TABLE OF CONTENTS

Technical specification ......................................................1-1
Features and Accessories .................................................1-2
Connections and controls ..................................................1-3
Instruction For Use .....................................................1-4..1-6

Safety & Warnings.............................................................1-7

Service hints
   Repair positions ............................................................2-1
   Dismantling CD-door .....................................................2-1
   Handling chip components ............................................2-2
   Service tools..................................................................2-2

Pin description of ICs ....................................................3-1..3-5
Start-up procedure .........................................................3-6
Service Test Program ..................................................3-7..3-8
Blockdiagram .....................................................................3-9

Circuit diagrams
   Supply part .................................................................4-1
   Audio part ..................................................................4-2
   DSP part ....................................................................4-3

Printed circuit board
   Componentside view ....................................................4-4
   Copperside view .........................................................4-5

Exploded view .................................................................5-1
Mechanical partslist .....................................................5-1

Electrical partslist .......................................................6-1..6-3

CLASS 1
LASER PRODUCT
TECHNICAL SPECIFICATION

General

Dimensions (WxHxD) : 128x30x139.5mm
Weight without batteries : 220g

Laser

Output power : <5mW (3mW typ.)
Wavelength : 780nm

Shock resistance

+X/-X direction : ≥2.5g
+Y/-Y direction : ≥2.5g
+Z/-Z direction : ≥2.0g

Power supply modes

<table>
<thead>
<tr>
<th>SUPPLY MODE</th>
<th>Voltage range</th>
</tr>
</thead>
<tbody>
<tr>
<td>DC-in socket</td>
<td>2.9 - 6.0V</td>
</tr>
<tr>
<td>Primary batteries 2 x LR6</td>
<td>1.7 - 3.6V</td>
</tr>
<tr>
<td>Rechargeable batteries AY3362 (1200mAh)</td>
<td>1.7 - 3.6V</td>
</tr>
</tbody>
</table>

Battery lifetime

<table>
<thead>
<tr>
<th>BATTERY TYPE</th>
<th>CD MODE</th>
<th>CD MODE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Primary batteries 2 x LR6</td>
<td>≥19h (24h typ.)</td>
<td>≥16h (21h typ.)</td>
</tr>
<tr>
<td>Rechargeable batteries AY3362 (1200mAh)</td>
<td>≥10h (12h typ.)</td>
<td>≥8h (10h typ.)</td>
</tr>
</tbody>
</table>

Battery level detection – CD mode

<table>
<thead>
<tr>
<th>DETECTION LEVEL</th>
<th>Primary batteries</th>
<th>Rechargeable batteries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Battery empty</td>
<td>1.8V +100V/50mV</td>
<td>1.6V +100V/50mV</td>
</tr>
<tr>
<td>Battery weak 1</td>
<td>battery empty level + 0.75V ±100mV</td>
<td>battery empty level + 0.7V ±100mV</td>
</tr>
<tr>
<td>Battery weak 2</td>
<td>battery empty level + 0.45V ±100mV</td>
<td>battery empty level + 0.5V ±100mV</td>
</tr>
<tr>
<td>Battery weak 3</td>
<td>battery empty level + 0.3V ±100mV</td>
<td>battery empty level + 0.3V ±100mV</td>
</tr>
</tbody>
</table>

Current consumption

<table>
<thead>
<tr>
<th>OPERATION MODE</th>
<th>DC-IN SUPPLY (4.5V)</th>
<th>BATT. SUPPLY (2.25V)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Powersave</td>
<td>ESP ON</td>
</tr>
<tr>
<td>CD Play mode</td>
<td>80mA typ.</td>
<td>100mA typ.</td>
</tr>
<tr>
<td>CD Jump mode</td>
<td>220mA typ.</td>
<td>220mA typ.</td>
</tr>
<tr>
<td>CHARGE mode</td>
<td>n/a</td>
<td>300mA typ.</td>
</tr>
<tr>
<td>Stand-by (excl. recharge)</td>
<td>30mA typ.</td>
<td>350µA typ.</td>
</tr>
</tbody>
</table>

Charge section (not on all versions)

Charge current : 250mA ±10%
Max. charge time (µP controlled) : 7h
Temperature protection : 50°C ±5°C

Headphone out (measured with 16Ω load, DBB/ESP off)

Output power (THD=10%)
/17 version only : 2x4mW (+2/-2dB)
all other versions : 2x2mW (+2/-2dB)
Frequency response (1mW) : 100Hz-20kHz within 6dB
S/N ratio (unwght) : ≥76dB (80dB typ.)
S/N ratio (A-wght) : ≥78dB (82dB typ.)
THD+N (1kHz, 1mW) : ≤1% (0.2% typ.)
Channel crosstalk (1kHz, w/o load) : ≤40dB (-44dB typ.)
Channel unbalance (-40dB) : ≤5dB
Volume attenuation (1kHz) : ≥60dB

Dynamic Bass Boost DBB

<table>
<thead>
<tr>
<th>DBB STAGE</th>
<th>Frequency response</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>63kHz</td>
</tr>
<tr>
<td>DBB</td>
<td>+8dB±2dB</td>
</tr>
</tbody>
</table>

Measurement setup CD

Use Audio Signal disc SBC429 4822 397 30184
### FEATURES

<table>
<thead>
<tr>
<th>FEATURES OF CD-PORTABLE PRODUCT FAMILY FOCUS ESP</th>
<th>AX3200/00C</th>
<th>AX3200/00Z</th>
<th>AX3201/00C</th>
<th>AX3201/00Z</th>
<th>AX3201/01</th>
<th>AX3201/10</th>
<th>AX3202/00C</th>
<th>AX3202/05Z</th>
<th>AX3201/20</th>
<th>AX3202/10</th>
<th>AX3205/10</th>
<th>AX3205/16</th>
<th>AX3211/17</th>
<th>AX3212/17</th>
<th>AX3214/17</th>
<th>AX3215/17</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD-RW COMPATIBILITY</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>ELECTRONIC SKIP PROTECTION</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ESP DRAM SIZE [Mbit]</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
<td>45s</td>
</tr>
<tr>
<td>HOLD / RESUME FUNCTION</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>DBB STAGES</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>ACoustIC FEEDBACK</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
<td>•</td>
</tr>
<tr>
<td>PROGRAM MEMORY</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>RECHARGE NICd / NiMH</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
</tr>
<tr>
<td>BELT-CLIP</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
<td>●</td>
</tr>
<tr>
<td>CORD REMOTE CONTROL</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
<td>--</td>
</tr>
<tr>
<td>LINE / OPT. DIGITAL OUTPUT</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
<td>--/--</td>
</tr>
</tbody>
</table>

### ACCESSORIES

| ACCESSORIES FOR CD-PORTABLE PRODUCT FAMILY FOCUS ESP | AX3200 | AX3200 | AX3200 | AX3201 | AX3201 | AX3201 | AX3201 | AX3201 | AX3201 | AX3201 | AX3201 | AX3201 | AX3201 | AX3201 | AX3201 | AX3201 |
|----------------------------------------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| AY3170/000 AC/DC Adaptor                           | 4822   | 219    | 10617  | O      | O      | X      | X      |        |        |        |        |        |        |        |        |        |        |
| AY3170/002 AC/DC Adaptor                           | 4822   | 219    | 10676  | X      | X      |        |        |        |        |        |        |        |        |        |        |        |        |
| AY3170/005 AC/DC Adaptor                           | 4822   | 219    | 10672  | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |
| AY3170/10 AC/DC Adaptor                            | 4822   | 219    | 10681  | X      | X      |        |        |        |        |        |        |        |        |        |        |        |        |
| AY3170/12 AC/DC Adaptor                            | 4822   | 219    | 10671  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| AY3170/17 AC/DC Adaptor                            | 4822   | 219    | 10616  | O      | O      | O      | O      |        |        |        |        |        |        |        |        |        |        |
| AY3266/000 Pouch (Neoprene)                        | 3140   | 113    | 10360  | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      |
| AY3362/000 Rechargeable Batt. NiMH                 | 3103   | 308    | 84120  | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |
| AY3464 HiFi Cord (3.5mm L-plug –cinch)              | 4822   | 320    | 11861  | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      | O      |
| AY3551/80 Car Adaptor Cassette                     | 4822   | 397    | 10059  | O      | O      | O      | O      | X      | X      | O      | O      | X      | X      | X      | X      | X      |
| AY3545/90 Car DC/DC Converter                      | 4822   | 219    | 10033  | O      | O      | O      | O      | X      | X      | O      | O      | X      | X      | X      | X      | X      |
| AY3545/17 Car DC/DC Converter                      | 3140   | 118    | 32970  | O      | O      | X      |        |        |        |        |        |        |        |        |        |        |        |
| AY3768/000 Cord Remote Control                     | 3140   | 118    | 50980  | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |
| HE205/77 Headphone                                 | 9082   | 100    | 00615  | X      | X      | X      | X      | X      |        |        |        |        |        |        |        |        |        |
| HE205/77s Headphone (E-plug)                       | 9082   | 100    | 00616  |        |        |        |        |        |        |        |        |        |        |        |        |        |        |
| HL351/77 Headphone                                 | 9082   | 100    | 00639  | X      | X      |        |        |        |        |        |        |        |        |        |        |        |        |
| HS383/77s Headphone (E-plug)                       | 9082   | 100    | 01821  | X      |        |        |        |        |        |        |        |        |        |        |        |        |        |
| BELT-CLIP                                         | 3103   | 304    | 70250  | X      | X      | X      | X      | X      | X      | X      | X      | X      | X      | X      | X      | X      |

X...supplied with the set, O...optional available
CONNECTIONS AND CONTROLS

English  CONTROLS / POWER SUPPLY

CONTROLS ( see figure 1 )

1 OPEN............ opens the CD lid
2 .................skips and searches CD tracks backwards
3 .................skips and searches CD tracks forwards
4 .................switches the player on, starts or pauses CD play
5 STOP.............stops CD play, clears a program or switches the player off
6 DBB..............switches the bass enhancement on and off. This button also
switches acoustic feedback (the beep) on/off when it is
pressed for more than 2 seconds
7 .................display
8 MODE..........selects the different playing possibilities: shuffle,
shuffle repeat all, repeat, repeat all and SCAN
9 PROGRAM....programs tracks and reviews the program
10 RESUME......stores the last position of a CD track played
11 HOLD........locks all buttons
12 OFF............switches RESUME and HOLD off
13 LINE OUT/Ω...3.5 mm headphone socket, socket to connect the player to
another audio input of an additional appliance, remote
control socket (not on all versions)
14 VOL...........adjusts the volume
15 4.5V DC.......socket for external power supply
16 ..................belt clip holder
17 ..................typeplate

Batteries (supplied or optionally available)

You can use the following batteries with this CD-player:
• normal batteries type LR6, UM3 or AA (preferably Philips), or
• alkaline batteries type LR6, UM3 or AA (preferably Philips).
Notes— Old and new or different types of batteries should not be combined.
— Remove batteries if they are empty or if the player is not going to be used for
a long time.

