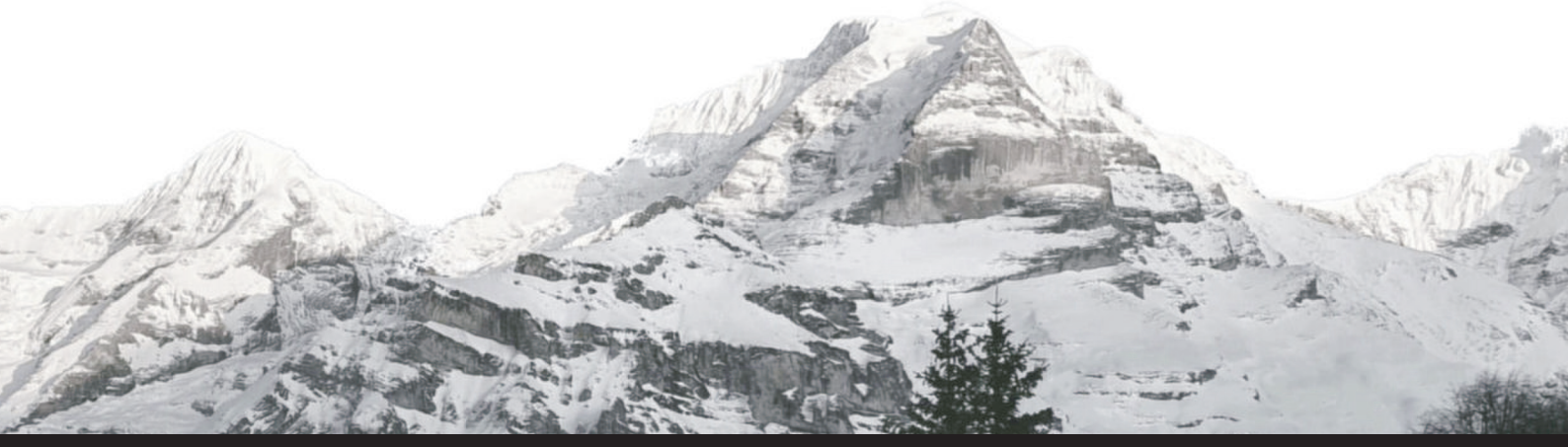
SILENTSYS

ultralow noise systems

CATALOG
PRODUCTS AND SERVICES



PHOTONICS ELECTRONICS THz / GHz

info@silentsys.com
www.silentsys.com

Company presentation

WHO WE ARE

SILENTSYS is a French company based in Le Mans, which develops, produces and markets innovative low-noise systems covering photonics, microwaves/THz and electronic modules.

Thanks to our know-how, patented technology and innovative designs, we can offer high-performance, compact, easy-to-use and affordable systems, such as turnkey laser frequency stabilization modules enabling linewidths in the Hz range to be achieved in a "compact format".

SILENTSYS
ultralow noise systems

- AGILITY
- KNOW-HOW
- INNOVATIONS
- PROFESSIONALISM

WHAT IS OUR MISSION

Our goal is to provide systems that are highly compatible with the needs of emerging industrial and laboratory applications such as those related to Quantum technologies, as well as Communications, Cryptography, Computing, Metrology, Sensing...

We aim to offer solutions that best fit your application and make your life easier.

- Team of 11 people
- Facilities 200m²
- Made in France

Dr. Pierre Brochard
President & Co-founder

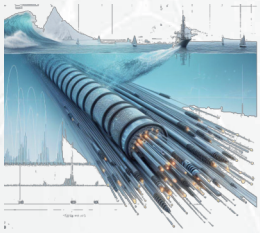
Ing. Romain Frénéhard
Director & Co-founder

