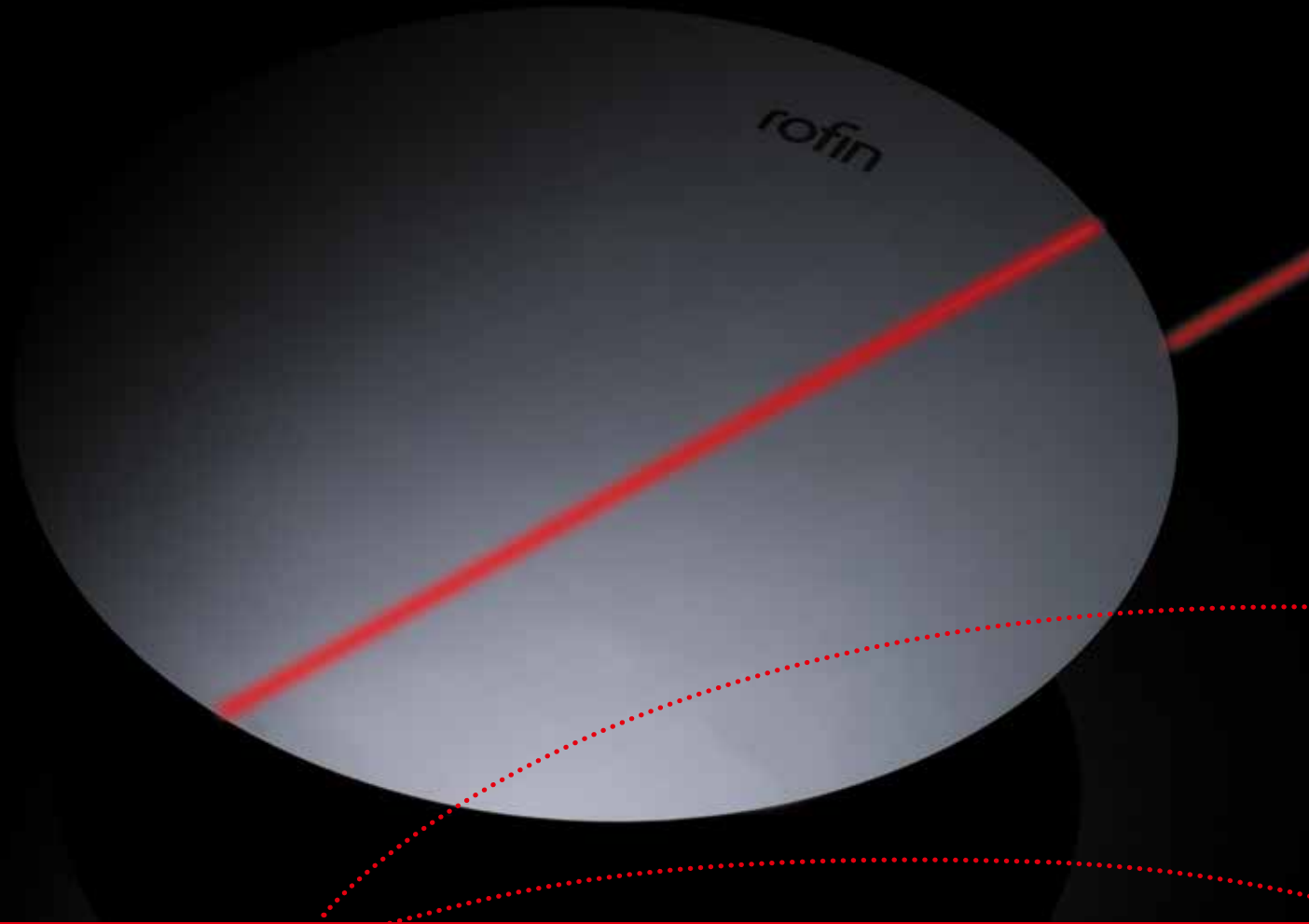




## SHORT-PULSE LASERS

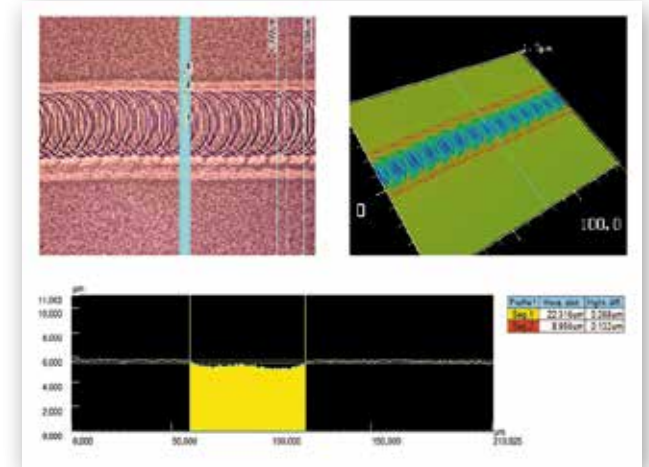
PowerLine Pico Series  
for Marking and Micro Processing



Short-pulse lasers from ROFIN offer high pulse peak power. This improves the quality of material removal, reduces surface roughness and increases the precision of selective layer removal. In addition, the thermal penetration depth in highly sensitive material-removal processes such as the marking of certain metals and semiconductor materials can be significantly reduced with shorter pulses.

**MATERIAL-FRIENDLY PROCESSING**

- Low thermal penetration depth (HAZ)
- Structural changes reduced
- Maximized process control with very thin substrates
- Virtually no material accumulation



Suitable for different application fields

**SHORT-PULSE LASER**

**Why ROFIN?**

To cover customer-specific fields of application to optimum effect, ROFIN offers lasers in the femtosecond, picosecond and nanosecond range. The PowerLine Pico lasers are suitable even at high frequencies for demanding marking applications – semiconductor or medical applications, for example – as well as for microprocessing such as thin-layer removal and structuring.

**YOUR BENEFITS**

- Outstanding processing quality at high speed
- Ease of integration thanks to compact dimensions
- Optimal solution for applications involving sensitive materials and miniaturized components
