

Edited by **Joe Bottiglieri, AA1GW** • Assistant Technical Editor

The Kenwood VC-H1 Interactive Visual Communicator

*Joe Bottiglieri, AA1GW
Assistant Technical Editor*

With the ever-increasing integration of the home computer into the modern ham shack, many of the modes of operation that used to be handled by some fairly complex external hardware and/or circuitry, such as RTTY, the generation of CW characters and messages, and slow scan amateur television (SSTV) to name a few, are now reduced to just a hand full of components, inexpensive (or free!) software, and some simple audio connections between our home computers and our transceivers. This has led to a rapidly growing number of participants in these interesting alternative communication modes.

Let's consider SSTV. While transmitting pictures over radio is certainly not a new activity (hams were there in the early development of television), up until only a few years ago SSTV required expensive dedicated external equipment. Now, anyone with a fairly up-to-date computer with a sound card can download a file from the Web and be up and running on slow scan in no time! Even those with more modest computers can build SSTV interfaces with a few bucks worth of parts and join in. The pictures are often full color and the resolution is surprisingly good.

You'll soon find that trading pictures over the air is great fun, but you may also discover that generating your own original pictures for transmission will require either a digital camera, a video camera and some computer interface equipment, or your existing photographs and a computer image scanner.

Lose the Weight

Kenwood's latest offering, the VC-H1, brings an entirely new level of convenience and portability to SSTV. No longer are you tethered to that bulky computer and limited to retransmitting received pictures or images found on the Web. Here's a handheld battery-powered unit just a bit larger than your average H-T that, much like the digital photographic cameras that are becoming so popular, can capture and store full-color still pictures. A few quick connections to your H-T, mobile, or HF transceiver (no computer required), and you're ready to share pictures of yourself, your friends and family, your shack... heck, you can even bore your ham buddies with pictures of your vacation. (OK, so I'm guilty of this one.) It doesn't matter if they are around the corner or on the other side of the planet!



In addition to its capture, store, and transmit capabilities, this unit will also receive pictures in eight of the most popular SSTV modes and a new "Fast FM" 9600 baud mode, and will instantly display them on its built-in 1.8-inch TFT (thin film transistor) LCD color display. Received pictures, much like those you collect yourself, can be stored in one of 10 memories.

As delivered, the VC-H1 includes the main unit with the display screen and a half-dozen rubberized pushbutton controls, a rotatable, removable color CCD camera, a wall transformer power supply, an interconnect cable wired for use with Kenwood handheld radios, a carry strap, a soft cloth for cleaning the camera lens and display screen and a simple, well-written operator's manual. You'll also find several addendum

The Bottom Line

The VC-H1 is a complete slow scan television system in a highly portable package. Just add a transceiver and you're ready to go. Beyond casual picture swapping, this unit should find many applications in public service and emergency communications.

sheets with some clarifications on operation and information on wiring the unit to Kenwood VHF/UHF mobile radios with the mini DIN type packet connector and to the 13 pin accessory jack on the TS-570 and TS-870 HF transceivers. (These connections will also work with Kenwood's earlier HF transceivers that have the 13-pin accessory jack.) A prewired cable, the PG-4T, for the DIN type packet connector on the mobile radios is available as an accessory. When using the included cord and a Kenwood H-T, the VC-H1 also performs double-duty as a speaker microphone.

Get the Picture?

Operating the VC-H1 is easy. It is not necessary to have the unit attached to a transceiver when collecting pictures. To take a picture, simply switch the power on, press the **S** button, which activates the camera, and aim the camera and frame your shot by viewing it on the screen. A second press of the **S** button captures the image. Pushing the **MR** button will enter the captured picture into one of the unit's memories. A **HOLD** button allows you to protect selected images from being overwritten.

The included fixed-focus color camera does a nice job in a wide variety of range and lighting conditions, but, as with almost any camera, it can be susceptible to wash-out in bright sunlight. The camera attaches to the top of the unit using a 3.5-mm stereo plug and a keyed mechanical interlock system and is easily removable. An extension cable can be used to remote mount the camera away from the main unit.

With the VC-H1 connected to a transceiver, receiving pictures transmitted by others is even easier. Just turn on the power and the unit does the rest. When the VC-H1 detects an SSTV transmission with sufficient level and clarity (and you are not currently in the live picture capture mode), it will automatically switch into the picture receive mode and display the incoming picture. Pictures received over the air can also be saved to memory. If interference or fading signals cause the unit to fail to activate the automatic receive function, an **RX** button allows you to start receive manually. An addendum sheet explains some of the limitations of the manual receive feature. Our reviewers found it successful in salvaging usable images in only a small number of instances.

Holding various combinations of buttons while turning on the power provides control of a number of advanced features.

These include call sign overlay, battery save, display contrast adjustment, auto transmit and memory reset.

