150-W HF Dipole HX002A1 with integrated tuning unit

Reliable coverage from 1.5 MHz, in particular over the short and medium ranges

- Single mast installation
- 1.5 MHz to 30 MHz
- No control line required
- Silent tuning
- Reliable transmission links through automatic adaptive operation
- Omnidirectional coverage with high-angle radiation

HF Dipole HX002A1 is highly suitable for providing optimum coverage over all distance ranges. In contrast to rod antennas, for example, it ensures high transmission reliability especially over short and medium distances.

ROHDE&SCHWARZ

Use, operation

With its adaptive behaviour, HF Dipole HX002A1 meets all important requirements made on state-of-the-art communication systems, such as fast frequency change and continuous matching over the whole frequency range from 1.5 MHz to 30 MHz - even with varying conditions in the near field of the antenna.

The HX002A1 can easily be integrated in existing systems since no control line is required. All the control signals and the supply for the ATU are fed via the inner conductor of the antenna RF cable.

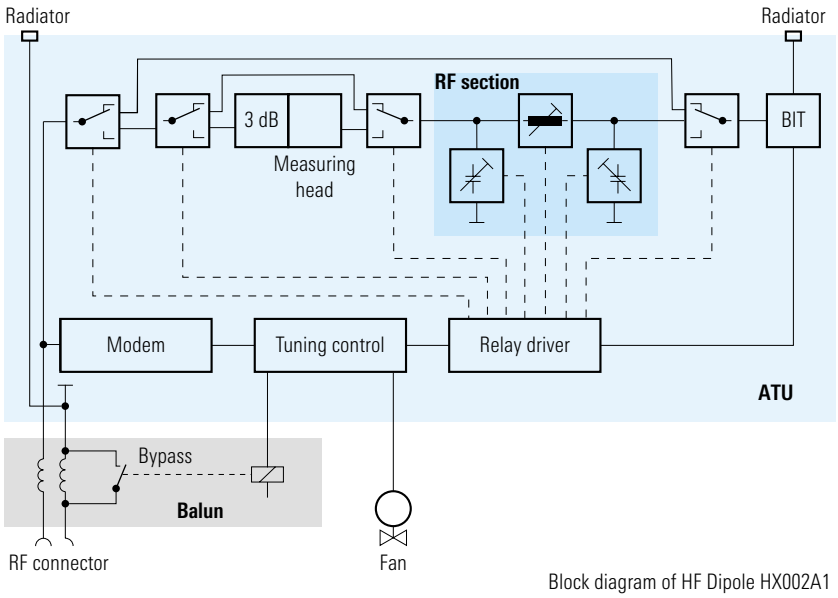
The antenna head carries the radiators and accommodates the automatic ATU as well as the balun. This enables a high radiation efficiency to be obtained (see block diagram above).

High-angle radiation (NVIS: nearly vertically incident skywave) for ensuring omnidirectional coverage at suitable frequencies below approx. 8 MHz is achieved by means of a 15-m mast.

A 5-m mast is available for roof installation of the HF dipole.

For flat emission, i.e. over long distances, the HX002A1 shows the well-known double-circle radiation pattern with two main directions vertical to the dipole axis.

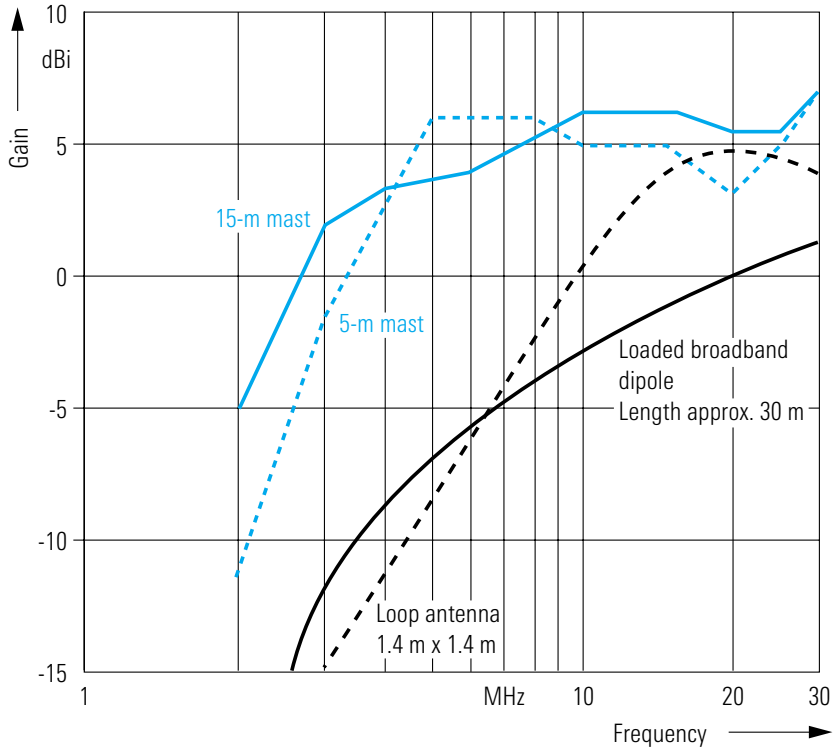
When operating the dipole at frequencies below 2 MHz, the balun is by-passed. In this case, the antenna operates as a top-fed monopole, thus ensuring omnidirectional coverage with ground waves.



