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.
3 Specifications

Frequency range .......................................................... 20 MHz to 3 GHz
Polarization ............................................................... vertical
Antenna patterns .......................................................... see Fig. 1 to Fig. 4
Antenna factor $k = 20 \lg \left( \frac{E}{V_{\text{out}}} \right) $ .......................................................... see Fig. 5
Field strength sensitivity ............................................. see Fig. 6
Destructive field strength
  up to 10 MHz .......................................................... $> 50 \text{ V/m (typ.)}$
  10 MHz to 20 MHz .................................................. $> 20 \text{ V/m (typ.)}$
  20 MHz to 3 GHz .................................................. $> 10 \text{ V/m (typ.)}$
Linearity of antenna circuitry ........................................ ${\text{IP}_2 = 50 \text{ dBm to } = 30 \text{ dBm, 20 MHz to 3 GHz (typ.)}}$
  ${\text{IP}_3 = 25 \text{ dBm (typ.)}}$
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 $\Omega$
  (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$^2$/Hz
  300 Hz to 500 Hz: 0.003 g$^2$/Hz
Shock resistance ....................................................... max. 40 g, spectrum 45 Hz to 2000 Hz
Waterproofness ...................................................... IP55 to DIN 40050
MTBF ................................................................. $> 50,000 \text{ h (MIL: GROUND FIXED 25 °C)}$
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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)
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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
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Bild 3  Typische Antennendiagramme 1,2 GHz
Fig. 3  Typical antenna patterns at 1.2 GHz

Bild 4  Typische Antennendiagramme 3 GHz
Fig. 4  Typical antenna patterns at 3 GHz
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Bild 5 Wandlungsmaß (in Hauptempfangsrichtung)
Fig. 5 Antenna factor (in main direction of reception)
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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Bild 7  Typische VSWR-Kurve
Fig. 7  Typical VSWR curve
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Bild 8 Abmessungen
Fig. 8 Dimensions

main direction of reception
Bild 9  Flanschabmessungen und Befestigungspunkte
Fig. 9  Flange dimensions and fixing points