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You can read the recommendations in the user guide, the technical guide or the installation guide for KENWOOD TS-590S. You'll find the answers to all your questions on the KENWOOD TS-590S in the user manual (information, specifications, safety advice, size, accessories, etc.). Detailed instructions for use are in the User's Guide.

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
KENWOOD

INSTRUCTION MANUAL



HF/50 MHz ALL MODE TRANSCEIVER
TS-590S

NOTIFICATION

This equipment complies with the essential requirements of Directive 1995/EC.
The use of the warning symbol  means the equipment is subject to restrictions of use in certain countries.

This equipment requires a licence and is intended for use in the countries below.

AT	BE	DK	FI	FR	DE	GR	IS
IE	IT	LI	LU	NL	NO	PT	ES
SE	CH	GB	CY	CZ	EE	HU	LV
LT	MT	PL	SK	SI	BG	RO	

ISO1164

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Manual abstract:

By taking maximum advantage of DSP technology, the TS-590S transceiver gives you enhanced interference reduction capabilities and improves the quality of audio. You will notice the differences when you fight QRM and QRN. As you learn how to use this transceiver, you will also find that Kenwood is pursuing "user friendliness". For example, each time you change the Menu No. in Menu mode, you will see scrolling messages on the display, telling you what you are selecting. @@ Consider this manual to be a personal tutorial from the designers. @@@@ @INFORMATION TO THE DIGITAL DEVICE USER

REQUIRED BY THE FCC This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can generate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that the interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: · Reorient or relocate the receiving antenna. · Increase the separation between the equipment and receiver. · Connect the equipment to an outlet on a circuit different from that to which the receiver is connected. · Consult the dealer for technical assistance. · All mode operation from HF to 50 MHz amateur radio band 500 Hz/ 2.

7 kHz roofing filter Superior C/N response by the DDS largely decreases the noise of the undesired signal. IF DSP through the adoption of 32-bit floating point DSP Digital Noise Blanking PC interface via a Universal Serial Bus port (B-type) Drive output and RX only antenna connector Direct band keys Built-in Antenna Tuner for the HF/ 50 MHz band 100 W output power for SSB, CW, FSK, FM, and 25 W output power for AM. Amateur radio regulations vary from country to country. Confirm your local amateur radio regulations and requirements before operating the transceiver. Depending on the size and type of vehicle, the maximum transmission output power for the mobile operation will vary.

The maximum transmission output power is usually specified by the car manufacturer to avoid interference with other electric devices used in the vehicle. Consult your car manufacturer and amateur radio equipment dealer for the requirements and installation. K-type: The Americas E-type: Europe The market code is shown on the carton box. Refer to the specifications {page 81} for information on the available operating frequencies. Information on Disposal of Old Electrical and Electronic Equipment and Batteries (applicable for EU countries that have adopted separate waste collection systems) Products and batteries with the symbol (crossed-out wheeled bin) cannot be disposed as household waste. Old electrical and electronic equipment and batteries should be recycled at a facility capable of handling these items and their waste byproducts. Contact your local authority for details in locating a recycle facility nearest to you.

Proper recycling and waste disposal will help conserve resources whilst preventing detrimental effects on our health and the environment. i The writing conventions described below have been followed to simplify instructions and avoid unnecessary repetition. Instruction Press [KEY].

Press Mic [KEY]. Press and hold [KEY]. Action Press and release KEY. Press and release KEY on the microphone. Press and hold KEY down for a moment, then release KEY. Press and hold KEY down until instructed to release KEY. With the transceiver power OFF, press and hold KEY, then switch the transceiver power ON by pressing []. After carefully unpacking the transceiver, identify the items listed in the table below. We recommend you keep the box and packing materials in case you need to repack the transceiver in the future. Accessory Microphone DC power cable Line filter (with retaining band) Fuse Fuse DIN plug DIN plug Screw set Plastic spacer 25 A; for DC power cable 4 A; for an external antenna tuner 7-pin 13-pin For bracket For bracket English French Instruction Manual Spanish German Italian Dutch Schematic diagram Warranty Card Comment Quantity K-type E-type 1 1 1 1 1 1 4 1 1 2 1 1 1 1 1 1 1 1 4 1 1 1 1 1 1 1 1 1 1 Hold [KEY].

Press [KEY] + []. ii · Please observe the following precautions to prevent fire, personal injury, and transceiver damage: · Connect the transceiver only to a power source as described in this manual or as marked on the transceiver itself. · Route all power cables safely. Ensure the power cables can neither be stepped upon nor pinched by items placed near or against the cables. Pay particular attention to locations near AC receptacles, AC outlet strips, and points of entry to the transceiver.

· Take care not to drop objects or spill liquid into the transceiver through enclosure openings. Metal objects, such as hairpins or needles, inserted into the transceiver may contact voltages resulting in serious electrical shocks. Never permit children to insert any objects into the transceiver. · Do not attempt to defeat methods used for grounding and electrical polarization in the transceiver, particularly involving the power input cable. · Adequately ground all outdoor antennas for this transceiver using approved methods.

Grounding helps protect against voltage surges caused by lightning. It also reduces the chance of a build-up of static charge. EXAMPLE OF ANTENNA GROUNDING ANTENNA LEAD IN WIRE ANTENNA DISCHARGE UNIT GROUNDING CONDUCTORS ELECTRIC SERVICE EQUIPMENT GROUND CLAMPS POWER SERVICE GROUNDING ELECTRODE SYSTEM ······ GROUND CLAMP · Locate the transceiver away from heat sources such as a radiator, stove, amplifier or other devices that produce substantial amounts of heat. Do not use volatile solvents such as alcohol, paint thinner, gasoline, or benzene to clean the cabinet of the transceiver. Use only a clean cloth with warm water or a mild detergent. Disconnect the input power cable from the power source when the transceiver is not used for long periods of time. Remove the transceiver's enclosure only to do accessory installations described in this manual or accessory manuals. Follow provided instructions carefully, to avoid electrical shocks. If unfamiliar with this type of work, seek assistance from an experienced individual, or have a professional technician do the task. Enlist the services of qualified personnel in the following cases: a) The power supply or plug is damaged.



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b) Objects have fallen into or liquid has spilled into the transceiver. c) The transceiver has been exposed to rain. d) The transceiver is operating abnormally or performance has seriously degraded. e) The transceiver has been dropped or the enclosure damaged. Do not attempt to perform any kind of configuration or menu setup while driving. Do not wear headphones while driving. Install the transceiver in a safe and convenient position inside your vehicle so as not to subject yourself to danger while driving. Consult your car dealer for the transceiver installation to ensure safety. HF/ 50 MHz mobile antennas are larger and heavier than VHF/ UHF antennas. Therefore, use a strong and rigid mount to safely and securely install the HF/ 50 MHz mobile antenna.

Minimum recommended distance for an outdoor antenna from power lines is one and one-half times the vertical height of the associated antenna support structure. This distance allows adequate clearance from the power lines if the support structure fails for any reason. Locate the transceiver so as not to interfere with its ventilation. Do not place books or other equipment on the transceiver that may impede the free movement of air. Allow a minimum of 10 cm (4 inches) between the rear of the transceiver and the wall or operating desk shelf.

Do not use the transceiver near water or sources of moisture. For example, avoid use near a bathtub, sink, swimming pool, or in a damp basement or attic. The presence of an unusual odor or smoke is often a sign of trouble. Immediately turn the power OFF and remove the power cable. Contact a Kenwood service station or your dealer for advice.