Inserting batteries
1 Push OPEN to open the CD lid.
2 Open the battery compartment and insert either 2
normal or alkaline batteries, or the rechargeable
NiMH battery AY3362 (if supplied).

Battery indication
The approximate power level of your batteries is shown in the display:
   Battery full
   Battery two-thirds full
   Battery one-third full
   Battery dead or empty. When the batteries are dead
or empty, the symbol ! flashes, & & & is
displayed, and the beep tone sounds repeatedly.

Average playing time of batteries under normal conditions

<table>
<thead>
<tr>
<th>Battery type</th>
<th>ESP on</th>
<th>Power Save</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>5 hours</td>
<td>6 hours</td>
</tr>
<tr>
<td>Alkaline</td>
<td>16 hours</td>
<td>20 hours</td>
</tr>
<tr>
<td>Rechargeable ECO-PLUS NiMH battery</td>
<td>7 hours</td>
<td>9 hours</td>
</tr>
</tbody>
</table>

Batteries contain chemical substances, so they should be disposed of properly.

This set complies with the radio interference requirements of the European Union.
INSTRUCTION FOR USE

POWER SUPPLY / GENERAL INFORMATION

ECO-PLUS NiMH battery information (for versions supplied with the rechargeable ECO-PLUS NiMH battery AY 3362)

Recharging works only on players supplied with the rechargeable ECO-PLUS NiMH battery AY 3362.

Recharging the ECO-PLUS NiMH battery on board
1 Insert the rechargeable ECO-PLUS NiMH battery AY 3362.
2 Connect the mains adapter to the 4.5V DC socket of the player and then to the wall socket.
   - If the batteries become too warm, recharging will be interrupted for approximately 30 minutes and FULL is displayed.
   - To ensure proper recharging on board, take care that contacts are clean.
   - Use only the ECO-PLUS NiMH battery AY 3362.

Handling instructions
• Recharging already charged or half-charged batteries will shorten their lifetime. We therefore recommend that you let the rechargeable ECO-PLUS NiMH battery run till it is completely empty before you recharge it.
• To avoid a short circuit, do not let the battery touch any metal object.
• If the battery becomes empty soon after recharging, then either its contacts are dirty or it has reached the end of its lifetime.

Mains adapter (supplied or optionally available)

Use only the AY 3170 adapter (4.5 V / 300 mA direct current, positive pole to the center pin). Any other product may damage the player.
1 Make sure the local voltage corresponds to the power adapter’s voltage.
2 Connect the power adapter to the 4.5V DC socket of the player and to the wall socket.
Note: Always disconnect the adapter when you are not using it.

Belt Clip (not on all versions)

1 To attach the belt clip to the CD-player, position the shaped grip (found on the back of the belt clip) so that it fits into the belt clip hole of the CD-player.
2 Turn the clip to LOCK as indicated on the set.
3 To detach, gently lift the belt clip and turn to RELEASE as indicated on the set.

Environmental information
• All redundant packing material has been omitted. We have done our utmost to make the packaging easily separable into two mono materials: cardboard (box) and polyethylene (bags, protective foam sheet).
• Your set consists of materials which can be recycled if disassembled by a specialized company. Please observe the local regulations regarding the disposal of packing materials, exhausted batteries and old equipment.

GENERAL INFORMATION

CD player and CD handling
• Do not touch the lens (A) of the CD player.
• Do not expose the unit, batteries or CDs to humidity, rain, sand or excessive heat (caused by heating equipment or direct sunlight).
• You can clean the CD player with a soft, slightly dampened, lint-free cloth. Do not use any cleaning agents as they may have a corrosive effect.
• To clean the CD, wipe it in a straight line from the center toward the edge using a soft, lint-free cloth. A cleaning agent may damage the disc! Never write on a CD or attach a sticker to it.
• The lens may cloud over when the unit is moved suddenly from cold to warm surroundings. Playing a CD is not possible then. Leave the CD player in a warm environment until the moisture has evaporated.
• Active mobile phones in the vicinity of the CD player may cause malfunctions.
• Avoid dropping the unit as this may cause damage.

Headphones HE205

• Connect the supplied headphones to the LINE OUT/ socket of the player.
Note: LINE OUT/ can also be used for connecting this set to your HiFi system. To adjust the sound and volume, use the controls on the connected audio equipment and on the CD player.

IMPORTANT!

Hearing safety: Do not play your headphones at a high volume. Hearing experts advise that continuous use at high volume can permanently damage your hearing.

Traffic safety: Do not use headphones while driving a vehicle. It may create a hazard and it is illegal in many countries. Even if your headphones are an open-air type designed to let you hear outside sounds, do not turn up the volume so high that you cannot hear what is going on around you.

In-car use (connections supplied or optionally available)

Only use the AY 3545 (4822 219 10033) or AY 3548 (3140 118 71890) car voltage converter (4.5 V DC, positive pole to the center pin) and the AY 3501 car adapter cassette. Any other product may damage the set.
1 Put the set on a horizontal, vibration-free and obstacle to the driver and the passengers.
2 Connect the voltage converter into the cigarette lighter socket (4.5 V DC, positive pole to the center pin) and the AY 3501 car adapter cassette. Any other product may damage the set.
3 Make sure the local voltage corresponds to the power adapter’s voltage.
4 Turn down the volume and connect the adapter cassette plug to LINE OUT/ on the set.
5 Carefully insert the adapter cassette into the car radio’s cassette compartment.
6 Make sure the cord does not hinder your driving.
7 Decrease the volume on the set if necessary. Start playback on the set and adjust the sound with the car radio controls.
• Always remove the voltage converter from the cigarette lighter socket when the set is not in use.

Note: If your car radio has a LINE IN socket, it is better to use it for the car radio connection instead of the adapter cassette. Connect the signal lead to this LINE IN socket and to LINE OUT/ on the set.
INSTRUCTION FOR USE

CD PLAY

Playing a CD
This CD-player can play all kinds of Audio Discs such as CD-Recordables and CD-Rewritables. Do not try to play a CD-ROM, CDi, VCD, DVD or computer CD.

1. Push the OPEN ► slider to open the player.
2. Insert an audio CD, printed side up, by pressing the CD onto the hub.
3. Close the player by pressing the lid down.
4. Press ► to switch the player on and start playback. The current track number and elapsed playing time are displayed.
5. Press 9 to stop playback. The total number of tracks and the total playing time of the CD are displayed.

Playback information
- If a CD-Recordable (CD-R) or a CD-Rewritable (CD-RW) is not recorded properly, \( \text{NF DISC} \) is displayed, indicating that the CD has not been finalized. In that case, use FINALIZE on your CD recorder to complete the recording.
- When playing a CD-Rewritable (CD-RW), please note that it takes 3–15 seconds after pressing ► for sound reproduction to start.
- Playback will stop if you open the CD lid.
- While the CD is read, \( \text{1-5} \) flashes in the display.

Volume and bass

Volume adjustment
- Adjust the volume by using \( \text{VOL} \).

Bass adjustment
- Press DBB to switch the bass enhancement on or off. \( \text{DBB} \) is shown if the bass enhancement is activated.

Selecting a track and searching

Selecting a track during playback
- Briefly press \( \text{[ or ]} \) once or several times to skip to the current, previous or next track.
- Playback continues with the selected track, and the track’s number is displayed.

Selecting a track when playback is stopped
1. Briefly press \( \text{[ or ]} \) once or several times to select the desired track. The track number is displayed.
2. Press ► to start CD play.
- Playback starts with the selected track.

Searching for a passage during playback
1. Keep \( \text{[ or ]} \) pressed to find a particular passage in a backward or forward direction.
- Searching starts while playback continues at low volume. After 2 seconds the search speeds up.
2. Release the button when you reach the desired passage.
- Playback continues from this position.

Notes:
- If the player is in SCAN mode (see MODE chapter), searching is not possible.
- In shuffle, shuffle repeat all or repeat mode (see MODE chapter), or while playing a program, searching is only possible within the particular track.

Programming track numbers

You can store up to 30 tracks to play in a program. A single track may be stored more than once in the program.

1. While playback is stopped, select a track with \( \text{[ or ]} \).
2. Press PROGRAM to store the track. \( \text{program} \) lights up, the track number programmed and \( \text{P} \) with the total number of stored tracks are displayed.
3. Select and store all desired tracks in this way.
4. Press ► to start playback of your selected tracks. \( \text{program} \) is shown and playback starts.

- You can review the program by pressing PROGRAM for more than 2 seconds.
- The display shows all the stored tracks in sequence.

Notes:
- If you press PROGRAM and there is no track selected, \( \text{SEL} \) is displayed.
- If you try to store more than 30 tracks, \( \text{FULL} \) is displayed.

Clearing the program
- While playback is stopped, press \( \) to clear program.
- \( \text{CLR} \) is displayed once, \( \text{program} \) goes off, and the program is cleared.

Note: The program will also be cleared if the power supply is interrupted, or if the CD-player lid is opened, or if the set switches off automatically.

Remote control (supplied or optionally available)
Use the AV 3768 cord remote control. The buttons on the remote control have the same functions as the corresponding buttons on the set.

1. Press \( \) twice to switch off the set.
2. Firmly connect the remote control to \( \text{LINE OUT} \) on the set.
3. Adjust the volume \( \text{VOL} \) on the CD player and remote control.

INSTRUCTION FOR USE
FEATURES

Selecting different playing possibilities—MODE
It is possible to play tracks in random order, to repeat a single track or the entire CD, and to play the first few seconds of each track.

