



SERVICE MANUAL

VHF MARINE TRANSCEIVER

IC-M421

S-14114MZ-C1-①

Aug. 2006

Icom Inc.

INTRODUCTION

This service manual describes the latest service information for the **IC-M421** VHF MARINE TRANSCEIVER at the time of publication.

8 versions of the **IC-M421** have been designed. This service manual covers each version.

| MODEL | VERSION | ATIS | COLOUR |
|---------|--------------|------|--------|
| IC-M421 | UK-2, EUR-2 | No | BLACK |
| | HOL-2, FRG-2 | Yes | |
| | UK-3, EUR-3 | No | WHITE |
| | HOL-3, FRG-3 | Yes | |

To upgrade quality, any electrical or mechanical parts and internal circuits are subject to change without notice or obligation.

CAUTION

NEVER connect the transceiver to an AC outlet or to a DC power supply that uses more than 16 V. This will ruin the transceiver.

DO NOT reverse the polarities of the power supply when connecting the transceiver.

DO NOT apply an RF signal of more than 20 dBm (100mW) to the antenna connector. This could damage the transceiver's front end.



ORDERING PARTS

Be sure to include the following four points when ordering replacement parts:

1. 10-digit Icom parts number
2. Component part number and name
3. Equipment model name and unit name
4. Quantity required

<SAMPLE ORDER>

| | | | |
|-----------------|------------------|-------------------|----------|
| 1110003200 S.IC | TA31136FN | IC-M421 MAIN UNIT | 5 pieces |
| 8810004540 SRW | Bind M3 × 8 SUS | IC-M421 CHASSIS | 8 pieces |
| 8810004700 SRW | PH A0 3 × 16 SUS | IC-M421 CHASSIS | 8 pieces |

Addresses are provided on the inside back cover for your convenience.

REPAIR NOTES

1. Make sure a problem is internal before disassembling the transceiver.
2. **DO NOT** open the transceiver until the transceiver is disconnected from its power source.
3. **DO NOT** force any of the variable components. Turn them slowly and smoothly.
4. **DO NOT** short any circuits or electronic parts. An insulated turning tool **MUST** be used for all adjustments.
5. **DO NOT** keep power ON for a long time when the transceiver is defective.
6. **DO NOT** transmit power into a signal generator or a sweep generator.
7. **ALWAYS** connect a 40 dB to 50 dB attenuator between the transceiver and a deviation meter or spectrum analyzer when using such test equipment.
8. **READ** the instructions of test equipment thoroughly before connecting equipment to the transceiver.

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SECTION 1

SPECIFICATIONS

1. GENERAL

- Frequency coverage : TX 156.000–161.450 MHz
RX 156.000–163.425 MHz
CH70RX 156.525 MHz
- Type of emission : 16K0G3E, 16K0G2B

- Antenna impedance : 50 Ω (nominal)
- Operating temperature range : –20°C to +60°C (–4 °F to +140°F)

- Power supply requirement : 13.8 V DC nominal (negative ground)
- Current drain (at 13.8 V DC ; approx.) : Receiving 1.5 A (at max. audio)
Transmitting 5.5 A (at 25 W)

- Dimensions (projections not included) : 164(W)×78(H)×139.5(D) mm
6^{15/32} (W)×3^{1/16}(H)×5^{1/2}(D) in

- Weight : Approximately 1150 g (41^{1/16} oz)

2. TRANSMITTER

- Output power (at 13.8 V DC) : 25 W (High)/1 W (Low)
- Modulation : Variable reactance frequency modulation
- Maximum permissible deviation : ± 5.0 kHz
- Frequency error : ± 1.5 kHz
- Spurious emissions : Less than 0.25 μ W
- Adjacent channel power : 70 dB min.
- Audio harmonic distortion : Less than 10% (at 60% deviation)
- Residual modulation : 40 dB min.
- Audio frequency response : +1dB to –3dB of 6dB oct. from 300Hz to 3000Hz
- Microphone impedance : 2 k Ω

3. RECEIVER

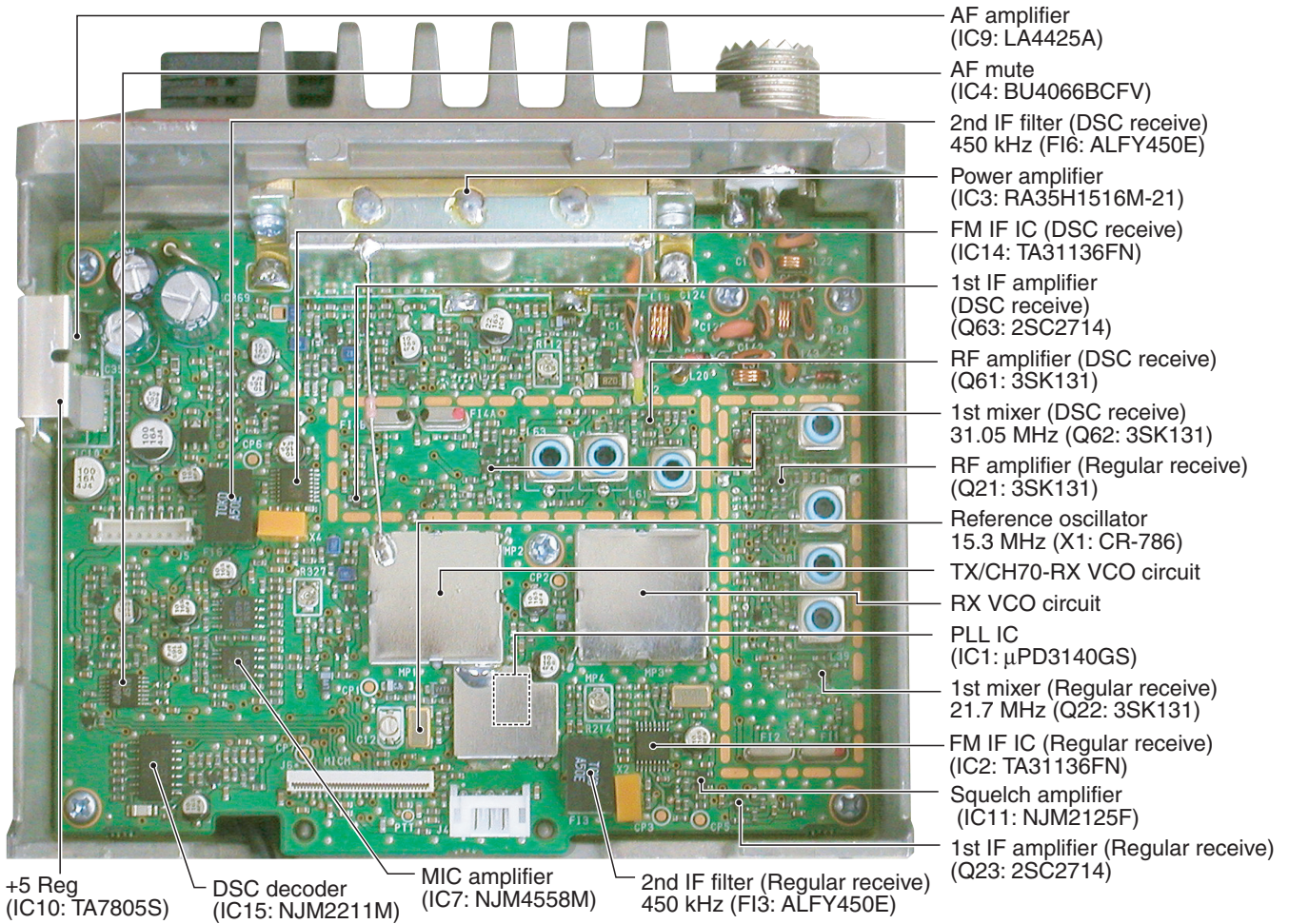
- Receive system : Double conversion superheterodyne system
- Intermediate frequencies Normal : 1st IF: 21.7 MHz, 2nd IF: 450 kHz (Normal RX)
1st IF: 31.05 MHz, 2nd IF: 450 kHz (CH70 RX)
- Sensitivity : –2 dB μ emf (–115 dBm) typical at 20 dB SINAD
- Adjacent channel selectivity : 70 dB min.
- Spurious response : 70 dB min.
- Intermodulation rejection ratio : 68 dB min.
- Hum and Noise : 40 dB min.
- Audio output power : More than 2 W at 10% distortion with a 4 Ω load
- Squelch sensitivity (at threshold) : Less than 0 dB μ emf
- Output impedance (Audio) : 4 Ω

Specifications are measured in accordance with EIA-152-C/204D, TIA-603 or EN 300 086.

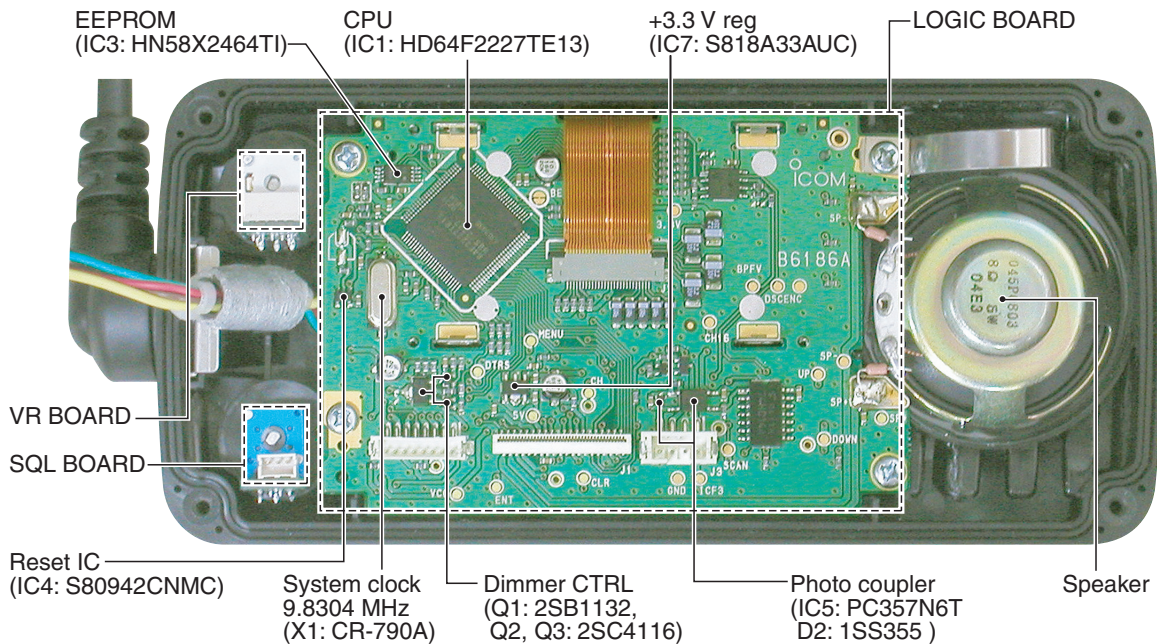
All stated specifications are subject to change without notice or obligation.

SECTION 2 INSIDE VIEWS

• MAIN UNIT



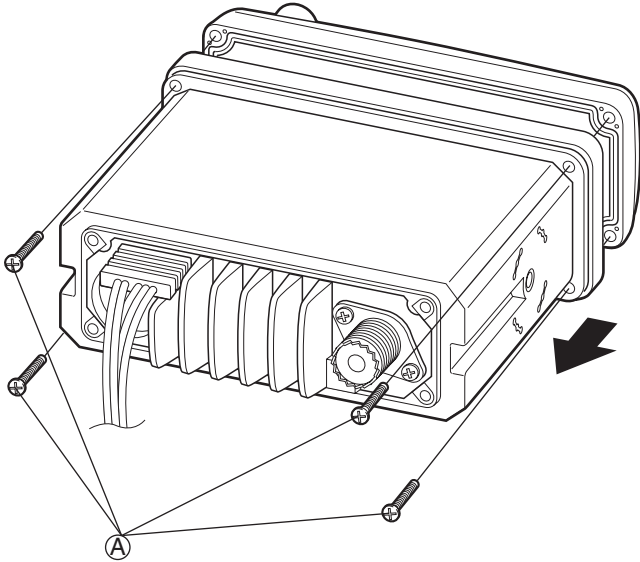
• FRONT UNIT



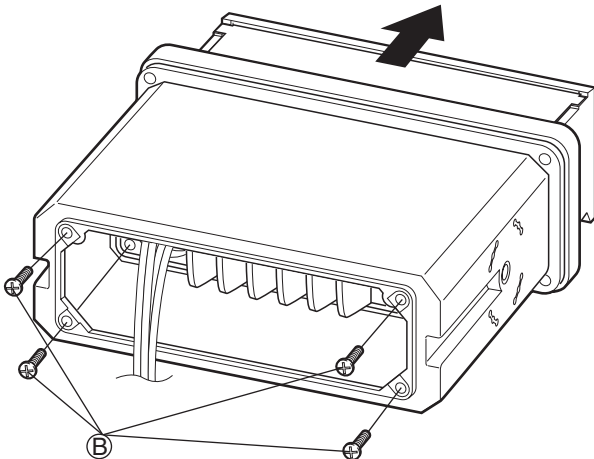
SECTION 3 DISASSEMBLY INSTRUCTIONS

● REMOVING THE CASE

- ① Unscrew 4 screws, (A).
Note: When replacing the screws, 10–12 kg of torque MUST be applied to ensure water resistance.
- ② Slide the case free of the front panel in the direction of the arrow.

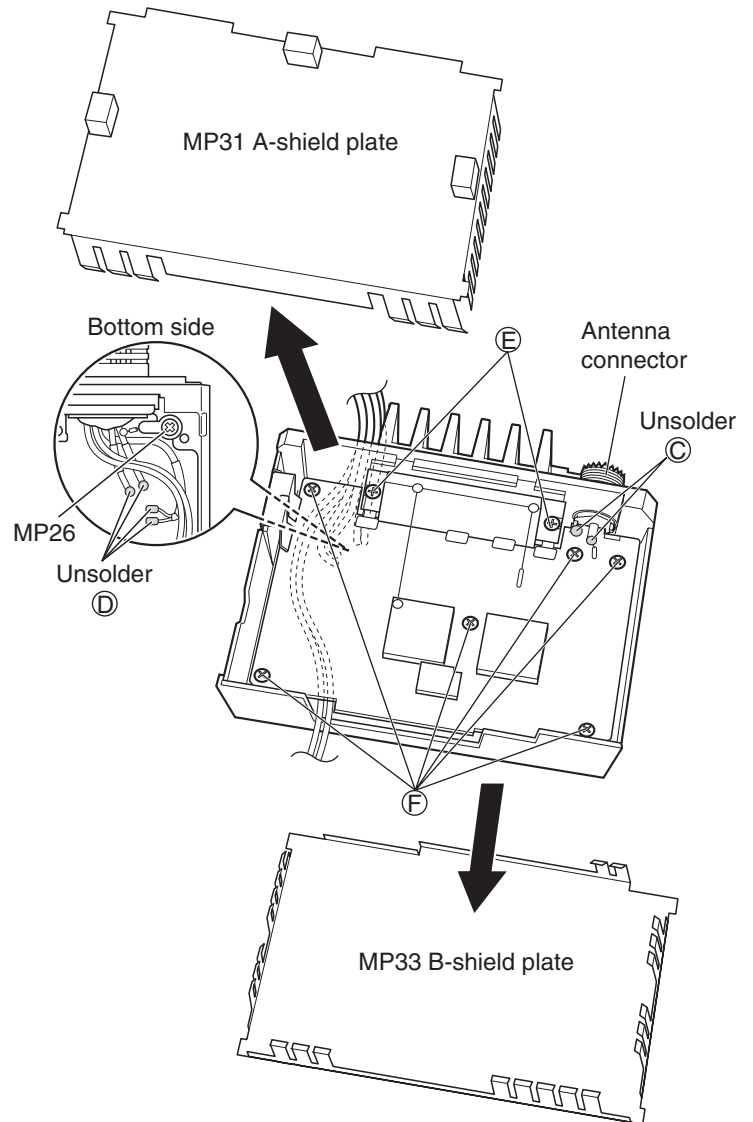


- ③ Unscrew 4 screws, (B).
- ④ Slide the case free of the chassis in the direction of the arrow.



● REMOVING THE MAIN UNIT

- ① Remove the shield covers, MP31 and MP33.
- ② Unsolder the antenna connector, (C) (1 point).
- ③ Unsolder bottom side (D) (4 points), and unscrew 1 screw MP26, as shown below.
- ④ Unscrew 2 screws, (E), and 6 screws, (F), to remove the MAIN unit.



SECTION 4 CIRCUIT DESCRIPTION

4-1 RECEIVER CIRCUITS

4-1-1 ANTENNA SWITCHING CIRCUIT

The antenna switching circuit toggles receive line and transmit line. This circuit does not allow transmit signals to enter the receiver circuits.

Received signals from the antenna pass through the two-staged low-pass filter (LPF: L21, L22, C127–C131) and applied to the antenna switching circuit (D14, D21). Then the signals are applied to the RF circuit.

4-1-2 RF CIRCUIT

The RF circuit amplifies signals within the range of frequency coverage and filters off out-of-band signals.

The signals from the antenna switching circuit pass through the LPF (L31, C142, C143) and divided by the divider (L34) and pass through a tunable bandpass filter (BPF: D25, L35, C154), then applied to the RF amplifier (Q21).

The amplified signals pass through a three-staged BPF (D26, D27, D28, L36, L38, L39, C161, C162, C173, C174, C177, C178) to suppress unwanted signals. The filtered signals are then applied to the 1st IF circuits.

4-1-3 1st MIXER AND 1st IF AMPLIFIER CIRCUITS

The 1st mixer circuit converts received signals into the 1st intermediate frequency (IF) signal by mixing with local oscillator (LO) signal. The converted 1st IF signal is filtered at the 1st IF filter, then amplified at the 1st IF amplifier.

The signals from the three-stage BPF are converted into 21.7 MHz 1st IF signal at the 1st mixer (Q22) by being mixed with 1st LO signals generated at RX VCO (Q72, Q73, D51, D52).

1st IF signal from the 1st mixer passes through a pair of crystal filter (F11, F12) to suppress unwanted signals again, and amplified at the 1st IF amplifier (Q23).

The amplified 1st IF signal is applied to the FM IF IC (IC2).

• 2nd IF AND DEMODULATOR CIRCUITS

4-1-4 2nd IF AND DEMODULATOR CIRCUITS

The 1st IF signal is converted into 2nd IF signal and demodulated by the FM IF IC. The FM IF IC contains 2nd mixer, limiter amplifier and quadrature detector in its package.

The 1st IF signal from 1st IF amplifier is applied to pin 16 of IC2, and mixed with the 21.25 MHz 2nd LO signal generated by crystal oscillator (X3), to convert into the 450 kHz 2nd IF signal and output from pin 3. The 2nd IF signal is filtered by ceramic filter (F13) to suppress the heterodyne noise, then applied to IC2 (pin 5) again and amplified at the limiter amplifier section and demodulated by the quadrature detector.

The quadrature detector is a detection method which uses a ceramic discriminator (X2) as a phase delayer for no adjustment. The demodulated signals are output from pin 9.

4-1-5 AF CIRCUITS

Demodulated signals are filtered and amplified at AF circuits.

AF signals from IC2 (pin 9) pass through analog switch (IC4) and applied to the de-emphasis circuit (R231, C232) which is an integrated circuit with frequency characteristic of -6dB/oct .

Then the signals are pass through the two-staged BPF (Q31, Q32, R232, R234, R235, R238, R239, C233, C234, C236, C237).

Filtered signals pass through AF mute switch (Q33) and controlled its level by R1 (VR BOARD), then applied to the AF power amplifier (IC9, pin 1).

The AF power amplifier provides more than 2 W of audio power.

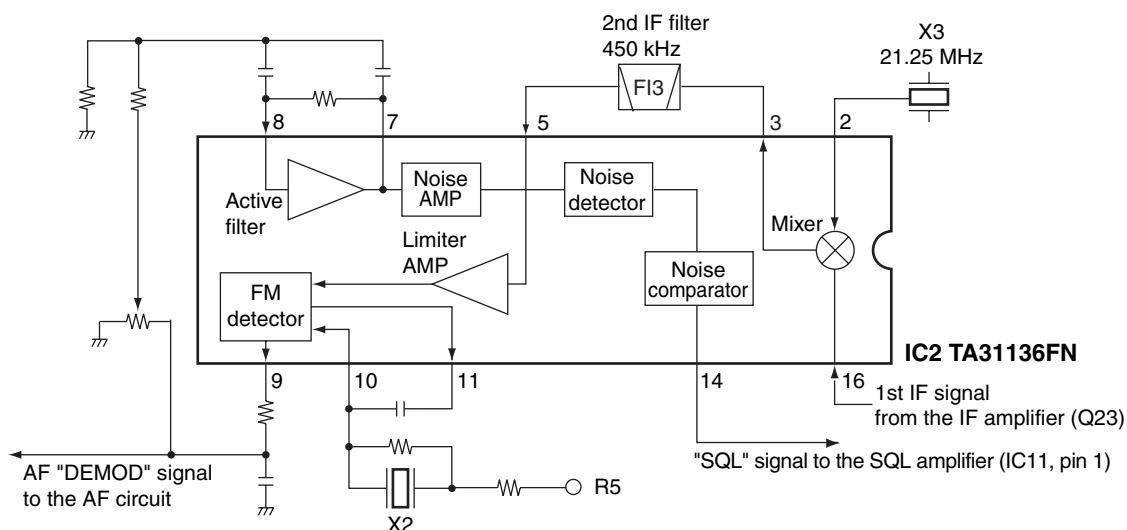
4-1-6 SQUELCH CIRCUIT

Squelch circuit mutes AF output when no signals are received.

A portion of the AF signals from the FM IF IC (IC2, pin 9) pass through the squelch adjustment pot (R214) and active filter (IC2, pin 8, R211–R213, C211, C212).

The filtered signals are applied to the noise amplifier section in the FM IF IC to amplify the noise components only.

Then the noise components are applied to the noise detector section to convert into DC voltage and output from pin 14 as "SQL" signal. The "SQL" signal is amplified at the SQL amplifier (IC11) and applied to the CPU (IC1, pin 51: LOGIC BOARD). Then the CPU analyzes the noise condition by comparing the "SQL" signal and squelch control setting and outputs "RMUTE" signal to toggle the AF mute switch (Q33) ON and OFF.



