

**(Print this out and assemble into a manual.)**



Example: For a training period of 5 minutes 30 seconds (= 0.5 minutes) Press [7][5][#][5],  
 For a training period of 60 minutes press [7][6][0][#][0].

5. **Programming Constant Speed.** In both slow code and Farnsworth mode, the trainer may be programmed for no speed change by programming a training period of 0.0.  
 Example: For no speed change, press [7][0][#][0]:

In the slow code, the trainer will send at the starting speed. A finishing speed higher than the starting speed should be entered even for constant speed operations.

6. **Initiating Trainer Operation.** After the various trainer options have been selected, the trainer may be started by pressing [2][2] and then any of the digits. Each digit starts its own unique character sequence and your copy may be compared with the published answer book.

If you find that you are memorizing the character sets press [2][#] for a random starting point.

7. **Terminating Trainer Operation.** To stop the trainer, press and hold the pound [#] key until the trainer quits sending. After the key is released, a few additional dots and dashes may follow. The key pads may also be used in place of the pound [#] key.

8. **Code Training Method — Farnsworth or Slow.** Many people have found that it takes far less time to learn Morse code if the Morse characters are set at speeds greater than 12 to 15 wpm, but with the spaces between characters much longer than normal for these speeds. This method is referred to as "fast code" in this trainer. It is also called the Farnsworth method. In this mode, the characters are sent at the finishing speed and the intercharacter space is initially set to make the code speed equal to the starting speed. The extra inter character space is gradually shortened throughout the training period. At the end of the training period the code will continue to be sent at the finish speed.  
 "Slow" code sends code with the proper inter character spacing. Unless you can copy code at speeds greater than 12 wpm, we strongly urge use of the fast code method.

The trainer selects fast code operation during turn-on. To select "slow" code, press [2][0]. To reselect "fast" code, press [2][0].

9. **Five Character Code Group or Random Spacing.** On turn-on, the trainer is set to transmit five character groups of code. If desired, random groups and spacing may be selected by pressing [2][9]. To reselect five character groups, press [2][9].

10. **Common or All Morse Characters.** For the advanced code student, additional uncommon Morse characters may be selected by pressing [2][8]. To reselect common characters, press [2][8]. Tables of the common and uncommon character sets are listed in appendix A.

# APPENDIX A

## Common Character Set

A	• • —	O	— — — —	2	• • — — —
B	— • • • •	P	• — — •	3	• • • — —
C	— • — • •	Q	— — • —	4	• • • • —
D	— • • •	R	• — •	5	• • • • •
E	• • • •	S	• • •	6	— • • • •
F	• • — •	T	—	7	— — • • •
G	— — •	U	• • —	8	— — — • •
H	• • • •	V	• • • —	9	— — — — •
I	• • •	W	• — —	Period	• — • — • —
J	• — — —	X	— • • —	Comma	— — • • — —
K	— • —	Y	— • — —	Hyphen	— • • • • —
L	• — • •	Z	— — • •	Fraction bar	— • • — •
M	— — —	0	— — — —	Question mark	• • — — • •
N	— •	1	• — — —	Double dash	— • • • —

## Less Common Characters

Colon	— — — • • •	Understood	• • • — •
Semicolon	— • — • • •	Wait AS	• — • • •
Parenthesis	— • — — • •	End of Work SK	• • • — • —
Apostrophe	• — — — •	Break BK	— • • • — •
Exclamation point	— • — • •	End of Message AR	• — • — •
Quote	• — • • • •		



# ABBREVIATED INSTRUCTIONS

space length, (a dot-space ratio of 1.0) and the dash length equal to three intra character space lengths (a dash—space ratio of 3.0). To change the dot-space ratio, press **[2]** and enter the new ratio using the pound **#** key as the decimal point.

Examples: to enter a dot-space ratio of 0.7 press

**[2]** **[0]** **#** **[7]** or **[2]** **[0]** **#** **[7]**.

To enter a dot-space ratio of 1.3 press

**[2]** **[1]** **#** **[3]**.

If the dot-space ratio entered exceeds 1.5 or is less than 0.5, the ratio will be set to 1.0.

