# 1994 AEA Catalog


Data Controllers

Software

Antennas

Antenna Analyzers

Remote Control

Keyers

# an unfaltering dedication to all of amateur radio

## *A Message From Our President, Rod Proctor*

Seventeen years ago, AEA was founded with one purpose in mind: to offer breakthrough technology to amateur operators worldwide.

Our mission remains unchanged. We are committed to producing superior amateur radio products built on the premise that engineering makes a difference. The results speak for themselves—AEA has grown into a multimillion dollar company by serving the needs of the amateur radio community.

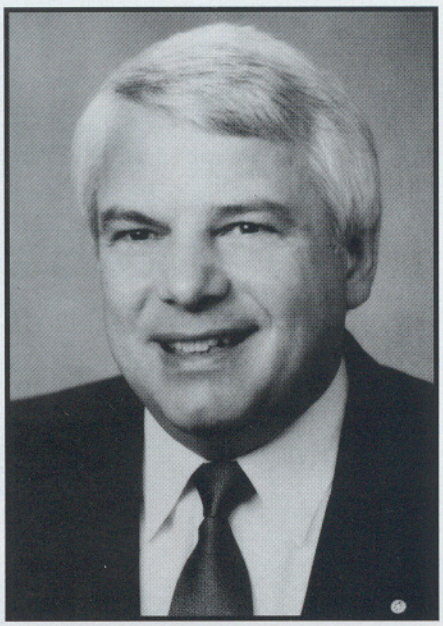
To say we are dedicated radio operators is an understatement. With over 340 years of licensed amateur experience, our staff has a unique perspective on the needs of our fellow amateur radio enthusiasts.

Our IsoLoop 10-30 antenna is an excellent example of our dedication to amateur radio operators. We became aware that a growing number of amateurs were facing antenna restrictions and that many amateurs live in apartments and condominiums, where space for installing antennas is limited. Immediately, we set out to develop an antenna that had the performance of a big antenna without the size. We accomplished this with the IsoLoop 10-30—a 35" loop antenna with low-angle performance better than many full-size HF antennas.

Yet another example is found in our SWR-121 Antenna Analysts. Before the SWR-121, this sort of equipment was large, usually not portable, and difficult to use. Our search for an alternative to the cumbersome and confusing analyzers of old led us to develop a pair of antenna analysts that are completely portable, easy-to-use, and less expensive than many of the alternatives.

We're not just committed to providing the best technology—we're dedicated to providing the best overall experience. Our $1,000 Amateur Ambassador Award is just one way we use to promote amateur radio. The award is intended to recognize amateurs who promote amateur radio to those outside the hobby.

Each year, one amateur radio operator is picked from the many nominations we receive. Nominees are judged on their dedication to amateur radio, the influence they've had on those outside amateur radio, and any special activities that promote amateur radio. Last year's Amateur Ambassador, Catharine Gunderson of Santa Cruz, CA, spearheaded a program that enabled the youngsters in her area to talk to astronauts on the Space Shuttle *Endeavor*. If you would like to make a nomination for this year's award, drop us a line at the address on the back cover.



Our dedication spans the distance between the technology and the people of amateur radio. It's a great hobby, and we here at AEA are doing everything we can to keep it going strong.

Here's hoping you enjoy the hobby as much as we enjoy providing more ways to enjoy it.

73,

Rod Proctor, N7UDD
President

# index

# data controllers

## Data Controllers From AEA ... Anything Else is Old News

Today's amateur radio operators communicate in many different ways. One of the more popular methods is digital communications. The first signals sent in amateur radio were in Morse code, a form of digital communications. Another early method of communication was RTTY. RTTY is still popular, though the computer has replaced the teletype terminal, with all of its mechanical wonders. Since computers play an important role in our everyday lives, it is hardly surprising that people with computers might want to talk to other people with computers.

In late 1970's, the amateur radio community modified the communication system used by ships to come up with AMTOR (AMateur Telegraph Over Radio), which allowed worldwide error-free communication. A similar thing happened when a group of Canadian amateurs modified a particular networking protocol and created the first packet radio protocol, starting a revolution in digital communications.

One of the most common modes is packet radio. Packet radio is a low-cost way to send and receive messages on a worldwide basis. You can communicate keyboard-to-keyboard, use a personal mailbox, access Internet, or send and receive DX spotting information on a DX cluster. Packet radio doesn't require a wealth of knowledge about computers or amateur radio and the cost of getting set up with a packet radio station is very reasonable. As a matter of fact, if you own a home computer and a VHF transceiver you have two of the three necessary ingredients to get started in packet radio. What's left? A data controller from AEA.



AEA has been the technology leader in data controllers from the very start. Currently, there are seven high-quality AEA data controllers to choose from.

A good place to get started is with one of our packet-only data controllers, the PK-88 and the new PK-96. The PK-88 is perfect for the budget-minded amateur just looking to get their feet wet. Our newest data controller, the PK-96, lets you communicate with the state-of-the-art 9600 baud stations coming on line.

If you're interested in working digital modes other than packet, our line of multi-mode controllers are your best bet. Our best selling multi-mode controller, the PK-232MBX, is the best way to get a low-cost, high performance data controller that can decipher what you can't hear.

The future is in DSP-based (Digital Signal Processing) data controllers. AEA has been designing and manufacturing the DSP-2232/1232 for three years. It is the most sophisticated data controller available for amateur use today.

Every day AEA's engineers are designing new products and new features for existing products. Not only have we pioneered hardware, but we have also helped bring new protocols, like PACTOR, to amateur radio operators. We have also developed a complete line of software that makes communications easier and more fun.

Buying an AEA product is an investment in the future because we bring you the break throughs.

**Multi-Mode Product Comparison Chart**

| | DSP-2232/1232 | PK-900 | PK-232 |
|---|---|---|---|
| Dual port | ●/○ | ● | ○ |
| Pactor/packet/AMTOR MailDrop | ● | ● | ● |
| B&W fax | ● | ● | ● |
| 9600 bps | ● | ◔ | ○ |
| PSK satellite modems | ● | ○ | ○ |
| State machine DCD | ○ | ● | ○ |
| 19,200 TBAUD | ● | ● | ○ |
| Memory ARQ | ● | ● | ● |
| LCD readout | ● | ● | ○ |
| External reset button | ● | ● | ○ |
| Separate AFSK controls | ●/○ | ● | ○ |
| Digital signal processing | ● | ○ | ○ |

● = Yes ○ = No ◔ = Option

# DSP-2232 & DSP-1232


## Exceptional Data Controllers for Amateurs Who Demand The Best

**Take a fast trip to the future with these digital signal processing multi-mode data controllers!** The DSP-1232 with two switchable ports, and the DSP-2232 with two simultaneous ports, provide a new level of performance and versatility in data controllers. The capabilities of both are endless.

**Providing a new level of performance and versatility.** An incoming analog signal is digitized by a 12-bit, high speed, analog-to-digital converter. The digitized data is then digitally filtered and analyzed by a Motorola 56001 computer running at 24 MHz. The processed demodulated signals are then passed to a second processor, the Hitachi 64180, for protocol conversion. One great advantage of the DSP is that new modems or modes only require new software; unlike an analog modem which usually requires that new hardware be installed.

**The dual port capabilities of the DSP-2232 let you take full advantage of Gateway.** Your DSP-2232 now has a capability never before offered in a multi-mode controller: the ability to create a "gateway" from packet-to-AMTOR, packet-to-PACTOR, and of course, packet-to-packet. Since you have dual simultaneous radio ports, the DSP-2232 allows cross-mode gateway operation. Under your command, you can allow packet users connecting to Port 2, the ability to monitor and link to other AMTOR, PACTOR, or even packet stations using your HF radio on Port 1.

The dual ports of the DSP-2232 also offer you simultaneous HF and VHF monitoring, or running two

*continued on page 6*

**Specifications for the DSP-2232 and the DSP-1232**

| | |
|---|---|
| Demodulator | Motorola 56001 Digital Signal Processor running at 24 MHz |
| Modulator | Phase continuous sinewave, AFSK generator |
| Modulator output level | 5-100 mV RMS, adjustable with side-panel controls |
| Processor system | Hitachi 64180 |
| RAM | 64K Lithium battery-backed |
| ROM | Up to 384K (128K dedicated to DSP) |
| Hardware HDLC | Zilog 8530 SCC |
| Power requirements | +13 VDC (+12 to +16 VDC) @ 1.1A |
| **Input/Output Connections** | |
| Radio interface | Two 5-pin DIN connectors. Simultaneous operation on the DSP-2232, software selectable on the DSP-1232 |
| Direct FSK outputs | Normal/Reverse |
| CW keying output | +100 VDC @ 100 mA max or -30 VDC @ 20 mA max |
| Terminal interface | RS-232-C DB-9P connector with hardware/software handshake |
| Terminal data rates | Autobaud settings at 300, 600, 1200, 2400, 4800, 9600, and 19,200 bps |
| Printer interface | IBM compatible 25-pin bi-directional parallel port (DB-25 connector) |
| **Physical** | |
| Dimensions | 12" (305mm)W x 9.8" (249mm)D x 2.9" (73.7mm)H |
| Weight | 3 lbs, 12 oz (1.7 kg) |

*DSP-2232 & DSP-1232 continued from page 5*

## On the Leading Edge of the Amateur Radio Frontier

VHF packet radios at the same time. You can also listen to your local DX node while working AMTOR on an HF frequency.