- Low operating costs

Result of material processing with short-pulsed lasers



**OVERLAP MAXIMIZED**

- Extremely high, variable pulse frequency
- High pulse-to-pulse overlap thus maximized
- Time-efficient material processing
- High-precision selective layer removal

Result of material processing with nanosecond lasers



**LOW OVERLAP**

- Typical result with nanosecond lasers



MARKING UNIT

LASER BEAM SOURCE

From laser source to laser marker

The extremely high, variable pulse frequency of our short-pulse lasers ensures rapid processing and allows the pulse-to-pulse overlap to be maximized, as in case of the thin-film structuring of solar cells, for example. The laser can be operated quickly and easily via the TCP/IP, USB and RS 422 interfaces.

- PRODUCT FEATURES**
- Wavelengths of 1064 nm, 532 nm and 355 nm
  - Easily integrated, compact 19" plug-in for the laser control unit
  - Comprehensive marking software included with the product
  - Beam expansion included
  - Configurable marking area size

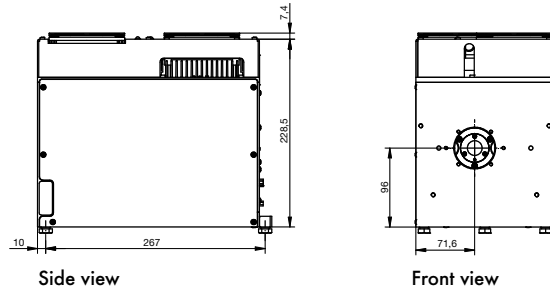


In addition, ROFIN offers the laser at double and triple frequency with a wavelength of 532 nm or 355 nm and in different power classes. The PowerLine Pico is also available as a beam source in an enhanced configuration level as a marking laser. Thanks to its extremely compact dimensions and all-in-one design, the PowerLine Pico can be integrated easily.

