

73 Review

by Fred R. Sharp W8ASF

VisiTel On-The-Air

Heath Company
Hill Top Road
St. Joseph, MI 49085
1-800-444-3284
Price Class: \$400

A visual phone display you can interface with your transceiver.

Looks like we may finally have affordable SSTV after all, and better yet, something we can share with the XYL (or OM). This is in the form of the Mitsubishi VisiTel visual telephone display system.

Here's Looking At You

The VisiTel is a complete black and white SSTV transceiver designed for telephone service. It comes with a husky line cord power adapter ready to plug in to a modular telephone jack. The compact unit measures $6\frac{3}{4}'' \times 6\frac{3}{4}'' \times 7''$ and weighs $3\frac{1}{2}$ pounds. It features a built-in $4\frac{1}{2}''$ monochrome monitor with miniature fixed-focus vidicon camera. The size of the image is $3\frac{1}{4}'' \times 2\frac{1}{2}''$.

Installing and Using VisiTel

This is very simple. Just plug the VisiTel cable into your phone line, and plug your telephone into the VisiTel, and send pictures of the kids to Grandma in Los Angeles or Greece! Of course, Grandma will need a VisiTel to receive your transmission.

To operate the VisiTel, merely slide the camera tube cover to the side, exposing the camera tube. Next, push the SEND button to transmit your picture. It takes 5.5 seconds to send a picture in 90×90 pixels at 32 shades of gray. While the pixel and line count is not high, the good gray scale makes up for it. You're better off with more shades of gray and less pixels than vice versa—ask any slow-scanner.

Neat Feature

The VisiTel stores in memory the last three images received as long as the unit is turned on. It kicks the first memorized image out of memory when a fourth image goes into memory. To scroll through the picture memory bank, repeatedly press the VIEW/POSE button. You can send the same picture more than once from the memory. After displaying or sending the stored picture sequence, the Vis-



The Mitsubishi VisiTel visual telephone display.

iTel screen once again displays the user's live image.

The brightness control (up and down) keys enable the user to adjust the contrast in relation to ambient lighting. The keys affect the picture as it is displayed and received.

Interfacing VisiTel and Your Transceiver

The unit interfaces with any VHF or HF transceiver, so you can send and receive the same pictures on the air or record them on audio tape for playback. The other night, for example, Rick WB8RTK and I were sending pictures back and forth on 2 meters.

Since VisiTel uses the same red and green telephone lines for both sending and receiving,

you have to couple the transceiver audio through a capacitor. A simple hookup is shown in Figure 1 with the green line as ground.

Leave everything as it is for receiving, but for transmitting, you'll have to use your SEND/RECEIVE switch to turn on your carrier before pushing the SEND button. I installed a pot to adjust the output to about 1 volt. Radio aShack's #279-355 quick connect jack is ideal for housing the pot and capacitor. The box contains a modular

telephone jack.

The ideal interface would key the VisiTel's push-to-talk line, and change from receive to transmit automatically when you press the SEND button. To sense the tone output of the VisiTel, I first tried using an optocoupler, and then I tried the 567 tone decoder chip, but neither method worked. The tone is present on both receive and transmit, which causes your rig to transmit on receive as well as on transmit. I decided it was impossible to interface without going inside the VisiTel.

Under the Cover

Three self-tapping screws free up the entire cover. Don't worry, no springs will jump out at you and no nuts will drop into some unreachable corner of the chassis. The mother board is easily recognizable and readily accessible, and just two connections are tack-soldered on top of the board. They are shown in Figure 2. They are +5 volts DC and ground.

You will notice that the interface in Figure 2 is the same as the one in Figure 1, except that its ground is common to the ground in the push-to-talk circuit. The interface draws about 3 mA maximum current so you can use #26 or even #30 wire-wrap wire. This size is very easy to thread through the expanded metal grill on the back of the unit.

Now you only need to connect one of the pins on the SEND switch. This requires further disassembly, but this is not a difficult

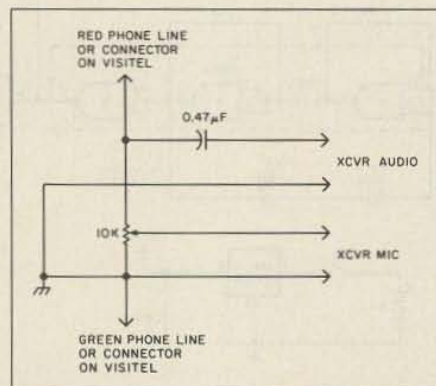


Figure 1. Transceiver audio coupling circuit.

