

Antenna Splitter & By-Pass relay. Panoramic reception Transmission Monitoring

User manual. Rev 08
(February 2018)

The Antenna Splitter & By-Pass Relay combines any transceiver with any receiver sharing the same antenna, enabling simultaneous reception feature on both radios.

Simultaneous reception on any transceiver and any receiver sharing the same antenna.

If a SDR radio is used as secondary receiver you get Panoramic Spectrum reception/Transmission monitoring feature.

On transmission switch-over embedded protection circuitry avoids overloading the secondary receiver and internal components of the unit.

It brings new life to any older radio by adding advanced SDR features.

High performance, low insertion loss, telecommunication grade set of relays rated for RF power applications are used in order keep large isolation among ports and the nominal 50 Ohms impedance.

Two models are available depending on the range of frequency cover by the passive splitter device:

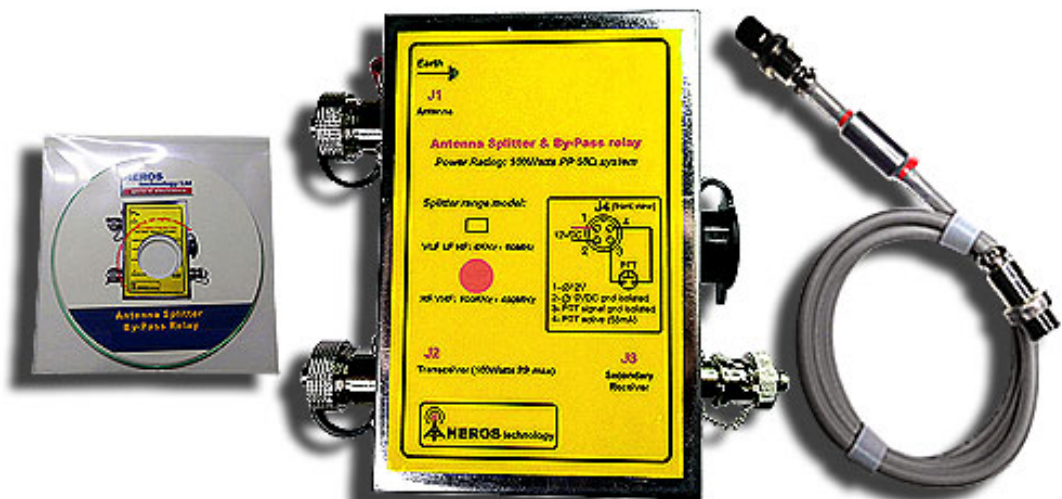
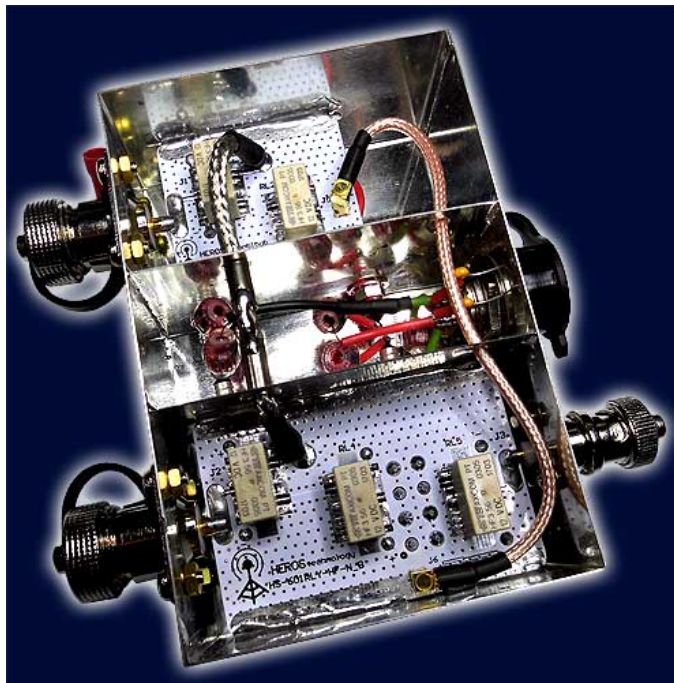
VLF- LF-MF-HF: 4kHz - 60MHz.