4-2 TRANSMITTER CIRCUITS

4-2-1 MIC AMPLIFIER, IDC, SPLTTER FILTER CIRCUITS

The MIC amplifier circuit amplifies audio signals from the microphone within +6 dB/oct pre-emphasis characteristics and amplifies to the level needed for modulation.

The AF signals from the microphone are applied to the Mic mute circuit (IC4, pin 10) and output from pin 11, and pass through the pre-emphasis circuit (R303, C302) to obtain frequency characteristics of +6 dB/oct.

The AF signals are amplified at the microphone amplifier (IC7 B), limited its level (IC7 A) at the IDC amplifier. Then the signals pass through the splatter filter (IC8B) to supress unwanted 3 kHz and higher audio signals, then applied to the modulation circuit.

4-2-2 MODULATOR CIRCUITS

The modulation circuit modulates the VCO oscillating signal with the audio signals from the microphone.

AF signals from the splatter filter (IC8 B) pass through frequency deviation adjustment pot (R327), then applied to the modulation circuit (Q2, D1, D2) to modulate the oscillated signals by changing the reactance of D2 at the TX VCO (Q4, Q5, D3).

4-2-3 TRANSMIT AMPLIFIERS

Transmit amplifiers amplify the TX VCO output to transmit power level.

The TX VCO output signal is buffer-amplified by the buffer amplifiers (Q6, Q7) and passes through the TX/RX switch (D7). The signals from the TX/RX switch are applied to the pre-drive (Q10) and YGR (Q12) amplifiers to obtain an approximate signal level of 50 mW which is the input signal level for power amplifier module (IC3). The YGR amplifier output is applied to the power amplifier module (IC3) which has amplification output capabilities of about 35 W with 50 mW input.

The power module output is applied to the antenna connector (J1: CHASSIS UNIT) via low-pass filters.

4-2-4 APC CIRCUIT

The APC (Auto Power Control) circuit allows stabilizes transmit output power and controls transmit output power High (25 W) and Low (1 W).

The RF output signal from the power amplifier (IC3) is detected at the power detector (D12, D13). The detector circuit converts the RF signal into DC voltage, and the detected voltage is applied to the APC controller (IC12, pin 3) via the power control circuit (Q17, D11).

The transmit output power setting voltage is applied to anther input of the APC controller as the reference voltage. The applied voltage signals control APC controller output (IC12, pin 4). Thus the APC circuit maintains a constant output power.

4-3 PLL CIRCUITS

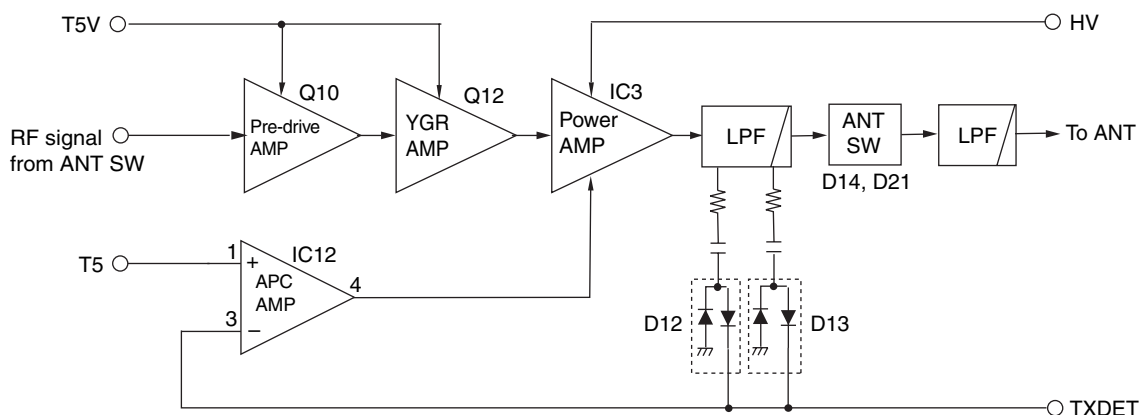
4-3-1 GENERAL

PLL circuits control TX/CH70-RX and RX VCO circuits. IC1 is a dual PLL IC and contains prescalers, programmable counters, programmable dividers, phase detectors, charge pumps for two PLL circuits in its package.

The PLL IC (IC1) and VCOs directly generate the transmit frequency and 1st LO frequency for receiving. The PLL sets the divided ratio based on the serial data from the CPU (IC1: LOGIC BOARD), and compares the phase of VCO output with the reference oscillator's frequency (15.3 MHz) oscillated by X1.

If the oscillated signal drifts, the phase of its frequency changes from the reference frequency, causing a lock voltage change to compensate for the drift in the oscillated frequency.

• APC CIRCUIT



4-3-2 TRANSMIT/DSC RESCEIVE LOOP

A portion of the generated signal at the TX/CH70-RX VCO (Q4, Q5, D3) is applied to the PLL IC (IC1, pin 19) via buffer-amplifier (Q3). The buffer-amplified signal is divided at the programmable divider section and is then applied to the phase detector section. The phase detector compares the input signal with a reference frequency, and then outputs the control signal (pulse-type) from pin 13. The pulse-type signal is converted into DC voltage at the loop filter (R7–R9, R41, C4, C5, C43), and then applied to the TX/CH70-RX VCO (Q4, Q5, D3) as the lock voltage.

The generated signal is applied to the YGR amplifier (Q12) while transmitting, or the 1st mixer (Q62) while receiving via the buffer amplifiers (Q6, Q7) and T/R switch (D7, D8).

4-3-3 NORMAL RECEIVE LOOP

The generated signal at the RX-VCO (Q72, Q73, D51, D52) is applied to the PLL IC (IC1, pin 2) via buffer-amplifier (Q75) and is divided at the programmable divider section and is then applied to the phase detector section.

The phase detector compares the input signal with a reference frequency, and then outputs the control signal (pulse-type) from pin 8. The pulse-type signal is converted into DC voltage at the loop filter (R602–R604, R606, C603, C604, C606, C607), and then applied to the RX VCO (Q72, Q73, D51, D52) as the lock voltage.

The generated signal is applied to the 1st mixer (Q22) after being amplified at the buffer amplifiers (Q74, Q76) as the 1st LO signal.

4-4 DSC circuits

4-4-1 RF CIRCUIT (DSC receive)

The divided RF signals from the divider (L34) are applied to the band-pass filter (L61, C151, C500) to extract a 156.525 MHz (CH70) of DSC signal. The filtered signal is amplified at the RF amplifier (Q61) and then applied to another band-pass filter (L62, L63, C510–C512).

The filtered signal is applied to the 1st mixer circuit (Q62) to obtain a 31.05 MHz of 1st IF signal by mixing with the 1st LO signal. The 1st IF signal is applied to the 2nd IF circuit.

4-4-2 2nd IF AND DEMODULATOR CIRCUITS (CH70 RX)

The 1st IF signal is passed through a pair of crystal filters (FI4A, B) and then amplified at the IF amplifier (Q63). Then the amplified signal is applied to the 2nd mixer circuit (IC14, pin 16).

The amplified 1st IF signal is mixed with the 30.6 MHz of 2nd LO signal at the 2nd mixer in the FM IF IC to obtain a 450 kHz of 2nd IF signal. The mixed IF signal is filtered at the band-pass filter (FI6) then demodulated at the detector section in the FM IF IC (IC14). The demodulated signals are output from pin 9 and applied to the decoder circuit.

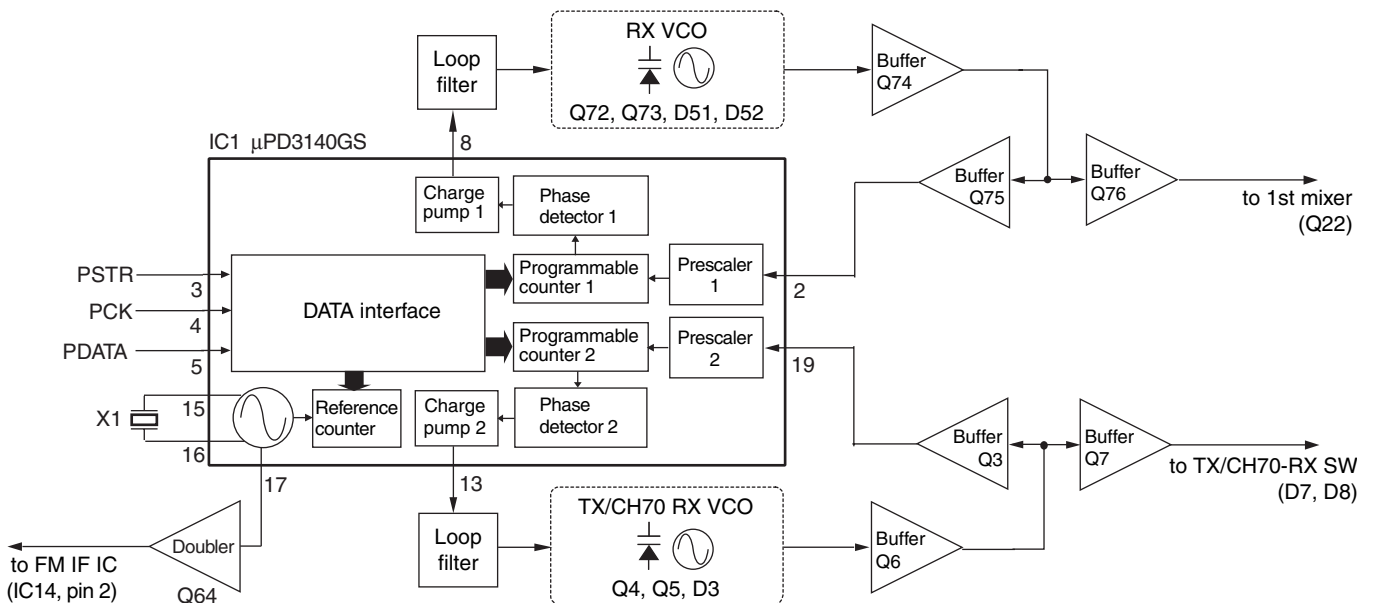
4-4-3 DECODE

The AF signals from FM IF IC (IC14, pin 9) are filtered at the LPF (Q65, R572–R577, C572, C574, C575, C576). The filtered signals are applied to the DSC decoder IC (IC15, pin 2), and then applied to the CPU (IC1, pin 81: LOGIC BOARD) to control the transceiver according to the received DSC call content.

4-4-4 ENCODE

The DSC (FSK) signal is generated by the CPU (IC1, pins 13, 15–21: LOGIC BOARD) and converted into analog signal at the D/A converter (IC2 A, R3–R18). The converted signal is then applied to the modulator circuit via the splatter filter (IC8 B: MAIN UNIT).

• PLL CIRCUITS



4-5 POWER SUPPLY CIRCUITS

4-5-1 VOLTAGE LINES

| LINE | DESCRIPTION |
|------|---|
| HV | The voltage from the connected DC power supply. |
| VCC | Same voltage as the HV line which is passed through the [VOL] switch (R1: VR BOARD). |
| 3.3V | 3.3V for CPU converted from the +5V line at the 3.3V regulator circuit (IC7: LOGIC BOARD). 3.3V for MAIN unit converted from the +5V line at the 3.3V regulator circuit (IC16: MAIN UNIT). |
| +5V | Common 5V converted from the VCC line at the VCC regulator circuit (IC10). |
| T5 | Transmit 5V controled by the T5 control circuit (Q52, Q57) using the SEND signal from the CPU. |
| R8 | Receive 8V converted from the VCC line. The converted voltage is applied to the receiver circuits (Q55, Q56). |
| R5 | Receive 5V controlled by the R5 controll circuit (Q53, Q54) using the RCV signal from CPU. The controlled voltage is applied to the receiver circuits. |

4-6 LOGIC CIRCUITS

4-6-1 CPU

IC1 is a 16 bit single chip microcomputer and contains serial I/O, timer, A/D converter, programable I/O, ROM and RAM in its package. The CPU controls to display characters on the LCD too.

4-6-2 SYSTEM CROCK OSCILLATOR

X1 is a crystal oscillator and oscillates 9.8304 MHz system clock for the CPU.

4-6-3 RESET CIRCUIT

IC4 is a reset IC which outputs "low" pulse signals to the reset terminal of the CPU when the power turns ON.

4-6-4 BATTERY VOLTAGE DETECTOR

IC1 detects the voltage of the VCC line devided by R36, R37.

4-6-5 DIMMER CIRCUIT

CPU (IC1) and Q1, Q2, Q3 compose a dimmer adjustment circuit. The circuit controls the brightness of backlight LEDs (DS2-DS11) in 4 steps.

4-6-6 BPF TUNING VOLTAGE

Ladder-type D/A convertor (IC2 B) genarates and controls tuning voltage for BPF of regular receive circuit.

4-6-6 CPU PORT ALLOCATIONS (IC1: LOGIC BOARD)

| Pin number | Port name | Description |
|------------|-----------|---|
| 1 | DB5 | Input/Output ports for LCD DATA. |
| 2 | DB6 | |
| 3 | DB7 | |
| 5 | DTRS | Input port for distress key. |
| 7 | UNLK | Input port for UNLK signal from PLL IC (IC1: MAIN UNIT). |
| 22 | CH16 | Input port for [CH16•C] key. |
| 23 | CH | Input port for [CH•DUAL] key. |
| 24 | SCAN | Input port for [SCAN•TAG] key. |
| 25 | MENU | Input port for [MENU] key. |
| 26 | ENT | Input port for [ENT] key. |
| 27 | CLR | Input port for [CLR] key. |
| 28 | UP | Input port for [UP] key. |
| 29 | DOWN | Input port for [DOWN] key. |
| 30 | EDATA | Access port for EEPROM (IC3: LOGIC BOARD). |
| 33 | ECK | Clock port for EEPROM (IC3: LOGIC BOARD). |
| 35 | H/L | Output port for output power select signal. |
| 36 | TMUTE | Output port for TX mute signal. |
| 37 | SEND | Output port for T5 line control signal. |
| 38 | RCV | Output port for R5 line control signal. |
| 39 | RMUTE | Output port for AF mute signal. |
| 40 | MICM | Output port for MIC mute signal. |
| 41 | BPLV | Output port for BEEP leve control signal. |
| 48 | SQLV | Input port for SQL voltage level. |
| 50 | LBAT | Input port for battery voltage level. |
| 51 | SQL | Input port for noise level. |
| 52 | TXDET | Input port for TX detection signal. |
| 73 | DIM0 | Output ports for dimmer control signal. |
| 74 | DIM1 | |
| 75 | DIM2 | |
| 78 | FEW | Output port for Flash rewrite mode control signal. |
| 79 | DATAMC | Access ports for cloning. |
| 80 | DATACM | |
| 81 | DSDEC | Input port for DSC receive circuit. |
| 84 | DATANM | Input/Output port for NMEA signal. |
| 88 | PSTB | Output port for strobe signal to PLL IC (IC1: MAIN UNIT). |
| 89 | PCK | Output port for Clock signal to (IC1: MAIN UNIT). |
| 91 | CS1B | Output ports for LCD driver control signal. |
| 93 | RS | |
| 94 | WR | |
| 95 | RD | |
| 96 | DB0 | Input/Output ports for LCD data. |
| 97 | DB1 | |
| 98 | DB2 | |
| 99 | DB3 | |
| 100 | DB4 | |

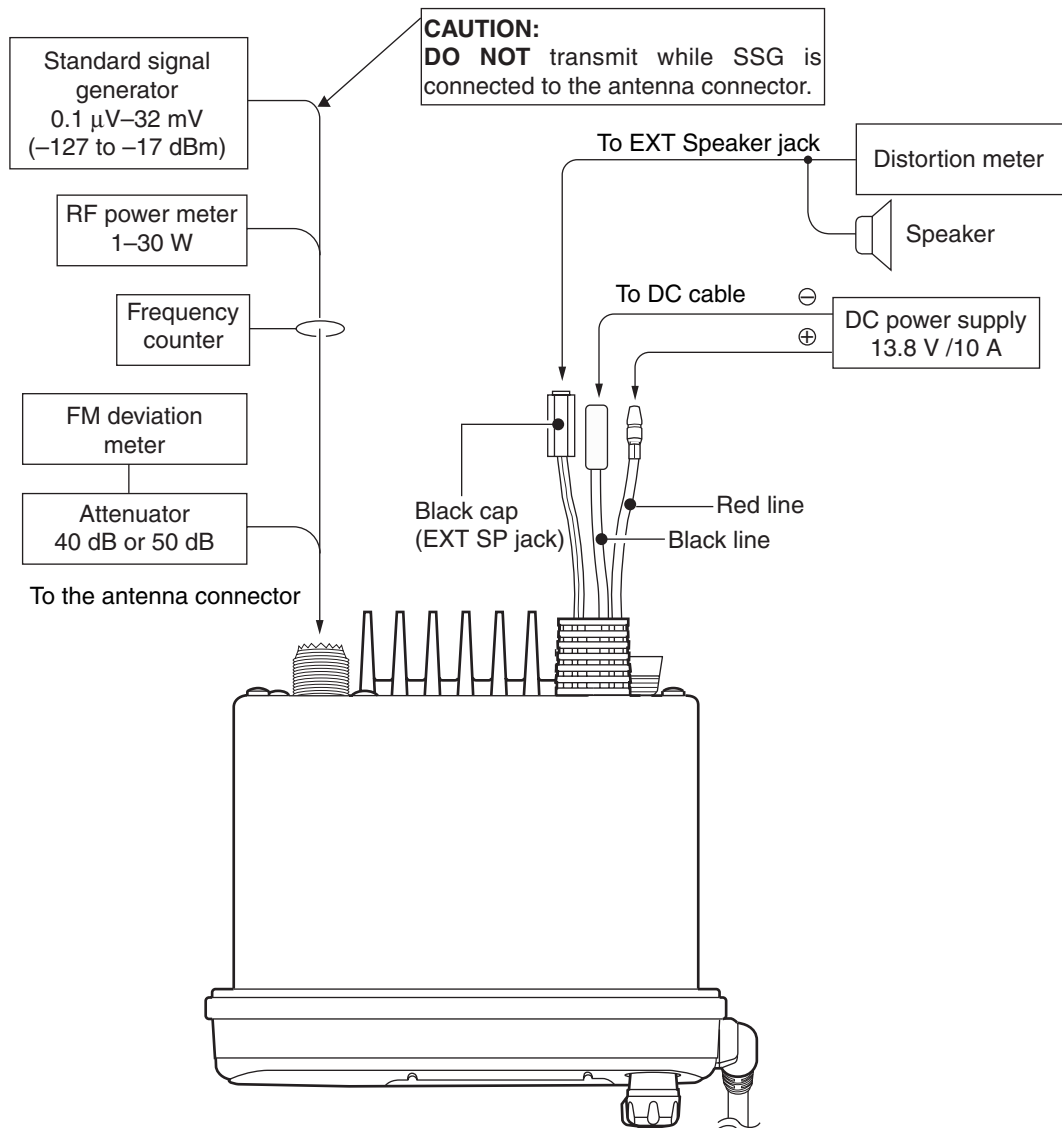
SECTION 5 ADJUSTMENT PROCEDURES

5-1 PREPARATION

■ REQUIRED TEST EQUIPMENTS

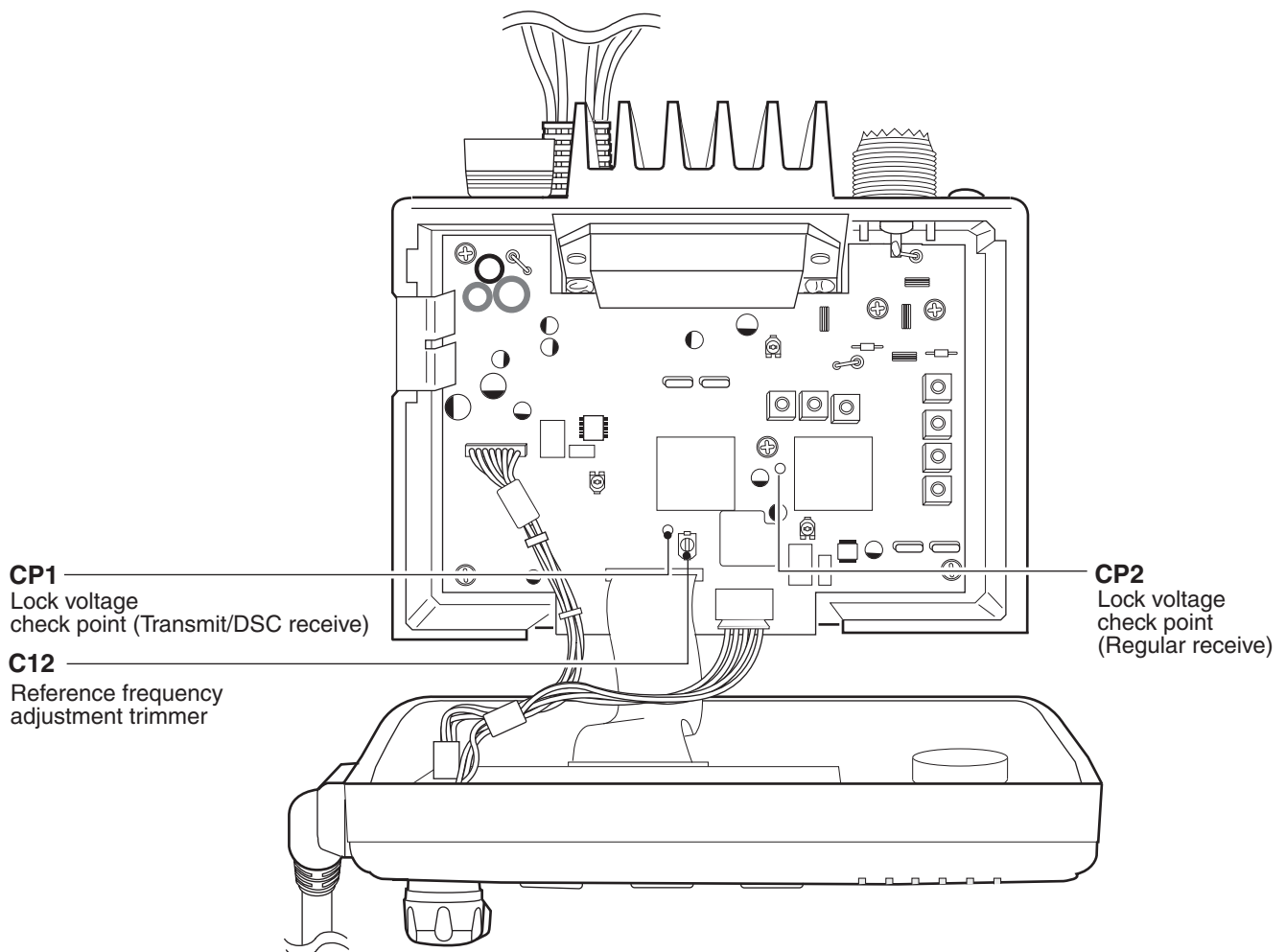
| EQUIPMENT | GRADE AND RANGE | EQUIPMENT | GRADE AND RANGE |
|----------------------------------|--|---------------------------------|---|
| DC power supply | Output voltage : 13.8 V DC Current capacity : More than 10 A | Audio generator | Frequency range : 300–3000 Hz Measuring range : 1–500 mV |
| RF power meter (terminated type) | Measuring range : 1–30 W Frequency range : 100–300 MHz Impedance : 50 Ω SWR : Less than 1.2 : 1 | Standard signal generator (SSG) | Frequency range : 0.1–300 MHz Output level : 0.1 μV–32 mV (–127 to –17 dBm) |
| Frequency counter | Frequency range : 0.1–300 MHz Frequency accuracy: ±1 ppm or better Sensitivity : 100 mV or better | Oscilloscope | Frequency range : DC–20 MHz Measuring range : 0.01–20 V |
| FM deviation meter | Frequency range : 30–300 MHz Measuring range : 0 to ±10 kHz | AC millivoltmeter | Measuring range : 10 mV–10 V |
| DC volt meter | Input impedance : 50 kΩ /V DC or better | External speaker | Input impedance : 4 Ω Capacity : More than 5 W |
| | | Attenuator | Power attenuation : 40 or 50 dB Capacity : More than 30 W |

