-103 | RES FILM 18K / 0,4 J | R13 |
| 74 | 3 | ST | 21 | 235004-082 | RES FILM 2K4 / 0,4 J | R14 |
| | 3 | ST | 21 | 235004-082 | RES FILM 2K4 / 0,4 J | R47 |
| | 3 | ST | 21 | 235004-082 | RES FILM 2K4 / 0,4 J | R50 |
| 75 | 1 | ST | 21 | 235004-115 | RES FILM 56K / 0.4 J | R15 |
| 76 | 3 | ST | 21 | 235004-089 | RES FILM 4K7 / 0.4 J | R19 |
| | 3 | ST | 21 | 235004-089 | RES FILM 4K7 / 0.4 J | R17 |
| | 3 | ST | 21 | 235004-089 | RES FILM 4K7 / 0.4 J | R16 |
| 77 | 1 | ST | 21 | 206088-013 | RES NETW 7 X 4K7 1/5G | R18 |
| 78 | 3 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R22 |
| | 3 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R21 |
| | 3 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R20 |
| 80 | 1 | ST | 21 | 206088-007 | RES NETW 9 X 1K0 1/5G | R24 |
| 81 | 1 | ST | 21 | 203237-026 | RES NETW 8 X 15K 1/4G | R25 |
| 82 | 1 | ST | 21 | 235005-318 | RES FILM 15K0 / 0,4F | R26 |
| 83 | 8 | ST | 21 | 235005-285 | RES FILM 7K50 / 0.4F | R31 |
| | 8 | ST | 21 | 235005-285 | RES FILM 7K50 / 0.4F | R28 |
| | 8 | ST | 21 | 235005-285 | RES FILM 7K50 / 0.4F | R30 |
| | 8 | ST | 21 | 235005-285 | RES FILM 7K50 / 0.4F | R32 |
| | 8 | ST | 21 | 235005-285 | RES FILM 7K50 / 0.4F | R33 |

**600135-001 FR PAN CKT RX/RC4010, A11A1**

# PARTSLIST

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| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 83 | 8 | ST | 21 | 235005-285 | RES FILM 7K50 / 0.4F | R34 |
| | 8 | ST | 21 | 235005-285 | RES FILM 7K50 / 0.4F | R27 |
| | 8 | ST | 21 | 235005-285 | RES FILM 7K50 / 0.4F | R29 |
| 84 | 1 | ST | 21 | 235004-121 | RES FILM 100K / 0.4 J | R35 |
| 85 | 1 | ST | 21 | 235004-101 | RES FILM 15K / 0.4 J | R36 |
| 86 | 1 | ST | 21 | 235004-063 | RES FILM 390R / 0,4 J | R37 |
| 87 | 5 | ST | 21 | 235004-097 | RES FILM 10K / 0.4 J | R43 |
| | 5 | ST | 21 | 235004-097 | RES FILM 10K / 0.4 J | R38 |
| | 5 | ST | 21 | 235004-097 | RES FILM 10K / 0.4 J | R44 |
| | 5 | ST | 21 | 235004-097 | RES FILM 10K / 0.4 J | R53 |
| | 5 | ST | 21 | 235004-097 | RES FILM 10K / 0.4 J | R54 |
| 88 | 1 | ST | 21 | 235004-090 | RES FILM 5K1 / 0,4 J | R39 |
| 89 | 2 | ST | 21 | 235004-105 | RES FILM 22K / 0.4 J | R48 |
| | 2 | ST | 21 | 235004-105 | RES FILM 22K / 0.4 J | R51 |
| 91 | 1 | ST | 33 | BR471992 | SWITCH, SLIDE SPDT F/PWB | S33 |
| 92 | 1 | ST | 24 | 206072-095 | IC, --74HCT138, DECODER | U1 |
| 93 | 1 | ST | 24 | 200463-095 | IC, --74HCT 02, NOR | U2 |
| 94 | 3 | ST | 24 | 203469-006 | IC, --74 06N | U12 |
| | 3 | ST | 24 | 203469-006 | IC, --74 06N | U10 |
| | 3 | ST | 24 | 203469-006 | IC, --74 06N | U3 |
| 95 | 1 | ST | 24 | 203927-095 | IC, --74HCT 14, INVERTERS | U4 |
| 96 | 1 | ST | 24 | 213289-095 | IC, --74HCT373E | U5 |
| 97 | 1 | ST | 24 | BR450294 | IC, TL 082CP OP.AMP. | U6 |
| 98 | 2 | ST | 24 | 200896-095 | IC, --74HCT164 SHIFT RE | U8 |
| | 2 | ST | 24 | 200896-095 | IC, --74HCT164 SHIFT RE | U7 |
| 99 | 1 | ST | 24 | 211115-095 | IC, --74HCT240 8XBUF.IN | U9 |
| 100 | 1 | ST | 24 | 200888-026 | IC, --74LS 74N, 2X D FF | U11 |
| 101 | 1 | ST | 24 | BR473928 | IC, HYBRID OPB822SD OPTO S | U13 |
| 102 | 1 | ST | 37 | BR459550 | FLATCABLE ASSY W1 A11 | W1 |
| 103 | 3 | ST | 31 | BR451479 | CONN AMP MODU2 10P FEMAL | XP1 |
| | 3 | ST | 31 | BR451479 | CONN AMP MODU2 10P FEMAL | XP3 |
| | 3 | ST | 31 | BR451479 | CONN AMP MODU2 10P FEMAL | XP2 |
| 104 | 1 | G | 78 | 200799-001 | COMPOUND.THERMAL,SILICO | |
| 105 | 1 | ST | 48 | 214073-004 | LABEL, ADHESIVE, ESD | |
| 106 | 1 | ST | 60 | 600131-001 | NUM. KEYBOARD, A11A1A2 | A11A1A2 |
| 107 | 1 | ST | 60 | 600133-001 | MODE KEY BOARD, A11A1A3, | A11A1A3 |
| 109 | 2 | ST | 37 | 600137-001 | FLATCABLE ASSY, 16P, 150MM | W4 |
| | 2 | ST | 37 | 600137-001 | FLATCABLE ASSY, 16P, 150MM | W5 |

**600135-001 FR PAN CKT RX/RC4010, A11A1**

# PARTSLIST

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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 | CR1 |
| | 2 | ST | 23 | 200352-001 | DIODE 1N4148 | CR2 |
| 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 | P1 |
| | 3 | ST | 31 | BR490458 | CONN AMP MODU2 10P MALE | P2 |
| 5 | 11 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q11 |
| | 11 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q1 |
| | 11 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q2 |
| | 11 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q9 |
| | 11 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q3 |
| | 11 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q7 |
| | 11 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q4 |
| | 11 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q6 |
| | 11 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q8 |
| | 11 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q10 |
| | 11 | ST | 26 | 235034-001 | TRANSISTOR NPN DARL. MPSA | Q5 |
| 6 | 11 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R1 |
| | 11 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R2 |
| | 11 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R18 |
| | 11 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R19 |
| | 11 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R15 |
| | 11 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R13 |
| | 11 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R11 |
| | 11 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R12 |
| | 11 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R17 |
| | 11 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R16 |
| | 11 | ST | 21 | 235004-085 | RES FILM 3K3 / 0.4 J | R14 |
| 7 | 1 | ST | 21 | 235004-073 | RES FILM 1K0 / 0.4 J | R3 |
| 8 | 1 | ST | 21 | 235004-082 | RES FILM 2K4 / 0,4 J | R4 |
| 9 | 2 | ST | 21 | 235004-084 | RES FILM 3K0 / 0,4 J | R5 |
| | 2 | ST | 21 | 235004-084 | RES FILM 3K0 / 0,4 J | R6 |
| 10 | 1 | ST | 21 | 235004-106 | RES FILM 24K / 0,4 J | R7 |
| 11 | 1 | ST | 21 | 235004-097 | RES FILM 10K / 0.4 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 / 0.4 J | R20 |
| 14 | 10 | ST | 24 | BR489859 | IC, DSPL HD1077R 7 SEGM.RE | U2 |
| | 10 | ST | 24 | BR489859 | IC, DSPL HD1077R 7 SEGM.RE | U6 |
| | 10 | ST | 24 | BR489859 | IC, DSPL HD1077R 7 SEGM.RE | U3 |
| | 10 | ST | 24 | BR489859 | IC, DSPL HD1077R 7 SEGM.RE | U5 |
| | 10 | ST | 24 | BR489859 | IC, DSPL HD1077R 7 SEGM.RE | U8 |
| | 10 | ST | 24 | BR489859 | IC, DSPL HD1077R 7 SEGM.RE | U4 |
| | 10 | ST | 24 | BR489859 | IC, DSPL HD1077R 7 SEGM.RE | U9 |
| | 10 | ST | 24 | BR489859 | IC, DSPL HD1077R 7 SEGM.RE | U10 |
| | 10 | ST | 24 | BR489859 | IC, DSPL HD1077R 7 SEGM.RE | U7 |

**BR489883 DSPL BD A11A1A1 RX/RC4010**

# PARTSLIST

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| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 14 | 10 | ST | 24 | BR489859 | IC, DSPL HD1077R 7 SEGM.RE | U1 |
| 15 | 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 | U25 |
| | 13 | ST | 24 | BR471380 | IC, DSPL HLMP2300 LGHT BAR | U15 |
| | 13 | ST | 24 | BR471380 | IC, DSPL HLMP2300 LGHT BAR | U23 |
| | 13 | ST | 24 | BR471380 | IC, DSPL HLMP2300 LGHT BAR | U12 |
| | 13 | ST | 24 | BR471380 | IC, DSPL HLMP2300 LGHT BAR | U14 |
| | 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 | U17 |
| | 13 | ST | 24 | BR471380 | IC, DSPL HLMP2300 LGHT BAR | U21 |
| | 13 | ST | 24 | BR471380 | IC, DSPL HLMP2300 LGHT BAR | U24 |
| | 13 | ST | 24 | BR471380 | IC, DSPL HLMP2300 LGHT BAR | U11 |
| 16 | 1 | ST | 24 | BR446327 | IC, UAA 170 LED DRIVER | U18 |
| 17 | 2 | ST | 23 | 223807-001 | LED ARRAY 10 ELEMENT RED | U19 |
| | 2 | ST | 23 | 223807-001 | LED ARRAY 10 ELEMENT RED | U20 |

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| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 28 | 1 | ST | 43 | 600081-018 | KNOB,BLACK,WHT.TEXT "BFO | MP4 |
| 29 | 1 | ST | 43 | 600081-009 | KNOB,BLACK,WHT.TEXT "9" | MP5 |
| 30 | 1 | ST | 43 | 600081-006 | KNOB,BLACK,WHT.TEXT "6" | MP6 |
| 31 | 1 | ST | 43 | 600081-003 | KNOB,BLACK,WHT.TEXT "3" | MP7 |
| 32 | 1 | ST | 43 | 600081-021 | KNOB,BLACK,WHT.TEXT "C" | MP8 |
| 36 | 1 | ST | 43 | 600081-016 | KNOB,BLACK,WHT.TEXT "SCN | MP12 |
| 37 | 1 | ST | 43 | 600081-007 | KNOB,BLACK,WHT.TEXT "7" | MP13 |
| 38 | 1 | ST | 43 | 600081-004 | KNOB,BLACK,WHT.TEXT "4" | MP14 |
| 39 | 1 | ST | 43 | 600081-001 | KNOB,BLACK,WHT.TEXT "1" | MP15 |
| 40 | 1 | ST | 43 | 600081-010 | KNOB,BLACK,WHT.TEXT "0" | MP16 |
| 44 | 1 | ST | 43 | 600081-011 | KNOB,BLACK,WHT.TEXT "RCL | MP20 |
| 45 | 1 | ST | 43 | 600081-012 | KNOB,BLACK,WHT.TEXT "STO | MP21 |
| 47 | 1 | ST | 43 | 600081-015 | KNOB,BLACK,WHT.TEXT "MO | MP23 |
| 51 | 1 | ST | 43 | 600081-019 | KNOB,BLACK,WHT.TEXT "TUN | MP27 |
| 52 | 1 | ST | 43 | 600081-008 | KNOB,BLACK,WHT.TEXT "8" | MP28 |
| 53 | 1 | ST | 43 | 600081-005 | KNOB,BLACK,WHT.TEXT "5" | MP29 |
| 54 | 1 | ST | 43 | 600081-002 | KNOB,BLACK,WHT.TEXT "2" | MP30 |
| 55 | 1 | ST | 43 | 600081-020 | KNOB,BLACK,WHT.TEXT "." | MP31 |
| 56 | 1 | ST | 37 | 600132-001 | PWB, A11A1A2 | |
| 61 | 1 | ST | 43 | 600081-017 | KNOB,BLACK,WHT.TEXT "PRG | MP38 |
| 79 | 4 | ST | 21 | 235004-081 | RES FILM 2K2 / 0.4 J | R1 |
| | 4 | ST | 21 | 235004-081 | RES FILM 2K2 / 0.4 J | R4 |
| | 4 | ST | 21 | 235004-081 | RES FILM 2K2 / 0.4 J | R3 |
| | 4 | ST | 21 | 235004-081 | RES FILM 2K2 / 0.4 J | R2 |
| 90 | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S27 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S12 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S31 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S21 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S7 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S28 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S22 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S30 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S20 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S15 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S4 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S16 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S13 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S14 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S5 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S6 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S29 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S23 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S8 |
| | 20 | ST | 33 | 600078-001 | SWITCH, PUSH BU.SPST NO | S32 |
| 108 | 1 | ST | 31 | 211918-019 | CONN FLAT 16-PIN, ANGLE | P4 |

**600131-001 NUM. KEYBOARD, A11A1A2**

# PARTSLIST

Printed: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 25 | 1 | ST | 43 | 600082-030 | KNOB,BLACK,WHT.TEXT "SLW | MP1 |
| 26 | 1 | ST | 43 | 600082-026 | KNOB,BLACK,WHT.TEXT "INT" | MP2 |
| 27 | 1 | ST | 43 | 600082-022 | KNOB,BLACK,WHT.TEXT "AM" | MP3 |
| 33 | 1 | ST | 43 | 600082-032 | KNOB,BLACK,WHT.TEXT "ATT | MP9 |
| 34 | 1 | ST | 43 | 600082-028 | KNOB,BLACK,WHT.TEXT "VNR | MP10 |
| 35 | 1 | ST | 43 | 600082-024 | KNOB,BLACK,WHT.TEXT "CW" | MP11 |
| 41 | 1 | ST | 43 | 600082-029 | KNOB,BLACK.WHT.TEXT "OFF | MP17 |
| 42 | 1 | ST | 43 | 600082-025 | KNOB,BLACK,WHT.TEXT "WID | MP18 |
| 43 | 1 | ST | 43 | 600082-021 | KNOB,BLACK,WHT.TEXT "SSB" | MP19 |
| 48 | 1 | ST | 43 | 600082-031 | KNOB,BLACK,WHT.TEXT "FST" | MP24 |
| 49 | 1 | ST | 43 | 600082-027 | KNOB,BLACK,WHT.TEXT "NAR | MP25 |
| 50 | 1 | ST | 43 | 600082-023 | KNOB,BLACK,WHT.TEXT "RT" | MP26 |
| 57 | 1 | ST | 37 | 600134-001 | PWB, A11A1A3 | |
| 79 | 4 | ST | 21 | 235004-081 | RES FILM 2K2 / 0.4 J | R2 |
| | 4 | ST | 21 | 235004-081 | RES FILM 2K2 / 0.4 J | R3 |
| | 4 | ST | 21 | 235004-081 | RES FILM 2K2 / 0.4 J | R4 |
| | 4 | ST | 21 | 235004-081 | RES FILM 2K2 / 0.4 J | R1 |
| 90 | 12 | ST | 33 | 600079-001 | SWITCH, PUSH BU.SPST NO W. | S18 |
| | 12 | ST | 33 | 600079-001 | SWITCH, PUSH BU.SPST NO W. | S17 |
| | 12 | ST | 33 | 600079-001 | SWITCH, PUSH BU.SPST NO W. | S26 |
| | 12 | ST | 33 | 600079-001 | SWITCH, PUSH BU.SPST NO W. | S25 |
| | 12 | ST | 33 | 600079-001 | SWITCH, PUSH BU.SPST NO W. | S24 |
| | 12 | ST | 33 | 600079-001 | SWITCH, PUSH BU.SPST NO W. | S9 |
| | 12 | ST | 33 | 600079-001 | SWITCH, PUSH BU.SPST NO W. | S1 |
| | 12 | ST | 33 | 600079-001 | SWITCH, PUSH BU.SPST NO W. | S11 |
| | 12 | ST | 33 | 600079-001 | SWITCH, PUSH BU.SPST NO W. | S10 |
| | 12 | ST | 33 | 600079-001 | SWITCH, PUSH BU.SPST NO W. | S2 |
| | 12 | ST | 33 | 600079-001 | SWITCH, PUSH BU.SPST NO W. | S3 |
| | 12 | ST | 33 | 600079-001 | SWITCH, PUSH BU.SPST NO W. | S19 |
| 110 | 1 | ST | 31 | 211918-019 | CONN FLAT 16-PIN, ANGLE | P5 |

**600133-001 MODE KEY BOARD, A11A1A3,**

# PARTSLIST

Printed: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 1 | 1 | ST | 60 | BR471925 | MOTHERB ASSY A12A1 RC40.. | 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 M 3 X 8 UHR UNBRAK | H4 |
| 5 | 40 | ST | 51 | BR450561 | SCREW SELFTAP.4X3/8 PH-PL | H5 |
| 6 | 20 | ST | 51 | BR321494 | 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 | BR474991 | PLATE,JUNCTION A12 | MP1 |
| 9 | 8 | ST | 41 | BR445886 | PROFILE,PC 1M | MP2 |
| 10 | 2 | ST | 41 | BR445894 | PROFILE,PC 1M DRILL | MP3 |
| 11 | 1 | ST | 41 | BR445908 | PROFILE,PC 1,5M | MP4 |
| 12 | 2 | ST | 41 | BR445940 | PROFILE,SIDE DRILL. | 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 | 18 | ST | 51 | BR333417 | SCREW M 4 X10 UHJ GULCR | H8 |
| 17 | 8 | ST | 46 | BR497266 | BRACKET FOR 1M PROFILE | MP9 |
| 18 | 1 | ST | 46 | BR497274 | BRACKET FOR 1,5M PROFILE | MP10 |
| 19 | 9 | 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 | |

**BR476056 CHASSIS ASSY A12 RC40..**

# PARTSLIST

Printed: 1999-02-10

| FN NO | QTY | U M | CLASS | Item Number | Description: | REF. DES. |
|---|---|---|---|---|---|---|
| 1 | 1 | ST | 37 | BR471917 | PWB MOTHERBRD. | |
| 2 | 2 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C1 |
| | 2 | ST | 22 | 200514-204 | CAP. CER 100N / 50K | C2 |
| 3 | 16 | ST | 31 | BR454419 | CONN PCB ACCES CODE PIN | H1 |
| 4 | 1 | ST | 21 | 600004-081 | RES CARB. 2K2, 0.5J | R6 |
| 5 | 5 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R7 |
| | 5 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R8 |
| | 5 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R9 |
| | 5 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R12 |
| | 5 | ST | 21 | 600004-073 | RES CARB. 1K0, 0.5J | R13 |
| 6 | 1 | ST | 21 | 206088-003 | RES NETW 9 X 2K2 1/5G | R10 |
| 7 | 1 | ST | 21 | 206088-048 | RES NETW 5 X 2K2 1/5G | R11 |
| 8 | 2 | ST | 24 | 207432-026 | IC, --74LS245N | U2 |
| | 2 | ST | 24 | 207432-026 | IC, --74LS245N | U1 |
| 9 | 1 | ST | 24 | 200498-006 | IC, --74 37N 4X2IN NAND | U3 |
| 10 | 8 | ST | 31 | BR451509 | CONN PCB EDGE 36P FEMALE | X51 |
| | 8 | ST | 31 | BR451509 | CONN PCB EDGE 36P FEMALE | X52 |
| | 8 | ST | 31 | BR451509 | CONN PCB EDGE 36P FEMALE | X53 |
| | 8 | ST | 31 | BR451509 | CONN PCB EDGE 36P FEMALE | X54 |
| | 8 | ST | 31 | BR451509 | CONN PCB EDGE 36P FEMALE | X61 |
| | 8 | ST | 31 | BR451509 | CONN PCB EDGE 36P FEMALE | X81 |
| | 8 | ST | 31 | BR451509 | CONN PCB EDGE 36P FEMALE | X91 |
| | 8 | ST | 31 | BR451509 | CONN PCB EDGE 36P FEMALE | X101 |

**BR471925 MOTHERB ASSY A12A1 RC40..**

# SECTION 7
# MANUAL CHANGES

This section contains information for correcting manual errors and for adapting the manual to equipment containing improvements made after the printing of the manual or to equipment containing options.

# SECTION 8
# SERVICE

## 8.1 Introduction

This section provides information for servicing the RC4010.

## 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 RC4010.

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

Self test is activated by selecting program 49. The built-in test program goes through the following sequence:

a) The remote address will be shown 2.5 sec. and then the software version number.
Press enter to continue.

b) Software Option displayed. "0000000" indicate no option.
Press enter to continue.

c) Key test. Pressing any key but enter results in the hexadecimal value of the key being shown, see table 8.2.
Press enter to continue.

d) Display and led test. All led's and segment's are lit.
Press enter to continue.

e) Real time clock test. The µp tests the real time clock, and displays "Err. A8 cloc." if an error has been recognized.
Press enter to continue.

f) Assembly test. The µp addresses the modules to see whether they are present. If any module does not acknowledge the call, the µp displays e.g. "no A9" and then continues the test (A5.1 -A5.4 indicate A5 module no. 1-4).
Press enter to end 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 RC 4010.

The pushbutton switches in this RC4010 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 RC4010 side profiles.
b) carefully withdraw the front panelassembly and disconnect the ribbon cable connector from the mother-board.
c) to reinstall the front panel assembly, reserve 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 RC4010 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 RC4010 uses two different families of logic circuits: MOS, and TTL. Most of the logic devices used in this RC4010 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 RC4010.

Table 8.1 Typical Logic Levels

| Logic Family | High Level | Low Level |
|---|---|---|
| TTL | 3 - 5V | 0.2V |
| 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 RC4010 is shown in Figure 8.1.

The microcomputer assembly A8 performs the overall control of the Receiver controller.

Typical tasks handled by the assembly:

- Control of the individual assemblies.
- Keyboard reading.
- Display refreshing.
- Programmable memory set-ups.
- 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.
The remote assembly A9 performs the remote control communication under control from the microcomputer.
The audio signals is selected by the audio A5 modul.

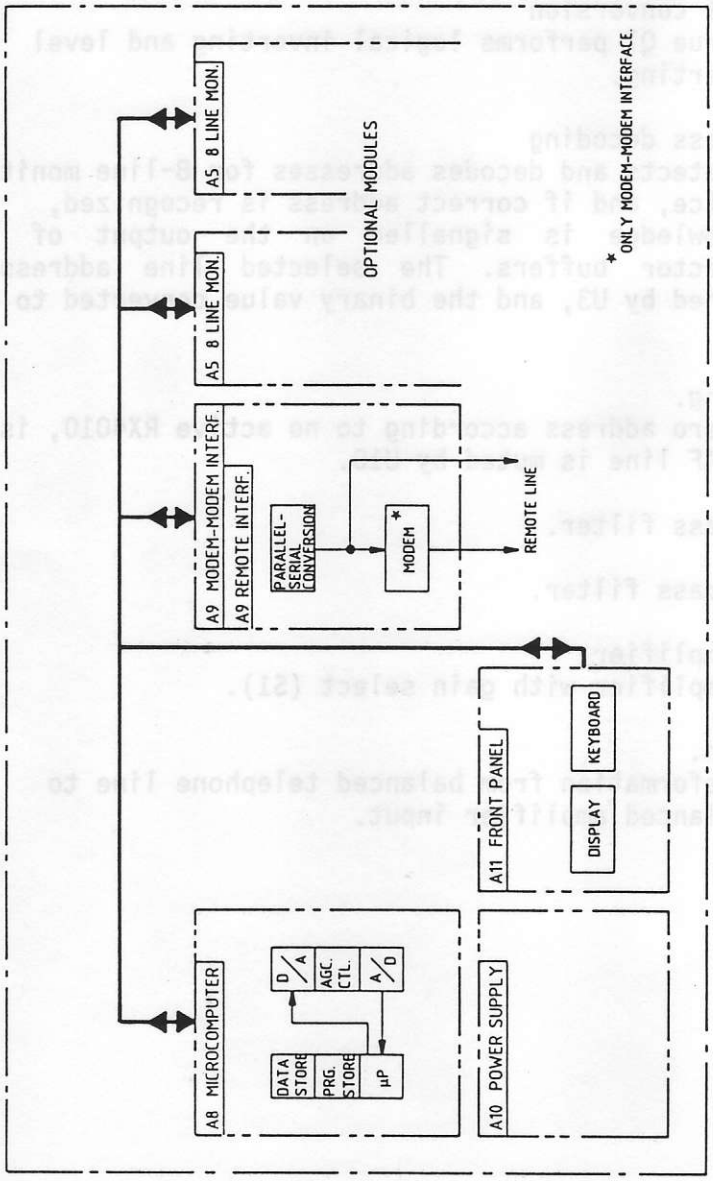



figure 8.1 Overall Functional Block Diagram.

