

### Characteristics

- ◆ Full Waveguide Bandwidths
- ◆ High Sensitivity
- ◆ No Bias Required
- ◆ Positive or Negative Output



### Product Description

QuinStar Technology's **QEA series broadband detectors** cover the frequency range of 18 to 110 GHz in seven waveguide bands. These detectors provide an output voltage which is directly proportional to the power level of an RF signal without needing any external DC bias. They are useful for power detection, monitoring, built-in-test and frequency measurement. The detectors can also be

used in millimeter-wave test systems with a wide variety of high-impedance oscilloscopes and scalar analyzers. They can be used for both CW and pulsed power measurements. They are constructed with a very rugged, reliable split-block mechanical design and are available with either positive or negative output voltage polarity.

### Specifications

FREQUENCY BAND	K	Ka	Q	U	V	E	W
Frequency Range (GHz)	18-26.5	26.5-40	33-50	40-60	50-75	60-90	75-110
Waveguide Size	WR-42	WR-28	WR-22	WR-19	WR-15	WR-12	WR-10
Sensitivity (mV/mW min) <sup>1,2</sup>	1000	1000	1000	800	800	500	500
Flatness (dB max) <sup>3</sup>	±1.5	±1.5	±1.5	±1.5	±1.5	±1.5	±2.0
Input Power (mW max)	100	100	100	100	100	100	100

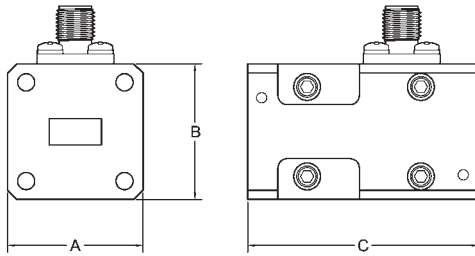
<sup>1</sup> The sensitivity of QEA broadband detectors can be optimized over a narrow bandwidth if desired.

<sup>2</sup> Measured at -10dBm input power level, into a 100 K ohm load.

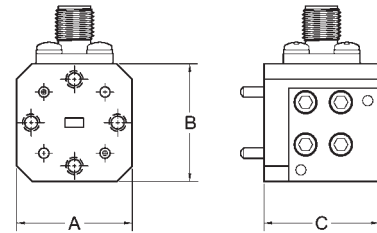
<sup>3</sup> Better flatness can be achieved over reduced bandwidth

Other waveguide bands available for higher frequency operation beyond 110 GHz. Please consult factory.

### Outline Drawings/Mechanical Specifications



WR-42 and WR-28



WR-22 through WR-10

FREQUENCY BAND	WAVEGUIDE SIZE	FLANGE PATTERN	VIDEO OUTPUT	OUTLINE DIMENSIONS, inches/mm		
				A	B	C
K	WR-42	UG-595/U	SMA JACK	0.88/22.4	0.88/22.4	1.5/38.1
Ka	WR-28	UG-599/U	SMA JACK	0.75/19.1	0.75/19.1	1.5/38.1
Q	WR-22	UG-383/U	SMA JACK	1.13/28.7	1.13/28.7	1.25/31.75
U	WR-19	UG-383/U	SMA JACK	1.13/28.7	1.13/28.7	1.25/31.75
V	WR-15	UG-385/U	SMA JACK	0.75/19.1	0.75/19.1	0.75/19.1
E	WR-12	UG-387/U	SMA JACK	0.75/19.1	0.75/19.1	0.75/19.1
W	WR-10	UG-387/U	SMA JACK	0.75/19.1	0.75/19.1	0.75/19.1

### Ordering Information

Model Number **QEA - AB CD E F**

center frequency rounded to nearest GHz  
 (1A = 100-109 GHz, FB = fullband)

bandwidth rounded to nearest GHz  
 (FB = fullband)

polarity \*

P = positive  
 N = negative  
 \* Detector output voltage with respect to case

waveguide band designator

K = K-band                      V = V-band  
 A = Ka-band                    E = E-band  
 Q = Q-band                      W = W-band  
 U = U-band



### Characteristics

- ◆ Phase Comparison of 2 RF Signals
- ◆ High RF Isolation
- ◆ Balanced Configuration



### Product Description

QuinStar Technology's **QEP** series **balanced phase detectors** enable phase comparison of two RF signals. They utilize GaAs beam lead diodes which offer significant advantages over other detector types.

