

Owner's Manual & Installation Guide

Welcome to the Intellitron family. The **AA-4901** is a high-efficiency 49:1 broadband impedance transformer (balun/unun) designed specifically for End-Fed Half-Wave (EFHW) antenna systems. Whether you are setting up a permanent base station or a portable QRP rig, this unit is engineered to provide a low-loss transition between your 50-ohm coaxial feedline and the high-impedance entry point of a half-wave radiator.

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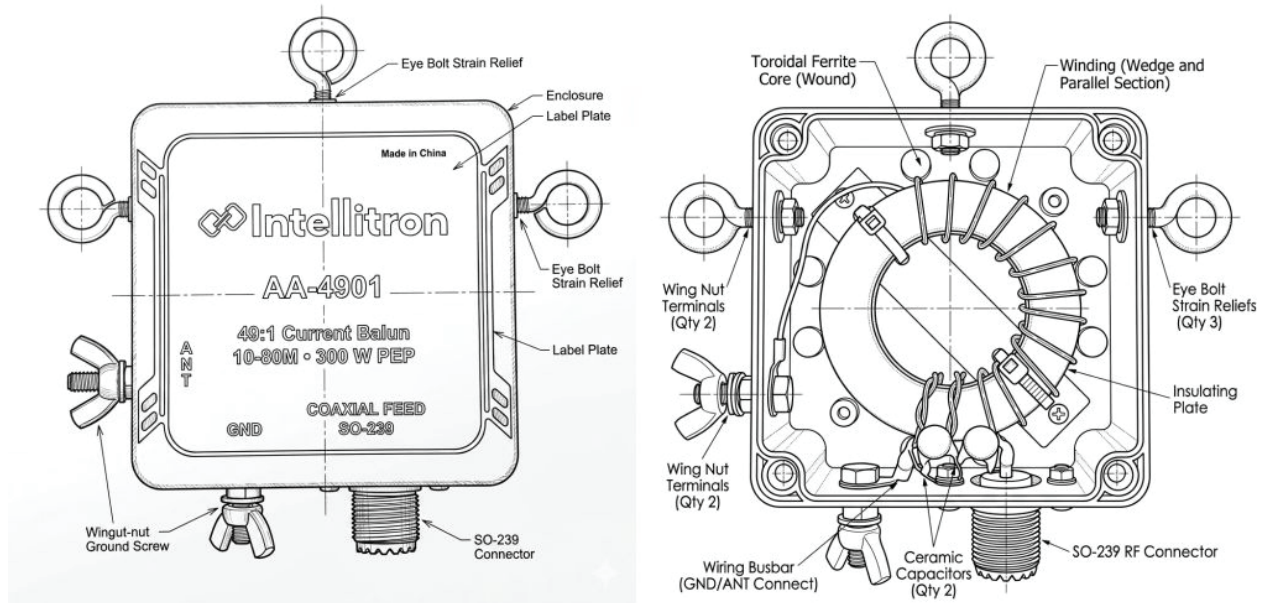
1. Product Description

The Intellitron AA-4901 serves as the heart of a multi-band EFHW antenna. Unlike a traditional dipole, a half-wave wire fed at the end presents a very high impedance—typically between 2,500 and 4,000 ohms. The AA-4901 utilizes a dual-core toroidal transformation to step down this impedance at a **49:1 ratio**, bringing it close to the **50-ohm** requirement of your transceiver.

Key Features:

- **Broadband Coverage:** Optimized for 3.5 MHz to 30 MHz.
 - **High Efficiency:** Uses high-permeability ferrite cores to minimize insertion loss.
 - **Weather-resistant Construction:** Housed in a UV-stabilized, gasket-sealed enclosure, featuring rear heat vents and bottom drain ports
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2. Visual Reference



3. Installation & Deployment

3.1 Mounting

The unit should be mounted using the top stainless steel eye-bolt. Ensure the SO-239 connector faces downward to prevent moisture accumulation within the coaxial jacket.

3.2 Connection Steps

1. **Radiator:** Connect your half-wave wire (e.g., ~66 ft for 40m-10m operation) to the side wing-nut terminal. Use a ring terminal for a secure electrical connection.
2. **Counterpoise (Optional but Recommended):** While the coaxial shield often acts as the return path, connecting a length of wire, roughly 0.05 times the longest operating wavelength, to the ground lug can stabilize the SWR and reduce "RF in the shack."
3. **Feedline:** Attach high-quality 50-ohm coax to the SO-239 base.

4. Usage Guidelines & Tuning

4.1 Safety First

- **RF Exposure:** Ensure the radiator wire is out of reach of people and pets. End-fed antennas develop extremely high voltages at the tips.
- **Lightning:** Always disconnect the antenna from your radio equipment when a storm is approaching.

4.2 Tuning the System

The AA-4901 is a passive device; the SWR is determined by the length of your radiator wire.

1. Start with a wire slightly longer than the calculated half-wave length:

$$L = \frac{468}{f_{\text{MHz}}}$$

2. Check the SWR at the lowest desired frequency (e.g., 7.1 MHz).
3. Trim the wire in small increments (2–3 inches) until the SWR dip is centered in your preferred operating range.

5. Technical Specifications

Feature	Specification
Transformation Ratio	49:1 (Impedance)
Frequency Range	3.5 MHz – 30 MHz (80m - 10m)
Power Rating (CW/SSB)	300W PEP (Intermittent Amateur Service)
Power Rating (Digital/FT8)	60W (Continuous)
Insertion Loss	< 0.8 dB
Enclosure Material	High-Impact ABS, UV Rated

6. Physical Dimensions

- **Height:** 3-3/8 inches (85 mm) excluding eye-bolt.
- **Width:** 3-3/8 inches (85 mm) excluding eye-bolts.
- **Depth:** 1-1/2 inches (40 mm).
- **Weight:** 9.3 oz (265 g).

7. Installation & Maintenance Tips

- **10-meter band:** For best results, ensure the first 6 feet of your coax remains relatively straight as it leaves the transformer. This helps the AA-4901 maintain its capacitive balance.

- **Airflow Clearance:** When mounting the AA-4901 against a flat surface (such as a wooden post or a wall), utilize spacers to maintain a 1/2-inch (12mm) gap between the rear vents and the mounting surface. Blocking these vents can lead to core saturation and permanent damage to the winding insulation.
- **Orientation:** Always mount the unit with the SO-239 connector pointing toward the ground. This ensures the bottom drain holes function correctly and prevents rainwater from entering the vent system.
- **Insect Guard:** In environments prone to small insects (wasps/mud daubers), it is recommended to periodically inspect the rear vents to ensure they remain unobstructed.



TWO YEAR LIMITED WARRANTY

This Limited Product Warranty is provided by the Dealer where your Intellitron product was purchased. The Product Warranty extends only to the original purchaser of the product and is valid for a period of two years from the date of purchase. Please keep your dated sales receipt as evidence of the date of purchase. You will need it to receive warranty service. Your Dealer warrants the product will be free from defects in workmanship and materials under normal use. If the product fails to conform to the warrant and is within the warranty period of two years, contact your original dealer for a return authorization. Your dealer may choose to either repair or replace the non-conforming product.