3D PRO Laser Mini™ Compact Structured Light Laser



Seamless Integration, Excellent Uniformity.

The 3D PRO Laser Mini[™] has been designed specifically for machine vision applications where space is restricted. These structured light lasers have a compact cylindrical form factor based on industry standard dimensions for easy integration into existing applications.

The 3D PRO Laser Mini[™] is 10mm in diameter, compatible with the majority of existing machine vision systems. The laser is available with a customer-specified fixed focus.

3D PRO Laser Mini offers excellent uniformity with line widths down to $30\mu m$ at 120mm which is ideal for inspection applications that demand a high degree of accuracy. They are available with fan angles between 10° and 90° . Wavelengths range from 405nm to 850nm and include 635nm and 660nm. The 3D PRO Laser Mini range is available in a wide variety of line and diffractive optic options.

Key Features

- Compact, 10mm diameter cylindrical housing
- Lightweight
- Wavelengths from 405nm to 830nm
- Excellent uniformity
- Line width of 30μm at 120mm
- Available options include: power levels, fan angles, diffractive options, CW & TTL Modulation

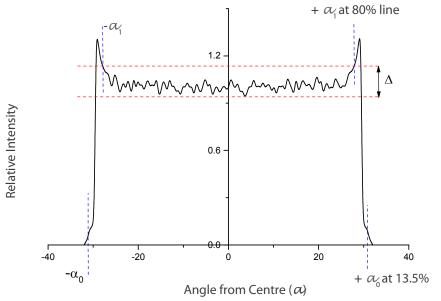
Key Applications

- 3D measurement
- Dimensional scanning
- High precision alignment, pointing, positioning
- Automated inspection



Uniformity

3D PRO Laser Mini can deliver a range of uniformities dependent on customer requirements. The graph below shows a typical intensity profile along the length of a line and our method for defining the uniformity and beam angle. 3D PRO Laser Mini achieves a standard uniformity of $\pm 22.5\%$. A higher uniformity option is available with a uniformity of $\pm 12.5\%$.



1: Optical power

2a⁄₁: Fan angle

 $\alpha_1=2 \operatorname{Arctan} (0.8 \tan \frac{\alpha_0}{2})$

 Δ : Max I $(-\alpha_1, \alpha_2)$ - Min I $(-\alpha_1, \alpha_2)$

Uniformity = $\pm \frac{\Delta}{21(-\alpha_i, \alpha_i)} *100$

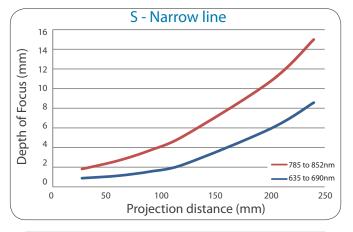
 $I(-\alpha_1,\alpha_2)$: average intensity between $(-\alpha_1,\alpha_2)$

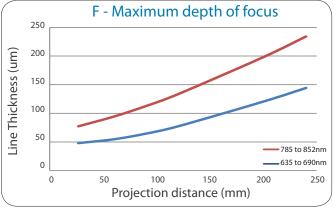
Uniformity					
S	Standard	±22.5%			
Н	Higher	±12.5%			

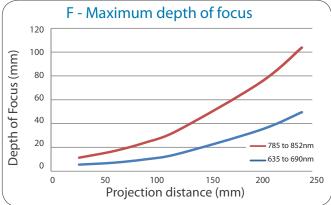
Focusing and Depth of Focus performance

The following graphs show the focusing and depth of focus performance of the 3D PRO Laser Mini at different wavelengths, representing two different optical configurations. S will provide a narrower line while F will provide a greater depth of focus. The focus charts indicate the minimum line thickness achievable for a specific projection distance. The depth of focus is defined as the region around the nominal working distance where the line width does not increase by more than a factor of $\sqrt{2}$.









Product Specifications

Mechanical Specifications		
Weight	12g	
Housing Material	Anodized Aluminum	
Protection Category	IP56	
Electrical Isolation	Potential-free Housing	
Bore Sighting	<1mrad	

Wavelength (nm)	Diode Power (mW)				
405	5	10	15	20	
635	1	5	10	15	20
660	1	5	15	20	
670	5	10	15		
785	20				
850	20				

Other wavelengths and diode power levels are available on request

Please Note: Power levels refer to maximum diode output power. Module output power will vary depending on optical configuration.

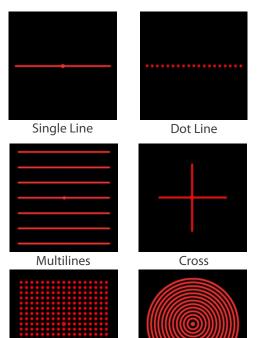
Electrical and Environmental Specifications	Min	Max	
Input Voltage	2.7VDC	6.0VDC	
Input Current	Up to 150mA		
Mode of Operation	Automatic Power Control with current limiting		
Optical Power Stability	±3%		
Operating Temperature*	-10°C	40°C	
Storage Temperature	-10°C	80°C	
Digital Modulation	TTL 0HZ - 100kHz maximum, 0V=off 5V=on		

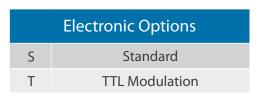
^{*}Module surface temperature

Fan Angle

10°, 20°, 30°, 45°, 60°, 75°, 90°

Diffractive	Diffractive Options		
L01	1 Line		
L05	5 Lines		
L07	7 Lines		
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L65	65 Lines		
S01	Spot		
X01	Crosshair		
Other Diffractive Options are available on request			





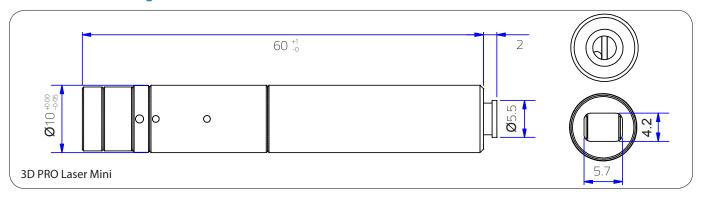
Dot Matrix

^{*}Images courtesy of HOLOEYE Photonics AG



Concentric Circles

Dimensional Drawing

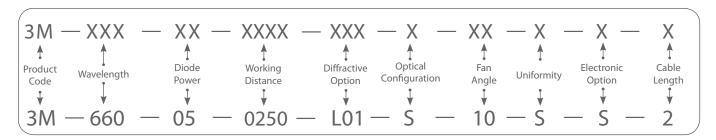


Part Numbers

3D PRO Lasers are covered by a 2 year warranty.

To order your 3D PRO Laser Mini use the product code 3M – Select Wavelength(XXX)- Select Diode Power (XX) - Select Working Distance (in mm) (XXXX) – Select Diffractive Option (XXX) - Select Optical configuration (see graph) (X) - Select Fan Angle (XX) - Select Uniformity option (S/H) – Select Electronic Option (S/T) – Select Cable Length in metres (X)

E.G. 3M - 660 - 05 - 0250 - L01 - S - 10 - S - S - 2



Laser Safety Information

Our lasers are compliant with IEC 60825 standards. For further information please contact us.

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For more information contact us at sales@prophotonix.com or visit us at www.prophotonix.com

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