**Internal software provides all popular digital amateur data modes, including PACTOR.** As new modes become available, all you need are replacement EPROMs. Satellite and all PK-232MBX modems are available, plus the K9NG and G3RUH compatible 9600 bps modems. Any desired FSK tone pair can be programmed for the DSP units, as well as QPSK or other specialized modems. The DSP multi-mode data controllers are the most versatile on the market.

**Automatic Doppler correction.** Up/down Doppler shift for PSK modems, outputs for up/down frequency stepping to control the radio's frequency.

**The onboard 9600 baud modem gives you even more power.** Having 9600 baud capability lets you bounce packets off satellites and communicate with terrestrial stations at a blazing rate of speed!

**PACTOR opens up a universe of capabilities.** The potential of this new mode is practically limitless! Specific benefits include automatic speed selection (100 or 200 bps), error-free data, transmission memory ARQ, personal MailDrop, and ASCII data compression.

**Other important benefits:**

- Unique LCD read-out on the DSP-2232 displays the mode and diagnostics for both channels, giving you more information than LEDs can.
- On packet, the LCD diplays the call signs of stations heard. On RTTY, AMTOR, and PACTOR text received on the air is displayed.
- Upgradeable flexibility for the DSP-1232 allows you to upgrade to a full-featured DSP-2232 with the LCD display at any time.

**Everything that makes the PK-232MBX such a success is included in both DSP units.** You get the latest version of MailDrop with selective control of third-party traffic and bulletin board system (BBS) compatibility so messages can be automatically forwarded. Also included is the host mode preferred by professional programmers for efficient control of TNCs. In packet, the DSP is compatible with the TCP/IP networking protocol. This requires the data controller to recognize special commands not found on all controllers, such as KISS, PERSISTENCE, and SLOTTIME.

**For fax printing, most parallel printers can be connected to the DSP or your computer.** With the right software, you can print HF monitored fax signals. The DSP supports most printing standards.

**DSP controllers will decode Time Division Multiplex (TDM) signals.** TDM is a mode resembleing FEC AMTOR used in commercial applications. TDM uses one sub-carrier, but assigns separate data channels to different time slots.

**Modes and Modems for the DSP-1232 and the DSP-2232**

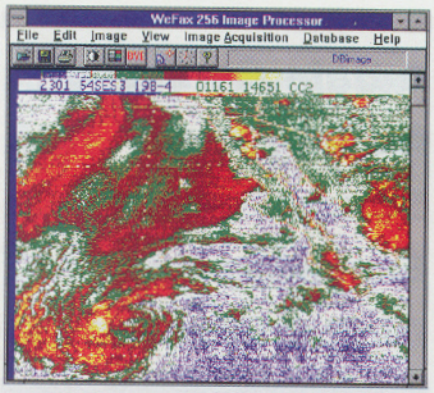
| | |
|---|---|
| **Modes** | |
| Send and receive | ASCII, AMTOR (ARQ & FEC), Baudot, Fax (2-color), Morse code, Packet (AX.25 and KISS), PACTOR |
| Receive only | Signal Identification, AMTOR ARQ Listen, Bit-inverted Baudot RTTY, NAVTEX, TDM, 250 gray shade fax, PACTOR Listen |
| **Modems** | |
| Port 1 | RTTY/TOR 170: 2125/2295, RTTY/TOR 170: 1445/1275, RTTY/TOR 425: 2125/2250, RTTY/TOR 850: 2125/2975, RTTY/TOR 200: PACTOR 2110/2310, RTTY/TOR 200: PACTOR 1460/1260, Packet 300 bps HF 2110/2310, Packet 300 bps HF 1460/1260, Packet 1200 bps VHF, Packet 1200 bps PACSAT, Packet 1200 bps PSK, Packet 2400 bps V.26B, Packet 4800 bps PACSAT, Packet 4800 bps PSK, Packet 9600 bps FSK K9NG/G3RUH, Packet 4800 bps PSK, Morse 750 Hz, Analog Fax HF, Analog Fax APT, Analog SSTV, DSP data 400 bps OSCAR-13, RTTY/TOR 1200 bps ASCII OSCAR-11, DSP data spectrum, Packet 1200 bps MSK, Packet 2400 bps MSK |
| Port 2 | Packet 200 bps HF 2110/2310, Packet 1200 bps VHF, Packet 1200 bps PACSAT, Packet 2400 bps V.26B, Packet 9600 bps FSK K9NG/G3RUH, DSP data 400 bps OSCAR-13, Packet 1200 bps MSK, Packet 2400 bps MSK |
| Dual port | RTTY/TOR 170: 2125/2295; Packet 300 bps HF 2110/2310<br>RTTY/TOR 170: 2125/2295; Packet 1200 bps VHF<br>RTTY/TOR 200: PACTOR 2110/2310; Packet 300 bps HF 2110/2310<br>Packet 300 bps HF 2110/2310; Packet 1200 bps VHF<br>RTTY/TOR 200: PACTOR 2110/2310; Packet 1200 bps VHF<br>Packet 1200 bps VHF; Packet 1200 bps VHF |

# accessories for the DSP-2232/1232

## AEA WeFax 256

**This new Windows Program for WEFAX display features:**

- Displays, in real time, true grayscale images from either the NOAA HF WeFax Service or the NOAA APT Satellite Service.
- Provides two modes of resolution—500 or 250 pixels per line—which insure that the AEA WeFax 256 Imaging System will work on your system. In addition to the real-time display mode, all incoming data is stored in a buffer, giving you the ability to obtain a higher resolution.
- Incorporates a scrollable receive buffer capable of operating in either stop or loop modes.
- Includes a complete Image Processor, giving the user the ability to enhance received images to bring out areas of interest. Enhancements include brightness, contrast, gamma, sharpness, negative, blur, false color, and many more.
- Supports BMP, GIF, PCX, TIF, and JPG image formats.
- Integrates an Auto Clock function to "wake up" your system; captures unattended transmissions.




*A sample screen from AEA WeFax 256 demonstrating some of the available enhancements.*

**Requirements:** An AEA DSP-1232 or DSP-2232 Multi-mode Data Controller with a receiver and antenna system for either HF, APT VHF or microwave operation. A 386 PC-compatible computer or better, 2 MB of RAM (4 MB highly recommended), 5 MB of free hard disk space (more required if you wish to save images). VGA 256-color monitor and video card or better. Windows 3.1.



## ST-1 Satellite Tracker

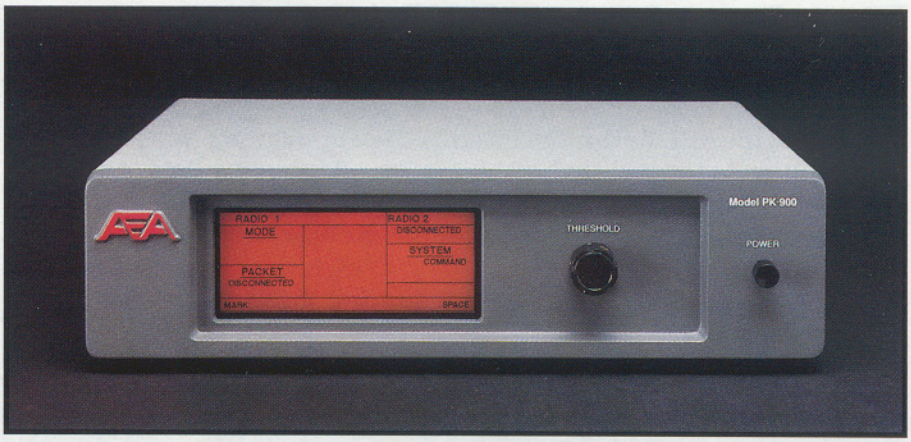
New for the satellite operator! Hardware and software for automatic tracking of satellites. Hands–off control of antennas and transceiver tuning make satellite operation easy. As the satellite nears the horizon, the antennas are pointed in the proper direction and the rig is tuned to the right uplink and down-link frequencies. As the satellite moves into the field of view, the antennas track and the transceiver tuning is corrected for the Doppler shift throughout the pass.

**Features:**

- Automatically controls Yaesu 5400/5600 Azimuth-Elevation rotors. The ST-1 can be used with two independent rotors as well. Has A/D converters, precision power supply, and relays to control two independent rotors.
- Works with InstantTrack, QuickTrack and RealTrack software.
- Tunes FT-736, TS-790, IC-970 and the IC-475/275 combination transceivers. Does not require external RS-232 adapters.
- Provides initial tuning and Doppler correction during satellite pass.
- Hardware uses one serial port and parallel port from the host computer. Automatic switching provides easy access to serial and parallel port when ST-1 isn't in use.
- Requires an IBM PC-compatible computer capable of running InstantTrack, QuickTrack or RealTrack and 13.6 VDC @ 1A.

