

51nanoFI-S-405-12-M29-P-12-4-28-0-150

Fiber-coupled low coherence laser source with integrated Faraday isolator and polarization-maintaining fiber cable



FEATURES

The Laser Diode Beam Source of type 51nanoFI-S-405-12-M29-P-12-4-28-0-150 has a reduced power noise, a reduced coherence length and a low speckle contrast.

- Reduced power noise: typ. $< 0.1\%$ of P_0 (RMS, Bandwidth < 1 MHz)
- Reduced coherence length: coherence length $\approx 300\ \mu\text{m}$
- Reduced speckle contrast
- Wavelength: 405 nm
- Laser output power: 12 mW
- Integrated Faraday isolator > 30 dB
- Polarization-maintaining fiber cable
- FC APC connector (8°-polish) with end cap
- Modulation analog and TTL
- With interlock and key switch (conform to EN 60825-1)

Alternative: Laser Diode Beam Source 51nanoFi-N (OEM version w/o key switch and w/o interlock)

- With integrated Faraday isolator



DESCRIPTION

The fiber-coupled Laser Diode Beam Source of type 51nanoFI-S-405-12-M29-P-12-4-28-0-150 has a reduced power noise (typ. < 0.1 % of P_o (RMS, Bandwidth < 1 MHz)), reduced coherence length ($\approx 300 \mu\text{m}$) and a lowered speckle contrast.

Electrical features

The output power is adjustable using a potentiometer or using the two modulation inputs for analog and TTL.

Faraday isolator

The source has an integrated Faraday isolator in order to protect the laser from back reflections.

Fiber cable

The source is fiber-coupled to a polarization-maintaining fiber cable (standard, polarization extinction ratio $\geq 21 \text{ dB}$). As a result the beam profile is rotationally symmetric with Gaussian intensity distribution. The fiber cable is equipped with an FC APC type connector (8°-polish) and an end cap to prevent fiber damage. The fiber cable has a strain-relief and a protective sleeving ($\varnothing 3 \text{ mm}$). Standard cable length is 150 cm.

Options:

- Single-mode fiber
- Core-centered (single-mode only)
- Other connector types including FC PC, DIN or AVIO, or E2000
- Other fiber cable lengths
- Incorporated vacuum feed-through

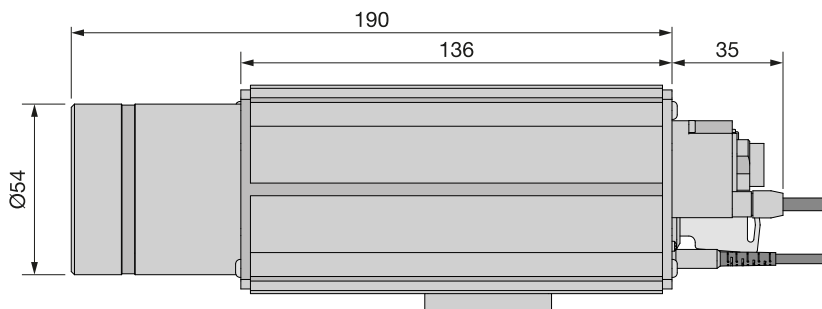
Laser safety

The laser safety is conform to IEC 825 / EN 60825-1.

- Interlock chain for the remote deactivation of the laser
- Laser power-up is only possible using the key switch
- LED status indicator for "Laser ON"
- For a quick start the laser is shipped with a interlock connector type BC0106F-iLCK

An OEM version is available as type 51nanoFi-N without key switch or interlock which is not conform to EN 60825-1.

A version without Faraday isolator is available here.



