

CP-50-164ПВ

50 Ohm coaxial cable connector

Product of the Russian Federation/Soviet Union

This page inspired by an original text from Pavel UA1CBX via Adam G0ORY, and includes information from Björn [SM5HF](#) as well. Connector photos are by ND2X and UA1CBX, adapter photos by SM5HF, and relay photos by ND2X.

Basics

The SR-50 is a very robust connector, used in professional and military equipment from DC-650 MHz at power levels up to 3 KW. The connector resembles a screw-C type, and similar others. Note that the connector is attached by screw threads (as with an N type), not a bayonet mount.

Note also that there is a right-angled variant available, and also others for smaller size cables like RG58. The version described here, the SR-50-164PV (western letters) is for cables like RG-213/RG-214 and UR67. There is a physically identical connector designated SR-50-164FV. I am not sure of the significance of letters "F" and "P", but I suspect that "P" may stand for Polystyrene and "F" may stand for Teflon, since this corresponds with the insulating materials internal to each. If you know better, send me an e-mail.

There is an SR-50-130PV version, the rubber washer for which has a center hole about the diameter of RG-213/214 center insulation and a center pin with a hole for center conductor approximately 1mm diameter. This is clearly designed for coaxial cable of some type other than RG-213/214. The SR-50-135FV is a smaller version suitable for RG-58-sized cable.

SR-75 (75 Ohm) plugs are almost identical to the SR-50 plugs apart from the thinner center pin.

There was a .pdf file available on the web for these plugs, but the link is broken. If you stumble onto this file, please forward via e-mail and I'll add it here.

You're going to need to get familiar with these if you're using surplus Russian coax relays!



An illustrated how-to for installing these connectors:

1. Disassemble the connector, you should have a set of parts like this. Like any coax connector, they get easier with a little practice.



From left to right: connector outer shell, outer insulator, center pin, and inner insulator. In the top picture, and not in the bottom, is a "star washer" - some connectors come with this, some without. Resuming part identification for both pictures, the next item is a "castellated" washer, then the rubber washer (red in top picture, white in bottom), metal washer, cable clamps and backnut. The brownish circles above and below the metal washers are paper wafers placed between the metal washers and the clamps to keep all parts seated together properly for shipping.



2. Cut 5/8" (ca. 16mm) of the black cablesheath neatly from the cable, without nicking the braid; slide the backnut, then the metal and rubber washers over the cable as shown. Slide the front 'castellated' washer over the exposed braid; seat it in the top of the black outer sheath of the coax.

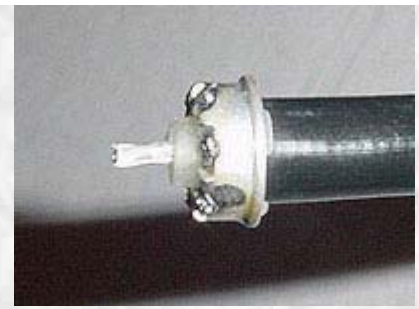


3. Fan the braid out evenly, then twist into six equally spaced pigtails, placed in the spaces around the washer, as shown.



4. Tin the six pigtails and trim them back to the washer. Use 200W soldering gun and quickly solder tinned braid to castellated washer. Speed is necessary to prevent melting both inner and outer insulation on the coaxial cable. Cut center insulator back leaving 1/8 inch or a bit more (3-4mm) remaining in front of washer and braid. Then cut center conductor, leaving 1/4 inch (6-7mm)

protruding from center insulator.



4a. If the connector you are using came with a star washer, place it over the remaining center insulation, as shown.



5. Place the inner insulating washer (it can be either teflon or polythene) on the center insulation protruding from the coax. One side of the washer is shaped to fit over the end of the coax inner insulation. Make sure this side goes on first. Slide the center pin onto the coax center conductor; it fits into the hole in the insulating washer all the way to the shoulder on the pin. Solder in place. If the washer is polystyrene, don't use too much heat or take too much time; it is possible to melt the washer.



6. Place the outer insulator over the center pin.



7. Insert the assembly into the connector shell. Then bring up the washers for installation in the shell.



8. Pull the rubber and metal washers into the connector shell. Sometimes it helps to

twist the shell, as if screwing the washers into the cylinder, to get the rubber washer to seat evenly in the shell.