■ CONNECTION



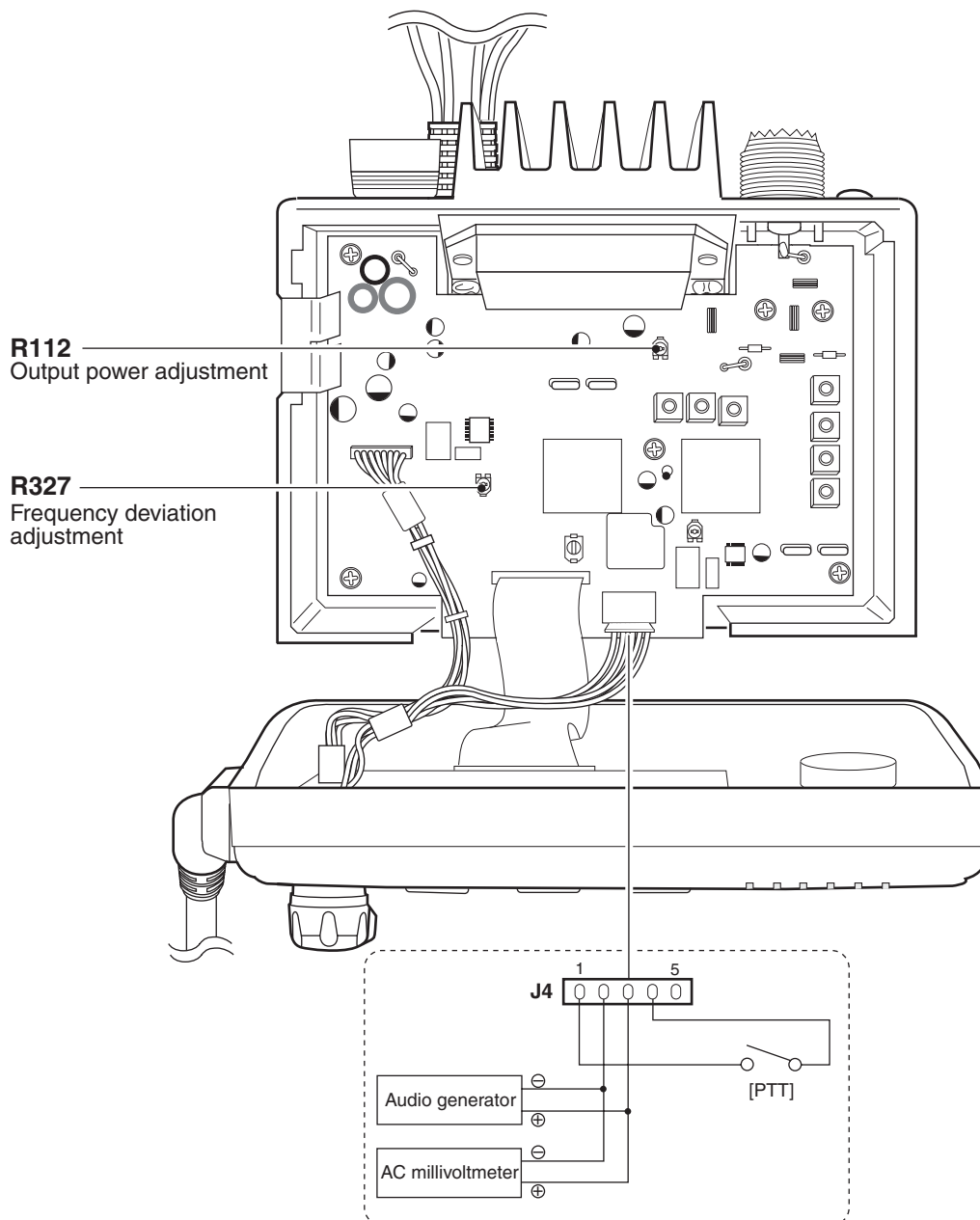
5-2 PLL ADJUSTMENTS

| ADJUSTMENT | ADJUSTMENT CONDITION | MEASUREMENT | | VALUE | ADJUSTMENT POINT | |
|-----------------------------------|---|-------------|---|------------------------|------------------|--------|
| | | UNIT | LOCATION | | UNIT | ADJUST |
| LOCK VOLTAGE (Regular receive) | 1 <ul style="list-style-type: none"> • Channel : CH16 (156.800 MHz) • Receiving | MAIN | Connect a digital multi-meter or oscilloscope to the check point "CP2". | 1.3–2.3 V | MAIN | Verify |
| | 2 <ul style="list-style-type: none"> • Channel : CH16 (156.800 MHz) • Output power : Low • Transmitting | | Connect a digital multi-meter or oscilloscope to the check point "CP1". | | | Verify |
| LOCK VOLTAGE (DSC receive) | 1 <ul style="list-style-type: none"> • Receiving | MAIN | Connect a digital multi-meter or oscilloscope to the check point "CP1". | 1.3–2.3 V | MAIN | Verify |
| REFERENCE FREQUENCY | 1 <ul style="list-style-type: none"> • Channel : CH16 (156.800 MHz) • Output power : Low • Connect a power meter to the antenna connector. • Transmitting | Rear Panel | Loosely couple a frequency counter to the antenna connector. | 156.800 MHz ±500 Hz | MAIN | C12 |



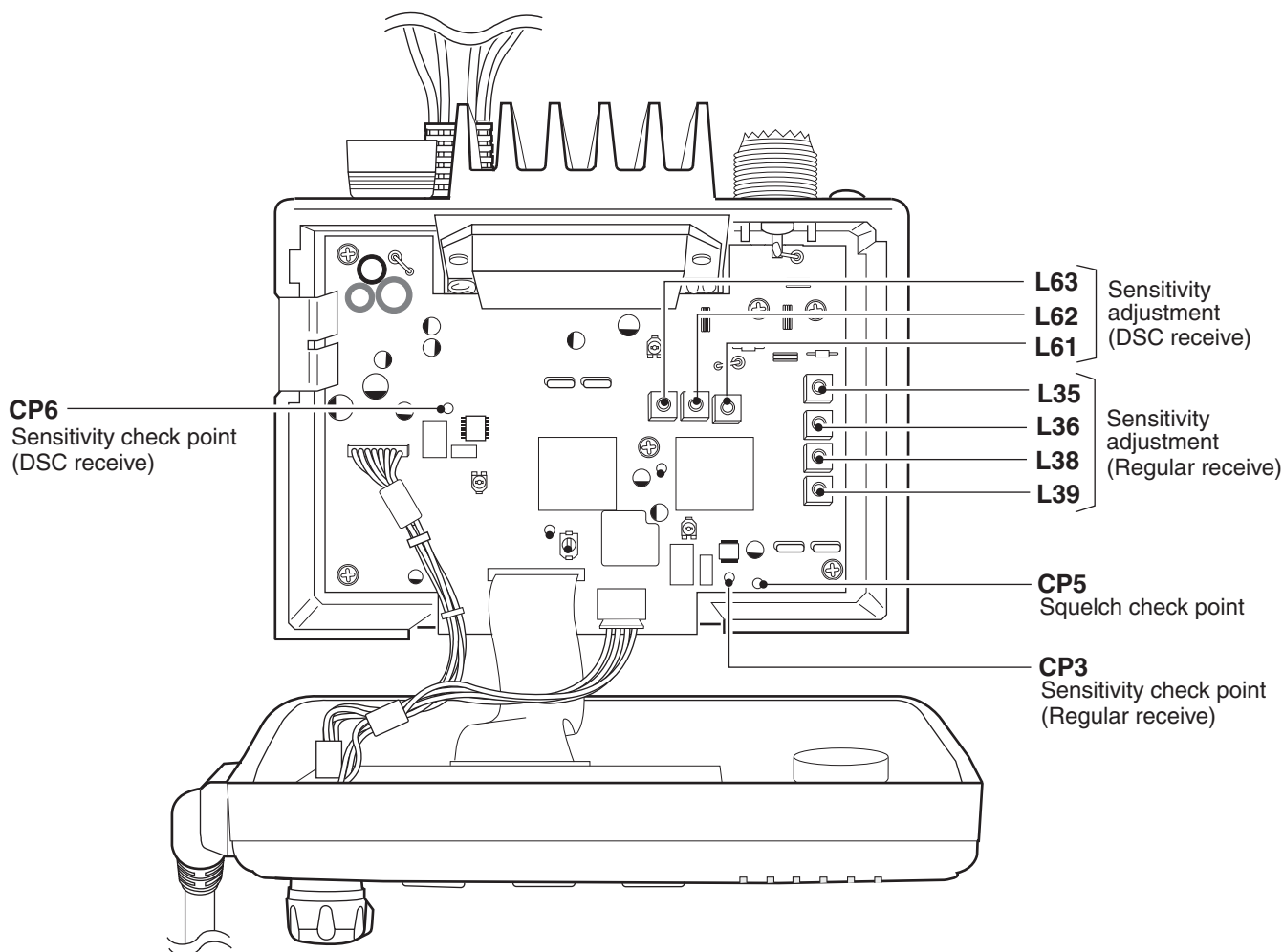
5-3 TRANSMITTER ADJUSTMENTS

| ADJUSTMENT | ADJUSTMENT CONDITION | MEASUREMENT | | VALUE | ADJUSTMENT POINT | |
|---------------------|--|-------------|---|-----------------------------|------------------|--------|
| | | UNIT | LOCATION | | UNIT | ADJUST |
| OUTPUT POWER | 1 <ul style="list-style-type: none"> • Channel : CH16 (156.800 MHz) • Output power : High • Transmitting | Rear Panel | Connect an RF power meter to the antenna connector. | 23–23.5 W | MAIN | R112 |
| FREQUENCY DEVIATION | 1 <ul style="list-style-type: none"> • Operating Channel : CH16 (156.800 MHz) • Output power : Low • Connect an audio generator to the microphone connector and set as ; Frequency : 1 kHz Level : 30 mV • Set the FM deviation meter as ; HPF : OFF LPF : 20 kHz De-emphasis : OFF Detector : (P-P)/2 • Transmitting | Rear Panel | Connect an FM deviation meter to the antenna connector through an attenuator. | $\pm 4.25\text{--}4.35$ kHz | MAIN | R327 |



5-4 RECEIVER ADJUSTMENTS

| ADJUSTMENT | ADJUSTMENT CONDITION | MEASUREMENT | | VALUE | ADJUSTMENT POINT | |
|----------------------------------|--|-------------|---|-----------------|------------------|--|
| | | UNIT | LOCATION | | UNIT | ADJUST |
| SENSITIVITY (Regular receive) | 1 <ul style="list-style-type: none"> • Channel : CH16 (156.800 MHz) • [SQUELCH] : Max. counterclockwise • Set the internal speaker OFF in the SET mode, and connect a distortion meter with a 4 Ω load to [EXT SP] receptacle. • Connect an SSG to the antenna connector and set as ; <ul style="list-style-type: none"> Frequency : 156.800 MHz Level : -8 dBu Modulation : 1 kHz Deviation : ±3 kHz • Receiving | MAIN | Connect a DC volt meter or oscilloscope to the check point "CP3". | Maximum voltage | MAIN | L35 → L36 → L38 → L39 (Repeat two times or more.) |
| SQUELCH | 1 <ul style="list-style-type: none"> • Channel : CH16 (156.800 MHz) • [SQUELCH] : Max. counterclockwise • Connect an SSG to the antenna connector and set as "SENSITIVITY ADJUSTMENT". • Receiving | MAIN | Connect a volt meter or oscilloscope to the check point "CP5". | 0.8 V | MAIN | R214 |
| SENSITIVITY (DSC receive) | 1 <ul style="list-style-type: none"> • Activate DSC check mode ([MENU]+ POWER-ON) and set [8 RX]. • Operating Channel : None • [SQUELCH] : Open • Connect an SSG to the antenna connector and set as ; <ul style="list-style-type: none"> Frequency : 156.525 MHz (CH70) Level : +10 dBu Modulation : 1 kHz Deviation : ±3 kHz • Set the internal speaker OFF in the SET mode, and connect a distortion meter with a 4 Ω load to [EXT SP] receptacle. • Receiving | MAIN | Connect a DC volt meter to the check point "CP6". | Maximum voltage | MAIN | L61 → L62 → L63 (Repeat two times or more.) |



SECTION 6

PARTS LIST

6-1 IC-M421

[LOGIC BOARD]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|-------------------------------|----|--------------|
| IC1 | 1140012330 | S.IC HD64F2227TE13 | B | 70.9/46 |
| IC2 | 1110002700 | S.IC NJM2904M-TE1 | B | 29.6/52.8 |
| IC3 | 1140008650 | S.IC HN58X2464TI | B | 81.8/54.5 |
| IC4 | 1110005770 | S.IC S-80942CNMC-G9C-T2 | B | 90.4/34.9 |
| IC5 | 1170000350 | S.IC PC357N6T | B | 34.6/18.3 |
| IC6 | 1130005290 | S.IC TC74HC14AF (EL) | B | 23/16.2 |
| IC7 | 1180002420 | S.IC S-818A33AUC-BGN-T2 | B | 62.9/20.5 |
| Q1 | 1520000460 | S.TR 2SB1132 T100 R | B | 78/19.9 |
| Q2 | 1530002850 | S.TR 2SC4116-BL (TE85R) | B | 73.7/18 |
| Q3 | 1530002850 | S.TR 2SC4116-BL (TE85R) | B | 73.7/21.8 |
| Q4 | 1590000660 | S.TR DTC144TU T106 | B | 39.3/23.4 |
| D1 | 1750000150 | S.DIO DA204K T146 | B | 36.1/23.9 |
| D2 | 1750000550 | S.DIO 1SS355 TE-17 | B | 39.7/18.3 |
| X1 | 6050012041 | S.XTL CR-790A (9.8304 MHz) | B | 84.2/35.2 |
| R1 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | B | 56.5/47.8 |
| R2 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 56.5/49.1 |
| R3 | 7030004120 | S.RES ERJ3GEYJ 203 V (20 kΩ) | B | 39.2/51.5 |
| R4 | 7030004120 | S.RES ERJ3GEYJ 203 V (20 kΩ) | B | 36.4/51.5 |
| R5 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 36.4/52.8 |
| R6 | 7030004120 | S.RES ERJ3GEYJ 203 V (20 kΩ) | B | 39.2/53.4 |
| R7 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 36.4/54.1 |
| R8 | 7030004120 | S.RES ERJ3GEYJ 203 V (20 kΩ) | B | 39.2/54.7 |
| R9 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 36.4/55.4 |
| R10 | 7030004120 | S.RES ERJ3GEYJ 203 V (20 kΩ) | B | 39.2/56 |
| R11 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 36.4/56.7 |
| R12 | 7030004120 | S.RES ERJ3GEYJ 203 V (20 kΩ) | B | 39.2/57.3 |
| R13 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 36.4/58 |
| R14 | 7030004120 | S.RES ERJ3GEYJ 203 V (20 kΩ) | B | 39.2/58.6 |
| R15 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 36.4/59.3 |
| R16 | 7030004120 | S.RES ERJ3GEYJ 203 V (20 kΩ) | B | 39.2/59.9 |
| R17 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 36.4/60.6 |
| R18 | 7030004120 | S.RES ERJ3GEYJ 203 V (20 kΩ) | B | 39.2/61.2 |
| R22 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | B | 34.3/52.8 |
| R23 | 7030003800 | S.RES ERJ3GEYJ 105 V (1 MΩ) | B | 34.3/50 |
| R24 | 7030003500 | S.RES ERJ3GEYJ 332 V (3.3 kΩ) | B | 32.2/56.3 |
| R25 | 7030005321 | S.RES ERA3YED 103V | B | 24.1/51.1 |
| R26 | 7030005451 | S.RES ERA3YED 153V | B | 24.1/52.5 |
| R28 | 7030003860 | S.RES ERJ3GE JPW V | B | 22/50.4 |
| R31 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 77.3/58.8 |
| R32 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 84.4/52 |
| R33 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | B | 53.5/18.2 |
| R34 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 43.7/19 |
| R36 | 7030005981 | S.RES ERA3YED 333V | B | 87.3/49.3 |
| R37 | 7030008051 | S.RES ERA3YKD 184V (180 kΩ) | B | 87.1/48 |
| R41 | 7030003570 | S.RES ERJ3GEYJ 123 V (12 kΩ) | B | 85.2/46 |
| R42 | 7030003570 | S.RES ERJ3GEYJ 123 V (12 kΩ) | B | 86.5/46 |
| R43 | 7030003570 | S.RES ERJ3GEYJ 123 V (12 kΩ) | B | 86.5/43.2 |
| R44 | 7030003640 | S.RES ERJ3GEYJ 473 V (47 kΩ) | B | 89.5/46.7 |
| R45 | 7030003640 | S.RES ERJ3GEYJ 473 V (47 kΩ) | B | 90.3/39.2 |
| R46 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | B | 79.7/38.6 |
| R47 | 7030003570 | S.RES ERJ3GEYJ 123 V (12 kΩ) | B | 77/35.8 |
| R48 | 7030003570 | S.RES ERJ3GEYJ 123 V (12 kΩ) | B | 77/9.8/1 |
| R49 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | B | 75.4/34.3 |
| R51 | 7030003250 | S.RES ERJ3GEYJ 270 V (27 Ω) | B | 75.9/23.8 |
| R52 | 7030003250 | S.RES ERJ3GEYJ 270 V (27 Ω) | B | 77.2/23.8 |
| R53 | 7030003250 | S.RES ERJ3GEYJ 270 V (27 Ω) | B | 78.5/23.8 |
| R54 | 7030003590 | S.RES ERJ3GEYJ 183 V (18 kΩ) | B | 66.7/29.8 |
| R55 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 66.7/27 |
| R56 | 7030003590 | S.RES ERJ3GEYJ 183 V (18 kΩ) | B | 65.4/29.8 |
| R57 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 65.4/27 |
| R58 | 7030003590 | S.RES ERJ3GEYJ 183 V (18 kΩ) | B | 64.1/29.8 |
| R59 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 64.1/27 |
| R60 | 7030003630 | S.RES ERJ3GEYJ 393 V (39 kΩ) | B | 71.5/20.3 |
| R61 | 7030003640 | S.RES ERJ3GEYJ 473 V (47 kΩ) | B | 71.5/17.5 |
| R62 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | B | 72.8/24.5 |
| R63 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | B | 73.6/19.9 |
| R64 | 7030003460 | S.RES ERJ3GEYJ 152 V (1.5 kΩ) | B | 71.5/24.5 |
| R71 | 7030003430 | S.RES ERJ3GEYJ 821 V (820 Ω) | B | 85.3/8.1 |
| R72 | 7030003430 | S.RES ERJ3GEYJ 821 V (820 Ω) | B | 23/8.7 |
| R73 | 7030003430 | S.RES ERJ3GEYJ 821 V (820 Ω) | B | 11.4/8.7 |
| R74 | 7030003380 | S.RES ERJ3GEYJ 331 V (330 Ω) | B | 12.4/50 |
| R75 | 7030003380 | S.RES ERJ3GEYJ 331 V (330 Ω) | B | 12.4/37 |
| R76 | 7030003380 | S.RES ERJ3GEYJ 331 V (330 Ω) | B | 12.4/43.5 |
| R81 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | B | 58.2/25.3 |
| R82 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | B | 37.7/26.6 |