Dr. François Labaye
Board member & Co-founder

Dr. Valentin Wittwer
Board member & Co-founder

Prof. Mehdi Alouini
Board member

PHOTONICS ELECTRONICS THz / GHz

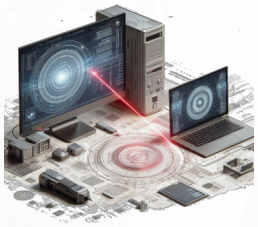


Optical Fiber Sensing

→ Longer detection range

LiDAR / RADAR

→ Better precision



Quantum computing/ Gravitometry

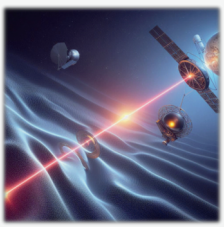
→ Easier atom manipulation

SILENTSYS

APPLICATIONS

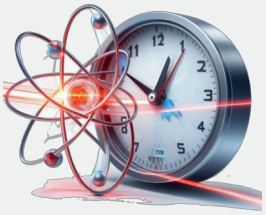
Quantum Communication

→ Securing data transmission



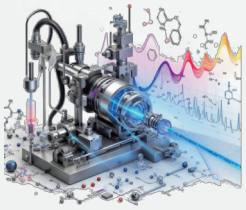
Interferometry

→ Improved sensitivity



Optical Clocks

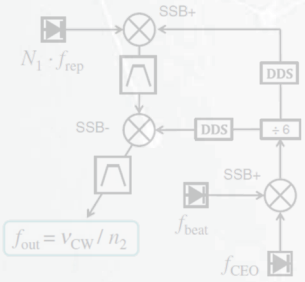
→ Finer atomic transition

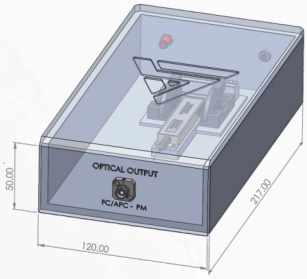


Microscopy/Spectroscopy and Holography

→ Best resolution

PROOF-OF-CONCEPT





Contact us for a proof-of-concept so we can put forward different solutions to your challenges...

We are researchers with a strong imagination!

SILENTSYS

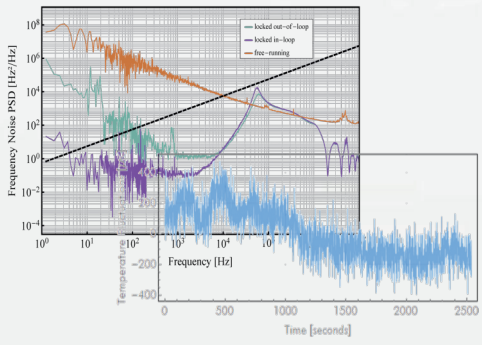
SERVICES

CUSTOM-MADE SOLUTIONS

You have specific needs in your company or lab for your systems or experiments and you can't find anything on the market that fits?

We are here to bring you the best solutions!

STUDIES & ANALYSIS



We are armed with several years of experience in the ultralow noise area. Contact us to do specific measurements and analysis with our dedicated instruments.

Let us help you to save your time!

PHOTONICS

We offer compact, plug and play, and convenient off-the-shelf products for your lab experiments and industrial developments.

Covering UV, VIS, NIR to MIR!

SILENTSYS

PRODUCTS

THz / GHz

We provide laser frequency stabilization/down-conversion systems that enable low-noise THz or GHz signal generation.

ELECTRONICS

SILENTSYS proposes different electronic modules that aim to improve your setups, experiments and systems.

SILENTSYS PRODUCTS

OFD - OPTICAL FREQUENCY DISCRIMINATOR

A compact and useful product for laboratory experiments and industrial developments.

ULN-PDB - ULTRALOW NOISE BALANCED PHOTODETECTOR

The ULN-PDB module is a plug and play ultralow noise balanced photodetector inside a compact and user-friendly package.

ALM-01 - ULTRALOW NOISE POWER SUPPLY

The ALM-01 is a very low noise plug and play power supply that delivers 3 voltages of up to 1.3A each and 25W in total with an unprecedented level of ripple.

ALM-05 - ULTRALOW NOISE POWER SUPPLY

The ALM-05 is an ultralow noise plug and play power supply that delivers 5V up to 3A with an unprecedented level of ripple.