1 Press MODE during playback as often as required in order to activate one of the following ‘modes’. The active mode is shown in the display.
   - shuffle all: All tracks of the CD are played in random order until all of them have been played once.
   - shuffle repeat all: All tracks of the CD are played repeatedly in random order.
   - repeat: The current track is played repeatedly.
   - repeat all: The entire CD is played repeatedly.
   - C.R.W.: The first 10 seconds of each of the remaining tracks are played in sequence.

2 Playback starts in the chosen mode after 2 seconds.
   - To return to normal playback, press MODE repeatedly until the display shows no active modes.

ESP / Power Save Mode
With a conventional portable CD-player you might have experienced that the music stopped e.g. when you were jogging. The ELECTRONIC SKIP PROTECTION prevents loss of sound caused by light vibrations and shocks. Continuous playback is ensured. However ESP does not prevent playback interruptions during vigorous running. It also does not protect the unit against any damage caused by dropping! On this set ESP is default on. It is possible to set ESP off and enter the Power Save mode. The Power Save mode helps to extend battery lifetime for longer playback.
   - Press MODE for more than 2 seconds.
     - ESP disappears: Power save mode is now activated.
   - Press MODE again for more than 2 seconds.
     - ESP is displayed once.
   - ESP on — Power Save — ESP on

RESUME and HOLD
You can interrupt playback and continue (even after an extended period of time) from the position where playback stopped (RESUME) and you can lock all buttons of the set so that no action will be executed (HOLD).

Use the RESUME–HOLD–OFF slider for these functions.

RESUME – continuing from where you have stopped
1 Switch the slider to RESUME during playback to activate RESUME.
   - resume is shown.

2 Press ■ whenever you want to stop playback.

3 Press ▶ whenever you want to resume playback.
   - resume is shown and playback continues from where you have stopped.
   - To deactivate RESUME, switch the slider to OFF.
   - resume goes off.

HOLD – locking all buttons
You can lock the buttons of the set by switching the slider to HOLD. Now, when a key is pressed, no action will be executed. This is of use, for example, when transporting the player in a bag. With HOLD activated, you can avoid accidental activation of other functions.

1 Switch the slider to HOLD to activate HOLD.
   - All buttons are locked. HOLD is shown when you press any button. If the set is switched off, HOLD will be shown only when ▶ is pressed.

2 To deactivate HOLD, switch the slider to OFF.
   - Note: If you deactivate HOLD by switching the slider to RESUME, you will be activating the RESUME function.

Troubleshooting

No sound or bad sound quality.
- PAUSE might be active. Press ▶.
- Loose, wrong or dirty connections. Check and clean connections.
- Volume might not be appropriately adjusted. Adjust the volume.
- Strong magnetic fields. Check player’s position and connections. Also keep away from active mobile phones.
- For in-car use, check that the cassette player’s playback direction is correct (press autoreverse to change), and that the cigarette lighter jack is clean. Allow time for temperature change.

Troubleshooting

WARNING: Under no circumstances should you try to repair the set yourself as this will invalidate the warranty. If a fault occurs, first check the points listed, before taking the unit for repair. If you are unable to solve a problem by following these hints, consult your dealer or service center.

The CD player has no power, or playback does not start
- Check that your batteries are not dead or empty, that they are inserted correctly, that the contact pins are clean.
- Your adapter connection may be loose. Connect it securely.
- For in-car use, check that the car ignition is on. Also check player’s batteries.

The CD skips tracks
- The CD is damaged or dirty. Replace or clean the CD.

The indication -pad is displayed
- CD-RW (CD-R) was not recorded properly. Use FINALIZE on your CD-recorder.

The indication -pad is displayed
- Check that the CD is clean and correctly inserted (label-side upward).
- If your lens has steamed up, wait a few minutes for this to clear.

The indication hold is on and/or there is no reaction to controls
- If HOLD is activated, then deactivate it.
- Electrostatic discharge. Disconnect power or remove batteries for a few seconds.

The CD skips tracks
- The CD is damaged or dirty. Replace or clean the CD.
- RESUME, SHUFFLE or PROGRAM is active. Switch off whichever is on.

CAUTION
Use of controls or adjustments or performance of procedures other than herein may result in hazardous radiation exposure or other unsafe
SAFETY & WARNINGS

**WARNING**
All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD). Careless handling during repair can reduce life drastically. When repairing, make sure that you are connected with the same potential as the mass of the set via a wristband with resistance. Keep components and tools at this potential.

**ATTENTION**
Tous les IC et beaucoup d’autres semi-conducteurs sont sensibles aux décharges statiques (ESD). Leur longévité pourrait être considérablement écourtée par le fait qu’aucune précaution n’est prise à leur manipulation. Lors de réparations, s’assurer de bien être relié au même potentiel que la masse de l’appareil et enfiler le bracelet serti d’une résistance de sécurité. Veiller à ce que les composants ainsi que les outils que l’on utilise soient également à ce potentiel.

**WARNUNG**

**WAARSCHUWING**
Alle IC’s en vele andere halfgeleiders zijn gevoelig voor electrostatische ontladingen (ESD). Onzorgvuldig behandelen tijdens reparatie kan de levensduur drastisch doen verminderen. Zorg ervoor dat u tijdens reparatie via een polsband met weerstand verbonden bent met hetzelfde potentiwal als de massa van het apparaat. Houd componenten en hulpmiddelen ook op ditzelfde potentiaal.

**AVVERTIMENTO**
Tutti IC e parecchi semi-conduttori sono sensibili alle scariche statiche (ESD). La loro longevità potrebbe essere fortemente ridotta in caso di non osservazione della più grande cautela alla loro manipolazione. Durante le riparazioni occorre quindi essere collegato allo stesso potenziale che quello della massa del’apparecchio tramite un braccialetto a resistenza. Assicurarsi che i componenti e anche gli utensili con quali si lavora siano anche a questo potenziale.

**AVAILABLE ESD PROTECTION EQUIPMENT :**
- **anti-static table mat** large 1200x650x1.25mm 4822 466 10953
  small 600x650x1.25mm 4822 466 10958
- **anti-static wristband** 4822 395 10223
- **connection box** (3 press stud connections, 1MΩ) 4822 320 11307
- **extendible cable** (2m, 2MΩ, to connect wristband to connection box) 4822 320 11305
- **connecting cable** (3m, 2MΩ, to connect table mat to connection box) 4822 320 11306
- **earth cable** (1MΩ, to connect any product to mat or to connection box) 4822 320 11308
- **KIT ESD3** (combining all 6 prior products - small table mat) 4822 310 10671
- **wristband tester** 4822 344 13999

**SAFETY & WARNINGS**

**DANGER:** Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.

**WARNING**

**WARNUNG**

**VAARSCHUWING**
Veiligheidsbepalingen vereisen, dat het apparaat in zijn orspronkelijke toestand wordt teruggebracht en dat onderdelen, identiek aan de gespecificeerde, worden toegepast. De Veiligheidsonderdelen zijn aangeduid met het symbool.

**AVVERTIMENTO**
Le norme di sicurezza estigono che l’apparecchio venga rimesso nelle condizioni originali e che siano utilizzati i pezzi di ricambio identici a quelli specificati. Componenti di sicurezza sono marcati con.

**DANGER**
Osynlig laserstrålning när apparaten är öppnad och spärrar är urkopplad. Betrakta ej strålen.

**WARNUNG**
Oszynlig laserstrålning ved åbningen når sikkerhedsafbryderen er udstillet. Undgå udsættelse for stråling.

**VAARSCHUWING**
Avatussa laitteessa ja suojalukituksen chitettaessa olet alttiina näkymättömälle lasersäteilylle. Älä katso sääteeeseen!

**WARNING**
Osynlig laserstrålning när apparaten är öppnad och spärrar är urkopplad. Betrakta ej strålen.

**VAARSCHUWING**
Osynlig laserstrålning när apparaten är öppnad och spärrar är urkopplad. Betrakta ej strålen.
SERVICE HINTS

REPAIR POSITION COPPERSIDE

To get access to the copperside of the printed board assembly proceed as follows:

1. Remove the bottom screws (6x)
2. Lift the bottom -cabinet
3. Supply the unit via external DC-socket
4. Take care that the door switch is closed during measurements

REPAIR POSITION COMPONENTSIDE

To get access to the componentside of the printed board assembly proceed as followed:

1. Remove the bottom screws (6x)
2. Open the CD-door
3. Lift the top-cabinet and put it backwards on the table
4. Supply the unit via the external DC-socket
5. Take care that the door switch is closed during measurements

DISMANTLING THE CD-DOOR

To dismantle the CD-door proceed as follows:

1. Dismantle bottom and printed board/drive assembly
2. Disconnect membrane keyboard (flex-foil connector on copperside of printed board)
3. Bend the cabinet rightwards downwards as indicated in the picture above

Remark: Do not use screwdrivers or tools like that. Sharp edges could damage hinge or cabinet part.
HANDLING CHIP COMPONENTS

SERVICE TOOLS

Audio signal disc SBC429 4822 397 30184
Playability test disc SBC444 4822 397 30245
Test disc 5 (disc without errors) + Test disc 5A (disc with dropout errors, black spots and fingerprints) SBC426/ SBC426A 4822 397 30096

ESD PROTECTION EQUIPMENT

Anti-static table mat large 1200x650x1.25mm 4822 466 10953
small 600x650x1.25mm 4822 466 10958
Anti-static wristband 4822 395 10223
Connection box (3 press stud connections, 1MΩ) 4822 320 11307
Extendible cable (2m, 2MΩ, to connect wristband to connection box) 4822 320 11305
Connecting cable (3m, 2MΩ, to connect table mat to connection box) 4822 320 11306
Earth cable (1MΩ, to connect any product to mat or to connection box) 4822 320 11308
KIT ESD3 (combining all 6 prior products - small table mat) 4822 310 10671
Wristband tester 4822 344 13999
# PIN DESCRIPTION OF INTEGRATED CIRCUITS

