

DUAL-POLARIZED REFLECTOR ANTENNA

R&S[®] AC025DP

Technical Information

Subject to change
Product ID: 4062.5882.02 - 01



ROHDE & SCHWARZ

DUAL-POLARIZED REFLECTOR ANTENNA R&S®AC025DP
Technical Information

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DUAL-POLARIZED REFLECTOR ANTENNA R&S®AC025DP

Technical Information

1 General

The Dual-Polarized Reflector Antenna R&S®AC025DP covers a wide frequency range extending from 18 GHz to 40 GHz.

Due to the integration of low-noise preamplifiers, its main area of application is the reception of weak microwave signals.

R&S®AC025DP is designed for mobile use with its own tripod (e.g. R&S®HZ-1) and adapter (e.g. R&S®KA308R2). It can be used to extend the frequency range of the R&S®AC008 Directional Microwave Antenna system. Furthermore, it is also suitable for stationary use in conjunction with the R&S®AC090 and R&S®AC300 microwave systems. These systems are designed so that the R&S®AC025DP can be mounted rapidly. Their operating concept has also been constructed with remote control of the R&S®AC025DP antenna in mind.

2 Design and operation

The R&S®AC025DP is a Cassegrain dual-reflector antenna. It comprises the main reflector, diameter approx. 320 mm, a subreflector with a diameter of approx. 40 mm and a feed which contains two linear, mutually orthogonal polarizations.

Two low-noise amplifiers, one for each polarization, are connected to the feed. Then, the signals are routed to the rear via two cables with K connectors. The orientation of the polarization planes is indicated by means of lines on the back of the antenna.

The antenna has been designed for rapid and simple mounting using the appropriate counter adapter – even when rotated through 45°.

The mechanical design of the R&S®AC025DP is very rugged.

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3 Assembly and startup

The R&S®AC090, and R&S®AC300 microwave systems are prepared beforehand so that the R&S®AC025DP can be mounted rapidly. Depending on the direction of polarization, the antenna, fitted with the appropriate mounting device, is inserted into the clamp on the large reflector, pushed back to the stop and locked into position with the locking handle on the instrument's bolt. For more information consult the relevant antenna system manual.

The R&S®AC025DP can be directly mounted onto the Wooden Tripod R&S®HZ-1 with the adapter R&S®KA308R2.

The receiver connectors are X22 and X32. A suitable microwave cable should be used. Power (e.g. from the R&S®IN308 Power supply unit) is fed to connector X24 via a suitable control cable that is wired up as indicated in figure 10.

When the supply voltage has been connected, the antenna should meet its specified data after a warm-up time of approx. 10 min.

4 Safety instructions



To maximize the sensitivity of the R&S®AC025DP microwave antenna, low-noise amplifiers are connected at the feed output. For the same reason, no voltage limiters or by-pass circuits have been used.

Generally speaking, the field strengths encountered when sighting satellites or produced by the secondary lobes of radio hops are not capable of overdriving or even destroying the amplifiers. However, if the antenna is set up near to large radar systems, e.g. at airports, very high field strengths may be produced which, under certain circumstances, could destroy the amplifiers. As a rule, the field strength values listed below should not be exceeded:

30 V/m @ 18 GHz

30 V/m @ 40 GHz

This antenna contains electrostatically sensitive devices.

Electrostatically sensitive devices require special handling.

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5 Technical data

Antenna

Main reflector	approx. 320 mm diameter
Frequency range	18 GHz to 40 GHz
Gain (output K-female)	typ. 26 dBi to 32 dBi, (refer to figure 2)
HPBW and radiation pattern	4.5 ° to 2.0 °, (refer to figures 3 to 8)
Polarization	2 x linear, mutually orthogonal
Deviation of electrical to mechanical axis	1° (max.)

Amplifier unit ¹

Frequency range	18 GHz to 40 GHz
Noise figure	5.0 dB (max.)
Gain	28 dB (min.)
Output power.....	> 5 dBm at 1-dB-Compression
Max. input signal	17 dBm CW
DC-Input.....	+15 V (+0 V/-3 V) / 0.5 A (max.)