## 8.13 8-line monitor assembly

The functional block diagram of the 8-line monitor Assembly is shown in Figure 8.2.

1. Inputs and outputs.
   Spikes and overvoltage protection of inputs and outputs.

2. Line switches
   Line switching according to address decoded line number.

3. Level conversion
   Q1 true Q7 performs logical inverting and level converting.

4. Address decoding
   U2 detects and decodes addresses for 8-line monitor service, and if correct address is recognized, acknowledge is signalled on the output of the U6 open collector buffers. The selected line address is further latched by U3, and the binary value converted to decimal by U1.

5. Muting.
   If zero address according to no active RX4010, is detected, the AF line is muted by U10.

6. Lowpass filter.

7. Highpass filter.

8. AF amplifier.
   AF amplifier with gain select (S1).

9. Balun.
   Transformation from balanced telephone line to unbalanced amplifier input.

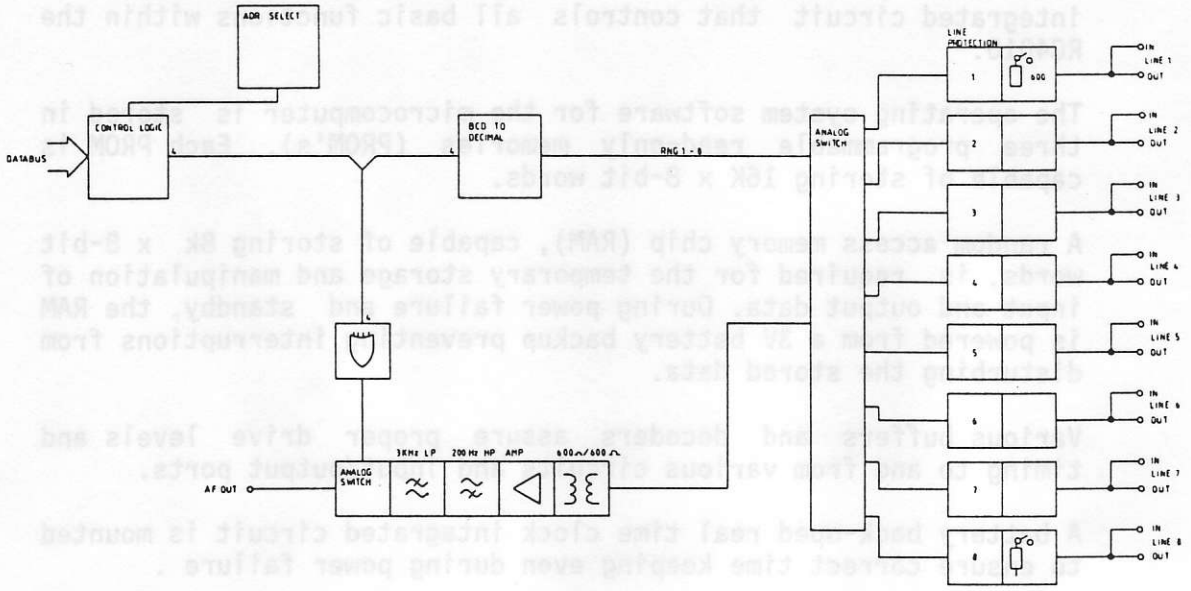



Fig 8.2 8-line monitor assembly

## 8.14 Microcomputer Assembly A8

The functional block diagram of the Microcomputer Assembly is shown in Figure 8.3.

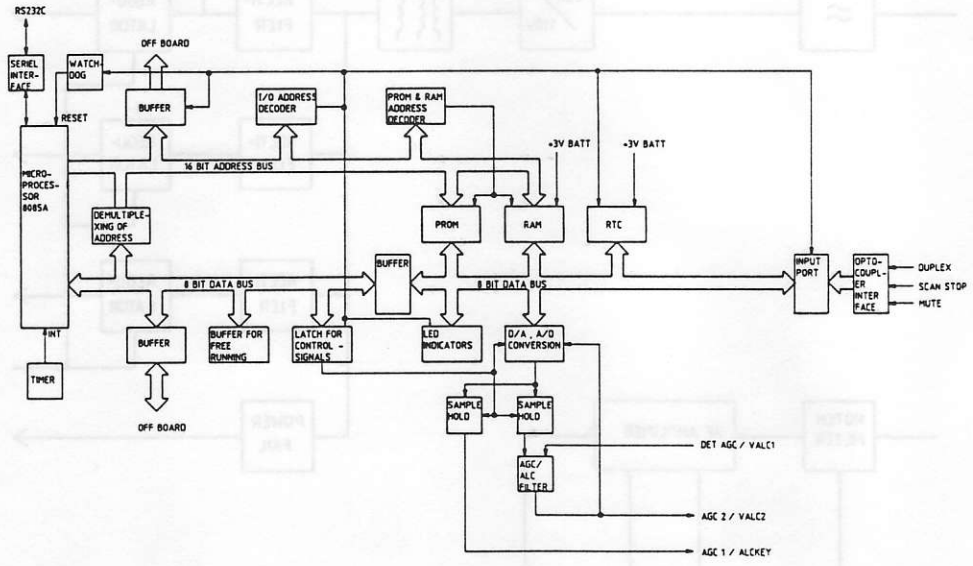



Figure 8.3 Microcomputer Assembly

The assembly consists of a 8085 microprocessor largescale integrated circuit that controls all basic functions within the RC4010.

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 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 .

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

## 8.15 Power Supply Assembly A10

The functional block diagram of the Power Supply Assembly is shown in Figure 8.4 for the AC only version and in Figure 8.5 for the AC/DC version.

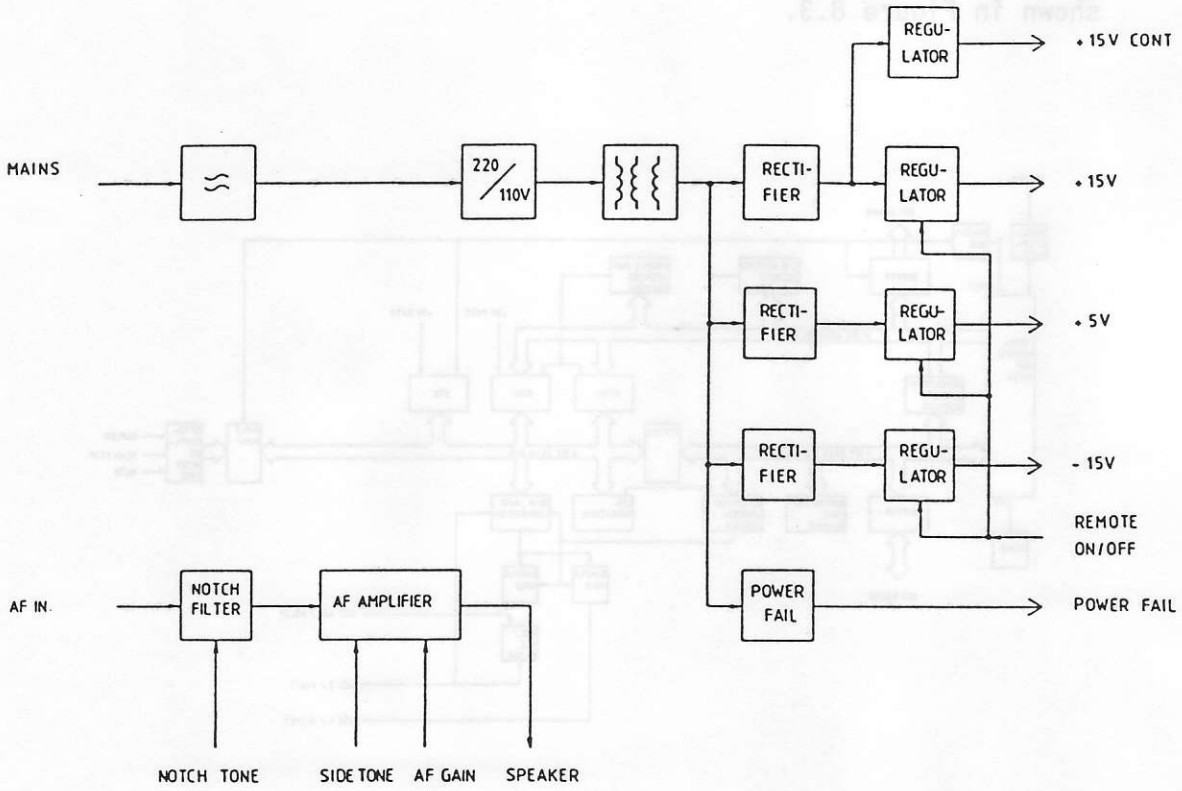



Figure 8.4 Power Supply Assembly. AC only version.

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 8.5) 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.

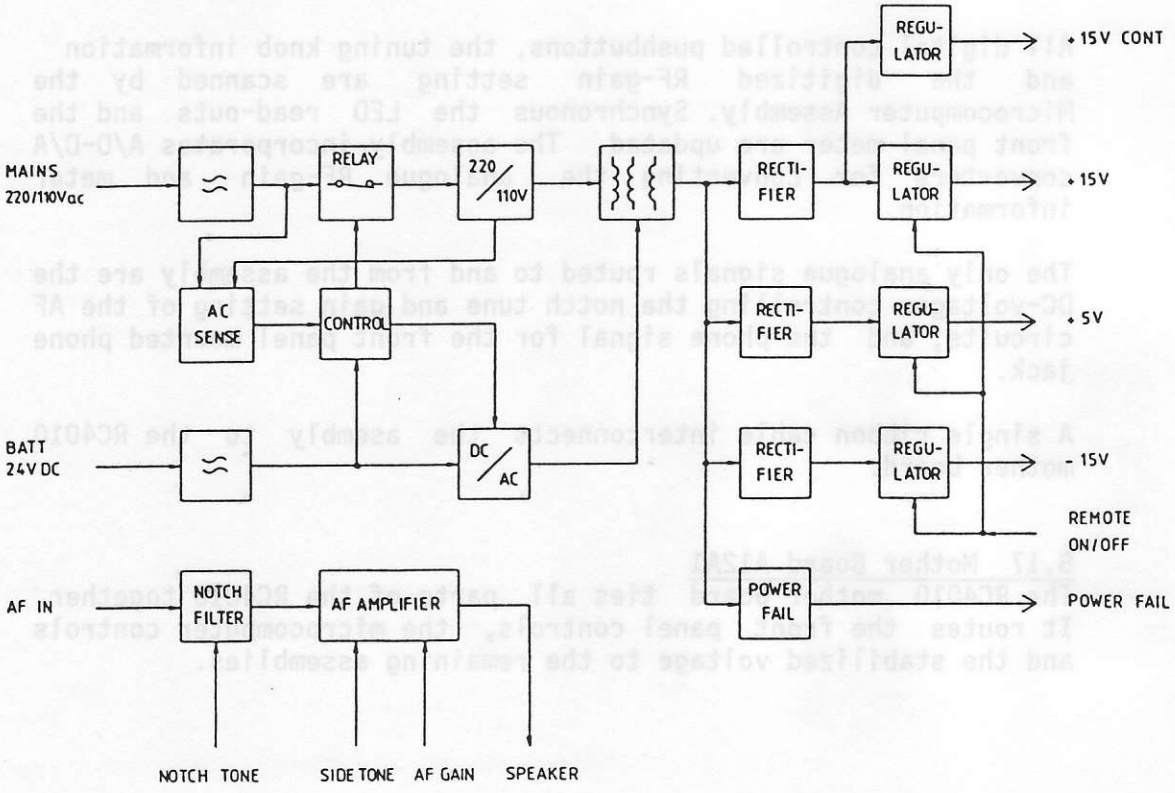



Figure 8.5 Power Supply Assembly. AC/DC version.

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.

By means of an on/off switch positioned on the assembly rear panel the RC4010 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.

## 8.16 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 RC4010 mother board.

## 8.17 Mother Board A12A1

The RC4010 mother board ties all parts of the RC4010 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 |
| addr | 32 |
| mon | 33 |
| progr | 38 |

## Table 8.3 Fault Analysis Procedures

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

| SYMPTOM | POSSIBLE CAUSE |
|---|---|
| 1. RC4010 dead. Mains OK Fuse not blown. No LEDs lit. | A10 Power Supply. A11 Front Panel. on/off switch. |
| 2. RC4010 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. | A8 Microcomputer A10 Power Supply 5V missing |
| 4. Front Panel dead. | A11 Front Panel |
| 5. Display very Weak. RC4010 else OK | A11 Front Panel Dimmer Circuit A10 Power Supply 8V missing |
| 6. Part of Display lights extremely bright while the rest do not lit. RC4010 stops operation. | A8 Microcomputer 8085 |
| 7. The same display segment is missing in all figures. | A11 Front Panel Driver transistor Interconnection cable to motherboard |
| 8. Display shows "bAt.FAIL" steadyly or periodically. | A10 Power Supply VBB, VEE or VFF drifting or incorrectly adjusted |
| 9. The Display shows "Axx FAIL" during power-up. | Microcomputer inter face on Ax is faulty |
| 10. "no Axx" during test program | Microcomputer interface on Axx faulty |
| 11. RC4010 acts strange when pressing certain keys | A8 Microcomputer 8085 or EPROMs |
| 12. RC4010 looses data in memory. | A8 Microcomputer Battery run out CMOS RAM faulty |
| 13. "bAt.FAIL" during power-up | As 12. |

Table 8.4 Remote transmission error codes.

| Display | Error type | Explanation |
|---|---|---|
| r.Fr. | Received frames | Number is counting up for every 256 received frames. |
| r.bt. | Received bytes | Number is counting up for every 256 received bytes. |
| Syn. | Synchronousing retransmissions | The data is retransmitted 3 times, if there is no answer this error is counting up. |
| Hd.E. | Header error | a) More than 32 byte is received in a frame.<br>b) There is not the correct number of data in the datatype.<br>c) Datatype don't exist. |
| to.E. | Timeout error | The time between two frames is out of limit. |
| Fr.E. | Framing error | No stop bit is detected. |
| or.E. | Overrun error | The received byte is not read before a newone is received. Data lost. |
| Pt.E. | Parity error | The parity bit is not correct on the received byte |
| to.S. | Timeout on S110 line | No acknowledge received on |

INTERCONNECTION DIAGRAM RC 4010

DWG.NO. 49 51 23

**ASSY 471941, 8-LINE MONITOR**

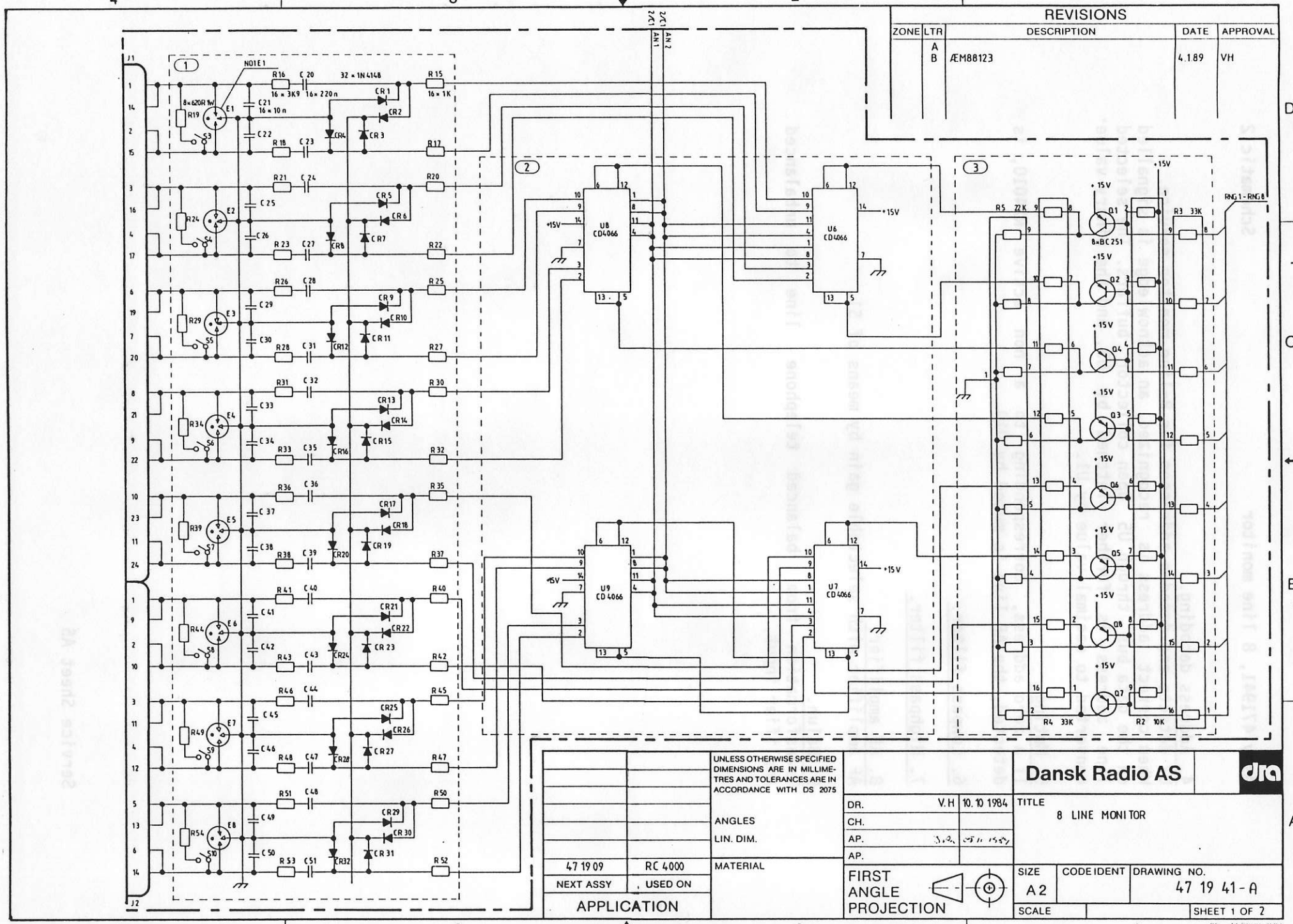
Service sheet A5

**Assy 471941, 8-line monitor** **Schematic 1**

1. Input circuits.
Spike and overvoltage protection of the inputs. With S3 to S10 the impedance of the line inputs can be selected to 600Ω.

2. Line switches.
Line switching according to address decoded line number.

3. Level conversion.
Q1 thru Q7 performs logical inverting and level converting.




Service Sheet A5

4. Address decoding.
U2 detects and decodes addresses for 8-line monitor service. When correct address is recognized, an acknowledge is signalled on the data bus thrugh U5 open collector buffers. The selected line address is further latched by U3, and the binary value converted to decimal value by U1.

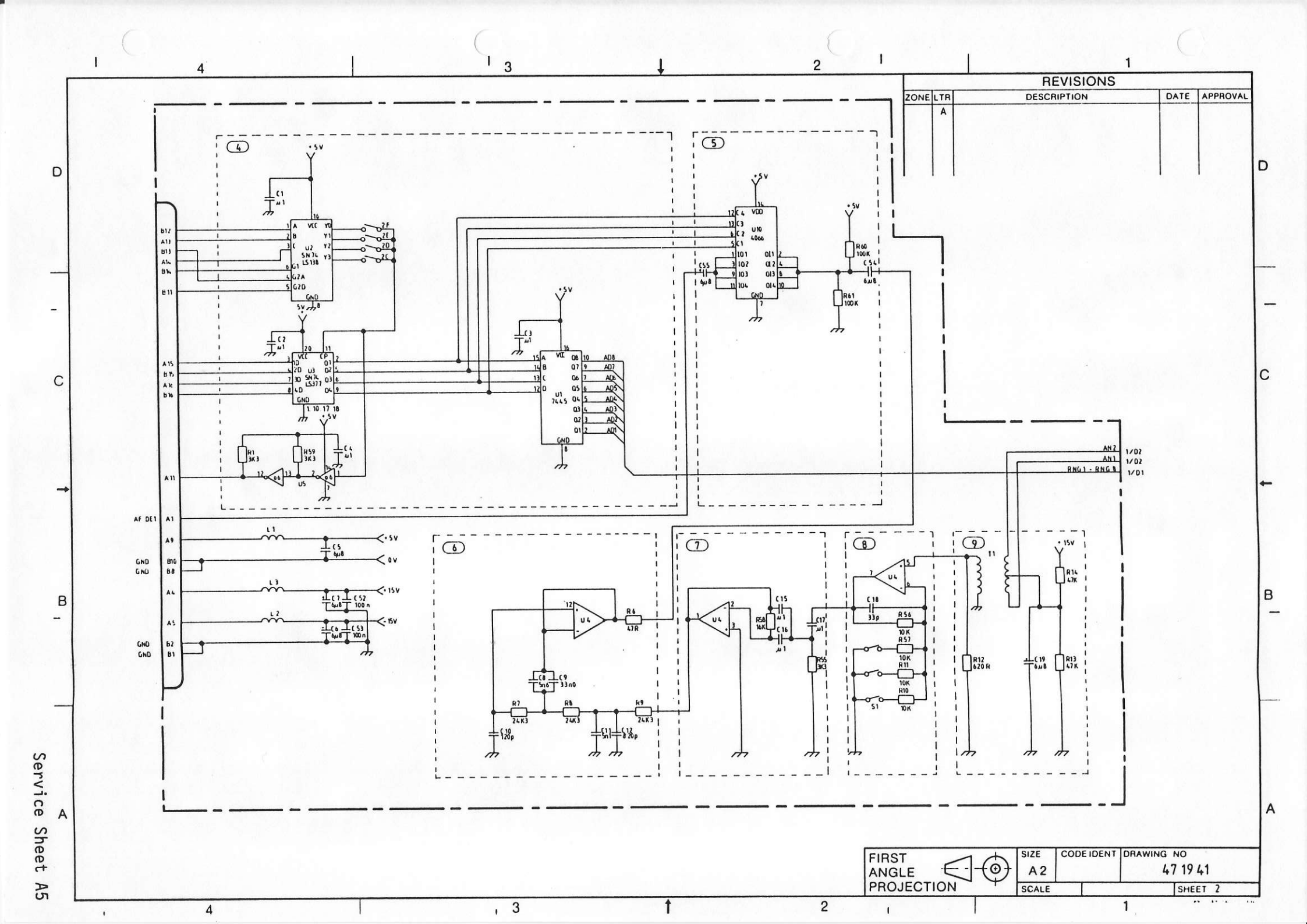
5. Muting.
If a zero address, corresponding to a non active RX4010, is detected, the AF line is muted by U10.

6. Lowpass filter.

7. Highpass filter.

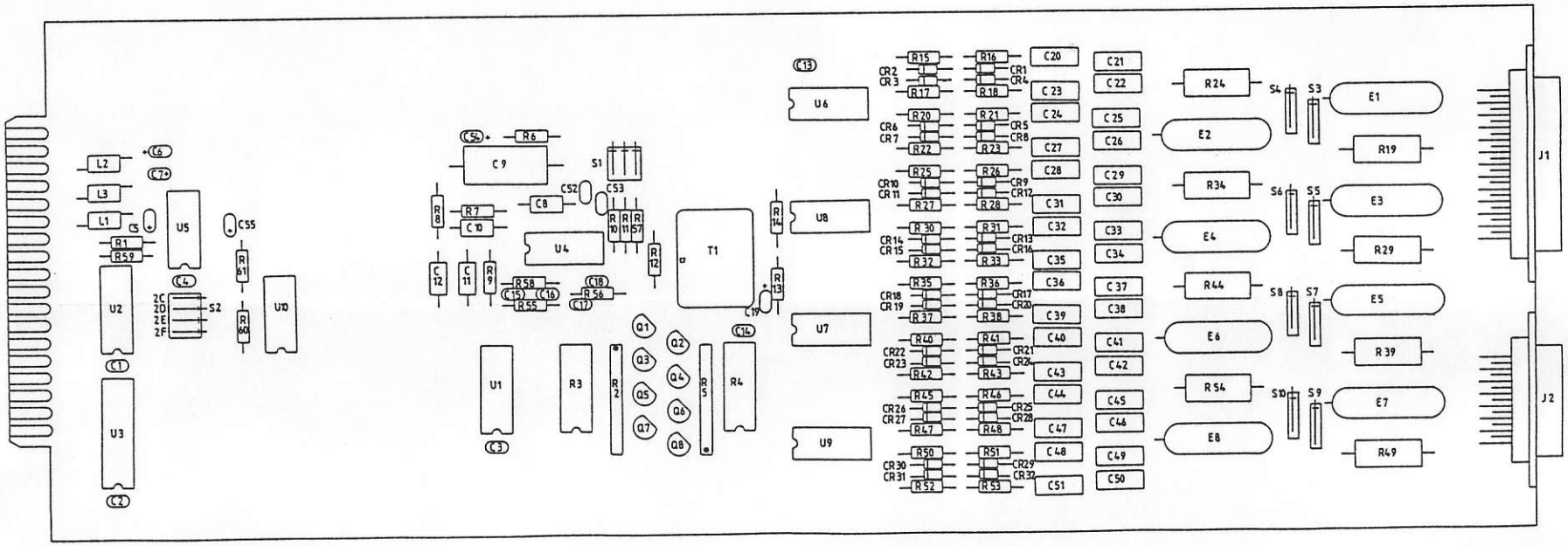
8. AF amplifier.
AF amplifier with selectable gain by means of S1.

