SIMRAD

A KONGSBERG Company

SIMRAD Fixed VHF DSC Radio RD68

Service Manual

SIMRAD

A KONGSBERG Company

SIMRAD Fixed VHF DSC Radio RD68

Contents

CONTENTS

10 TECHNICAL NOTES

SIMRAD

A KONGSBERG Company

SIMRAD Fixed VHF DSC Radio RD68

Introduction

1 INTRODUCTION TO THE SIMRAD RD68 FIXED DSC VHF RADIO

The Simrad RD68 is a combined VHF radio, watch-keeping receiver and Class D Digital Selective Calling (DSC) unit to facilitate routine and distress calling on VHF Channel 70. Digitally Selected Calls are quicker and simpler to make than traditional voice calls using Channel 16 and should a distress situation occur, an alert can quickly be raised indicating identity, position and nature of the emergency and automatically establish communication on the emergency voice channel. The RD68 is robustly constructed using a pressure die cast aluminium case for effective heat dissipation ensuring maximum transmission performance even after many hours of constant use.

The RD68 has full international channel capability; 16 pre-programmed private channels; features Dual Watch, Tri Watch, Scan and full memory operation; back-lit LCD display and is available with either fist-mic or telephone handset.

The main components of the Simrad RD68 are:

1.1 Electronics PCBs

a.	Receiver / Transmitter PCB	Drawing No. E03866
b.	Control PCB	Drawing No. E03656
c.	Second Receiver PCB	Drawing No. E03211
d.	Fist Mic	Drawing No. E03283
e.	Telephone Handset	Drawing No. E03308

1.2 Mechanical Components

a.	RD68 Chassis	Drawing No. E03848
b.	RD68 Assembly	Drawing No. E03847
c.	Fist Mic Assembly	Drawing No. E03161
d.	Telephone Handset Assembly	Drawing No. E03162

SIMRAD

A KONGSBERG Company

SIMRAD Fixed VHF DSC Radio RD68

Operation

2 OPERATING THE SIMRAD DSC VHF RADIO

This Service Manual only contains operating instructions for those features of the Simrad RD68 Radio that are not normally available to the end user. For details of normal operation please refer to the Simrad RD68 Instruction Manual, E03912.

LCD Test Mode. The LCD test mode may be entered by holding Soft Keys 2 and 4 on power up. Depressing each key in turn will then fill the display with the appropriate characters. The radio must be turned off to exit test mode.

SIMRAD

A KONGSBERG Company

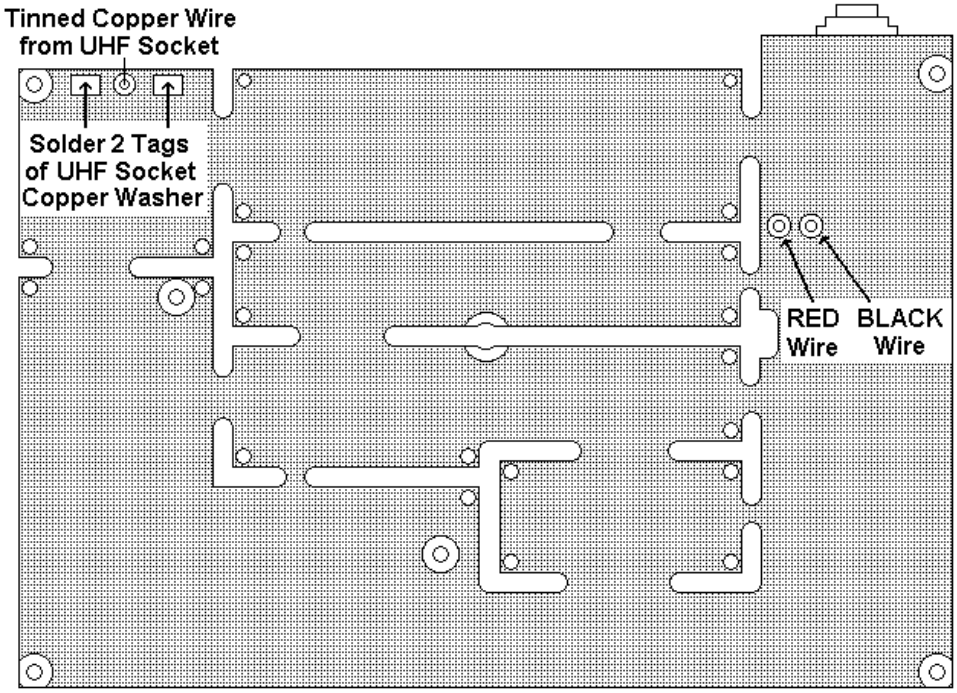
SIMRAD Fixed VHF DSC Radio RD68

Assembly Instructions

3 ASSEMBLY INSTRUCTIONS

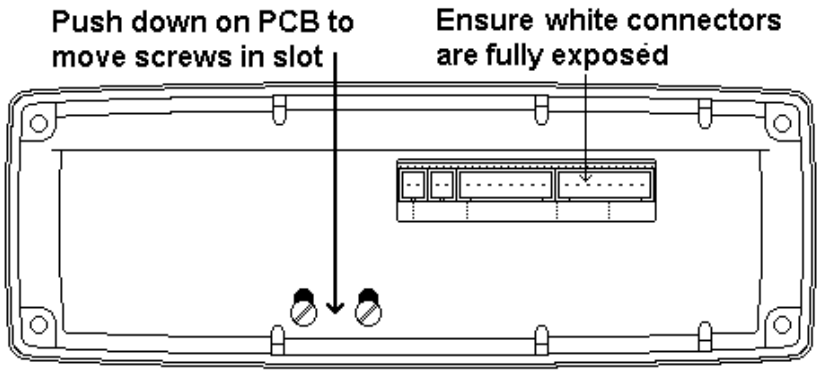
3.1 RD68 Chassis Pre-Assembly

The main transmitter and receiver and second receiver PCBs are a matched pair and replacement of either requires the tuning of both to be checked and adjusted as necessary. Position the PCB over the Chassis.



Apply a small amount of Hellerman sleeving oil to the part of the Red and Black power and the red and blue NMEA leads inside the chassis, to provide lubrication and facilitate withdrawal from the chassis as the board is set down. Ensure that the 2 copper tags from the washer on the Antenna socket are standing up clear and insert the tinned copper wire from the rear of the Antenna socket up through the plated hole in the board. Fit the PCB into the chassis, carefully pulling the 4 leads through the grommet to remove excess from the chassis interior. Locate the PCB over the ribs in the chassis and push down to position the PCB flat into the casting. When the board is correctly fitted, refer to drawing No E03848 and fit 2 - M3 X 10 screws 200048 into the front of the chassis to secure the heatsink in place, do not fully tighten these screws at this stage .

Fit 1 washer 200081 onto each of the 2 screws M3 x 16mm 200200, and fit into the 2 holes at the back of the chassis. When all 4 screws are in place, lightly press down on the front part of the PCB until the front panel connectors are clearly visible and permit engagement of the front panel without interference. (See drawing below)

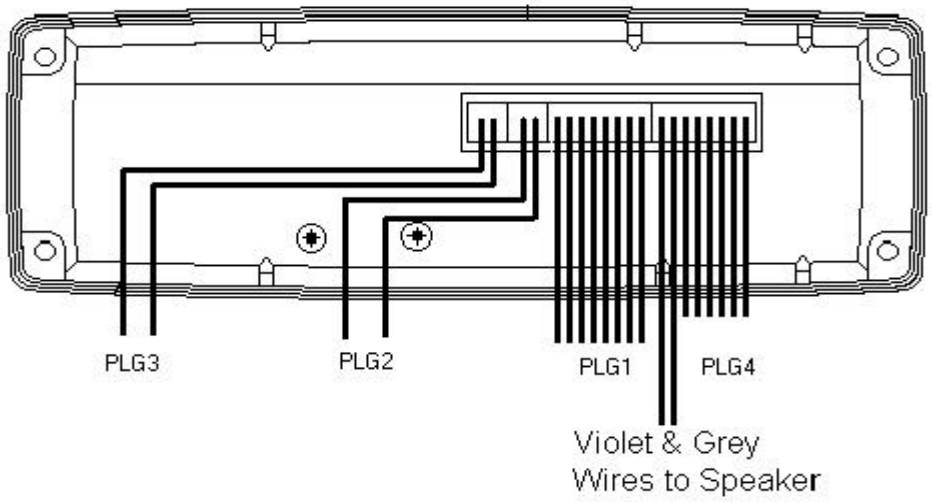


When this has been achieved fully tighten the rear module screws and then the heatsink screws at the front.

Solder the tinned copper wire from the Antenna socket into the board, then fold down the 2 tags, from the Antenna socket copper washer, onto the PCB and solder both tags down to the pads.

3.2 RD68 Final Assembly

Fit the Cover Seal E03117 into the top cover ensuring that the seal lays into the recess around the cover. Refer to drawing E03847, place Screen / Insulator Assembly E03223 on top of the PCB in the Chassis Assembly E03848 with the Leatheriod insulator down towards the board. Fit Top Cover onto Chassis assembly and fix down using 5 off M3 x 16 Pan Head Slot Screws fitted with M3 Nyltite Sealing Washers 200252, fully tighten ensuring that the seal remains correctly fitted. Refer to drawing E03849 and fit the Front Panel Seal E03116 to the Front Panel Assembly E03850 as shown, ensuring that the 6 small 'feet' attached to the seal sit down onto the PCB. Take the four sets of wires from PLUGS 1 – 4 on the front panel and, referring to the drawing below, plug them into their correct connectors as shown.



Offer up the front panel to the chassis and, ensuring that the seal is still correctly located, fit the front panel. Refer to drawing No.E03847 and onto each of the four No.6 x 1/2" Pan Head Screws 200005, fit a M3.5 Nyltite Washer 200253. From the rear, fit these screws through the chassis and into the front panel. Screw on the front panel, fully tightening the screws.

3.3 Fist Mic Assembly

Refer to Drawing No. E03161 and fit the PTT Grommet E03143 into the web in the front case ensuring that it is correctly seated. From the end of the Cable Assembly E03175 strip and remove the outer insulation for 15mm. Cut off the Blue ,Green, Orange and Black wires, (not used), flush with the end of the outer insulation. Strip 5mm of insulation from the ends of the Red and White wires, twist and sleeve the screen and tin the ends. Pass the end of the cable up through the bottom hole in the front case, apply a small quantity of Hellerman Sleeving Oil to the cable and slide on Cable Grommet E03141. Pull the cable and grommet through together, until the grommet is fully home, ensuring that the flat on the head of the grommet lays against the inside of the case, then pull cable back through grommet by approximately 100mm. Wipe off any excess sleeving oil from the cable. Solder the cable connections to the PCB and position the PCB assembly onto the 2 mounting pillars. Route the cable into the case, pulling out any excess wire, until the PCB and cable lay neatly into the case. Ensure the PTT Key hits the push switch before fixing the PCB assemble into the case using 2 screws (200036).

Into the groove around the outside of the Rear Case E03133 fit a Case Seal E03136 ensuring it is pushed fully home. Fit the PTT Key E03134 so that the spring leg in the centre of the key with a guide either side, faces out, and the peg on the other side of the key faces into the case front. Fit the rear case onto the front using washer (200257) and screw (200023) and tighten firmly.

3.4 Telephone Handset Assembly

Refer to Drawing No. E03162 and fit the PTT Grommet E03143 into the side wall of the front case ensuring that it is correctly seated. From the end of the Cable Assembly E03175 strip and remove the outer insulation

for 35mm. Cut off the Blue wire flush with the outer insulation, (not used). Cut back the Red wire to 20 mm long from the end of the outer insulation, the Orange and Black wire to 30 mm and the Green and White wire to 35 mm. Strip and tin the ends. Pass the end of the cable up through the hole in the bottom of the front case, apply a small quantity of Hellerman Sleeving Oil to the cable and slide on Cable Grommet E03141. Pull the cable and grommet through together, until the grommet is fully home into the case, ensuring that the flat on the head of the grommet is facing out, not towards the wall of the case. Then pull cable back through grommet by approximately 30mm. Wipe off any excess sleeving oil from the cable. Secure with Cable Tie 200026. Fit the handset weight E03311 and hold in place by fitting 3 Grommets 190024 onto the pillars. Solder the five wires and screen from the coiled cable and the two wires from the speaker to the PCB E03309. Position the PCB into the case on top of the three pillars retaining the weight and using 3 Screws 200082, fix the PCB into the case. Fully tighten the 3 screws. Fit PTT Key and check that the key operates the switch. Into the groove around the outside of the Rear Case E03140 fit Case Seal E03142 ensuring it is pushed fully home. Fit the rear case onto the front, ensuring the seal remains in place, using 6 Screws 200055 with washers and tighten screws firmly to secure front and rear case halves together.

SIMRAD

A KONGSBERG Company

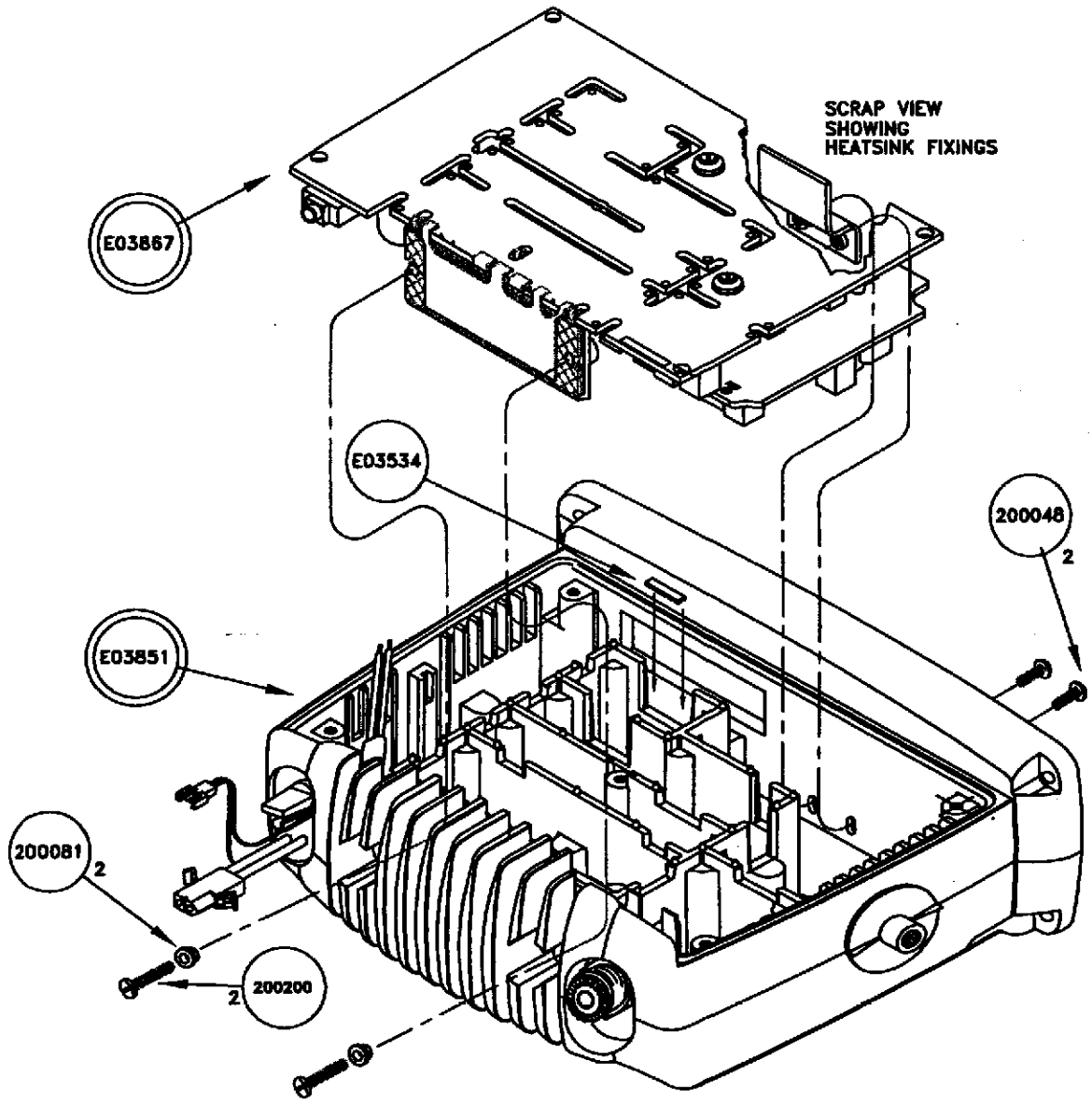
SIMRAD Fixed VHF DSC Radio RD68

Mechanical Assembly Drawings

4 MECHANICAL ASSEMBLY DRAWINGS

DRAWN IN ACCORDANCE WITH BS 308

DRG. No: E03848
PRODUCT GROUP: 811
USED ON: E03847



DO NOT SCALE | IF IN DOUBT ASK

Mod.No.	Iss.	Date:	Modifications

SIMRAD — A KONGSBERG Company

STAR LANE, MARGATE, KENT CT9 4NP
TEL: 01843 290290 | FAX: 01843 290471
+44 1843 290290

Drawn:	Checked:	Approved:
B.M.	WAC	AV
date: 06:06:00	date: 19/6/00	date: 2/7/00

Tolerances + & −
0. = 0.50
0.0 = 0.25
0.00= 0.10
ANG. = 0.5°

ALL DIMENSIONS mm

SHT. 1 OF 1

COMPUTER GENERATED DRAWING.
MANUAL MODIFICATION INVALIDATES CAD FILE.

Material: SEE ABOVE

Finish: —

Model: RD68W

Date: 06:06:00

Scale: NTS

Title: ASSEMBLY: CHASSIS

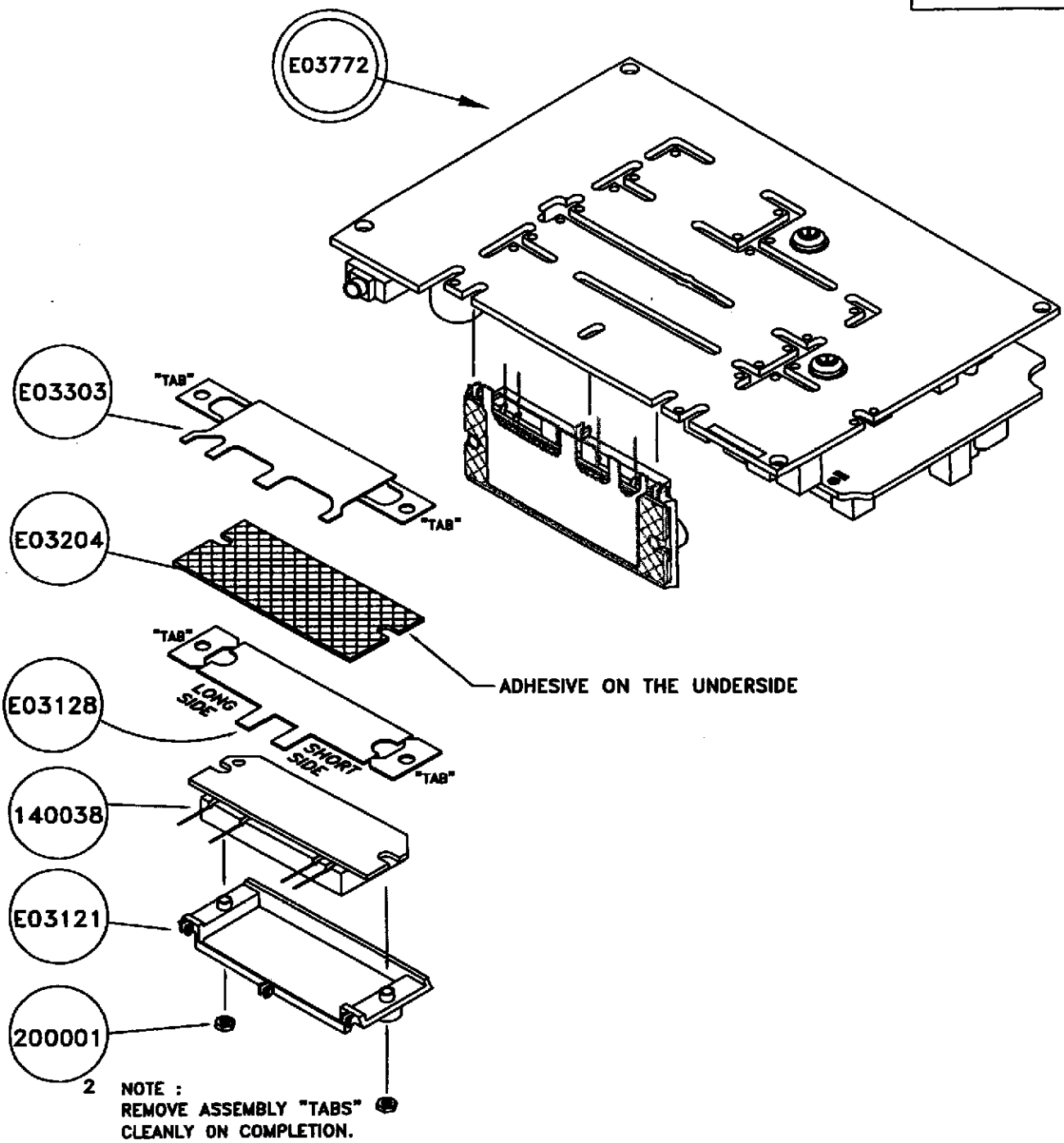
Drg. No.: E03848

Issue: 1

SIZE A2 : 594 x 420mm
PORTRAIT

DRAWN IN ACCORDANCE WITH BS 308

Drg. No.:	E03867
Product Group:	811
Used on:	E03848



NOTE :
REMOVE ASSEMBLY "TABS" CLEANLY ON COMPLETION.

