

R&S® HE400 HANDHELD DIRECTIONAL ANTENNA FAMILY

Expert in interference hunting



Product Brochure
Version 02.01

ROHDE & SCHWARZ

Make ideas real



R&S®HE400 HANDHELD DIRECTIONAL ANTENNA FAMILY

AT A GLANCE

The R&S®HE400 antenna family in combination with an analyzer or receiver reliably detects and locates transmitters and interference sources from 8.3 kHz to 20 GHz.

The R&S®HE400 handheld directional antenna family is used together with an analyzer or receiver to detect and locate transmitters and interference sources. Bearings are found by manually pointing the antenna in the direction where the signal is strongest.

The antenna family is optimized for use with the R&S®PR200 portable monitoring receiver, the R&S®PR100 portable receiver and portable spectrum analyzers.

It consists of three antenna handles, seven different antenna modules and accessories (cables, transport cases, transport boxes, tripod, etc.) that can be individually chosen for a specific application. Other antenna modules can be added at a later stage.

Benefits and key features

- ▶ Modular product design to select the best antenna handle and antenna module for the customer application
- ▶ Compact with very wide frequency range from 8.3 kHz to 20 GHz to address a large range of applications and a multitude of customer applications
- ▶ Suitable for 5G New Radio frequency range FR1
- ▶ Wideband antenna modules and optimized narrowband solutions available
- ▶ Distinct directional radiation pattern for precise location of interference sources
- ▶ Fast and comfortable exchange of antenna modules
- ▶ Turnable antenna modules for reception of vertically or horizontally polarized signals
- ▶ Automatic detection of plugged-in module and polarization alignment (with R&S®HE400, R&S®HE400MW)
- ▶ Support of different Rohde & Schwarz receivers and analyzers
- ▶ Support of third-party receivers (with R&S®HE400BC)
- ▶ Trigger function for external triggering of the receiver or the analyzer (with R&S®HE400, R&S®HE400MW)
- ▶ Integrated electronic compass delivers exact azimuth and elevation angle (with R&S®HE400, R&S®HE400MW)
- ▶ Built-in sensitive GPS and GLONASS capable receiver for precise location by triangulation and use of geolocation data for further processing (with R&S®HE400, R&S®HE400MW)
- ▶ Switchable built-in low-noise amplifier (LNA) for optimum sensitivity in active mode and wide dynamic range in passive mode (with R&S®HE400, R&S®HE400MW)
- ▶ Power to antenna supplied by connected receiver or spectrum analyzer (no battery needed)
- ▶ Unique and very sophisticated bearing detection mode for highly accurate bearing results allows fast localization of signal sources (with R&S®HE400CEL, R&S®HE400SCB)
- ▶ Low antenna weight and attachable arm rest ensure fatigue-free operation

APPLICATIONS



General interference hunting

General interference hunting

The antenna modules provide a directional radiation pattern, allowing users to detect and locate a potential interference source based on triangulation of multiple bearings. In highly reflective environments (i.e. indoors), the last few meters to the target are often found more easily by gradually approaching the transmitter (homing mode).



Spectrum monitoring and spectrum surveillance

Spectrum monitoring and spectrum surveillance

The radio frequency spectrum is a limited natural resource and it is important that it be used in the most effective and efficient way. Smart planning of frequency usage and well-designed frequency allocation schemes are very important. Spectrum monitoring can effectively help enforce compliance with international radio traffic regulations.

The R&S®HE400 antenna family in combination with a receiver or an analyzer allows users to monitor and analyze relevant signal parameters such as the frequency, spectrum occupancy, signal level and signal bandwidth.



Mobile network testing and interference hunting

Mobile network testing and interference hunting in wireless communications networks

To ensure optimum performance of wireless communications networks, the network parameters are constantly monitored and analyzed. When an unknown or interfering signal is found, the source of the signal has to be identified. Highly accurate bearing results are needed in order to quickly locate and find the signal source.

The R&S®HE400 antenna family is ideal for this task since it allows fast and reliable detection and localization of such sources over a very wide frequency range.

R&S®HE400 HANDHELD DIRECTIONAL ANTENNA FAMILY

ANTENNA HANDLES



R&S®HE400 handheld directional antenna with R&S®HE400VHF



R&S®HE400MW microwave handheld directional antenna with R&S®HE400LP



R&S®HE400BC basic handheld directional antenna with R&S®HE400HF

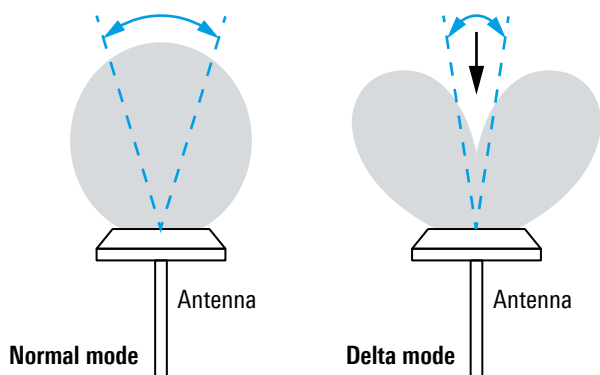
The R&S®HE400 antenna handle supports all antenna modules up to 8 GHz. It is compatible with the R&S®PR200 portable monitoring receiver, the R&S®PR100 portable receiver, the R&S®Spectrum Rider FPH, R&S®FSH4 and R&S®FSH8 handheld spectrum analyzers and the R&S®CableRider ZPH cable and antenna analyzer.

