FURUNO

SERVICE MANUAL

SSB RADIOTELEPHONE

MODEL FS-1550

FURUNO ELECTRIC CO., LTD.
NISHINOMIYA, JAPAN

9-52, Ashihara-cho,
Nishinomiya, Japan 662

Telephone: 0798-65-2111
Telefax: 0798-65-4200

·Your Local Agent/Dealer

FIRST EDITION : SEP 1989

PUB. No. SME-55100-A
(SHNI) FS-1550

* * * C O N T E N T S * * *

SPECIFICATIONS OF FS-1550

GENERAL CHARACTERISTICS

1. Frequency Range
1.6 to 23MHz in 10Hz steps
525 - 1605kHz (receive only, where permitted by authorities. Degraded sensitivity)

2. Frequency Accuracy
After warmup: TX ± 20Hz
Tuning Error: RX 20Hz (5Hz by clarifier)
Tuning Drift: RX 10Hz (15 min.)

3. Communication System
Simplex or semi-duplex

4. Class of Emission
J3E, H3E, R3E
(option: A1A, F1B; T/A spec not considered)
Automatic selection H3E on 2182kHz, manual override to other emission.

5. Number of Channels
Separate TX, RX Frequencies:
TX: 64 factory programmed, recalled by CH No.
RX: 10Hz step free selection independent of TX frequency, user programmable with CH No. 1 - 64.
Paired TX/RX Frequencyies: Factory programmed 64 TX/RX pairs selected by CH No. 1 - 64.
ITU HF: 192 ITU channels (Available in both Separate and Paired TX/RX frequency versions)

6. Power Supply
13.6 VDC ±15%, 18A (TX), 1.2A(Std-by)
24 or 32VDC with extra DC-DC converter
110/220VAC with extra rectifier

TRANSMITTER CHARACTERISTICS

1. RF OUTPUT POWER
J3E/R3E/H3E: 150 Wpep at 50 ohm load (@13.6VDC, IEC rec.), reduction to 60 Wpep or less
A1A/F1B (option): 100W

2. Two-tone Alarm Generator
Built in as standard.

ANTENNA COUPLER CHARACTERISTICS

1. Input Impedance 50 ohms
2. Antenna 6 - 15m wire or whip
3. Tuning Speed 0.2 to 2 sec typical

RECEIVER CHARACTERISTICS

1. Receiving System
Double-conversion superheterodyne
IF: 54.455MHz and 455kHz

2. Sensitivity
Input level at 50 ohms to produce SINAD 20dB
J3E/R3E: 3dBuV (1.4uVemf)
H3E: 16dBuV (6.3uVemf)

3. Selectivity
J3E/R3E: 350 to 2700Hz H3E: ±3kHz
A1A/F1B(option): ±150Hz

4. Scan
8 groups (8 ch/group), All channels in slelcted band on ITU channels. Dwell time 1 - 9 sec where trafic is present.

5. Audio Output
3W rated into internal speaker
5W max. into external 4-ohm speaker

6. Other Features
AGC: ON/OFF; RF Gain: Adjustable;
Noise Blanker: always in circuit;
Squelch: ON/OFF;
Dimmer: OFF/Dark/Med/Bright;
Speaker: ON/OFF (Handset always alive)

EQUIPMENT LIST

(Standard)

Main Unit w/ Mounting Bracket	1set
Telephone Handset	1set
Antenna Coupler	1set

(Optional)
DC-DC Converter PC-220 for 24 or 32 VDC
Rectifier PR-270 for 110/220VAC mains
Flushmount Adapter for Main Unit

ANTENNA COUPLER (AT-1500)

Tuning System	CPU controlled fully automatic tuning system
Frequency Range	1.6 to 25 MHz
Input Impedance	50 ohms (Viewed from transceiver)
Antenna Required	6 to 15 m wire or whip
Power Capability	150 Wpep, 75 W continuous
Tuning Power	10 W
VSWR	Less than 1.5
Tune-up Time	Within 2 to 15 sec. Within 0.5 sec. in the pretuned bands
Switches/controls	MANUAL 2182 kHz tuning facility TEST switch (Self-test)
Power Requirement	15 VDC (supplied from transceiver), 0.6 A max.
Ambient Temperature	– 30°C to + 60°C at 95% RH
Construction	Weather-proof plastic cabinet, stainless steel mount
Coating Color	White
Dimensions	267 mm (W) x 390 mm (H) x 90 mm (D) (10.5" x 15.4" x 3.5")
Weight	Approx. 2.9 kg (6.4 lbs.)

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MAINTENANCE PARTS LIST
FOR FS1550

*1:DEPOT MAINTENANCE PARTS FOR 10 SETS IN 2 YEARS
*2:SHIPBORNE RUNNING PARTS FOR 1 SET IN 2 YEARS

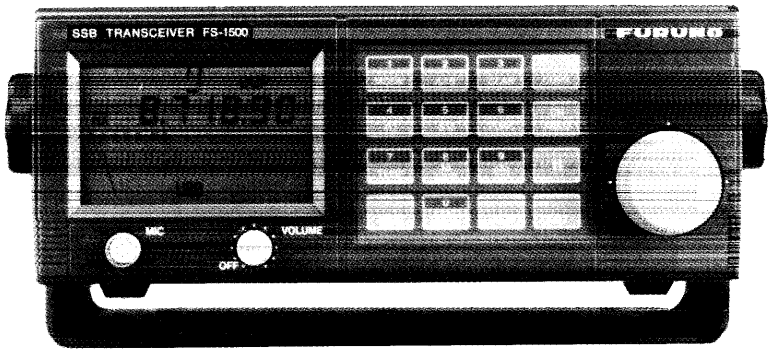
CODE NO.	NAME OF PARTS	TYPE	SPECIFICATIONS	QUANTITY *1	QUANTITY *2	REMARKS
000-113-440	TRANSISTOR	2SC3240		6	2	PAIR
000-118-083	TRANSISTOR	2SA1315-Y		3	1	
000-126-340	TRANSISTOR	2SC3133		6	2	PAIR
000-127-940	TRANSISTOR	2SD667A		3	1	
000-128-069	TRANSISTOR	2SD1271A-P		3	1	
000-113-449	FET	2SK751A		6	2	PAIR
000-129-359	FET	2SK125		6	2	
000-107-973	DIODE	MA649		3	1	
000-110-984	IC	UPC1242H		3	1	
000-112-744	IC	SQ	05S0393-0	3	1	
000-113-353	IC	VOX	05S0397-0	3	1	
000-113-391	IC	IF	05S0392-0	3	1	
000-113-393	IC	NB	05S0394-0	3	1	
000-113-394	IC	AGC	05S0396-0	3	1	
000-113-395	IC	ALC	05S0395-0	3	1	
000-113-448	IC	NJM7805A		3	1	
000-103-544	RELAY	G6B-1114P-US DC12V		10	3	
000-113-428	RELAY	G6B-2114P-DC12V		1	2	
000-113-485	RELAY	G4W-2212PUSTV5-DC12V		3	1	
000-549-017	FUSE GLASS TUBE TYPE	FGB0 30A AC125V	00S0081	20	3	
000-113-465	LOUDSPEAKER	SI008047	05S0391-0	3	1	
000-112-622	MICROPHONE WITH CURL CORD	DM1620FZ1 W/FM10PS6H	FM-2510	3	1	
005-592-270	PRINTED CIRCUIT BOARD	05P0274,PA	FS-1500/1550	1		
005-592-310	PRINTED CIRCUIT BOARD	05P0276,SW REG	FS-1500/1550	1		
005-592-370	PRINTED CIRCUIT BOARD	05P0278,COUP	AT-1500	1		
005-592-440	FRONT PANEL ASSEMBLY	FRONT PANEL	FS-1550	1		
005-592-490	PRINTED CIRCUIT BOARD	05P0273A,TX/FIL	FS-1500/1550	1		
005-593-600	PRINTED CIRCUIT BOARD	05P0326,RELAY	FS-1500/1550	1		
005-593-620	PRINTED CIRCUIT BOARD	05P0328A,TX/RX	FS-1550	1		
000-287-502	MODULE CAPACITOR	EXF-P4103ZW	0.01UF 50V	6		
000-375-524	METAL OXIDE FILM RESISTOR	ERG-3SJ560P	00S0102-0	6		
000-375-538	METAL OXIDE FILM RESISTOR	ERG-3SJ821P	00S0102-0	6		
000-375-539	METAL OXIDE FILM RESISTOR	ERG-3SJ102P	3W 1K	6		

CHAPTER 1 CIRCUIT DISCRIPTION

1.1 Major Difference Between FS-1550 and FS-1500 Series

FUNCTION	FS-1550	FS-1500 Series
Display of TX Frequency	Enable	Disable
RF GAIN Control Knob	Provided	Not provided
AGC Control Knob	Provided	Not provided
Setting Different Channel Numbers for TX and RX (Cross Band Operation) on ITU Ch. and/or User Ch.	Enable	Disable
Baud Rate of RS-232C Data	Fixed (4800)	Selectable (9600 OR 4800)

Front View of FS-1550



Front View of FS-1500

1.2 Transceiver Unit

The FS-1550 radiotelephone set is a modern, 2-unit design. The 2 units are transceiver unit and antenna coupler unit. The transceiver unit contains 6 printed circuit boards; the CPU board, TX/RX board, TX FIL board, PA board, RELAY board and the SW REG board.

1. Transmitter Section

Refer to the Transmitter Block Diagrams on page 1-17.

An audio signal applied to the microphone is amplified by U10 of the TX/RX board. U10 also compresses excessive level of speech to achieve proper modulation level.

The compressed audio signal is switched by Hybrid IC U12 and applied to Double Balanced Modulator (DBM) CR28. The DBM modulates the audio signal with the 3rd local oscillation frequency 456.5kHz (USB) and outputs a Double Side Band (DSB) signal with suppressed carrier.

The DSB signal is amplified by Buffer Amplifier Q12 and passed to Crystal Filter FL3 where unwanted Upper Side Band (USB) component is rejected and only Lower Side Band (LSB) component is selected.

In order to inject the carrier for class of emission R3E and H3E, the 3rd local oscillation frequency 456.5kHz is injected at the output of FL3 and carrier level for R3E and H3E is adjusted by potentiometer R85 and R87, respectively.

The LSB signal is mixed with the 2nd local oscillation frequency 54MHz by the 2nd Mixer CR27 DBM, resulting in the output of a 54.455MHz LSB signal.

The 54.455MHz LSB signal is amplified by Buffer Amplifier Q10 and passes through Crystal Filter FL1 (54.455MHz) where unwanted components are deleted.

The 1st Mixer CR26 DBM mixes the LSB signal with the 1st local oscillation frequency (f + 54.4565MHz) to generate a transmit frequency ("f") from 1.6 to 23 MHz. As the Mixer outputs the difference frequency, the LSB signal is converted to a USB signal.

The USB signal output goes to a combination of a Low Pass Filter (LPF) and a High Pass Filter (HPF) consisting of coils L7 to L10 and capacitors C48 to C57 which delete unwanted components.

The USB signal is amplified by Wideband Amplifier IC U2 and Buffer Amplifiers Q7 and Q5 to a level required to drive the B04 Power Amplifier (P.A.).

In the PA section an input from the TX/RX board is amplified by two push-pull amplifiers, consisting of Q1 and Q2, and Q3 and Q4, to a level of nominal output power.

The Power Amplifier incorporates Temperature Detector, comprised of RT2 and U1, which monitors the temperature of the power amplifier transistors. When the temperature at the top of the transistors exceeds approx. 80°C, the Temperature Detector outputs DC voltage which is recognized as "over-temp" by MPU, resulting that the gain of Wideband Amplifier U2 of the TX/RX board is decreased "LOW POWER".

The output of the PA passes through an LPF in the B03 TX FIL board where harmonics of the signal are deleted. Spurious components contained in the signal output from the LPF are attenuated by at least 65 dB relative to the wanted signal.

LPF	Cut-off Frequency
B1	2.4 MHz
B2	3.6 MHz
B3	6.0 MHz
B4	10.0 MHz
B5	18.0 MHz
B6	30.0 MHz

L14, CR1, CR2 and U1 of the TX FIL board form the SWR Detector which detects excessive Standing Wave due to antenna matching failure or open-circuited or short-circuited antenna terminal. Should one of these occur, the SWR detector reduces the gain of the Wideband Amplifier U2 in the B02 TX/RX board to protect the PA from damage. U2 also controls power reduction with DC voltage sent by the CPU.

If the PA is driven to produce output power exceeding the rated power, the DC voltage of the ALC signal is increased, gain at U2 is decreased and the drive level (output level of the TX/RX board) is decreased so as not to exceed the rated output power.

2. Local Oscillator Section

Refer to the Local Oscillator Block Diagram on Page 1-18.

All local oscillation frequencies are generated by the VCO (Voltage Controlled Oscillator) section of the TX/RX board.

Table 1.2 Local Oscillation Frequency

	USB/R3E	LSB	TLX	CW	AM
1st LO (kHz)	F+54456.5	F+54453.5	F+54455.0	F+54455.0	F+54455.0
2nd LO (kHz)	54000.0	54000.0	54000.0	54000.0	54000.0
3rd LO (kHz)	456.5	453.5	456.7	(TX)455.0 (RX)455.8	455.0

49.5 MHz is oscillated by crystal Y1 in the oven and U9. 49.5 MHz is divided by 11 by U10, becoming 4.5 MHz, which is used as the reference frequency for the Phase Lock Loops.

The 1st local oscillation frequency is generated by 2 Phase Lock Loops, Loop-1 and Loop-2. A frequency between 50.500 and 51.499 MHz in 1 kHz steps is produced by PLL IC U2 and VCO Q1. The resultant frequency is divided by 100 by U3 and mixed with 49.5 MHz by U4 resulting in the generation of a frequency between 50.00500 and 50.01499 MHz in 10 Hz increments.

Loop-1 generates, with PLL IC U5 and VCO Q7, 1st local oscillation frequency (f+54.455MHz in 10Hz steps). Mixer U8 outputs a frequency from 4.55 to 34.44MHz in 10kHz steps by mixing a frequency between 50.500 to 51.499MHz with the output frequency of the Loop-2.

The 2nd local oscillation frequency (54.0MHz) is synthesized with the crystal oscillation frequency (49.5 MHz) and the reference frequency (4.5MHz).

Loop-3 consisting of PLL IC U11 and VCO Q15 generates a frequency between 45.35 and 45.68MHz in 10kHz steps. This is divided by 100 by U12 to generate the 3rd local oscillation frequency (453.5 to 456.8kHz) depending on class of emission.

3. Receiver Section

Refer to the Receiver Block Diagram on page 1-19.

A received frequency ("f"), passes through the antenna matching network in the antenna coupler unit, and is sent to an LPF in B03 TX FIL board. The signal then passes through the BC rejection filter which deletes incoming broadcasting signal in the BC band and an LPF which protects local frequency signals from passing through the antenna system. The received signal is passed through Induction Rejector CR1 and CR2, amplified by RF Amplifier Q1 and Q2 and supplied to the 1st Mixer CR26 DBM.

1st mixer mixes the received signal with the 1st local oscillation frequency (f + 54.455 MHz). The 1st IF (54.455 MHz) passes through filter FL4 (±4kHz bandwidth) for rejection of unwanted components and then is amplified by U1.

The amplified 1st IF signal is mixed with the 2nd local oscillation frequency (54.0 MHz) by the 2nd Mixer CR27 DBM resulting in the output of the 455 kHz 2nd IF signal. CR16, CR17 and the hybrid IC U4 cut spike noise in the 2nd IF signal. The 2nd IF signal is applied to a bandpass filter FL3, FL4 or FL5 in accordance with the class of emission selected. It is then amplified by hybrid IC U7 and supplied to Detector CR28 thru a BPF and Buffer Amplifier Q13.

CR28 mixes the 2nd IF signal with the 3rd local oscillation frequency (456.5MHz, for USB), which results in the output of an audio frequency signal.

For reception of an H3E signal, Detectors CR19 and CR20 are used to obtain the audio signal which is amplified by hybrid IC U8.

U8 also generates an AGC signal to control with voltage gain of the 1st IF Amplifier U1 and the 2nd IF Amplifier U7.

The audio signal is applied to hybrid IC U12 and then fed to Line Amplifier U15. The output of the Line Amplifier is used as "LINE OUTPUT" signal, but also is applied to Squelch Control U11. The squelch control mutes audio output in the absence of a signal.

The audio signal is finally amplified by AF Power Amplifier U13 to drive a loudspeaker. The level of audio output is adjustable by a volume control on the front panel.

4. Panel/CPU Section

Refer to the General Block Diagram on page 1-16.

MPU U1 of the B01 CPU board receives and processes key and channel selector operations. Received signal strength or antenna current is converted into a digital signal by Analog-to-Digital Converter U3 and processed by the MPU. Signal strength or antenna current (or 50 ohm line current) is graphically indicated on the LCD.

ITU channel data is stored in the ROM section of the MPU. User-programmed channel data (2 x 64 channels) is stored in the Electrically Erasable PROM U4.

When a frequency is selected through the keyboard or a rotary knob, the MPU displays the frequency on the LCD and sends necessary data to each PLL on the TX/RX board.

For dimmer adjustment, the MPU controls the amount of current supplied to each illumination lamp in accordance with instructions received through the keyboard.

The following descriptions provide more detailed information about the devices employed by the B01 CPU board. The Schematic Diagram on page S-2 should also be referred to.

<< U1 >>

System Control

Front panel key or dial operation is received by the MPU U1 and after it is judged to be valid or invalid, required data are synchronized by the clock and sent to each circuit block.

The figure below shows the outline block diagram of U1.

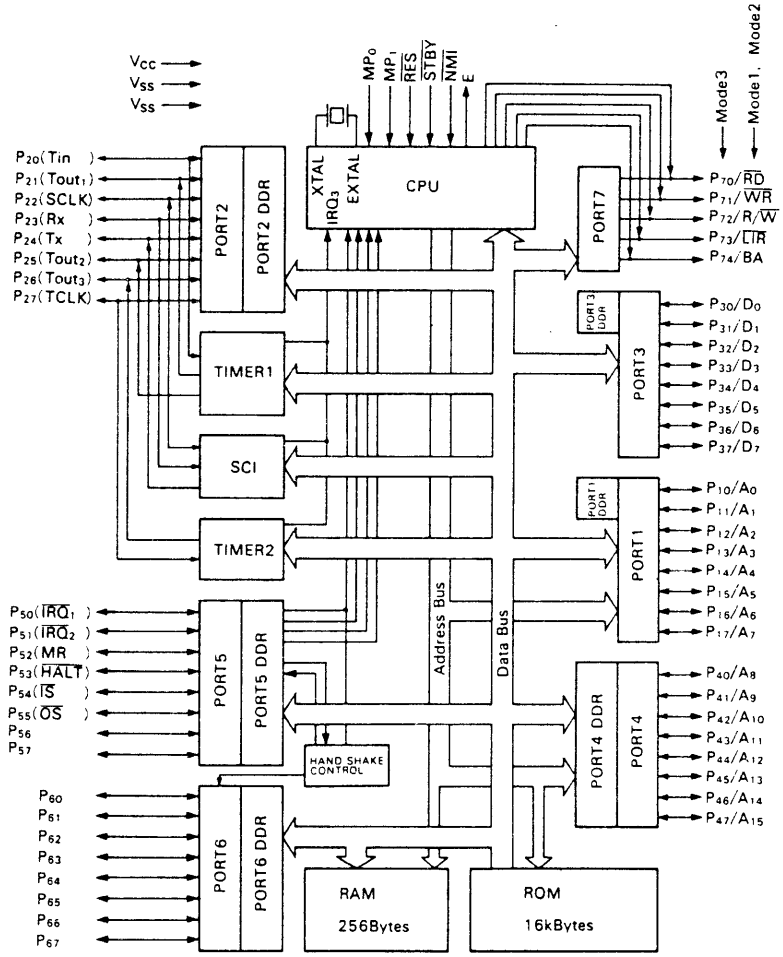


Fig. 1-1 Block Diagram of U1 of CPU Board

U1 is a one chip microprocessor comprised of an 8 bit CPU, 256 Byte RAM, 16k Byte ROM, timers, serial and parallel interfaces, etc. Because it is of one chip construction, no external ROM/RAM is used. Consequently, data loaded on the data bus or the address bus is not directly sent to external circuits but is passed through a parallel or series I/O port where external events (key operation, etc.) are monitored and control signals are sent to external circuits.

The ROM preserves, when the power is removed or reset, system control program, test program, ITU channel frequencies and corresponding data and other fixed data.

The RAM temporarily stores key operations, last-selected channel frequency and channel data (Simp/Dup/Class of Emission). Channel frequency and channel data are preserved by this RAM when the power is removed.

<< U2 >>

U2, a LCD Control IC, drives the LCD display according to data/commands serially sent from the MPU.

Transmission of Command/Data

Serial data input and clock from pin SCK are sent out via pin SI to an internal shift register.
Transmission data; i.e., command or display data, are differentiated by the C/D pin. The MPU monitors the BUSY output of the LCD Control, and if "READY" transmits data.

Driving the LCD

The LCD is made up of 4 common lines and 32 segment lines. An area on the LCD is blackened by voltage applied to its corresponding segment.

<< U3 >>

A/D Converter U3 digitally converts receive signal strength or antenna current and sends it to the MPU as synchronous serial data. The address data to determine which one of four analog inputs should be A/D converted is sent from the MPU as synchronous serial data. After A/D conversion is completed, the EOC (End Of Conversion) terminal goes into "L" state. The CPU reads EOC terminal status and outputs a clock signal to SCK (shift clock) terminal of U3. Then, U3, in synchronization with the shift clock, returns converted data to the CPU via pin SO. Note that in actual practice only two of four channels are used; A0 (receive signal strength) and A1 (antenna current or 50 ohm line current).

<< U4 >>

U4 stores user channel data (Simp/Dup/Class of Emission) which has been memorized by channel programming.

<< U5 >>

Chip Selection (Address Decoder)

U5 is partially comprised of two 2-to 4-line decoders; one reads key operation and the other is used for controlling LCD driver U2 and A/D Converter U3.

Reading of Key Operation

As shown in the figure below, the keyboard is arranged in 4 rows X 4 columns of keys (16 keys total). Which one of the four rows of keys should be binarally converted is determined by the MPU's two bit address P54/55. Each column has a pull-up resistor and whenever a key is pressed the corresponding column goes into "L" state. Data sent from a column is read by Input Ports P10-13 and compared with address (row) information to determine which key has been pressed. Note that the entire operation is not initiated as soon as a key is pressed; the MPU continually reads key status in fixed intervals.

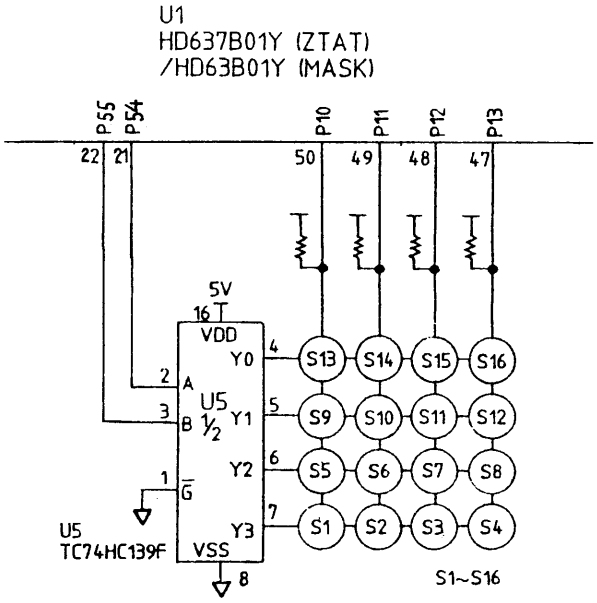


Fig. 1-2 Keyboard Matrix

<< U6 >>

Analog Multiplexer U6 reads DIP Switch status. As shown below, U6 is an 8-contact rotary switch. The setting selected is binarally converted at the terminals A, B and C for output to the MPU. Since a pull-up resistor is connected to the COM terminal, the switch selected goes into "L" state when ON and "H" state when OFF.

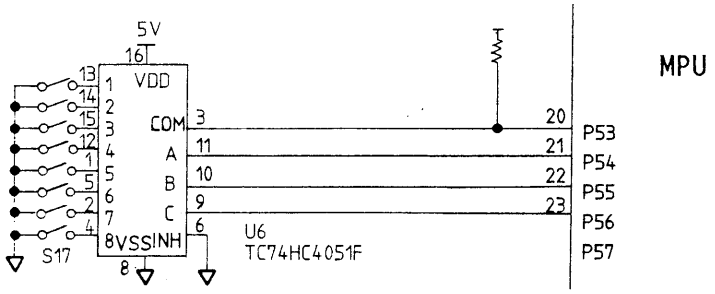


Fig. 1-3 Analog Multiplexer U6

<< U7 >>

Lamp Status

Parallel Input/Series Output Shift Register U7 controls lamp ON/OFF status. When the DIM key is pressed, the CPU serially loads shift clock and data onto P35/36, respectively, and sends them to U7. When updating of data is completed, the contents of U7 are latched by a latch pulse output from P37 to the open-drain output.

5. Power Supply Section

Refer to the Power Supply Block Diagram on page 1-20.

The power supply section consists of RELAY and SW REG boards.
The operating range of this section is 12V +30%, -10%.

A regulated power supply (model PR-270) is prepared for AC ship's mains and a DC-DC converter (model PC-220), for 24V/32VDC. When external power supply unit is prepared locally, use a unit whose able current output is from 2A to max. 30A with minimum voltage fluctuation. An ordinary rectifier can not be used.

A 2m power cable with two 30A fuses in snap-in holders is supplied as standard. If another type of cable is used, ensure that it is properly "fused."

The negative terminal of the battery is floating. Input voltage is always applied to the relay K1, overvoltage detector consisting of Q1, U1, and an oven even if the power is off.

When the power switch is turned on, the relay K1 is driven and input voltage is applied to the switching regulator and a PA circuit.

The PA circuit operates with the input voltage, but other circuits operate with internal +15V provided by the switching regulator or +5V produced from the +15V.

The antenna coupler is also powered with +15V. A 1A breaker is provided in the coupler. +5V for the coupler is produced internally.

1.3 Antenna Coupler Unit

1. Block Description of Coupler

Refer to the Antenna Coupler Block Diagram on page 1-21.

When the PTT switch or [TUNE] key is depressed, "tune" signal is applied to the Antenna Coupler, Relay K1 and K2 are energized and CW signal of approx. 10W is fed from the transceiver 50 ohm antenna terminal to the reactive antenna through a Phase Detector, VSWR Detector (T2), the Matching Network consisting of C1-C18 and L1-L10 and Antenna Current Detector (T3).

MPU U8 selects, according to signals sent from T1 and T2, suitable constants through a combination of capacitors and coils. The initial constants are automatically defined by the MPU depending on the frequency which is read out by a counter consisting of Q1 and U1. The suitable value is stored in the memory of U8 as initial value, for use when the same frequency is selected later. This stored data is held for about one week by super capacitor C42.

The function of DIP switches S3 to S6 is to enable manual matching on 2182kHz. An LED is provided for each relay to indicate switching on or off capacitors and coils. LED CR53 and CR54 are lighted when the matching L-C network is in circuit. LED's CR33 through CR52 are lighted when the relevant coil or capacitor is connected.

S1 "TUNE" is provided to enable manual tuning.

A 50 ohm dummy composed of R25 thru R27 is incorporated for adjusting the VSWR detector. Shunt capacitor C16 thru C18 is normally connected between antenna line and ground to reduce the antenna impedance. Connectors are provided to disconnect the shunt capacitor when only low frequencies are used.

2. Tuning Sequence of Coupler

The basic function of the coupler is to check matching condition whenever there is a change in frequency. If data for a matching condition are available (stored in memory), the coupler reads such data and immediately makes matching.

Fig. 1.4 shows impedance characteristics of vertical grounding type antenna used for ships. When the length of the antenna is shorter than $1/4\lambda$, the characteristic of the antenna is "capacitive". When the length is $1/4\lambda$, it shows a pure resistance of approx. 36 ohms.

When the length is longer than that, "inductive" characteristic is obtained. Then the value of radiation resistance becomes from several hundred ohms to several kilo ohms depending on the size of wire, environmental conditions, and structure. A peak value is obtained at $1/2\lambda$.
For example, in a 7m-long antenna, the characteristic is capacitive for the frequency range from 1.6 to 12 MHz and inductive for over 12MHz.

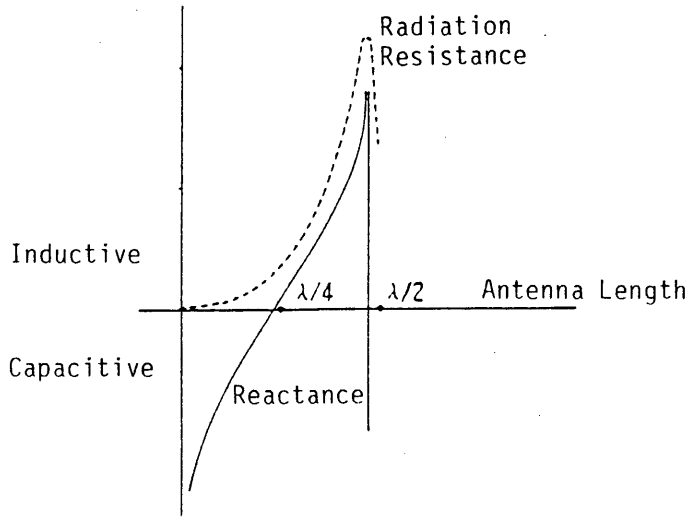


Fig. 1-4 Impedance Characteristics of Vertical Grounding Antenna

In the case of a "capacitive antenna" (Fig. 1-5), a coil "Lx" to cancel the capacitance "Ca" is connected. When viewed from the left side of the matching network, the impedance "Zx" on the right side becomes "ra". The circuits of "Lo" and "Co" converts the impedance viewed from the cable connection side "Zo" (50 ohm) and "Zx" from the antenna side.

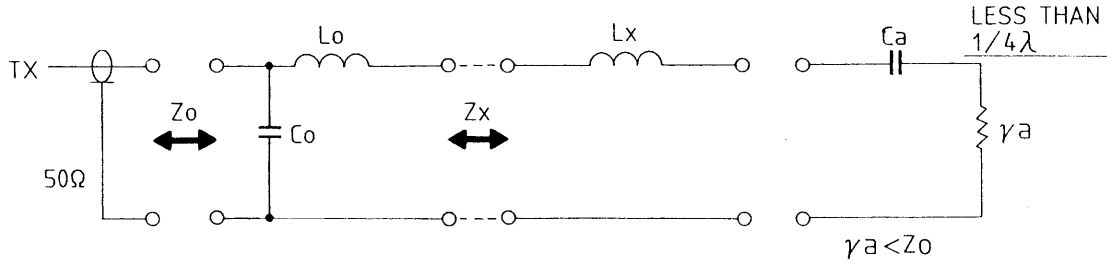


Fig. 1-5 Capacitive Antenna

In the case of an "inductive antenna" (Fig. 1-6), a capacitor "Cx" to cancel the inductance "La'" is connected. Conversion is made by "Lo" and "Co".

The positions for inserting capacitor and coil are different between capacitive and inductive antennas.

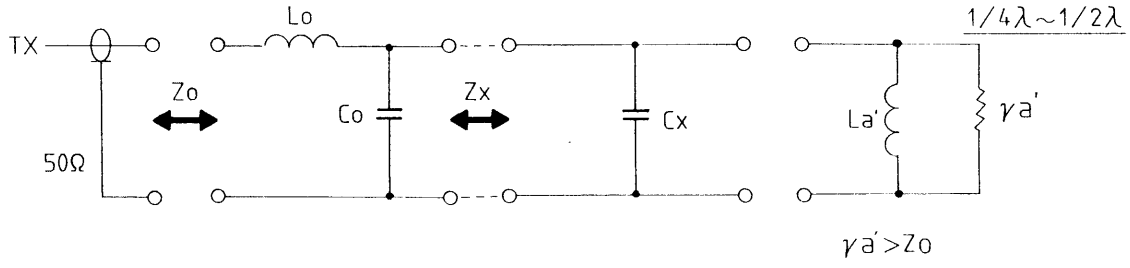


Fig. 1-6 Inductive Antenna

Fig. 1.7 shows the matching circuit of AT-1500.
A matching circuit of L and C according to the antenna condition mentioned earlier is made by switching a number of coils and capacitors with relays. An optimum L-C combination is automatically selected by the control of the CPU.

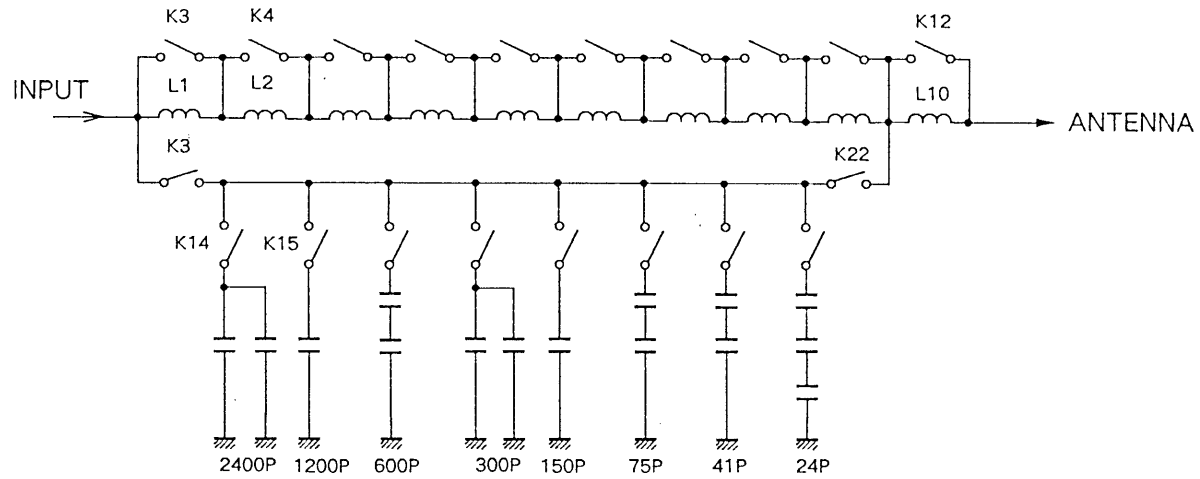


Fig. 1-7 Matching Circuit

The matching procedure is basically as follows;

1. When TUNE switch or PTT switch of FS-1550 is pressed, AT-1500 will automatically start controlling.

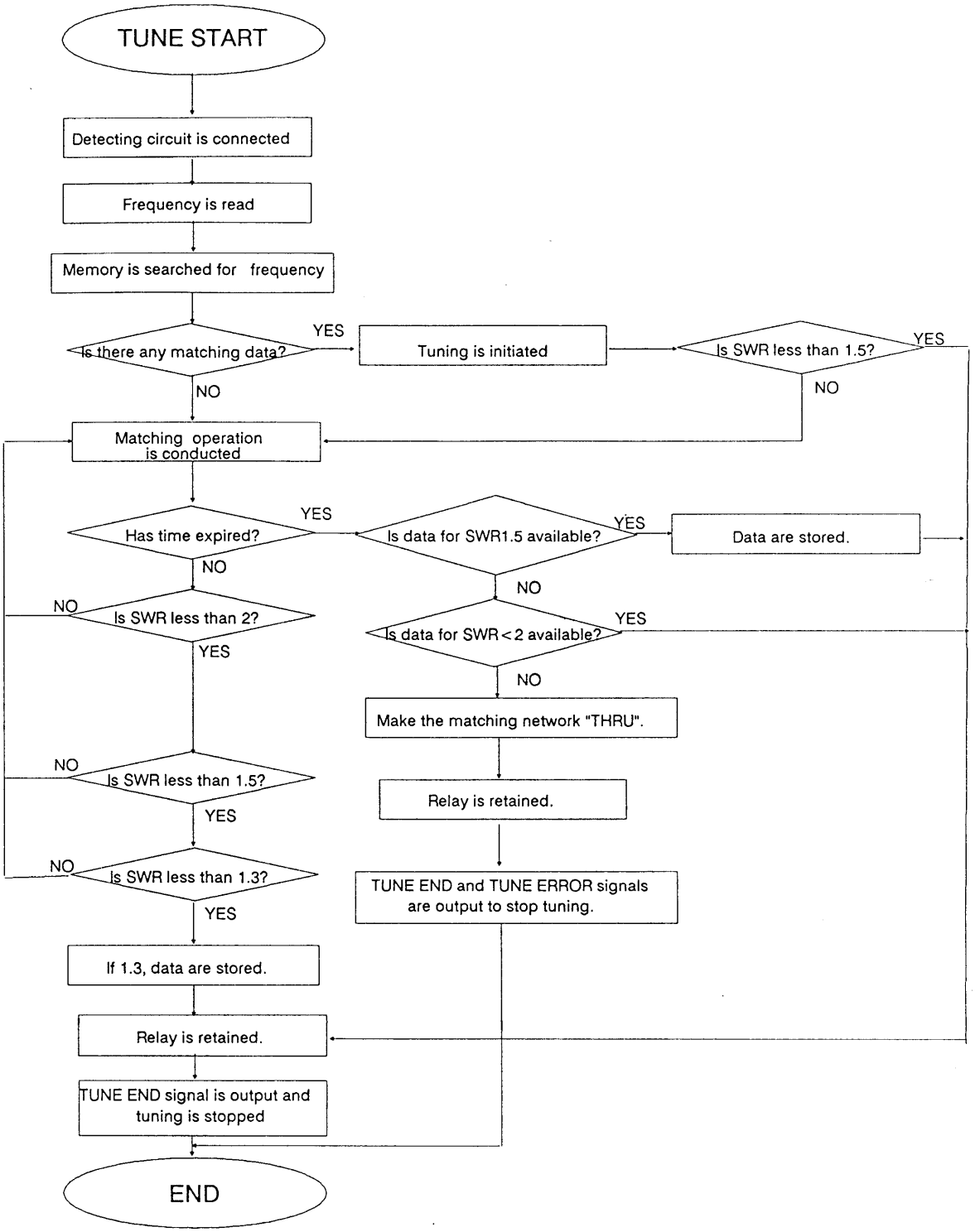
2. FS-1550 is set to the "CW" mode and ready for transmission. The power is set to approx. 10W.