DO NOT SCALE | IF IN DOUBT ASK

Mod. No.	Issue	Date:	Modifications

SIMRAD — A KONGSBERG Company

STAR LANE, MARGATE, KENT CT9 4NP
TEL: 01843 290290 | FAX: 01843 290471
+44 1843 290290

Drawn:	Checked:	Approved:
B.M.	WAC	AW
Date: 05:06:00	Date: 19/6/00	Date: 3/7/00

COMPUTER GENERATED DRAWING
MANUAL MODIFICATION INVALIDATES CAD FILE.

Tolerances + & −	All dimensions mm
0. = 0.50	© SIMRAD NAVICO 2000
0.0 = 0.25	
0.00= 0.10	Sht. 1 of 1
ANG. = 0.5°	

Material:	Model:
SEE ABOVE	RD68W

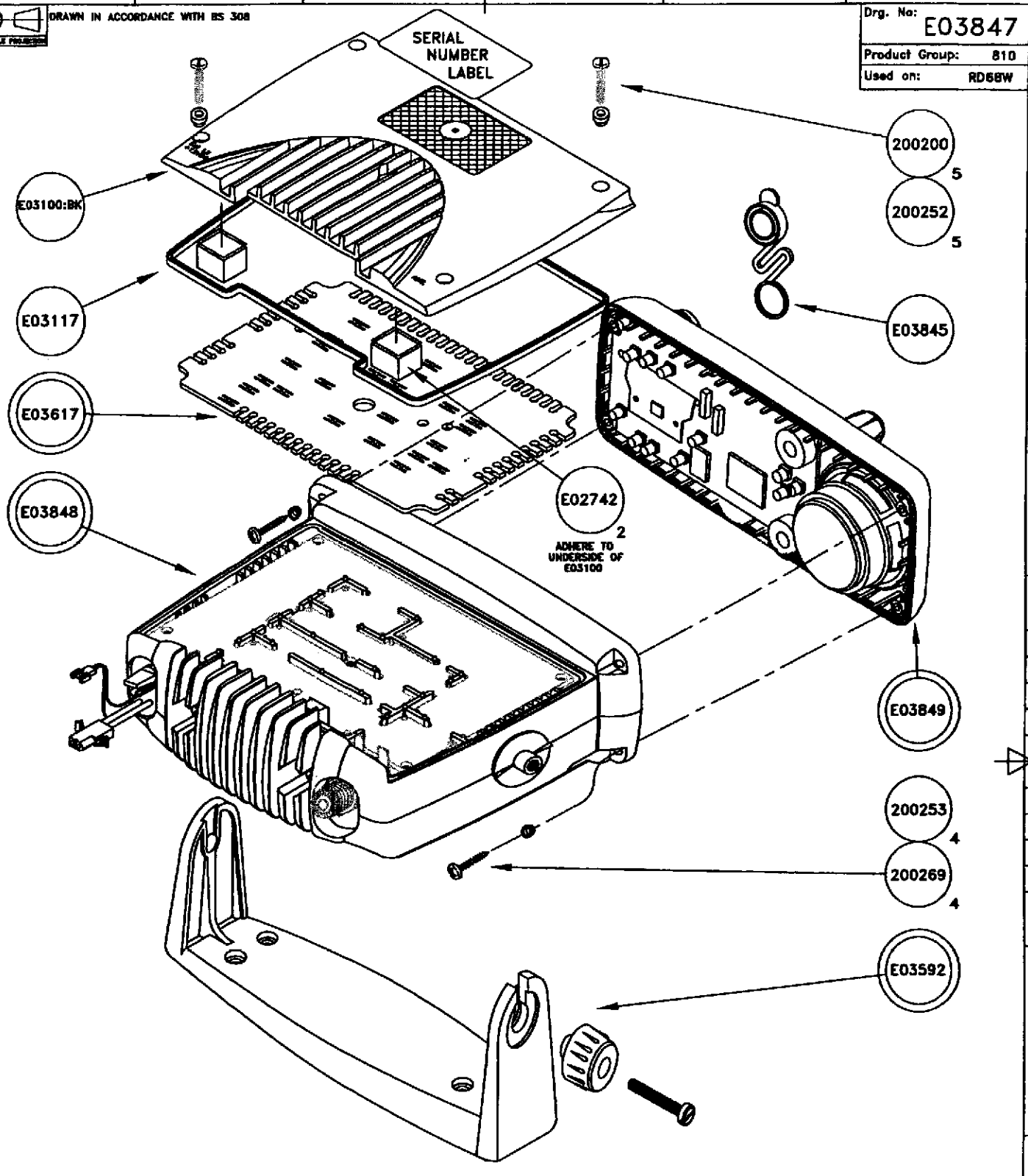
Finish:	Title:	Drg. No.:	Issue:
—	ASSY : P.C.B's & POWER MODULE	E03867	1

Date:	Original Scale:
05:06:00	N.T.S.

SIZE A3 :420 x 297
PORTRAIT

DRAWN IN ACCORDANCE WITH BS 308

Drg. No: E03847
Product Group: 810
Used on: RD68W



DO NOT SCALE | IF IN DOUBT ASK

Mod.No.	Iss.	Date:	Modifications

SIMRAD
A KONGSBERG Company

STAR LANE, MARGATE, KENT CT9 4NP
TEL: 01843 290290 | FAX: 01843 290471
+44 1843 290290

Drawn:	Checked:	Approved:
B.M.	WAC	AIC
date: 07:06:00	date: 7/6/00	date: 26/6/00

Tolerances
+ & −
0. = 0.50
0.0 = 0.25
0.00= 0.10
ANG. = 0.5°

ALL DIMENSIONS mm

COMPUTER GENERATED DRAWING.
MANUAL MODIFICATION INVALIDATES CAD FILE.

Material: SEE ABOVE

Finish: —

Model: RD68W

SHT. 1 OF 1

Date: 07:06:00

Scale: NTS

Title: ASSEMBLY : MOBILE RADIO

Drg. No.: E03847

Issue: 1

SIZE A2 : 594 x 420mm
PORTRAIT

DRAWN IN ACCORDANCE WITH BS 308

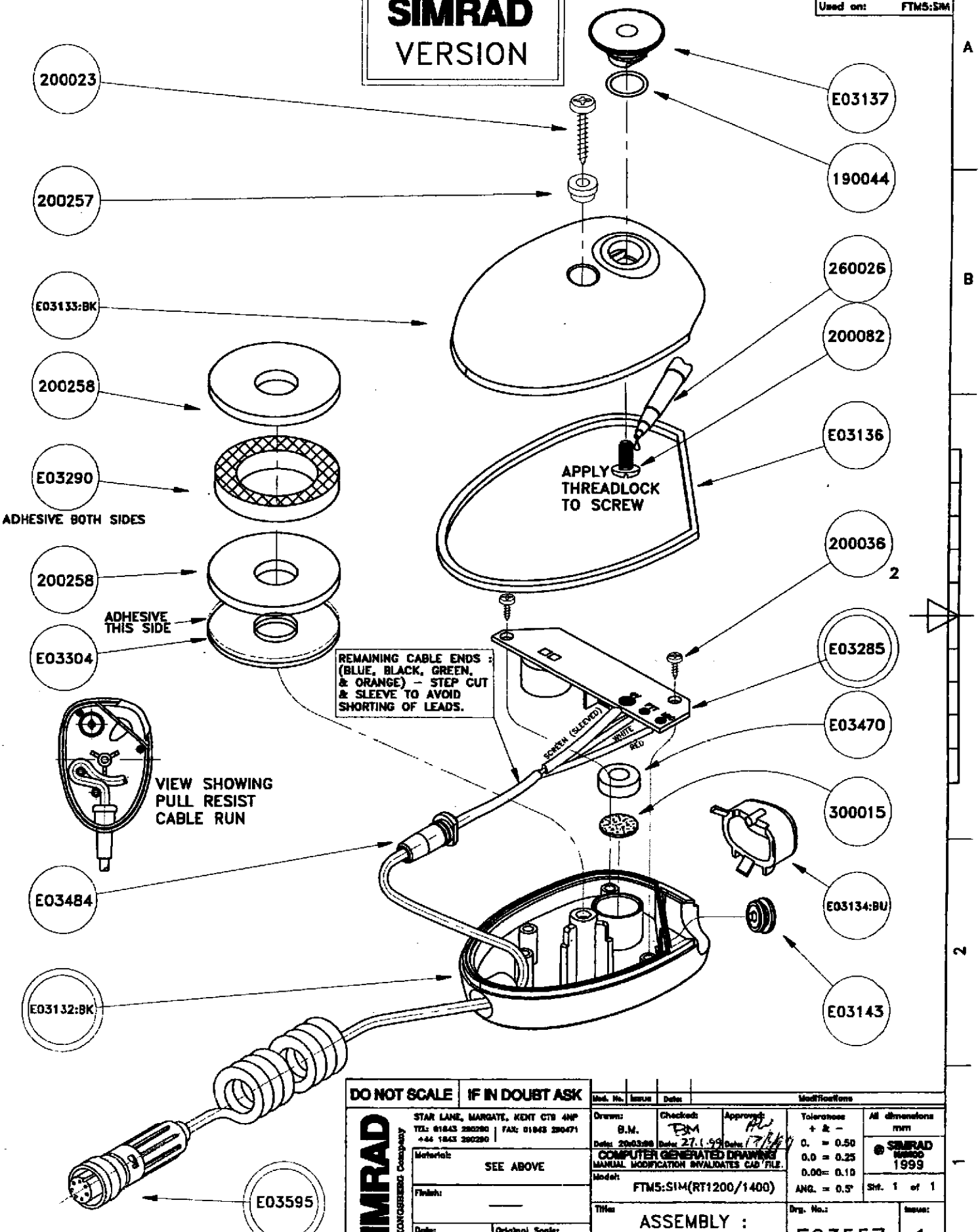
3rd ANGLE PROJECTION

Drg. No.: E03557

Product Group: 810

Used on: FTM5:SIM

SIMRAD VERSION



DO NOT SCALE | IF IN DOUBT ASK

Mod. No.	Issue	Date	Modifications

SIMRAD — A KONGSBERG Company

STAR LANE, MARGATE, KENT CT9 4NP
TEL: 01843 290290 | FAX: 01843 290471
+44 1843 290290

Drawn:	Checked:	Approved:	Tolerances + & –	All dimensions
B.M.	BM		0. = 0.50	mm
Date: 20/03/98	Date: 27.1.99	Date: 17/1/99	0.0 = 0.25	© SIMRAD 1999
			0.00= 0.10	
			ANG. = 0.5°	Sht. 1 of 1

Material: SEE ABOVE

Finish: —

COMPUTER GENERATED DRAWING
MANUAL MODIFICATION INVALIDATES CAD FILE.

Model: FTM5:SIM(RT1200/1400)

Date: 14:01:99 | Original Scale: NTS

Title: ASSEMBLY : FIST MIC. SIMRAD

Drg. No.: E03557 | Issue: 1

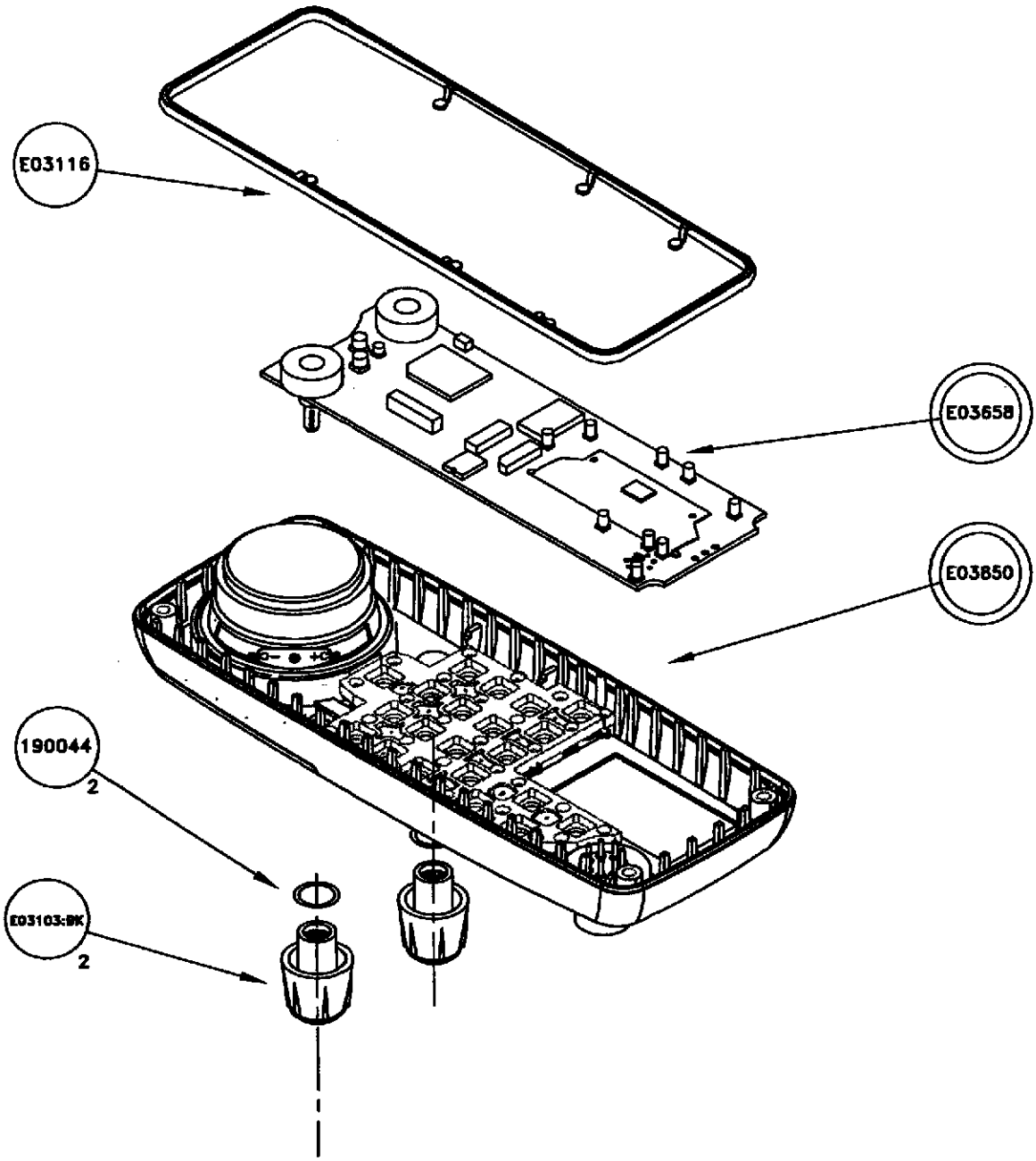
SIZE A3 (420 x 297

DRAWN IN ACCORDANCE WITH BS 308

DRG. No: E03849

PRODUCT GROUP: 811

USED ON: E03847



DO NOT SCALE | IF IN DOUBT ASK

Mod.No.	Iss.	Date:	Modifications

SIMRAD A KONGSBERG Company

STAR LANE, MARGATE, KENT CT9 4NP
TEL: 01843 290290 | FAX: 01843 290471
+44 1843 290290

Drawn:	Checked:	Approved:
B.M.	WAC	AW
date: 06:06:00	date: 19/6/00	date: 26/6/00

Tolerances + & −
0. = 0.50
0.0 = 0.25
0.00= 0.10
ANG. = 0.5°

ALL DIMENSIONS mm

SHT. 1 OF 1

Material: SEE ABOVE

Finish: ——

COMPUTER GENERATED DRAWING.
MANUAL MODIFICATION INVALIDATES CAD FILE.

Model: RD68W

Date: 06:06:00

Scale: NTS

Title: ASSY : FRONT PANEL

Drg. No.: E03849

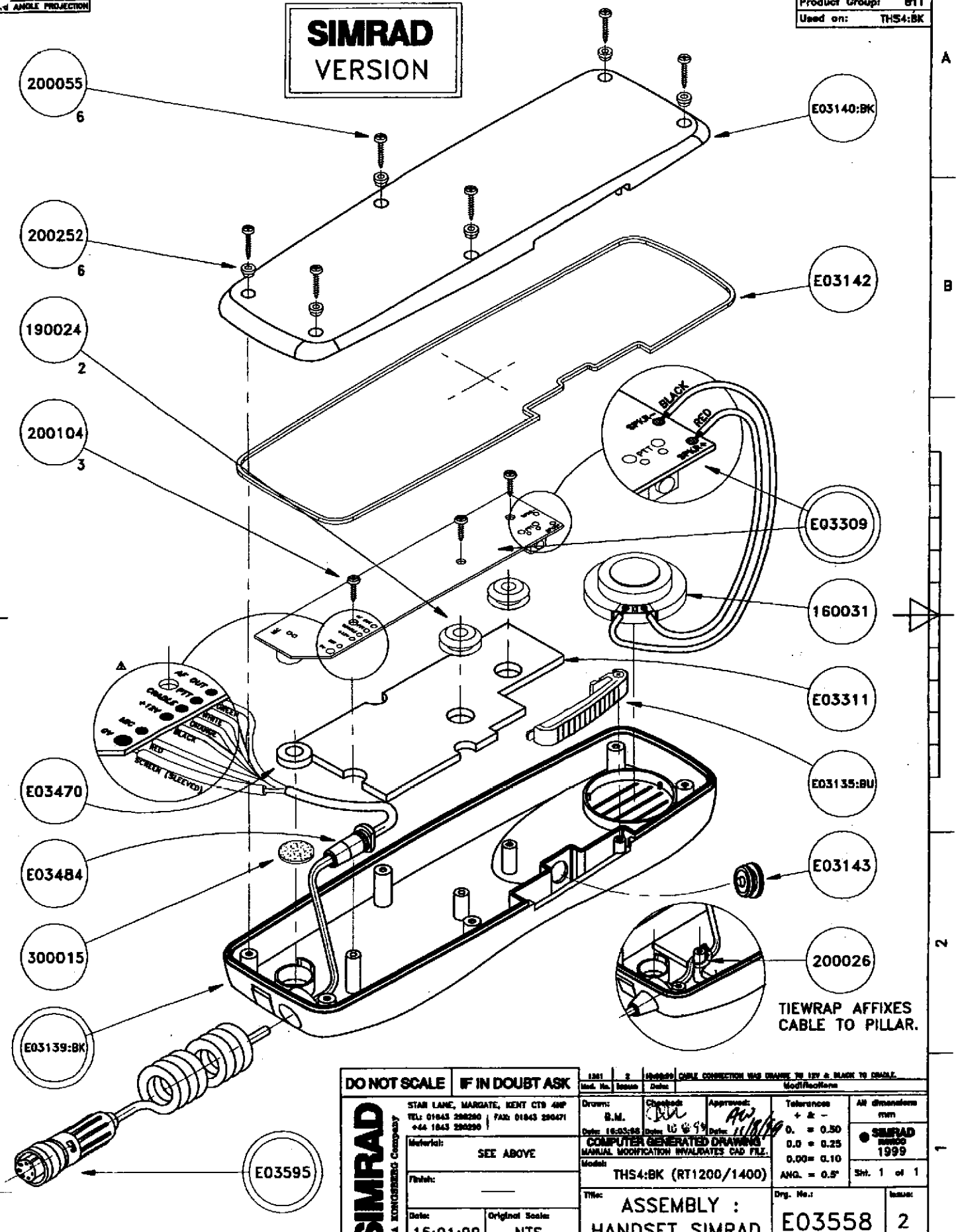
Issue: 1

SIZE A2 : 594 x 420mm PORTRAIT

DRAWN IN ACCORDANCE WITH BS 308

Drg. No.: E03558
Product Group: 811
Used on: THS4:BK

SIMRAD VERSION



DO NOT SCALE | IF IN DOUBT ASK

1341 | 2 | CABLE CONNECTION WAS ORANGE TO 12V & BLACK TO CHASSIS.
Mod. No. | Issue | Date | Modifications

SIMRAD — A KONGSBERG Company

STAR LANE, MARGATE, KENT CT9 4NP
TEL: 01843 290290 | FAX: 01843 290471
+44 1843 290290

Drawn: B.M. Date: 15:03:99
Checked: Date: 10/3/99
Approved: AW Date: 11/3/99
Tolerances + & −: 0. = 0.50; 0.0 = 0.25; 0.00= 0.10; ANG. = 0.5°
All dimensions mm

Material: SEE ABOVE
Finish: ——
Date: 15:01:99
Original Scale: NTS

COMPUTER GENERATED DRAWING
MANUAL MODIFICATION INVALIDATES CAD FILE.

