

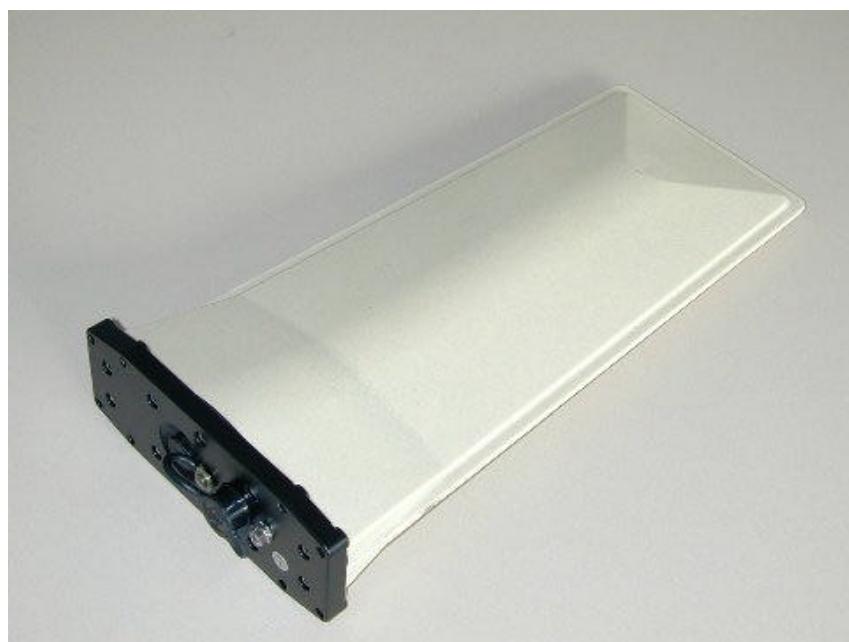
# Active Receiving Antenna

# HE 500

20 MHz to 3000 MHz

## Technical Information

Subject to change [2002-08-26, 8GEP-Dp]



# Active Receiving Antenna HE 500

## Technical Information

### **1 Uses**

Broadband Active Receiving Antenna HE 500 is designed as a monitoring antenna for vertical polarization in the frequency range 20 MHz to 3 GHz.

The antenna is characterized by compact design and low weight. It is accommodated in a sturdy, weatherproof glass fiber reinforced plastic (GRP) radome.

The GRP radome protects the antenna against the effects of weather and high wind speeds.

Active Receiving Antenna HE 500 offers good reception results despite its compact size and is therefore ideal for use in mobile systems and environments where space is at a premium.

### **2 Description**

Antenna HE 500 consists of two active antennas arranged one on top of the other for the frequency ranges 20 MHz to 1000 MHz and 1 GHz to 3 GHz.

The two frequency subranges are combined via a diplexer.

HE 500 is powered at its RF output from a bias unit IN500 (no part of delivery) connected to the coaxial cable of the antenna.

The antenna operates on supply voltages from 18 V to 32 V. With limited specifications operation is even possible from 10 V upwards. A voltage regulator in the antenna adjusts the amplifier voltages.

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## Technical Information

### **3 Specifications**

Frequency range.....	20 MHz to 3 GHz
Polarization.....	vertical
Antenna patterns .....	see Fig. 1 to Fig. 4
Antenna factor k = 20 lg (E/V <sub>out</sub> ) .....	see Fig. 5
Field strength sensitivity .....	see Fig. 6
Destructive field strength	
up to 10 MHz .....	> 50 V/m (typ.)
10 MHz to 20 MHz .....	> 20 V/m (typ.)
20 MHz to 3 GHz.....	> 10 V/m (typ.)
Linearity of antenna circuitry.....	IP2 = 50 dBm to = 30 dBm, 20 MHz to 3 GHz (typ.) IP3 = 25 dBm (typ.)
Power supply .....	via RF cable 18 V DC to 32 V DC, max. 180 mA (limited specs from 10 V DC to 18 V DC)
RF connector.....	N type (female), 50 Ω (for VSWR see Fig. 7)
Dimensions .....	171 mm x 65 mm x 366 mm (L x W x H), see Fig. 8 and Fig. 9
Weight .....	approx. 1.2 kg
Flange dimensions .....	see Fig. 9
Permissible wind speed	
without ice deposit .....	narrow side: 600 km/h (max. ±15°) broad side: 250 km/h
with 30 mm ice deposit .....	narrow side: 200 km/h broad side: 200 km/h
Operating temperature range.....	-40 °C to +65 °C
Storage temperature range .....	-40 °C to +85 °C
Humidity .....	95 % at 25 °C/55 °C to DIN EN 600 68-2-30
Vibration resistance .....	random: 10 Hz to 300 Hz: 0.01 g <sup>2</sup> /Hz 300 Hz to 500 Hz: 0.003 g <sup>2</sup> /Hz
Shock resistance.....	max. 40 g, spectrum 45 Hz to 2000 Hz
Waterproofness .....	IP55 to DIN 40050
MTBF .....	> 50,000 h (MIL: GROUND FIXED 25 °C)