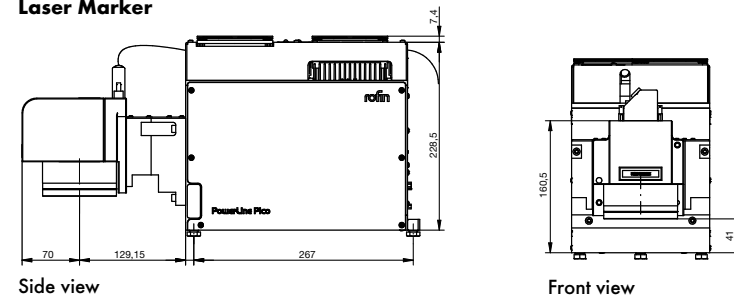
- PRODUCT FEATURES**
- Wavelengths of 1064 nm, 532 nm and 355 nm
  - Flexible laser configuration for specific purposes
  - Software for parameterization included with the product
  - Compact all-in-one design

## TECHNICAL DATA POWERLINE PICO 10

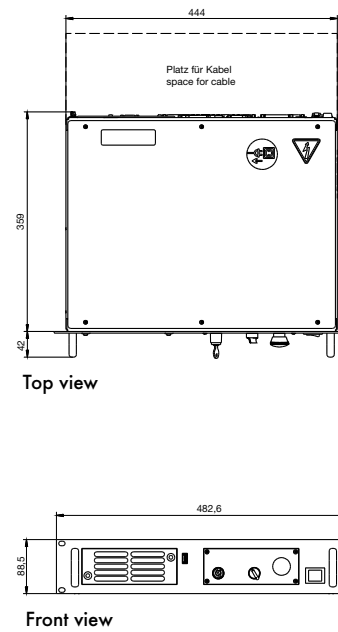
### Laser Beam source



### Laser Marker



### Supply unit

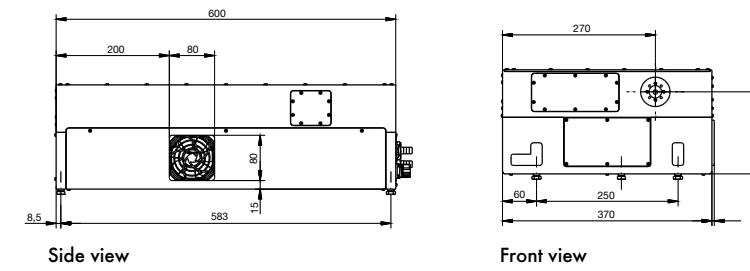


Laser Beam source	PowerLine Pico 10-1064	PowerLine Pico 10-532
Wavelength (nm):	1064	532
Average power (W):	8 @ 400 kHz	3 @ 400 Hz
Pulse frequency (kHz):	200 - 800	200 - 800
Pulse width (ps):	550 @ 400 kHz	450 @ 400 kHz
Beam quality:	TEM <sub>00</sub>	TEM <sub>00</sub>
M <sup>2</sup> :	< 1.6	< 1.5
Energy per Pulse (μJ):	20 @ 400 kHz; 10 @ 800 kHz	7.5 @ 400 kHz; 3.5 @ 800 kHz
Peak power (kW):	20 @ 400 kHz	7.5 @ 800 kHz
Beam diameter (mm):	approx. 2	approx. 2
Divergence angle full radius (mrad):	collimated	collimated
Polarization:	random; > 100:1	linear; > 100:1
Power supply (V DC):	115 - 240 +/-10, 50/60 Hz	115 - 240 +/-10, 50/60 Hz
Operating temperature (°C):	15 - 35	15 - 35