The R&S®HE400MW antenna handle operates up to 20 GHz. It supports the R&S®HE400VHF, R&S®HE400UWB, R&S®HE400LP, R&S®HE400CEL, R&S®HE400SCB and R&S®HE400SHF antenna modules and is compatible with the R&S®Spectrum Rider FPH, R&S®FSH13 and R&S®FSH20 handheld spectrum analyzers and the R&S®CableRider ZPH cable and antenna analyzer.

The R&S®HE400BC antenna handle is the cost-effective, basic version. It has a mechanical compass, is fully passive and does not require a power supply. The R&S®HE400BC supports the R&S®HE400HF, R&S®HE400VHF, R&S®HE400UWB, R&S®HE400LP and R&S®HE400SHF antenna modules. The R&S®HE400BC can be used with the R&S®PR200 portable monitoring receiver, the R&S®PR100 portable receiver, the R&S®Spectrum Rider FPH and R&S®FSH handheld spectrum analyzers, the R&S®CableRider ZPH cable and antenna analyzer and any third-party receiver or spectrum analyzer.

ANTENNA MODULES

Operating mode (principle concept)



The R&S®HE400HF antenna module covers a frequency range from 8.3 kHz to 30 MHz and is supported by the R&S®HE400 and R&S®HE400BC antenna handles.

The R&S®HE400VHF antenna module has an operational frequency range from 20 MHz to 200 MHz. The antenna module can be used with all antenna handles.

The frequency range of the R&S®HE400LP antenna module stretches from 450 MHz to 8 GHz. The antenna module operates with all antenna handles.

The R&S®HE400CEL cellular antenna module and the R&S®HE400SCB S/C band antenna module offer a unique and very sophisticated bearing detection mode that delivers highly accurate bearing results over the wide frequency range from 700 MHz to 2.5 GHz and 1.7 GHz to 6 GHz respectively.

The antennas can be switched between normal mode, with a distinct maximum pointing to the front, and delta mode, where the radiation pattern exhibits a steep-edge indent at the boresight. Direction finding based on the minimum signal in delta mode allows users to find the signal source much more accurately and quickly. Both antenna modules are supported by the R&S®HE400 and R&S®HE400MW antenna handles.



R&S®HE400MW microwave handheld directional antenna with R&S®HE400CEL



R&S®HE400MW microwave handheld directional antenna with R&S®HE400SCB



R&S®HE400 handheld directional antenna with R&S®HE400UWB

The R&S®HE400UWB antenna module covers the extremely wide frequency range from 30 MHz to 6 GHz with a single module, addressing the VHF, UHF and lower SHF range. The antenna module operates with all antenna handles.

The frequency range of the R&S®HE400SHF antenna module extends from 5 GHz to 20 GHz. The antenna module works with all antenna handles.

