

COLOR-ADDER CONVERTS WEATHER / MESSAGE CHANNELS TO RED, WHITE, BLACK DISPLAYS

Red Is Bright

If your black-and-white weather channel has been plugging along for months or years with no more attention than most... and if you are looking for a way to liven up the channel (short of running "X" rated slides at the end of the scan), here is a quick and easy rainy-day project that will turn your whites and grays to a better shade of pink (or red).

The *Color Adder* is a simple "fool the television set" box that plugs into the coax line between the output of the vidicon camera (video output) and the input to the CATV channel modulator. It operates on the principle that for there to be color reaction in a color receiver, the "transmitter" must radiate a 3.58 MHz (rounded off) sub-carrier. So the Color Adder does just that: it generates a 3.58 MHz carrier which is mixed (or added) to the vidicon camera video output on the way to the channel modulator. At the customer's receiver, the receiver detects the presence of the 3.58 MHz (sub) carrier, believes it is receiving a color sub-carrier, and immediately turns on the color guts of the receiver. In the process, anything the vidicon camera sees becomes subject to the 3.58 MHz (sub)

carrier; the net result is that the so-called gray scale from just a shade darker than white all of the way up to dark gray becomes a shade of red (or pink if you will).

In addition to getting a white (more about that shortly), pink to red and black display from a *black-and-white camera*, it is the observed opinion of several system operators who have tried this circuit that you can sharpen up the black and white detail of the vidicon camera picture display on a color receiver by running the Color Adder at a low level, too low to actually provide a color tint on the grays.

One IC

There is not much to the circuit; it goes easily into a mini-box. The basic circuit is nothing more than a *1702 Quad two input positive NOR gate* IC device. Added to this (see Diagram 1) is a 3.579 (etc.) crystal (commonly available these days), and a small handful of miscellaneous junk-box-type parts. A 500 ohm pot allows you to control the level of 3.58 MHz injection from the oscillator to the through line of the vidicon camera video.

Construction is simple, and all parts should be available locally. The type 402 trimmer is a 5-25 pF mica compression trimmer; any other variable capacitor that will tune this range should

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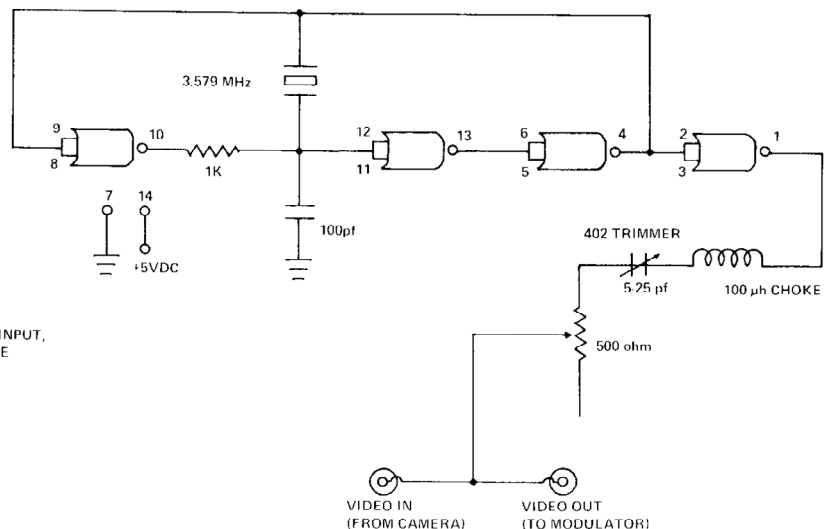


DIAGRAM 1

do the job. If you want to put together a PC board, a foil side layout is included here, actual size. Simply use it as it appears in CATJ to expose your own board. Or, you can wire the unit up as shown on an appropriate IC socket with hard wiring.

The power requirements are very minimal: 5 volts DC is required. Use the schematic shown in Diagram 2, or voltage drop from any standard 6 volt supply you may have kicking around. Even a battery source will do, although the battery life will not be very high.