3. AT-1500 starts to select matching points. In order to make matching, phase and SWR value are detected for use as data. L-C combination is selected using a CPU-stored program.

4. When the optimum condition is detected, tuning is stopped and L-C combination is stored in the RAM.

5. Transmission is stopped by a BUSY signal from AT-1500 and the last-used mode is restored.

These procedures are shown in the flow chart on the next page.


TUNE START
Detecting circuit is connected
Frequency is read
Memory is searched for frequency
Is there any matching data?
YES
Tuning is initiated
Is SWR less than 1.5?
YES
NO
NO
Matching operation is conducted
Has time expired?
YES
Is data for SWR1.5 available?
YES
Data are stored.
NO
NO
Is SWR less than 2?
YES
Is data for SWR < 2 available?
YES
NO
Make the matching network "THRU".
NO
Is SWR less than 1.5?
YES
Relay is retained.
NO
Is SWR less than 1.3?
YES
TUNE END and TUNE ERROR signals are output to stop tuning.
If 1.3, data are stored.
Relay is retained.
TUNE END signal is output and tuning is stopped
END

Operations of L-C matching network

The matching operation starts by conducting the "phase check" to estimate the approximate values of L and C. Then, the best SWR value is found by increasing/decreasing "C".

[Capacitive antenna]

1. "Phase Check" is conducted.
2. "L" is increased to find the point where the phase changes from "capacitive" to "inductive".
3. While observing SWR value, "L" is increased slightly and then "C" is increased.
4. Step 3 is repeated until the point where SWR is less than 1.3 is found.
5. When a combination of L and C which satisfies "SWR 1.3" is found, the data is stored in the RAM.
6. If time has expired before a combination of L and C which satisfies "SWR 1.3" is found and SWR is less than 1.5, the data is stored in the RAM.

[Inductive antenna]

1. "Phase Check" is conducted.
2. "C" is increased to find the point where the phase changes from "inductive" to "capacitive".
3. While observing SWR value, "C" is increased slightly and then "L" is increased.
4. Step 3 is repeated until the point which satisfies "SWR 1.3" is found.
5. Same as steps 5 and 6 for "capacitive antenna".

* If a data which satisfies "SWR 2" is not found from the data obtained by the latest matching sequence, the matching network is made "THROUGH" and tuning is stopped.
(Time out = 15 sec. In this condition "TUNE OK" is not indicated but some of the power can be emitted in spite of mismatching.)

FURUNO

1 2 3 4 5 6

A B C D

1B02, 05P0272, TX/RX (1/2)

MIC
MIC ALC AMP U10 TA7658P
LIMITER AMP & LINE SELECT U12 05S0395-0
MIX CR28 ND487 CI-3R
BUFF AMP Q12 2SC1815Y
BUFF AMP Q14 2SC1815
3rd Lo
FILTER (SSB)
(CW.TELEX)
(AM)
N.B. SW CR16, 17 1SS135 ×2
N.B. CONTROL U4 0530394-0
MIX CR27 ND487 CI-3R
2nd Lo
BUFF AMP Q10 2SC2498
IF AMP U1 05S0392-0
AGC
FILTER
MIX BUFF AMP Q9 2SC2478 CR26 SBL-1C
1st Lo (f+54.455MHz)
L.P.F. H.P.F.
AMP U2 SL1611 DG
AMP Q7 2SC1947
AMP Q5 2SC3133
LINE IN
AM DET & AGC AMP U8 05S0396-0
TONE (ALARM, CW)
BUFF AMP Q13 2SC1815Y
B.P.F.
IF AMP U7 05S0392-0
S
(54MHz)
L.P.F.
RF AMP Q1, Q2 2SK192AGR×2
ANT

2B01 05P0278 COUP
I.ANT PICK UP
U7 NJM 2904D
MATCHING NETWORK
I.ANT
SWR DET
U2 A/D CONV. μPD7001C
RELAY DRIV
U8 CPU HD63B01Y
U9~11 M54563P ×3

1B04, 05P0274 P.A.
Q1, Q2 2SC3133×2
DRIV
P.A.
Q3, Q4 2SC3240×2
OVER TEMP
U1 NJM2904D

1B03, 05P0273 TX FIL
L.P.F.
6BAND
SWR DET
SWR ALC AMP U1 NJM2904D

1B02, 05P0272, TX/RX(2/2)
(456.5KHz)
1/100 DIVIDER U12 M54459L
VCO3
Q15 2SK 192A GR
PLL3
U11 M54 927P
1/11 DIVIDER U10 HD10551
MIX U9 2/2 TA7310P
B.P.F.
OSC U9 1/2
TA 7310P
Xtal 49.5 MHz
+12V
OVEN
0V
(4.5MHz)
VCO2 Q1 2SK 192A GR
U2 PLL2 M549 27P
1/100 DIVIDER U3 M54459L
MIX U4 μPC1307H
B.P.F.
MIX U8 μPC1307H
BUFF Q8~10 2SK241GR ×3
VCO1 Q7 2SK192AGR
PLL1
U5 M54927P

LINE AMP U15 NJM082
LINE OUT
HAND SET OUT
SP
AF POWER AMP U13 μPC1272H
S.Q. CONTROL U11 05S0393-0
TELEX
KEY
REMOTE

TUNE CONTROL
+12V(P.A.)
OVEN
12VDC INPUT

1B06, 05P0276
U1, μPC1094C
Q1, 2SK751A
SW REG

1B05, 05P0275
OVER VOLT CHECK U1, μPC1093J
RELAY

+15V
+15V
REG
U23 AN7805F

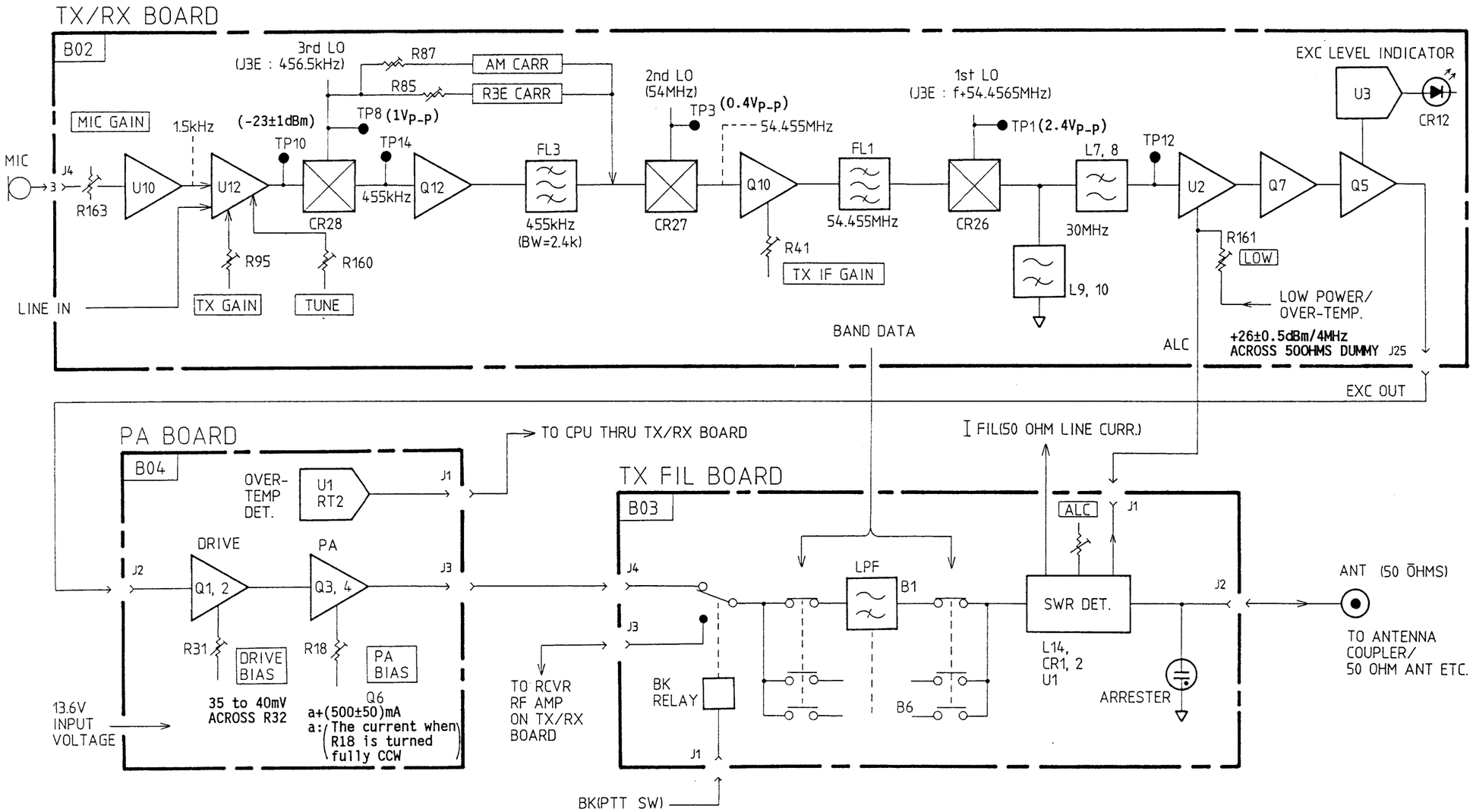
1B01, 05P0271, CPU
L.C.D. DISPLAY
LCD DRIV U2 μPD7225G
U1 CPU HD63B01Y
KEY SCAN U5 TC74HC139F
KEY PAD
1	2	3	TX
4	5	6	RX
7	8	9	RCL
2182	0	ALARM	ENT

RF GAIN
VOLUME POWER SW
A/D CONVERTER U3 μPC7001C
I.ANT
S
EEPROM U4 X2404
LAMP DRIV U7 M54972P
DIAL

FS-1550

承認 APPROVED	DEC・6・'88 T.UAMAGUCHI	名称 TITLE	FS-1550 BLOCK DIAGRAM
検図 CHECKED	Dec・6・'88 M.IKEDA		
製図 DRAWN	Dec・6・'88 S.Nishi	図番 DWG.NO.	E5510-005-C

FURUNO ELECTRIC CO., LTD.



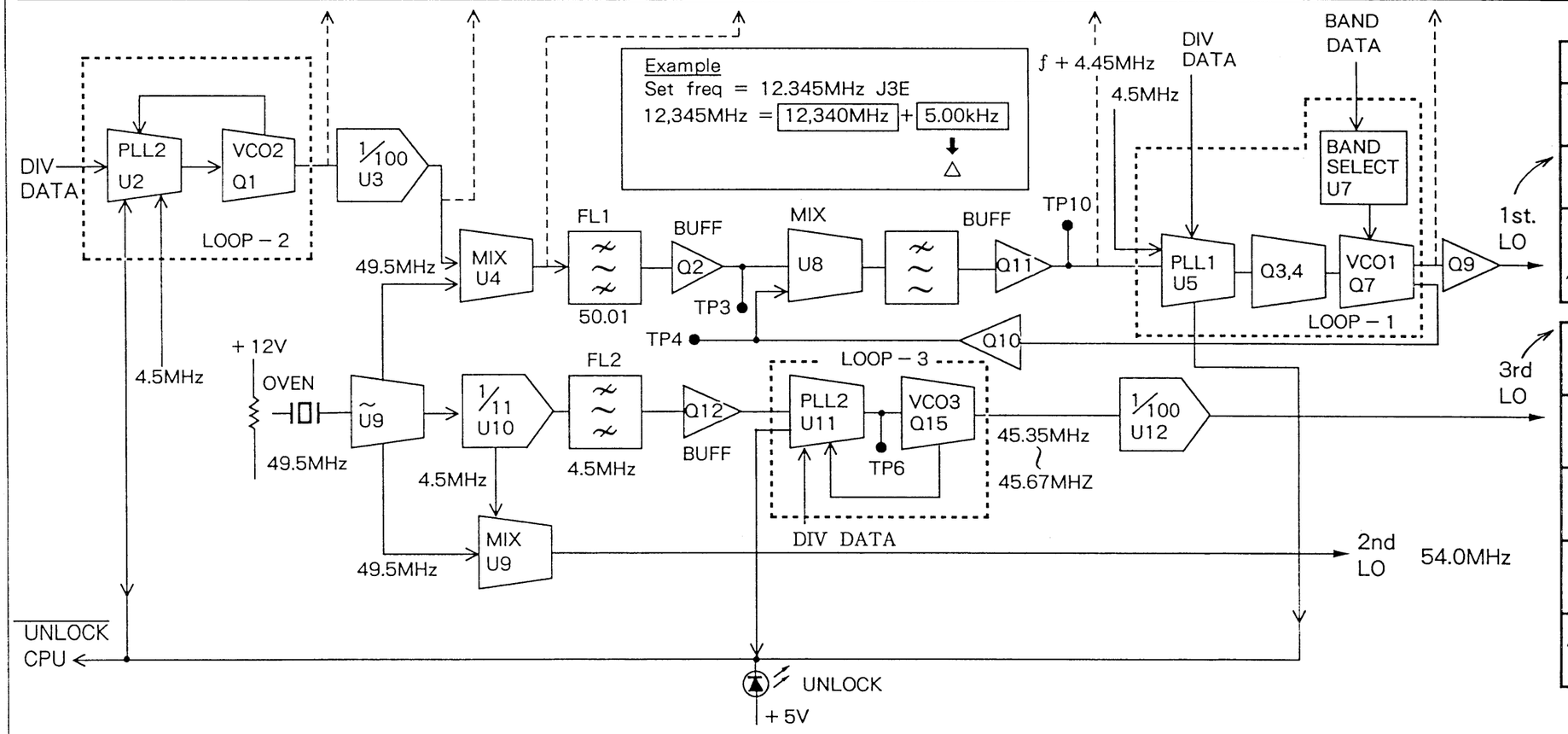
FS-1550 TRANSMITTER SECTION

△ : SET FREQ. (BELOW ×10kHz)

0.00kHz	50.500MHz	0.50500MHz	50.00500MHz
9.99kHz	51.499MHz	0.51499MHz	50.01499MHz
Ex. 5.00kHz	51.000MHz	0.51000MHz	50.01000MHz

SET FREQ. (ABOVE ×10kHz)

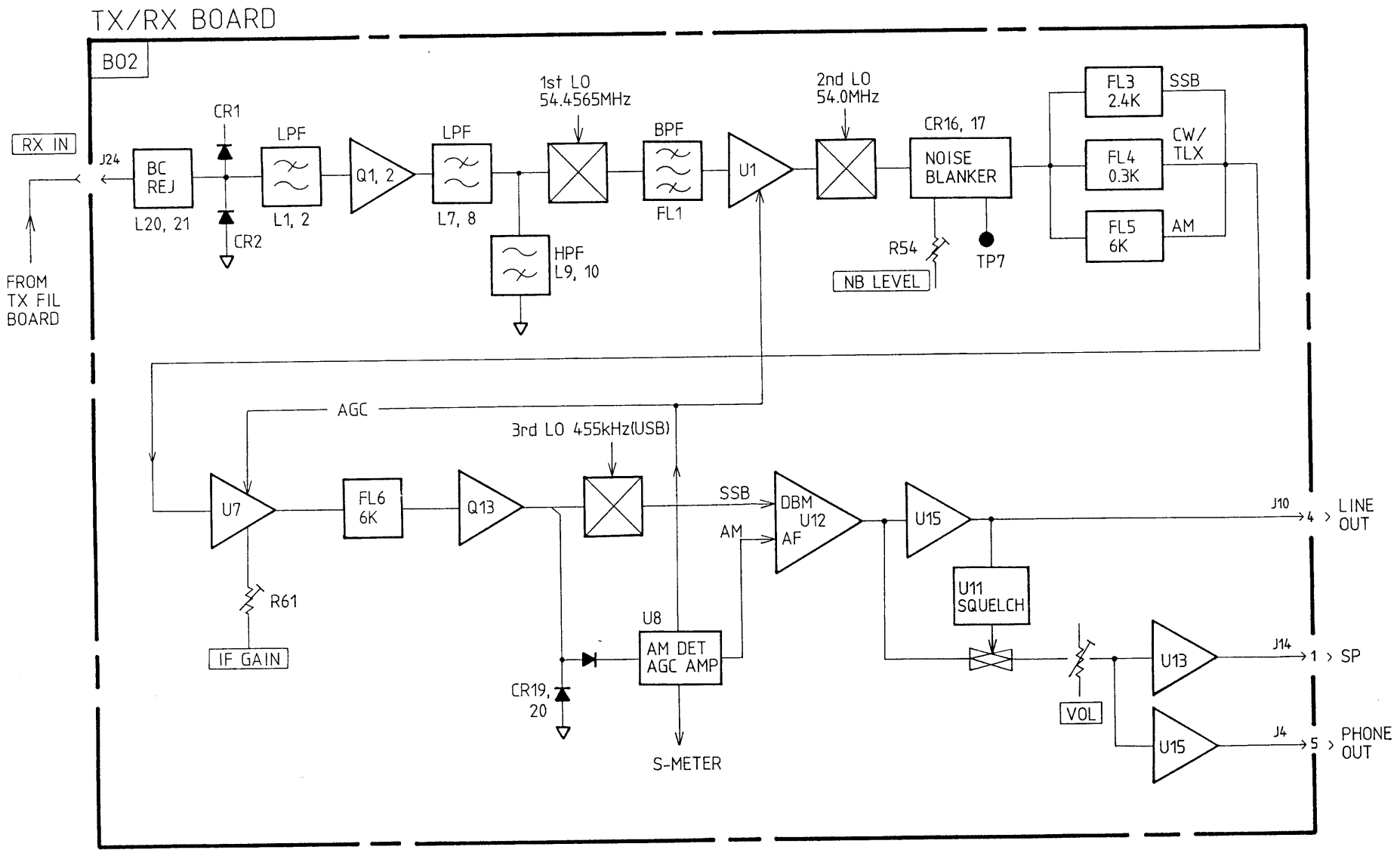
0.10MHz	4.55MHz	54.555MHz + △ MHz + OFFSET
29.99MHz	34.44MHz	84.445MHz + △ MHz + OFFSET
Ex. 12.34MHz	16.79MHz	66.795MHz + 0.005MHz + 1.5kHz



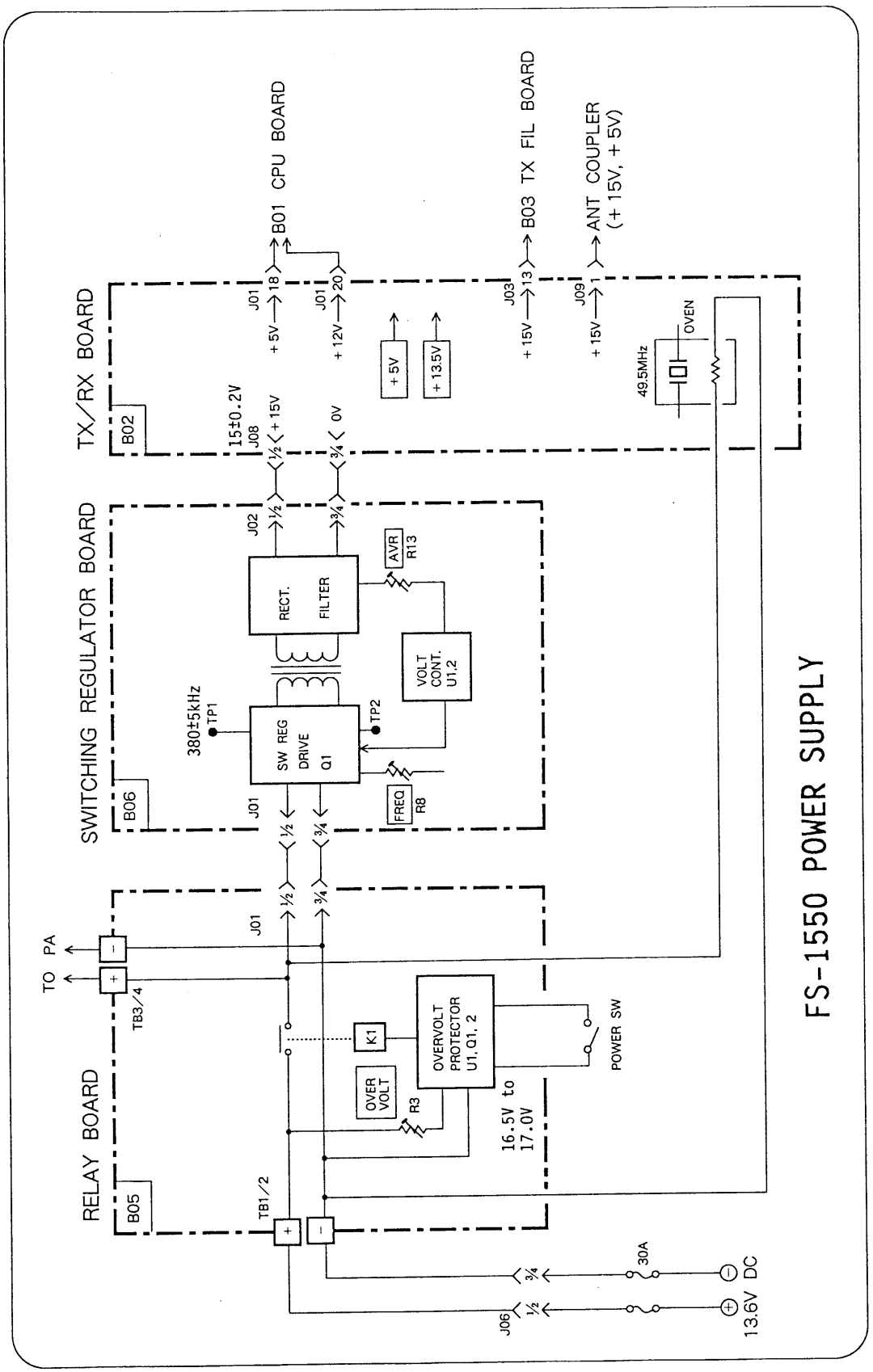
		OFFSET
USB R3E	ƒ + 54.455MHz	+ 1.5kHz
LSB	ƒ + 54.455MHz	– 1.5kHz
AM CW TLX	ƒ + 54.455MHz	± 0kHz

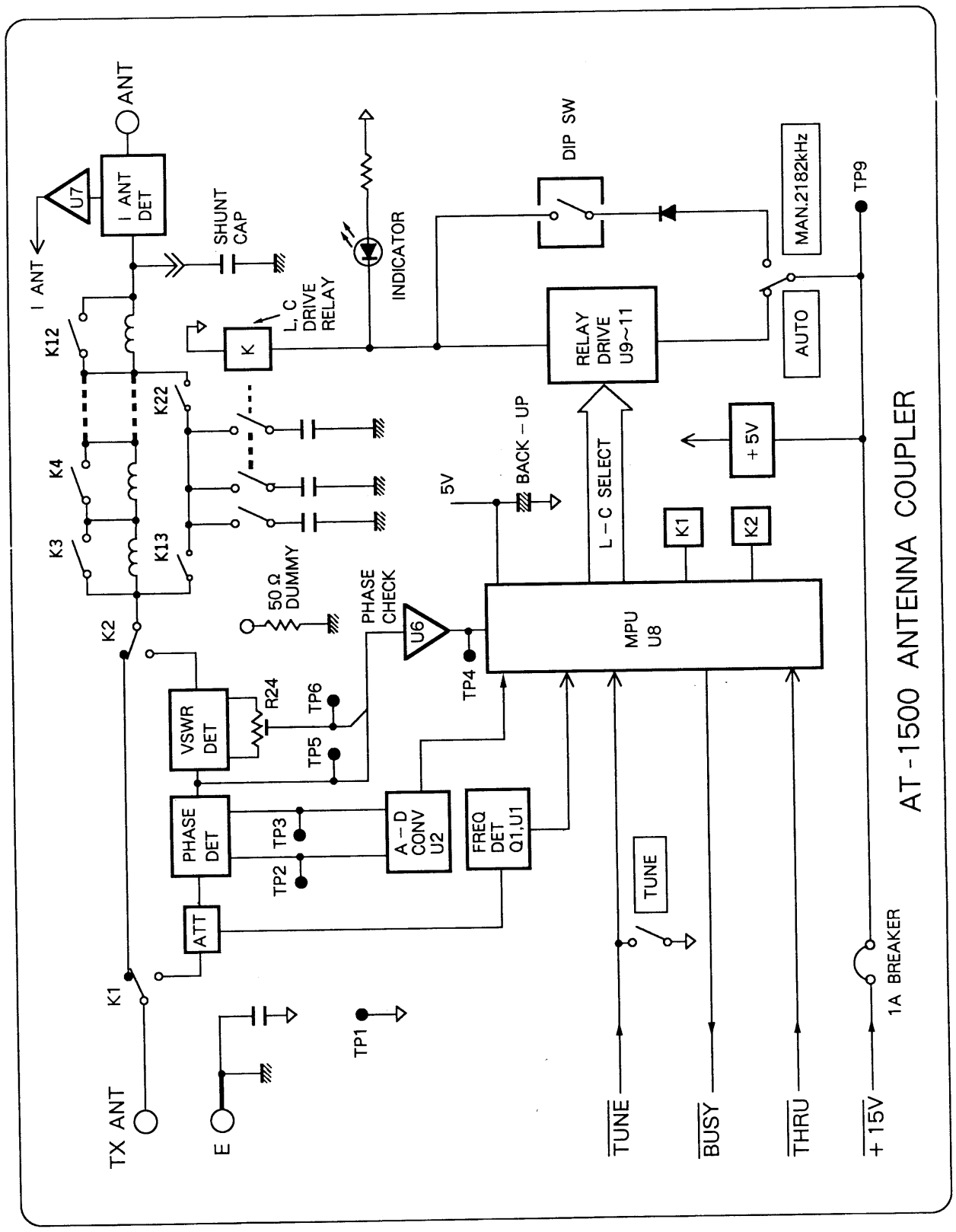
USB R3E	456.5kHz
LSB	453.5kHz
AM	455.0kHz
CW	455.0kHz (TX) 455.8kHz (RX)
TLX	456.7kHz

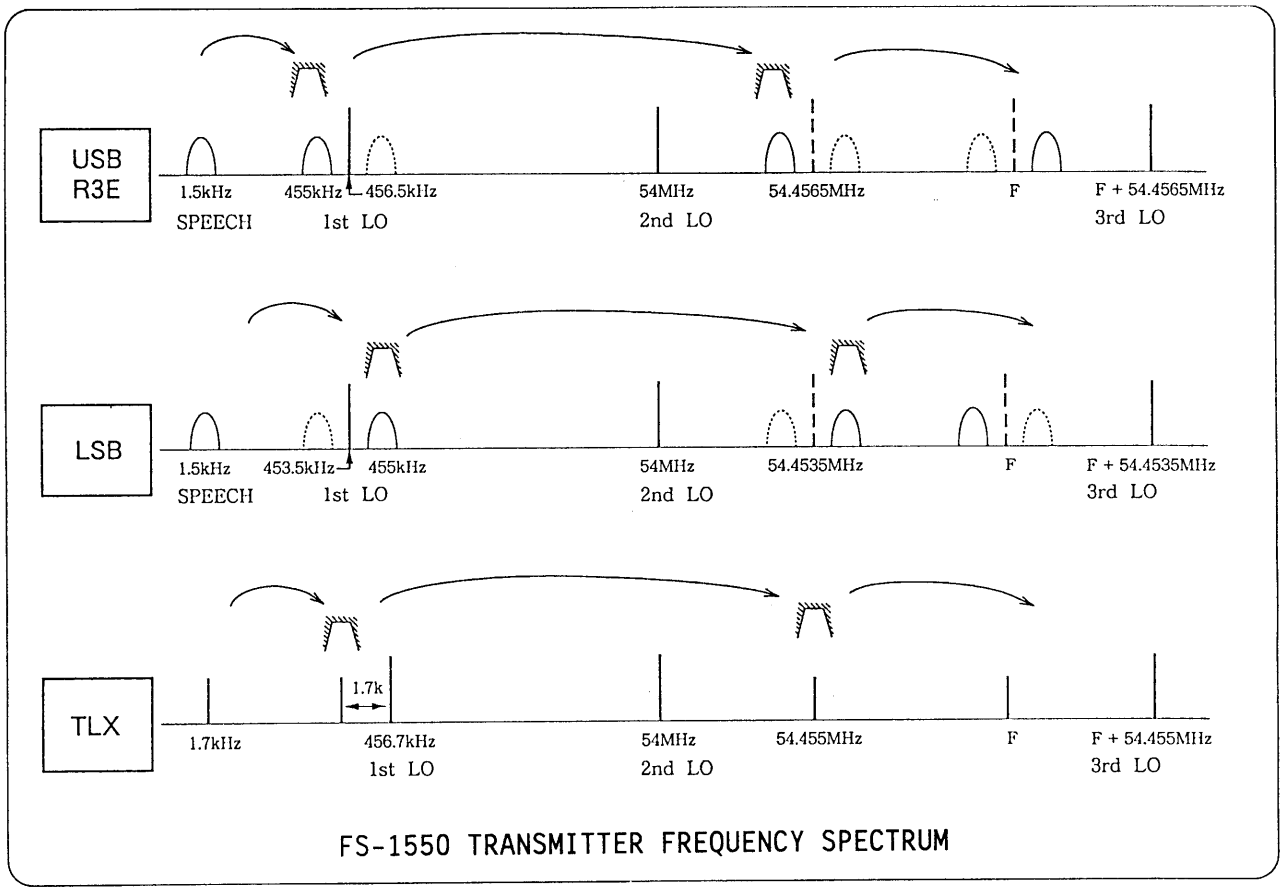
FS-1550 LOCAL OSC



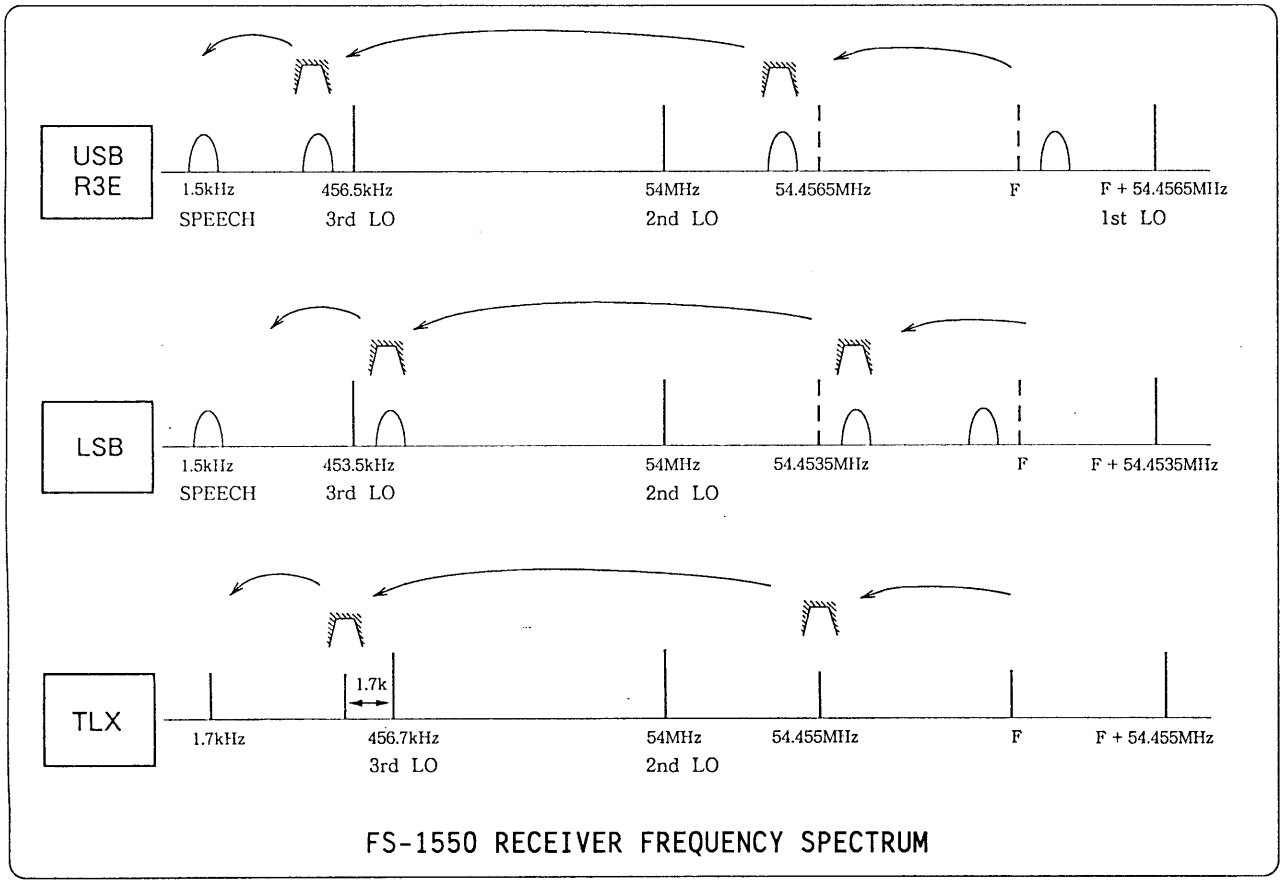
FS-1550 RECEIVER SECTION


FS-1550 POWER SUPPLY
TX/RX BOARD
B02
SWITCHING REGULATOR BOARD
B06
RELAY BOARD
B05
B01 CPU BOARD
B03 TX FIL BOARD
ANT COUPLER
(+15V, +5V)
J01
J02
J03
J06
J08
J09
+5V
+12V
+15V
0V
+13.5V
15±0.2V
49.5MHz
OVEN
RECT.
FILTER
AVR
R13
VOLT
CONT.
U1,2
SW REG
DRIVE
Q1
380±5kHz
TP1
TP2
FREQ
R8
TO PA
TB3/4
TB1/2
K1
OVER
VOLT
R3
OVERVOLT
PROTECTOR
U1, Q1, 2
16.5V to
17.0V
POWER SW
30A
13.6V DC


AT-1500 ANTENNA COUPLER
ANT
I ANT DET
U7
I ANT
SHUNT CAP
INDICATOR
DIP SW
MAN.2182kHz
TP9
K12
K
L, C DRIVE RELAY
RELAY DRIVE U9~11
AUTO
K22
K4
K3
K13
5V
BACK – UP
L – C SELECT
+ 5V
K1
K2
50 Ω DUMMY
PHASE CHECK
U6
MPU U8
TP4
VSWR DET
R24
TP6
TP5
PHASE DET
TP3
TP2
A – D CONV U2
FREQ DET Q1,U1
ATT
TUNE
1A BREAKER
TP1
TX ANT
E
TUNE
BUSY
THRU
+ 15V



FS-1550 TRANSMITTER FREQUENCY SPECTRUM



FS-1550 RECEIVER FREQUENCY SPECTRUM

CHAPTER 2 SETTING-UP

This FS-1550 radiotelephone is provided with DIP switches to tailor it according to local regulations and user's requirements.

CAUTION

This instruction is prepared for use by authorized FURUNO agents or dealers to preset the equipment to comply with the local regulations of the user of this radiotelephone. Please carefully read the instructions and follow the recommended precedures for presetting the equipment.
FURUNO will assume no responsibility for the inconvenience or disturbance to communications due to inadequate or unlawful presetting of the equipment.
Please note again that the preset must be carried out by an authorized agent or dealer, not by the operator or owner of the equipment.