General

HF-Connection	2x K-female (compatible to PC-2.92)
Nominal impedance.....	50 Ω
VSWR (output)	2.5 (typ.), < 3.0, (refer to figure 1)

¹ Electrical data valid at +25°C

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Mechanical data

Dimensions	(refer to figure 11)
Diameter.....	approx. 320 mm
Length	approx. 340 mm
Weight.....	approx. 5 kg
Max. permissible wind speed.....	200 km/h (without ice accretion)
MTBF (acc. to EN 61709).....	> 50 000 h

Environmental data

Operating temperature range	-30 °C to +55 °C
Storage temperature range	-40 °C to +70 °C
Protection class.....	IP 45 (acc. to EN 60 529)

6 Ordering information and scope of delivery

Ordering information

Dual-polarized reflector antenna R&S®AC025DP with two preamplifiers, 2x K-female	4062.5830.02
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Recommended extras

Power supply R&S®IN308	4059.6752.02
Wodden tripod R&S®HZ-1	0837.2310.02
Adapter for tripod R&S®HZ-1 R&S®KA308R2	4057.8606.00

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7 Figures

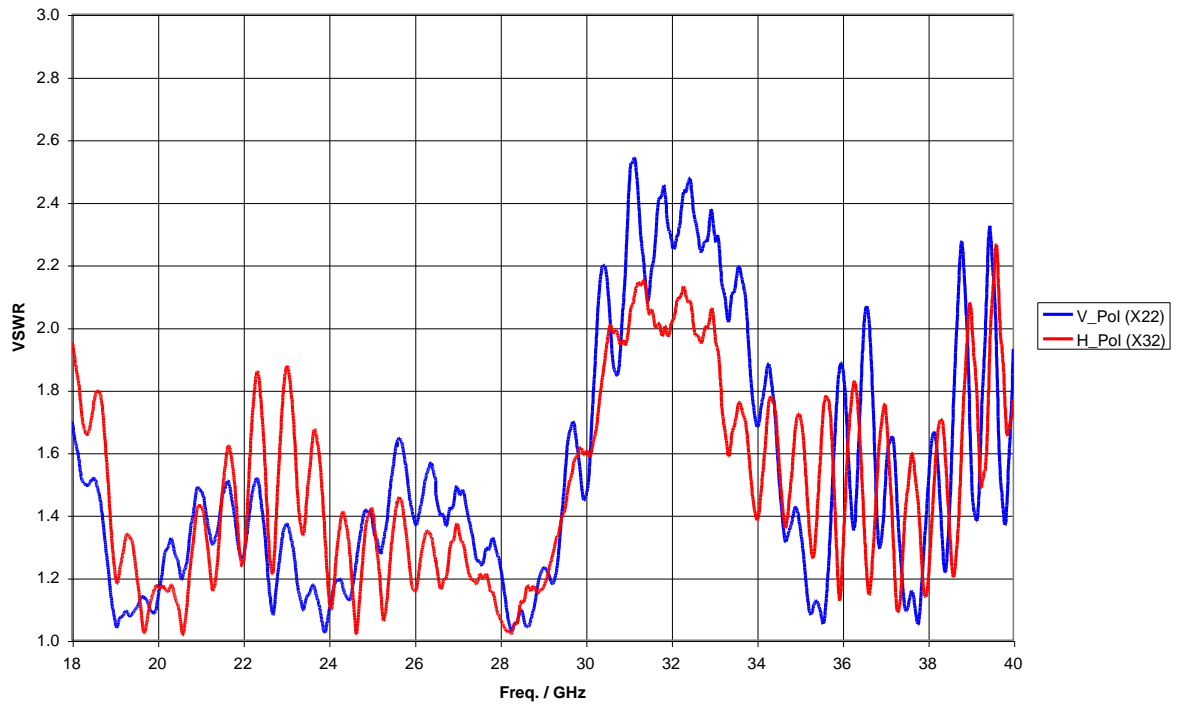


Figure 1: Typ. VSWR of R&S®AC025DP

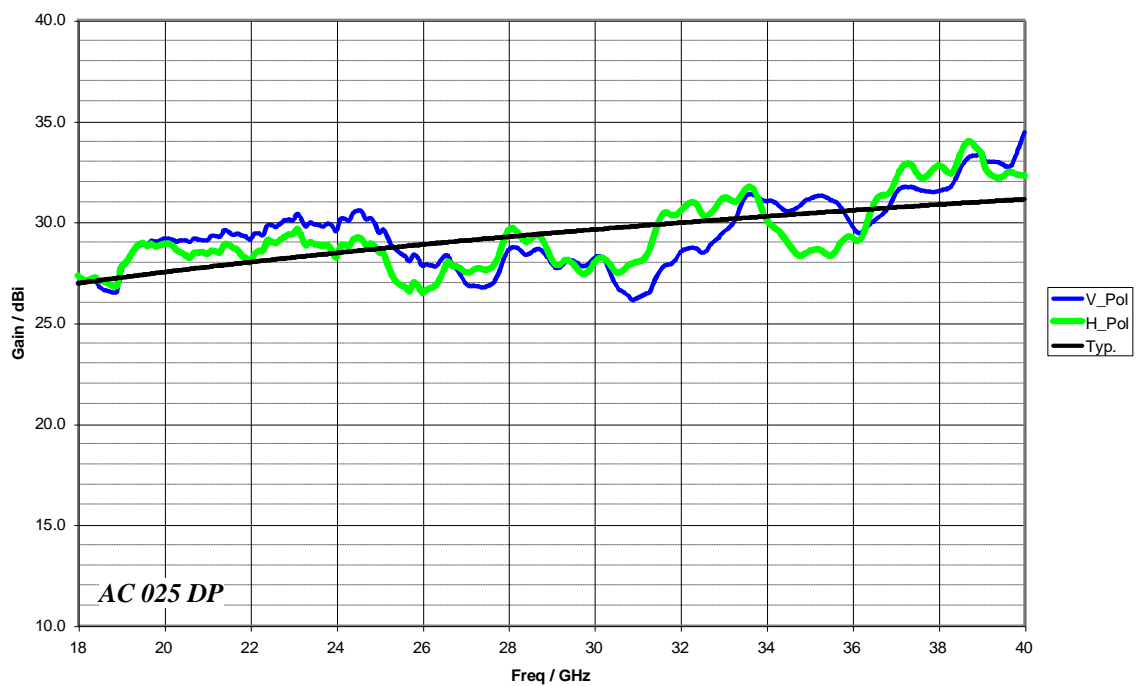


Figure 2: Typ. gain of R&S®AC025DP

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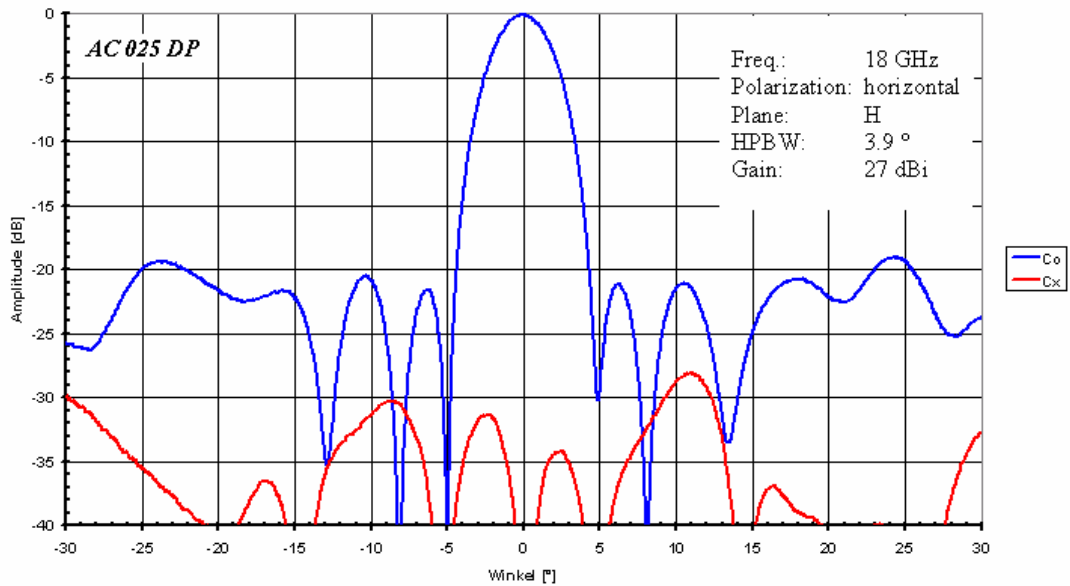


Figure 3: Typ. radiation pattern of R&S®AC025DP at 18 GHz (H-plane)

