

High Speed Analog Fiber-Coupled Amplified Detector



(900-1600nm, 100kHz to 3GHz, 20dB gain, SM28 Fiber)

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Features

- 0.1MHz to 3GHz
- SM28 Fiber
- Low Loss
- Low Cost
- Stable

Applications

- GSM Repeater
- CDMA Repeater
- WCDMA Repeater
- PHS Repeater
- Digital TV Repeater
- Broadcast Repeater

The HAPD series High-Speed Analog Fiber-Coupled Amplified Detector is designed to detect and receive analog optical signals across a wide bandwidth of 100 kHz to 3 GHz. It converts an optical input into an RF output through a high-performance, low-noise, and high-linearity amplifier. This detector is ideal for high-speed fiber optic detection and RF-over-fiber applications when paired with a matching transmitter that converts an RF signal into an optical signal.

Specifications

Parameter	Min	Typical	Max	Unit
Optical Wavelength	900	1550	1600	nm
Optical Input Power	0.001		3	mW
Sensitivity @1550nm	0.9			A/W
Optical Return Loss	40			dB
Operation Frequency Range	0.1		3000	MHz
Amplified Gain	20		25	dB
Gain Adjustability	10			dB
Noise Figure			1	dB
Gain Flatness (p-p)		3	4	dB
RF Output Power@1GHz/1mW Input	-5		1	dBm
RF Input Power	-45	-40	-30	dBm
Spurious Free Dynamic Range	100			dBm/H ^{2/3}
Fiber Type		SM28		
Fiber Connector Type		FC/APC		
RF Output Impedance		50		Ω
RF Connector		SMA Female		
Power Supply		5		VDC
Power Consumption	3			W
Weight	0.5			kg
Operating Temperature	-20		50	°C
Storage Temperature	-45		85	°C

Note: The specifications provided are for general applications with a cost-effective approach. If you need to narrow or expand the tolerance, coverage, limit, or qualifications, please [click this link](#):

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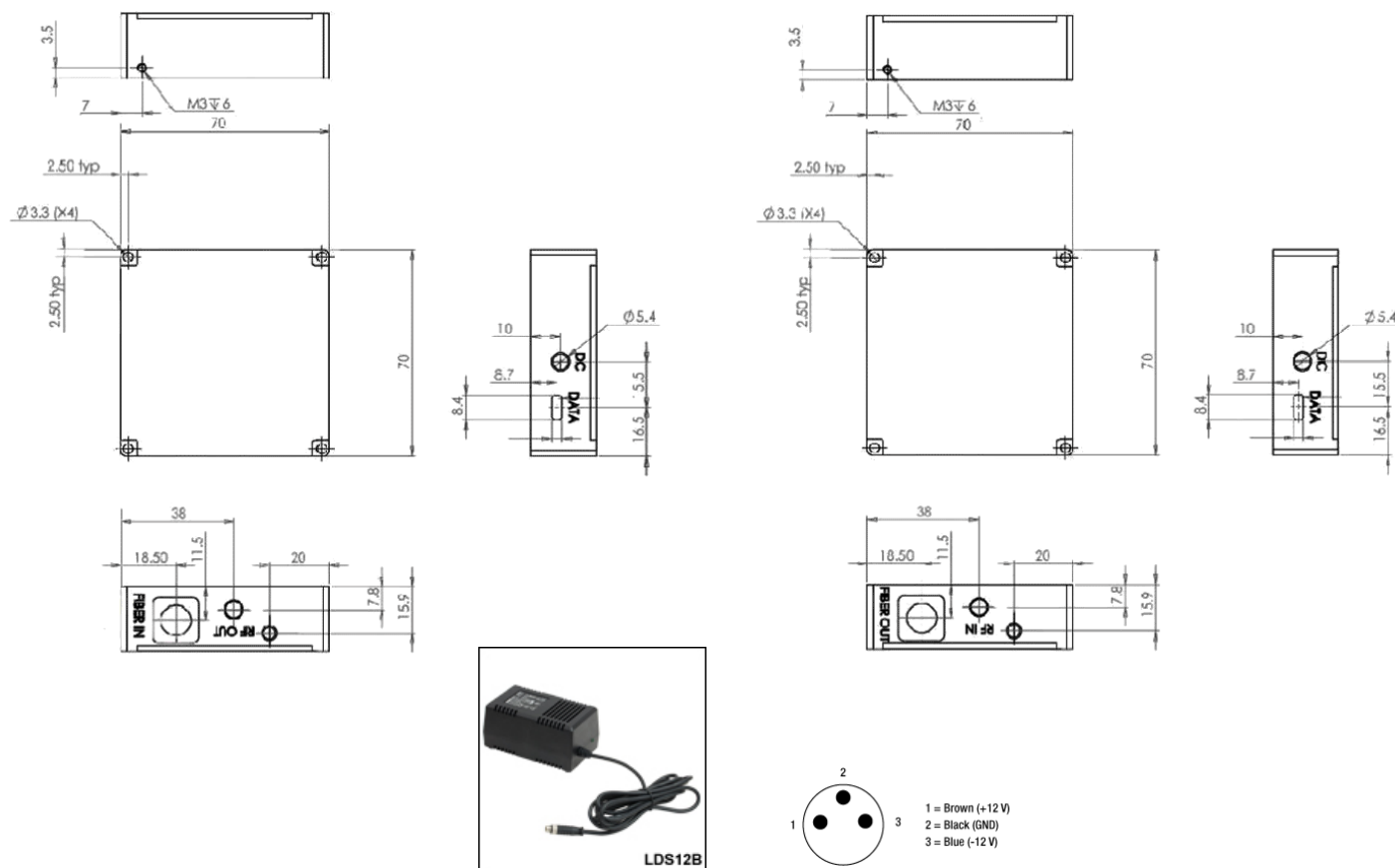
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Dimensions (Unit: mm)