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..... 81 vi An antenna system consists of an antenna, feed line, and ground. The transceiver can give excellent results if the antenna system and its installation are cable, and top-quality connectors. All connections must be clean and tight. After making the connections, match the impedance of the coaxial cable and antenna so that the SWR is 1.

5:1 or less. High SWR will cause the transmit output to drop and may lead to radio frequency interference with consumer products such as stereo receivers and televisions. You may even cause interference with your own transceiver. Reports that your signal is distorted could indicate that your antenna system is not efficiently radiating your transceiver's power. Connect your primary HF/ 50 MHz antenna feed line to ANT 1 on the rear of the transceiver. If you are using two HF/ 50 MHz antennas, connect the secondary antenna to ANT 2. Refer to page 9 for the location of the antenna connectors. The LF band is outputted only from the DRV terminal. Note: Transmitting without connecting an antenna or other matched load may damage the transceiver. Always connect the antenna to the transceiver before transmitting.

All fixed stations should be equipped with a lightning arrester to reduce the risk of fire, electric shock, and transceiver damage. The transceiver's protection circuit will activate when the SWR is greater than 1.5:1; however, do not rely on protection to compensate for a poorly functioning antenna system. Even in areas where lightning storms are less common, there is always a chance that a storm will occur each year.



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Consider carefully how to protect your equipment and home from lightning. The installation of a lightning arrester is a start, but there is more that you can do. For example, terminate your antenna system transmission lines at an entry panel that you install outside your home. Ground this entry panel to a good outside ground, then connect the appropriate feed lines between the entry panel and your transceiver. When a lightning storm occurs, disconnecting the feed lines from your transceiver will ensure additional protection. In order to use this transceiver, you need a separate 13.

8 V DC power supply that must be purchased separately. Do not directly connect the transceiver to an AC outlet. Use the supplied DC power cable to connect the transceiver to a regulated power supply. Do not substitute a cable with smaller gauge wires. The current capacity of the power supply must be 20.5 A peak or more. First, connect the DC power cable to the regulated DC power supply; the red lead to the positive terminal and the black lead to the negative terminal. Next, connect the DC power cable to the transceiver's DC power connector. Press the connectors firmly until the locking tab clicks. Attach the line filter to the DC cable as shown below (E-type only).

Note: Before connecting the DC power supply to the transceiver, be sure to switch OFF the DC power supply and transceiver. Do not plug the DC power supply into an AC outlet until you make all connections. At a minimum, a good DC ground is required to prevent such dangers as electric shock. For superior communications, a good RF ground is required against which the antenna system can operate. Both of these conditions can be met by providing a good earth ground for your station.

Bury one or more ground rods or a large copper plate under the ground, then connect this to the transceiver GND terminal. Use heavy gauge wire or a copper strap, cut as short as possible, for this connection. Do not use a gas pipe, an electrical conduit, or a plastic water pipe as a ground. E-type only Fuse (25 A) Black () TS-590S DC Power supply (20.5 A or more) Red (+) 1 This transceiver is equipped with a bail so that you can angle the transceiver.

The bail is located on the bottom of the transceiver. Pull the bail forward to the limit as shown. Connect monaural or stereo headphones with a (1/4") diameter, 2-conductor (mono) or 3-conductor (stereo) plug. After connecting the headphones, you will hear no sound from the internal (or optional external) Speaker/Microphone (MIC). impedance. Fully insert the connector, then screw the retaining ring clockwise until secure. Compatible microphones include the MC-43S, MC-90. Note: Do not use the MC-44, MC-44DM, MC-45, MC-45E, MC-45DM, MC-45DME, or MC-53DM microphones. The following fuses are used in the TS-590S transceiver. If a fuse blows, determine the cause then correct the problem.

Only after the problem has been resolved, replace the blown fuse with a new one with the specified ratings. If newly installed fuses continue to blow, disconnect the power plug and contact a Kenwood service center or your dealer for assistance. Fuse Location TS-590S Transceiver Supplied DC power cable Fuse Current Rating 4A (for external antenna tuner) 25 A On the rear panel of the transceiver, there is an external speaker jack. If an external speaker is connected to EXP.SP, the transceiver internal speaker will mute. Use only external speakers with accepts only 3.5 mm (1/8") diameter, 2-conductor (mono) plugs. Do not connect headphones to this jack. The high audio output of this jack could damage your hearing. Fuse (4 A) For CW operation while using the internal electronic keyer, connect a keyer paddle to the PADDLE jack.

For CW operation without using the internal electronic keyer, connect a straight key, semi-automatic key (bug), electronic keyer, or the CW keyed output from a Multimode Communications Processor (MCP) to the KEY jack. Fuse (25 A) Fuse (25 A) (1/4") 3-conductor plug and a 3.5 mm (1/8") 2-conductor plug, respectively. External electronic keyers or MCPs must use positive keying to be compatible with this transceiver. Use a shielded cable between the key and the transceiver.

Note: Due to the functionality of the internal electronic keyer, you may find it unnecessary to connect both a paddle and another type of keyer unless you want to use a PC-based keyer for CW. Read the "ELECTRONIC KEYS" section {page 33} to become familiar with the internal keyer. 2 Headphones Front Panel MIC PTT DOWN UP GND (STBY) GND (MIC) NC 8 V (10 mA max) MIC connector (Front view) External speaker Microphone Rear Panel Paddle Straight key Bug key Electronic keyer PC keyer output 3 A C D E F G B H ---- A ---- [] Press and hold to switch the transceiver power ON and OFF {page 10}. [PF A] You can assign a function to this Programmable Function key {page 54}. [ATT (RX ANT)] Press to turn the receiver attenuator ON or OFF {page 40}.

Press and hold to enable or disable the RX-ANT terminal {page 50}. [PRE (ANT 1/2)] Press to turn the pre-amplifier ON or OFF {page 40}. Press and hold to select either ANT 1 or ANT 2 {page 50}. [VOX (LEV)] In voice mode, press to turn the VOX (Voice-Operated Transmit) function ON or OFF {page 30}. In CW mode, press to turn the Break-in function ON or OFF {page 32}. Press and hold to adjust the microphone input gain for VOX operation. [PROC (LEV)] Press to turn the Speech Processor ON or OFF {page 31}. Press and hold to adjust the Speech Processor input level. [SEND] Press to turn transmission ON or OFF. [AT (TUNE)] Press to turn the internal antenna tuner ON or OFF {page 50}.

Press and hold to start tuning the automatic antenna tuner. --- C --- [METER (DRV)] Press to switch the meter type. Press and hold to turn the Drive Out function ON or OFF {page 50}. [PF B] You can assign a function to this Programmable Function key {page 54}. [MIC (CAR)] Press to adjust the microphone gain {page 13}. While the Speech Processor function is ON, press to adjust the Speech Processor output level {page 31}. Press and hold to adjust the carrier level {page 23}. [PWR (TX MONI)] Press to adjust the transmission output power {pages 13, 55}. Press and hold to turn the transmission signal monitor function ON or OFF {page 56}. [KEY (DELAY)] Press to adjust the internal electronic keyer speed {page 33}.

Press and hold to adjust the VOX delay time for voice mode {page 30} or Break-in time (Full Break-in/ Semi Break-in time) for CW mode. [GENE] Press to select the general coverage band memory {page 11}. [1.8 (1)] Press to select the 1.8 MHz band memory {page 11} or enter keypad number 1. [3.5 (2)] Press to select the 3.5 MHz band memory {page 11} or enter keypad number 2. [7 (3)] Press to select the 7 MHz band memory {page 11} or enter keypad number 3. [10 (4)] Press to select the 10 MHz band memory {page 11} or enter keypad number 4.



