

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 30μm 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 635nm to 850nm. The 3D PRO Laser Mini range is available in a wide variety of line and diffractive optic options.

Key Features

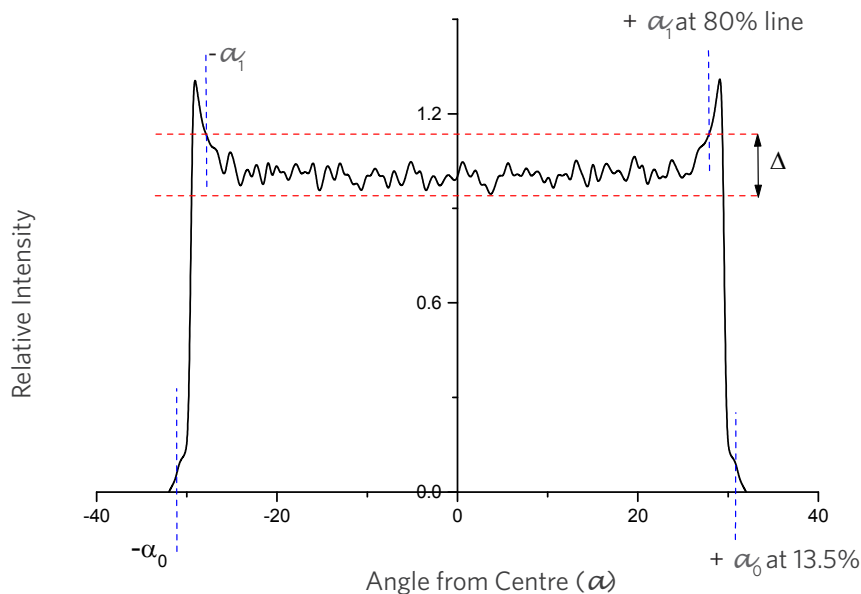
- Compact, 10mm Diameter Cylindrical Housing
- Lightweight
- Wavelengths from 635nm to 850nm
- Excellent Uniformity
- Line width of 30μm at 120mm
- Available Options Include: Power Levels, Fan Angles, Diffractive Options , CW & TTL Modulation

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 $\pm 12.5\%$.



I : Optical power

$2\alpha_0$: Fan angle

$$\alpha_r = 2 \arctan(0.8 \tan \frac{\alpha_0}{2})$$

$$\Delta : \text{Max } I(-\alpha_r, \alpha_r) - \text{Min } I(-\alpha_r, \alpha_r)$$

