DTS uses a dual-channel APD photodetector

Product Description

The DTS-APD2 module integrates two sets of single-mode/multi-mode WDM and APD photodetectors, widely used in distributed optical fiber temperature sensing to detect Stokes and Anti- Stokes signal light respectively.

Product features

Proprietary dual-channel design; optimized for Raman signals; high gain and low noise; built-in temperature compensation; wide bandwidth and low NEP

Part Number

MP-DTS-APD2-I-SM-M

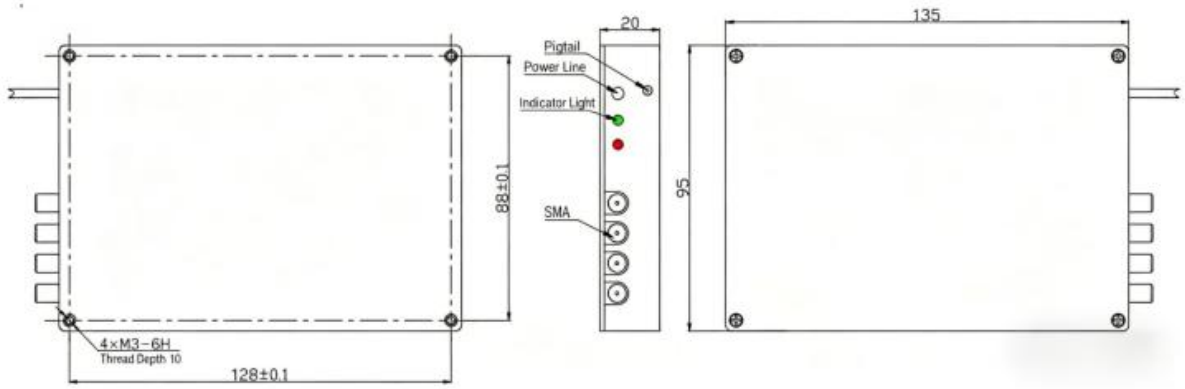
Application area

Distributed Fiber Temperature Measurement (DTS) | Fiber Optic Vibration/Acoustic Monitoring (DVS/DAS) | Optical Communication and OTDR | Optical Communication and OTDR

Core parameters

Operating wavelength	Tape width
900-1700nm	150MHz

Dimension Drawing



General Parameters

The module incorporates an integrated temperature and pressure control module, ensuring that the APD photodetector chip remains in a constant operating state with minimal temperature drift and low noise levels. To handle weak signals, the module employs multi-stage amplification and noise suppression techniques, delivering high-quality output signals and enhancing the system's signal-to-noise ratio.

The detector module operates on a single DC+5V power supply and incorporates high-precision drive circuits and logic control circuits, allowing work parameters to be configured via the serial port and host computer.