LF-MF- HF-VHF-UHF: 100kHz - 450MHz

Features:

- Frequency range, two models to choose:
- 4KHz - 60MHz
- or
- 100KHz-450MHz.
- Insertion loss, Reception: 3dB
- Insertion loss, Transmission: 0.5dB
- Trans./Rec. isolation: 100dB max.
- Power rating Transmission: 100 W PP max.
- Nominal Impedance: 50 Ohms.
- Power Splitter device:
- VLF-LF-MF-HF: Minicircuits PSC-2-2 +
- LF-MF-HF-VHF: Minicircuits PSC-2-1 +
- Relays switching time:
- Set: 5mS
- Reset: 4mS
- Activation port: Sink to ground (100mA max)
- Diode protection.
- Power supply: 11-15 Volts DC/60 mA (active)
- Size: 73x110x40mm(2.87x4.33x1.57in)
- Connectors: SO-239 or N type Antenna and Transceiver; BNC receiver output.
- Shielded remote control cable with snap-on RFI-EMI suppressor ferrite cores included.





Antenna Splitter-By-Pass relay operation

The Antenna Splitter-By-Pass relay device is inserted between the antenna and a transceiver, a secondary receiver is connected to its corresponding port.

By default the Antenna Splitter-By-Pass relay device is in reception state enabling reception on both radios. When the transceiver transmit/receive switching (PTT or CW key) is pressed the RF outputs after some milliseconds delay time called "Peripheral-enable-to-RF output".

This RF output delay time is used to give enough time to engage the internal relays of any external peripheral such as the Antenna Splitter & By-Pass Relay device before the RF power outputs the transceiver. The delay time varies depending on the transceiver settings.

Some popular transceivers "Peripheral-enable-to-RF output" default delay time are as follows:

Kenwood TS-480/2000: 10ms

Yaesu FT-1000 MKV/Filed: 5ms

Yaesu FTDX-9000, FT-2000: 15ms

ICOM IC-706: 15ms

ICOM IC-7000: 10ms

Elecraft K3: 8ms

TenTec Orion/OmniVII: 15ms

TenTec OmniVII & Orion I/II: 15ms

To work with the Antenna Splitter & By-Pass relay we recommend to set the delay to 20-30ms. See owner manual settings of the particular transceiver in use.

Remote Control

An output enable SEND control signal from the transceiver is activate (type sink to ground) BEFORE the Peripheral-enable-to-RF output delay time starts.

The output enable SEND control signal is generally available on a service connector located on the rear panel of the radio.

Transceiver manufactures give different names to the output enable SEND control signal as SEND, DELAY, LINEAR AMPLIFIER, TX-GND, T/R-LINE, etc. See owner manual of the particular transceiver in use.

IMPORTANT WARNING TO AVOID DAMAGE!

Before apply RF power to the unit make sure that all connections are right and the device is powered. First test switching functionality without RF power.

If the output enable SEND control signal is not connected or the Peripheral-enable-to-RF output delay time is too short the RF power coming from the transceiver will reach the device still in reception state (relays not engaged) damaging the internal splitter component and may be the secondary receiver.

Check-up that the enable output SEND control signal from the transceiver in use is the default standard on most transceivers called "Closing to Ground", "Sink to Ground", "Sink Current", or "Ground on Transmit" (denomination may vary).

Some transceivers may output a non-standard "+12V" enable SEND control signal instead of the standard "Closure to Ground" one. In this case the Antenna Splitter-By-Pass Relay device WILL NOT WORK.

