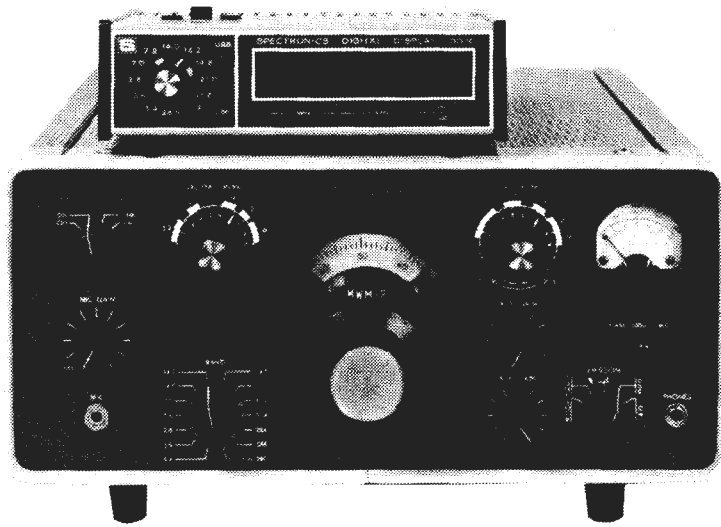


INSTRUCTION MANUAL DIGITAL FREQUENCY DISPLAY



DD-1C



SPECTRONICS / 1491 EAST 28TH STREET
SIGNAL HILL, CALIFORNIA 90806

Description

The SPECTRONICS Model DD-1C Digital Frequency Display is designed to operate in conjunction with the Collins KWM2/2A transceivers and 75S series receivers. The DD-1C provides a six digit display of both transmitted and receive frequency in the "transceive" mode (receive frequency only with "S-LINE" operating in split-frequency mode).

The displayed frequency is indicated in MHz, kHz, and hundreds of Hz, providing rapid interpretation by the operator. The display is updated approximately 17 times per second, thus permitting an instantaneous readout while tuning across the band.

Specifications

Frequency display ranges	3.4 to 4.0; 7.0 to 7.4; 14.0 to 14.4; 14.8 to 15.0; 21.0 to 21.6; and 28.5 to 28.7 MHz
Input frequency range	2500 to 2700 kHz
Frequency display	6 digits
Accuracy	Within 100 Hz \pm 1 count
Counting time	10 milliseconds
Clock frequency	8 MHz
Semiconductor complement	21 IC's, 1 transistor, 76 diodes
Power source	105 to 125V, 50/60 Hz
Dimensions	8½"w x 6"d x 3"h (not including knobs and connectors)
Weight	3 lbs

General

The DD-1C Digital Frequency Display should be located where an unobstructed flow of cool air may be obtained around the unit. If the unit is situated on top of the transceiver (or receiver), use a sheet of cork or asbestos under the digital display as a heat buffer.

Connection

The DD-1C is supplied with a gray interconnecting cable that has an RCA type jack molded into the cable at each end. Connect one end to the DD-1C and the other end to the RCA type receptacle marked "EXT VFO" on the rear of the KWM2/2A. When the DD-1C is used with the 32S-75S series it is necessary to connect the DD-1C cable in parallel with the VFO output cable leading to the transmitter. Commercial "Y" connectors suitable for this purpose are the "Radio Shack" p/n 274-303 or the "Switchcraft" p/n 330 FP1. The "Y" connector simply plugs into the RCA jack marked "VFO OUTPUT" on the rear apron of the 75S and provides connections for both the transmitter and the DD-1C cables.

Operation

General - Your DD-1C has been factory calibrated to a secondary frequency standard referenced to WWV. The overall accuracy of the digital frequency readout however will depend on the tolerance of the heterodyne crystals in the first local oscillator circuit of the transceiver or receiver. These are normally close enough that any error will be minimized between bands. If a significant error is noted when checked against WWV, you may recalibrate the DD-1C to your transceiver or receiver as described in the MAINTENANCE section.

You may notice some non-linearity between the readout on the DD-1C and the "analog dial" of your transceiver or receiver as you tune across the band. In this case the DD-1C is providing a correct frequency readout; the non-linearity is in the mechanical "tracking" of the associated unit's VFO/dial drive.

