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Introduction

Thank you for choosing the Nady W-1KU wireless system, and congratulations on your choice. The W-1KU has the best performance and price value in professional UHF wireless, offering clear-channel, frequency-agile operation on the UHF band for interference-free performance in any application or locale. The W-1KU delivers 1000 user selectable channels, frequency synthesized in 00-09 groups and 00-99 channels in the US frequency band 672.000MHz-696.975MHz. The W-1KU features proprietary companding and low-noise circuitry for an industry-best 120dB dynamic range, and the clearest, most natural sound available in wireless today.

Using This Manual

This booklet provides instructions for the operation of the W-1KU and includes a description of features, a quick user controls guide, a step-by-step guide to operations for each unit, system specifications, a troubleshooting guide, miscellaneous tips, and servicing information.

System Features

W-1KU Receiver

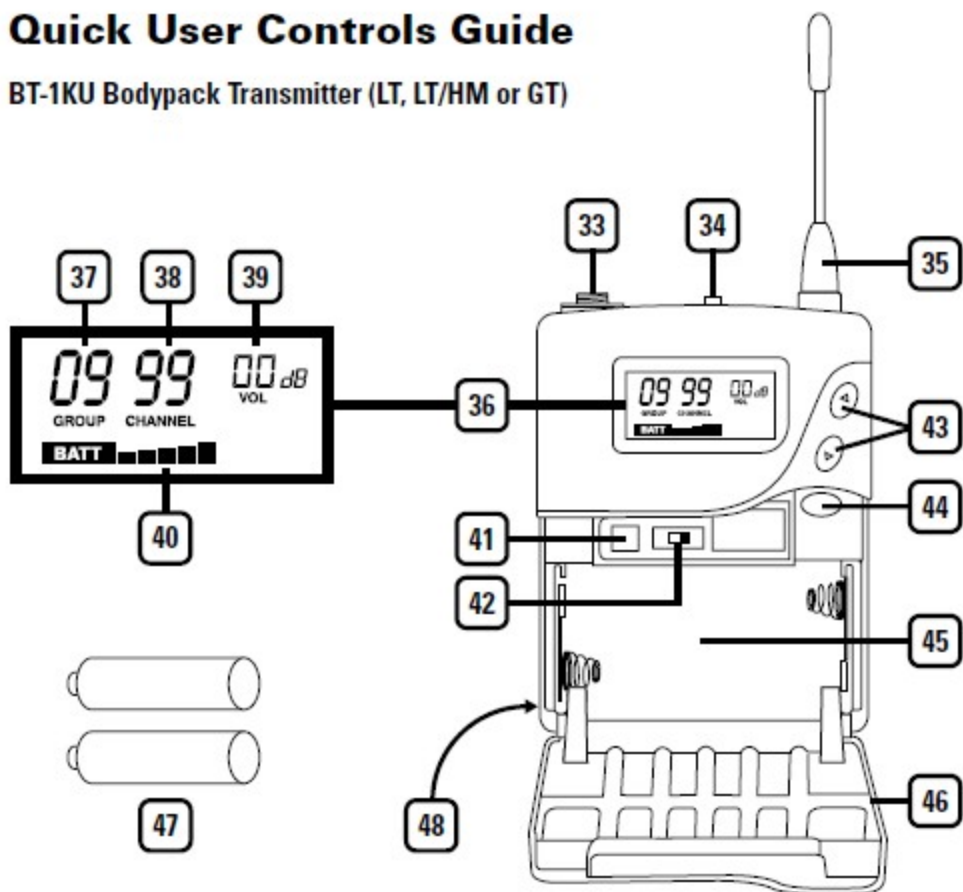
- Unsurpassed state-of-the-art PLL UHF performance with 120dB dynamic range and operation up to 500 feet line-of sight
- 1000 user selectable UHF frequencies per band
- True Diversity circuitry with two complete front ends for maximizing range and most effective elimination of dropouts
- Sophisticated IF filtering for simultaneous operation of HT-1KU or BT-1KU systems in the same location
- Front panel touch control buttons and user-friendly LCD configuration menus
- ASC™ (Auto-Sync Channel) IR download feature sends selected Group/Channel information to transmitter via IR sender for easy frequency synchronization
- Front panel backlit LCD display indicates selected audio output Volume level, Group, Channel, RF signal strength meter, A/B Diversity antenna status; Separate audio LED bar graph display provides instantaneous audio level status from a distance
- Back panel Balanced XLR Mic level and Unbalanced 1/4" Line level audio output jacks, squelch control, RF BNC connectors for dual removable 1/2 wave antennas, and DC power input jack
- Externally powered (adapter included).
- Rugged all-metal housing—optionally rack mountable (single or dual)