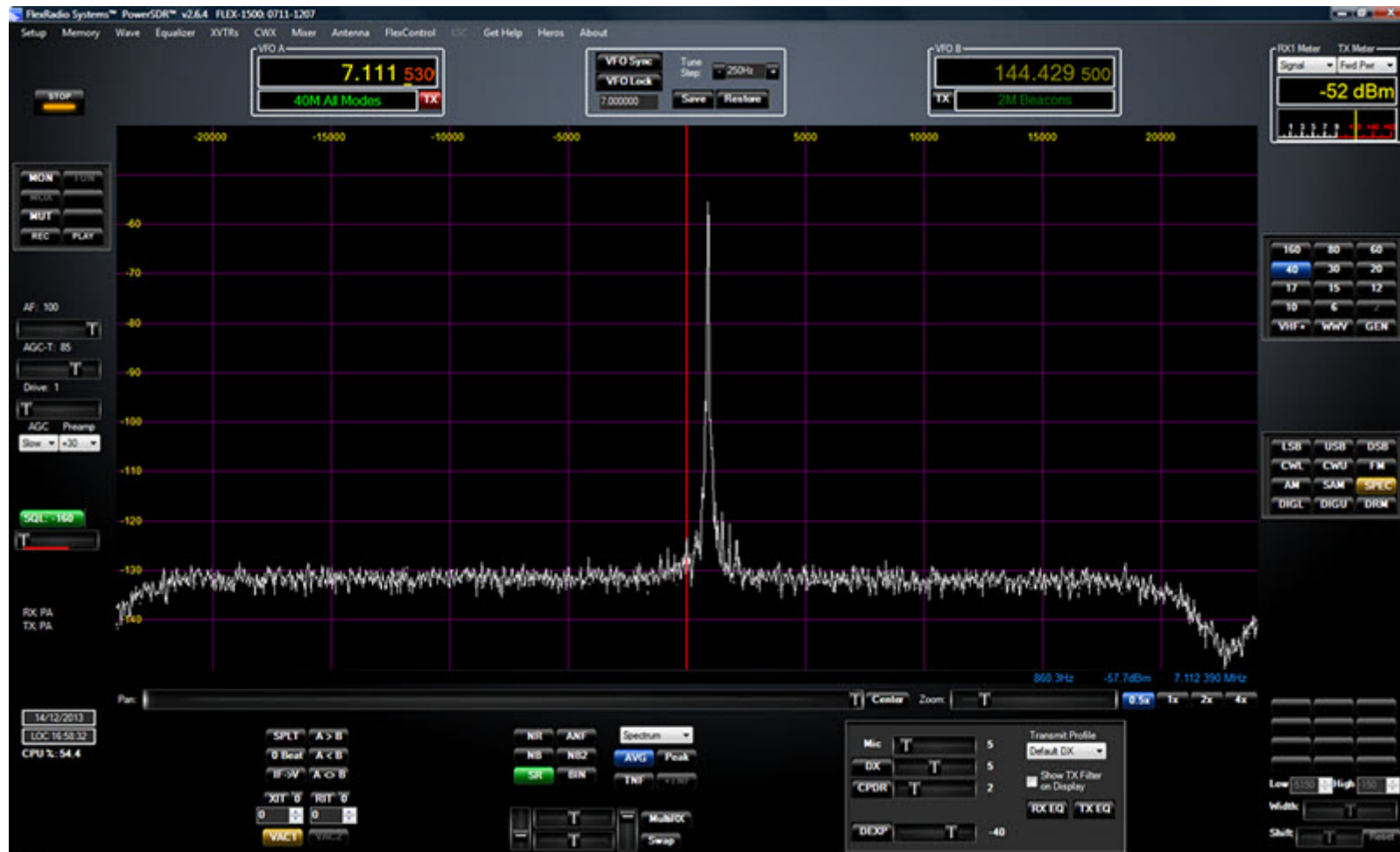
The maximum peak sink current to activate the Antenna Splitter & By-Pass relay device is 100mA. It is compatible with relay or solid-state, closure to-ground, type of output ports.