[LOGIC BOARD]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|-------------------------------|----|--------------|
| R83 | 7030003580 | S.RES ERJ3GEYJ 153 V (15 kΩ) | B | 39.2/25.3 |
| R84 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | B | 41.5/23.3 |
| R85 | 7030003400 | S.RES ERJ3GEYJ 471 V (470 Ω) | B | 37.4/21.1 |
| R86 | 7030003520 | S.RES ERJ3GEYJ 472 V (4.7 kΩ) | B | 29.7/16.7 |
| R91 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | B | 56.2/33.8 |
| R92 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | B | 54.9/33.8 |
| R93 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | B | 53.6/33.8 |
| R94 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | B | 52.3/33.8 |
| R95 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | B | 51/33.8 |
| R101 | 7030003640 | S.RES ERJ3GEYJ 473 V (47 kΩ) | B | 86.9/51.7 |
| | | [HOL], [FRG] | | |
| | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | B | 86.9/51.7 |
| | | [EUR], [EUR-1] | | |
| R102 | 7030003640 | S.RES ERJ3GEYJ 473 V (47 kΩ) | B | 88.3/51.7 |
| | | [EUR], [EUR-1] | | |
| | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | B | 88.3/51.7 |
| | | [HOL] | | |
| | 7030003680 | S.RES ERJ3GE JPW V | B | 88.3/51.7 |
| | | [UK], [UK-1] | | |
| C1 | 4510004630 | S.ELE ECEV1CA100SR | B | 57.7/55.3 |
| C2 | 4030011600 | S.CER C1608 JB 1E 104K-T | B | 61.1/53.8 |
| C3 | 4030006900 | S.CER C1608 JB 1H 103K-T | B | 62.4/53.8 |
| C21 | 4030011600 | S.CER C1608 JB 1E 104K-T | B | 28.3/56.3 |
| C31 | 4030006900 | S.CER C1608 JB 1H 103K-T | B | 83.1/50 |
| C32 | 4030011600 | S.CER C1608 JB 1E 104K-T | B | 81.1/52 |
| C33 | 4030011600 | S.CER C1608 JB 1E 104K-T | B | 75.8/57.4 |
| C34 | 4030011600 | S.CER C1608 JB 1E 104K-T | B | 84.9/48.8 |
| C41 | 4030011600 | S.CER C1608 JB 1E 104K-T | B | 87.6/40.6 |
| C42 | 4030006900 | S.CER C1608 JB 1H 103K-T | B | 89.9/48 |
| C44 | 4030008890 | S.CER C1608 JB 1H 273K-T | B | 88/34.5 |
| C45 | 4030007050 | S.CER C1608 CH 1H 220J-T | B | 80.4/36.5 |
| C46 | 4030007050 | S.CER C1608 CH 1H 220J-T | B | 78.8/36.5 |
| C51 | 4510004630 | S.ELE ECEV1CA100SR | B | 83/23.6 |
| C52 | 4030006860 | S.CER C1608 JB 1H 102K-T | B | 74.1/24.5 |
| C81 | 4030011600 | S.CER C1608 JB 1E 104K-T | B | 59.9/24 |
| C82 | 4030006860 | S.CER C1608 JB 1H 472K-T | B | 41.3/18.3 |
| C83 | 4030006900 | S.CER C1608 JB 1H 103K-T | B | 29.7/19.5 |
| C84 | 4030011600 | S.CER C1608 JB 1E 104K-T | B | 17.7/19.5 |
| C91 | 4550006460 | S.TAN ECST1VX225R | B | 31.3/45.8 |
| C92 | 4550006460 | S.TAN ECST1VX225R | B | 34.6/43 |
| C93 | 4550006460 | S.TAN ECST1VX225R | B | 31.3/38.8 |
| C94 | 4550006460 | S.TAN ECST1VX225R | B | 34.6/36 |
| C95 | 4550007000 | S.TAN ECST1VY105R | B | 46.8/32.4 |
| C96 | 4550007000 | S.TAN ECST1VY105R | B | 44.7/32.4 |
| C97 | 4550007000 | S.TAN ECST1VY105R | B | 42.6/32.4 |
| C98 | 4550007000 | S.TAN ECST1VY105R | B | 40.5/32.4 |
| C99 | 4550007000 | S.TAN ECST1VY105R | B | 38.4/32.4 |
| C101 | 4030011600 | S.CER C1608 JB 1E 104K-T | B | 59.7/21.9 |
| C102 | 4510004630 | S.ELE ECEV1CA100SR | B | 56.6/20.5 |
| C103 | 4030017490 | S.CER C1608 JB 1A 105K-T | B | 59.7/19.5 |
| C104 | 4030006860 | S.CER C1608 JB 1H 102K-T | B | 7.4/15.7 |
| C105 | 4030006860 | S.CER C1608 JB 1H 102K-T | B | 9/53 |
| C106 | 4030006900 | S.CER C1608 JB 1H 103K-T | B | 57.8/8.9 |
| C107 | 4030006900 | S.CER C1608 JB 1H 103K-T | B | 66.2/17.1 |
| J1 | 6510022470 | S.CNR 40FLT-SM1-TB | B | 55.4/11.8 |
| J2 | 6510023390 | S.CNR 27FLZ-SM1-TB | B | 48.1/39.5 |
| J3 | 6510018970 | S.CNR B4B-PH-SM3-TB | B | 36.9/10.7 |
| DS1 | 5030002750 | LCD HLM7937-010100 | T | 69.9/11.8 |
| DS2 | 5040002310 | S.LED SML-311YTT86 | T | 82.7/4.2 |
| DS3 | 5040002310 | S.LED SML-311YTT86 | T | 54.6/11.8 |
| DS4 | 5040002310 | S.LED SML-311YTT86 | T | 24/11.8 |
| DS5 | 5040002310 | S.LED SML-311YTT86 | T | 39.3/11.8 |
| DS6 | 5040002310 | S.LED SML-311YTT86 | T | 10.2/11.8 |
| DS7 | 5040002310 | S.LED SML-311YTT86 | T | 85.9/50.9 |
| DS8 | 5040002660 | S.LED FY1101F-TR (LED) | T | 10.3/50.9 |
| DS9 | 5040002660 | S.LED FY1101F-TR (LED) | T | 85.9/33.5 |
| DS10 | 5040002660 | S.LED FY1101F-TR (LED) | T | 10.3/33.5 |
| DS11 | 5040002660 | S.LED FY1101F-TR (LED) | T | 85.9/42.2 |
| DS12 | 5040002660 | S.LED FY1101F-TR (LED) | T | 10.3/42.2 |
| DS13 | 5040002660 | S.LED FY1101F-TR (LED) | T | 10.3/42.2 |
| EP1 | 0910058092 | PCB B 6186B | | |

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

S.=Surface mount

[MAIN UNIT]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|------------------------------|----|--------------|
| IC1 | 1130007610 | S.IC μ PD3140GS-E1 (DS8) | T | 65.5/21.5 |
| IC2 | 1110003200 | S.IC TA31136FN (EL) | T | 89.6/16 |
| IC3 | 1150002081 | IC RA35H1516M-21 | | |
| IC4 | 1130008090 | S.IC BU4066BCFV-E1 | T | 10.3/24.6 |
| IC7 | 1110000960 | S.IC NJM4558M-TE1 | T | 27.5/28.8 |
| IC8 | 1110000960 | S.IC NJM4558M-TE1 | T | 27.5/36.2 |
| IC9 | 1110003090 | IC LA4425A | | |
| IC10 | 1110002020 | IC TA7805S | | |
| IC11 | 1120002830 | S.IC NJM2125F-TE1 | T | 97.1/10.8 |
| IC12 | 1110002400 | S.IC NJM2107F-TE1 | T | 60.8/74.6 |
| IC14 | 1110003200 | S.IC TA31136FN (EL) | T | 36/55.5 |
| IC15 | 1110003650 | S.IC NJM2211M-TE1 | T | 15.1/13 |
| IC16 | 1180002420 | S.IC S-818A33AUC-BGN-T2 | T | 20.9/63.1 |
| Q1 | 1530002850 | S.TR 2SC4116-BL (TE85R) | T | 62.3/39.5 |
| Q2 | 1590000430 | S.TR DTC144EUA T106 | T | 43/30.5 |
| Q3 | 1530002600 | S.TR 2SC4215-O (TE85R) | T | 63.4/44.3 |
| Q4 | 1530002920 | S.TR 2SC4226-T1 R25 | T | 62.7/35.1 |
| Q5 | 1530002920 | S.TR 2SC4226-T1 R25 | T | 61/30.9 |
| Q6 | 1530002600 | S.TR 2SC4215-O (TE85R) | T | 58.3/39.3 |
| Q7 | 1530002600 | S.TR 2SC4215-O (TE85R) | T | 51.4/45.1 |
| Q10 | 1530002920 | S.TR 2SC4226-T1 R25 | T | 46.5/79.3 |
| Q12 | 1530002240 | S.TR 2SC3775-3-TB | T | 41.7/78.3 |
| Q17 | 1590000430 | S.TR DTC144EUA T106 | T | 69.2/74.2 |
| Q21 | 1580000540 | S.FET 3SK131-T2-LA | T | 109/55.7 |
| Q22 | 1580000540 | S.FET 3SK131-T2-LA | T | 114.9/26.5 |
| Q23 | 1530002360 | S.TR 2SC2714-Y (TE85R) | T | 102.5/7.5 |
| Q31 | 1530002850 | S.TR 2SC4116-BL (TE85R) | T | 9.4/41.4 |
| Q32 | 1530002850 | S.TR 2SC4116-BL (TE85R) | T | 6.6/38.3 |
| Q33 | 1590001390 | S.FET 2SJ144-Y (TE85R) | T | 4.3/28.9 |
| Q34 | 1590000430 | S.TR DTC144EUA T106 | T | 5/20.1 |
| Q41 | 1590000430 | S.TR DTC144EUA T106 | T | 9.9/63.1 |
| Q52 | 1590000430 | S.TR DTC144EUA T106 | T | 26.3/70.4 |
| Q53 | 1510000920 | S.TR 2SA1577 T106 Q | T | 26.3/66.6 |
| Q54 | 1590000430 | S.TR DTC144EUA T106 | T | 26.3/63.5 |
| Q55 | 1520000460 | S.TR 2SB1132 T100 R | T | 34.8/65.7 |
| Q56 | 1530002850 | S.TR 2SC4116-BL (TE85R) | T | 29.4/67 |
| Q57 | 1510000920 | S.TR 2SA1577 T106 Q | T | 26.3/73.5 |
| Q61 | 1580000540 | S.FET 3SK131-T2-LA | T | 89.6/65.4 |
| Q62 | 1580000540 | S.FET 3SK131-T2-LA | T | 65.5/57.8 |
| Q63 | 1530002360 | S.TR 2SC2714-Y (TE85R) | T | 45.4/53.5 |
| Q64 | 1530002600 | S.TR 2SC4215-O (TE85R) | T | 44.4/37.9 |
| Q65 | 1530002850 | S.TR 2SC4116-BL (TE85R) | T | 23.8/11.2 |
| Q71 | 1530002850 | S.TR 2SC4116-BL (TE85R) | T | 89/35.1 |
| Q72 | 1530002920 | S.TR 2SC4226-T1 R25 | T | 85/33.9 |
| Q73 | 1530002920 | S.TR 2SC4226-T1 R25 | T | 80.8/34 |
| Q74 | 1530002600 | S.TR 2SC4215-O (TE85R) | T | 88.6/38.7 |
| Q75 | 1530002600 | S.TR 2SC4215-O (TE85R) | T | 94.2/32.7 |
| Q76 | 1530002600 | S.TR 2SC4215-O (TE85R) | T | 95.1/44.2 |
| D1 | 1790000620 | S.DIO MA77 (TX) | T | 50.3/33.8 |
| D2 | 1790000620 | S.DIO MA77 (TX) | T | 50.8/31.1 |
| D3 | 1750000710 | S.VCP HVC350BTRF | T | 55.2/31.9 |
| D7 | 1790000620 | S.DIO MA77 (TX) | T | 53.7/71.5 |
| D8 | 1790000620 | S.DIO MA77 (TX) | T | 56.5/53.5 |
| D10 | 1790001250 | S.DIO MA2S111-(TX) | T | 64.6/71.2 |
| D11 | 1790001250 | S.DIO MA2S111-(TX) | T | 74.7/78.4 |
| D12 | 1790000690 | S.DIO HSM88ASR-TR | T | 81.4/79.1 |
| D13 | 1790000690 | S.DIO HSM88ASR-TR | T | 82.9/74.4 |
| D14 | 1710001080 | DIO XB15A308 | | |
| D21 | 1710001080 | DIO XB15A308 | | |
| D25 | 1720000260 | S.VCP 1SV214 (TPH2) | T | 117.6/57.5 |
| D26 | 1720000260 | S.VCP 1SV214 (TPH2) | T | 108.3/49.2 |
| D27 | 1720000260 | S.VCP 1SV214 (TPH2) | T | 106.6/42.3 |
| D28 | 1720000260 | S.VCP 1SV214 (TPH2) | T | 105.6/35.6 |
| D41 | 1750000130 | S.DIO DA204U T106 | T | 9.7/60.1 |
| D42 | 1790000700 | DIO DSA3A1 | | |
| D51 | 1750000710 | S.VCP HVC350BTRF | T | 80.9/39.8 |
| D52 | 1750000710 | S.VCP HVC350BTRF | T | 80.9/38.5 |
| F11 | 2030000350 | MLH 21R15AB (FL-368) | | |
| F12 | 2030000270 | MLH FL-363 (21.7 MHz) | | |
| F13 | 2020001680 | CER ALFY450E | | |
| F14 | 2030000380 | MLH 31M15B5 (FL-372) | | |
| F16 | 2020001680 | CER ALFY450E | | |
| X1 | 6050011980 | S.XTL CR-786 (15.3 MHz) | T | 54.7/19 |
| X2 | 6070000200 | DCR CDBLA450KCAY24-B0 | | |
| X3 | 6050011990 | S.XTL CR-787 (21.250 MHz) | T | 95.5/23.5 |
| X4 | 6070000200 | DCR CDBLA450KCAY24-B0 | | |
| L1 | 6200009560 | S.COL MLG1608B R10J-T | T | 63.4/46.2 |
| L2 | 6200010840 | S.COL MLG1608B 56NJ-T | T | 65.6/41.6 |
| L3 | 6200003090 | S.COL NL 322522T-2R7J-3 | T | 51.9/37.5 |
| L4 | 6200008190 | S.COL 0.25-1.9-8TL 80N | T | 55.6/35.1 |
| L6 | 6200009560 | S.COL MLG1608B R10J-T | T | 56.1/41.6 |
| L7 | 6200010840 | S.COL MLG1608B 56NJ-T | T | 51.6/43.2 |
| L11 | 6200009560 | S.COL MLG1608B R10J-T | T | 105.6/33.1 |

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

[MAIN UNIT]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|--|----|--------------|
| L12 | 6200009560 | S.COL MLG1608B R10J-T | T | 109/32.5 |
| L14 | 6200005740 | S.COL ELJRE 47NG-F | T | 46.8/73.9 |
| L15 | 6200002430 | S.COL NL 252018T-082J | T | 44.3/75.3 |
| L16 | 6200009620 | S.COL MLG1608B 68NJ-T | T | 39.4/77.9 |
| L17 | 6200002600 | S.COL NL 252018T-047J | T | 36.6/76.9 |
| L18 | 6200002600 | S.COL NL 252018T-047J | T | 35.9/81.6 |
| L19 | 6110001670 | COL LA-253 | | |
| L20 | 6170000230 | COL LW-25 | | |
| L21 | 6110001600 | COL LA-243 | | |
| L22 | 6110001600 | COL LA-243 | | |
| L31 | 6110001600 | COL LA-243 | | |
| L34 | 6140002810 | S.COL LR-317 | T | 104.1/60.3 |
| L35 | 6150003820 | COL LS-440 | | |
| L36 | 6150003820 | COL LS-440 | | |
| L38 | 6150003820 | COL LS-440 | | |
| L39 | 6150003820 | COL LS-440 | | |
| L42 | 6200010090 | S.COL ELJND R82JF | T | 111.4/25.2 |
| L61 | 6150003820 | COL LS-440 | | |
| L62 | 6150003820 | COL LS-440 | | |
| L63 | 6150003820 | COL LS-440 | | |
| L64 | 6200007360 | S.COL ELJND R47J | T | 65.4/60.5 |
| L65 | 6200009560 | S.COL MLG1608B R10J-T | T | 61.9/53.9 |
| L66 | 6200009560 | S.COL MLG1608B R10J-T | T | 65.3/53.8 |
| L67 | 6200001980 | S.COL NL 252018T-1R0J | T | 43.8/42 |
| L68 | 6200001980 | S.COL NL 252018T-1R0J | T | 41.9/46.3 |
| L71 | 6200003090 | S.COL NL 322522T-2R7J-3 | T | 86.8/43.4 |
| L72 | 6200008190 | S.COL 0.25-1.9-8TL 80N | T | 84.1/39.7 |
| L73 | 6200009560 | S.COL MLG1608B R10J-T | T | 92.1/39.9 |
| L74 | 6200009560 | S.COL MLG1608B R10J-T | T | 96.3/32.4 |
| L75 | 6200010840 | S.COL MLG1608B 56NJ-T | T | 92.4/30 |
| L76 | 6200010840 | S.COL MLG1608B 56NJ-T | T | 93.2/44.2 |
| R1 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 k Ω) | T | 72.1/18.6 |
| R2 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 k Ω) | T | 72.3/20 |
| R3 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 k Ω) | T | 72.5/21.4 |
| R4 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 k Ω) | T | 71/16 |
| R5 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 k Ω) | T | 71/17.3 |
| R6 | 7030003380 | S.RES ERJ3GEYJ 331 V (330 Ω) | T | 72.7/24 |
| R7 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 k Ω) | T | 58.8/23 |
| R8 | 7030003200 | S.RES ERJ3GEYJ 100 V (10 Ω) | T | 56/23 |
| R9 | 7030003500 | S.RES ERJ3GEYJ 332 V (3.3 k Ω) | T | 53.3/23.5 |
| R10 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 k Ω) | T | 50.5/23.5 |
| R11 | 7030003380 | S.RES ERJ3GEYJ 331 V (330 Ω) | T | 58.9/19.7 |
| R21 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 k Ω) | T | 64.2/38.6 |
| R22 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 k Ω) | T | 40/34.4 |
| R23 | 7030003640 | S.RES ERJ3GEYJ 473 V (47 k Ω) | T | 41.3/34.4 |
| R24 | 7030003410 | S.RES ERJ3GEYJ 561 V (560 Ω) | T | 49.2/30.8 |
| R25 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 43.2/26.9 |
| R26 | 7030003620 | S.RES ERJ3GEYJ 333 V (33 k Ω) | T | 36.7/26.1 |
| R27 | 7030003600 | S.RES ERJ3GEYJ 223 V (22 k Ω) | T | 35.9/28.2 |
| R28 | 7030003620 | S.RES ERJ3GEYJ 333 V (33 k Ω) | T | 37.9/28.8 |
| R31 | 7030003400 | S.RES ERJ3GEYJ 471 V (470 Ω) | T | 60.5/46.4 |
| R32 | 7030003660 | S.RES ERJ3GEYJ 683 V (68 k Ω) | T | 60.5/45.1 |
| R33 | 7030003360 | S.RES ERJ3GEYJ 220 V (220 Ω) | T | 71.4/32.6 |
| R34 | 7030003240 | S.RES ERJ3GEYJ 220 V (22 Ω) | T | 70.1/33.8 |
| R35 | 7030003360 | S.RES ERJ3GEYJ 221 V (220 Ω) | T | 68.8/31 |
| R41 | 7030003410 | S.RES ERJ3GEYJ 561 V (560 Ω) | T | 49.2/37.7 |
| R42 | 7030003550 | S.RES ERJ3GEYJ 822 V (8.2 k Ω) | T | 60.8/35 |
| R43 | 7030003550 | S.RES ERJ3GEYJ 822 V (8.2 k Ω) | T | 59.1/31 |
| R44 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 60.4/39.4 |
| R45 | 7030003390 | S.RES ERJ3GEYJ 391 V (390 Ω) | T | 59.5/36.4 |
| R46 | 7030003350 | S.RES ERJ3GEYJ 181 V (180 Ω) | T | 61.1/33 |
| R51 | 7030003420 | S.RES ERJ3GEYJ 681 V (680 Ω) | T | 54.8/41.6 |
| R52 | 7030003660 | S.RES ERJ3GEYJ 683 V (68 k Ω) | T | 56.1/38.8 |
| R55 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 55.7/43.6 |
| R56 | 7030003610 | S.RES ERJ3GEYJ 273 V (27 k Ω) | T | 53.6/44.5 |
| R81 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 k Ω) | T | 58.1/53.2 |
| R82 | 7030003270 | S.RES ERJ3GEYJ 390 V (39 Ω) | T | 52.1/72.2 |
| R83 | 7030003480 | S.RES ERJ3GEYJ 222 V (2.2 k Ω) | T | 50.8/72.2 |
| R84 | 7030003390 | S.RES ERJ3GEYJ 391 V (390 Ω) | T | 48.8/74.6 |
| R85 | 7030003200 | S.RES ERJ3GEYJ 100 V (10 Ω) | T | 45.5/71.4 |
| R86 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 k Ω) | T | 44.8/73.4 |
| R87 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 k Ω) | T | 48.8/79.3 |
| R88 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 50.1/79.3 |
| R91 | 7030003480 | S.RES ERJ3GEYJ 222 V (2.2 k Ω) | T | 40.4/73.9 |
| R92 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 41.9/73.9 |
| R93 | 7030003240 | S.RES ERJ3GEYJ 220 V (22 Ω) | T | 37.8/73.1 |
| R94 | 7030003240 | S.RES ERJ3GEYJ 220 V (22 Ω) | T | 39.1/73.1 |
| R95 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 k Ω) | T | 44.1/79.3 |
| R96 | 7030003270 | S.RES ERJ3GEYJ 390 V (39 Ω) | T | 44.1/82.6 |
| R101 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 58.3/77.6 |
| R102 | 7030003600 | S.RES ERJ3GEYJ 223 V (22 k Ω) | T | 61.1/78.3 |
| R103 | 7030003460 | S.RES ERJ3GEYJ 152 V (1.5 k Ω) | T | 65.2/73.4 |
| R104 | 7030003610 | S.RES ERJ3GEYJ 273 V (27 k Ω) | T | 70.7/79.1 |
| R105 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 56.7/72.3 |
| R106 | 7510001490 | S.TMR NTCG16 3NH 681KT | T | 70/77.1 |
| R111 | 7030003800 | S.RES ERJ3GEYJ 105 V (1 M Ω) | T | 69.2/72 |
| R112 | 7130002740 | S.TRI RV-150 (RH03A3A14X0FC) | T | 74.1/73 |
| R113 | 7030003540 | S.RES ERJ3GEYJ 682 V (6.8 k Ω) | T | 77.9/71.6 |
| R114 | 7030003340 | S.RES ERJ3GEYJ 151 V (150 Ω) | T | 77.5/78.4 |
| R115 | 7030003480 | S.RES ERJ3GEYJ 222 V (2.2 k Ω) | T | 79.6/76.9 |
| R116 | 7030003410 | S.RES ERJ3GEYJ 561 V (560 Ω) | T | 71.4/77.1 |