9. Balun.
Transformation from balanced telephone line to unbalanced amplifier input.


REVISIONS
ZONE
LTR
DESCRIPTION
DATE
APPROVAL
A
Service Sheet A5
FIRST ANGLE PROJECTION
SIZE
A2
CODE IDENT
DRAWING NO
47 19 41
SCALE
SHEET 2

1. E1 - E8 : OPTIONAL

| REVISIONS | | | | |
|---|---|---|---|---|
| ZONE | LTR | DESCRIPTION | DATE | APPROVAL |
| | A | | 24.2.90 | VH |
| | B | ÆO4535 | 94110 2 | AMK / dc |
| | B1 | ÆO4735-8 | | |




| | | | |
|---|---|---|---|
| | | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2073 | Dansk Radio AS |
| | | ANGLES | DR. VH 23.10 1984 |
| | | LIN. DIM. | CH. |
| | | | AP. |
| | | | AP |
| 47 1909 | RC 4000 | MATERIAL | TITLE: 8-LINE MONITOR |
| NEXT ASSY | USED ON | | |
| APPLICATION | | | FIRST ANGLE PROJECTION |

| SIZE | CODE IDENT | DRAWING NO. |
|---|---|---|
| A1 | | 47 1941 PD |
| SCALE | | SHEET 1 OF 1 |

Service sheet A5

**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.

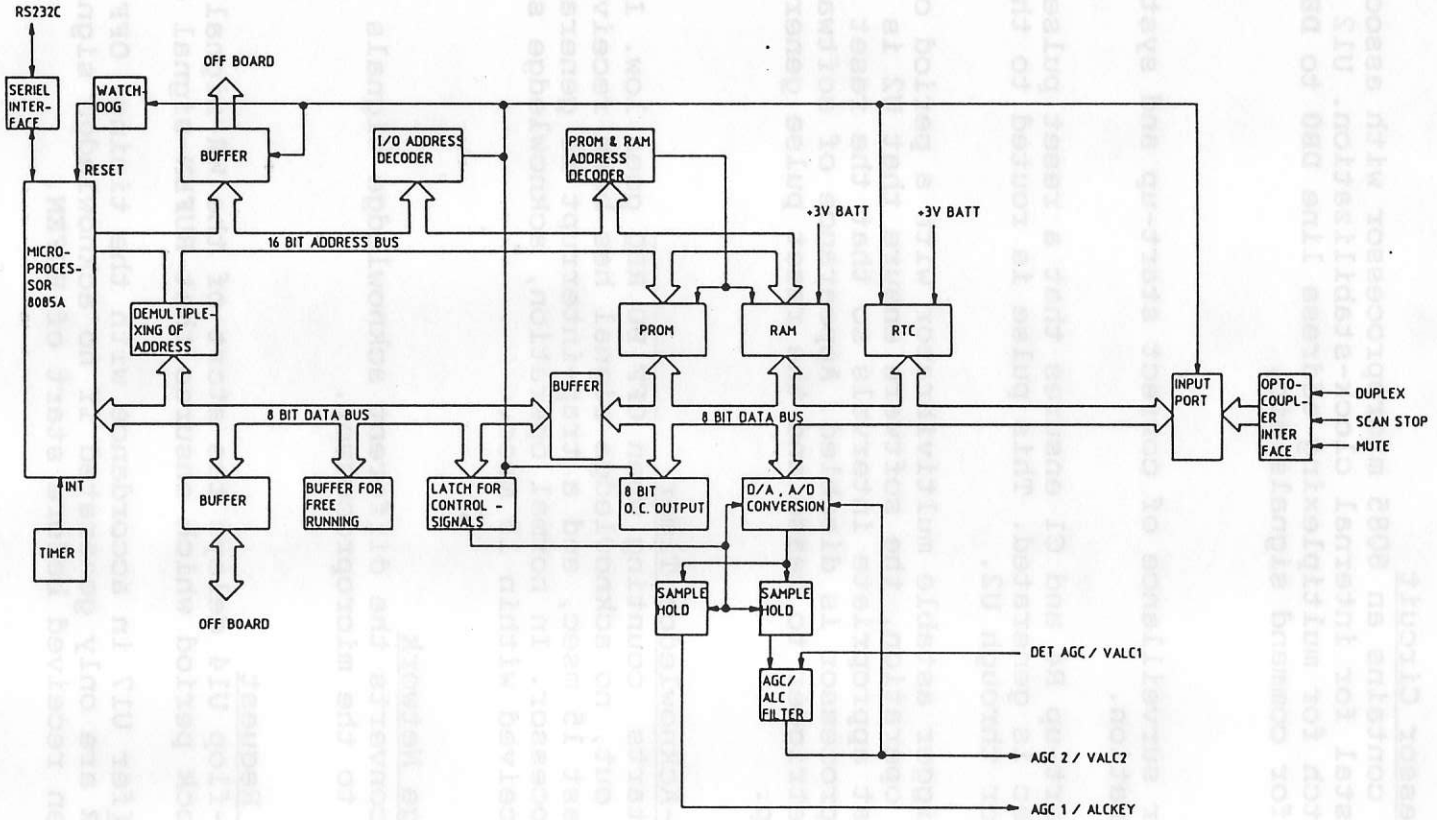
Timing of the assembly is via a 6.144MHz crystal oscillator contained in the CPU.

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. | NIF | 11.05.87 |
| 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

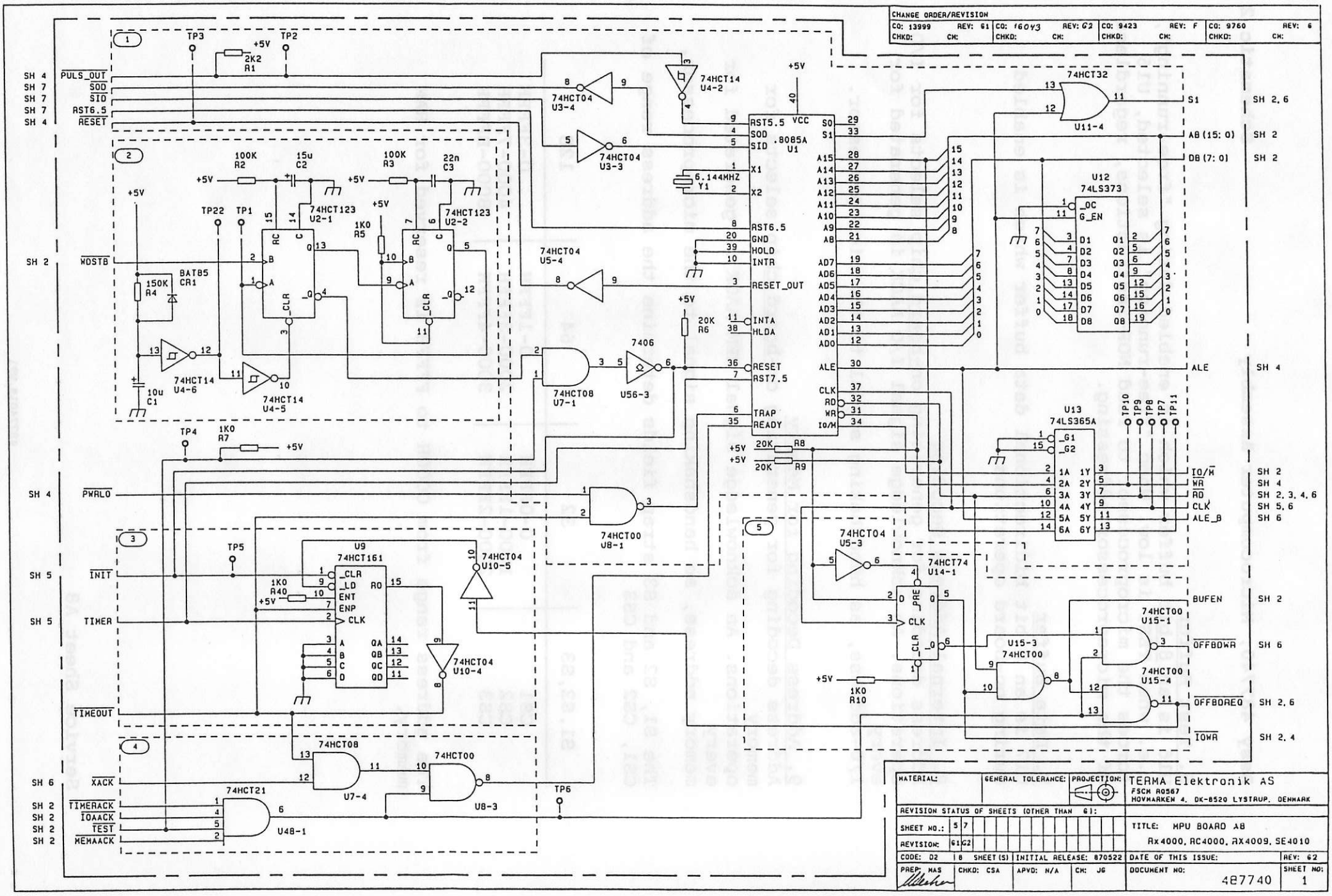
This timer starts counting when **OFF BD REQ** goes low. If the timer counts out, no acknowledge signal has been received within the last 15 msec, and a trap-interrupt is generated to the micro-processor. In normal operation, acknowledge signals should be received within 15 msec.

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.

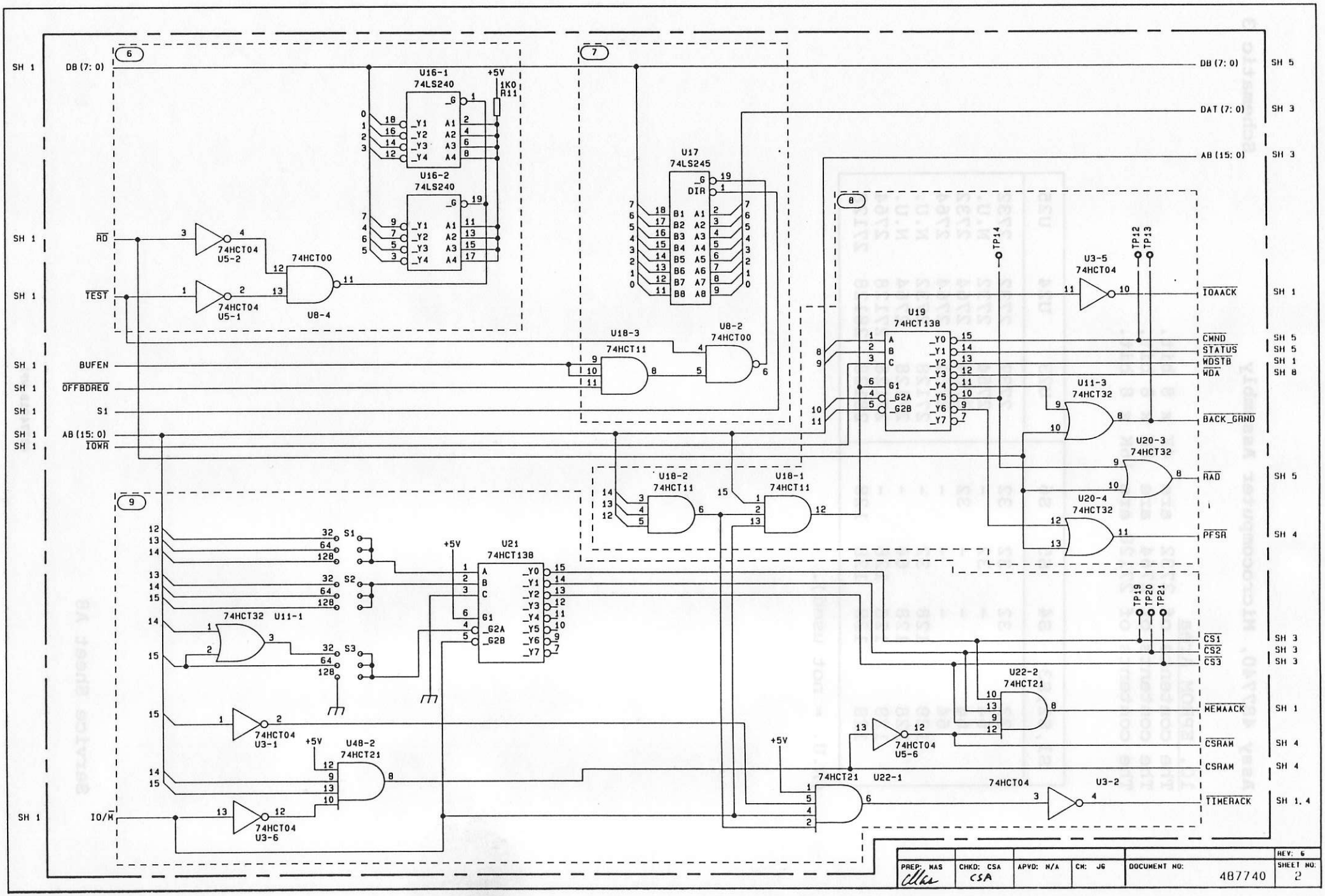
9. Address Decoding for Memory

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.



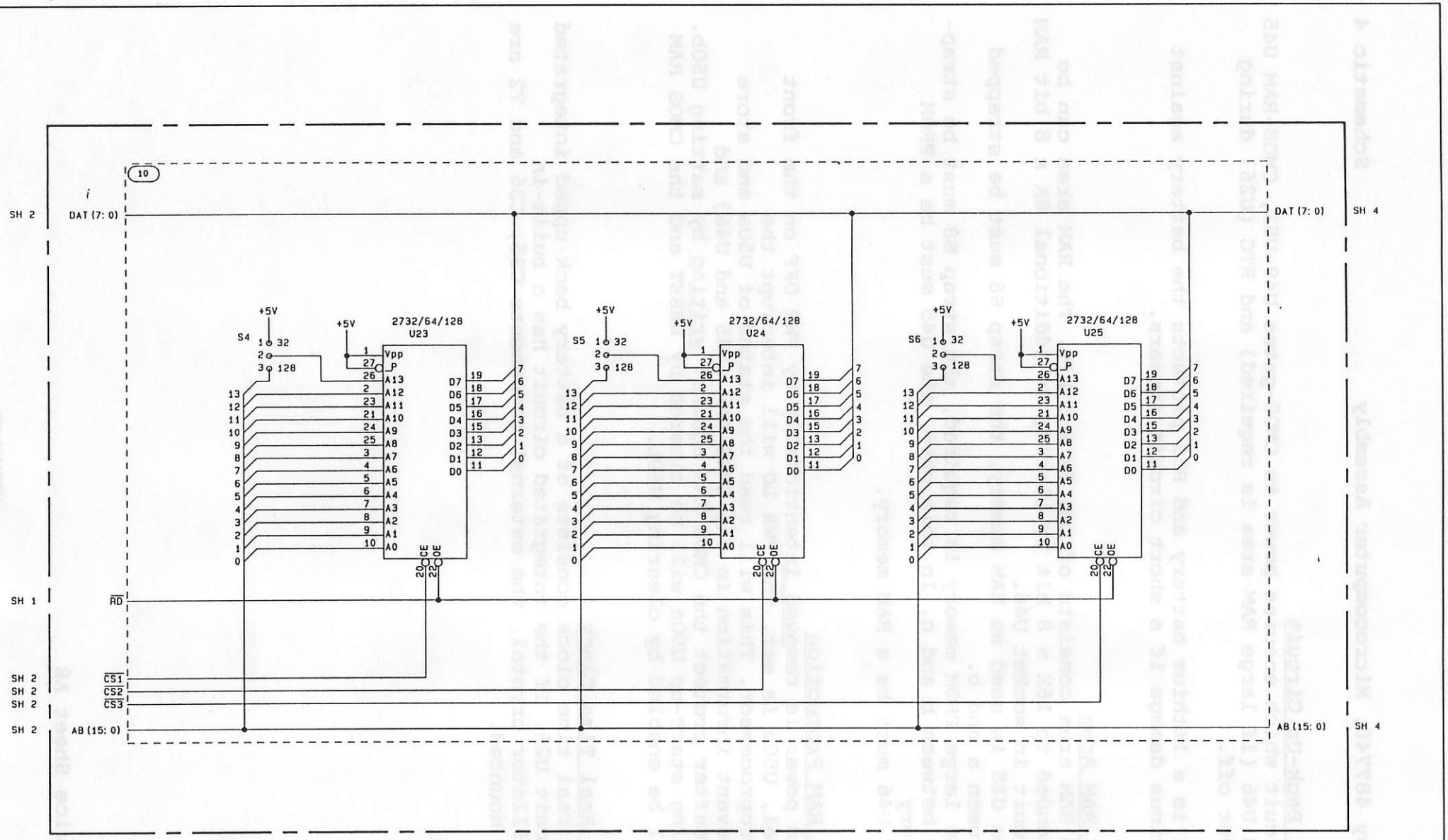

Service Sheet A8

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 |

| PREP: MAS | CHKD: CSA | APVD: N/A | CM: JG | DOCUMENT NO: 487740 | REV: G |
|---|---|---|---|---|---|
| | | | | | SHEET NO: 3 |

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

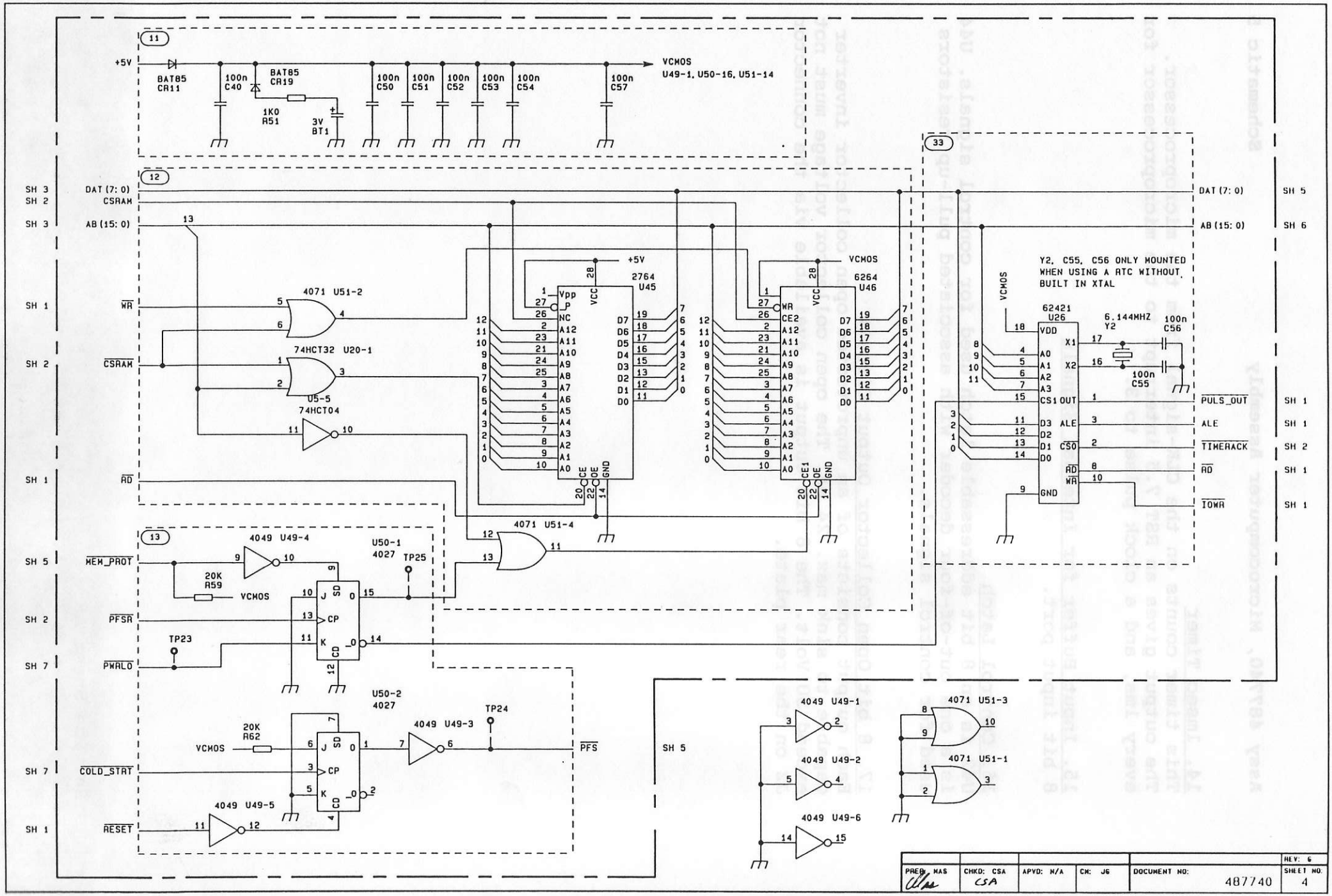
The RAM area consists of one 8K x 8 bit. The RAM area can be extended to 16K x 8 bit by placing an additional 8K x 8 bit RAM circuit in socket U46.
When U45 is used as RAM memory, the strap S8 must be strapped between a and b.
When large PROM memory is required, the strap S8 must be strapped between 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.




Service Sheet A8

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

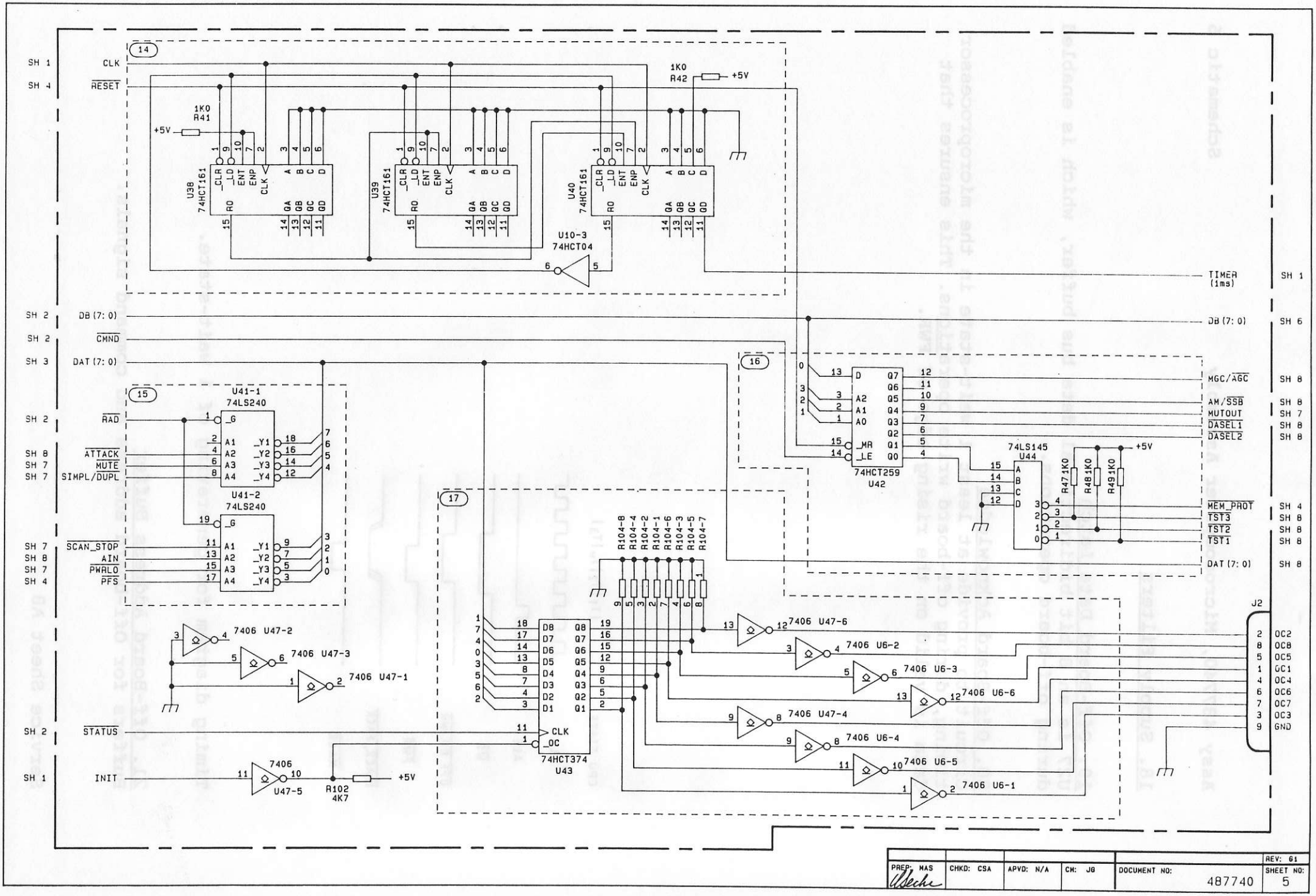
8 bit input port.