# PK-900 Multi-Mode Controller

## A Data Controller for Amateurs Serious About Exploring the Digital Frontier




The next generation of our American-made multi-mode data controllers is here. When you're ready to step up beyond our popular PK-232MBX multi-mode controller, the PK-900 is it. Its performance is comparable to units costing hundreds...even thousands of dollars more. From a capability standpoint, the PK-900 is positioned between the PK-232MBX and the DSP-2232, exhibiting features found on both. With the PK-900, there are no compromises: It has established a new benchmark in performance, with all the modes and features of the PK-232MBX and a good deal more.

**Dual simultaneous ports.** Switch between radio ports with a keystroke and still receive simultaneous signals from both ports. The days of hitting Radio 1/Radio 2 to switch back and forth—limiting you to one conversation at a time—are over.

**Internal firmware includes SIAM™—Signal Identification & Acquisition Mode.** SIAM automatically identifies incoming Baudot, ASCII, AMTOR/SITOR, PACTOR, and TDM signals, and with a few keystrokes switches to the recognized mode and starts the data display.

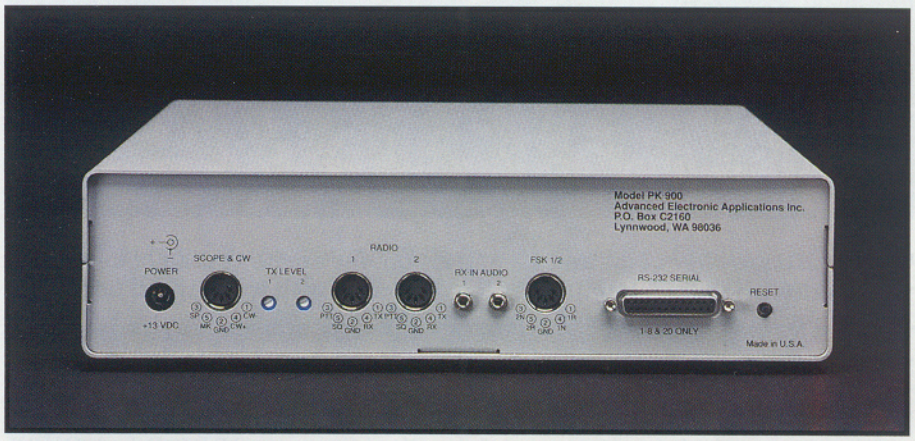
**Specifications for the PK-900**

| | |
|---|---|
| Demodulator | Port 1: 8-pole Chebyshev bandpass filter, 4-pole discriminator, 5-pole post-detection low pass filter. Port 2: AMD 7910 Modem |
| Modulator | Programmable phase continuous sinewave, AFSK generator |
| Modulator output level | 5-100 mV RMS |
| Processor system | Hitachi 64180, Motorola 68HC05B4, Motorola 68HC05C4 |
| RAM | 64K Lithium battery-backed |
| ROM | Up to 256K |
| Hardware HDLC | Zilog 8530 SCC |
| Power requirements | +12 to +16 VDC @ 1.1A |
| **Input/Output Connections** | |
| Radio interface | Two 5-pin DIN connectors |
| Direct FSK outputs | Normal/Reverse |
| CW keying output | +100 VDC @ 100 mA max or -30 VDC @ 20 mA |
| Terminal interface | RS-232-C 25-pin DB-25 connector with hardware/software handshake |
| Terminal data rates | Autobaud settings at 300, 600, 1200, 2400, 4800, 9600, and 19,200 bps |
| Printer interface | IBM compatible 25-pin bi-directional parallel port (DB-25 connector) |
| **Physical** | |
| Dimensions | 11.8" (300mm)W x 12" (305mm)D x 3.5" (89mm)H |
| Weight | 6 lbs, 4 oz (2.84 kg) |

**Optional 9600 baud modem board gives you more power.** This easy-to-install board makes "getting up to speed" easy. Bounce packets off satellites or communicate with terrestrial stations at a blazing 9600 baud. The PK-900 uses three dedicated processors and an innovative circuit design to give it the power and flexibility you want from a multi-mode controller that will serve you into the future.

**High-performance bandpass filter limiter discriminator gives you excellent filtering on channel 1.** The 8-pole Chebyshev bandpass filter offers six software selectable tone shifts—170 to 1000 Hz. The 6-pole, post detection linear phase low pass filter is optimized for data rates from 45 to 2000 baud.

**Unique LCD display tells you everything at a glance.** The large,




## Any Way You Look At It, The PK-900 is a Revolution in Data Controller Technology

easy-to-read backlit display provides all essential status and mode information for both ports. A 20-segment multi-mode bar graph makes HF tuning easy. This display even informs you of new mail!

**All standard features needed for digital amateur radio operation are included:** PACTOR, Packet, AMTOR, ASCII, Baudot, Morse, B&W Fax trnasmission and reception, as well as ARQE3, NAVTEX, TDM, 16-level gray scale fax (with optional software), and signal identification when you're scanning the bands. 17K dynamically allocated packet and AMTOR MailDrop, Packet Lite for enhanced HF operation, and host mode for superior software support. Interface connection for AFSK, direct FSK, direct CW keying, tuning scope, plus selectable State Machine PLL or in-band energy level DCD. Also features a test mode for easy troubleshooting. The new ARXTOR command allows for automatic detection of AMTOR or PACTOR signals, identifying which type of signal it is and switching your PK-900 to that mode.

**Change the way you communicate with Gateway!** Not only does the PK-900 feature all the fine capabilities detailed above—now you have a capability never before offered in a multi-mode controller: the ability to "gateway" from packet to AMTOR, packet to PACTOR, and of course, packet to packet. Under your command, you can allow packet users connecting to Port 2 the ability to monitor and link to other AMTOR, PACTOR, and even packet stations using your HF radio on Port 1.

**Gateway as a Node.** Your Gateway firmware will support local acknowledgment *(acks)* of packets like a full-service node does, so instead of users having to digipeat through your MYALIAS or MYCALL call sign to connect to a destination station, they can now simply connect to your MYGATE call sign. From there, they can issue a connect request to the station they want to reach and your station will be responsible for accepting and sending packet data and acks.

**Twenty software selectable modems.** There are optimized modems for AMTOR, PACTOR, 45 baud teletype, and packet. There is even a disconnect header, so you can plug in your own modem. Modem selection is as easy as typing a command for the one you want. For a full listing of available modems, see below.

**Modems:** *Port 1:* FSK 45 bps 170 Hz, FSK 100 bps 170 Hz, FSK 45 bps 200 Hz, FSK 100 bps 200 Hz, FSK 100 bps 425 Hz, FSK 100 bps 850 Hz, Analog, Fax, FSK 300 bps 200 Hz, FSK 1200 bps 1000 Hz, Morse. *Port 2:* HF Packet, VHF Packet, Internal option for 9600 baud, and Modem disconnect header.



### Accessories for your PK-900:

**For truly cutting-edge digital operation, consider these products:**

***IsoLoop 10-30HF Antenna*** Page 18
A small loop antenna with big antenna performance. Great for amateurs with limited space.

***PC-PAKRATT for Windows*** Page 14
Windows software that makes it easier to use the full capabilities of your PK-900.

**For the following options, call our upgrade hotline at (206) 774-1722:**

***AEA FAX II 900 Option***
Receives and displays fax signals in 16 shades of gray.

***9600 Baud Option***
Work satellites or terrestrial stations at 9600 baud.

# PK-232MBX Multi-Mode Controller

## The Largest Selling Multi-Mode Data Controller in the World


This data controller combines all of the popular amateur data communication modes into just one unit; with over 65,000 sold worldwide, operators know they have found a winner!

**Modes include:** Morse Code, Baudot, ASCII, AMTOR/SITOR 476 and 625, PACTOR, HF & VHF Packet, B&W FAX receive/transmit, NAVTEX/AMTEX/ARRL information services.

**Gateway as a Node.** Your Gateway firmware will support local acknowledgement *(acks)* of packets like a full-service node does, so instead of digipeating through your MYALIAS or MYCALL call sign to connect to a destination station, simply connect to the MYGATE call sign.

**Designed specifically for multi-mode operation...it's not just a packet controller with extra firmware.** Its internal modem can transceive packet at rates from 45 to 1200 baud (2400 bps optional), with the option of using an external modem for higher baud rates. Also features a no-nonsense VHF/HF/CW modem with an 8-pole Chebyshev bandpass filter, followed by a limiter-discriminator with automatic threshold correction. The modem can copy shifts from 85 to 1500 Hz in two ranges.