2.1 Function Of DIP Switches

Refer to the "CHAPTER 5 PARTS LOCATION" for location of the switches.

Table 2-1 DIP Switch and Corresponding Function

No. of DIP SW.	FUNCTION	S17-1	S17-2
S17-1 & S17-2	FREE TX/RX + ITU (TX/RX) + CUSTOM TX/RX	ON	ON
	FREE RX + ITU (TX/RX) + CUSTOM TX/RX	OFF	ON
	FREE RX + ITU (RX) + CUSTOM TX/RX	ON	OFF
	CUSTOM TX/RX	OFF	OFF

	FUNCTION	ON	OFF
S17-3	Initial class of emission at 2182kHz	J3E (USB)	H3E
S17-4	Usage of CW and TELEX	ENABLE	DISABLE
S17-5	Channelizing custom frequencies	TX and RX	RX only
S17-6	Sending "TUNE" signal to Antenna Coupler	ENABLE	DISABLE
S17-7	Receiving of 100kHz to 1,600kHz	ENABLE	DISABLE
S17-8	Display of the class of emission	ALL	Other than USB

*1: When a 50 ohm antenna such as doublet antenna, trap vertical, solid antenna matching device, etc. is directly connected to the transceiver unit, S17-6 should be turned to "OFF".

Table 2-2 DIP Switch and Corresponding Function

No. of DIP SW.	FUNCTION	I_{ANT}	I_{FIL}
S19	Indication of I_{ANT} or I_{FIL}	I_{ANT}	I_{FIL} *2

No. of DIP SW.	FUNCTION	ON	OFF
S20	Propagation Standard for RS-232C Port	T-BUS for TT-1600	FURUNO I/F

*2: For "I_{FIL}", refer to 2.2.

Standard Setting

Table 2-3 Standard Setting

No. of DIP SW.	ON/OFF
S17-1	OFF
S17-2	ON
S17-3	OFF
S17-4	OFF
S17-5	OFF
S17-6	ON
S17-7	ON
S17-8	ON
S19	I_{ANT}
S20	OFF

2.2 Alternation of I_{ANT} and I_{FIL}

Some licensing authorities require an indication of transmitter antenna current in amperes. The FS-1550 is factory set to display this. If not required by law, some users may prefer the meter to indicate power on the filter output line, which will be more uniform over the various frequencies and with various antenna configurations. This is accomplished by switching S19 to I_{FIL}.

2.3 Writing a Frequency into Memory

1) Turn on the power while pressing and holding [RCL]. Release [RCL] after "MEMO" appears on the LCD display.

2) Select a desired channel number by the tuning dial. (Rotate the tuning dial to reach desired TX channel. If you are channelizing a RX frequency, rotate it one click further to reach RX channel.)

3) Define the class of emission by selecting a desired one such as J3E(USB) through the [MODE] key.

4) Press [TX] or [RX] and enter desired frequency to the digit of 10Hz (i.e., 2182.00 - the decimal point is not necessary to enter, but do not neglect entry of 00).

5) Press [ENT].

6) Repeat steps 2 to 5 for other channels as many as necessary.

NOTE :

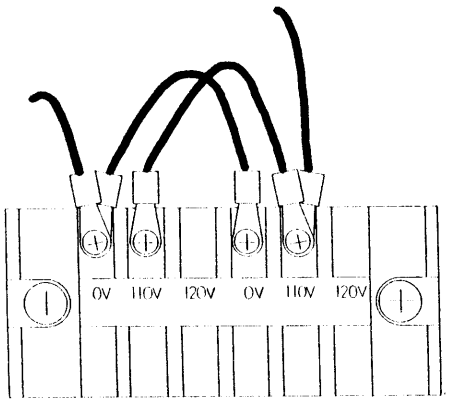
1. After TX frequencies are channelized, never fail to set segment No. 5 of DIP switch S17 to the OFF position.

2. How to channelize the RX frequencies is described in the Operator's Manual, but the method to channelize the TX frequencies is not disclosed to operators. Precaution should be taken to prevent users from channelizing unauthorized transmitting frequencies.

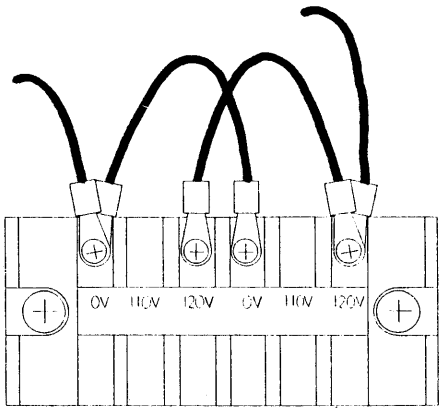
2.4 Alternation of Input Voltage for RECTIFIER UNIT PR-270

The input voltage of the model PR-270 Rectifier Unit can be set to 110/120/220/230/240VAC.
Remove the top cover of the rectifier and change the lead connection on the input terminal of power transformer. Also change the fuse if necessary.

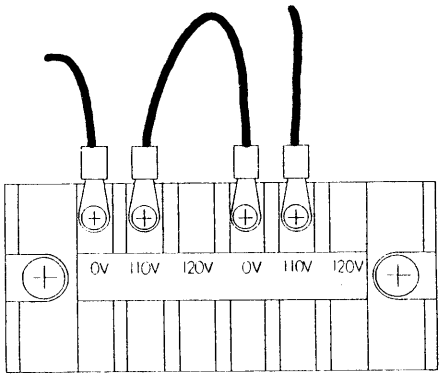
Supply voltage	Type of fuse
110/120VAC	10A
220/230/240VAC	5A



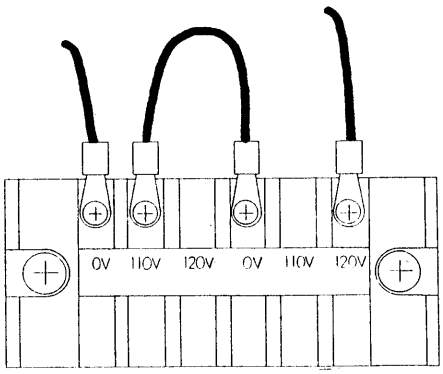
For 110VAC



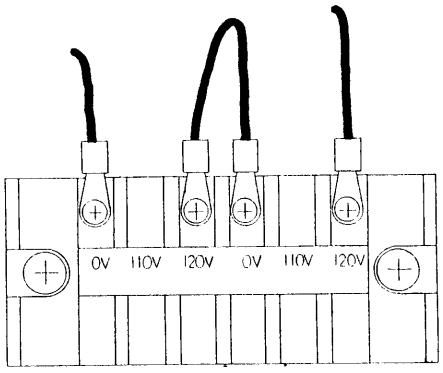
For 120VAC



For 220VAC
(Factory setting)



For 230VAC



For 240VAC

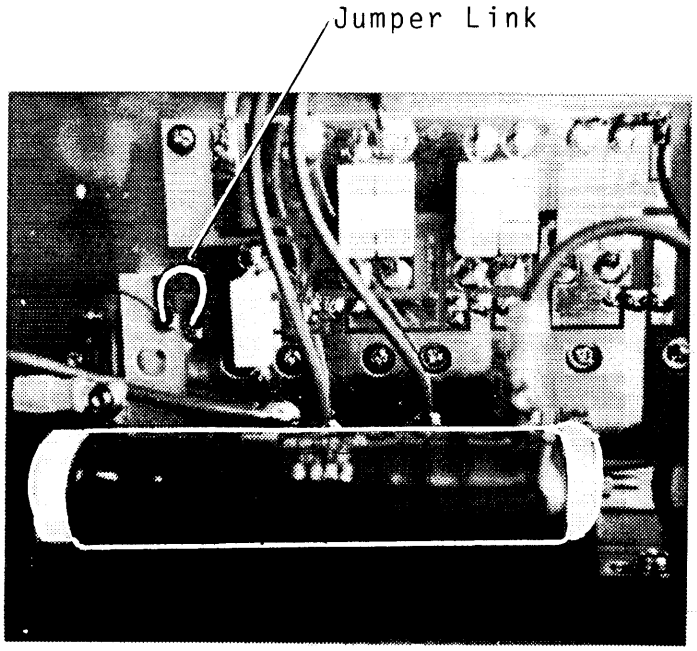
-CAUTION-

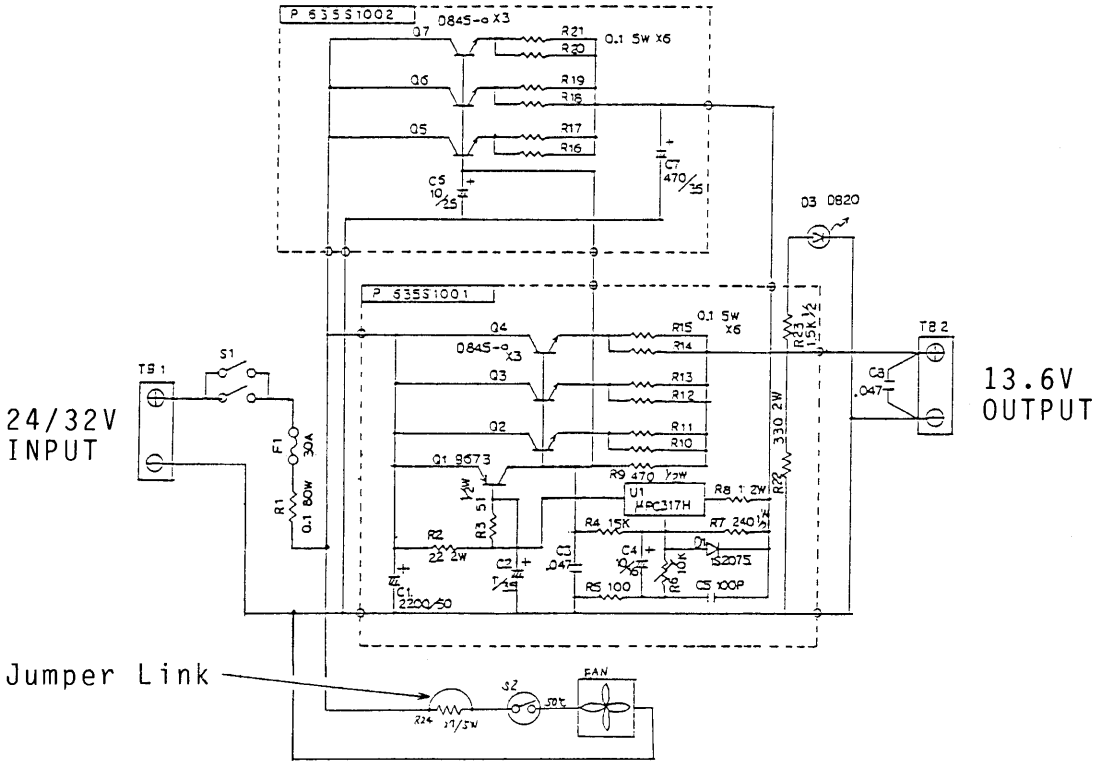
To alterate the supply voltage, move only blue-lugged white wires. Leave the two yellow-lugged gray wires on 0V and 110V terminal, as they are connected to the fan.

For 110V and 120V connection, use the jumper wire connected to the first 120V terminal from the right.

2.5 Alterating of Input Voltage for DC-DC CONVERTER PC-220

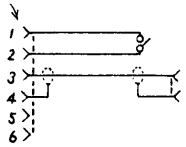
The input voltage of the DC-DC converter can be set for either 24VDC (factory setting) or 32VDC. To enable 32VDC operation, remove the jumper link (see figure below).





CHAPTER 3. ADJUSTMENT

3.1 Necessary Test Instruments

Test Instrument	Minimum Requirement	Use
Multimeter	10k ohms/VDC	Voltage check
DC Ammeter	30A, 2A	Input current check
Frequency Counter	100MHz	Frequency check
Precision AC Voltmeter (VTVM) with RF Probe	Volt Range: 1mV to 3V dB Range: -50 to +20dBm	Level check Sensitivity check
Standard Signal Generator with 50 ohm Adaptor	Freq. Range: 100kHz to 30MHz Output Level: -10 to +110dBu Output Impedance: 50 ohms	Sensitivity check
Distortion Meter		Sensitivity check
Audio Dummy	8 ohm, 10W Enamelled Resistor with EXT. Sp. Plug.	Sensitivity check
Oscilloscope	Freq. Response: 50MHz	Waveform check
RF Power Meter	Dummy Terminated Type, Impedance: 50 ohms Capacity: 100W average Freq. Range: 50MHz	Power check
Dummy Ant. for Coupler	10 ohms +250pF (for 1.6 -4MHz) 50 ohms (for 6-23MHz)	Performance check
SSB Two-tone Generator or 2 AF Oscillators	Freq. Range: 1 to 3kHz Impedance: 600 ohms Output Level: 0dBm(0.77Vrms) Attenuator: 60dB/1dB step	Power check
Two-tone Mixing Network	See section 3.5.	Not necessary when two-tone gen. is available.
AF Signal Cable w/Switch	MIC PLUG: FM-10PS-6h  * Prepare locally.	Transmitter adjustment.
Regulated DC Power Supply	13.6VDC/30A or greater	

3.2 Line Voltage Check

Prior to the adjustment, check the following.

No	Check Item	Check Point		Ratings	Adjust;	Condition/Remarks
		PCB	Point			
1	Input Voltage	RELAY 05P0275	TB1(+) TB4(-)	13.6V (12V-10% +30%)	———	———
2	+15V	SW REG. 05P0276	J2-1 J2-3	15±0.2V	[AVR] R13	If not, check sw reg. frequency.
3	SW REG. Frequency		TP1 TP2	380±5kHz	[FREQ] R8	———
4	Over-voltage Protector	RELAY 05P0275	TB3(+) TB4(-)	16.5-17.0V	OVERVOLT R3	Disconnect PA and SW REG.

3.3 Local OSC Frequency/Level Check

No	Check Item	Check Point	Ratings		Condition/Remarks
			Freq.	Level	
1	2nd LO	TP3(+)-TP4(-) on TX/RX Board	54MHz ±5Hz	0.4Vp-p or greater	———
2	3rd LO	TP8(+)-TP9(-) on TX/RX Board	456.5kHz	1.0Vp-p or greater	USB, 4MHz
			455kHz		H3E, 4MHz
3	1st LO	TP1(+)-TP6(-) on TX/RX Board	f+54.455MHz +1.5kHz	2.4Vp-p or greater	USB, 4MHz
			f+54.455MHz		H3E, 4MHz

3.4 PA Bias Adjustment

No	Check Item	Check Point	Ratings	Adjust;	Condition/Remarks
1	Drive Bias	Across R32	35-40mV	R31	No AF signal to MIC input.
2	PA Bias	Input Current	α+(500 ±50)mA (See note below.)	R18	Terminate transceiver with 50 ohm dummy.

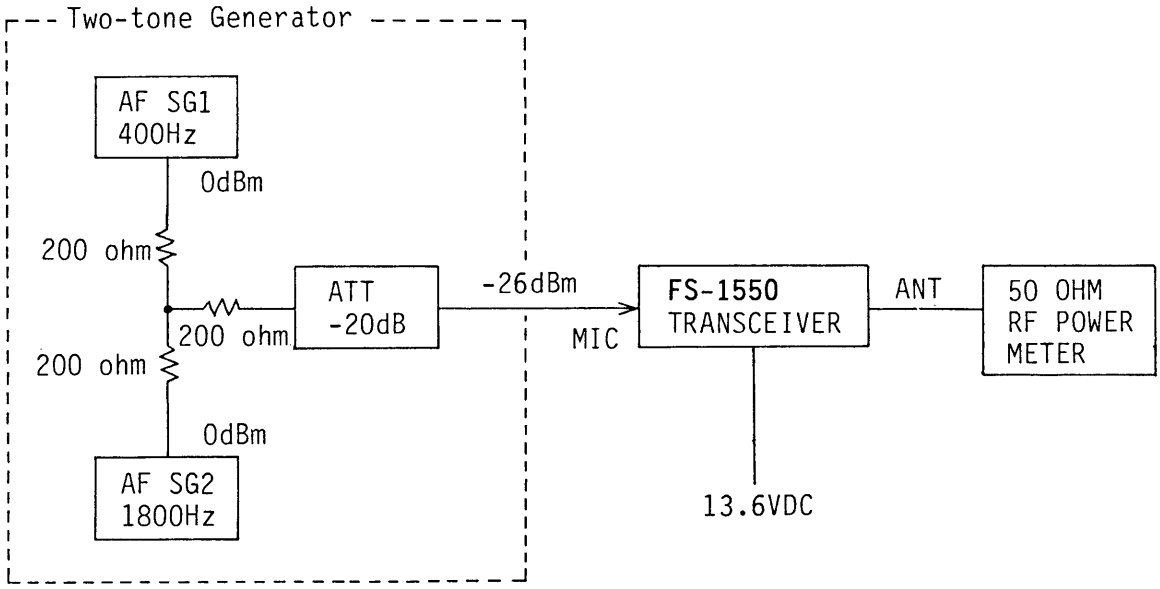
NOTE

1) BIAS ADJUSTMENT: Turn R18 fully counterclockwise and adjust DRIVE BIAS R31 for 35 to 40mV across R32 (0.22 ohms). Then adjust PA BIAS R18 so that the input current is 500±50mA higher than the one (α) obtained by DRIVE BIAS adjustment.

2) When the components of the PA board are replaced, above check should be done.

3) If bias for PA stage is incorrectly adjusted, spurious emission may increase.

3.5 Transmitter Output Level Adjustment

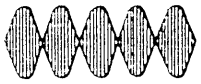


No.	Check Item	Ratings	Adjust;	Conditions/Remarks
1	Max. Power	90W	R41 [TX IF GAIN]	J3E, 4MHz MIC Input: 2-tone, -26dBm R5(ALC) fully CCW
2	ALC Level	75W	R5 [ALC]	J3E, 4MHz MIC Input: -26dBm
3	Output Power	60-90W	R95 [TX GAIN]	
4	Low Power	20W	R161 [LOW]	
5	TUNE Power	15W	R160 [TUNE]	J3E, 4MHz Press [TUNE] key
6	H3E Power	40-50W	R87 [AM]	H3E, (2182kHz) Press PTT switch with no audio input
7	R3E Power	1.5-4W	R85 [R3E]	R3E, 4MHz Press PTT switch with no audio input

W: Average power

NOTE

1) Before performing the adjustment, the output level of SG1 should be adjusted so that the "100% modulation wave" is observed at the ANT terminal.



← 100% modulation wave.

2) Before beginning the adjustment, the PA and TX FIL boards should be covered with a "shield plate".

3) Power difference of max. 30W (max. 90W, min. 60W) may be observed between the highest power band and lowest power band (not the highest frequency and the lowest frequency). This is due to the frequency response of the power amplifier. Disregard the difference.

4) When the waveforms shown below are observed when the oscilloscope is coupled to the PA stage, readjustment of transmitter circuit may be required.

Waveform	Cause/Remedy
 Clipped at peak level	Excessive drive. Check the MIC GAIN pot. R163.
 Unstable	Incorrect amplifier bias. Readjust BIAS adj.

5) Peak output power of approx. 100W will be observed on the power meter when you whistle into microphone.

6) When the output power is far less than the rated power with proper AF input signal, check the TX younger stage.

No	Check Item	Ratings	Adjust;	Condition/Remarks
1	MIC Amp Level	-23±1dBm /600 ohms	R95 [TX GAIN]	R163 [MIC GAIN] fully colckwise. USB, 4MHz. Mic input: -26dBm/600 ohms 2-tone.
2	Exciter Output	+26±0.5dBm /50 ohms	R41 [TX IF GAIN]	As above. Disconnect coax. from PA board; then check the level by precision AC voltmeter, coupled with 50 ohm dummy and attenuator.

* The EXC OUTPUT LEVEL INDICATOR CR12 is provided to check the output level. However, if the level detect level is set high, the indicator may not light on some bands due to frequency response.

Procedure for Power Adjustment

1) Connect a 50 ohm power meter to the ANT connector and select J3E on any frequency of 4MHz band.

2) Rotate R5 (ALC) fully counterclockwise.

3) Confirm R163 (MIC GAIN) is turned fully clockwise.

4) Apply 2-tone signal 400Hz and 1800Hz into MIC terminal at a level of -26dBm.

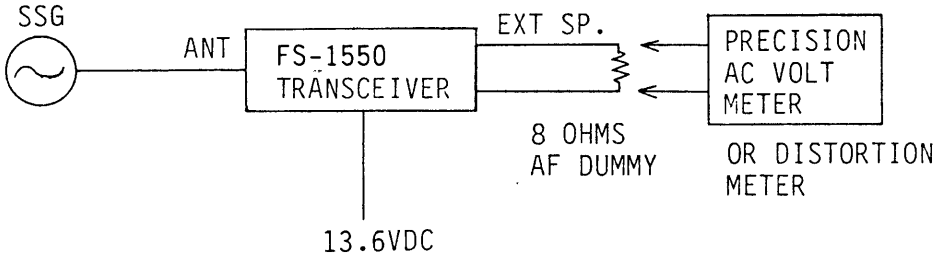
5) Adjust R41 (TX IF GAIN) for reading of approx. 90W (average power) on the power meter.

6) Decrease output power to 75W by adjusting R5 (ALC).

7) Adjust R95 (TX GAIN) for 60 to 90W on all bands.

3.6 Receiver Adjustment

CAUTION: Before beginning the adjustment, MIC plug (PTT switch) should be disconnected to prevent SSG from being damaged due to accidental emission.



No	Check Item	Ratings	Adjust;	Condition/Remarks
1	IF Gain	S = 0 ⇔ 1	R61 [IF GAIN] on TX/RX Board	Input signal: 4MHz, 6dBu. S-meter respond gradually so adjust slowly.
2	S-meter	S = 5 ± 1 S = 8 ± 1	— —	20dBu 40dBu
3	Overall Sensitivity	-3 ± 3dBu	—	The input level to obtain AF output of 1W.
4	J3E Sensitivity	+3dBu or better	—	SINAD 20dB, J3E, 4MHz

Quick Check of Receiver Sensitivity

1) Select J3E on any frequency of 4MHz band.

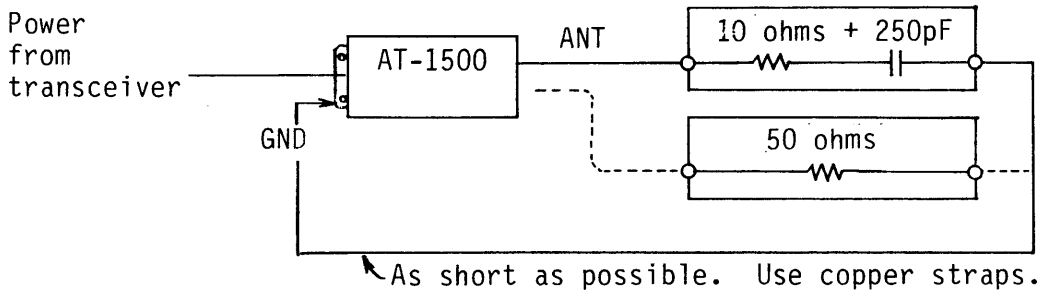
2) Connect SSG (standard signal generator), set to receive frequency and output of approx. 30dB, to the ANT connector of transceiver unit.

3) Adjust SSG frequency precisely for maximum audio output.

4) Gradually decrease the SSG output until noise is slightly present.

5) Read out the SSG attenuator reading. If the reading is 0dB or less (-6dB), the receiver sensitivity is satisfactory.

3.7 Check of Antenna Coupler



No	Check Item	Check Point	Ratings	Condition/Remarks
1	Tuning Detector Output Level			USB, 4MHz LOW. (10±0.5W... temporarily adjust by R161 [LOW] on TX/RX board.)
		TP6(+) - TP5	-40 to -100mV	R24 fully CCW.
			180 to 140mV	R24 fully CW.
			0 ± 1mV	Adjust by R24.
		TP3(+) - TP1(-)	1350 - 1650mV	
		TP2(+) - TP1(-)	5mV or less	
2	Automatic Tuning	Status of relays and LCD window (TUNE OK)	Tuning is conducted.	10 ohm + 250pF dummy for 1.6 to 4.5MHz. 50 ohm dummy for 6 to 23MHz.
3	"THRU" function	Status of LED	CR33, 34, 51, 52 and 42 are lit when tuning is completed. (Matching network is shorted to pass received signal.)	10 ohm + 250pF dummy. 3MHz, DUP. Repeat TX and RX. * Check if S2-4 is "off" when this function is suspected.
4	Antenna Current	LCD window	1.5 - 2A	10 ohm + 250pF dummy. 2MHz Input power to be 50W (average).

CHAPTER 4 TROUBLESHOOTING

4.1 Self-test

The AT-1500 antenna coupler is equipped with self-test facility for checking the performance.

CHECK OF RELAY

The function of the relays which select capacitor and coil may be checked for proper operation as shown below.

1) Open the shield cover inside the coupler. Locate DIP switch S2.

2) Set No.2 of S2 to "ON".

3) Press "TUNE" switch S1.

4) Then each LED (CR33 to CR52) will light one by one for 1 sec. if the corresponding relay is energized, and they all blink at once upon completion of the test.

   LED and corresponding relay

CR 33 - K 3	CR 38 - K 8	CR 43 - K 14	CR 48 - K 19
CR 34 - K 4	CR 39 - K 9	CR 44 - K 15	CR 49 - K 20
CR 35 - K 5	CR 40 - K 10	CR 45 - K 16	CR 50 - K 21
CR 36 - K 6	CR 41 - K 11	CR 46 - K 17	CR 51 - K 13
CR 37 - K 7	CR 42 - K 12	CR 47 - K 18	CR 52 - K 22

Note : For the location of the LED's see "CHAPTER 5 PARTS LOCATION".

5) Now the tuner is returned to normal operating status.

6) Re-set No.2 of DIP switch S2 to "OFF" otherwise transmission will be impossible.

7) Ensure that all switches of DIP switch S2 are set to "OFF" before you close the cover.

4.2 Replacement of Major Parts

1. Final Transistor Q3, Q4 (P.A. board)

1) Loosen two fixing bolts and unsolder four pins to release the defective transistor.

2) Orientate the new transistors as shown below.

3) Tighten the fixing bolts and solder the transistors.

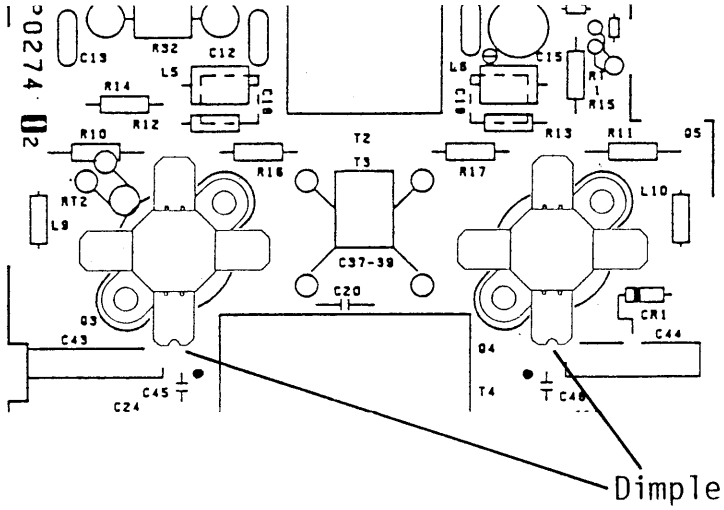


Fig. 4-2 Direction of the transistor

2. Replacement of P.C. Board

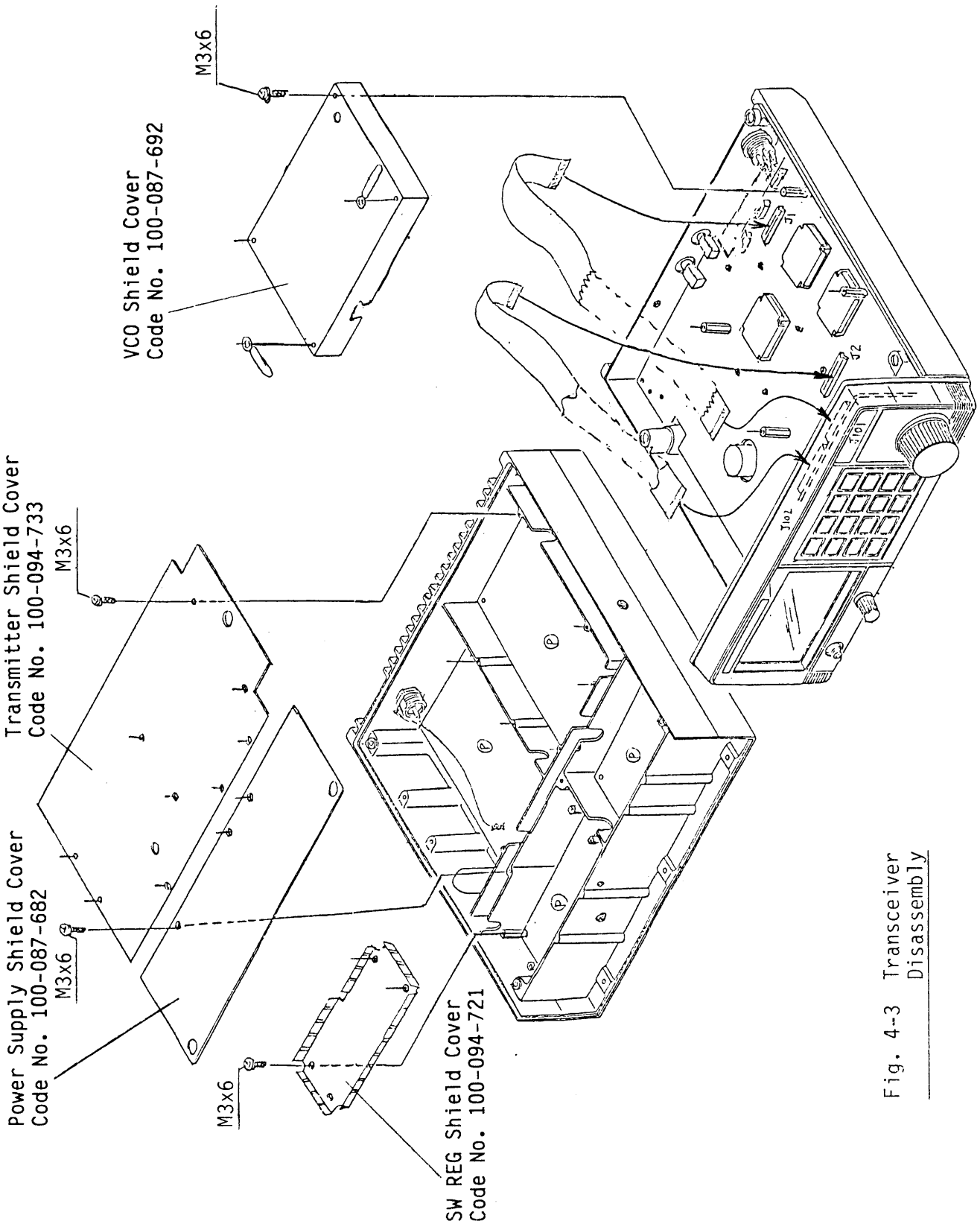
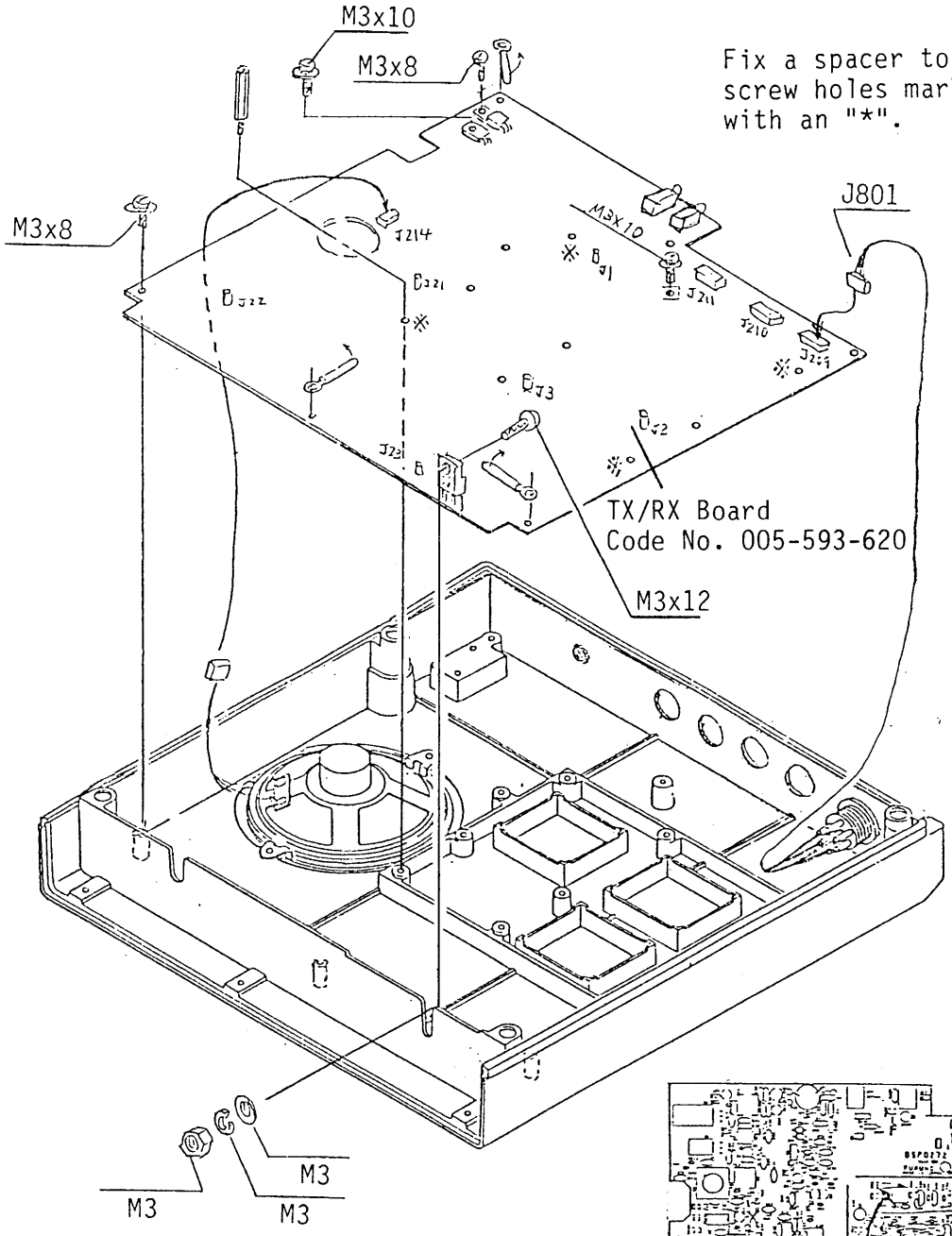
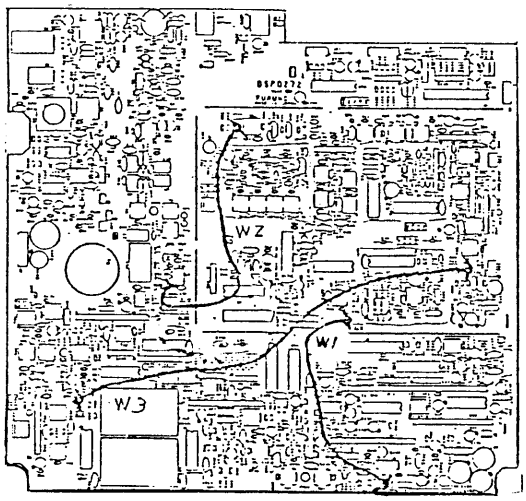