## MN662786SB – SIGNAL PROCESSING IC

<table>
<thead>
<tr>
<th>Pin</th>
<th>Name</th>
<th>I/O</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DRVDD</td>
<td>I</td>
<td>Power supply for DRAM interface (Pin 2 to 19, and 80)</td>
</tr>
<tr>
<td>2</td>
<td>D0</td>
<td>I/O</td>
<td>DRAM data I/O signal 0</td>
</tr>
<tr>
<td>3</td>
<td>D1</td>
<td>I/O</td>
<td>DRAM data I/O signal 1</td>
</tr>
<tr>
<td>4</td>
<td>WE</td>
<td>O</td>
<td>DRAM write enable signal</td>
</tr>
<tr>
<td>5</td>
<td>NWE</td>
<td>O</td>
<td>DRAM CAS control signal</td>
</tr>
<tr>
<td>6</td>
<td>D2</td>
<td>I/O</td>
<td>DRAM data I/O signal 2</td>
</tr>
<tr>
<td>7</td>
<td>D3</td>
<td>I/O</td>
<td>DRAM data I/O signal 3</td>
</tr>
<tr>
<td>8</td>
<td>NCAS0</td>
<td>O</td>
<td>DRAM control signal 0</td>
</tr>
<tr>
<td>9</td>
<td>NCAS1</td>
<td>O</td>
<td>DRAM control signal 1</td>
</tr>
<tr>
<td>10</td>
<td>A8</td>
<td>O</td>
<td>DRAM address signal 8</td>
</tr>
<tr>
<td>11</td>
<td>A7</td>
<td>O</td>
<td>DRAM address signal 7</td>
</tr>
<tr>
<td>12</td>
<td>A6</td>
<td>O</td>
<td>DRAM address signal 6</td>
</tr>
<tr>
<td>13</td>
<td>A5</td>
<td>O</td>
<td>DRAM address signal 5</td>
</tr>
<tr>
<td>14</td>
<td>A4</td>
<td>O</td>
<td>DRAM address signal 4</td>
</tr>
<tr>
<td>15</td>
<td>A9</td>
<td>O</td>
<td>DRAM address signal 9</td>
</tr>
<tr>
<td>16</td>
<td>A0</td>
<td>O</td>
<td>DRAM address signal 0</td>
</tr>
<tr>
<td>17</td>
<td>A1</td>
<td>O</td>
<td>DRAM address signal 1</td>
</tr>
<tr>
<td>18</td>
<td>A2</td>
<td>O</td>
<td>DRAM address signal 2</td>
</tr>
<tr>
<td>19</td>
<td>A3</td>
<td>O</td>
<td>DRAM address signal 3</td>
</tr>
<tr>
<td>20</td>
<td>DVSS2</td>
<td>I</td>
<td>Ground for digital circuits</td>
</tr>
<tr>
<td>21</td>
<td>DVDD2</td>
<td>I</td>
<td>Power supply for digital circuits</td>
</tr>
<tr>
<td>22</td>
<td>SPOUT</td>
<td>O</td>
<td>Spindle motor drive signal output (Absolute value output)</td>
</tr>
<tr>
<td>23</td>
<td>TRVP</td>
<td>O</td>
<td>Traverse drive output (+side output)</td>
</tr>
<tr>
<td>24</td>
<td>TRVM</td>
<td>O</td>
<td>Traverse drive output (-side output)</td>
</tr>
<tr>
<td>25</td>
<td>TRP</td>
<td>O</td>
<td>Traverse drive output (+side output)</td>
</tr>
<tr>
<td>26</td>
<td>TRM</td>
<td>O</td>
<td>Traverse drive output (-side output)</td>
</tr>
<tr>
<td>27</td>
<td>FOP</td>
<td>O</td>
<td>Focus drive output (+side output)</td>
</tr>
<tr>
<td>28</td>
<td>FOM</td>
<td>O</td>
<td>Focus drive output (-side output)</td>
</tr>
<tr>
<td>29</td>
<td>IOVd1</td>
<td>I</td>
<td>I/O power supply</td>
</tr>
<tr>
<td>30</td>
<td>TBAL</td>
<td>O</td>
<td>Tracking balance adjustment output</td>
</tr>
<tr>
<td>31</td>
<td>FBAL</td>
<td>O</td>
<td>Focus adjustment output</td>
</tr>
<tr>
<td>32</td>
<td>FE</td>
<td>I</td>
<td>Focus error signal input (Analog input)</td>
</tr>
<tr>
<td>33</td>
<td>TE</td>
<td>I</td>
<td>Tracking error signal input (Analog input)</td>
</tr>
<tr>
<td>34</td>
<td>RFENV</td>
<td>I</td>
<td>RF envelope signal input (Analog input)</td>
</tr>
<tr>
<td>35</td>
<td>OFF</td>
<td>I</td>
<td>Off-track signal input H: Off track</td>
</tr>
<tr>
<td>36</td>
<td>NRFDET</td>
<td>I</td>
<td>RF detection signal input L: Detect</td>
</tr>
<tr>
<td>37</td>
<td>BDO</td>
<td>O</td>
<td>Dropout signal input H: Dropout</td>
</tr>
<tr>
<td>38</td>
<td>LDON</td>
<td>O</td>
<td>Laser ON signal output H: ON</td>
</tr>
<tr>
<td>39</td>
<td>ARF</td>
<td>I</td>
<td>RF signal input</td>
</tr>
<tr>
<td>40</td>
<td>1REF</td>
<td>I</td>
<td>Reference current input</td>
</tr>
<tr>
<td>41</td>
<td>ADPVCC</td>
<td>I</td>
<td>A/D converter reference voltage input (Analog input)</td>
</tr>
<tr>
<td>42</td>
<td>DSLF</td>
<td>O</td>
<td>DSL loop filter</td>
</tr>
<tr>
<td>43</td>
<td>DREF</td>
<td>I</td>
<td>DSL bias</td>
</tr>
<tr>
<td>44</td>
<td>PLLF</td>
<td>O</td>
<td>PLL loop filter</td>
</tr>
<tr>
<td>45</td>
<td>VCOF</td>
<td>O</td>
<td>Jitter-free VCO loop filter</td>
</tr>
<tr>
<td>46</td>
<td>AVd2</td>
<td>I</td>
<td>Power supply for analog circuits (For DSL, PLL, VCOF, A/D converter, and D/A converter)</td>
</tr>
<tr>
<td>47</td>
<td>AVs2</td>
<td>I</td>
<td>Ground for analog circuits (For DSL, PLL, VCOF, A/D converter, and D/A converter)</td>
</tr>
<tr>
<td>48</td>
<td>OUTL</td>
<td>O</td>
<td>L-ch audio output</td>
</tr>
<tr>
<td>49</td>
<td>AVss1</td>
<td>I</td>
<td>Ground for analog circuits (For audio output stage)</td>
</tr>
<tr>
<td>50</td>
<td>OUTR</td>
<td>O</td>
<td>R-ch audio output</td>
</tr>
<tr>
<td>51</td>
<td>AVd1</td>
<td>I</td>
<td>Power supply for analog circuits (For audio output stage)</td>
</tr>
<tr>
<td>52</td>
<td>FSEL</td>
<td>I</td>
<td>Noise filter for microcontroller interface ON/OFF selection input L:ON H:OFF</td>
</tr>
<tr>
<td>53</td>
<td>TMOD1</td>
<td>I</td>
<td>Test input pin Normal: L</td>
</tr>
<tr>
<td>54</td>
<td>TMOD2</td>
<td>I</td>
<td>Test input pin Normal: L</td>
</tr>
<tr>
<td>55</td>
<td>*FLAG</td>
<td>O</td>
<td>Flag signal output</td>
</tr>
<tr>
<td>56</td>
<td>*IPFLAG</td>
<td>O</td>
<td>Interpolation flag signal output H:Interpolation</td>
</tr>
<tr>
<td>57</td>
<td>*EXT0</td>
<td>I/O</td>
<td>Expansion I/O port 0</td>
</tr>
<tr>
<td>58</td>
<td>*EXT1</td>
<td>I/O</td>
<td>Expansion I/O port 1</td>
</tr>
<tr>
<td>59</td>
<td>IOV0d2</td>
<td>I</td>
<td>I/O power supply</td>
</tr>
<tr>
<td>60</td>
<td>TX</td>
<td>O</td>
<td>Digital audio interface signal output</td>
</tr>
<tr>
<td>61</td>
<td>MCLK</td>
<td>I</td>
<td>Microcontroller command clock signal input (Latches the data at a rising edge)</td>
</tr>
<tr>
<td>62</td>
<td>MDATA</td>
<td>I</td>
<td>Microcontroller command data signal input</td>
</tr>
<tr>
<td>63</td>
<td>MLD</td>
<td>I</td>
<td>Microcontroller command load signal input L:Load</td>
</tr>
<tr>
<td>64</td>
<td>*BLKCK</td>
<td>O</td>
<td>Subcode block clock signal output f=75 Hz (Normal-speed playback)</td>
</tr>
<tr>
<td>65</td>
<td>PWMSEL</td>
<td>I/O</td>
<td>PWM output mode selection input L: Direct H: 3-state</td>
</tr>
<tr>
<td>66</td>
<td>SMCK</td>
<td>O</td>
<td>4.236-MHz/8.4672-MHz clock signal output</td>
</tr>
<tr>
<td>67</td>
<td>DMUTE</td>
<td>I/O</td>
<td>Muting input H: Mute</td>
</tr>
<tr>
<td>68</td>
<td>STAT</td>
<td>O</td>
<td>Status signal output</td>
</tr>
<tr>
<td>69</td>
<td>NRST</td>
<td>I</td>
<td>Reset input L:Reset</td>
</tr>
<tr>
<td>Pin</td>
<td>Name</td>
<td>I/O</td>
<td>Description</td>
</tr>
<tr>
<td>-----</td>
<td>------------</td>
<td>-----</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td>70</td>
<td>*SPPOL</td>
<td>O</td>
<td>Spindle motor drive signal output (Polarity output)</td>
</tr>
<tr>
<td>71</td>
<td>PMCK</td>
<td>O</td>
<td>88.2-KHz clock signal output</td>
</tr>
<tr>
<td>72</td>
<td>*NCLDCK</td>
<td>O</td>
<td>Frame sync signal output $f=7.35$kHz (Normal-speed playback)</td>
</tr>
<tr>
<td>73</td>
<td>*SUBC</td>
<td>O</td>
<td>Subcode serial output</td>
</tr>
<tr>
<td>74</td>
<td>*SBCK</td>
<td>I</td>
<td>Subcode serial output clock input</td>
</tr>
<tr>
<td>75</td>
<td>NTEST</td>
<td>I</td>
<td>Test input pin</td>
</tr>
<tr>
<td>76</td>
<td>X2</td>
<td>O</td>
<td>Crystal oscillator output pin $f=16.9344$ MHz</td>
</tr>
<tr>
<td>77</td>
<td>X1</td>
<td>I</td>
<td>Crystal oscillator output pin $f=16.9344$ MHz</td>
</tr>
<tr>
<td>78</td>
<td>DVSS1</td>
<td>I</td>
<td>Power supply for digital circuits</td>
</tr>
<tr>
<td>79</td>
<td>DVDD1</td>
<td>I</td>
<td>Power supply for digital circuits</td>
</tr>
<tr>
<td>80</td>
<td>*EXT2</td>
<td>I</td>
<td>Expansion I/O part 2</td>
</tr>
</tbody>
</table>

