

**CHARLIE** OWNER'S MANUAL

**SUMO**  
SUMO ELECTRIC COMPANY LIMITED

# SPECIFICATIONS

	MONO	STEREO
Usable Sensitivity (I.H.F.) entire range:	2.5 $\mu$ V (13.5dBf)	4 $\mu$ V (17.3dBf)
Quieting Sensitivity (S/N=50dB):	3.7 $\mu$ V (16.5dBf)	40 $\mu$ V (37.4dBf)
Ultimate S/N Ratio (65dBf, 98MHz):	80dB	74dB
Distortion (65dBf-98MHz)	Wide:	1KHz-.04%, 10KHz-.05%
	Narrow:	1KHz-.10%, 10KHz-.10%
Muting Threshold:		6 $\mu$ V (20dBf)
Image Rejection Ratio:		90dB
I.F. Rejection Ratio:		110dB
Spurious Response (from 50MHz to 250MHz):		110dB
Capture Ratio (65dBf):		1dB
Alternate Channel Selectivity (45dBf)	Wide:	47dB
	Narrow:	75dB
AM Suppression (65dBf):		60dB
Frequency Response:		30Hz-15KHz, +.1dB, -.25dB
Subcarrier (38KHz) Rejection (65dBf-98MHz-Filter"ON")		63dB
Separation (65dBf-98MHz)	100Hz-45dB	1KHz-50dB 10KHz-45dB 15KHz-40dB

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## INTRODUCTION

Thank you for purchasing this SUMO product. The CHARLIE FM tuner represents a culmination of the very latest technological advances in audio engineering and delivers a level of performance which is simply unapproached by competitive products.

In order to achieve the maximum performance of which CHARLIE is capable, please read this manual thoroughly before attempting to operate the unit. If you have any questions concerning the use or maintenance of CHARLIE, please contact your dealer or SUMO Customer Service, 31316 Via Colinas, Suite 103, Westlake Village, CA. 91362, telephone (213) 991-5330.

## PRECAUTIONS

1. Be sure to turn your system's preamplifier volume down from loud settings when tuning CHARLIE. Very loud levels of interstation hiss may damage your speaker's high-frequency drivers.
2. Do not change any rear panel connections on CHARLIE while your system is turned on.

CAUTION: To prevent fire or shock hazard, do not expose this unit to rain or moisture.

## UNPACKING

Immediately upon receiving CHARLIE, carefully unpack and inspect it for any sign of damage. If any damage is evident, please contact your dealer immediately. Please save the shipping carton and all associated packing materials for future use. They have been carefully designed to transport CHARLIE with a minimum of disturbance.

Shipment to the factory of this unit for any purpose must be made in the original carton and packing. If the original is lost or damaged, contact SUMO Electric Company for replacement.

## INSTALLATION

CHARLIE is designed primarily for mounting on a shelf. If CHARLIE is to be inserted into a panel a 17-6/16 inch by 3-5/16 inch cutout must be provided.

## ELECTRICAL CONNECTIONS

(refer to Pictorial A)

With the power switch in the OFF position, plug the line cord into any 105-125V, 50 or 60 Hz outlet. Do not turn CHARLIE on until all connections have been made.