Model: THS4:BK (RT1200/1400)

SIMRAD 1999

Sht. 1 of 1

Title: ASSEMBLY : HANDSET SIMRAD

Drg. No.: E03558

Issue: 2

SIZE A3 :420 x 297
PORTRAIT

SIMRAD

A KONGSBERG Company

SIMRAD Fixed VHF DSC Radio RD68

Circuit Descriptions

5 CIRCUIT DESCRIPTIONS

Introduction

The SIMRAD RD68 consists of 3 PCB assemblies. The main Receiver / Transmitter PCB assembly, Navico Part No. E03866, contains all the transmitter and receiver circuitry including the synthesiser, modulator and audio power amplifiers. The control PCB assembly, Navico Part No. E03656, houses the microcontroller, user controls and interfaces, display module and ATIS detection and mute circuitry. A full Class D DSC controller is also incorporated through a V.23 modem. The second receiver, Channel 70 watchdog receiver, Navico Part No. E03211, is fitted to the main Tx / Rx assembly, the 2 PCBs are an interdependent matched pair.

5.1 Receiver / Transmitter PCB Assembly

Refer to drawing number E02955.

Receiver. RF from the Antenna socket passes through the low pass PA filter to a quarter wave match / switch L5, L6 and pin diode D1. During transmissions, D1 is switched on to protect the receiver. There then follows an optional attenuator and power splitter, to provide RF to the second receiver in the RT1400, which is bypassed by link LK1 in the RT1200. C214 is a 1nF coupling capacitor and L7, L8 and the associated capacitors form a bandpass filter at the input to the RF pre-amplifier TR1. L9 and L11 form a further bandpass section before the mixer TR2. The RF signal is fed to TR2 Source and the local oscillator to Gate 1. Low side injection is used, i.e. the LO, TR105 buffered by TR103 and TR104, is 21.4 MHz below the receive frequency. L13 forms the drain load before matching through C25 and C26 to the 4 pole crystal filter XTAL1 and XTAL2. The output of the filter is coupled by L14, C28 and C29 to the integrated IF amplifier / demodulator IC1. A second local oscillator running at 21.855MHz produces the second IF of 455KHz. XTAL4 is a 6 pole ceramic filter completing the necessary bandwidth definition with quadrature coil L16 providing demodulation.

Audio from pin 9 of IC1 is de-emphasised by R20 and C43, buffered by TR20 and distributed to the various audio stages on the control PCB. The audio from pin 9 is also passed through a very high gain amplifier, within IC1 and configured as a bandpass filter, to detector D2 to provide a voltage proportional to the received signal strength. This level is fed to the front panel to provide squelch control. The AF signal is returned from the control panel after the volume and squelch controls to 2 audio power amplifiers in bridge mode. The internal speaker output remains live when an external speaker is connected.

Transmitter. The LO switch / buffer TR102 switches the transmit signal for amplification by controlled transistors TR101 and TR100 to drive the hybrid PA module IC100 which is capable of generating the required 25 Watts. The output is switched through PIN diode D100 before passing

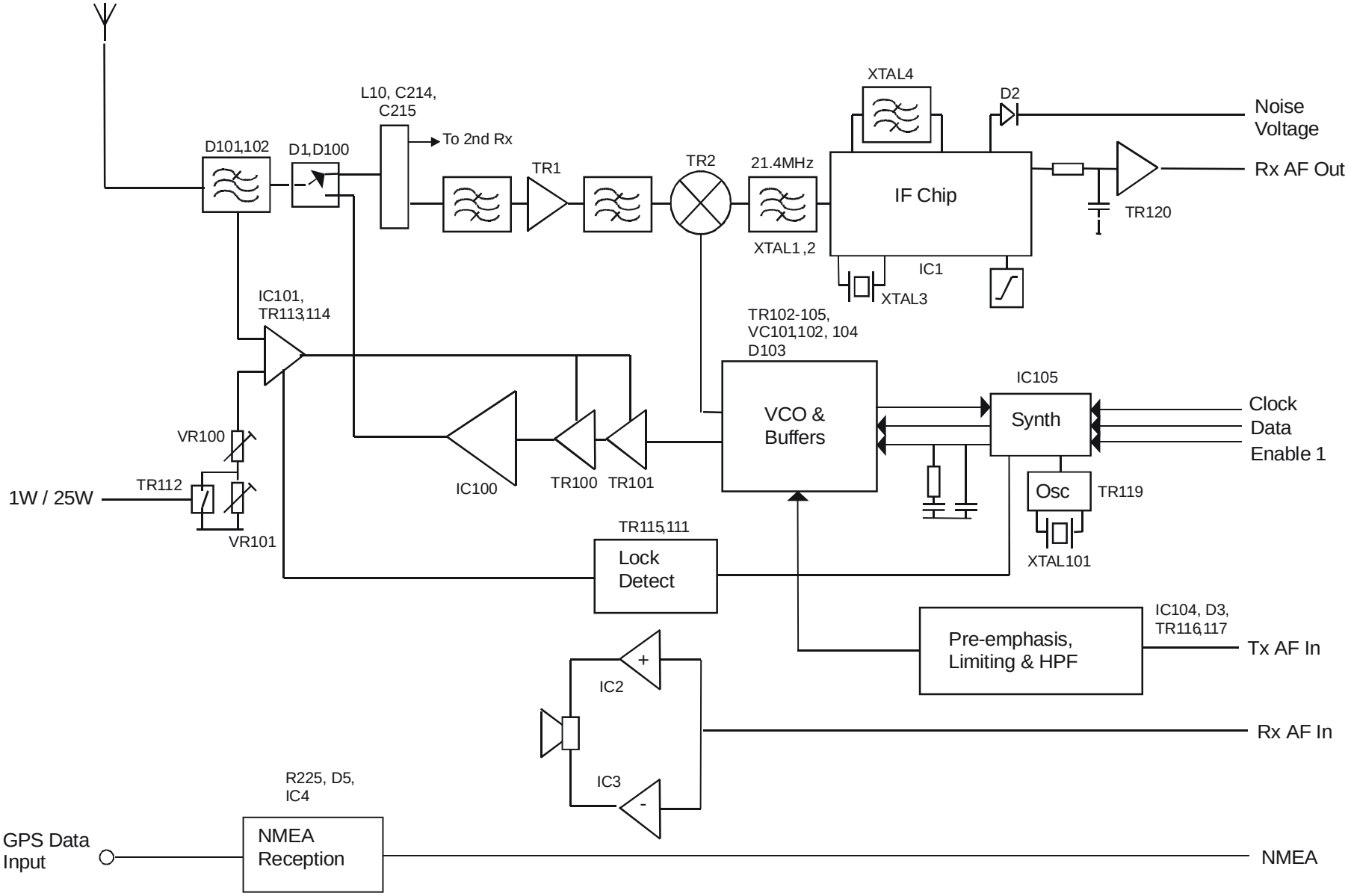
through the PA filter L1 to L4. L4 of this filter, with diodes D101 and D102, forms a simple forward and reverse power detector to provide power control and transmitter status indication on the front panel display. The power control signal is fed to differential amplifier IC101 together with the reference power signal from VR100 and VR101, to set the high and low power levels. The output of this amplifier forms a regulated supply with TR113 and TR114 to supply the PA drivers TR100 and TR101. The reference input and supply for TR114 is fed from TR111 which is only turned on after the synthesiser is in lock.

Local Oscillator / Synthesizer. The main LO consists of TR105 connected as a Colpitts oscillator. Tuning is by L113, varactor VC102 and VC104. Band switching between receive and transmit is by PIN diode D103. The output of the oscillator is buffered by a cascade pair formed by TR104 and TR103 in receive and TR102 and TR104 in transmit., the supply to TR102 and TR103 being switched between the 2 modes. The output is also buffered by TR118 to the input of the synthesiser IC105. The reference frequency at 9.6 MHz is generated by TR119 and controlled by XTAL101. C200, C115 and R157 form the main loop filter with additional suppression of the reference frequency by R179 and C204. The synthesiser is controlled from the control panel via a 3 wire serial interface.

Modulator. Audio from the control panel is amplified by IC104b, the gain being configured by R169, R173 and C169, to give the signal pre-emphasis. The output of the stage is peak detected by D3 and detector TR1167 to provide a gain control signal to TR117 to enable limiting of high level input signals. Temperature compensation of the limiter is provided by thermistor TH1 and IC104a forms a high pass filter to meet the 14dB / octave roll-off above 6kHz. The final output is fed to the modulation diode VC101 via gain control VR102 which is set to a maximum of 5kHz deviation.

Power Regulation and Switching. The 12 volt supply is switched on the front panel and then feeds the audio amplifiers and regulators. The RF power module takes power before the switch to minimise voltage drops. D104 and D105 provide reverse polarity protection. A regulated 8v supply is provided by IC103 and 5v from IC107. The supplies for receive and transmit circuits are switched by TR106 and TR110 controlled form the synthesiser via TR107 to TR109. IC105 controls the switching of PIN diode D103 ensuring that there is a suitably high reverse bias across it in the OFF condition.

NMEA Reception. (RD68 only) Position and time information, from a GPS unit, is received in the form of NMEA data. This is opto-coupled into the radio via R225, D5 and IC4. The data is then routed through to the control PCB via PLG3.


XTAL4
D2
Noise Voltage
L10, C214, C215
To 2nd Rx
D101,102
D1,D100
TR1
TR2
21.4MHz
IF Chip
Rx AF Out
TR120
XTAL1 ,2
IC1
XTAL3
IC101, TR113,114
TR102-105, VC101,102, 104 D103
IC105
VCO & Buffers
Synth
Clock
Data
Enable 1
VR100
TR112
1W / 25W
VR101
IC100
TR100
TR101
Osc
TR119
XTAL101
TR115,111
Lock Detect
IC104, D3, TR116,117
Pre-emphasis, Limiting & HPF
Tx AF In
IC2
Rx AF In
IC3
R225, D5, IC4
GPS Data Input
NMEA Reception
NMEA

5.2 Control PCB Assembly.

Refer to drawing number E03656.

All the functions of the radio are controlled from this assembly by the microprocessor IC4. The microprocessor has it own clock controlled by XTAL1 running at 7.15909MHz. Reset generator IC9 ensures that the microprocessor starts up correctly and resets under low voltage conditions. The microprocessor has a data bus interface driving the front panel display module. External controls consist of a 21 push button key matrix, rotary squelch and volume control VR1 and VR3 respectively. The level of illumination on the LCD and keypad is controlled by TR7 driving LED's 1 to 10 and the integral LED's on the LCD module.

Configuration data, MMSI and channel information is stored in the non volatile memory IC5. This interfaces to IC4 via a 4 wire serial interface shared with the synthesiser data to the Rx / Tx PCB assembly. Separate enables ensure that the data is routed correctly.

Volume control VR3 controls the level of audio in the loudspeaker. Amplifier IC2a boosts the level delivered to the handset earpiece. Individual mutes of the handset and speaker audio are provided by TR3 and TR4 respectively, under control of the microprocessor. The voltage on the squelch control and noise input from the Rx/Tx PCB are read and the audio muted as appropriate. Additionally the state of the handset is detected from SKT1 to mute the speaker when the handset is off cradle (optional).

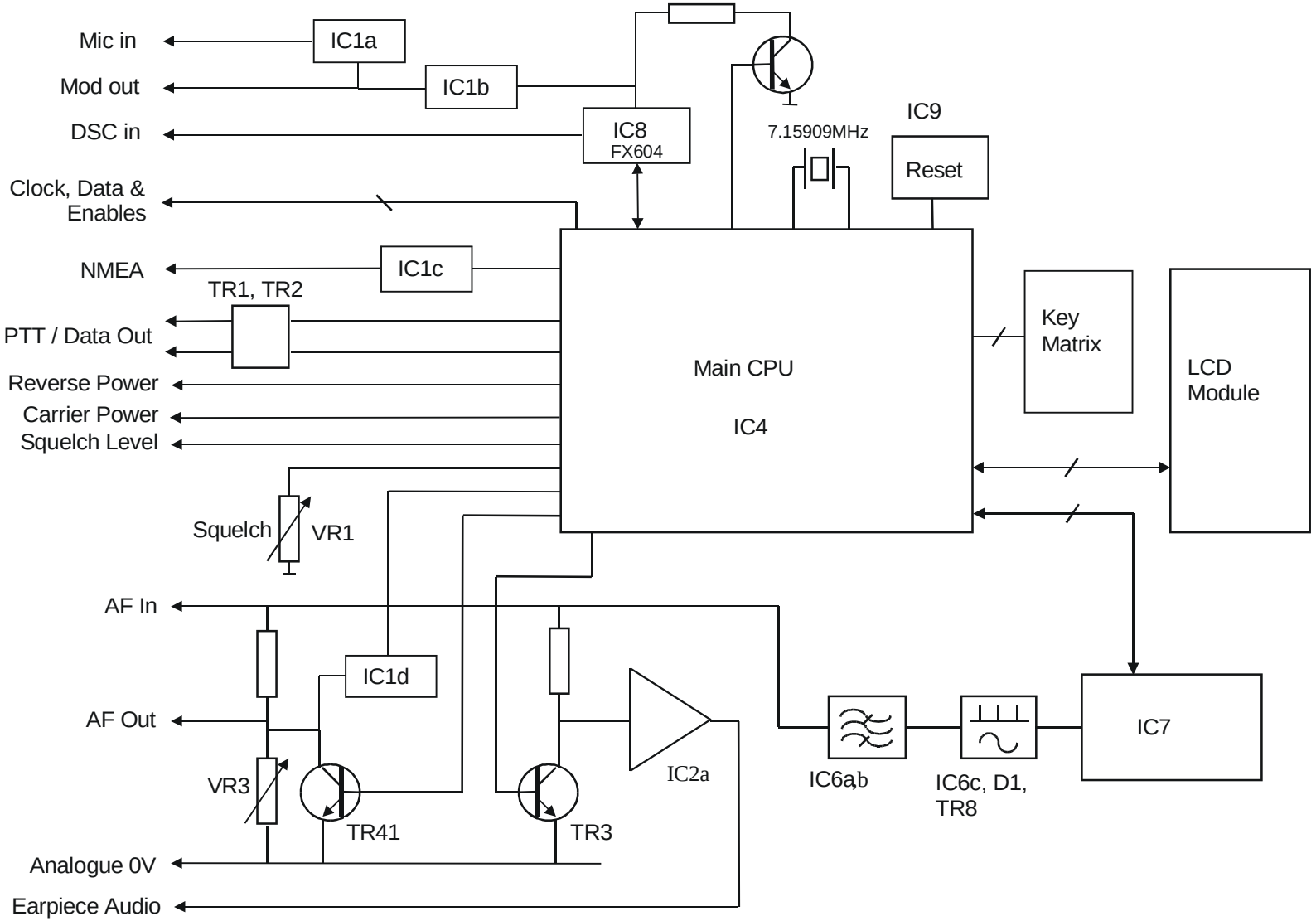
The handset interface is via connector SKT1. The microphone input is biased for use with Electret microphones and may be muted by IC1a. The 12V output is current limited by TR5 and TR6. The cradle and PTT lines are also used for external data connections to a PC or third party accessories.

Data interfaces are provided for external programming via TR1 and TR2. NMEA data is received from the Rx/Tx PCB via PLG2 and passed onto the microprocessor, IC4, via IC1c.

Optional circuitry for ATIS detection consists of IC6, IC7, D1 and TR8.The inclusion of IC7 allows the ATIS signal to be muted during reception. The received audio is filtered by IC6c and IC6d which are followed by a zero crossing detector formed by IC6a, IC6b, D1 and TR8. This signal is sent to a second microprocessor, IC7, which measures the period of each half cycle of the incoming signal. By counting the number of periods which might be an ATIS signal the micro can decide whether ATIS is being received or not. When this decision is made, after about 10ms, IC7 sets an output to inform IC4 to mute the audio for 300ms. IC7 derives its clock and reset from the main microprocessor IC4.

The ATIS and DSC signals are generated and decoded by the modem, IC8 and surrounding components. TR9 switches the modulation index between that required for DSC and ATIS. The output signal is then passed onto the microphone audio via IC1b. Note that the microphone is muted by IC1a during transmission of the ATIS or DSC signals.

The audio level required for alarms is controlled by IC1d. For normal key ‘beeps’ the microprocessor, IC4, generates a square wave which is filtered and reduced in level by R15, R75, C14 and C105 and then fed into the audio amplifier via PLG1. For alarm generation IC1d short circuits R75 to increase the level of signal being fed to the audio amplifier.

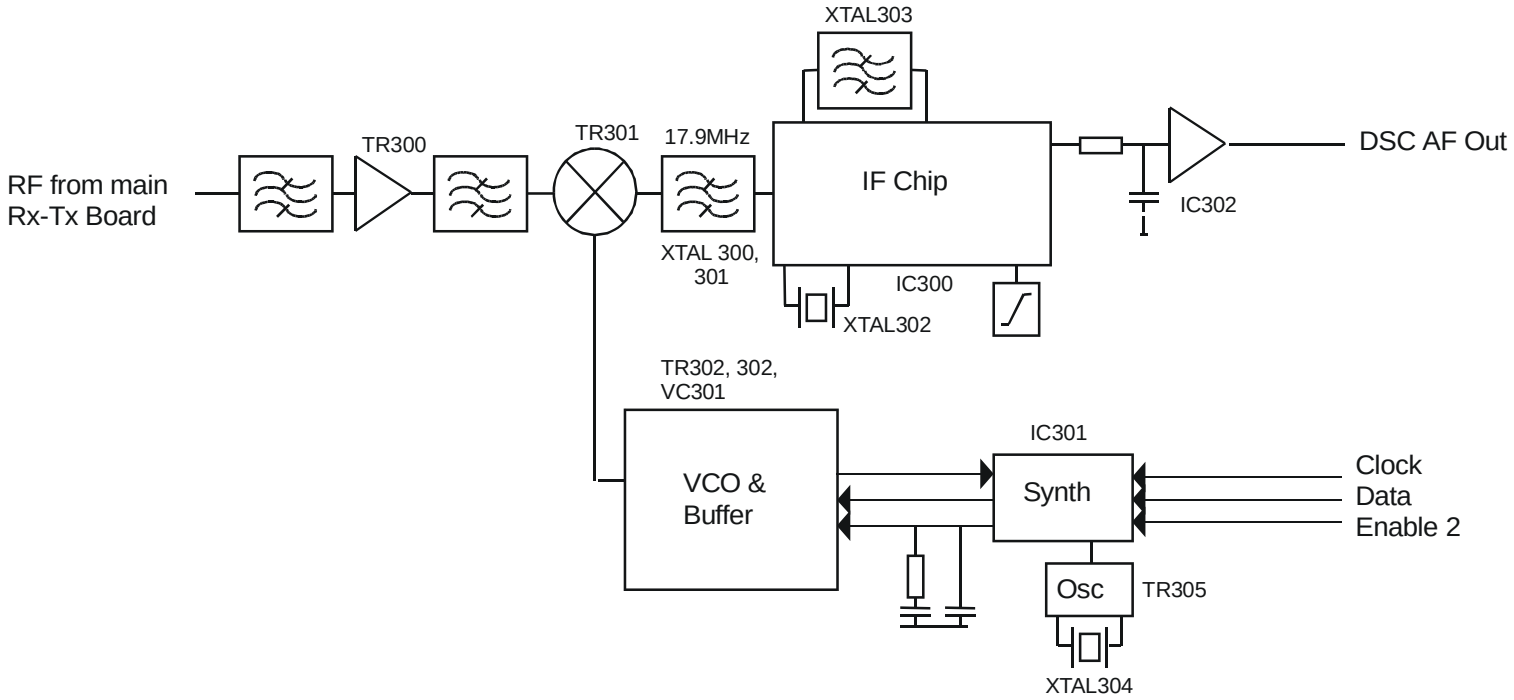

Mic in
IC1a
Mod out
IC1b
DSC in
IC8
FX604
7.15909MHz
IC9
Reset
Clock, Data &
Enables
NMEA
IC1c
TR1, TR2
PTT / Data Out
Reverse Power
Carrier Power
Squelch Level
Main CPU
IC4
Key
Matrix
LCD
Module
Squelch
VR1
AF In
IC1d
AF Out
VR3
TR41
TR3
IC2a
IC6a,b
IC6c, D1,
TR8
IC7
Analogue 0V
Earpiece Audio

5.3 Second Receiver PCB Assembly

Refer to drawing number E03209.