The dash-space ratio is set to 3.0 on turn-on and is adjustable from 2.0 to 4.0. To change the dash-space ratio, enter **[2]** **[2]** and the new dash ratio using the pound **#** key as the decimal point.

Example: To enter a dash-space ratio of 3.7, press

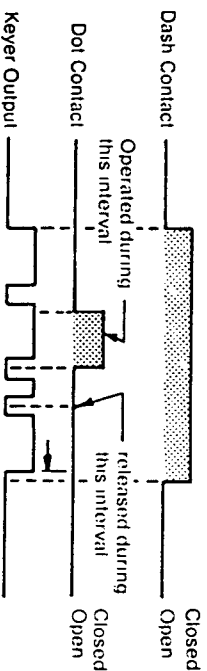
**[2]** **[2]** **[3]** **#** **[7]**.

If the dash space ratio entered exceeds 4.0 or is less than 2.0, the ratio will be set to 3.0.

The code speed is automatically corrected for other than "perfect" dot-space, dash-space ratios. The code speed is based on the word "PARIS...".

**6. Dot and Dash Memories.** The selectable dot and dash memories are enabled on keyer turn-on. The dot memory allows insertion of a dot during a string of dashes. For example, the letter "Q" could be generated in the following manner.

\* See Appendix B



The dash memory operates in the same fashion, allowing the insertion of a dash in a string of dots.

To disable the Dot Memory, press **[2]** **[3]**.

To enable the Dot Memory, press **[2]** **[4]**.

To disable the Dash Memory, press **[2]** **[4]**.

To enable the Dash Memory, press **[2]** **[3]**.

**7. Iambic Operation.** Full iambic operation is available with the dot and dash memories enabled or disabled. The iambic feature is

MODE	INSTRUCTION	LIMITS /COMMENTS	TURN ON AT
<b>KEYER:</b> Code Speed	<b>[6]</b> <b>[N]</b> <b>[N]</b>	02-99 in 1 wpm increments	20 wpm
Increase Tone Decrease	<b>[7]</b> <b>[1]</b> <b>[2]</b> <b>[1]</b>	700 to 2000 Hz	1111 Hz
Dot-Space Ratio	<b>[2]</b> <b>[N]</b> <b>#</b> <b>[N]</b>	0.5-1.5 in 0.1 increments	1.0
Dash-Space Ratio	<b>[2]</b> <b>[2]</b> <b>[N]</b> <b>#</b> <b>[N]</b>	2.0-4.0 in 0.1 increments	3.0
Dot Memory On Off	<b>[2]</b> <b>[3]</b> <b>[4]</b>	N/A	On
Dash Memory On Off	<b>[2]</b> <b>[4]</b> <b>[4]</b>	N/A	On
Semiautomatic (Bug)	<b>[5]</b>	N/A	Off
Automatic	<b>[2]</b> <b>[5]</b>	N/A	On
Tune Off On	<b>[2]</b> <b>[7]</b> Any button or key paddle	N/A	Off

## MORSE TRAINER:

Start Speed Set (Farnsworth word speed)	<b>[6]</b> <b>[N]</b> <b>[N]</b>	01-98 in 1 wpm increments	5 wpm
Finish Speed Set (Farnsworth char. speed)	<b>[3]</b> <b>[N]</b> <b>[N]</b>	02-99 in 1 wpm increments	15 wpm
Duration of Speed Increase (Set minutes and tenths)	<b>[7]</b> <b>[N]</b> <b>[N]</b> <b>#</b> <b>[N]</b>	00.1 to 99.9 in 0.1 min. increments	10 Min.
Fast Code Method	<b>[2]</b> <b>[0]</b>	N/A	On
Slow Code Method	<b>[2]</b> <b>[0]</b>	N/A	Off
Characters Uncommon	<b>[8]</b>	N/A	Common
Character Groups: 5 Character Groups Random Char. Groups	<b>[2]</b> <b>[9]</b> <b>[9]</b>	N/A	5 Character Groups

NOTE: **[N]** = one of the numbered buttons.