*Product dimensions may change without notice. This is sometimes required for non-standard specifications.

Ordering Information (Part Number)

Prefix	Low Frequency	High Frequency	Wavelength	Gain	Package	Fiber Connector ^[1]
HAPD-	0.1MHz = 001 Special = 000	2GHz = 2 3GHz = 3	900-1600 nm = 5 Special = 0	20dB = 20 Special = 00	Module = 1 Special = 0	FC/APC = 2 FC/UPC = 3 SC/APC = 4 SC/UPC = 5 LC/APC = A LC/UPC = U Special = 0

[1]. The default connector configuration uses fiber with 0.9 mm buffer protection. The connector cannot be installed directly onto bare fiber because the bare fiber is prone to damage during shipping. However, the connector can be assembled on bare fiber if a 3 cm protective loose tube is added for reinforcement. The customer may remove this protective tube after testing. The optical power handling of a standard connector is less than 0.5 W for SMF-28 fiber and decreases further for smaller-core fibers.

Note:

* Bidirectional means two-way communications via a single fiber link. The price is double since it comprises two pairs of transceivers and receivers with WDM (different wavelength) or circulator (same wavelength) cable jumpers.

Red marked -- Special order

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Application Notes

Fiber Core Alignment

Note that the minimum attenuation for these devices depends on excellent core-to-core alignment when the connectors are mated. This is crucial for shorter wavelengths with smaller fiber core diameters that can increase the loss of many decibels above the specification if they are not perfectly aligned. Different vendors' connectors may not mate well with each other, especially for angled APC.

Fiber Cleanliness

Fibers with smaller core diameters ($<5\text{ }\mu\text{m}$) must be kept extremely clean, contamination at fiber-fiber interfaces, combined with the high optical power density, can lead to significant optical damage. This type of damage usually requires re-polishing or replacement of the connector.

Maximum Optical Input Power

Due to their small fiber core diameters for short wavelength and high photon energies, the damage thresholds for device is substantially reduced than the common 1550nm fiber. To avoid damage to the exposed fiber end faces and internal components, the optical input power should never exceed 20 mW for wavelengths shorter 650nm. We produce a special version to increase the handling by expanding the core side at the fiber ends.

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