HT-1KU Handheld and BT-1KU Bodypack Transmitters

- Choice of transmitters: HT-1KU or BT-1KU, all with 1000 easily selectable channels: manually with up/down buttons on units or via IR Sync download of selected channel for easy synchronization with receiver
- HT-1KU Handheld transmitter features a sleek, durable all-metal housing; power Off/On switch; internal antenna system; and superior neodymium cartridge for clear, powerful audio, maximum feedback rejection, and minimal handling noise
- BT-1KU bodypack transmitter (choice of three versions: LT, LT/HM, or GT) features road worthy all-metal case; power Off/Mute/On switch; flexible external antenna rod; and mini locking connector for lapel (LT), Headmic™ (LT/HM), or instrument (GT) applications
- HT-1KU and BT-1KU transmitters feature LCD displays indicating selected Group, Channel, Volume (Input Audio Level), and Battery level status; transmitting High/Low RF power switch for optimizing distance operation depending on application; and operation with two AA batteries (alkaline or rechargeable NiMH) for longest reliable, economical battery life

Quick User Controls Guide

BT-1KU Bodypack Transmitter (LT, LT/HM or GT)



- 33. INPUT JACK** 3.5mm locking mini jack for connecting audio input cord from lapel mic (LT), Headmic™ (LT/HM), or instrument (GT)
- 34. OFF/MUTE/ON** Slide power switch to ON or OFF to turn ON-OFF, set to MUTE to turn power on with audio muted
- 35. ANTENNA** Permanently attached antenna
- 36. LCD DISPLAY** For indication of GRP (00-09)/CH (00-99), INPUT AUDIO LEVEL, and BATTERY status (1 bar=empty). See 37/38/39 in diagram above for display indicators detail.
- 37. FREQUENCY GROUP** Indicates selected frequency group from 00-09
- 38. FREQUENCY CHANNEL** Indicates selected frequency channel from 00-99
- 39. INPUT VOLUME METER** Indicates input audio level ranging from 00dB to -30dB
- 40. BATTERY METER** Indicates battery status (5 bars=full, 1 bar=empty). Change battery when flashing.
- 41. IR RECEPTOR SENSOR** Infrared LED sensor for linking the TX to the RX during IR frequency download
- 42. RF POWER HI/LOW SWITCH** To select power level setting for high or low RF output power
- 43. ▲ UP BUTTON** To change the VOL level or GRP/CH settings up by one step at a time
▼ DOWN BUTTON To change the VOL level or GRP/CH down by one step at a time
- 44. SET BUTTON** To scroll LCD menu and set the selected program/function
- 45. BATTERY COMPARTMENT**
- 46. LATCHING BATTERY COMPARTMENT DOOR**
- 47. 2 x AA ALKALINE BATTERIES**
- 48. BELT CLIP** (on back of unit)—removable clip can be set for top of transmitter pointing either up or down

be on, indicating a received signal from the transmitter. Adjust the volume of the receiver per *Connecting Audio Output*.

Note: Avoid acoustic feedback (howling or screeching) by taking care in selecting PA volume, transmitter location and speaker placement.

Note: The RF Signal meter and the Diversity AB indicator on the receiver's LCD display should be "On" in normal operation.