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: 61 |
|---|---|---|---|---|---|
| | | | | | SHEET NO: 5 |

Service Sheet A8

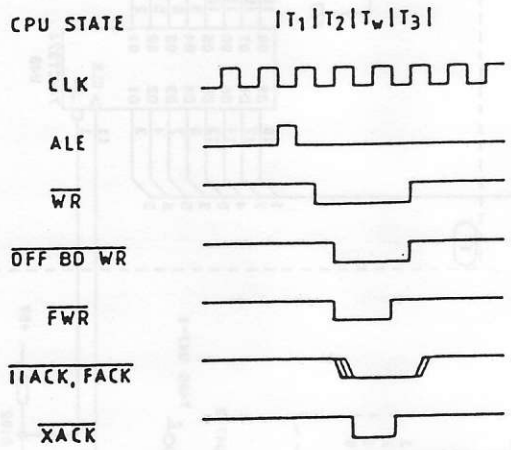
## 18. Supply Filters

## 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.

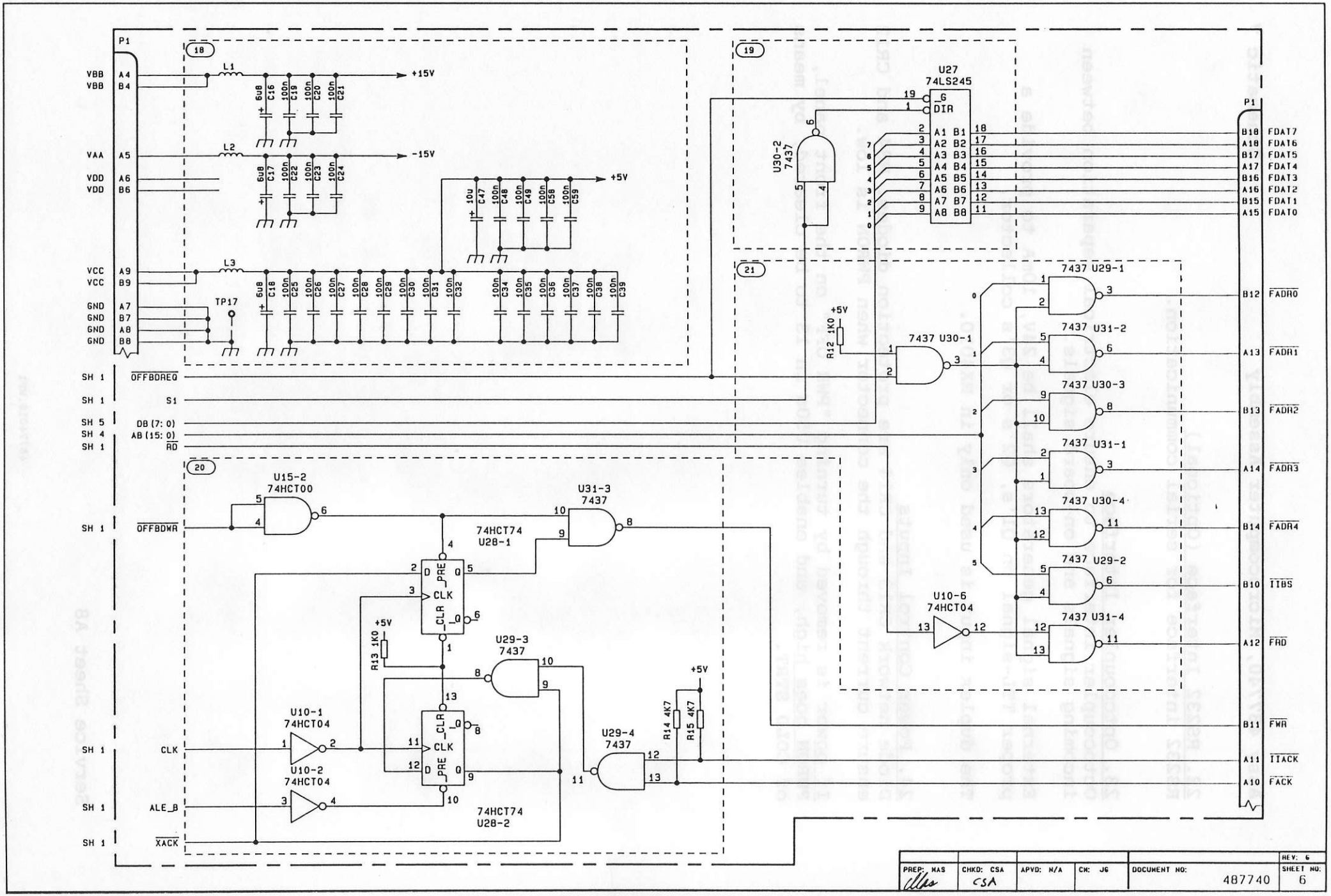



Timing diagram for generating of 1 wait-state.

## 21. Off-Board Address Buffer

Buffers for Off-board address and command signals.

Service Sheet A8




| PREP: MAS | 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.

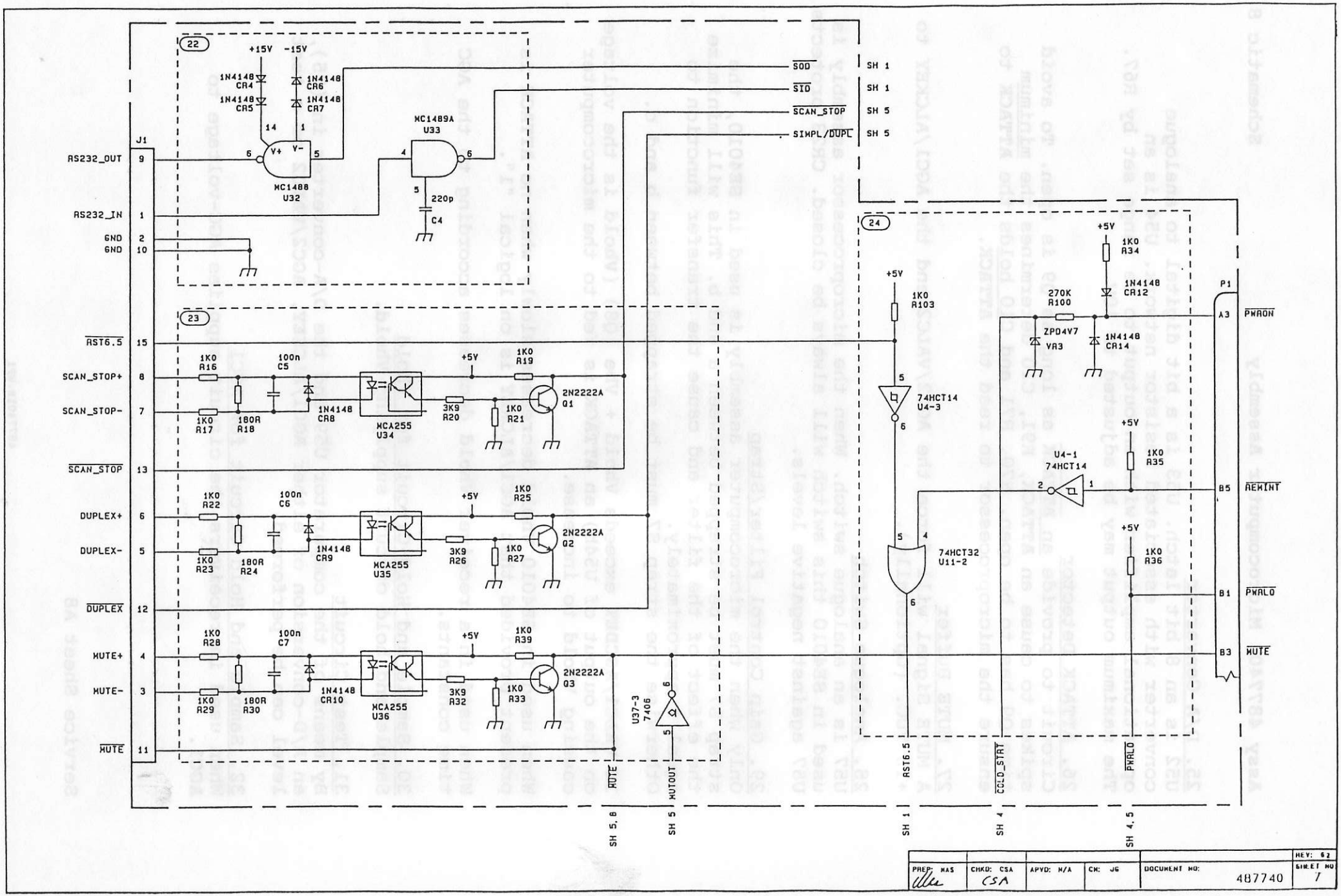
23. Optocoupler Interface
Octocoupler interface to ensure electrical separation between incoming signals and on-board signals.

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.

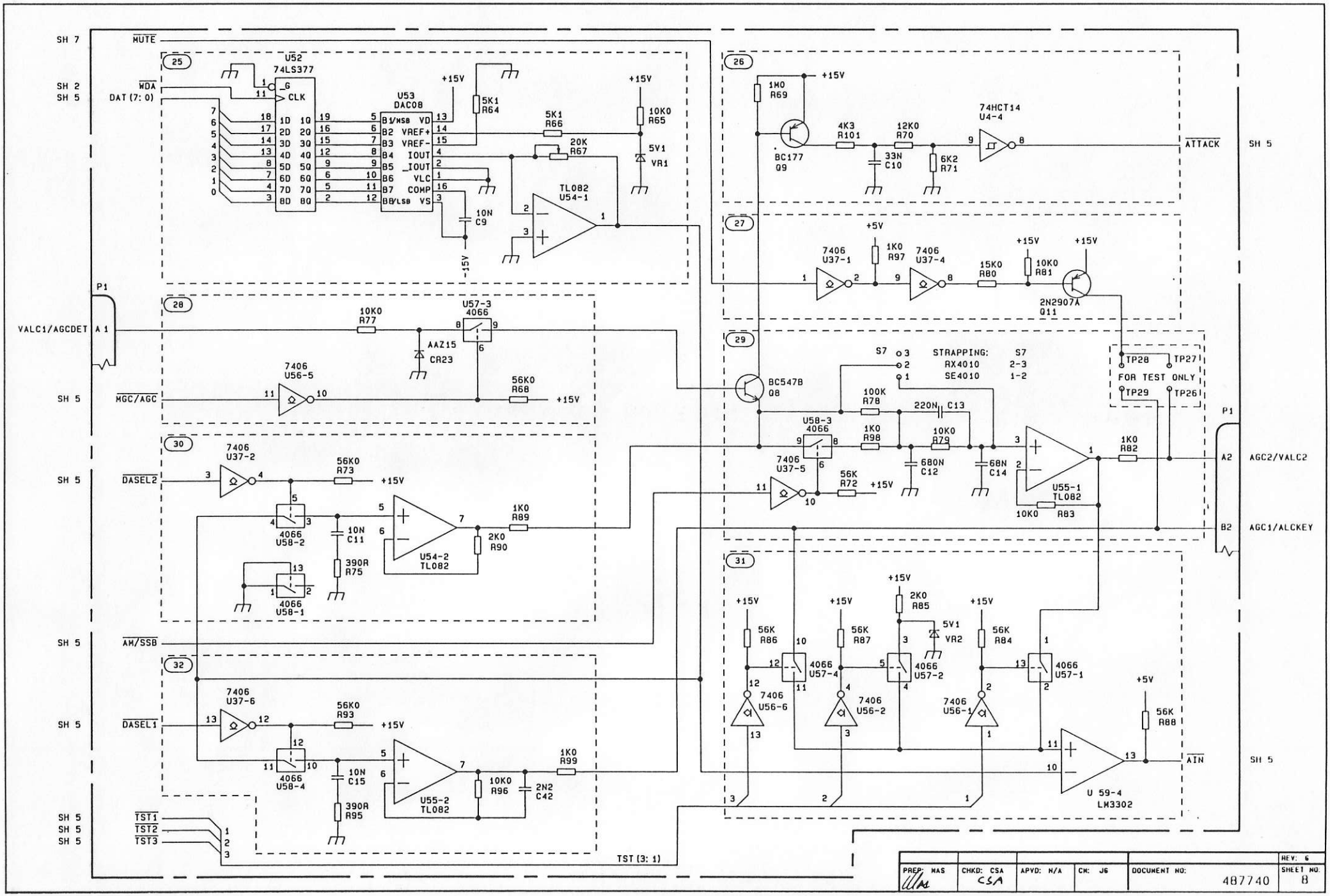
When used in SE4010 **Vhold** decreases slowly when no **ATTACK** is present provided that **AGC1/ALCKEY** is on logical "1".

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**.

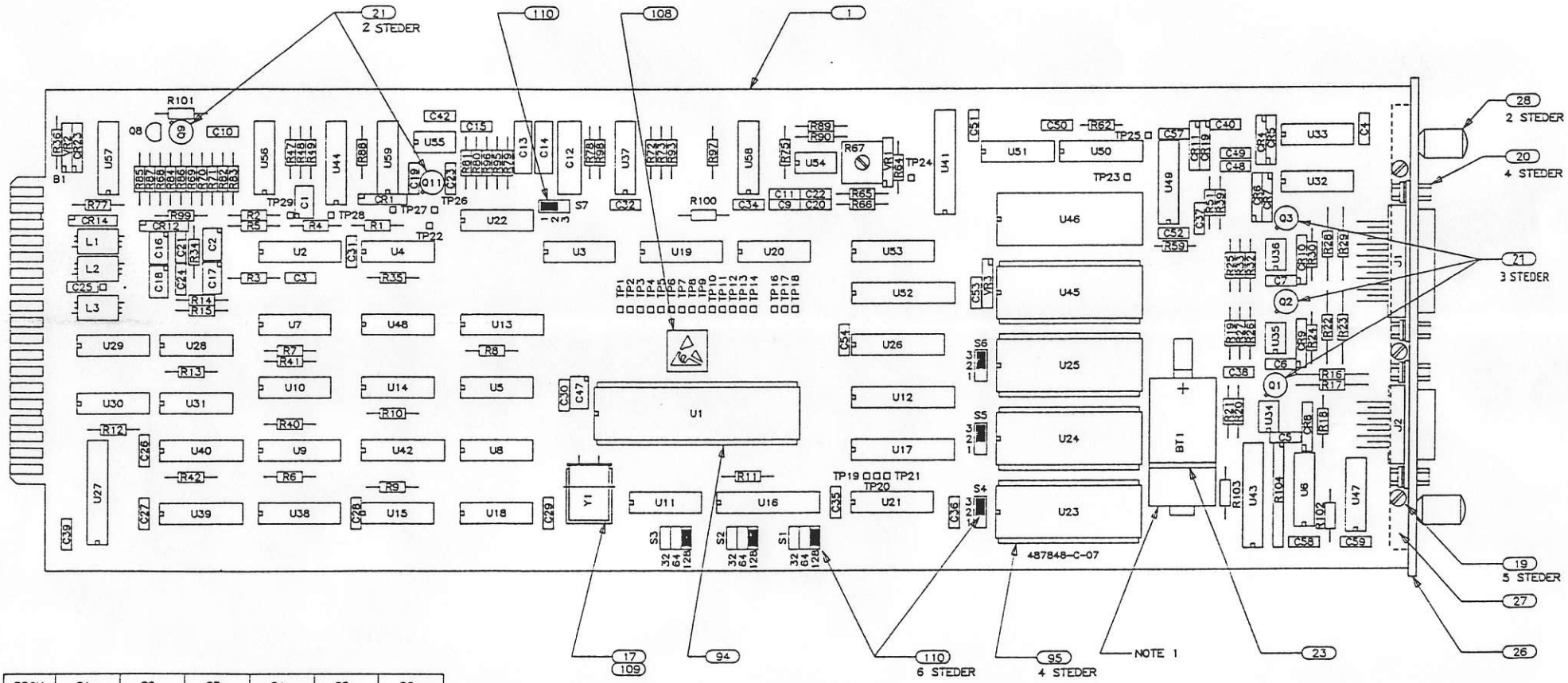



| PREP: MAS | CHKD: CSA | APVD: N/A | CM: J6 | DOCUMENT NO: 487740 | REV: G SHEET NO: 8 |
|---|---|---|---|---|---|

Service Sheet A8

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.

| CHANGE ORDER/REVISION | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| CO: 13999 | REV: K2 | CO: 17510 | REV: K3 | CO: 17613 | REV: K4 | CO: 18076 | REV: K5 |
| CHKD: | CM: CSA | CHKD: | CM: JG | CHKD: | CM: | CHKD: | CM: |




| 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<br>FISKI ROSKILDE<br>HOVMARKEN 4, DK-8520 LYSTRUP, DENMARK |
| REVISION STATUS OF SHEETS (OTHER THAN K1 ): | | | |
| SHEET NO.: | | | TITLE: COMPONENT LOCATION MPU BOARD A8 |
| REVISION: | | | |
| 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 |

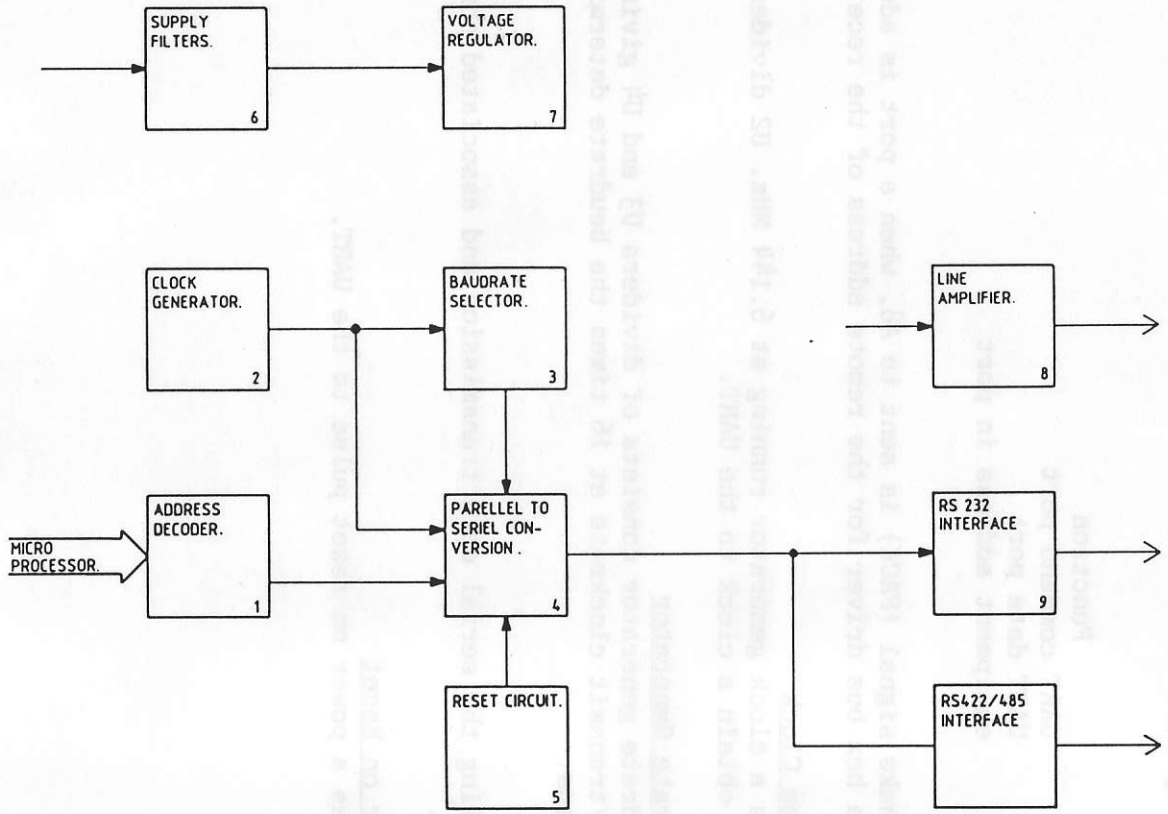
Service Sheet A8

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 |
| | | | | |




| | | | | | |
|---|---|---|---|---|---|
| NEXT ASSY | USED ON | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075 | | Dansk Radio AS | dra |
| APPLICATION | | ANGLES<br>LIN. DIM. | DR. VH 11.1 1988<br>CH.<br>AP. 68 11.1.1988<br>AP. | TITLE<br>MODULE CONFIGURATION<br>INTERFACE<br>RS232/422/485 | |
| | | MATERIAL | FIRST ANGLE PROJECTION | SIZE A2 / CODE IDENT / DRAWING NO. 49 05 98-A<br>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

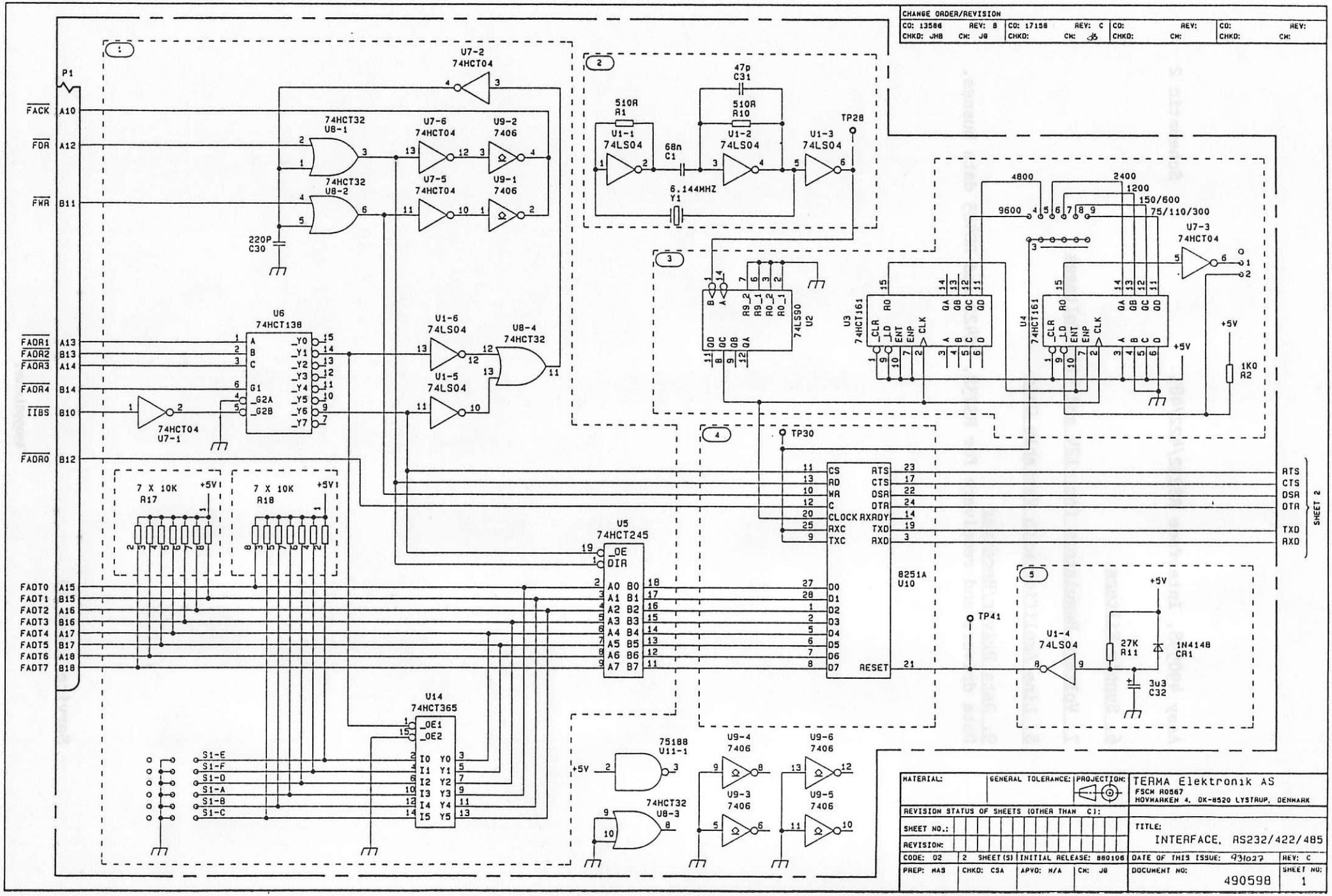
The baudrate generator consists of dividers U3 and U4 giving the receive/transmit clockrate at 16 times the baudrate determined by the straps.

4. UART

Controlling the serial data transmission and associated control signals.

5. Power on Reset

Generates a power on reset pulse to the UART.