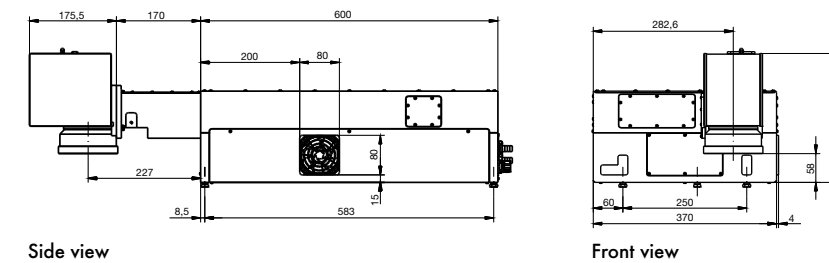
Laser Marker	PowerLine Pico 10-1064	PowerLine Pico 10-532
Wavelength (nm):	1064	532
Pulse frequency (kHz):	200 - 800	200 - 800
Pulse width (ps):	550 @ 400 kHz	450 @ 400 kHz
Dimensions (W x D x H, mm):	168 x 465 x 230	168 x 465 x 230
Air flow (m <sup>3</sup> /h):	approx. 180	approx. 180
Field size (mm):	120 x 120 or 240 x 240	120 x 120 or 240 x 240
Focus distance (mm):	193 (+/- 7) or 432 (+/- 25)	193 (+/- 7) or 432 (+/- 25)
Supply unit dimensions (W x D x H, mm):	19", 2 rack units	19", 2 rack units
Software:	VLM	VLM
Air flow 19" supply unit (m <sup>3</sup> /h):	approx. 80	approx. 80
Power supply (V):	115 - 240, +/- 10, 1 P/N/PE	115 - 240, +/- 10, 1 P/N/PE
Operating temperature (°C):	15 - 35	15 - 35

## TECHNICAL DATA POWERLINE PICO 50

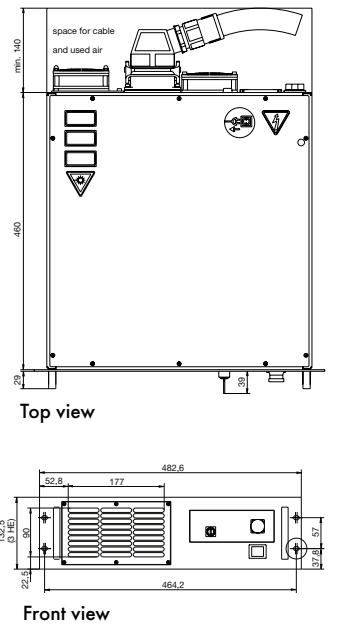
### Laser Beam source



### Laser Marker



### Supply unit



Laser Beam source	PowerLine Pico 50-1064
Wavelength (nm):	1064
Average power (W):	40 @ 250 kHz
Pulse frequency (kHz):	200 - 800
Pulse width (ps):	300 @ 250 kHz
Beam quality:	TEM <sub>00</sub>
M <sup>2</sup> :	1.5
Energy per Pulse (μJ):	160 @ 250 kHz
Peak power (kW):	500 @ 250 kHz
Beam diameter (mm):	3
Divergence angle full radius (mrad):	< 1
Polarization:	linear; > 100:1
Power supply (V DC):	115 - 240 +/- 10, 50/60 Hz
Operating temperature (°C):	15 - 35

Laser Marker	PowerLine Pico 50-1064
Wavelength (nm):	1064
Pulse frequency (kHz):	200 - 800
Pulse width (ps):	300 @ 250 kHz
Dimensions (W x D x H, mm):	370 x 945 x 260
Air flow (m <sup>3</sup> /h):	watercooled
Field size (mm):	variable
Focus distance (mm):	variable
Supply unit dimensions (W x D x H, mm):	19", 3 rack units
Software:	VLM
Air flow 19" supply unit (m <sup>3</sup> /h):	105
Power supply (V):	115 - 240 +/- 10, 50/60 Hz
Operating temperature (°C):	15 - 35

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