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[14 (5)] Press to select the 14 MHz band memory {page 11} or enter keypad number 5. [18 (6)] Press to select the 18 MHz band memory {page 11} or enter keypad number 6. ---- B ---- PHONES jack Mate with a 6.3 mm (1/4") diameter, 2-conductor (mono) or 3-conductor (stereo) plug for connecting a set of headphones {page 2}. MIC connector Connect a microphone to this connector {page 2}. 4 [21 (7)] Press to select the 21 MHz band memory {page 11} or enter keypad number 7. [24 (8)] Press to select the 24 MHz band memory {page 11} or enter keypad number 8. [28 (9)] Press to select the 28 MHz band memory {page 11} or enter keypad number 9. [50 (0)] Press to select the 50 MHz band memory {page 11} or enter keypad number 0. [CLR] Press to exit from, abort, or reset various functions.

Press and hold to clear a memory channel {page 44}. [ENT] Press to enter your desired frequency using the 10-key keypad {page 28}. [NB (LEV)] Press to cycle through Noise Blanker 1, Noise Blanker 2, and OFF. Press and hold to adjust the Noise Blanker level {page 40}. [NR (LEV)] Press to cycle through the DSP Noise Reduction types: NR1, NR2, or OFF {page 39}. When the Noise Reduction function is turned ON, press and hold to change the parameters of the Noise Reduction function {page 39}. [BC (A.NOTCH)] Press to select the DSP Beat Cancel function, BC1 (Beat Cancel 1), BC2 (Beat Cancel 2) or OFF {page 39}. Press and hold to toggle the Auto Notch Filter ON and OFF {page 39}. [NOTCH (WIDE)] Press to toggle the IF Notch Filter ON or OFF {page 39}.

Press and hold to set up the IF Notch bandwidth {page 39}. [SPLIT] Press to enter split-frequency operation, allowing you to use different transmission and reception frequencies {page 24}. [TF-SET] During split-frequency operation, press to monitor or change your transmit frequency {page 24}. [A/B (A=B)] Press to select either VFO A or VFO B {page 24}. Press and hold to duplicate the data in the current VFO to the other VFO {page 25}.

While in Menu mode, press to select Menu A or Menu B. While in Program Memory Channel mode, press to recall the start or end frequency. [M/V] Press to toggle between Memory and VFO modes. [M.IN] Press to enter Memory Scroll mode and to store data to a Memory channel {page 41}.

[M>V] Press to transfer the current Memory Channel contents to the VFO. [Q-M.IN] Press to store data to the Quick Memory. [Q-MR] Press to recall data from the Quick Memory, while in VFO mode. Press to enter Memory Name Edit mode, while in Memory Channel mode. [MHz] Press to turn the MHz Up/Down function ON or OFF. The MHz digit increases or decreases when you turn the MULTI/CH control. In Menu mode, press to turn the Quick Menu ON or OFF {page 14}. [SCAN (SG.SEL)] Press to start or stop the Scan function {page 46}.

Press and hold to select a Scan group {page 49}. [MENU] Press to enter Menu mode {page 14}. ---- D ---- [LSB/USB] Press to select LSB or USB mode {page 11}. [CW/FSK (REV)] Press to select CW or FSK mode {page 11}. Press and hold to select a sideband (CW/ CW-R or FSK/ FSK-R). [FM/AM (FM-N)] Press to select FM or AM mode {page 11}. Press and hold to select Narrow FM mode. [DATA] Press to select a Data mode (LSB/ LSB-DATA, USB/ USB-DATA, or FM/ FM-DATA) {page 11}. [FINE (F.LOCK)] Press to activate the Fine tuning function to allow more precise tuning {page 29}.

Press and hold to activate the Frequency Lock function {page 53}. ---- E ---- Central (Tuning) control Turn to select the desired frequency {page 12}. Use the convenient finger-tip cavity for continuous tuning. Slide the lever underneath the Tuning control to the left or right to adjust the torque level of the control. Left makes the control light and right makes it heavy.

light heavy TX-RX LED Lights red while transmitting and green when the squelch opens while receiving. ---- F ---- [IF FIL] Press to toggle between IF Filter A and IF Filter B {page 38}. You can adjust the filter bandwidth using the LO/WIDTH and HI/SHIFT controls. Press and hold [IF FIL] to momentarily display each setting value of the current DSP filter DSP filter bandwidth {page 38}. 5 A C D E F G B H [CH1 (REC)] Press to play back a CW {page 34} or voice message (requires VGS-1 option) {page 58}.

Press and hold to record a CW {page 34} or voice message (requires VGS-1 option) {page 59}. [CH2 (REC)] Press to play back a CW {page 34} or voice message (requires VGS-1 option) {page 59}. Press and hold to record a CW {page 34} or voice message (requires VGS-1 option) {page 59}. Press and hold to record a CW {page 34} or voice message (requires VGS-1 option) {page 59}. [RX/4 (REC)] Press to play back a CW {page 34} or voice message (requires VGS-1 option) {page 59}, or the constantly recorded signal (requires VGS-1 option) {page 60}. Press and hold to activate the constant recorder (requires VGS-1 option) {page 60}. RIT/XIT control When the RIT/XIT function is ON, turn to adjust the offset frequency. The RIT/XIT offset frequency appears on the sub-display {pages 29, 31}. While scanning, turn to adjust the scan speed.

---- H ---- SQL control Turn to select the desired squelch level {page 12}. NOTCH control Turn to select the desired Notch frequency {page 39}. MULTI/CH control In VFO mode, rotate to step the operating frequency up or down {page 28}. In Memory Channel mode, rotate to select a Memory Channel {page 41}. Also, used for selecting Menu numbers when accessing the Menu mode {page 14} and for various configurations. The MULTI/CH LED lights when the MULTI/CH control is not being used to adjust the step frequency. HI/SHIFT control Rotate to adjust the DSP filter bandwidth (high-cut) or to adjust the DSP filter bandwidth (filter band shift) {page 38}. LO/WIDTH control Rotate to adjust the DSP filter bandwidth (high-cut or shift) {page 38}. AF control Turn to adjust the AF gain level {page 10}. RF control Turn to adjust the RF gain level {page 10}.

---- G ---- [AGC/T (SEL)] Press to toggle the fast or slow response time for the Automatic Gain Control (AGC) {page 29}. In FM mode, press to cycle through the Tone settings: Tone, CTCSS, CTCSSx, or OFF {page 26}. When Tone is activated in FM mode, press and hold to select a Tone frequency {page 26}. When CTCSS is activated in FM mode, press and hold to select a CTCSS frequency {page 27}. [CW T. (AGC OFF)] Press to start CW auto tuning {page 23}. Press and hold to turn AGC OFF {page 29}. [RIT] Press to turn the RIT (Receive Incremental Tuning) function ON or OFF {page 29}. [XIT] Press to turn the XIT (Transmit Incremental Tuning) function ON or OFF {page 31}. [CL] Press to clear the RIT/XIT frequency to zero {pages 29, 31}.

6 A B C D E F ---- A ---- Appears when the Noise Blanker 1 or 2 is ON {page 40}. " " (fast) or " " (slow) appears when the Automatic Gain Control function is ON. " " appears when the AGC is OFF {page 29}. Appears when IF filter A is selected {page 39}.