The diodes are carefully matched to achieve high isolation between RF ports, low DC offset, noise cancellation and

suppression of the adverse effect of amplitude modulation. The detected output is proportional to phase differences up to 180 degrees for two equal amplitude signals at the same frequency.

Balanced phase detectors are typically used in phase bridges and phase modulated receiver systems.

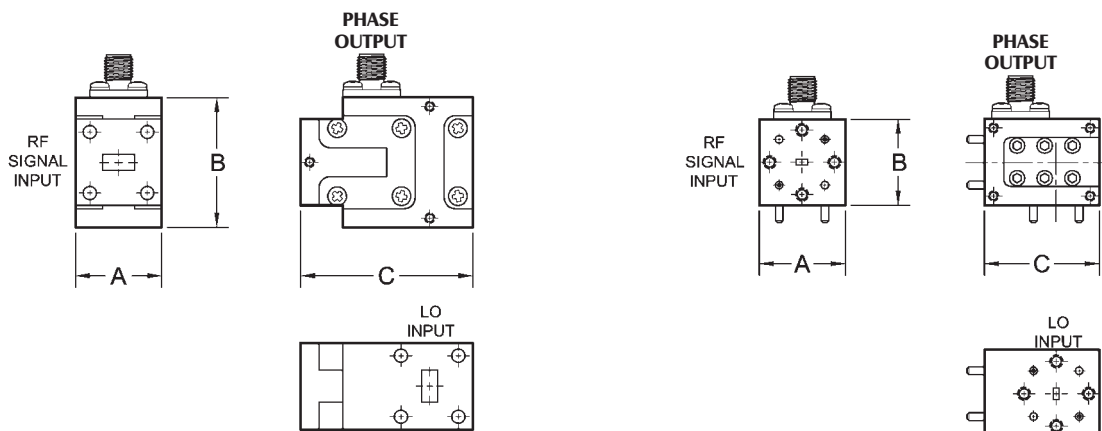
### Specifications

FREQUENCY BAND	K	Ka	Q	U	V	E	W
Frequency Range (GHz)	18-26.5	26.5-40	33-50	40-60	50-75	60-90	75-110
Waveguide Size	WR-42	WR-28	WR-22	WR-19	WR-15	WR-12	WR-10
Bandwidth (GHz typ)	4	4	4	4	4	4	4
Sensitivity (mV/degrees, typ) <sup>1</sup>	5	5	5	5	4	3	3
RF Isolation (dB typ)	20	20	20	20	20	20	20
AM Suppression (dB typ)	20	20	20	20	20	20	20
Input Power (mW max)	100	100	100	100	100	100	100

Other waveguide sizes are available.

<sup>1</sup> At 5 dBm input into each port with >100K ohm output load.

### Outline Drawings/Mechanical Specifications



WR-42 and WR-28

WR-22 through WR-10

FREQUENCY BAND	WAVEGUIDE SIZE	FLANGE PATTERN	IF OUTPUT	OUTLINE DIMENSIONS, inches/mm		
				A	B	C
K	WR-42	UG-595/U	SMA JACK	0.88/22.4	1.13/30.2	1.89/48.0
Ka	WR-28	UG-599/U	SMA JACK	0.75/19.1	1.13/30.2	1.50/38.1
Q	WR-22	UG-383/U	SMA JACK	1.13/28.7	1.13/28.7	1.50/38.1
U	WR-19	UG-383/U	SMA JACK	1.13/28.7	1.13/28.7	1.50/38.1
V	WR-15	UG-385/U	SMA JACK	0.75/19.1	0.75/19.1	1.00/25.4
E	WR-12	UG-387/U	SMA JACK	0.75/19.1	0.75/19.1	1.00/25.4
W	WR-10	UG-387/U	SMA JACK	0.75/19.1	0.75/19.1	1.00/25.4

### Ordering Information

Model Number **QEP - AB CD E 0**



Please specify exact RF frequency range when ordering.

center frequency rounded to nearest GHz (1A = 100-109 GHz)

bandwidth rounded to nearest GHz

waveguide band designator

- K = K-band
- A = Ka-band
- Q = Q-band
- U = U-band
- V = V-band
- E = E-band
- W = W-band