

Walfront Ht201

Walfront HT201 Passive Attenuator User Manual

Model: HT201

For Oscilloscope Measurement Applications

1. INTRODUCTION

The Walfront HT201 is a passive attenuator designed to extend the measurement capabilities of your oscilloscope. It provides a 20:1 attenuation ratio, allowing your oscilloscope to safely measure higher voltages than its direct input range. This device is particularly useful for automotive diagnostics, enabling the measurement of fuel injector and primary ignition waveforms.



Figure 1: The Walfront HT201 Passive Attenuator, a compact black device with BNC connectors on both ends, labeled "ATTENUATOR HT-201" with "Attenuation: 20:1" and "Bandwidth: 10MHz".

2. SAFETY INFORMATION

Please read and understand the following safety precautions before using the HT201 attenuator. Failure to follow these instructions may result in damage to the device, oscilloscope, or personal injury.

- **Voltage Limits:** The HT201 is designed to attenuate high voltages. Ensure that the input voltage does not exceed the maximum specified voltage for the attenuator (300V).
- **Application Specific Use:** This attenuator is suitable for measuring inductive signals such as fuel injector and primary ignition waveforms.
- **CRITICAL WARNING:** Do NOT use this attenuator for secondary ignition tests. Secondary ignition voltages are significantly higher and can damage the attenuator and your oscilloscope.
- **Proper Connection:** Always ensure secure and correct connections between the attenuator, the signal source, and the oscilloscope. Loose connections can lead to inaccurate readings or damage.
- **Environmental Conditions:** Use the attenuator in a dry environment, away from moisture, extreme

temperatures, and corrosive substances.



Figure 2: An illustration emphasizing the specific use case for the attenuator, stating it can measure fuel injector and primary ignition waveforms, with a critical warning not to use it for secondary ignition tests.

3. PRODUCT FEATURES

- **Attenuation Ratio:** Provides a 20:1 attenuation, meaning an input voltage of 20V will be reduced to 1V at the output. This allows oscilloscopes with limited input ranges (e.g., $\pm 20V$) to measure much higher voltages.
- **Bandwidth:** Operates effectively within a 10MHz bandwidth.
- **Input Overload Protection:** Designed to provide enhanced input overload protection for your oscilloscope when measuring inductive signals.
- **Compatibility:** Equipped with standard BNC connectors for wide compatibility with most oscilloscopes.



Figure 3: An icon representing input overload protection, highlighting a key safety feature of the HT201 attenuator.

4. SETUP AND CONNECTION

Follow these steps to properly connect the HT201 attenuator to your oscilloscope and the signal source.

1. **Identify Connectors:** The HT201 has a male BNC connector on one end and a female BNC connector on the other. The male end typically connects to the signal source, and the female end connects to the oscilloscope's input.
2. **Connect to Signal Source:** Connect the male BNC end of the HT201 attenuator to the signal source you wish to measure (e.g., a test lead from a fuel injector).

3. **Connect to Oscilloscope:** Connect the female BNC end of the HT201 attenuator to the input channel of your oscilloscope. Ensure the connection is firm and secure.
4. **Oscilloscope Settings:** Adjust your oscilloscope's vertical scale (Volts/Div) to account for the 20:1 attenuation. For example, if the attenuator outputs 1V, the actual signal is 20V. You will need to manually multiply your oscilloscope's reading by 20, or if your oscilloscope supports probe settings, set the probe attenuation to 20X.



Figure 4: A diagram illustrating the male and female BNC connectors of the HT201 attenuator, indicating which end connects to the signal source and which to the oscilloscope.

NEW AND OLD MODELS ARE SHIPPED RANDOMLY



New Type



Old Type

Figure 5: A visual comparison between the "New Type" and "Old Type" BNC connectors, indicating that either version may be shipped randomly.

5. OPERATION

Once the HT201 attenuator is connected, you can proceed with your measurements. Remember to adjust your oscilloscope settings accordingly.

- **Signal Measurement:** The attenuator allows your oscilloscope to display waveforms from high-voltage sources without damaging the oscilloscope's input circuitry.
- **Automotive Applications:** Specifically, this attenuator is ideal for observing waveforms from fuel injectors and primary ignition coils, which typically involve voltages higher than standard oscilloscope inputs can handle directly.
- **Interpretation of Readings:** Always remember that the voltage displayed on your oscilloscope screen is 1/20th of the actual voltage. Multiply the displayed voltage by 20 to get the true voltage of the signal source.



Figure 6: A user operating an oscilloscope with the HT201 attenuator connected, demonstrating its use in measuring electrical waveforms.

6. MAINTENANCE

The Walfront HT201 attenuator requires minimal maintenance to ensure its longevity and accurate performance.

- **Cleaning:** Use a soft, dry cloth to clean the exterior of the attenuator. Do not use abrasive cleaners or solvents.
- **Storage:** Store the attenuator in a cool, dry place, away from direct sunlight and extreme temperatures. Protect the connectors from dust and physical damage.
- **Inspection:** Periodically inspect the connectors for any signs of wear, corrosion, or damage. Ensure they are clean and free of debris before each use.

7. TROUBLESHOOTING

If you encounter issues while using the HT201 attenuator, consider the following common troubleshooting steps:

- **No Signal or Weak Signal:**
 - Check all connections to ensure they are secure.
 - Verify that the signal source is active and producing a signal.
 - Ensure your oscilloscope's vertical scale (Volts/Div) is set appropriately. Remember the 20:1 attenuation.
- **Distorted Waveform:**
 - Check the attenuator's bandwidth (10MHz) against the frequency of your signal. Signals exceeding the bandwidth may appear distorted.
 - Ensure the signal voltage does not exceed the attenuator's maximum input voltage.
 - Inspect the attenuator and cables for any physical damage.
- **Incorrect Voltage Reading:**
 - Confirm that you are multiplying the oscilloscope's displayed voltage by the correct attenuation factor (20).
 - If your oscilloscope has probe settings, ensure it is correctly configured for a 20X probe.

8. SPECIFICATIONS

Parameter	Value
Model	HT201
Attenuation Ratio	20:1
Bandwidth	10MHz
Maximum Input Voltage	300V
Connector Type	BNC (Male to Female)
Manufacturer	Walfront



Figure 7: Dimensions of the HT201 attenuator, showing a length of 61mm (2.4 inches), and connector widths of 17mm (0.7 inches) and 21mm (0.8 inches).

9. WARRANTY AND SUPPORT

Walfront products are manufactured to high-quality standards. For any questions regarding the HT201 Passive Attenuator, please contact your retailer or Walfront customer support. Please refer to your purchase documentation for specific warranty terms and conditions.

For further assistance, you may visit the Walfront store on Amazon: [Walfront Store](#)