

51nano-S-520-7-O11-P-12-4-18-0-150

Fiber-coupled low coherence laser source with single-mode fiber cable



FEATURES

The Laser Diode Beam Source of type 51nano-S-520-7-O11-P-12-4-18-0-150 has a <u>reduced power noise</u>, a reduced coherence length and a low <u>speckle contrast</u>.

- Reduced power noise: typ. < 0.3 % of P₀ (RMS, Bandwidth < 1 MHz)
- Reduced coherence length: coherence length ≈ 300 µm
- Reduced speckle contrast
- Wavelength: 520 nm
- Laser output power: 7 mW
- Single-mode 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 <u>51nano-N</u> (OEM version w/o key switch and w/o interlock) or with polarization-maintaining fiber cable

DESCRIPTION

The fiber-coupled Laser Diode Beam Source of type 51nano-S-520-7-O11-P-12-4-18-0-150 has a reduced power noise (typ. < 0.3 % of P $_{\rm O}$ (RMS, Bandwidth < 1 MHz)), reduced coherence length (\approx 300 μ 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 single-mode fiber cable. 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 <u>end cap</u> to prevent fiber damage. The fiber cable has a strain-relief and a protective sleeving (Ø 3 mm). Standard cable length is 150 cm.

Options:

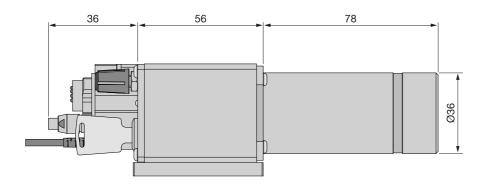
- Polarization-maintaining fiber cable
- Multiple fiber output cables (51nanoC, single-mode only)
- Other connector types including FC PC, DIN or AVIO, or E2000
- Other fiber cable lengths
- Incorporated vacuum feed-through

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 $\underline{51nano-N}$ without key switch or interlock which is not conform to EN 60825-1.



TECHNICAL DATA

51nano-S-520-7-O11-P-12-4-18-0-150

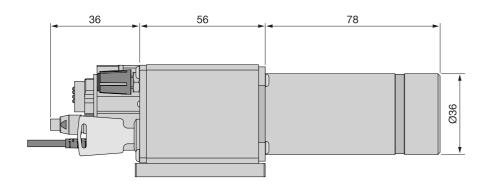
Order Code	51nano-S-520-7-O11-P-12-4-18-0-150 51nano-S (single-mode) 3B	
Series		
Laser class		
Center wavelength	520 ± 10 nm	
Bandwidth	0.7 - 4 nm	
Output power	typ. 7 mW	