S.=Surface mount

[MAIN UNIT]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|----------------------------------|----|--------------|
| R121 | 7030005420 | S.RES ERJ3GEYJ 202 V (2 kΩ) | T | 84.4/82.1 |
| R122 | 7030005420 | S.RES ERJ3GEYJ 202 V (2 kΩ) | T | 83.1/82.1 |
| R123 | 7030005420 | S.RES ERJ3GEYJ 202 V (2 kΩ) | T | 88.5/74.4 |
| R124 | 7030005420 | S.RES ERJ3GEYJ 202 V (2 kΩ) | T | 86.5/75.2 |
| R125 | 7030001120 | S.RES MCR50JZHJ 82 Ω (820) | T | 83.4/71.2 |
| R126 | 7030003670 | S.RES ERJ3GEYJ 823 V (82 kΩ) | T | 105.4/93.6 |
| R127 | 7030003760 | S.RES ERJ3GEYJ 474 V (470 kΩ) | T | 78.3/76.4 |
| R128 | 7030003690 | S.RES ERJ3GEYJ 124 V (120 kΩ) | T | 78.3/73.6 |
| R143 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | T | 105.9/65.6 |
| R144 | 7030003230 | S.RES ERJ3GEYJ 180 V (18 Ω) | T | 107.8/63.6 |
| R145 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | T | 107.2/65.6 |
| R146 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 104.5/49 |
| R147 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 105.8/52 |
| R148 | 7030003360 | S.RES ERJ3GEYJ 221 V (220 Ω) | T | 107.3/61.5 |
| R149 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 111.5/56.4 |
| R150 | 7030003630 | S.RES ERJ3GEYJ 393 V (39 kΩ) | T | 105.8/55.9 |
| R151 | 7030003640 | S.RES ERJ3GEYJ 473 V (47 kΩ) | T | 107.3/58.8 |
| R152 | 7030003260 | S.RES ERJ3GEYJ 330 V (33 Ω) | T | 114.1/56.4 |
| R153 | 7030004050 | S.RES ERJ3GEYJ 1R0 V (1 Ω) | T | 108.2/52.5 |
| R154 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | T | 109.5/52.5 |
| R155 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 105.5/46.1 |
| R171 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 104.3/42.1 |
| R172 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 104.1/39.4 |
| R173 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 103/35.7 |
| R176 | 7030003820 | S.RES ERJ3GEYJ 155 V (1.5 MΩ) | T | 109.9/29.2 |
| R177 | 7030003600 | S.RES ERJ3GEYJ 223 V (22 kΩ) | T | 109.9/27.9 |
| R178 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 112.4/27.5 |
| R181 | 7030003640 | S.RES ERJ3GEYJ 473 V (47 kΩ) | T | 118/28.1 |
| R182 | 7030003200 | S.RES ERJ3GEYJ 100 V (10 Ω) | T | 107.7/27 |
| R183 | 7030003460 | S.RES ERJ3GEYJ 152 V (1.5 kΩ) | T | 113.2/22.9 |
| R185 | 7030003460 | S.RES ERJ3GEYJ 152 V (1.5 kΩ) | T | 117.6/20.8 |
| R201 | 7030003460 | S.RES ERJ3GEYJ 152 V (1.5 kΩ) | T | 109.8/7.1 |
| R202 | 7030003400 | S.RES ERJ3GEYJ 471 V (470 Ω) | T | 102.5/4.8 |
| R203 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 104.8/5.5 |
| R204 | 7030003460 | S.RES ERJ3GEYJ 152 V (1.5 kΩ) | T | 106.1/7.4 |
| R205 | 7030003460 | S.RES ERJ3GEYJ 152 V (1.5 kΩ) | T | 88.9/7.4 |
| R206 | 7030003390 | S.RES ERJ3GEYJ 391 V (390 Ω) | T | 93.2/16.9 |
| R209 | 7030003200 | S.RES ERJ3GEYJ 100 V (10 Ω) | T | 91.1/21.4 |
| R210 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 90.1/24.2 |
| R211 | 7030003760 | S.RES ERJ3GEYJ 474 V (470 kΩ) | T | 85.3/17.1 |
| R212 | 7030003430 | S.RES ERJ3GEYJ 821 V (820 Ω) | T | 85.3/21 |
| R213 | 7030003620 | S.RES ERJ3GEYJ 333 V (33 kΩ) | T | 85.3/22.3 |
| R214 | 7310002760 | S.TRI RV-152 (RH03A3AJ4X0HA) 223 | T | 81.6/22.5 |
| R215 | 7510001660 | S.TMR NTCG16 4LH 473KT | T | 77.9/23.6 |
| R216 | 7030003550 | S.RES ERJ3GEYJ 822 V (8.2 kΩ) | T | 77.1/21.6 |
| R218 | 7030003620 | S.RES ERJ3GEYJ 333 V (33 kΩ) | T | 78.7/21.6 |
| R219 | 7030003400 | S.RES ERJ3GEYJ 471 V (470 Ω) | T | 85.3/15.3 |
| R222 | 7030003570 | S.RES ERJ3GEYJ 123 V (12 kΩ) | T | 94.6/10 |
| R223 | 7030003490 | S.RES ERJ3GEYJ 272 V (2.7 kΩ) | T | 96.8/8.4 |
| R224 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 96.8/7.1 |
| R225 | 7030003660 | S.RES ERJ3GEYJ 683 V (68 kΩ) | T | 94.6/7.2 |
| R226 | 7030003570 | S.RES ERJ3GEYJ 123 V (12 kΩ) | T | 93.8/5.2 |
| R227 | 7510001550 | S.TMR NTCG16 4LH 333KT | T | 93.3/7.2 |
| R231 | 7030003600 | S.RES ERJ3GEYJ 223 V (22 kΩ) | T | 16.2/35.1 |
| R232 | 7030003580 | S.RES ERJ3GEYJ 153 V (15 kΩ) | T | 12.4/42.1 |
| R233 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | T | 7.2/34.4 |
| R234 | 7030003760 | S.RES ERJ3GEYJ 474 V (470 kΩ) | T | 9.5/39.5 |
| R235 | 7030003720 | S.RES ERJ3GEYJ 224 V (220 kΩ) | T | 12.4/39.5 |
| R236 | 7030003380 | S.RES ERJ3GEYJ 331 V (330 Ω) | T | 11.5/43.3 |
| R237 | 7030003490 | S.RES ERJ3GEYJ 272 V (2.7 kΩ) | T | 7.2/41 |
| R238 | 7030003620 | S.RES ERJ3GEYJ 333 V (33 kΩ) | T | 6.5/43 |
| R239 | 7030003620 | S.RES ERJ3GEYJ 333 V (33 kΩ) | T | 5.2/40.3 |
| R240 | 7030003480 | S.RES ERJ3GEYJ 222 V (2.2 kΩ) | T | 5.2/36.3 |
| R242 | 7030003800 | S.RES ERJ3GEYJ 105 V (1 MΩ) | T | 15.9/24.2 |
| R244 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 6.9/20.1 |
| R245 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 7.8/30 |
| R246 | 7030003760 | S.RES ERJ3GEYJ 474 V (470 kΩ) | T | 7.3/28.4 |
| R247 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 5.2/33.7 |
| R248 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 4.6/31.7 |
| R249 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 4.9/24.1 |
| R250 | 7030003820 | S.RES ERJ3GEYJ 155 V (1.5 MΩ) | T | 12.1/29.3 |
| R257 | 7030003490 | S.RES ERJ3GEYJ 272 V (2.7 kΩ) | T | 9.8/32 |
| R292 | 7030008051 | S.RES ERA3YKD 184V (180 kΩ) | T | 13.4/29.3 |
| R293 | 7030005321 | S.RES ERA3YED 103V | T | 12.4/32.1 |
| R294 | 7030003200 | S.RES ERJ3GEYJ 100 V (10 Ω) | T | 20/40.8 |
| R295 | 7030006091 | S.RES ERA3YED 822V | T | 11.1/32.1 |
| R301 | 7030003820 | S.RES ERJ3GEYJ 155 V (1.5 MΩ) | T | 33.1/24.3 |
| R302 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 33.1/23 |
| R303 | 7030003480 | S.RES ERJ3GEYJ 222 V (2.2 kΩ) | T | 33.1/26.9 |
| R304 | 7030003650 | S.RES ERJ3GEYJ 563 V (56 kΩ) | T | 33.1/29.5 |
| R305 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 30.2/25.2 |
| R306 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | T | 27.4/25.2 |
| R307 | 7030003540 | S.RES ERJ3GEYJ 682 V (6.8 kΩ) | T | 22.6/26.6 |
| R308 | 7030003770 | S.RES ERJ3GEYJ 564 V (560 kΩ) | T | 21.8/28.6 |
| R309 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 24.8/32.5 |
| R311 | 7030003520 | S.RES ERJ3GEYJ 472 V (4.7 kΩ) | T | 21/26.6 |
| R312 | 7030003610 | S.RES ERJ3GEYJ 273 V (2.7 kΩ) | T | 21.1/31.9 |
| R313 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 22.6/32.5 |
| R314 | 7030003590 | S.RES ERJ3GEYJ 183 V (18 kΩ) | T | 22.6/31.9 |
| R315 | 7030003670 | S.RES ERJ3GEYJ 823 V (82 kΩ) | T | 30.3/32.5 |
| R316 | 7030003670 | S.RES ERJ3GEYJ 823 V (82 kΩ) | T | 33.1/33.4 |
| R317 | 7030003670 | S.RES ERJ3GEYJ 823 V (82 kΩ) | T | 33.1/36 |
| R318 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 22.6/34.7 |

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

[MAIN UNIT]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|----------------------------------|----|--------------|
| R323 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 33.1/38.6 |
| R324 | 7510001670 | S.TMR NTCG16 4BH 103KT | T | 33.1/39.9 |
| R325 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 31.1/40.4 |
| R326 | 7030003580 | S.RES ERJ3GEYJ 153 V (15 kΩ) | T | 33.1/41.2 |
| R327 | 7310002600 | S.TRI RV-110 (RH03A3AS4X0AA) 473 | T | 38/38.8 |
| R328 | 7030003550 | S.RES ERJ3GEYJ 822 V (8.2 kΩ) | T | 36.6/34.4 |
| R341 | 7030003860 | S.RES ERJ3GE JPW V | T | 24.6/22.6 |
| R351 | 7030003580 | S.RES ERJ3GEYJ 153 V (15 kΩ) | T | 9.2/66 |
| R352 | 7030003450 | S.RES ERJ3GEYJ 122 V (1.2 kΩ) | T | 10.5/66 |
| R353 | 7030003770 | S.RES ERJ3GEYJ 564 V (560 kΩ) | T | 9.4/70.3 |
| R354 | 7030003580 | S.RES ERJ3GEYJ 153 V (15 kΩ) | T | 11.9/71.3 |
| R355 | 7030003620 | S.RES ERJ3GEYJ 333 V (33 kΩ) | T | 7.4/70.6 |
| R356 | 7030000100 | S.RES MCR10EZJH 4.7 Ω (4R7) | T | 17.8/74 |
| R382 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 24.4/73.4 |
| R383 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | T | 24.4/70.5 |
| R384 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 24.4/66.5 |
| R385 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | T | 24.4/63.7 |
| R386 | 7030003510 | S.RES ERJ3GEYJ 392 V (3.9 kΩ) | T | 31.4/64.6 |
| R387 | 7030003510 | S.RES ERJ3GEYJ 392 V (3.9 kΩ) | T | 29.3/63.8 |
| R401 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 56.6/6.4 |
| R501 | 7030003630 | S.RES ERJ3GEYJ 393 V (39 kΩ) | T | 93.3/65.7 |
| R502 | 7030003640 | S.RES ERJ3GEYJ 473 V (47 kΩ) | T | 94.6/65.7 |
| R503 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 89.1/61.7 |
| R504 | 7030003260 | S.RES ERJ3GEYJ 330 V (33 Ω) | T | 87.1/62.8 |
| R505 | 7030003420 | S.RES ERJ3GEYJ 681 V (680 Ω) | T | 83.5/64.1 |
| R506 | 7030004050 | S.RES ERJ3GEYJ 1R0 V (1 Ω) | T | 85.1/64.1 |
| R507 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 80.4/66.5 |
| R511 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 69.1/61.4 |
| R512 | 7030003740 | S.RES ERJ3GEYJ 334 V (330 kΩ) | T | 68.7/59.3 |
| R513 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 62.4/56.2 |
| R514 | 7030003600 | S.RES ERJ3GEYJ 223 V (22 kΩ) | T | 68/56 |
| R515 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 68/53.2 |
| R521 | 7030003200 | S.RES ERJ3GEYJ 100 V (10 Ω) | T | 67.8/61.4 |
| R522 | 7030003500 | S.RES ERJ3GEYJ 332 V (3.3 kΩ) | T | 66/62.8 |
| R523 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | T | 60.8/62.8 |
| R524 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | T | 49.1/58 |
| R531 | 7030003460 | S.RES ERJ3GEYJ 152 V (1.5 kΩ) | T | 46.2/60.5 |
| R532 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 48.3/55.9 |
| R533 | 7030003400 | S.RES ERJ3GEYJ 471 V (470 Ω) | T | 45.5/55.9 |
| R534 | 7030003480 | S.RES ERJ3GEYJ 222 V (2.2 kΩ) | T | 55.8/55.9 |
| R541 | 7030003390 | S.RES ERJ3GEYJ 391 V (390 Ω) | T | 36/44.6 |
| R542 | 7030003460 | S.RES ERJ3GEYJ 152 V (1.5 kΩ) | T | 38/45.5 |
| R544 | 7030003400 | S.RES ERJ3GEYJ 471 V (470 Ω) | T | 30.5/43.3 |
| R561 | 7030003450 | S.RES ERJ3GEYJ 122 V (1.2 kΩ) | T | 41.4/49 |
| R562 | 7030003760 | S.RES ERJ3GEYJ 474 V (470 kΩ) | T | 42/39.6 |
| R563 | 7030003340 | S.RES ERJ3GEYJ 151 V (150 Ω) | T | 38/44.2 |
| R571 | 7030003590 | S.RES ERJ3GEYJ 183 V (18 kΩ) | T | 28.3/11.3 |
| R572 | 7030003620 | S.RES ERJ3GEYJ 333 V (33 kΩ) | T | 27/14.9 |
| R573 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 29.6/14.9 |
| R574 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 29.6/12.1 |
| R575 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 27/12.1 |
| R576 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | T | 24.4/14.2 |
| R577 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 21.8/11.4 |
| R582 | 7030003760 | S.RES ERJ3GEYJ 474 V (470 kΩ) | T | 21.8/14.2 |
| R583 | 7030003280 | S.RES ERJ3GEYJ 470 V (47 Ω) | T | 30.5/10.1 |
| R584 | 7030003680 | S.RES ERJ3GEYJ 104 V (100 kΩ) | T | 9.5/13.7 |
| R585 | 7030003630 | S.RES ERJ3GEYJ 393 V (39 kΩ) | T | 9.5/11.1 |
| R586 | 7030003580 | S.RES ERJ3GEYJ 153 V (15 kΩ) | T | 9.5/9.8 |
| R587 | 7030003470 | S.RES ERJ3GEYJ 182 V (1.8 kΩ) | T | 9.5/8.5 |
| R601 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | T | 90.9/36.7 |
| R602 | 7030003440 | S.RES ERJ3GEYJ 102 V (1 kΩ) | T | 82.2/44.3 |
| R603 | 7030003200 | S.RES ERJ3GEYJ 100 V (10 Ω) | T | 84.2/44.9 |
| R604 | 7030003480 | S.RES ERJ3GEYJ 222 V (2.2 kΩ) | T | 83.7/46.4 |
| R605 | 7030003560 | S.RES ERJ3GEYJ 103 V (10 kΩ) | T | 75.8/39 |
| R606 | 7030003410 | S.RES ERJ3GEYJ 561 V (560 Ω) | T | 86.5/46.2 |
| R611 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 88/32.9 |
| R612 | 7030003390 | S.RES ERJ3GEYJ 391 V (390 Ω) | T | 87.1/34.9 |
| R613 | 7030003550 | S.RES ERJ3GEYJ 822 V (8.2 kΩ) | T | 85.5/36.5 |
| R614 | 7030003550 | S.RES ERJ3GEYJ 822 V (8.2 kΩ) | T | 80.7/35.9 |
| R615 | 7030003350 | S.RES ERJ3GEYJ 181 V (180 Ω) | T | 82.9/33.9 |
| R616 | 7030003420 | S.RES ERJ3GEYJ 681 V (680 Ω) | T | 90.7/39.9 |
| R617 | 7030003660 | S.RES ERJ3GEYJ 683 V (68 kΩ) | T | 88.7/40.6 |
| R621 | 7030003660 | S.RES ERJ3GEYJ 683 V (68 kΩ) | T | 94.8/35.3 |
| R622 | 7030003400 | S.RES ERJ3GEYJ 471 V (470 Ω) | T | 96.1/35.3 |
| R623 | 7030003360 | S.RES ERJ3GEYJ 221 V (220 Ω) | T | 90.4/30.8 |
| R624 | 7030003240 | S.RES ERJ3GEYJ 220 V (22 Ω) | T | 87.1/30.3 |
| R625 | 7030003360 | S.RES ERJ3GEYJ 221 V (220 Ω) | T | 87.1/31.6 |
| R631 | 7030003320 | S.RES ERJ3GEYJ 101 V (100 Ω) | T | 93.5/39.9 |
| R632 | 7030003610 | S.RES ERJ3GEYJ 273 V (27 kΩ) | T | 94.4/42 |
| C1 | 4030008880 | S.CER C1608 JB 1H 223K-T | T | 72.7/22.7 |
| C2 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 67.4/16.7 |
| C3 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 68.2/15.4 |
| C4 | 4550000510 | S.TAN TEESVA 1V 473M8L | T | 58/24.7</ |

[MAIN UNIT]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|--------------------------|----|--------------|
| C351 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 10.7/68.8 |
| C352 | 4510005860 | S.ELE ECEV1HA2R2SR | T | 15.3/68.5 |
| C353 | 4030017490 | S.CER C1608 JB 1A 105K-T | T | 5/72.8 |
| C354 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 4.1/74.8 |
| C355 | 4510004590 | ELE 16 MV 470 HC | | |
| C356 | 4510007480 | ELE 16 MV 470 CA | | |
| C357 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 16.2/75.4 |
| C358 | 4030007090 | S.CER C1608 CH 1H 470J-T | T | 4.1/77.7 |
| C359 | 4030007090 | S.CER C1608 CH 1H 470J-T | T | 5.4/77.7 |
| C361 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 9.2/53.6 |
| C362 | 4030007090 | S.CER C1608 CH 1H 470J-T | T | 6.1/52.1 |
| C363 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 16.5/53.6 |
| C364 | 4030007090 | S.CER C1608 CH 1H 470J-T | T | 16.5/54.9 |
| C367 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 30.8/83.6 |
| C368 | 4030007090 | S.CER C1608 CH 1H 470J-T | T | 27.1/82 |
| C369 | 4510007470 | ELE 16 MV 1000 CA | | |
| C370 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 21.1/74.4 |
| C371 | 4030007170 | S.CER C1608 CH 1H 221J-T | T | 13.5/53.6 |
| C372 | 4030007010 | S.CER C1608 CH 1H 100D-T | T | 13.5/54.9 |
| C373 | 4030007050 | S.CER C1608 CH 1H 220J-T | T | 54.6/82.6 |
| C374 | 4030007050 | S.CER C1608 CH 1H 220J-T | T | 40.3/69.4 |
| C375 | 4030007130 | S.CER C1608 CH 1H 101J-T | T | 39/70.3 |
| C376 | 4030011340 | S.CER C1608 CH 1H 471J-T | T | 37.7/70.3 |
| C377 | 4030007090 | S.CER C1608 CH 1H 470J-T | T | 5.4/80.5 |
| C378 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 4.1/80.5 |
| C379 | 4030007130 | S.CER C1608 CH 1H 101J-T | T | 30.8/81.2 |
| C380 | 4030011340 | S.CER C1608 CH 1H 471J-T | T | 28.4/82 |
| C381 | 4510006220 | S.ELE ECEV1CA101UP | T | 4.5/56.3 |
| C382 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 7.1/65 |
| C383 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 5.8/65 |
| C384 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 7.1/67.8 |
| C385 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 5.8/67.8 |
| C386 | 4510006220 | S.ELE ECEV1CA101UP | T | 14.8/61.8 |
| C387 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 22.4/70.3 |
| C388 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 25.2/75.7 |
| C389 | 4510004630 | S.ELE ECEV1CA100SR | T | 30.9/75.5 |
| C390 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 22.4/69 |
| C391 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 29.3/65.1 |
| C392 | 4510004630 | S.ELE ECEV1CA100SR | T | 30.7/70.7 |
| C393 | 4510004630 | S.ELE ECEV1CA100SR | T | 35.5/60.8 |
| C394 | 4030017490 | S.CER C1608 JB 1A 105K-T | T | 20.3/66.8 |
| C395 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 20.1/59.7 |
| C396 | 4510004630 | S.ELE ECEV1CA100SR | T | 20.5/56.1 |
| C401 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 54.6/6.6 |
| C402 | 4030011340 | S.CER C1608 CH 1H 471J-T | T | 49.2/4.4 |
| C403 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 56.6/5.1 |
| C407 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 72.3/9.4 |
| C500 | 4030009920 | S.CER C1608 CH 1H 050B-T | T | 93.1/61.8 |
| C501 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 84.1/66.5 |
| C502 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 92/65.7 |
| C503 | 4030009920 | S.CER C1608 CH 1H 050B-T | T | 91.1/62.2 |
| C504 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 81.5/64.4 |
| C505 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 89.1/63 |
| C506 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 87/65.6 |
| C510 | 4030007000 | S.CER C1608 CH 1H 090D-T | T | 86/52.7 |
| C511 | 4030009500 | S.CER C1608 CH 1H 0R5B-T | T | 78.2/52.7 |
| C512 | 4030006980 | S.CER C1608 CH 1H 070D-T | T | 75.4/52.7 |
| C513 | 4030009920 | S.CER C1608 CH 1H 050B-T | T | 68.7/58 |
| C516 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 69.3/56 |
| C520 | 4030009550 | S.CER C1608 CH 1H 2R5B-T | T | 63.4/64 |
| C521 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 70.3/64.3 |
| C522 | 4030007110 | S.CER C1608 CH 1H 680J-T | T | 64.7/62.8 |
| C523 | 4030008880 | S.CER C1608 JB 1H 223K-T | T | 68/63.5 |
| C524 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 65.6/64.8 |
| C525 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 62.3/61.5 |
| C527 | 4030007010 | S.CER C1608 CH 1H 100D-T | T | 54.4/62.7 |
| C529 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 49.6/60.8 |
| C531 | 4030011810 | S.CER C1608 JB 1A 224K-T | T | 45.5/57.2 |
| C532 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 45.5/58.5 |
| C533 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 43.4/55.6 |
| C534 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 44.7/60.5 |
| C535 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 59/55.2 |
| C537 | 4030006990 | S.CER C1608 CH 1H 080D-T | T | 63.9/53.2 |
| C541 | 4030007130 | S.CER C1608 CH 1H 101J-T | T | 38.2/51.9 |
| C542 | 4510004630 | S.ELE ECEV1CA100SR | T | 25.7/42 |
| C543 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 34/44.2 |
| C544 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 34/45.5 |
| C546 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 31.4/55 |
| C547 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 32.8/51.9 |
| C548 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 29.5/41.9 |
| C549 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 28.3/16.9 |
| C550 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 33.1/42.8 |
| C551 | 4030011810 | S.CER C1608 JB 1A 224K-T | T | 31.8/59.5 |
| C552 | 4030011810 | S.CER C1608 JB 1A 224K-T | T | 39.2/60.6 |
| C561 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 44.2/40.1 |
| C562 | 4030009920 | S.CER C1608 CH 1H 050B-T | T | 45.3/35 |
| C563 | 4030007040 | S.CER C1608 CH 1H 180J-T | T | 45.1/46 |
| C564 | 4030009530 | S.CER C1608 CH 1H 030B-T | T | 44.2/43.9 |
| C565 | 4030007040 | S.CER C1608 CH 1H 180J-T | T | 43.8/46 |
| C566 | 4030007010 | S.CER C1608 CH 1H 100D-T | T | 40/45 |
| C571 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 30.9/14.9 |
| C572 | 4030009880 | S.CER C1608 JB 1H 682K-T | T | 28.3/14.9 |
| C573 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 25.7/9.3 |