The second receiver is connected to the main receiver at the power splitter L10, C215, C214 and R205. The basic circuitry is the same as the receiver section of the main receiver. L300, L301 and associated capacitors form the input bandpass section, prior to the RF amplifier TR300. A second bandpass section is formed by L302 and L303, which couple into the mixer at the source of TR301. Low side injection from the local oscillator is fed into the gate. The output at 17.9MHz passes through the crystal filter XTAL300 and XTAL301 to the second IF stage, IC300. Demodulated audio is buffered by IC302a.

TR304 and XTAL304 form the reference oscillator for the synthesiser, IC301. Data from the front panel is fed from Clock, Data and Enable 2. C350, C355 and R345 form the basic loop filter to control the frequency of the local oscillator, TR303, by varactor VC301. The output of the local oscillator is buffered by TR302 before being coupled to the mixer through band bass filter L307 and L308.


XTAL303
TR300
TR301
17.9MHz
RF from main
Rx-Tx Board
IF Chip
DSC AF Out
IC302
XTAL 300,
301
IC300
XTAL302
TR302, 302,
VC301
IC301
VCO &
Buffer
Synth
Clock
Data
Enable 2
Osc
TR305
XTAL304

SIMRAD

A KONGSBERG Company

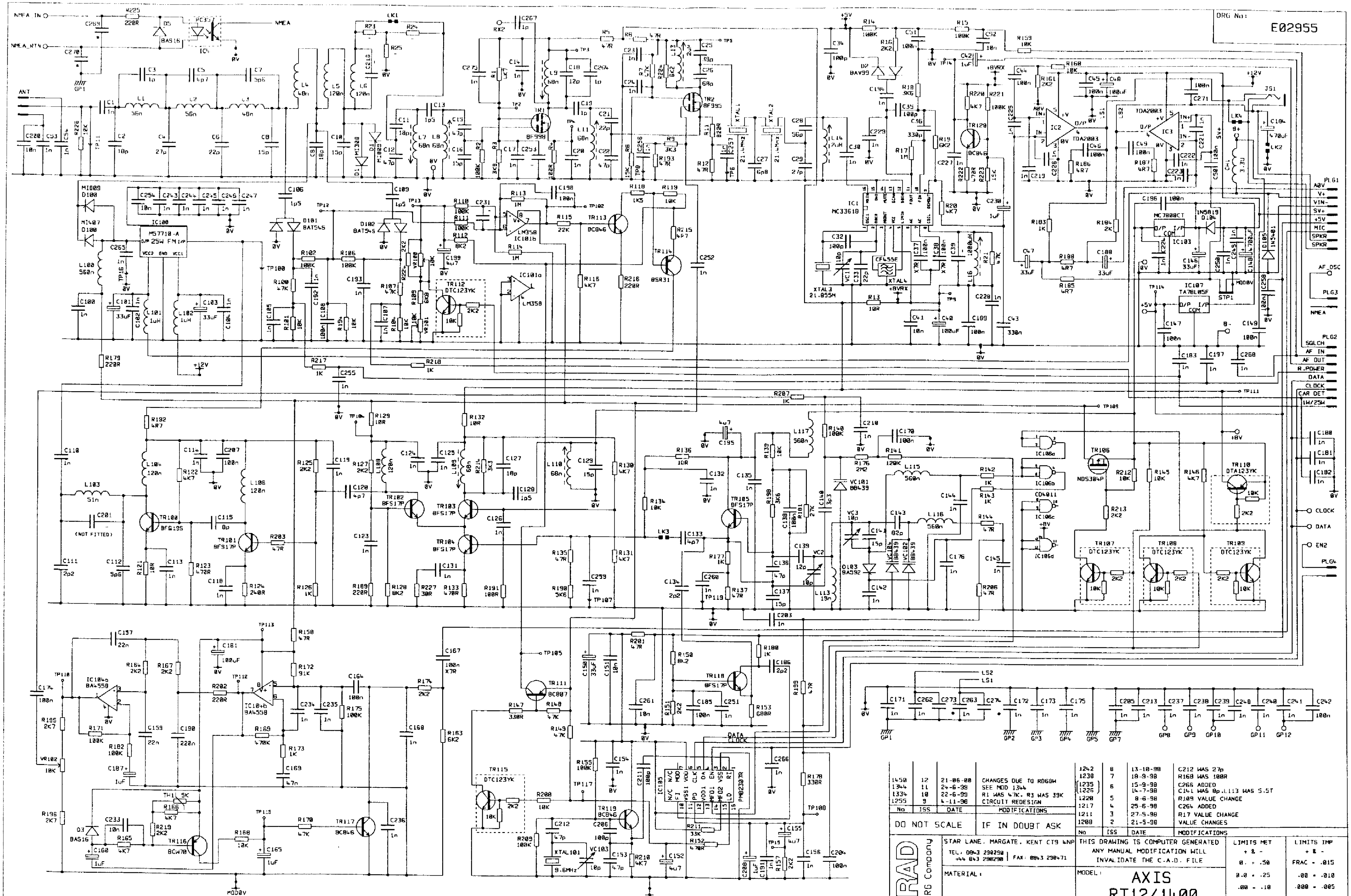
SIMRAD Fixed VHF DSC Radio RD68

Circuit Diagrams

6 CIRCUIT DIAGRAMS

6.1 Circuit Schematics

Receiver / Transmitter Circuit Diagram	E02955
Control PCB Circuit Diagram	E03656
Second Receiver Circuit Diagram	E03209
Fist Mic Circuit Diagram	E03283
Telephone Handset Circuit Diagram	E03308



No	ISS	DATE	MODIFICATIONS
1450	12	21-06-00	CHANGES DUE TO RD68W
1344	11	24-6-99	SEE MOD 1344
1334	10	22-6-99	R1 WAS 47K, R3 WAS 39K
1255	9	4-11-98	CIRCUIT REDESIGN
1242	8	13-10-98	C212 WAS 27p
1238	7	18-9-98	R168 WAS 100R
1235 / 1226	6	15-9-98 / 14-7-98	C266 ADDED / C141 WAS 8p, L113 WAS 5.5T
1220	5	8-6-98	R109 VALUE CHANGE
1217	4	25-6-98	C264 ADDED
1211	3	27-5-98	R17 VALUE CHANGE
1208	2	21-5-98	VALUE CHANGES

DO NOT SCALE

IF IN DOUBT ASK

SIMRAD
A KONGSBERG Company

STAR LANE, MARGATE, KENT CT9 4NP
TEL: 0843 290290 / +44 843 290290 | FAX: 0843 290471

THIS DRAWING IS COMPUTER GENERATED ANY MANUAL MODIFICATION WILL INVALIDATE THE C.A.D. FILE

LIMITS MET + & -	LIMITS IMP + & -
0. = .50	FRAC = .015
0.0 = .25	.00 = .010
.00 = .10	.000 = .005
ANG = 0.5	ANG = 0.5

MATERIAL:

MODEL: AXIS RT12/1400

NOT FITTED:- R23, R24, R25, R205, C39, C184, C201, C215, C216, C220, C231, C253, L10, D1(MI809), D1000(MI809)

THIRD ANGLE PROJECTION

DRAWN BY: R.F.
DATE: 6-4-98

CHECKED:
DATE:

APPROVED:
DATE:

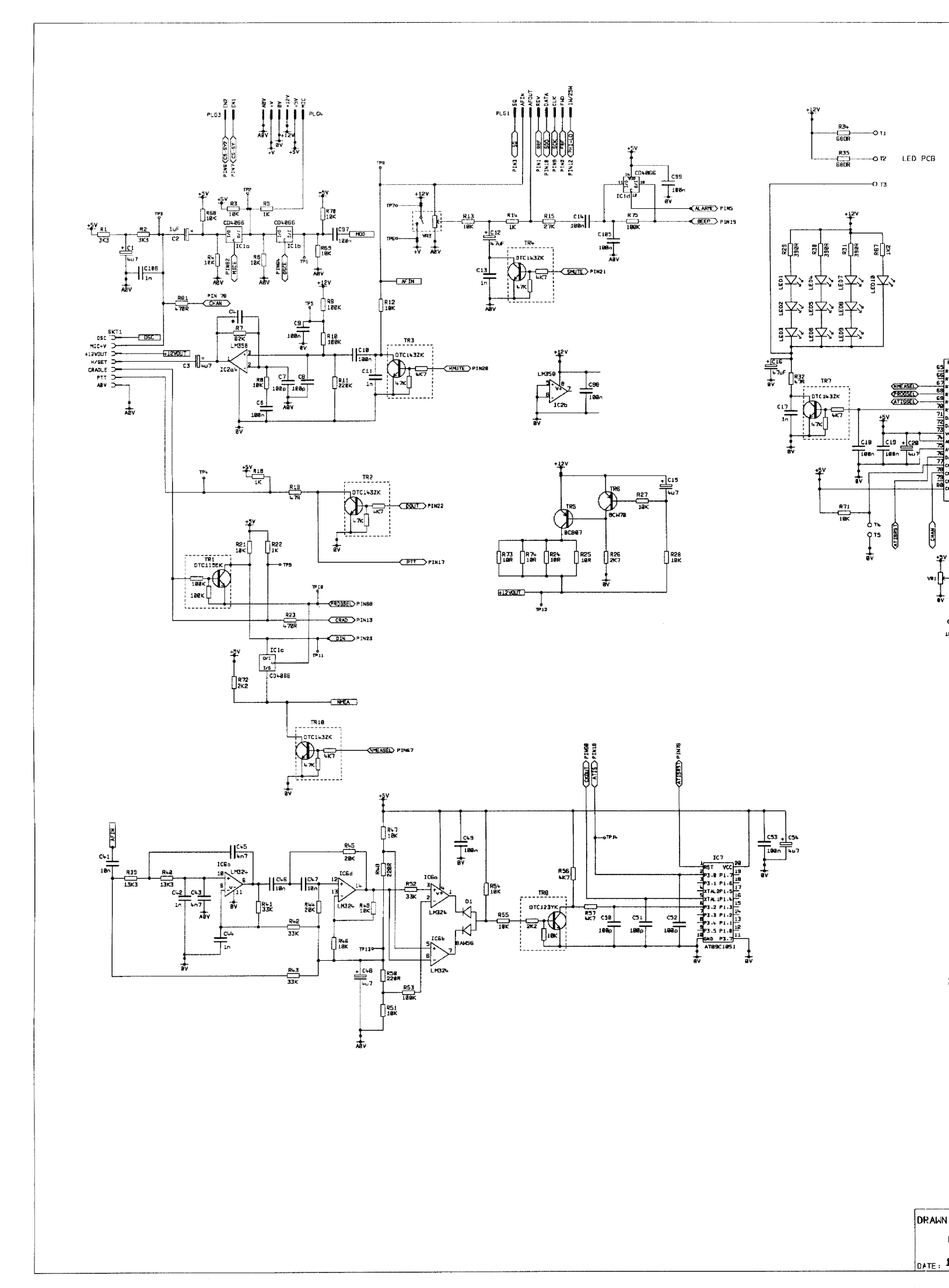
DATE: 21-06-00

SCALE:

TITLE: RX/TX PCB CIRCUIT DIAGRAM

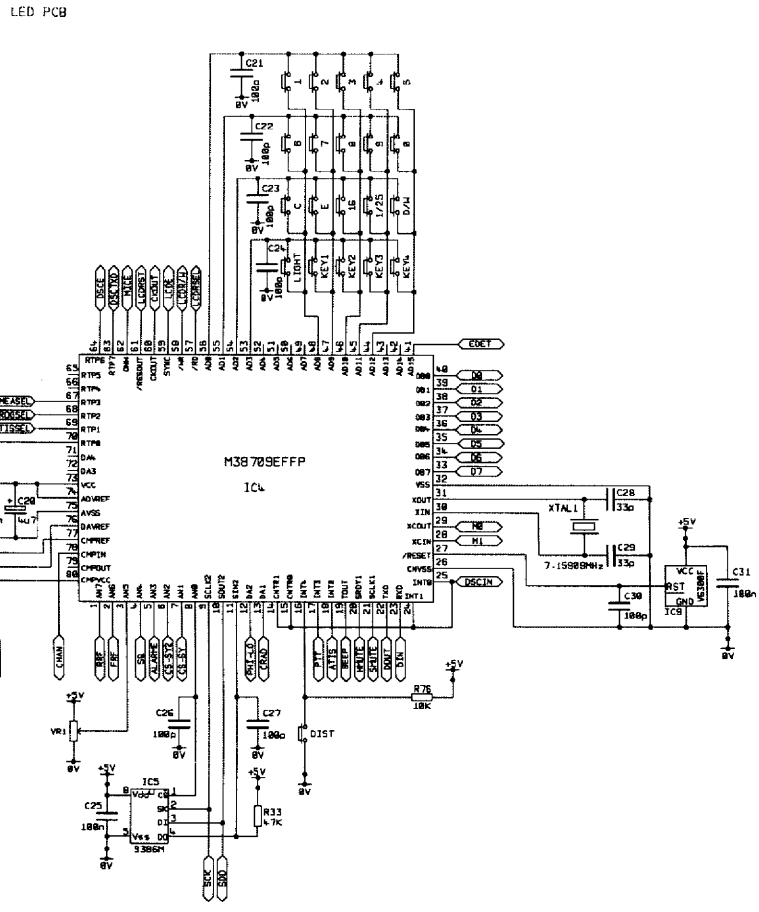
DRG No: E02955

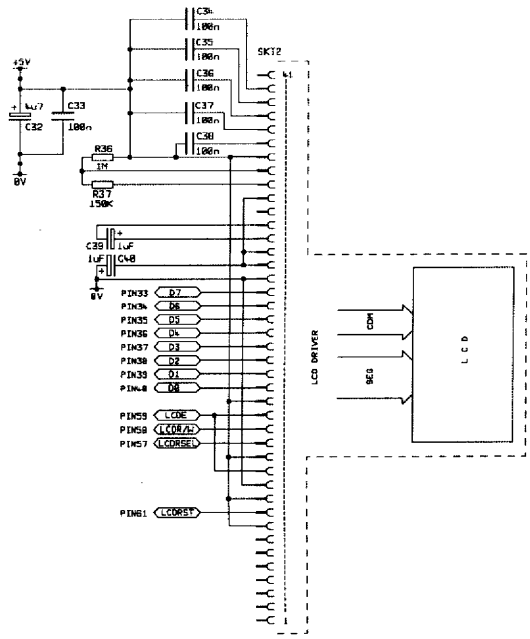
ISSUE: 12

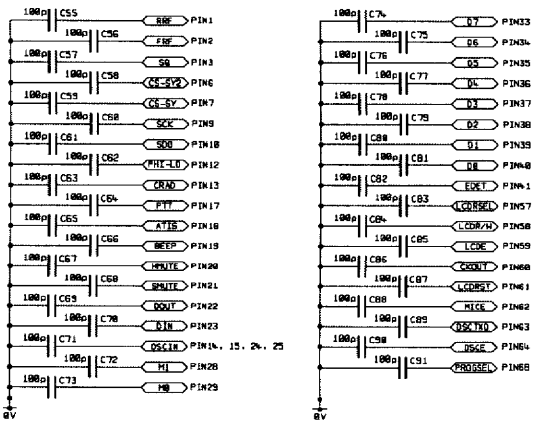

LED PCB
DRAWN
DATE :