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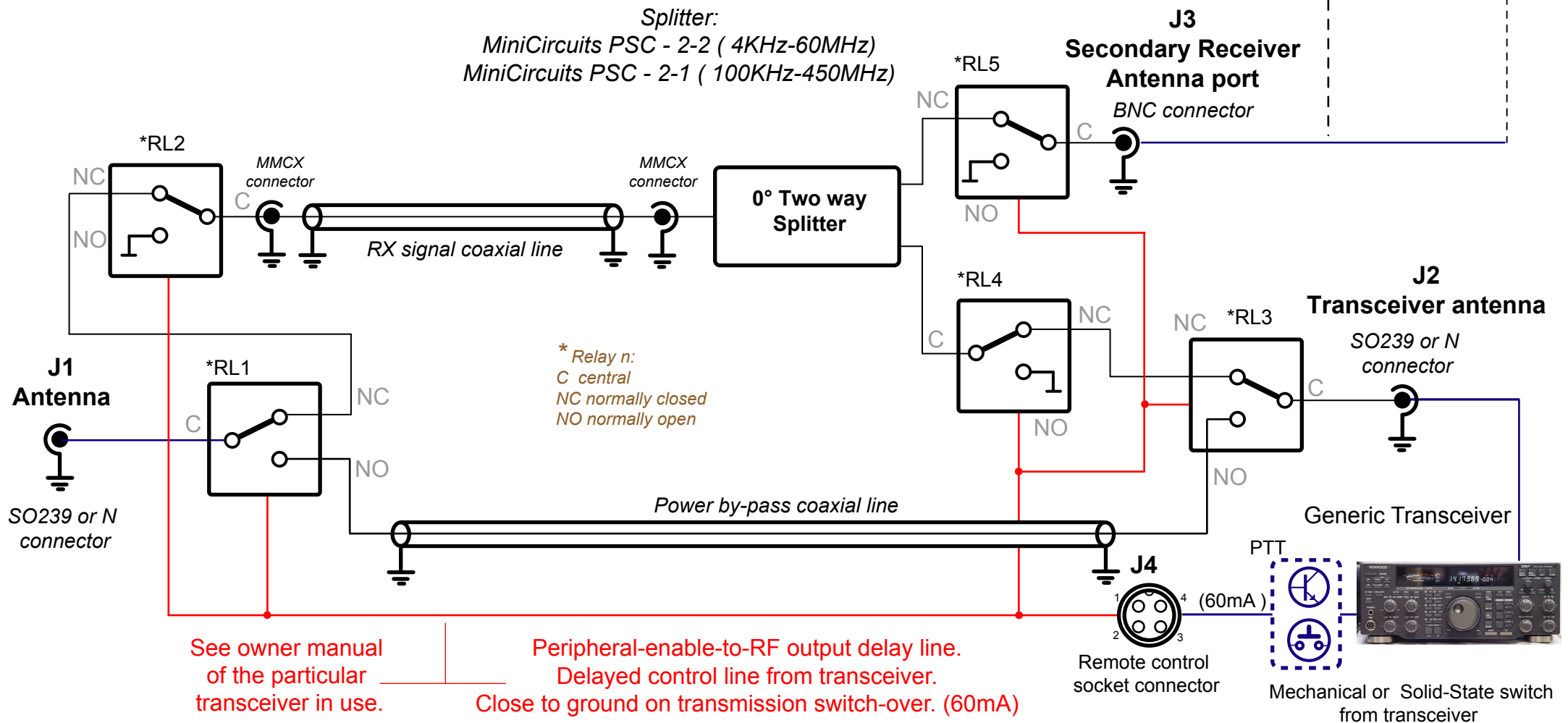
It is your responsibility to ensure that your application meets with specifications.

Transmission monitoring spectrum. SSB tone

Secondary receiver: FlexRadio 1500 & PowerSDR.

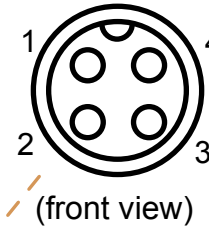


Antenna Splitter & By-Pass relay. Panoramic reception. Transmission monitoring.
Conceptual diagram showing default state, Reception.



