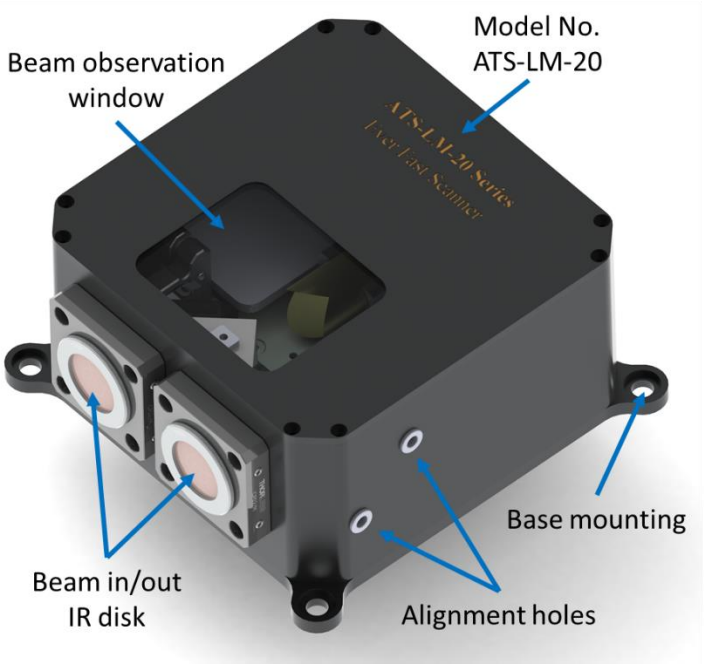
THz System™
Advance the future

Ultrafast Optical Delay Line

ATS-LM20 Series

Introduction

Advanced Terahertz Systems' ultrafast delay lines are the ideal choices to speed up your scanning with high precision. The standard version provides a tunable optical stroke up to 20 mm, equivalent to 130 ps optical delays, while the resolution is down to 0.1 um. Such an optical scanner is capable of high-speed motion up to 8 Hz, corresponding to 16 spectra/s under full stroke range (130 ps). Furthermore, the speed can be even faster, up to 20 Hz (40 spectra/s) when scanning for 40 ps delay. Thanks to the high performance & low moving mass stage, the module is quite with low vibration, and the optimized design grants extraordinary stability to the modules, ideal for long term operation. The optical delay modules can be independent instruments for "plug in & use", and they are also suitable for integrating into wide range of systems, such as:



- Terahertz Time domain spectrometers
- Femtosecond laser powered Pump & probe systems
- Optical coherence tomography (OCT) systems, and
- Other equipment and/or testing instruments where the fast & precision optical delay management is required.

The standard version ATS-LM20-20-800 equipped with optics for 800 nm laser beam, other wavelengths are available upon request. For fiber lasers or fiber coupled systems, we recommend our all fiber coupled version **LM-S 12 Fiber Series**. The delay unit has integrated controllers in the optical heads, when power is on, the scanner will start to work automatically. Basic LabView (NI) program are provided for quick usage. Examples based on C, Python are available upon requests.

Application notes: ATS recommends high speed data acquisition devices to be compatible with the fast scanners. Conventional Lock-in amplifiers may not be able to follow the fast scanners due to the low data handling rate.

Recommended combinations

In pump & probe system, ***ATS-LM20 free space*** or ***LM-S-12 Fiber Series*** is recommended for fast scanning on the Pump path, while ***ATS-LRD-1500*** or ***ATS-LRD-DD series*** are recommended for long range optical path management (up to 800 mm stroke) on the probe/detector path.

For THz spectroscopies, ***AFG-400 module*** is recommended for THz signal amplification, ***DCHV module*** for DC bias up to 120V and ***ACHV*** for high speed AC modulation up to 50 kHz with ± 50 V

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Specifications (ATS-LM20-20-XXXX)

Delay stage stroke	**0 - 20 mm**
Optical Delay Resolution	0.2 um or 0.7 fs (calculated from encoder counts)
Optical damage power	500 mW (Ultrashort pulse laser)
Insertion loss	< 1dB (typical 0.5dB)
Internal optical path	12 cm (air) + Stroke length (air)
Power in	24 VDC 2.5A
[1]Control	Integrated controller with CAN bus communication
[2]Dimensions	140 mm × 140 mm × 68 mm

Notes:
[1]The drivers are integrated in the optical module.
[2]The dimensions exclude the optical and electrical connectors.

