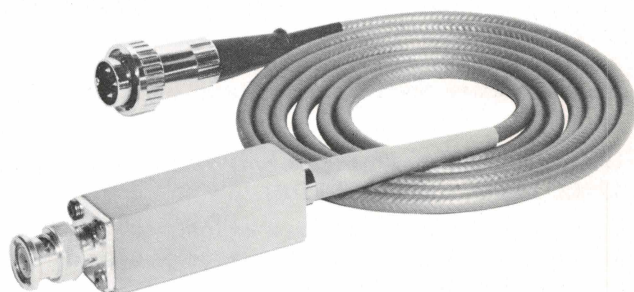
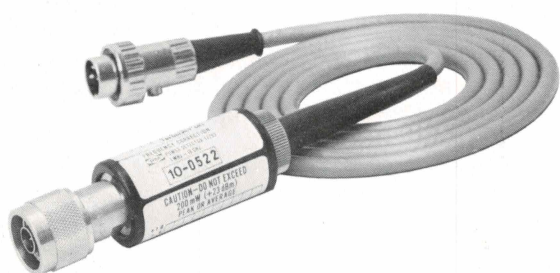




## POWER DETECTORS FOR USE WITH THE MODEL 1038 MEASUREMENT SYSTEM



### GENERAL

The Pacific Measurements Power Detectors described herein are specifically designed for the Model 1038 Measurement System. They have a high return loss (low SWR) over a wide bandwidth. A temperature sensing thermistor placed in the metal detector body permits

temperature compensation circuits to correct for variations in detector characteristics due to temperature. A low-pass filter removes any RF leakage from the output so cable resonance effects are eliminated and the detectors can be used at low and high RF frequencies.

### SPECIFICATIONS

Part No.	Frequency Range	Impedance	Connector	Diode Replacement Kit Part No.
12685	100 KHz to 1 GHz	75 $\Omega$	Type F	12888
12882	100 KHz to 1 GHz	75 $\Omega$	BNC	12888
12883	100 KHz to 1 GHz	50 $\Omega$	BNC	12888
13160	100 KHz to 2 GHz	50 $\Omega$	Type N	12888
13161	100 KHz to 1 GHz	75 $\Omega$	Type N	12888
13782	1 MHz to 18 GHz	50 $\Omega$	Type N	14016
13783	1 MHz to 18 GHz	50 $\Omega$	APC-7	14016
13784	1 MHz to 18 GHz	50 $\Omega$	SMA	14016

Maximum Input Power: 200 mW (+23 dBm) Peak or CW without damage.

Measurement Range: 10 mW (+10 dBm) to <10 nW (–50 dBm) when used with Model 1038 Measurement System (for 12685, 12882 and 13161 the output signal error may be 0.2 dB between +5 and +10 dBm).

Calibration: Frequency correction data is supplied with Power Detectors 13782, 13783 and 13784. The uncertainty of calibration at 1 mW (0 dBm) is 2% to 12 GHz and 3.5% to 18 GHz.

#### Return Loss

100 KHz to 1 GHz:	> 20.8 dB, SWR < 1.20
(for 12685, 12882, 12883, 13160 and 13161)	
1 MHz to 4.5 GHz:	> 20.8 dB, SWR < 1.20
4.5 GHz to 8 GHz:	> 16.5 dB, SWR < 1.35
8 GHz to 12 GHz:	> 14.0 dB, SWR < 1.50
12 GHz to 18 GHz:	> 11.7 dB, SWR < 1.70

#### Physical:

Cable length	1.5 m (5 ft)
Weight	Approximately 230 gm (8 oz)

#### Temperature:

Operating	0 to +50°C
Non-operating	–40 to +65°C

## MAINTENANCE

The most common cause of difficulty with RF power detectors is burn-out caused by the application of RF power in excess of their rating. If burn-out occurs, the detector element may be replaced. Disassembly instructions follow.

