# R&S®RT-ZP03S
# Probe
# User Manual


1802957302
Version 04

ROHDE&SCHWARZ
Make ideas real

This document describes the following R&S®RT-ZP03S models:

- R&S®RT-ZP03S (1803.1001.02)


Mühldorfstr. 15, 81671 München, Germany
Phone: +49 89 41 29 - 0
Email: info@rohde-schwarz.com
Internet: www.rohde-schwarz.com


1802.9573.02 | Version 04 | R&S®RT-ZP03S

Throughout this manual, products from Rohde & Schwarz are indicated without the ® symbol, e.g. R&S®RT-ZP03S is indicated as R&S RT-ZP03S.

# 1 Safety and regulatory information

The product documentation helps you use the R&S RT-ZP03S safely and efficiently. Follow the instructions provided here and throughout the manual.

Use the product only for its intended use and within its performance limits. If the probe assembly is used in a manner not specified by the manufacturer, the protection provided by it may be impaired.

### Operating site

Only use the product indoors, and keep it dry. The product has no casing and is sensitive to moisture and humidity.

Do not use the probe in explosive atmospheres.

The product is suitable for pollution degree 2 environments where nonconductive contamination can occur. Occasionally a temporary conductivity that is caused by condensation must be expected. Temporary condensation occurs only when the product is out of service.

### Using the probe

Take the following measures for your safety:

- If any part of the product is damaged or broken, stop using the product. Check the probe cable regularly for wear. Touching a worn cable during measurements can cause injuries.
- Before connecting the probe to a circuit under test, make sure that the probe is connected to a grounded measurement instrument.
- Do not connect a probe to any voltage that exceeds the maximum permissible input voltage specified in the data sheet.
- Do not use the probe for measurements on mains circuit.
- The probe is not rated for any measurement category. Do not use the probes in circuits with measurement category II, III or IV.
- With increasing frequency, the voltage on the probe tip should not be higher than illustrated in the derating curve.
- Always connect the probe lead to earth ground.

## Declaration of Conformity

The manufacturer declares the conformity of this product with the actual required safety standards in accordance with the Low Voltage Directive IEC 61010-031 Safety requirements for electrical equipment for measurement, control and laboratory use.

Part 031: Safety requirements for hand-held probe assemblies for electrical measurement and test

## Measurement Categories

IEC 61010-2-030 defines measurement categories that rate instruments on their ability to resist short transient overvoltages that occur in addition to the working voltage. Use the measurement instrument and accessories only in electrical environments for which they are rated.

- 0 - Instruments without rated measurement category
  For measurements performed on circuits not directly connected to mains, for example, electronics, circuits powered by batteries, and specially protected secondary circuits. This measurement category is also known as CAT I.
- CAT II:
  For measurements performed on circuits directly connected to the low-voltage installation by a standard socket outlet, for example, household appliances and portable tools.
- CAT III:
  For measurements performed in the building installation, such as junction boxes, circuit breakers, distribution boards, and equipment with permanent connection to the fixed installation.
- CAT IV:
  For measurements performed at the source of the low-voltage installation, such as electricity meters and primary overcurrent protection devices.

## Disposal

This electronic product is classified within the WEEE/ RoHS category list as monitoring and control equipment (category 9). Category 9 products are exempted from the restrictions under the scope of the RoHS directive.

Rohde & Schwarz has developed a disposal concept for the ecofriendly disposal or recycling of waste material. Rohde & Schwarz fully assumes its obligation as a producer to take back and dispose of electrical and electronic waste. Contact your local service representative to dispose of the product.

## EC Directives

- WEEE Directive 2002/96/EC - Waste Electrical and Electronic Equipment
- RoHS Directive 2002/95/EC - Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment

## Meaning of safety labels

Safety labels on the product warn against potential hazards.

| | |
|---|---|
|  | Potential hazard<br>Read the product documentation to avoid personal injury or product damage. |
|  | Electrical hazard<br>Indicates live parts. Risk of electric shock, fire, personal injury or even death. |

# 2 Specifications

***Table 2-1: Electrical specifications***

| | |
|---|---|
| Attenuation ratio | 10 : 1 |
| Bandwidth | 300 MHz (meas.), –3 dB |
| Rise time | 1.15 ns (meas.) |
| Input impedance | 10 MΩ II 12 pF (meas.) |
| Input voltage | max. 400 $V_{RMS}$ (600 V transient overvoltage) |

***Table 2-2: Miscellaneous***

| | |
|---|---|
| Temperature range | 0 °C to 40 °C |
| Relative humidity | max. 80%, without condensation |
| Altitude | max. 2000 m |
| Pollution degree | 2 |
| Cable length | ca. 1.20 m |

## Derating

The input impedance of the probe decreases as the frequency of the applied signal increases.