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

[MAIN UNIT]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|---------------------------|----|--------------|
| C574 | 4030008880 | S.CER C1608 JB 1H 223K-T | T | 25.7/12.1 |
| C575 | 4030006870 | S.CER C1608 JB 1H 222K-T | T | 25.7/14.9 |
| C576 | 4030009880 | S.CER C1608 JB 1H 682K-T | T | 23.1/14.2 |
| C581 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 20.5/11.4 |
| C582 | 4030011810 | S.CER C1608 JB 1A 224K-T | T | 20.5/14.2 |
| C584 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 17/5.7 |
| C585 | 4510004630 | S.ELE ECEV1CA100SR | T | 21.3/7 |
| C586 | 4340000310 | S.MLR ECHU 1C 333JX5 | T | 13.1/6.6 |
| C587 | 4030006870 | S.CER C1608 JB 1H 222K-T | T | 9.5/16.3 |
| C588 | 4030011600 | S.CER C1608 JB 1E 104K-T | T | 9.5/15 |
| C589 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 9.5/12.4 |
| C601 | 4030006900 | S.CER C1608 JB 1H 103K-T | T | 91.6/34.5 |
| C602 | 4510004630 | S.ELE ECEV1CA100SR | T | 73.8/28.1 |
| C603 | 4550000510 | S.TAN TEESVA 1V 473M8L | T | 80.5/44.4 |
| C604 | 4550006560 | S.TAN ECST1CY225R | T | 76/34.4 |
| C606 | 4550006430 | S.TAN ECST1VY474R | T | 89.4/44.4 |
| C607 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 91.1/45.6 |
| C608 | 4030007090 | S.CER C1608 CH 1H 470J-T | T | 80.8/41.1 |
| C611 | 4030011340 | S.CER C1608 CH 1H 471J-T | T | 85.1/30.9 |
| C612 | 4030009540 | S.CER C1608 CH 1H 1R5B-T | T | 83.5/37.2 |
| C613 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 83.5/35.9 |
| C614 | 4030009540 | S.CER C1608 CH 1H 1R5B-T | T | 80.7/37.2 |
| C615 | 4030011340 | S.CER C1608 CH 1H 471J-T | T | 80.7/32.1 |
| C616 | 4030009560 | S.CER C1608 CH 1H R75B-T | T | 86.5/39.5 |
| C617 | 4030011340 | S.CER C1608 CH 1H 471J-T | T | 91.1/42.7 |
| C621 | 4030009920 | S.CER C1608 CH 1H 050B-T | T | 92.2/36.7 |
| C622 | 4030011340 | S.CER C1608 CH 1H 471J-T | T | 93.5/35.3 |
| C623 | 4030007050 | S.CER C1608 CH 1H 220J-T | T | 95.5/30 |
| C624 | 4030007060 | S.CER C1608 CH 1H 270J-T | T | 92.1/32.5 |
| C625 | 4030007060 | S.CER C1608 CH 1H 270J-T | T | 89.1/30.8 |
| C626 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 83.1/30.1 |
| C631 | 4030006860 | S.CER C1608 JB 1H 102K-T | T | 95.5/39.4 |
| C632 | 4030011340 | S.CER C1608 CH 1H 471J-T | T | 95.5/40.7 |
| C633 | 4030011770 | S.CER C1608 CH 1H 060B-T | T | 94.4/37.8 |
| C634 | 4030007050 | S.CER C1608 CH 1H 220J-T | T | 95.5/46.4 |
| J4 | 6510024600 | CNR S5B-PH-K-S | | |
| J5 | 6510019420 | S.CNR B8B-ZR-SM3-TF | T | 13.5/48.5 |
| J6 | 6510022470 | S.CNR 40FLT-SM1-TB | T | 46/10.5 |
| W1 | 7120000470 | JMP ERDS2T0 | | |
| W2 | 7120000470 | JMP ERDS2T0 | | |
| W3 | 8900013550 | CBL OPC-1407 | | |
| W4 | 8900012890 | CBL OPC-1332 (N=40,L=100) | | |
| EP341 | 6910014690 | S.BEA MPZ1608S221A-T | B | 8.2/63.1 |
| EP342 | 6910014690 | S.BEA MPZ1608S221A-T | B | 9/70.5 |
| EP401 | 6910012350 | S.BEA MMZ1608Y 102BT | T | 55.2/3.4 |

[FRONT UNIT]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|---|----|--------------|
| MC1 | 0800007900 | MIC HM-150SW ACC [UK-1], [EUR-1], [HOL-1], [FRG-1] | | |
| | 0800007890 | MIC HM-150B ACC [UK], [EUR], [HOL], [FRG] | | |
| W1 | 7120000470 | JMP ERDS2T0 | | |
| W2 | 7120000470 | JMP ERDS2T0 | | |

[VR BOARD]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|-----------------------------|----|--------------|
| R1 | 7210003140 | VAR TP96N97N-15SK-10KA-2685 | | |
| J1 | 6510009380 | CNR B5B-ZR | | |

S.=Surface mount

[CHASSIS UNIT]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|------------------------|----|--------------|
| C1 | 4020000430 | CYR UP050 B 471K-NA-CZ | | |
| J1 | 6510004880 | CNR MR-DS-E 01 | | |
| W2 | 7120000470 | JMP ERDS2TO | | |

[SQL BOARD]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|----------------------------|----|--------------|
| EP2 | 6910016740 | BEA HF70BB9x10x4.5 | | |
| R1 | 7210003150 | VAR TP96N97-15SK-10KB-2685 | | |
| J1 | 6510009470 | CNR S3B-ZR | | |

M.=Mounted side (T: Mounted on the Top side, B: Mounted on the Bottom side)

6-2 HM-150

[MAIN UNIT]

| REF NO. | ORDER NO. | DESCRIPTION | M. | H/V LOCATION |
|---------|------------|--------------------------|----|--------------|
| R1 | 7010007590 | RES 21K R20 | | |
| R2 | 7010007600 | RES 6.8K R20 | | |
| R3 | 7010007610 | RES 15K R20 | | |
| R4 | 7010007620 | RES 33K R20 | | |
| C1 | 4030018660 | S.CER C1608 JB 1H 223K-T | | 40.9/43.0 |
| MC1 | 7700002640 | MIC KUC3523-040245 | | |
| W1 | 9027150010 | JMP 71/98/010/X98/X98 | | |
| W2 | 9027150010 | JMP 71/98/010/X98/X98 | | |
| W3 | 9027150020 | JMP 24/00/020/W01/W01 | | |
| W4 | 9027150030 | JMP 24/04/020/W01/W01 | | |
| S1 | 2260002780 | SW SKHHLPA010 | | |
| S2 | 2260002790 | SW SKHHAMA010 | | |
| S3 | 2260002790 | SW SKHHAMA010 | | |
| S4 | 2260002790 | SW SKHHAMA010 | | |

S.=Surface mount

SECTION 7 MECHANICAL PARTS AND DISASSEMBLY

7-1 IC-M421

[CHASSIS PARTS]

| REF. NO. | ORDER NO. | DESCRIPTION | QTY. |
|----------|------------|-------------------------------|------|
| C1 | 4020000430 | Cylinder UP050B 471K-NA 470P | 1 |
| J1 | 6510004880 | Connector MR-DSE-01 | 1 |
| W1 | 8900013521 | Cable OPC-1404A | 1 |
| MP1 | 8510016590 | 2807 case [black] | 1 |
| | 8510016620 | 2807 case (A) [white] | 1 |
| MP4 | 8930055070 | 2438 sheet | 1 |
| MP5 | 8930064040 | 2807 seal | 1 |
| MP11 | 8010019781 | 2807 chassis-1 | 1 |
| MP12 | 8930034300 | 1542 ANT seal <KN> | 1 |
| MP13 | 8810002950 | Screw bind M3 × 6 SUS | 2 |
| MP14 | 8930064350 | 2807 R-bush plate | 1 |
| MP16 | 8930064390 | 2807 module plate | 1 |
| MP17 | 8510016700 | 2807 module cover | 1 |
| MP19 | 8810008661 | Screw PH B0 3 × 8 NI-ZC3 (BT) | 2 |
| MP20 | 8950000180 | Cable tie-80 | 1 |
| MP22 | 8930052440 | 2345 B-IC CLIP | 1 |
| MP23 | 8810008661 | Screw PH B0 3 × 8 NI-ZC3 (BT) | 6 |
| MP25 | 8860000120 | Grounding lug B4 (M3) BS AG | 1 |
| MP26 | 8810008631 | Screw PH B0 3 × 8 NI-ZC3 (BT) | 1 |
| MP27 | 8950000180 | Cable tie-80 | 1 |
| MP31 | 8510016690 | 2807 A-shield plate | 1 |
| MP32 | 8930043121 | Rubber sheet (AE)-1 | 3 |
| MP33 | 8510016680 | 2807 B-shield plate | 1 |
| MP40 | 8810004540 | Screw bind M3 × 8 SUS | 4 |
| MP41 | 8930064030 | 2807 F-packing | 1 |
| MP42 | 8810004700 | Screw PH A0 3 × 16 SUS | 4 |
| MP47 | 8930049040 | Isolating plate (FQ) | 1 |

[FRONT UNIT]

†Differ from optional HM-150.

| REF. NO. | ORDER NO. | DESCRIPTION | QTY. |
|----------|------------|---------------------------------|------|
| MC1† | 0800007890 | Microphone HM-150B ACC [black] | 1 |
| | 0800007900 | Microphone HM-150SW ACC [white] | 1 |
| SP1 | 2510001240 | Speaker 045P0803 | 1 |
| MP1 | 8210020980 | 2807 front panel [black] | 1 |
| | 8210021000 | 2807 front panel (A) [white] | 1 |
| MP21 | 8930052280 | O-ring (AC) | 2 |
| MP22 | 8930060490 | 2685 F-bush plate | 1 |
| MP23 | 8930055840 | 2490 grounding spring | 1 |
| MP25 | 8810008661 | Screw B0 3 × 8 NI-ZC3 (BT) | 4 |
| MP31 | 8610011370 | Knob N-312 [black] | 2 |
| | 8610012140 | Knob N-312(C) [white] | 2 |

[LOGIC BOARD]

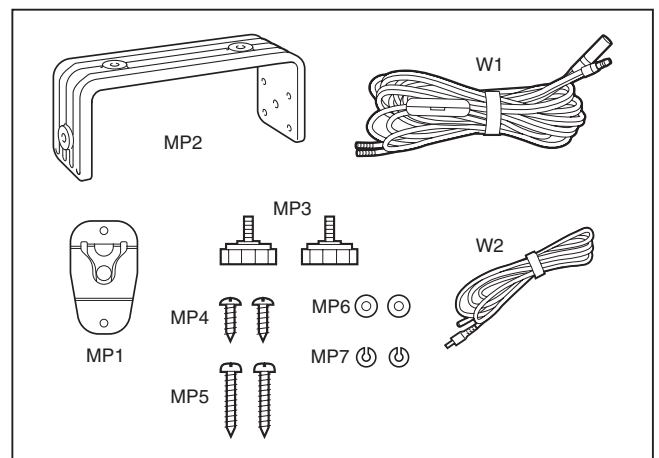
| REF. NO. | ORDER NO. | DESCRIPTION | QTY. |
|----------|------------|--------------------|------|
| DS1 | 5030002750 | LCD HLM7937-010100 | 1 |
| MP1 | 8930064400 | 2807 LCD holder | 1 |
| MP2 | 8210020990 | 2807 reflector | 1 |
| MP3 | 8930064800 | Sponge (IA) | 1 |
| MP4 | 8930064790 | White sheet (S) | 1 |
| MP5 | 8930064860 | 2807 sponge | 1 |

[MAIN UNIT]

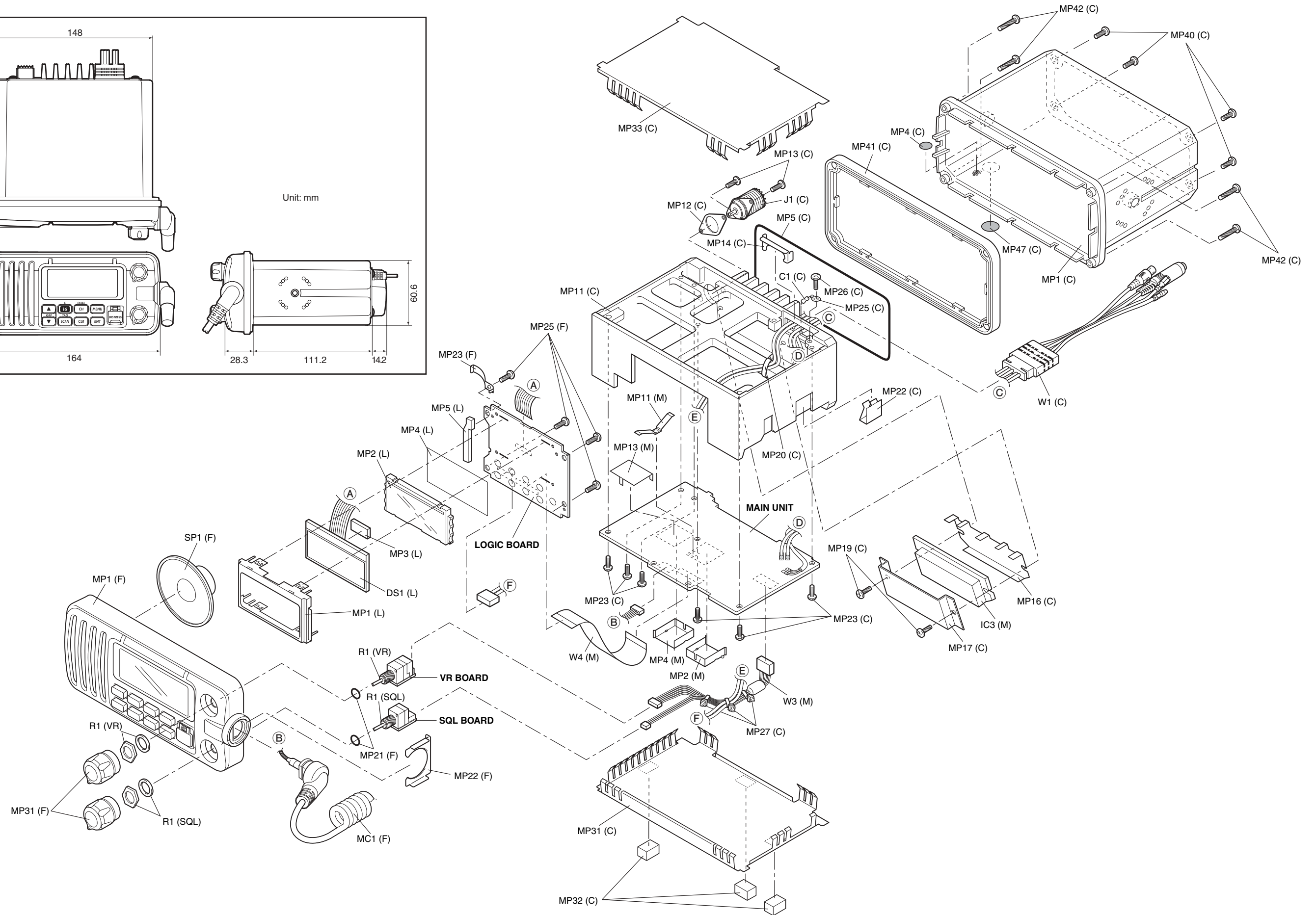
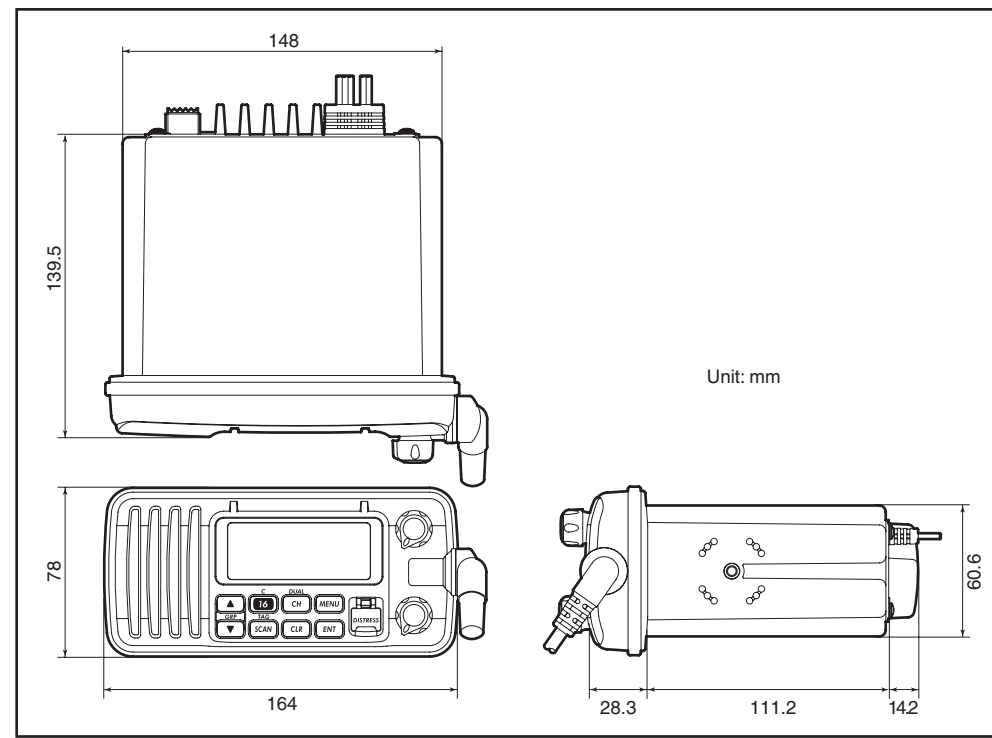
| REF. NO. | ORDER NO. | DESCRIPTION | QTY. |
|----------|------------|----------------------|------|
| W3 | 8900013550 | Cable OPC-1407 | 1 |
| W4 | 8900014870 | Cable OPC-1332A | 1 |
| MP2 | 8510014950 | 2601 VCO cover | 1 |
| MP4 | 8510014950 | 2601 VCO cover | 1 |
| MP11 | 8930014140 | Grounding spring (D) | 1 |
| MP13 | 8510002280 | VCO shield plate (A) | 1 |

[ACCESSORIES]

| REF. NO. | ORDER NO. | DESCRIPTION | QTY. |
|----------|------------|---------------------------------|------|
| W1 | 8900009040 | Cable OPC-891 | 1 |
| W2 | 8900012420 | Cable OPC-1278 <AI> | 1 |
| MP1 | 8950005110 | 2289 microphone hanger | 1 |
| MP2 | 8010019790 | 2807 mobile blacket [black] | 1 |
| | 8010019810 | 2807 mobile blacket (A) [white] | 1 |
| MP3 | 8610010561 | 2040 knob bolt-1<KN> [black] | 2 |
| | 8610011260 | 2040 knob bolt(B)-1<KN> [white] | 2 |
| MP4 | 8810004700 | Screw PH A0 3 × 16 SUS | 2 |
| MP5 | 8810001490 | Screw A0 5 × 20 SUS | 2 |
| MP6 | 8850000180 | Flat washer M5 SUS | 2 |
| MP7 | 8850000500 | Spring washer M5 SUS | 2 |



Screw abbreviations A0, B0, BT: Self-tapping
 PH: Pan head
 NI: Nickel
 SUS: Stainless
 NI-ZU, NI-ZC3: Nickel-Zinc



UNIT abbreviations (C): CHASSIS PARTS, (L): LOGIC BOARD, (M): MAIN UNIT (F): FRONT UNIT
 (VR): VR BOARD, (SQL): SQL BOARD

7-2 HM-150

[CHASSIS PARTS]

