BR-3502 Doppler Radar

The BR-3502 is a cost effective 35.5GHz Doppler radar capable to accurately measure the velocity of moving objects with unprecedented resolution.

BR-3502 General Description

The BR-3502 Doppler radar antenna utilizes the Doppler principle to measure the velocity of moving objects. It is a low cost radar that can be used in a variety of application such as projectile muzzle velocity, in-bore measurement, very short range velocity measurement, etc. It is a great alternative to optical chronographs. The BR-3502 is compact as well as easy to deploy and use. It works at 35.5GHz and provides more than 3 times better resolution than a 10.5GHz (X-Band) radar, and can therefore be used on very small projectile calibers (ex: 1mm). The BR-3502 is particularly well suited for interior ballistic ranges where very short range measurements (down to few meters) are performed. It can also be used outside for short range measurement up to 250 meters (and more), depending on projectile caliber.

When used in conjunction with Infinition's junction box and TestCenter Doppler processing software, it provides a powerful tool for velocity analysis of moving objects.

In-bore Measurement

Projectile velocity can be measured inside the gun barrel by using the BR-3502 in combination with a reflector, which is typically a metal plate made out of standard 1/8 inch thick aluminum sheet. Special accessories can be provided to properly align the radar beam and the reflector to achieve optimum results. Typically, in-bore measurement can be performed for 20mm caliber and above.

Performance

The BR-3502 has been designed for short range applications. The following table summarizes the expected range performance for different projectile calibers. Actual performance can vary slightly based on projectile shape and material as well as test conditions.

Caliber	Maximum Range
4.7mm	45m
20mm	190m
25mm	240m
155mm	> 250m

Specifications

Antenna gain	20dBi
Antenna Type	Lens Horn
Beamwidth	12 x 12 deg
Polarization	Circular
Transmitter Output Power	> 0.1 Watt
Transmitter Source	Gunn, CW
Modulation	None
Frequency	35.5GHz (nominal)
Stability	+/-0.1%
Receiver Noise Figure	< 8dB
Radial Velocity Coverage	30 – 5000m/s
Operating Temperature	-20 to 50degC
Supply	115Vac 60Hz 0.3A (North America Model) 230Vac 50Hz 0.15A (European Model)
Dimension (antenna head)	(L) 11.1cm x (OD) 8.5cm
Dimension (power supply)	20cm x 15cm x 6cm
Weight	1kg
Approvals	CE, FCC

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sales@infinition.com

www.infinition.com