ALM-08 - ULTRALOW NOISE POWER SUPPLY

The ALM-08 is a very low noise plug and play power supply that delivers 2 voltages: 12V with up to 0.5A and 2V with up to 8A, with an unprecedented level of ripple.

PID-01 - HIGH SPEED SERVO CONTROLLER

PID-01 is a High-Speed Servo Controller that is digitally controlled using an integrated touchscreen. It provides Proportional, simple Integrator and double Integrator functions.

OFC - OPTICAL FREQUENCY CORRELATOR

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

PRODUCTS

OFD

OPTICAL FREQUENCY DISCRIMINATOR

The OFD system smartly delivers a voltage signal that is proportional to the frequency fluctuations of the input laser beam. This turn-key module 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 OFD features ultralow noise performances being successful in achieving frequency noise levels as low as 0.1 Hz^2/Hz; and this in a compact and user-friendly package.

SPECIFICATIONS

- Laser type: single-frequency continuous wave
- Optical power in: ~200 µW before saturation
- Optical Input: typ. FC/APC connexion

- Electrical output voltage range: ± 5V max
- Electrical output connector: SMA female

- Free Spectral Range (FSR): typ. 1 MHz to 1 GHz
- System sensitivity: typ. 1 MHz/V to 1 GHz/V
- Frequency noise floor limit: typ. < 0.1 Hz^2/Hz
- Typical laser linewidth achievable: up to Hz-level
- Systems dimensions: 360 × 360 × 88 mm^3

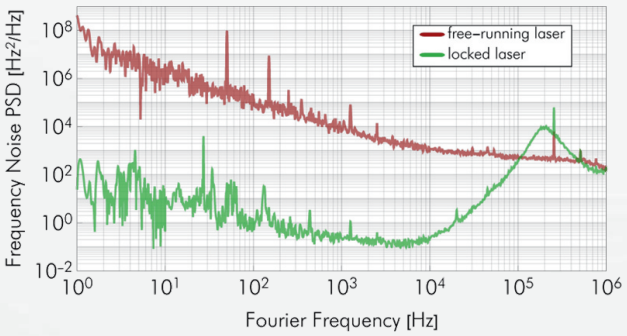
- External control of the Optical module temperature

Ultralow frequency noise
Compact & TurnKey
UV-VIS-NIR-MIR

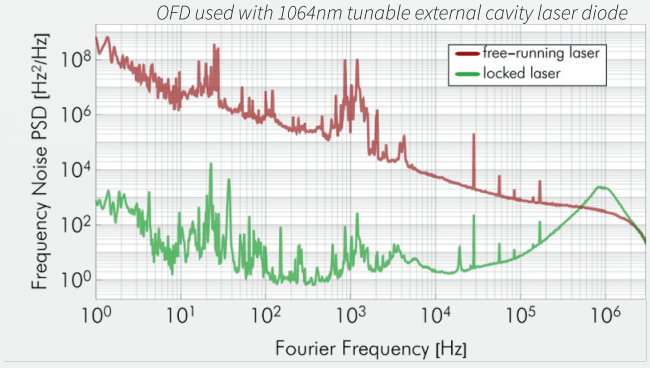
1 to 2 channels

PERFORMANCES

OFD used with 1557nm telecom laser diode



OFD used with 1064nm tunable external cavity laser diode

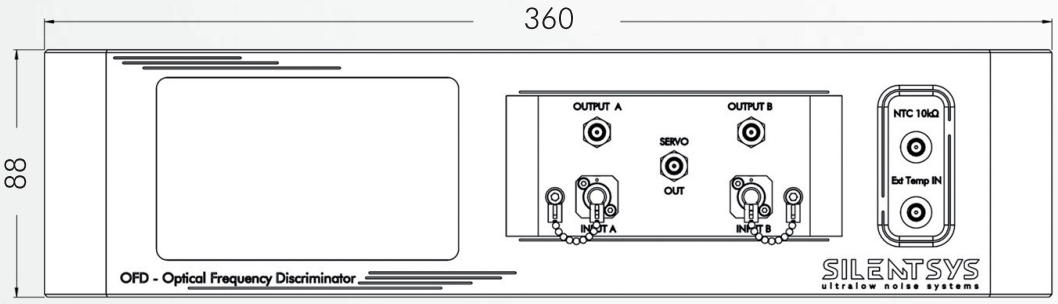


Coming soon : PID controller included !