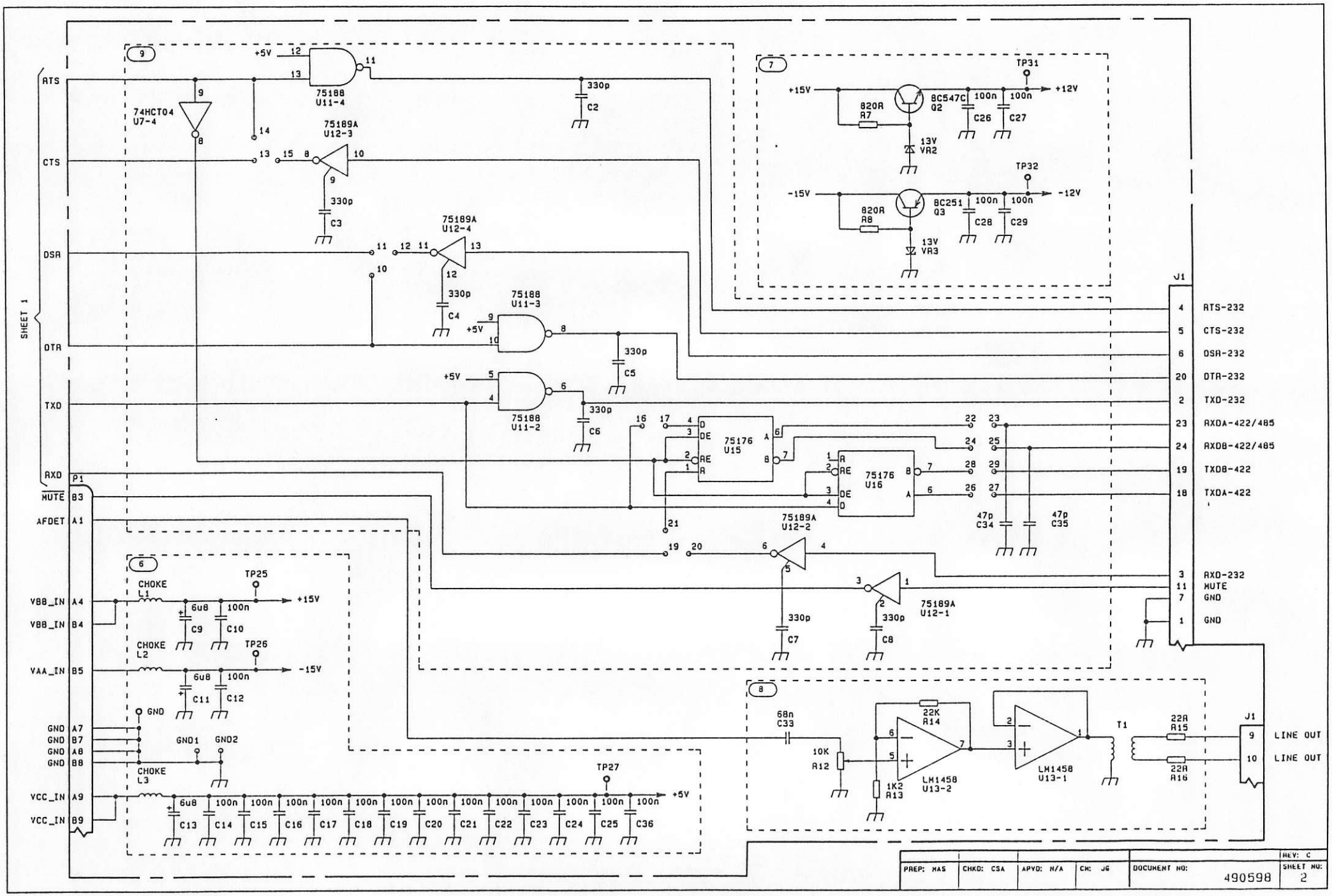

Service Sheet A9

6. Supply Filters

7. Voltage Regulators for +12V and -12V Voltages

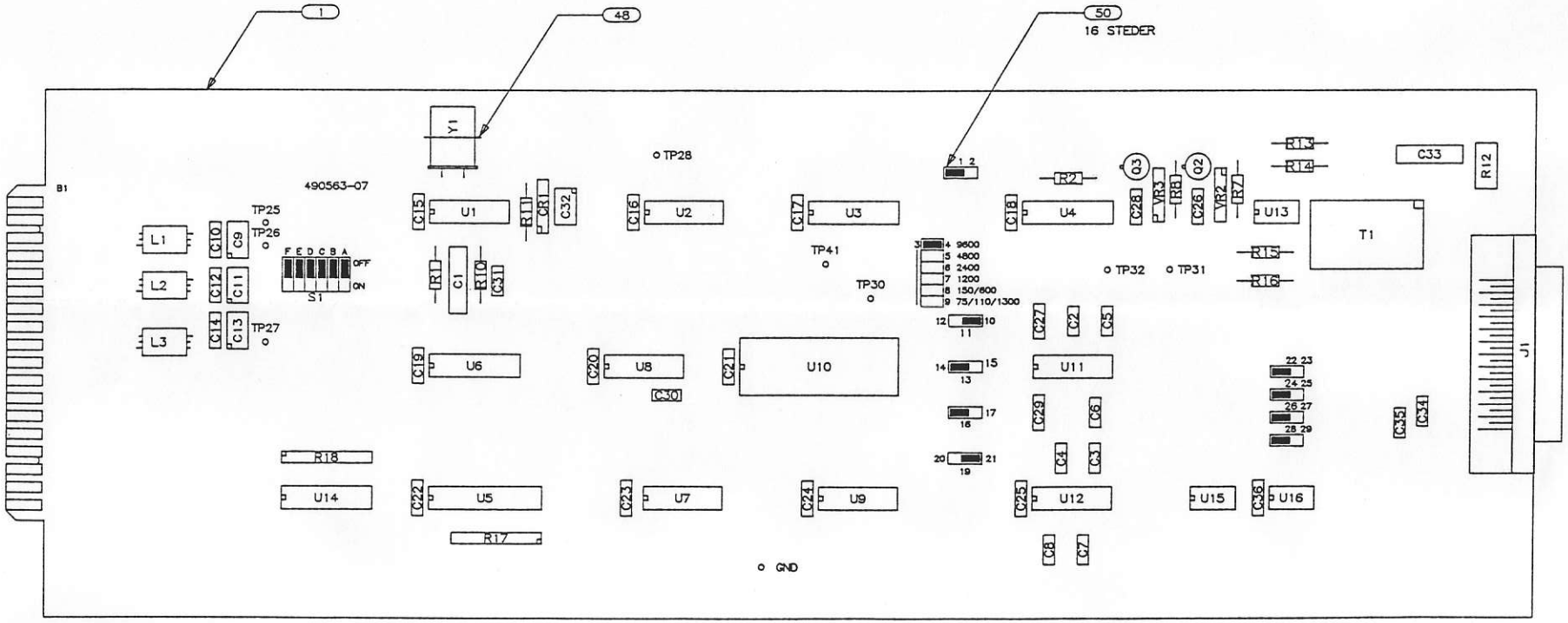
8. Line Amplifier with Variable Gain

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<br>AUT: CM: | CO: 9796 REV: F<br>AUT: CM: JG | CO: 17158 REV: G<br>AUT: CM: | CO: 17307 REV: G1<br>AUT: CM: |

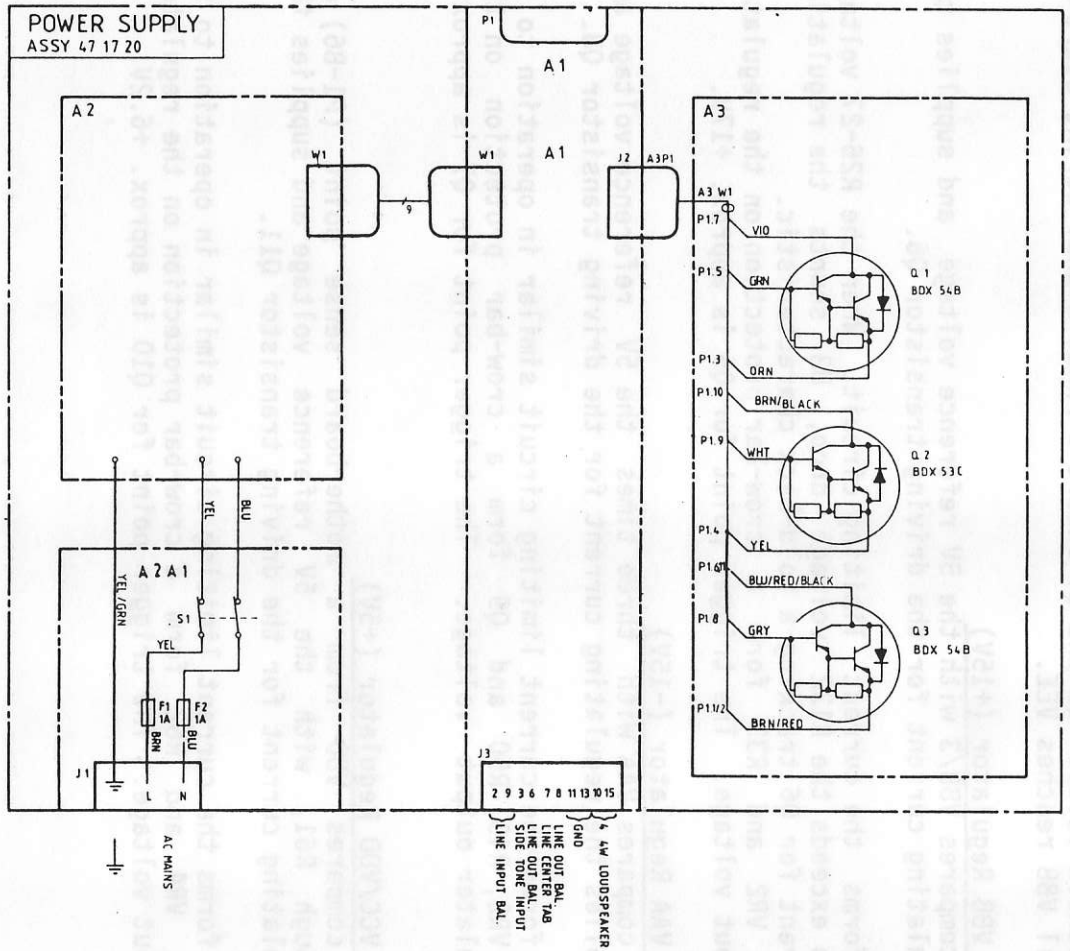



| | | | |
|---|---|---|---|
| MATERIAL: | GENERAL TOLERANCE: | PROJECTION: | TERMA Elektronik AS<br>FSCM 80567<br>HOVMARKEN 4, DK-8520 LYSTRUP, DENMARK |
| REVISION STATUS OF SHEETS (OTHER THAN G ): | | | |
| SHEET NO.: | | | TITLE: COMPONENT LOCATION<br>INTERFACE<br>RS232/422/485 |
| REVISION: | | | |
| CODE: D2 | 1 SHEET(S) | INITIAL RELEASE: 890807 | DATE OF LATEST REV.: 94 06 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 |
| | | | | |




| | |
|---|---|
| 47 19 09 | RC4000 |
| 47 17 12 | RX4000 |
| 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. | FP | 8-11-83 |
| CH. | | |
| AP. | | |
| AP. | | |

FIRST ANGLE PROJECTION

**Dansk Radio AS**

TITLE
POWER SUPPLY

| SIZE | CODE IDENT | DRAWING NO. |
|---|---|---|
| A2 | | 47 17 20 |
| SCALE | | SHEET 1 OF 1 |

Service Sheet A10

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.

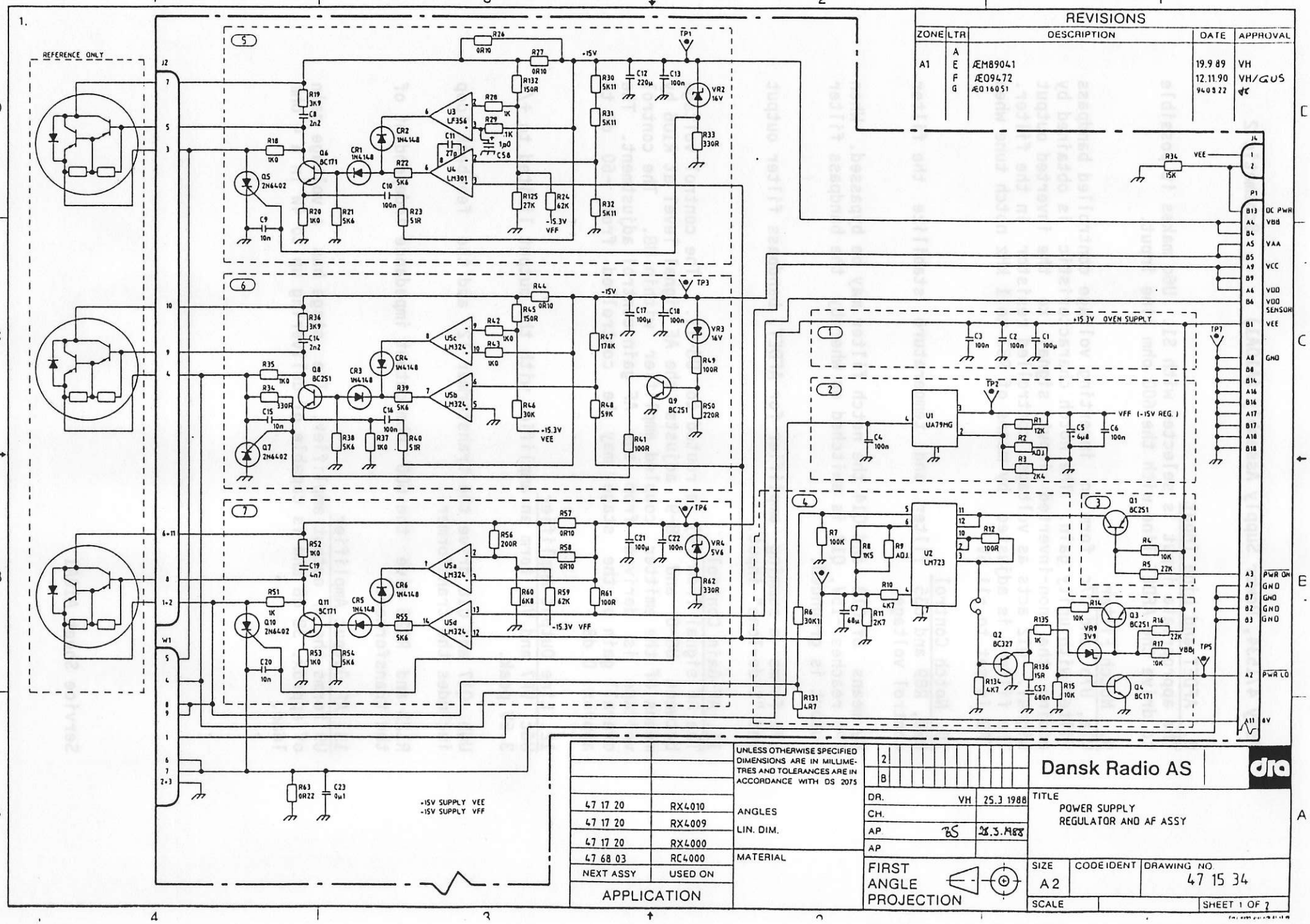
U3 forms the current limiting circuit. When the R26-27 voltage drop exceeds the R132 voltage drop, U3 shunts the regulating current for Q6 tracking a fold-back characteristic.
Q5, VR2 and R33 form a crow-bar protection on the regulator output voltage. The trigger point for Q5 is approx. +17V.

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

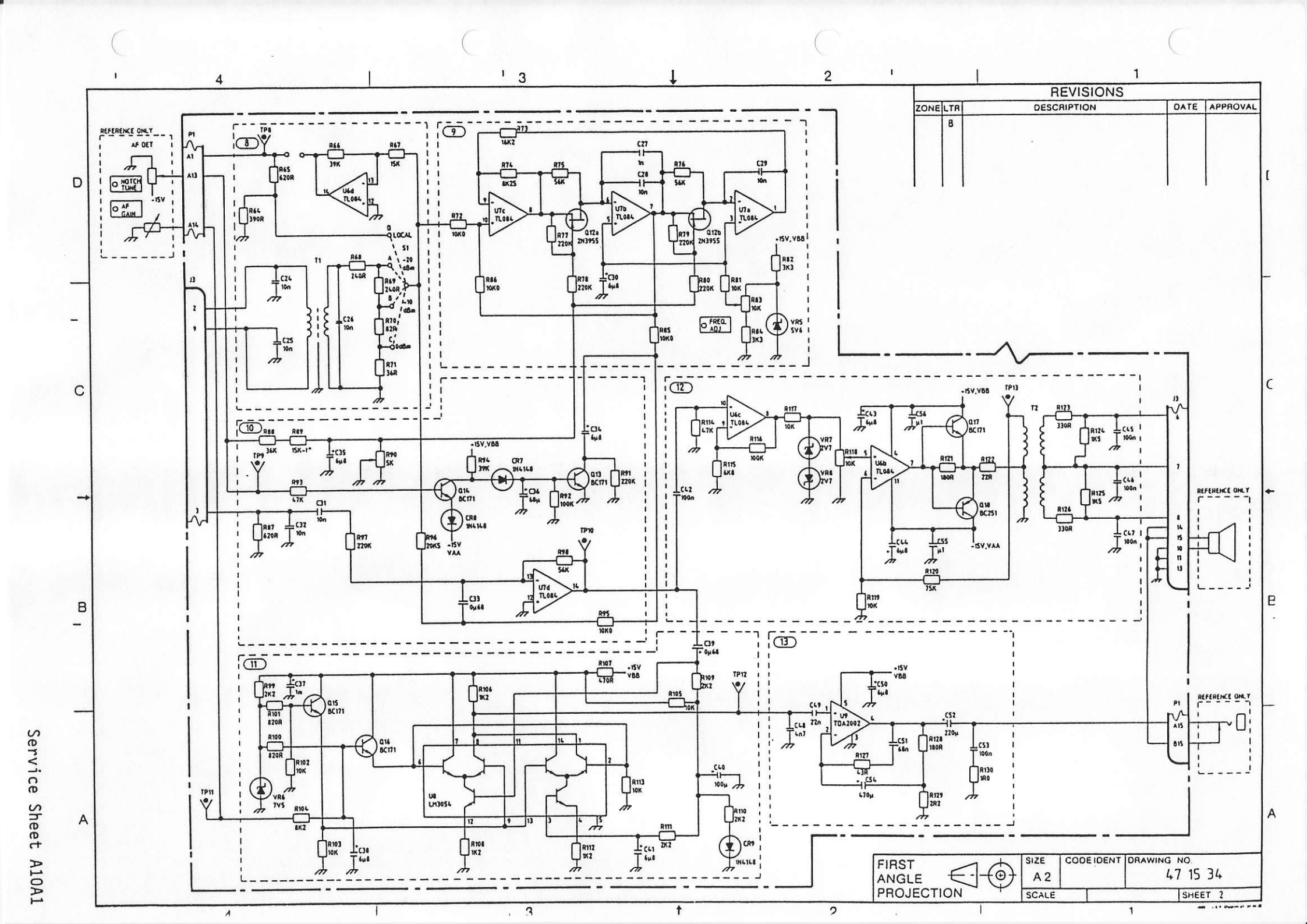
U6c, VR7 and VR8 form an amplifier with the output limited to +/- 3.5V peak.

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

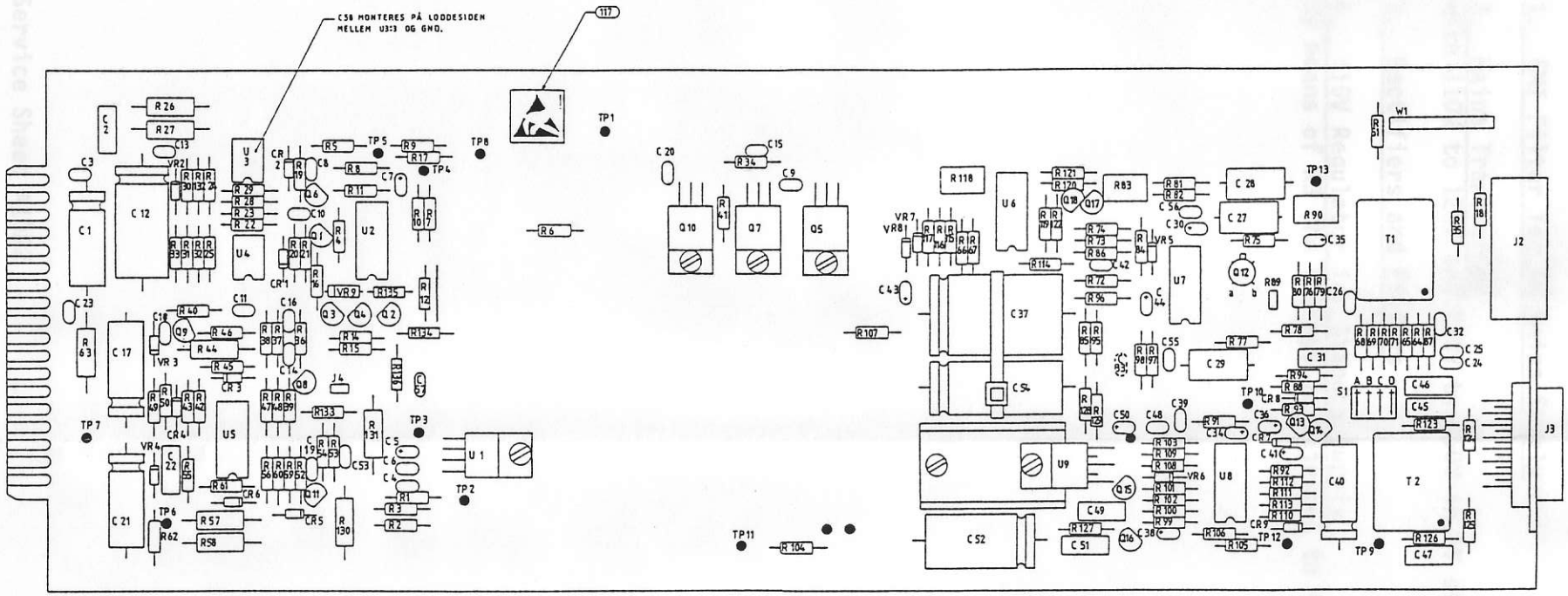
U9 forms the AF output amplifier. The stage has a voltage gain of approx. 38 dB and is capable of delivering up to 4W in a 4 ohm load.


REVISIONS
ZONE LTR DESCRIPTION DATE APPROVAL
B
REFERENCE ONLY
AF DET
NOTCH TUNE
AF GAIN
-15V
P1
A1
A13
A14
8
TP8
R66 39K
R67 15K
R65 620R
R64 390R
U6d TL084
LOCAL
S1
-20 dBm
4-10 dBm
0 dBm
T1
R68 240R
R69 240R
R70 82R
R71 36R
C24 10n
C25 10n
C26 10n
J3
9
R73 14K2
R74 8K25
R75 56K
R76 56K
C27 1n
C28 10n
C29 10n
R72 10K0
U7c TL084
U7b TL084
U7a TL084
Q12a 2N3955
Q12b 2N3955
R77 220K
R78 220K
R79 220K
R80 220K
C30 6µ8
R81 10K
R82 3K3
R83 10K
R84 3K3
R85 10K0
R86 10K0
+15V.VBB
FREQ. ADJ
VR5 5V6
10
R88 36K
R89 15K-1%
C35 6µ8
R90 5K
TP9
R93 47K
C31 10n
R87 620R
C32 10n
R97 220K
R96 20K5
-15V VAA
R94 39K
CR7 1N4148
Q14 BC171
Q13 BC171
R91 220K
R92 100K
C34 6µ8
C36 68µ
CR8 1N4148
TP10
R98 56K
U7d TL084
C33 0µ68
R95 10K0
12
U6c TL084
R114 47K
R117 10K
R116 100K
R115 6K8
VR7 2V7
VR8 2V7
C42 100n
C43 6µ8
C56 µ1
Q17 BC171
TP13
T2
R118 10K
U6b TL084
R121 180R
R122 22R
Q18 BC251
C44 6µ8
C55 µ1
C45 100n
C46 100n
C47 100n
R123 330R
R124 1K5
R125 1K5
R126 330R
R119 10K
R120 75K
-15V.VAA
REFERENCE ONLY
11
C39 0µ68
R107 470R
+15V VBB
R109 2K2
TP12
R105 10K
R99 2K2
C37 1n
R101 820R
Q15 BC171
R106 1K2
R100 820R
Q16 BC171
R102 10K
VR6 7V5
TP11
R104 8K2
R103 10K
C38 6µ8
U8 LM3054
R113 10K
C40 100µ
R110 2K2
CR9 1N4148
R111 2K2
R108 1K2
R112 1K2
C41 6µ8
13
C50 6µ8
C49 22n
C48 4n7
U9 TDA2002
C51 68n
R128 180R
C52 220µ
C53 100n
R130 1R0
R127 43R
C54 470µ
R129 2R2
P1
A15
B15
REFERENCE ONLY
FIRST ANGLE PROJECTION
SIZE A2
CODE IDENT
DRAWING NO. 47 15 34
SCALE
SHEET 2
Service Sheet A10A1

1. ESD BESKYTTELSE PER 1000

CAUTION
DEVICES ARE SUBJECT TO DAMAGE BY STATIC ELECTRICITY

| REVISIONS | | | | |
|---|---|---|---|---|
| ZONE | LTR | DESCRIPTION | DATE | APPROVAL |
| | G | Æ09155 | 8.6.90 | VH |
| | H | Æ09472 | 12.11.90 | VH/ |
| | J | Æ016051 | 940823 | |




| | | | | | |
|---|---|---|---|---|---|
| | | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075 | | Dansk Radio AS | dra |
| | | | DR. | TITLE | |
| | | | CH. | Regulator and AF assy | |
| | | ANGLES | AP. | | |
| | | LIN. DIM. | AP | | |
| 471909 | RC 4000 | | | | |
| 471712 | RX 4000 | MATERIAL | FIRST ANGLE PROJECTION | SIZE A1 | CODE IDENT / DRAWING NO. 47 15 34 |
| NEXT ASSY | USED ON | | | SCALE | SHEET 1 OF 1 |
| APPLICATION | | | | | |

Service Sheet A10A1

Assy 471550, Power Supply Assembly (A10A2) Schematic 1

1. EMI Filter for AC Mains Supply

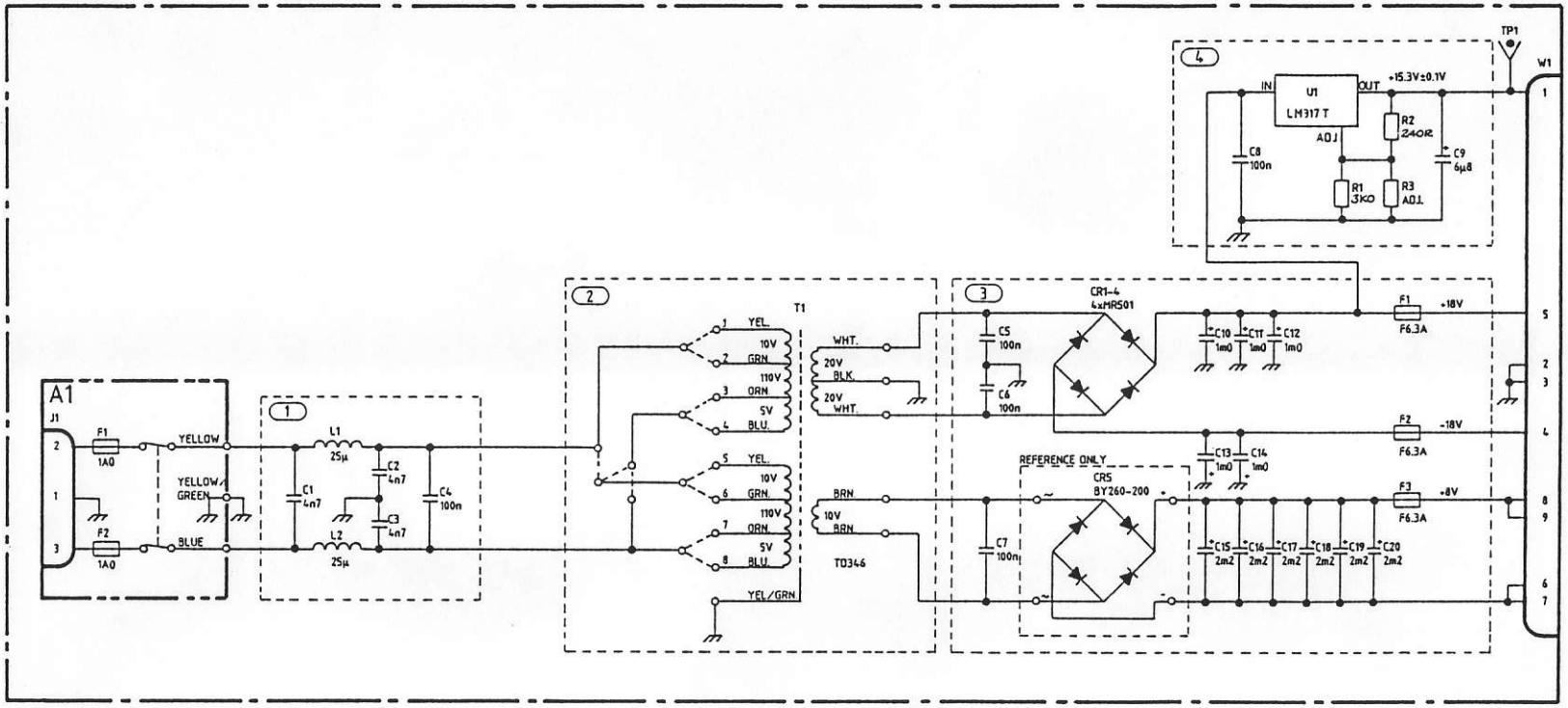
2. Mains Transformer
with 110V to 125V and 220V to 250V in 5V steps.