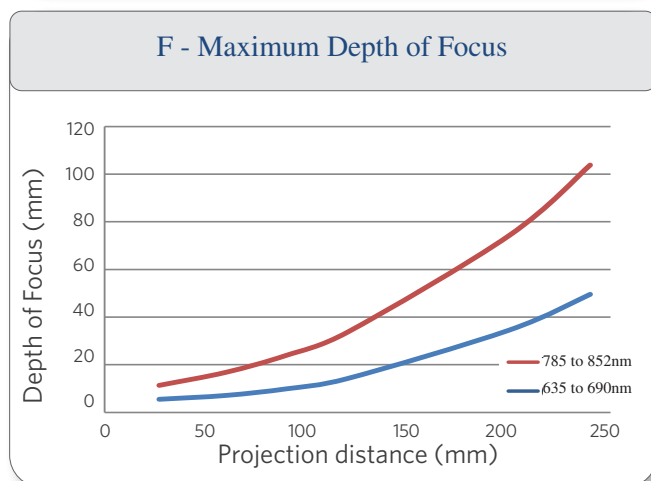
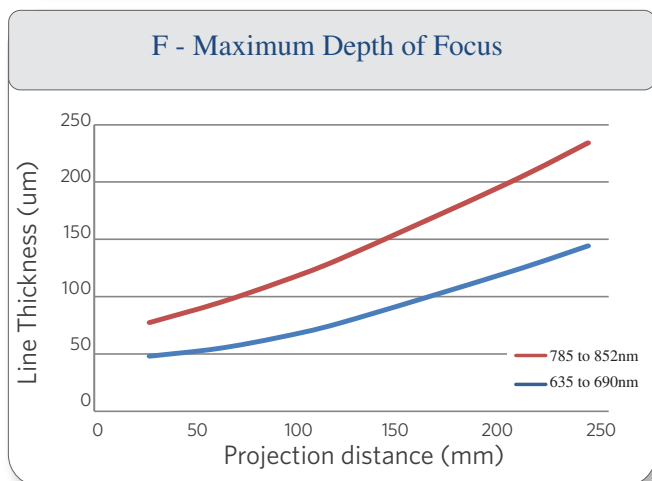
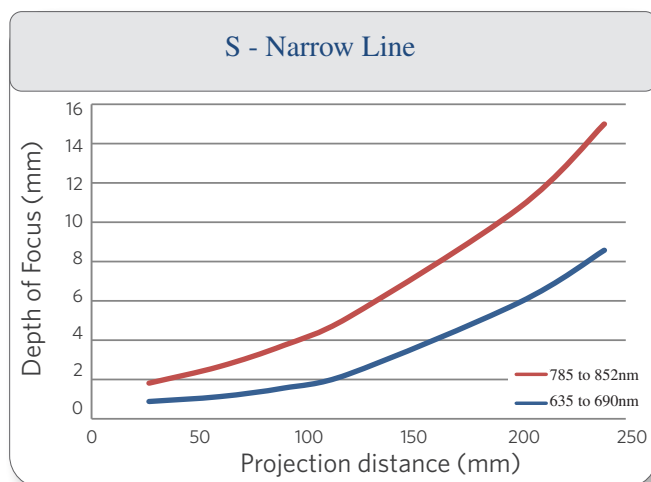
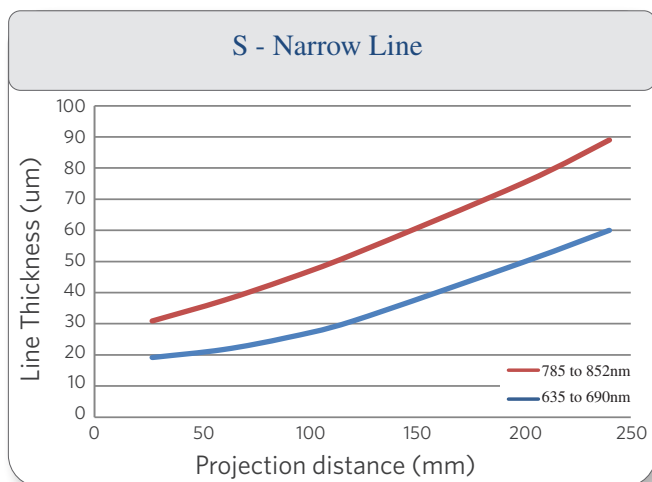
$$\text{Uniformity} = \pm \frac{\Delta}{2I(-\alpha_r, \alpha_r)} * 100$$

$I(-\alpha_r, \alpha_r)$: average intensity between $(-\alpha_r, \alpha_r)$

Uniformity		
S	Standard	$\pm 22.5\%$
H	Higher	$\pm 12.5\%$

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)				
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					

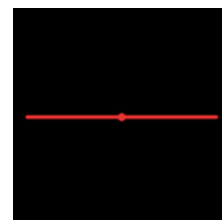
Please Note: Power levels refer to maximum diode output power. Module output power will vary depending on optical configuration.