Fig. 4-3 Transceiver Disassembly





W1: J3 — J23
W2: J1 — J21
W3: J2 — J22

Fig. 4-4 TX/RX Board Disassembly

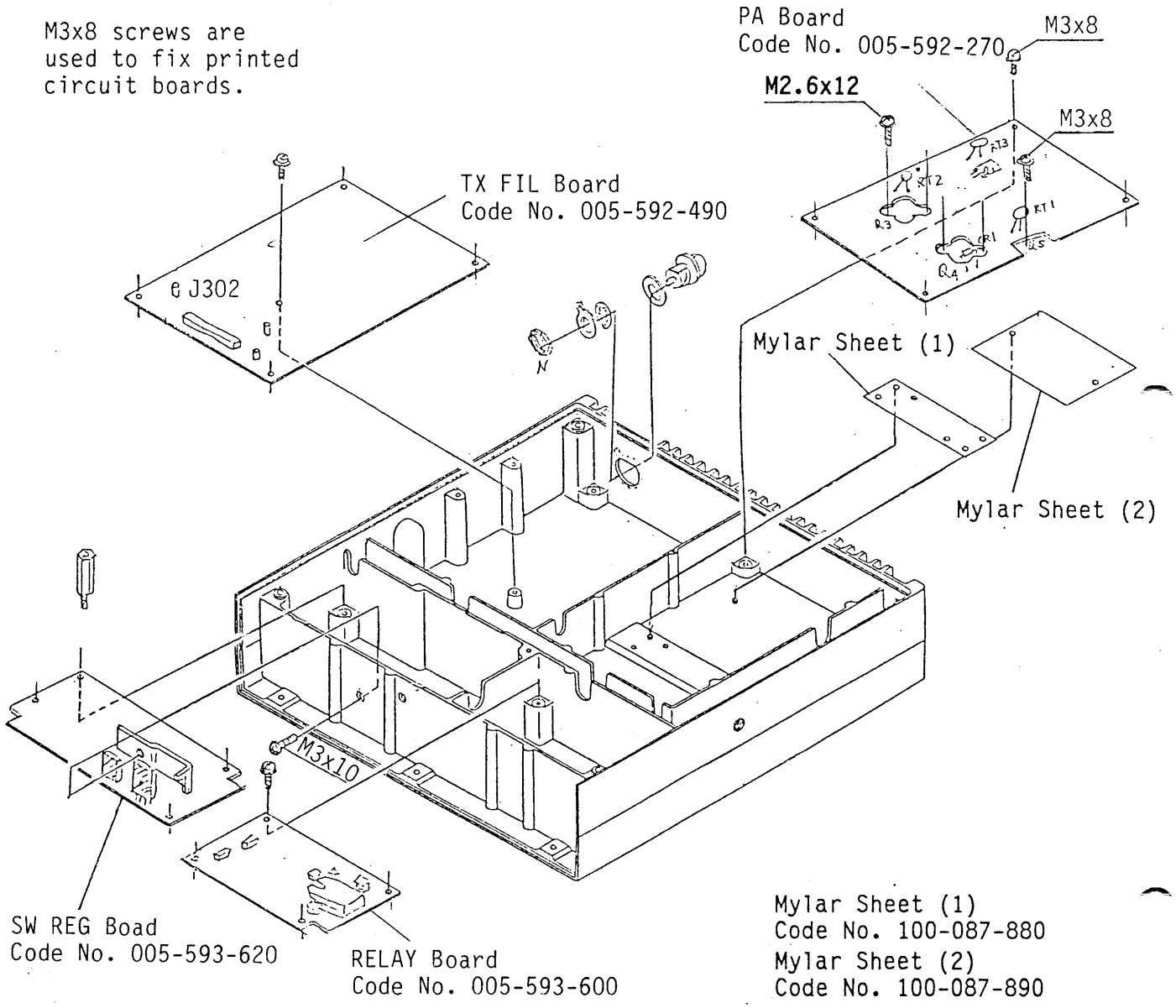


Fig. 4-5 Disassembly of P.C. Boards from Top Chassis

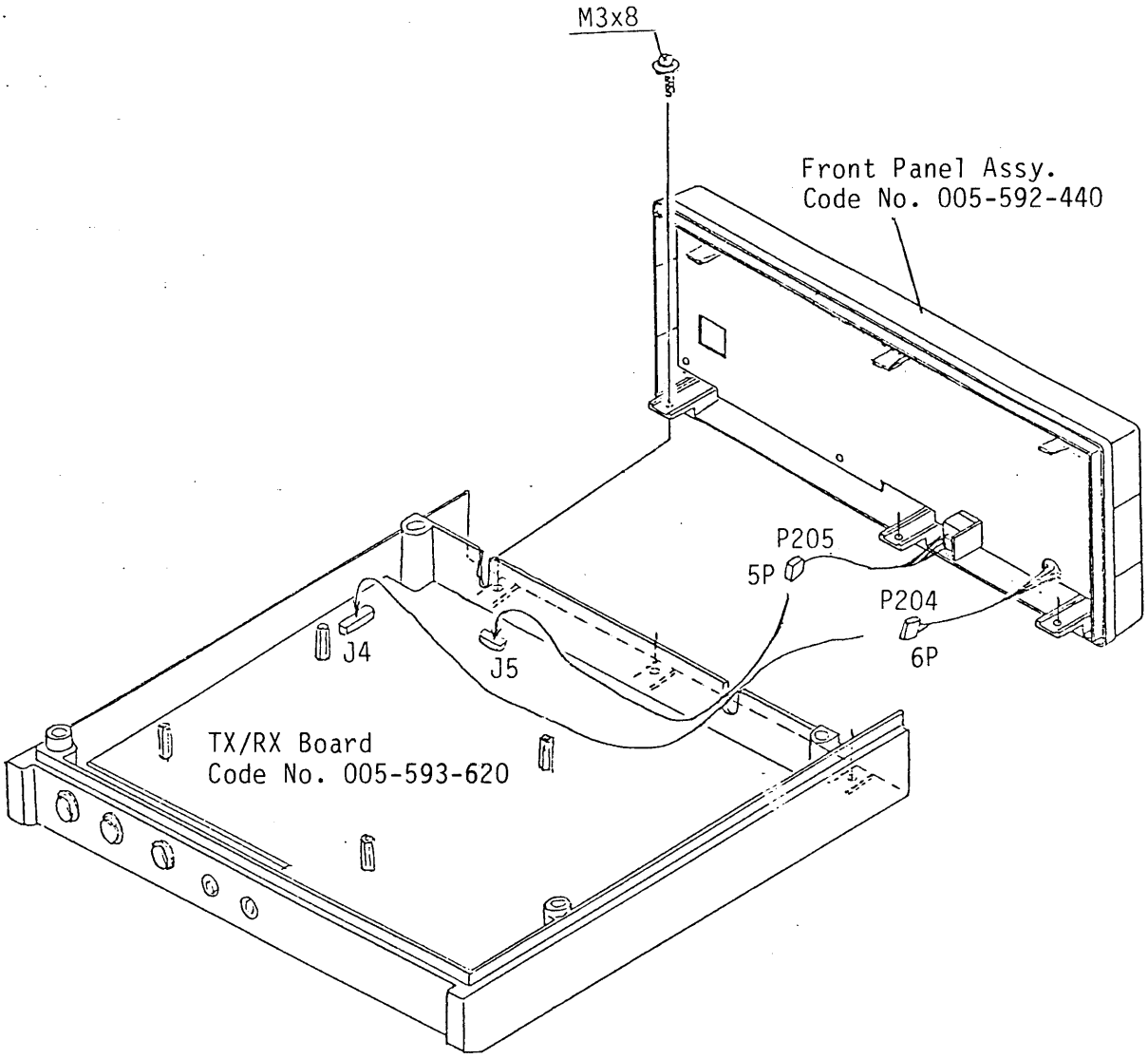


Fig. 4-6 Front Panel Disassembly

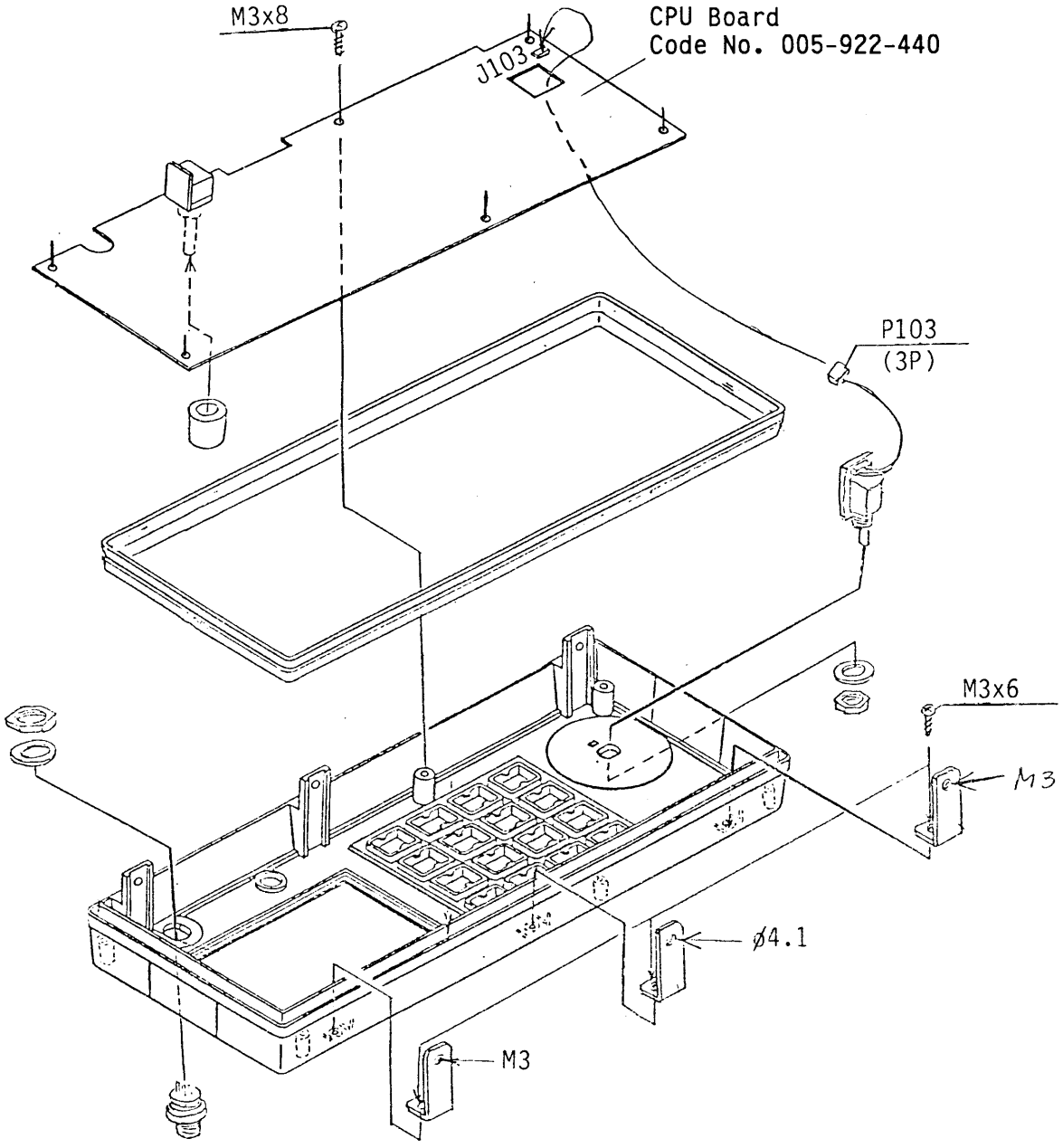
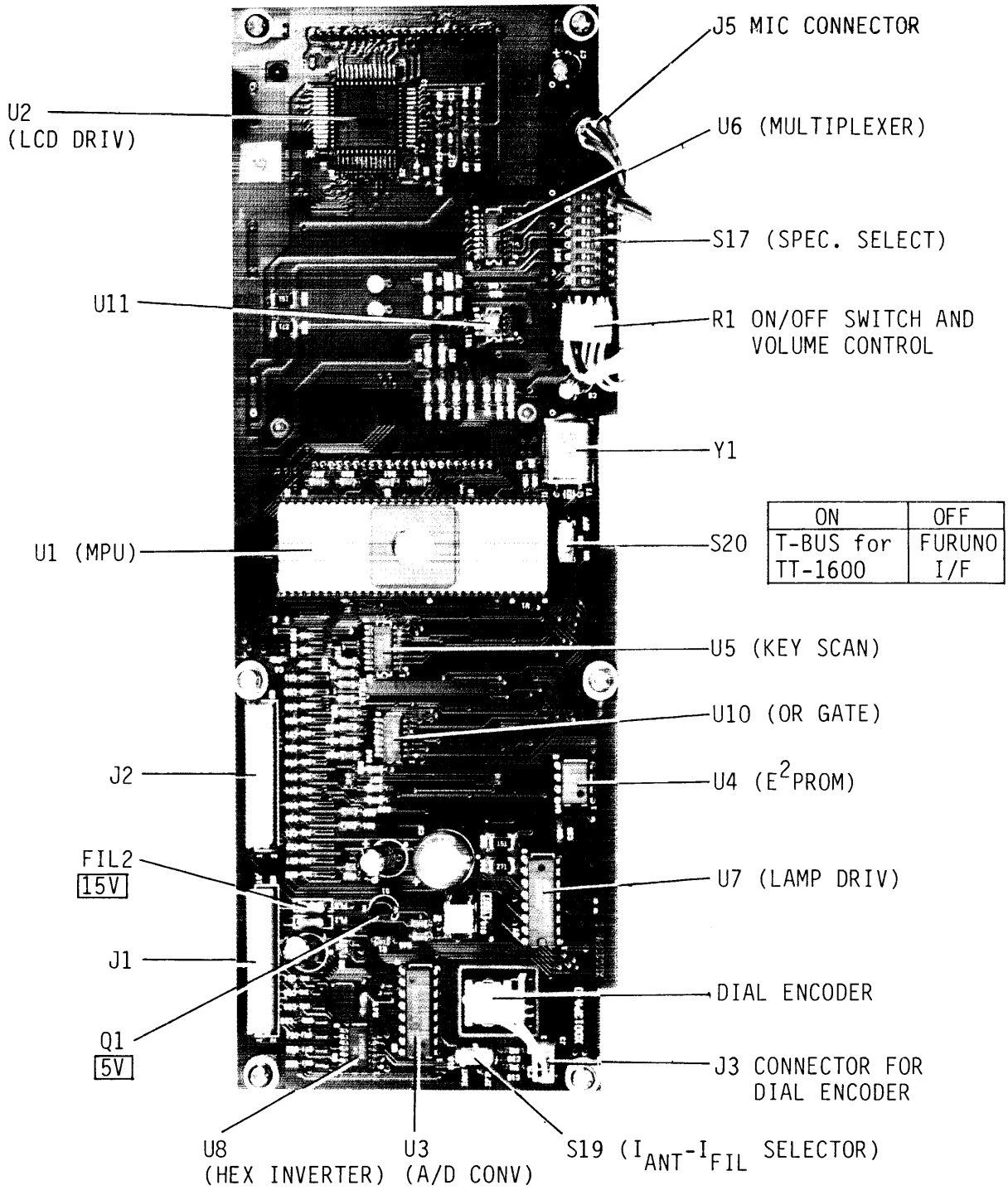


Fig. 4-7 Front Panel Disassembly

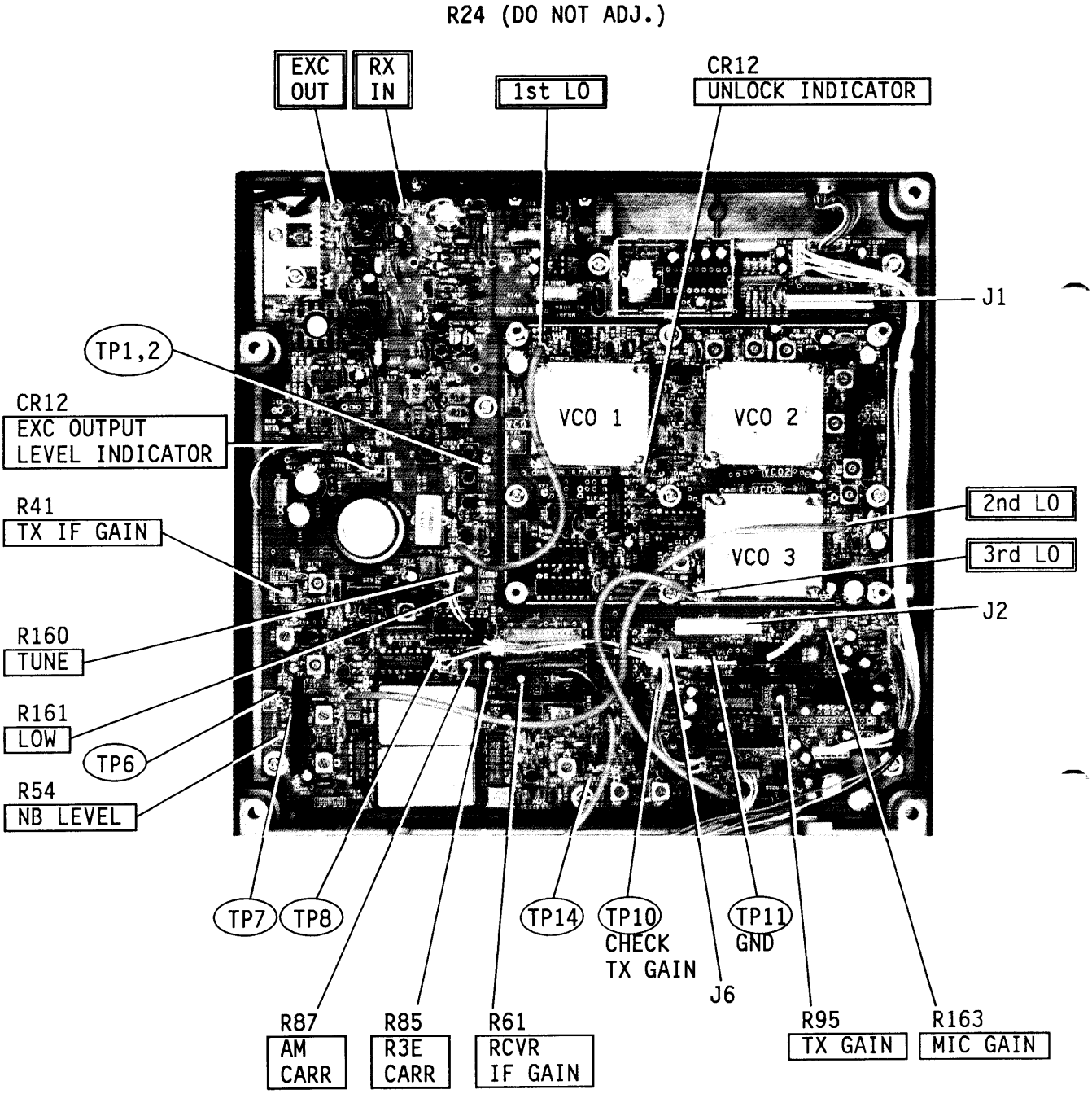
CHAPTER 5 PARTS LOCATION

5.1 TRANSCEIVER UNIT

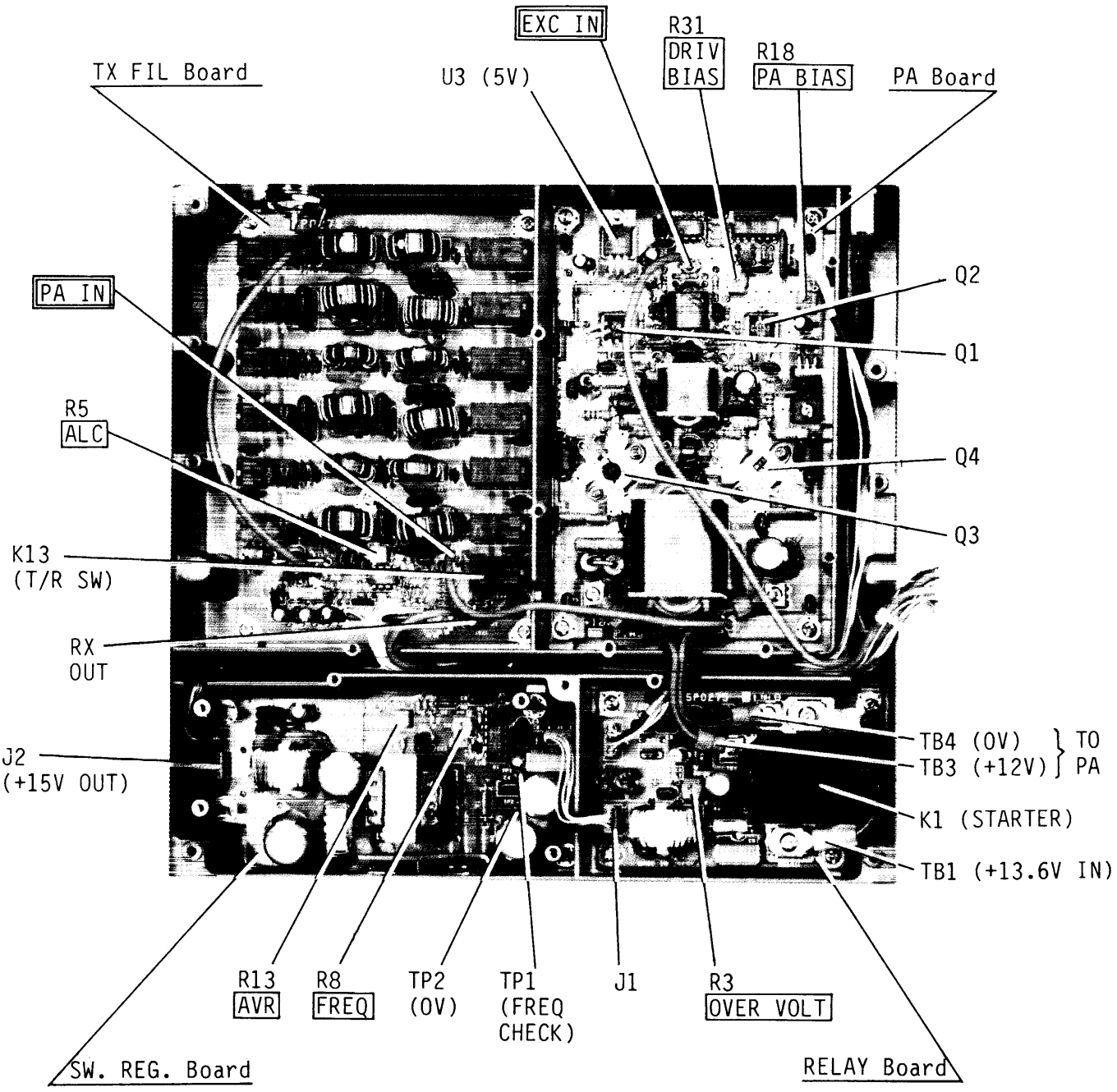
1. 05P0271 CPU Board



2. 05P0328 TX/RX Board

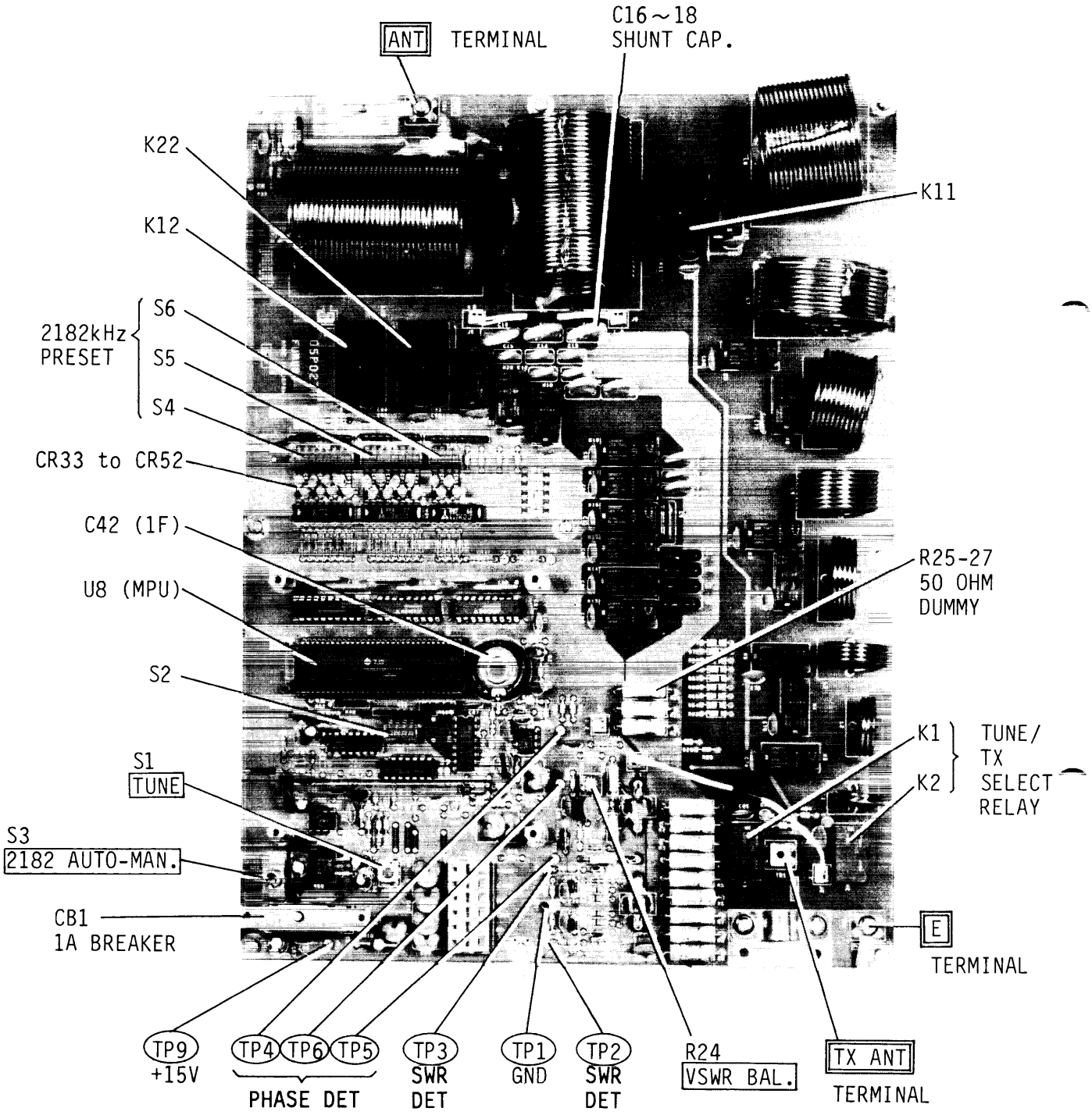


3. 05P0273A TX FIL Board
   05P0274A PA Board
   05P0326 RELAY Board
   05P0276 SW REG Board



5.2 ANTENNA COUPLER

1. 05P0278 COUPLER Board



CHAPTER 6 SPECIFICATIONS OF MAJOR COMPONENTS

6.1 Specifications of IC's

DEVICE	FUNCTION	MANUFACTURER
MSM4051RS	Single 8-channel Multiplexer/Demultiplexer	OKI
05S0392	IF AMP	FURUNO
05S0393	SQ DET	FURUNO
05S0394	NB DET	FURUNO
05S0395	ALC AMP	FURUNO
05S0396	AGC AMP	FURUNO
HD637B01Y	Microprocessor	HITACHI
NJM082	Operational Amplifier	JRC
NJM2904D	operational Amplifier	JRC
LT1080CN	Quad Diff Line (RS232C) Driver Receiver	LINEAR
M54459	1/100 High Speed Divider	MITSUBISHI
M54563P	8-unit 500mA Source Type Darlington Transistor Assy.	MITSUBISHI
M54581P	8-unit 500mA Source Type Darlington Transistor Assy.	MITSUBISHI
M54927P	Serial Input PLL Frequency Synthesizer	MITSUBISHI
M54972P	8-bit Serial-Input Latched Driver	MITSUBISHI
UPC1037H	Audio Power Amplifier	NEC
UPC1094C	Switching Regulator Control	NEC
UPC1242H	Audio Power Amplifier	NEC
UPD7001C	A/D Converter	NEC
UPD7225G	Programmable LCD Controller/Driver	NEC
AN7805F	Regulator	PANASONIC
SL1611C/DG	VIDEO, IF and RF Amplifier	PLESSEY
SN74HC139	Dual 2-line to 4-line Decoders	TEXAS INST.
TA7658P	Built-in ALC, Dual Pre-amplifier	TOSHIBA
TC4013BAP	FLIP-FLOP	TOSHIBA
TC4066BP	Analog Switch	TOSHIBA
TC74HC14P	Hex Schmitt Inverter	TOSHIBA
TC74HC390P	Dual Decade Counter	TOSHIBA
X2402	Electrically Erasable PROM	XICOR

TRANSCEIVER UNIT

PARTS ON CHASSIS

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
	PRINTED CIRCUIT BOARD ﾌﾟﾘﾝﾄｷﾊﾞﾝ			
	05P0328A, TX/RX	FS-1550	005-593-620	
	05P0273A, TX/FIL	FS-1500/1550	005-592-490	
	05P0274, PA	FS-1500/1550	005-592-270	
	05P0326, RELAY	FS-1500/1550	005-593-600	
	05P0276, SW REG	FS-1500/1550	005-592-310	
	ASSEMBLY	ｸﾐﾋﾝ		
	FRONT PANEL	FS-1550	005-592-440	
	JACK	ｼﾞｬｯｸ		
1B08J0001	FM14-6SM		000-113-528	
1B08J0002	FM214-7SM		000-113-463	
1B08J0003	FM214-5SM(1)		000-113-464	
1B08J0004	M-BR-H*BS*		000-506-495	
1B08J0006	05S0415-1		000-113-469	
	LOUDSPEAKER	ｽﾋﾟｰｶｰ		
1B08LS0001	SI008047	05S0391-0	000-113-465	

PARTS ON FRONT PANEL

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
	JACK	ｼﾞｬｯｸ		
1B07J0005	FM10RS(1)-6HA		000-113-456	
	RESISTOR	ﾃｲｺｳ		
1B07R0001	RK0972211	05S0556-0	000-115-252	
	SWITCH	ｽｲｯﾁ		
1B07S0001	05S0517-0	05S0517-0	000-114-134	
	INTEGRATED CIRCUIT	ｼｭｳﾃｷｶｲﾛ		
1B07U0001	HD637H01Y0P		000-113-481	
	LCD DISPLAY	ｴｷｼｮｳﾋｮｳｼﾞｷ		
1B07V1001	A10A7LCF07	05S-0573-0	000-116-368	LCD PANEL

NOTE:
備考:

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
1B02	05P0328A	TX/RX (1/2)	005-593-620	
	CAPACITOR	コンデンサー		
1B02C0001	ECQ-B1H152JZ	1500PF 50V	000-102-427	
1B02C0002	ECQ-B1H682JZ	6800PF 50V	000-102-680	
1B02C0003	ECQ-B1H102JZ	1000PF 50V	000-100-753	
1B02C0004	ECQ-B1H183JZ	0.018UF 50V	000-100-126	
1B02C0005	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0008	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0009	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0010	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0011	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0012	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0013	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0014	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0015	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0018	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0019	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0020	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0021	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0022	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0023	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0024	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0025	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0026	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0027	DD306F104Z25	00S0130-0	000-108-968	
1B02C0028	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0029	DD306F104Z25	00S0130-0	000-108-968	
1B02C0030	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0031	DD306F104Z25	00S0130-0	000-108-968	
1B02C0032	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0033	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0034	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0035	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0036	DD306F104Z25	00S0130-0	000-108-968	
1B02C0037	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0038	DD306F104Z25	00S0130-0	000-108-968	
1B02C0039	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0040	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0041	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0042	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0044	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0045	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0046	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0048	ECC-F1H470JC	47PF 50VDC	000-255-226	
1B02C0049	ECC-F1H680JC	68PF 50V	000-255-230	
1B02C0050	ECC-F1H150JC	15PF 50V	000-256-902	
1B02C0051	DD104B151K50V02	150PF 50V	000-252-173	
1B02C0052	ECC-F1H910JC	91PF 50VDC	000-255-233	
1B02C0053	ECC-F1H470JC	47PF 50VDC	000-255-226	
1B02C0054	DD104B181K50V	180PF 50V	000-113-365	
1B02C0055	ECC-F1H330JC	33PF 50VDC	000-255-222	
1B02C0056	DD104B471K50V02	470PF 50V	000-252-176	
1B02C0057	ECC-F1H470JC	47PF 50VDC	000-255-226	
1B02C0058	ECC-F1H390JC	39PF 50VDC	000-255-224	
1B02C0059	ECC-F1H390JC	39PF 50VDC	000-255-224	
1B02C0060	DD104B181K50V	180PF 50V	000-113-365	
1B02C0061	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0062	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0063	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0064	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0065	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0066	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0067	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0068	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0069	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0070	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0071	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0072	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0073	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0074	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0075	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0076	ECQ-B1H102JZ	1000PF 25V	000-592-252	
1B02C0077	DD104B101K50V	100PF 50V	000-252-172	
1B02C0078	ECQ-B1H102JZ	1000PF 25V	000-592-252	
1B02C0079	ECQ-B1H102JZ	1000PF 25V	000-592-252	
1B02C0080	DD306F104Z25	00S0130-0	000-108-968	
1B02C0081	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0082	DD306F104Z25	00S0130-0	000-108-968	
1B02C0083	DD306F104Z25	00S0130-0	000-108-968	
1B02C0084	DD306F104Z25	00S0130-0	000-108-968	
1B02C0085	DD306F104Z25	00S0130-0	000-108-968	
1B02C0086	DD306F104Z25	00S0130-0	000-108-968	
1B02C0087	DD306F104Z25	00S0130-0	000-108-968	
1B02C0088	DD306F104Z25	00S0130-0	000-108-968	
1B02C0089	DD306F104Z25	00S0130-0	000-108-968	
1B02C0090	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C0091	ECQ-B1H102JZ	1000PF 50V	000-252-713	
1B02C0092	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0093	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0094	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0095	DD306F104Z25	00S0130-0	000-108-968	
1B02C0096	ECQ-B1H102JZ	1000PF 25V	000-592-252	
1B02C0097	DD306F104Z25	00S0130-0	000-108-968	
1B02C0098	DD306F104Z25	00S0130-0	000-108-968	
1B02C0099	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0100	ECE-A1EU220E	22UF 25V	000-201-813	
1B02C0101	ECQ-B1H122JZ	0.0012UF 50V	000-262-714	
1B02C0102	DD306F104Z25	00S0130-0	000-108-968	
1B02C0103	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C0104	DD306F104Z25	00S0130-0	000-108-968	
1B02C0105	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0106	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0107	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0108	ECE-A1EU101E	W5.0 100MF 25V	000-206-105	
1B02C0109	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C0110	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C0111	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0112	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0113	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0114	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0115	ECE-A1EU101E	W5.0 100MF 25V	000-206-105	
1B02C0116	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0117	ECQ-B1H102JZ	1000PF 50V	000-100-753	
1B02C0118	ECE-A1EU470E	47UF 25V	000-201-815	
1B02C0119	ECE-A1EU470E	47UF 25V	000-201-815	
1B02C0120	ECE-A1EU470E	47UF 25V	000-201-815	
1B02C0121	ECQ-V1H224JZ	0.22UF 50V	000-261-528	
1B02C0122	ECE-A1EU471E	470UF 25V	000-201-817	
1B02C0123	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0124	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0125	EXC-EMT103DC	08S0078-1	000-107-994	
1B02C0126	EXC-EMT103DC	08S0078-1	000-107-994	
1B02C0127	EXC-EMT103DC	08S0078-1	000-107-994	
1B02C0128	EXC-EMT103DC	08S0078-1	000-107-994	
1B02C0129	EXC-EMT103DC	08S0078-1	000-107-994	
1B02C0130	EXF-P4103ZW	0.01UF 50V	000-237-502	
1B02C0131	EXF-P4103ZW	0.01UF 50V	000-237-502	
1B02C0132	ECE-A1HN010SE	1UF 50V	000-206-108	
1B02C0133	ECE-A1HN010SE	1UF 50V	000-206-108	
1B02C0134	DD306F104Z25	00S0130-0	000-108-968	
1B02C0135	DD306F104Z25	00S0130-0	000-108-968	
1B02C0136	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0137	ECE-A1HN010E	1UF 50V	000-206-115	
1B02C0138	EXC-EMT103DC	08S0078-1	000-107-994	
1B02C0139	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0140	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0141	ECE-A1EU470E	47UF 25V	000-201-815	
1B02C0142	ECE-A1AU471E	470UF 10V	000-206-118	
1B02C0143	ECE-A1CU222E	2200UF,16V	000-201-810	
1B02C0144	ECQ-B1H103JZ	0.01UF 50V	000-100-125	
1B02C0145	ECQ-B1H103JZ	0.01UF 50V	000-100-125	
1B02C0146	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0147	ECE-A1HN010E	1UF 50V	000-206-115	
1B02C0148	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0149	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0150	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0151	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0152	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0153	EXF-P4103ZW	0.01UF 50V	000-237-502	
1B02C0154	EXF-P4103ZW	0.01UF 50V	000-237-502	
1B02C0155	EXF-P4103ZW	0.01UF 50V	000-237-502	
1B02C0156	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0157	ECQ-B1H152JZ	1500PF 50V	000-102-427	
1B02C0158	DD306F104Z25	00S0130-0	000-108-968	
1B02C0159	ECE-A1EU471E	470UF 25V	000-201-817	
1B02C0160	DD306F104Z25	00S0130-0	000-108-968	
1B02C0161	DD306F104Z25	00S0130-0	000-108-968	
1B02C0162	DD306F104Z25	00S0130-0	000-108-968	
1B02C0164	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0165	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0166	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0168	ECC-F1H020CC	2PF 50VDC	000-255-202	
1B02C0169	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C0170	ECC-F1H101JC	100PF, 50V	000-256-910	
1B02C0171	ECC-F1H150JC	15PF 50V	000-256-902	
1B02C0172	DD104B151K50V02	150PF 50V	000-252-173	
1B02C0173	ECC-F1H470JC	47PF 50VDC	000-255-226	
1B02C0174	ECC-F1H680JC	68PF 50V	000-255-230	
1B02C0179	ECE-A1EU470E	47UF 25V	000-201-815	
1B02C0180	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0181	DD104B102K50V	1000PF 50V	000-252-171	
1B02C0182	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0183	DD306F104Z25	00S0130-0	000-108-968	
1B02C0184	ECQ-B1H103JZ	0.01UF 50V	000-100-125	
1B02C0185	DD306F104Z25	00S0130-0	000-108-968	
1B02C0186	ECE-A1EU4R7E	4.7U 25V	000-114-132	
1B02C0187	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0188	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0189	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C0190	DD306F104Z25	00S0130-0	000-108-968	
1B02C0191	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0192	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C0193	ECE-A1EU220E	22UF 25V	000-201-813	
1B02C0194	DD104B221K50V02	220PF 50WV	000-252-174	
1B02C0196	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C0197	DD306F104Z25	00S0130-0	000-108-968	
1B02C0198	DD306F104Z25	00S0130-0	000-108-968	
1B02C0199	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C0200	ECQ-V1H474JZ	0.47UF 50V	000-261-532	