3. Rectifiers and Filters

4. +15V Regulator for Standby Supply
By means of R3 the voltage is adjusted to +15.3V at 25°C.

1.

| REVISIONS | | | | |
|---|---|---|---|---|
| ZONE | LTR | DESCRIPTION | DATE | APPROVAL |
| | A | | | |
| | B | ÆO9057 | 4.3.90 | VH |
| | C | ÆO 16105 | ANK 941216 | |
| | C1 | ÆO 22051 | TGP 950117 | |




| | | 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 |
| NEXT ASSY | USED ON | | | SCALE | SHEET 1 OF 1 |
| APPLICATION | | | | DRAWING NO. BR 47 15 50 EC | |

Service Sheet A10A2

1.

ESD BESKYTTELSE PER (1000)

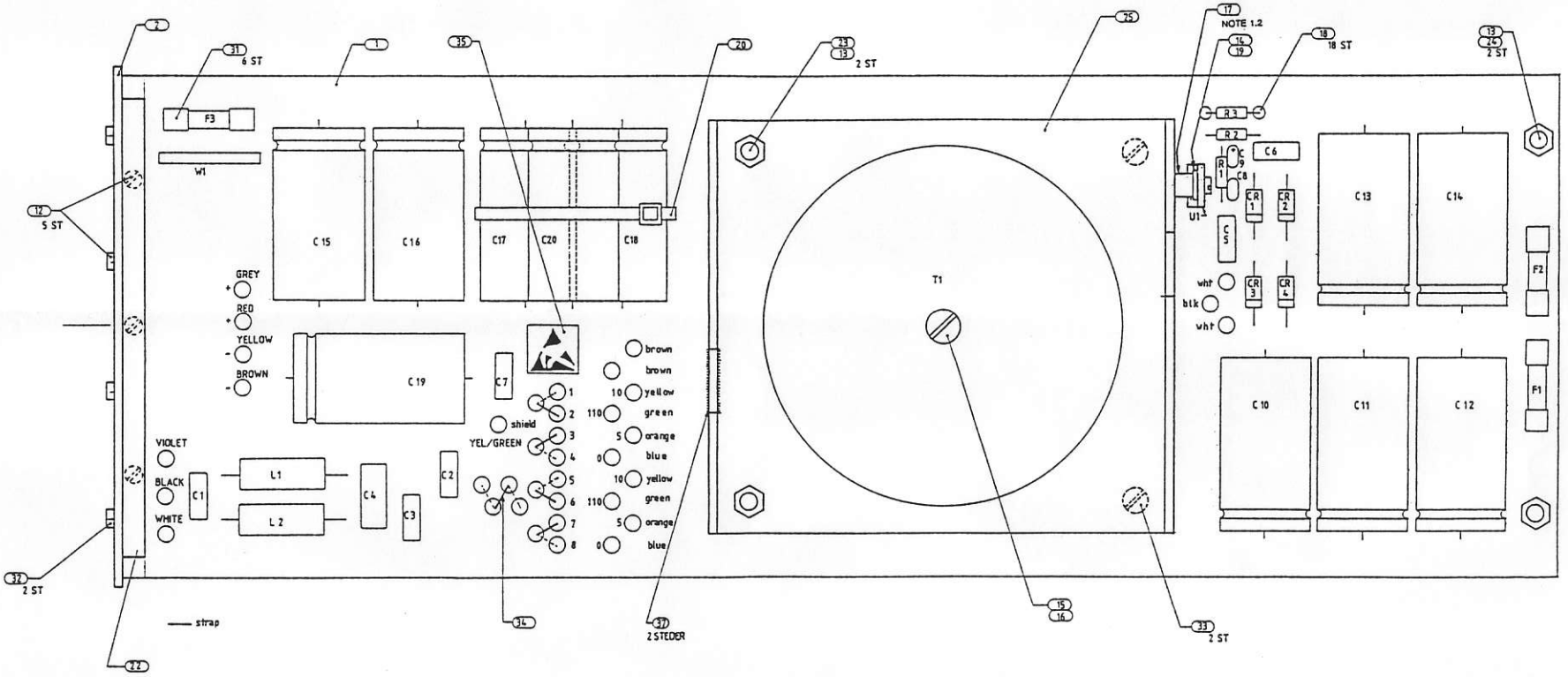
CAUTION
DEVICES ARE SUBJECT TO DAMAGE BY STATIC ELECTRICITY

1.1 : C10 - C20 LIMES MED (36) EFTER TEST.

1.2 U1 VENDES MED KØLESIDEN MOD R1.
PWB-HUL NÆRMEST C5 BENYTTES IKKE.

REVISIONS

| ZONE | LTR | DESCRIPTION | DATE | APPROVA |
|---|---|---|---|---|
| C3 | A | | | |
| | B | ÆM87101 | 29.2.88 | VH |
| | C | ÆO9057 | 4.3.90 | VH |
| | D | ÆO9417 | 14.9.90 | VH/GLS |
| | E | ÆO8860 | 22.8.91 | VH |
| | E1 | ÆO13448 | 930106 | VH/GSA |
| | F | 17551 | 940607 | GS |
| | G | Re 16105 | AML 941215 | GS |




| | | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES ARE IN ACCORDANCE WITH DS 2075 | | Dansk Radio AS |
|---|---|---|---|---|
| | | | DR. | TITLE COMPONENT LOCATION POWER SUPPLY , 220V TRAFO ASSY |
| | | ANGLES | CH. | |
| 47 17 20 | RX4010 | LIN. DIM. | AP. | |
| 47 17 20 | RX4009 | | AP | |
| 47 17 20 | RX4000 | MATERIAL | FIRST ANGLE PROJECTION | SIZE A1 / CODE IDENT / DRAWING NO. BR 47 15 50 PD |
| NEXT ASSY | USED ON | PARTS LIST | | SCALE 2:1 / SHEET 1 OF 1 |
| APPLICATION | | | | |

Service Sheet A10A2

**ASSY 600135, FRONT PANEL CIRCUIT**
**ASSY 489883, DISPLAY BOARD ASSEMBLY**
**ASSY 600133, MODE KEY BOARD ASSEMBLY**
**ASSY 600131, NUM. KEYBOARD ASSEMBLY**

Service Sheet A11A1, A11A1A1,
A11A1A2 AND A11A1A3

**Assy 600135, 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

| REVISIONS | | | | |
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| ZONE | LTR | DESCRIPTION | DATE | APPROVAL |
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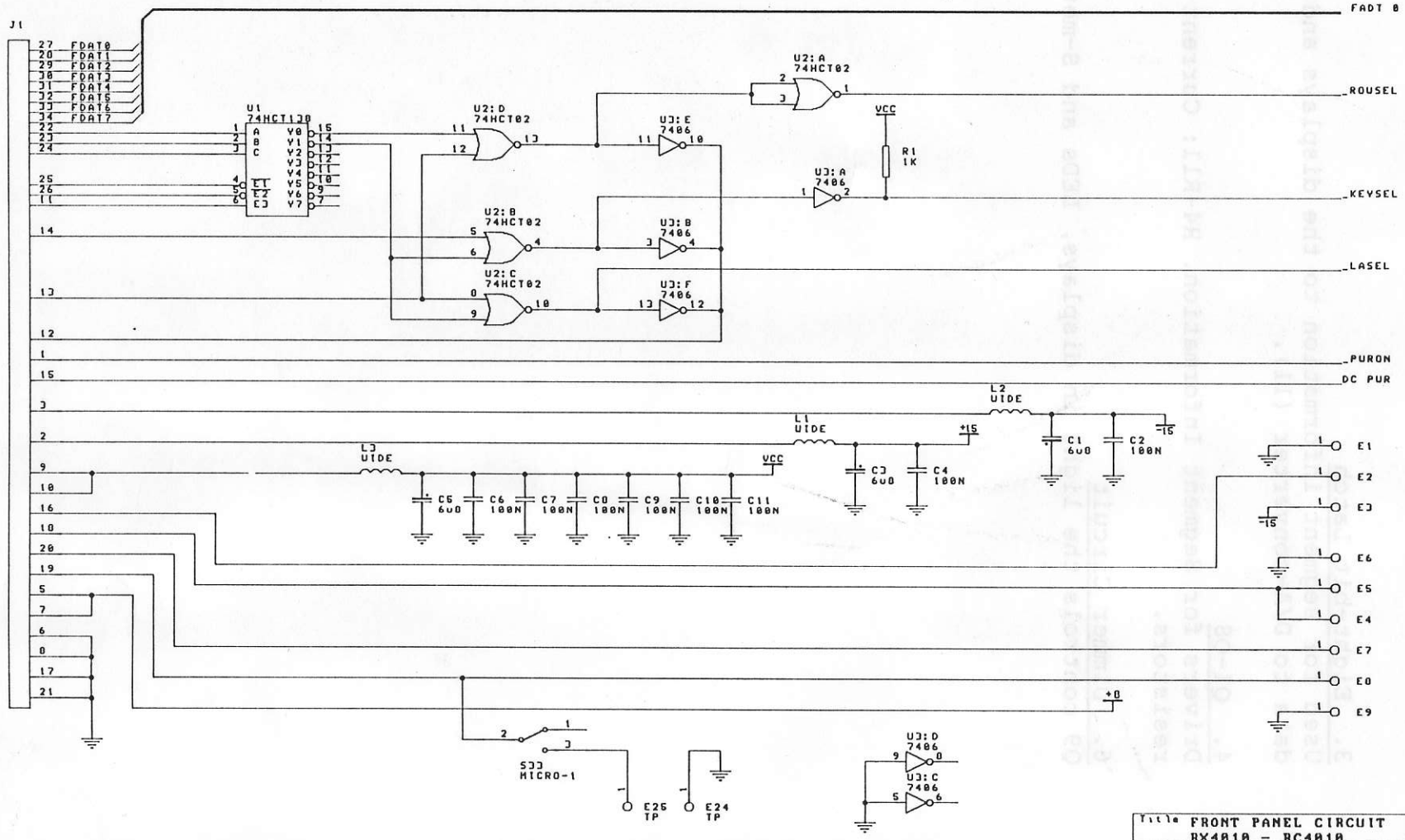


| | | |
|---|---|---|
| Title | FRONT PANEL CIRCUIT<br>RX4010 - RC4010 | |
| Size<br>A3 | Number<br>600135-EC | Revision<br>B |
| Date: 8-FEB 1999 | | Sheet 1 of 5 |
| File: C:\DESIGN\600135\1 | | Drawn By: JHL |

3. Eight-bit Latch
Used for segment information to the displays and LEDs, and data to D/A-converter (11).

4. Q1-Q8
Drivers for Segment Information. R4-R11: Current limiting resistors.

6. Dimmer Circuit
Q9 controls the light in displays, LEDs and S-meter.

## REVISIONS

| ZONE | LTR | DESCRIPTION | DATE | APPROVAL |
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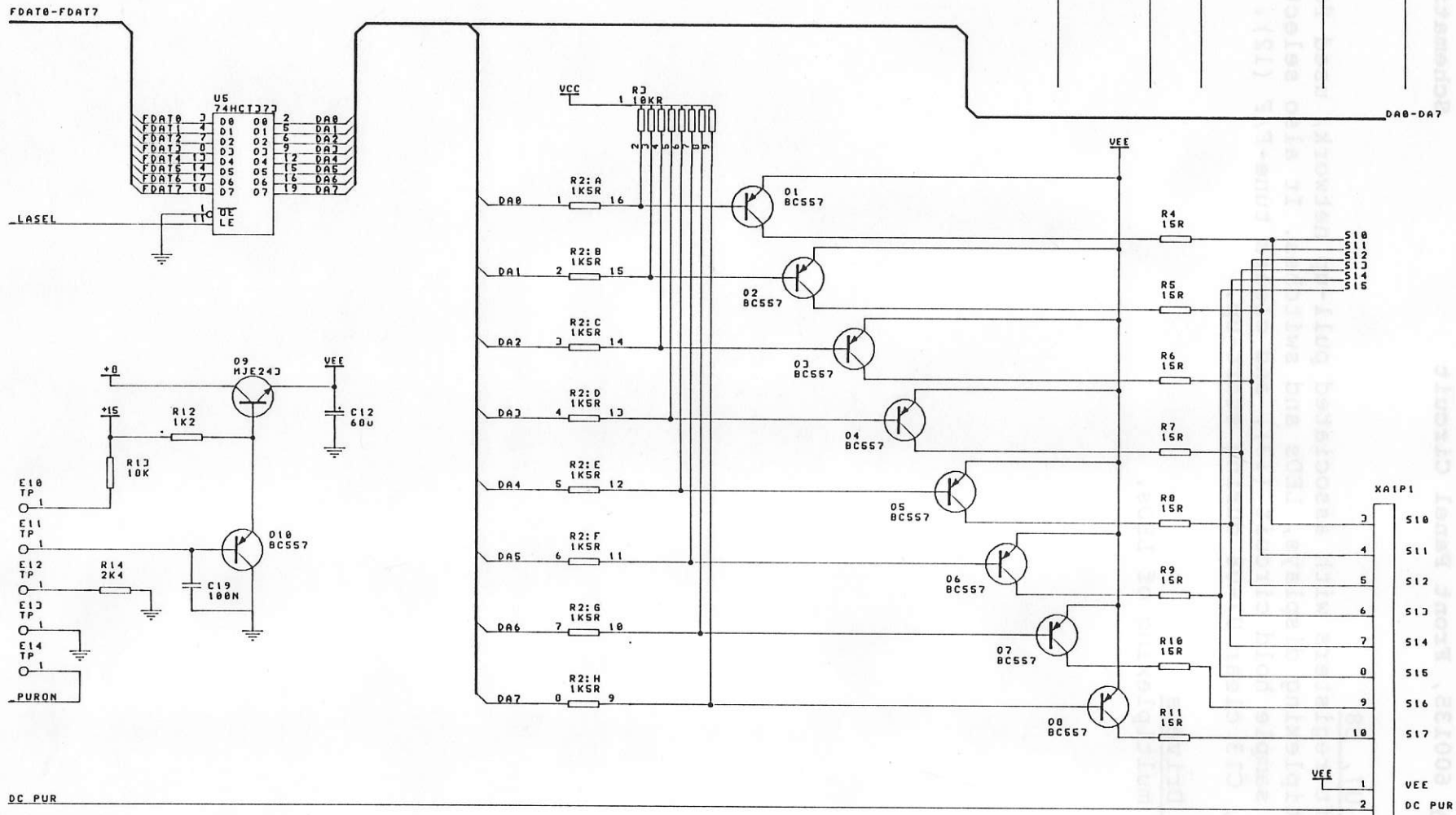


| | | |
|---|---|---|
| Title | FRONT PANEL CIRCUIT RX4010 - RC4010 | |
| Size A3 | Number 600135-EC | Revision B |
| Date: 8-FEB 1999 | | Sheet 2 of 6 |
| File: C:\DESIGN\600135\2 | | Drawn By: JHL |

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 | | | | |
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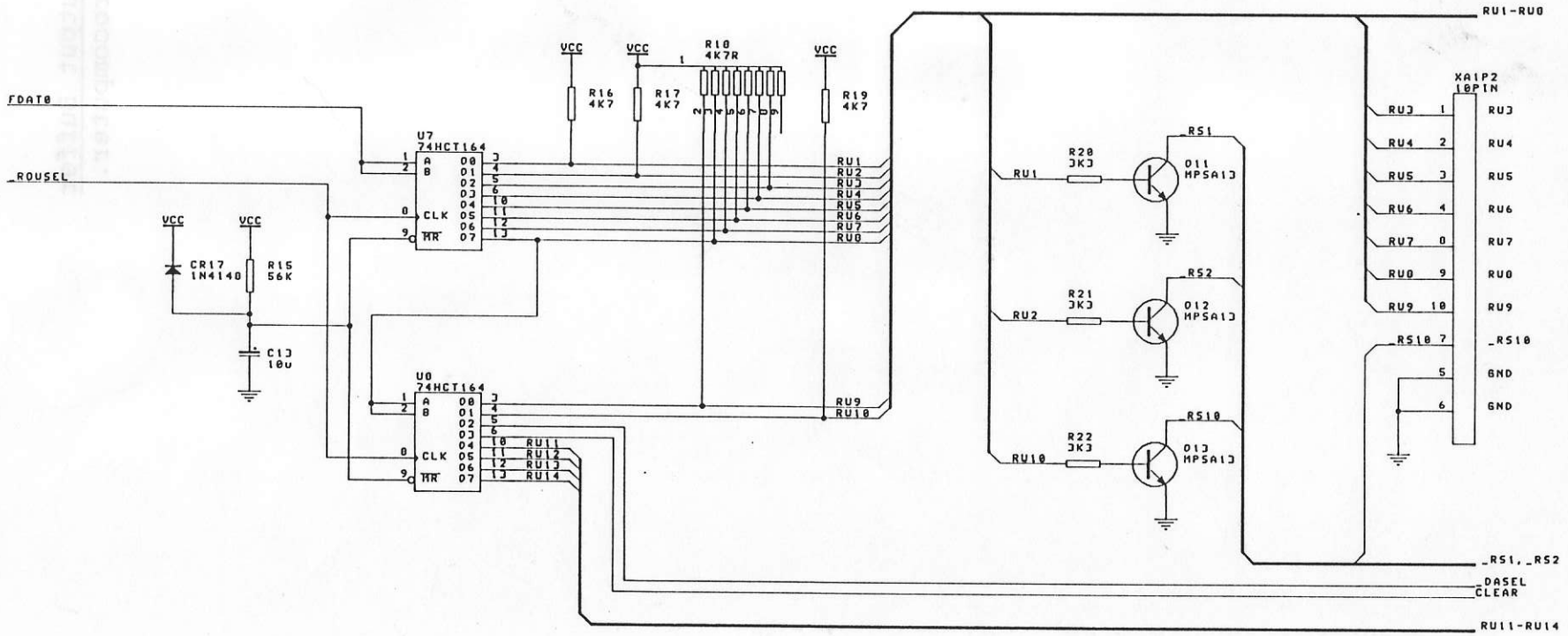


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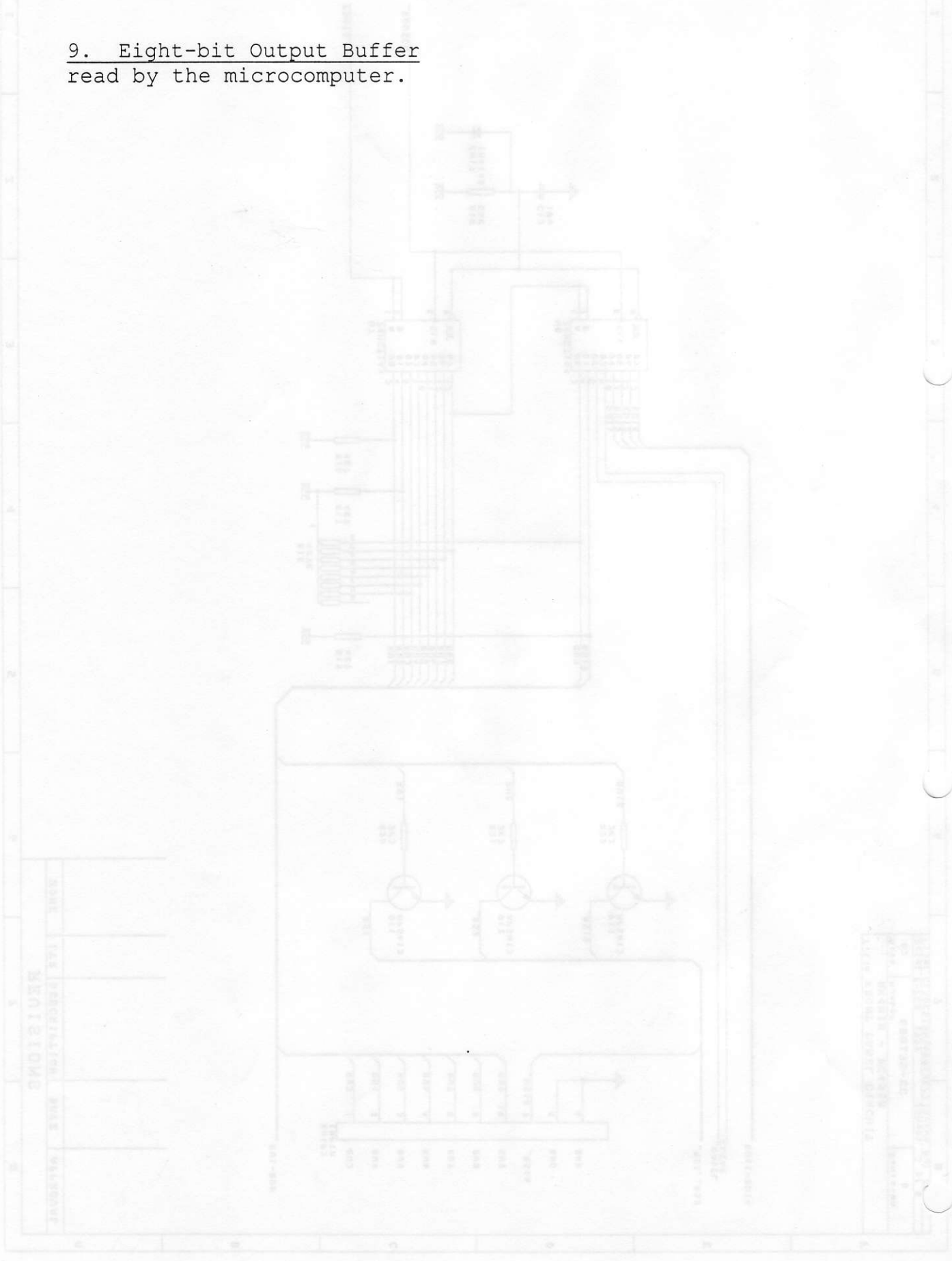
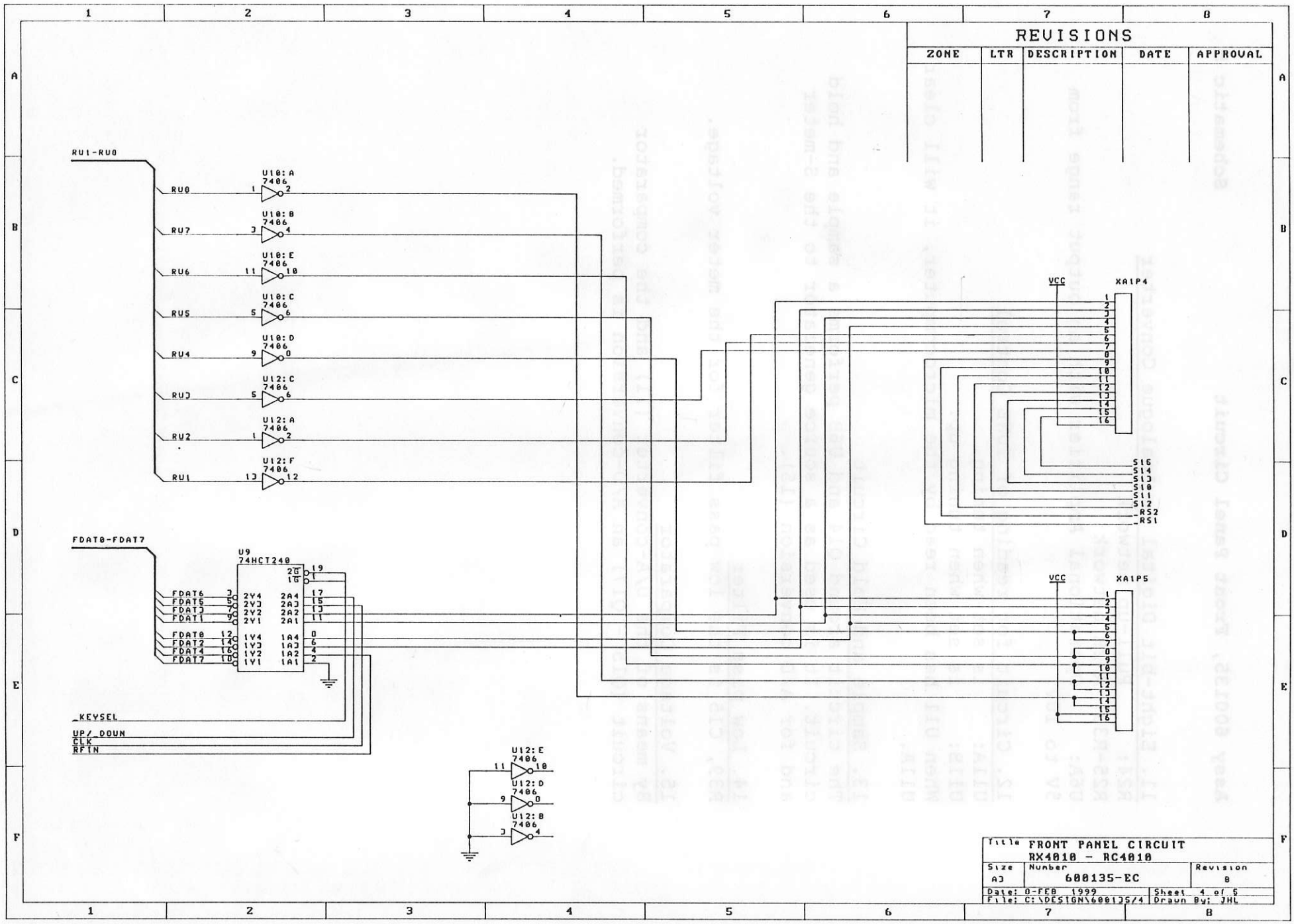
|---|---|---|
| Title: FRONT PANEL CIRCUIT RX4010 - RC4010 | | |
| Size: A3 | Number: 600135-EC | Revision: B |
| Date: 0-FEB-1999 | | Sheet 3 of 5 |
| File: C:\DESIGN\600135C3 | | Drawn By: JP |