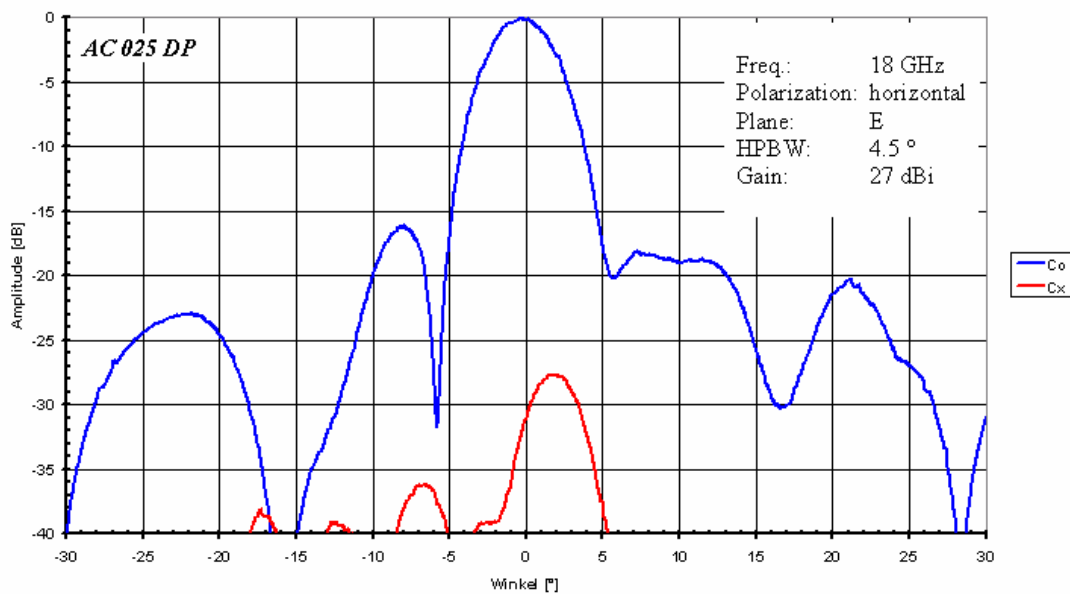


Figure 4: Typ. radiation pattern of R&S®AC025DP at 18 GHz (E-plane)

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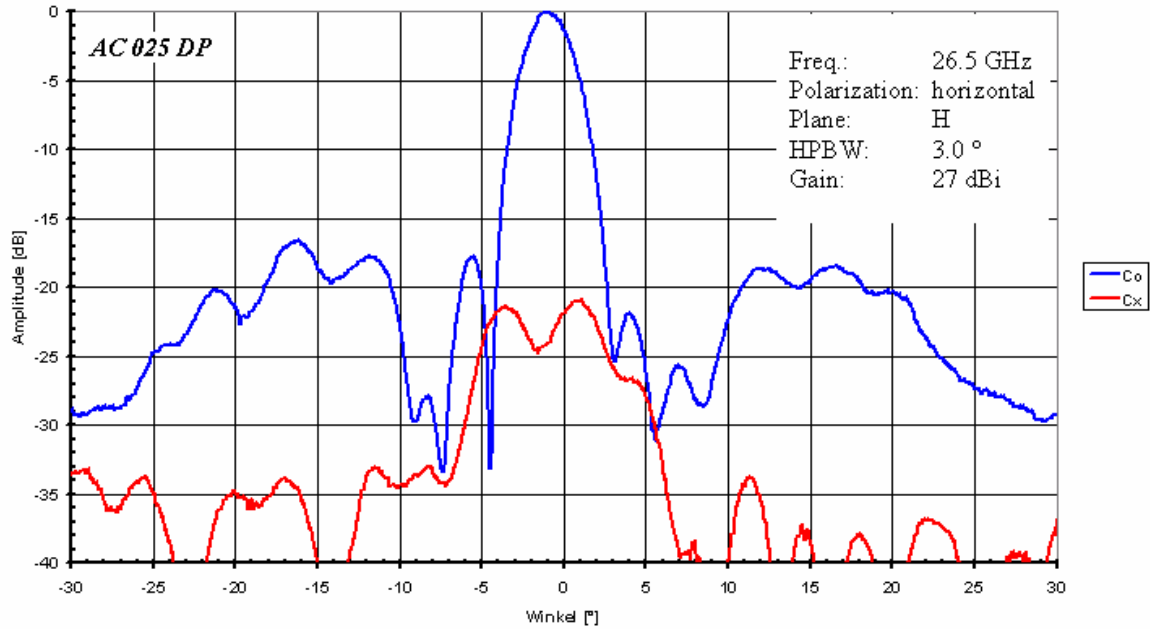


Figure 5: Typ. radiation pattern of R&S®AC025DP at 26.5 GHz (H-plane)