**Internal software includes SIAM™— Signal Identification & Acquisition Mode.** SIAM automatically identifies incoming Baudot, ASCII, AMTOR/SITOR, PACTOR, and TDM signals, and with a few keystrokes switches to the recognized mode and starts the data display.



### Specifications for the PK-232MBX

| | |
|---|---|
| Demodulator | 8-pole Chebyshev bandpass filter, limiter, 4-pole discriminator, 5-pole post-detection low-pass filter |
| Modulator | Phase continuous sinewave, AFSK generator |
| Modulator output level | 5-200 mV RMS |
| Processor system | Zilog Z-80 |
| RAM | 32K Lithium battery-backed |
| ROM | 128K |
| Hardware HDLC | Zilog 8530 SCC |
| Power requirements | +12 to +16 VDC @ 850 mA (1A recommended) |
| **Input/Output Connections** | |
| Radio interface | Two 5-pin connectors, front panel selectable |
| Direct FSK outputs | Normal/Reverse |
| Scope outputs | Mark, space |
| CW keying outputs | +100 VDC @ 200 mA max and –25 VDC @ 30 mA max |
| Terminal interface | RS-232-C 25-pin DB-25 connector with hardware/software handshake |
| Terminal data rates | Autobaud settings at 300, 600, 1200, 2400, 4800, and 9600 bps |
| Printer interface | Centronics parallel printer output with optional cable |
| **Physical** | |
| Dimensions | 11" (279mm)W x 8.25" (210mm)D x 2.5" (64mm)H |
| Weight | 3 lbs (1.35 kg) |

**Standard 18K MailDrop with selective control of third party traffic.** It uses a subset of popular WØRLI/WA7MBL commands, including List Mine, Kill Mine, Read Mine, Edit, Help, etc. Your local BBS can automatically forward and reverse-forward messages to and from your station. The PK-232MBX can be used as the data controller "front end" with most popular BBS programs.

**Efficient control with host mode designed to allow easy programming of powerful programs.** In packet, the PK-232MBX internal program is compatible with the popular TCP/IP networking protocol via KISS mode.

**Included:** RS-232 shielded cable, two radio cables, and all rear panel mating connectors. Optional AC-4 power supply and pre-made radio cables available.

# PK-96 Packet Controller


## A High Speed Packet Controller With the Speed You Need

Tired of waiting for packet data? Wish for an easy solution? Now there is one: the PK-96, a cost-effective, high-speed, single-mode data controller.

**When what you need is speed, you need the PK-96.** You will no longer have to purchase a data controller and add a high-speed modem upgrade just to do 9600 baud packet! Our PK-96 1200/9600 baud packet controller comes standard with 1200 baud AFSK tone signaling, as well as 9600 baud K9NG and G3RUH compatible direct frequency modulation, making it a truly high-performance data controller! The PK-96 not only makes an excellent terrestrial or satellite data controller, it also can be used for high-speed data links between packet systems.

**Full-featured mail facilities.** In addition to the speed, the PK-96 comes standard with 18K of battery-backed MailDrop memory which is easily expanded to 110K, as well as the command set you've come to enjoy from our products. MailDrop allows you to automatically receive and reverse-forward messages and control third-party traffic.

**Extra commands add extra value, extra control.** In addition to our famous HOST mode, special commands not found in all data controllers are included in the PK-96. Some of these include KISS, PERSISTENCE, and SLOTTIME.

**Other features include:**

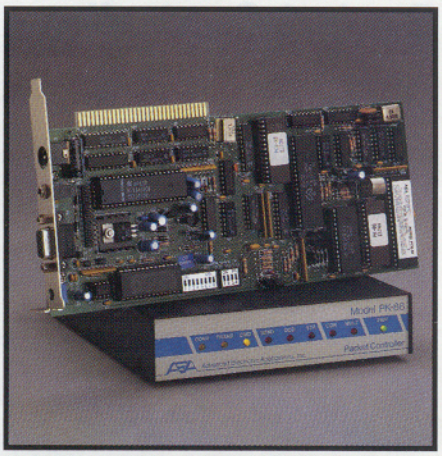
- Hardware "true DCD" state machine for open squelch operation.
- Hardware HDLC controller guarantees accurate protocol conversion at 9600 baud.
- Modem disconnect header for installing other modems.
- Separate 1200/9600 TX level controls.
- Enhanced MHEARD function identifies TCP/IP, NET/ROM, and <The-Net> stations.
- EXPERT command included to ease the learning process—only the most popular commands will be executable until the EXPERT mode is enabled.
- Small size—more room on your bench for other equipment!

If you're serious about packet radio, the PK-96 is the obvious choice. As a data controller, the PK-96 allows you to communicate on existing 1200 baud packet systems as well as communicating with the new 9600 baud systems coming on line. As a high-speed link, the PK-96 eliminates system bottlenecks and therefore increases system capacity.

**Specifications for the PK-96**

| | |
|---|---|
| Demodulator | Texas Instruments TCM-3105 1200/G3RUH and K9NG compatible 9600 |
| Modulator | Phase continuous AFSK 1200/9600 bps direct FSK |
| Modulator output level | 5 mV-1 V RMS rear panel adjustable |
| Processor system | Hitachi 64180 |
| RAM | 32K standard, expandable to 128K |
| ROM | 64K maximum |
| Hardware HDLC | Zilog Z8530 |
| Power requirements | +12 to +16 VDC @ 400 mA |
| **Input/Output Connections** | |
| Radio interface | 5-pin DIN connector |
| Terminal interface | RS-232C DB-25 connector with hardware/software handshake |
| Terminal data rates | Autobaud settings at 300, 600, 1200,2400, 4800, 9600, and 19,200 bps |
| **Physical** | |
| Dimensions | 6.13" (156mm)W x 7.4" (188mm)D x 1.35" (34mm)H |
| Weight | 1.2 lbs (0.54 kg) |

# PK-88 Packet Controller



Looking for a data controller with proven, superior packet performance? Connect with our popular PK-88 HF/VHF packet-only data controller!

**Ideal for those just getting started, as well as stepping up.** The PK-88 is ideal for the amateur who is looking to get started in digital communications. Yet, because of its superior features, the PK-88 has the sophistication for those amateur radio operators looking to take their hobby one step further.

**Unique features make the PK-88 more versatile.** The PK-88 combines AEA's unique host mode with enhanced KISS capability to provide compatibility with TCP/IP and G8BPQ networking software. There is also a special version of NET/ROM* firmware available. These capabilities allow you to turn your PK-88 into an ISO layer 3 and 4 network node.

**Enjoy MailDrop, an extremely efficient 18K personal mailbox with selectable third-party traffic.** When your PK-88 is active, other stations can connect to you and exchange personal messages, traffic, or bulletins. MailDrop accepts inbound mail forwarding and supports reverse forwarding to your local WØRLI/WA7MBL/AA4RE/MSYS auto-forwarding packet BBS. The PK-88's internal lithium battery will hold the MailDrop contents when the unit is off.

Besides standard TNC features, you also get these exceptional bonuses:

- **Packet Dump Suppression** prevents dumping unsent packets if the link fails.
- **Prioritized Acknowledgment (ACKPRIOR) Protocol** improves performance on busy channels.
- **Custom Command** allows additional PK-88 customization for non-standard applications.
- **Exclusive CFROM and DFROM Commands** to permit selective connecting and digipeating—accept or reject digipeater operation or connection to your station by call signs.



| Specifications for the PK-88 | |
|---|---|
| Demodulator | AMD-7910 world modem chip |
| Modulator | Phase continuous sinewave, AFSK generator |
| Modulator output level | 5-300 mV RMS |
| Processor system | Zilog Z-80 |
| RAM | 32K, Lithium battery-backed |
| ROM | 32K |
| Hardware HDLC | Zilog 8530 SCC |
| Power requirements | +12 to +16 VDC @ 550 mA |
| **Input/Output Connections** | |
| Radio interface | Locking 8-pin mic connector |
| Terminal interface | RS-232-C 25-pin DB-25 connector with hardware/software handshake |
| Terminal data rates | Autobaud settings at 300, 600, 1200, 2400, 4800, and 9600 bps |
| **Physical** | |
| Dimensions | 7.5" (191mm)W x 6.1" (152mm)D x 1.5" (38mm)H |
| Weight | 2 lbs, 5 oz (1.1 kg) |

| Specifications for the PCB-88 (same as PK-88 with the following differences) | |
|---|---|
| Power requirements | Internal computer power or +12 to +16 VDC @ 375 mA |
| **Input/Output Connections** | |
| Radio interface | DB-9 9-pin connector |
| Computer interface | IBM-PC compatible (ISA Bus) internal card |
| **Physical** | |
| Dimensions | 9.75" (248mm)W x 4.9" (124mm)D x .9" (23mm)H |
| Weight | 9 oz (0.25 kg) |