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## Technical Information

### **4 Accessories Supplied**

Manual ..... 4059.2040.34

### **5 Order Designation**

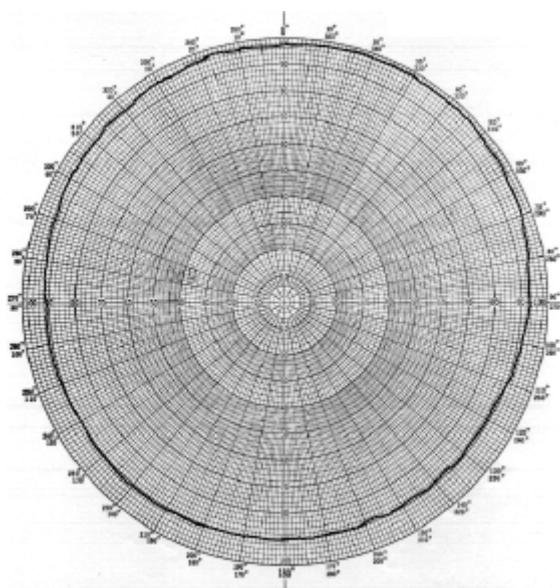
Active Receiving Antenna HE 500 ..... 4059.2005.02

### **6 Recommended Extras**

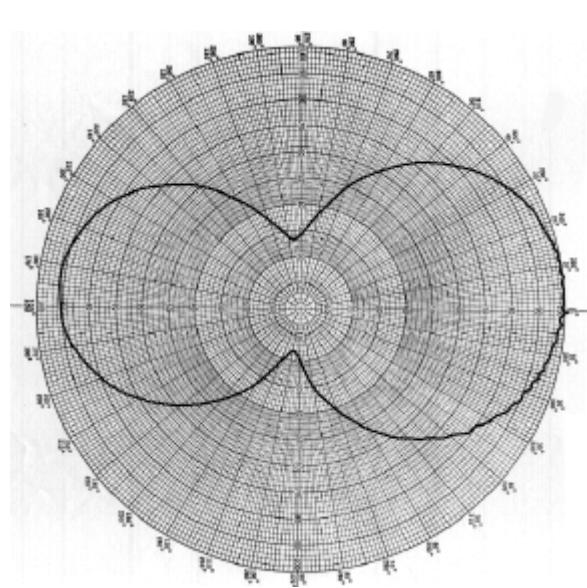
Bias Unit IN 500 ..... 4062.0880.02  
(incl. power supply)