## HANDLING PRECAUTIONS

Capacitive discharge of stored electrical energy can easily damage the detector element. Before disassembly, sit down and touch a grounded surface. Touch any conductive surface before placing a detector element on it. Volt-ohm meters should never be used to check the condition of the diode in the detector because they often have excessive open circuit voltages and short circuit currents.

### Diode Replacement Procedure for Power Detector 12685, 12882, 12883, 13160 and 13161.

To replace the diode, proceed as follows:

- Remove the cover from the detector body.
- Unsolder the diode leads.
- Solder the replacement diode so that the cathode end (color dot) is toward the input connector.
- Carefully solder the diode leads with a low wattage soldering iron.
- Replace the body cover.

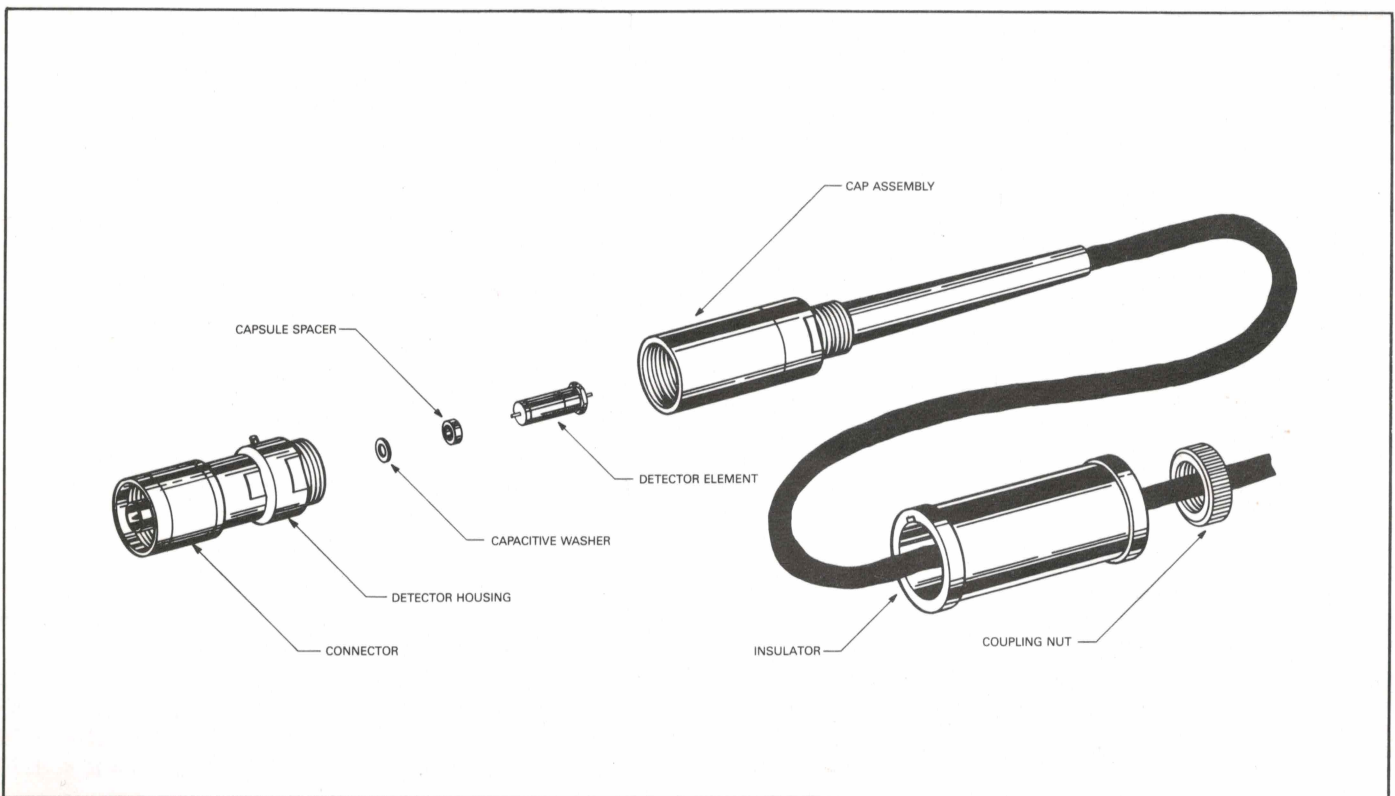
### Diode Replacement Procedure for Power Detectors 13782, 13783, and 13784.