## PCB-88

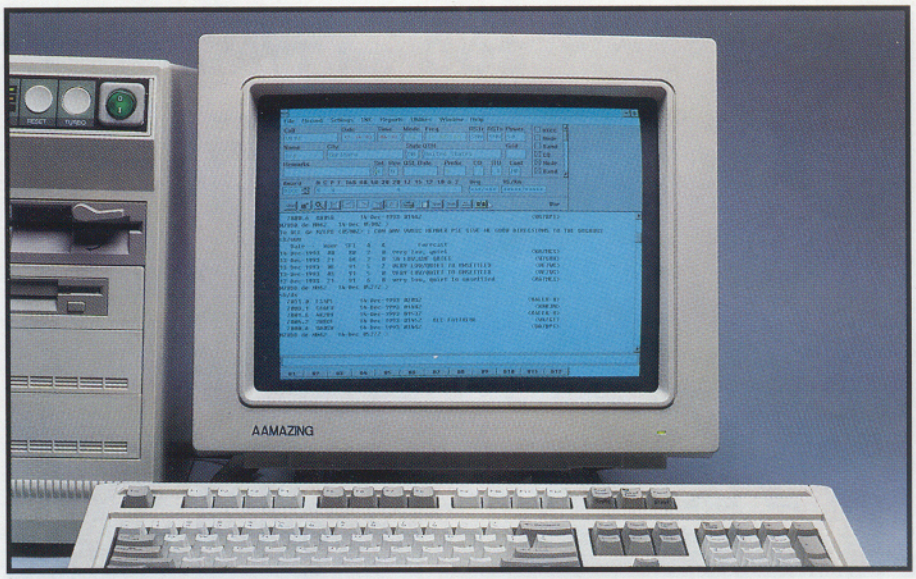
All the features of the PK-88 to plug into an 8- or 16-bit expansion slot on your PC-compatible computer. It has a true DCD circuit built in, along with a standard modem disconnect header, allowing for easy hook up of external modems, for high-speed, PSK, etc. In addition, the PCB-88 includes the PC-Pakratt 88 host mode program for easy control.

The included (US only) 12VDC adapter allows the MailDrop to receive messages, even when the computer is off. All necessary instructions and cables are included.

* © Software 2000

# software

## Log Windows™



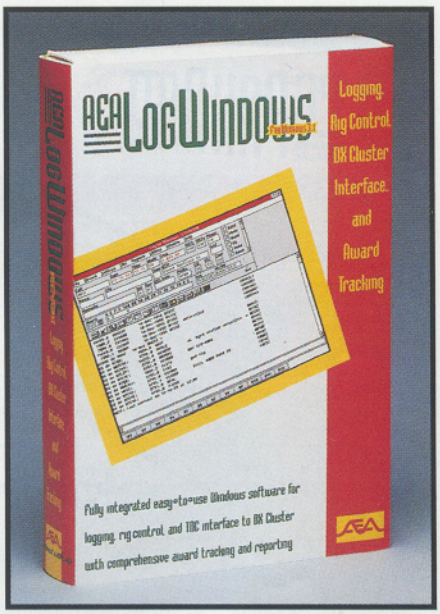

***A Fully Integrated Easy-To-Use Windows Program to Simplify Almost Everything You Do!***

Log Windows™ is a fully integrated, easy-to-use Windows program. It combines the functions of logging, rig control, and DX Cluster monitoring with award tracking and reporting. The award tracking functions will keep you up-to-date on your progress toward various awards. Importing information from other logging programs is easy—move data from your favorite contest program or previous logging program into the Log Windows database without a hitch!

**Features include:**

- Logging, rig control (ICOM, Kenwood, and newer Yaesu radios), and data controller interface in one integrated application. Radio QSY and QSX via DX Spots.
- Comprehensive database for storage of QSO information.
- Powerful reporting and search capabilities for the data contained in your on-line logbooks—no more flipping through your logbook!
- Packet Cluster interface supports any data controller in dumb terminal mode. Seven hundred line scrollable buffer. MCI DX Alert (DX in CW). Mouse-based Spot grabbing.
- Award Types: DXCC mixed, phone, CW, FSK, bands; CQ mixed, SSB CW FXK, bands; WAS mixed, SSB, CW, FSK, bands.
- Report Types: Summary, Full report, Countries/states/zones worked, Countries/states/zones needed, QSLs sent, QSLs needed, Award tag types (not tagged/duplicates).
- Record Searching Modes: Call sign, prefix, QTH, state, grid, exact match, sequential, wildcard, and record number.
- Print logbook (chronological or sorted by prefix) or print QSO labels.
- Import data from major logging programs, such as CT, Easy-DX, Hyperlog, LogMaster, DXBase. Moving to Log Windows is a breeze!
- Export data to an ASCII File for use in other applications.
- Interfaces to SAM and Buckmaster on-line callbooks for automatic display of name and QTH when call sign is entered.

**Requirements:** Windows 3.1, 4 MB of RAM, VGA display. A mouse is recommended. Supports data controllers connected to COM1-COM4 (Optional) and/or Radio Serial Port connected to COM1-COM4 (Optional).



# PC-PAKRATT for Windows

## PC-PAKRATT for Windows Makes Taking Control of Your AEA Data Controller Easier & More Enjoyable!


AEA knows that good software can make all the difference in whether you find your hobby a pleasure or a tedious chore. PC-PAKRATT for Windows has been designed with this in mind.

PC-PAKRATT for Windows is a true Windows application, allowing you to run other programs while controlling your data controller. Windows also provides you with terrific features like cut & paste, background execution, multi-tasking, etc. The graphical user interface makes the program functions quick and easy to access.

**The entire family of AEA data controllers are supported by PC-PAKRATT for Windows!** It has all the features that amateurs operating digital modes have asked for, such as the ability to run two data controllers at the same time.

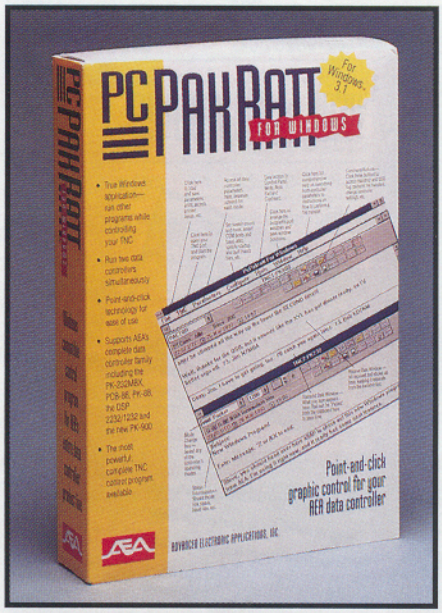
**Run two data controllers at once!** Using Windows' multi-tasking abilities, you can have dual-, tri-, or even quad-port operation with two full-featured AEA data controllers. Imagine working an AMTOR DX station through your PK-232MBX, receiving information from a local packet net on your PK-900's port 2, and working PACTOR on port 1 of the PK-900, all at the same time! Or, use your PK-900 and DSP-2232 for four simultaneous ports!

**Separate parameter files mean setting up your TNC once and forgetting it.** Parameter changes are easy with the complete parameter windows, and each mode has a different parameter set, allowing each controller's setup to be easily optimized for each mode.

**More exciting features!** Other features include separate windows for mailbox operation, QSO logging, file transfers, full control of screen colors, and more. And, of course, PC-PAKRATT for Windows contains a comprehensive Help section to explain everything—from parameter definitions to how to run a dual-port controller.

**Supports all AEA Data Controllers.** PC-PAKRATT for Windows supports AEA's complete line of data controllers, including the PK-88, PCB-88, PK-96, PK-232MBX, PK-900, DSP-1232, and DSP-2232.

**Requirements:** Windows 3.1, 4 MB of free hard disk storage space, and 2 MB RAM (4 MB recommended).



## PC-PAKRATT for DOS

Designed for PC-compatible computers and all AEA data controllers.

PC-PAKRATT II 5.5, is a split-screen terminal program for operation of Morse code, baudot, ASCII, AMTOR, PACTOR, NAVTEX, and packet.

**Among its many features:**

- Friendly on-screen one-touch Help menu to define commands and parameters for all modes.
- Full QSO logging feature.
- Nine hundred line scroll-back buffer stores incoming data.
- Five message/command buffers allow pre-programming of messages or commands for transmission with a single keystroke.
- Includes PK-FAX, a black & white fax display program.
- Complete macro key facility.
- PK-EDIT for editing message files.

**Specifications:** Requires minimum of 512K RAM and DOS 3.0. Supports COM 1-4. Provides mouse support.

## MacRATT with Fax

Version 2.1 for Macintosh computers. Makes using AEA's Data Controllers as easy as clicking the mouse! Supports PK-232MBX and PK-88.

## PC-PAKRATT 88

A lower-cost version of PC-PAKRATT II specifically for the PK-88. Most features of PC-PAKRATT II are included, but RTTY, FAX, AMTOR, etc., support have been removed since the PK-88 is a packet-only TNC.

## COM-PAKRATT with Fax

For the Commodore 64 computer. Supports the PK-88 and the PK-232MBX. Supplied on two ROM plug-in cartridges and includes an RS-232 level converter.