# Active Receiving Antenna HE 500

## Technical Information



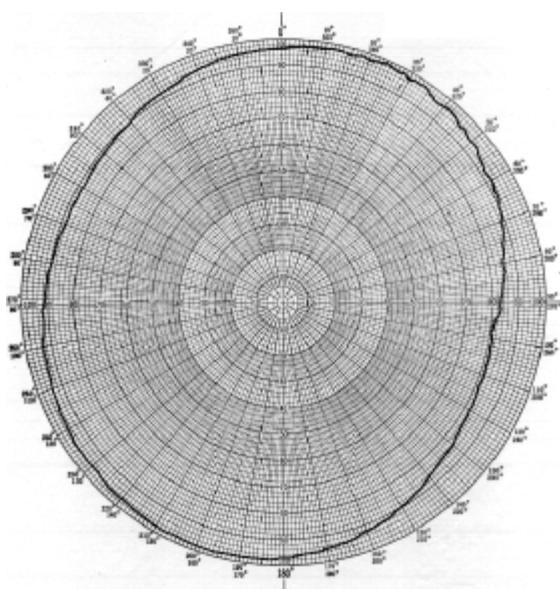
Horizontaldiagramm/Horizontal pattern



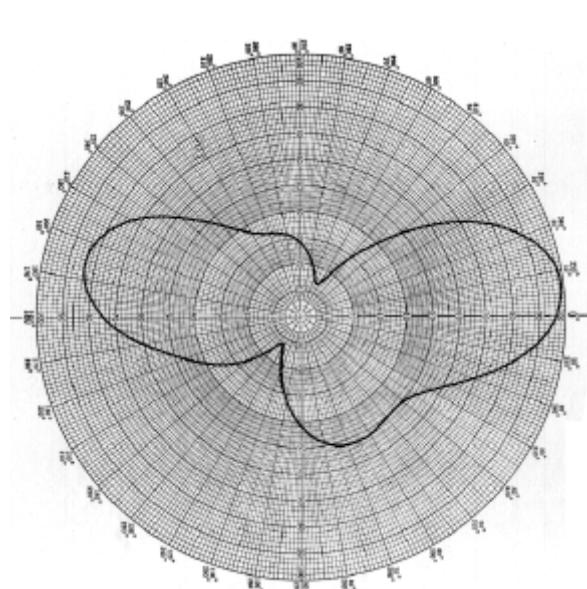
Vertikaldiagramm/Vertical pattern

**Bild 1 Typische Antennendiagramme 0,02 GHz bis 0,4 GHz**

**Fig. 1 Typical antenna patterns from 0.02 GHz to 0.4 GHz**



Horizontaldiagramm/Horizontal pattern



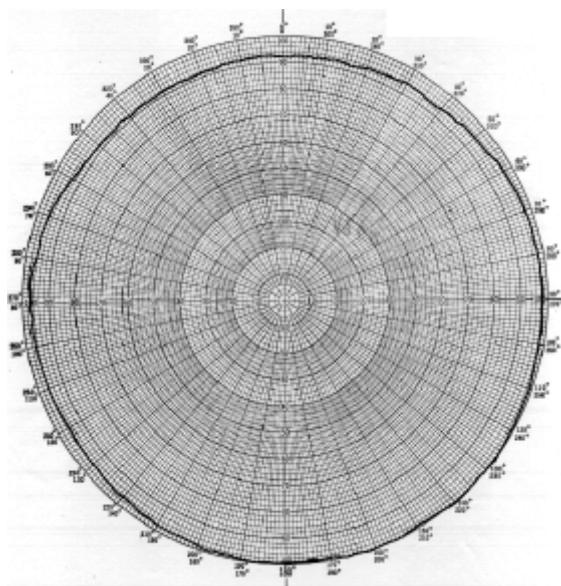
Vertikaldiagramm/Vertical pattern

**Bild 2 Typische Antennendiagramme 0,8 GHz**

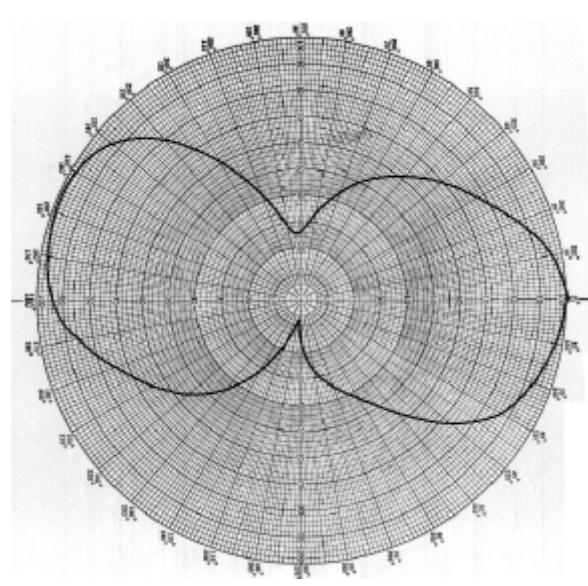
**Fig. 2 Typical antenna patterns at 0.8 GHz**