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Appears when IF filter B is selected {page 39}. While receiving, the meter serves as an S-meter to measure and display the received signal strength. While transmitting, it serves as a power meter plus an ALC meter, an SWR meter, or a Speech Processor compression meter. The Peak Hold function holds each reading for approximately half a second. While adjusting the IF filter bandwidth, the meter displays an adjustment state. ---- B ---- Appears when the Auto Mode function is ON and while in Auto Mode frequency setup {page 51}.

Displays the operating mode (USB, LSB, FM, AM, CW, CWR, FSK, or FSR) {page 11}. Appears while in Menu mode {page 14}. Appears while in Memory Scroll mode {page 42}. Appears while in Memory Channel mode or Memory Scroll mode {page 42}. In normal operating mode and various configuration modes, it displays the Memory Channel number, Quick Memory number, and entry log number. In Menu mode, it displays the Menu No. " " " 39}. ---- D ---- " appears when manual notch is set to Normal. " appears when Manual Notch is set to Wide. " appears when Auto Notch is selected {page Appears when the Fine Tuning function is ON {page 29}.

Appears when the MHz Step function is ON {page 28}. Also appears when the Quick Menu function is ON {page 14}. " " or " " appears, depending on whether DSP Noise Reduction 1 or Noise Reduction 2 is selected {page 39}. " " appears when the RX Equalizer function is ON {page 55}. " " appears when the TX Equalizer function is ON {page 32}.

" " or " " appears, when you select the DSP Beat Cancel 1 or Beat Cancel 2 {page 39}. " " appears when the Tone function is ON {page 25}, and blinks during Tone scan. " " appears when the CTCSS (Continuous Tone Coded Squelch System) function is ON, and blinks during CTCSS scan {page 26}. " " appears when the Cross Tone function is ON {page 27}. ---- C ---- Appears while in Data mode {page 38}.

Appears while in narrow FM mode {page 11}. Appears when the receiver pre-amplifier is ON {page 40}. Appears when the receiver's attenuator is ON {page 40}. 7 A B C D E F Appears when the VOX (Voice Operated Transmission) function is ON or the Break-in function is ON for CW mode {page 30}. Appears when the Frequency Lock function is ON {page 53}. Appears when the Speech Processor function is ON {page 31}. Appears when the constant recording function is ON {page 60}. Reserved for future updates. Appears when the selected Menu No. is in the Quick Menu list {page 14}.

It also appears when the transceiver is scanning the frequencies between the slow down frequency points {page 47}. Appears when Receive Incremental Tuning function is ON {page 29}. Appears when Transmit Incremental Tuning function is ON {page 31}. ---- F ---- (Main Display) In normal operating mode and various configuration modes, it displays the transceiver operating frequency. In Menu mode, it displays the various menus, and in Adjustment mode, it displays the adjustment values. (Sub-display) When recalling a memory channel, it displays the Memory Channel name (if one has been programmed). During split frequency operation, it displays the frequency. When the following indications occur simultaneously, information is displayed in the following order:

RIT/XIT frequency, Split frequency, Memory Name. In Menu mode, it displays a menu title. In other modes, it displays the configuration parameters. Appears when the split-frequency operation is ON {page 24}. " " appears while VFO A is selected. " " appears while transmitting on a split channel in VFO A {page 10}. " " appears while Menu A is being accessed in Menu mode {page 14}. " " appears while VFO B is selected.

" " appears while transmitting on a split channel in VFO B {page 10}. " " appears while Menu B is being accessed in Menu mode {page 14}. " " appears while a simplex memory channel is selected. " " appears while a split memory channel is selected {page 41}. ---- E ---- Appears when the RX ANT terminal is enabled {page 50}.

Either " " or " " appears, depending on which antenna connector is selected {page 50}. " " appears while the internal antenna tuner {page 61} is in-line for operation. " " appears while receiving when the internal antenna tuner is in-line for operation. " " and " " blink while tuning is in progress {page 50}.

Appears when the DRV terminal is enabled {page 50}. 8 ANT 1 and ANT 2 connectors Connect your primary HF/ 50 MHz antenna to ANT 1 connector. If you are using 2 antennas for the HF/ 50 MHz band, connect the secondary antenna to the ANT 2 connector {page 1}. GND post Connect a heavy gauge wire or copper strap between the ground post and the nearest earth ground {page 1}. AT connector Mates with the connector from the cable supplied with the AT-300 external antenna tuner {pages 66, 68}. Refer to the instruction manual supplied with the tuner for more information.

DC 13.8 V connector Connect a regulated 13.8 V DC power source to this connector {page 1}. Use the DC cable supplied with the transceiver. COM connector Mates with a DB-9 female connector for connecting a computer or compatible transceiver {pages 57, 65}. Also used with the Quick Data Transfer function {page 57} and DX PacketCluster Tune function {page 63}. (USB) connector Mates with a USB connector for connecting a computer via one of its USB ports {pages 57, 67}. jack Mate with a 3.5 mm (1/8"), 2-conductor (mono) plug for connecting an external speaker {page 2}. ACC 2 connector Mates with a 13-pin male DIN connector for connecting various accessory equipment, such as an external TNC/MCP or a RTTY terminal {page 65}.

REMOTE connector Mates with a 7-pin male DIN connector for connecting an HF/ 50 MHz linear amplifier {page 65, 68}. KEY and PADDLE jacks The KEY jack mates with a 3.5 mm (1/8") 2-conductor plug for connecting an external key for CW operation. The PADDLE jack mates with a 6.3 mm (1/4") 3-conductor plug for connecting a keyer paddle to the internal electronic keyer.

Refer to "Keys for CW (PADDLE and KEY)" {page 2} before using these jacks. DRV connector Connect an antenna drive device to this connector {page 50}.

RX ANT connector Connect an RX antenna to this connector {page 50}. PTT (Push-to-Talk) switch The transceiver is placed in Transmission mode when this non-locking switch is held down. Releasing the switch returns the transceiver to Reception mode.

/ Mic [UP]/ [DWN] Use these keys to step the VFO frequency, Memory Channels, or Menu selections up and down. Press and hold these keys to continuously change the settings. You can also change the operational function of these keys {page 54} 9 1 Switch the DC power supply ON. 2 Press [] to switch the transceiver ON. · If you hold the power switch for more than approximately 2 seconds, the transceiver will switch back OFF.



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· Upon power up, "HELLO" appears on the main display, followed by the current frequency and other indicators. The RF gain is normally configured to the maximum level regardless of the operating modes. The transceiver has been configured to the maximum level at the factory. However, you may decrease the RF gain slightly when you have trouble hearing the desired signal due to excessive atmospheric noise or interference from other stations. First, take note of the peak S-meter reading of the desired signal.

Then, turn the RF control counterclockwise until the S-meter reads the peak value that you noted. 3 To switch the transceiver OFF, press [] again. 4 Switch the DC power supply OFF. · You may skip step 3. After switching the transceiver ON, you can switch it OFF or ON using only the power switch of the DC power supply. The transceiver remembers the power switch position when the DC power source is switched OFF. · Signals that are weaker than this level will be attenuated and reception of the station will become easier. Depending on the type and gain of your antenna and the condition of the band, adjust the RF gain. When using FM mode, always adjust the RF gain to the maximum level. Turn the AF control clockwise to increase the audio level and counterclockwise to decrease it.

Two VFOs are available for controlling the frequency on the transceiver. Each VFO (VFO A and VFO B) works independently so that a different frequency and mode can be selected. For example, when SPLIT operation is activated, VFO A is used for reception and VFO B is used for transmission. The opposite combination is also possible. Press [A/B (A=B)] to toggle between VFO A and B.