TECHNICAL DATA

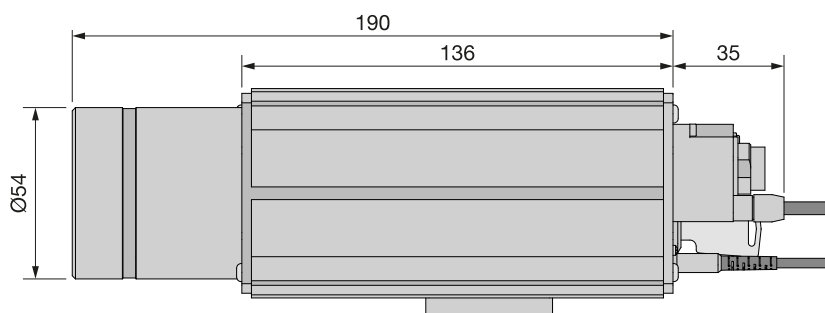
51nanoFI-S-405-12-M29-P-12-4-28-0-150

Order Code	51nanoFI-S-405-12-M29-P-12-4-28-0-150	
Series	51nanoFI-S (PM)	
Laser class	§B	
Center Wavelength	405 ± 10 nm	
Bandwidth	0.7 - 4 nm	
Output power	typ. 12 mW	
Power adjustment	< 1 - 100 %	
Power noise	typ. < 0.1 % of P ₀ (RMS, BW < 1 MHz)	
Coherence length	≈ 300 μm	
Isolation	> 30 dB	
Fiber cable	polarization-maintaining	
Fiber type	PMC-E-400Si	
Nominal fiber NA	0.11	
Effective fiber NA _e ²	0.071 ± 10 % (1/e ²)	
Mode field diameter MFD	3.6 μm ± 10 % (1/e ²)	
PER	≥ 21 dB	
Fiber cable length	1.5 ± 0.05 m (standard)	
Fiber cable type	Ø 3 mm with Kevlar strain-relief	
Fiber connector type	FC APC with end cap (standard)	
Power stability	max. 12 % power variation between 15°C and 35°C	
Electronics type	HP	
Electr. cable length	1.5 ± 0.1 m (standard)	
Connector type	4 pin (male, Lumberg SV40)	
Supply voltage	12.0 ± 0.5 V	
Max. current consumption*	260 mA	
Modulation input connector	6 pin (male, Lumberg SV60)	
Modulation inputs	Analog	TTL
Max. input voltage	6.5 V	6.5 V
Voltage for P _{min} / P ₀	0 V / 2.5 V	< 0.8 V / > 2.4 V
Input impedance	9 kOhm	9 kOhm
Max. modulation frequency	1 Hz	300 kHz

Time delay ON/OFF*	< 2.0/0.5 ms	< 0.5/0.2 μ s
Rise / fall time*	0.5/0.5 s	0.8/0.3 μ s

* Typical value. Depends on laser diode.

Operating temperature	15 - 35°C \pm 0.5°C
Warm-up time	approx. 10 min
Air humidity	max. 90 % non-condensing
Casing Type	S1
Weight	g
Dimensions (w/o base)	66 x 66 x 225 mm
Protection Class	IP30
Dimensions (for a complete dimensional drawing please refer to the downloads section)	



TECHNOTES

- [Fiber-coupled low noise beam source](#)
[Comparison of a low noise laser source to a conventional laser source](#)
- [51nano: Electronics Type HP](#)
[Electronic features for electronics type HP](#)

DOWNLOADS



[090410090100.pdf \(Dimensional drawing\).](#)



[Conformity_51nano_2023_E_web.PDF \(CE certificate\).](#)

ACCESSORIES

PS051003E	Power Supply 5 V
BC0106F-ILCK	Interlock connector
FIBER COLLIMATORS SINGLE-MODE/PM	Fiber Collimators for collimating light exiting a single-mode or polarization-maintaining fiber cable

RELATED PRODUCTS

51NANO-S (POLARIZATION- MAINTAINING)	Fiber-coupled low coherence laser source with polarization-maintaining fiber cable
51NANOFI-N WITH FARADAY ISOLATOR (PM/OEM)	Fiber-coupled low coherence laser source with polarization-maintaining fiber cable (OEM version)
51NANOFI-S WITH FARADAY ISOLATOR (SM)	Fiber-coupled low coherence laser source with single-mode fiber cable

This is a printout of the page <https://sukhamburg.com/products/details/51nanoFI-S-405-12-M29-P-12-4-28-0-150> from 5/2/2024

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