The text overlay feature lets you superimpose up to eight alphanumeric characters in the lower portion of the display. This is handy for adding your call sign to transmitted pictures. In "auto transmit" the VC-H1 will automatically capture and transmit a picture once every three minutes. This could be a useful feature for "remote viewing" of a location during a public service event, for example.

The VC-H1 operates on four double-A batteries, or the included wall transformer power supply. We found battery life is relatively short. A battery save feature can be set to automatically shut power off to the camera and screen if no operations are performed in over 30 seconds. When this is activated, the unit is still capable of receiving incoming pictures. This greatly reduces power consumption. For portable operation, it's a good idea to keep some spare batteries handy. The manual cautions against using NiCds.

Peripheral Vision

Beyond its built-in features, the VC-H1 provides connection points for a variety of external devices. While the included display is adequate for portable operations, you may find the 1.8-inch screen a bit on the small side for fixed station use. A 2.5-mm jack on the side of the unit serves as an NTSC video output and can be used to connect an external monitor. (Most current TVs provide an NTSC video input, typically an RCA type jack.) This is a great feature when you want to share the incoming pictures with a group of people. This output would also allow you to record your received pictures, slideshow style, onto a similarly equipped VCR.

Alternative NTSC video sources can also be fed in through the camera jack. I connected this to the output of my VCR. With the VC-H1 in its picture capture mode (hit the S button once), full motion video

can be viewed on the unit's screen. Activate the capture function (hit S a second time) and you capture a single frame for SSTV transmission. This arrangement allowed me to use some of my previously recorded vacation videos as a source of still pictures. You could also substitute an alternative camera with an NTSC output, such as a camcorder, in place of the stock camera. Now you can take advantage of some of that camera's more advanced features, such as telephoto or wide-angle lens, for your SSTV picture compositions.

Though Kenwood does not offer accessory cords for these applications, the manual provides enough information to easily determine the necessary cabling. When using any external source or monitor, first verify the device's input or output levels are compatible with the specifications given in the VC-H1's manual.

Speaking of interconnection, specific information on wiring the unit to radios of other manufacture is not included. Those wishing to use the VC-H1 with other transceivers will find wiring to be basically similar to that required when attaching packet or multimode TNCs. If you intend to cannibalize the included H-T cord for use with other transceivers, study the Kenwood radio wiring diagrams very carefully. Rewiring, especially for use with mobile or HF transceivers, will probably require relocating some connections in the tiny 16-pin data port connector that attaches the transceiver interface cable to the VC-H1. Disassembly of the connector is pretty straight forward, but the internal connections are extremely small and can be a challenge to work on. For HF and mobile radios, I've found the easiest solution seems to be to purchase the Kenwood PG-4T accessory mini DIN mobile cable, locate the mating mini DIN jack, (available from Radio Shack and others) and wire interconnections between the jack and the transceiver's microphone, PTT and speaker connection or, if available, the unit's accessory jack. Plug the PG-4T into

this homebrew adapter cable, and you're ready to go.

Back to that Bulky Computer

What fun would any modern piece of equipment be if you couldn't hook it up to your computer? The Kenwood companion computer software and cabling was still under development during our review period. The *Windows 95/98* software is now available.

For those interested in writing their own control software, an interface cable wiring diagram and command list are included in the manual.

A look through the command set indicates that computer interconnection will provide duplication of most of the unit's existing controls, additional text overlay features (in a variety of colors) and the ability to manually select specific SSTV modes. Kenwood indicates that their cabling and *Windows 95* software should be available shortly.

Playing to a Wider Audience

While the VC-H1 proved very reliable and easy to use for local FM communications with both computer-based SSTV systems and other VC-H1 equipped stations, our reviewers had mixed results when participating in picture swapping on the popular HF SSTV frequencies. One limitation is the inability to manually select the SSTV mode. The unit's default mode is Robot 36. The most popular currently used mode on HF seems to be Scottie 1. The VC-H1 will automatically identify the mode in use when receiving a picture and will select that mode for subsequent transmissions, so if you find activity on a frequency and allow the unit to capture a picture before your first picture transmission, you'll be ready to transmit in that mode. If the unit has not yet successfully captured a picture, let the receiving stations know that you will be transmitting in Robot 36. (Most current SSTV equipment has Robot 36 capability.) Turning the power off and on will



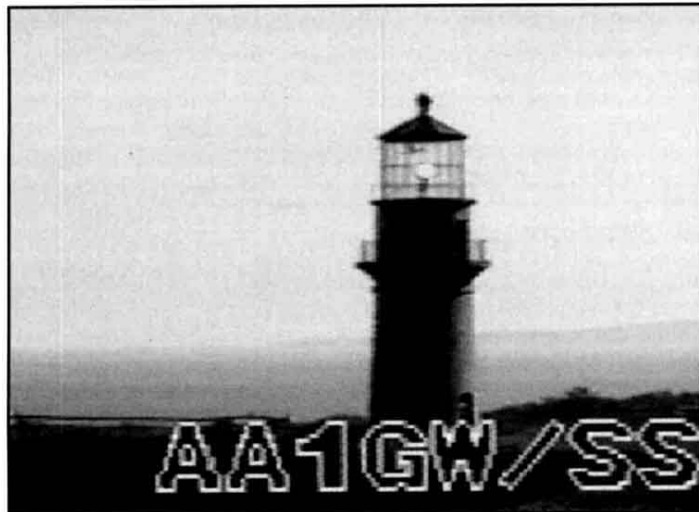
This view of W1AW was captured using a VC-H1. It was transmitted on VHF using FM and received on a second VC-H1 equipped station.



