

# Wireless control of the R&S®Scope Rider for increased operator safety

The R&S®Scope Rider is a modern versatile handheld oscilloscope featuring lab oscilloscope performance in a portable format with the ruggedness of a battery operated handheld device. Its superior performance is the best in its class.



## Your task

Several applications can be addressed with this oscilloscope. It is extremely attractive for applications that require safe measurements, such as in power electronics. For example, analyzing modern electric drive systems requires measuring motor voltages and currents and evaluating the associated digital control signals. These voltages and currents are safety critical and require special mea-

surement setup consideration. Operator safety is the key consideration for such measurements.

## T&M solution

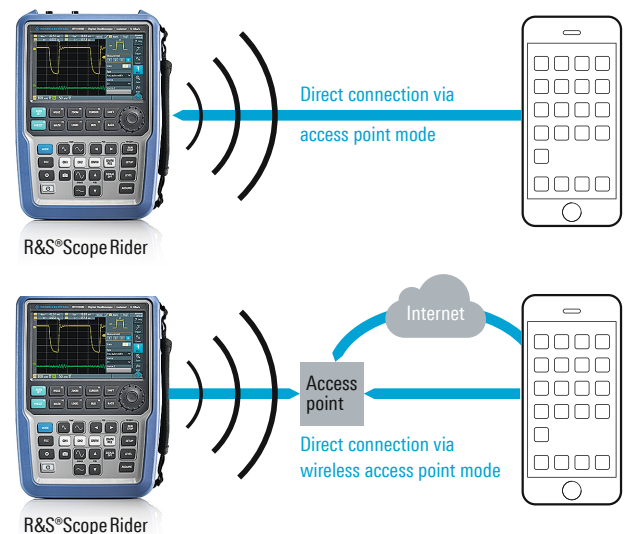
The R&S®Scope Rider offers up to four isolated input channels with CAT IV 600 V rating that allow measurements on high-voltage electronics without compromising user safety. Digital control signals can be analyzed with the 8-bit wide logic interface that is isolated from the analog input channels. These measures ensure the safety of the instrument, but more attention must be paid to the safety of the operator.

Operator safety can be accomplished by using the wireless LAN interface so that no cable jeopardizes the safety requirement. A laptop, tablet or smartphone can access the R&S®Scope Rider directly or via an access point. This allows the operator to remain at a safe distance during safety critical measurements and to operate the oscilloscope and react to unforeseen measurement events.

## Application

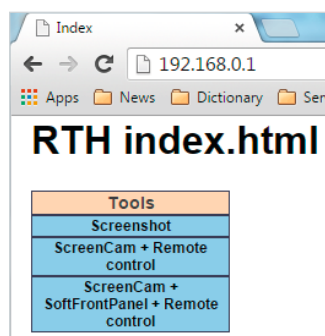
To remotely start the measurement, the operator must properly connect the R&S®Scope Rider to the DUT before setting up the remote connection on the instrument.

### Network configuration



There are two remote connection options (see figure on first page):

- **Direct connection:** The R&S®ScopeRider acts as an access point in wireless infrastructure mode. In the setup menu, the operator selects wireless LAN and a menu appears. The wireless mode is set to “access point” and the SSID contains a suggestion based on the instrument’s serial number. The operator must provide a passphrase and set the wireless state to 1. The remote terminal can now access the oscilloscope
- **Connection via a wireless access point:** The oscilloscope connects to the network as a client. In the “wireless LAN” menu, the operator sets the wireless mode to client and then enables the wireless state. The oscilloscope scans for available networks and presents a list of networks. The operator selects a network and the oscilloscope is connected. If the access point features an Internet connection, the operator can enter a preshared key to allow access from an even more remote location



Browser setup.

The operator now moves to a safe area and accesses the oscilloscope via remote terminal. Opening a browser and entering the oscilloscope’s IP address (192.168.0.1) brings up a website with a tools menu (see figure above). The operator can choose between a screenshot, a screen cam with remote control via pointer (upper screenshot on right) or a screen cam with soft front panel and remote control (lower screenshot on right). The operator can adjust the terminal display size and resolution.

In the example shown here, the oscilloscope triggers and captures a sinusoidal signal on channel 1 and a ramp signal on channel 2, which is not synchronous to channel 1 and therefore moves across the screen. In the top left corner of the display, the result of an automated measurement (minimum) on channel 1 is shown.

The excellent remote access performance (six frames per second) is noticed by watching the second channel as it is not synchronous to the trigger and appears as a moving

waveform, as well as by the clock in the top right corner, which progresses without any gaps.

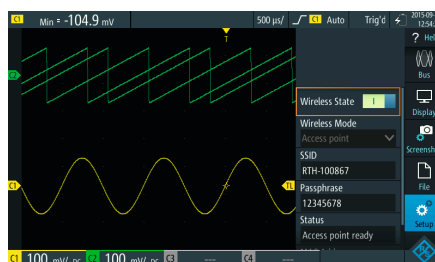
Remember that this performance strongly depends on the quality of the wireless network. Proximity to the access point and interference from other nodes may degrade performance.

The R&S®ScopeRider offers more options for remote access. Like a typical lab instrument, it is possible to access the instrument remotely via SCPI. This allows extensive programming of complex measurement scenarios that can be carried out in the field with a tablet, laptop or smartphone.

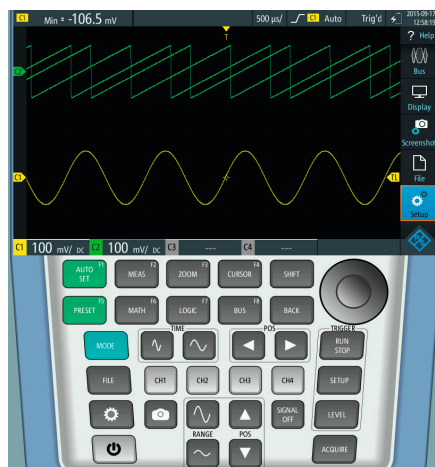
Remote access of the R&S®ScopeRider is not limited to the wireless interface. It can also be accessed via isolated USB and Ethernet ports.

## Summary

The R&S®ScopeRider is a handheld oscilloscope with a wireless interface for extensive, high-performance remote access. This is a unique and important feature, as are channel isolation and battery operation, when high isolation and safety critical measurements are required. Wireless access allows interactive control of live signals and fast execution of remote analysis.



Browser view of R&S®ScopeRider display.



Browser view of R&S®ScopeRider display with soft panel.

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