

## Replacing the rear-view camera in a 1996 Sahara.

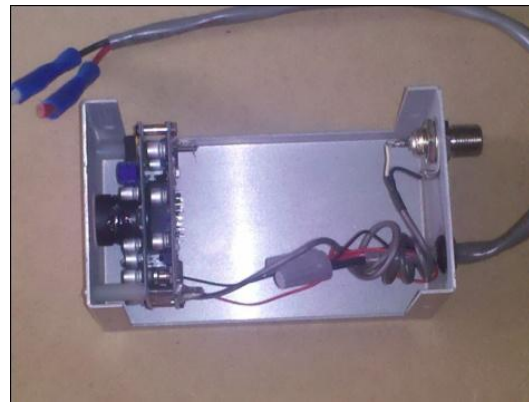
There are a number of solutions to the problem of a failed rear-view camera system. This is just one.

My major objective was to replace a failed B/W camera. My secondary objective was to provide a better, less awkward, viewing system than using the overhead TV. My third objective was to keep costs as low as possible while providing a useful system.

I started by first verifying that the camera was receiving 12VDC when the driver-position switch was on. Next I verified cable continuity from front to back by running a long wire from the rear end of the cable to the front end through the inside of the coach, connected to a self-powered circuit tester.

I had help removing the back of the TV cabinet and verifying that all connections were tight, and connecting the cable end directly to the TV to eliminate problems in the switch box.

I removed the old camera.



As the photos indicate it was a simple “circuit board” camera with the lens directly attached to the first of two circuit boards. It was mounted in an inexpensive project box.

I suspect that all of the rear view cameras currently available have similar internals and only differ in the mounting case, the selection of a CCD or CMOS sensor, 420 lines of resolution or 380 lines, and provision of Infra-Red LEDs for night use. CCD sensors are higher quality but the question remains – do you need higher definition for a rear-view system. I decided that the extra definition was superfluous in this application and the difference between 420 lines and 380 lines would not be detectable on a 7” screen.

All of the systems I found now incorporate color sensors – an added advantage for the improvement of my system. After several hours searching the Internet I found this system at <http://www.ecbuys.com/> which appeared to meet my needs.

**P165 Wired Reversing IR Camera w/ 7" LCD Car Monitor**  
Model: P165 ecbuys

**Price:** USD  **US\$91.99**

**FREE SHIPPING**

[Larger Image](#)

**Description:**

The camera system was shipped from Hong Kong by airmail and arrived in 11 working days. The system arrived packed in two boxes inside a single mailer.



The contents consisted of:



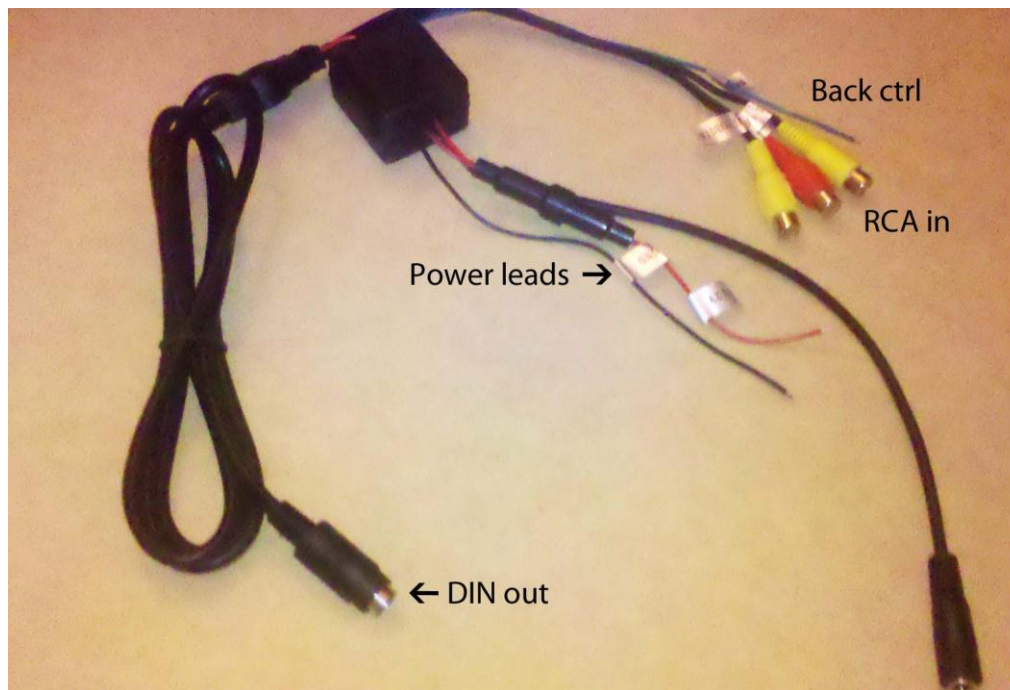
Left of the manual: parts for the monitor. To the right: parts for the camera.

I was surprised to find that the camera was in a metal case since it appeared to be a plastic case in the advertizing. A second, welcome, surprise was the power “pigtail” shown directly below the camera in the picture above. That eliminated the need to find a suitable RCA size power plug. I could just splice the pigtail into the existing 12V at the camera position.

