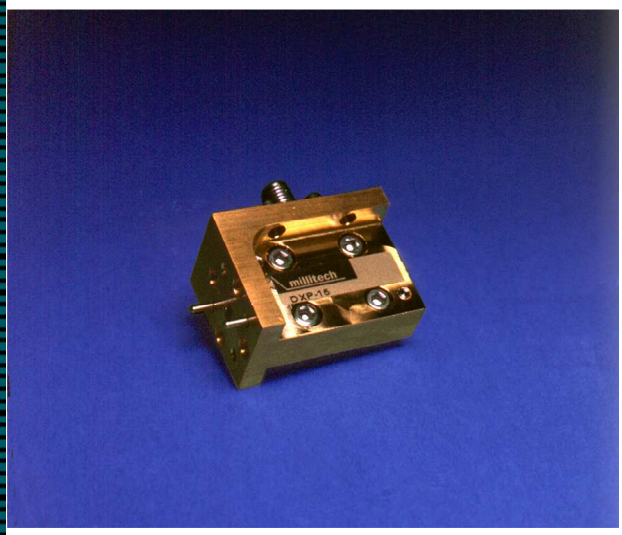
millitech®

Millimeter-Wave Technology & Solutions

## SERIES DXP

# GENERAL PURPOSE DETECTORS




### FEATURES:

- Full waveguide bandwidth
- High sensitivity
- No tuning required
- Zero bias

### APPLICATIONS:

- Instrumentation
- Power monitoring
- Usable as harmonic mixer

****Not recommended for new design****

**See DET-Series for an updated line of general purpose detectors.**

### DESCRIPTION

Millitech series DXP detectors, utilizing MIC technology and Schottky Barrier Beam Lead Diodes, provide a very economical solution for power detection over the 18 to 140 GHz range. Both high sensitivity and full waveguide bandwidths are achieved simultaneously without external DC bias or adjustments. Positive or negative output voltage polarity is available for use with various scalar analyzers. These detectors have a flat frequency response, as their sensitivity shows minor variation over the entire waveguide band.

Series DXP detector response is linear for power levels below -10 dBm. These units are rugged, thermally stable, and small. For applications requiring higher responsivity (mV/mW), models are available with an external amplifier.

The amplifier responds to amplitude-modulated (AM) input signals up to 50 kHz. This detector/amplifier combination can provide an output voltage of up to 10 volts. For low input VSWR (1.25:1), a fullband isolator, series FBI, can be added at the input of these detectors.

Series DXP detectors are directly compatible with typical scalar analyzers such as those manufactured by Agilent and Anritsu. Designs with custom electrical or mechanical specifications and higher frequency operation are also available.

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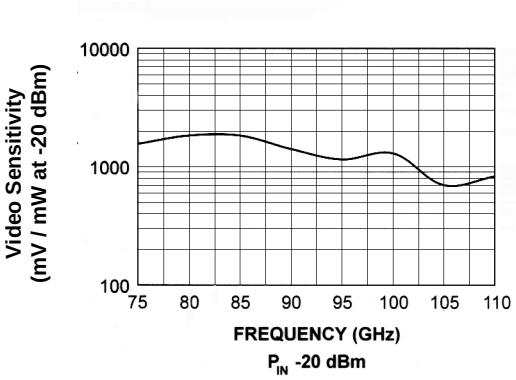
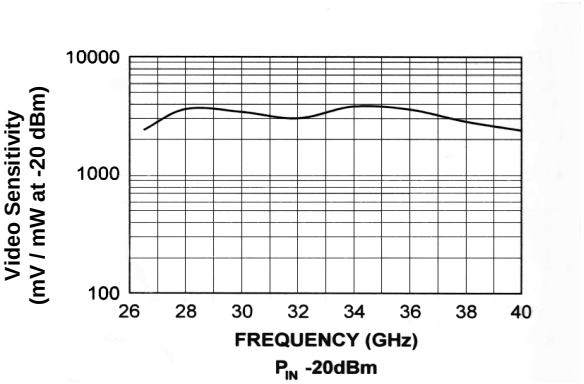
## TYPICAL PERFORMANCE

