



OFC-ALPHA



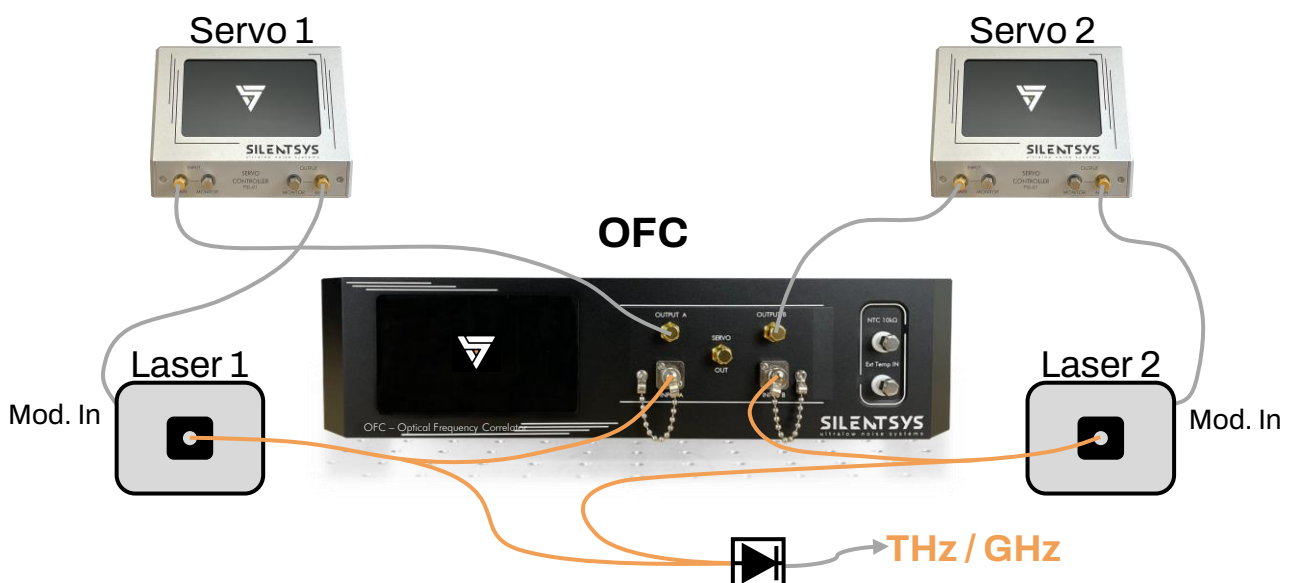
OPTICAL FREQUENCY CORRELATOR

The OFC-ALPHA system is comprised of a common 2-input optical frequency discriminator (OFD). This makes it possible to frequency-stabilize two wavelength-distant lasers onto the same optical reference to reduce their frequency fluctuations and to correlate them.

Based on this fact, the optical beat frequency between the two stabilized lasers generates a THz or GHz signal that reaches a very low frequency noise level and high frequency stability.

Moreover, as a standard OFD, it smartly delivers a voltage signal that is proportional to the frequency fluctuations of the input laser beam. This turn-key device is suitable for laser frequency noise characterization and/or for laser frequency stabilization to drastically reduce its optical full-width-at-half-maximum linewidth. The OFC features ultralow noise performances, achieving frequency noise levels as low as $0.01 \text{ Hz}^2/\text{Hz}$, in a compact and user-friendly package. It also includes external temperature control to act on the laser frequency once it is locked onto the OFC.