# Active Receiving Antenna HE 500

## Technical Information

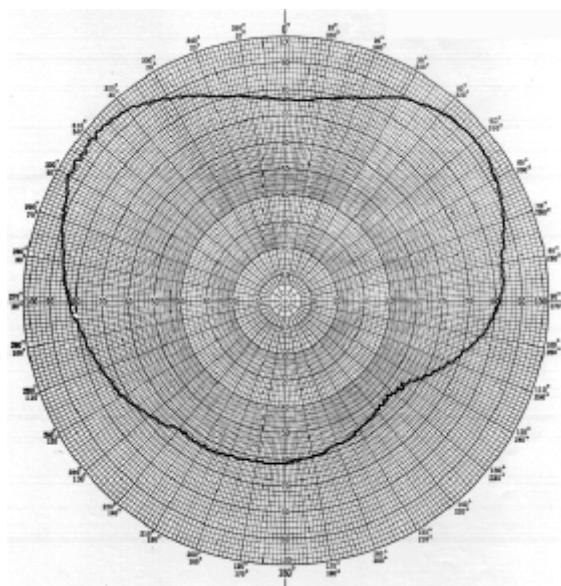


Horizontaldiagramm/Horizontal pattern

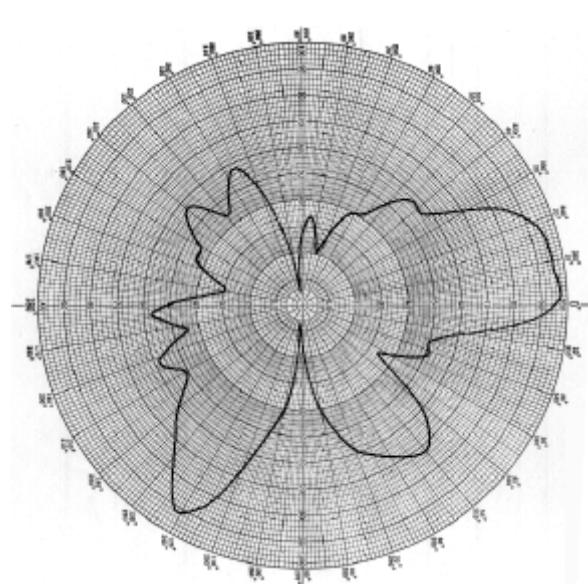


Vertikaldiagramm/Vertical pattern

**Bild 3 Typische Antennendiagramme 1,2 GHz**  
**Fig. 3 Typical antenna patterns at 1.2 GHz**



Horizontaldiagramm/Horizontal pattern

