

# Clocklaser

## Laserdiode

- Datasheet [Serial Number: BA-02465]
- Datasheet [Serial Number: BA-02464]
- Temperature Laserdiode:
  - `<fc #ff0000>XX</fc>` [2018]
- Typical Current Laserdiode:
  - 96 mA [2018]

## Tapered Amplifier

- Temperature TA:
  - `<fc #ff0000>XX</fc>` [2018]
- Typical Current TA:
  - `<fc #ff0000>96</fc>` mA [2018]

## Turning on the Laser

We use toptica electronics:

1. Turning the main-key to on. The LED's from the temperature control will go on!
2. Push the green button. The green LED from the button will go on!
3. Switch on the toggle (=Kippschalter) from the laserdiode. The green LED from the laserdiode module will go on!
4. Switch on the toggle from the TA, if he is seeded! The green LED from the TA module will go on!

If the switches are on, then not steps 3. & 4. 😊

## Turning off the Laser

Both toggles to switch to off(Laserdiode/TA) is not required!

1. Push the red button. The green LED will go out!
2. Turning the main-key to "mains"

## Turning off the Laserdiode

1. Switch off the toggle from the TA. The green LED from the TA module will go out!

2. Switch off the toggle from the laserdiode. The green LED from the laserdiode module will go out!

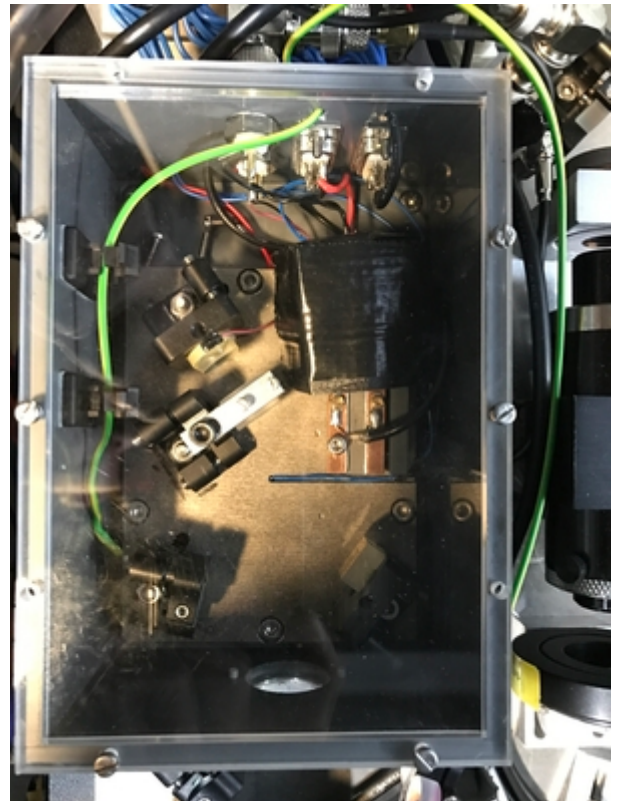
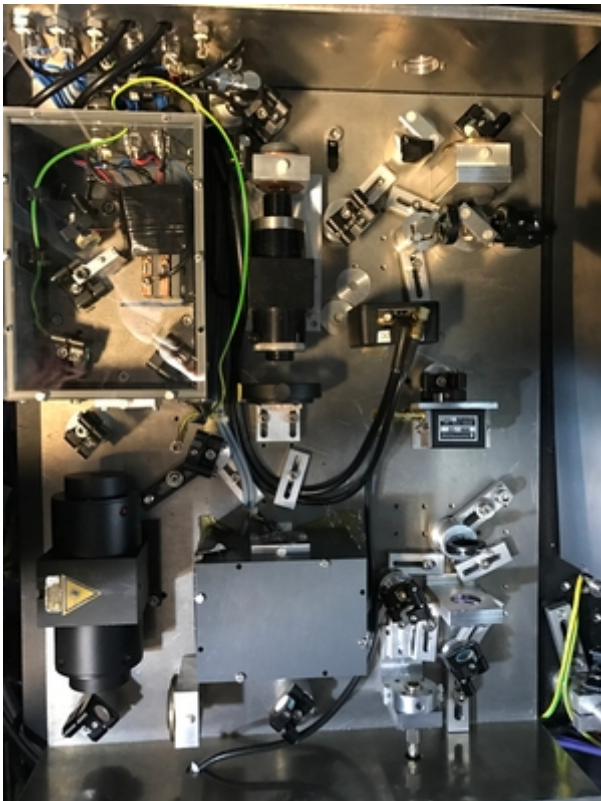
### Turning off or on only the TA

1. Switch off or on the toggle from the TA. The green LED from the TA module will go out or on!

## Locking to the resonators

1. **Put a Paper in front R1! - Check Laserdiodepower after Laserhousing - TA Lock: If the incoupling is good  $\rightarrow$  1A - after TA:  $\sim 200\text{mW}$  - Nessasray lock power:  $200\text{mW}$  - Intensity Lock - after Isolator  $\sim 120\text{mW}$  - otherwise improve the optical way to the Isolator for more power - mit Output Offset des Intensitäts-PID auf  $100\text{mW}$  herunterdrehen - HENCE: Check always Power after Isolator of R1: not more than  $100\text{mW}$ !**
2. Only activate PDH/TA, if the power is  $70\text{-}100\text{mW}$  after the Isolator of R1
3. Tune the Piezo to TEM00
4. Lock RAM
5. Lock Fiberstabilization

## Littmann design



**Typical efficiencies at 916 nm:**

- Isolators: 80 %
- AOMs: 50-60 %
- Fiber coupling: 50 %

**Typical values for the laser:**

- Frequency: 327.5293 THz (doubled upstairs directly behind SHG: 655.058 566 THz)
- Power after ECDL:
  - ~12 mW (@ ~90 mA) [2016]
  - ~<fc #ff0000>XX</fc> mW (@ ~96 mA) [2016]
- Power after TA:
  - ~200 mW (@ ~1000 mA) [2016]
  - ~<fc #ff0000>XX</fc> mW (@ ~1165 mA) [2018]
- TA current should be <1.2A otherwise the fiber stabilization will soar (=aufschwingen)

**Typical values in front fibers:**

- Power before fiber for wavemeter/comb/mode analysis cavity:
  - ~12 mW [2016]
  - ~<fc #ff0000>XX</fc> mW [2018]
- Power before AtomLabFiber:
  - ~30 mW → 15 mW upstairs before TA [2016- without fiber stabilization]
  - ~<fc #ff0000>XX</fc> mW → 20 mW upstairs before TA [2018]
- Power to R2:
  - ~2.5 mW [2016]
  - ~<fc #ff0000>XX</fc> mW [2018]

**Typical values for the resonators:**

- In front of telescope: 2.2 mW
- In front of AOM: 1.5 mW
- In front of fiber: 450  $\mu$ W
- 100  $\mu$ W between Isolator and BS
- 50  $\mu$ W in front of Resonator

**Typical values for locking signals:**

- PDH error signal locked ~500 mV PP / unlocked ~200 mV PP
- Intensity Error signal ~2 mV PP / DC:
- Fiber Stabilization Locked ~200 mV PP / Unlocked ~2 Volt PP

**Manuals and Datasheets**

From:

<https://iqwiki.iqo.uni-hannover.de/> - IQwiki

Permanent link:

<https://iqwiki.iqo.uni-hannover.de/doku.php?id=groups:mg:clocklaser&rev=1529065358>

Last update: **2018/06/15 12:22**

