RDF PRODUCTS
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Product Data Sheet; Model DFP-1010B *Single-Channel Watson-Watt RS-232 Computer-Operated DF Bearing Processor*

FEATURES

C **Adds DF Capability to Most Receivers**

C **Full Remote Operation w/Software**

C **Requires Only One PC Serial Port**

C **AM/FM/CW/SSB Demodulation**

C **Simultaneous DF & Listen-Through**

C **Ultra-Fast Pulse Response Capability**

C **6/15/30/200 kHz IF Bandwidths**

DESCRIPTION

The RDF Products Model DFP-1010B is a single-channel Watson-Watt DF bearing processor unit that, in conjunction with an appropriate RDF Products DF antenna economically adds DF capability to almost any receiver. The DFP-1010B is a professional-quality unit that is compact, rugged, and easy to operate.

DF receivers traditionally have been very expensive as a result of low-volume production. With the "add-on" DF bearing processor concept as embodied in the DFP-1010B, however, DF capability can be achieved far more economically by using either an existing receiver or one of the many highly capable wide frequency coverage low-cost consumer-market receivers.

The DFP-1010B easily interfaces to most receivers via its standard 10.7 MHz (or custom) IF interface. The unit can also interface to the host receiver via connection to that receiver's AM audio output. As a result, the DFP-1010B can interface to most any receiver with excellent results.

Unlike most competing add-on DF bearing processors, the bearing accuracy of the DFP-1010B is nearly impervious to host receiver anomalies associated with group delay variations and AGC characteristics. As a result, there is no need to implement expensive and time-consuming modifications to the host receiver in order to make it "DF-ready".

The DFP-1010B is designed exclusively for computer-controlled operation and has no operational manual controls, displays, or indicators. It is ideal for fixed-site DF applications, unmanned remote DF applications, and any DF application in general where computer-controlled rather than manual operation is necessary or preferred.

Full remote capability is provided via a single RS-232 port. With the software provided, all features can be controlled and outputs displayed at the host computer. Additional serial ports are provided for connection of a host receiver, digital compass, and GPS receiver so that all of these peripheral system components can be managed at the host computer via the single RS-232 connection without the need for cumbersome external data multiplexers or hubs. The "open" RS-232 protocol is published in detail for the benefit of users who wish to write custom software.

The DFP-1010B features excellent listen-through capability. With most signal formats, undistorted audio output is obtainable simultaneously with DF operation. Demodulators are included for AM, FM, and CW/SSB with built-in speaker or external headset audio output. Other features include four selectable IF bandwidths, bearing display track & hold, and eight selectable bearing integration times with pulse response down to 35 ms.

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DF Technique:	Single-channel Watson-Watt	Track & Hold:	3 sec nominal holding time
Frequency Coverage:	Limited only by host receiver and DF antenna	Line Audio Output:	600 ohms (unbalanced)
		RS-232 Interface (to host computer):	19200-N-8-1; data string includes embedded data from receiver, GPS, & compass
Bearing Accuracy:	0.5° RMS (using 200 millisecond bearing integration)		
Bearing Resolution:	0.1°	Power Requirements:	11-16 VDC @ 0.7 ampere (negative ground)
Receiver Signal Interface Format:	10.7 MHz (or custom) IF or AM audio output	Over- And Reverse-Voltage Protection:	18 volt shunt power zener blows fuse
IF Signal Input Requirements:	-25 to -130 dBm into 50 ohms	Operating Temp.:	0 to +50 degrees C
AM Audio Signal Input Requirements:	10 mV-1.5V RMS with 0-600 ohm source impedance	Storage Temp.:	-40 to +70 degrees C
		Humidity:	0-95% (no condensation)
IF Bandwidths:	6/15/30/200 kHz	Dimensions:	4.6"x8.25"x10.5" (HxWxD)
Bearing Integration:	35/50/80/100/160/200/275/400 ms	Weight:	5 lbs

APPLICATIONS INFORMATION

DF receiving systems traditionally consist of one or more DF antennas connected to a self-contained DF receiver. This DF receiver in turn consists of an appropriate radio receiver (specially designed and carefully aligned to minimize factors that induce bearing errors) having a built-in DF bearing processor and display. Such DF receivers are very expensive (especially those covering wide frequency ranges) due to low-volume production. Furthermore, when the user is faced with new frequency coverage requirements, it is necessary to duplicate this already heavy expenditure to accommodate the new frequency range.

The concept of a DF bearing processor that can work with an external low-cost non-DF host receiver is not new. Most attempts at implementing this concept, however, have yielded DF bearing processors with serious shortcomings. In some instances, they can work only with special receivers built by the same manufacturer. In other cases, intrusive and extensive modifications to the host receiver are required. In general, significant performance degradation must be accepted. Typical performance anomalies include

bearing shifts with receiver tuning, IF bandwidth changes, signal strength, and even as a result of volume control setting changes. In most cases, the resulting DF system is of sub-professional-quality.

The RDF Products Model DFP-1010B has been specifically designed to work in conjunction with the many low-cost wide frequency coverage receivers that have appeared on the consumer market in recent years. By virtue of careful implementation of a particularly suitable DF technique (i.e., the Adcock/Watson-Watt DF technique), the DFP-1010B easily interfaces with almost any receiver to economically provide a professional quality DF system free of the afore-mentioned performance anomalies. New frequency requirements can be easily and economically accommodated simply by purchasing an appropriate DF antenna.

The DFP-1010B replaces the earlier DFP-1010/DFP-1010A, employing an all-new modernized design with enhanced features, performance, and versatility unmatched by any single-channel DF processor at any price.