
QRO.cz RX Audite SDR Splitter/Switch

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Over the last decade, one trend in amateur radio has been the use of small software-defined radios (SDRs) to augment station capabilities in a number of ways — from actively monitoring bands other than those currently being heard on the station transceiver, to powering spectrum display of the existing band, to contributing spots to the Reverse Beacon Network.

Many users have encountered one technical issue: how to monitor the bands with an SDR while at the same time actively operating on one or more of them. This is the need that the RX Audite SDR Switch meets. The RX Audite is the brainchild of Jan Sustr, OK2ZAW. For more information, see www.QRO.cz. Jan is one of the technical gurus behind the OL7M contest station. You will find the online manual via <https://hamparts.shop/blog/rx-audite-sdr-switch-manual.html>. The RX Audite is also sold from this website.

The Audite supports all the HF bands and 6 meters (the frequency range is 0.1 – 60 MHz), with a maximum input power of 250 W (200 W maximum recommended). The PTT is not designed for QSK, but you



can use it with the right PTT lead/tail/transmit delay time (minimum 20/20 ms). According to the manufacturer, the isolation between the transceiver and the SDR is 100 dB at 14 MHz, and 80 dB at 50 MHz. The RF limiter for RF signals is up to +13 dBm (20 mW) and could be +17 dBm at 50 Ω.

Bottom Line

This RX Audite splitter/switch combines TRX switch, RX splitter, and RF limiter protection for both RX outputs. It's reliable, and the insertion loss can be compensated with the addition of the optional RX preamplifier. With this unit you can share your main transmit antenna with two receivers with RF power limiter protection.



Figure 4 — The RX Audite rear panel.

Description

On the front panel you will find three switches. The leftmost switch is the SDR output second RX antenna switch. The second switch turns on or off the optional preamplifier, and the third one turns on and off the unit. On the front panel there is also a PTT LED indicator.

On the rear panel you will find a ground connection (GND), a 12 – 14 V dc power input (requiring a maximum of 0.7 A if the preamplifier is installed), PTT IN and OUT, an SO-239 for connecting to the transceiver (TRX), another SO-239 for the transmitting antenna (TX/RX ANT), and two SMA female connectors, one for a separate receiving antenna (RX [INBAND]) and one to connect the SDR receiver (RX [SDR]; see Figure 4).

How It Works

The Audite is inserted in the feed line between a transceiver and an amplifier or antenna. What it does, quite simply, is divert the transmitting antenna to an SDR whenever PTT is not asserted. When you are transmitting, the Audite bypasses the SDR and allows the station to operate normally. What is special about the Audite is the extent of protective circuitry offered to ensure that neither the transceiver nor the SDR is damaged by their coexisting, either on the transmit antenna

or through the use of a close-by in-band receiving antenna by the SDR, while it is being subjected to high RF voltages from nearby transmitting antennas.

Figure 5 is a block diagram of the Audite in receiving mode/standby (turned on but PTT not asserted). The signal coming from the transmit antenna is split between the SDR and the transceiver. The optional preamplifier, which the test unit included, more than makes up for the loss in the signal caused by the splitter.

The PTT (denoted by the dotted lines in the diagram) is via two double pole double throw (DPDT) relays. When PTT is asserted by the transceiver, the Audite and the SDR connected to it are isolated from the transmitted RF path.

Whether you select the transmit antenna (TX = INB RX ANT) or the in-band receiving antenna (INB RX ANT) on the front panel of the Audite, there are extensive provisions made to protect your SDR from damage, either from your own transmitter or from other nearby transmitters (in the case of a multi-op station). Neon tubes, gas discharge tubes, and resettable positive temperature coefficient (PTC) fuses protect attached receivers and the internal preamplifier from damage. When transmitting, with PTT asserted, the transmitted signal is isolated from the SDR, as is any separate receiving antenna that is in use. Hedging against a possible operator error or equipment failure, if the PTT circuit to the unit is not activated, a resettable fuse protects the Audite from damage, and it reverts to presenting an open circuit to the transceiver, causing its SWR protection to cut power to a minimum, even as the built-in protection shields the SDR.

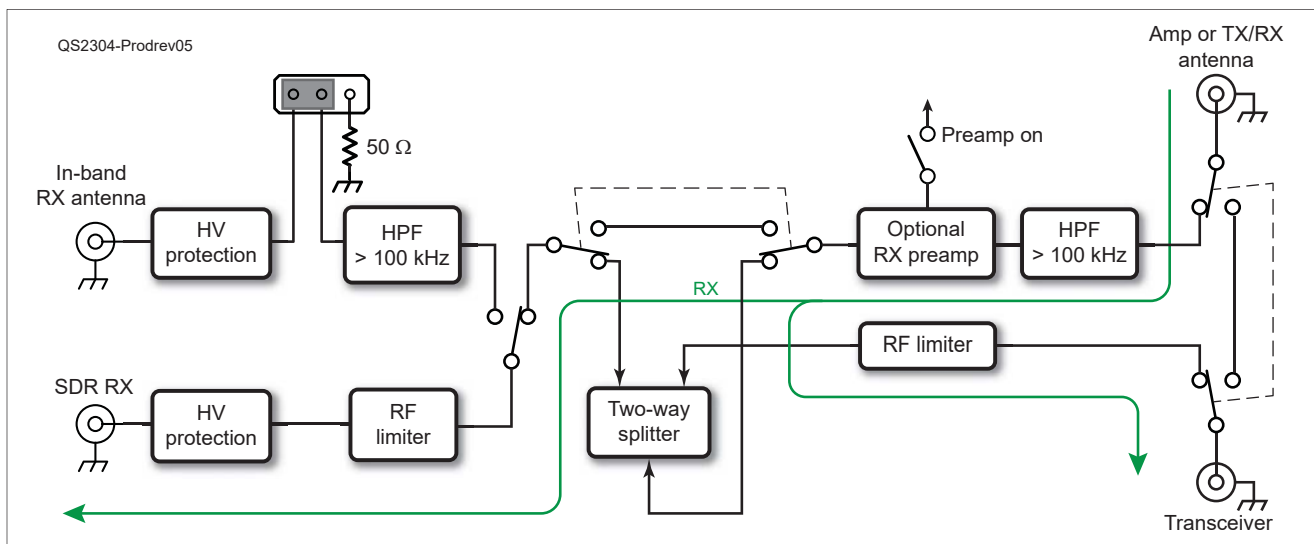


Figure 5 —The RX Audite block diagram. [Courtesy of QRO.cz]

Measurements by the manufacturer (not verified) show the effects of these measures. If PTT is not asserted but the transceiver delivers 100 W to the input, the SDR sees only -16 dBm, through fuse, neon tube, and gas discharge tube protection. With PTT asserted, in normal operations, the SDR sees a maximum of 4 dBm, or 10 dBm (10 mW) with the preamplifier on. In practical use, this is plenty to protect the receiver while still allowing full receiving capability when keyed up.

As this review was being finalized, OK2ZAW let us know about further improvements to the design that

usefully improved receiver protection when transmitting.

Conclusion

I have been using the RX Audite in my station running a 100 W transceiver driving a 1500 W amplifier. I have made over 1,000 CW contacts with the Audite in place, watching my SDR continue to decode and spot stations whenever my PTT is not asserted.

Manufacturer: QRO.cz, www.qro.cz (also see www.hamparts.shop). Price: \$248 without preamplifier, \$262 with preamplifier.