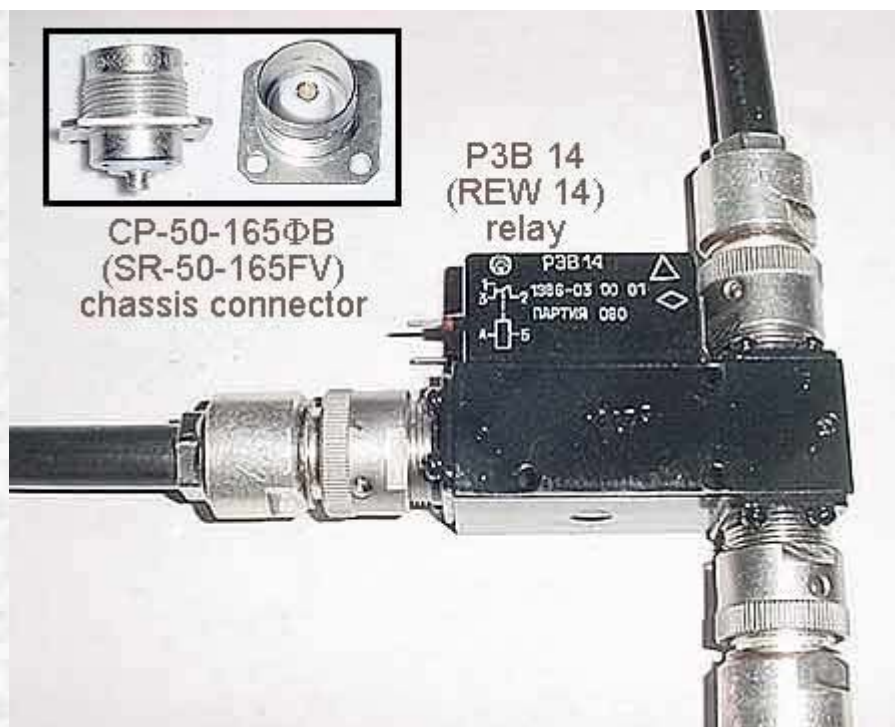
9. Insert the two C clamp pieces into the connector shell. Note that these engage in machined recesses in the connector shell.



10. Do up the backnut. This clamps the cable securely. Note that there's no torque figure specified in the original text. Go for what you need to make sure everything's electrically and mechanically sound.



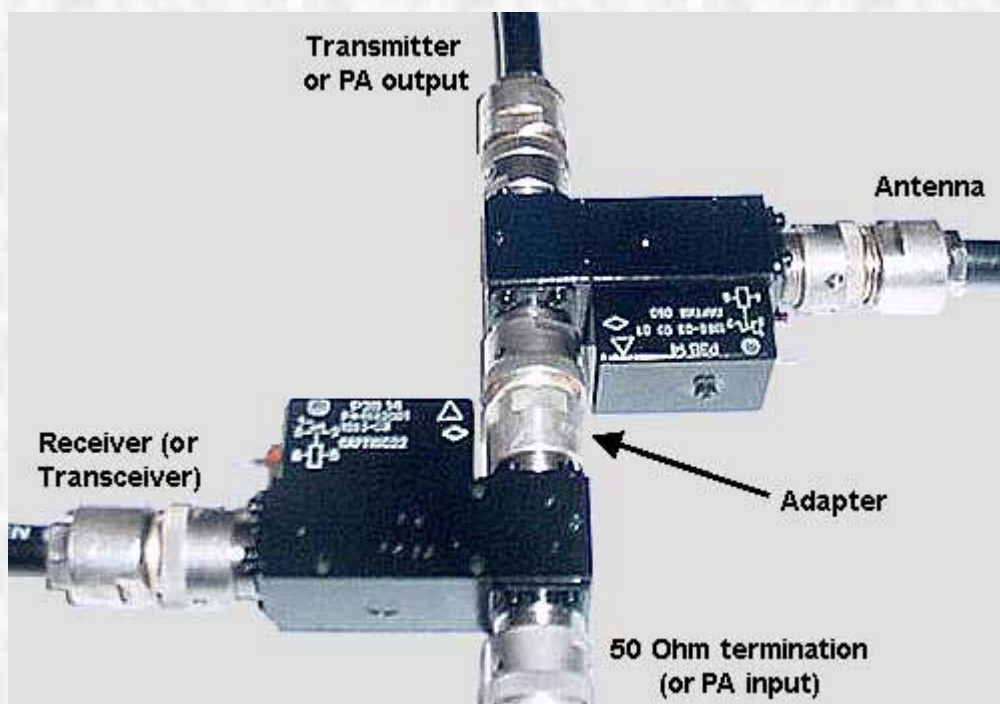
My contratulations! You can assemble Russian coaxial cable connectors.



The SR-50-164PV (or "FV") connectors are used with the **REW 14** relay or the SR-50-165-FV (or "PV") wall mount chassis connector (see inset).

Making a Male-to-Male Adapter using SR-50 Connectors

One may prepare cables as above and use the CP-50-164 connector with the REW 14 relay as shown in the picture above. There is also a way to make a "male-to-male" adapter using these connectors, as shown in the picture below, to allow direct connection of two REW 14 relays for T/R use (scroll down for explanation and details).