# ACCESSORIES FOR THE KT-2 KEYSER-TRAINER

ITEM	DESCRIPTION
AC-1	600 Ma. 12 Volt wall adapter.
AC-2	350 Ma. 12 Volt wall adapter.
DC-1	Cigarette lighter cord for all AEA Keyers and Trainers except MT-1P.
DC-2	Nickel Cadmium Rechargeable battery pack.

SPECIFICATIONS SUBJECT TO CHANGE WITHOUT NOTICE OR OBLIGATION.

**Advanced Electronic Applications, Inc.**  
P.O. Box 2160  
Lynnwood, Washington 98036  
Call (206) 775-7373

4. Press **[4]**. Now press **[1]**, **[2]**, **[3]**, **[4]**, **[5]** and notice that the Trainer is sending random word lengths and not continuous five-letter code groups. Press and hold **[5]** to terminate.

5. Press **[1]**, **[2]**, **[3]**, **[4]**, **[5]**. Pressing **[1]**, **[2]**, **[3]**, **[4]**, **[5]** will now start slow code in five letter code groups. The slow characters will gradually speed up to 20 wpm in 0.5 minutes.

This concludes the check-out of your KT-2 unit. If all these features operate properly, your KT-2 is in good operational condition. If not, please reread the instructions and if necessary, start over from the beginning. Providing you still have difficulties, contact the AEA Service Department at (206) 775-7373 for advice.

## OPERATING INSTRUCTIONS

### General

The AEA Keyer Trainer is a compact, full feature keyer and a sophisticated Morse trainer. The trainer features user-programmable automatically increasing code speed, two sets of Morse characters (common and common plus uncommon), five letter code groups or random code groups and selectable slow or Farnsworth code training.

### Keyer Operation

- Speed Set.** The keyer is set to 20 wpm on turn-on. To change speed press **[4]** and enter the new speed as two digits. If the new speed is less than 10 wpm the first digit must be zero.  
Example: To enter 40 wpm, press **[4]****[6]****[4]****[0]**.  
To enter 7 wpm, press **[4]****[6]****[0]****[7]**.  
Speed may also be entered by **[4]****[4]****[6]**.
- Sidetone Change.** The keyer-trainer sidetone is set to 1111 Hz on turn-on. To increase the pitch, press **[1]** and hold the "1" until the desired pitch is reached.  
The sidetone pitch may be lowered by pressing **[2]** and holding the "1" key.
- Automatic and Semi-automatic Operation.** On turn-on, the keyer is set for automatic, iambic operation. The keyer may be operated as a bug by pressing **[5]**. To return to full automatic operation, press **[4]****[5]**.
- Straight Key Operation.** For code practice or on-the-air use, the keyer must be used with a straight key by keying the dash input in semi-automatic (bug) mode.
- Dot-Space, Dash Space Ratios, (Weighting).** "Perfect" Morse code is formed with the length of dot equal to the intra character

## PARTS PICTORIAL

10. Similar to step 9, press the dash paddle quickly and then press the dot paddle momentarily. After the dash is finished and an intracharacter space is inserted (automatically), the Keyer will send a dot automatically. This is called **Dot Memory** or **automatic dot insertion**.

11. Press  $\square$  [3] and repeat step 10. Note that the Dot Memory is no longer present.

12. Press  $\square$  [4] and repeat step 9. Note that the Dash Memory is no longer present.

13. Press  $\square$  [2] [3] and then  $\square$  [2] [4]. Note that both Dot and Dash Memories are re-enabled.

14. Enter  $\square$  [6] and a two digit number corresponding to a sending speed you feel comfortable with. (If less than 10 wpm use 0 as the first digit.) Practice sending at that speed for about a minute. Because the KT-2 has almost perfect dot and dash ratios and spacing, many operators feel the speed calibration is low. Actually the KT-2 probably has the best speed calibration in the market. It is calibrated using the FCC definition of "PARIS" being the standard word. (See Appendix B.) You might also note that many practice code tapes are actually faster than the advertised speed.

