



## 2.0 to 6.0GHz Instantaneous Frequency Measurement Unit

The DR076 uses proprietary Teledyne Defence & Space (TDS) Technology to provide state of the art performance in a package measuring 130mm x 90mm x 18mm.

The DR076 provides a 13 bit absolute binary digital output word. The frequency measurement word is updated in response to an external trigger input signal, and internally generated trigger or is continuously updated every clock cycle. These operational modes are controlled via a serial control interface.

The 13 bit frequency word offers a nominal resolution of 0.5MHz with an RMS accuracy of 2MHz for SNRs of +3dB or better. The unique feature of the DR076 is the ability to

configure the IFM during operation in order to achieve improved frequency resolution and accuracy when capturing longer pulses under poor SNR conditions.

The DR076 has a smaller frequency footprint and lower power consumption than traditional 2.0 – 6.0GHz IFM's.

External connections are made via a 51 – way micro-D Type connector for power, frequency measurement data and control. An SMA (female) is provided for the RF input.

A PDW output is also available as an option.

For further information, please contact the TDS sales team.

### FEATURES

- Full 2.0 – 6.0GHz broadband operation
- 13 Bit Resolution
- 60dB Dynamic Range
- 50ns Pulse Width Measurement
- Internally or Externally Triggered
- Very Small Size
- Low Power Consumption
- Software Configurable

### APPLICATIONS

- Electronic Support Measures (ESM)
- Communications Jamming (COMJAM)
- Radar Warning Receivers (RWR)
- ESM for low weight, low power, small or portable payload applications

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## ELECTRICAL SPECIFICATIONS

Parameters	Units	Min	Nom	Max
Operating Frequency Range	GHz	2.0		6.0
Unambiguous Bandwidth	GHz	1.9		6.1
Frequency Resolution	MHz		0.5	
Digital Frequency Resolution	Bits		13	
System Clock Rate	MHz	49.99	50	50.01
Throughput Time	ns		200	
RF Input Dynamic Range	dBm	-55		5
RF Input Signal/Noise Ratio	dBm	0		
RF Input Pulse Width	ns	50		CW
RF Input VSWR				2:2:1
Frequency Error (RMS)				
0dB SNR	MHz			4
3dB SNR	MHz			2
Frequency Peak Error	MHz		15	
Peak Error Rate				
0dB SNR	%			0.4
3dB SNR	%			0.04
Bad data Error rate				
0dB SNR	%			3
3dB SNR	%			1
Simultaneous Signal: Level	dBc	6		
Simultaneous Signal: Frequency Separation	MHz	50		
Temperature Range	°C	-40		+85
Power Consumption	Watts		8	
Power Supply Current: +5v Rail	A		1.6	
Size	mm		130x90x18	
Weight	g		550	
Operating Temperature Range	°C	-40°C		+85°C

Mechanical Shock: MIL STD 202 F - Method 213 B

Test condition: 20g / 11 ms half-sinusoidal.

Humidity: MIL-STD-810F Method 507.4. Procedure 2.

R.H. 85% to 95% Temperature between +30°C and +60°C

Salt Fog: MIL-STD-810F Method 509.4.

Reliability: Failure Rate of 20 per million hours, which equates to an MTBF of 50,000 hours for a ARW Airborne Rotary Wing Environment and a Failure Rate of 15 per million hours, which equates to an MTBF of 67,000 for a AUF, Airborne Uninhabited Fighter Environment using MIL-HDBK-217F Parts Stress Method. Both predictions are for an ambient temperature of +70 °C.

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## TECHNICAL INFORMATION

The ability for the DR076 to be reconfigured on the fly to suit operational scenarios offers performance attributes unmatched by currently available IFM's. Specifically, increased resolution and accuracies can be achieved for longer pulse durations.