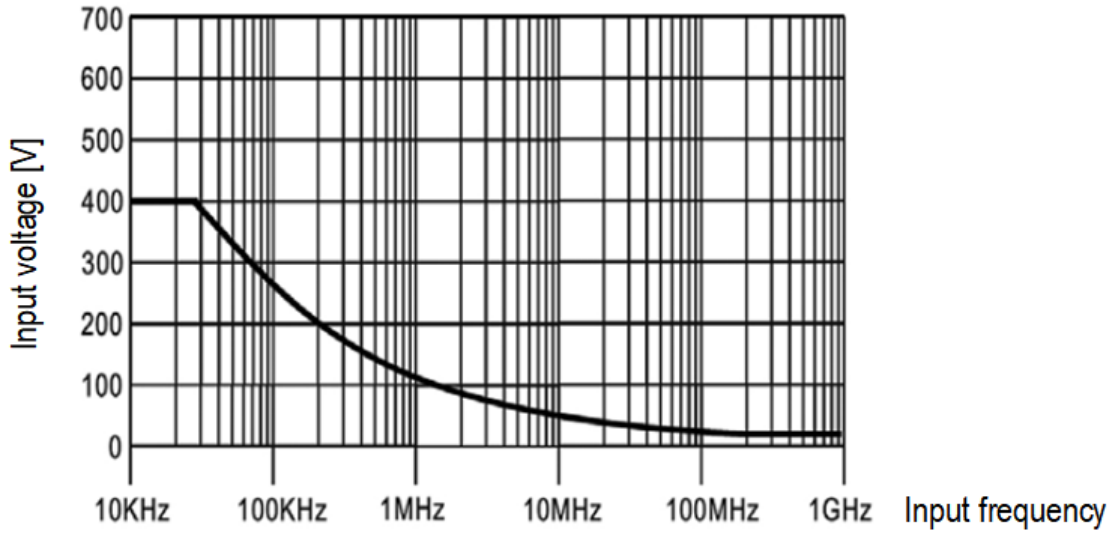


***Figure 2-1: Derating curve***

## Included in delivery

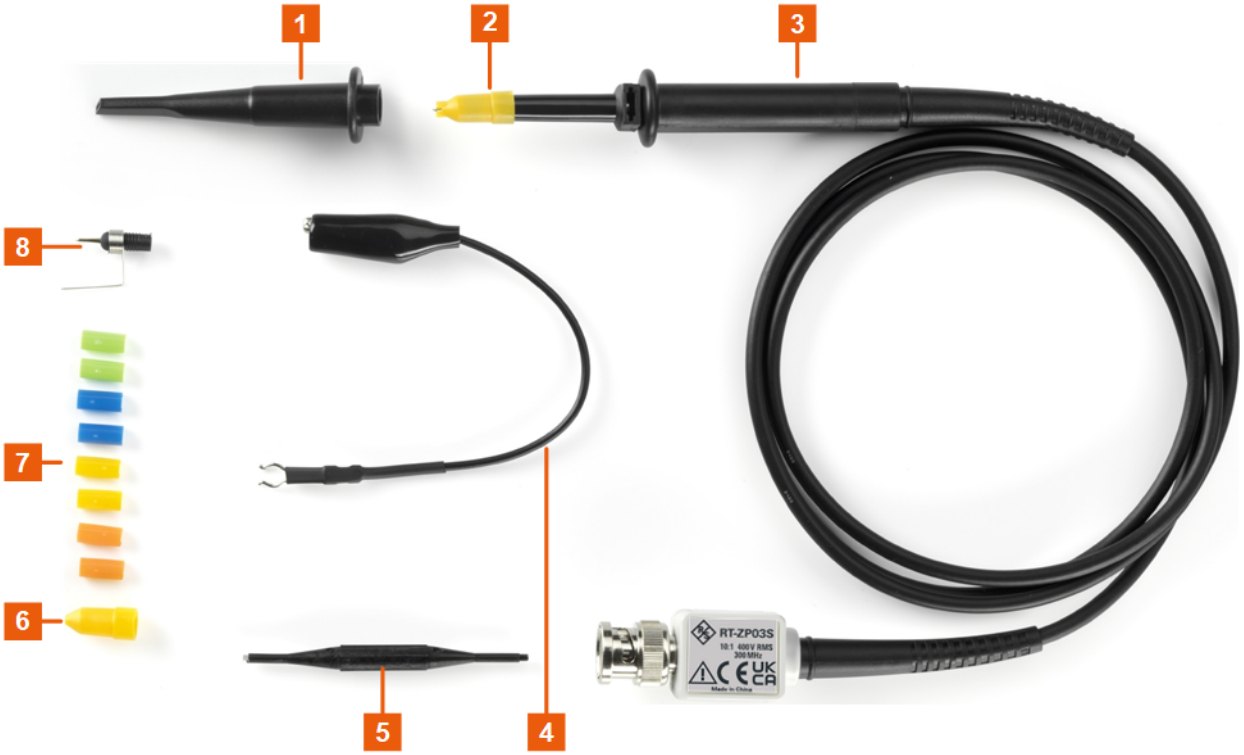


*Figure 2-2: Parts included in delivery*

1 = Retractable hook
2 = IC insulating cap
3 = Probe
4 = Ground lead
5 = Adjustment tool
6 = Protection cap
7 = Identification tags
8 = Additional probe tip with ground clip

# 3 Adjustment

The probe can be adjusted for low (LF) and high frequency compensation (HF).

