

ROHDE & SCHWARZ INSTRUMENT HEALTH GUIDE

For signal generators –
tips for avoiding instrument damage

For further information on the topics below please consult

- ▶ the safety instructions and
- ▶ the user manual for your instrument



Flyer
Version 01.03

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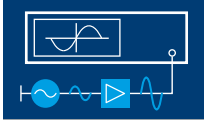


PREVENTING ELECTRICAL DAMAGE

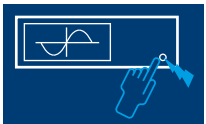
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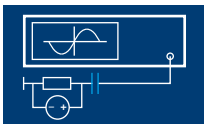
- ▶ Consult the operating manual or data sheet for further information before using any input or output.



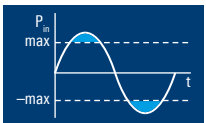
- ▶ Ensure proper impedance matching between any instrument port and the DUT before activating an RF output. Mismatch between instrument ports and the DUT will lead to signal reflections. These, in turn, can lead to overload, which may cause damage to the instrument.



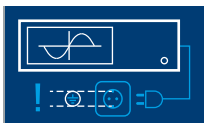
- ▶ Observe ESD precautions. Use a wrist strap and cord to ground yourself, or use a conductive floor mat and a heel ground strap when connecting a DUT or a test fixture to, or disconnecting it from, the instrument's RF ports. Install ESD protective covers after each use of the instrument's ports.



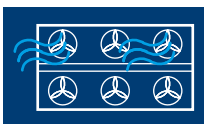
- ▶ Protect the RF ports from DC current/voltage. Applicable limits are specified in the data sheet (see "Maximum permissible DC voltage").



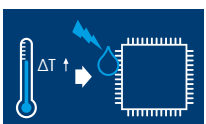
- ▶ Verify the signal power of an external generator before applying it to the instrument's inputs. The displayed and actual output power of an external signal generator may differ depending on the connected load.



- ▶ Consult the data sheet on the permissible characteristics of the instrument's power supply. Always use an AC power socket with a protective earth contact. Use a 3-wire power cable.



- ▶ Ensure proper airflow by providing a minimum distance of 10 cm from other objects and externally cleaning the fans at regular intervals.



- ▶ Ensure that the ambient temperature is within the range specified in the data sheet.

DO NOT:

- ▶ Operate the instrument outside specifications. Warning signs are strategically placed at sensitive connectors.

- ▶ Overload the signal outputs by exceeding the reverse power limit. The reverse power limit is specified in the data sheet.

- ▶ Defeat the instrument's earth grounding protection by using a power (extension) cable or an autotransformer without a protective ground conductor.

- ▶ Directly connect a DC supply to an RF output. Instead, use a bias tee for both biasing your DUT and supplying it with the RF signal.

- ▶ Exceed input signal limits specified in the data sheet. Even connected USB devices with an external power supply can feed back current into the 5 V pin of the USB port.

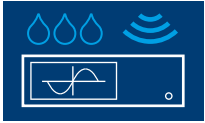
- ▶ Use any AC power cable other than that delivered with the instrument. Other cables may be of poorer quality and could result in damage to the instrument.

- ▶ Stack too many instruments. Instruments placed on top take in the hot air of lower ones, resulting in higher ambient temperature and potential overheating.

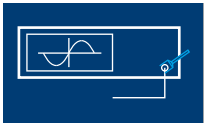
- ▶ Operate the instrument if it shows signs of condensation. Condensation is the result of rapid temperature changes, for example after transport.

PREVENTING MECHANICAL DAMAGE

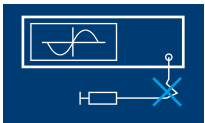
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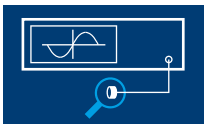
- ▶ Take preventive measures in case of a suboptimal operating site, for example by providing extra shielding for your instrument.



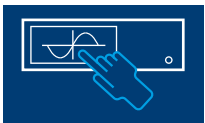
- ▶ Clean and inspect each connector prior to its use. Make sure to align the connectors on the cable and on the instrument along a common axis before tightening. Turn the outer connector nut, not the cable itself. Use a calibrated torque wrench to tighten the connector with the specified torque.



- ▶ Use cables of appropriate length to avoid bending of cables. Sharp bends lead to reflections and possibly to permanent cable damage.



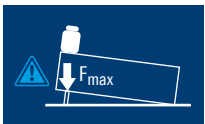
- ▶ Look for dirt and outer and inner conductor damage before using any cable. In case of dirt, apply compressed air to dislodge larger debris. Make use of isopropanol moistened foam cleaning swabs or wooden cocktail sticks to remove the remaining dirt. Dry the connector using compressed air.



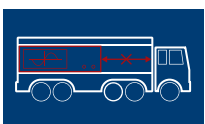
- ▶ Use your fingers or a stylus pen when touching the screen. Use a soft, dry, lint-free dust cloth for cleaning.



- ▶ Use both handles on the front or side of the casing for lifting or carrying the instrument.



- ▶ Fold the feet in or out completely to ensure stability of the instrument. The feet can collapse if they are not folded out completely or if the instrument is shifted while the feet are folded out.



- ▶ Use the original packaging for transportation. It is specifically designed to prevent mechanical damage and to provide ESD protection. In case the original packaging is lost, it can always be ordered separately.

DO NOT:

- ▶ Operate the instrument in a wet or polluted environment or expose it to high electromagnetic interference as these conditions can lead to premature aging or cause damage to the instrument.

- ▶ Tighten cables excessively as this can cause damage to the cables or the connectors. In contrast, insufficient tightening can lead to inaccurate measurement results. Make sure not to mix incompatible connector systems.

- ▶ Repeatedly bend cables as this increases wear.

- ▶ Apply too much pressure when cleaning the inside of connectors with foam cleaning swabs or wooden cocktail sticks. In the case of female connectors with an air dielectric, the slotted contacts of the inner conductor are easily bent. In the case of male connectors, the center pin is easily bent.

- ▶ Use cleaning agents as there is a risk of damage to the screen. Never touch the screen with a ballpoint pen or other sharp object.

- ▶ Apply excessive force or load to the handles, for example by carrying the instrument using only one handle.

- ▶ Exceed the maximum force or load on the instrument, with or without folded-out feet. Applicable limits are specified in the user manual.

- ▶ Leave headroom in the transport box as this means loose cargo and potential damage. Never use styrene pellets for packaging as they do not provide proper cushioning.

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