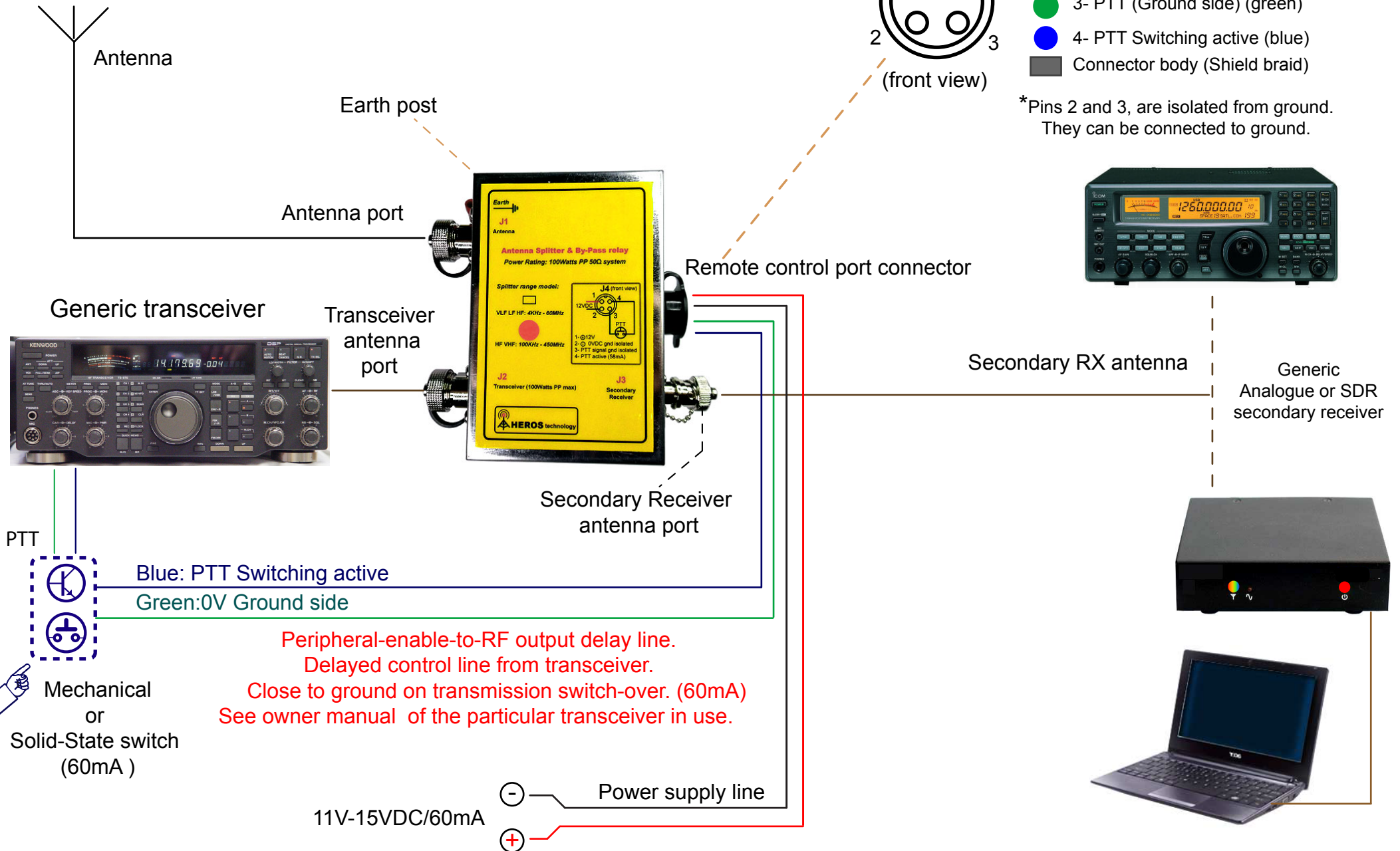
Antenna Splitter & By-Pass relay. Connection diagram Panoramic reception. Transmission monitoring.

Remote control port connector cable colour code



- 1- +12V (red)
- 2- 0V (black)
- 3- PTT (Ground side) (green)
- 4- PTT Switching active (blue)
- Connector body (Shield braid)

*Pins 2 and 3, are isolated from ground.
They can be connected to ground.



NOTES:

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It is your responsibility to ensure that your application meets with specifications.

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