15. Press  $\square$  [5] and note that tone will appear as long as you hold the dash paddle. This is called **Semiautomatic** or **"Bug" mode**. Press  $\square$  [4] [5] and the Keyer will return to fully automatic operation.

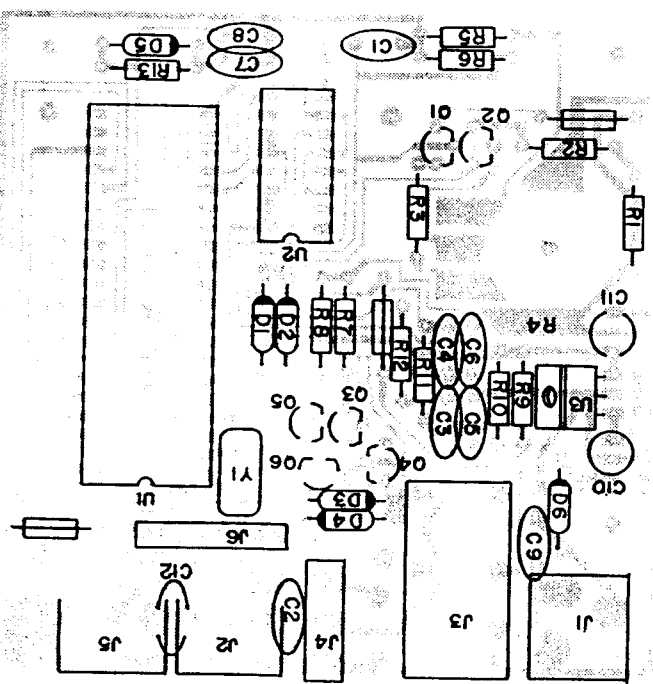
16. Press  $\square$  [2] [7] and very quickly release the [7] button before the feedback tone stops. The KT-2 will then key continuously until you press any keypad button or touch either paddle. This is the **Automatic Tune** feature. (If you hold the [7] button down, the KT-2 will not go into the Tune mode.)

## MORSE TRAINER MODE

1. Press  $\square$  [6] [5] and  $\square$  [2] [6] [2] [0] for a starting speed of 5 wpm and an ending speed of 20 wpm. Press  $\square$  [7] [0] [6] [5] for a practice duration of 0.5 minutes.

2. Press  $\square$  [2] [2] [6] and the Keyer should start sending code at a 20 wpm character speed with space between characters such that the beginning word speed is only 5 wpm. The space between characters will shorten during the half minute until the spacing is proper for 20 wpm. The Trainer will now continue to send until you halt it by pressing the [6] button and hold it through at least one character. The Trainer may continue to send a couple of characters before final termination.

3. Press  $\square$  [6] and then  $\square$  [2] [2] [2] [1]. The Trainer should repeat sending as in step 2 except that difficult characters will be included. Press and hold [6] to terminate.







## HOOK-UP INSTRUCTIONS

1. **Power.** To perform the Check-Out Procedures in the following section and familiarize yourself with the KT-2 it is first necessary to apply 13 volts to the power input jack on the Rear Panel of the KT-2. This may be easily accomplished by connecting the cord attached to the optional AC-1 or AC-2 wall adapter to the power socket on the Rear Panel of the KT-2.

If you do not have one of the optional power supply units, it is necessary to supply 10 - 15 volts DC to the KT-2 from any external source (including batteries) capable of delivering at least 300 ma. Use the mating power connector supplied for interfacing the KT-2 and the power source. **BE SURE TO OBSERVE PROPER POLARITY.** The center pin is positive.

