



**LNIX Corporation**  
8B Industrial Way  
Salem, NH 03079  
P: 603-898-6800  
F: 603-898-6860  
[www.lnxcorp.com](http://www.lnxcorp.com)

## **An Introduction to DIFMs**

### **By Art Humason, Director of DIFM Technology, LNX Corporation**

DIFMs are used to measure the frequency of short RF pulses (50 nanoseconds to CW), to high resolution (down to 1 MHz, or less), and high accuracy (5 MHz or less), on single RF pulse events. This makes them well suited for detecting Radar pulses and pulse trains, even in a dense pulse environment. In the likely event that RF pulse trains walk through each other, DIFMs make it possible to separate the trains by identifying the frequency of each individual RF pulse.

DIFMs are generally used in receiver applications where the frequency of an incoming signal or signals is unknown. The frequency of an RF emitter is often the best indication of what the source of the signal is, and what it is intended to be used for.

DIFMs are also referred to as Digital Frequency Discriminators (DFDs). These two denominations are said to imply different levels of performance in some specific markets, but in general they are interchangeable.

The frequency range of a DIFM can be small, for separating RF signals in a known band, or as large as 2.0 to 18.0 GHz. A DIFM can observe the entire 2.0 to 18.0 GHz band instantaneously, without the need for converting to a smaller analysis band. This gives DIFMs excellent Probability of Detection of pulsed RF events. This also makes DIFMs ideally suited for steering the front end of a Digital Receiver system, which has lower instantaneous bandwidth.

The performance level of DIFMs can be varied to accommodate specific needs and budget constraints. Also additional functionality can be incorporated for custom applications.