PRODUCTS

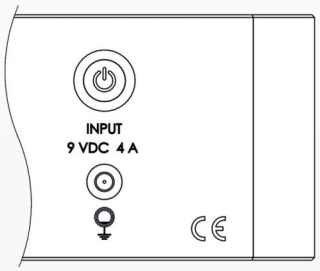
DRAWINGS

FRONT VIEW

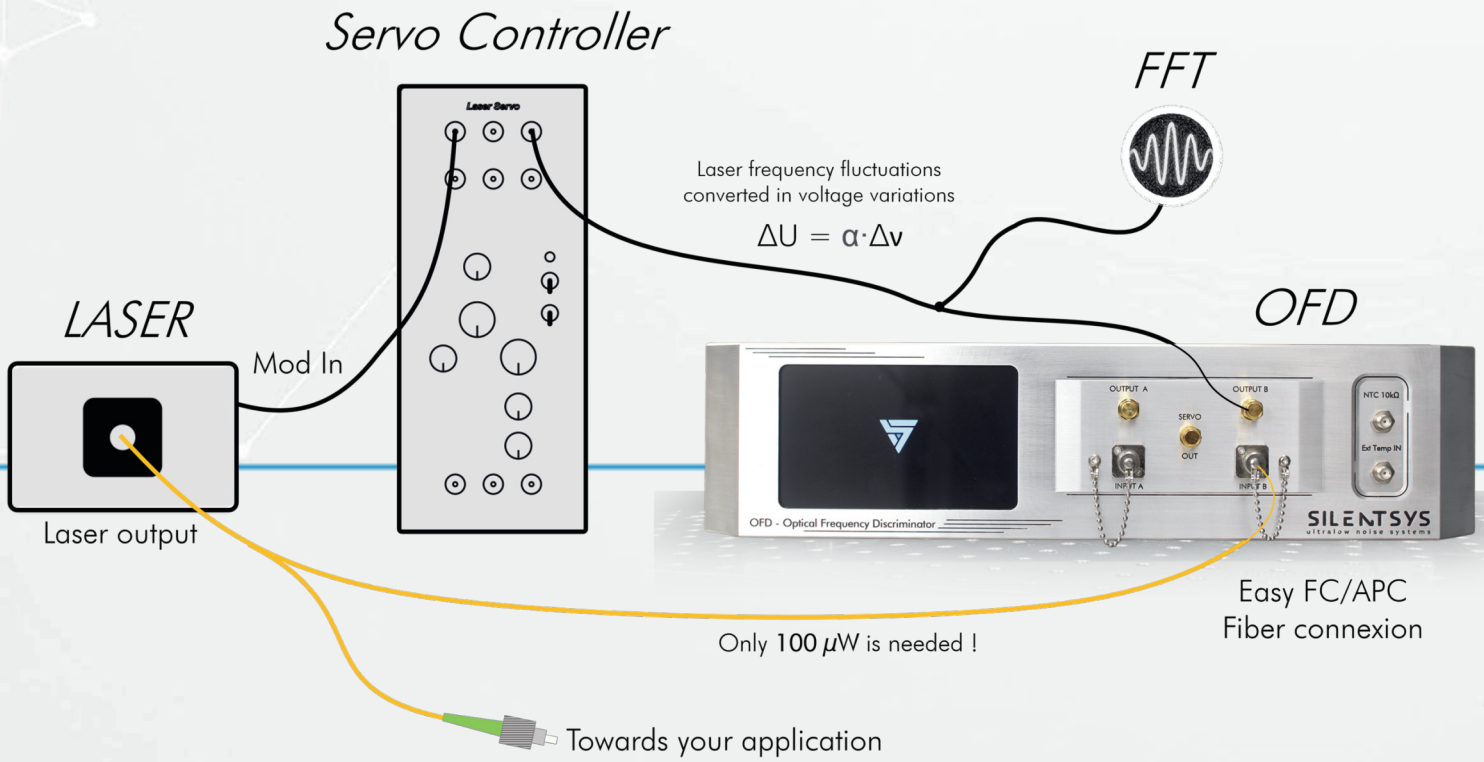


BACK VIEW

(cropped)



HOW-TO-USE



ENHANCE YOUR LASER WITH SIMPLICITY !