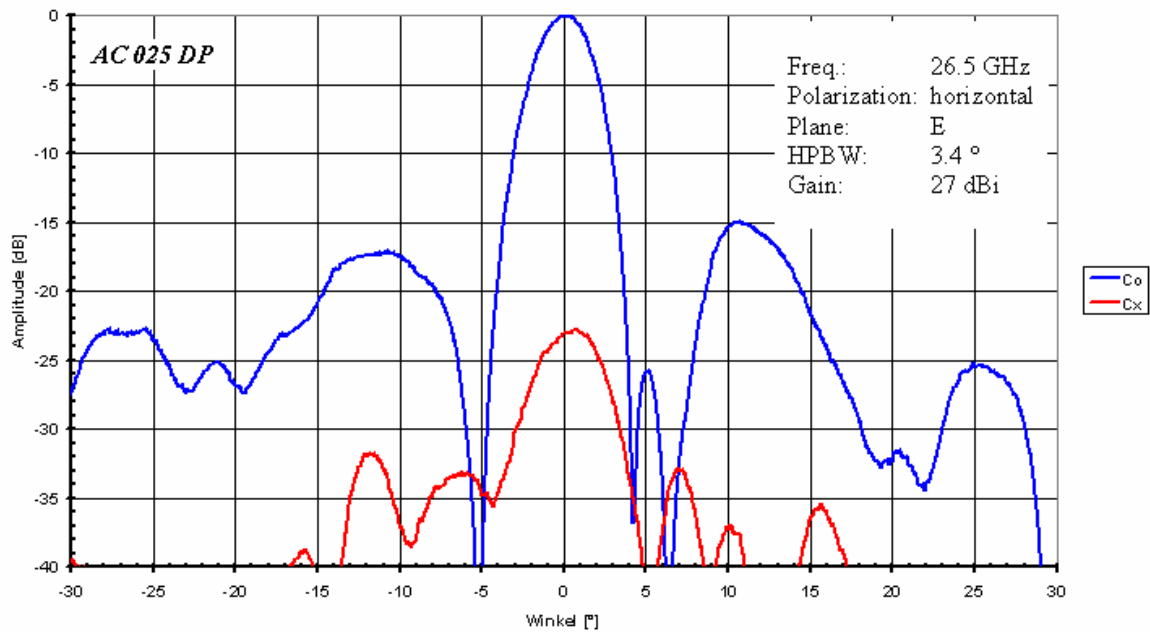


Figure 6: Typ. radiation pattern of R&S®AC025DP at 26.5 GHz (E-plane)

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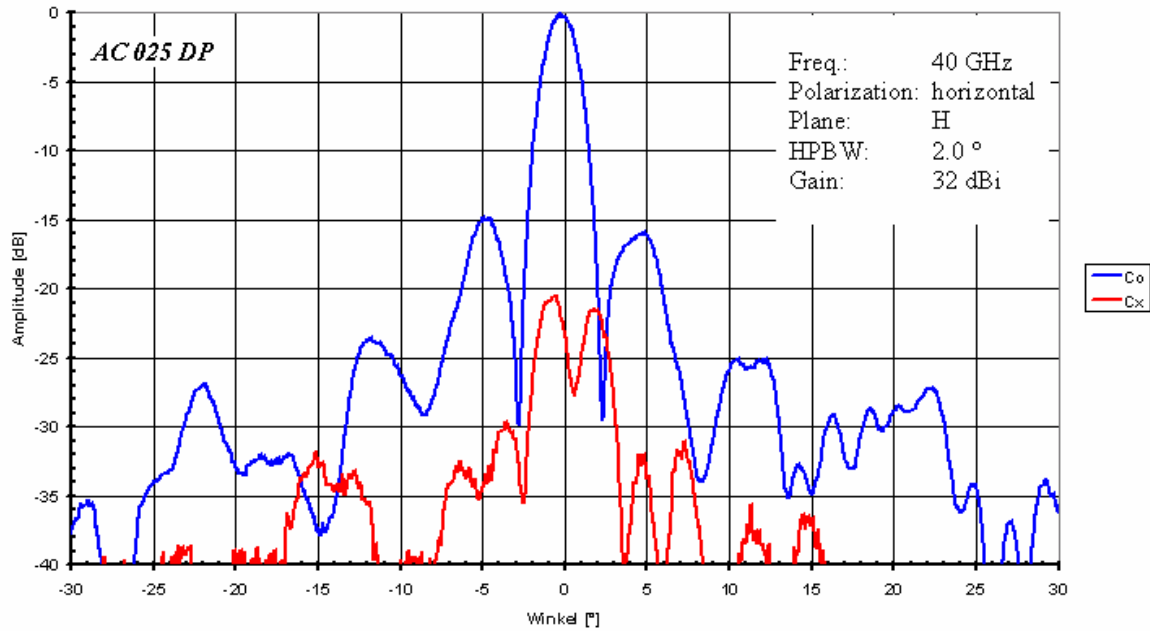