AN8789FB– SILICON MONOLITHIC BIPOLAR IC

<table>
<thead>
<tr>
<th>Pin</th>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>VSEN</td>
<td>Empty detection input</td>
</tr>
<tr>
<td>2</td>
<td>PVCC1</td>
<td>Power supply</td>
</tr>
<tr>
<td>3</td>
<td>RESET</td>
<td>Reset output</td>
</tr>
<tr>
<td>4</td>
<td>DED</td>
<td>Dead time input</td>
</tr>
<tr>
<td>5</td>
<td>OUT</td>
<td>CD/DC converter output</td>
</tr>
<tr>
<td>6</td>
<td>FB</td>
<td>Error amplifier output</td>
</tr>
<tr>
<td>7</td>
<td>IN</td>
<td>Error amplifier input</td>
</tr>
<tr>
<td>8</td>
<td>SP</td>
<td>Short-circuit protection input</td>
</tr>
<tr>
<td>9</td>
<td>CT</td>
<td>Triangular wave oscillation</td>
</tr>
<tr>
<td>10</td>
<td>AREF</td>
<td>$1/2$ AVDD output</td>
</tr>
<tr>
<td>11</td>
<td>CRI</td>
<td>Ripple rejection capacitor</td>
</tr>
<tr>
<td>12</td>
<td>SVC</td>
<td>Power supply</td>
</tr>
<tr>
<td>13</td>
<td>N.C.</td>
<td>Not connected</td>
</tr>
<tr>
<td>14</td>
<td>AVDD</td>
<td>Ripple filter output</td>
</tr>
<tr>
<td>15</td>
<td>DRVDD</td>
<td>Power supply</td>
</tr>
<tr>
<td>16</td>
<td>VREF</td>
<td>$1/2$ VDCC input</td>
</tr>
<tr>
<td>17</td>
<td>INF</td>
<td>Driver input</td>
</tr>
<tr>
<td>18</td>
<td>IN1T</td>
<td>Driver input</td>
</tr>
<tr>
<td>19</td>
<td>LDON</td>
<td>Driver ON/OFF control</td>
</tr>
<tr>
<td>20</td>
<td>INSP</td>
<td>Driver input</td>
</tr>
<tr>
<td>21</td>
<td>PC</td>
<td>Driver IN/OFF control</td>
</tr>
<tr>
<td>22</td>
<td>INTV</td>
<td>Driver input</td>
</tr>
<tr>
<td>23</td>
<td>TRVSTOP</td>
<td>Driver ON/OFF control</td>
</tr>
<tr>
<td>24</td>
<td>TR-</td>
<td>Driver output</td>
</tr>
<tr>
<td>25</td>
<td>TR+</td>
<td>Driver output</td>
</tr>
<tr>
<td>26</td>
<td>FO-</td>
<td>Driver output</td>
</tr>
<tr>
<td>27</td>
<td>FO+</td>
<td>Driver output</td>
</tr>
<tr>
<td>28</td>
<td>PGND</td>
<td>Ground</td>
</tr>
<tr>
<td>29</td>
<td>SP+</td>
<td>Driver output</td>
</tr>
<tr>
<td>30</td>
<td>SP-</td>
<td>Driver output</td>
</tr>
<tr>
<td>31</td>
<td>TV+</td>
<td>Driver output</td>
</tr>
<tr>
<td>32</td>
<td>TV-</td>
<td>Driver output</td>
</tr>
<tr>
<td>33</td>
<td>ICONT</td>
<td>Charge current setting</td>
</tr>
<tr>
<td>34</td>
<td>MRST</td>
<td>Muting reset output</td>
</tr>
<tr>
<td>35</td>
<td>EMP</td>
<td>Empty detection output</td>
</tr>
<tr>
<td>36</td>
<td>VC</td>
<td>Driver supply voltage</td>
</tr>
<tr>
<td>37</td>
<td>TB</td>
<td>PWM circuit output</td>
</tr>
<tr>
<td>38</td>
<td>CLK</td>
<td>External sync input</td>
</tr>
<tr>
<td>39</td>
<td>START</td>
<td>Start oscillation starting input</td>
</tr>
<tr>
<td>40</td>
<td>POWER</td>
<td>Power ON/OFF</td>
</tr>
<tr>
<td>41</td>
<td>PVCC2</td>
<td>Power supply</td>
</tr>
<tr>
<td>42</td>
<td>IOUT</td>
<td>Charging and battery detection</td>
</tr>
<tr>
<td>43</td>
<td>SGND</td>
<td>Ground</td>
</tr>
<tr>
<td>44</td>
<td>PWMG</td>
<td>PWM loop gain control</td>
</tr>
</tbody>
</table>
## Pin Specification (1/2)

<table>
<thead>
<tr>
<th>Pins</th>
<th>Special Functions</th>
<th>I/O</th>
<th>Direction Control</th>
<th>Pin Control</th>
<th>Functions Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P00</td>
<td>SBO0 : TXD</td>
<td>in/out</td>
<td>P0DIR0</td>
<td>P0PLU0</td>
<td>SBO0 : Serial Interface 0 transmission data output</td>
</tr>
<tr>
<td>P01</td>
<td>SBI0 : RXD</td>
<td>in/out</td>
<td>P0DIR1</td>
<td>P0PLU1</td>
<td>SBI0 : Serial Interface 0 reception data input</td>
</tr>
<tr>
<td>P02</td>
<td>SBT0</td>
<td>in/out</td>
<td>P0DIR2</td>
<td>P0PLU2</td>
<td>SBT0 : Serial Interface 0 clock I/O</td>
</tr>
<tr>
<td>P03</td>
<td>SBO1</td>
<td>in/out</td>
<td>P0DIR3</td>
<td>P0PLU3</td>
<td>SBO1 : Serial Interface 1 transmission data output</td>
</tr>
<tr>
<td>P04</td>
<td>SBI1</td>
<td>in/out</td>
<td>P0DIR4</td>
<td>P0PLU4</td>
<td>SBI1 : Serial Interface 1 reception data input</td>
</tr>
<tr>
<td>P05</td>
<td>SBT1</td>
<td>in/out</td>
<td>P0DIR5</td>
<td>P0PLU5</td>
<td>SBT1 : Serial Interface 1 clock I/O</td>
</tr>
<tr>
<td>P06</td>
<td>NDK : BUZZER</td>
<td>in/out</td>
<td>P0DIR6</td>
<td>P0PLU6</td>
<td>NDK : Data acknowledgement signal</td>
</tr>
<tr>
<td>P10</td>
<td>RMOUT</td>
<td>in</td>
<td>P1DIR0</td>
<td>P1PLU0</td>
<td>RMOUT : Remote control carrier output</td>
</tr>
<tr>
<td>P11</td>
<td>TM2IO</td>
<td>in</td>
<td>P1DIR1</td>
<td>P1PLU1</td>
<td>TM2IO : Timer 2 I/O</td>
</tr>
<tr>
<td>P12</td>
<td>TM3IO</td>
<td>in</td>
<td>P1DIR2</td>
<td>P1PLU2</td>
<td>TM3IO : Timer 3 I/O</td>
</tr>
<tr>
<td>P13</td>
<td>TM4IO</td>
<td>in</td>
<td>P1DIR3</td>
<td>P1PLU3</td>
<td>TM4IO : Timer 4 I/O</td>
</tr>
<tr>
<td>P14</td>
<td>IRQ0</td>
<td>in</td>
<td>-</td>
<td>P2PLU0</td>
<td>IRQ0 : External interrupt 0</td>
</tr>
<tr>
<td>P15</td>
<td>IRQ1</td>
<td>in</td>
<td>-</td>
<td>P2PLU1</td>
<td>IRQ1 : External interrupt 1</td>
</tr>
<tr>
<td>P16</td>
<td>IRQ2</td>
<td>in</td>
<td>-</td>
<td>P2PLU2</td>
<td>IRQ2 : External interrupt 2</td>
</tr>
<tr>
<td>P17</td>
<td>IRQ3</td>
<td>in</td>
<td>-</td>
<td>P2PLU3</td>
<td>IRQ3 : External interrupt 3</td>
</tr>
<tr>
<td>P18</td>
<td>NRST</td>
<td>in</td>
<td>-</td>
<td>-</td>
<td>NRST : Reset</td>
</tr>
<tr>
<td>P20</td>
<td>KEY0</td>
<td>in</td>
<td>P4DIR0</td>
<td>P4PLU0</td>
<td>KEY0 : KEY interrupt input 0</td>
</tr>
<tr>
<td>P21</td>
<td>KEY1</td>
<td>in</td>
<td>P4DIR1</td>
<td>P4PLU1</td>
<td>KEY1 : KEY interrupt input 1</td>
</tr>
<tr>
<td>P22</td>
<td>KEY2</td>
<td>in</td>
<td>P4DIR2</td>
<td>P4PLU2</td>
<td>KEY2 : KEY interrupt input 2</td>
</tr>
<tr>
<td>P23</td>
<td>KEY3</td>
<td>in</td>
<td>P4DIR3</td>
<td>P4PLU3</td>
<td>KEY3 : KEY interrupt input 3</td>
</tr>
<tr>
<td>P24</td>
<td>KEY4</td>
<td>in</td>
<td>P4DIR4</td>
<td>P4PLU4</td>
<td>KEY4 : KEY interrupt input 4</td>
</tr>
<tr>
<td>P25</td>
<td>KEY5</td>
<td>in</td>
<td>P4DIR5</td>
<td>P4PLU5</td>
<td>KEY5 : KEY interrupt input 5</td>
</tr>
<tr>
<td>P26</td>
<td>KEY6</td>
<td>in</td>
<td>P4DIR6</td>
<td>P4PLU6</td>
<td>KEY6 : KEY interrupt input 6</td>
</tr>
<tr>
<td>P27</td>
<td>KEY7</td>
<td>in</td>
<td>P4DIR7</td>
<td>P4PLU7</td>
<td>KEY7 : KEY interrupt input 7</td>
</tr>
<tr>
<td>P30</td>
<td>NWE : LED0</td>
<td>in/out</td>
<td>P5DIR0</td>
<td>P5PLU0</td>
<td>NWE : Write enable signal</td>
</tr>
<tr>
<td>P31</td>
<td>NRE : LED1</td>
<td>in/out</td>
<td>P5DIR1</td>
<td>P5PLU1</td>
<td>NRE : Read enable signal</td>
</tr>
<tr>
<td>P32</td>
<td>NCS : LED2</td>
<td>in/out</td>
<td>P5DIR2</td>
<td>P5PLU2</td>
<td>NCS : Chip select signal</td>
</tr>
<tr>
<td>P33</td>
<td>A16 : LED3</td>
<td>in/out</td>
<td>P5DIR3</td>
<td>P5PLU3</td>
<td>A16 : Address output (bp16)</td>
</tr>
<tr>
<td>P34</td>
<td>SEG27 : LED4</td>
<td>in/out</td>
<td>P5DIR4</td>
<td>P5PLU4</td>
<td>LED4 : Address output (bp17)</td>
</tr>
<tr>
<td>P35</td>
<td>SEG28 : SEG26</td>
<td></td>
<td></td>
<td></td>
<td>LED4 : Address output (bp17)</td>
</tr>
<tr>
<td>P36</td>
<td>A0 : SEG25</td>
<td>in</td>
<td>P6DIR0</td>
<td>P6PLU0</td>
<td>A0 : Address output (bp0)</td>
</tr>
<tr>
<td>P37</td>
<td>A1 : SEG24</td>
<td>in</td>
<td>P6DIR1</td>
<td>P6PLU1</td>
<td>A1 : Address output (bp1)</td>
</tr>
<tr>
<td>P38</td>
<td>A2 : SEG23</td>
<td>in</td>
<td>P6DIR2</td>
<td>P6PLU2</td>
<td>A2 : Address output (bp2)</td>
</tr>
<tr>
<td>P39</td>
<td>A3 : SEG22</td>
<td>in</td>
<td>P6DIR3</td>
<td>P6PLU3</td>
<td>A3 : Address output (bp3)</td>
</tr>
<tr>
<td>P40</td>
<td>A4 : SEG21</td>
<td>in</td>
<td>P6DIR4</td>
<td>P6PLU4</td>
<td>A4 : Address output (bp4)</td>
</tr>
<tr>
<td>P41</td>
<td>A5 : SEG20</td>
<td>in</td>
<td>P6DIR5</td>
<td>P6PLU5</td>
<td>A5 : Address output (bp5)</td>
</tr>
<tr>
<td>P42</td>
<td>A6 : SEG19</td>
<td>in</td>
<td>P6DIR6</td>
<td>P6PLU6</td>
<td>A6 : Address output (bp6)</td>
</tr>
<tr>
<td>P43</td>
<td>A7 : SEG18</td>
<td>in</td>
<td>P6DIR7</td>
<td>P6PLU7</td>
<td>A7 : Address output (bp7)</td>
</tr>
</tbody>
</table>