9. Eight-bit Output Buffer
read by the microcomputer.




REVISIONS
ZONE
LTR
DESCRIPTION
DATE
APPROVAL
RU1-RU0
U10:A 7406
U10:B 7406
U10:E 7406
U10:C 7406
U10:D 7406
U12:C 7406
U12:A 7406
U12:F 7406
RU0
RU7
RU6
RU5
RU4
RU3
RU2
RU1
VCC
XA1P4
SI6
SI4
SI3
SI0
SI1
SI2
-RS2
-RS1
FDAT0-FDAT7
U9
74HCT240
FDAT6
FDAT5
FDAT3
FDAT1
FDAT0
FDAT2
FDAT4
FDAT7
XA1P5
-KEYSEL
UP/-DOWN
CLK
RFIN
U12:E 7406
U12:D 7406
U12:B 7406
Title FRONT PANEL CIRCUIT
RX4010 - RC4010
Size A3
Number 600135-EC
Revision B
Date: 8-FEB 1999
Sheet 4 of 5
File: C:\DESIGN\600135\4
Drawn By: JHL

11. Eight-bit Digital to Analogue Converter

R24: Pull-up network
R25-R33: R-2R network
U6A: 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, it will clear U11A.

13. Sample and Hold Circuit

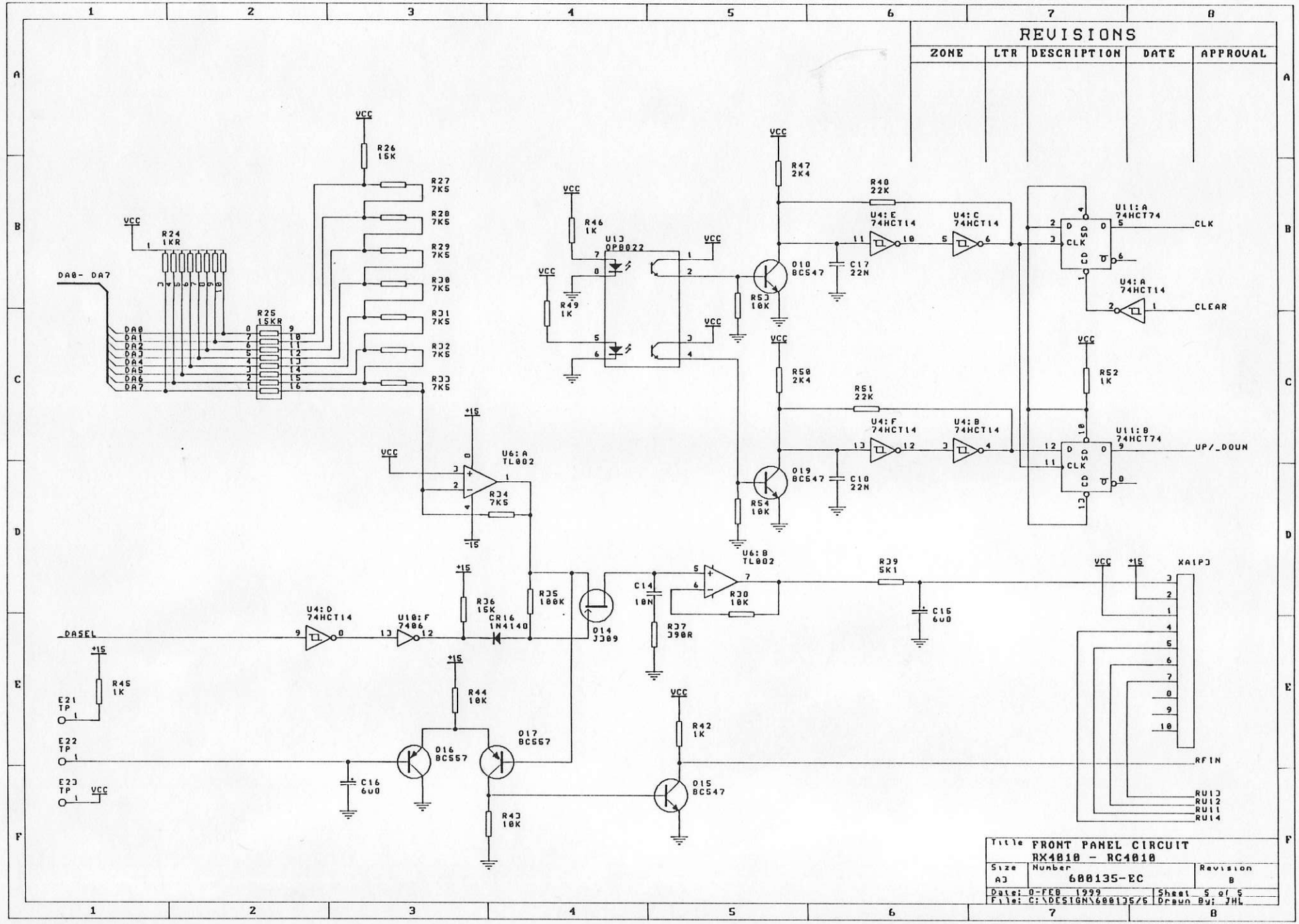
The circuit around Q14 and U6B performs a sample and hold circuit. It is used as a source generator to the S-meter and for A/D conversion (15).

14. Low pass Filter

R39, C15 is the low pass filter for the meter voltage.

15. Voltage Comparator

By means of the D/A-converter (11) and the comparator circuit (Q15 - Q17) an A/D-conversion is performed.


REVISIONS
ZONE
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DESCRIPTION
DATE
APPROVAL
VCC
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R27 7K5
R28 7K5
R29 7K5
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R31 7K5
R32 7K5
R33 7K5
R24 1KR
R25 15KR
DA0- DA7
DA0
DA1
DA2
DA3
DA4
DA5
DA6
DA7
R46 1K
U13 OP8022
R49 1K
R47 2K4
R48 22K
U4:E 74HCT14
U4:C 74HCT14
Q10 BC547
R53 10K
C17 22N
U11:A 74HCT74
CLK
U4:A 74HCT14
CLEAR
R50 2K4
R51 22K
U4:F 74HCT14
U4:B 74HCT14
Q19 BC547
R54 10K
C10 22N
R52 1K
U11:B 74HCT74
UP/_DOUN
+15
U6:A TL082
R34 7K5
-15
U6:B TL082
R39 5K1
C16 6U8
R36 15K
R35 100K
CR16 1N4148
Q14 JJ89
C14 10N
R37 390R
R38 10K
U4:D 74HCT14
U10:F 7406
_DASEL
R45 1K
E21 TP
R44 10K
Q16 BC557
Q17 BC557
E22 TP
E23 TP
C16 6U8
R43 10K
R42 1K
Q15 BC547
XA1P3
RFIN
RU13
RU12
RU11
RU14
Title FRONT PANEL CIRCUIT
RX4010 - RC4010
Size A3
Number 600135-EC
Revision B
Date: 0-FEB 1999
Sheet 5 of 5
File: C:\DESIGN\600135\5
Drawn By: JHL

NOTES:
1. ALLE SKRUEHOVEDER MOD PRINT MONTERES MED FLADSKIVE FN. 20
2. DE 4 MIDTERBEN PÅ U13 MONTERES MED FN. 22, LÆNGDE 9MM.

| REVISIONS | | | |
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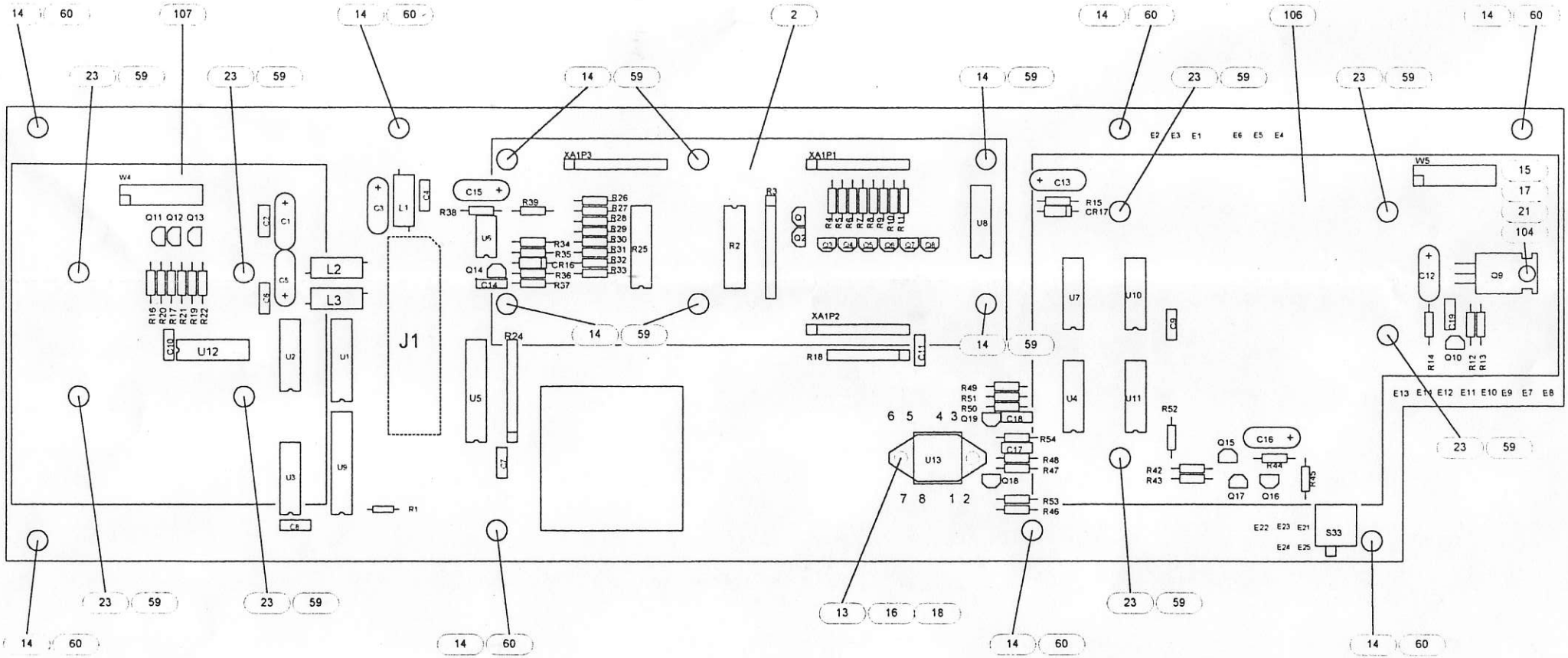
| | RELEASE | 99.03.05 | JHL |




| | | |
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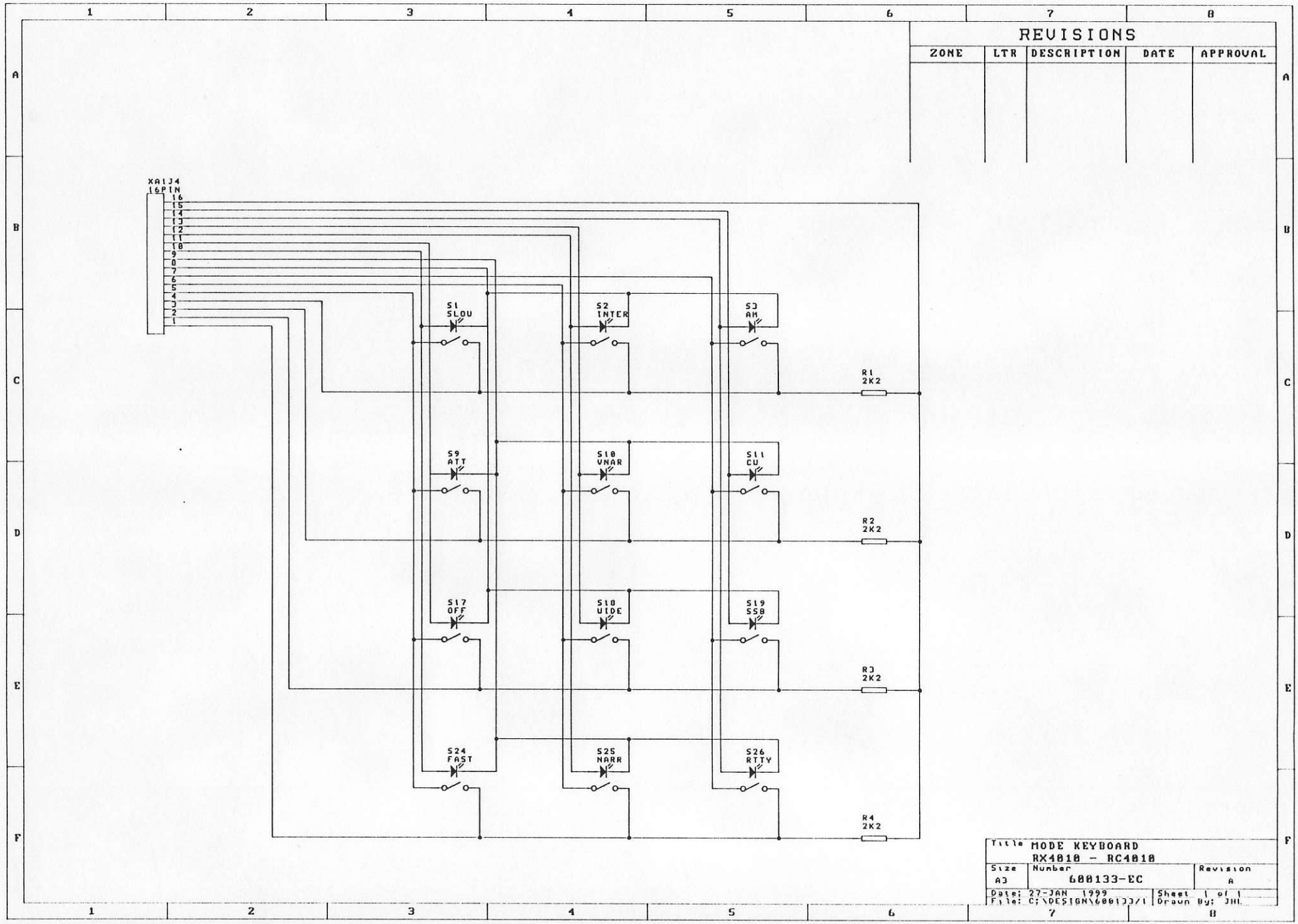
| FIRST ANGLE PROJECTION | SIZE: A 3 | DRAWING NO: 600135 PD |
| | Sign. KL | SHEET: 1 of 1 |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LTR
DESCRIPTION
DATE
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XA1J4
16PIN
16
15
14
13
12
11
10
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8
7
6
5
4
3
2
1
S1
SLOW
S2
INTER
S3
AM
S9
ATT
S10
VNAR
S11
CW
S17
OFF
S18
WIDE
S19
SSB
S24
FAST
S25
NARR
S26
RTTY
R1
2K2
R2
2K2
R3
2K2
R4
2K2
Title
MODE KEYBOARD
RX4810 - RC4810
Size
A3
Number
600133-EC
Revision
A
Date: 27-JAN 1999
File: C:\DESIGN\600133\1
Sheet 1 of 1
Drawn By: JHL

| REVISIONS | | | |
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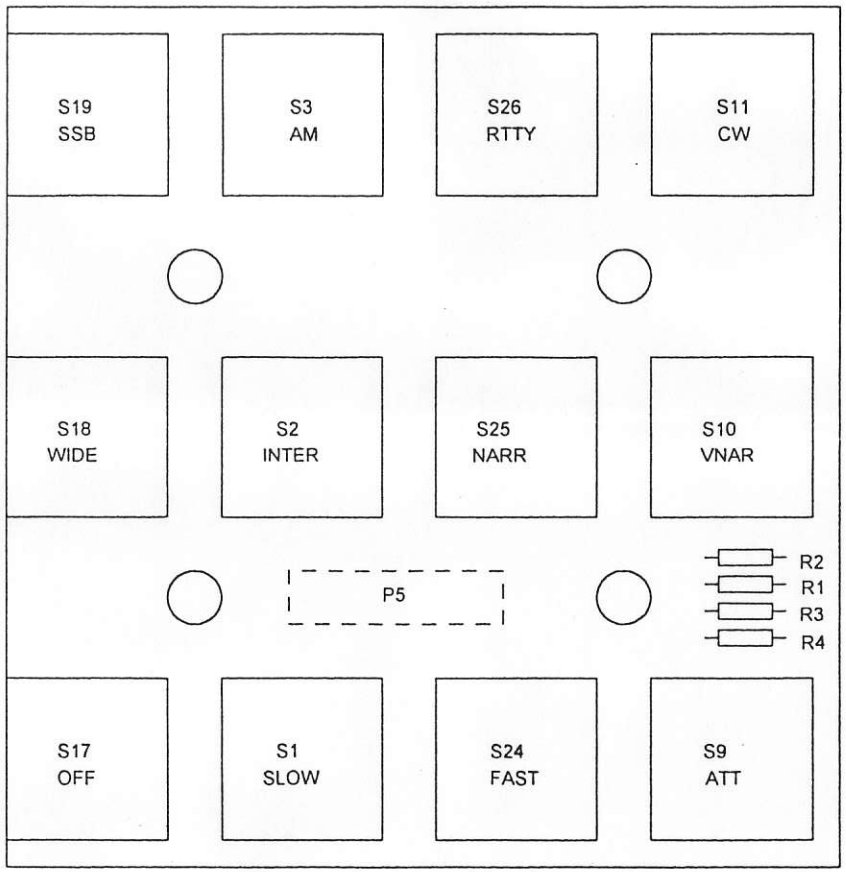
| | RELEASE | 99.03-03 | JHL |




| DANSK RADIO Comm. ApS | | |
|---|---|---|
| FIRST ANGLE PROJECTION | SIZE: A 3 | DRAWING NO: 600133 PD |
| | Sign. KL | SHEET: 1 of 1 |

| REVISIONS | | | | |
|---|---|---|---|---|
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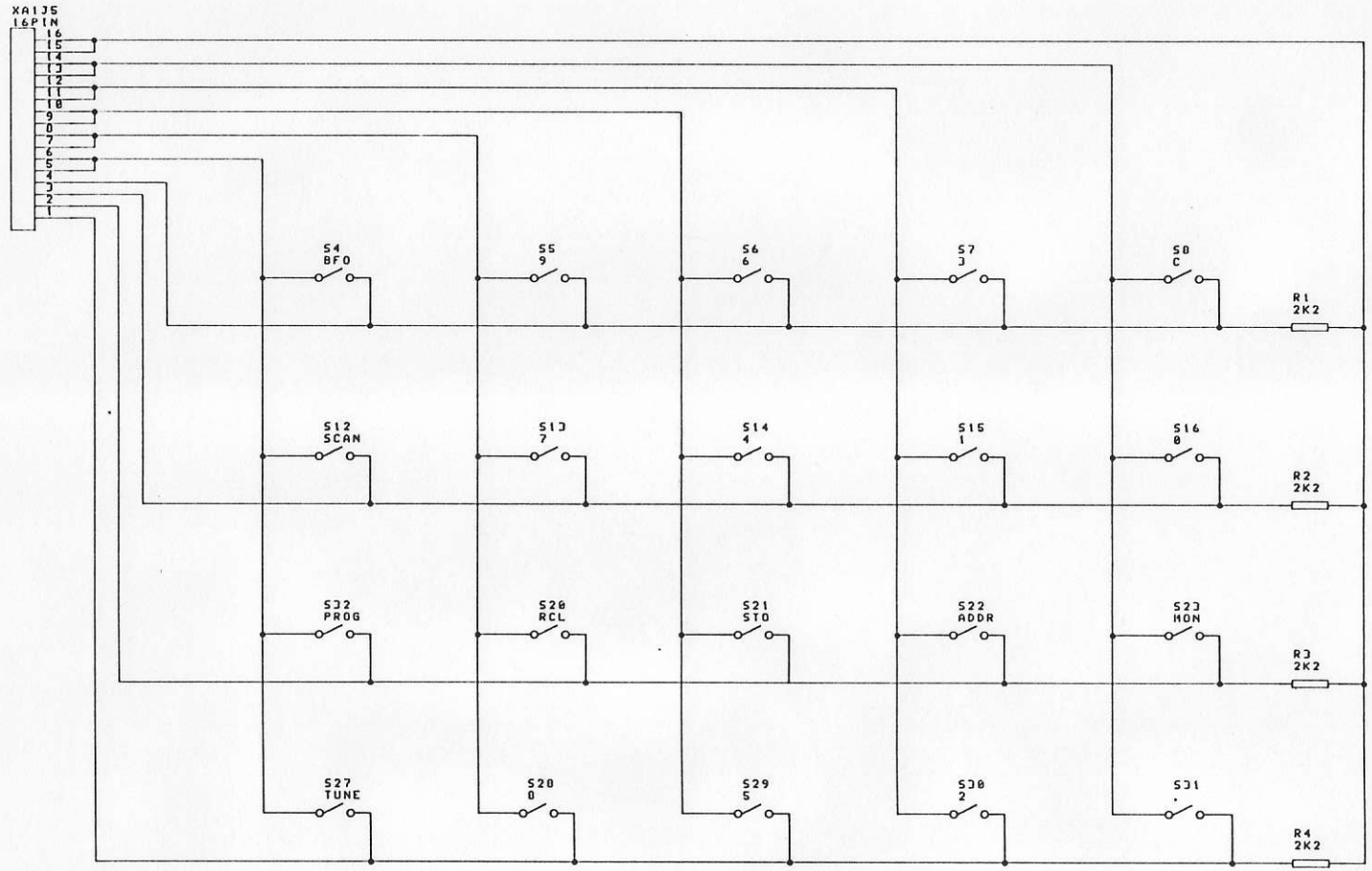
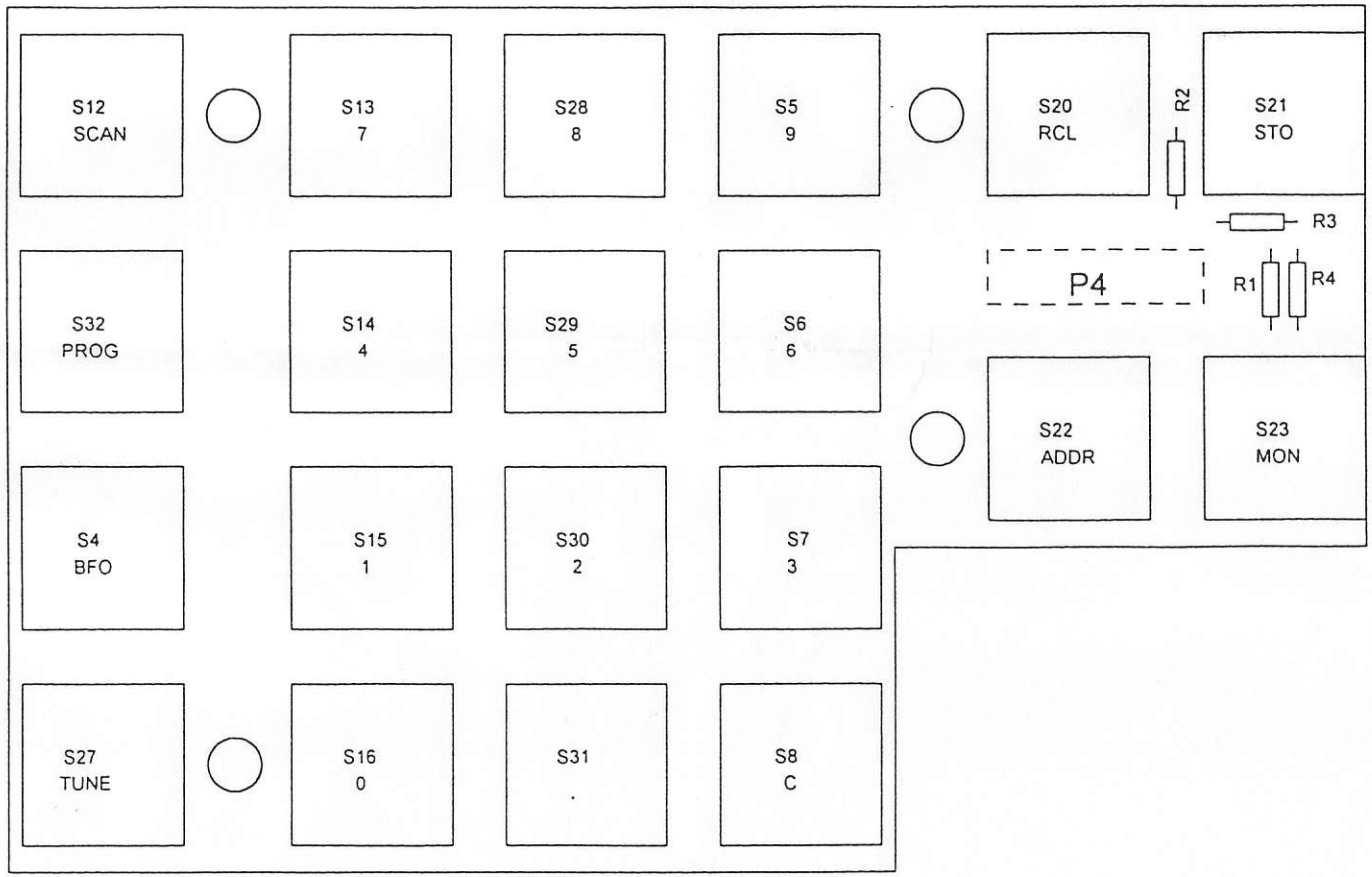