Installation is very simple: *insert the Color Adder into the video line* from the camera on your weather channel, message channel, etc. as it goes to the CATV channel modulator. The 500 ohm pot in the Color Adder is used to control the amount of 3.58 MHz oscillator signal that enters the modulator along with the vidicon camera video information. And this is another way of saying that as you vary the 3.58 oscillator signal level, upwards, the amount of color showing on the receiver increases. It has been noted that if you crank in *just enough 3.58 oscillator* to key on the receiver color circuits, but *not quite enough* to start the tinting process, the quality (i.e. definition) of the black-and-white (untinted) image on the weather (message) channel improves noticeably. Apparently the TV receiver likes the presence of

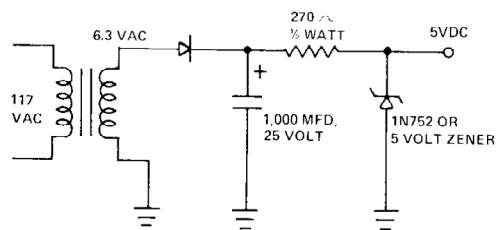
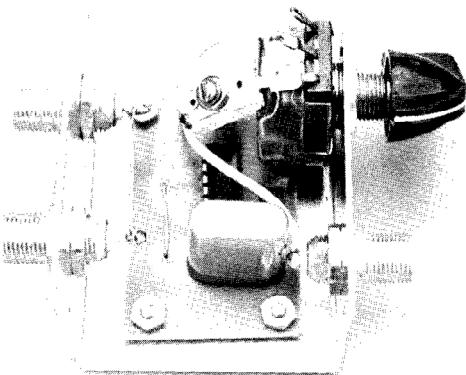
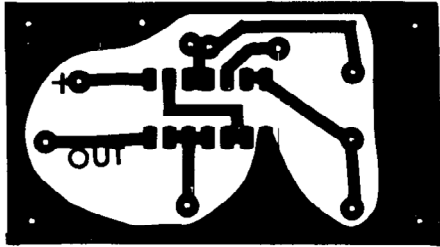


DIAGRAM 2



the 3.58 sub-carrier, and the video detector and associated receiver video amplifier circuits perform better with the color oscillator switched on. As you go beyond the point where the 3.58 MHz receiver oscillator just keys on, the amount of red tint to gray objects, backgrounds, etc. increases. You never reach a full red (unless you kill the vidicon camera video level and have just a blank raster; then you have a bright red!), but with the 3.58 level set by the 500 ohm pot in the Color Adder at a point where white areas *just start to take on a pink tint*, the gray scale (from light gray or off white to dark gray, or almost black) tint up from light pink to dark pink, respectively.

A really critical person would notice that with the Color Adder on, white (i.e. *pure* white) is no longer possible; it takes on a slight pink tint. This may or may not be to your liking. Of course you control the amount of pink from light to dark with the 500 ohm pot, but this is a subjective thing that every CATV-connected set in town will have to cope with on their own as they dis-

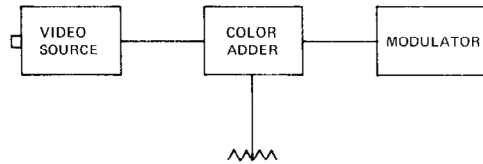


DIAGRAM 3

cover your new toy and start cranking around their own "tint controls" looking for blues and greens!

One way to make the whites come back is to design a diode level detector that senses the presence of pure white (maximum video level), and operates a FET switch to turn off the 3.58 MHz oscillator when full white is diode detected. This would allow you to run the gamut from black to reds to pure white with not much more invested than the simple Color Adder circuit shown here. This has not been done to date by the author, however, simply because we are still in the "Gee, look at those red pictures" stage.

One fellow we know got so carried away when he built up his own Color Adder that he directed his secretary to go down and purchase some Hot Pink lipstick. After applying the lipstick (to her, not him!) he ordered her to plant a big set of lip prints on the face of several of his weather instrument glass covers. Now when the camera pans the instruments, the background of the white meter is very slightly pink, the lettering and needle are black, and standing out there in front are two "Hot Pink Lips."

Whatever turns you on!

CABLE

DROP

OOPS

The May issue of CATJ, Page 11, contains a schematic drawing of C-COR's basic standby power station and the interconnection for same. In the diode bridge, the diode on the **southeast** quadrant (up is north) is reversed 180 degrees. Turn it around or it will self-destruct. This error was in CATJ drafting, not C-COR presentation.

The same May issue, Page 34, glibly discusses the proposal that the 1050 sweep machine could be externally "jacked" for direct DC powering from the cable system amplifier; or "jacked" for powering from the 30/60 VAC line supply. Actually, DC powering will not fly because there is no 60 cycles for the sweep horizontal drive to the scope. But a manufacturer could provide a tapped 1050 (etc.) AC transformer in their unit which would accept 30/60 VAC as well as 110 VAC and the scheme would work.