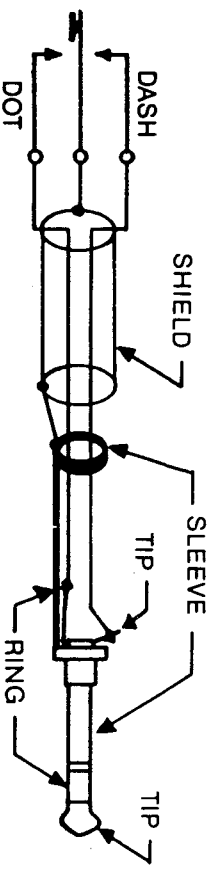
The KT-2 may be used in an automobile by using the optional DC-1 power cord.

The KT-2 will also operate for 2 to 3 hours between charges from the optional DC-2 NICAD battery pack.

2. **Paddle.** Wire your external keyer paddle to a stereo phone plug using two conductor plus shield cable (available from any Radio Shack store). Connect the shield to paddle common and the other wires to the dot and dash contacts. By convention, for right-handed operators, the thumb should activate the dot contact and the index and middle fingers should operate the dash contact.

3. **Straight Key.** A straight key may be used for sending. Use a three conductor stereo plug with the key across the tip (dash) terminal and the sleeve (common) terminal. The KT-2 must be programmed for Semiautomatic mode.

4. **Headphones.** The headphone jack will drive low, medium, or high impedance headphones. A standard 3.5 mm two conductor headphone plug is necessary.



## KT-2 PARTS LIST

C1	0047 mf	50v disc cer
C2,7,9,12	.01 mf	50v disc cer
C3,4,5,6	.001	50v disc cer
C8	01 mf	50v disc cer
C10,11	10 mf	25v dipped tantalum
D1,2,5	1N4448	
D3,4	1N4006	
D6	1N4003	
Q1,3,5	2N3904	
Q2	MPS6561	
Q4	MPSA92	
R1,2	13 Ohms	1/2W 5% Carbon Comp
R3	330 Ohms	1/4W 5% Carbon Comp
R4	1K Ohms	pot w switch, audio taper
R5	240 Ohms	1/4W 5% Carbon Comp
R6,11,12	47K Ohms	1/4W 5% Carbon Comp
R7,8	120 Ohms	1/4W 5% Carbon Comp
R9,10	1K Ohms	1/4W 5% Carbon Comp
R13	10K Ohms	1/4W 5% Carbon Comp
U1	AEA 1980 MT-1	
U2	CD4044	
U3	7805 Voltage regulator	
X1	4.00 MHz Xtal	

# MBA READER,<sup>TM</sup> A NAME YOU SHOULD KNOW

What does MBA mean? It stands for Morse-Baudot and ASCII.

What does the MBA Reader do? The RQ model (reader only) uses a 32 character alphanumeric vacuum fluorescent display and takes cw or tty audio from a receiver or tape recorder and visually presents it on the display.

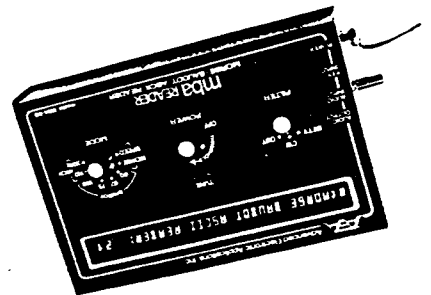
The copy moves from right to left across the screen, much like the Times Square reader board. Is the AEA model MBA Reader different from other readers? It certainly is! It is the first to give the user 32 characters of copy (without a CRT), up to five words at one time. It can copy cw up to 99 wpm and Baudot at 60-67-75 and 100 wpm. Speeds in the ASCII mode are 110 and hand typed 300 baud. The expanded display allows easy copy even during high speed reception.

The AEA model MBA has an exclusive automatic speed tracking feature. If you are copying a signal at 3-5 wpm and tune to a new signal at 90 wpm, the MBA catches the increased speed without loss of copy. The MBA Reader allows a visual display of your first and improves your code proficiency. It is compact in size, and has an easily read vacuum fluorescent display. The Reader operates from an external 12 VDC source. This allows for portable/mobile or fixed operation.