BT-1KU Bodypack Transmitter (LT, LT/HM or GT)

Setting up the Transmitter

The BT-1KU bodypack requires two AA size batteries to operate. To install the batteries into the battery compartment, lift the **Battery Compartment Door (46)** by grabbing the two spring-loaded locking tabs and pull out, exposing the **Battery Compartment (45)**. Insert two fresh AA batteries according to the correct polarity as indicated on the transmitter body. Close the battery cover, ensuring the cover is snapped shut. Fresh alkaline batteries can last provide up to 8-10 hours of operation, but in order to ensure optimum performance it is recommended that the batteries be replaced after 6-8 hours of use or as indicated necessary by the flashing **Battery Meter (40)**.

Connecting Input Audio Source

Use **Audio Input (33)** 3.5mm locking mini jack for connecting the audio input cord from lapel mic (LT), Headmic™ (LT/HM), or instrument (GT), depending on which version transmitter is being used. Secure the connection to the cable by lining up the slot of the 3.5mm mini connector and turning the ring to securely lock in.

Powering the Transmitter On/Off

To turn on the transmitter, slide the **Power Off/Mute/On Switch (34)** to the Mute (middle) position (transmitter on, audio muted). The LCD backlight will light up. The unit is now on. After ten seconds the backlight will automatically turn off. The **Group Icon (37)** and **Battery Meter (40)** remain on in normal operation.

As many of the five LCD battery levels should stay lit as possible, indicating usable battery strength. As the batteries weaken, fewer of the level indicators stay lit until only one bar shows, which will then flash to warn that the batteries are now too low and should be replaced as soon as possible. To preserve battery life, turn the transmitter off when not in use. To turn the transmitter off, slide the Off/Mute/On switch to Mute and then Off. No LCD or backlight is lit up and the unit will be off.

Programming the BT-1KU to the Selected Channel

The transmitter can be programmed to the same frequency as selected for the receiver, either via automatic synchronization using the IR Sync function or manually on the transmitter itself.

IR Sync Programming:

Use the wireless **IR LED Receptor Sensor (41)** to download pre-programmed channels from the receiver (see *Selecting the W-1KU Receiver Volume Level/Group/Channel* and *Selecting the BT-1KU Transmitter Group and Channel*). Start programming by holding the IR LED Receptor Sensor about 6"-12" from the receiver, then press the **IR Sync Button (11)** on the receiver. The red **IR LED (10)** on the receiver will flash once after one second indicating IR data transfer, and then once

more at three seconds, indicating that the IR transmission is over. Upon successful data transfer (usually in less than two seconds) the transmitter's backlight will light up and the transmitter will transmit a radio signal on the same channel as the receiver. The Signal Strength and Diversity Indicators on the receiver's LCD display will then light up, indicating that the IR link is completed. If no action is taken during the three seconds of active data transfer, the receiver and the transmitter units do not link and transmitter's previous program channel remains unchanged.

Note: *The IR link is infrared light and thus works best when this data transfer is accomplished in a light-shielded or darker environment. It may not be successful in a brightly lit area. If the transfer fails, repeat the procedure in a darker location or somehow shield the link from outside light to success-fully program the transmitter with the pre-programmed group and channel info from the receiver.*

Manual Programming (GRP/CH and Volume):

The transmitter's frequency is set using the **Set Button (44)** and then the **▲ (UP) or ▼ (DOWN) Buttons (43)**. To start, press the Set button once. The backlight on the **LCD (36)** will light up and the **Group Icon (37)** will flash. Use the **▲** or **▼** buttons to change the group. When a group selection is finished, press the Set button again for the channel selection. The **Channel Icon (38)** will now flash. Again, use the **▲** or **▼** buttons to change the channel as desired. When the group/channel selection is done, press the Set button to enter volume level input setting and then press **▲** or **▼** to change in four steps from 0dB to -30dB (for loudest input) or press the Set button a second time to exit to the main menu. To change volume

input level only, press the Set button three times to select the volume input level setting. Use the **▲** or **▼** to change in four steps from 0dB to -30dB (for loudest input). The level is preset at 0dB for GT and -10dB for LT/HM. These settings are optimal for most applications.