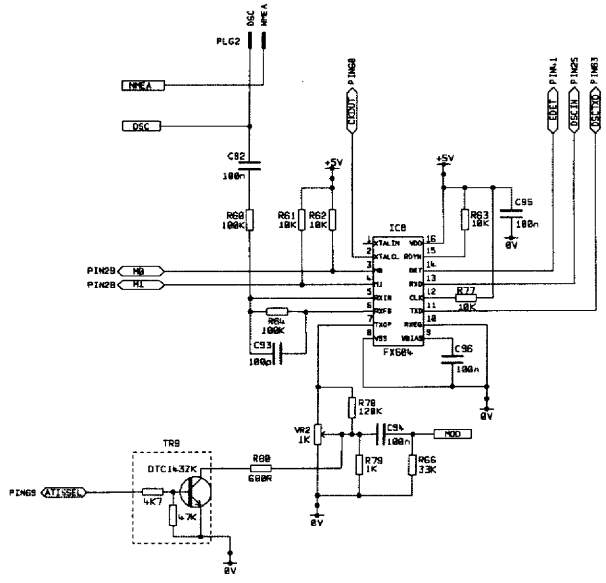
DRG No:
E03656

LED PCB

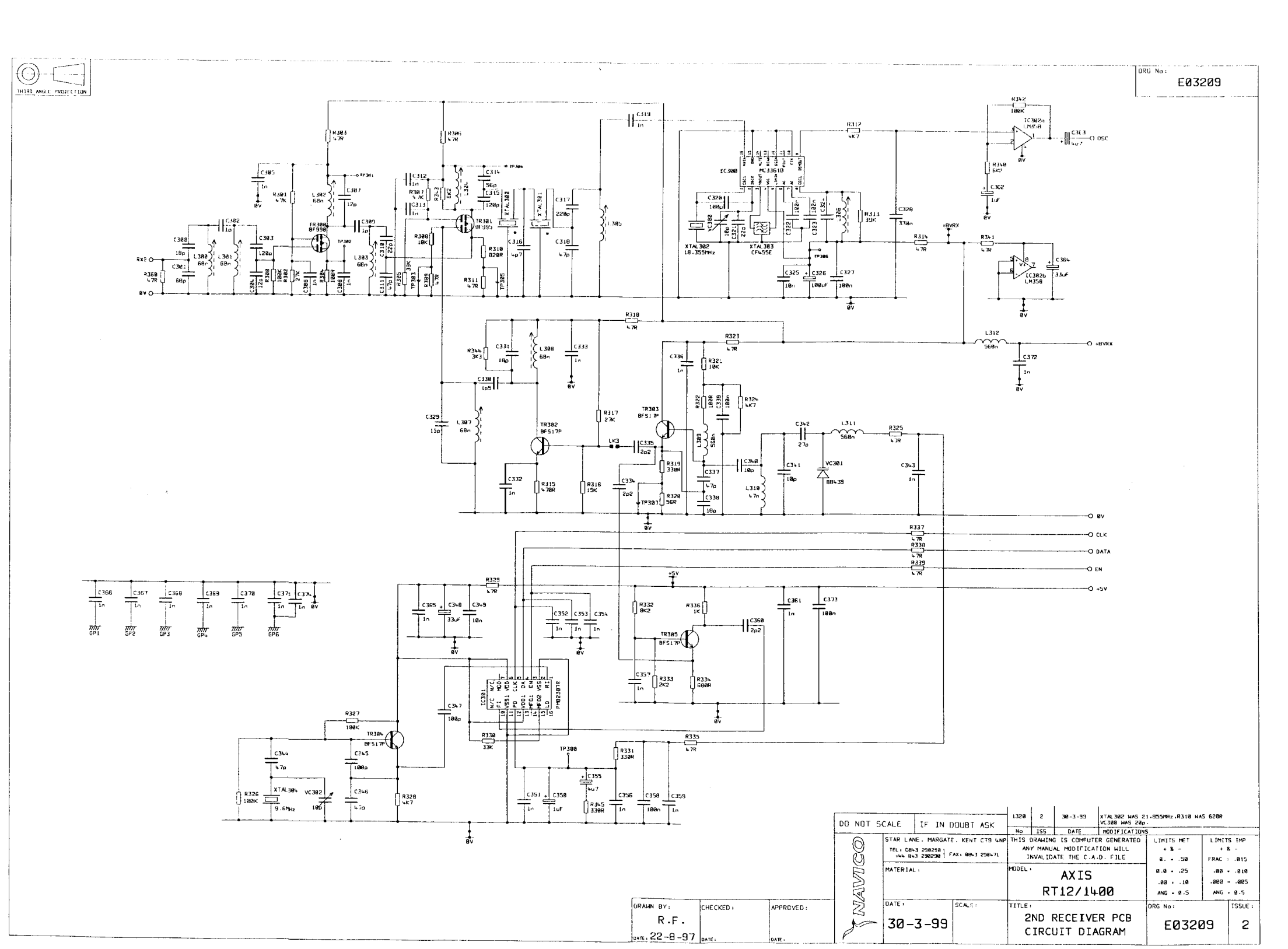




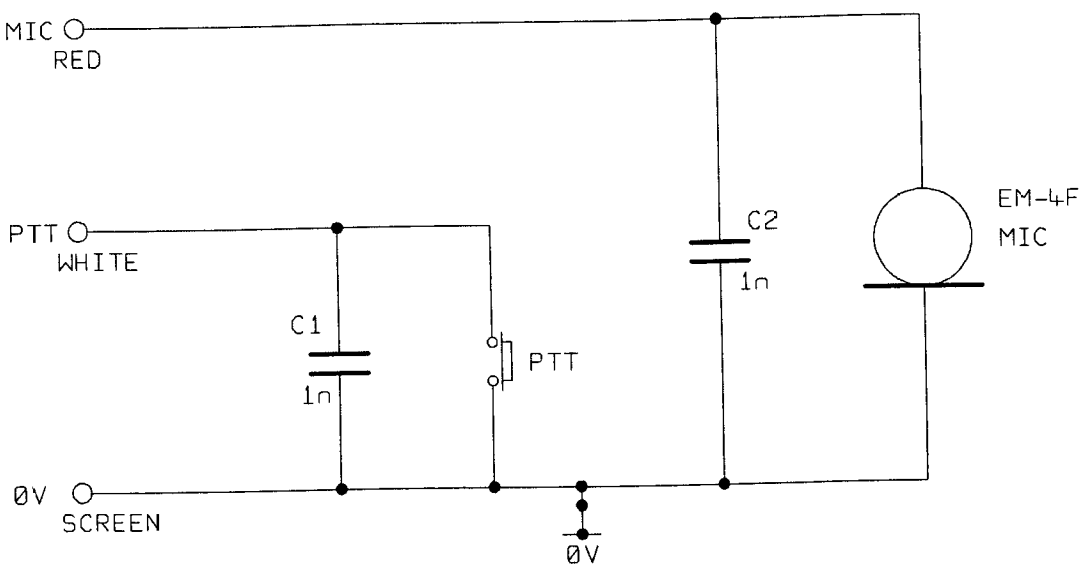




DO NOT SCALE	IF IN DOUBT ASK						
				No	ISS	DATE	MODIFICATIONS
SIMRAD A KONGSBERG Company	STAR LANE. MARGATE. KENT CT9 4NP TEL: 0843 290290 | +44 843 290290 FAX: 0843 290471			THIS DRAWING IS COMPUTER GENERATED ANY MANUAL MODIFICATION WILL INVALIDATE THE C.A.D. FILE		LIMITS MET + & - 0. = .50 0.0 = .25 .00 = .10 ANG = 0.5	LIMITS IMP + & - FRAC = .015 .00 = .010 .000 = .005 ANG = 0.5
	MATERIAL:			MODEL: RD68W			
DRAWN BY: R.F. DATE: 17-5-99	CHECKED: DATE:	APPROVED: DATE:	DATE: 21-06-00	SCALE:	TITLE: CONTROL PCB CIRCUIT DIAGRAM	DRG No: E03656	ISSUE: 1


THIRD ANGLE PROJECTION
DRG No: E03209
RX2
0V
+8VRX
OSC
CLK
DATA
EN
+5V
XTAL302 18.355MHz
XTAL303 CF455E
XTAL304 9.6MHz
TR301 BF998
TR302 BF517P
TR303 BF517P
TR304 BF517P
TR305 BF517P
IC301 PMB2307R
IC302a LM358
IC302b LM358
IC3000 MC3361B
VC300
VC301 BB439
VC302
LK3
TP300
TP301
TP302
TP303
TP304
TP305
TP306
TP307
GP1
GP2
GP3
GP4
GP5
GP6
DO NOT SCALE
IF IN DOUBT ASK
L320 2 30-3-99 XTAL302 WAS 21.855MHz.R310 WAS 620R VC300 WAS 20p.
No ISS DATE MODIFICATIONS
NAVICO
STAR LANE. MARGATE. KENT CT9 4NP
TEL: 0843 290290 | +44 843 290290 | FAX: 0843 290471
THIS DRAWING IS COMPUTER GENERATED ANY MANUAL MODIFICATION WILL INVALIDATE THE C.A.D. FILE
MATERIAL:
MODEL: AXIS RT12/1400
LIMITS MET + & - 0. - .50 0.0 - .25 .00 - .10 ANG - 0.5
LIMITS IMP + & - FRAC - .015 .00 - .010 .000 - .005 ANG - 0.5
DRAWN BY: R.F. DATE: 22-8-97
CHECKED: DATE:
APPROVED: DATE:
DATE: 30-3-99
SCALE:
TITLE: 2ND RECEIVER PCB CIRCUIT DIAGRAM
DRG No: E03209
ISSUE: 2

DRG No: E03283



DRAWN BY: R.F. DATE: 28-10-97	CHECKED: DATE:	APPROVED: DATE:	

DO NOT SCALE | IF IN DOUBT ASK

NAVICO

STAR LANE. MARGATE. KENT CT9 4NP
TEL: 0843 250250 | FAX: 0843 250471

MATERIAL:

DATE: 25-6-98

SCALE:

No	ISS	DATE	MODIFICATIONS

THIS DRAWING IS COMPUTER GENERATED
ANY MANUAL MODIFICATION WILL
INVALIDATE THE C.A.D. FILE

MODEL: AXIS RT12/1400

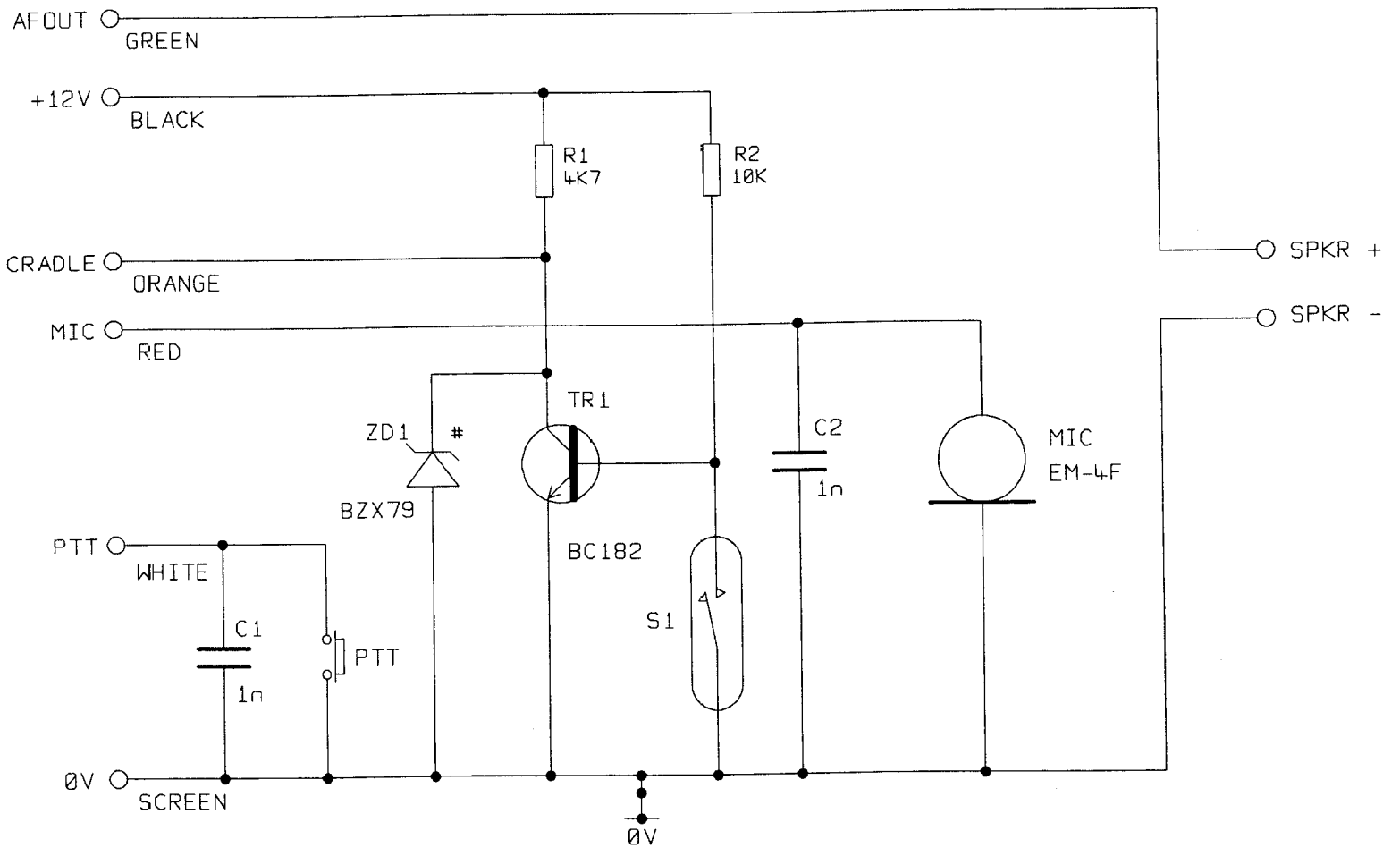
TITLE: FIST MIC CIRCUIT DIAGRAM

LIMITS MET + & -	LIMITS IMP + & -
0. = .50	FRAC = .015
0.0 = .25	.00 = .010
.00 = .10	.000 = .005
ANG = 0.5	ANG = 0.5

DRG No: E03283

ISSUE: 1

DRG No: E03308



DO NOT SCALE | IF IN DOUBT ASK

No	ISS	DATE	MODIFICATIONS

NAVICO

STAR LANE, MARGATE, KENT CT9 4NP
TEL: 0843 288288 | FAX: 0843 288271

THIS DRAWING IS COMPUTER GENERATED
ANY MANUAL MODIFICATION WILL
INVALIDATE THE C.A.D. FILE

LIMITS MET + & -	LIMITS IMP + & -
0. = .50	FRAC = .015
0.0 = .25	.00 = .010
.00 = .10	.000 = .005
ANG = 0.5	ANG = 0.5

MATERIAL:

MODEL: AXIS RT12/1400

DRAWN BY:	CHECKED:	APPROVED:
R.F.		
DATE: 3-12-97	DATE:	DATE:

DATE: 3-12-97

SCALE:

TITLE: MODEL A PCB CIRCUIT DIAGRAM

DRG No: E03308

ISSUE: 1

Component Lists and Layouts

Receiver / Transmitter PCB Front Assembly Detail	E03866(Sht 1)
Receiver / Transmitter PCB Assembly Detail	E03866(Sht 2)
Receiver / Transmitter PCB Rear Assembly Detail	E03866(Sht 3)
Front Panel Assembly Detail (Sht 1)	E03658
ATIS Front Panel Assembly Detail	E03865
Second Receiver PCB Assembly Detail	E03211
Fist Mic PCB Assembly Detail	E03285
Telephone Handset PCB Assembly Detail	E03309

THIRD ANGLE PROJECTION

(REF E03866:SM PCB ASSY SM:RX/TX)

ORG No: E03866

SURFACE MOUNT COMPONENTS

ITEM	QTY	PART No.	COMP REF	DESCRIPTION
1	1	-	E02956	PCB DRILLED
2	1	100125	R121	1206 10R
3	13	100161	R2.R14.R15.R102.R106.R110.R111.R155.R171.R175.R182.R209 R221	0805 100K
4	3	100162	R17.R113.R114	0805 1M
5	4	100163	R179.R189.R202.R216	0805 220R
6	7	100166	R7.R21.R100.R107.R148.R149.R178	0805 47K
7	8	100167	R126.R142.R143.R173.R188.R183.R217.R218	0805 1K
8	3	100168	R19 .R163 .R204	0805 6K2
9	1	100169	R124	0805 240R
10	2	100172	R195.R196	0805 2K7
11	4	100175	R123.R133.R152.R222	0805 470R
12	2	100177	R9 .R214	0805 3K3
13	4	100181	R13. R129.R132.R136	0805 10R
14	1	100183	R115	0805 22K
15	2	100186	R4.R191	0805 100R
16	11	100188	R1.R20.R116.R122.R130.R131.R146.R165.R166.R210.R220	0805 4K7
17	18	100190	R101.R104.R119.R134.R145.R159.R168.R194.R200.R212	0805 10K
18	2	100191	R8.R223	0805 15K
19	11	100193	R16.R125.R127.R151.R157.R164.R167.R174.R213.R219.R224	0805 2K2
20	1	100194	R176	0805 2M2
21	9	100195	R5.R6.R12.R135.R150.R193.R199.R201.R203	0805 47R
22	1	100196	R169	0805 470K
23	1	100197	R184	0805 2K
24	1	100203	R118	0805 1K5
25	3	100204	R112.R128.R150	0805 8K2
26	1	100206	R153	0805 680R
27	1	100209	R141	0805 120K
28	6	100231	R185.R186.R187.R188.R192 .R215	0805 4R7
29	1	100262	R190	0805 5K6
30	2	100269	R147.R178	0805 330R
31	1	100275	R211	0805 33K
32	1	100277	R11	0805 820R
33	1	100291	R172	0805 91K
34	2	100292	R18.R198	0805 3K6
35	1	100300	R109	0805 6K8
36	1	100304	R227	0805 30R
37	3	100322	R137.R144.R206	0603 47R
38	2	100338	R177.R207	0603 1K
39	1	100342	R161	0603 2K2
40	2	100350	R139.R168	0603 10K
41	1	100355	R181	0603 27K
42	1	100362	R140	0603 100K
43	6	110102	C47.C101.C103.C146.C150.C188	33UF 25V ELECT
44	47	110115	C1.C14.C20.C23.C24.C38.C53.C54.C100.C102.C105.C107.C113 C114.C118.C119.C123.C124.C125.C126.C131.C132.C154.C156 C160.C176.C180.C181.C191.C192.C193.C194.C197.C203.C224 C227.C228.C229.C234.C235.C236.C251.C252.C256.C257.C259 C260	0805 1n
45	3	110116	C6.C21.C33	0805 22p
46	5	110118	C32.C34.C35.C206.C211	0805 100p
47	4	110119	C8.C10.C16.C129	0805 15p
48	1	110122	C18	0805 12p
49	4	110125	C13.C186.C189.C128	0805 1p5
50	2	110127	C4.C29	0805 27p
51	16	110128	C45.C46.C49.C50.C51.C108.C147.C164.C174.C185.C189.C196 C198.C204.C207.C258	0805 100n
52	1	110129	C25	0805 39p
53	5	110131	C12.C15.C22.C153.C212	0805 47p
54	1	110132	C20	0805 56p
55	1	110137	C115	0805 8p
56	6	110138	C41.C52.C151.C200.C233.C261	0805 18n
57	1	110139	C26	0805 68p
58	1	110141	C36	0805 330p
59	3	110143	C111.C134.C186	0805 2p2
60	2	110144	C7.C112	0805 5p6
61	1	110145	C140	0805 3p3
62	1	110152	C43	0805 330n
63	4	110153	C2.C9.C11.C127	0805 18p
64	4	110166	C3.C19.C264.C267	0805 1p
65	6	110168	C42.C160.C165.C187.C208.C230	1UF 50V SM ELECT
66	4	110169	C152.C155.C195 .C199	4U7 25V SM ELECT
67	2	110170	C157.C159	0805 22n
68	3	110173	C5.C128.C133	0805 4p7
69	1	110174	C27	0805 6p8
70	1	110181	C169	0805 47n
71	1	110182	C198	0805 220n
72	4	110183	VC1.VC2.VC3.VC103	ERCJA 18p
73	3	110186	C37.C38.C167	0805 100n X7R

R23.R24.R25.D1(MI809)
D100(MI809).C39.C184.
C201.C216 .C231.C270
C273.C274 NOT FITTED

SURFACE MOUNT COMPONENTS

ITEM	QTY	PART No.	COMP REF	DESCRIPTION
74	7	110194	C135.C142.C144.C145.C182.C183.C210	0603 1n
75	3	110199	C44.C138.C170	0603 100n
76	1	110212	C139	0603 12p
77	2	110213	C137.C141	0603 15p
78	1	110219	C136	0603 47p
79	1	110222	C143	0603 82p
80	1	120036	D3	BAS16T
81	1	120043	D2	BAV99
82	1	120077	D103	BA592
83	3	120078	VC101.VC102.VC104	BB439
84	2	120080	D101.D102	BAT54S
85	4	130028	TR113.TR117.TR119.TR120	BC846
86	1	130029	TR116	BCW70
87	1	130034	TR114	BSR31
88	1	130036	TR2	BF995
89	1	130037	TR1	BF998
90	1	130038	TR108	BFQ19S
91	6	130039	TR101.TR102.TR103.TR104.TR105.TR118	BFS17P
92	1	130044	TR111	BC807
93	1	130053	TR110	DTA123YK
94	5	130054	TR107.TR108.TR109 .TR112.TR115	DTC123YK
95	1	130058	TR106	NDS304P
96	1	140051	IC101	LM358
97	1	140075	IC4	PC357
98	1	140092	IC107	TA78L05F
99	1	140140	IC106	HC4011B
100	1	140151	IC1	MC33610
101	1	140152	IC105	PMB2307R
102	1	140154	IC104	BA4558
103	3	150037	VR100.VR101.VR102	PDZ3KN 10K
104	4	240028	L108.L115.L116.L117	TDK NL322522T S68n

CONVENTIONAL MOUNT COMPONENTS

ITEM	QTY	PART No.	COMP REF	DESCRIPTION
105	1	100116	TH1	5K NTC THERMISTOR
106	3	110015	C40.C48.C161	100UF 50V ELECT
107	1	110176	C148	4700UF 50V RADIAL ELECT
108	1	120001	D105	1N5401
109	1	120002	D106	1N5819
110	1	120025	D1	MI388
111	1	120034	D108	MI487
112	1	140155	IC103	MC7808CT
113	1	160085	XTAL4	LTH33-455E
114	1	160086	XTAL3	21.855MHz HC49U
115	2	160118	XTAL1.XTAL2	21.4MHz XTAL FILTER UM-1
116	1	160158	XTAL101	9.6MHz HC49U
117	1	170179	JS1	MIN JACK SOCKET
118	2	170180	PL61.PL62	8WAY 2mm
119	2	170181	PL63.PL64	2WAY 2mm
120	1	240049	L113	16nH INDUCTOR
121	4	300014	OVER L1.L2.L3.L4	7mm STYLE CAN
122	2	E02989	-	INSULATOR
123	1	E03163	L103	5T 3.0i/d 0.8 Air cored coil 51nH
124	5	E03164	L5.L6.L104.L106.L108	6T 4.5i/d 0.8 Air cored coil 120nH
125	2	E03168	L101.L102	10.5T 5.0mmi/d 0.8 Air cored coil 1uH
126	1	E03169	CH1	3.3uH 6Amp Choke
127	6	E03170	L7.L8.L9.L11.L109.L110	68nH Adjustable Coil
128	2	E03171	L13.L14	2uH Adjustable Coil
129	1	E03172	L16	1000uH/120pF Adjustable coil
130	2	E03373	L3.L4	5.5T 3.0i/d 0.8 Air cored coil 48nH
131	2	E03374	L1.L2	6.5T 3.5i/d 0.8 Air cored coil 56nH