Note: The position of the AF control does not affect the volume of beeps caused by pressing keys nor the CW TX sidetone. The audio level for Digital mode operation is also independent of the AF control setting. 10 Press [1.8 (1)] ~ [50 (0)] or [GENE] to select your desired band. Press one of the following keys to select your desired mode set: [LSB/USB], [CW/FSK (REV)], or [FM/AM (FM-N)].

[LSB/USB] Press to select LSB or USB mode. Press again to toggle between LSB and USB mode. While in LSB mode, press [DATA] to toggle between LSB and LSB-DATA mode. Likewise, while in USB mode press [DATA] to toggle between USB and USB-DATA mode. Additionally, while in LSB-DATA or USB-DATA mode, you can press [LSB/USB] to toggle between LSB-DATA and USB-DATA mode. [CW/FSK (REV)] Press to select CW or FSK mode. Press again to toggle between CW and FSK mode. While in CW mode, press and hold [CW/FSK (REV)] to toggle between CW and CW-R mode. Likewise, while in FSK mode press and hold [CW/FSK (REV)] to toggle between FSK and FSK-R mode. Additionally, while in CW-R or FSK-R mode, you can press [CW/FSK (REV)] to toggle between CW-R and FSK-R mode.

[FM/AM (FM-N)] Press to select FM or AM mode. Press again to toggle between FM and AM mode. While in FM mode, press and hold [FM/AM (FM-N)] to toggle between FM and FM-NAR mode, or press [DATA] to toggle between FM and FM-DATA mode. Additionally, while in FM-NAR mode, press [DATA] to toggle between FM-NAR and FM-NAR-DATA mode and while in FM-DATA mode, press and hold [FM/AM (FM-N)] to toggle between FM-DATA and FM-NAR-DATA mode. · Press each key to cycle through the 3 default settings as shown in the table below. Each setting can be modified with your personal preference for frequency and mode. After modifying the setting, pressing the key again will save that setting. Frequency Range (MHz) Default Setting (MHz)/

Mode 1 1.8/ CW 1.83/ CW 3.

5/ LSB 2 1.82/ CW 1.84/ CW 3.7/ LSB 7.1/ LSB 7.

05/ LSB 10.12/ CW 14.1/ USB 18.11/ USB 21.15/ USB 24.

93/ USB 28.3/ USB 50.125/ USB 50.15/ USB 5.3305/ USB 5.2585/ USB 3 1.84/ CW 1.81/ CW 3.8/ LSB 3.79/ LSB 7.

2/ LSB 7.1/ LSB 10.14/ CW 14.2/ USB 18.15/ USB 21.3/ USB 24.95/ USB 29/ FM 51/ FM Key Type K [1.8 (1)] E K [3.5 (2)] E K [7 (3)] E [10 (4)] [14 (5)] [18 (6)] [21 (7)] [24 (8)] [28 (9)] All All All All All All K [50 (0)] E K [GENE] E 0.03 ~ 60 50 ~ 54 10 ~ 10.

5 13.5 ~ 14.5 18 ~ 19 20.5 ~ 21.5 24 ~ 25 27.

5 ~ 30 6.5 ~ 7.5 3~4 1.62 ~ 2 7.0/ LSB 10.

1/ CW 14.0/ USB 18.068/ USB 21.0/ USB 24.89/ USB 28/ USB 50/ USB Access Menu No. 23 then press [M.IN] to select "on" to turn the Auto Mode selection ON. When it is ON, " " appears. As a default, if you change the frequency above or below 9.5 MHz, the transceiver automatically switches modes; LSB for frequencies under 9.

5 MHz and USB for frequencies 9.5 MHz and over. You can further add the frequency borders to the Auto Mode selection (page 51). 0.1357/ CW 5.4305/ USB 11 The purpose of the Squelch is to mute the speaker when no signals are present. With the squelch level correctly set, you will hear sound only while actually receiving signals. The higher the selected squelch level, the stronger the signals must be to receive. The appropriate squelch level depends on the ambient RF noise conditions. Turn the SQL control when there are no signals present to select the squelch level at which the background noise is just eliminated; the green TX-RX LED will turn off.

Many ham operators prefer leaving the SQL control fully counterclockwise unless operating on a full-carrier mode such as FM. The squelch level for the transceiver is preset at the factory to approximately the 9 o'clock position for FM and 11 o'clock for SSB and AM. The multi-function meter measures the parameters in the table below. The S-meter and FILTER scales appears when the transceiver is in receive mode, and the PWR meter appears when it is in transmit mode. Each press of [METER (DRV)] cycles between the ALC, COMP, and SWR meters.

Peak readings for the S-meter, ALC, SWR, COMP, and PWR functions are held momentarily. ALC COMP Turn the Tuning control clockwise or press Mic [UP] to increase the frequency. Turn the Tuning control counterclockwise or press Mic [DWN] to decrease the frequency. SWR Meter Name S PWR ALC SWR You may prefer directly entering a frequency using the numeric keypad if the desired frequency is far from the current frequency. Press [ENT], then press the numeric keys as necessary.

For details, refer to "Direct Frequency Entry" (page 28). COMP FILTER Parameters Measured Strength of received signals Transmission output power Automatic level control status Antenna system standing wave ratio Speech compression level when using the Speech Processor (page 31) IF filter width (page 38) Note: The COMP meter functions only when the Speech Processor is ON for SSB, FM, or AM mode. Peak Hold readings cannot be deactivated. The S-meter responds differently in FM mode, compared to other modes. This is not a malfunction. 12 For voice communications, press and hold Mic [PTT] and speak into the microphone in your normal voice. When you finish speaking, release Mic [PTT] to receive. To transmit CW, press [VOX (REV)] to turn the "Break" appears. Close the key or in function ON. " keyer paddle.

Connect a key or keyer paddle (page 2), then select CW using [CW/FSK (REV)].



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For a detailed explanation on transmitting, refer to "BASIC COMMUNICATIONS", beginning on page 21. The microphone gain must be adjusted when SSB or AM mode is selected without using the speech processor {pages 21, 22}. 1 Press [MIC (CAR)]. It is wise to select a lower transmission power if communication is still reliable. This lowers the risk of interfering with others on the band. When operating from battery power, selecting a lower transmission power allows you more operating time before recharging is necessary. This transceiver allows you to change the transmission power even while transmitting.

1 Press [PWR (TX MONI)]. · The current microphone gain level appears.

The range is from 0 to 100 with a default of 50. 2 Press and hold Mic [PTT]. · The TX-RX LED lights red. 3 SSB: While speaking into the microphone, adjust the MULTI/CH control so that the ALC meter reflects your voice level but does not exceed the ALC limit. AM: While speaking into the microphone, adjust the MULTI/CH control so that the power meter slightly reflects your voice level.

FM: Access Menu No. 47 and select "1" (Normal), "2" (Medium), or "3" (High) for the microphone gain if necessary {page 21}. · The current transmission power appears. 2 Turn the MULTI/CH control counterclockwise to reduce the power or clockwise to increase the power. 4 Release Mic [PTT] to receive. · The TX-RX LED lights green or turns off, depending on the SQL control setting. 5 Press [MIC (CAR)] or [CLR] to exit the Microphone gain adjustment. 3 Press [PWR (TX MONI)] or [CLR] to complete the setting. Note: You can access Menu No. 48, and select "on" to change the step size from 5 W to 1 W {page 56}. Note: When using the MC-90 microphone in FM mode, select "3" (High) for the microphone gain. The microphone sensitivity is low in FM mode. This may cause insufficient modulation. For other microphones, select either "1" (Normal) or "2" (Medium). 13 Many functions on this transceiver are selected or configured via a software-controlled Menu, rather than through the physical controls of the transceiver.