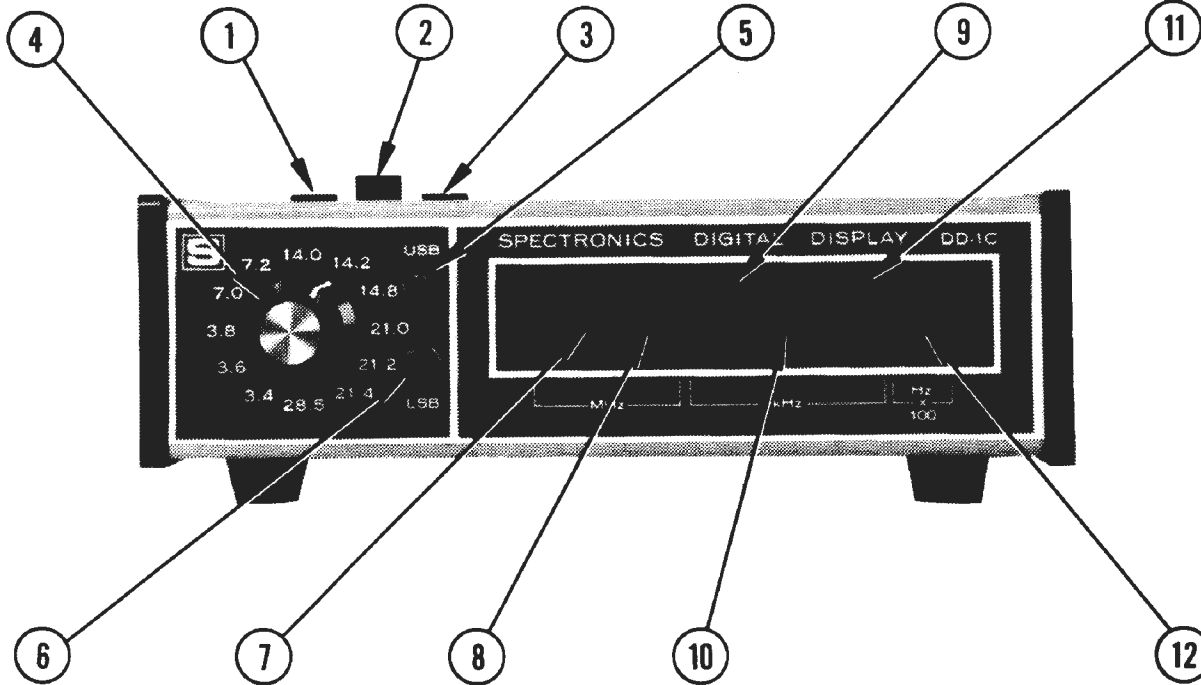


Figure 1. Controls and Indicators

Controls and Indicators - The various controls and indicators are shown in Figure 1. The function of each is as follows:

1. POWER Switch - This switch applies power to the DD-1C when pressed.
2. MODE Switch - This switch re-programs the DD-1C to provide the correct readout for USB or LSB, also illuminates the appropriate indicator.

NOTE: The MODE switch must be set to the same position as the EMISSION switch in the transceiver (or receiver). For CW or AM, however, use the USB position.

3. Hz x 100 Switch - This switch illuminates the 100 Hz readout when pressed.
4. Band Switch - This switch selects the desired 200 kHz segment of the band to be displayed and also programs

the counter. This switch must also be set to the same position as the BAND switch in the transceiver (or receiver) for proper readout.

5. USB Indicator - Illuminated when USB mode is selected.
6. LSB Indicator - Illuminated when LSB mode is selected.
7. First Digit Display - Readout for MHz x 10 (this digit is not illuminated when the Band switch is in the 3.4 thru 7.2 positions).
8. Second Digit Display - Readout for MHz x 10.
9. Third Digit Display - Readout for kHz x 100.
10. Fourth Digit Display - Readout for kHz x 10.
11. Fifth Digit Display - Readout for kHz x 1.
12. Sixth Digit Display - Readout for Hz x 100 (this digit is not illuminated unless the Hz x 100 switch is pressed).

