

## 51nano-S-405-14-M29-P-12-4-28-0-150

Fiber-coupled low coherence laser source with polarization-maintaining fiber cable



### FEATURES

The Laser Diode Beam Source of type 51nano-S-405-14-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.  $< 0.06\%$  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: 14 mW
- 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 [51nano-N](#) (OEM version w/o key switch and w/o interlock)

## DESCRIPTION

The fiber-coupled Laser Diode Beam Source of type 51nano-S-405-14-M29-P-12-4-28-0-150 has a [reduced power noise](#) (typ.  $< 0.06\%$  of  $P_0$  (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.

### Fiber cable

The source is fiber-coupled to a polarization-maintaining fiber cable (standard, polarization extinction ratio  $\geq 21$  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 ( $\varnothing 3$  mm). Standard cable length is 150 cm.

## Options:

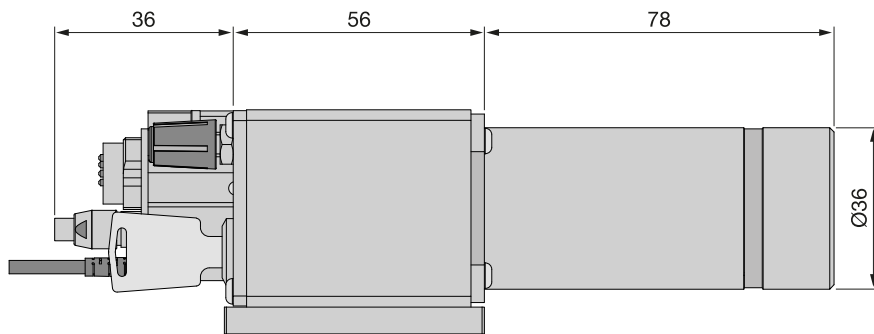
- Single-mode fiber
- Other connector types including FC PC, DIN or AVIO, or E2000
- Other fiber cable lengths
- Incorporated vacuum feed-through

## 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 [51nano-N](#) without key switch or interlock which is not conform to EN 60825-1.



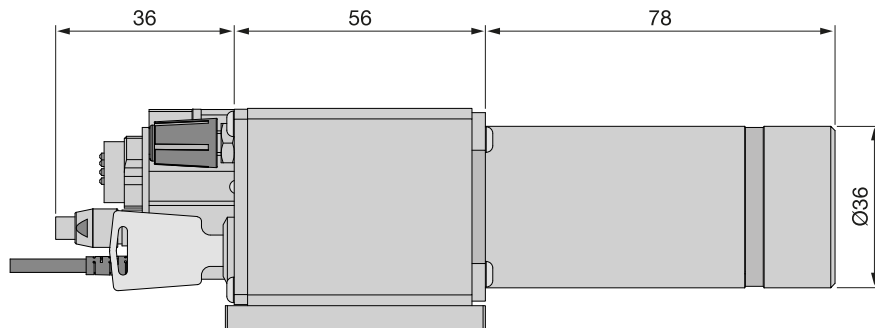
## TECHNICAL DATA

51nano-S-405-14-M29-P-12-4-28-0-150

Order Code	51nano-S-405-14-M29-P-12-4-28-0-150
Will replace	51nanoL-S-405-14-M29-P-12-4-28-0-150
Series	<a href="#">51nano-S (PM)</a>
Laser class	3B
Center wavelength	405 ± 10 nm
Bandwidth	0.7 - 4 nm
Output power	typ. 14 mW
Power adjustment	< 1 - 100 %
Power noise	typ. < 0.06 % of P <sub>0</sub> (RMS, BW < 1 MHz)
Coherence length	≈ 300 μm

Fiber cable	polarization-maintaining	
Fiber type	PMC-E-400Si	
Nominal fiber NA	0.11	
Effective fiber NA <sub>e</sub> <sup>2</sup>	0.071 ± 10 % (1/e <sup>2</sup> )	
Mode field diameter MFD	3.6 μm ± 10 % (1/e <sup>2</sup> )	
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 <sub>min</sub> / P <sub>O</sub>	0 V / 2.5 V	< 0.8 V / > 3.0 V
Input impedance	9 kOhm	9 kOhm
Max. modulation frequency	1 Hz	300 kHz
Modulation delay ON/OFF*	< 2.0/0.5 ms	< 0.5/0.2 μs
Rise / fall time*	0.5/0.5 s	0.8/0.3 μs
* Typical value. Depends on laser diode.		
Operating temperature	15 - 35°C ± 0.5°C	
Warm-up time	approx. 10 min	
Air humidity	max. 90 % non-condensing	
Weight	530 g	
Dimensions	50 x 58 x 166 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



[000829001100.pdf \(Dimensional drawing\).](#)



[Conformity\\_51nano\\_2023\\_E\\_web.PDF \(CE certificate\).](#)

## ACCESSORIES

<b>PS120516E</b>	Power Supply 12 V
<b>BC0106F-ILCK</b>	Interlock connector
<b>FIBER COLLIMATORS SINGLE-MODE/PM</b>	Fiber Collimators for collimating light exiting a single-mode or polarization-maintaining fiber cable

## RELATED PRODUCTS

<b>51NANO-S (SINGLE-MODE)</b>	Fiber-coupled low coherence laser source with single-mode fiber cable
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**51NANO-N  
(POLARIZATION-  
MAINTAINING, OEM)**

Fiber-coupled low coherence laser source with  
polarization-maintaining fiber cable (OEM version)

**51NANOFI-S WITH  
FARADAY ISOLATOR  
(PM)**

Fiber-coupled low coherence laser source with  
polarization-maintaining fiber cable

**58FCM**

Fiber-coupled laser source with single-mode or  
polarization-maintaining fiber cable

This is a printout of the page <https://sukhamburg.com/products/details/51nano-S-405-14-M29-P-12-4-28-0-150> from 4/25/2024

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