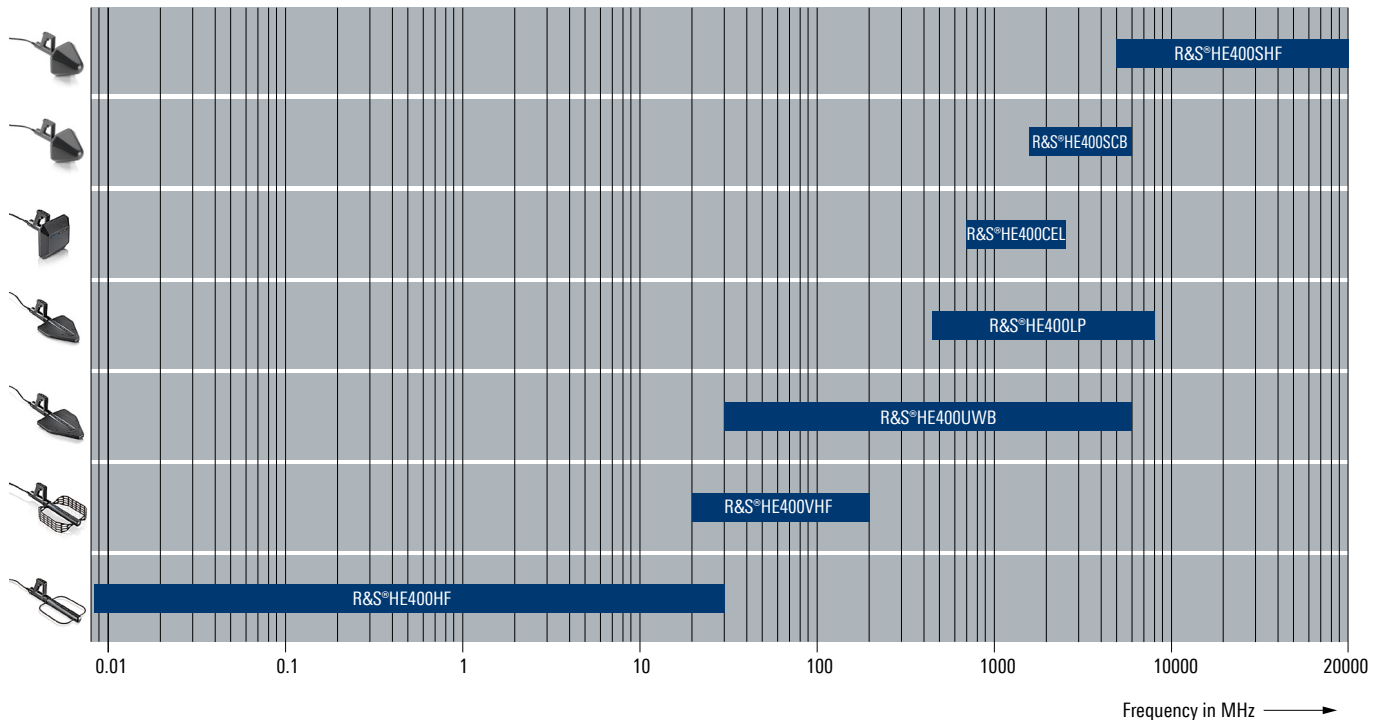
The operating frequency range of the system depends on the lower and upper frequency of the antenna, the receiver or the analyzer.

The R&S®PR200 portable monitoring receiver will support the full frequency range of the SHF antenna module on request.



R&S®HE400MW microwave handheld directional antenna with R&S®HE400SHF

The R&S®HE400 product family covers the frequency range from 8.3 kHz to 20 GHz



ORDERING INFORMATION

Designation	Type	Order No.
Antenna handles		
Handheld directional antenna	R&S®HE400	4104.6000.02
Microwave handheld directional antenna	R&S®HE400MW	4104.6000.03
Basic handheld directional antenna	R&S®HE400BC	4104.6000.04
Antenna modules		
HF antenna module, 8.3 kHz to 30 MHz	R&S®HE400HF	4104.8002.02
VHF antenna module, 20 MHz to 200 MHz	R&S®HE400VHF	4104.8202.02
UWB antenna module, 30 MHz to 6 GHz	R&S®HE400UWB	4104.6900.02
Log-periodic antenna module, 450 MHz to 8 GHz	R&S®HE400LP	4104.8402.02
Cellular antenna module, 700 MHz to 2500 MHz	R&S®HE400CEL	4104.7306.02
S/C band antenna module, 1.7 GHz to 6 GHz	R&S®HE400SCB	4104.7606.02
SHF antenna module, 5 GHz to 20 GHz	R&S®HE400SHF	4104.8602.02
Accessories		
Cable set, for connecting R&S®HE400/HE400MW to R&S®PR100/FSH/FPH/ZPH	R&S®HE400-K	4104.7770.02
Cable set, for connecting R&S®HE400 to R&S®PR200	R&S®HE400-K	4104.7770.03
RF cable, for connecting R&S®HE400BC to R&S®PR200/R&S®PR100/FSH/FPH/ZPH or third-party receivers	R&S®HE400-KB	4104.7770.04
Serial to USB adapter, for connecting R&S®HE400/HE400MW to R&S®FPH	R&S®HE300USB	4080.9440.02
Transport case, for R&S®HE400 antenna family	R&S®HE400Z1	4104.9009.02
Transport bag (small), for R&S®HE400 antenna family (recommended for one or two antenna modules)	R&S®HE400Z2	4104.9050.02
Transport bag (large), for R&S®HE400 antenna family (recommended for three or four antenna modules)	R&S®HE400Z3	4104.9080.02
Tripod, for R&S®HE400 antenna family	R&S®HE400Z4	4104.9109.02
Transport case, for R&S®HE400 antenna family, suitable for R&S®HE400SHF/HE400SCB	R&S®HE400Z5	4104.9015.02
Transport bag, for R&S®HE400 antenna family, suitable for R&S®HE400SHF/HE400SCB	R&S®HE400Z6	4104.9096.02



R&S®HE400Z1 transport case



R&S®HE400Z2 transport bag (small)



R&S®HE400Z3 transport bag (large)



R&S®HE400Z4 tripod



R&S®HE400Z5 transport case suitable for R&S®HE400SHF/HE400SCB



R&S®HE400Z6 transport bag suitable for R&S®HE400SHF/HE400SCB antenna module