NOTE:
備考:

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
	DIODE	ダイオード		
1B02CR0001	V06C		000-136-005	
1B02CR0002	V06C		000-136-005	
1B02CR0007	1SS135		000-108-075	
1B02CR0008	1SS135		000-108-075	
1B02CR0012	LN26 RPH		000-108-071	
1B02CR0013	1SS133		000-103-097	
1B02CR0014	1SS135		000-108-075	
1B02CR0015	1SS135		000-108-075	
1B02CR0016	1SS135		000-108-075	
1B02CR0017	1SS135		000-108-075	
1B02CR0018	1SS133		000-103-097	
1B02CR0019	1SS133		000-103-097	
1B02CR0020	1SS133		000-103-097	
1B02CR0021	1SS133		000-103-097	
1B02CR0023	1SS133		000-103-097	
1B02CR0024	1SS133		000-103-097	
1B02CR0025	1SS133		000-103-097	
1B02CR0026	SBL-1	D.B.M	000-179-000	
1B02CR0027	ND487C1-3R		000-133-882	
1B02CR0028	ND487C1-3R		000-133-882	
1B02CR0029	1SS133		000-103-097	
1B02CR0030	1SS133		000-103-097	
1B02CR0031	1SS133		000-103-097	
1B02CR0032	1SS133		000-103-097	
1B02CR0033	1SS133		000-103-097	
	FILTER	フィルター		
1B02FL0001	54M8B	05S0589-0	000-116-691	
1B02FL0003	K00F24M	05S0591-0	000-116-692	
1B02FL0004	5F0L04	05S0590-0	000-116-693	
1B02FL0005	SFP455H	05S0406-0	000-113-402	
1B02FL0006	SFP455H	05S0406-0	000-113-402	
1B02FL0007	SC-01-20G		000-115-258	
	COIL	コイル		
1B02L0001	LAL03NAR33M	0.33UH	000-423-135	
1B02L0002	LAL03NAR22M	0.22UH	000-423-134	
1B02L0003	R22 05S4058-0	0.22UF	000-428-296	
1B02L0005	R82 05S4072-0	0.82UH	000-428-308	
1B02L0006	LAL03NA102K		000-108-083	
1B02L0007	R24 05S4059-0	0.24UH	000-428-297	
1B02L0008	R33 05S4062-0	0.33UF	000-428-301	
1B02L0009	05S4055-0 R15	15UH	000-428-294	
1B02L0010	R18 05S4056-0	0.18UH	000-428-295	
1B02L0011	LAL03NA100K	10UH	000-428-144	
1B02L0012	LAL03NA100K	10UH	000-428-144	
1B02L0013	LAL03NA100K	10UH	000-428-144	
1B02L0014	LAL03NA102K		000-108-083	
1B02L0015	LAL03NA102K		000-108-083	
1B02L0016	LAL03NA102K		000-108-083	
1B02L0017	SLC36		000-115-388	
1B02L0018	LAL03NA101K	100UH	000-428-133	
1B02L0019	LAL03NA101K	100UH	000-428-133	
1B02L0020	LAL03NA5R6K		000-428-142	
1B02L0021	LAL03NA4R7K	4.7UH	000-428-141	
1B02L0023	LAL03NA5R6K		000-428-142	
1B02L0024	LAL03NA100K	10UH	000-428-144	
1B02L0025	LAL03NA102K		000-108-083	
	TRANSISTOR	トランジスター		
1B02Q0001	2SK125		000-129-359	
1B02Q0002	2SK125		000-129-359	
1B02Q0003	UN4122		000-113-381	
1B02Q0005	2SC3133		000-126-340	
1B02Q0006	2SC1212AC		000-124-792	
1B02Q0007	2SC1947		000-125-785	
1B02Q0008	UN4122		000-113-381	
1B02Q0009	2SC2498		000-126-200	
1B02Q0010	2SC2498		000-126-200	
1B02Q0011	2SC2498		000-126-200	
1B02Q0012	2SC1815-Y		000-125-631	
1B02Q0013	2SC1815-Y		000-125-631	
1B02Q0014	2SC1815-Y		000-125-631	
1B02Q0015	UN4122		000-113-381	
1B02Q0016	UN4122		000-113-381	
1B02Q0017	UN4122		000-113-381	
1B02Q0018	UN4211		000-108-963	
1B02Q0019	UN4211		000-108-963	
1B02Q0020	UN4211		000-108-963	
1B02Q0021	UN4122		000-113-381	
1B02Q0022	UN4211		000-108-963	
1B02Q0023	UN4122		000-113-381	
1B02Q0024	UN4122		000-113-381	
1B02Q0025	UN4211		000-108-963	
1B02Q0026	2SC1815-Y		000-125-631	
	RESISTOR	テイコウ		
1B02R0001	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0002	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0008	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0009	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0010	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0011	ERD-16TJ150	00S0095-0	000-330-843	
1B02R0012	ERD-16TJ332	0.16W 3.3K	000-329-045	
1B02R0013	ERD-16TJ332	0.16W 3.3K	000-329-045	
1B02R0014	ERD-16TJ332	0.16W 3.3K	000-329-045	
1B02R0015	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0016	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0017	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0019	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0020	ERD-16TJ331	0.16W 330	000-329-025	
1B02R0021	ERD-16TJ680	0.16W 68	000-329-009	
1B02R0022	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0023	ERD-16TJ220	0.16W 22	000-330-847	
1B02R0024	ERD-16TJ220	0.16W 22	000-330-847	
1B02R0025	ERG-1SJ391P	00S0102-0	000-375-404	
1B02R0026	ERD-16TJ2R2	0.16W 2.2	000-330-823	
1B02R0027	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0028	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0029	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0030	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0033	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0034	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0035	ERD-16TJ223	0.16W 22K	000-330-810	
1B02R0036	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0037	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0038	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0039	ERD-16TJ332	0.16W 3.3K	000-329-045	
1B02R0040	ERD-16TJ332	0.16W 3.3K	000-329-045	
1B02R0041	EVM-MCGA01B12	100	000-103-628	
1B02R0042	ERD-16TJ221	0.16W 220	000-329-021	
1B02R0043	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0044	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0045	ERD-16TJ332	0.16W 3.3K	000-329-045	
1B02R0046	ERD-16TJ332	0.16W 3.3K	000-329-045	
1B02R0047	ERD-16TJ331	0.16W 330	000-329-025	
1B02R0048	ERD-16TJ223	0.16W 22K	000-330-810	
1B02R0049	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0050	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0051	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0052	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0053	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0054	EVM-MCGA01B13	1K	000-103-593	
1B02R0055	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0056	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0057	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0058	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0059	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0060	ERD-16TJ562	0.16W 5.6K	000-329-050	
1B02R0061	EVM-MCGA01B14	10K	000-103-632	
1B02R0062	ERD-16TJ562	0.16W 5.6K	000-329-050	
1B02R0063	ERD-16TJ331	0.16W 330	000-329-025	
1B02R0064	ERD-16TJ331	0.16W 330	000-329-025	
1B02R0065	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0066	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0067	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0068	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0069	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0070	ERD-16TJ101	0.16W 10J	000-329-013	
1B02R0071	ERD-16TJ473	0.16W 47K	000-330-814	
1B02R0072	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0073	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0074	ERD-16TJ331	0.16W 330	000-329-025	
1B02R0075	ERD-16TJ681	0.16W 680	000-330-813	
1B02R0076	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0077	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0078	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0079	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0080	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0081	ERD-16TJ273	0.16W 27K	000-330-811	
1B02R0082	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0083	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0084	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0085	EVM-MCGA01B14	10K	000-103-632	
1B02R0086	ERD-16TJ332	0.16W 3.3K	000-329-045	
1B02R0087	EVM-MCGA01B53	5K (00S0119)	000-103-631	
1B02R0088	ERD-25PJ102	0.25W 1K	000-330-357	
1B02R0090	ERD-16TJ681	0.16W 680	000-330-813	
1B02R0091	ERD-16TJ223	0.16W 22K	000-330-810	
1B02R0092	ERD-16TJ823	0.16W 82K	000-329-073	
1B02R0093	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0094	ERD-16TJ224	0.16W 220K	000-329-080	
1B02R0095	EVM-MCGA01B53	5K (00S0119)	000-103-631	
1B02R0096	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0097	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0098	ERD-16TJ153	0.16W 15K	000-329-059	
1B02R0099	ERD-16TJ471	0.16W 470	000-329-029	
1B02R0100	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0101	ERD-16TJ334	0.16W 330K	000-329-084	
1B02R0102	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0103	ERD-16TJ331	0.16W 330	000-329-025	
1B02R0104	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0105	ERD-16TJ473	0.16W 47K	000-330-814	
1B02R0106	ERD-16TJ331	0.16W 330	000-329-001	
1B02R0107	ERX-2SJ1R0P	2W 1	000-375-436	
1B02R0108	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0109	ERD-16TJ102	0.16W 1K	000-330-801	

NOTE:
備考:

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
1B02R0110	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0111	ERD-16TJ150	00S0095-0	000-330-843	
1B02R0112	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0113	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0114	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0115	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0116	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0117	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0118	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0119	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0120	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0121	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0122	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0123	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0124	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0125	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0126	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0127	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0128	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0129	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0130	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0131	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0132	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0133	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0134	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0135	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0136	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0137	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0138	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0139	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0140	EXB-F5E472J	0.125W 4.7KX4	000-379-073	
1B02R0141	EXB-F5E472J	0.125W 4.7KX4	000-379-073	
1B02R0142	EXB-F5E472J	0.125W 4.7KX4	000-379-073	
1B02R0143	EXB-F5E472J	0.125W 4.7KX4	000-379-073	
1B02R0144	ERG-3SJ180P	00S0102-0	000-375-517	
1B02R0145	ERD-16TJ392	0.16W 3.9K	000-329-047	
1B02R0146	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0154	ERD-16TJ152	0.16W 1.5K	000-329-039	
1B02R0155	ERD-16TJ222	0.16W 2.2K	000-330-809	
1B02R0156	ERD-16TJ331	0.16W 330	000-329-025	
1B02R0157	ERD-16TJ331	0.16W 330	000-329-025	
1B02R0158	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0159	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0160	EVM-MCGA01B53	5K (00S0119)	000-103-631	
1B02R0161	EVM-MCGA01B14	10K	000-103-632	
1B02R0162	ERD-16TJ221	0.16W 220	000-329-021	
1B02R0163	EVM-MCGA01B52	00S0119-1	000-103-592	
1B02R0164	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0165	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0166	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0167	ERD-16TJ150	00S0095-0	000-330-843	
1B02R0168	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0169	ERD-16TJ681	0.16W 680	000-330-813	
1B02R0170	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0171	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0172	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0173	ERD-16TJ331	0.16W 330	000-329-025	
1B02R0174	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0175	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0176	ERD-16TJ470	0.16W 47	000-329-005	
1B02R0178	ERD-16TJ681	0.16W 680	000-330-813	
1B02R0179	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0180	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0181	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0182	ERD-16TJ473	0.16W 47K	000-330-814	
1B02R0183	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R0184	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0185	ERD-16TJ101	0.16W 100	000-329-013	
1B02R0186	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R0187	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R0188	ERD-16TJ332	0.16W 3.3K	000-329-045	
1B02R0190	ERD-16TJ100	0.16W 10	000-330-839	
1B02R0191	ERD-16TJ683	0.16W 68K	000-329-071	
1B02R0192	ERD-16TJ103	0.16W 10K	000-330-802	
	THERMISTOR	サーミスター		
1B02RT0001	D-33A		000-180-625	
1B02RT0002	D-33A		000-180-625	
1B02RT0003	D-33A		000-180-625	
1B02RT0004	D-33A		000-180-625	
	TRANSFORMER	トランス		
1B02T0001	ST460	05S0355-0	000-109-054	
1B02T0002	ST476	05S0420-0	000-113-389	
1B02T0003	ST460	05S0355-0	000-109-054	
1B02T0004	ST476	05S0420-0	000-113-389	
1B02T0007	ST460	05S0355-0	000-109-054	
1B02T0011	ST474	05S0417-0	000-113-390	
1B02T0012	ST475	05S0419-0	000-113-369	
1B02T0013	ST460	05S0355-0	000-109-054	
1B02T0014	ST460	05S0355-0	000-109-054	
1B02T0015	ST475	05S0419-0	000-113-369	

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
	INTEGRATED CIRCUIT	シュウセキカイロ		
1B02U0001	IF	05S0392-0	000-113-391	
1B02U0002	SL1611C/DG		000-169-138	
1B02U0003	NJM2904		000-113-392	
1B02U0004	NF	05S0394-0	000-113-393	
1B02U0005	TC4066BP		000-163-264	
1B02U0006	TC4066BP		000-163-264	
1B02U0007	IF	05S0392-0	000-113-391	
1B02U0008	AGC	05S0396-0	000-113-394	
1B02U0009	TC4066BP		000-163-264	
1B02U0010	TA7658P		000-106-200	
1B02U0011	SW	05S0393-0	000-112-744	
1B02U0012	ALC	05S0395-0	000-113-395	
1B02U0013	UPC1242H		000-110-984	
1B02U0014	TC4066BP		000-163-264	
1B02U0015	NJM082		000-113-396	
1B02U0016	VOX	05S0397-0	000-113-353	
1B02U0017	M54972P		000-113-380	
1B02U0018	M54972P		000-113-380	
1B02U0019	M54972P		000-113-380	
1B02U0021	M5458IP		000-106-229	
1B02U0022	LT1080CH		000-111-479	
1B02U0023	AN7805F		000-113-496	
	POTENTIOMETER	ポテンショメーター		
1B02VR0002	HZ12A-1L	ZENER	000-113-383	
	CABLE WITH CONNECTOR	コネクターツキケーブル		
1B02W0001	L-140	07S0046-0	000-522-074	
1B02W0002	L-250	07S0046-0	000-522-004	
1B02W0003	L-170	07S0046-0	000-522-076	
	HEAT SINK	ホウネツバン		
1B02XQ0071	PRV-7		000-113-397	
1B02XQ0072	MC213A820		000-113-398	

NOTE:
備考:

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
1B02	05P0328A	TX/RX (2/2)	005-593-620	
	CAPACITOR	コンデンサー		
1B02C1001	EXF-P4102ZW	1000PF 50V	000-106-076	
1B02C1002	EXF-P4102ZW	1000PF 50V	000-106-076	
1B02C1003	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1004	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1005	ECC-F1H010CC	1PF 50VDC	000-255-201	
1B02C1007	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C1008	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C1009	ECQ-B1H103JZ	0.01UF 50V	000-100-125	
1B02C1010	DD104B102K50V02	1000PF 50V	000-252-171	
1B02C1011	DD104B102K50V02	1000PF 50V	000-252-171	
1B02C1012	ECC-F1H330JC	33PF 50VDC	000-255-222	
1B02C1013	ECC-F1H100DS	10PF 50V	000-115-930	
1B02C1014	ECC-F1H150JS	15PF 50V	000-108-823	
1B02C1015	DD104B102K50V02	1000PF 50V	000-252-171	
1B02C1016	ECE-A1AU471E	470UF 10V	000-206-118	
1B02C1017	ECC-F1H010CC	1PF 50VDC	000-255-201	
1B02C1018	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1019	DD104B102K50V02	1000PF 50V	000-252-171	
1B02C1020	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1021	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1022	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1023	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1024	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1025	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1026	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C1027	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C1028	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1029	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1030	ECE-A1AU101E	100UF 10V	000-206-113	
1B02C1031	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1032	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1033	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1034	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1035	ECQ-B1H223JZ	0.01UF 50V	000-100-127	
1B02C1036	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C1037	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C1038	DD306F104Z25	0.1UF 25V	000-108-968	
1B02C1039	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C1040	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C1046	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1047	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1048	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1049	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1050	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1051	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1052	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1053	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1054	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1055	ECE-A1CU471E	470UF,16V	000-201-808	
1B02C1056	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C1057	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1058	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1059	ECC-F1H010CC	1PF 50VDC	000-255-201	
1B02C1060	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1061	ECC-F1H100DC	10PF,50V	000-255-210	
1B02C1062	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1063	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1064	ECC-F1H100DC	10PF,50V	000-255-210	
1B02C1065	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1066	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1067	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1068	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1069	DD104B121K50V	120PF 50V	000-111-435	
1B02C1070	ECC-F1H150JC	15PF 50V	000-256-902	
1B02C1071	DD104B181K50V	180PF 50V	000-113-365	
1B02C1072	ECC-F1H470JC	47PF 50VDC	000-255-226	
1B02C1073	DD104B121K50V	120PF 50V	000-111-435	
1B02C1074	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1075	ECC-F1H470JC	47PF 50VDC	000-255-226	
1B02C1076	DD104B471K50V02	470PF 50V	000-252-176	
1B02C1077	ECC-F1H330JC	33PF 50VDC	000-255-222	
1B02C1078	DD104B181K50V	180PF 50V	000-113-365	
1B02C1079	ECC-F1H470JC	47PF 50VDC	000-255-226	
1B02C1080	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1081	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1082	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1083	ECC-F1H150JC	15PF 50VDC	000-255-216	
1B02C1084	TZ03M100FR	10PF 50V	000-113-366	
1B02C1085	ECC-F1H220JC	22PF 50V	000-256-905	
1B02C1086	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1087	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1088	ECC-F1H100DC	10PF,50V	000-255-210	
1B02C1089	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1090	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1091	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1092	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1093	ECE-A1EU101E	WS.0 100UF 25V	000-206-105	
1B02C1094	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1095	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1096	ECC-F1H040CC	4PF 50VDC	000-255-204	
1B02C1098	DD109L103P50V	0.01UF 50V	000-253-436	
1B02C1099	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1100	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1101	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1102	ECQ-B1H223JZ	0.01UF 50V	000-100-127	
1B02C1103	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B02C1104	ECQ-B1H103JZ	0.01UF 50V	000-100-125	
1B02C1105	ECE-A1CU471E	470UF,16V	000-201-808	
1B02C1106	DD104B102K50V	1000PF 50V	000-252-171	
1B02C1107	ECC-F1H330JC	33PF 50VDC	000-255-222	
1B02C1108	ECC-F1H220JC	22PF 50V	000-256-905	
1B02C1109	ECC-F1H330JC	33PF 50VDC	000-255-222	
1B02C1110	DD104B102K50V02	1000PF 50V	000-252-171	
1B02C1111	DD104B102K50V02	1000PF 50V	000-252-171	
1B02C1112	ECC-F1H010CC	1PF 50VDC	000-255-201	
1B02C1113	ECC-F1H010CC	1PF 50VDC	000-255-201	
1B02C1114	DD104B102K50V02	1000PF 50V	000-252-171	
1B02C1115	DD104B102K50V02	1000PF 50V	000-252-171	
1B02C1116	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1117	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1118	DD104B102K50V02	1000PF 50V	000-252-171	
1B02C1119	DD306F104Z25	0.1UF 25V	000-108-968	
1B02C1120	EXC-EMT103DC	0850078-1	000-107-994	
1B02C1121	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1122	ECE-A1CU471E	470UF,16V	000-201-808	
1B02C1123	ECE-A1EU100E	10UF 25V	000-201-812	
1B02C1124	EXC-EMT103DC	0850078-1	000-107-994	
1B02C1125	ECE-A1AU471E	470UF 10V	000-206-118	
1B02C1126	DD109E103P50V	0.01UF 50V	000-253-436	
1B02C1127	DD306F104Z25	0.1UF 25V	000-108-968	
1B02C1128	DD104B102K50V02	1000PF 50V	000-252-171	
1B02C1129	ECE-A1EU100E	10UF 25V	000-201-812	
	DIODE	ダイオード		
1B02CR1001	1SV68	VARI.CAP.	000-114-120	
1B02CR1002	1SS135		000-108-075	
1B02CR1003	1SS135		000-108-075	
1B02CR1004	1SS135		000-108-075	
1B02CR1005	1SS135		000-108-075	
1B02CR1006	1SV68	VARI.CAP.	000-114-120	
1B02CR1007	1SV68	VARI.CAP.	000-114-120	
1B02CR1008	1SV68	VARI.CAP.	000-114-120	
1B02CR1009	1SV68	VARI.CAP.	000-114-120	
1B02CR1010	1SS133		000-103-097	
1B02CR1011	1SV68	VARI.CAP.	000-114-120	
1B02CR1012	LN28 RPH		000-108-071	
	FILTER	フィルター		
1B02FL1001	SCU14A	50.01MHZ 05S0592-0	000-116-694	
1B02FL1002	SFE4.5MS	4.5MHZ 05S0404-0	000-113-375	
	COIL	コイル		
1B02L1001	LAL03NA100K	10UH	000-428-144	
1B02L1002	LAL03NA100K	10UH	000-428-144	
1B02L1003	LAL03NA100K	10UH	000-428-144	
1B02L1004	LAL03NA100K	10UH	000-428-144	
1B02L1005	LAL03NA100K	10UH	000-428-144	
1B02L1006	LAL03NA100K	10UH	000-428-144	
1B02L1007	R24 05S4059-0	0.24UH	000-428-297	
1B02L1008	R18 05S4056-0	0.18UH	000-428-295	
1B02L1009	05S4055-0 R15	15UH	000-428-294	
1B02L1010	R18 05S4056-0	0.18UH	000-428-295	
1B02L1011	LAL03NA101K	100UH	000-428-133	
1B02L1012	LAL03NA100K	10UH	000-428-144	
1B02L1013	LAL03NA100K	10UH	000-428-144	
1B02L1014	LAL03NA100K	10UH	000-428-144	
	TRANSISTOR	トランジスター		
1B02Q1001	2SK192A-GR		000-129-375	
1B02Q1002	2SK241-GR		000-110-986	
1B02Q1003	2SK30ATM-O		000-129-263	
1B02Q1004	2SC1000GTM-BL		000-124-481	
1B02Q1005	UN4211		000-108-963	
1B02Q1006	UN4211		000-108-963	
1B02Q1007	2SK192A-GR		000-129-375	
1B02Q1008	2SK241-GR		000-110-986	
1B02Q1009	2SK241-GR		000-110-986	
1B02Q1010	2SK241-GR		000-110-986	
1B02Q1011	2SK241-GR		000-110-986	
1B02Q1012	2SK192A-GR		000-129-375	
1B02Q1013	2SC1815-Y		000-125-031	
1B02Q1014	UN4211		000-108-963	
1B02Q1015	2SK192A-GR		000-129-375	
1B02Q1016	UN4122		000-113-381	
1B02Q1017	2SD960&/P		000-114-833	
	RESISTOR	チイコウ		
1B02R1001	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R1002	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R1003	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R1004	ERD-16TJ473	0.16W 47K	000-330-814	

NOTE:
備考:

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
1B02R1005	ERD-16TJ101	0.16W 100	000-329-013	
1B02R1006	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R1007	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R1008	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1010	ERD-16TJ473	0.16W 47K	000-330-814	
1B02R1011	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1012	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R1013	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R1014	ERD-16TJ471	0.16W 470	000-329-029	
1B02R1015	ERD-16TJ681	0.16W 680	000-330-813	
1B02R1016	ERD-16TJ152	0.16W 1.5K	000-329-039	
1B02R1017	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R1018	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R1019	ERD-16TJ222	0.16W 2.2K	000-330-809	
1B02R1022	ERD-16TJ750	0.16W 75	000-329-010	
1B02R1023	ERD-16TJ750	0.16W 75	000-329-010	
1B02R1024	EVM-MCGA01B53	5K (00S0119)	000-103-631	
1B02R1025	ERD-16TJ392	0.16W 3.9K	000-329-047	
1B02R1026	ERD-16TJ272	0.16W 2.7K	000-329-043	
1B02R1027	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R1028	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R1029	ERD-16TJ332	0.16W 3.3K	000-329-045	
1B02R1030	ERD-16TJ473	0.16W 47K	000-330-814	
1B02R1031	ERD-16TJ101	0.16W 100	000-329-013	
1B02R1032	ERD-16TJ471	0.16W 470	000-329-029	
1B02R1033	ERD-16TJ473	0.16W 47K	000-330-814	
1B02R1034	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1035	ERD-16TJ473	0.16W 47K	000-330-814	
1B02R1036	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1037	ERD-16TJ101	0.16W 100	000-329-013	
1B02R1038	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1039	ERD-16TJ103	0.16W 10K	000-330-802	
1B02R1040	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1041	ERD-16TJ152	0.16W 1.5K	000-329-039	
1B02R1042	ERD-16TJ150	00S0095-0	000-330-843	
1B02R1043	ERD-16TJ470	0.16W 47	000-329-005	
1B02R1044	ERD-16TJ470	0.16W 47	000-329-005	
1B02R1045	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1046	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R1047	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1048	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1049	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R1050	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R1051	ERD-16TJ470	0.16W 47	000-329-005	
1B02R1052	ERD-16TJ101	0.16W 100	000-329-013	
1B02R1053	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1054	ERD-16TJ104	0.16W 100K	000-330-803	
1B02R1055	ERD-16TJ332	0.16W 3.3K	000-329-045	
1B02R1056	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R1057	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R1058	ERD-16TJ102	0.16W 1K	000-330-801	
1B02R1059	ERD-16TJ473	0.16W 47K	000-330-814	
1B02R1060	ERD-16TJ101	0.16W 100	000-329-013	
1B02R1061	ERD-16TJ472	0.16W 4.7K	000-330-812	
1B02R1062	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1063	EXB-F5E472J	0.125W 4.7KX4	000-379-073	
1B02R1064	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1065	ERD-16TJ471	0.16W 470	000-329-029	
1B02R1066	ERD-16TJ680	0.16W 68	000-329-009	
1B02R1067	ERD-16TJ331	0.16W 330	000-329-025	
1B02R1068	ERD-16TJ680	0.16W 68	000-329-009	
1B02R1069	ERD-16TJ222	0.16W 2.2K	000-330-809	
1B02R1070	ERD-16TJ560	0.16W 56	000-329-007	
1B02R1071	ERD-16TJ221	0.16W 220	000-329-021	
1B02R1072	ERD-16TJ101	0.16W 100	000-329-013	
1B02R1073	ERD-16TJ680	0.16W 68	000-329-009	
1B02R1074	ERD-16TJ101	0.16W 100	000-329-013	
	THERMISTOR	サーミスタ		
1B02RT1001	PTH507R01BM500N016	05S0403-0	000-113-377	
	TRANSFORMER	トランス		
1B02T1001	5T477	05S0421-0	000-113-367	
1B02T1002	5T499	05S0418-0	000-113-363	
1B02T1003	5T499	05S0418-0	000-113-368	
1B02T1004	5T475	05S0419-0	000-113-369	
1B02T1005	5T477	05S0421-0	000-113-367	
1B02T1006	5T478	05S0422-0	000-113-370	
1B02T1007	5T479	05S0423-0	000-113-371	
1B02T1008	5T480	05S0424-0	000-113-372	
1B02T1009	5T460	05S0355-0	000-109-054	
1B02T1010	5T513	05S0425-0	000-113-373	
1B02T1011	5T475	05S0419-0	000-113-369	
1B02T1012	5T475	05S0419-0	000-113-369	
1B02T1013	5T475	05S0419-0	000-113-369	
1B02T1014	5T477	05S0421-0	000-113-367	
1B02T1015	5T394	05S4394-0	000-107-604	

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
	INTEGRATED CIRCUIT	ICカイロ		
1B02U1001	TC4013BAP		000-104-336	
1B02U1002	M54927P		000-113-378	
1B02U1003	M54459L		000-150-912	
1B02U1004	UPC1037H		000-113-379	
1B02U1005	M54927P		000-113-378	
1B02U1006	TC4066BP		000-163-264	
1B02U1007	M54972P		000-113-380	
1B02U1008	UPC1037H		000-113-379	
1B02U1009	TA7510P		000-101-337	
1B02U1010	HD10551		000-162-270	
1B02U1011	M54927P		000-113-378	
1B02U1012	M54459L		000-150-912	
1B02U1013	TC4066BP		000-163-264	
	ZENER DIODE	ツエナーダイオード		
1B02VR1001	HZ12A-1L	ZENER	000-113-383	
1B02VR1002	HZ6A2L		000-133-227	
1B02VR1003	HZ12C-3L	ZENER	000-113-384	
	CRYSTAL	クリスタル		
1B02Y1001	49.5MHZ	05S0593-0	000-116-695	

1B03 05P0273A TX FIL 005-592-490

	CAPACITOR	コンデンサー		
1B03C0001	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0002	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0003	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0004	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0005	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0006	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0007	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0008	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0009	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0010	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0011	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0012	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0013	DD109E103P50V	0.01UF 50V	000-253-436	
1B03C0014	DM19C132K5	1300PF 500V	000-113-416	
1B03C0015	DD11CH161J500V	160PF 500V	000-106-124	
1B03C0016	DM19C222K5	2200PF, 500V	000-222-482	
1B03C0017	DD11SL471K500V	470PF 500V	000-106-123	
1B03C0018	DM19C122K5	1200PF, 500V	000-222-448	
1B03C0019	DM19C911K5		000-113-417	
1B03C0020	DD10CH111J500V	110PF 500V	000-106-127	
1B03C0021	DM19C152K5	1500PF 500V	000-113-413	
1B03C0022	DD10SL331K500V	330PF 500V	000-106-119	
1B03C0023	DM19C751K5	750PF 500V	000-113-419	
1B03C0024	DD12SL561K500V	560PF 500V	000-106-118	
1B03C0025	DD09CH680J500V	68PF 500V	000-106-134	
1B03C0026	DM19C911K5		000-113-417	
1B03C0027	DD12CH201J500V	200PF 500V	000-106-139	
1B03C0028	DD11SL471K500V	470PF 500V	000-106-123	
1B03C0029	DD10SL361K500V	360PF 500V	000-113-420	
1B03C0030	DD07CH430J500V	43PF 500V	000-113-421	
1B03C0031	DD12SL561K500V	560PF 500V	000-106-118	
1B03C0032	DD10CH121J500V	120PF 500V	000-106-128	
1B03C0033	DD10SL301K500V	300PF 500V	000-106-121	
1B03C0034	DD10CH181J500V	180PF 500V	000-106-138	
1B03C0035	DD05CH220J500V	22PF 500V	000-106-141	
1B03C0036	DD10SL301K500V	300PF 500V	000-106-121	
1B03C0037	DD06CH620J500V	62PF 500V	000-113-422	
1B03C0038	DD11CH161J500V	160PF 500V	000-106-124	
1B03C0039	DD10CH111J500V	110PF 500V	000-106-127	

NOTE:
備考:

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
1B03C0040	DD05CH130J500V	13PF 500V	000-113-423	
1B03C0041	DD12CH181J500V	180PF 500V	000-106-178	
1B03C0042	DD07CH360J500V	36PF 500V	000-113-424	
1B03C0043	DD10CH910J500V	91PF 500V	000-113-425	
1B03C0044	CCC-F1H470JC	47PF 50VDC	000-255-220	
1B03C0045	DD05CH050C500V	5PF 500V	000-113-434	
1B03C0046	DD10CH101J500V	100PF 500V	000-106-176	
1B03C0048	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B03C0050	ECE-A1EU100E	10UF 25V	000-201-812	
1B03C0051	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B03C0052	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B03C0053	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B03C0054	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B03C0055	EXC-EHT103C	0.01UF	000-107-994	
1B03C0057	ECF-A1EU220E	22UF 25V	000-201-813	
1B03C0058	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B03C0059	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B03C0060	ECQ-B1H103JZ	0.01UF 50V	000-100-125	
1B03C0061	ECE-A1AU101E	100UF 10V	000-206-113	
1B03C0062	ECQ-B1H102JZ	1000PF 50V	000-100-753	
	DIODE	ダイオード		
1B03CR0001	1SS82		000-114-021	
1B03CR0002	1SS82		000-114-021	
1B03CR0003	1SS133		000-103-097	
1B03CR0004	1SS133		000-103-097	
1B03CR0005	1SS82		000-114-021	
1B03CR0006	1SS82		000-114-021	
1B03CR0007	1SS82		000-114-021	
1B03CR0008	1SS82		000-114-021	
1B03CR0009	1SS82		000-114-021	
1B03CR0010	1SS82		000-114-021	
1B03CR0011	1SS82		000-114-021	
1B03CR0012	1SS82		000-114-021	
	ARRESTER	アレスター		
1B03E0001	T08-350B		000-113-427	
	JACK	ジャック		
1B03J0001	TL-S-13P-S2T2-FF	1950077-0	000-113-404	
1B03J0002	TMP-J01X-V6	0550455	000-509-859	
1B03J0003	TMP-J01X-V6	0550455	000-509-859	
1B03J0004	TMP-J01X-V6	0550455	000-509-859	
	RELAY	リレー		
1B03K0001	G6R-1114P-US-AP-12V		000-114-405	
1B03K0002	G6R-1114P-US-AP-12V		000-114-405	
1B03K0003	G6R-1114P-US-AP-12V		000-114-405	
1B03K0004	G6R-1114P-US-AP-12V		000-114-405	
1B03K0005	G6R-1114P-US-AP-12V		000-114-405	
1B03K0006	G6R-1114P-US-AP-12V		000-114-405	
1B03K0007	G6R-1114P-US-AP-12V		000-114-405	
1B03K0008	G6R-1114P-US-AP-12V		000-114-405	
1B03K0009	G6R-1114P-US-AP-12V		000-114-405	
1B03K0010	G6R-1114P-US-AP-12V		000-114-405	
1B03K0011	G6R-1114P-US-AP-12V		000-114-405	
1B03K0012	G6R-1114P-US-AP-12V		000-114-405	
1B03K0013	G6R-2114P-DC12V		000-113-428	
	COIL	コイル		
1B03L0001	5T508	0550472-0	000-113-429	
1B03L0002	5T023	0554023-0	000-732-573	
1B03L0003	5T024	0554024-0	000-732-574	
1B03L0004	5T025	0554025-0	000-732-575	
1B03L0005	5T026	0554026-0	000-732-576	
1B03L0006	5T503	0550463-0	000-113-430	
1B03L0007	5T027	0554027-0	000-732-577	
1B03L0008	5T028	0554028-0	000-732-578	
1B03L0009	5T029	0554029-0	000-732-579	
1B03L0010	5T505	0550469-0	000-113-431	
1B03L0011	5T506	0550470-0	000-113-432	
1B03L0012	5T507	0550471-0	000-113-433	
1B03L0013	LAL03NA22M	0.22UH	000-428-134	
1B03L0014	5T031	0554031-0	000-732-581	

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
	RESISTOR	抵抗		
1B03R0001	ERD-25FJ332	0.25W 3.3K	000-330-369	
1B03R0002	ERG-25J680	0.25W 68	000-375-460	
1B03R0003	ERD-16TJ103	0.16W 10K	000-330-802	
1B03R0004	ERD-16TJ103	0.16W 10K	000-330-802	
1B03R0005	RVM-MCGA01B13	1K	000-103-593	
1B03R0006	ERD-16TJ102	0.16W 1K	000-330-301	
1B03R0007	ERD-16TJ471	0.16W 470	000-329-029	
1B03R0008	ERD-16TJ473	0.16W 47K	000-330-814	
1B03R0009	ERD-16TJ471	0.16W 470	000-329-029	
1B03R0010	ERD-16TJ473	0.16W 47K	000-330-814	
1B03R0011	ERD-16TJ473	0.16W 47K	000-330-814	
1B03R0012	ERD-16TJ473	0.16W 47K	000-330-814	
1B03R0013	ERD-16TJ101	0.16W 100	000-329-013	
1B03R0014	ERD-16TJ103	0.16W 10K	000-330-802	
1B03R0015	ERD-16TJ103	0.16W 10K	000-330-802	
	INTEGRATED CIRCUIT	集積回路		
1B03U0001	NJM2904D		000-113-434	