## Data Controller Software for your Macintosh,™ Commodore,™ or DOS-based Computer



**Pakratt Software Selection Table**

| | PC-PAKRATT for Windows | PC-PAKRATT II | PC-PAKRATT 88 | COM-PAKRATT | MacRATT |
|---|---|---|---|---|---|
| Which controllers* | All | PK/PCB-88, PK-232MBX | PK/PCB-88 | PK-88, PK-232MBX | PK-88, PK-232MBX |
| Computer type | PC Compatible | PC Compatible | PC Compatible | Commodore C-64 | Macintosh |
| PACTOR | ●** | ●** | ○ | ○ | ○ |
| Fax | ●*** | ●*** | ○ | ● | ● |
| Binary file transfer | ● | ● | ● | ○ | ● |
| Disk & printer access | ● | ● | ● | ● | ● |
| Help | ● | ● | ● | ○ | ○ |

* "All" denotes PK-96, PK-88, PCB-88, PK-232, PK-900, DSP-1232, and DSP-2232.
** Requires AEA multi-mode controller with PACTOR.
*** Includes DOS-based PK-FAX, B&W fax receive & transmit program. Works with multi-mode controllers only.

● = Yes ○ = No

# AEA FAX II

## Tired of Waiting for the Weather Reports on Television?


AEA FAX II is a multi-shade, gray scale fax receiving system for your PC-compatible computer. With a VGA monitor, up to sixteen shades of gray are possible, enabling you to receive highly detailed gray scale images. EGA, CGA, and Hercules monochrome adapters and monitors are supported as well, but with fewer gray shades displayed.

In addition to weather charts, WEFAX images, and wire photos, you'll be able to receive and decode Morse code and RTTY transmissions. AEA FAX II also has the capability to receive and display NAVTEX transmissions—the teletext-style maritime information service. The program is menu driven and works with or without a mouse.

**On-screen tuning indicator makes tuning the signal a breeze!** This tuning indicator remains active even while receiving, which helps you keep the signals coming in clearly.

**Keep track of your favorite stations.** AEA FAX II also includes a fax station database where you can keep a log of stations heard. Once a station is in the database, you can quickly and easily search the entire database by names, country, or time.


**Share your images with friends!** We've included a function that will export your received images to PCX or GIF files so you can use the images in other applications, share images with friends who don't have AEA FAX II, or edit the images in your favorite photo-editing program.

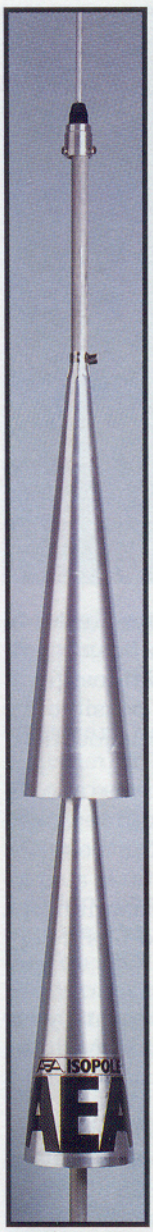
**Simple plug-in demodulator included.** The circuitry for demodulation is housed in the included demodulator (pictured with box at left). A shielded audio cable plugs into a COM port on your computer and into your HF receiver's external speaker output. The connector has a female DB-25 connector on one side, to interface with your computer's COM 1-4 port; on the other side is a male DB-25 connector so you can "daisy chain" and avoid tying up a COM port.

Other exciting features include automatic reception of images when you're away, support for most HP LaserJet- and Epson-compatible printers, and false color capabilities on an EGA monitor.

**Requirements to run AEA FAX II.** AEA FAX II requires a PC-compatible computer and a general coverage HF SSB receiver. VGA monitor required for gray scale fax display.

# antennas

## IsoPole™




The IsoPole™ is available in 144, 220, or 440 MHz versions, each yielding the maximum gain attainable for their respective lengths as well as zero-degree angle of radiation.

**Superior decoupling results in simple tuning and a significant reduction in TVI potential.** There is less feedline pick-up of any computer hash noise with the IsoPole than with any equivalent antenna.

**Cones offer greater efficiency over obsolete radials which radiate in the horizontal plane.** Additionally, the IsoPole offers broad frequency coverage. There is no loss of power output from one end of the band to the other. When used with SWR-protected solid-state transceivers, you experience a typical SWR of 1.4:1 or better across the entire band. VHF versions include a 50 ohm SO-239 connector recessed within the base sleeve for full weather protection.

**An impedance matching network designed for maximum legal power.** It compensates for the impedance introduced by the SO-239 connector used in the VHF models.

**The IsoPole offers superb strength to withstand the harshest environments.** The insulating material offers excellent strength and dielectric properties plus superb long-term ultraviolet resistance. The mounting hardware is stainless steel and the decoupling cone and radiating element are made of corrosion-resistant aluminum alloys. The aerodynamic cones are the only appreciable windload and attach directly to your TV mast.

### *The Maximum Gain Antenna with Patented Cone Decoupling*



**Specifications for the IsoPole**

| Model*: | Iso-144 | Iso-220 | Iso-440 |
|---|---|---|---|
| Frequency coverage | 135-160 MHz | 210-230 MHz | 415-465 MHz |
| Impedance | 50 ohms | 50 ohms | 50 ohms |
| Nominal power rating | 1.0 KW | 1.0 KW | 1.0 KW |
| 2.1 VSWR bandwidth | 10 MHz @ 146 MHz | 15 MHz @ 220 MHz | 22 MHz @ 435 MHz |
| Length | 125.5" (3.2m) | 79.25" (2m) | 46" (1.2m) |
| Min. mast length** | 8' (2.4m) | 5.25' (1.6m) | 6" (50mm) |
| Coax connector | SO-239 | SO-239 | Type N |
| Gain (on horizon) | 3 dBd | 3 dBd | 3 dBd |

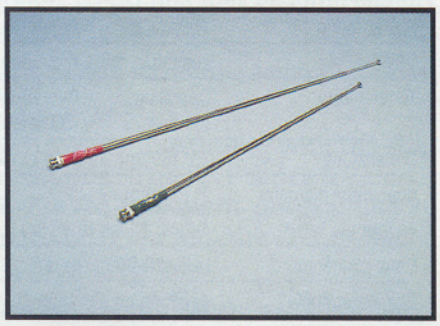
* Aircraft band and commercial versions also available
** Mast not included.

## HotRods

**Get extended range and maximum gain with these high-performance telescoping handheld half-wave antennas.** HotRods achieve higher gain than any 5/8 wave, two-meter telescopic antenna for handhelds.

The HR-1 is 20% shorter and lighter than a 5/8 wave antenna, which places less stress on your handheld's connector and case. It can handle over 25 watts of power, making it an ideal portable base or mobile antenna. Collapsed, the HotRods perform electrically like helical quarter-wave flexible antennas.

**Two versions available:** the HR-1 half-wave 2M, and the HR-2 half-wave 220 MHz.



# IsoLoop 10-30 antenna

## The Biggest Performance You Can Find in a Small Antenna!

**This high-Q, high-efficiency antenna is perfect for amateurs living in areas with antenna restrictions!** This antenna exhibits a significant engineering breakthrough with its high-performance, low-profile design. It covers 10-30 MHz continuously at 150 watts and makes it possible for hams to enjoy their hobby in what may seem to be an impossible location.

**Superb engineering makes this antenna unique.** The antenna is omnidirectional and requires no rotor or antenna tuner. It can be mounted horizontally or vertically. Horizontal mounting is preferred for best DX performance due to the lower angle of radiation at low heights. It also allows for easy attic installation. Mounting it vertically provides a null in a specified direction. The flexible, iridited aluminum loop band has a very low radiation resistance—ranging from 0.2 to 0.4 ohms!

**Compact design great for amateurs in restricted areas.** Operate your favorite band from areas with restrictive zoning ordinances! And the IsoLoop 10-30 can be easily compressed to squeeze through attic openings and other tight spaces in apartments and condos.

**The antenna is highly efficient due to precise, heavy-duty construction and design standards.** Efficiency ranges from 96% on 10 meters to 72% on 20 meters. The custom designed, split-stator capacitor has no rotating contacts and is rated at 10,000 volts. (A smaller capacitor would require a less efficient antenna design to prevent arcing.)