Once familiar with the Menu system, you will appreciate the versatility it offers. You can customize the various timings, settings, and programming functions on this transceiver to meet your needs without using many controls and switches. Because the number of functions this transceiver provides is extraordinary, there are numerous items in each Menu. If you find accessing desired Menu Nos. to be too time consuming, use the Quick Menu to create your own customized, abbreviated Menu. You can then add those Menu Nos. which you frequently use, to the Quick Menu. Copying Menu Nos. to the Quick Menu has no effect on the Menu. 1 Press [MENU].

This transceiver has 2 menus: Menu A and Menu B. These menus contain identical functions and can be configured independently. The transceiver, therefore, allows you to switch between 2 different environments quickly and easily. For example, you can configure Menu A for DXing and contesting while Menu B is for relaxed local ragchewing. By switching from Menu A to Menu B, you can instantly change the Menu configuration and key assignment to suit your current operating style.

Or, 2 operators may share a single transceiver by dedicating one Menu to each operator. Both operators can always enjoy their own configuration. 2 Press [Q-M.IN]/[Q-MR] or turn the MULTI/CH control to select the desired Menu No. 3 Press [FINE (F.LOCK)]. · " " appears, indicating that the Menu item has been added to the Quick Menu. · To remove the item from the Quick Menu, press [FINE (F.LOCK)] again. " " disappears. 4 Press [MENU] to exit Menu mode. 1 Press [MENU]. · The Menu No. and setting appear on the display, and the explanation of the menu appears on the sub-display. 1 Press [MENU].

2 Press [MHz]. " " appears. · 2 Press [A/B (A=B)] to select Menu A or B. · " " or " " appears, indicating which Menu is selected. 3 Press [Q-M.IN]/[Q-MR] or turn the MULTI/CH control to select the desired Menu No. · Each time you change the Menu No., a different scrolling message appears on the sub-display, describing the Menu No. 4 Press [M.IN]/[SCAN (SG.

SEL)], or Mic [UP]/[DWN] to select a parameter. 3 Press [Q-M.IN]/[Q-MR] or turn the MULTI/CH control to select the desired Quick Menu No. 4 Press [M.IN]/[SCAN (SG.

SEL)], or Mic [UP]/[DWN] to change the current setting for the selected Menu No. · When the Menu is registered to the Quick Menu list, " " appears. 5 Press [MENU] to exit Quick Menu mode. Note: If the Quick Menu has not been programmed, Press [Q-M.IN]/[Q-MR] or turning the MULTI/CH control in step 2 causes "CHECK" to be output in Morse code.

5 Press [MENU] to exit Menu mode. 14 Category No. Display brightness 00 Description Display* Off, 1: minimum, 6: maximum DISPLAY BRIGHTNESS Display backlight color Settings** Default** OFF/ 1 ~ 6 4 1/2 1 1/2/3 Ref. Page 53 Operator Interface 01 1: amber, 2: green BACKLIGHT COLOR Panel key response for double function 1: 0.2 second, 2: 0.5 second, 3: 1 second PANEL KEY RESPONSE FOR DOUBLE FUNCTIONS Beep output level 53 02 53 2 OFF/ 1 ~ 9 (1 step) 4 OFF/ 1 ~ 9 (1 step) 4 OFF/ 1 ~ 9 (1 step) 4 OFF/ 1 ~ 7 (1 step) 4 0 ~ 4 (1 step) 1 EN/ JP EN OFF/ ON ON 0.1/ 0.5/ 1 [MHz] 1 250/ 500/ 1000 [Hz] 1000 OFF/ ON 28 ON OFF/ ON K type: OFF E type: ON 0.5/ 1/ 2.5/ 5/ 10 [kHz] 5 15 28 29 60 28 61 62 62 59 23, 35 03 OFF, 1: minimum, 9: maximum BEEP VOLUME Sidetone volume 52 Volume 04 OFF, 1: minimum, 9: maximum SIDETONE VOLUME VGS-1 message playback volume 05 OFF, 1: minimum, 9: maximum MESSAGE PLAYBACK VOLUME VGS-1 announcement volume 06 OFF, 1: minimum, 7: maximum VOICE GUIDE VOLUME VGS-1 announcement speed 07 Voice Guide 08 0: slow, 4: fast VOICE GUIDE SPEED VGS-1 announcement language EN: English, JP: Japanese VOICE GUIDE LANGUAGE VGS-1 auto announcement AUTO ANNOUNCEMENT MHz step MHz STEP Tuning control adjustment rate TUNING CONTROL CHANGE RATE PER REVOLUTION Rounds off VFO frequencies changed by using the MULTI/CH control FREQUENCY ROUNDING OFF WHEN USING MULTI/CH CONTROL 9 kHz frequency step size for the MULTI/CH control in AM mode on the AM broadcast band MULTI/CH CONTROL 9KHZ STEP CHANGE IN AM BROADCAST BAND Frequency step size for the MULTI/CH control in SSB/ CW/ FSK mode MULTI/CH CONTROL 09 10 11 12 Tuning 13 14 28 Category No.

Description Display* Frequency step size for the MULTI/CH control in AM mode AM MULTI/CH CONTROL Frequency step size for the MULTI/CH control in FM mode FM MULTI/CH CONTROL Number of quick memory channels NUMBER OF QUICK MEMORY CHANNELS Tunable memory recall frequencies TUNABLE MEMORY RECALL FREQUENCIES Program scan partially slowed PROGRAM SCAN PARTIALLY SLOWED Slow down frequency range for the program scan PROGRAM SLOW-SCAN RANGE Settings** Default** 5/ 6.