A number of modes of operation are available controlled via the serial control port, these include:

Operating Mode	Operation
Standard	Configured to measure minimum ppulse width (50 ns)
Selectable PW	Minimum pulse width is user selectable (50ns to 'CW'). Unit measures longer pulses with improved accuracy and resolution.
Variable PW	Unit performs measurements of pulse on continuous basis throughout the duration of the pulse. Subsequent measurements have improved resolution and accuracy. In this mode, frequency measurement accuracy is optimized on a pulse-by-pulse basis.
Trigger Mode	<b>Continuous Clocked Output:</b> Frequency output word is updated at system clock rate. <b>Externally Triggered:</b> Frequency output word is updated in response to rising edge of external trigger input. <b>Internally Triggered:</b> Frequency output word is updated in response to rising edge of internally generated trigger input (derived from internal pulse detection threshold circuit).
Trigger Level	The internal trigger level can be adjusted to optimize the POI and false alarms in the presence of injected noise or CW.
Power Down	Various power down modes can be configured reduce quiescent power consumption.

The Variable PW mode uses Teledyne propriety techniques, and as such offers improved performance levels when compared with standard Instantaneous Frequency Measurement units currently available.

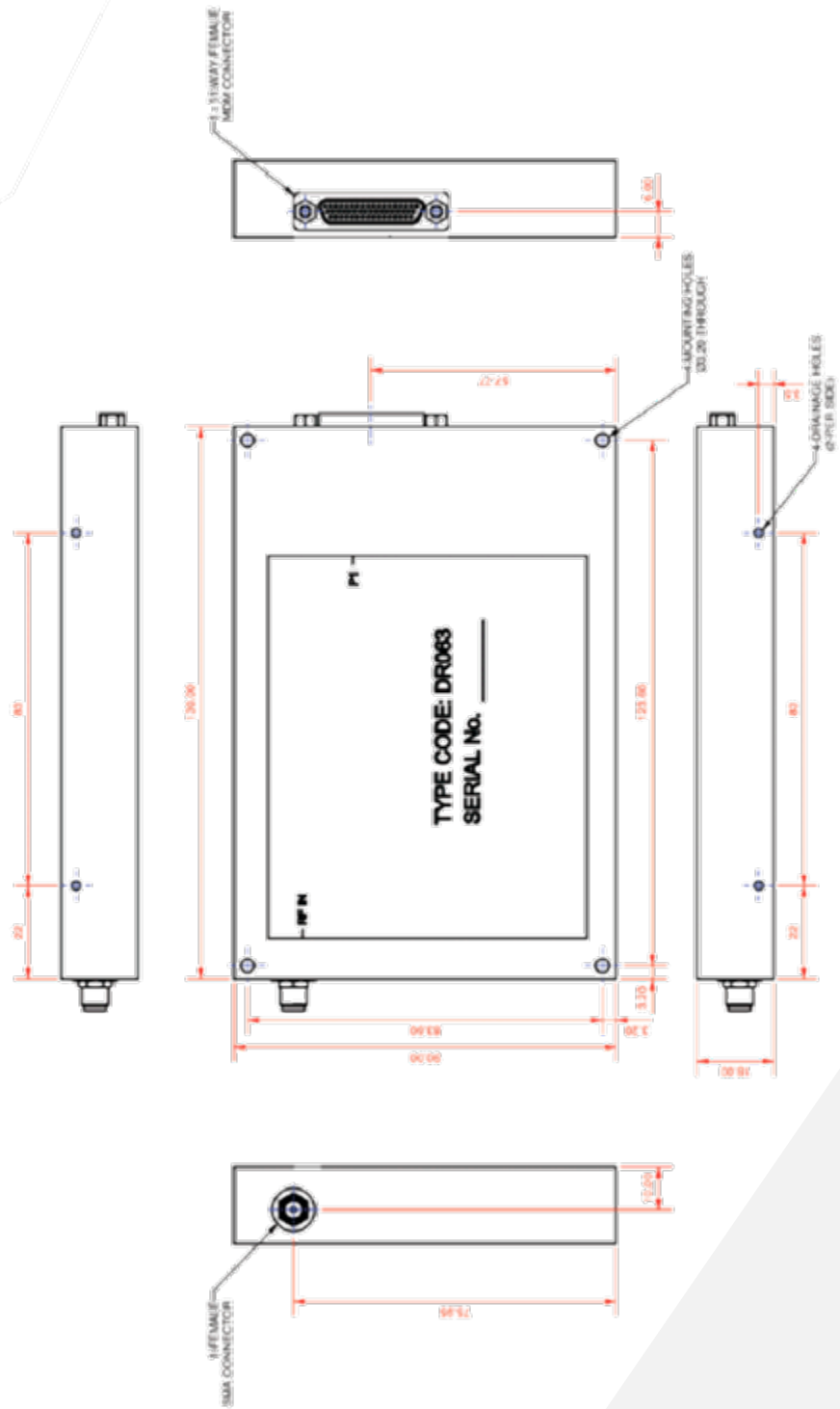
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TECHNICAL INFORMATION