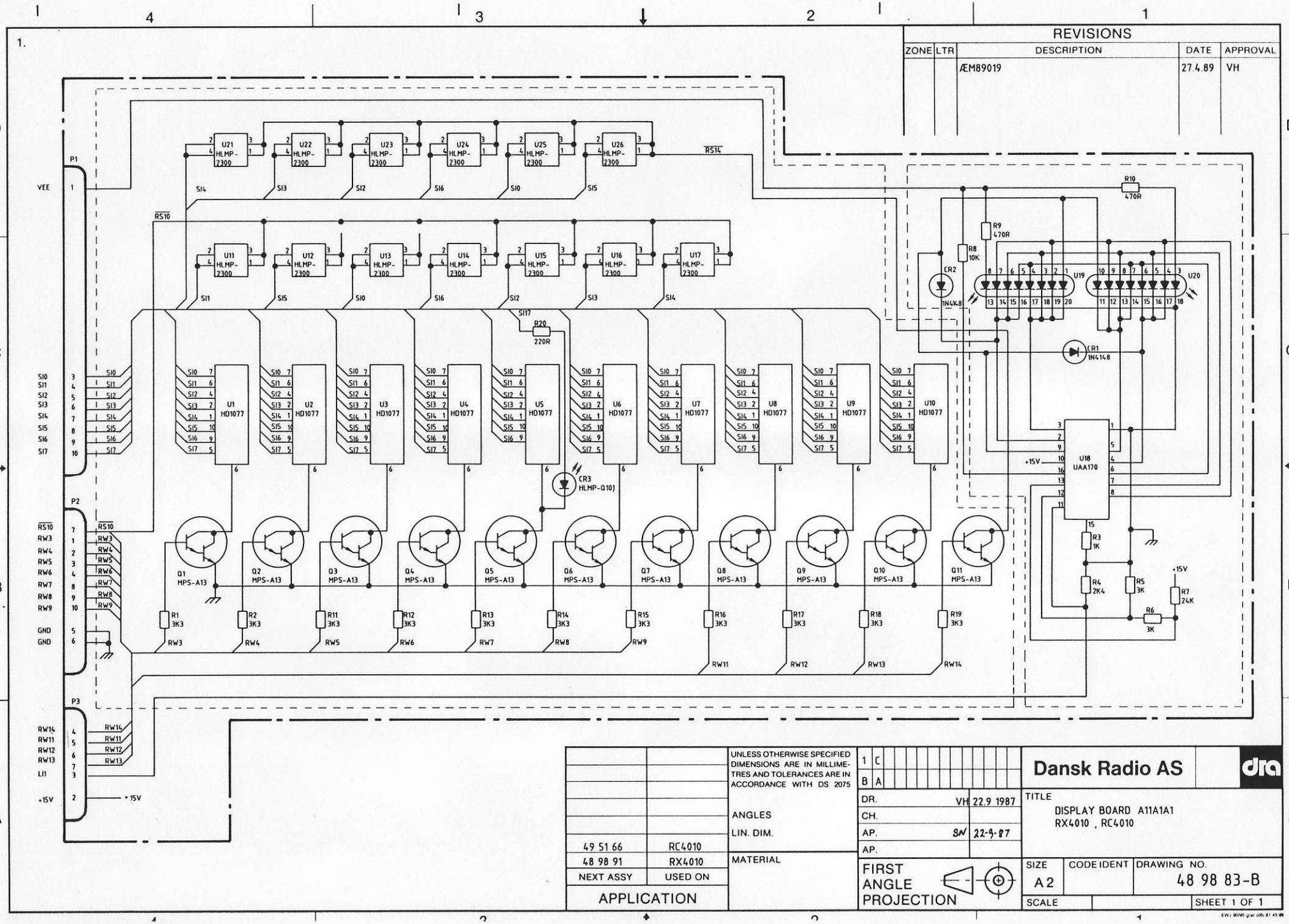

| Title | KEYBOARD, NUMERICAL RC4010 | |
|---|---|---|
| Size A3 | Number 600131-EC | Revision A |
| Date: 0-FEB 1999 | | Sheet 1 of 1 |
| File: C:\DESIGN\600131\1 | | Drawn By: JHL |

| REVISIONS | | | |
|---|---|---|---|
| LTR | Description | DATE | APP. |
| | RELEASE | 99.03-03 | JHL |




**DANSK RADIO Comm. ApS**

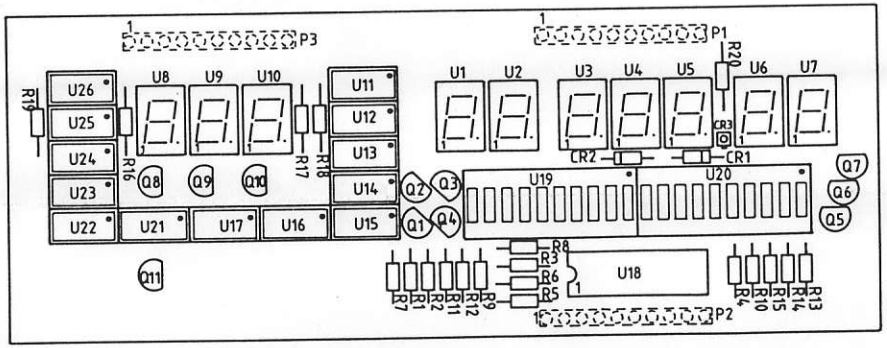
| | | | |
|---|---|---|---|
| FIRST ANGLE PROJECTION | SIZE: A 3 | DRAWING NO: 600131 PD | |
| | Sign. KL | SHEET: 1 of 1 | |




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 |
| | | ANGLES | DR. VH 22.9 1987 | TITLE COMPONENT LOCATION DISPLAY BOARD RX4010 |
| | | LIN. DIM. | CH. | |
| | | | AP. SN 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 | | | | |

Service Sheet A11A1A1

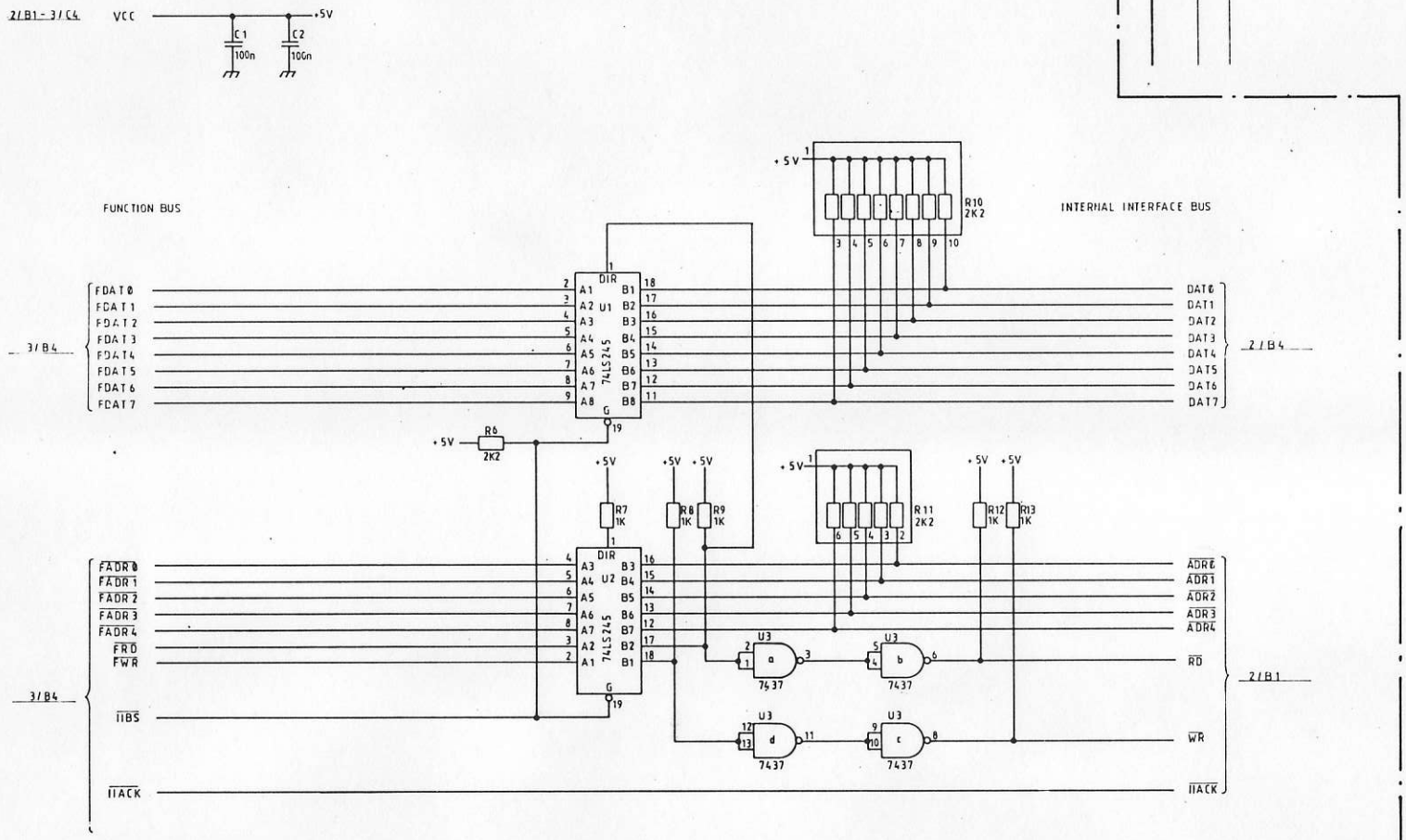
# ASSY 471925, MOTHERBOARD ASSEMBLY

Service Sheet A12A1

Assy 471925, Motherboard Assembly

To avoid noise in the more sensitive parts of the receiver controller, two buffers U1 and U2 separate the internal interface bus from the function bus. The internal interface bus is only activated when necessary.

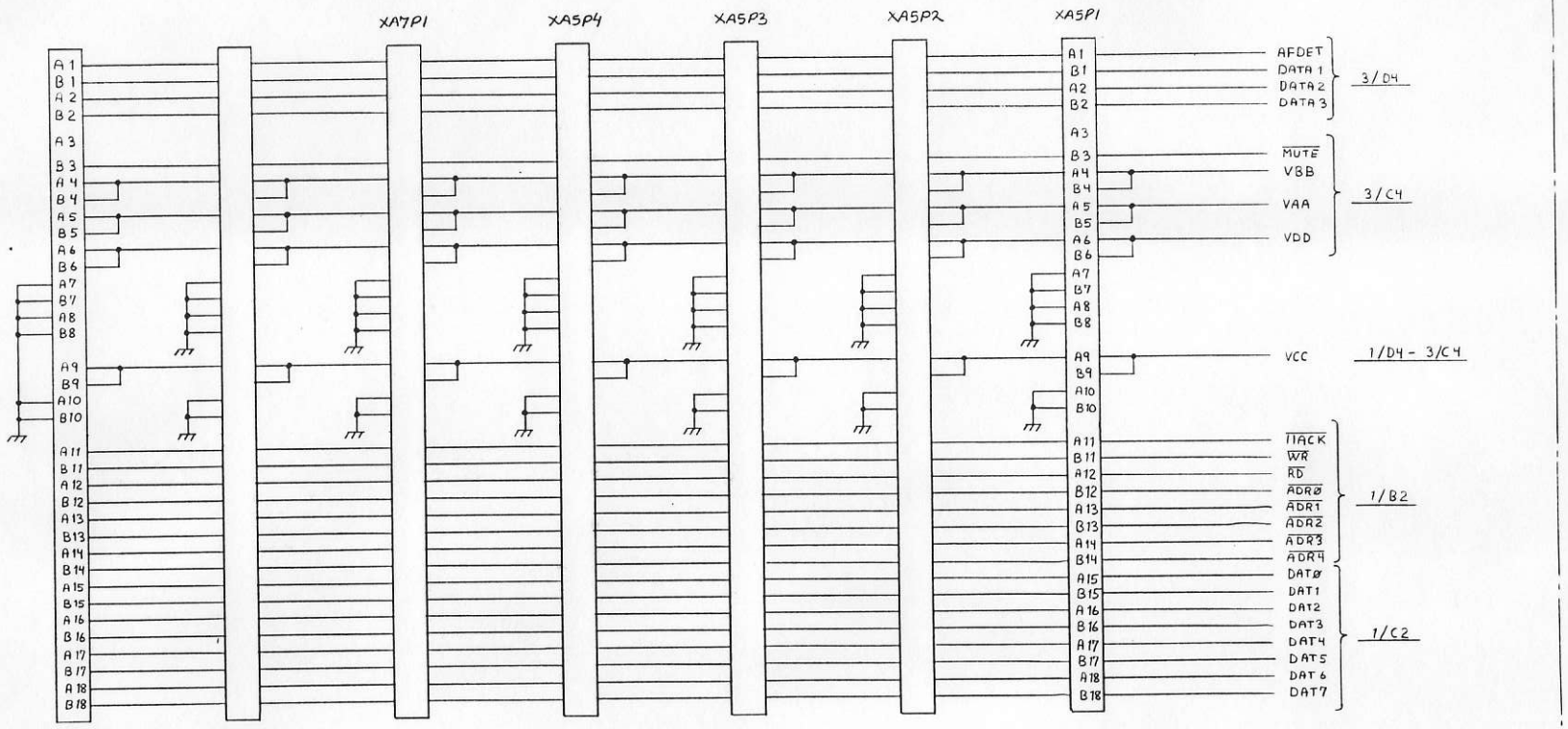
| REVISIONS | | | | |
|---|---|---|---|---|
| ZONE | LTR | DESCRIPTION | DATE | APPR |
| | A | | | |
| | B | ÆM88020 | 3.3.88 | VH |




| | | | | |
|---|---|---|---|---|
| | | UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN MILLIMETRES AND TOLERANCES IN ACCORDANCE WITH DS 2075 | | Dansk Radio AS |
| | | ANGLES: | DR: H.PRÆTORIUS 830412 | TITLE: MOTHERBOARD RC 4000 |
| | | LIN. DIM.: | CH.: HP 13/4-88 | |
| | | | AP.: | |
| | | | AP.: | |
| 476056 | RC 4000 | MATERIAL: | FIRST ANGLE PROJECTION | SIZE A2 / CLASS: / NO.: 47 19 25 |
| NEXT ASSY | USED ON | | | SCALE: / SHEET 1 OF 3 |
| APPLICATION | | | | |

Service Sheet A12A1

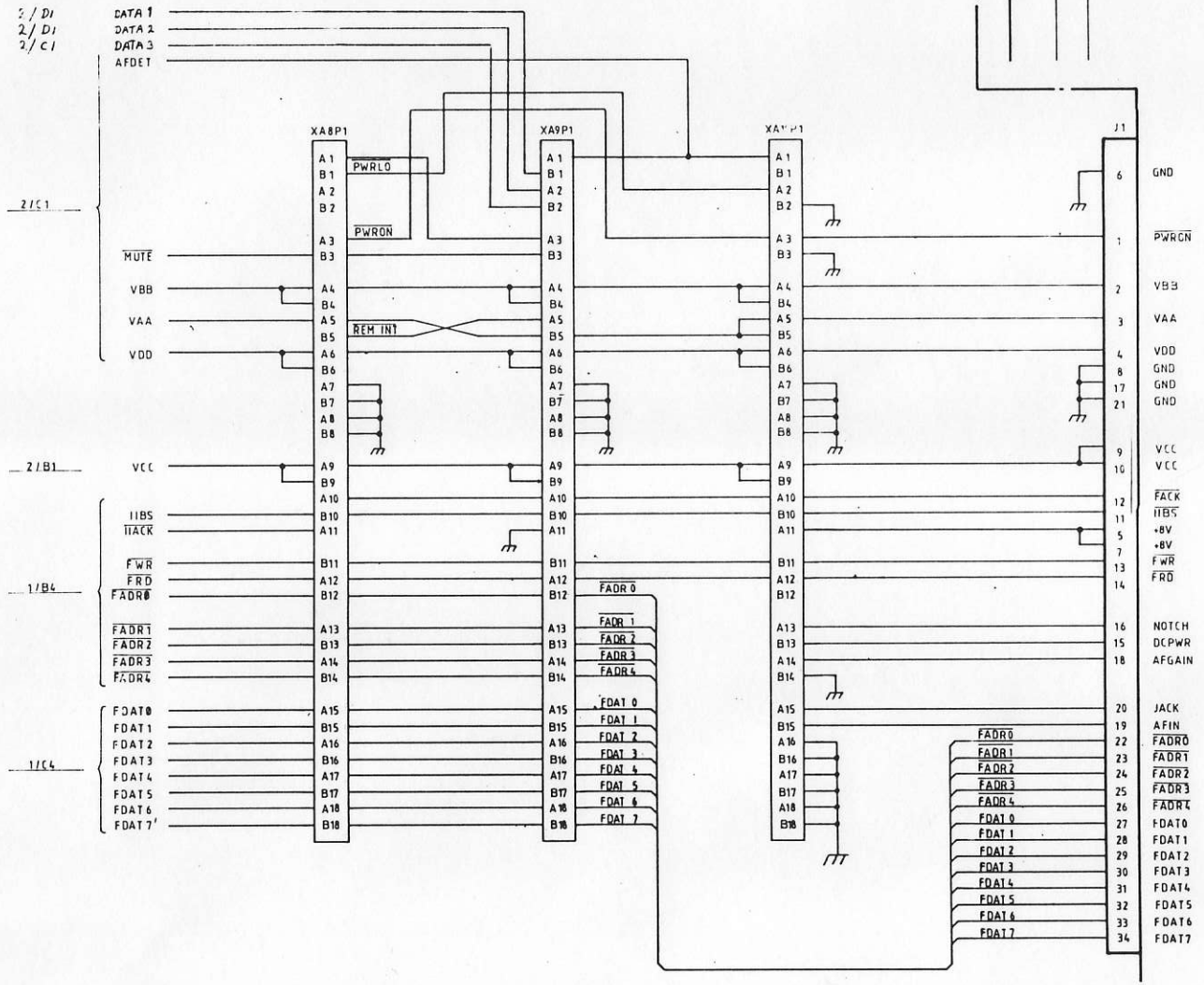
| REVISIONS | | | | |
|---|---|---|---|---|
| ZONE | LTR | DESCRIPTION | DATE | APPROVAL |
| | A | | | |




| FIRST ANGLE PROJECTION | SIZE | CODE IDENT | DRAWING NO. |
|---|---|---|---|
| | A2 | | 47 19 25 |
| | SCALE | | SHEET 2 |

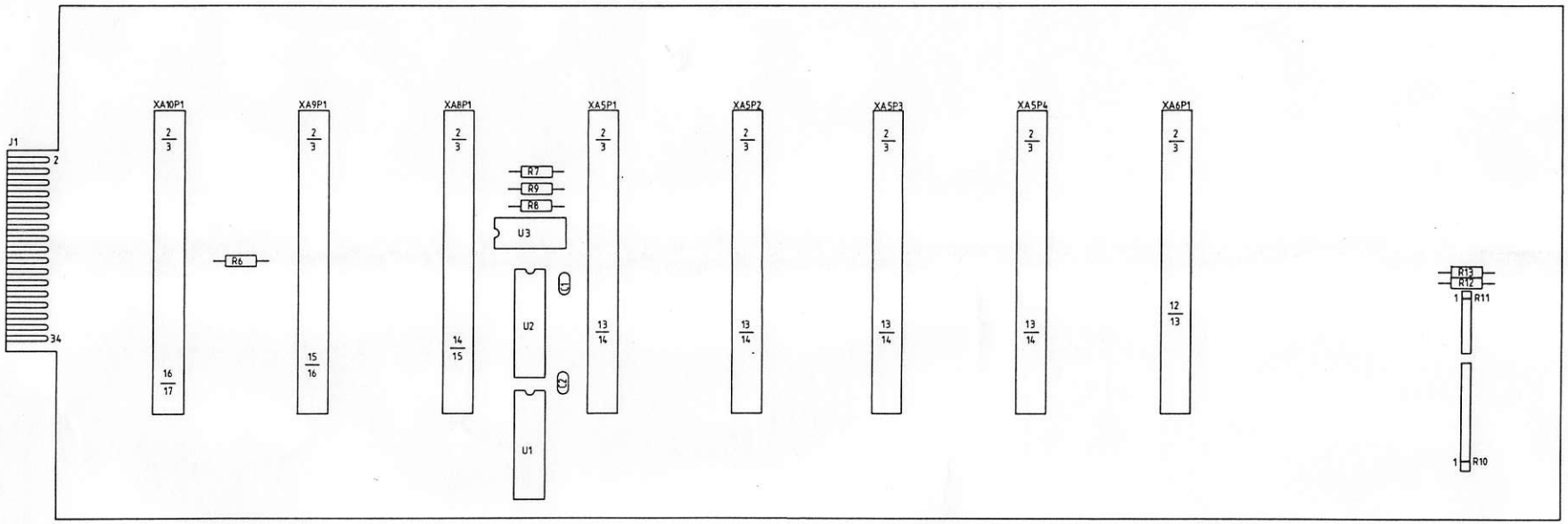
Service Sheet A12A1

| REVISIONS | | | | |
|---|---|---|---|---|
| ZONE | LTR | DESCRIPTION | DATE | APPROVAL |
| | A | | | |
| | B | ÆM88057 | 12.12.88 | VH |




| | | | | |
|---|---|---|---|---|
| FIRST ANGLE PROJECTION | SIZE A2 | CLASS: | NO.: 47 19 25 | |
| | SCALE: | | SHEET 3 | |

| REVISIONS | | | | |
|---|---|---|---|---|
| ZONE | LTR | DESCRIPTION | DATE | APPROVAL |
| | A | | | |
| | B | ÆM88020 | 3.3.88 | VH |
| | C | ÆO9062 | 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 FP 14-7-83 | TITLE: MOTHERBOARD |
| | | LIN. DIM | CH | |
| | | | AP | |
| 476054 | RC 4000 | MATERIAL | AP | |
| NEXT ASSY | USED ON | | FIRST ANGLE PROJECTION | SIZE A1 / CODE IDENT / DRAWING NO. 47 19 25 |
| APPLICATION | | | | SCALE / SHEET 1 OF |

Service Sheet A12A1