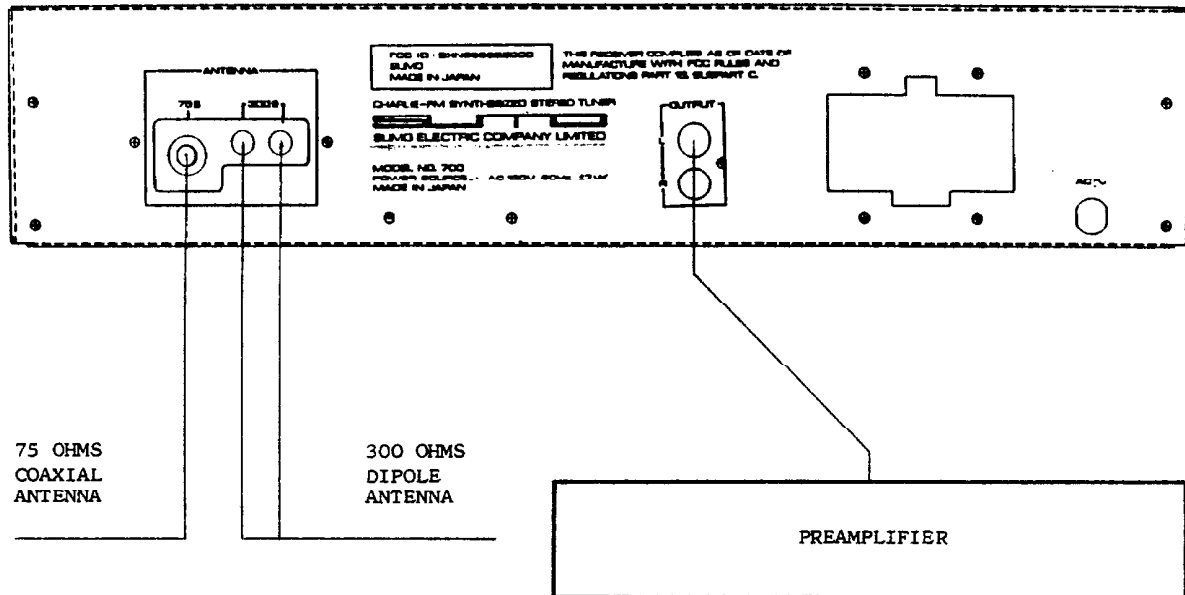
Connect the rear-panel output jacks to your preamplifier's or receiver's Tuner input (or other high-level input, such as Tape, Aux, et cetera) using the pair of audio cables supplied with the tuner.

ANTENNA CONNECTION: CHARLIE is supplied with a folded dipole antenna. Connect this to the terminals marked "300 Ohms" on the rear panel.

Despite its simplicity, the folded dipole is sensitive enough to receive most FM stations in the great majority of areas. Should you fail to receive satisfactory reception with the dipole, contact your dealer to find the correct antenna for your needs.

The 75-Ohm antenna system is usually characterized by a round coaxial cable. The cable typically terminates in a screw-fastened connector. This may be directly connected to the 75 Ohm jack on CHARLIE's rear panel.

# PICTORIAL A



## OPERATION

(refer to Pictorial B)

Depress the power switch; the red light above the switch will glow, and the digital display will be illuminated. When first operating CHARLIE, set the controls as follows:

### DISPLAY

(refer to Pictorial B)

CHARLIE's four-function LED display indicates the following:

**SIGNAL:** This indicates relative signal strength from the station tuned in. If it shows a weak signal condition (two or fewer bars illuminated), try reorienting the antenna for improved reception.

**MULTIPATH:** This indicates, in the same fashion as the SIGNAL function, the amount of multipath distortion being received with the signal. If it indicates too much distortion (three or more bars illuminated), try reorienting the antenna for the least amount.

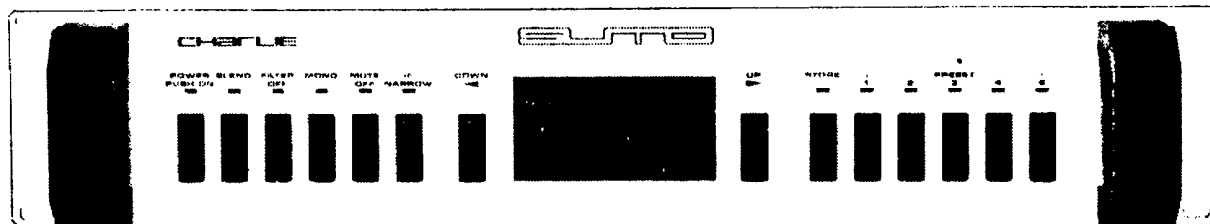
**NOTE:** Optimum tuning is achieved when the SIGNAL indicator shows maximum possible illumination and the MULTIPATH indicator shows minimum possible illumination.