DO NOT SCALE | IF IN DOUBT ASK

No	ISS	DATE	MODIFICATIONS

SIMRAD — A KONGSBERG Company

STAR LANE. MARGATE. KENT CT9 4NP
TEL: 0843 290290 | FAX: 0843 290471

THIS DRAWING IS COMPUTER GENERATED ANY MANUAL MODIFICATION WILL INVALIDATE THE C.A.D. FILE

LIMITS MET		LIMITS IMP	
+ & -		+ & -	
0. + .50	FRAC + .015		
0.0 + .25	.00 + .010		
.00 + .10	.000 + .005		
ANG + 0.5	ANG + 0.5		

MATERIAL:

MODEL: RD68W

DRAWN BY:	CHECKED:	APPROVED:
R.F.		
DATE: 17-05-00	DATE:	DATE:

DATE: 22-06-00 | SCALE:

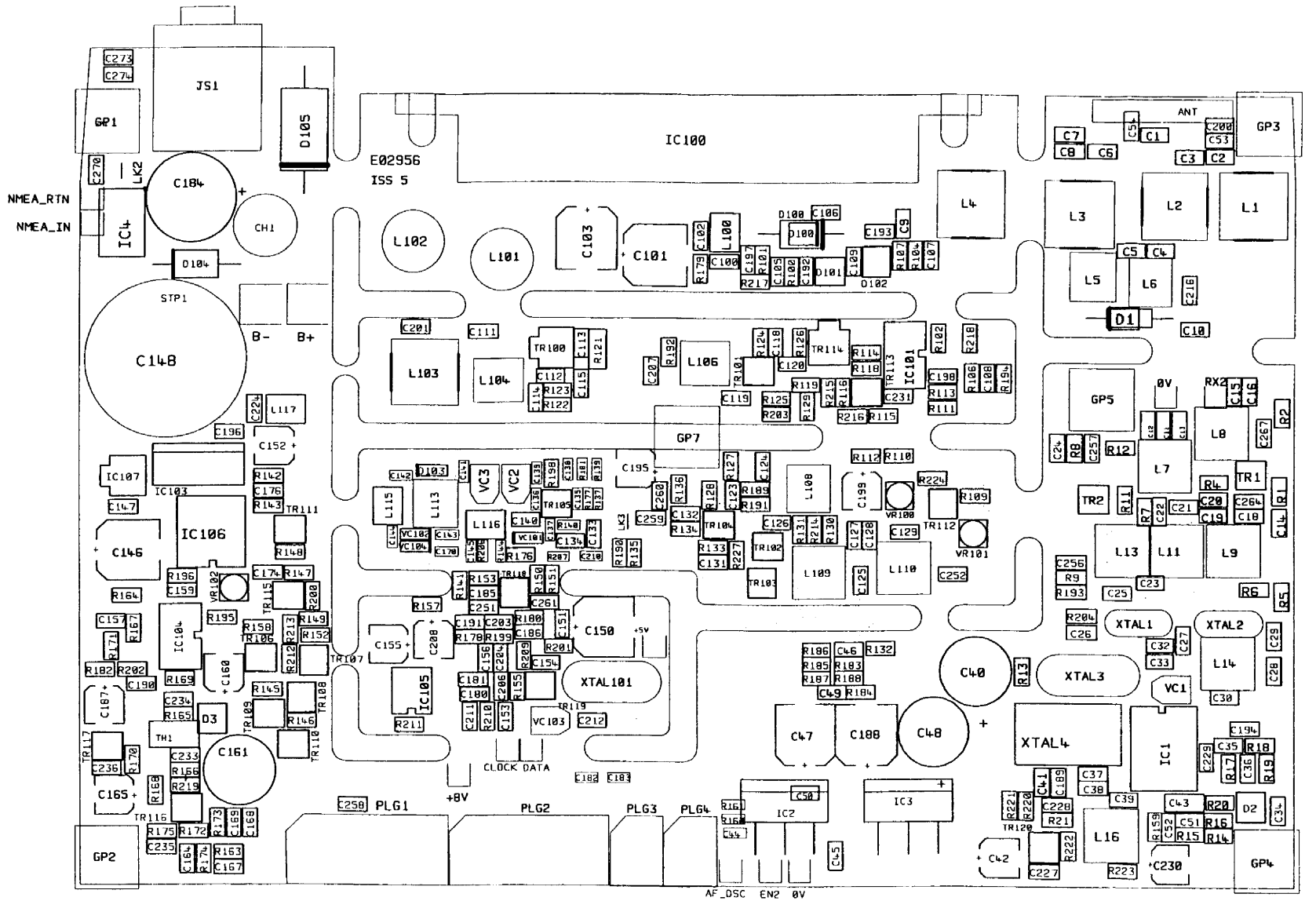
TITLE: RX/TX PCB(FRONT) ASSEMBLY DETAIL

ORG No: E03866 SHT 1 OF 3

ISSUE: 1

THIRD ANGLE PROJECTION

DRG No: E03866



DRAWN BY:	CHECKED:	APPROVED:
R.F.		
DATE: 17-05-00	DATE:	DATE 26/6/02

DO NOT SCALE | IF IN DOUBT ASK

No	ISS	DATE	MODIFICATIONS

SIMRAD
A KONGSBERG Company

STAR LANE, MARGATE, KENT CT9 4NP
TEL: 0845 230230 | FAX: 0845 230231

THIS DRAWING IS COMPUTER GENERATED
ANY MANUAL MODIFICATION WILL
INVALIDATE THE C.A.D. FILE

LIMITS MET	LIMITS IMP
+ & -	+ & -
0. = .50	FRAC = 015
0.0 = .25	.00 = .010
.00 = .10	.000 = .005
ANG = 0.5	ANG = 0.5

MATERIAL:

MODEL: RD68W

DATE: 22-06-00

SCALE:

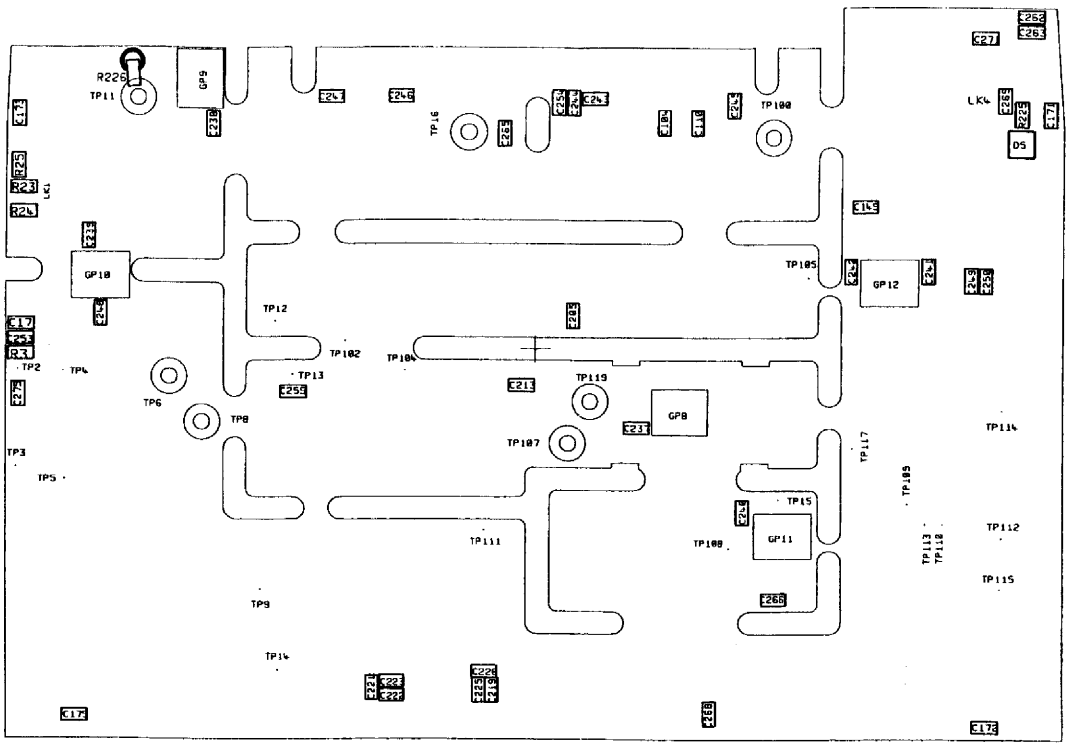
TITLE: RX/TX PCB ASSEMBLY DETAIL

DRG No: E03866 SHT 2 OF 3

ISSUE: 1

THIRD ANGLE PROJECTION

DRG No: E03866



SURFACE MOUNT COMPONENTS

ITEM	QTY	PART No.	COMP REF	DESCRIPTION
1	1	100176	R3	0805 3K9
2	1	100163	R225	0805 220R
3	1	100190	R226	0805 10K
4	35	110115	C17.C104.C110.C171.C172.C173.C175.C205 C213.C219.C221.C222.C223.C225.C226.C237 C238.C239.C240.C241.C243.C244.C245.C246 C247.C248.C249.C250.C255.C262.C263.C265 C266.C268.C275	0805 1n
5	3	110128	C149 .C242.C271	0805 100n
6	1	110138	C254	0805 10n
7	1	120036	D5	BAS16

C253.C269.R23.R24.R25 NOT FITTED

NOTE:- R226 CONNECTED BETWEEN ANTENNA PAD AND TP11 (GND) AFTER PCB TEST.

DO NOT SCALE | IF IN DOUBT ASK

No	ISS	DATE	MODIFICATIONS

SIMRAD A KONGSBERG Company

STAR LANE. MARGATE. KENT CT9 4NP
TEL: 0843 290290 | FAX: 0843 290471
+44 843 290290

THIS DRAWING IS COMPUTER GENERATED
ANY MANUAL MODIFICATION WILL INVALIDATE THE C.A.D. FILE

LIMITS MET	LIMITS IMP
+ & -	+ & -
0. . .50	FRAC . .015
0.0 . .25	.00 . .010
.00 . .10	.000 . .005
ANG . 0.5	ANG . 0.5

MATERIAL:

MODEL: RD68W

DRAWN BY:	CHECKED:	APPROVED:
R.F.	AK	AW
DATE: 17-05-00	DATE:	DATE: 20/7/00

DATE: 22-06-00

SCALE:

TITLE: RX/TX PCB REAR ASSEMBLY DETAIL

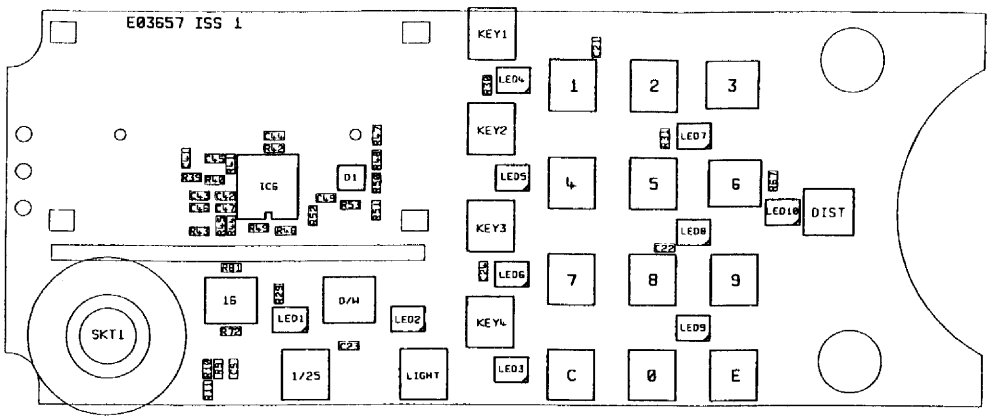
DRG No: E03866 SHT 3 OF 3

ISSUE: 1

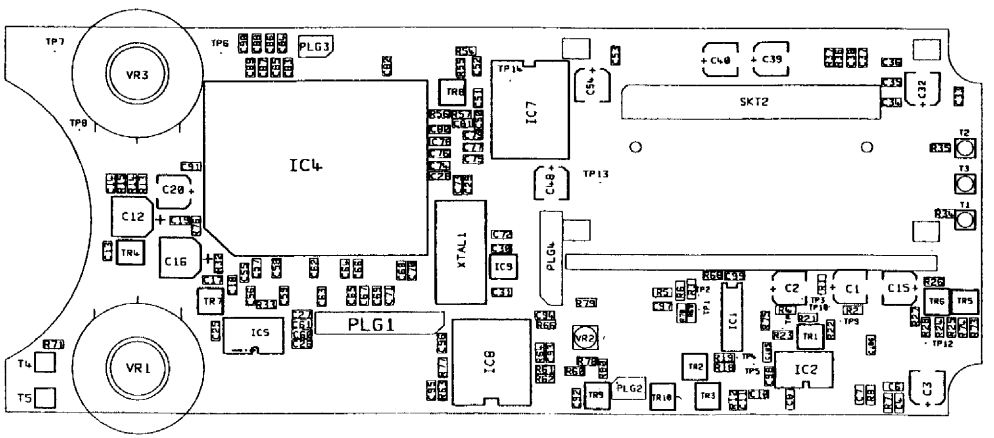
THIRD ANGLE PROJECTION

DRG No: E03658

FRONT VIEW



REAR VIEW



SURFACE MOUNT COMPONENTS

ITEM	QTY	PART No.	COMP REF	DESCRIPTION
1	1	E03657	-	PCB DRILLED
2	4	100314	R24.R25.R73.R74	0603 10R
3	2	100322	R19.R32	0603 47R
4	3	100333	R29.R30.R31	0603 390R
5	2	100334	R23.R81	0603 470R
6	2	100336	R34.R35	0603 680R
7	5	100338	R5.R14.R18.R22.R79	0603 1K
8	1	100339	R67	0603 1K2
9	1	100342	R72	0603 2K2
10	1	100343	R26	0603 2K7
11	2	100344	R1.R2	0603 3K3
12	18	100350	R3.R4.R6.R8.R12.R13.R21.R27.R28.R61.R62.R63 R68.R69.R70.R71.R76.R77	0603 10K
13	1	100355	R15	0603 27K
14	1	100356	R66	0603 33K
15	1	100358	R33	0603 47K
16	1	100361	R7	0603 82K
17	5	100362	R9.R10.R60.R64.R75	0603 100K
18	1	100363	R78	0603 120K
19	1	100364	R37	0603 150K
20	1	100366	R11	0603 220K
21	1	100374	R36	0603 1M
22	3	110168	C2.C39.C40	1UF 50V ELECT
23	5	110169	C1.C3.C15.C20.C32	4U7 25V ELECT
24	2	110191	C12.C16	47UF 6.3V ELECT
25	4	110194	C11.C13.C17.C106	0603 1n
26	22	110199	C6.C9.C10.C14.C18.C19.C25.C31.C33.C34.C35.C36 C37.C38.C92.C94.C95.C96.C97.C98.C99.C105	0603 100n
27	2	110217	C28.C29	0603 33p
28	33	110223	C7.C8.C21.C22.C23.C24.C26.C27.C58.C59.C60.C69 C70.C71.C72.C73.C74.C75.C76.C77.C78.C79.C80 C81.C82.C83.C84.C85.C86.C88.C89.C90.C93	0603 100p
29	10	120058	LED1.LED2.LED3.LED4.LED5.LED6.LED7.LED8.LED9 LED10	LED GREEN
30	1	130029	TR6	BCW70T
31	1	130044	TR5	BC807
32	5	130057	TR2.TR3.TR4.TR7.TR10	DTC143ZK
33	1	130061	TR1	DTC115EK
34	1	140051	IC2	LM358
35	1	140052	IC1	40668
36	1	140147	IC9	LM324
37	1	E03773	IC4	M38079EFFP
38	1	140172	IC8	FX604
39	1	140173	IC5	N93C86NM 16K EPROM
40	1	160071	XTAL1	7.15909MHz SMQ715TR
41	21	210019	S1.S2.S3.S4.S5.S6.S7.S8.S9.S0.C.E.16.1/25.D/W LIGHT.KEY1.KEY2.KEY3.KEY4.DIST	DTSM61NR

CONVENTIONAL MOUNT COMPONENTS

ITEM	QTY	PART No.	COMP REF	DESCRIPTION
42	1	E03658:SM	-	SM PCB ASSY
43	1	150038	VR1	POT 10K LIN
44	1	150039	VR3	POT SWITCHED 50K LOG
45	1	170182	SKT1	7 PIN PLUG : PANEL MOUNT
46	1	E03191	PLG4	CABLE 8-6+2 WAY 26 AWG
47	1	E03192	PLG1	CABLE 8-8 WAY 28 AWG
48	2	E03193	PLG2.PLG3	CABLE 2-2 WAY 28 AWG

NOTE:- C4.C30.C55.C56.C57.C61.C62.C63.C64.C65.C66.C67.C68.C87.C91.VR2 NOT FITTED

NOTE : ALTHOUGH SKT1 IS SHOWN, IT IS NOT FITTED UNTIL A LATER STAGE.

DO NOT SCALE | IF IN DOUBT ASK

No	ISS	DATE	MODIFICATIONS

SIMRAD A KONGSBERG Company

STAR LANE. MARGATE. KENT CT9 4NP
TEL: 0843 290290 | FAX: 0843 290471
+44 843 290290

THIS DRAWING IS COMPUTER GENERATED ANY MANUAL MODIFICATION WILL INVALIDATE THE C.A.D. FILE

LIMITS MET	LIMITS IMP
+ & -	+ & -
0. : .50	FRAC : .015
0.0 : .25	.00 : .010
.00 : .10	.000 : .005
ANG : 0.5	ANG : 0.5

MATERIAL:

MODEL: RD68W

DRAWN BY:	CHECKED:	APPROVED:
R.F.	JJC	AW
DATE: 13-3-00	DATE: 4/7/00	DATE: 4/7/00

DATE: 21-06-00

SCALE:

TITLE: FRONT PANEL ASSEMBLY DETAIL

DRG No: E03658 SHT 1 OF 2

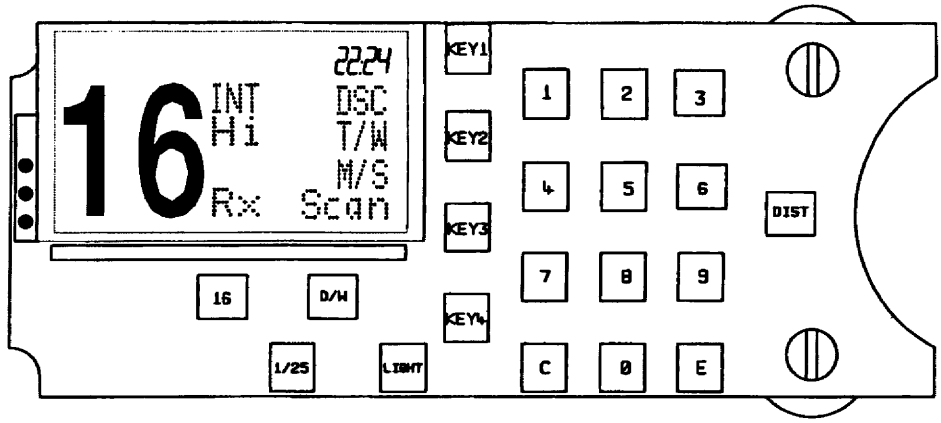
ISSUE: 1

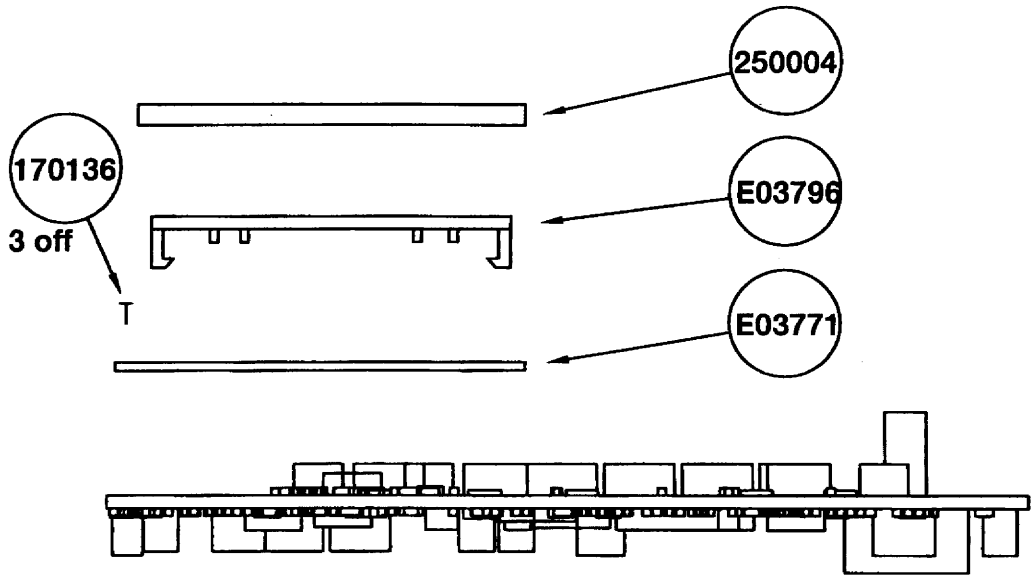
DRAWN IN ACCORDANCE WITH BS 308

3rd ANGLE PROJECTION

Drg. No.: E03658

Product Group 800





170136 Terminal Pin
250004 SEK1054B74A LCD Module
E03769 LCD Support Frame
E03771 PCB Drilled: LCD PCB

DO NOT SCALE | IF IN DOUBT ASK

Mod.No.	Issue	Date	Modifications

SIMRAD
A KONGSBERG Company
STAR LANE, MARGATE, KENT CT9 4NP
TEL: 01843 290290 | FAX: 01843 290471
+44 1843 290290

Drawn: WAC/BM Date 09:06:00
Checked: WAC Date 21/6/00
Approved: Date 26/6/00

Tolerances + & −
0. = 0.50
0.0 = 0.25
0.00= 0.10
ANG. = 0.5°

ALL DIMENSIONS mm

Material: SEE ABOVE

Finish:

COMPUTER GENERATED DRAWING
MANUAL MODIFICATION INVALIDATES CAD FILE.