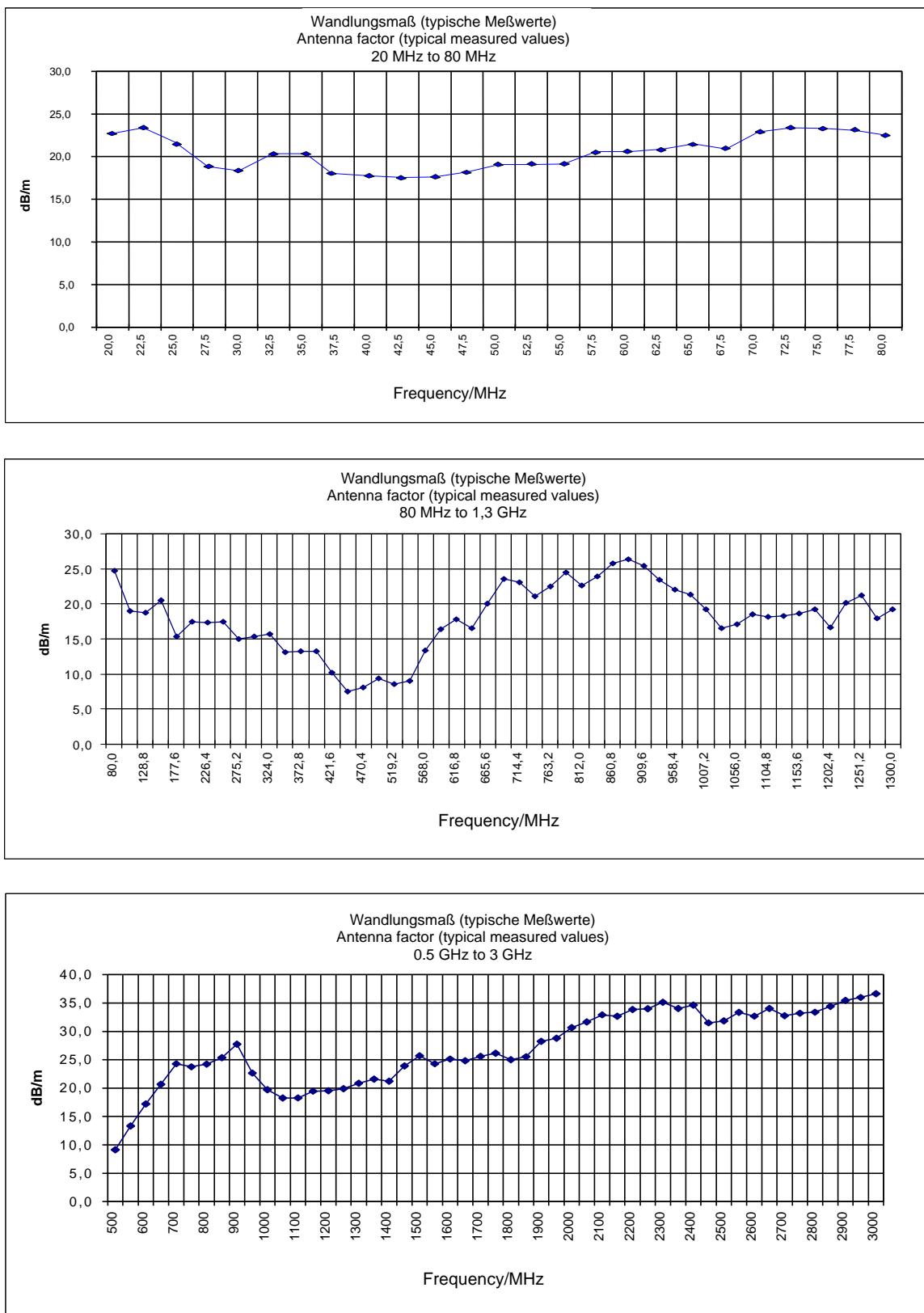


Vertikaldiagramm/Vertical pattern

**Bild 4 Typische Antennendiagramme 3 GHz**  
**Fig. 4 Typical antenna patterns at 3 GHz**

# Active Receiving Antenna HE 500

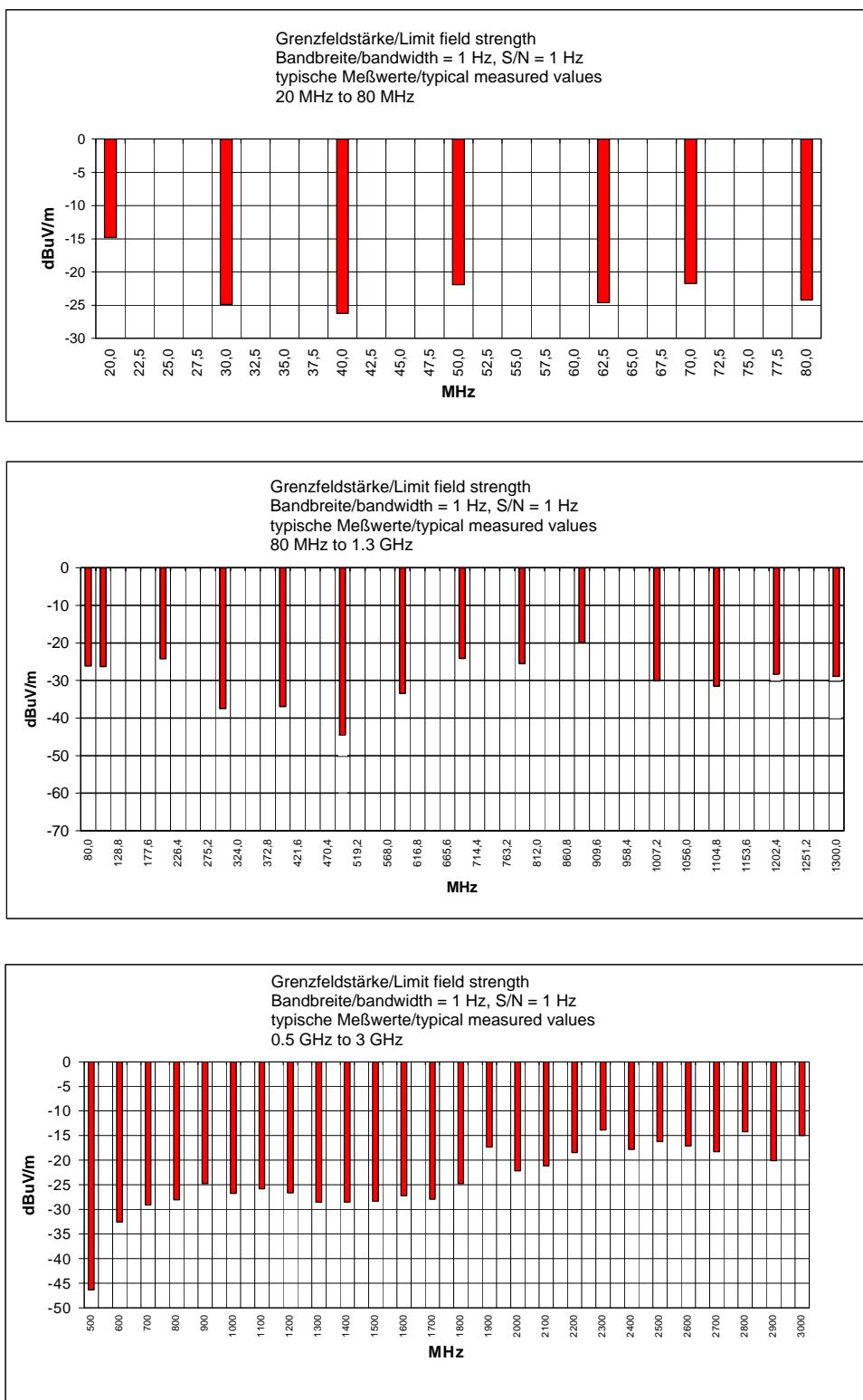