1B04	05P0274	P.A.	005-592-270
	CAPACITOR	コンデンサー	
1B04C0001	ECQ-B1H472JZ	4700PF 50V	000-102-493
1B04C0002	ECQ-B1H472JZ	4700PF 50V	000-102-493
1B04C0003	ECQ-B1H103JZ	0.01UF 50V	000-100-125
1B04C0004	ECQ-B1H103JZ	0.01UF 50V	000-100-125
1B04C0005	ECF-A1AU101E	100UF 10V	000-206-113
1B04C0006	ECQ-V1H104JZ	0.1UF 50V	000-261-524
1B04C0007	ECQ-V1H104JZ	0.1UF 50V	000-261-524
1B04C0008	ECC-F1H101JC	100PF, 50V	000-256-910
1B04C0009	DM15C511K1	510PF, 100V	000-222-285
1B04C0012	ECQ-V1H104JZ	0.1UF 50V	000-261-524
1B04C0013	ECQ-V1H104JZ	0.1UF 50V	000-261-524
1B04C0014	ECQ-V1H104JZ	0.1UF 50V	000-261-524
1B04C0015	ECE-A1AU471E	470UF 10V	000-206-113
1B04C0016	DD109E103P50V	0.01UF 50V	000-253-436
1B04C0017	ECE-A1AU101E	100UF 10V	000-206-113
1B04C0018	C5650SL1H682K	6800PF	000-113-436
1B04C0019	C5650SL1H682K	6800PF	000-113-436
1B04C0020	DM19C122K5	1200PF, 500V	000-222-448
1B04C0021	ECE-A1EU102E	1000UF,25V	000-201-318
1B04C0022	MD-2-2F-224K	0.22UF 250WV	000-262-187
1B04C0023	GK44-145R104M100	0.1UF 100V	000-254-000
1B04C0024	MD-2-2F-224K	0.22UF 250WV	000-262-187
1B04C0025	ECE-A1EU100E	10UF 25V	000-201-812
1B04C0026	ECE-A1EU100E	10UF 25V	000-201-812
1B04C0027	DD109E103P50V	0.01UF 50V	000-253-436
1B04C0028	DD109E103P50V	0.01UF 50V	000-253-436
1B04C0029	DD109E103P50V	0.01UF 50V	000-253-436
1B04C0030	DD109E103P50V	0.01UF 50V	000-253-436
1B04C0031	DD109E103P50V	0.01UF 50V	000-253-436
1B04C0032	EXF-B4102ZW	1000PF 50V	000-106-078
1B04C0033	ECQ-V1H104JZ	0.1UF 50V	000-261-524
1B04C0034	ECQ-V1H104JZ	0.1UF 50V	000-261-524
1B04C0035	ECQ-V1H104JZ	0.1UF 50V	000-261-524
1B04C0036	ECQ-V1H104JZ	0.1UF 50V	000-261-524
1B04C0037	GA41SL102K50	1000PF 50V	000-253-990
1B04C0038	DM15C471K5	470PF, 500V	000-222-292
1B04C0040	DM19C472K5	4700PF 500V	000-113-438
1B04C0041	C95AE2A2247	0.22MF 100V	000-254-992
1B04C0042	C95AE2A2247	0.22MF 100V	000-254-992
1B04C0043	MD-2-2F-104M	0.1UF 250WV	000-262-183
1B04C0044	MD-2-2F-104M	0.1UF 250WV	000-262-183
1B04C0045	DM10C331K1	330PF, 100V	000-222-120
1B04C0046	DM10C331K1	330PF, 100V	000-222-120

NOTE:
備考:

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
	DIODE	ダイオード		
1B04CR0001	SV02Y5		000-106-176	
	JACK	ジャック		
1B04J0001	TL-S-4P-S2T2-EF	10S007Y-0	000-103-091	
1B04J0002	TMP-J01X-V6	05S0455	000-509-359	
1B04J0003	TMP-J01X-V6	05S0455	000-509-359	
	COIL	コイル		
1B04L0001	LAL03NA100K	10UH	000-428-144	
1B04L0002	LAL03NA100K	10UH	000-428-144	
1B04L0003	2C3RI5X5-2		000-424-149	
1B04L0004	2C3RI5X5-2		000-424-149	
1B04L0005	FB-225		000-428-900	
1B04L0006	FB-225		000-428-900	
1B04L0007	FB-801		000-428-950	
1B04L0008	FB-801		000-428-950	
1B04L0009	FB-801		000-428-950	
1B04L0010	FB-801		000-428-950	
	TRANSISTOR	トランジスター		
1B04Q0001	2SC3133		000-126-340	
1B04Q0002	2SC3133		000-126-340	
1B04Q0003	2SC3240		000-113-440	
1B04Q0004	2SC3240		000-113-440	
1B04Q0005	2SD1271A-P		000-128-069	
1B04Q0006	2SA1315-Y		000-113-083	
	RESISTOR	テイコウ		
1B04R0001	ERD-25TJ681	0.25W 680	000-330-353	
1B04R0002	ERD-25PJ100	0.25W 10	000-330-309	
1B04R0003	ERD-25TJ681	0.25W 680	000-330-353	
1B04R0004	ERD-25PJ2R2	0.25W 2.2	000-330-297	
1B04R0005	ERD-25PJ2R2	0.25W 2.2	000-330-297	
1B04R0006	ERD-25PJ470	0.25W 47	000-330-325	
1B04R0007	ERD-25PJ470	0.25W 47	000-330-325	
1B04R0008	ERD-25PJ330	0.25W 33	000-330-321	
1B04R0009	ERD-25PJ330	0.25W 33	000-330-321	
1B04R0010	ERG-2SJ470P	2W 47	000-375-457	
1B04R0011	ERG-2SJ470P	2W 47	000-375-457	
1B04R0012	ERX-1SJ1R2P	0.5W 1.2 5%	000-375-372	
1B04R0013	ERX-1SJ1R2P	0.5W 1.2 5%	000-375-372	
1B04R0014	ERD-50TJ100	0.5W 10	000-330-009	
1B04R0015	ERD-50TJ100	0.5W 10	000-330-009	
1B04R0016	ERX-1SJ3P3P	3.3,1W	000-375-377	
1B04R0017	ERX-1SJ3R3P	3.3,1W	000-375-377	
1B04R0018	EVM-MCGA01B12	100	000-103-628	
1B04R0019	ERD-16TJ271	0.16W 270	000-329-023	
1B04R0020	ERX-3SJ4R7P	00S0102-0	000-375-509	
1B04R0021	ERD-16TJ102	0.16W 1K	000-330-801	
1B04R0022	ERD-16TJ102	0.16W 1K	000-330-801	
1B04R0023	ERD-16TJ102	0.16W 1K	000-330-801	
1B04R0024	ERD-16TJ102	0.16W 1K	000-330-801	
1B04R0025	ERD-16TJ222	0.16W 2.2K	000-330-809	
1B04R0026	ERD-16TJ271	0.16W 270	000-329-023	
1B04R0027	ERD-16TJ222	0.16W 2.2K	000-330-809	
1B04R0028	ERD-16TJ222	0.16W 2.2K	000-330-809	
1B04R0029	ERD-16TJ122	0.16W 1.2K	000-329-037	
1B04R0030	ERD-16TJ102	0.16W 1K	000-330-801	
1B04R0031	EVM-MCGA01B12	100	000-103-628	
1B04R0032	ERX-2SJR22	2W 0.22	000-102-435	
1B04R0033	ERD-16TJ680	0.16W 68	000-329-009	
1B04R0034	ERD-16TJ100	0.16W 10	000-330-839	
1B04R0035	ERD-16TJ101	0.16W 100	000-329-013	
	THERMISTOR	サーミスター		
1B04RT0001	D-22A		000-180-617	
1B04RT0002	D-33A		000-180-625	
1B04RT0003	D-91A		000-180-650	
	TRANSFORMER	トランス		
1B04T0001	5T018A	05S4018-1	000-750-772	
1B04T0002	5T523	05S0473-0	000-113-442	
1B04T0003	5T525	05S0475-0	000-113-443	
1B04T0004	5T524	05S0474-0	000-113-444	
	INTEGRATED CIRCUIT	シュウセキカイロ		
1B04U0001	NJM2904D		000-113-434	
1B04U0002	PC837		000-134-274	
1B04U0003	NJM7805A		000-113-448	

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
1B05	05P0326	RELAY	005-593-600	
	CAPACITOR	コンデンサー		
1B05C0001	R32562-E1155J	1.5UF 100V	000-101-171	
1B05C0002	R32562-E1155J	1.5UF 100V	000-101-171	
1B05C0003	R32562-E1155J	1.5UF 100V	000-101-171	
1B05C0004	ECF-A1D471E	470UF 25V	000-201-817	
1B05C0005	PD109E103P50V	0.01UF 50V	000-253-436	
1B05C0006	FCR-V1H104JZ	0.1UF 50V	000-261-524	
1B05C0007	PD109E103P50V	0.01UF 50V	000-253-436	
1B05C0008	FCR-V1H104JZ	0.1UF 50V	000-261-524	
1B05C0009	FCR-V1H104JZ	0.1UF 50V	000-261-524	
1B05C0010	FCR-V1H104JZ	0.1UF 50V	000-261-524	
1B05C0011	DSS310-25D223S50V	04S4163-0	000-103-745	
1B05C0012	DSS310-25D223S50V	04S4163-0	000-103-745	
	DIODE	ダイオード		
1B05CR0001	V06C		000-136-005	
1B05CR0002	V06C		000-136-005	
	FILTER	フイルター		
1B05FL0001	SC-05-100	10H 5A	000-424-972	
	RELAY	リレー		
1B05K0001	G4F-11123T-DC12V		000-113-446	
	TRANSISTOR	トランジスター		
1B05Q0001	UN4211		000-108-963	
1B05Q0002	2SD667A		000-127-940	
	RESISTOR	テイコウ		
1B05R0001	ERG-2SJ220P	2W 22	000-375-453	
1B05R0002	ERD-16TJ102	0.16W 1K	000-330-801	
1B05R0003	EVM-MCGA01B53	5K (00S0119)	000-103-631	
1B05R0004	ERD-16TJ102	0.16W 1K	000-330-801	
1B05R0005	ERD-16TJ102	0.16W 1K	000-330-801	
1B05R0006	ERD-16TJ102	0.16W 1K	000-330-801	
1B05R0007	ERD-16TJ101	0.16W 100	000-329-013	
1B05R0008	ERD-16TJ101	0.16W 100	000-329-013	
	THERMISTOR	サーミスター		
1B05RT0001	D-22A		000-180-617	
	INTEGRATED CIRCUIT	シュウセキカイロ		
1B05U0001	UPC1093J		000-113-445	

NOTE:
備考:

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
1B06	05P0276	SW REG	005-592-310	
	CAPACITOR	コンデンサー		
1B06C0001	B32562-E1155J	1.5UF 100V	000-101-171	
1B06C0002	ECF-A1EFS102F	1000UF 25V	000-113-451	
1B06C0003	ECE-A1EFS102F	1000UF 25V	000-113-451	
1B06C0004	ECQ-P1101JZ	100PF 100WV	000-261-801	
1B06C0005	ECQ-P1152JZ	M5.5	000-261-128	
1B06C0006	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B06C0007	ECE-A1EU470E	47UF 25V	000-201-815	
1B06C0008	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B06C0009	ECF-A1H0010E	1UF 50V	000-206-115	
1B06C0010	RPE132CH102J50	1000PF 50V	000-105-395	
1B06C0011	ECQ-B1H103JZ	0.01UF 50V	000-100-125	
1B06C0012	ECE-A1EFS102F	1000UF 25V	000-113-451	
1B06C0013	ECE-A1EFS102F	1000UF 25V	000-113-451	
1B06C0014	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B06C0015	ECF-A1EU101F	W5.0 100MF 25V	000-206-105	
1B06C0016	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B06C0017	DSS310-75D223S50V	04S4163-0	000-103-745	
1B06C0018	DSS310-75D223S50V	04S4163-0	000-103-745	
1B06C0019	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B06C0020	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B06C0021	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
1B06C0022	ECQ-P1101JZ	100PF 100WV	000-261-801	
	DIODE	ダイオード		
1B06CR0001	MA649		000-107-973	
	FILTER	フィルター		
1B06FL0001	SC-05-100	10H 5A	000-424-972	
	COIL	コイル		
1B06L0001	MP-032		000-108-776	
	TRANSISTOR	トランジスター		
1B06Q0001	2SK751A		000-113-449	
	RESISTOR	テイコウ		
1B06R0001	ERD-50TJ4R7	0.5W 4.7	000-330-001	
1B06R0002	ERD-50TJ561	0.5W 560	000-330-051	
1B06R0003	ERD-50TJ100	0.5W 10	000-330-009	
1B06R0004	ERD-16TJ220	0.16W 22	000-330-247	
1B06R0005	ERD-16TJ273	0.16W 27K	000-330-311	
1B06R0006	ERD-16TJ183	0.16W 18K	000-329-061	
1B06R0007	ERD-16TJ103	0.16W 10K	000-330-302	
1B06R0008	EVM-MCGA01B14	10K	000-103-632	
1B06R0009	ERD-16TJ102	0.16W 1K	000-330-301	
1B06R0010	ERD-16TJ102	0.16W 1K	000-330-301	
1B06R0011	ERD-16TJ151	0.25W 150	000-329-017	
1B06R0012	ERD-16TJ472	0.16W 4.7K	000-330-312	
1B06R0013	EVM-MCGA01B13	1K	000-103-593	
1B06R0014	ERD-16TJ102	0.16W 1K	000-330-301	
1B06R0015	ERG-1SJ101P	100,1W	000-375-397	
	TRANSFORMER	トランス		
1B06T0001	ST481	0550416-0	000-113-450	
	INTEGRATED CIRCUIT	シュウセキカイロ		
1B06U0001	UPC1094C	0550476-0	000-113-460	
1B06U0002	PC-617A	1454043-1	000-134-273	
1B06U0003	UPC1093J		000-113-445	

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考

ANTENNA COUPLER UNIT

PARTS ON CHASSIS

	MISCELLANEOUS	ソノタ		
2B02 0000	SB-03		000-113-498	ANT. INSULATOR
	PRINTED CIRCUIT BOARDプリントキバン			
2B02A0001	05P0278/COUP	AT-1500	005-592-370	
2B01	05P0278	COUP	005-922-750	
	CAPACITOR	コンデンサー		
2B01C0001	DM19C122K5	1200PF, 500V	000-222-448	
2B01C0002	DM19C122K5	1200PF, 500V	000-222-448	
2B01C0003	DM19C122K5	1200PF, 500V	000-222-448	
2B01C0004	DM19C122K5	1200PF, 500V	000-222-448	
2B01C0005	DM19C122K5	1200PF, 500V	000-222-448	
2B01C0006	DE1207SL151J3KV	150PF 3KV	000-106-212	
2B01C0007	DE1207SL151J3KV	150PF 3KV	000-106-212	
2B01C0008	DE1207SL151J3KV	150PF 3KV	000-106-212	
2B01C0009	DE1207SL151J3KV	150PF 3KV	000-106-212	
2B01C0010	DE1207SL151J3KV	150PF 3KV	000-106-212	
2B01C0011	DE0907SL820J3KV	82PF 3KV	000-106-211	
2B01C0012	DE0907SL820J3KV	82PF 3KV	000-106-211	
2B01C0013	DE0807SL680J3KV	68PF 3KV	000-113-482	
2B01C0014	DE0807SL680J3KV	68PF 3KV	000-113-482	
2B01C0015	DE0807SL680J3KV	68PF 3KV	000-113-482	
2B01C0016	DE1510SL151J6KV	150PF 6KV	000-113-483	
2B01C0017	DE1510SL151J6KV	150PF 6KV	000-113-483	
2B01C0018	DE1510SL151J6KV	150PF 6KV	000-113-483	
2B01C0019	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0020	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
2B01C0021	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0022	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0023	ECC-F1H150JC	15PF 50V	000-256-902	
2B01C0024	RPE132CH331J50	330PF 50V	000-105-389	
2B01C0025	ECC-F1H150JC	15PF 50V	000-256-902	
2B01C0026	RPE132CH331J50	330PF 50V	000-105-389	
2B01C0027	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0028	ECC-F1H120JC	12PF 50VDC	000-255-212	
2B01C0029	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0030	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0031	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0032	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0033	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0034	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0035	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0036	DSS310-75D223S50V	04S4163-0	000-103-745	
2B01C0037	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0038	ECE-A1EU100E	10UF 25V	000-201-812	
2B01C0039	DD109E103P50V	0.01UF 50V	000-253-436	

NOTE:
備考:

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
2B01C0040	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0041	DD306F104Z25	00S0130-0	000-108-968	
2B01C0042	ECC-F5R5U105	1F 5.5V	000-113-484	
2B01C0043	DSS310-75D223S50V	0454163-0	000-103-745	
2B01C0044	DSS310-75D223S50V	0454163-0	000-103-745	
2B01C0045	ECC-F1H470JC	47PF 50VDC	000-255-226	
2B01C0046	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0047	DD104B102K50V	1000PF 50V	000-252-171	
2B01C0048	DD104B102K50V	1000PF 50V	000-252-171	
2B01C0049	DD104B102K50V	1000PF 50V	000-252-171	
2B01C0050	ECF-A1HU3R3E	W5.0 3.3MF 50V	000-201-331	
2B01C0051	ECQ-V1H104JZ	0.1UF 50V	000-261-524	
2B01C0052	ECF-A1EU10E	10UF 25V	000-201-312	
2B01C0053	ECF-A1EU100E	10UF 25V	000-201-312	
2B01C0054	DD306F104Z25	00S0130-0	000-108-968	
2B01C0055	DD306F104Z25	00S0130-0	000-108-968	
2B01C0056	DD306F104Z25	00S0130-0	000-108-968	
2B01C0057	ECC-F1H330JC	33PF 50VDC	000-255-222	
2B01C0058	ECC-F1H330JC	33PF 50VDC	000-255-222	
2B01C0059	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0060	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0061	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0062	DSS310-75D223S50V	0454163-0	000-103-745	
2B01C0063	DSS310-75D223S50V	0454163-0	000-103-745	
2B01C0064	DSS310-75D223S50V	0454163-0	000-103-745	
2B01C0065	DSS310-75D223S50V	0454163-0	000-103-745	
2B01C0066	DSS310-75D223S50V	0454163-0	000-103-745	
2B01C0067	ECF-A1EU101E	W5.0 100MF 25V	000-206-105	
2B01C0068	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0069	EXF-P4103ZW	0.01UF 50V	000-287-502	
2B01C0070	EXF-P4103ZW	0.01UF 50V	000-287-502	
2B01C0071	EXF-P4103ZW	0.01UF 50V	000-287-502	
2B01C0072	EXF-P4103ZW	0.01UF 50V	000-287-502	
2B01C0073	EXF-P4103ZW	0.01UF 50V	000-287-502	
2B01C0074	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0075	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0076	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0077	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0078	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0079	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0080	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0081	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0082	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0083	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0084	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0085	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0086	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0087	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0088	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0089	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0090	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0091	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0092	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0093	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0094	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0095	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0096	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0097	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0098	EXF-P4103ZW	0.01UF 50V	000-287-502	
2B01C0099	DD109E103P50V	0.01UF 50V	000-253-436	
2B01C0100	DD306F104Z25	00S0130-0	000-108-968	
2B01C0101	DD306F104Z25	00S0130-0	000-108-968	
2B01C0102	ECF-A1EU100E	10UF 25V	000-201-312	
2B01C0103	ECC-F1H1000C	10PF 50V	000-255-210	
	CIRCUIT BREAKER	サーキットブレーカー		
2B01CB0001	TBC5101-01-0411	125V 1A	000-106-265	
	CHOKE COIL	チョーク コイル		
2B01CH0001	5T031	05S4031-0	000-732-581	
2B01CH0002	5T031	05S4031-0	000-732-581	
2B01CH0003	5T383	05S4383-0	000-107-636	
	DIODE	ダイオード		
2B01CR0001	1SS82		000-114-021	
2B01CR0002	1SS82		000-114-021	
2B01CR0003	1SS82		000-114-021	
2B01CR0004	1SS82		000-114-021	
2B01CR0005	1SS82		000-114-021	
2B01CR0006	1SS133		000-103-097	
2B01CR0007	1SS133		000-103-097	
2B01CR0008	1SS133		000-103-097	
2B01CR0009	1SS133		000-103-097	
2B01CR0010	3BZ51		000-129-920	
2B01CR0011	1SS82		000-114-021	
2B01CR0012	1SS82		000-114-021	
2B01CR0013	1SS82		000-114-021	
2B01CR0014	1SS82		000-114-021	
2B01CR0015	1SS82		000-114-021	
2B01CR0016	1SS82		000-114-021	
2B01CR0017	1SS82		000-114-021	
2B01CR0018	1SS82		000-114-021	
2B01CR0019	1SS82		000-114-021	

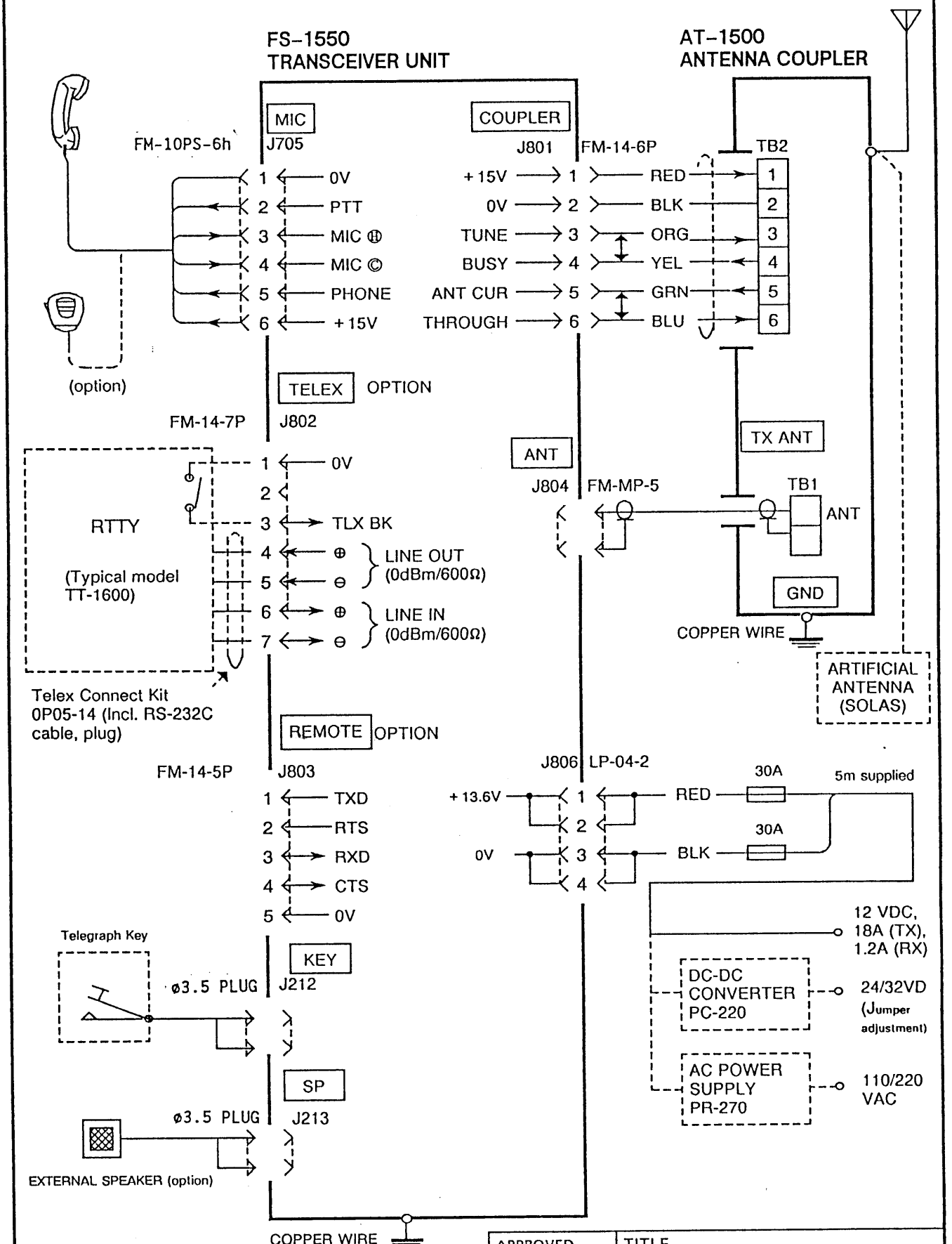
SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
2B01CR0020	1SS82		000-114-021	
2B01CR0021	1SS82		000-114-021	
2B01CR0022	1SS82		000-114-021	
2B01CR0023	1SS82		000-114-021	
2B01CR0024	1SS82		000-114-021	
2B01CR0025	1SS82		000-114-021	
2B01CR0026	1SS82		000-114-021	
2B01CR0027	1SS82		000-114-021	
2B01CR0028	1SS82		000-114-021	
2B01CR0029	1SS82		000-114-021	
2B01CR0030	1SS82		000-114-021	
2B01CR0031	1SS82		000-114-021	
2B01CR0032	1SS82		000-114-021	
2B01CR0033	LN28 RPH		000-108-071	
2B01CR0034	LN28 RPH		000-108-071	
2B01CR0035	LN28 RPH		000-108-071	
2B01CR0036	LN28 RPH		000-108-071	
2B01CR0037	LN28 RPH		000-108-071	
2B01CR0038	LN28 RPH		000-108-071	
2B01CR0039	LN28 RPH		000-108-071	
2B01CR0040	LN28 RPH		000-108-071	
2B01CR0041	LN28 RPH		000-108-071	
2B01CR0042	LN28 RPH		000-108-071	
2B01CR0043	LN28 RPH		000-108-071	
2B01CR0044	LN28 RPH		000-108-071	
2B01CR0045	LN28 RPH		000-108-071	
2B01CR0046	LN28 RPH		000-108-071	
2B01CR0047	LN28 RPH		000-108-071	
2B01CR0048	LN28 RPH		000-108-071	
2B01CR0049	LN28 RPH		000-108-071	
2B01CR0050	LN28 RPH		000-108-071	
2B01CR0051	LN28 RPH		000-108-071	
2B01CR0052	LN28 RPH		000-108-071	
2B01CR0053	LN28 RPH		000-108-071	
2B01CR0054	LN28 RPH		000-108-071	
2B01CR0055	NAL8AS-1		000-106-231	
2B01CR0056	NAL8AS-1		000-106-231	
2B01CR0057	NAL8AS-1		000-106-231	
2B01CR0058	1SS133		000-103-097	
2B01CR0059	1SS133		000-103-097	
	RELAY	リレー		
2B01K0001	G6B-2114P-US-AP-12V		000-114-406	
2B01K0002	G6B-2114P-US-AP-12V		000-114-406	
2B01K0003	G6B-1114P-US-AP-12V		000-114-405	
2B01K0004	G6B-1114P-US-AP-12V		000-114-405	
2B01K0005	G6B-1114P-US-AP-12V		000-114-405	
2B01K0006	G6B-1114P-US-AP-12V		000-114-405	
2B01K0007	G6B-1114P-US-AP-12V		000-114-405	
2B01K0008	G6B-1114P-US-AP-12V		000-114-405	
2B01K0009	G6B-1114P-US-AP-12V		000-114-405	
2B01K0010	G6B-1114P-US-AP-12V		000-114-405	
2B01K0011	G4W-2212PUSTV5-DC12V		000-113-485	
2B01K0012	G4W-2212PUSTV5-DC12V		000-113-485	
2B01K0013	G6B-1114P-US-AP-12V		000-114-405	
2B01K0014	G6B-1114P-US-AP-12V		000-114-405	
2B01K0015	G6B-1114P-US-AP-12V		000-114-405	
2B01K0016	G6B-1114P-US-AP-12V		000-114-405	
2B01K0017	G6B-1114P-US-AP-12V		000-114-405	
2B01K0018	G6B-1114P-US-AP-12V		000-114-405	
2B01K0019	G6B-1114P-US-AP-12V		000-114-405	
2B01K0020	G6B-1114P-US-AP-12V		000-114-405	
2B01K0021	G6B-1114P-US-AP-12V		000-114-405	
2B01K0022	G4W-2212PUSTV5-DC12V		000-113-485	
	COIL	コイル		
2B01L0001	5T331	05S4331-1	000-106-218	
2B01L0002	5T332	05S4332-1	000-106-219	
2B01L0003	5T333	05S4333-1	000-106-220	
2B01L0004	5T334	05S4334-1	000-106-221	
2B01L0005	5T335	05S4335-0	000-106-222	
2B01L0006	5T585	05S0511-0	000-114-126	
2B01L0007	5T586	05S0512-0	000-114-127	
2B01L0008	5T587	05S0513-0	000-114-128	
2B01L0009	5T588	05S0514-0	000-114-129	
2B01L0010	5T593	05S0516-0	000-114-131	
2B01L0011	LAL03NA101K	100UH	000-428-133	
2B01L0012	LAL03NA101K	100UH	000-428-133	
2B01L0013	LAL03NA101K	100UH	000-428-133	
	TRANSISTOR	トランジスター		
2B01Q0001	2SC2498		000-126-200	
2B01Q0002	2SA1315-Y		000-118-083	
2B01Q0003	2SC1815-Y		000-125-631	
	RESISTOR	テイコウ		
2B01R0001	ERG-3SJ821P	00S0102-0	000-375-538	
2B01R0002	ERG-3SJ821P	00S0102-0	000-375-538	
2B01R0003	ERG-3SJ102P	00S0102-0	000-375-539	
2B01R0004	ERG-3SJ560P	00S0102-0	000-375-524	
2B01R0005	ERG-3SJ560P	00S0102-0	000-375-524	
2B01R0006	ERG-3SJ560P	00S0102-0	000-375-524	
2B01R0007	ERG-3SJ821P	00S0102-0	000-375-538	
2B01R0008	ERG-3SJ821P	00S0102-0	000-375-538	
2B01R0009	ERG-3SJ102P	00S0102-0	000-375-539	

NOTE:
備考:

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
2B01R0010	ERD-16TJ103	0.16W 10K	000-330-802	
2B01R0011	ERD-25PJ101	0.25W 100	000-330-333	
2B01R0012	ERD-25PJ101	0.25W 100	000-330-333	
2B01R0013	ERD-25PJ101	0.25W 100	000-330-333	
2B01R0014	ERD-25PJ101	0.25W 100	000-330-333	
2B01R0015	ERD-16TJ103	0.16W 10K	000-330-802	
2B01R0016	ERD-16TJ471	0.16W 470	000-329-029	
2B01R0017	ERG-1SJ101P	100/1W	000-375-397	
2B01R0018	ERG-1SJ390P	1W 39	000-375-391	
2B01R0019	ERG-1SJ390P	1W 39	000-375-391	
2B01R0020	ERD-16TJ152	0.16W 1.5K	000-329-039	
2B01R0021	ERD-16TJ152	0.16W 1.5K	000-329-039	
2B01R0022	ERD-16TJ392	0.16W 3.9K	000-329-047	
2B01R0023	ERD-16TJ392	0.16W 3.9K	000-329-047	
2B01R0024	EVM-MCGA01B53	5K (00S0119)	000-103-631	
2B01R0025	ERG-3SJ151P	00S0102-0	000-375-529	
2B01R0026	ERG-3SJ151P	00S0102-0	000-375-529	
2B01R0027	ERG-3SJ151P	00S0102-0	000-375-529	
2B01R0028	ERD-16TJ273	0.16W 27K	000-330-811	
2B01R0029	ERD-16TJ273	0.16W 27K	000-330-811	
2B01R0030	ERG-2SJ101P	2W 100	000-375-462	
2B01R0031	ERD-16TJ222	0.16W 2.2K	000-330-809	
2B01R0032	ERD-16TJ102	0.16W 1K	000-330-801	
2B01R0033	ERD-16TJ102	0.16W 1K	000-330-801	
2B01R0034	ERD-16TJ223	0.16W 22K	000-330-810	
2B01R0035	ERD-16TJ223	0.16W 22K	000-330-810	
2B01R0036	ERD-16TJ101	0.16W 100	000-329-013	
2B01R0037	ERD-16TJ102	0.16W 1K	000-330-801	
2B01R0038	ERD-16TJ470	0.16W 47	000-329-005	
2B01R0039	ERD-16TJ103	0.16W 10K	000-330-802	
2B01R0040	ERD-16TJ103	0.16W 10K	000-330-802	
2B01R0041	ERD-16TJ101	0.16W 100	000-329-013	
2B01R0042	ERD-16TJ104	0.16W 100K	000-330-803	
2B01R0043	ERD-16TJ103	0.16W 10K	000-330-802	
2B01R0044	ERD-16TJ103	0.16W 10K	000-330-802	
2B01R0045	ERD-16TJ103	0.16W 10K	000-330-802	
2B01R0046	ERD-16TJ471	0.16W 470	000-329-029	
2B01R0047	ERD-16TJ472	0.16W 4.7K	000-330-812	
2B01R0048	ERD-16TJ472	0.16W 4.7K	000-330-812	
2B01R0049	EXB-F5E103J	10KX4	000-379-082	
2B01R0050	EXB-F5E103J	10KX4	000-379-082	
2B01R0051	ERD-16TJ102	0.16W 1K	000-330-801	
2B01R0052	ERD-16TJ101	0.16W 100	000-329-013	
2B01R0053	ERD-16TJ472	0.16W 4.7K	000-330-812	
2B01R0054	ERD-16TJ472	0.16W 4.7K	000-330-812	
2B01R0055	ERD-16TJ273	0.16W 27K	000-330-811	
2B01R0056	EXB-F9E103J	0.125W 10K	000-378-901	
2B01R0057	ERD-16TJ101	0.16W 100	000-329-013	
2B01R0058	ERD-16TJ102	0.16W 1K	000-330-801	
2B01R0059	ERD-16TJ101	0.16W 100	000-329-013	
2B01R0060	ERG-2SJ100P	2W 10	000-375-449	
2B01R0061	ERD-16TJ103	0.16W 10K	000-330-802	
2B01R0062	ERD-16TJ103	0.16W 10K	000-330-802	
2B01R0063	ERD-25PJ220	0.25W 22	000-330-317	
2B01R0064	ERD-25PJ220	0.25W 22	000-330-317	
2B01R0065	ERD-25PJ220	0.25W 22	000-330-317	
2B01R0066	ERD-25PJ220	0.25W 22	000-330-317	
2B01R0067	ERD-25PJ220	0.25W 22	000-330-317	
2B01R0068	ERD-25PJ220	0.25W 22	000-330-317	
2B01R0069	ERD-25PJ220	0.25W 22	000-330-317	
2B01R0070	ERD-25PJ220	0.25W 22	000-330-317	
2B01R0071	ERD-25PJ220	0.25W 22	000-330-317	
2B01R0072	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0073	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0074	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0075	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0076	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0077	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0078	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0079	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0080	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0081	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0082	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0083	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0084	ERD-16TJ472	0.16W 4.7K	000-330-812	
2B01R0085	ERD-16TJ220	0.16W 22	000-330-847	
2B01R0086	ERD-16TJ472	0.16W 4.7K	000-330-812	
2B01R0087	ERD-16TJ102	0.16W 1K	000-330-801	
2B01R0088	ERD-16TJ103	0.16W 10K	000-330-802	
2B01R0089	ERD-16TJ562	0.16W 5.6K	000-329-050	
2B01R0090	ERD-16TJ103	0.16W 10K	000-330-802	
2B01R0091	ERD-16TJ562	0.16W 5.6K	000-329-050	
2B01R0092	ERD-16TJ103	0.16W 10K	000-330-802	
	SWITCH	スイッチ		
2B01S0001	62T-14		000-106-104	
2B01S0002	51D-0401		000-106-105	
2B01S0003	M-2012B		000-474-344	
2B01S0004	51D-0401		000-106-194	
2B01S0005	51D-0401		000-106-194	
2B01S0006	51D-0401		000-106-105	
	TERMINAL BOARD	ターミナル		
2B01TB0001	P-97		000-108-797	
2B01TB0002	236-106M(1-6)		000-104-340	
2B01TB0003	P-97		000-108-797	
2B01TB0004	P-97		000-108-797	

SYMBOL 記号	TYPE 型名	SPECIFICATIONS 規格	CODE NO. コード番号	REMARKS 備考
	INTEGRATED CIRCUIT	シュウセキカイロ		
2B01U0001	TC74HC390P		000-100-838	
2B01U0002	UPD7001C		000-112-375	
2B01U0003	TC74HC14P		000-143-421	
2B01U0004	M51953BL		000-104-052	
2B01U0005	NJM7805A		000-113-448	
2B01U0006	NJM2403D		000-113-430	
2B01U0007	NJM2904D		000-113-434	
2B01U0008	HD63B01Y0F76P	05S0522-0	000-114-315	
2B01U0009	M54563P		000-106-228	
2B01U0010	M54563P		000-106-228	
2B01U0011	M54563P		000-106-228	
2B01U0012	EXB-R8B-472J		000-379-055	
2B01U0013	EXB-R8B-472J		000-379-055	
2B01U0014	EXB-R8B-472J		000-112-256	
	POTENTIOMETER	ポテンショメーター		
2B01VR0001	05AZ2.7Z	ZENER	000-104-424	
2B01VR0002	05AZ3.3Z		000-111-882	
	CRYSTAL	クリスタル		
2B01Y0001	4MHZ	05S0594-0	000-116-696	

NOTE:
備考:



APPROVED SEP. 12 '89 T. NAKAJO	TITLE FS-1550 SSB RADIOTELEPHONE INTERCONNECTION DIAGRAM
CHECKED Sept. 11 '89 M. IKEDA	
DRAWN Sept. 11 '89 S. Nishi	DWG. NO. E5510-C01-A

FURUNO

S-1

B08

B07

B01 CPU
05P0271

B06 SW REG
05P0276

B05 RELAY
05P0326

B04 PA
05P0274

B03 TX FIL
05P0273

B02 TX/RX
05P0328

S01

DIAL

GAIN

AF

RF

R01-1
10K

R01-2
100K

MIC

LS01

SPKR

KEY

REMOTE

TELEX

COUPLER

GND

ANT

13.6VDC

OPTION

OPTION

1B07J0005

承認 APPROVED	Aug. 1. '88 H. Okushima
検図 CHECKED	Aug. 1. '88 S. Nakami
製図 DRAWN	July. 1. '88 T. Suematsu
名称 TITLE	FS-1550 SSB TRANSCEIVER
図番 DWG.NO.	E5510-002-B

FS-1550

FURUNO ELECTRIC CO., LTD.