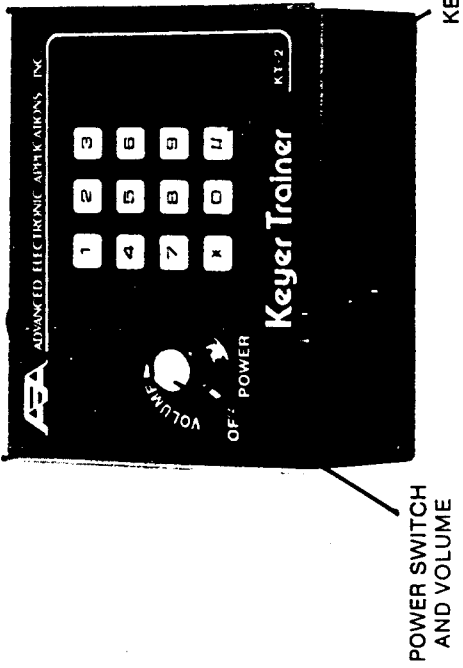
Check the AEA model MBA Reader at your favorite dealer and see all the features in this new equipment. If your dealer cannot supply you, contact

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P.O. Box 2160, Lynnwood, WA 98036 Call 206/775-7373

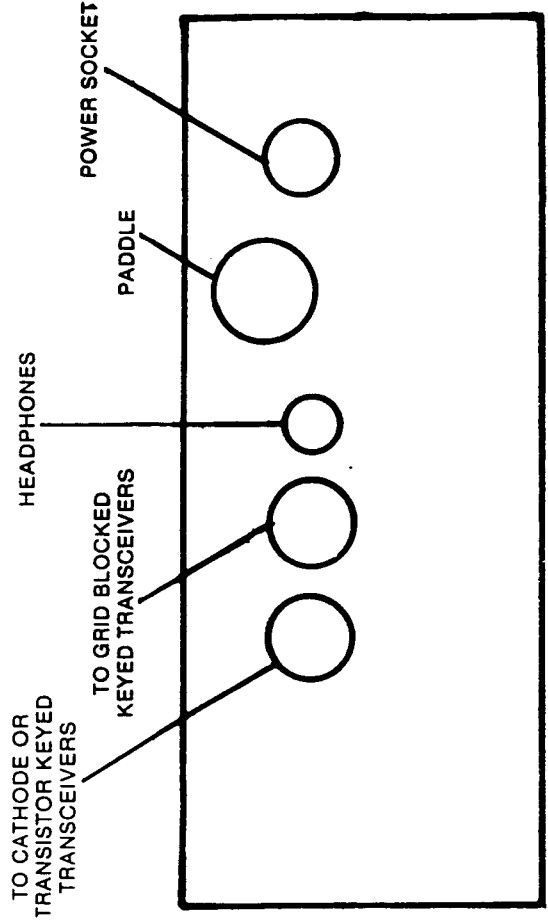
Prices and specifications subject to change without notice or obligation



## TOP PANEL DESCRIPTION



## REAR PANEL DESCRIPTION



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# **Instruction Manual**

## **AEA KEYER-TRAINER**

### **MODEL KT-2**

Congratulations on your decision to purchase the versatile AEA KT-2 Keyer-Trainer. You will find it is truly a gem for CW operation.

The KT-2 has two basic modes of operation. You may choose between a keyer and a Morse trainer. Control for each mode is provided from the keypad for full feature programming.

You have a fully programmable trainer with an incredible range of features for learning or teaching Morse code. You also have a programmable keyer with selectable speed, tone, dot-dash ratios and automatic and semi-automatic (bug) capabilities.

There's a lot more and the possibilities are endless! Just look in the pages that follow and learn how to perform your own KT-2 Morse magic!

