



## **INSTRUMENT USAGE SHEET**

### **ULTRASHORT PULSE AMPLIFIED LASER – CLASS IV – TRIDENT (AMPLITUDE TECHNOLOGIES, NOW AMPLITUDE)**

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#### **General Information**

**Instrument:** Ultrashort pulse amplified laser – Class IV – Trident (Amplitude Technologies, now Amplitude)

**Manufacturer:** Amplitude Technologies

#### **Location:**

- CRIETT – Torre Building
- Via Valleggio 11, Como
- Floor: 3 – U.N.O. Lab (CO. VALLEGGIO.TORRE P3.013.0)

#### **Contacts:**

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#### **Authorized Users:**

Prof. Lucia Caspani

Prof. Matteo Clerici

Prof. Paolo Di Trapani

Dr. Ottavia Jedrkiewicz



**Training Required: Yes\***

Independent use of the instrument is allowed. The practical component consists of individual training (with duration defined by the instrument supervisors). For the theoretical component, the supervisors will provide a handout explaining the operating principles.

**Internal tickets can be viewed on the intranet page (access with university credentials):** <https://intranet.uninsubria.it/areadocumenti/ticket-strumenti-criett-utenti-interni>

**The fee schedule for external users can be viewed on the website:**  
[www.uninsubria.it/criett](http://www.uninsubria.it/criett)

**Acknowledgment Requirement (see CRIETT Regulations, Art. 11):**  
Use of CRIETT major equipment must be acknowledged in scientific publications using the following wording:

“The scientific support from CRIETT centre of University of Insubria (instrument code: MAC25) is greatly acknowledged.”

**Instrument Code:** MAC25

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## **Access Modes**

### **1. Direct Access (Self-Service)**

**Who:** Only users who regularly operate the instrument have received specific training and are authorized by the instrument supervisors.

**How:** Trained users may independently access and operate the instrument through online booking.

### **2. Occasional / Temporary User**

**Who:** Research groups that use the instrument occasionally, external users, or those without qualified personnel.

**How:** Access is granted upon authorization and under the supervision of the instrument managers, with support from technical staff under their direction.

## Description and Functions

The Trident laser system is an amplified Ti:Sapphire laser with a repetition rate of 20 Hz, producing ultrashort pulses (38 fs, transform limited) with high pulse energy (12 mJ). It is designed for applications in ultrafast nonlinear optics, laser micromachining, and radiation–matter interaction studies.

## Technical Specifications:

The laser system consists of:

- A femtosecond oscillator with its pump laser and chiller
- A stretcher with optics polished to  $\lambda/10$
- A regenerative amplifier driven by a GenPulse module
- A multipass pre-amplifier equipped with a Quantel CFR200 pump laser
- An optical compressor based on diffraction gratings

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## ⚠ Safety Warnings

- Use it only after completing the required training
- Follow all laser safety regulations
- Turn off the laser after use
- In case of doubts or malfunctions, contact the supervisor

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## Operational Notes

- Self-service use is allowed only for trained and authorized users
- Any malfunction must be promptly reported to CRIETT staff

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## User-Provided Materials and Accessories

- Infrared viewer



- Infrared detection cards
- Laser safety goggles
- Broadband autocorrelator (400–1600 nm)
- Energy meter