Power noise typ. < 0.3 % of P₀ (RMS, BW < 1 MHz)	Power adjustment	er adjustment < 1 - 100 %	
Fiber cable Fiber type SMC-E-460Si Nominal fiber NA 0.12 Effective fiber NAe² 0.076 ± 10 % (1/e²) Mode field diameter MFD 4.3 µm ± 10 % (1/e²) 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 input connector 6 pin (male, Lumberg SV60) Modulation input optinge 0.5 V 0.5 V Voltage for Pmin / Po 0 V / 2.5 V 0.8 V / > 3.0 V Input impedance 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	Power noise	typ. $< 0.3 \%$ of P $_0$ (RMS, BW $< 1 \text{ MHz}$)	
Fiber type SMC-E-460Si Nominal fiber NA 0.12 Effective fiber NAe² 0.076 ± 10 % (1/e²) Mode field diameter MFD 4.3 µm ± 10 % (1/e²) 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 input voltage 6.5 V 6.5 V Voltage for P _{min} / Po 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	Coherence length	≈ 300 µm	
Nominal fiber NA 0.12 Effective fiber NAe² 0.076 ± 10 % (1/e²) Mode field diameter MFD 4.3 µm ± 10 % (1/e²) 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 input connector 6 pin (male, Lumberg SV60) Modulation input voltage 6.5 V 6.5 V Voltage for P _{min} / P _O 0 V/ 2.5 V < 0.8 V/ > Max. input voltage 9 kOhm 9 kOhm Max. modulation frequency 1 Hz 300 kHz Modulation delay ON/OFF* < 2.0/0.5 ms	Fiber cable	single-mode	
Effective fiber NAe² 0.076 ± 10 % (1/e²) Mode field diameter MFD 4.3 µm ± 10 % (1/e²) 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) 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} / Po 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 * 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 <	Fiber type	SMC-E-460Si	
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Fiber cable type 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 Voltage for P _{min} / P _O 0 V / 2.5 V Voltage for P _{min} / P _O 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 Air humidity max. 90 % non-condensing Weight 530 g Dimensions 50 x 58 x 166 mm	Mode field diameter MFD	4.3 μm ± 10 % (1/e ²)	
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Modulation inputsAnalogTTLMax. input voltage 6.5 V 6.5 V Voltage for P_{min} / P_O $0 \text{ V / } 2.5 \text{ V}$ $< 0.8 \text{ V / } >$ Input impedance 9 kOhm 9 kOhm Max. modulation frequency 1 Hz 300 kHz Modulation delay ON/OFF* $< 2.0/0.5 \text{ ms}$ $< 0.5/0.2 \text{ µs}$ *Typical value. Depends on laser diode.Operating temperature $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up timeapprox. 10 min Air humiditymax. 90% non-condensingWeight 530 g Dimensions $50 \times 58 \times 166 \text{ mm}$	Max. current consumption*	260 mA	
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Voltage for P_{min} / P_{O} $0 \ V/2.5 \ V$ $< 0.8 \ V/> 3.0 \ V$ Input impedance9 kOhm9 kOhmMax. modulation frequency1 Hz $300 \ kHz$ Modulation delay ON/OFF* $< 2.0/0.5 \ ms$ $< 0.5/0.2 \ \mu s$ Rise / fall time* $0.5/0.5 \ s$ $0.8/0.3 \ \mu s$ * Typical value. Depends on laser diode.Operating temperature $15 - 35^{\circ}C \pm 0.5^{\circ}C$ Warm-up timeapprox. $10 \ min$ Air humiditymax. $90 \ \%$ non-condensingWeight $530 \ g$ Dimensions $50 \times 58 \times 166 \ mm$	Modulation inputs	Analog	TTL
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 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 Weight 530 g Dimensions 50 x 58 x 166 mm	Max. input voltage	6.5 V	6.5 V
Max. modulation frequency1 Hz 300 kHz Modulation delay ON/OFF* $< 2.0/0.5 \text{ ms}$ $< 0.5/0.2 \text{ µs}$ Rise / fall time* $0.5/0.5 \text{ s}$ $0.8/0.3 \text{ µs}$ * Typical value. Depends on laser diode.Operating temperature $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight 530 g Dimensions $50 \times 58 \times 166 \text{ mm}$	Voltage for P _{min} / P _O	0 V / 2.5 V	
Modulation delay ON/OFF* $< 2.0/0.5 \text{ ms}$ $< 0.5/0.2 \text{ µs}$ Rise / fall time* $0.5/0.5 \text{ s}$ $0.8/0.3 \text{ µs}$ * Typical value. Depends on laser diode.Operating temperature $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight 530 g Dimensions $50 \times 58 \times 166 \text{ mm}$	Input impedance	9 kOhm	9 kOhm
Rise / fall time*0.5/0.5 s0.8/0.3 μs* Typical value. Depends on laser diode.Operating temperature15 - 35°C ± 0.5°CWarm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight530 gDimensions50 x 58 x 166 mm	Max. modulation frequency	1 Hz	300 kHz
* 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	Modulation delay ON/OFF*	< 2.0/0.5 ms	< 0.5/0.2 μs
Operating temperature $15 - 35^{\circ}\text{C} \pm 0.5^{\circ}\text{C}$ Warm-up timeapprox. 10 minAir humiditymax. 90 % non-condensingWeight 530 g Dimensions $50 \times 58 \times 166 \text{ mm}$	Rise / fall time*	0.5/0.5 s	0.8/0.3 μs
Warm-up time approx. 10 min Air humidity max. 90 % non-condensing Weight 530 g Dimensions 50 x 58 x 166 mm	* Typical value. Depends on laser diode.		
Air humidity max. 90 % non-condensing Weight 530 g Dimensions 50 x 58 x 166 mm	Operating temperature	15 - 35°C ± 0.5°C	
Weight 530 g Dimensions 50 x 58 x 166 mm	Warm-up time	approx. 10 min	
Dimensions 50 x 58 x 166 mm	Air humidity	humidity max. 90 % non-condensing	
	Weight 530 g		
Protection Class IP30	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

PS120516E Power Supply 12 V

BC0106F-ILCK Interlock connector

FIBER COLLIMATORS Fiber Collimators for collimating light exiting a single-

SINGLE-MODE/PM mode or polarization-maintaining fiber cable

RELATED PRODUCTS



51NANO-S Fiber-coupled low coherence laser source with

(POLARIZATION- polarization-maintaining fiber cable

MAINTAINING)

51NANO-N (SINGLE- Fiber-coupled low coherence laser source with

MODE, OEM) single-mode fiber cable (OEM version)

51NANOFI-S WITH Fiber-coupled low coherence laser source with

FARADAY ISOLATOR polarization-maintaining fiber cable

(PM)

This is a printout of the page https://sukhamburg.com/products/details/51nano-S-520-7-O11-P-12-4-18-0-150 from 5/8/2024

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