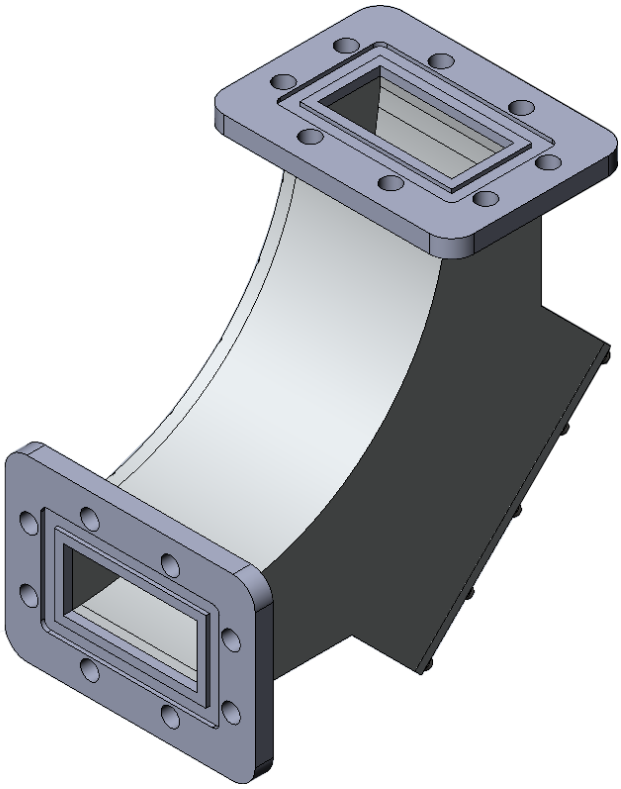
Model: ARC-187-E-A-CPRG-T1-CPRG-T1-B

WR-187 Arc Detector

Typical Application

- **Radar Systems**
- **Communication Systems**
- **Test Benches**
- **Military and Space**



Product Features

- **Wide Spectral Responsivity**
- **Fast Response Time**
- **High-temperature Resistant Optics**
- **High Electromagnetic Coupling Between Waveguide and Detectors' Cavity**
- **Monitoring and Control of Arcing in High Power Waveguide Systems**

Product Description

An Arc Detector is used to protect expensive RF power source and high-power waveguide devices from the arcing process, which can occur in waveguide systems. Power breakdown in waveguides can occur as a result of an excessive voltage gradient at some point where there is a discontinuity in the wall surface. A minor imperfection, a junction where the coupling flanges do not meet properly, or improper positioning of tuning elements in waveguide device cavities can all contribute to the problem. In any event, such a breakdown is accompanied by arcing, i.e. an electrical discharge producing visible light, as well as a change in the transmission characteristics of the waveguide which reflects a corresponding change in the loading on the microwave power source. The breakdown may be progressive, with the arc being small at first, then rapidly becoming larger as the air or other gas in the vicinity become ionized. If the resulting load change becomes large enough, the power source will be damaged.

The Arc Detector is an opto-electronic device which detects infrared and visible arcs in high-power waveguide transmission lines. In response to a visible arc in the waveguide facing the detector device, the Arc detector produces a signal (“Alarm”) which may be used to shut down the system.

The Arc Detector can be incorporated into one assembly with other waveguide devices such as waveguide directional couplers, magic tees, circulators, waveguide filters, diplexers, power source’s waveguide launcher, etc.

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WR-187 Arc Detector

Product Specifications

Electrical	
Waveguide Size	WR187
Operating Frequency Range	3.95 - 5.9 GHz
Peak Power Average Power	500 kW 5 kW
VSWR	1.1:1 max
Insertion Loss	0.05 dB max
Spectral Responsivity	320nm – 1050nm (visible light and near-infrared spectrum)
Electromagnetic Coupling (between waveguide main line and detector's cavity)	> 95 dB
Optical Sensitivity (typical)	Equal in both directions (toward Port 1 or Port 2)
Flange 1 (port 1. INPUT)	CPRG, THROUGH HOLES
Flange 2 (port 2, OUTPUT)	CPRG, THROUGH HOLES
Output (interface) connector	MS3114E10-6P, Circular PIN 6, MIL-C-26482
DC Supply Voltage	Typical +28V
Supply Current	40 mA (max)
Output Voltage	No ARC 15V, ARC 0 - 1V
Response Time	less than 10 µsec
Pressure Sealed to:	30 PSI
Material	6061-T6 Aluminum
Finish	Chromate
Operating Temperature Range	-40 to + 80°C, 100 % RH

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