Model: RD68W

Sht. 2 of 2

Date: 09:06:00

Original Scale: 1 : 1

Title: PCB Assy: Front Panel

Drg No.: E03658

Issue 1

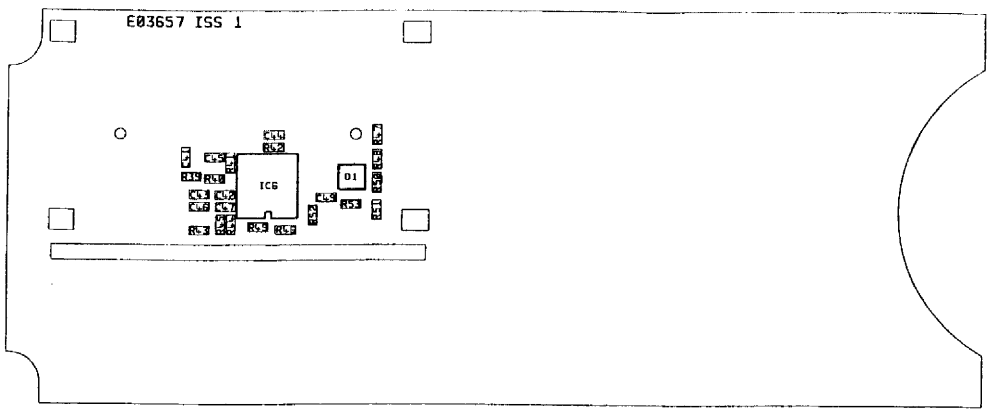
ISSUE 2:25:01:99

SIZE A4:210 x 297

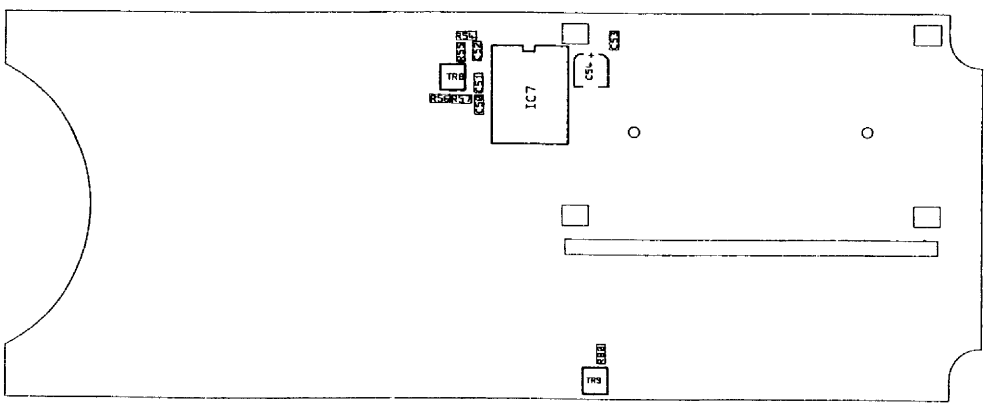
THIRD ANGLE PROJECTION

DRG No: E03865

FRONT VIEW



REAR VIEW



SURFACE MOUNT COMPONENTS

ITEM	QTY	PART No.	COMP REF	DESCRIPTION
1	2	100330	R48.R50	0603 220R
2	1	100336	R80	0603 680R
3	2	100346	R56.R57	0603 4K7
4	6	100350	R46.R47.R49.R51.R54.R55	0603 10K
5	4	100356	R41.R42.R43.R52	0603 33K
6	1	100362	R53	0603 100K
7	2	100376	R39.R40	0603 13K3
8	2	100377	R44.R45	0603 20K
9	2	110169	C48.C54	4U7 25V ELECT
10	2	110194	C42.C44	0603 1n
11	2	110195	C43.C45	0603 4n7
12	3	110196	C41.C46.C47	0603 10n
13	2	110199	C49.C53	0603 100n
14	3	110223	C50.C51.C52	0603 100p
15	1	120081	D1	BAW56
16	1	130054	TR8	DTC123YK
17	1	130057	TR9	DTC143ZK
18	1	140071	IC6	LM324
19	1	E03399	IC7	AT89C1051

NOTE:- THESE COMPONENTS FITTED IN ADDITION TO THOSE INDICATED ON E03658

DO NOT SCALE | IF IN DOUBT ASK

No	ISS	DATE	MODIFICATIONS

SIMRAD — A KONGSBERG Company

STAR LANE. MARGATE. KENT CT9 4NP
TEL: 0843 290290 | FAX: 0843 290471

THIS DRAWING IS COMPUTER GENERATED
ANY MANUAL MODIFICATION WILL INVALIDATE THE C.A.D. FILE

LIMITS MET: + & - | 0. = .50 | 0.0 = .25 | .00 = .10 | ANG = 0.5

LIMITS IMP: + & - | FRAC = .015 | .00 = .010 | 000 = .005 | ANG = 0.5

MATERIAL:

MODEL: RD68W

DRAWN BY:	CHECKED:	APPROVED:
R.F.		
DATE: 13-3-00	DATE:	DATE: 26/4/00

DATE: 21-06-00

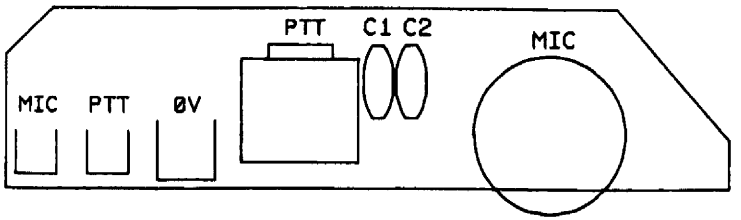
SCALE:

TITLE: ATIS FRONT PANEL ASSEMBLY DETAIL

DRG No: E03865

ISSUE: 1

DRG No: 03285



CONVENTIONAL MOUNT COMPONENTS

ITEM	QTY	PART No.	COMP REF	DESCRIPTION
1	1	E03284	-	PCB DRILLED
2	2	110065	C1.C2	CER DISC 2.54
3	1	160012	MIC	EM-4F
4	1	210027	PTT	PUSH SWITCH TSH62A

DO NOT SCALE | IF IN DOUBT ASK

STAR LANE. MARGATE. KENT CT9 4NP

MATERIAL:

DRAWN BY: R.F. DATE 26-3-98

CHECKED: DATE:

APPROVED: AW DATE: 17/4/98

NAVICO

DATE: 25-6-98

SCALE:

No.	DR	DATE	MODIFICATIONS
			THIS DRAWING IS COMPUTER GENERATED ANY MANUAL MODIFICATION WILL INVALIDATE THE C.A.D. FILE

MODEL: AXIS TR1200/1400

TITLE: FIST MIC PCB ASSEMBLY DETAIL

LIMITS MET + & -	LIMITS IMP + & -
0. - .50	FRAC - .015
0.0 - .25	.00 - .010
.000 - .10	.0000 - .0005
ANG - 0.5	ANG - 0.5

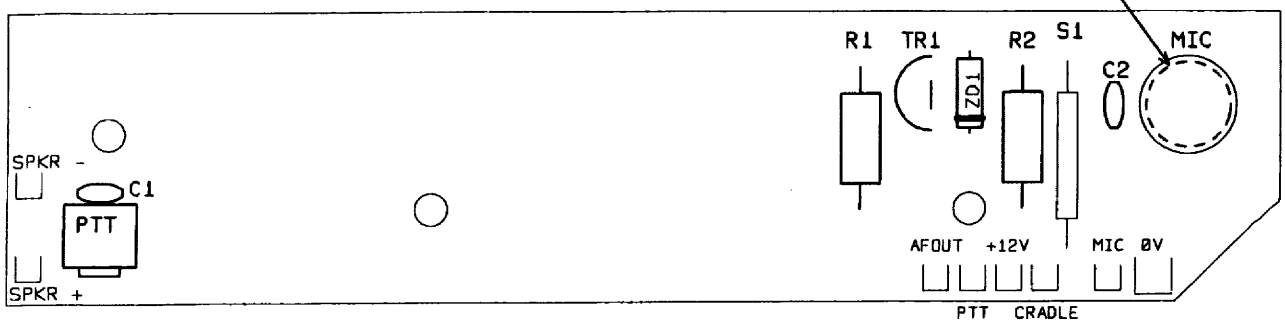
DRG No: E03285

ISSUE: 1

DRG No: E03309

MIC SPACER TO BE FITTED
UNDERNEATH MICROPHPONE

COMPONENT VIEW



CONVENTIONAL MOUNT COMPONENTS

ITEM	QTY	PART NO.	COMP REF	DESCRIPTION
1	1	E03174	-	PCB DRILLED
2	1	100044	R1	0.25W 4K7
3	1	100048	R2	0.25W 10K
4	2	110065	C1.C2	CER DISC 1n
5	1	120017	ZD1	BZX79
6	1	130000	TR1	BC182
7	1	160012	MIC	EM-4F
8	1	200276	-	MIC SPACER
9	1	210027	PTT	PUSH SWITCH TSH62A
10	1	210032	S1	REED SWITCH TM13101

DO NOT SCALE | IF IN DOUBT ASK

No	ISS	DATE	MODIFICATIONS
1393	2	05-10-99	MIC SPACER ADDED

NAVIGATION AND COMMUNICATION
NAVICO
STAR LANE, MARGATE, KENT CT9 4NP
TEL: 0843 290290 | TELEX 965893 NAVICO G
+44 843 290290 | FAX: 0843 290471

THIS DRAWING IS COMPUTER GENERATED
ANY MANUAL MODIFICATION WILL
INVALIDATE THE C.A.D. FILE

LIMITS MET + & -	LIMITS IMP + & -
0. = .50	FRAC = .015
0.0 = .25	.00 = .010
.00 = .10	.000 = .005
ANG = 0.5	ANG = 0.5

MATERIAL:

MODEL: AXIS RT1200/1400

DRAWN BY:	CHECKED:	APPROVED:
R.F.		

DATE: 05-10-99

SCALE:

TITLE: TELE - H/SET ASSEMBLY DETAIL

DRG No: E03309

ISSUE: 2

SIMRAD

A KONGSBERG Company

SIMRAD Fixed VHF DSC Radio RD68

Programming and Configuration

7 PROGRAMMING AND CONFIGURATION

Introduction

All Transmitting / Receiving characteristics of the RD68 Series radiotelephones are stored in Non Volatile Memory (NVM). The NVM of any RD68 Series radio can be programmed with new characteristics using the programming kit, Part Number PR68.

The following features are available:

COUNTRY	Selects primary mode. NVMs with INT (International) selected for the FIRST COUNTRY flag will receive on the INT Rx frequencies. The radio can be switched to USA with weather channels if the BACKLIGHT key is depressed on power up unless the SELECTED MODE ONLY flag is set. (SECOND MODE – YES).
SECOND MODE	Enables or disables switch to USA with weather channels.
SCANNING	Enables or disables SCAN and MEMORY SCAN functions.
CHANNEL 10 SCAN	Enables or disables Channel 10 from SCAN function.
DUAL WATCH	Enables or disables DUAL WATCH function.
TRI WATCH	Enables or disables TRI WATCH function.
ALTERNATE SCAN	Enables or disables ALTERNATE SCAN function. Switches to Channel 16 between each channel when scanning. For use in Scandinavia only. (1 – 16, 2 – 16, 3 – 16, 4 – 16).
FIRST KEY BEEP	Enables or disables confirmation key beep from all first level functions. (NB. Second level key beep cannot be disabled).
STARTUP CHANNEL	Selects channel to be displayed on power up, usually Channel 16.
WATCH CHANNEL	Selects alternate channel to be monitored when DUAL WATCH selected.
USA / CANADA WEATHER CHANNELS	Enables or disables USA weather channels.

DSC IDENTIFIER (MMSI)	Stores Maritime Mobile Service Identity (MMSI) number.
ATIS IDENTIFIER	Stores Automatic Transmission Identification System (ATIS) Number.

INITIAL SET UP

The PR68 programming kit operates in conjunction with an IBM compatible PC. The programme should be copied to the 'C' drive on the PC hard disc into a directory entitled **RD68DATA**

If using a monochrome monitor type **MODE BW80**. Connection between the radio and PC is by means of the programming lead supplied with the kit from the radio Mic Socket, on the front of the radio, to a 9 pin serial port on the PC.

Enter the programming set up software by typing “Prog68”. Place the radio into programming mode by holding Soft Keys 1 and 3 and the LIGHTS Key whilst powering up. Programming is entirely menu driven and self-explanatory.

RD68 RADIO CONFIGURATION PROGRAM

Version 1.1

Copyright (C) Simrad-Navico Ltd 2000

This program allows the dealer to configure the RD68 series radios to any mode including the programming of private channels.

WARNING

Incorrect use of this program could enable the radios to be used in contravention of local regulations.

Which COM port is to be used? (1 or 2)

Type 1, 2 or [ESC] to exit program

RD68 RADIO CONFIGURATION PROGRAM

Using COM1 port on computer NVM Data: NOT LOADED

Select option:-

1 - Load NVM data from Radio (Copy data from radio to PC)
2 - Load NVM data from File (Load data from programme file)
3 - View/Modify NVM data (View/change displayed data)
4 - Save NVM data to Radio (Save displayed data to radio)
5 - Save NVM data to File (Save data to new PC file)
6 - CLONE from existing Radio (Copy existing data from radio to radio)
7 - Exit Program (Exit programme)

Use ↑↓ [Enter] or type option number, type [ESC] to exit program

Load NVM data from Radio

Connect Radio, press any key when ready

NVM data

00:	10:	20:	30:	40:	50:	60:	70:
01:	11:	21:	31:	41:	51:	61:	71:
02:	12:	22:	32:	42:	52:	62:	72:
03:	13:	23:	33:	43:	53:	63:	73:
04:	14:	24:	34:	44:	54:	64:	74:
05:	15:	25:	35:	45:	55:	65:	75:
06:	16:	26:	36:	46:	56:	66:	76:
07:	17:	27:	37:	47:	57:	67:	77:
08:	18:	28:	38:	48:	58:	68:	78:
09:	19:	29:	39:	49:	59:	69:	79:
0A:	1A:	2A:	3A:	4A:	5A:	6A:	7A:
0B:	1B:	2B:	3B:	4B:	5B:	6B:	7B:
0C:	1C:	2C:	3C:	4C:	5C:	6C:	7C:
0D:	1D:	2D:	3D:	4D:	5D:	6D:	7D:
0E:	1E:	2E:	3E:	4E:	5E:	6E:	7E:
OF:	1F:	2F:	3F:	4F:	5F:	6F:	7F:

Any key to continue, [ESC] to exit

Load NVM data from Radio

Connect Radio, press any key when ready
Failed – check connections, is radio turned on?

NVM data

00:	10:	20:	30:	40:	50:	60:	70:
01:	11:	21:	31:	41:	51:	61:	71:
02:	12:	22:	32:	42:	52:	62:	72:
03:	13:	23:	33:	43:	53:	63:	73:
04:	14:	24:	34:	44:	54:	64:	74:
05:	15:	25:	35:	45:	55:	65:	75:
06:	16:	26:	36:	46:	56:	66:	76:
07:	17:	27:	37:	47:	57:	67:	77:
08:	18:	28:	38:	48:	58:	68:	78:
09:	19:	29:	39:	49:	59:	69:	79:
0A:	1A:	2A:	3A:	4A:	5A:	6A:	7A:
0B:	1B:	2B:	3B:	4B:	5B:	6B:	7B:
0C:	1C:	2C:	3C:	4C:	5C:	6C:	7C:
0D:	1D:	2D:	3D:	4D:	5D:	6D:	7D:
0E:	1E:	2E:	3E:	4E:	5E:	6E:	7E:
OF:	1F:	2F:	3F:	4F:	5F:	6F:	7F:

Any key to continue, [ESC] to exit

Load NVM data from Radio

Connect Radio, press any key when ready
NVM data loaded successfully.

NVM data

00:1068	10:1110	20:0000	30:0000	40:9876	50:FFFF	60:FFFF	70:FFFF
01:3200	11:0BBB	21:0000	31:0000	41:5432	51:FFFF	61:FFFF	71:FFFF
02:B111	12:3333	22:0000	32:0000	42:10FF	52:FFFF	62:FFFF	72:FFFF
03:1101	13:3333	23:0000	33:0000	43:FFFF	53:FFFF	63:FFFF	73:FFFF
04:0000	14:3300	24:0000	34:0000	44:FFFF	54:FFFF	64:FFFF	74:FFFF
05:0004	15:3333	25:0000	35:0000	45:1919	55:FFFF	65:FFFF	75:FFFF
06:0411	16:3333	26:0000	36:0000	46:0606	56:FFFF	66:FFFF	76:FFFF
07:1111	17:3333	27:0000	37:0000	47:1010	57:FFFF	67:FFFF	77:FFFF
08:1111	18:33FF	28:0000	38:1016	48:FFFF	58:FFFF	68:FFFF	78:FFFF
09:1BB3	19:5431	29:DFD2	39:0010	49:FFFF	59:FFFF	69:FFFF	79:FFFF
0A:1111	1A:7232	2A:FFFF	3A:FFFF	4A:FFFF	5A:FFFF	6A:FFFF	7A:FFFF
0B:1110	1B:0000	2B:FFFF	3B:FFFF	4B:FFFF	5B:FFFF	6B:FFFF	7B:FFFF
0C:0030	1C:0000	2C:0000	3C:FFFF	4C:FFFF	5C:FFFF	6C:FFFF	7C:FFFF
0D:0004	1D:0000	2D:0000	3D:FFFF	4D:FFFF	5D:FFFF	6D:FFFF	7D:FFFF
0E:4011	1E:0000	2E:0000	3E:FFFF	4E:FFFF	5E:FFFF	6E:FFFF	7E:FFFF
OF:1111	1F:0000	2F:0000	3F:0439	4F:FFFF	5F:FFFF	6F:FFFF	7F:FF83

Any key to continue, [ESC] to exit

RD68 RADIO CONFIGURATION PROGRAM

Using COM1 port on computer

NVM Data: LOADED
Software: 0.4

Select option:-

1 - Load NVM data from Radio
2 - Load NVM data from File
3 - View/Modify NVM data
4 - Save NVM data to Radio
5 - Save NVM data to File
6 - CLONE from existing Radio
7 – Exit Program

Use ↑↓ [Enter] or type option number, type [ESC] to exit program

Load NVM data from File

Enter NVM Data File Name:

NVM data

00:	10:	20:	30:	40:	50:	60:	70:
01:	11:	21:	31:	41:	51:	61:	71:
02:	12:	22:	32:	42:	52:	62:	72:
03:	13:	23:	33:	43:	53:	63:	73:
04:	14:	24:	34:	44:	54:	64:	74:
05:	15:	25:	35:	45:	55:	65:	75:
06:	16:	26:	36:	46:	56:	66:	76:
07:	17:	27:	37:	47:	57:	67:	77:
08:	18:	28:	38:	48:	58:	68:	78:
09:	19:	29:	39:	49:	59:	69:	79:
0A:	1A:	2A:	3A:	4A:	5A:	6A:	7A:
0B:	1B:	2B:	3B:	4B:	5B:	6B:	7B:
0C:	1C:	2C:	3C:	4C:	5C:	6C:	7C:
0D:	1D:	2D:	3D:	4D:	5D:	6D:	7D:
0E:	1E:	2E:	3E:	4E:	5E:	6E:	7E:
OF:	1F:	2F:	3F:	4F:	5F:	6F:	7F:

Enter file name {and path if required) or [ESC] to exit

Load NVM data from File

Enter NVM Data File Name:
File cannot be found or cannot be opened

NVM data

00:	10:	20:	30:	40:	50:	60:	70:
01:	11:	21:	31:	41:	51:	61:	71:
02:	12:	22:	32:	42:	52:	62:	72:
03:	13:	23:	33:	43:	53:	63:	73:
04:	14:	24:	34:	44:	54:	64:	74:
05:	15:	25:	35:	45:	55:	65:	75:
06:	16:	26:	36:	46:	56:	66:	76:
07:	17:	27:	37:	47:	57:	67:	77:
08:	18:	28:	38:	48:	58:	68:	78:
09:	19:	29:	39:	49:	59:	69:	79:
0A:	1A:	2A:	3A:	4A:	5A:	6A:	7A:
0B:	1B:	2B:	3B:	4B:	5B:	6B:	7B:
0C:	1C:	2C:	3C:	4C:	5C:	6C:	7C:
0D:	1D:	2D:	3D:	4D:	5D:	6D:	7D:
0E:	1E:	2E:	3E:	4E:	5E:	6E:	7E:
OF:	1F:	2F:	3F:	4F:	5F:	6F:	7F:

Enter file name {and path if required) or [ESC] to exit

Load NVM data from Radio

Enter NVM Data File Name: RD68DATA/B1.DAT
File loaded successfully.