## Technical Information



**Bild 5 Wandlungsmaß (in Hauptempfangsrichtung)**  
**Fig. 5 Antenna factor (in main direction of reception)**

# Active Receiving Antenna HE 500

## Technical Information

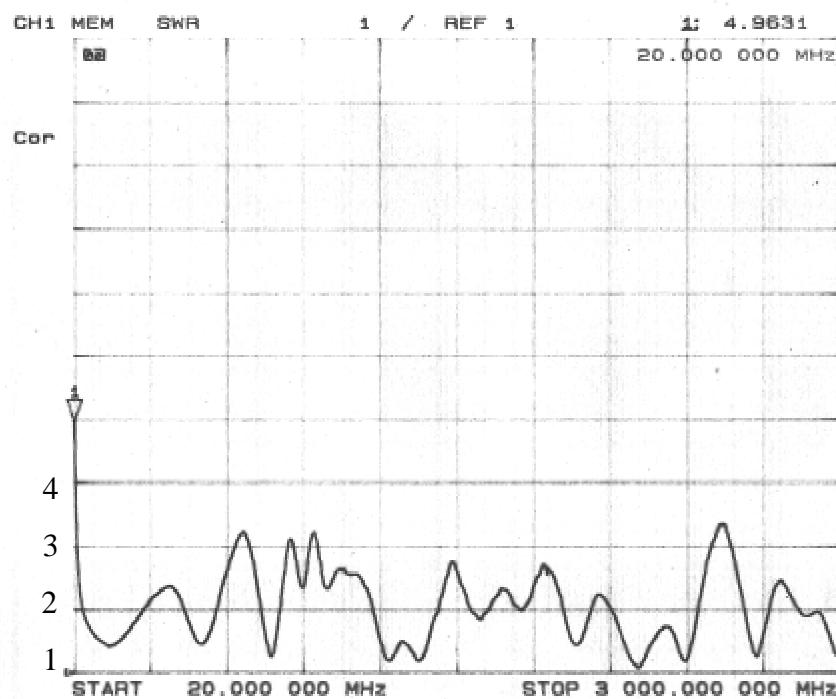


**Bild 6** Feldstärkeempfindlichkeit ( $S/N=1$ ) bezogen auf 1-Hz-Bandbreite  
(in Hauptempfangsrichtung)