Just an example of the wide variety of pictures you'll see passed around on HF. This image was received on 14.230 MHz using a VC-H1 connected to a Kenwood TS-570.



Robert Robinson, WB9VCL's tongue-in-cheek warning to contesters who stray too close to occupied 20-meter SSTV frequencies!



A VCR connected to the VC-H1's camera input allowed me to use my vacation videos as a picture source.

switch the mode back to Robot 36.

As with the operation of any SSTV system when using SSB, proper tuning of the operating frequency is imperative. Carefully tune in the pitch of the sending station's voice before they begin their picture transmission. Many of the existing software-based systems provide some form of tuning scope to facilitate tuning. Unfortunately, the VC-H1 does not. With a bit of practice, you should be able to maximize the number of pictures you successfully capture when using SSB.

I ran the VC-H1 and one of the most popular SSTV sound-card based software programs simultaneously using my Kenwood TS-570 transceiver. I found the

ability of either system to automatically identify and synchronize to received pictures over a wide variety of signal strengths about equal. Curiously, while there were several instances where one system would receive a picture the other missed, neither system seemed to consistently outperform the other in this respect.

If you haven't yet tried SSTV, I highly recommend you consider it. Trading pictures locally over FM or long distance on HF is loads of fun! Members of our review team had a blast passing shots of family, homes, shacks and various personal treasures around. If economic considerations put the VC-H1 out of your present reach, and you have a computer in the house, get

your hands on some software and give it a go. If you want a system that offers extreme portability, picture capture capability and freedom from the ubiquitous computer, the VC-H1 certainly deserves a closer look. For a more complete picture of the VC-H1, you can download a copy of the owner's manual at <ftp://ftp.kenwood.net>.

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Manufacturer: Kenwood Communications Corp, 2201 E Dominguez St, Box 22745, Long Beach, CA 90801; tel 310-639-5300; fax 310-537-8235; <http://www.kenwood.net>. Manufacturer's suggested retail price, \$585.

The M² 6M7JHV 6-Meter Yagi Antenna

Reviewed by Bart J. Jahnke, W9JJ
ARRL/VEC Manager

Whether you've been a 6-meter aficionado for many years, or are new to the "magic band," thoughts of the increased enjoyment that would come from adding a monster skyhook to your arsenal no doubt occasionally cross your mind. Granted, when 6 meters is open—and the propagation gods are smiling on you—a simple antenna and a modest amount of power will net you many enjoyable contacts. When the band is not wide open, however, or when longer distance E-skip, F2, TE, or scatter contacts are possible but weak, you might wonder how you can raise your presence on the band and participate in this exotic DX.

Bottom Line

A heavyweight performer with a lightweight design, the M² Antenna Systems 6M7JHV offers plenty of punch for the weak-signal 6-meter enthusiast.

One way to extend your available communications range without resorting to additional aluminum is to add an amplifier and a receive preamp. But a more economical and certainly more efficient way to improve your chances of working those signals down in the noise is through the use of a high performance directional antenna. The focused pattern of a highly directional beam will allow you to choose the direction of the sources and destinations of your signals with surprising accuracy. This review covers this method for enhancing the performance of your 6-meter station: adding a multi-element long-boom Yagi.

The 6M7JHV antenna is a mid-sized (in today's marketplace) 7-element Yagi constructed on a 30-foot 8-inch boom. The "JHV" in the model number refers to the fact that M² originally designed the antenna for Dave Batcho, N5JHV. (Dave has a high performance 6-meter station and uses several stacked JHV Yagis). What sets this antenna apart from other 6-meter Yagis is its light weight, clean pattern and perfor-

mance characteristics carefully optimized for its boom length. These attributes make it an ideal choice in single Yagi or stacked array use for long-distance terrestrial, scatter or EME (moonbounce) communications.

One of the reasons I felt the 6M7JHV was right for my station was its performance to weight ratio. As you may be able to see from the photo, my antennas are mounted on a 36-foot tall steel push-up mast. With the combined weight of the push-up mast

Table 1
M² 6M7JHV 6-Meter Yagi

Manufacturer's Specifications:
Frequency of operation: 50.0-50.4 MHz

Number of elements	7
Longest element (half)	57.625"
Boom length	368" (30'8")
Weight	17 lbs
Wind load	2.5 ft ² (85/mph)
Power rating	1500 W
SWR	1.2:1 typical