For normal operation, the transmitter should have the same Group/Channel as displayed on the receiver. After programming is finished, close the battery compartment door, ensuring that it latches. The BT-1KU is now ready for use.

BT-1KU Transmitter Switches

At Power Off the transmitter will store the last settings entered and re-display them at the next power on where it can be reprogrammed to any new Group/Channel. The default factory setting is Group 08, Channel 00.

The **RF Power Level Switch (42)** is used to select Hi/Low power transmission (see *Operating the BT-1KU Handheld Transmitter*).

When the **Set Button (44)** is pressed, the LCD main menu will cycle in this order:

MAIN MENU > GROUP > CHANNEL > VOLUME > repeat

The selected function will flash for 20 seconds before returning to the main menu.

The **▲ (UP) or ▼ (DOWN) Buttons (43)** work in the set mode only. They can be used to change any Group/Channel as selected (if not using IR Sync from receiver). They can also be used to select the desired Input audio level VOL setting.

Operating the BT-1KU Bodypack Transmitter

During normal operation with the unit powered on, the transmitter power level can be changed by sliding the **RF Power Switch (42)** to "H" to increase the transmitted RF power (for longer range) or to "L" to decrease the RF power (reduced range). This is a useful feature as the "L" setting increases battery life and also optimizes the number of channels that can be used simultaneously in a given location. Use this setting for normal use not requiring maximum operating range. A range walk test before use will determine which setting is best for your application.

The **Power Off/Mute/On Switch (34)** has three positions and functions both as a power on/off and as an audio mute on/off switch. After the unit is powered on, slide the power switch to the on position to un-mute the audio. To mute/un-mute the audio during use, set the power switch accordingly. The transmitter is now ready to use. Slide the On/Off switch to the on position and the microphone is now ready to use. The receiver's **RF Signal Meter (7)** and **Diversity A/B (3)** indicators should now be on, indicating a received signal from the transmitter. When ready to transmit audio, slide the power switch to on to un-mute. To mute, slide the power switch to Mute again. Adjust the volume of the receiver per *Connecting Audio Output*.

Note: Avoid acoustic feedback (howling or screeching) by taking care in selecting PA volume, transmitter location and speaker placement.

Note: The RF Signal meter and the Diversity A/B indicator on the receiver's LCD display should be "On" in normal operation.

Instrument Use (BT-1KU/GT only)

Secure the connection of the GT (instrument) cable by lining up the slot of the 3.5mm mini connector and turning the ring to securely lock in. When ready to play, slide the **Power Off/Mute/On switch (26)** to ON position to un-mute the audio. Adjust the volume on the receiver for one-to-one unity gain (possible with Input Level set to 0dB only) with a hardwired cord or select up to an added 4-5dB boost by adjusting the receiver volume to maximum for normal use with guitars and bass guitars.

Note: The audio level should be adjusted on the instrument as when using a hard-wired cord.

Specifications

SYSTEM OVERALL SPECIFICATIONS

Operating Frequency Range	672.000MHz-696.975MHz(US)
Freq. Synthesized	(1000 channels switchable) 25kHz/step
PLL system frequency stability	<0.005%
Frequency Response	30Hz-18kHz +/-3dB
Dynamic Range	120dB
Harmonic Distortion	<0.5%
Modulation	FM (F3E) +/-25kHz normal, +/-75kHz max
Operating Range	150-250 feet typical, 500+feet max line-of-sight

W-1KU RECEIVER SPECIFICATIONS

Receiver System	Dual conversion Super Heterodyne with True Diversity (two complete receiver sections with optimum audio selected)
Selectivity	60dB, normal +/-75kHz offset
Image Rejection	-70dB, minimum
Sensitivity	-107dBm, normal, Spurious Rejection, 65dB, normal
Mute Threshold	-65dBm to -95dBm (adjustable)
Controls	UP/DOWN selects, SET, IR Sync, Power ON/OFF buttons, MUTE level control
LCD Display	Single backlight LCD panel indicating selected Group/Channel, received RF levels, A/B diversity, and unbalanced receiver out Volume levels
LED Display	5-segment LED tree indicating received audio levels from transmitter
Audio Output Level	Unbalanced output: 360mV adjustable audio output @ +/- 25 KHz deviation Balanced output: 24mV fixed level audio output @ +/- 25 KHz deviation
Output Impedance	Balanced and unbalanced: 600 Ω
Power Requirement	15VDC/0.4A
Antennas	Dual BNC right angle
Dimensions	8.25"W x 6.25"D x 1.75"H (21.6cm x 15.9cm x 4.5cm)
Weight	2 lbs (0.907 Kg)
Housing Construction	Metal

