BURK TECHNOLOGY

Instruction Manual

PRF-1: Precision RF Power Sensor

Rev D

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DESCRIPTION

The PRF-1 is a precision RF power sensor providing a dc voltage output that is linear with respect to RF input power. The PRF-1 utilizes a true rms sensor, and with appropriate calibration, can be used to measure forward or reflected power.

The PRF-1 has a dynamic range of 60 dB (-40 dBm to +20 dBm) at the RF sample input. This eliminates the need for additional attenuation in most installations. Frequency response is 6 MHz to 1000 MHz.

RF INPUT

The PRF-1 samples RF power from a customer provided directional coupler via the built-in male N-type connector. Two sensors can be used to simultaneously measure forward and reflected power.

RF INPUT DISPLAY

Figure 1 shows the front panel of the PRF-1 with nine green LEDs and one red LED. After an LED test at startup, these LEDs indicate the relative RF input power level.

Figure 1. Front view of PRF-1

The first green LED will flash when the RF input signal is below the useful level of the sensor. Each LED represents an additional 2 dB of input. The Red LED will flash when the RF input signal is within 1dB of saturating the sensor. When the Red LED turns solid, it is indicating that the RF input signal is above the maximum limit.

POWER AND OUTPUT CONNECTOR

The interface for both dc power and dc output signal is the 0.150 inch, 4-pin Phoenix style connector, as shown in Figure 2. The pinout for the connector is shown in Table 1. The mating female connector is included with the RF Sensor.

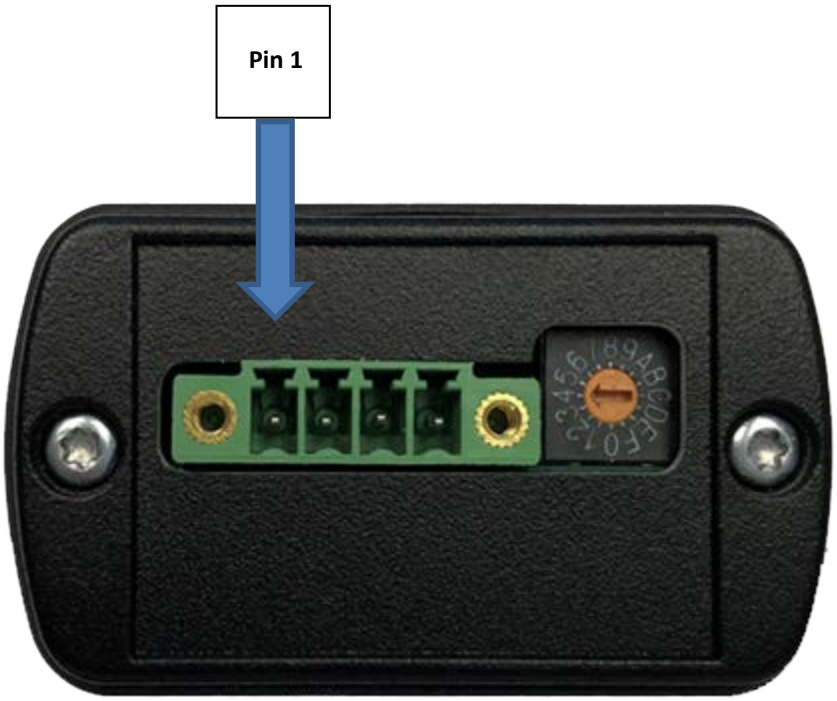

Figure 2. End view of PRF-1 sensor showing 4-pin connector and rotary gain switch

Pin No.	*Function*
1	Power (+9 V to +24V))
2	GND
3	Analog Out (V)
4	GND

Table 1. Pin description for PRF-1 4-pin connector

When the RF input is in the valid range, as indicated by the LEDs, the dc signal output will vary from 0 V to +5 V, proportional to the level of RF input. The dc power input for the sensor must be between +9 V and +24 V.

ROTARY GAIN SWITCH

Adjustment of internal sensor gain is made via the rotary switch control shown in Figure 2. This switch control has 16 positions (0-9, A, B, C, D, E, F) with position 0 providing 0 dB of gain and position F, providing +40 dB. Each ascending position on the rotary switch increases the internal gain by approximately +2.67 dB.

INSTALLATION

Connect the male N connector on the PRF-1 to the directional coupler and connect the dc input and output via the Phoenix connector. A 12V DC power supply is provided.

To optimize the output signal of the PRF-1 for forward power measurements, adjust the rotary gain switch to light green LED indicators 8 or 9, if possible. Similarly, for reflected power, adjust the gain to light green LED indicators 3 or 4, if possible.

IF THE RED LED IS ON SOLID WITH THE GAIN SWITCH AT 0, THE RF LEVEL IS TOO HIGH. INSTALL AN APPROPRIATE RF PAD BETWEEN THE DIRECTIONAL COUPLER AND THE SENSOR.SPECIFICATIONS

Physical Dimensions	4.33″ (11 cm) L, 2.35″ (5.97 cm) W, 1.38″ (3.51 cm) D
Operating Temperature	0 to 45 °C
Operating Humidity	5% to 90% non-condensing
Sensor Type	True RMS
RF Sample Input Frequency	6 MHz to 1000 MHz
RF Sample Input Range	-40 dBm to +20 dBm
Impedance	50 Ω
RF Input Connector	Type N
DC Connector supply inputs	Phoenix plug and socket for DC sample outputs and power supply inputs
DC Power Supply	9 V to 24 V / 400mA

TECHNICAL SUPPORT

For technical support, email support@burk.com or call our direct technical support line at (978) 486-3711. We will be glad to assist you. The technical support office is open Monday – Friday, 9AM to 5PM.