---

**Legend:**
- **TXD** : UART transmission data output
- **RXD** : UART reception data input
- **BUZZER** : Buzzer output
## Pin Specification (2/2)

<table>
<thead>
<tr>
<th>Pins</th>
<th>Special Functions</th>
<th>I/O Control</th>
<th>Pin Control</th>
<th>Functions Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>P70</td>
<td>A8 SEG17 SDO0</td>
<td>in/out</td>
<td>P7DIR0 P7PLUD0</td>
<td>A8 : Address output (bp8) SEG17 : LCD segment output 17 SDO0 : Synchronous output 0</td>
</tr>
<tr>
<td>P71</td>
<td>A9 SEG16 SDO1</td>
<td>in/out</td>
<td>P7DIR1 P7PLUD1</td>
<td>A9 : Address output (bp9) SEG16 : LCD segment output 16 SDO1 : Synchronous output 1</td>
</tr>
<tr>
<td>P72</td>
<td>A10 SEG15 SDO2</td>
<td>in/out</td>
<td>P7DIR2 P7PLUD2</td>
<td>A10 : Address output (bp10) SEG15 : LCD segment output 15 SDO2 : Synchronous output 2</td>
</tr>
<tr>
<td>P73</td>
<td>A11 SEG14 SDO3</td>
<td>in/out</td>
<td>P7DIR3 P7PLUD3</td>
<td>A11 : Address output (bp11) SEG14 : LCD segment output 14 SDO3 : Synchronous output 3</td>
</tr>
<tr>
<td>P74</td>
<td>A12 SEG13 SDO4</td>
<td>in/out</td>
<td>P7DIR4 P7PLUD4</td>
<td>A12 : Address output (bp12) SEG13 : LCD segment output 13 SDO4 : Synchronous output 4</td>
</tr>
<tr>
<td>P75</td>
<td>A13 SEG12 SDO5</td>
<td>in/out</td>
<td>P7DIR5 P7PLUD5</td>
<td>A13 : Address output (bp13) SEG12 : LCD segment output 12 SDO5 : Synchronous output 5</td>
</tr>
<tr>
<td>P76</td>
<td>A14 SEG11 SDO6</td>
<td>in/out</td>
<td>P7DIR6 P7PLUD6</td>
<td>A14 : Address output (bp14) SEG11 : LCD segment output 11 SDO6 : Synchronous output 6</td>
</tr>
<tr>
<td>P77</td>
<td>A15 SEG10 SDO7</td>
<td>in/out</td>
<td>P7DIR7 P7PLUD7</td>
<td>A15 : Address output (bp15) SEG10 : LCD segment output 10 SDO7 : Synchronous output 7</td>
</tr>
<tr>
<td>P80</td>
<td>D0 SEG2</td>
<td>in/out</td>
<td>P8DIR0 P8PLU0</td>
<td>D0 : Data I/O (bp0) SEG2 : LCD segment output 2</td>
</tr>
<tr>
<td>P81</td>
<td>D1 SEG3</td>
<td>in/out</td>
<td>P8DIR1 P8PLU1</td>
<td>D1 : Data I/O (bp1) SEG3 : LCD segment output 3</td>
</tr>
<tr>
<td>P82</td>
<td>D2 SEG4</td>
<td>in/out</td>
<td>P8DIR2 P8PLU2</td>
<td>D2 : Data I/O (bp2) SEG4 : LCD segment output 4</td>
</tr>
<tr>
<td>P83</td>
<td>D3 SEG5</td>
<td>in/out</td>
<td>P8DIR3 P8PLU3</td>
<td>D3 : Data I/O (bp3) SEG5 : LCD segment output 5</td>
</tr>
<tr>
<td>P84</td>
<td>D4 SEG6</td>
<td>in/out</td>
<td>P8DIR4 P8PLU4</td>
<td>D4 : Data I/O (bp4) SEG6 : LCD segment output 6</td>
</tr>
<tr>
<td>P85</td>
<td>D5 SEG7</td>
<td>in/out</td>
<td>P8DIR5 P8PLU5</td>
<td>D5 : Data I/O (bp5) SEG7 : LCD segment output 7</td>
</tr>
<tr>
<td>P86</td>
<td>D6 SEG8</td>
<td>in/out</td>
<td>P8DIR6 P8PLU6</td>
<td>D6 : Data I/O (bp6) SEG8 : LCD segment output 8</td>
</tr>
<tr>
<td>P87</td>
<td>D7 SEG9</td>
<td>in/out</td>
<td>P8DIR7 P8PLU7</td>
<td>D7 : Data I/O (bp7) SEG9 : LCD segment output 9</td>
</tr>
<tr>
<td>PA0</td>
<td>AN0</td>
<td>in</td>
<td>- PAPLUD0</td>
<td>AN0 : Analog 0 input</td>
</tr>
<tr>
<td>PA1</td>
<td>AN1</td>
<td>in</td>
<td>- PAPLUD1</td>
<td>AN1 : Analog 1 input</td>
</tr>
<tr>
<td>PA2</td>
<td>AN2</td>
<td>in</td>
<td>- PAPLUD2</td>
<td>AN2 : Analog 2 input</td>
</tr>
<tr>
<td>PA3</td>
<td>AN3</td>
<td>in</td>
<td>- PAPLUD3</td>
<td>AN3 : Analog 3 input</td>
</tr>
<tr>
<td>PA4</td>
<td>AN4</td>
<td>in</td>
<td>- PAPLUD4</td>
<td>AN4 : Analog 4 input</td>
</tr>
<tr>
<td>PA5</td>
<td>AN5</td>
<td>in</td>
<td>- PAPLUD5</td>
<td>AN5 : Analog 5 input</td>
</tr>
<tr>
<td>PA6</td>
<td>AN6</td>
<td>in</td>
<td>- PAPLUD6</td>
<td>AN6 : Analog 6 input</td>
</tr>
<tr>
<td>PA7</td>
<td>AN7</td>
<td>in</td>
<td>- PAPLUD7</td>
<td>AN7 : Analog 7 input</td>
</tr>
<tr>
<td>SEG0</td>
<td>SEG0</td>
<td>out</td>
<td>- -</td>
<td>SEG0 : LCD segment output 0</td>
</tr>
<tr>
<td>SEG1</td>
<td>SEG1</td>
<td>out</td>
<td>- -</td>
<td>SEG1 : LCD segment output 1</td>
</tr>
<tr>
<td>COM0</td>
<td>COM0</td>
<td>out</td>
<td>- -</td>
<td>COM0 : LCD common output 0</td>
</tr>
<tr>
<td>COM1</td>
<td>COM1</td>
<td>out</td>
<td>- -</td>
<td>COM1 : LCD common output 1</td>
</tr>
<tr>
<td>COM2</td>
<td>COM2</td>
<td>out</td>
<td>- -</td>
<td>COM2 : LCD common output 2</td>
</tr>
<tr>
<td>COM3</td>
<td>COM3</td>
<td>out</td>
<td>- -</td>
<td>COM3 : LCD common output 3</td>
</tr>
</tbody>
</table>
Start-up procedure for external DC supply, no accu inserted, hold-switch in off pos., ESA on, resume-mode off, CD-door closed.