HOW-TO-USE



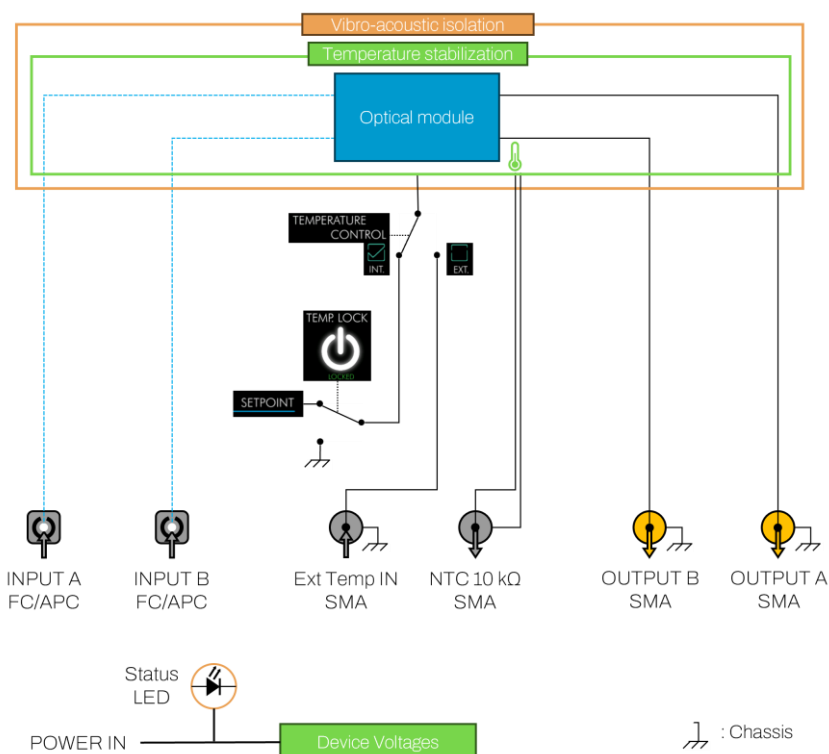


SPECIFICATIONS

- Number of optical inputs: 2
- Laser type: Single-frequency continuous wave
- Available wavelengths: 385 nm – 2200 nm (to be defined on order)
- Optical input power: typ. 200 μ W before saturation (measured at 1.5 μ m)
- Optical input connector: FC/APC
- Free Spectral Range (FSR): typ. 2 MHz to 2 GHz
- Frequency noise floor limit: typ. < 0.01 Hz²/Hz
- Typical laser linewidth achievable: down to Hz-level
- Number of electrical outputs: 2
- Electrical output connector: SMA
- Electrical output voltage range: $\pm$ 3 V max
- External temperature control
- NTC resistance reading connector: SMA
- Temperature control input connector: SMA
- Interface: Touchscreen
- Product dimensions: 360 x 360 x 88 mm³
- Product weight: approx. 8.2 kg
- Aluminum case
- Temperature: +10 °C to +40 °C

FUNCTIONAL DIAGRAM

The functional diagram is a simple view of what the instrument does. It enables a fast and simple understanding of the internal functionalities in respect to the system inputs and outputs.





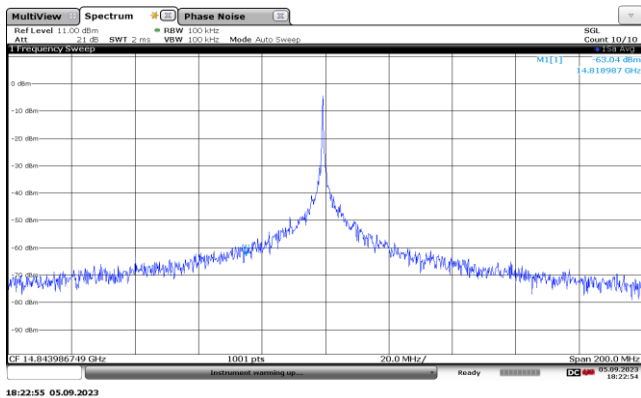
PRODUCTS



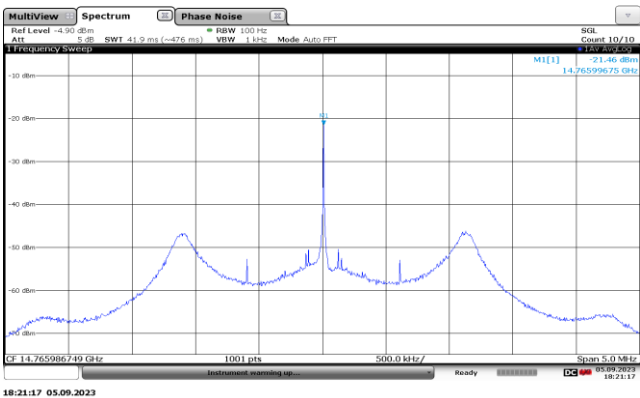
PERFORMANCES

Here are typical results of a beat note measured at ~14.5 GHz, when lasers are free-running and locked. The two lasers are emitting at telecom wavelength and are semiconductor DFB lasers.

The optical beat note has been detected on a fast photodiode and analyzed with Signal Source Analyzer FSWP-26 from Rohde & Schwarz.



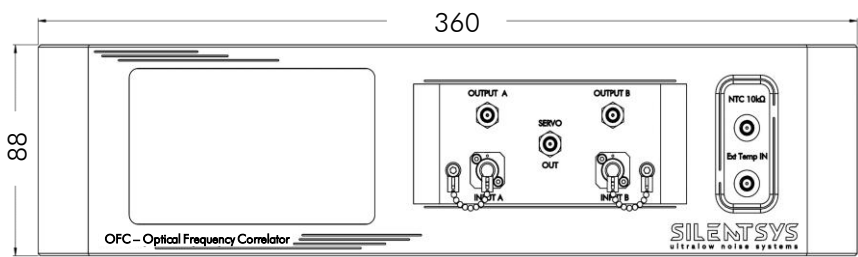
Free-running



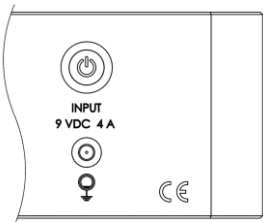
Locked

DRAWINGS

The dimensions of the device are presented here with a simplified view. It also shows the connections from the front and back view of the instrument.



FRONT



BACK (cropped)

Dimensions are in [mm]