Whether by thought or accident, the design of the SR-50-164 connector allows the innards of two connectors to install into one, making a back-to-back male connector for short connection

*threads are identical
in both ends of the
connector shell*



between two REW 14 relays (as shown above). Note that the adapter is not in a position for which impedance is critical; this assembly has not been swept, and it is likely that the "rear" portion of the shell, because it is a larger diameter than the "front" portion, will present an "impedance bump" to the circuit. In the position and application shown, it should not present a significant problem.



superior solution.

To manufacture the center contact assembly shown at left, it is imperative that the two dielectric washers be kept in exact alignment during the soldering process until the solder solidifies. Trying to solder the pieces together properly without some kind of support (soldering "jig") can be an extremely frustrating if not futile job. Clamping the assembly abeam in a vice which has rubber jaws would probably be a satisfactory solution if making only one of these, but if more than one or two adapters is to be manufactured, then a soldering jig made of wood (described below) is the

1. Place one washer on a piece of wood 1" wood.

2. Drive three 1.5" nails into the wood around the washer, equally spaced, fitting snugly against the washer. Adjust the nails to stand straight up.

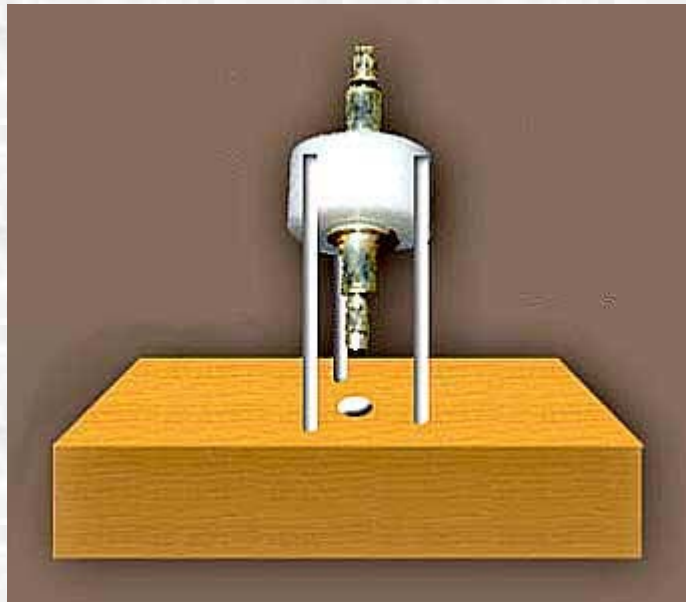
3. Use a 4.5mm drill to mark the center hole through the washer. Remove the washer and drill the hole, 14+mm deep.

4. Solder a conductor of 16-17mm length into one of the contact pins, and insert the pin into the 4.5mm hole. Straighten the conductor to stand right up. NOTE: The diameter of the conductor is determined by the connector type selected for adapter parts; for the SR-50-164P/FV,

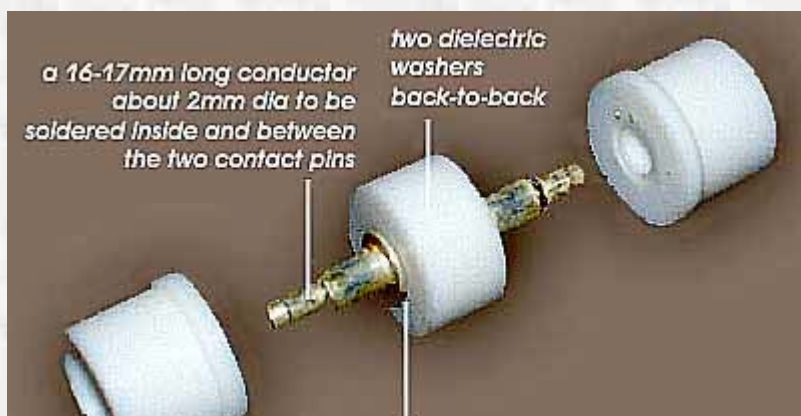
a piece of RG-214 (or equivalent) center conductor would be perfect. For SR-50-130P/FV, the conductor would be 1.5mm diameter wire.

5. Place the two washers on the conductor, and the second contact pin on top. Note that the flat sides of the washers must face the contact pins. Check that the top of the conductor is visible in the soldering hole in the contact pin.

6. Press the parts well together, and solder the top contact pin.



Once the center contact assembly is completed, insert it into the connector shell, seating the insulator in the "front" of the shell as normal. The adapter is ready for use; the center contact assembly is held in proper position by the female contacts on the REW 14 relays.



For soldering, a butane pencil is recommended. It is a tool which can provide a lot of momentary heat in a pinpoint area. This lessens the probability of melting dielectrics made from other material than Teflon. Thin solder (1mm or less) will also help.

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Best Viewed: MSIE 4.0 & higher, or Netscape 3.02 & higher, and screen set to 800x600 pixels

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Feedback: [Paul S. Goble, III, ND2X](#)

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