1. **POWER OFF** (stand-by)
   - PLAY pressed?
     - Y: DC/DC converter is switched on
     - N: µP resets CD10&NPC w/ default parameter/settings
2. µP sends command to CD10: "move slide inside"
3. Inner switch closed within ~6s?
   - Y: µP accelerates disc motor for ~200ms
   - N: re-initialize CD10 and restart focus search procedure
4. µP sends command to CD10: "move slide outside"
5. Inner switch open within ~0.3s?
   - Y: µP calculates ramping offset and sends play-params to CD10
   - N: µP initializes CD10&NPC
     - NPC_RES=L
     - PORES=L
     - µP initializes radial servo loop (~330ms)
     - µP releases muting (via MUTE)
     - µP sends command to CD10: "jump 10 tracks inside"
     - µP sends new focus parameters to CD10 (switch to higher focus sensitivity)
     - µP calculates ramping offset and sends play-params to CD10
     - µP initializes CD10&NPC
6. µP resets CD10&NPC
   - NPC_RES=L
   - PORES=L
7. µP initializes CD10&NPC w/ default parameter/settings
8. µP sends command to CD10: "move slide inside"
9. µP sends command to CD10: "move slide outside"
10. µP sends command to CD10: "laser on"
11. µP sends command to CD10: "focus servo on"
12. µP sends new focus parameters to CD10 (switch to higher focus sensitivity)
13. µP resets CD10&NPC
   - NPC_RES=L
   - PORES=L
14. µP initializes CD10&NPC w/ default parameter/settings

---

**START-UP PROCEDURE -CHART**

- **PLAY-MODE**
- Display shows "no d1SC"
- Display shows "nF d1SC"
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
  - Y: µP resets CD10&NPC
  - N: µP initializes CD10&NPC w/ default parameter/settings
- Focus found during ramping cycle?
SERVICE TEST PROGRAM

1. PRELIMINARY SETUP
- To enter the service test program disconnect the AC/DC adaptor and remove batteries, open the CD-door and hold the buttons “PLAY” & “PREV” depressed while turning power on (i.e. connecting the AC/DC adaptor).
- The display shows the software version of the built-in μP (i.e. “5.2-22”). Versions are counted from “0.0.0” onwards; that means the higher the number the newer the software.
- The program is now in the main menu – various tests can be entered by pressing the corresponding buttons (see flow chart on next page or detailed description of available tests below).
- To exit the service test program press the “STOP” button or disconnect the set from the power source.

2. DISPLAY TEST
Purpose: Check functionality of display and display driver.
- To enter the display test start the service test program and press the “NEXT” button.
- The display shows test pattern1. All segments are activated for finding open circuits (see flow chart on next page).
- To jump to the next pattern press the “NEXT” button.
- The display shows test pattern2. All alternate pins (2, 4, 8, ...) are activated for finding short circuits (see flow chart on next page).
- To jump back to test pattern1 press the “NEXT” button, to exit the display test and return to the main menu press the “STOP” button.

3. KEY TEST
Purpose: Check operation of keys and cord remote control.
- To enter the key test start the service test program and press the “MODE” button.
- The display shows “- - -”.
- Hold key depressed and check corresponding key code on the display. Key codes can be found in table1 (see flow chart on next page).
- To exit the key test and return to the main menu press the “STOP” button.

4. PLAYBACK TEST WITH ERROR ANALYSIS
Purpose: Analyze errors that occur during playback and search for intermittent failures.
- To enter the playback test start the service test program and press the “BASS” button.
- To start the analysis press the “PLAY” button. Note that the playback test can only be entered if the CD-door is closed.
- The set will read the TOC and start playback.

As long as the playback is free of errors the display shows track and time information like in normal play-mode. In case of errors corresponding error codes will be displayed. The meaning of these error codes can be found in table2 (see flow chart on next page).

Note: Errors can either be “fatal” or “non fatal”. Fatal errors always stop the playback, non fatal errors only cause a short interruption of the music. Fatal errors are displayed as long as the set is connected to the power source, non fatal errors are displayed until a new error occurs or a button is pressed.
- To stop the playback test disconnect the set from the power source.

5. SERVO TEST
Purpose: Check door switch, inner switch of CD-drive, movement of slide and acceleration of discmotor.
- To enter the servo test start the service test program and press the “PLAY” button.
- The display shows “x.y”.
  “x” indicates state of door switch;
  “y” indicates state of inner switch.
  x.y = “0” means switch is closed; ”-” means switch is open.
- To move slide outside hold the “NEXT” button depressed.
- To move slide inside hold the “PREV” button depressed.
- To accelerate the discmotor clockwise hold the “MODE” button depressed.
- To accelerate the discmotor counter-clockwise hold the “PROG” button depressed.
- To enter the focus test press the “PLAY” button, to exit the servo test and return to the main menu press the “STOP” button.

6. FOCUS TEST
Purpose: Check movement of lens and operation of focus servo for CDDA and CDRW discs.

Since the CDRW reflects much less light than an ordinary CDDA, the gain of the HF-amplifier stage and the sensitivity of the ADC inside the Decoder&Digital Servo IC “CD10” must be adapted accordingly. The gain is switched via the CDRW input of the HF-preamplifier. The ADC-sensitivity is set via software parameters (sent from μP to “CD10”). In total, there are 4 sensitivity modes available: 1 for CDDA and 3 for CDRW. The modes are listed in table3 (see next page).

In normal play-mode, the correct focus sensitivity is chosen automatically during start-up (see “Start-up procedure” on previous page).

In the service test program, the sensitivity can be chosen manually in order to allow individual measurements in several modes.

• The focus servo loop is switched on and the set starts searching the focus (“focus ramping”). As soon as the focus has been found the focus servo loop is closed and the state of the focus is monitored continuously.

• If the focus is OK the display shows “+ x”, else “- x”.
  “x” indicates the sensitivity mode. Details can be found in table3 (see flow chart on next page).

• To toggle between sensitivity modes press the “BASS” button.

• To move slide outside hold the “NEXT” button depressed.

• To move slide inside hold the “PREV” button depressed.

• To accelerate the discmotor clockwise hold the “MODE” button depressed.

• To accelerate the discmotor counter-clockwise hold the “PROG” button depressed.

• In case the focus is OK the discmotor test can be entered by pressing the “PLAY” button, to exit the focus test and return to the main menu press the “STOP” button.

7. DISCMOTOR TEST
Purpose: Check speed regulation of discmotor.

• The speed regulation is switched on and the discmotor starts rotating. If the speed reaches 75% of the nom. speed the display shows “+”, else “-”.

• In parallel also the state of the focus is monitored continuously (display “+ x” or “- x”).

• In case the disc speed is OK and the focus is OK the radial test can be entered by pressing the “PLAY” button, to exit the discmotor test and return to the main menu press the “STOP” button.

8. RADIAL TEST
Purpose: Check if radial loop locks and an audio signal is audible at the headphone output.

• The radial servo loop is switched on, mute is released and the audio signal is audible. If the system is on track the display shows “+ x”, else “- x”.

• In parallel also the state of the focus (“focus ramping”) is monitored continuously.

• To jump back to test pattern1 press the “NEXT” button, to exit the playback test and return to the main menu press the “STOP” button.

Important remark:
In radial test mode data to the DRAM is written at 1.2 times the nominal speed, and read from the DRAM at nominal speed. Because writing is done faster than reading the DRAM gets full after a certain time.

In normal play mode the system would now wait until the DRAM is partly emptied again, jump backwards and resume filling at the last written position. However, in radial test mode the jumps would disturb measurements on the radial servo loop.

Therefore this function has been disabled and filling restarts immediately from the current position of the pick-up unit. As a result “jumps” are audible during playback.
To enter service test program open the CD-door and hold PREVIOUS & PLAY buttons depressed while turning POWER ON (i.e. connecting the AC/DC adaptor)

Preparatory setup

To enter service test program open the CD-door and hold PREVIOUS & PLAY buttons depressed while turning POWER ON (i.e. connecting the AC/DC adaptor)

MAIN MENU

PLAY pressed?

KEY TEST
Display shows

MODE pressed?

DISPLAY TEST 1
display shows test pattern 1

NEXT pressed?

KEY TEST
Display shows

DISPLAY TEST 2
display shows test pattern 2

NEXT pressed?

MODE pressed?

PLAY presssed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV depressed?

MODE depressed?

PREV pressed?

NEXT pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?