HT-1KU HANDHELD TRANSMITTER SPECIFICATIONS

RF Output Power	HI/LOW selectable HI: +14dBm (25mW typical), LOW: +4dBm (2.5mW typical)
Harmonic and Spurious Emission	-50dBc normal
Audio Input Levels	24mV for +/- 25 KHz deviation
Impedance	6.0 k Ω
Controls	Power ON/OFF, RF Power HI/LOW switches, Set/Up/Down
LCD Display	Group/Channels/Volume/Battery Levels
Antenna Type	Integral
Battery Type	2 x AA alkaline batteries operation
Battery Life	8-10 hours typical
Dimensions	10"L x 2"D (25.4 cm x 5.1 cm)
Weight (w/o batteries)	11 oz (0.312 kg)
Housing Construction	Metal

BT-1KU BODYPACK TRANSMITTER SPECIFICATIONS

RF Output Power	Hi/Lo selectable HI: +14dBm (25mW typical), LOW: +4dBm (2.5mW typical)
Harmonic and Spurious Emission	-50dBc normal
Audio Input Levels	75mV (Lape/Lavaliere—LT) / 310mV (Headmic™—LT/HM) / 225mV (Instrument—GT) for +/- 25KHz deviation
Input Impedance	500 k Ω (Instr.)
Controls	Power OFF/MUTE/ON, RF Power HI/LOW switches, Set/Up/Down
Input Connector	Mini 3.5mm with locking nut
LCD Display	Group/Channels/Volume/Battery Levels
Antenna Type	External removable
Battery Type	2 x AA alkaline batteries operation
Battery Life	8-10 Hours typical
Dimensions	2.5"W x 3.25"H x 1-13/16"D (6.35cm x 8.3cm x 1.82cm)
Weight (w/o batteries)	3.8 oz (0.108 kg)
Housing Construction	Metal

Cautions and Troubleshooting

Feedback

Avoid acoustic feedback (howling or screeching) by taking care in selecting PA volume, transmitter location and speaker placement.

Please also note the pickup pattern characteristics of the microphone selected. Unidirectional mics are more resistant to feedback. However, they pick up sound sources best that are directly in front of the mic. Also mics that are farther from the sound source require more acoustic gain and thus are also more prone to feed back than close-source mics such as handheld.

No or Low Audio

If you are not getting audio through the system, carefully re-check all setups. Especially note that the receiver and transmitter must be set to operate on the same RF channel. For BT-1KU Bodypack transmitter, also confirm that the **Power Off/Mute/On Switch (34)** is not in the Mute position. The receiver's **Unbalanced Line Level Out (17)** is adjustable so make sure the **Volume (6)** is set properly.

RF Interference and Finding Open Channels

If you encounter slight receiving interference when the transmitter is far from the receiver (from other than an operating TV station on the same frequency), often it can be overcome by adjusting the receiver's **Squelch Control (16)** (see *Adjusting the Squelch*). If receiving interference on a selected channel with the transmitter off, you must reprogram the receiver and transmitter to a different channel.