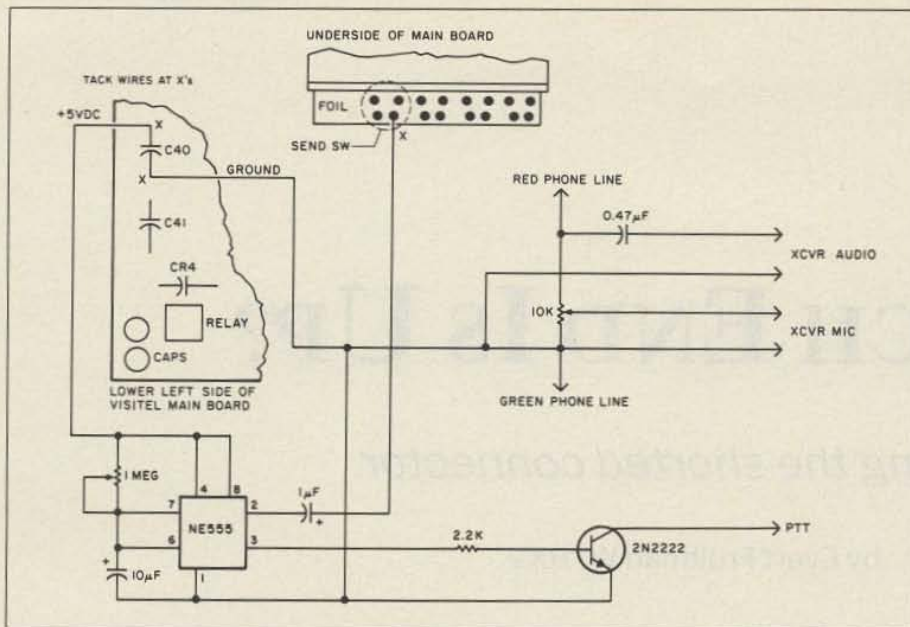


Figure 2. VisiTel/transceiver interface schematic.

procedure. When you have finished the 5 volt and ground connections, make this connection on the bottom of this same board. Free the board by removing the two large self-tapping screws from the edges of the metal cover that shields the foil side of the board. You don't have to take out all the little screws that hold this shield to the board. Fortunately, you make the connection on the exposed edge of the board, and not the part of the board covered by the shield.

The negative-going trigger pulse is applied to pin 2 through a 1 mF capacitor. The combination of the 10 mF capacitor (tantalum, please) and the 1 meg pot make up the RC network to set the time delay on the output at pin 3. Before pin 2 is triggered, pin 3 is low. When pin 2 is triggered, pin 3 goes high and turns on the 2N2222 transistor via the 2.2k base resistor. With the transistor emitter at ground and the collector connected to the transceiver push-to-talk, the transceiver is

"You're better off with more shades of gray and less pixels than vice versa..."

Remove the board by lifting sideways, disengaging the head pins from the connecting strip on the top side. You will see two white wires connected to the board which you do not need to remove. Tack-solder a wire to the SEND switch terminal as shown in Figure 2. This is a negative-going pulse which will trigger a 555 timer chip configured in the monostable mode. Bring this wire out with the +5 volt and ground wires. Re-insert the header pins in the connecting strip and fasten the two self-tapping screws. Before buttoning up the cabinet again, turn on the VisiTel and check for +5 volts, ground, and a negative-going pulse on the last wire tacked to the SEND switch. (A scope or logic probe will be helpful.) Close up the case, and you're ready to connect the interface as shown in Figure 2.

Operating the Interface

The operation of the interface is quite simple. You don't have to switch the red and green telephone lines. The push-to-talk circuit is just one way of using the miraculous 555 timer.

turned on for a period of time set by the RC network.

Because picture transmission time is 5.5 seconds, set the pot so that the transceiver is keyed on for about 6 seconds and then drops out. This setting is close to the center of the pot or around 500 kΩ. A little experimenting with pot settings will get the delay just right.

After you've made all the connections, plug everything in, open the VisiTel door, and get a picture on the monitor. Press the SEND button on the VisiTel and your push-to-talk will be keyed, and you'll be transmitting your picture. At the end of transmission, your push-to-talk relay will drop out and you'll be ready to receive.

Since the picture information is sent on a bandwidth of 3 kHz or less, you can transmit on any of the amateur frequencies permitting SSTV transmission, including HF. A little DIN plug or some such connector on the leads coming out of the VisiTel might be handy for quickly disconnecting the VisiTel when your XYL wants to use it to see her grandchildren in Sheboygan! Have fun! 74

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