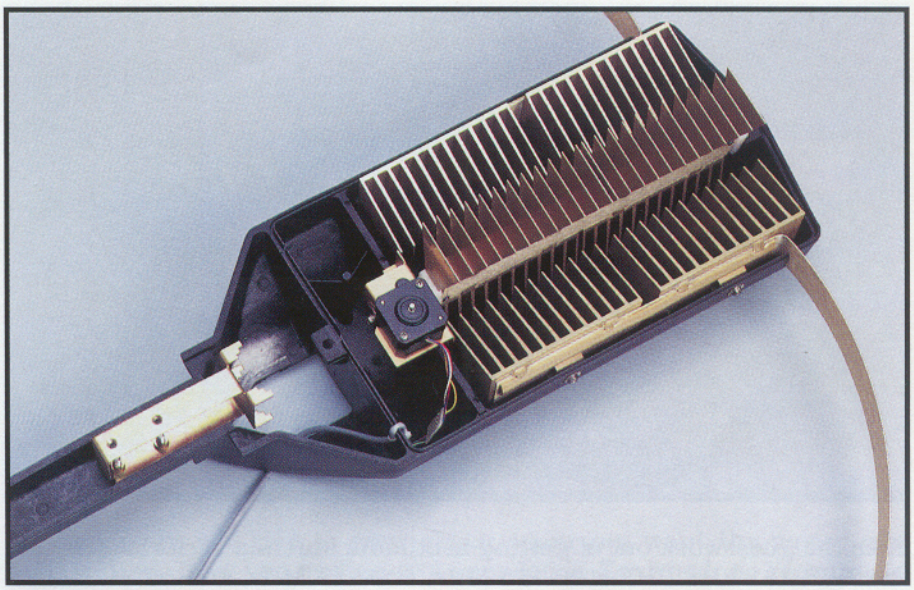
In addition, the high-Q design results in a narrow bandwidth which suppresses harmonics from your transmitter, reducing TVI problems. It also attenuates out-of-band signals, helping prevent receiver overload.

The capacitor is rotated by a low-noise precision stepper motor, so exact tuning is a breeze.

**Specifications for the IsoLoop 10-30**

| | | |
|---|---|---|
| Frequency coverage | 10 to 30 MHz, continuous | |
| Nominal Impedance | 50 ohms | |
| Power rating | 150 watts | |
| VSWR | Less than 1.5:1 (no nearby obstructions) | |
| Temperature | Operating | 0 to 150°F (-17 to 65°C) |
| | Storage | -50 to 200°F (-45 to 93°C) |
| Dimensions | 35" (89cm) diameter circle | |
| Max. mast diameter | 2" (51mm) | |
| Weight | Actual: 14 lbs (6.35 kg) | Shipping: 25 lbs (11.34 kg) |
| Coax connector | UHF (SO-239) | |
| Gain over dipole | Depends on elevation | |

Optional LC-2 shielded control cable with connectors available in 50' (15.25 M) and 100' (30.5 M) lengths.



## From the Inside Out, the IsoLoop Proves That Size Doesn't Matter!

**Getting on the air is a snap.** The IsoLoop comes fully assembled, so getting on the air is just a matter of sliding the loop onto the mast;* tightening down the U-bolt, and attaching the coax.*

**There are no complicated instructions or mechanical joints.** All welded contruction means no mechanical joints, so the possibility of corrosion is kept to a minimum. The IsoLoop 10-30 is isolated from the feedline, resulting in an undistorted radiation pattern and less stray RF in the ham shack.

**The IsoLoop 10-30 is compact, round, measures a scant 35" in diameter and weighs only 14 pounds.** Because it comes fully assembled and operates on 13.8 VDC, it is the ideal antenna for Field Day and DXpeditioning. Use it on a boat, a mobile home, take it wherever you wish! It comes with an AC-1 power supply (US only), LC-2 tuner with frequency indicator, and a 50-foot shielded control cable.

The IsoLoop 10-30 includes 50 feet (15.25 M) of shielded control cable. Extension cables are available.

*Mast and coax cable not included.



## IT-1 Automatic Tuner

With the IT-1 IsoTuner, tuning the IsoLoop 10-30 has just become easier! Tuning with the IT-1 typically takes just a few seconds.

Internal beeper confirms key pad operations and announces completion of tuning or error conditions

A thumbwheel knob provides manual control and fine tuning with the step rate determined by the speed of knob rotation. The IT-1 tunes for maximum receive noise or minimum SWR. Add to this eight programmable memories and a 10-segment multipurpose LED bar and the IT-1 becomes an indispensable part of your IsoLoop tuning system.

Memory back-up, built-in serial interface, and pop-up software included.

# antenna analyzers

## SWR-121 HF & SWR-121 V/U

### Get a Grip on Your Antenna's Performance With the SWR-121 HF or SWR-121 V/U


Take the guesswork out of getting maximum antenna performance—use the SWR-121 VHF/UHF (120-175 MHz, 200-225 MHz, and 400-475 MHz) or the SWR-121 HF (1-32 MHz) Antenna Analyst. With a graphic display to show what's happening with your antenna's SWR vs. frequency, the SWR-121 Antenna Analysts help you maximize your investment in your amateur radio antennas.

The SWR-121 Antenna Analysts combine a microprocessor-controlled frequency synthesizer with an accurate low-power SWR bridge. A full-featured keypad allows you to select the center frequency, frequency range, and step size. The unique LCD readout displays the antenna's SWR curve over an entire range, not just at one frequency.

**Use the analyzer anywhere—at a Field Day site, up the tower, or from your shack!** Take this portable analyst with you next time you climb the tower. From there, plug your antenna directly into the SWR-121 and get a precise display of your antenna's SWR curve, independent of the feedline. Subsequently, make tuning adjustments and immediately see the results. There's even a handy carrying case available!



**Specifications for the SWR-121 HF & SWR-121 V/U**

| | SWR-121 HF | SWR-121 V/U |
|---|---|---|
| Frequency ranges | 1.0-31.999 MHz | 120-175, 200-225, 400-475 MHz |
| Characteristic impedance | 50/75 ohms, selectable | 50 ohms |
| SWR measurement range | 1:1 to 65.5:1 | 1:1 to 65.5:1 |
| Return loss range | 0.3 dB to 50 dB | 0.3 dB to 50 dB |
| Frequency increments | 1 kHz | 10 kHz |
| Serial port | 9600 baud, XON/XOFF handshake | 9600 baud, XON/XOFF handshake |
| Accuracy | +/- 10% typical, below 10:1 | +/- 10% typical, below 10:1 |
| Display resolution | 0 to 200 kHz per dot (1 kHz increments) | 0 to 990 kHz per dot (10 kHz increments) |
| Harmonics & spurious | >30 dB below fundamental, typical | >30 dB below fundamental, typical |
| Display update time | Approximately 9 seconds/sweep | Approximately 2 seconds/sweep |
| Power requirements (identical for both units) | Internal Eight AA alkaline or high energy lithium batteries<br>External 12-16 VDC | |
| **Physical** (identical for both units) | | |
| Dimensions | 4.3" (109mm)W x 8.5" (216mm)D x 2.25" (57mm)H | |
| Weight | 1 lb, 10 oz (0.74kg) | |

**Testing coax has never been easier!** Use your SWR-121 Antenna Analyst to measure the return/loss in dB in a length of coax. Now you will be certain it's time to replace that old feedline with fresh coax and new connectors.

**Optional Software.** With features like remote control of your SWR-121 and the ability to display plots on the computer, the optional AACOM software makes it easy for you to get the most from your hand-held Antenna Analyst. With AACOM you can:

- Save plots to disk and track antenna performance over time.
- Control an SWR-121 from a computer keyboard. (Interface cable included with AACOM.)

# remote control

## HamLink and RadioLink


**Now You Can Operate Your Base Station From Just About Anywhere**

**No longer are you tied to your shack when you want the power of a base station.** Now you can control your Icom, Kenwood, or Yaesu radio using a telephone, handheld, or mobile radio. Using your radio's computer port you can operate SSB, FM, AM, and even CW from your car, your office, on vacation—anywhere you go.

You can change bands, frequency, and modes with HamLink or RadioLink. Just in case you lose track of your frequency or mode, we've included a voice synthesizer to remind you. Plug-in cables make set-up a snap. Both units have outputs for controlling other accessories.

**HamLink.** HamLink controls your ham station using a touch-tone telephone. Change bands and frequency, tune up or down, switch modes (AM/SSB/FM/CW), scan, run split VFO, or virtually any other radio feature from anywhere you can find a touch-tone phone.

HamLink hooks into your existing telephone line so there is no need for a second phone line. HamLink functions perfectly even if you have an answering machine connected to the same phone line.

**RadioLink.** Similar to HamLink, RadioLink lets you use the touch-tone keypad on your handheld or mobile radio to change bands, frequency, or mode. RadioLink can go between your HF/VHF/UHF transceiver and a repeater or a 220 MHz or UHF full duplex link.

RadioLink also interfaces with equipment that does not have a computer port for commercial use. In addition, RadioLink can be switched to a local mode so that the user does not have to plug and unplug a local mic, key, and speaker.




## OpLink

Used with HamLink, OpLink lets you plug in your favorite key or keyer and start transmitting high speed CW. Use a headset/boom mic combination or stereo headsets at the user end of the connection for great audio.

OpLink allows the use of the Icom HS-10 or Yaesu YH-2 headset boom microphone combination, allowing you to use a mic tailored for amateur use instead of the element in your telephone. OpLink also has a key jack so you can plug in your keyer, bug, or hand key to allow high speed CW.