ULN-PDB

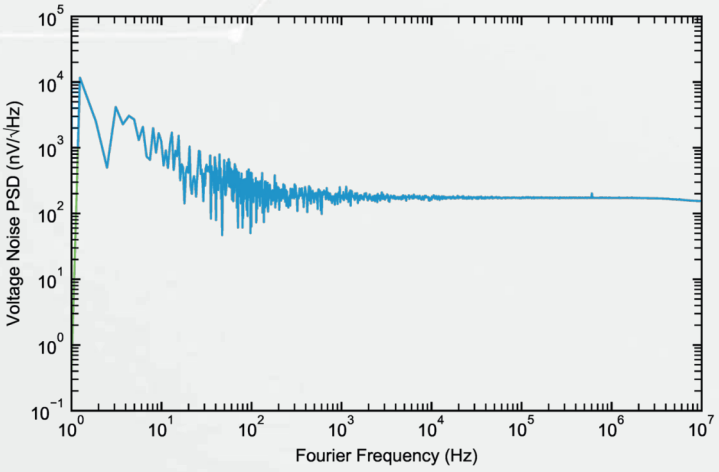
ULTRALOW NOISE BALANCED PHOTODETECTOR

The ULN-PDB module is a plug and play ultralow noise balanced photodetector in a compact and user-friendly package. It is proposed with InGaAs, Si or GaAs photodiodes and offers a bandwidth of 100 MHz with a high gain of 39 kV/A in a DC-coupled version.

SPECIFICATIONS

- Number of output: 1
- Trans-impedance gain: 39 kV/A
- Output impedence: 50 Ω
- Bandwidth: 100 MHz
- Output connectors: SMA female
- Input connectors: FC
- Output voltage range: -3V to +3V

- Product dimensions: 108 x 79 x 33 mm^3
- Product weight: approx. 300g
- Mono-color LED display



PERFORMANCES

Typical voltage noise power spectral density of the output with 500 µW optical power:

(limited by the measurement noise floor)

ALM01

ULTRALOW NOISE POWER SUPPLY

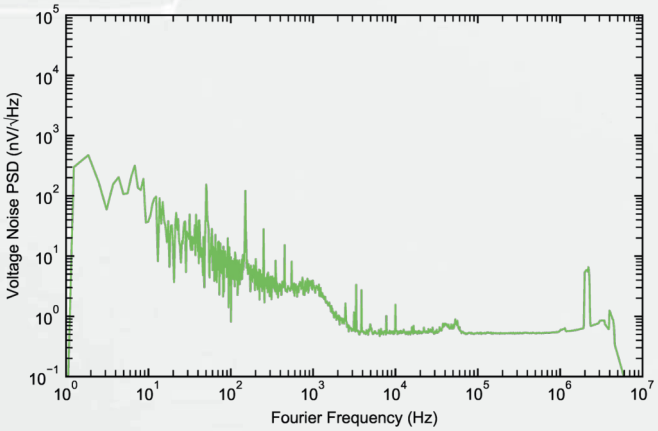
The ALM-01 module is a plug and play ultralow noise power supply that delivers 3 voltages of maximum 1.3A each and 25W in total with an unprecedented level of ripple, all this in a compact and user-friendly package.