Figure 7: Typ. radiation pattern of R&S®AC025DP at 40 GHz (H-plane)

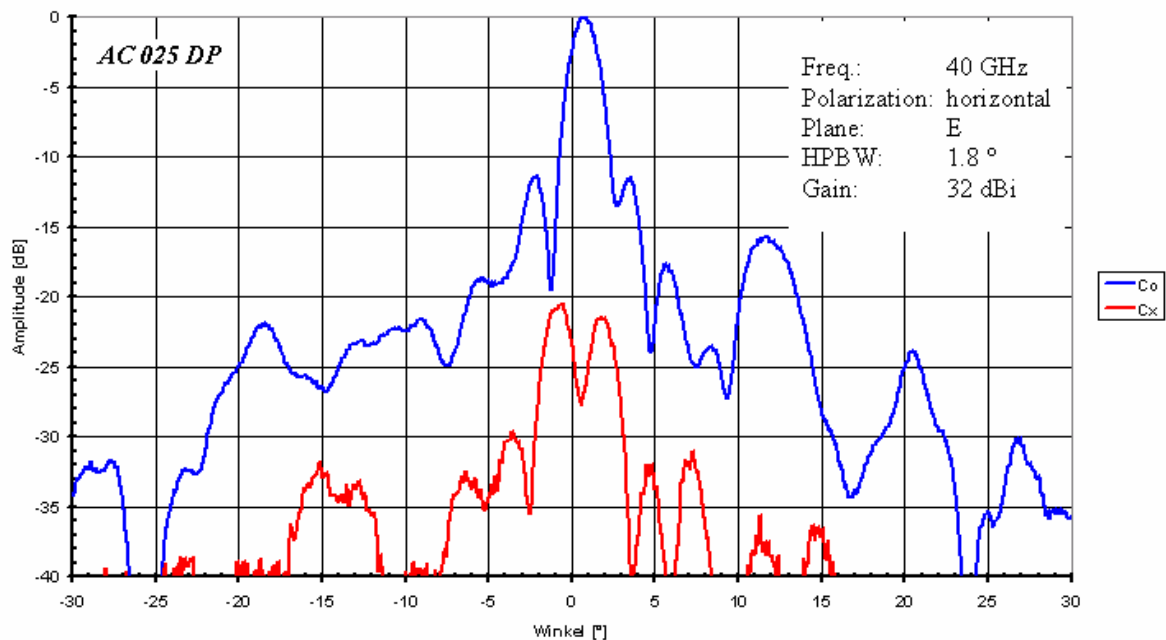


Figure 8: Typ. radiation pattern of R&S®AC025DP at 40 GHz (E-plane)

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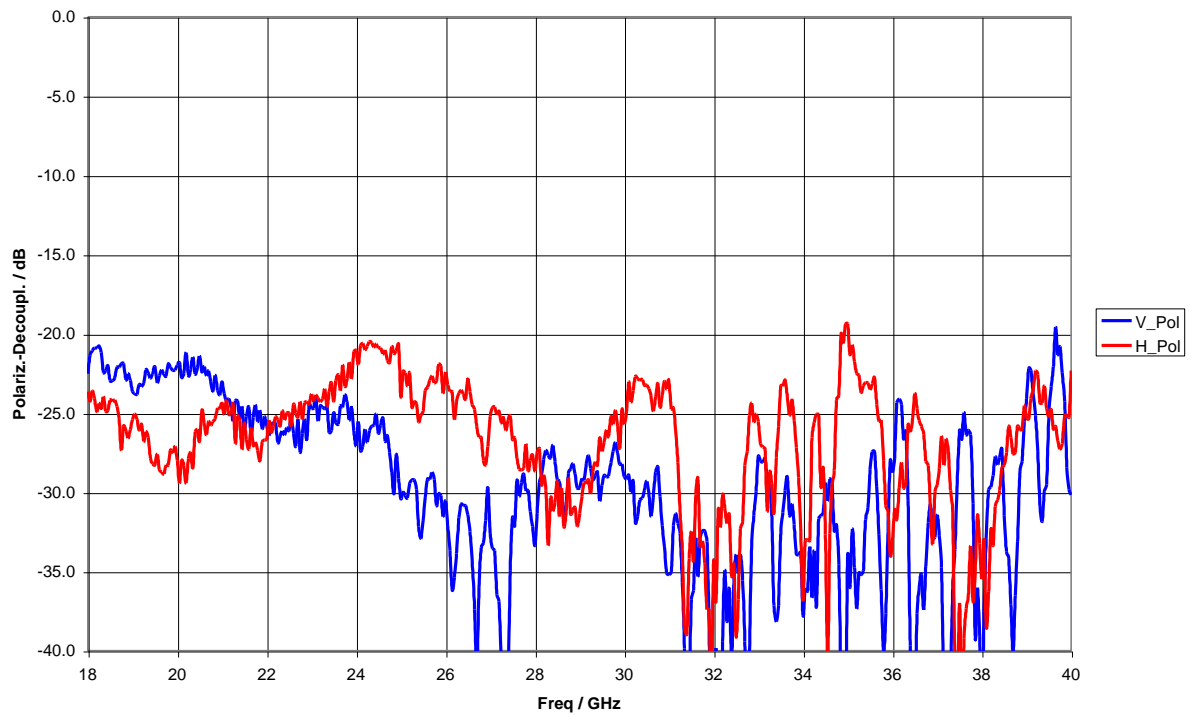