## LIMITED WARRANTY

ADVANCED ELECTRONIC APPLICATIONS, INC. warrants to the original purchaser that this product shall be free from defects in material or workmanship for ninety days from the date of original purchase. In order to obtain warranty service: (1) Complete and mail the warranty registration card within 10 days to Advanced Electronic Applications, Inc., and (2) Send written notification to the address below or telephone as soon as possible after discovering a possible defect:

Advanced Electronic Applications, Inc.  
Attention: Service Department  
2006 - 196th S.W.  
Lynnwood, WA 98036

The written notification must include a copy of the invoice. Include a description of the defective part or condition, with details of the electrical connections to associated equipment and list such equipment. Please enclose your name, phone number, and address. Shipping charges for any parts or units submitted for replacement under this warranty must be paid by the purchaser.

Correct maintenance, repair, and use are important to insure proper performance from this product. Carefully read the Instruction Manual. This warranty does not apply to any defect AEA determines is caused by (1) Improper maintenance or repair, including the installation of parts or accessories that do not conform to the quality and specification of the original parts; (2) misuse, abuse, neglect, or improper installation; (3) accidental or intentional damage. The field installation of circuits or batteries according to the instructions in the manual will not nullify this warranty.

All implied warranties, if any, terminate ninety days from the date of original purchase. AEA is not responsible for damage to other equipment or property or any other consequential or incidental damage of any kind whether based on contract, negligence, or strict liability. Maximum liability shall not, in any case, exceed the purchase price of the unit.

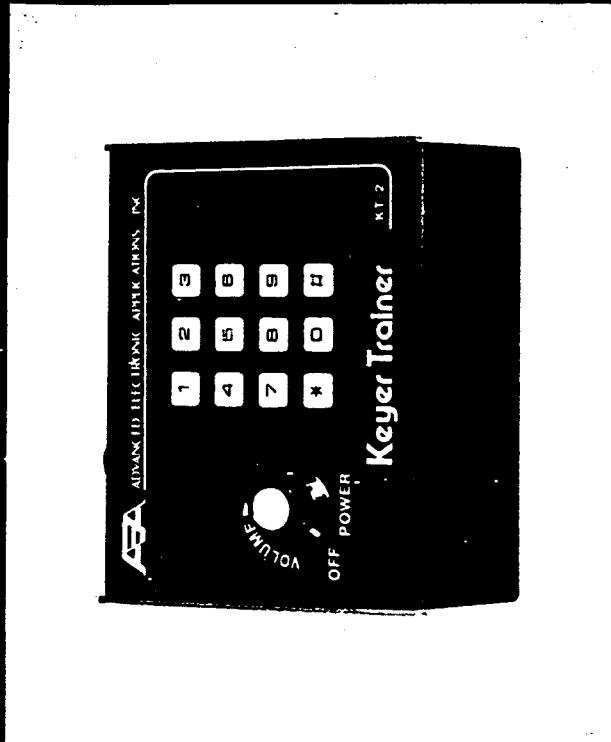
The foregoing constitutes AEA's entire obligation with respect to this product. The original purchaser and any user or owner shall have no other remedy and no claim for incidental or consequential damages. Some states do not allow limitations of how long an implied warranty lasts or do not allow the exclusion of incidental or consequential damages, therefore, the above limitations and exclusions may not apply to you.

This warranty gives specific legal rights. You may also have other rights which vary from state to state.

## PROGRAMMING KEY

### MODEL KT-2 MORSE KEYSER TRAINER

	* * *	* * * *	* * * * *
1	Tone Frequency Up	Tone Frequency Down	TRAINER TEST POSITION
2	Dot Ratio	Dash Ratio	
3	Dot Mem. Off	Dot Mem. On	
4	Dash Mem. Off	Dash Mem. On	
5	Semi-Auto (bug)	Auto	
6	Start Speed	Finish Speed	
7	Practice Duration	Tune	
8	All Characters	XXXXXXXXXXXXXX	
9	Random Space	5 Letter Groups	
0	Slow Code	Farnsworth	
#	HALT .....		
		Random Trainer	



# Instruction Manual AEA KEYSER-TRAINER MODEL KT-2



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