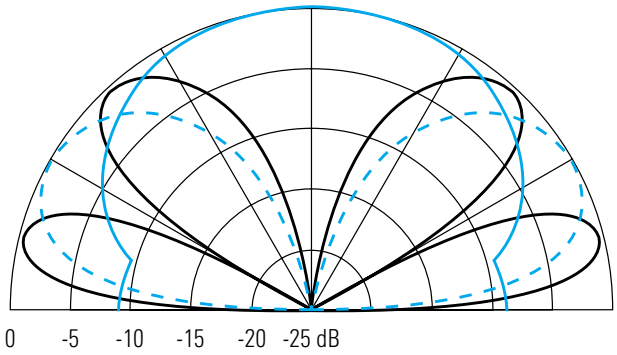
Block diagram of HF Dipole HX002A1

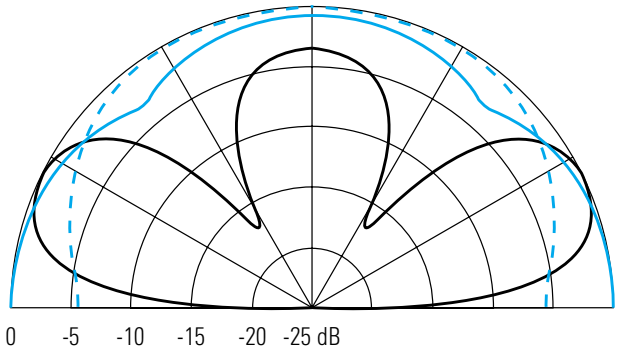
HF Dipole HX002A1 can be directly connected to the HF Transceivers XK2100 from Rohde&Schwarz. To connect transmitters of other type or from other manufacturers, Junction Unit GX002A1 is available to provide power supply and tuning control.

HF Dipole HX002 from Rohde&Schwarz (see data sheet PD 757.1102) is recommended for the coverage over medium and long distances at 1 kW transmitting power.



Gain curve of HF Dipole HX002A1 over ideal conducting plane (15-m mast in the field or 5-m mast on a roof); as a comparison: loop antenna and loaded broadband dipole





Vertical radiation patterns of HF Dipole HX002A1 over ideal conducting plane;
left: installed on a 15-m mast at 3 MHz (continuous blue line), 10 MHz (dotted blue line) and 20 MHz (continuous black line);
right: installed on a 5-m mast (on large area roof) at 2 MHz (continuous blue line), 10 MHz (dotted blue line) and 30 MHz (continuous black line)

Specifications

Frequency	1.5 MHz to 30 MHz
Max. permissible input power	150 W PEP/100 W CW
Input impedance	50 Ω
SWR	typ. ≤1.3 (max. 1.5)
Polarization	horizontal
Vertical patterns	see above
Gain	see bottom half of page opposite
Tuning time	typ. 200 ms
Initial tuning	typ. 3 s (≤6 s)
Silent tuning	≤30 ms
Tuning power	30 W to 100 W
with Junction Unit GX002A1	50 W to 100 W
RF connector	N female
EMC	meets MIL-STD-461 B
EMP protection	lightning and NEMP protection

General data

Operating temperature range	–25 °C to +55 °C
Storage temperature range	–40 °C to +85 °C
Permissible wind speed	
without ice accretion	188 km/h (meets DIN 4143)
with 3 cm radial ice accretion	130 km/h
Wind load (at 188 km/h)	960 N (without ice accretion)
MTBF (at +25 °C)	
HX002A1	12,000 hours
GX002A1	15,000 hours
Power supply	via GX002A1
AC supply	100/120/230 V ± 10%, 47 Hz to 63 Hz (100 VA)
Battery	+22 V to +32 V, typ. 2.5 A at +24 V +23 V to +32 V with use of a 60-m cable of type RG 213/U
Dimensions	
HX002A1	approx. 10.7 m x 4.4 m
GX002A1 (W x H x D)	483 mm x 133 mm x 390 mm
Dipole weight	approx. 37.5 kg

Ordering information

HF Dipole (with tuning unit)	HX002A1	4031.8009.02
Junction Unit		
Bench model	GX002A1	4031.9005.02
Recommended extras		
5-m folding mast, for roof mounting, with guy ropes	KM002A1	4035.7359.02
RF cable (without connector)		
Recommended length up to 60 m	RG213/U	0025.4580.00
up to 120 m	LCF3/8" Cu2Y	4031.2175.00
N connector (for RG213/U)		0018.4472.00
Set of cables (RF cable and control cable) between GX002A1 and Transceiver XK852	GX002K1	
Length 3 m		4031.8909.03
Other lengths on request		4031.8909.02

Certified Quality System ISO 9001 DQS REG. NO 1954

Certified Environmental System ISO 14001 REG. NO 1954 QS

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