To replace the detector element, refer to Figure 1 and proceed as follows:

- Remove the Knurled Nut that secures the Insulator to the detector. Slide the Insulator back along the cable to expose the metal detector body.
- Unscrew the Cap Assembly from the Detector Housing.
- Remove the Detector Element and Capsule Spacer from the Detector Housing. Retain the old Capacitive Washer for the new Diode Replacement Kit.
- Install the Capacitive Washer, Capsule Spacer and Detector Element in that order. Note that the black side of the Capsule Spacer should be against the Capacitive Washer. Be sure that all three components are correctly seated into and pressed firmly into the Detector Housing.

**CAUTION:** Use care when inserting the Detector Element into the Housing to avoid damaging the female socket contacts.

- Replace the Cap Assembly onto the Detector Housing and tighten firmly. Reassemble the Insulator and Knurled Nut onto the detector.
- Remove the old calibration label since its data will no longer apply. Leave the part number label on the Insulator.
- Calibrate the detector and mark the new calibration data on the Replacement Label. Apply the Label to the Insulator.



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## HANDLING PRECAUTIONS FOR PACIFIC MEASUREMENTS RF DETECTORS

### OPERATING PRECAUTIONS

Static discharge can easily damage the diode in your RF Detector.

1. For detectors with detachable cable (e.g. for PM 1045 Power meters):  
Make certain that the cable is connected to the instrument and discharged before connecting it to the RF detector.
2. For detectors with fixed cables (e.g. for PM 1038 systems):  
Avoid touching exposed leads. Before connecting the detector to its associated instrument, touch an exposed metal part acting as a ground located on the instrument. Then connect the RF detector to the instrument.

### GENERAL

Avoid unnecessary handling of the detector element used in the RF detector.

1. Static electricity which builds up on a person, especially on dry days, must never be allowed to discharge through the RF detector. Avoid any exposed leads on the RF detector input or output.
2. Before installing the detector element into the detector housing, touch the exposed metal housing with your hand to discharge static electricity. Then install the detector element into the housing.
3. Before handing a detector element to another person, touch hands first to remove static electricity potential between you.
4. Do not use an ohmmeter to measure the detector element's diode resistances. The ohmmeter's open circuit voltage or short circuit current can easily damage the diode.

### MECHANICAL PRECAUTIONS

The RF detector is a very delicate instrument that can be easily damaged during handling, so that excessive return loss or mechanical breakage occurs. To avoid problems while installing the detector element, review the procedures contained in the appropriate technical manual. The following precautions are provided as supplemental information and are general in nature.

1. During disassembly of the detector assembly, note the position and alignment of all components. If small components, washers and spacers, are damaged or marked, replace them before reassembly.
2. Ensure that the parts are clean, but use extreme care in cleaning them to avoid causing other problems. If a cleaning fluid must be used, use only ISOPROPYL ALCOHOL, as other solvents may affect the materials used in the detector assembly.
3. Reassemble the elements using minimum force. Normally, the assembly can be HAND-TIGHTENED to the point that no space is noted between the housing and the cap. If you can no longer tighten it and space remains, it means that something is misaligned internally.
4. Seat the assembly firmly using a torque wrench and the specified torque 120 to 150 in-lbs. or 10 to 12.5 ft-lbs., ensuring that the wrenches used are seated on the flats provided.