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25/ 10/ 12.5/ 15/ 20/ 25/ 30/ 50/ 100 [kHz] 5 5/ 6.25/ 10/ 12.5/ 15/ 20/ 25/ 30/ 50/ 100 [kHz] 10 3/ 5/ 10 [ch] 5 OFF/ ON OFF OFF/ ON ON 100/ 200/ 300/ 400/ 500 [Hz] 300 OFF/ ON OFF TO/ CO TO ON/ OFF OFF 0 ~ 4 (1 step) 2 10/ 100/ 200/ 300/ 400/ 500 [Hz] 300 2500/ 2600/ 2700/ 2800/ 2900/ 3000 [Hz] 2700 10/ 100/ 200/ 300/ 400/ 500 [Hz] 300 2500/ 2600/ 2700/ 2800/ 2900/ 3000 [Hz] 2700 SOFT/ HARD HARD Ref. Page 28 15 Tuning (continued) 16 28 17 Memory Channel 18 19 45 42 47 20 Scan 21 22 Auto Mode 23 24 47 Program scan hold PROGRAM SCAN HOLD Scan resume method SCAN RESUME METHOD Auto mode operation AUTO MODE OPERATION Auto notch tracking speed AUTO NOTCH TRACKING SPEED TX filter for SSB/AM low cut TX FILTER FOR SSB/AM LOW CUT 47 48 51 39 25 32 26 DSP Function 27 TX filter for SSB/AM high cut TX FILTER FOR SSB/AM HIGH CUT TX filter for SSB-DATA low cut TX FILTER FOR SSB-DATA LOW CUT 32 32 28 TX filter for SSB-DATA high cut TX FILTER FOR SSB-DATA HIGH CUT 32 29 Speech processor effect SPEECH PROCESSOR EFFECT DSP TX equalizer oFF: Off, Hb1: High boost1, Hb2: High boost2, FP: Formant pass, bb1: Bass boost1, bb2: Bass boost2, c: Conventional, U: User (Reserved for ARCP software) DSP TX EQUALIZER DSP RX equalizer oFF: Off, Hb1: High boost1, Hb2: High boost2, FP: Formant pass, bb1 Bass boost1, bb2: Bass boost2, FLAT: Flat U: User (Reserved for ARCP software) DSP RX EQUALIZER 31 30 OFF/ HB1/ HB2/ FP/ BB1/ BB2/ C/ U 32 Equalizer OFF 31 OFF/ HB1/ HB2/ FP/ BB1/ BB2/ FLAT/ U 55 OFF 16 Category No. 32 33 34 35 Description Display* Electric keyer mode ELECTRIC KEYSER MODE Keying priority over playback KEYING PRIORITY OVER PLAYBACK CW RX pitch/ TX sidetone frequency CW RX PITCH/TX SIDETONE FREQUENCY CW rise time CW RISE TIME CW keying dot, dash weight ratio CW WEIGHTING Settings** Default** A/ B B OFF/ ON OFF 300 ~ 1000 (50 [Hz] step) 800 1/ 2/ 4/ 6 [ms] 6 AUTO/ 2.5 ~ 4.0 (0.1 step) AUTO OFF/ ON OFF OFF/ ON OFF OFF/ ON OFF PF/ PA PF OFF/ ON OFF OFF/ ON OFF OFF/ ON OFF 170/ 200/ 425/ 850 [Hz] 170 OFF/ ON OFF 1275/ 2125 [Hz] 2125 1~3 1 OFF/ ON OFF OFF/ 3/ 5/ 10/ 20/ 30 (min) OFF OFF/ 1/ 2 OFF Ref.

Page 33 34 23 33 36 33 37 CW 38 39 Reverse CW keying auto weight ratio REVERSED CW WEIGHTING Bug key function BUG KEY FUNCTION Reversed dot and dash keying REVERSED DOT AND DASH KEYING MIC UP/DWN key paddle function PF: PF key PA: Paddle 33 34 35 40 36 MIC UP/DWN KEY FUNCTION 41 Auto CW TX when keying in SSB AUTO CW TX WHEN KEYING IN SSB Frequency correction for changing SSB to CW 42 FREQUENCY CORRECTION FOR SSB-TO-CW CHANGE No Break-in operation while adjusting keying speed NO BK-IN WHILE ADJUSTING KEYING SPEED 44 FSK 45 46 FSK shift FSK SHIFT FSK keying polarity REVERSED FSK KEY-DOWN POLARITY FSK tone frequency FSK TONE FREQUENCY MIC gain for FM FM 47 1: Low, 2: Mid, 3: Hi FM MIC GAIN 48 TX Control 49 Fine transmission power tuning FINE TRANSMIT POWER CHANGE STEPS Time-out timer TIME-OUT TIMER Transverter 50 Xverter/ power down of Xverter XVERTER/ POWER DOWN OF XVERTER 36 36 43 33 37 37 21 56 55 55 17 Category No. 51 Description Display* TX hold when AT completes the tuning ANTENNA TUNER TX HOLD In-line AT while receiving ANTENNA TUNER FOR RECEPTION Linear amplifier control relay for HF band HF LINEAR AMPLIFIER CONTROL RELAY Linear amplifier control relay for 50 MHz band 50MHZ LINEAR AMPLIFIER CONTROL RELAY Constant recording CONSTANT RECORDING Repeat the playback PLAYBACK REPEAT Interval time for repeating the playback PLAYBACK INTERVAL TIME Split frequency transfer in master/ slave operation TRANSFER SPLIT FREQUENCY DATA TO ANOTHER TRANSCEIVER Permit to write the transferred split frequencies to the target VFOs COPY SPLIT FREQUENCY DATA TO VFO TX inhibit TX INHIBIT COM port communication speed COM PORT BAUDRATE USB port communication speed Settings** Default** OFF/ ON OFF OFF/ ON OFF OFF/ 1/ 2/ 3 OFF OFF/ 1/ 2/ 3 OFF OFF/ ON ON OFF/ ON OFF 0 ~ 60 [s] (1 step) 10 OFF/ ON OFF OFF/ ON OFF OFF/ ON OFF 4800/ 9600/ 19200/ 38400/ 57600/ 115200 9600 (bps) 4800/ 9600/ 19200/ 38400/ 57600/ 115200 115200 (bps) ACC2/ USB ACC2 0 ~ 9 (1 step) 4 0 ~ 9 (1 step) Ref. Page 50 50 53 53 60 36, 59 36, 59 Antenna Tuner 52 53 Linear Amp 54 55 Message 56 57 58 Split/ Transfer 59 57 57 TX Inhibit 60 32 61 PC (Communication) 62 57 58 USB PORT BAUDRATE Audio input line selection for data communications 63 AUDIO INPUT LINE SELECT FOR DATA COMMUNICATIONS Audio level of USB input for DATA communications 64 AUDIO LEVEL OF USB INPUT FOR DATA COMMUNICATIONS Audio level of USB output for DATA communications AUDIO LEVEL OF USB OUTPUT FOR DATA COMMUNICATIONS Audio level of ACC2 input for data communications 66 AUDIO LEVEL OF ACC2 INPUT FOR DATA COMMUNICATIONS AUDIO level of ACC2 output for data communications AUDIO LEVEL OF ACC2 OUTPUT FOR DATA COMMUNICATIONS Mixing beep tones for ACC2/USB audio output 68 MIXING BEEP TONES FOR ACC2/USB AUDIO OUTPUT 58 58 65 External Audio (Input/ Output) 58 4 0 ~ 9 (1 step) 4 0 ~ 9 (1 step) 58 4 OFF/ ON OFF 58 58 67 18 Category No. 69 70 71 72 Data VOX Description Display* VOX OPERATION WITH DATA INPUT Data VOX delay time DATA VOX DELAY TIME Data VOX gain for the USB audio input USB VOX GAIN Data VOX gain for the ACC2 terminal ACC2 VOX GAIN PKS polarity REVERSED PKS POLARITY Busy lockout (TX) BUSY FREQUENCY TRANSMISSION LOCKOUT CTCSS mute control CTCSS MUTE CONTROL PSQ control signal logic PSQ LOGIC OUTPUT PSQ source output condition PSQ SOURCE Settings** Default** OFF/ ON OFF 0 ~ 100 (5 step) 50 0 ~ 9 (1 step) 4 0 ~ 9 (1 step) 4 OFF/ ON OFF OFF/ ON OFF 1/ 2 1 LO/ OPEN LO OFF/ BSY/ SQL/ SND/ BSY-SND/ SQL-SND SQL OFF/ 60/ 120/ 180 [min] OFF 0 ~ 87, 100 ~ 134, 200 ~ 208, OFF 200 [VOICE1] 0 ~ 87, 100 ~ 134, 200 ~ 208, OFF 201 [VOICE2] 0 ~ 87, 100 ~ 134, 200 ~ 208, OFF 130 [A/B] 0 ~ 87, 100 ~ 134, 200 ~ 208, OFF 128 [SPLIT] 0 ~ 87, 100 ~ 134, 200 ~ 208, OFF 132 [M>V] 0 ~ 87, 100 ~ 134, 200 ~ 208, OFF 203 [MONITOR] 0 ~ 87, 100 ~ 134, 200 ~ 208, OFF 206 [DOWN] 0 ~ 87, 100 ~ 134, 200 ~ 208, OFF 207 [UP] HELLO/ EDIT KENWOOD Ref. Page 30 30 31 31 63 32 58 58 External Accessory Control 73 74 75 76 77 58 Timer 78 APO (Auto Power Off) function AUTO POWER OFF Front panel PF A key assignment FRONT PANEL PF A KEY ASSIGNMENT 50 79 54 80 Front panel PF B key assignment FRONT PANEL PF B KEY ASSIGNMENT 54 81 Microphone PF 1 key assignment MIC PF 1 KEY ASSIGNMENT 54 82 PF Keys 83 Microphone PF 2 key assignment MIC PF 2 KEY ASSIGNMENT Microphone PF 3 key assignment MIC PF 3 KEY ASSIGNMENT 54 54 84 Microphone PF 4 key assignment MIC PF 4 KEY ASSIGNMENT 54 85 Microphone DWN key assignment MIC DOWN KEY ASSIGNMENT 54 86 Microphone UP key assignment MIC UP KEY ASSIGNMENT 54 Message 87 Power on message POWER ON MESSAGE 23 * The bolded lettering of the display message is what appears on the display while paused.