**STEREO:** This indicator will be illuminated when the tuner receives a stereo broadcast.

**NOTE:** The STEREO function will light up only if the MONO switch is not engaged.

# CONTROLS LAYOUT (PICTORIAL B)

DISPLAY



ON/OFF SWITCH

BLEND

FILTER

MONO

MUTE

WIDE/NARROW

MEMORY  
PRESETS

MEMORY STORE

UP/DOWN TUNING

Similarly, CHARLIE will automatically switch a weak station into monaural (to reduce noise) only if the MUTE OFF switch is disengaged (i.e., the muting circuit is in, and the light above MUTE OFF does not glow).

MHz: This digital display indicates the frequency in megahertz of the station to which CHARLIE is tuned. The tuning circuitry of CHARLIE is fully quartz synthesized, so that once a station is tuned in the precise frequency of the station is locked in.

BLEND:	OUT (green light above switch does not glow)
FILTER OFF:	IN (red light above switch will glow)
MONO:	OUT (green light above switch will glow)
MUTE OFF:	IN (red light above switch will glow)
IF NARROW:	OUT (red light above switch does not glow)

Detailed operation of each function is as follows:

BLEND: Since the majority of FM stereo noise is out of phase, this switch reduces noise without sacrificing fidelity by partially blending high frequencies of the left and right channels.

FILTER OFF: When this switch is not engaged (i.e. when the red light is off), the 38K Hz carrier frequency is automatically filtered out. Use of this switch will defeat the filter to achieve maximum phase integrity.

MONO: When this switch is engaged, all stations will be blended into full monaural sound whether they are broadcasted in stereo or not. The light above the switch will glow in red to indicate monaural operation.

MUTE OFF: When this switch is not engaged (i.e. the red light is off), all noise between receivable stations will be eliminated from the output of the tuner. For normal listening, leave the switch out to mute this noise. Use the switch only when you wish to listen to an extremely weak broadcast.

IF NARROW: This switch allows the selection of either Wide (switch out) or Narrow (switch in) Intermediate Frequency (IF) filters. The wide position, for normal listening, provides optimum separation and lowest distortion. Use the narrow position when you wish to receive a weak broadcast where a much stronger station is near.



## TUNING AND STORING FM STATIONS

CHARLIE can store up to five different FM stations, any of which can then be recalled by depressing the appropriate PRESET switch. To store a station frequency, depress either the DOWN or UP search switch (located on either side of the display) and hold it in until the desired station is reached. When the display indicates the proper frequency, simply depress the STORE switch (the red light above it will glow) and then the PRESET number you wish to represent that station. Example: the display reads "89.1" and you wish to tune in 94.7 and store it in PRESET number 1. Depress the UP search switch until 94.7 is displayed. Now depress STORE, and then PRESET number 1. 94.7 will be instantly recalled any time PRESET number 1 is depressed. Repeat this action for the five stations you most often listen to. If you desire to listen to a station not stored in any of the PRESET numbers, simply use the UP or DOWN search switches to tune in the station you wish.

NOTES: Since the UP and DOWN functions search for stations very rapidly, it will probably be necessary when tuning to release the switch when the display indicates that the desired station is near. Then, tune in the precise station by touching the switch and quickly releasing it until the correct frequency is displayed.

If the STORE switch is accidentally depressed, do not attempt to defeat it by depressing any of the PRESET switches. The STORE function will automatically disengage within ten seconds.

## GENERAL MAINTENANCE AND SERVICE

Great care has been taken by the SUMO staff to insure that CHARLIE is as flawless in appearance as it is in performance. The front panel is finished with a high-grade anodizing process for durability as well as beauty. It can best be cleaned with a soft cloth dampened with a solution of liquid detergent and water. UNDER NO CIRCUMSTANCES should a lye solution or any abrasive cleanser (scouring powder, etc.) be used on any part of the unit.

SUMO Electric Company has a Customer Service program to answer all questions regarding the installation and operation of your SUMO components. Please feel free to write us at any time and we will attempt to offer prompt advice.

Please address inquiries to:

SUMO Electric Co. Ltd.  
Customer Service  
31316 Via Colinas, Suite 103  
Westlake Village, CA. 91362

Be sure to include the model number and serial number of your unit.

- In the event that the unit must be returned to the factory, an authorization must be requested from SUMO before the unit is returned. Under no circumstances should the unit be shipped to SUMO without prior authorization.