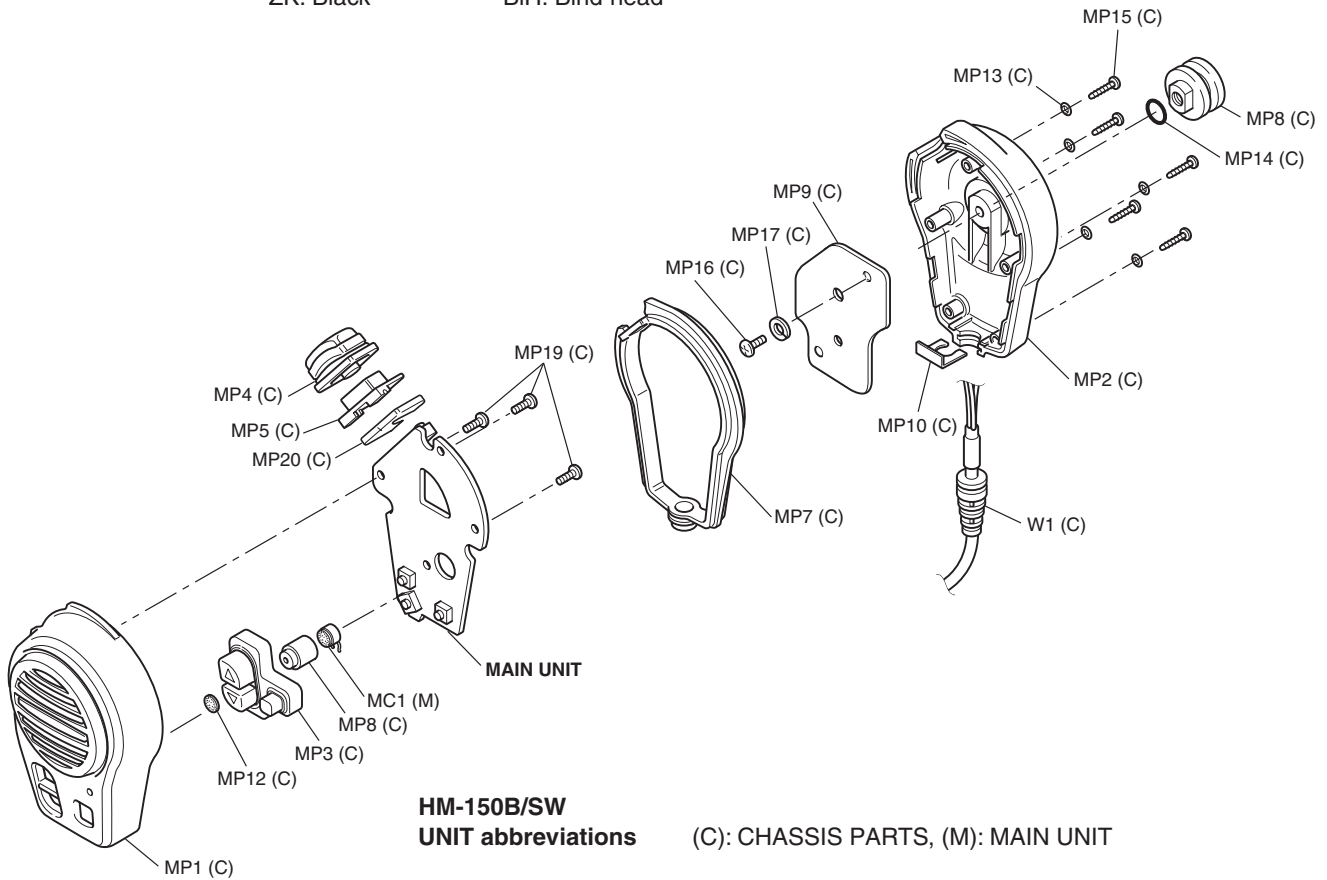
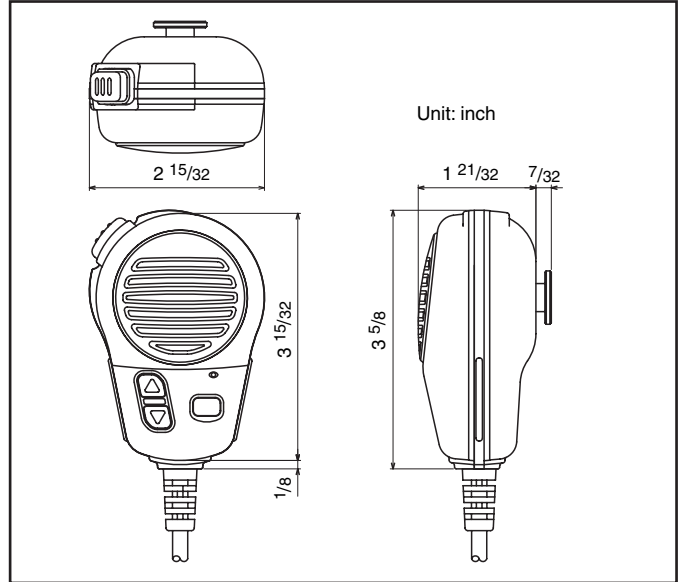
| REF. NO. | ORDER NO. | DESCRIPTION | QTY. |
|----------|------------|-----------------------------------|------|
| W1 | 8900012212 | Cable OPC-1249B [HM-150B] | 1 |
| | 8900013570 | Cable OPC-1406 [HM-150SW] | 1 |
| MP1 | 8210020111 | 2715 front panel -1 [HM-150B] | 1 |
| | 8210021061 | 2715 front panel (C)-1 [HM-150SW] | 1 |
| MP2 | 8210020120 | 2715 rear panel [HM-150B] | 1 |
| | 8210021240 | 2715 rear panel (C) [HM-150SW] | 1 |
| MP3 | 8930060910 | 2715 key | 1 |
| MP4 | 8930060920 | 2715 PTT rubber | 1 |
| MP5 | 8930061970 | 2715 A-PTT holder | 1 |
| MP7 | 8930060930 | 2715 main seal | 1 |
| MP8 | 8930011600 | 2715 hanger knob | 1 |
| MP9 | 8610060951 | 2715 bush plate-1 | 1 |
| MP10 | 8310060990 | 2715 MIC plate | 1 |
| MP11 | 8310061000 | 2715 MIC tape | 1 |
| MP12 | 8820061010 | 2715 A-MIC sheet | 1 |
| MP13 | 8850060960 | O-ring (AY) | 5 |
| MP14 | 8930060970 | O-ring (AZ) | 1 |
| MP15 | 8820001260 | 2715 screw 2.6 x18 SUS | 5 |
| MP16 | 8810010230 | Screw BiH M4 x 8 ZK | 1 |
| MP17 | 8850002000 | Spring washer M4 SUS | 1 |
| MP19 | 8810010240 | Screw PH B0 2 x 6 NI (BT) | 3 |
| MP20 | 8930061700 | 2715 PTT plate | 1 |

Screw and washer abbreviations

B0, BT: Self-Tapping PH: Pan head
 NI: Nickel SUS: Stainless
 ZK: Black BiH: Bind head

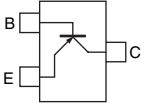
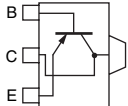
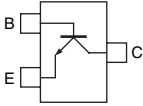
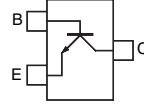
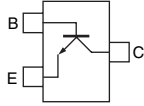
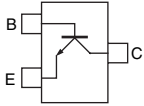
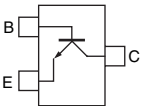
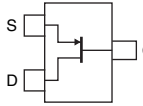
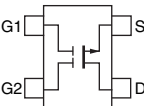
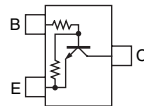
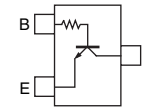
[MAIN PARTS]

| REF. NO. | ORDER NO. | DESCRIPTION | QTY. |
|----------|------------|--------------------|------|
| MC1 | 7700002640 | MIC KUC3523-040245 | 1 |

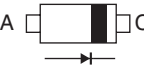
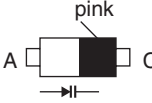
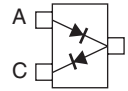
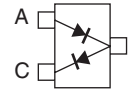
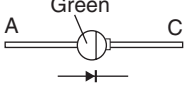
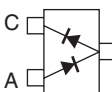



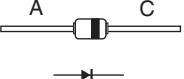


SECTION 8 SEMI-CONDUCTOR INFORMATION

• TRANSISTORS AND FETs

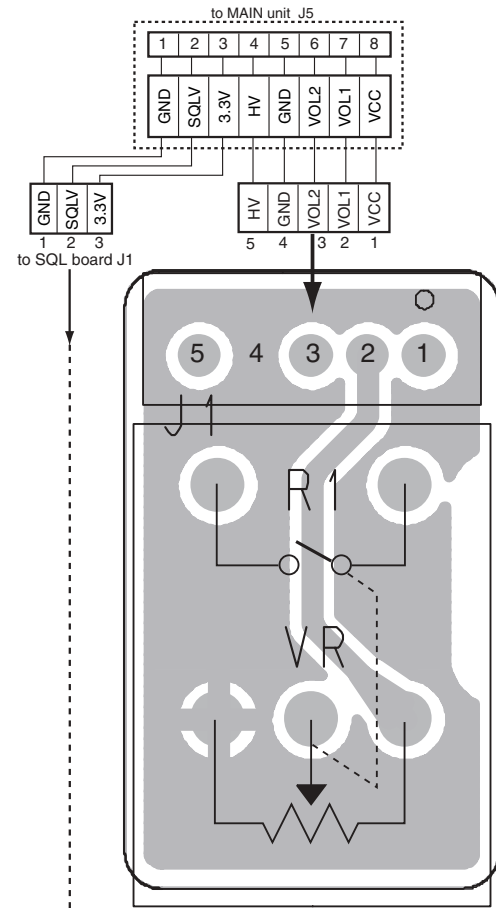
| | | | | |
|--|--|---|--|--|
| 2SA1577 Q (Symbol: HQ)  | 2SB1132 R (Symbol: BAR)  | 2SC2714 Y (Symbol: QY)  | 2SC3775 3 (Symbol: OY3)  | 2SC4116 BL (Symbol: LL)  |
| 2SC4215 O (Symbol: QO)  | 2SC4226 R25 (Symbol: R25)  | 2SJ144 Y (Symbol: VY)  | 3SK131-T2-LA (Symbol: V12)  | DTC144 EUA (Symbol: 26)  |
| DTC144 TU (Symbol: 06)  | | | | |

• DIODES

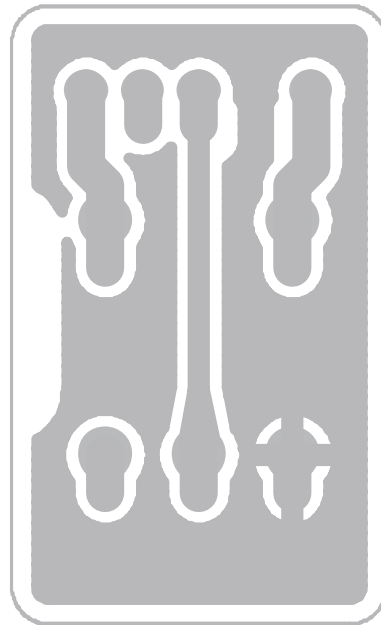
| | | | | |
|--|--|--|---|---|
| 1S355 (Symbol: A)  | 1SV214 (Symbol: T1)  | DA204 U (Symbol: K)  | DA204 K (Symbol: K)  | DSA3A1 (Symbol: Green)  |
| HSM88ASR (Symbol: C3)  | HVC350BTRF (Symbol: B0)  | MA2S111 (Symbol: A)  | MA77 (Symbol: 4B)  | XB15A308 (Symbol: T8)  |

SECTION 9 BOARD LAYOUTS

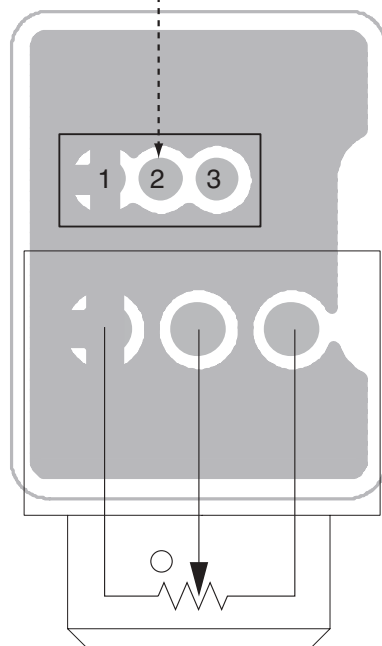
9-1 VR BOARD
• TOP VIEW



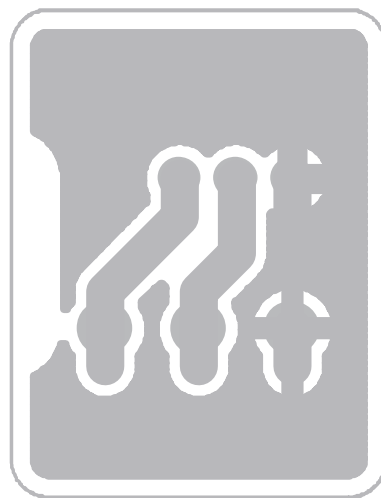
• BOTTOM VIEW



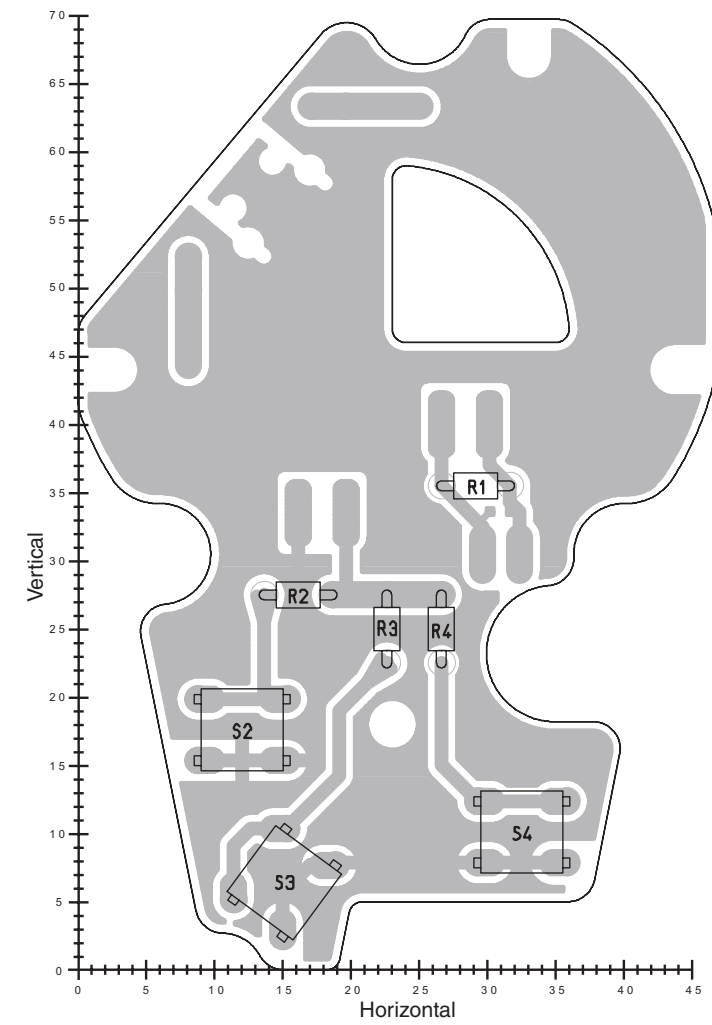
9-2 SQL BOARD
• TOP VIEW



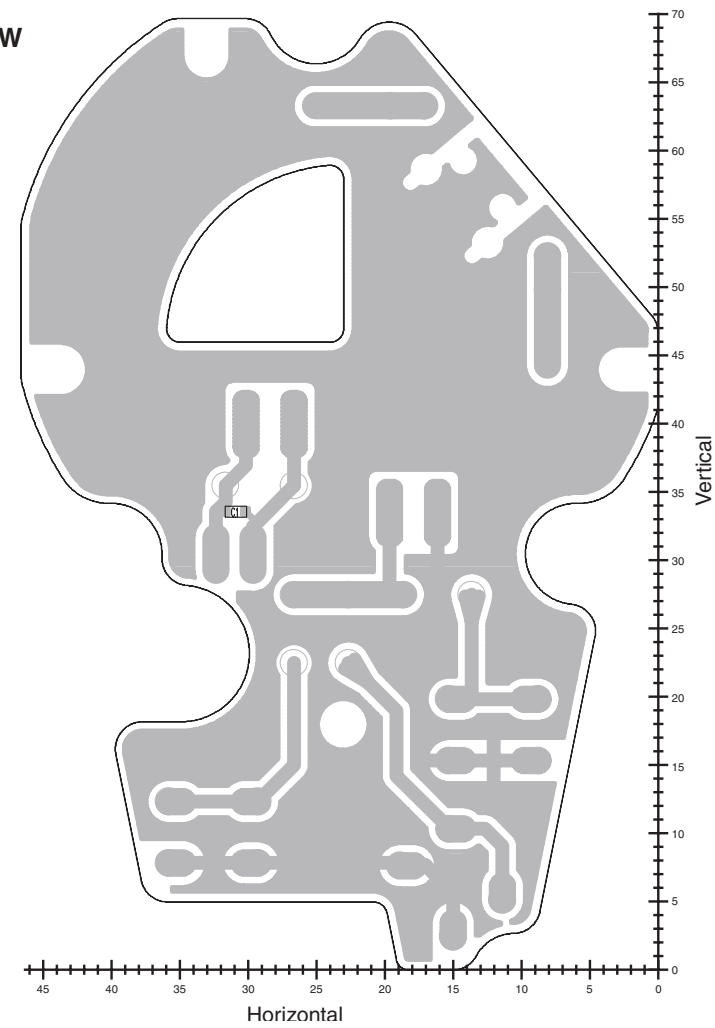
• BOTTOM VIEW



9-3 HM-150
• TOP VIEW

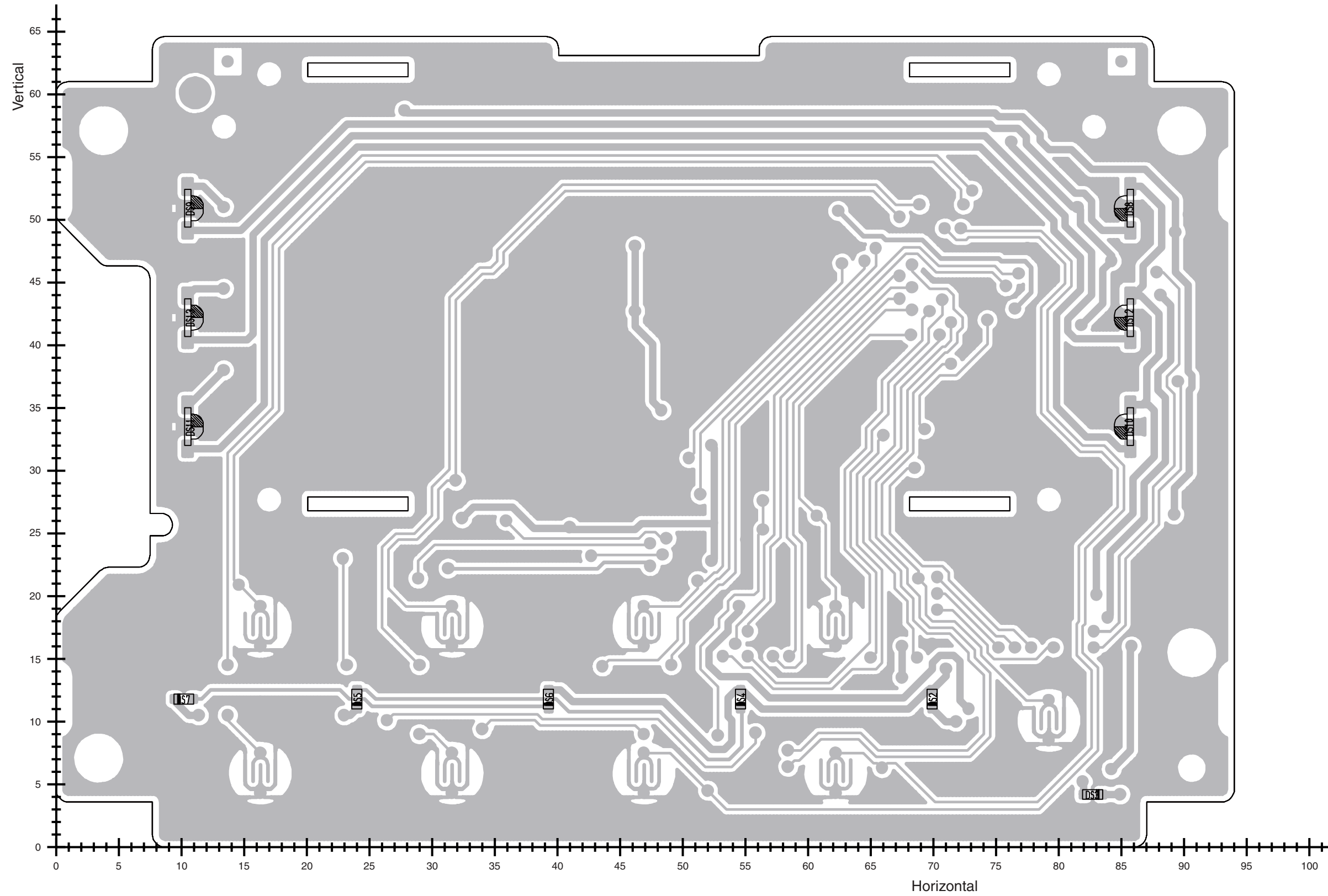


• BOTTOM VIEW



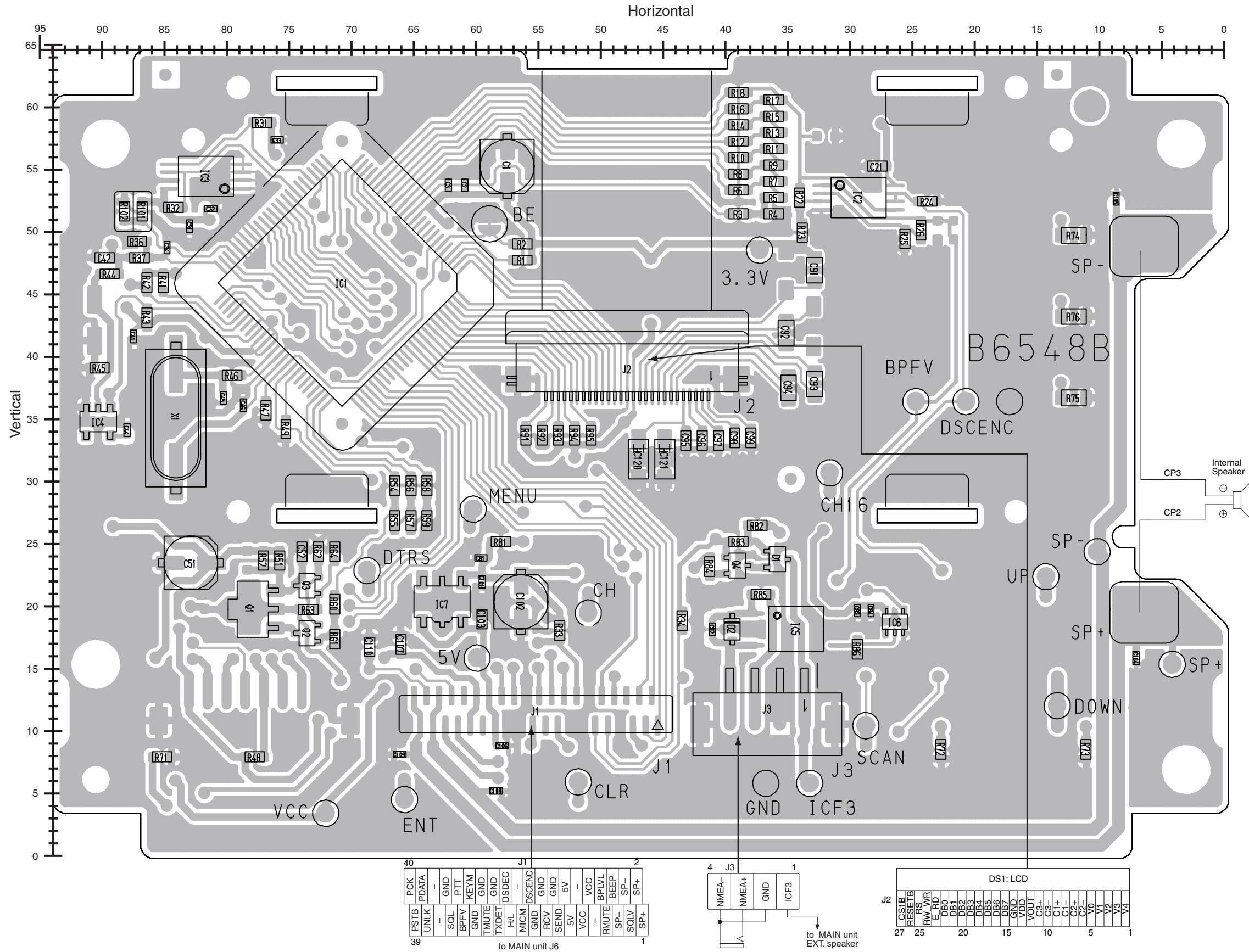
9-4 LOGIC BOARD
• TOP VIEW

The combination of this page and the next page shows the unit layout in the same configuration as the actual P.C. Board.