P1 n	Signal	Direction	Description
1	Reserved		
2	Reserved		
3	Freq(1)+	Output - LVDS	Frequency Measurement Word
4	Freq(1)-	Output - LVDS	Frequency Measurement Word
5	Freq(2)+	Output - LVDS	Frequency Measurement Word
6	Freq(2)-	Output - LVDS	Frequency Measurement Word
7	Freq(3)+	Output - LVDS	Frequency Measurement Word
8	Freq(3)-	Output - LVDS	Frequency Measurement Word
9	DGND	Power	
10	Freq(4)+	Output - LVDS	Frequency Measurement Word
11	Freq(4)-	Output - LVDS	Frequency Measurement Word
12	Freq(5)+	Output - LVDS	Frequency Measurement Word
13	Freq(5)-	Output - LVDS	Frequency Measurement Word
14	Freq(6)+	Output - LVDS	Frequency Measurement Word
15	Freq(6)-	Output - LVDS	Frequency Measurement Word
16	Freq(7)+	Output - LVDS	Frequency Measurement Word
17	Freq(7)-	Output - LVDS	Frequency Measurement Word
18	DGND	Power	
19	+5V	Power	
20	Freq(8)+	Output - LVDS	Frequency Measurement Word
21	Freq(8)-	Output - LVDS	Frequency Measurement Word
22	Freq(9)+	Output - LVDS	Frequency Measurement Word
23	Freq(9)-	Output - LVDS	Frequency Measurement Word
24	Freq(10)+	Output - LVDS	Frequency Measurement Word
25	Freq(10)-	Output - LVDS	Frequency Measurement Word
26	+5V	Power	
27	AGND	Power	
28	DataValid+	Output - LVDS	Data Valid Signal
29	DataValid-	Output - LVDS	Data Valid Signal
30	Freq_BD+	Output - LVDS	Frequency Measurement Bad Data Flag
31	Freq_BD-	Output - LVDS	Frequency Measurement Bad Data Flag
32	Reserved		
33	RF Detect	Output - LVTTTL	RF Present asynchronous
34	RF_Pres+	Output - LVDS	RF Present synchronous
35	RF_Pres-	Output - LVDS	RF Present synchronous
36	+5V	Power	
37	STATUS	Output - LVTTTL	IFM passed self test
38	Serial Out	Output - LVTTTL	Serial Data Link Output
39	Serial In	Input - LVTTTL	Serial Data Link Input
40	Reserved	Input - LVTTTL	
41	+5V	Power	
42	Freq(11)+	Output - LVDS	Frequency Measurement Word
43	Freq(11)-	Output - LVDS	Frequency Measurement Word
44	Reserved		Reserved
45	Freq(12)+	Output - LVDS	Frequency Measurement Word
46	Freq(12)-	Output - LVDS	Frequency Measurement Word
47	Reserved		
48	TRIG_IN -	Input - LVDS	External Trigger Input
49	TRIG_IN +	Input - LVDS	External Trigger Input
50	CLK_IN-	Input - LVDS	Master Clock Input
51	CLK_IN+	Input - LVDS	Master Clock Input

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OUTLINE DRAWING



Surface Finish -  
25um Nickel Plate

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