NVM data

00:1068	10:1110	20:0000	30:0000	40:9876	50:FFFF	60:FFFF	70:FFFF
01:3200	11:0BBB	21:0000	31:0000	41:5432	51:FFFF	61:FFFF	71:FFFF
02:B111	12:3333	22:0000	32:0000	42:10FF	52:FFFF	62:FFFF	72:FFFF
03:1101	13:3333	23:0000	33:0000	43:FFFF	53:FFFF	63:FFFF	73:FFFF
04:0000	14:3300	24:0000	34:0000	44:FFFF	54:FFFF	64:FFFF	74:FFFF
05:0004	15:3333	25:0000	35:0000	45:1919	55:FFFF	65:FFFF	75:FFFF
06:0411	16:3333	26:0000	36:0000	46:0606	56:FFFF	66:FFFF	76:FFFF
07:1111	17:3333	27:0000	37:0000	47:1010	57:FFFF	67:FFFF	77:FFFF
08:1111	18:33FF	28:0000	38:1016	48:FFFF	58:FFFF	68:FFFF	78:FFFF
09:1BB3	19:5431	29:DFD2	39:0010	49:FFFF	59:FFFF	69:FFFF	79:FFFF
0A:1111	1A:7232	2A:FFFF	3A:FFFF	4A:FFFF	5A:FFFF	6A:FFFF	7A:FFFF
0B:1110	1B:0000	2B:FFFF	3B:FFFF	4B:FFFF	5B:FFFF	6B:FFFF	7B:FFFF
0C:0030	1C:0000	2C:0000	3C:FFFF	4C:FFFF	5C:FFFF	6C:FFFF	7C:FFFF
0D:0004	1D:0000	2D:0000	3D:FFFF	4D:FFFF	5D:FFFF	6D:FFFF	7D:FFFF
0E:4011	1E:0000	2E:0000	3E:FFFF	4E:FFFF	5E:FFFF	6E:FFFF	7E:FFFF
OF:1111	1F:0000	2F:0000	3F:0439	4F:FFFF	5F:FFFF	6F:FFFF	7F:FF83

Any key to continue

View/Modify NVM data

Configuration Settings

Country:	INT
Second Mode Enabled:	NO
Scanning Enabled:	YES
Channel 10 Scan Enabled:	YES
Dual Watch Enabled:	YES
Tri Watch Enabled:	YES
Alternate Scan Enabled:	NO
User can disable first key beep:	YES
Startup Channel (SC):	16
Watch Channel (WC):	16
USA/Canada Weather Channels:	NO
DSC Identifier (MMSI):	----------

←↑↓→ select [Enter] modify [Pg Dn] done [ESC] exit

OR if radio is ATIS capable

View/Modify NVM data

Configuration Settings

Country:	INT
Second Mode Enabled:	NO
Scanning Enabled:	YES
Channel 10 Scan Enabled:	YES
Dual Watch Enabled:	YES
Tri Watch Enabled:	YES
Alternate Scan Enabled:	NO
User can disable first key beep:	YES
Startup Channel (SC):	16
Watch Channel (WC):	16
USA/Canada Weather Channels:	NO
DSC Identifier (MMSI):	----------

←↑↓→ select [Enter] modify [Pg Dn] done [ESC] exit

Save NVM data to Radio

Clear Log and Directory? {Y/N}

NVM data

00:1068	10:1110	20:0000	30:0000	40:9876	50:FFFF	60:FFFF	70:FFFF
01:3200	11:0BBB	21:0000	31:0000	41:5432	51:FFFF	61:FFFF	71:FFFF
02:B111	12:3333	22:0000	32:0000	42:10FF	52:FFFF	62:FFFF	72:FFFF
03:1101	13:3333	23:0000	33:0000	43:FFFF	53:FFFF	63:FFFF	73:FFFF
04:0000	14:3300	24:0000	34:0000	44:FFFF	54:FFFF	64:FFFF	74:FFFF
05:0004	15:3333	25:0000	35:0000	45:1919	55:FFFF	65:FFFF	75:FFFF
06:0411	16:3333	26:0000	36:0000	46:0606	56:FFFF	66:FFFF	76:FFFF
07:1111	17:3333	27:0000	37:0000	47:1010	57:FFFF	67:FFFF	77:FFFF
08:1111	18:33FF	28:0000	38:1016	48:FFFF	58:FFFF	68:FFFF	78:FFFF
09:1BB3	19:5431	29:DFD2	39:0010	49:FFFF	59:FFFF	69:FFFF	79:FFFF
0A:1111	1A:7232	2A:FFFF	3A:FFFF	4A:FFFF	5A:FFFF	6A:FFFF	7A:FFFF
0B:1110	1B:0000	2B:FFFF	3B:FFFF	4B:FFFF	5B:FFFF	6B:FFFF	7B:FFFF
0C:0030	1C:0000	2C:0000	3C:FFFF	4C:FFFF	5C:FFFF	6C:FFFF	7C:FFFF
0D:0004	1D:0000	2D:0000	3D:FFFF	4D:FFFF	5D:FFFF	6D:FFFF	7D:FFFF
0E:4011	1E:0000	2E:0000	3E:FFFF	4E:FFFF	5E:FFFF	6E:FFFF	7E:FFFF
OF:1111	1F:0000	2F:0000	3F:0439	4F:FFFF	5F:FFFF	6F:FFFF	7F:FF83

Save NVM data to Radio

Connect radio, press any key when ready

NVM data

00:1068	10:1110	20:0000	30:0000	40:9876	50:FFFF	60:FFFF	70:FFFF
01:3200	11:0BBB	21:0000	31:0000	41:5432	51:FFFF	61:FFFF	71:FFFF
02:B111	12:3333	22:0000	32:0000	42:10FF	52:FFFF	62:FFFF	72:FFFF
03:1101	13:3333	23:0000	33:0000	43:FFFF	53:FFFF	63:FFFF	73:FFFF
04:0000	14:3300	24:0000	34:0000	44:FFFF	54:FFFF	64:FFFF	74:FFFF
05:0004	15:3333	25:0000	35:0000	45:1919	55:FFFF	65:FFFF	75:FFFF
06:0411	16:3333	26:0000	36:0000	46:0606	56:FFFF	66:FFFF	76:FFFF
07:1111	17:3333	27:0000	37:0000	47:1010	57:FFFF	67:FFFF	77:FFFF
08:1111	18:33FF	28:0000	38:1016	48:FFFF	58:FFFF	68:FFFF	78:FFFF
09:1BB3	19:5431	29:DFD2	39:0010	49:FFFF	59:FFFF	69:FFFF	79:FFFF
0A:1111	1A:7232	2A:FFFF	3A:FFFF	4A:FFFF	5A:FFFF	6A:FFFF	7A:FFFF
0B:1110	1B:0000	2B:FFFF	3B:FFFF	4B:FFFF	5B:FFFF	6B:FFFF	7B:FFFF
0C:0030	1C:0000	2C:0000	3C:FFFF	4C:FFFF	5C:FFFF	6C:FFFF	7C:FFFF
0D:0004	1D:0000	2D:0000	3D:FFFF	4D:FFFF	5D:FFFF	6D:FFFF	7D:FFFF
0E:4011	1E:0000	2E:0000	3E:FFFF	4E:FFFF	5E:FFFF	6E:FFFF	7E:FFFF
OF:1111	1F:0000	2F:0000	3F:0439	4F:FFFF	5F:FFFF	6F:FFFF	7F:FF83

Any key to continue, [ESC] to exit

Save NVM data to File

Enter Data Ident: BRITISH

NVM data

00:1068	10:1110	20:0000	30:0000	40:9876	50:FFFF	60:FFFF	70:FFFF
01:3200	11:0BBB	21:0000	31:0000	41:5432	51:FFFF	61:FFFF	71:FFFF
02:B111	12:3333	22:0000	32:0000	42:10FF	52:FFFF	62:FFFF	72:FFFF
03:1101	13:3333	23:0000	33:0000	43:FFFF	53:FFFF	63:FFFF	73:FFFF
04:0000	14:3300	24:0000	34:0000	44:FFFF	54:FFFF	64:FFFF	74:FFFF
05:0004	15:3333	25:0000	35:0000	45:1919	55:FFFF	65:FFFF	75:FFFF
06:0411	16:3333	26:0000	36:0000	46:0606	56:FFFF	66:FFFF	76:FFFF
07:1111	17:3333	27:0000	37:0000	47:1010	57:FFFF	67:FFFF	77:FFFF
08:1111	18:33FF	28:0000	38:1016	48:FFFF	58:FFFF	68:FFFF	78:FFFF
09:1BB3	19:5431	29:DFD2	39:0010	49:FFFF	59:FFFF	69:FFFF	79:FFFF
0A:1111	1A:7232	2A:FFFF	3A:FFFF	4A:FFFF	5A:FFFF	6A:FFFF	7A:FFFF
0B:1110	1B:0000	2B:FFFF	3B:FFFF	4B:FFFF	5B:FFFF	6B:FFFF	7B:FFFF
0C:0030	1C:0000	2C:0000	3C:FFFF	4C:FFFF	5C:FFFF	6C:FFFF	7C:FFFF
0D:0004	1D:0000	2D:0000	3D:FFFF	4D:FFFF	5D:FFFF	6D:FFFF	7D:FFFF
0E:4011	1E:0000	2E:0000	3E:FFFF	4E:FFFF	5E:FFFF	6E:FFFF	7E:FFFF
OF:1111	1F:0000	2F:0000	3F:0439	4F:FFFF	5F:FFFF	6F:FFFF	7F:FF83

Enter Ident Text [Enter] for none [ESC] to exit

Save NVM data to File

Enter NVM Data Filename: C:\MY DOCUMENTS\UK.DAT

BRITISH

00:1068	10:1110	20:0000	30:0000	40:9876	50:FFFF	60:FFFF	70:FFFF
01:3200	11:0BBB	21:0000	31:0000	41:5432	51:FFFF	61:FFFF	71:FFFF
02:B111	12:3333	22:0000	32:0000	42:10FF	52:FFFF	62:FFFF	72:FFFF
03:1101	13:3333	23:0000	33:0000	43:FFFF	53:FFFF	63:FFFF	73:FFFF
04:0000	14:3300	24:0000	34:0000	44:FFFF	54:FFFF	64:FFFF	74:FFFF
05:0004	15:3333	25:0000	35:0000	45:1919	55:FFFF	65:FFFF	75:FFFF
06:0411	16:3333	26:0000	36:0000	46:0606	56:FFFF	66:FFFF	76:FFFF
07:1111	17:3333	27:0000	37:0000	47:1010	57:FFFF	67:FFFF	77:FFFF
08:1111	18:33FF	28:0000	38:1016	48:FFFF	58:FFFF	68:FFFF	78:FFFF
09:1BB3	19:5431	29:DFD2	39:0010	49:FFFF	59:FFFF	69:FFFF	79:FFFF
0A:1111	1A:7232	2A:FFFF	3A:FFFF	4A:FFFF	5A:FFFF	6A:FFFF	7A:FFFF
0B:1110	1B:0000	2B:FFFF	3B:FFFF	4B:FFFF	5B:FFFF	6B:FFFF	7B:FFFF
0C:0030	1C:0000	2C:0000	3C:FFFF	4C:FFFF	5C:FFFF	6C:FFFF	7C:FFFF
0D:0004	1D:0000	2D:0000	3D:FFFF	4D:FFFF	5D:FFFF	6D:FFFF	7D:FFFF
0E:4011	1E:0000	2E:0000	3E:FFFF	4E:FFFF	5E:FFFF	6E:FFFF	7E:FFFF
OF:1111	1F:0000	2F:0000	3F:0439	4F:FFFF	5F:FFFF	6F:FFFF	7F:FF83

Enter file name (and path if required) or [ESC] to exit

Save NVM data to File

Enter NVM Data Filename: C:\MY DOCUMENTS\UK.DAT
File written successfully

BRITISH

00:1068	10:1110	20:0000	30:0000	40:9876	50:FFFF	60:FFFF	70:FFFF
01:3200	11:0BBB	21:0000	31:0000	41:5432	51:FFFF	61:FFFF	71:FFFF
02:B111	12:3333	22:0000	32:0000	42:10FF	52:FFFF	62:FFFF	72:FFFF
03:1101	13:3333	23:0000	33:0000	43:FFFF	53:FFFF	63:FFFF	73:FFFF
04:0000	14:3300	24:0000	34:0000	44:FFFF	54:FFFF	64:FFFF	74:FFFF
05:0004	15:3333	25:0000	35:0000	45:1919	55:FFFF	65:FFFF	75:FFFF
06:0411	16:3333	26:0000	36:0000	46:0606	56:FFFF	66:FFFF	76:FFFF
07:1111	17:3333	27:0000	37:0000	47:1010	57:FFFF	67:FFFF	77:FFFF
08:1111	18:33FF	28:0000	38:1016	48:FFFF	58:FFFF	68:FFFF	78:FFFF
09:1BB3	19:5431	29:DFD2	39:0010	49:FFFF	59:FFFF	69:FFFF	79:FFFF
0A:1111	1A:7232	2A:FFFF	3A:FFFF	4A:FFFF	5A:FFFF	6A:FFFF	7A:FFFF
0B:1110	1B:0000	2B:FFFF	3B:FFFF	4B:FFFF	5B:FFFF	6B:FFFF	7B:FFFF
0C:0030	1C:0000	2C:0000	3C:FFFF	4C:FFFF	5C:FFFF	6C:FFFF	7C:FFFF
0D:0004	1D:0000	2D:0000	3D:FFFF	4D:FFFF	5D:FFFF	6D:FFFF	7D:FFFF
0E:4011	1E:0000	2E:0000	3E:FFFF	4E:FFFF	5E:FFFF	6E:FFFF	7E:FFFF
OF:1111	1F:0000	2F:0000	3F:0439	4F:FFFF	5F:FFFF	6F:FFFF	7F:FF83

Any key to continue

RD68 RADIO CONFIGURATION PROGRAM

Using COM1 port on computer

NVM Data: LOADED
Software: 0.4

Select option:-

1 - Load NVM data from Radio
2 - Load NVM data from File
3 - View/Modify NVM data
4 - Save NVM data to Radio
5 - Save NVM data to File
6 - CLONE from existing Radio
7 – Exit Program

Use ↑↓ [Enter] or type option number, type [ESC] to exit program

View / Modify NVM data

Normal Channel Settings

0 : - - -	16 : - - S	60 : - - D	76 : - - -
01 : - - D	17 : - L S	61 : - - D	77 : - - S
02 : - - D	18 : - - D	62 : - - D	78 : - - D
03 : - - D	19 : - - D	63 : - - D	79 : - - D
04 : - - D	20 : - - D	64 : - - D	80 : - - D
05 : - - D	21 : - - D	65 : - - D	81 : - - D
06 : - - S	22 : - - D	66 : - - D	82 : - - D
07 : - - D	23 : - - D	67 : - - S	83 : - - D
08 : - - S	24 : - - D	68 : - - S	84 : - - D
09 : - - D	25 : - - D	69 : - - S	85 : - - D
10 : - - D	26 : - - D	70 : - - -	86 : - - D
11 : - - D	27 : - - D	71 : - - S	87 : - - D
12 : - - D	28 : - - D	72 : - - S	88 : - - D
13 : - - D	29 : - - -	73 : - - S	89 : - - -
14 : - - D	31 : - - -	74 : - - S	90 : - - -
15 : - L S	37 : - - -	75 : - - -	99 : - - -

(- - -) disabled (T) Receive only (L) Low power only
(S) Simplex (D) semi-Duplex (R) Reverse duplex

←↑↓→ select [Delete] clear [Enter] modify [Pg Dn] done [ESC] exit

View / Modify NVM data

Aux Channel Settings

Channel	Attributes	Display	Frequency (MHz)
A1	- - S	M	157.850
A2	- - S	M2	161.425
A3	- - -		0.000
A4	- - -		0.000
A5	- - -		0.000
A6	- - -		0.000

(- - -) disabled (T) Receive only (L) Low power only
(S) Simplex (D) semi-Duplex (R) Reverse duplex

←↑↓→ select [Delete] clear [Enter] modify [Pg Dn] done [ESC] exit

NB. When entering frequency, only the transmit frequency is requested for entry, the receive frequency is entered automatically by the programme regardless whether simplex, duplex or reverse duplex is required provided that the attributes have been set.

View / Modify NVM data

Private Channel Settings

Channel	Attributes	Frequency (MHz)
P0	- - -	0.000
P2	- - -	0.000
P3	- - -	0.000
P4	- - -	0.000
P5	- - -	0.000
P6	- - -	0.000
P7	- - -	0.000
P8	- - -	0.000
P9	- - -	0.000

Password protection is OFF use [F4] key to change

(- - -) disabled (T) Receive only (L) Low power only
(S) Simplex (D) semi-Duplex (R) Reverse duplex

←↑↓→ select [Delete] clear [Enter] modify [Pg Dn] done [ESC] exit

SIMRAD

A KONGSBERG Company

SIMRAD Fixed VHF DSC Radio RD68

Fault Finding

8 FAULT FINDING

8.1 Common User Faults

None Yet Identified.

8.2 Common Technical Faults

None Yet Identified

SIMRAD

A KONGSBERG Company

SIMRAD Fixed VHF DSC Radio RD68

Spare Parts Detail

9 SPARE PARTS DETAIL

9.1 Spares Packs

Part No.	Description
RTPK18	Front Panel Assembly
RTPK18:A	Front Panel Assembly ATIS Version
RTPK19	Front Panel PCB
RTPK19:A	Front Panel PCB ATIS Version
RTPK20	Front Panel Assembly (Minus PCB)
RTPK21	PCBs & Power Module Assembly

Items common to RT1200, RT1400 and RD68

Part No.	Description
RTPK9	Bottom Cover Kit
MB1000:BK	Standard Mounting Kit – Black
RTPK12	Power Module Kit
RTPK13	Chassis Assembly
RTPK15	Accessory Kit
THS4:SIM	Telephone Handset – Black
CRDL1:BK	Handset Cradle – Black
FTM5:SIM	Fist Mic Assembly – Black

9.2 Service Aids

Part No.	Description
PR68	Programming Kit

SIMRAD

A KONGSBERG Company

SIMRAD Fixed VHF DSC Radio RD68

Technical Notes

10 TECHNICAL NOTES

None Yet Issued