



User Manual

Near-field probe:

HR-E 40-1

- Translation -

Intended Use

The HR-E 40-1 near-field probe is a passive probe that converts high-frequency electric near fields into an electric current or voltage. It may only be used by persons qualified in the field of EMC to measure near fields. The probe is designed to be connected to spectrum analyzers, oscilloscopes or similar devices.

Safety Instructions

Observe the operating and safety instructions for all devices used in the set-up.



Never use any damaged or defective devices.

The use of this near-field probe to test devices with voltages higher than safety extra-low voltage (SELV) is only permitted for trained personnel. Additional protective measures such as using an isolating transformer, additional insulation, etc. must be implemented to safeguard against electric shocks and to minimize the risk of injuries.

Depending on the measured field strength, voltages exceeding the permissible maximum input voltage of the connected device may be generated at the probe's output. Under certain circumstances, this may also occur with short-term events, such as short-circuits, high inrush currents, and so on. Employ protective measures, such as using attenuation elements, transient limiters or similar devices, as required.

The probe tip is sensitive to mechanical stress and is not a guaranteed insulation. The user is therefore required to provide appropriate insulation to protect the device under test and the connected measuring device.

Technical Parameters

Upper frequency limit	40 GHz
Lower frequency limit	Depending on the measuring device
Resolution	0.2 mm
Inner distance of the measuring electrode to the measuring tip	about 0.5 mm
Output resistance	50 Ω
Connection - output	2.92 mm (K), female, jack
Weight	19 g
Sizes (L x W x H)	(145 x 9 x 9) mm

Table 1: HR-E 40-1 technical parameters

Connecting an RF Cable to the HR Probe

Required tools:

- Torque wrench 8 mm (5/16 inch) / 0.9 Nm (8 in.-lbs.)
- Open-end wrench 1/4 inch

Please check the connectors. All connectors must be undamaged, clean and within mechanical specification.

1. Push the connectors straight together so that they can engage smoothly (do not tilt or twist).
2. Turn only the plug nut until it is hand-tight and make sure that you do not cross the threads.



3. Use the torque wrench to make the final connection. Tighten the connection to full torque. Use the open-end wrench to prevent the probe from rotating.



Separation of an RF Cable from the HR Probe

Required tools:

- Open-end wrench 1/4 inch
- Open-end wrench 8 mm (5/16 inch)

Do not use the torque wrench to loosen the connection!

1. Use the 0.25 inch open-end wrench to prevent the probe from rotating.
2. Use the 8 mm (5/16 in.) open-end wrench to loosen the connection.
3. Complete the process by hand, turning only the connector nut with your fingers.
4. Carefully pull the connectors apart (do not tilt or twist).

Operational Notes

Reproducible and reliable results are achieved when the probe tip is placed vertically and centrally on the RF structure or trace. By placing the probe tip directly on the RF trace, a defined distance (about 0.5 mm) between the RF trace and the measuring electrode can be achieved.

Resonance processes can be excited in the case of asymmetrical placement and with PCBs whose width is in the range of one centimeter (the ground plane of PCBs which are too small can be increased by connecting them electrically with a larger ground plane).

The measuring tip is decoupled from the probe shaft. Touching the probe near the probe tip may interfere with the probe function.

The measuring cable must be suitable for this frequency range. The measuring cable is available on request.

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