B01 CPU
05P0271

U1
HD637B01Y (ZTAT)
/HD63B01Y (MASK)

U5
TC74HC139F

U6
TC74HC4051F

U7
M54972P

U8
TC74HC14F

U10
TC74HC04F

U2
μPD7225G

U3
μPC7001C

U4
X2404

LCD
DISPLAY

1000P×8

1000P×4

FS-1500 SERIES

承認 APPROVED	MAY・31・'88 M TAKEUCHI	名称 TITLE: B01 05P0271 CPU
検図 CHECKED	May・27・'88	
製図 DRAWN	May・27・'88	図番 DWG.NO. E5485-013-C

FURUNO

S-3

B02 TX/RX(1/2)
05P0328

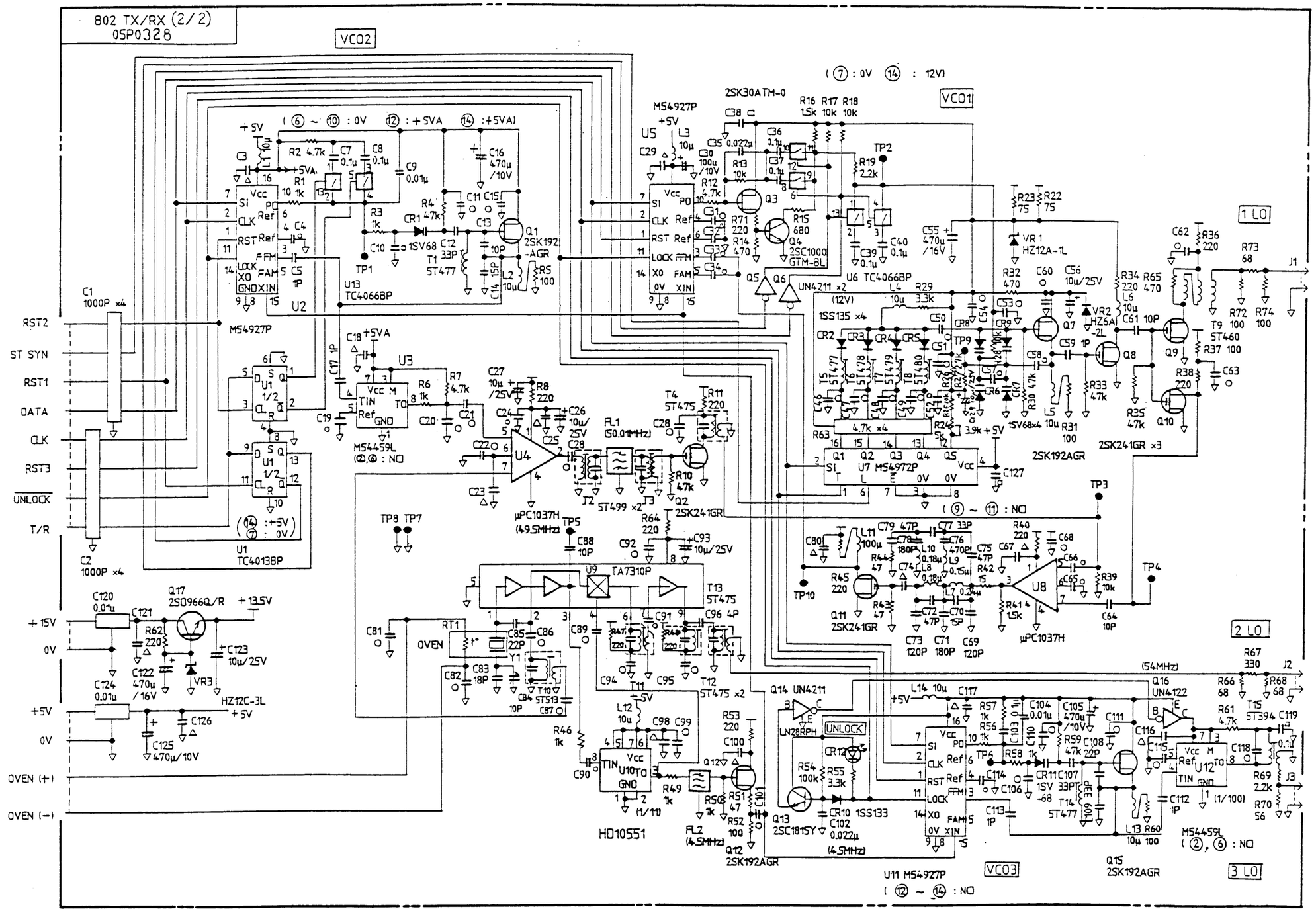
TX/RX (2/2)
05-001-3278

NOTE (1) RESISTORS ARE IN Ω (1/6W), CAPACITORS ARE IN μF.
INDUCTORS ARE IN H, UNLESS OTHERWISE NOTED.
(2) MARKS ○ ARE 1000PF/50WV CAPACITORS,
△ ARE 0.01μF/50WV CAPACITORS AND
□ ARE 0.1μF/25WV CAPACITORS.

FS1550

承認 APPROVED	Aug. 1. '88	名称 TITLE: B02 05P0328 TX/RX (1/2).
検図 CHECKED	Aug. 1. '88	
製図 DRAWN	July. 1. '88	図番 DWG.NO. E5510-003-C

FURUNO ELECTRIC CO., LTD.

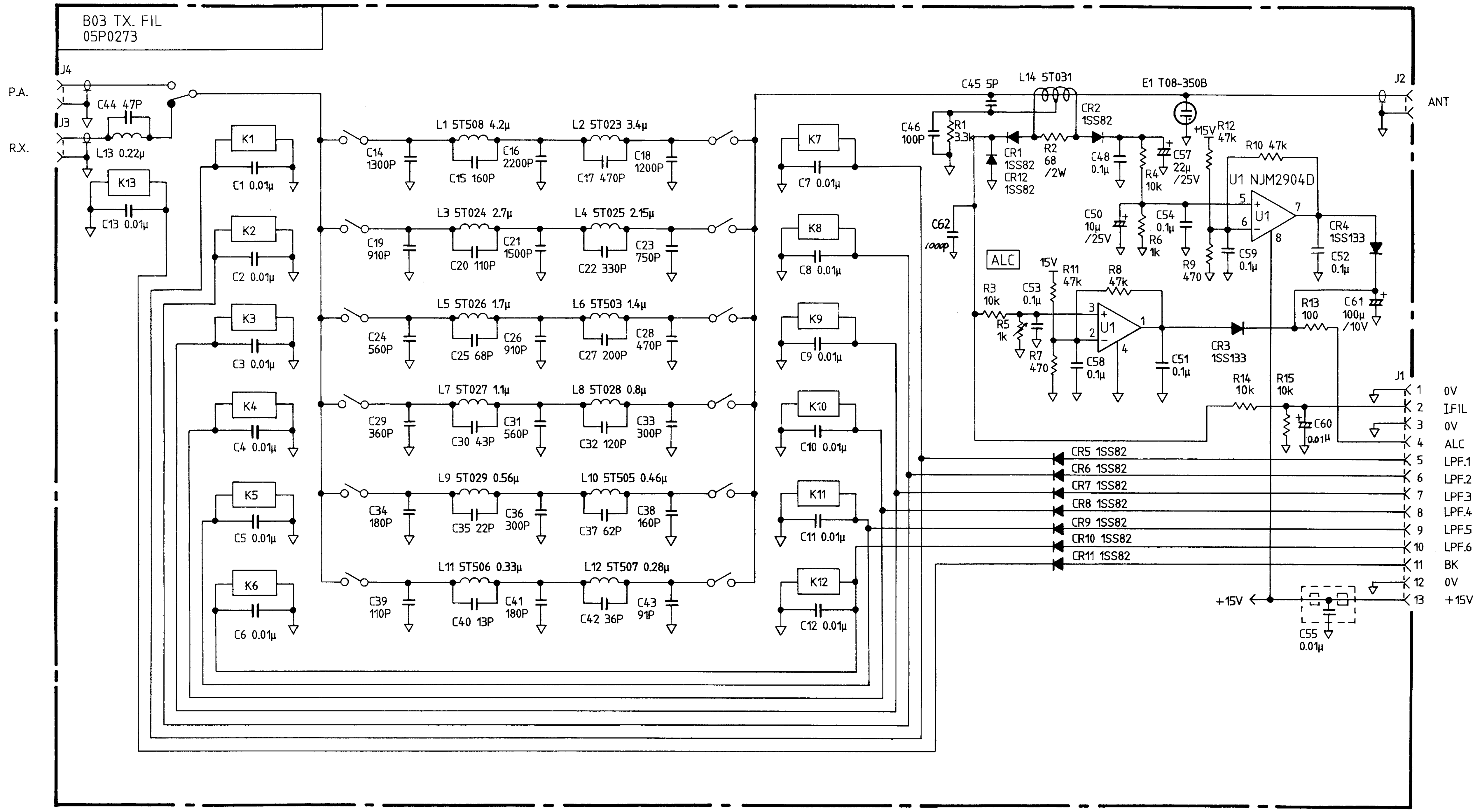


NOTE : (1) RESISTORS ARE IN Ω(1/6W), CAPACITORS ARE IN F.
INDUCTORS ARE IN H, UNLESS OTHERWISE NOTED.

(2) MARKS ○ ARE 1000PF/50WV CAPACITORS.
△ ARE 0.01μF/50WV CAPACITORS AND
□ ARE 0.1μF/25WV CAPACITORS.

FS-1550

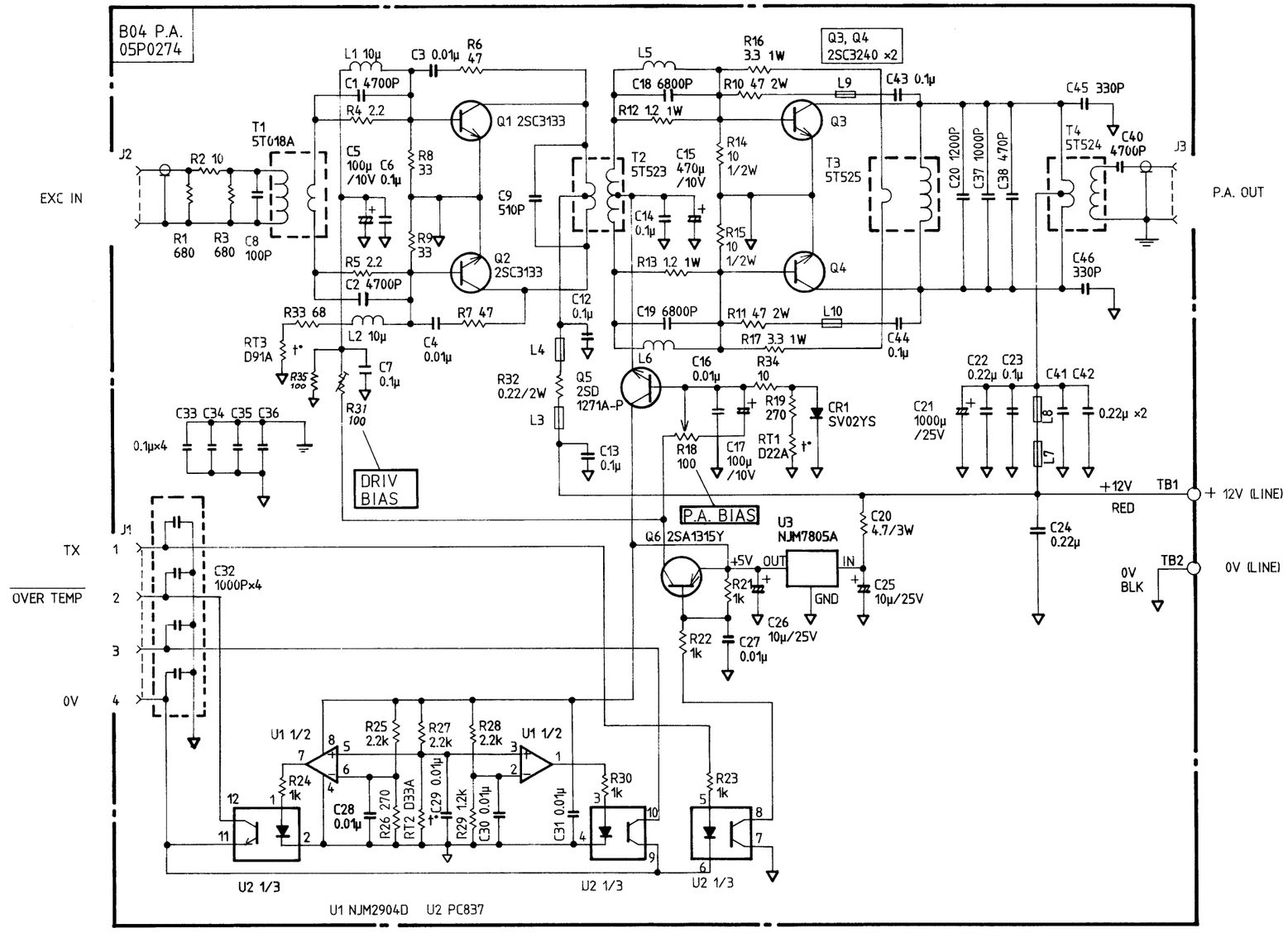
承認 APPROVED	Aug. 1. '88	名称 TITLE	B02 05P0328 TX/RX (2/2)
検図 CHECKED	Aug. 1. '88		
製図 DRAWN	July. 22. '88	図番 DWG.NO.	E5510-004-A



FS-1500 SERIES

承 認 APPROVED	Apr. 31. '88 M. TABUCHI	名 称 TITLE	
検 図 CHECKED	May. 27. '88 M. IKEDA	B03	05P0273 TX.FIL
製 図 DRAWN	May. 21. '88 S. Nishio	図 番 DWG. NO.	E5485-016-D

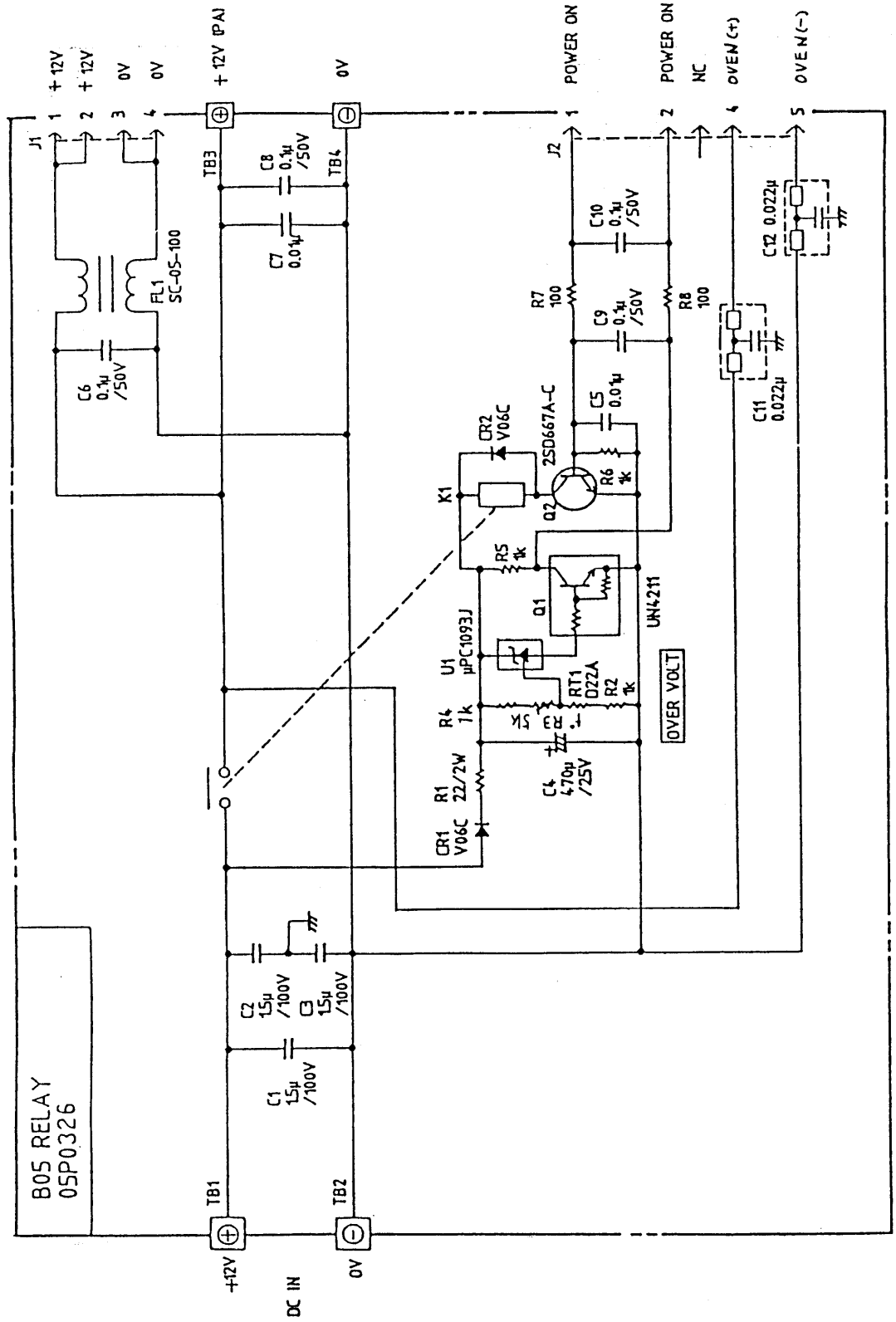
FURUNO ELECTRIC CO., LTD.



FS-1500 SERIES

承認 APPROVED	MAY·31·'88 M TAB[illegible]	名称 TITLE: B04 05P0274 P.A.
検図 CHECKED	May·27·'88 [illegible]	
製図 DRAWN	[illegible]	図番 DWG.NO. E5485-017-D

FURUNO ELECTRIC CO., LTD.

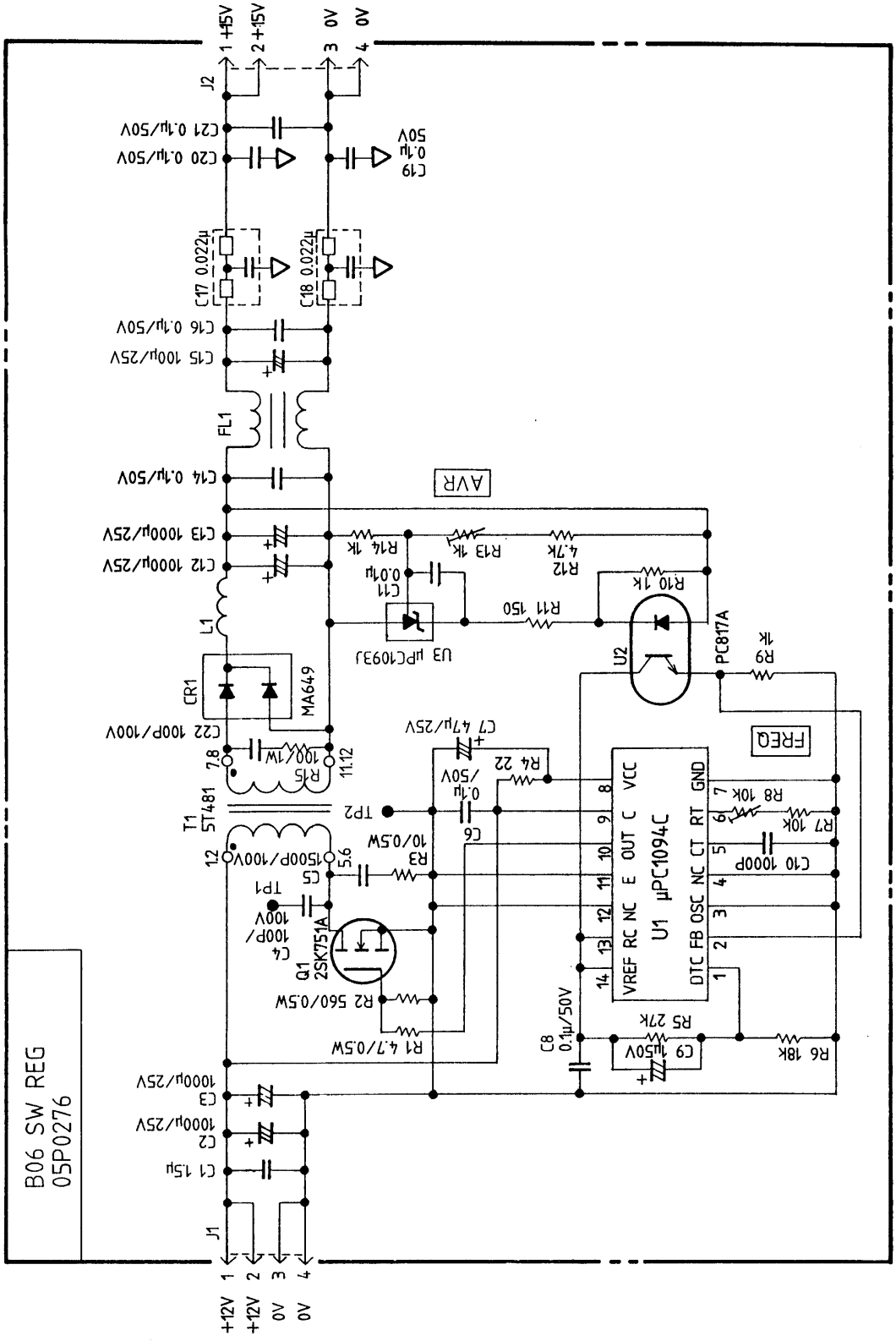


FS-1550

ITEM 品番	NAME 品名	MATERIAL 材質	Q'TY 数量	DWG.NO. 図番	REMARKS 摘要

APPROVED 承認	Aug. 1. '88	THIRD ANGLE PROJECTION 三角法	TITLE 名称: B05 05P0326 RELAY
CHECKED 検図	Aug. 1. '88	SCALE R 度 /	
DRAWN 製図	July. 1. '88	WEIGHT 重・量 kg	DWG.NO. 図番 E5510-001-B

FURUNO ELECTRIC CO., LTD.



FS-1500 SERIES	品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG.NO.	摘要 REMARKS

承認 APPROVED	MAY・31・'88 M.TABUCHI	三角法 THIRD ANGLE PROJECTION		名称 TITLE: B06 05P0276 SW. REG
検図 CHECKED	May・27・'88 M. IKEDA	尺度 SCALE	/	
製図 DRAWN	May・27・'88 S. Nishi	重量 WEIGHT	kg	図番 DWG.NO. E5485-019-B

B02 CHASSIS

B01 COUP 05P0278

TB1 TX ANT

TB3 E

K1

R4 56/3W

R5 56/3W

R6 56/3W

R1 820 /3W

R2 820/3W

R3 1k/3W

R7 820 /3W /3W

R8 820 /3W.

R9 1k

R92 10k

R10 10k

C19 C20 C21 C22

C23 15P

C24 330P

L11 100μ

CR1 1SS82

R11 100

R12 100

R13 100

CR2 1SS82

C25 15P

C26 330P

R14 100

L12 100μ

R15 10k

R16 470

R17 100/1W

C27 C29

VR1 05AZ2.7Z

CR3 1SS82

C28 12P

R18 R19

39/1W x2

C30 C31

CR4 1SS82

J3

R25 R26 R27

R22 3.9k

R20 1.5k

R21 1.5k

R23 3.9k

R24 5k

R25~27 : 150/3W

T1 5T031

T2 5T031

J1 P1 P2 J2

K2

R28 27k

R29 27k

K3 K4 K5 K6 K7 K8 K9 K10 K11 K12

5T331 5T332 5T333 5T334 5T335 5T585 5T586 5T587 5T588 5T593

K13 L1 L2 L3 L4 L5 L6 L7 L8 L9 L10

K22

K14 K15 K16 K17 K18 K19 K20 K21

C1 1200P C2 1200P C3 1200P C4 1200P C5 1200P C6 150P C7 150P C8 150P C9 150P C10 150P C11 82P C12 82P C13 68P C14 68P C15 68P C16 150P C17 150P C18 150P

J4 P5 P6 J5 J6

T3 5T383

TB4 ANT

R30 100 /2W

R31 2.2k

C103 10P

CR5 1SS82

R32 1k

R33 1k

C32

TP2 TP3

VR1 05AZ2.7Z

TP4 TP5 TP6

C99 R39 10k

U6 NJM2403D

C35 C36 0.022μ R40 10k

U7 NJM2904D

R42 100k R43 10k C37 5V C38 10μ /25V

CR9 1SS133

R44 10k

R45 10k

C39 C40

C102 10μ /25V

R41 100

C41 0.1μ /25V

R46 470

Q2 2SA1315Y

VR205AZ3.3Z 2SC1815Y

C42 1F

R47 4.7k

Q3

R48 4.7k

R87 1k

R63 ~ R82 : 22Ω

CR33 ~ CR52 : LN28RPH

C74 K3

CR33 CR34 CR35 CR36 CR37 CR38 CR39 CR40

CR41 CR42 CR43 CR44 CR45 CR46 CR47 CR48

CR49 CR50 CR51 CR52

R63 R64 R65 R66 R67 R68 R69 R70

R71 R72 R73 R74 R75 R76 R77 R78

R79 R80 R81 R82

C75 C76 C77 C78 C79 C80 C81

C82 C83 C84 C85 C86 C87 C88 C89

C90 C91 C92 C93

K4 K5 K6 K7 K8 K9 K10

K11 K12 K13 K14 K15 K16 K17 K18 K19

K20 K21 K22

U12 4.7k x8

U13 4.7k x8

U14 4.7k x7

CR11 ~ CR32 1SS82

C69 ~ C73 0.01μ x4

U1 TC74HC390P

1A 2A 1QA 2QA 1B 2B 1QB 2QB 1QC 2QC 1QD 2QD 1C 2C

CR6 1SS133

CR7 1SS133

CR8 1SS133

Q1 2SC2498

R34 2.2k

R35 10k

R36 100

R37 1k

L13 100μ

C33

R38 4.7

C34

TP1

C43 0.022μ

C44 0.022μ

C62 0.022μ

C63 0.022μ

C64 0.022μ

C65 0.022μ

C66 0.022μ

R88 10k R89 5.6k

C100 0.1

R90 10k R91 5.6k

C101 0.1

1SS133 x2

R58 R59

C97

U2 μPD7001C

A0 A1 A2 A3 Vss Vcc DL CS SCK SI SO CLO EOC Vref G CL1

R53 4.7k R54 4.7k R55 27k

C45 47P

C46

R56 10k

R50 10k

R51 1k R52 100

C47 1000P

C48 1000P

C49 1000P

R57 100

R58 1k R59 100

U3 TC74HC14P

U4 M51953BL

R49 1/4 R62 10k

C50 3.3μ /50V

R61 10k

C51

S10 TUNE

S2

STBY NMI RESET

P27/TCLK P20 P21/TOUT P22 P23 P24 P25 P26

P60 P61 P62 P63 P64 P65 P66 P67

P50/IRQ1 P51/IRQ2 P52 P53 P54 P55 P56 P57

U8 HD637B01YOP

XTAL EXTAL

Y1 4MHz

C57 33P C58 33P

Vcc MP0 MP1

P30 P31 P32 P33 P34 P35 P36 P37

P10 P11 P12 P13 P14 P15 P16 P17

P40 P41 P42 P43 P44 P45 P46 P47

U9 M54563P U10 M54563P U11 M54563P

C59 C60 C61

C70 C71 C72 C73

CR11 CR12 CR13 CR14 CR15 CR16 CR17 CR18

CR19 CR20 CR21 CR22 CR23 CR24 CR25 CR26

CR27 CR28 CR29 CR30 CR31

TP7 TP8

CR32

R83 22 R85 22

CR53 CR54 CR55

C94 C95 K2 K1

C98 0.01μ x4

S4 S5 S6

CR56 CR57

C96

R84 4.7k R86 4.7k

S3 AUTO MANUAL 2182kHz

CR53, 54 : LN28RPH CR55 ~ CR57 NAL8AS-1

TB2

I ANT TUNE BUSY THRU +15V 0V

CB1 1A

CR10 3BZ61

C67 100μ /25V

C68

TP9

R60 10 /2W

U5 NJM7805A

C52 10μ /25V

C53 10μ /25V

C54 0.1μ

U1 U3 U6

C55 0.1μ

C56 0.1μ

NOTE : (1) RESISTORS ARE IN Ω (1/6W), CAPACITORS ARE IN F, INDUCTORS ARE IN H, UNLESS OTHERWISE NOTED.

(2) MARKS ○ ARE 1000PF/50WV CAPACITORS

△ ARE 0.01μF/50WV CAPACITORS AND

□ ARE 0.1μF/25WV CAPACITORS.

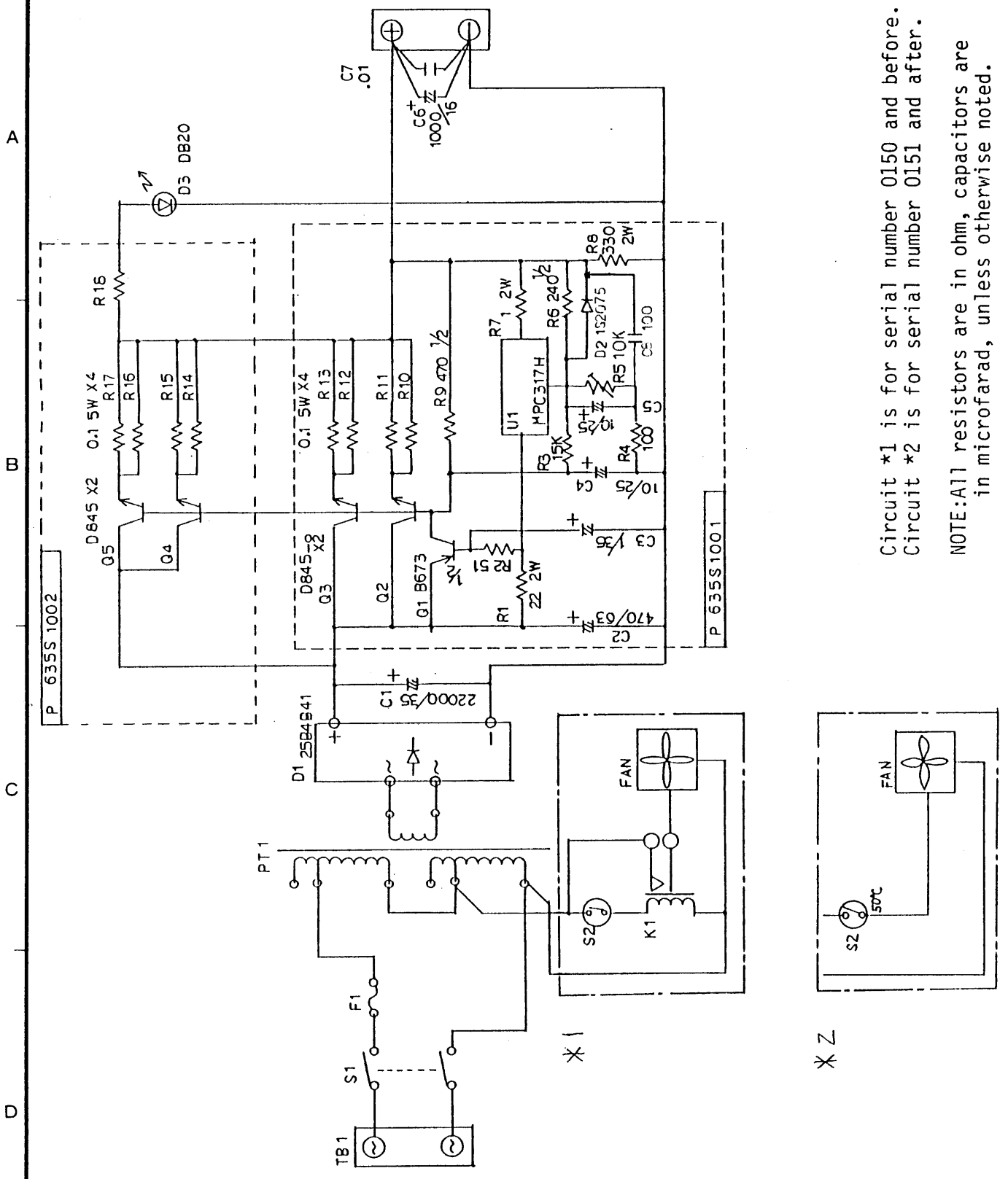
FS-1500 SERIES

承認 APPROVED	MAY.31.'88 M. TABUCHI	名称 TITLE	AT-1500 ANTENNA COUPLER
検図 CHECKED	May.27.'88 M. IKEDA		
製図 DRAWN	May.27.'88	図番 DWG.NO.	E5485-020-C

FURUNO ELECTRIC CO., LTD.

FURUNO

S-10



Circuit *1 is for serial number 0150 and before.
Circuit *2 is for serial number 0151 and after.

NOTE: All resistors are in ohm, capacitors are in microfarad, unless otherwise noted.

