PDA015A(/M) Silicon Amplified Detector
Safety & Quick Start Guide

Note: *The information contained in this document is for safety purposes. Thorlabs' green efforts are aimed at reducing waste and preserving our planet's natural resources. To that end, we have created a webpage so that you can digitally read, download, and save a copy of the full product manual and/or other documentation for any item on our website:* www.thorlabs.com/manuals

Description: The PDA015A(/M) is a fixed gain, 380 MHz BW, Silicon (Si) detector designed for detection of optical signals in the 400 to 1100 nm wavelength range. It has a frequency response from DC-380 MHz, an impulse response of 1 ns, and a transimpedance gain of 50 kV/A. Each PDA015A has a power supply connector designed to work with the LDS1212 linear power supply (±12 VDC, 200 mA) that is included with each unit. The PDA015A also includes a removable SM1T1 SM1 Adapter with internal threads and SM1RR retaining ring.

Safety Information

General: All statements regarding safe operation and technical data in the instruction manual will only apply when the unit is operated correctly. A copy of the full product manual can be accessed online at the following website: www.thorlabs.com/manuals

Before Applying Power: Each PDA015A is supplied with an external ±12 V power supply. Before connecting the power supply to the mains make sure that the RED Line Voltage Switch on the Power Supply Module is set to the proper voltage range so that it agrees with your local mains supply voltage. The PDA015A should always be powered up using the power switch on the power supply or the PDA015A itself. Hot plugging the unit is not recommended.

Covers and Service: Do not remove the cover of the PDA015A. There are no user serviceable parts in this product. Refer servicing to qualified personnel. Do not cover the device in order to prevent overheating of the instrument.

Explosive Environments: Do NOT operate this device in explosive environments.

Please read the Operational Precautions on the other side of this sheet

Operational Precautions

ESD Sensitivity: The components inside the PDA015A(/M) are ESD sensitive. Take all appropriate precautions to discharge personnel and equipment before making any electrical connections to the unit.

Shielded Connections: The PDA015A must be operated with proper shielded connection cables. Attach a 50 Ω BNC-type coaxial cable (i.e. RG-58U) to the output of the PDA015A. For best performance, we recommend terminating the cable with a 50 Ω load at the measurement instrument. If the instrument has a high impedance input, then adding an external 50 Ω load resistor may be an option. Do not add an external 50 Ω resistor if the instrument has an internal 50 Ω termination, as the resulting 25 Ω load could damage the output of the PDA015A.

Electromagnetic Interference: Mobile telephones, cellular phones or other radio transmitters are not to be used within the range of 3 meters of this unit since the electromagnetic field intensity may then exceed the maximum allowed disturbance values according to IEC 61326-1.This product has been tested and found to comply with the limits according to IEC 61326-1 for using connection cables shorter than 3 meters (9.8 feet).

Powering On: Note that immediately after the power is switched on, the output of the PDA015A will momentarily (for 200 ms) go to its maximum output voltage (5 V for 50 Ω load or 10 V for high impedance load). For sensitive equipment that cannot tolerate this brief spike, turn on the PDA015A before connecting to its output.

Input Optical Power: Photodiodes are sensitive devices and can be easily damaged by overpowering them; care must be taken to ensure functionality. Be careful not to illuminate to photodiode beyond its 150 µm diameter as this can degrade performance. Optical power can be converted to voltage using the formula noted below. Please use the formula to ensure the detector is not saturated.

$$Voltage\ (V) = Optical\ Power\ (W) \times Responsivity\ (A/W) \times 50{,}000\ (V/A) \times (R_{LOAD} / (R_{LOAD} + 50\ \Omega))$$

The maximum output of the PDA015A is 5 V for 50 Ω loads and 10 V for high impedance loads. Be sure not to exceed these output levels to avoid signal distortion. If necessary, use neutral density filters to reduce the input light level.

Caution Using Fiber Adapters: The PDA015A was designed to allow maximum accessibility to the photodetector by having the front surface of the diode close to the outside of the PDA015A's housing. When using fiber adapters, make sure that the fiber ferrule does not crash into the detector. Failure to do so may cause damage to the diode and/or the fiber.

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