Figure 9: Typ. polarization decoupling of R&S®AC025DP

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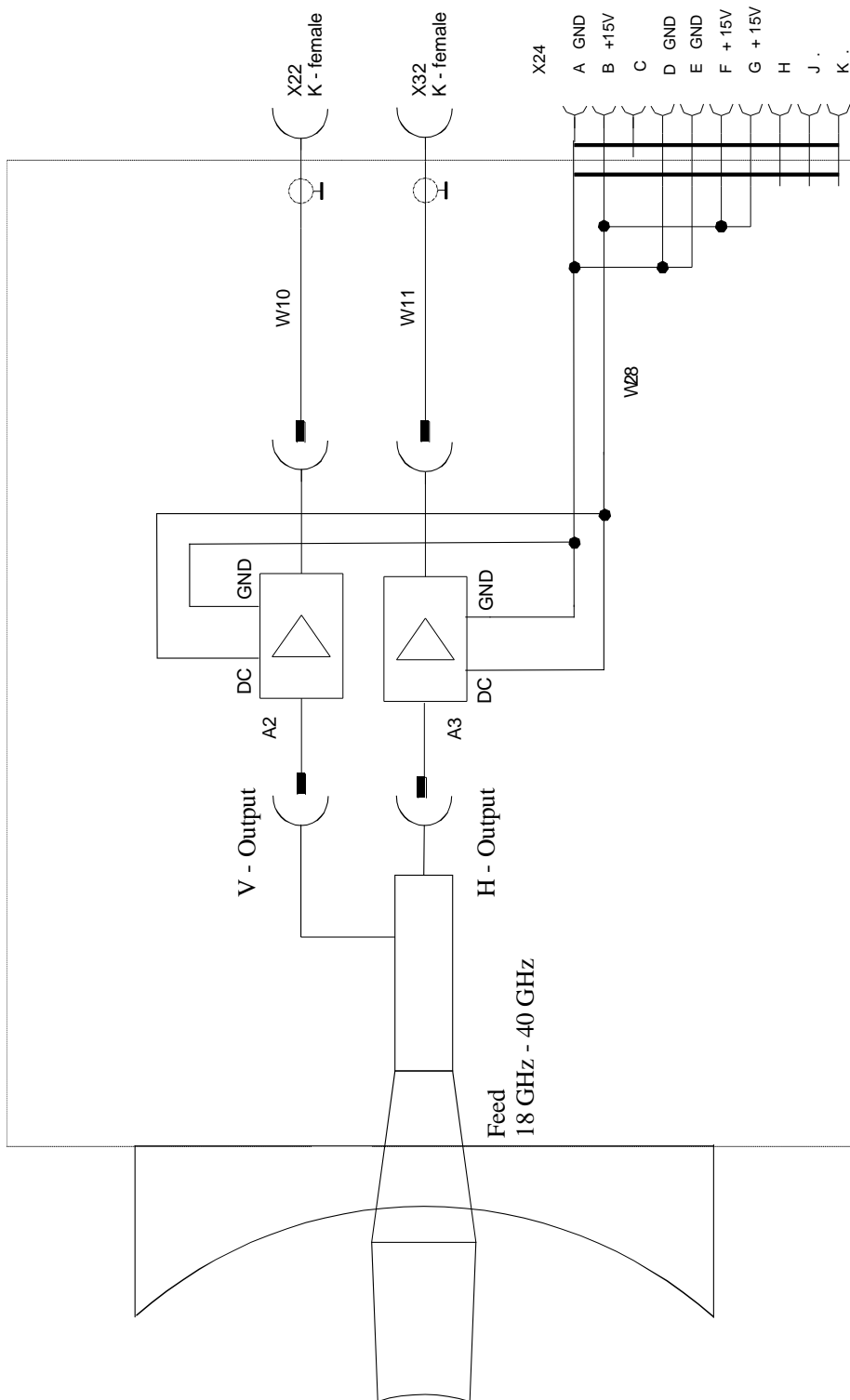