**Fig. 6** Field strength sensitivity ( $S/N = 1$ ) referred to 1 Hz bandwidth  
(in main direction of reception)

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## Technical Information

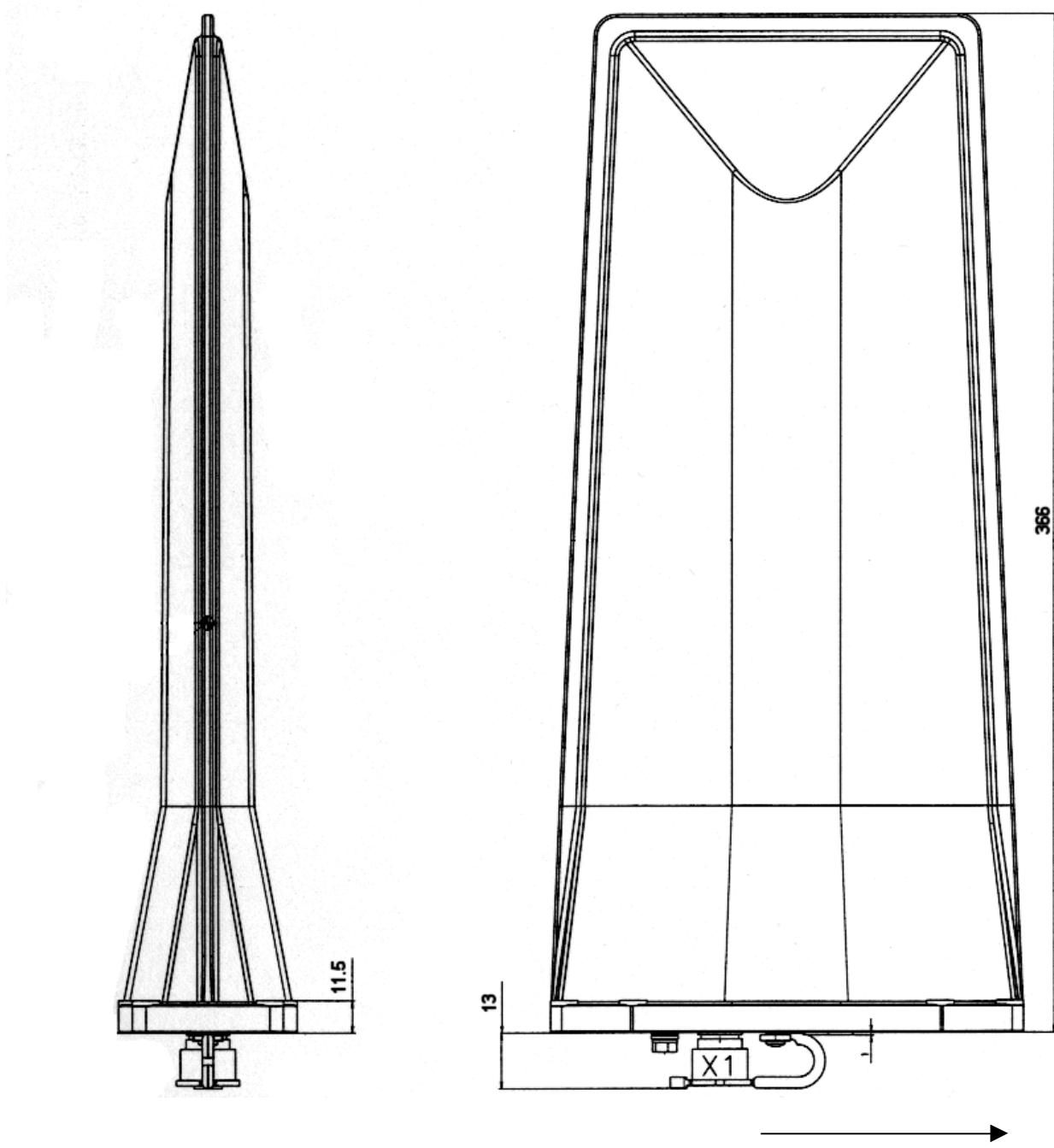


**Bild 7 Typische VSWR-Kurve**

**Fig. 7 Typical VSWR curve**

# Active Receiving