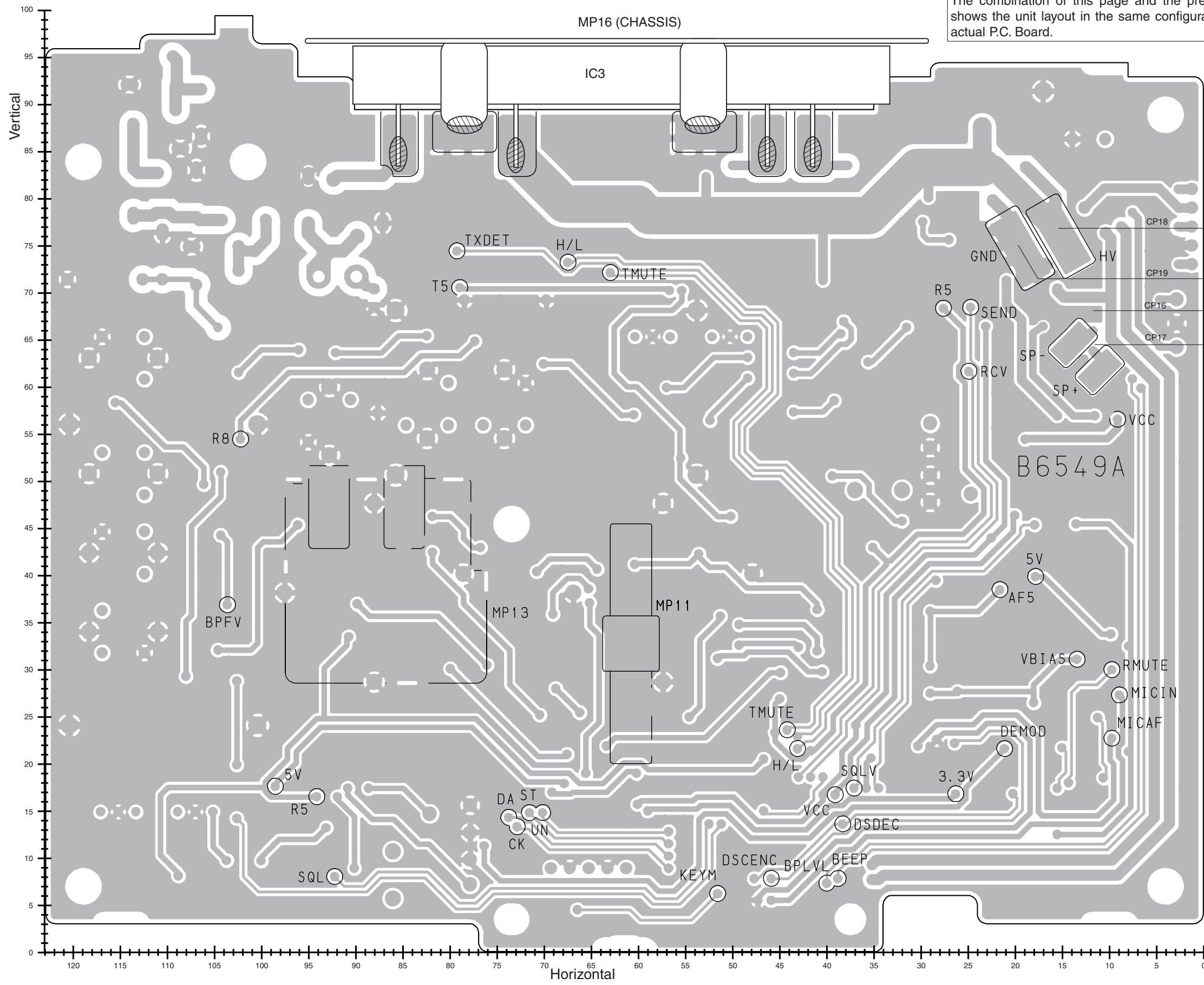


• BOTTOM VIEW

The combination of this page and the previous page shows the unit layout in the same configuration as the actual P.C. Board.

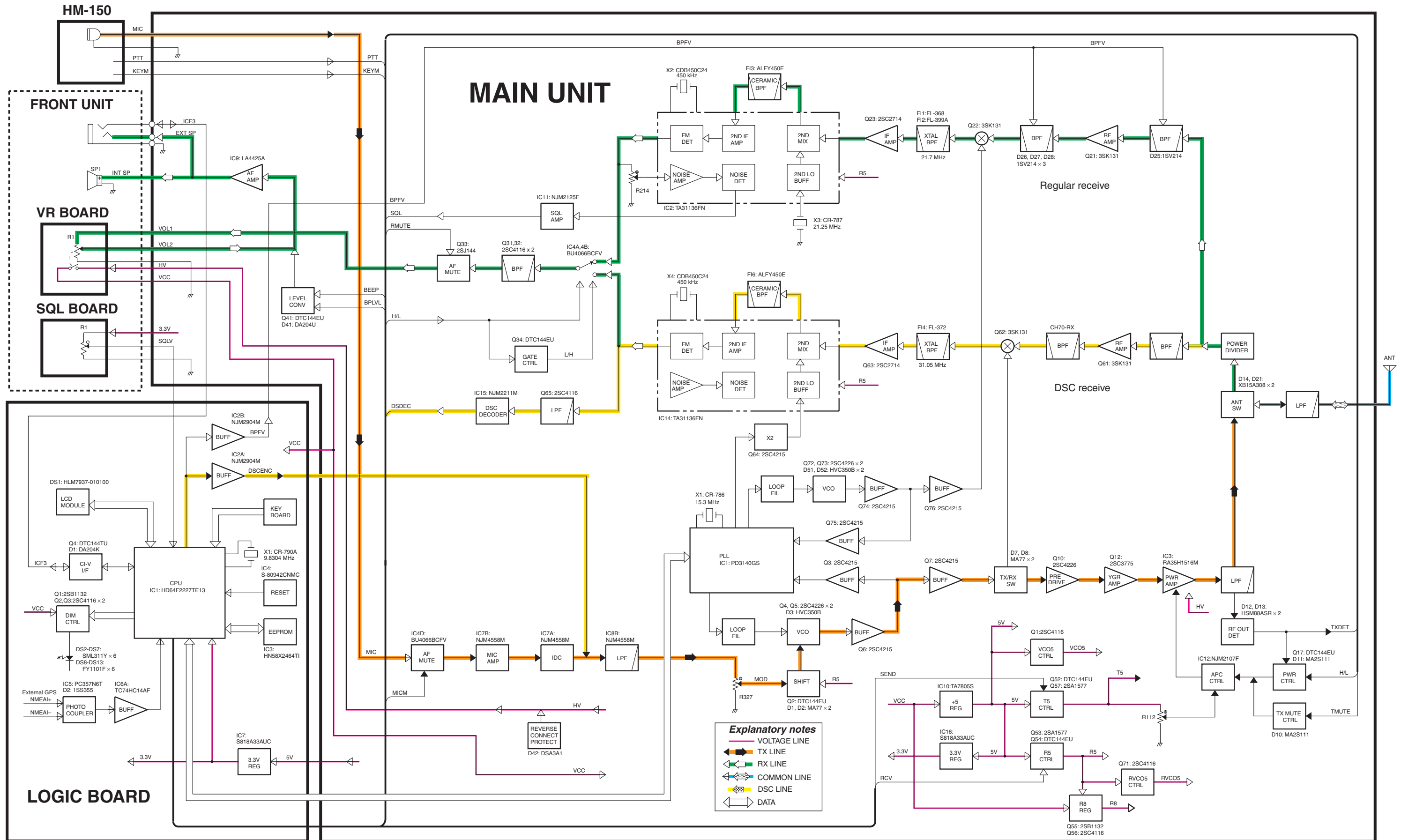


• BOTTOM VIEW



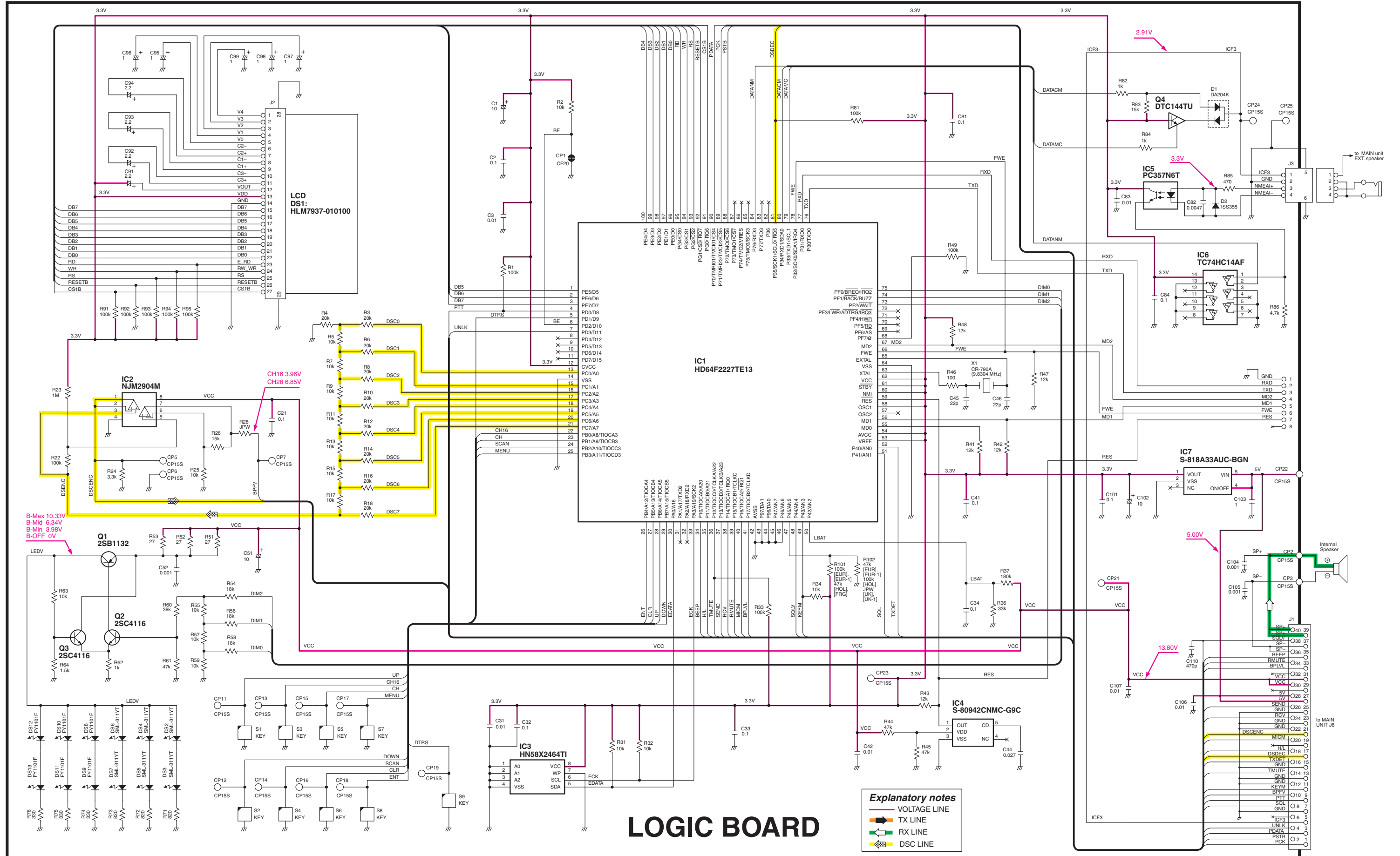
The combination of this page and the previous page shows the unit layout in the same configuration as the actual P.C. Board.

SECTION 10 BLOCK DIAGRAM



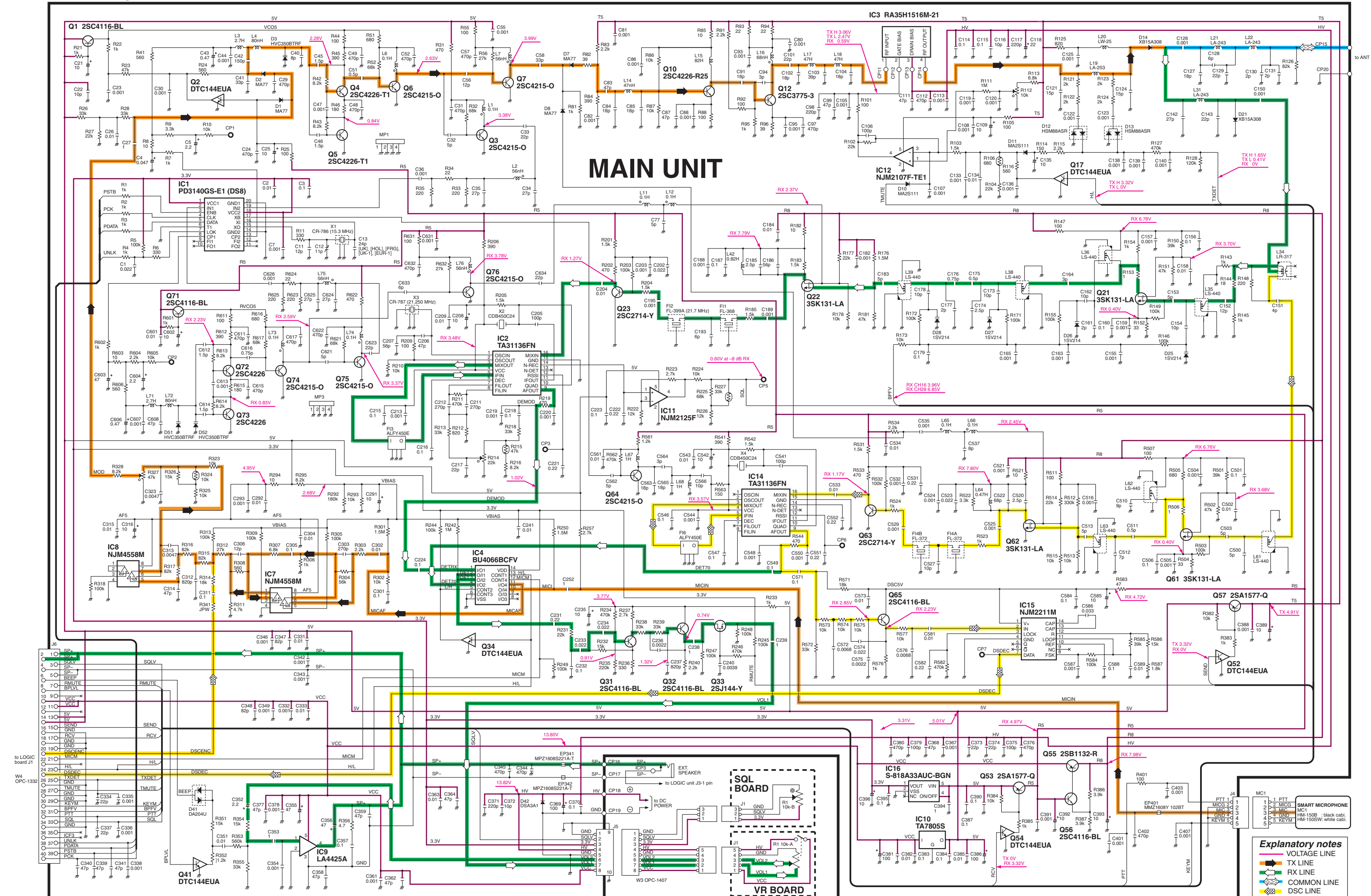
SECTION 11 VOLTAGE DIAGRAM

11-1 LOGIC BOARD



11-2 MAIN UNIT

MAIN UNIT



Explanatory notes

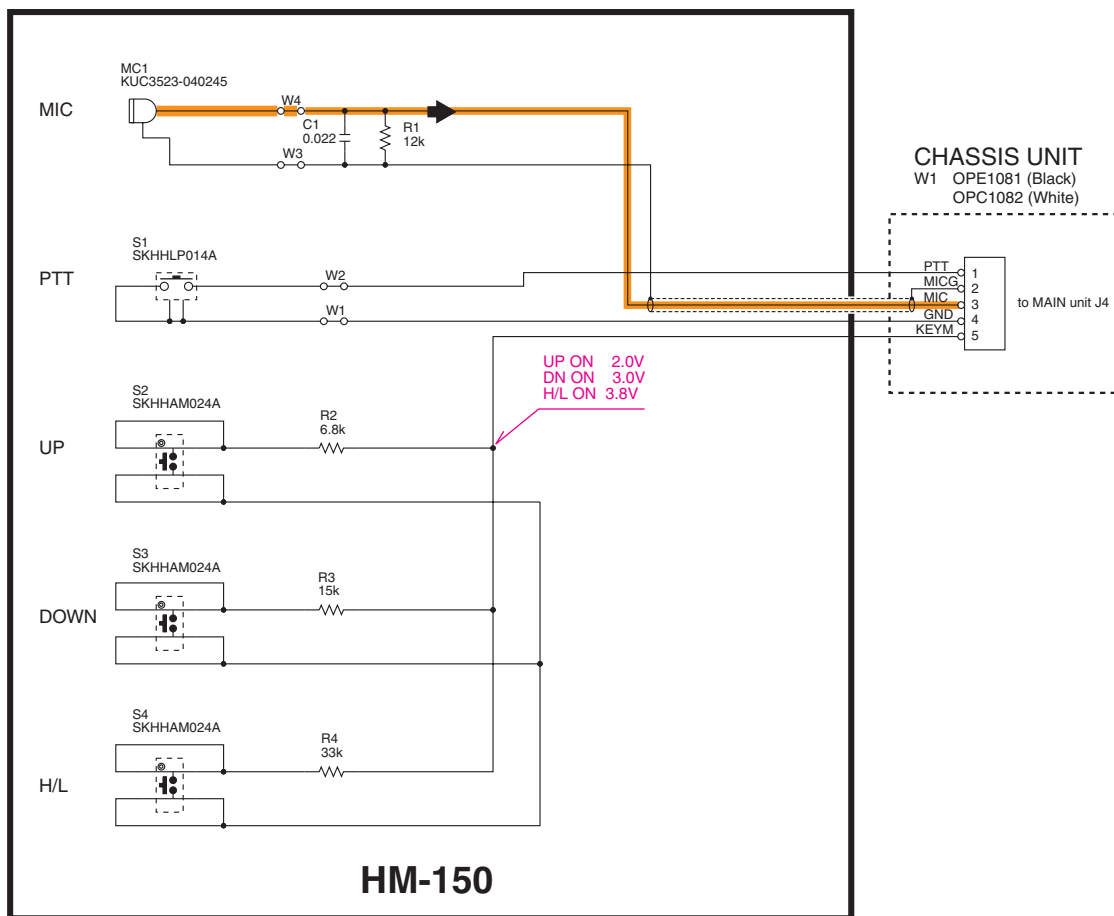
- VOLTAGE NOTE
- TX LINE
- RX LINE
- COMMON LINE
- DSC LINE

MC1

| | |
|---|------|
| 1 | PTT |
| 2 | MICG |
| 3 | MICB |
| 4 | GND |
| 5 | KEYM |

SMART MICROPHONE
 HM-150B : black cabi.
 HM-150SW : white cabi.

11-3 HM-150



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E-mail : info@icomuk.co.uk

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E-mail : icompolska@icompolska.com.pl

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