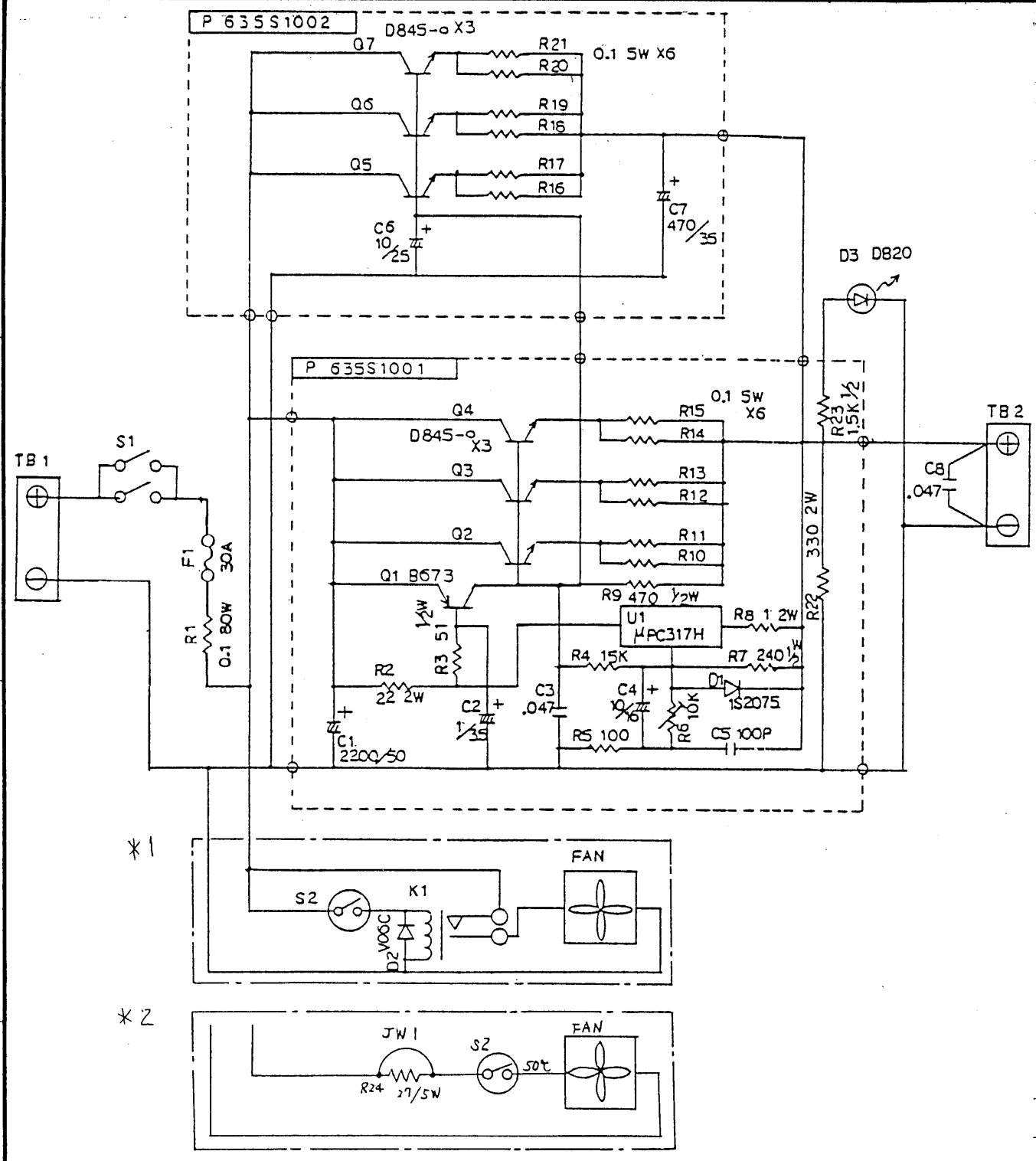
*1

*2

品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG.NO.	摘要 REMARKS

承認 APPROVED	DEC・14・'88 T. KAWAGUCHI	三角法 THIRD ANGLE PROJECTION		名称 TITLE	PR-270 AC 電源 POWER SUPPLY
検図 CHECKED	Dec・14・'88 M. HAGIWARA	尺度 SCALE	/		
製図 DRAWN	Dec・14・'88 S. NISHI	重量 WEIGHT	kg	図番 DWG.NO.	C5485-032-B

FURUNO ELECTRIC CO., LTD.



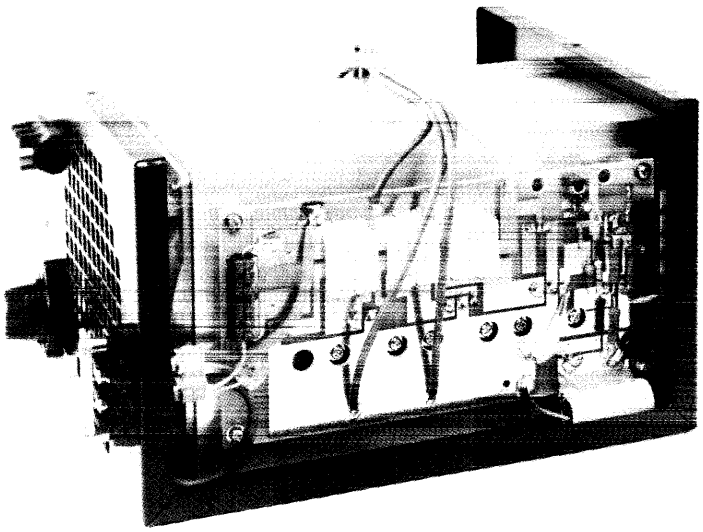
Circuit *1 is for serial number 0150 and before.
Circuit *2 is for serial number 0151 and after.

NOTE:All resistors are in ohm, capacitors are in microfarad, unless otherwise noted.

品番 ITEM	品名 NAME	材質 MATERIAL	数量 Q'TY	図番 DWG.NO.	摘要 REMARKS

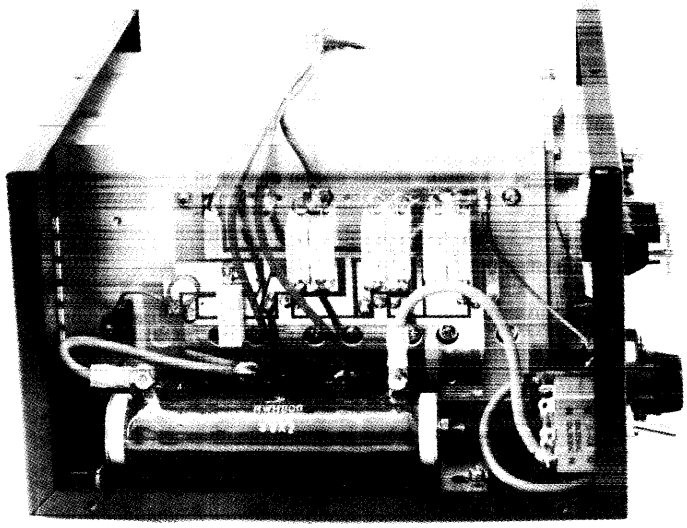
承認 APPROVED	DEC・14・'88 T.NAKAJI	三角法 THIRD ANGLE PROJECTION		名称 TITLE	PC-220 DC-DC コンバータ DC-DC CONVERTER
検図 CHECKED	Dec・14・'88 M.IIDA	尺度 SCALE	/		
製図 DRAWN	Dec・14・'88 S.Nishi	重量 WEIGHT	kg	図番 DWG.NO.	C5485-030-A

FURUNO ELECTRIC CO., LTD.



Left Side View

T Photo No.1026



Right Side View

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DC-DC CONVERTER PC-220

APPENDIX A Connection of TELEX Terminal

§1 GENERAL

When automatic telex communication is required, it is recommended to use the Thrane-Thrane Model 1600 system, comprising Radiotelex Modem TT-1585, Keyboard-processor TT-1601A and Video Monitor TT-1602A. The scanning function of the Radiotelex Modem enables fully-automatic telex communication.

Description

The TT-1600 System is an integrated Radiotelex Package including the Model TT-1585 Radiotelex Modem with 256 k character text editing facility, a detached keyboard and video display unit with full soft-key operation of system commands, a hard-copy printer for multicopying of received and transmitted messages, and all necessary interface cables between the TT-1600 System parts and the radio equipment.

The intelligence provided by the TT-1600 System enables fully automatic control of the complete radio station: start the transmitter, tune it, establish the connection and transmit and/or receive messages. It can even scan the receiver, search for incoming calls, adjust the transmitter frequency and handle the traffic without any operator intervention.

The TT-1600 System has storage capacity for 105 user programmable frequency pairs and call codes.

Characteristics

Communication protocol: CCIR 476-3, Rec. 491, Rec. 492, and the new Rec. 625.

Line signal: Two tone keyed with 7-unit code. Constant 4B/3Y ratio in accordance with CCIR Rec. 476-3, 100 Baud synchronous.

Modulation: Phase-continuous AFSK keying.

Tone frequencies: Fully programmable between 1 kHz and 3 kHz with 1 Hz resolution.

Frequency stability: < 0.1 Hz.

Filter tracking: Adaptive tracking within +/- 100 Hz.

Decision filtering: Bit-slicing with multipath correction.

Threshold control: Software controlled dynamic threshold.

Demodulator sensitivity: - 1.2 dB signal/noise ratio at 10% block error rate (1 kHz noise bandwidth).

RX-tone output: + 10 dBm to - 60 dBm, 600 ohm balanced, strap selectable.

TX-tone output: + 10 dBm to - 21 dBm, 600 ohm balanced, continuous adjustable.

The built-in, comprehensive screen-oriented text editor adds powerful dimensions to Telex handling. No more difficulties with message preparation, editing and transmission. The text editor becomes familiar to any user with a minimum of training.

A large number of different messages can be stored in the text memory for later transmission (separately or in groups).

The TT-1600 System can operate in a number of automatic modes, including unprotected/protected remote mode, public/secret save mode, operator programmable group command mode, and scan mode with automatic call controlled by the reception of »Free« signals.

Software controlled channel quality evaluation and frequency tracking ensures optimum selection of frequency channels.

Radio control input: RS-410 type N.

Radio control output RS-410 type N (open collector, Darlington drive).

Remote control: CCITT Rec. V. 10 SPECIAL (RS-423).

Character storage capacity: 256 kbyte shared between output buffer and text memory.

Soft-key commands: All editing and operational commands.

Keyboard programming: Full EEPROM programming of installation set-up, 105 user programmable frequency pairs and scanning tables.

System power source: 220 Vac/110 Vac, +/- 25%, 46–400 Hz, 100 VA max.

DC power source: 10-30 Vdc, 35 W (TT-1585 and TT-1601A only).

Ambient temperature: 0° C to 55° C operating, - 20° C to 70° C storage.

Relative humidity: 95 % non-condensing.

Vibration: IEC, CEPT and MPT 1204.

Features

- ☐ Unattended transmission and reception of telex messages, 24 hours a day.
- ☐ Simple operation by use of soft-keys.
- ☐ Screen-oriented word processor with 256 kbyte text memory.
- ☐ File packing for optimum usage of memory space.
- ☐ Storage capacity for 105 user programmable frequency pairs and call codes.
- ☐ Built-in High security Telex cipher.
- ☐ Automatic control of communication equipment with »Free« signal scanning and automatic power-up.
- ☐ Automatic channel quality evalution and frequency tracking for optimum channel selection.
- ☐ IBM-PC/XT Communications Software.

Ordering Information

TT-1600, Integrated Radiotelex System, comprising:
TT-1585 Radiotelex Modem, C or E model
TT-1601A, Keyboard-Processor
TT-1602A, Video Monitor
TT-1608A, Hard-Copy Printer
TT-16101A, Cable Kit
TT-16102A, Mounting Kit
Option 001, Text Memory Battery Back-Up.
TT-10201A, IBM-PC Communications Support Software.
Specify 1585C or E:
TT-1585C: Standard speed (50 Baud) Radiotelex Modem with 256 kbyte text memory, compact cabinet version.
TT-1585E: Standard speed (50 Baud) Radiotelex Modem with 256 kbyte text memory, 19" rack version.

Options

Option 002: Integrated 3.5" Microfloppy Disc Drive, 720 kbyte formatted (for 1585E only).
Option 003: Remote Panel Interface (for 1585E only).
Option 004: Free-Signal Generation for Base- and Coast Stations (CCIR Rec. 492).
Option 005: Adds douple speed (100 Baud) Twinplex operation (CCIR Rec. 346-1).
Option 006: Space/frequency diversity.
Option 007: High Security Telex Cipher.

From the product guide of Thrane-Thrane

§2 Modification of FS-1550

Prepare the "Telex Connection Kit" (OP05-14 Code No. 005-923-670).

Table 1. Contents of Telex Connection Kit

NO.	NAME	TYPE	CODE NO.	Q'TY
1	5-pin Jack	FM14-5P	000-111-537	1
2	5-pin Plug Assy.	05S4487-0	000-113-471	1
3	7-pin Jack	FM14-5P	000-113-345	1
4	6-pin Plug Assy.	05S4488-0	000-113-472	1
5	Connector Cover	05S4426-0	000-113-346	2
6	7-pin Plug	FM214-7SM	000-113-463	1
7	5-pin Plug	FM214-5SM	000-113-464	1
8	IC	LT1080CN	000-111-479	1
9	Gasket	05-029-0122-2	100-087-842	2

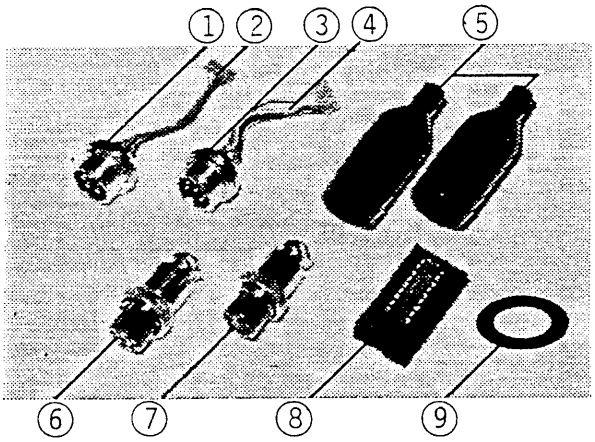


Fig 1. Telex Connection Kit

Installing the connector jacks

1) Peel off the rubber seals on the rear of the transceiver.

2) Solder "plug assys." to proper plugs.

3) Fix connector plugs to the chassis.

4) Connect lead wires to the respective connector on the TX/RX board.

§3 Connection

Table 2. Connections for Telex Communication

CONNECTOR	NO.	COLOR	SIGNAL	FUNCTION
TELEX (1B08J0002)	1.	BRN	0V	connected to ground
	2.	RED	SCAN STOP	not used
	3.	ORG	TLX BK	readies the transceiver for TX
	4.	YEL	LINE OUT(+)	0dBm/600 ohms audio output
	5.	GRN	LINE OUT(-)	
	6.	BLU	LINE IN (+)	0dBm/600 ohms audio input
	7.	*1	LINE IN (-)	
REMOTE (1B08J0003)	1.	BRN	TXD	Transmit Data (Not used)
	2.	RED	RTS	Request to Send (Not used)
	3.	ORG	RXD	Receive Data (Cont. Sig.)
	4.	YEL	CTS	Clear to Send (Not used)
	5.	GRN	0V	Common

*1: Connect a jumper wire to pin No.5.

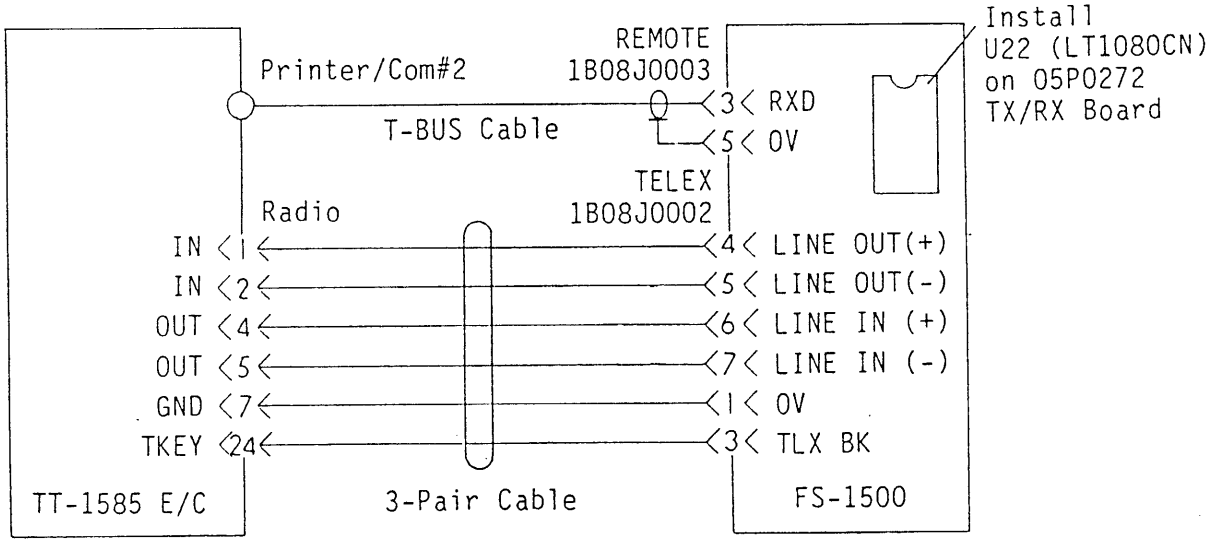


Fig. 2 Connection of FS-1550 to TT-1585

APPENDIX B Notes for Flush Mount Installation

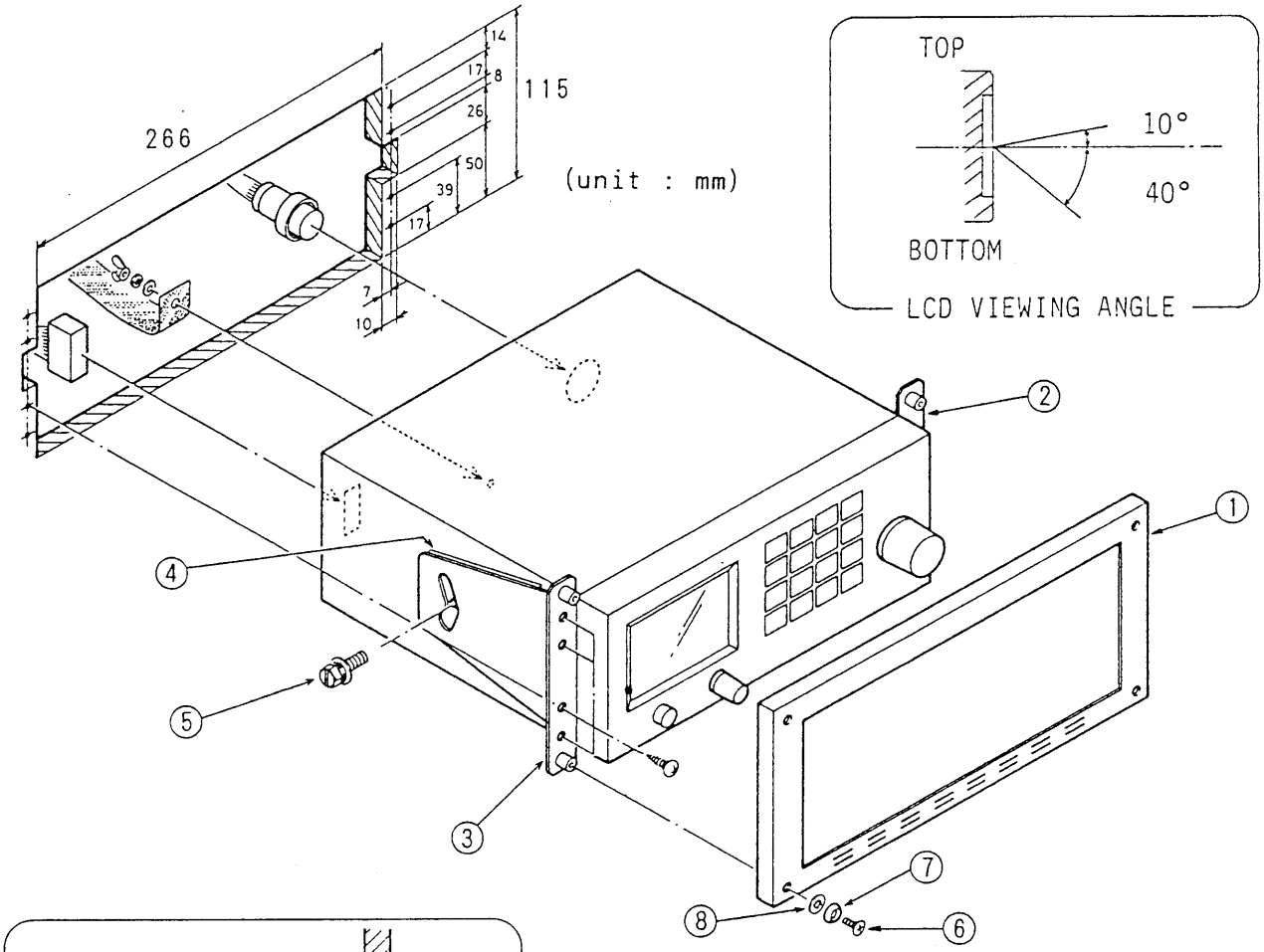
NOTES FOR FLUSH MOUNT INSTALLATION OF FS-1550 RADIOTELEPHONE

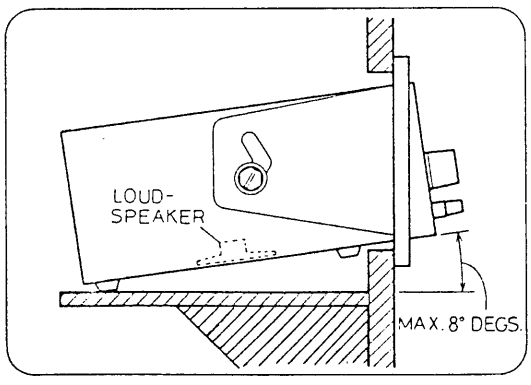
1. Select a place where the LCD can be easily viewed, keeping in mind that the LCD viewing angle is as illustrated below. Where required the unit may be tilted a maximum of 8°.

2. Ensure the mounting location is strong enough to support the weight of the unit (6kg approx.). If necessary fix the unit to a suitable reinforcement plate.

3. Two mounting brackets are supplied for flush mounting, one for right hand side and one for left hand side. Be careful not to interchange them when mounting.

4. Screws for bulkhead mounting (M4 bolts and nuts for ø4 screws : 8 pieces) and a reinforcement plate (where required) must be supplied locally.





Parts supplied

No.	NAME	TYPE	CODE No.	QUANTITY
1	FLUSH MOUNT PANEL		100-105-470	1
2	RIGHT MOUNTING BRACKET		100-105-480	1
3	LEFT MOUNTING BRACKET		100-105-490	1
4	FLUSH MOUNT LINER		100-105-500	2
5	HEX. WASHERHEAD SCREW	M8X16	000-882-160	2
6	PANHEAD SCREW	M3X8	000-861-495	4
7	ROSETTE WASHER	M3	000-864-900	4
8	NYLON WASHER	2.8X7X0.5	000-800-728	4

APPENDIX C ITU/TELEX Frequency List

ITU SSB CHANNEL/FREQUENCY LIST (1/2)

CH. NO.	4MHz TX	4MHz RX	CH. NO.	6MHz TX	6MHz RX	CH. NO.	8MHz TX	8MHz RX
401	4063.0*	4357.4*	601	[6200.0]*	[6506.4]*	801	8195.0*	8718.9*
402	4066.1	4360.5	602	6203.1	6509.5	802	8198.1	8722.0
403	4096.2	4363.6	603	6206.2	6512.6	803	8201.2	8725.1
404	4072.3	4366.7	604	6209.3	6516.7	804	8204.3	8728.2
405	4075.4	4369.8	605	6212.4	6518.8	805	8207.4	8731.3
406	4078.5	4372.9	606	6215.5	6521.9	806	8210.5	8734.4
407	4081.6	4376.0	607	(6218.6)	(6218.6)	807	8213.6	8737.5
408	4084.7	4379.1	608	(6221.6)	(6221.6)	808	8216.7	8740.6
409	4087.8	4382.2				809	8219.8	8743.7
410	4090.9	4385.3				810	8222.9	8746.8
411	4094.0	4388.4				811	8226.0	8749.9
412	4097.1	4391.5				812	8229.1	8753.0
413	4100.2	4394.6				813	8232.2	8756.1
414	4103.3	4397.7				814	8235.3	8759.2
415	4106.4	4400.8				815	8238.4	8762.3
416	4109.5	4403.9				816	[8241.5]	[8765.4]
417	4112.6	4407.0				817	8244.6	8768.5
418	4115.7	4410.1				818	8247.7	8771.6
419	4118.8	4413.2				819	8250.8	8774.7
420	4121.9	4416.3				820	8253.9	8777.8
421	4125.0	4419.4				821	8257.0	8780.9
422	4128.1	4422.5				822	8260.1	8784.0
423	4131.2	4425.6				823	8263.2	8787.1
424	[4134.3]	[4428.7]				824	8266.3	8790.2
425	4137.4	4431.8				825	8269.4	8793.3
426	4140.5	4434.9				826	8272.5	8796.4
427	(4143.6)	(4143.6)				827	8275.6	8799.5
						828	8278.7	8802.6
						829	8281.8	8805.7
						830	8284.9	8808.8
						831	8288.0	8811.9
						832	(8291.1)	(8291.1)
						833	(8294.2)	(8294.2)

NOTE: * J3E mode only
Calling channel
( ) Ship-to-ship simplex channel
[ ] USCG AMVER channel

ITU SSB CHANNEL/FREQUENCY LIST (2/2)

CH. NO.	12MHz TX	12MHz RX	CH. NO.	16MHz TX	16MHz RX	CH. NO.	22MHz TX	22MHz RX
1201	12330.0*	13100.8*	1601	16460.0*	17232.9*	2201	22000.0*	22596.0*
1202	12333.1	13103.9	1602	16463.1	17236.0	2202	22003.1	22599.1
1203	12336.2	13107.0	1603	16466.2	17239.1	2203	22006.2	22602.2
1204	12339.3	13110.1	1604	16469.3	17242.2	2204	22009.3	22605.3
1205	[12342.4]	[13113.2]	1605	16472.4	17245.3	2205	22012.4	22608.4
1206	12345.5	13116.3	1606	16475.5	17248.4	2206	22015.5	22611.5
1207	12348.6	13119.4	1607	16478.6	17251.5	2207	22018.6	22614.6
1208	12351.7	13122.5	1608	16481.7	17254.6	2208	22021.7	22617.7
1209	12354.8	13125.6	1609	16484.8	17257.7	2209	22024.8	22620.8
1210	12357.9	13128.7	1610	16487.9	17260.8	2210	22027.9	22623.9
1211	12361.0	13131.8	1611	16491.0	17263.9	2211	22031.0	22627.0
1212	12364.1	13134.9	1612	16494.1	17267.0	2212	22034.1	22630.1
1213	12367.2	13138.0	1613	16497.2	17270.1	2213	22037.2	22633.2
1214	12370.3	13141.1	1614	16500.3	17273.2	2214	22040.3	22636.3
1215	12373.4	13144.2	1615	16503.4	17276.3	2215	22043.4	22639.4
1216	12367.5	13147.3	1616	16506.5	17279.4	2216	22044.5	22642.5
1217	12379.6	13150.4	1617	16509.6	17282.5	2217	22049.6	22645.6
1218	12382.7	13153.5	1618	16512.7	17285.6	2218	22052.7	22648.7
1219	12385.8	13156.6	1619	16515.8	17288.7	2219	22055.8	22651.8
1220	12388.9	13159.7	1620	16518.9	17291.8	2220	22058.9	22654.9
1221	12392.0	13162.8	1621	16522.0	17294.9	2221	22062.0	22658.0
1222	12395.1	13165.9	1622	16525.1	17298.0	2222	22065.1	22661.1
1223	12398.2	13169.0	1623	16528.2	17301.1	2223	22068.2	22664.2
1224	12401.3	13172.1	1624	16531.3	17304.2	2224	22071.3	22667.3
1225	12404.4	13175.2	1625	[16534.4]	[17307.3]	2225	22074.4	22670.4
1226	12407.5	13178.3	1626	16537.5	17310.4	2226	22077.5	22673.5
1227	12410.6	13181.4	1627	16540.6	17313.5	2227	22080.6	22676.6
1228	12413.7	13184.5	1628	16543.7	17316.6	2228	22083.7	22679.7
1229	12416.8	13187.6	1629	16546.8	17319.7	2229	22086.8	22682.8
1230	12419.9	13190.7	1630	16549.9	17322.8	2230	22089.9	22685.9
1231	12423.0	13193.8	1631	16553.0	17325.9	2231	22093.0	22698.0
1232	12426.1	13196.9	1632	16556.1	17329.0	2232	22096.1	22692.1
1233	(12429.2)	(12429.2)	1633	16559.2	17332.1	2233	22099.2	22695.2
1234	(12432.3)	(12432.3)	1634	16562.3	17335.2	2234	22102.3	22698.3
1235	(12435.4)	(12435.4)	1635	16565.4	17338.3	2235	22105.4	22701.4
			1636	16568.5	17341.4	2236	22108.5	22704.5
			1637	16571.6	17344.5	2237	22111.6	22707.6
			1638	16574.7	17347.6	2238	22114.7	22710.7
			1639	16577.8	17350.7	2239	22117.8	22713.8
			1640	16580.9	17353.8	2240	22120.9	22716.9
			1641	16584.0	17356.9	2241	(22124.0)	(22124.0)
			1642	(16587.1)	(16587.1)	2242	(22127.1)	(22127.1)
			1643	(16590.2)	(16590.2)	2243	(22130.2)	(22130.2)
			1644	(16593.3)	(16593.3)	2244	(22133.3)	(22133.3)
						2245	(22136.4)	(22136.4)

NOTE: * J3E mode only
Calling channel
( ) Ship-to-ship simplex channel
[ ] USCG AMVER channel

ITU TELEX CHANNEL/FREQUENCY LIST (1/3)

CH. NO.	4MHz		CH. NO.	6MHz		CH. NO.	8MHz	
	TX	RX		TX	RX		TX	RX
401	4170.5	4350.0	601	6256.5	6494.5	801	8344.0	8705.0
402	4171.0	4350.5	602	6257.0	6495.0	802	8344.5	8705.5
403	4171.5	4351.0	603	6257.5	6495.5	803	8345.0	8706.0
404	4172.0	4351.5	604	6258.0	6496.0	804	8345.5	8706.5
405	4172.5	4352.0	605	6258.5	6496.5	805	8346.0	8707.0
406	4173.0	4352.5	606	6259.0	6497.0	806	8346.5	8707.5
407	4173.5	4353.0	607	6259.5	6497.5	807	8347.0	8708.0
408	4174.0	4353.5	608	6260.0	6498.0	808	8347.5	8708.5
409	4174.5	4354.0	609	6260.5	6498.5	809	8348.0	8709.0
410	4175.0	4354.5	610	6261.0	6499.0	810	8348.5	8709.5
411	4175.5	4355.0	611	6261.5	6499.5	811	8349.0	8710.0
412	4176.0	4355.5	612	6262.0	6500.0	812	8349.5	8710.5
413	4176.5	4356.0	613	6262.5	6500.5	813	8350.0	8711.0
414	4177.0	4356.5	614	6263.0	6501.0	814	8350.5	8711.5
			615	6263.5	6501.5	815	8351.0	8712.0
			616	6264.0	6502.0	816	8351.5	8712.5
			617	6264.5	6502.5	817	8352.0	8713.0
			618	6265.0	6503.0	818	8352.5	8713.5
			619	6265.5	6503.5	819	8353.0	8714.0
			620	6266.0	6504.0	820	8353.5	8714.5
			621	6266.5	6504.5	821	8354.0	8715.0
			622	6267.0	6505.0	822	8354.5	8715.5
			623	6267.5	6505.5	823	8355.0	8716.0
						824	8355.5	8716.5
						825	8356.0	8717.0
						826	8356.5	8717.5
						827	8357.0	8718.0

ITU TELEX CHANNEL/FREQUENCY LIST (2/3)

CH. NO.	12MHz TX	12MHz RX	CH. NO.	16MHz TX	16MHz RX	CH. NO.	22MHz TX	22MHz RX
1201	12491.5	13071.5	1601	16660.5	17197.5	2201	22192.5	22561.5
1202	12492.0	13072.0	1602	16661.0	17198.0	2202	22193.0	22562.0
1203	12492.5	13072.5	1603	16661.5	17198.5	2203	22193.5	22562.5
1204	12493.0	13073.0	1604	16662.0	17199.0	2204	22194.0	22563.0
1205	12493.5	13073.5	1605	16662.5	17199.5	2205	22194.5	22563.5
1206	12494.0	13074.0	1606	16663.0	17200.0	2206	22195.0	22564.0
1207	12494.5	13074.5	1607	16663.5	17200.5	2207	22195.5	22564.5
1208	12495.0	13075.0	1608	16664.0	17201.0	2208	22196.0	22565.0
1209	12495.5	13075.5	1609	16664.5	17201.5	2209	22196.5	22565.5
1210	12496.0	13076.0	1610	16665.0	17202.0	2210	22197.0	22566.0
1211	12496.5	13076.5	1611	16665.5	17202.5	2211	22197.5	22566.5
1212	12497.0	13077.0	1612	16666.0	17203.0	2212	22198.0	22567.0
1213	12497.5	13077.5	1613	16666.5	17203.5	2213	22198.5	22567.5
1214	12498.0	13078.0	1614	16667.0	17204.0	2214	22199.0	22568.0
1215	12498.5	13078.5	1615	16667.5	17204.5	2215	22199.5	22568.5
1216	12499.0	13079.0	1616	16668.0	17205.0	2216	22200.0	22569.0
1217	12499.5	13079.5	1617	16668.5	17205.5	2217	22200.5	22569.5
1218	12500.0	13080.0	1618	16669.0	17206.0	2218	22201.0	22570.0
1219	12500.5	13080.5	1619	16669.5	17206.5	2219	22201.5	22570.5
1220	12501.0	13081.0	1620	16670.0	17207.0	2220	22202.0	22571.0
1221	12501.5	13081.5	1621	16670.5	17207.5	2221	22202.5	22571.5
1222	12502.0	13082.0	1622	16671.0	17208.0	2222	22203.0	22572.0
1223	12502.5	13082.5	1623	16671.5	17208.5	2223	22203.5	22572.5
1224	12503.0	13083.0	1624	16672.0	17209.0	2224	22204.0	22573.0
1225	12503.5	13083.5	1625	16672.5	17209.5	2225	22204.5	22573.5
1226	12504.0	13084.0	1626	16673.0	17210.0	2226	22205.0	22574.0
1227	12504.5	13084.5	1627	16673.5	17210.5	2227	22205.5	22574.5
1228	12505.0	13085.0	1628	16674.0	17211.0	2228	22206.0	22575.0
1229	12505.5	13085.5	1629	16674.5	17211.5	2229	22206.5	22575.5
1230	12506.0	13086.0	1630	16675.0	17212.0	2230	22207.0	22576.0
1231	12506.5	13086.5	1631	16675.5	17212.5	2231	22207.5	22576.5
1232	12507.0	13087.0	1632	16676.0	17213.0	2232	22208.0	22577.0
1233	12507.5	13087.5	1633	16676.5	17213.5	2233	22208.5	22577.5
1234	12508.0	13088.0	1634	16677.0	17214.0	2234	22209.0	22578.0
1235	12508.5	13088.5	1635	16677.5	17214.5	2235	22209.5	22578.5
1236	12509.0	13089.0	1636	16678.0	17215.0	2236	22210.0	22579.0
1237	12509.5	13089.5	1637	16678.5	17215.5	2237	22210.5	22579.5
1238	12510.0	13090.0	1638	16679.0	17216.0	2238	22211.0	22580.0
1239	12510.5	13090.5	1639	16679.5	17216.5	2239	22211.5	22580.5
1240	12511.0	13091.0	1640	16680.0	17217.0	2240	22212.0	22581.0
1241	12511.5	13091.5	1641	16680.5	17217.5	2241	22212.5	22581.5
1242	12512.0	13092.0	1642	16681.0	17218.0	2242	22213.0	22582.0
1243	12512.5	13092.5	1643	16681.5	17218.5	2243	22213.5	22582.5
1244	12513.0	13093.0	1644	16682.0	17219.0	2244	22214.0	22583.0
1245	12513.5	13093.5	1645	16682.5	17219.5	2245	22214.5	22583.5
1246	12514.0	13094.0	1646	16683.0	17220.0	2246	22215.0	22584.0
1247	12514.5	13094.5	1647	16683.5	17220.5	2247	22215.5	22584.5
1248	12515.0	13095.0	1648	16684.0	17221.0	2248	22216.0	22585.0
1249	12515.5	13095.5	1649	16684.5	17221.5	2249	22216.5	22585.5
1250	12516.0	13096.0	1650	16685.0	17222.0	2250	22217.0	22586.0

ITU TELEX CHANNEL/FREQUENCY LIST (3/3)

CH. NO.	12MHz		CH. NO.	16MHz		CH. NO.	22MHz	
	TX	RX		TX	RX		TX	RX
1251	12516.5	13096.5	1651	16685.5	17222.5	2251	22217.5	22586.5
1252	12517.0	13097.0	1652	16686.0	17223.0	2252	22218.0	22587.0
1253	12517.5	13097.5	1653	16686.5	17223.5	2253	22218.5	22587.5
1254	12518.0	13098.0	1654	16687.0	17224.0	2254	22219.0	22588.0
1255	12518.5	13098.5	1655	16687.5	17224.5	2255	22219.5	22588.5
1256	12519.0	13099.0	1656	16688.0	17225.0	2256	22220.0	22589.0
1257	12519.5	13099.5	1657	16688.5	17225.5	2257	22220.5	22589.5
			1658	16689.0	17226.0	2258	22221.0	22590.0
			1659	16689.5	17226.5	2259	22221.5	22590.5
			1660	16690.0	17227.0	2260	22222.0	22591.0
			1661	16690.5	17227.5	2261	22222.5	22591.5
			1662	16691.0	17228.0	2262	22223.0	22592.0
			1663	16691.5	17228.5	2263	22223.5	22592.5
			1664	16692.0	17229.0	2264	22224.0	22593.0
			1665	16692.5	17229.5	2265	22224.5	22593.5
			1666	16693.0	17230.0	2266	22225.0	22594.0
			1667	16693.5	17230.5	2267	22225.5	22594.5
			1668	16694.0	17231.0			
			1669	16694.5	17231.5			