PREV pressed?
COMBI BOARD - CIRCUIT DIAGRAM

4 - 2

A

B

C

D

E

R...only for cord R/C
S...only for non cord R/C
X...component only provided(not in use)

* in the liver these components need to change to 'RT'

AUDIO-PART
COMBI BAORD - CIRCUIT DIAGRAM

DRIVE / ESP-PART

16 MBit | 4 MBit

MN662786SB

X.... component only provided (not in use)
COMBI BOARD - LAYOUT DIAGRAM - COPPER SIDE VIEW
EXPLODED VIEW DIAGRAM - CABINET

MECHANICAL PARTS LIST - CABINET

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>401</td>
<td>3140 117 66771 LCD LENS-PRT</td>
</tr>
<tr>
<td>402</td>
<td>3140 117 63981 CD-DOOR ASSY-1</td>
</tr>
<tr>
<td>403</td>
<td>3140 110 51680 LCD PANEL</td>
</tr>
<tr>
<td>404</td>
<td>3140 114 46831 ZEBRASTRIP</td>
</tr>
<tr>
<td>406</td>
<td>3140 117 66781 KNOBSET-PNT</td>
</tr>
<tr>
<td>407</td>
<td>3140 113 33020 KEY BOARD ASSY</td>
</tr>
<tr>
<td>408</td>
<td>3103 3079 9670 DOOR-BATTERY-LAC</td>
</tr>
<tr>
<td>409</td>
<td>3140 111 01371 CD-DOOR-SPRING-LEFT</td>
</tr>
<tr>
<td>411</td>
<td>3140 111 01381 CD-DOOR-SPRING-RIGHT</td>
</tr>
<tr>
<td>412</td>
<td>3103 304 69 570 SLIDER-RESUME</td>
</tr>
<tr>
<td>413</td>
<td>3103 304 69 540 COVER-BOTTOM</td>
</tr>
<tr>
<td>414</td>
<td>3103 304 69 580 SLIDER-OPEN</td>
</tr>
<tr>
<td>416</td>
<td>3103 301 06500 SPRING-SLIDER-OPEN-2</td>
</tr>
<tr>
<td>417</td>
<td>3103 301 45180 SPRING-BATTERY-SHORT-2</td>
</tr>
<tr>
<td>418</td>
<td>3103 304 69 590 SUSPENSION</td>
</tr>
<tr>
<td>419</td>
<td>3103 30905480 CD DA23ZPH</td>
</tr>
<tr>
<td>421</td>
<td>3103 301 45410 SPRING-BATTERY-MINUS</td>
</tr>
<tr>
<td>422</td>
<td>3103 301 45420 SPRING-BATTERY-PLUS</td>
</tr>
<tr>
<td>423</td>
<td>3103 307 99 620 BOTTOM-ASSY-1</td>
</tr>
<tr>
<td>424</td>
<td>4822 462 41819 RUBBER FOOT</td>
</tr>
<tr>
<td>425</td>
<td>9082 100 00615 HEADPHONE HE205/77</td>
</tr>
<tr>
<td>426</td>
<td>3103 304 70250 BELT CLIP</td>
</tr>
</tbody>
</table>

Note: Only these parts mentioned in the list are normal service parts.
### ELECTRICAL PARTSLIST - COMBI BOARD

#### MISCELLANEOUS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Code</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100</td>
<td>4822 267 11027</td>
<td>CONNECTOR 16P</td>
<td></td>
</tr>
<tr>
<td>1300</td>
<td>2422 086 10946</td>
<td>FUSE 630mA 65V</td>
<td></td>
</tr>
<tr>
<td>1301</td>
<td>2422 026 05086</td>
<td>CONNECTOR</td>
<td></td>
</tr>
<tr>
<td>1302</td>
<td>2422 025 12272</td>
<td>CONNECTOR 6P</td>
<td></td>
</tr>
<tr>
<td>1401</td>
<td>4822 277 21705</td>
<td>SWITCH</td>
<td></td>
</tr>
<tr>
<td>1402</td>
<td>4822 265 11248</td>
<td>CONNECTOR 24P</td>
<td></td>
</tr>
<tr>
<td>1403</td>
<td>2422 129 16818</td>
<td>PUSH SWITCH</td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td>2422 026 05204</td>
<td>SOCKET PHONE H 1P</td>
<td></td>
</tr>
</tbody>
</table>

#### CAPACITORS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Code</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100</td>
<td>4822 267 11027</td>
<td>CONNECTOR 16P</td>
<td></td>
</tr>
<tr>
<td>1300</td>
<td>2422 086 10946</td>
<td>FUSE 630mA 65V</td>
<td></td>
</tr>
<tr>
<td>1301</td>
<td>2422 026 05086</td>
<td>CONNECTOR</td>
<td></td>
</tr>
<tr>
<td>1302</td>
<td>2422 025 12272</td>
<td>CONNECTOR 6P</td>
<td></td>
</tr>
<tr>
<td>1401</td>
<td>4822 277 21705</td>
<td>SWITCH</td>
<td></td>
</tr>
<tr>
<td>1402</td>
<td>4822 265 11248</td>
<td>CONNECTOR 24P</td>
<td></td>
</tr>
<tr>
<td>1403</td>
<td>2422 129 16818</td>
<td>PUSH SWITCH</td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td>2422 026 05204</td>
<td>SOCKET PHONE H 1P</td>
<td></td>
</tr>
</tbody>
</table>

#### CAPACITORS

<table>
<thead>
<tr>
<th>Part Number</th>
<th>Description</th>
<th>Code</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1100</td>
<td>4822 267 11027</td>
<td>CONNECTOR 16P</td>
<td></td>
</tr>
<tr>
<td>1300</td>
<td>2422 086 10946</td>
<td>FUSE 630mA 65V</td>
<td></td>
</tr>
<tr>
<td>1301</td>
<td>2422 026 05086</td>
<td>CONNECTOR</td>
<td></td>
</tr>
<tr>
<td>1302</td>
<td>2422 025 12272</td>
<td>CONNECTOR 6P</td>
<td></td>
</tr>
<tr>
<td>1401</td>
<td>4822 277 21705</td>
<td>SWITCH</td>
<td></td>
</tr>
<tr>
<td>1402</td>
<td>4822 265 11248</td>
<td>CONNECTOR 24P</td>
<td></td>
</tr>
<tr>
<td>1403</td>
<td>2422 129 16818</td>
<td>PUSH SWITCH</td>
<td></td>
</tr>
<tr>
<td>1500</td>
<td>2422 026 05204</td>
<td>SOCKET PHONE H 1P</td>
<td></td>
</tr>
</tbody>
</table>
### Electrical Part List - Combi Board

#### Capacitors

<table>
<thead>
<tr>
<th>Code</th>
<th>Value</th>
<th>Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2536</td>
<td>4822 124 81058</td>
<td>47µF 20% 4V</td>
<td></td>
</tr>
<tr>
<td>2537</td>
<td>2238 586 58912</td>
<td>100µF +80-20% Y5V 50V</td>
<td></td>
</tr>
<tr>
<td>2538</td>
<td>4822 124 12108</td>
<td>100µF 20% 4V</td>
<td></td>
</tr>
<tr>
<td>2539</td>
<td>2238 586 58912</td>
<td>100µF +80-20% Y5V 50V</td>
<td></td>
</tr>
</tbody>
</table>

#### Resistors

<table>
<thead>
<tr>
<th>Code</th>
<th>Value</th>
<th>Type</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2540</td>
<td>4822 124 81058</td>
<td>47µF 20% 4V</td>
<td></td>
</tr>
<tr>
<td>2541</td>
<td>2238 586 58912</td>
<td>100µF +80-20% Y5V 50V</td>
<td></td>
</tr>
<tr>
<td>2542</td>
<td>4822 124 12108</td>
<td>100µF 20% 4V</td>
<td></td>
</tr>
<tr>
<td>2543</td>
<td>2238 586 58912</td>
<td>100µF +80-20% Y5V 50V</td>
<td></td>
</tr>
</tbody>
</table>
# ELECTRICAL PARTSLIST - COMBI BOARD

## RESISTORS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Value</th>
<th>Description</th>
<th>P/N</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>3508</td>
<td>4822 051 30103</td>
<td>10K 5% 0.062W</td>
<td>6000</td>
<td>9322 128 70685</td>
</tr>
<tr>
<td>3510</td>
<td>4822 051 30681</td>
<td>680R 5% 0.062W</td>
<td>6002</td>
<td>4822 130 11397</td>
</tr>
<tr>
<td>3511</td>
<td>4822 051 30681</td>
<td>680R 5% 0.062W</td>
<td>6004</td>
<td>4822 130 11397</td>
</tr>
<tr>
<td>3513</td>
<td>4822 051 30474</td>
<td>470K 5% 0.062W</td>
<td>6002</td>
<td>9322 129 38685</td>
</tr>
<tr>
<td>3514</td>
<td>4822 117 12139</td>
<td>22R 5% 0.062W</td>
<td>6003</td>
<td>9322 129 38685</td>
</tr>
</tbody>
</table>

## DIODES

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Value</th>
<th>Description</th>
<th>P/N</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>3517</td>
<td>4822 051 30331</td>
<td>330R 5% 0.062W</td>
<td>6005</td>
<td>9322 129 38685</td>
</tr>
<tr>
<td>3518</td>
<td>4822 051 30474</td>
<td>470K 5% 0.062W</td>
<td>6006</td>
<td>9322 129 38685</td>
</tr>
<tr>
<td>3519</td>
<td>4822 117 13632</td>
<td>100K 1% 0.62W</td>
<td>6007</td>
<td>9322 129 38685</td>
</tr>
<tr>
<td>3520</td>
<td>4822 051 30008</td>
<td>0R JUMPER</td>
<td>6008</td>
<td>9322 129 38685</td>
</tr>
</tbody>
</table>

## IC & TRANSISTORS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Value</th>
<th>Description</th>
<th>P/N</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>3530</td>
<td>4822 051 30102</td>
<td>1K 5% 0.062W</td>
<td>7100</td>
<td>5322 130 60123</td>
</tr>
<tr>
<td>3533</td>
<td>2122 400 00001</td>
<td>10KX2 H F-1001G</td>
<td>7101</td>
<td>9322 130 66671</td>
</tr>
<tr>
<td>3534</td>
<td>4822 117 13632</td>
<td>100K 1% 0.62W</td>
<td>7103</td>
<td>5322 130 60159</td>
</tr>
<tr>
<td>3535</td>
<td>4822 051 30682</td>
<td>6,8K 5% 0.062W</td>
<td>7200</td>
<td>9322 175 89668</td>
</tr>
<tr>
<td>3539</td>
<td>4822 117 12139</td>
<td>22R 5% 0.062W</td>
<td>7201</td>
<td>9322 182 62671</td>
</tr>
</tbody>
</table>

## COILS & FILTERS

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Value</th>
<th>Description</th>
<th>P/N</th>
<th>Qty</th>
</tr>
</thead>
<tbody>
<tr>
<td>5300</td>
<td>2422 536 00346</td>
<td>IND VAR 5MM 5HP 40uH</td>
<td>7500</td>
<td>4822 130 42615</td>
</tr>
<tr>
<td>5301</td>
<td>4822 157 51462</td>
<td>10uH 10% 4X9,8MM 100K</td>
<td>7501</td>
<td>4822 130 42615</td>
</tr>
</tbody>
</table>

Note: Only these parts mentioned in the list are normal service parts.