## TROUBLE SHOOTING GUIDE

SYMPTOM	PROBABLE CAUSE	POSSIBLE REMEDY
1. Unit will not turn on.	A. Not plugged into AC outlet. B. AC outlet lacks power.	A. Connect AC line cord to wall outlet. B. Try different wall outlet.
2. Unit turns on but no sound is heard.	A. Cables not connected properly. B. Preamplifier not set to proper function. C. Tuner is in MUTE mode.	A. Check cable connections. B. Adjust preamp to TUNER position. C. Depress MUTE OFF switch.
3. One or both channels inoperative.	A. Bad cables.	A. Replace with functioning cables.
4. Most stations are received clearly but one station is distorted.	A. Multipath distortion.	A. Reorient antenna for minimum multipath on unsatisfactory station.
5. Sputtering noise is present.	A. Auto ignition interference. B. Electric motor interference (i.e., from kitchen appliances or elevator).	A. Reorient antenna away from highway. B. Reorient antenna away from interfering motor or install RF filter on interfering motor.

# LIMITED WARRANTY

THIS PRODUCT IS WARRANTED UNDER THE FOLLOWING CONDITIONS:

1. PRODUCT IS PURCHASED THROUGH AN AUTHORIZED SUMO ELECTRIC CO. LTD. DEALER.
2. WARRANTY COVERS NORMAL OPERATING CONDITIONS OF HOME USE.
3. WARRANTY PERIOD BEGINS AS OF DATE OF SALE PROVIDED IT IS REGISTERED BY THE AUTHORIZED SUMO ELECTRIC CO. LTD. DEALER WHERE THE PRODUCT WAS PURCHASED. REGISTRY PERIOD IS 20 DAYS.
4. DELIBERATE MISUSE, MISHANDLING, FAILURE TO REPORT RECEIVING DAMAGED MERCHANDISE, OR UNAUTHORIZED TAMPERING WITH OR MODIFYING OF THIS MERCHANDISE AUTOMATICALLY VOIDS ALL WARRANTIES.
5. WARRANTY PERIOD FOR ALL SUMO ELECTRIC CO. LTD. FACTORY WIRED PRODUCTS IS 1 YEAR FROM THE DATE OF PURCHASE BY THE ORIGINAL OWNER COVERING BOTH PARTS AND LABOR. TRANSPORTATION CHARGES TO AND FROM THE DEALER OR FACTORY ARE EXCLUDED.
6. WARRANTY ON ALL SUMO ELECTRIC CO. LTD. PRODUCTS USED IN ANY OTHER FASHION THAN STATED ABOVE SHALL REDUCE THE WARRANTY TIME PERIOD AND OTHER CONDITIONS TO NEGOTIATIONS BETWEEN SUMO ELECTRIC CO. LTD. AND PROSPECTIVE USER.
7. SUMO ELECTRIC CO. LTD. GUARANTEES THAT ITS PRODUCTS ARE FREE FROM DEFECTS IN MATERIALS AND/OR WORKMANSHIP FOR THE REQUIRED WARRANTY PERIOD.
8. THIS WARRANTY IS NOT VALID UNLESS ACCOMPANIED BY SALES SLIP VALIDATION OR PROPERLY STATED INVOICE (COPY). THIS WARRANTY IS NOT TRANSFERRABLE.
9. THIS WARRANTY IS VALID ONLY IN THE UNITED STATES. SERVICE IN OTHER COUNTRIES WILL BE PROVIDED BY THE EXCLUSIVE SUMO ELECTRIC CO. LTD. REPRESENTATIVE OR HIS AGENTS. BECAUSE OF VARYING GOVERNMENTAL REGULATIONS AND CONDITIONS, THE SERVICE PERIOD MAY DIFFER FROM COUNTRY TO COUNTRY. HOWEVER, IN EVERY INSTANCE, THE SERVICE AGREEMENT CAN BE HONORED ONLY IN THE COUNTRY WHERE THE UNIT WAS PURCHASED.

SHIPPING ADDRESS: 31316 VIA COLINAS, SUITE 103, WESTLAKE VILLAGE, CA 91362

TELEPHONE (213) 991-5330