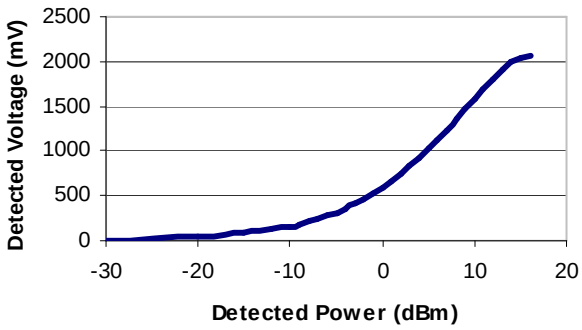
### DXP-10



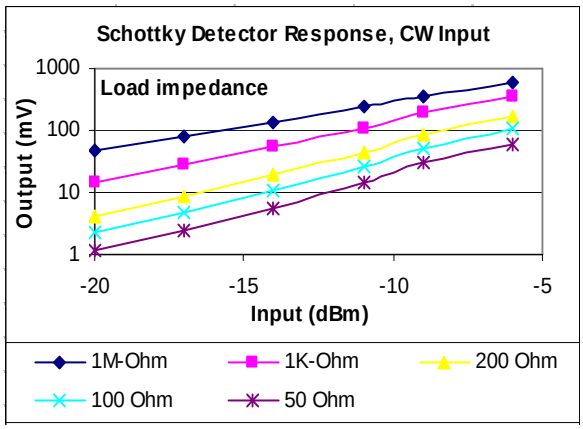

### DXP-28




### Typical DXP-22 Detector Response, 45 GHz




### Schottky Detector Response, CW Input




## ELECTRICAL SPECIFICATIONS

| Model Number | DXP-42 | DXP-28 | DXP-22 | DXP-19 | DXP-15 | DXP-12 | DXP-10 *3 | DXP-08 | DXP-06 *3 |
|---|---|---|---|---|---|---|---|---|---|
| Frequency band and range (GHz) | K 18-26.5 | Ka 26.5-40 | Q 33-50 | U 40-60 | V 50-75 | E 60-90 | W 75-110 | F 90-140 | D 110-170 |
| Video voltage (mV at -20 dB input) (typ) | 50 | 40 | 20 | 18 | 15 | 13 | 11 | 10 | 5 |
| Video sensitivity (mV/mW) (min into 1 MΩ) | 2500 | 1500 | 1200 | 1000 | 850 | 700 | 600 | 300 | 150 |
| Flatness (dB) (typ) | ±1.5 | ±1.5 | ±1.5 | ±1.5 | ±1.5 | ±2.0 | ±2.5 | ±3.0 | ±3.0 |
| TSS at 1 kHz (bw 40 Hz, dBm) (typ)*1 | -55 | -55 | -50 | -50 | -50 | -45 | -45 | -40 | -40 |
| Video bandwidth (MHz) (typ)*2 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 | 10 |
| Operating RF input power (dBm, CW max) | +16 | +16 | +16 | +16 | +16 | +16 | +16 | +16 | +16 |
| Absolute max rating (dBm) | +20 | +20 | +20 | +20 | +20 | +20 | +20 | +20 | +20 |

*1- TSS is defined as the signal level at which the video output is 8 dB greater than the noise level. Detectors are not tested for TSS.
*2 - Video bandwidth is 1 GHz typical when terminated into a 50Ω load.
*3 - New upgraded design available. Please contact Millitech for details.

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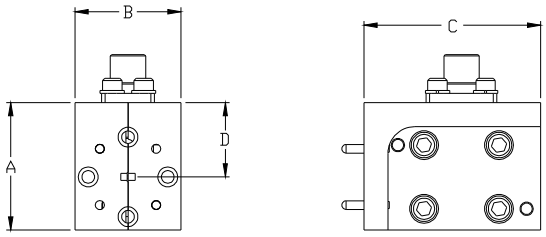
## OUTLINE DRAWINGS*




*The outlines shown may not reflect the latest information. Please contact Millitech for current outline drawings.

## MECHANICAL SPECIFICATIONS

| Model Number | DXP-42 | DXP-28 | DXP-22 | DXP-19 | DXP-15 | DXP-12 | DXP-10 | DXP-08 | DXP-06 |
|---|---|---|---|---|---|---|---|---|---|
| A (in/mm) | *1 | 0.95/24.13 | 1.13/28.70 | 1.13/28.70 | 0.6/15.24 | 0.9/22.86 | 0.90/22.86 | 0.90/22.86 | 0.775/19.69 |
| B (in/mm) | *1 | 0.75/19.05 | 1.13/28.70 | 1.13/28.70 | 0.75/19.05 | 0.75/19.05 | 0.75/19.05 | 0.75/19.05 | 0.75/19.05 |
| C (in/mm) | *1 | 1.26/32.00 | 1.13/28.70 | 1.13/28.70 | 1.25/31.75 | 1.25/31.75 | 1.25/31.75 | 1.25/31.75 | 0.625/15.88 |
| D (in/mm) | *1 | 0.58/14.75 | 0.56/14.22 | 0.56/14.22 | 0.53/13.46 | 0.53/13.46 | 0.53/13.46 | 0.53/13.46 | 0.4/10.16 |
| Flange MIL.F-3922 | *1 | /54-003*2 | /67B-006 | /67B-007 | /67B-008 | /67B-009 | /67B-010 | /67B-M08 | /67B-M06 |

*1 – Please contact Millitech for details.
*2 – With #4-40 threaded holes.

## HOW TO ORDER

| Specify Model Number<br>DXP-XX-ABCDØ |
|---|
| **XX** = Waveguide Band<br>**WR** – number |
| **A** = Flange Type<br>**R –** round (WR-22 through WR-08 only)<br>**S** – square (WR-42 and WR-28 only) |
| **B** = Polarity<br>**P** – positive<br>**N** – negative |
| **C** = Tested Bandwidth<br>**F** – fullband at -20 dBm (standard)<br>**N** – narrowband (please specify) |
| **D** = Amplifier Options<br>**A** – video amplifier (50 kHz bandwidth)<br>**W** – without amplifier |
| **E** = Special Options<br>**I** – fullband isolator<br>**N** – nonstandard (please specify) |

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