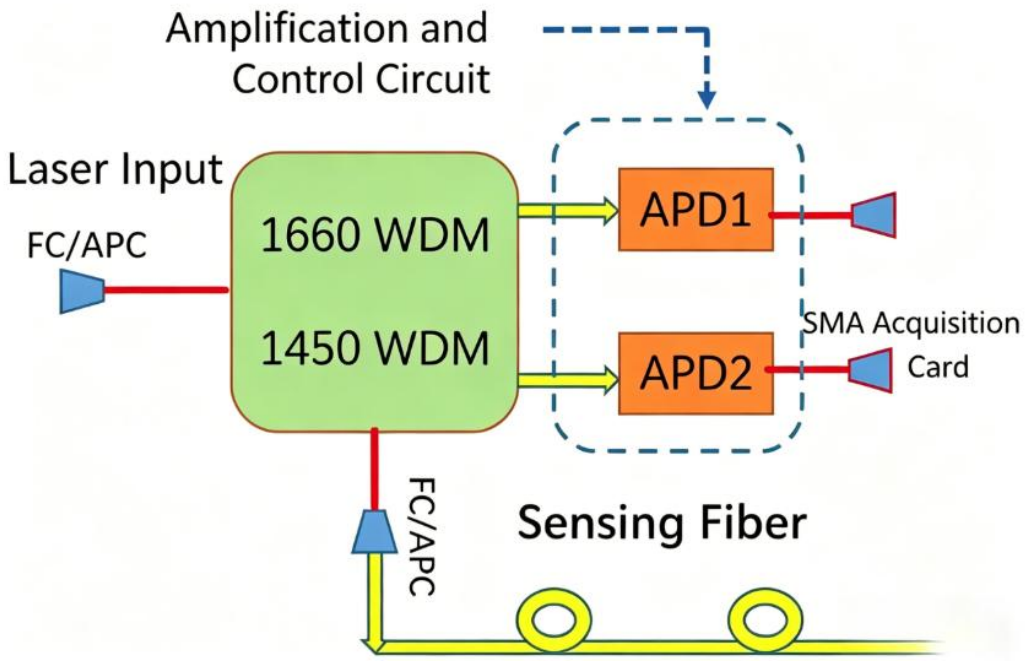


Figure1 : Principle Block Diagram ofthe DTS-APD2 Photodetector

As shown in Figure 1, this module integrates functional modules including 1450 nm

and 1650 nm WDMs,low-noise APD multi-stage amplification circuits, and control circuits

Parameter:

Parameter	Unit	Least value	Representative value	Crest value
APD Photodetector Specifications				
Operating wavelength	nm	00	-	1700
Responsiveness	A/W	-	8.5	20
Snow avalanche voltage VBR	V	40	-	60
Dark current	nA	-	2	10
Tape width	MHz	-	150	-
Photoelectric current responsivity	mV/nA	-	100	-
WDM optical index				
Operating wavelength	nm	1450 & 1550 & 1660		
Band range	nm	1443-1457 & 1553-1557 & 1645-1685		

Insertion loss	dB	-	-	1.2
1460/1550+1660 Isolation degree	dB	60	-	-
1660/1550 + 1450 Isolation degree	dB	60	-	-
Stability of insertion loss temperature	dB/℃	-	-	0.005
Wavelength Stability	nm/℃	-	-	0.003
Return loss	dB	45	-	-
Power Carrier	mW	-	-	500

Work Environment

Parameter	Unit	Least value	Representative value	Crest value
Operating temperature range	℃	-10	+25	+60
Storage temperature range	℃	-40	+25	+85
Relative humidity	%	5	40	90

Power Specification

Parameter	Unit	Least value	Representative value	Crest value
Service voltage	V	4.75	5	5.25
Current	A	-	0.8	-
Power dissipation	W	⩽20		

Interface Definition

Interface type	Label	Explain	Interface type
Source	DC+5V/GND	Module Power Supply	AFR-250 Silver-plated Copper Wire
Pilot lamp	LED (green)	Work Indicator Light	Normal: periodic flickering
	LED（ red ）	Alarm indicator	The red light is always on as an alarm.
Fiber Optic Interface	IN	Laser input port	900 μm sleeve single-mode fiber, FC/APC connector
	OUT	End sensing optical fiber	900 μm sheathed multimode fiber, FC/APC connector

Signal output port	S+	Stokes optical signal differential +	SMA Template
	S-	Stokes optical signal differential-	SMA Template
	AS+	Anti-Stokes optical signal differential +	SMA Template
	AS-	Anti-Stokes optical signal differential -	SMA Template

Tail Fiber Specifications

Project	Explain
Fiber Optic Type	SMF 900μm sleeve (laser input end) MMF 900μm sleeve (sensor fiber end)
Tail fiber length (mm)	500±20 (customizable)
Connection type	FC/APC

Optical Interface Tag

Optical Interface	Tag Text	Tag Format
Laser input port	IN	Casing
Sensor optical fiber end	OUT	Casing

Warning Label

Warning Label	Warning Content	Tag format and position
Laser safety warning label		
Anti-static warning label		

Order Information:

MP-DTS-APD2-I-SM-M

SM = single-mode; MM = multimode 62.5/125; others are customized