

venteon pre-amp

Femtosecond preamplifier modules



A Novanta Company

- 1030 nm amplification
- Amplification and pulse picking
- >1 nJ output
- Ideal for amplifier seeding



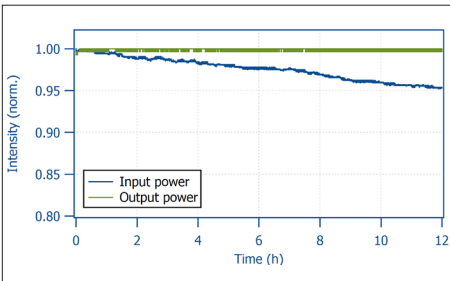
Overview

The **venteon pre-amp** modules have been developed for the amplification of low energy pulses (~ 10 pJ) to significant higher power levels. Designed for amplifying the narrowband 1030 nm output of the **venteon dual** laser system, the alignment-free preamplifier modules can also be used as an independent amplification module for other laser systems.

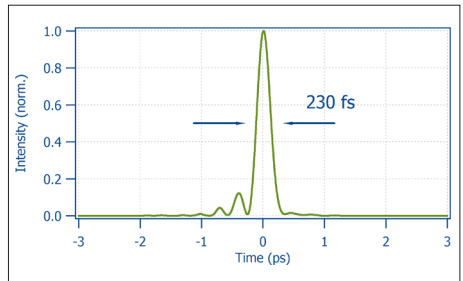
The different versions of the **venteon pre-amp** modules allow for a simple scaling of the pulse energy (**pre-amp 1**) and a reduction of the fundamental repetition rate of the seed oscillator using a fibre coupled pulse picker directly implemented within the amplifier module (**pre-amp 2**).

The control electronics contain several interlock functions as well as output power stabilisation technology to ensure reliable long term operation. Therefore the **venteon pre-amp** modules are best suited for seeding high power stages such as ROD-Type fibre amplifiers, regenerative amplifiers or slab amplifiers.

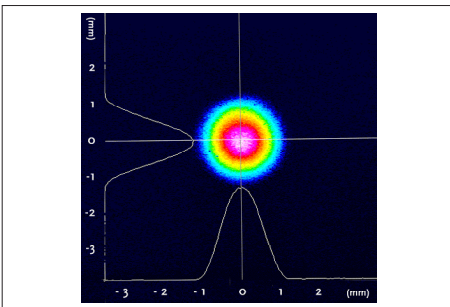
Typical performance



Typical output power of a preamplifier module measured over 12 hours. The output power is stabilised and therefore independent of seed power fluctuations in a range up to 20%.



Example of an externally compressed pulse of **pre-amp 1** using a grating compressor (Treacy configuration) measured with a **venteon SPIDER**. The pulse duration is as short as 230 fs.

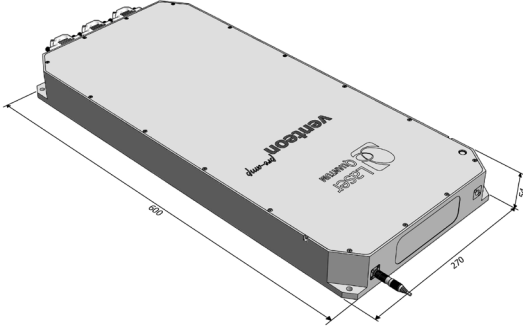


Measured output beam profile of a **venteon pre-amp 1**.

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Dimensions (mm)

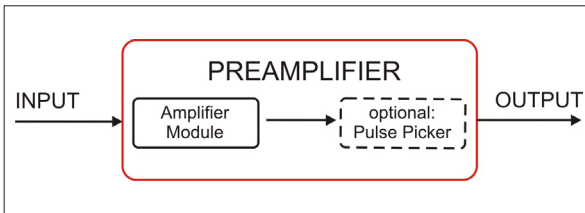


Drawings are for illustrative purposes only. Please contact Laser Quantum for complete engineer's drawings.

System overview

Input

| | pre-amp |
|---------------------------|-----------------|
| Pulse duration | >150 fs |
| Spectral bandwidth (FWHM) | >10 nm |
| Average input power | >2 mW (@80 MHz) |
| Central wavelength | 1030 nm |



Output

| | venteon pre-amp1 | venteon pre-amp2 |
|--|-------------------------------|------------------------------|
| Center wavelength ¹ | 1030 nm | 1030 nm |
| Spectral bandwidth (FWHM) | > 8 nm | > 8 nm |
| Average output power | depending on repetition rate | depending on repetition rate |
| Repetition rate | determined by seed oscillator | 0.3 - 80 MHz (variable) |
| Pulse energy | 1 nJ | > 0.5 nJ |
| Pulse duration (measured) ² | > 10 ps | > 10 ps |

¹ Other wavelength up to 1064nm available upon request

² Output is stretched

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