

RDF PRODUCTS

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Product Data Sheet; Model DFA-1310B1 Wide-Coverage VHF
Fixed-Site H-Dipole Adcock Radio Direction Finding Antenna

FEATURES

- C 75-300 MHz Continuous Frequency Coverage
- C Optimized for Sensitivity in 148-174 MHz Band
- C Fixed-Site Mast-Mount Design
- C True Adcock - Does Not Use Inferior Loops
- C Self-Decoupled From Support Tower or Mast
- C 1.5 Degrees RMS Typical Bearing Accuracy
- C Ultra-High Signal Handling Capability
- C Rugged, Weather-Sealed Design
- C Built-in RS-232 Personality Module
- C Replaces 80-250 MHz DFA-1310R1



DESCRIPTION

The RDF Products Model DFA-1310B1 is a 4-aerial VHF H-dipole Adcock single-channel radio direction finding antenna continuously covering 75-300 MHz. This rugged, weather-sealed unit is specifically designed for permanent or transportable fixed-site DF applications, and is readily mast- or tower-mounted.

Being of a true Adcock design, the DFA-1310B1 avoids the erratic performance associated with inferior loop DF antennas and provides sensitivity and listen-thru capability superior to that of comparable pseudo-Doppler DF antennas. The DFA-1310B1 has also been designed for ultra-high signal-handling capability for reliable performance in dense signal environments. Sensitivity is optimized for the all-important 148-174 MHz high-VHF civil band.

The DFA-1310B1 has been specially designed so that its performance is independent of its supporting mast or tower (this is accomplished with the supplied 5' isolation mast). This is in sharp contrast to competing mast-mounted DF antenna designs where performance is adversely and unpredictably affected not only by the presence of the mast, but also by changes in mast height.

Products DF bearing processors via a single 8-meter interface cable (routed through the isolation mast). Custom interface cables with user-specified lengths are also available. The aerials are removable to facilitate storage, transport, and user-testing. The isolation mast can also be removed.

The DFA-1310B1 includes a digital "personality module" that reports model number and frequency coverage information for this DF antenna. When connected to any of the RDF Products "B"-series DF processors/receivers (e.g., the DFP-1000B, DFP-1010B, or DFR-1000B), the DFA-1310B1 automatically reports its model number and frequency coverage information. This information is then displayed so that the user can easily avoid out-of-band operation. The DFA-1310B1 replaces the earlier 80-250 MHz DFA-1310R1, offering wider frequency coverage, superior mechanical design, and simpler installation.

The DFA-1310B1 directly interfaces with all RDF

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SPECIFICATIONS (subject to change without notice)

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DF Technique:	Single-channel 2-phase Adcock (derived sense)	Power Requirements:	11-16 VDC @ 90 mA (negative ground)
Frequency Coverage:	75-300 MHz continuous	Operating Temperature:	-40 to +60 degrees C
Bearing Accuracy:	3.0 degrees RMS max.; 1.5 degrees RMS typical (ideal siting conditions)	Storage Temperature:	-40 to +70 degrees C
Polarization:	Vertical	Humidity:	0-100%
Output Impedance:	50 ohms nominal	Dimensions:	95"x13.5"x13.5" (HxWxD, w/5' iso-mast and 24" support pipe)
2nd Order Intercept:	+40 dBm typical (referenced to derived sense input)	Structural Weight:	24 lbs. (includes main chassis, aerials, isolation mast, 8-meter interface cable; excludes 6.5 lb stainless-steel mast support pipe).
3rd Order Intercept:	+25 dBm typical (referenced to derived sense input)		

APPLICATIONS INFORMATION

Most mast-mounted DF antenna designs fail to take the necessary steps to decouple (isolate) the supporting mast from the antenna. The close proximity of the mast to the aerials results in mutual coupling that distorts the antenna gain patterns. This distortion in turn degrades bearing accuracy and DF sensitivity. This performance degradation is not only difficult to predict, but its severity greatly changes as a function of mast height.

The problem is most noticeable with wide-coverage DF antennas and most acutely manifests itself as frequency "holes" (narrow and sometimes not-so-narrow frequency bands where severe performance degradation is experienced). In addition, these "holes" tend to shift in frequency when the mast height is changed or the unit is installed at a different location. Furthermore, these "holes" are actually just the extreme manifestation of the broader problem that some degree of performance degradation exists over all or most of the DF antenna's frequency range as a consequence of inadequate mast decoupling. Users are often unaware of these problems, however, attributing them instead to site anomalies or the vagaries of radio direction finding in general. The problem is further compounded by the reluctance of most vendors to fully meet their duty of candor to customers to disclose this serious performance shortcoming.

In fact, these problems actually occur as a result of a design deficiency that is overcome in RDF Products mast-mounted DF antennas. All such DF antennas manufactured by RDF Products include an isolation mast that properly decouples the aerials from the supporting mast or tower, thus eliminating the above mentioned mast-induced performance degradations. DF antenna performance is thus unaffected by the mast and there are no frequency "holes".