Figure 10: Block diagram of R&S®AC025DP

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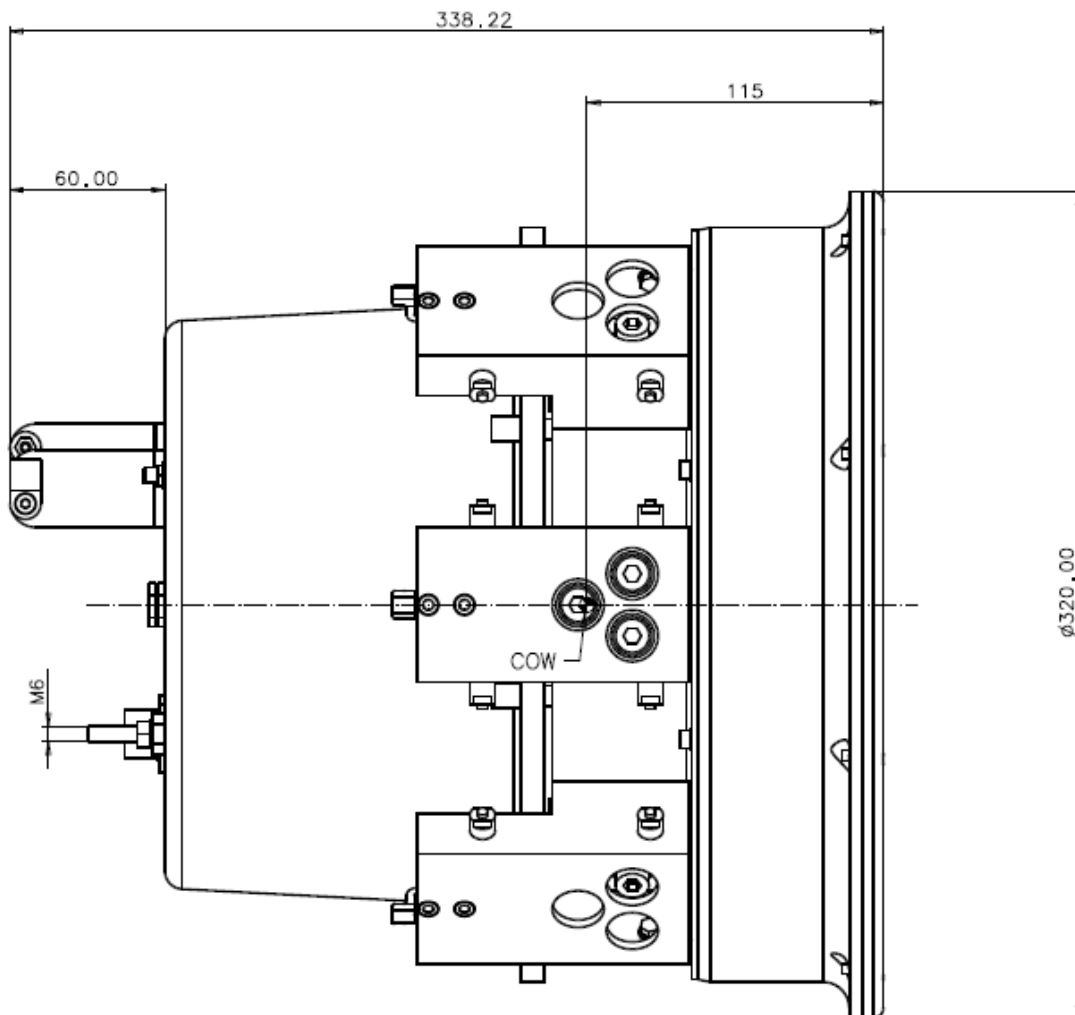


Figure 11: Mechanical dimensions of R&S®AC025DP in mm.