Antenna HE 500

## Technical Information



**Bild 8 Abmessungen**

**Fig. 8 Dimensions**

# Active Receiving Antenna HE 500

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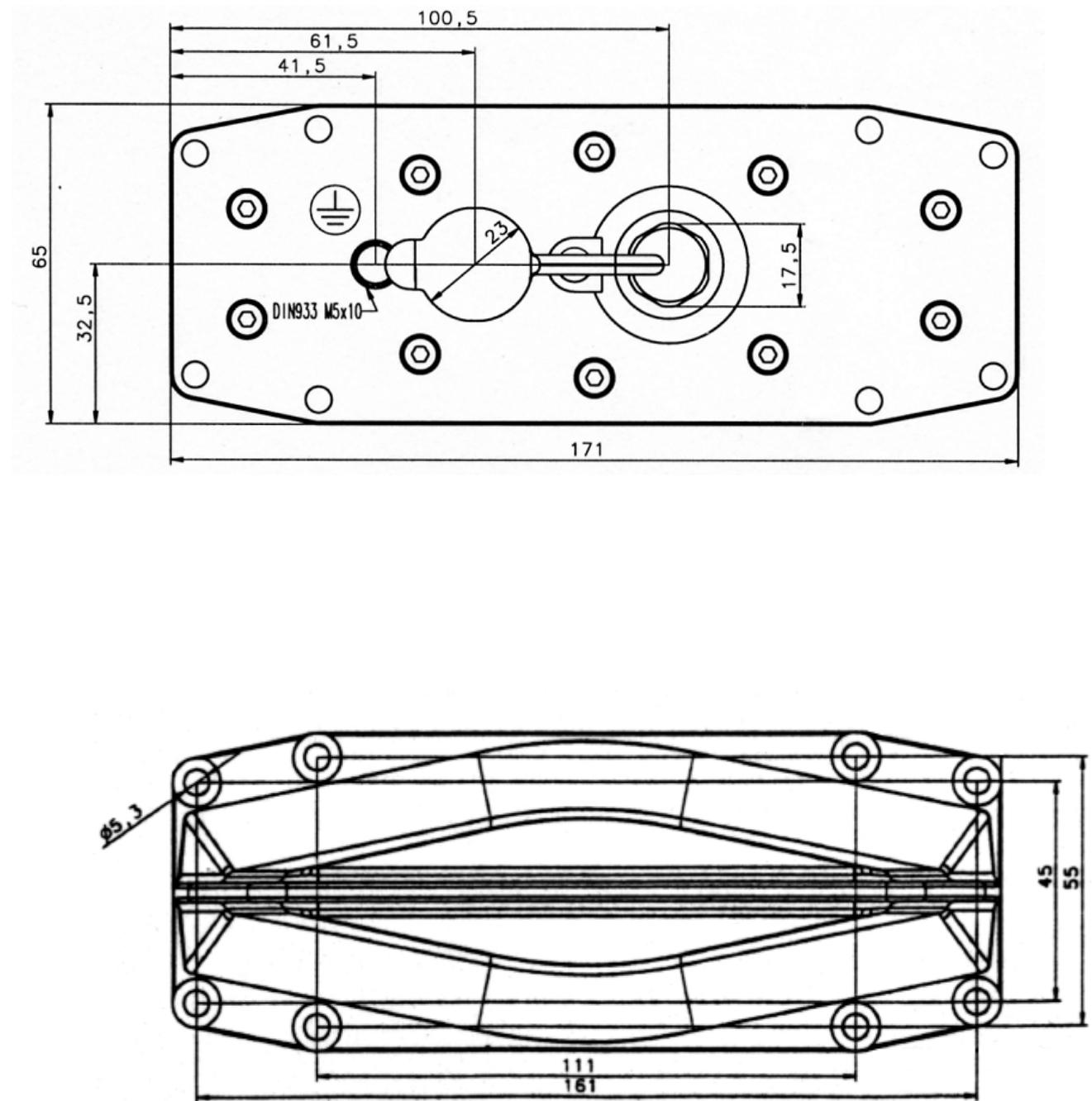


Bild 9 Flanschabmessungen und Befestigungspunkte

Fig. 9 Flange dimensions and fixing points