

## 2.7. Laser characterization - limitations

Laser sources can be measured by directly shining laser light into the spectrometer via an optical fiber or through the free-space input port. There are however two key limiting aspects to take into account.

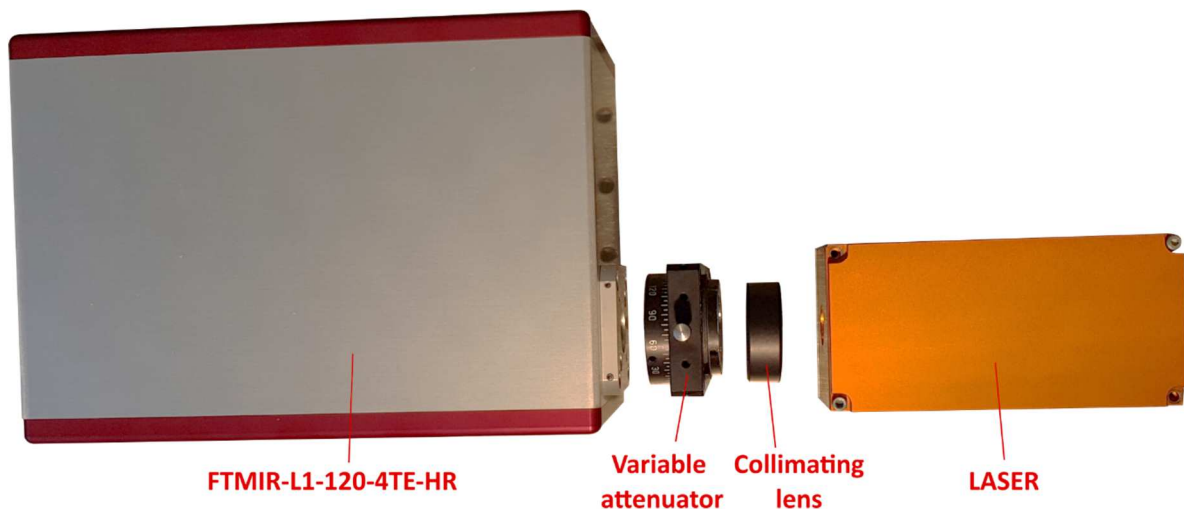


Figure 2.6 Laser characterization using the ARCoOptix FTMIR-L1-120-4TE-HR

### Maximum input power

Whether the laser source to be characterized is continuous wave (CW) or pulsed, the following limits must be watched at all time. **Failing to respect these power limitations will result in loss of warranty and may lead to breakage of the detector .**

- The CW, average or peak power of pulses longer than 1 $\mu$ s must not exceed 25mW
- The peak power of pulses shorter than 1 $\mu$ s must not exceed 100W
- For repeated irradiation with pulses shorter than 1  $\mu$ s, the equivalent CW irradiation, i.e. average power over the pulse-to-pulse period should be less than the CW maximum power according to equation:

$$\text{(Equivalent CW radiation power)} = \text{(pulse peak power)} * \text{(pulse duration)} * \text{(repetition rate)}$$

### Minimum repetition rate

Pulsed lasers (or pulsed sources in general) can only be measured if their repetition rate is faster than the FTIR modulation frequency. Typically, only lasers with **repetition rates above 10 kHz** can be measured. Please contact ARCoOptix for further information.