See: *Selecting the W-1KU Receiver Volume Level / Group / Channel*

Selecting the HT-1KU/BT-1KU Transmitter Group and Channel

Programming the HT-1KU/BT-1KU to the Selected Channel

Programming the HT-1KU/BT-1KU with the Group/Channel Selected on the Receiver

To reprogram, you must first find an open channel. To do this, follow the operating procedure outlined in *Selecting the W-1KU Receiver Volume Level / Group / Channel*. With the associated transmitter off, scroll through the groups/channels to find one that shows no received signal on the receiver's **RF Signal Meter (7)** (no bars). Also, there must be no bars either on each of the three immediately adjacent channels both above and below the selected channel for optimum interference-free operation (i.e. in a field of seven adjacent channel total—with the channel used in the middle). If operating multiple W-1KU Series systems simultaneously, repeat this procedure with every new channel being selected, with previously tuned systems all on, both transmitters and receivers.

Please note that wireless frequencies are shared with other radio services. According to FCC regulations, wireless microphone operations are unprotected from interference from other licensed operations in the band. If any interference is received by any Government or non-government operation, the wireless microphone must cease operation or change frequencies. The above statement is valid only for use in the U.S.A.

Note: *More bars in the Received Signal (39) icon indicate good signal strength in operation with the transmitter on, but more than 1 bar showing with the transmitter off also indicates the presence of likely RF interfering signals at that location. If this happens, select a different GRP/CH. One bar or less is ideal for interference-free operation.*

Miscellaneous Tips

- For optimum operation with external antennas, low loss RF shielded cable should be used and the length of the cable should not exceed 10' (3 m).
- The receiver antennas should be kept away from any metal surfaces whenever possible as they can reflect away or shield the incoming RF signal.
- If the receiver's volume control is set too high, it may overdrive the input of the attached audio mixer, causing distortion. Conversely, if the output is set too low, the overall signal-to-noise ratio of the system may be reduced, causing noticeable hiss. If such noise occurs, adjust the output level of the receiver so that highest sound pressure level going into the microphone transmitter causes no input overload in the mixer, but permits the mixer level control to operate in the normal range (not too high and not too low). This provides the optimum signal-to-noise for the entire system.
- Before inserting the batteries, ensure that they are inserted with the correct polarity.
- Before operation, confirm that the receiver and associated transmitter are tuned to the same frequency group and channel number.
- After making a receiver channel change, ensure that the corresponding change is also made on the matching transmitter.
- Use only brand new alkaline batteries. Do not use "general purpose" carbon batteries. When batteries are weak, replace all the batteries at the same time. Do not mix new and old batteries.
- Position the receiver so that it has the least possible obstructions between it and the transmitter. Line-of-sight is best!
- During operation, the transmitter and the receiver should be as close as possible for optimum results but never closer than 3' (1 m) as that may overload the receiver's input circuitry and cause noises.
- For the best operation, the receiver should be placed at least 3' (1 m) above the ground and 3' (1 m) away from a wall or metal surface. The transmitter should also be at least 3' (1 m) from the receiver. Keep antennas away from noise sources such as motors, automobiles, neon lights, signal processors, computers, as well as large metal objects.
- A receiver cannot receive signals from two or more transmitters simultaneously.
- Turn the transmitter off when it is not in use. For longest life, remove the batteries if the unit is not to be used for a long period as the transmitters draw a tiny residual current to maintain the programmed settings, even when turned off. Also, since batteries installed for a long time can sometimes corrode and/or leak, causing damage, it is generally recommended that batteries be removed whenever the transmitters are not being used.
- When using the BT-1KU bodypack for instrument use: Scratchy noises can sometimes occur when an electric guitar with dirty pots or connections is used with a wireless system. Therefore, the supplied capacitor provides first-order filtering of the RF signal from the cord into the guitar and eliminates virtually all scratchy noises. Should your equipment still produce scratchy noise, we suggest these steps to eliminate problems:
 - 1) Make sure all guitar volume and tone pots are clean and all contacts are solid. **This is very important.**
 - 2) Solder a 47pF capacitor across the pot to ground terminal of the guitar's volume and tone pots to provide extra filtering.

Frequency

Frequency Plan

Band 1: 672.000MHz-696.975MHz
25KHz per step (1000 Channels) U.S.