Operating Procedure - Operation of the DD-1C is automatic once the Band and MODE switches have been set to correspond to the frequency segment and EMISSION positions of the transceiver (or receiver). Once the analog dial of the associated unit has been calibrated at a 100 kHz marker the digital readout of the DD-1C will be the same except for possible non-linearity in mechanical tracking of the VFO previously discussed.

NOTE: The 100 Hz digit will exhibit an ambiguity of ± 1 . This is normal, however, if it is distracting release the Hz x 100 switch to extinguish the last digit.

General

Your DD-1C Digital Display has been carefully calibrated and tested prior to shipment from the factory. The reliability of the solid-state devices employed in the DD-1C should provide years of trouble free service if the unit is not abused.

CAUTION: DO NOT APPLY ANY VOLTAGE, OR SIGNAL, OTHER THAN THE TRANSCIEVER (OR RECEIVER) VFO OUTPUT AT THE DD-1C INPUT RECEPTACLE. FAILURE TO OBSERVE THIS PRECAUTION WILL RESULT IN SEVERE DAMAGE.

Routine Maintenance

Routine maintenance should be limited to keeping the unit clean, and periodic calibration checks against WWV.

Cleaning - When the DD-1C is used in dusty or sandy areas the interior should be periodically cleaned. A vacuum cleaner, or low pressure air source should be used, while accumulated dirt may be removed with a soft brush and alcohol. Check that the interior is thoroughly dry before replacing the cover and/or operating the equipment. Wipe the exterior with a damp cloth whenever required.

Calibration - Periodically check the accuracy of the digital readout against WWV at 15 MHz in both the USB and LSB modes. If the calibration error exceeds ± 100 Hz in either mode the unit may be recalibrated as follows:

1. Remove the two screws at the top rear of the case; slide the top cover back and remove.
2. Apply power to the transceiver (or receiver) and DD-1C and allow at least 30 minutes warmup.

3. Set the Band switches on the transceiver (or receiver) and DD-1C to the 14.8 position and the MODE and EMISSION switches to the USB position. Press the Hz x 100 switch to illuminate the last digit.
4. Tune in WWV at 15 MHz. Wait until the voice time announcement is transmitted, then carefully adjust the tuning for "normal" sounding voice.
5. Adjust trimmer capacitor TC1 in the DD-1C until the display reads 15 0000.

NOTE: The last digit of the display will normally read ± 100 Hz of the actual frequency. However, a reading of either 14 9999 or 15 0001 is acceptable if you cannot get it to stabilize at 15 0000

Troubleshooting and Repair

The digital circuitry employed in the DD-1C requires specialized test equipment for troubleshooting not normally available to the average amateur. Therefore, it is recommended that the unit be returned to the factory for any required service.

In most cases a problem encountered with operation of the DD-1C may be traced to a loose interconnecting cable between the unit and the transceiver (or receiver).

Fuse Replacement

The DD-1C is protected in the 115 VAC primary circuit with a 3AG 1 ampere fuse. If the fuse blows it may be replaced as follows:

1. Disconnect the unit from the 115 VAC power source.
2. Remove the two screws at the top rear of the case; slide the top cover back and remove.
3. Replace the fuse and assemble the unit.

WARRANTY

SPECTRONICS INC. warrants each new product to be free from defective material and workmanship and agrees to remedy any such defect or to furnish a new part in exchange for any part of any unit of its manufacture which under normal installation, use and service discloses such defect, provided the unit is delivered by the owner to our authorized service center, intact, for examination, with all transportation charges prepaid within ninety days from the date of sale to original purchaser and provided that such examination discloses in our judgement that it is thus defective.

This warranty does not extend to any of our products which have been subjected to misuse, neglect, accident, incorrect wiring not our own, improper installation, or to use in violation of instructions furnished by us, nor extended to units which have been repaired or altered outside of our factory or authorized service center, nor to cases where the serial number thereof has been removed, defaced, or changed.

Any part of a unit approved for remedy or exchange hereunder will be remedied or exchanged by the authorized service center without charge to the owner.

SPECTRONICS INC. reserves the right to make design and specification changes without incurring any obligation to incorporate new features in equipment previously sold.

This warranty is in lieu of all other warranties expressed or implied and no representative or person is authorized to assume for us any other liability in connection with the sale of our products.

SPECTRONICS INC.