

# RDF PRODUCTS

Vancouver, Washington, USA +1-360-253-2181



**Product Data Sheet; Model DFA-1248B1** Wide-Coverage VHF  
Fixed-Site H-Dipole Adcock Radio Direction Finding Antenna

## FEATURES

- C 20-174 MHz Coverage In Two Bands
- Wide Aerial Spacing For Low-VHF Operation
- 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 20-174 MHz DFA-1248R0

## DESCRIPTION

The RDF Products Model DFA-1248B1 is a 4-aerial VHF H-dipole Adcock single-channel radio direction finding antenna covering 20-174 MHz in two bands. 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-1248B1 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-1248B1 has also been designed for ultra-high signal handling capability for reliable operation in dense signal environments. With its wider aerial spacing, it is especially well-suited for the 20-88 MHz low-VHF band.

The DFA-1248B1 has been specifically designed so that its performance is independent of its supporting mast or tower (this is accomplished with the supplied 8' isolation mast). This is in sharp contrast to most competing designs where performance is adversely and unpredictably affected not only by the presence of the mast, but also by changes in mast height.



**DFA-1248B1 20-174 MHz H-Dipole Adcock DF Antenna (w/iso-mast)**

The DFA-1248B1 directly interfaces with all RDF Products DF bearing processors via a single 8-meter interface cable (routed through the isolation mast). Custom interface cables and use 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-1248B1 also includes a digital "personality module that reports model number and frequency coverage information for this antenna to the DF processor.

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## SPECIFICATIONS (subject to change without notice)

DFA-1248B1 - Page 2

DF Technique:	Single-channel 2-phase Adcock (derived sense)	3rd Order Intercept:	+15 dBm typ. (low band) +25 dBm typ. (high band) (referenced to derived sense input)
Frequency Coverage:	20-88/88-174 MHz	Power Requirements:	11-16 VDC @ 200 mA (negative ground)
Bearing Accuracy:	3 degrees RMS max.; 1.5 degrees RMS typical (ideal siting conditions)	Operating Temperature:	-40 to +60 degrees C
Polarization:	Vertical	Storage Temperature:	-40 to +70 degrees C
Output Impedance:	50 ohms nominal	Humidity:	0-100%
2nd Order Intercept:	+25 dBm typ. (low band) +40 dBm typ. (high band) (referenced to derived sense input)	Dimensions:	162"x20"x20" (HxWxD, incl. 8' iso-mast and 2' mast support pipe 36 lbs.
		Weight:	

## APPLICATIONS INFORMATION



A 24" long 2" inside-diameter schedule 40 unthreaded stainless-steel pipe is supplied with the DFA-1248B1 for use as a mast support. This pipe must be bolted, welded, or sleeved onto the supporting structure (typically a tower or mast). The DFA-1248B1 can then be mounted atop this pipe (with the interface cable run through).

As illustrated in the adjacent photo, the mounting sleeve at the bottom of the iso-mast snugly fits onto the top of the mast support pipe. The iso-mast is then rotated for the desired azimuthal orientation, after which the three locking bolts are tightened.

Competing mast-mounted DF antenna designs fail to take the necessary steps to decouple (isolate) the 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.

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".