The display is in a removable frame which needed to be removed for my installation. The instructions are typical of those for consumer electronics from the Far East. You sometimes feel that you are dealing with the DaVinci Code. In this case the frame, which is used in back-of-headrest installations, had a cryptic drawing entitled "Key: for eject the monitor from headrest frame". The drawing itself consisted of two "L" shaped lines. Not much information there.

Looking at the monitor I could see what appeared to be four clips holding the monitor in the frame but could see no reasonable way to release them. Eventually I slipped a thin nail file between the frame and the monitor and pushed the monitor gently from behind releasing one corner. Releasing the second clip let the monitor "eject" from the frame.

At the bottom left of the photo, and in the photo below, is a wiring harness for the monitor. All wires are tagged, but it took a moment to identify "Back ctrl" as the connection for reverse lights to switch monitor on when backing. That was taped-off because I use the rear-view continuously when driving. For power there are both pigtailed for direct wiring and a female RCA power plug if the vehicle source terminates in a plug. For video signal the cable has a DIN connector at one end and RCA Video female connector at the other end.

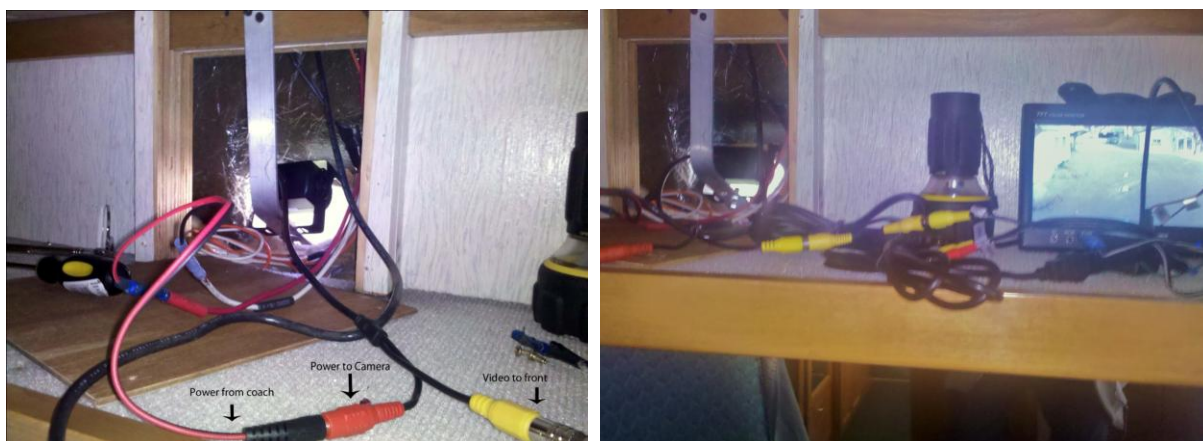


The lead coming from the monitor terminates in a DIN female connector. The wiring harness terminates in a DIN male plug. Video input to the harness is via RCA female plugs, so there is no compatibility issue if using a female "F" to RCA male adapter at the end of the factory installed RG59 cable.

The basic wiring takes the video from the camera via an RCA connector, through the adapter to the RG59 cable to the front. At the front another “F” to RCA adapter takes the signal to the RCA video IN, the harness breaks out the signal and feeds a DIN connector as well as picking up the 12VDC and applying it to the DIN connector. The DIN cable goes to the monitor.

The project entailed the purchase of only two additional parts – (2) female “F” connector to RCA male connectors. Cost approximately \$2 each.

My approach to the installation involved a mock-up of all connections before making any modifications. This also let me line up the camera without help and without running back and forth in the coach. It’s not clear in the picture but I lined up 3 white pails going straight back from the hitch. I just adjusted the camera so that the line of pails was in the center of the display and tightened the mounting bolt.



I used the provided power pig-tail to connect to the coach 12V supply.

Up front I didn’t have a handy source of 12V in the overhead cabinets so I used an old power block with a 12V output and a selection of RCA style plugs. Since I always drive with the Inverter on to power my laptop/VMSpc the power block would be energized whenever I had 120VAC.

Once I knew the system worked I considered how to mount the monitor. The monitor “stand” is intended to serve as a foot for dash mounting. It was a simple matter to unscrew the adjusting knob and turn it through 180 degrees and re-mount it to keep the monitor upright with the mount now facing up.



The last step was to mount the monitor up front. The biggest issue to resolved was how to connect the monitor cord. Jim B. brought his cable out from the back of the tv and neatly attached it along the bottom of the cabinet. My RG59 cable was already in the cabinet to the right of the tv. I'm no longer limber enough to do the awkward twist and lean to get the back off the tv cabinet, so I gritted my teeth and drilled a hole in the cabinet bottom. The hole is barely larger than the monitor cable is pretty well hidden behind the monitor.



All in all, this system met my objectives. The image is excellent, the installation is clean, and it should be much easier to monitor activity behind the coach and to back safely.

I did try the camera at night before the final installation and I found a considerable amount of glare from the 18 Infra-Red LEDs. Perhaps some of that was due to a dirty camera porthole. I cleaned the inside of the porthole and was surprised at the amount of dirt (soot?) I removed. I rarely drive at night so even if the cleaning didn't improve the night image, it won't be a big issue for me. If night driving is important then perhaps an externally mounted camera would be a better choice. I would use the camera provided by Leviathan\_holdings on Ebay. It is guaranteed to be weather proof; I don't know if the unit I purchased would be as suitable.