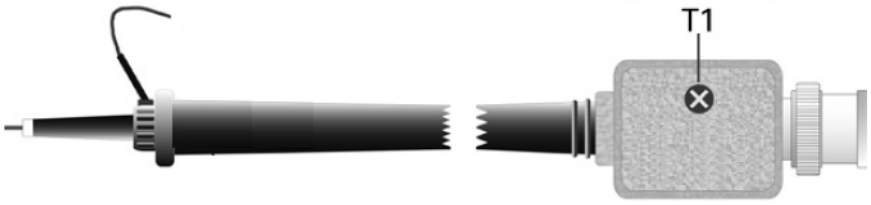


*Figure 3-1: Compensation trimmer*

### LF adjustment

1. Connect the probe to a 1 kHz square wave signal.
2. Adjust LF compensation trimmer T1 for optimum square wave response.

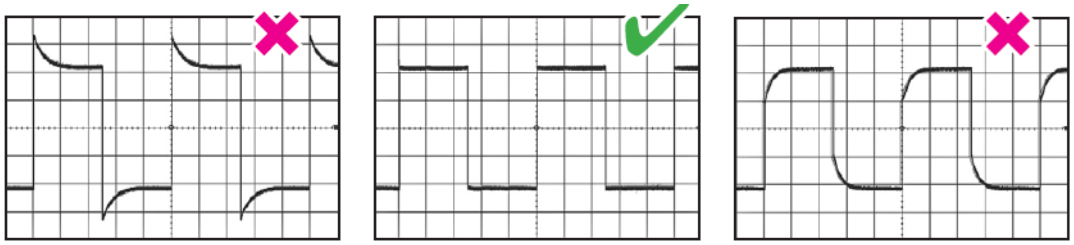

*Figure 3-2: LF adjustment with 1 kHz signal*

### RF adjustment

For special measurement tasks, an RF adjustment of the probe can be necessary. Therefore, the probe has two adjustable trimmers below the label beside T1. Remove the label if you need RF adjustment.

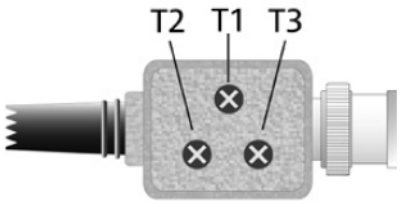


*Figure 3-3: Compensation trimmers for RF adjustment*

Use the probe adjust output on the oscilloscope or a pulse generator (less than 1 ns rise time) for full bandwidth adjustment.

1. Make sure that the trimmers T2 and T3 are in a center position.
2. Set the timebase of the oscilloscope to 5 ns/div.
3. Start the RF adjustment with trimmer T3. Turn it until the peak of the adjustable pulse response reaches the end level without any overshoot.
4. Turn trimmer T2 in the same way, but accept a small overshoot for the first few nanoseconds.

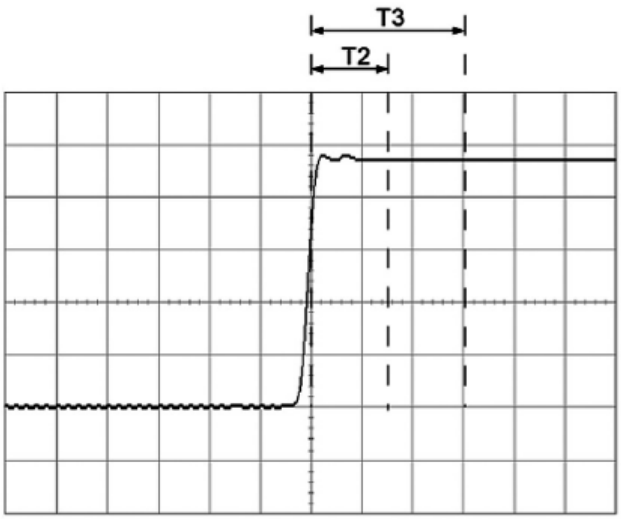


***Figure 3-4: RF adjustment: compensation times for both trimmers***

After adjustment, we recommend sticking the label again to avoid confusion of the trimmers.

# 4 Maintenance

## 4.1 Cleaning

1. Clean the outside of the product using a soft cloth moistened with either distilled water or isopropyl alcohol. Keep in mind that the casing is not waterproof.

   **Note:** Do not use cleaning agents. Solvents (thinners, acetone), acids and bases can damage the labeling or plastic parts.

2. Dry the product completely before using it.