

Abstract

There is a module about the measurement of power loss on the optical fiber communication systems practical which held by faculty of electrical and communication in IT Telkom. This module requires an optical power meter to measure the change in power due to attenuation in optical fiber. SKSO laboratories in IT Telkom has two optical power meters are used for lab work. The final task is structured to provide an alternative when the power meter used was broke.

The design is started by changing the light signals into electrical current by a photodetector and then converted into a voltage by “I to V” converting circuit. Out voltage amplified by non-inverting op-amp in order to has a suitable voltage to be read by microcontroller. Next, the voltage will be compared with an output power of a reference power meter to produce an equation that will be used as a program to determine the equivalent power output to a certain voltage.

The result obtained output voltage is 9.9 - 12, 8 mV before has amplified and after has strengthened is 2.44 to 2.87 V. Voltage range is read by the microcontroller for 2255 - 3253 bits. While the reference power meter has a power output of 2.36 to 41.55 nW. From the testing we obtained, the design of power meter has an accuracy which mean have a tolerance of fault is 5.41% and the average degree of precision is 89.38%.

Key words: Photodetector, 32-bit Microcontroller, Analog to Digital Converter (ADC), power meter