# keyers

## KK-1 Keyboard Keyer

### Get All Keyed Up with the New Keyboard Keyer from AEA


**Put the world at your fingertips!** If you enjoy operating CW, the KK-1 Keyboard Keyer literally puts the world at your fingertips. The KK-1 turns any standard PC-compatible 101-key keyboard into an easy-to-use, feature-packed Morse machine. If you already have a keyboard connected to your PC, the KK-1 will share it with your computer (cable provided), saving valuable operating space. A simple key combination switches the keyboard between the keyer and your computer.



**Well thought-out controls.** The KK-1's extensive features take full advantage of your keyboard's layout. For example, the separate numeric and cursor-control keypads are used for accessing the majority of functions and for parameter selection. The twelve function keys select the message buffers with a single keystroke.

**A host of useful features.** Unique features, such as short-term memory, message repeat, and nestable message buffers make the KK-1 versatile and easy to use. You can hone your skills with an extensive code practice mode which allows you to choose between words commonly heard on the air (over 700!) and random groups of selectable length and difficulty. A built-in iambic keyer allows you to use paddles for a change of pace, and the paddles can be easily inverted for right- or left-handed operation.

All operations are monitored on a large, four-digit LED display with mode indicators. Speed can be selected from the keyboard or the front panel knob (also used to adjust sidetone pitch). Adjust character formation speed and average sending speed together or independently. Practice code without disturbing others using the headphone jack and volume control. With nineteen weight settings, you can easily compensate for transmitter keying characteristics or give yourself a distinctive "fist."

With more usable features for your money than any other Morse keyboard, the KK-1 continues AEA's tradition of top-notch keyers.

**Specifications for the KK-1**

| | |
|---|---|
| Character formation speed range | 5 to 90 WPM |
| Average sending speed range | 5 WPM to formation speed |
| Memory | Up to 12 message memories, dynamically allocated, nestable |
| Keying output | Positive to ground and grid-block |
| Serial numbers | 1 to 9999 |
| Message auto-repeat delay | 1 to 99 seconds |
| Dot-dash ratio | Normal, plus 9 light and 9 heavy settings |
| Type ahead buffer size | 255 characters |
| Total message capacity | 7913 characters |
| Sidetone range | 200-2500 Hz, continuously variable |
| Power requirement | 10-16 VDC, 350 mA |
| **Physical** | |
| Dimensions | 6.8" (173mm)W x 4.5" (114mm)D x 2.5" (64 mm)H |
| Weight | 2 lbs (0.91 kg) |

# MM-3 Morse Machine


## Break Those Tough-To-Crack Speed Barriers With The Ultimate Keyer/Trainer

This is the machine you need to break through those tough-to-crack code speed barriers with five easy-to-use training modes—including QSO simulator for realistic "rag chews"—without going on the air. Plus, a DX contest simulator is included to sharpen your competitive skills.

Whether you're an expert or novice, the Morse Machine has four ways to help you improve your skills in both sending and receiving:

- A proficiency trainer allows random code group practice with steadily increasing speed.
- Random word generator that randomly generates four-letter words for a more realistic practice session.
- QSO simulator. You can call and work simulated stations, answer a CQ, or just sit back and listen to hear realistic QSOs very much like those you hear on the air every day.
- DX contest simulator. Take part in a realistic DX contest, or just listen.

**The Morse Machine is a full-featured keyer for the serious contester,** with automatic serial number insertion and incrementing in any memory message. Use the front panel knob to adjust sending speed or enter a precise speed with the keypad. Speed up exchanges by having parts of your message sent at a higher speed. You can also add remote switches for four of the memories so you can instantly send your responses or call CQ.

AEA's MM-3 can also be programmed to be an automatic beacon that automatically repeats a message every 1-999 seconds.

**Easy to customize!** The Morse Machine's keypad offers an intuitive, easy-to-use method of quickly changing parameters to customize the MM-3 to meet your specific needs. Most commands are clearly labeled on the front panel so the manual is rarely necessary for normal operation.

**Specifications for the MM-3**

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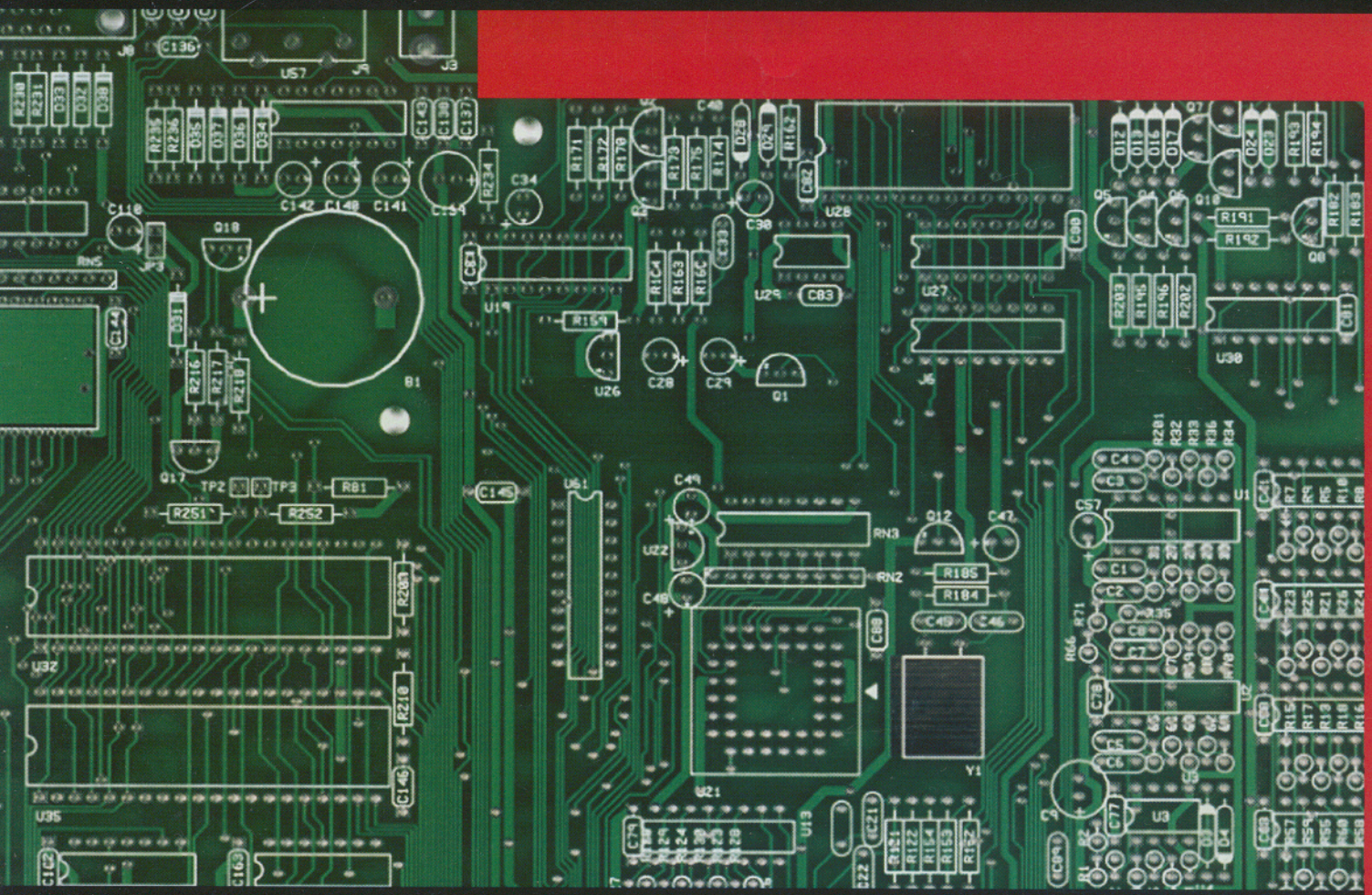
|---|---|
| Speed range | 2 to 99 (variable) or 2 to 255 (programmable) WPM |
| Memory | 8,192 bytes Lithium battery backed<br>Option: 32,768 bytes |
| Keying output | +50 V, 500mA max; -35V, 30mA max |
| Computer I/O | 150 to 9600 baud, RS-232 compatible |
| Serial numbers | 1 to 9,999 auto incrementing |
| Message auto-repeat delay | 1 to 999 seconds |
| Increase speed time | 0.1 to 59.9 minutes |
| Dot-dash memory on/off | Program selectable |
| Dot-space ratio | Programmable from 0.5 to 1.5 |
| Dash-space ratio | Programmable from 2.0 to 4.0 |
| Semi-automatic (bug) mode | Program selectable |
| Power requirement | +9 to +16 VDC @ 200mA |
| **Physical** | |
| Dimensions | 7.4" (188mm)W x 4.75" (121mm)D x 1.9" (48mm)H |
| Weight | 1.4 lbs (0.64 kg) |

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To order, contact your favorite amateur radio equipment dealer.

All specifications subject to change without notice.