SPECIFICATIONS

- Number of outputs: 3
- Output voltages: 5 VDC, 12 VDC, 15 VDC (custom values on request)
- Output currents: 0 - 1.3A for each
- Output connectors: BNC

- Residual ripple: < 5 to 50 µVrms (1Hz…1MHz)
- Voltage accuracy: ± 1 %
- Short circuit protections

- Product dimensions: 155 x 125 x 32 mm^3
- Product weight: approx. 900g
- Bi-color LED display per output
- LED color threshold: approx. 1.2A



PERFORMANCES

Typical voltage noise power spectral density of 5V output:

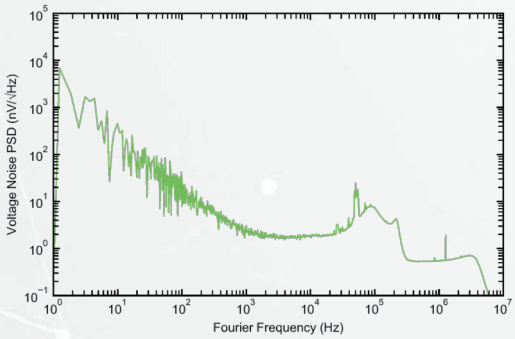
(limited by the measurement noise floor)

PRODUCTS

ALM05

ULTRALOW NOISE POWER SUPPLY

The ALM-05 is an ultra-low-noise, plug-and-play power supply that delivers a maximum voltage of 5V at 3A with an unprecedented ripple level, all in a compact, user-friendly package.



PERFORMANCES

Typical voltage noise power spectral density of 5V and 2A output: (Limited by the measurement noise floor)

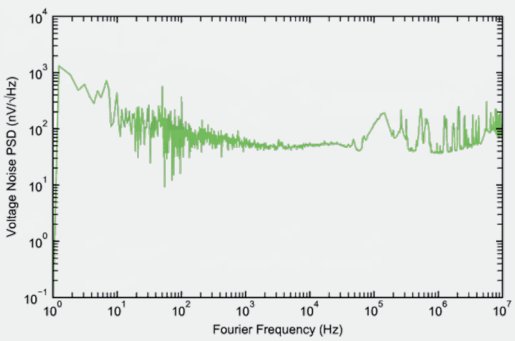
ALM08

ULTRALOW NOISE POWER SUPPLY

The ALM-08 module is a plug and play ultralow noise power supply that delivers 2 voltages: 12V with up to 0.5A and 2V with up to 8A, with an unprecedented level of ripple, all this in a compact and user-friendly package. It has been designed to supply optical amplifiers.

PERFORMANCES

Typical voltage noise power spectral density of the 2 VDC channel.



PRODUCTS

PID01

HIGH SPEED SERVO CONTROLLER

PID-01 is a High-Speed Servo Controller that is digitally controlled using an integrated touchscreen. It provides Proportional, simple Integrator and double Integrator functions. It features ultralow voltage noise, more than 200 dB open-loop gain and a bandwidth of > 30 MHz.

SPECIFICATIONS

- Number of outputs: 1 + one monitor
- Number of inputs : 1 + one monitor

- Output impedence: 50 Ω
- Input impedence: 50 Ω
- Input Voltage range max: -5V / +5V
- Output Voltage range max: -4,5V / +4,5V
- Output/Input connectors: SMA female

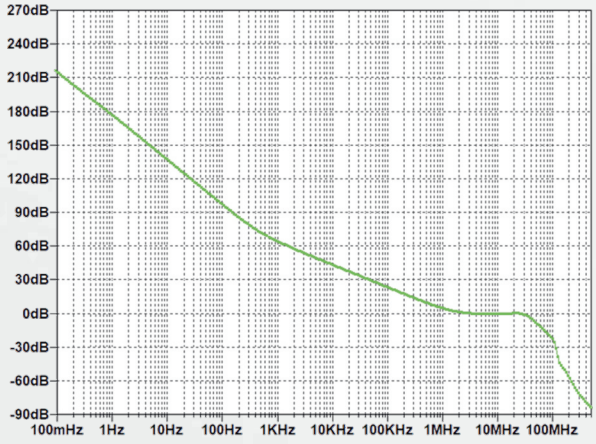
- Control Bandwidth: > 30 MHz
- Output offset range: - 2V / + 2V