Product Code

Please contact us for the availability if your needs are beyond the listed terms

ATS	**-XXXX**	**-XXXX**	**-XXXX**
↓	↓	↓	↓
A product of Advanced THz Systems	LM20	**Stroke:** 20 mm	**Operation wavelength:** 800 nm Any wavelength available upon requests

Caution!

- Precision instruments, handle with extra caution.
- Usage and storage out of controlled environment leads to lower performance.
- Dissemble the module with lead to the warranty void immediately.

3D drawing of the Fiber coupled long range delay line

All the dimensions are in mm.

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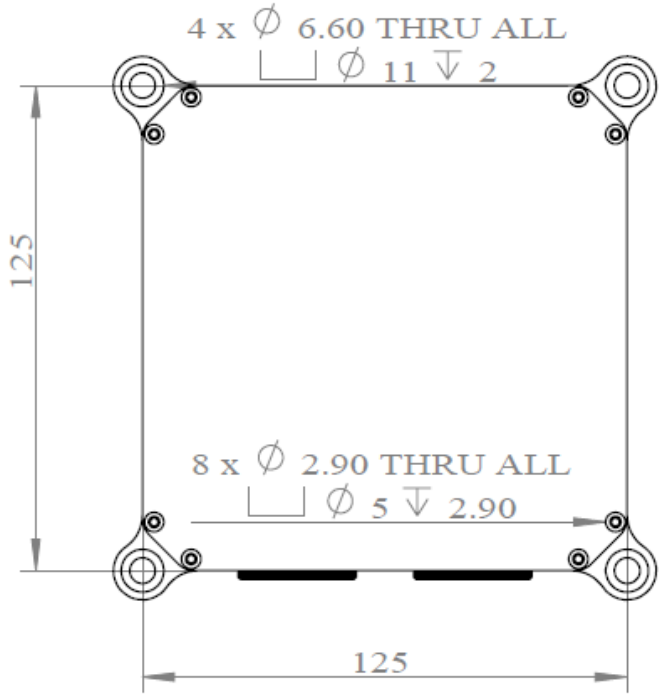

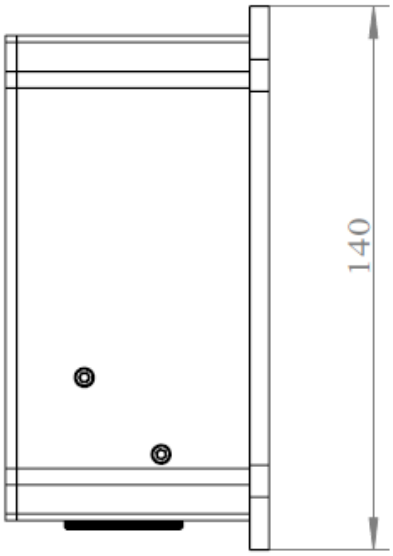

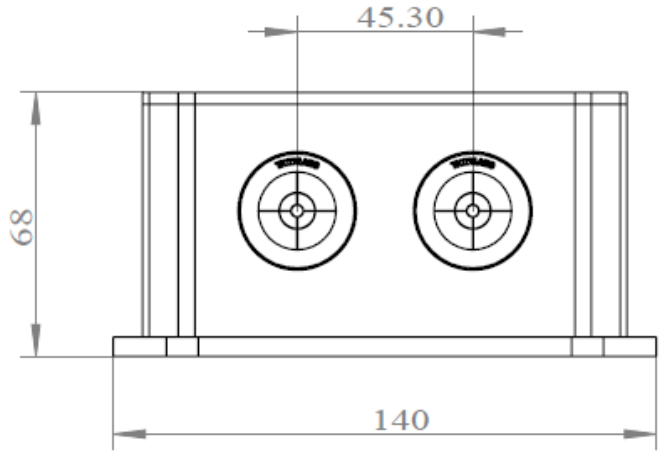

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