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



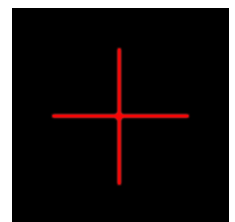
Single Line



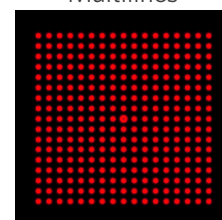
Dot Line



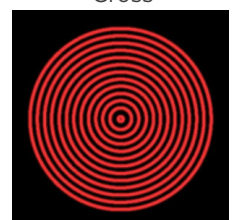
Multilines



Cross



Dot Matrix

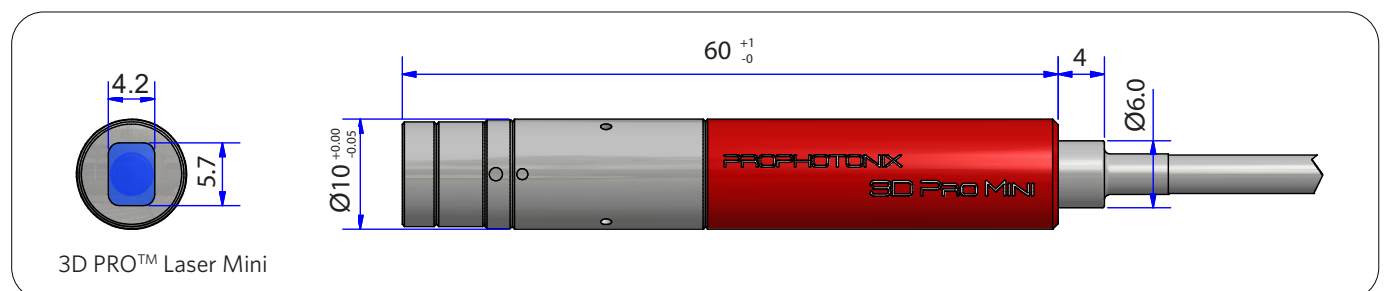


Concentric Circles

Electronic Options	
S	Standard
T	TTL Modulation

*Images courtesy of HOLOEYE Photonics AG

Dimensional Drawing

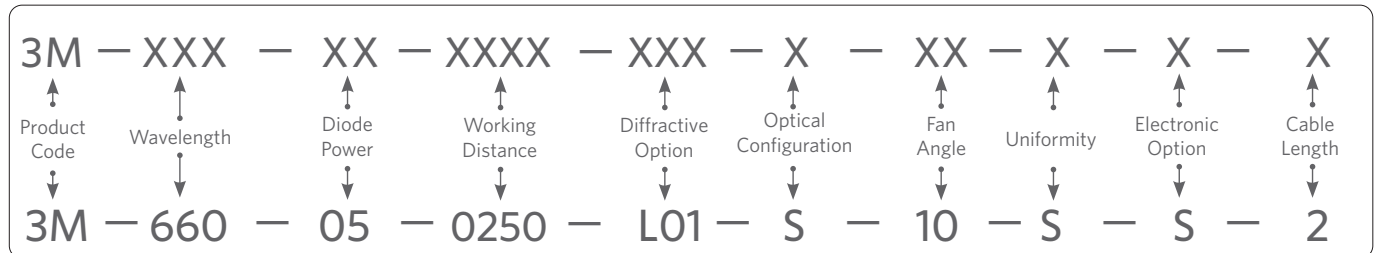


Part Numbers

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

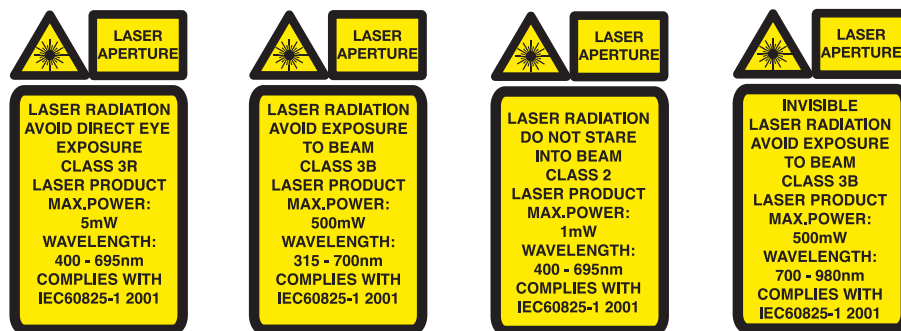
To order your 3D PRO Laser Mini use the product code 3M - Select Wavelength(XXX)- Select Diode Power (XX) - Select Working Distance (in mm) (XXXX) - Select Diffractive Option (XXX) - Select Optical configuration (see graph) (X) - Select Fan Angle (XX) - Select Uniformity option (S/H) - Select Electronic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



Laser Safety

The light emitted from these devices has been set in accordance with IEC60825. However, staring into the beam, whether directly or indirectly, must be avoided. IEC60825 classifies laser products into three different categories depending on light emitted, wavelength and eye safety.

CLASS II

“Caution”, visible laser light less than 1.0mW. Considered eye safe, normal exposure to this type of beam will not cause permanent damage to the retina.

CLASS IIIR

“Danger”, visible laser light between 1.0mW and 5.0mW. Considered eye safe with caution. Focusing of this light into the eye could cause some damage.

CLASS IIIB

“Danger”, infrared (IR), and high power visible lasers considered dangerous to the retina if exposed.

NB: It is important to note that while complying with the above classifications, unless otherwise stated, our laser diode products are not certified and are designed solely for use in OEM products. The way in which the device is used in the final product may alter its original design classification, and it is the responsibility of the OEM to ensure compliance with the relevant standards.

NB. Without the inclusion of laser drive circuits, the output powers cannot be set in accordance with EN60825 since they are designed for OEM use and not certified devices as defined in the specification. The manufacturer of the complete laser product is responsible for complying with the requirements of EN60825. If the case temperature of the laser diode exceeds its maximum specification, premature or catastrophic failure may occur. To ensure the maximum life of the laser diode, it is recommended that an additional electrically insulated heatsink, of at least 35sq. cm. be used. Thermal transfer paste can be used to improve contact and heat dissipation. Do not restrict air circulation around the device. Specifications subject to change without notice.

Document Revision:
(130524)

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