- Product dimensions: 155mm x 150mm x 112mm
- Product weight: approx. 1.5 kg

- Proportional Gain :
  from - 28 dB to 23 dB (0.2 dB increments)

- Simple Integrator :
  from 100 Hz to 10 MHz (16 settings)

- Double Integrator :
  from 100 mHz to 1 MHz (16 settings)



PERFORMANCES

Typical bode diagram of the module:

OFC

OPTICAL FREQUENCY CORRELATOR

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

Based on this fact, the optical beat frequency between the two stabilized lasers generates THz or GHz signal that reach a very low frequency noise level and that are easily frequency tunable.

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 0.1 Hz^2/Hz; and this in a compact and user-friendly package.

OFD with integrated PID

With the integrated PID, operation is simplified, only one tool is needed, no need for an additional module, everything can be set from the screen.

SLIM LINER

The Slim Liner is the single frequency laser that offers intrinsic optical linewidth narrower than 1 Hz, ultralow phase/frequency noise, as well as shot noise limited relative intensity noise above a few hundred kHz.

COMING SOON !

AMPLIFIERS & FILTERS

Measuring ultralow noise voltages is challenging and requires very specific electronic amplifiers and filters that we developed to characterize our systems (ALM-01-05-08… and OFD, OFC...).

Soon available for you too!

ACQUISITION CARDS

SILENTSYS is preparing, following the product LEO, an ultralow noise and high -resolution (32-bits) acquisition card designed for ultra-precise voltage and temperature measurements.

LASER DRIVERS

We will soon offer powerful and high-performance laser drivers that will include linear temperature control and low-noise high bandwidth (10 MHz) current driver functions.

Stay tuned …

Distributor

FR, EU

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info@morephotonics.com

more photonics

Direct sales

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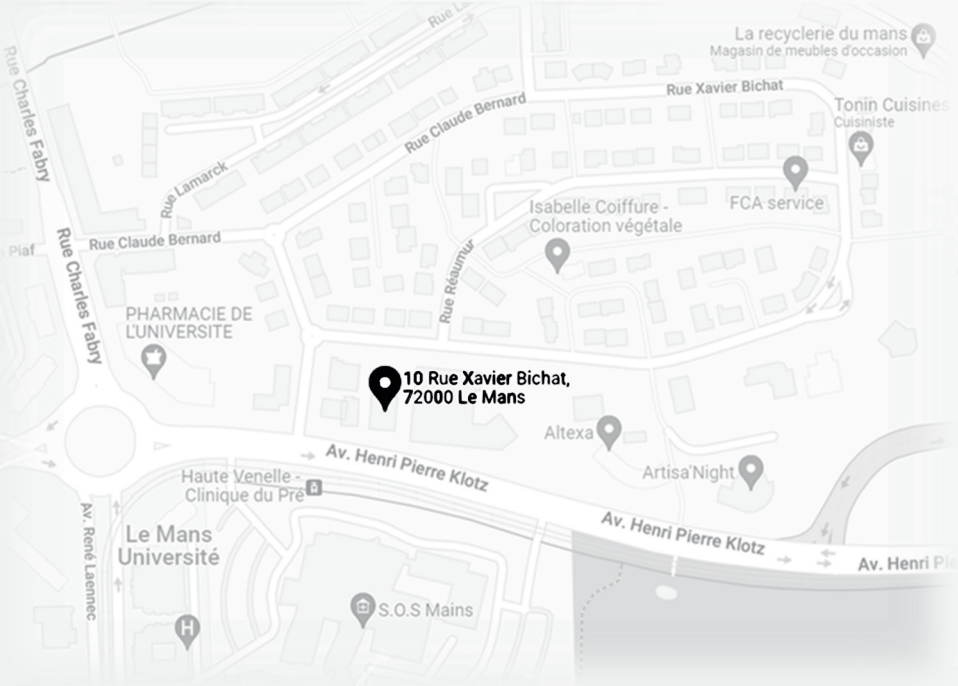
+33 786 91 63 01
sales@silentsys.com



LOCATION

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CATALOG
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