Accessories

Part Number	Description
IC-U1K	Instrument cable included for BT-1KU/GT transmitter, 3.5mm locking mini plug to 1/4"
AC-W1KU	15-18VDC/400mA AC/DC receiver power supply adapter included
RMK-1KUS	Single receiver rack mount kit (optional)
RMT-1KUD	Dual (side-by-side) receiver rack mount tray kit (optional)

Service Information

In the U.S. If you are experiencing operational problems with your system, please refer to the Support page at www.nady.com for assistance. Should your wireless system require service, please contact the Nady Service Department at (510) 652-2411 for a Return Authorization (R/A) Number and service quote (if out of warranty). Make sure the R/A Number is clearly marked on the outside of the package that you are returning.

If your unit is out of warranty, please enclose a cashier's check or money order (or pay by credit card) per instructions by the Nady Service Department. Ship your unit prepaid to: Nady Systems, Service Department, 6701 Shellmound Street, Emeryville, CA 94608. Include a brief description of the problem you are experiencing. For service of a unit under warranty, please follow the instructions in the following section.

Outside the U.S For service, please contact the NADY distributor in your country through the dealer/store from which you purchased this product.

Do not attempt to service this unit yourself as it can be dangerous and will also void the warranty.

One Year Limited Warranty

Nady Systems, Inc. warrants to the original consumer purchaser that the unit is free from any defects in material or workmanship for a period of one year from the date of original retail purchase. If any such defect is discovered within the warranty period, Nady Systems, Inc. will repair or replace the unit free of charge, subject to verification of the defect or malfunction upon return to Nady Systems. Please do not return your Nady product to the store where it was purchased as Nady Systems handles your warranty service directly. Communication with our Service Department is the most efficient means of servicing your unit and we are dedicated to keeping you a satisfied customer.

To the extent permitted by law, any applicable implied warranties, including warranties of merchantability and fitness are hereby limited to one year from the date of purchase. Consequential or incidental damages resulting from a breach of any applicable express or implied warranties are hereby excluded. This warranty is in lieu of all other agreements and warranties, general or special, express or implied and no representative or person including a Nady dealer, agent, or employee is authorized to assume for us any other liability in connection with the sale or use of this Nady Systems' product.

Whereas some states do not allow limitations on how long implied warranties last, and do not allow exclusion of incidental or consequential damages, the above limitations and exclusions may not apply to you. This warranty gives you specific legal rights and you may also have other rights which may vary from state to state.

This warranty is subject to the following conditions:

- 1) This system must have been purchased from an authorized Nady dealer and all warranty service must be performed by Nady's service department. Any service not performed by Nady will automatically void this warranty.
- 2) Items not covered: physical damage resulting from improper handling of the unit in transit from the factory by the shipper (Nady Systems is not responsible for such damage and all such claims must be made against the shipping company by the consignee); defects caused by normal wear of the product (expendable parts are typically connectors, cables, potentiometers, switches and similar components); damage or defects caused by abuse, neglect, accident, failure to connect or operate the unit in any way that does not comply with applicable technical or safety regulations, or improper repair, excessive heat or humidity, alteration or unreasonable use of the unit, causing cracks, broken cases/housings or parts; damage caused by leaking batteries; finish or appearance items; items damaged in shipment en route to Nady Systems, Inc. for repair. The warranty is null and void if any Nady serial number has been removed or defaced.

How To Obtain Service:

- 1) If factory service is required, you must contact our Service Department at (510) 652-2411 for a return authorization (RA) number. Make sure the RA number is clearly marked on the outside of your package. (Please note: if an RA number is not included, our shipping department cannot accept your package.)
- 2) Send the unit back to Nady Systems, 6701 Shellmound Street, Emeryville, CA, 94608, freight pre-paid. You must include proof of date and place of purchase (i.e., photocopy of your bill of sale) or Nady cannot be responsible for repair or replacement. Nady Systems, Inc. will not repair, nor be held responsible, for any units returned without proper identification, return address, and RA number clearly marked on the package.
- 3) Per the above, Nady will perform all warranty service and return the unit to you at no charge. Nady Systems will inform the buyer if product sent in does not meet the terms of this warranty and will provide a quote for fixing the unit and/or shipping it back exclusively at the buyer's expense.