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*** Settings and default values may be modified. 19 When character entry is required, a cursor will appear on the display. 1 Move the cursor to the left or right by pressing [QM.IN] or [Q-MR]. 2 Turn the MULTI/CH control or press [M.*

IN]/ [SCAN (SG.SEL)] to select your desired character. · You can delete the selected character by pressing [CL]. 3 Repeat steps 1 and 2 to enter the remaining characters. 4 Press [MENU] to set the entry and to exit character entry mode. · Press [CLR] at any time to cancel character entry mode and return to the Menu selection. Available alphanumeric characters: A B C D E F G H I J K L M N O P Q(q) R S T U V W X Y Z (space) + / 0 1 2 3 4 5 6 7 8 9 Note: Refer to page 23 to change the Power On message, and page 43 to register a Memory Channel name. 20 SSB is the most commonly-used mode on the HF Amateur radio bands. Compared with other voice modes, SSB requires only a narrow bandwidth for communications. SSB also allows long distance communications with minimum transmission power.

If necessary, refer to "OPERATING BASICS", beginning on page 10, for details on how to receive. 1 Select an operating frequency. 2 Press [LSB/USB] until "USB" or "LSB" appears on the operating mode display. · If the desired sideband ("USB" or "LSB") does not appear, select the other sideband first. Then, press [LSB/USB]. The mode indicator changes to your desired sideband. · "USB" represents the upper sideband and "LSB" represents the lower sideband. Normally, USB is used for the communications for 10 MHz and above while LSB is used for the frequencies below 10 MHz. FM is a common mode for communicating on VHF or UHF frequencies. As for HF and the 6 m band, 29 MHz and 51-54 MHz bands are commonly used for FM operation.

You can also utilize 10 m/6 m band repeaters to reach your friends when they are outside or skipped over from your coverage. Although FM requires a wider bandwidth when compared to SSB or AM mode, it has the finest audio quality among these modes. When combined with the full-quieting aspect of FM signals, which suppresses background noise on the frequency, FM can be the best method for maintaining casual communications with your local friends. If necessary, refer to "OPERATING BASICS", beginning on page 10, for details on how to receive. 1 Select an operating frequency.

2 Press [FM/AM (FM-N)] until "FM" appears. · If "FM" does not appear, select "AM", then press [FM/AM (FM-N)]. The mode indicator changes to "FM". 3 Press [MIC (CAR)] to adjust the Microphone gain. · The current gain level appears on the subdisplay.

3 Press and hold Mic [PTT]. · The TX-RX LED lights red. · Refer to "VOX" {page 30} for information on automatic TX/ RX switching. 4 Speak into the microphone in your normal voice. · Speaking too close to the microphone or too loudly may increase distortion and reduce intelligibility at the receiving end.

You can switch the Microphone gain for FM between 1 (Normal), 2 (Medium), and 3 (High) by using Menu No. 47. 1 (Normal) is usually appropriate; however, select 3 (High) if other stations report that your modulation is weak. 5 Release Mic [PTT] to return to Reception mode. · The TX-RX LED lights green or turns off, depending on the SQL control position.

Refer to "COMMUNICATING AIDS", beginning on page 28, for additional information on useful operation functions. Note: Microphone gain adjustment for SSB or AM has no effect in FM mode. In FM mode, you must select 1 (Normal), 2 (Medium), or 3 (High) in Menu No. 47. 4 Press and hold Mic [PTT]. · The TX-RX LED lights red. · Refer to "VOX" {page 30} for information on automatic TX/ RX switching. 5 Speak into the microphone and turn the MULTI/CH control so that the ALC meter reflects your voice level but does not exceed the ALC limit. · Speak in your normal tone and level of voice. Speaking too close to the microphone or too loudly may increase distortion and reduce intelligibility at the receiving end.

· You may want to use the Speech Processor. Refer to "SPEECH PROCESSOR" {page 31} for details. 6 Release Mic [PTT] to return to Reception mode. · The TX-RX LED lights green or turns off, depending on the SQL control position. 7 Press [MIC (CAR)] or [CLR] to exit the Microphone gain adjustment.

Refer to "COMMUNICATING AIDS", beginning on page 28, for information on additional useful operation functions. 21 Each mode used on the HF Amateur bands has its own advantages. Although long distance DX contacts may be less common while using AM, the superior audio quality characteristic of AM operation is one reason why some hams prefer this mode. If necessary, refer to "OPERATING BASICS", beginning on page 10, for details on how to receive. 1 Select an operating frequency.

2 Press [FM/AM (FM-N)] until "AM" appears. · If "AM" does not appear, select "FM" first, then press [FM/AM (FM-N)]. The mode indicator changes to "AM". Select wide band or narrow band TX deviation depending on whether the other station is using wide band or narrow band filter for FM mode. While "NAR" appears, the TS-590S transceiver transmits signals in narrow band FM but the reception IF filter bandwidth remains unchanged (Wide). The deviation selection is crucial to avoid audio distortion or insufficient intelligibility that the other station will encounter. 1 Press [FM/AM (FM-N)] until "FM" appears. · If "FM" does not appear, select "AM" first, then press [FM/AM (FM-N)]. The mode indicator changes to "FM". 2 Press and hold [FM/AM (FM-N)] to toggle the selection between wide and narrow TX deviation.

" appears when narrow TX deviation is ." selected. 3 Press [MIC (CAR)] to enter the Microphone gain adjustment mode. · The current gain level appears on the subdisplay. 4 Press and hold Mic [PTT]. · The TX-RX LED lights red. · Refer to "VOX" {page 30} for information on automatic TX/ RX switching. 5 Speak into the microphone and adjust the MULTI/CH control so that the power meter slightly reflects your voice level. · Speak in your normal tone and level of voice. Speaking too close to the microphone or too loudly may increase distortion and reduce intelligibility at the receiving end. · You may want to use the Speech Processor.

Refer to "SPEECH PROCESSOR" {page 31} for details. 6 Release Mic [PTT] to return to Reception mode. · The TX-RX LED lights green or turns off, depending on the SQL control position. 7 Press [MIC (CAR)] or [CLR] to exit the Microphone gain adjustment mode. Refer to "COMMUNICATING AIDS", beginning on page 28, for information on additional useful operation functions.

Note: When the TX power meter reading exceeds the value that you specified in the TX Power setting {page 56}, decrease the microphone gain or adjust your tone and level of voice.



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