ThermOptics™

PRELIMINARY

DATA SHEET

DN1410

FIBEROPTIC POWER MONITOR

The DN1410 is a pigtailed fiberoptic power monitor using an InGaAs photodiode detector. This device provides an output voltage that is proportional to the incoming optical power in dBm and is capable of measuring optical power from -70dBm to +0dBm at a wavelength of 1550nm. The DN1410 is ideally suited for monitoring optical power in fiber optic communication systems.

FEATURES

- 70dB DYNAMIC RANGE
- CONVERTS OPTICAL POWER LEVELS FROM 100pW to 1mW
- 0.500 VOLTS OUTPUT PER DECADE INCREASE IN OPTICAL POWER
- OPERATES FROM SINGLE +5 VOLT POWER SUPPLY
- SMALL SIZE 0.39" X 1.0" X 0.265"

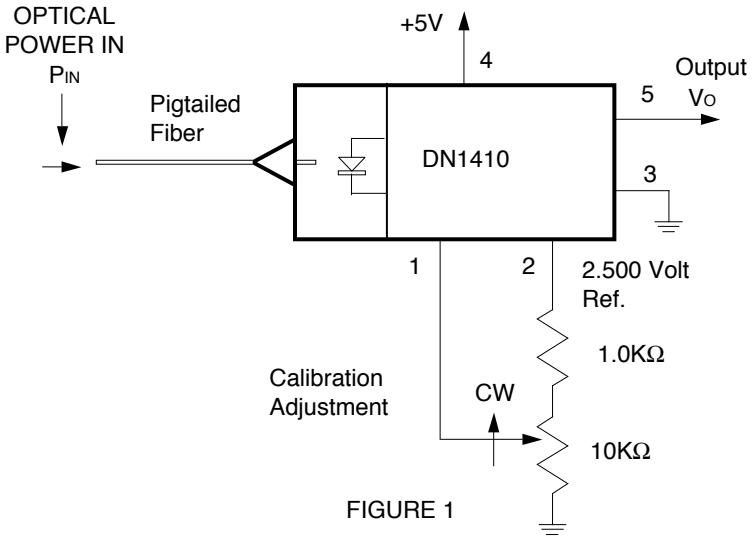
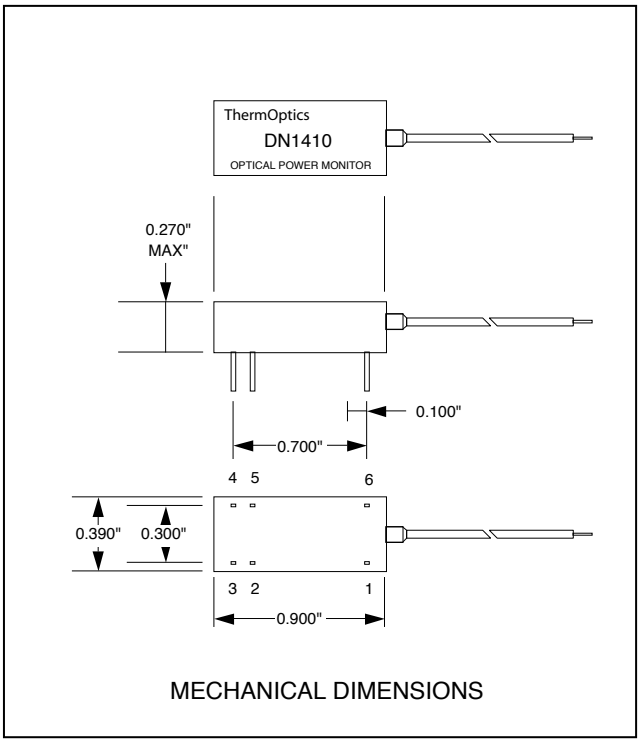


FIGURE 1



MECHANICAL DIMENSIONS

INPUT POWER		OUTPUT VOLTAGE
Watts	dBm	Volts
1 mW	0	4.000
100 µW	-10	3.500
10 µW	-20	3.000
1 µW	-30	2.500
100 nW	-40	2.000
10 nW	-50	1.500
1 nW	-60	1.000
100 pW	-70	0.500

Equation relating optical power input P_{IN} to output voltage V_O.

$P_{IN} = 20(V_O - 4)$ dBm

Example:

$V_O = 2.750$ Volts

$P_{IN} = 20(2.750 - 4) = -25$dBm

The pigtailed DN1410 assembly is calibrated by introducing an optical signal of known magnitude into the fiber and adjusting the calibration potentiometer so that the output voltage corresponds to the input power level.

Example:

One hundred microwatts of optical power @1550nm is introduced into a fiber that is terminated to the InGaAs photodiode inside the DN1410. The output voltage (Vo) will typically be 3.470 Volts when Pin 1 is grounded (the potentiometer is all the way CCW). Rotate the potentiometer CW until the output is 3.500 Volts. The optical power monitor is now calibrated at 1550nm.

The calibration control can be driven from an external voltage source such as the output of a digital to analog converter. This would allow the power monitor to be automatically calibrated in a systems application.

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