3D PRO Laser™

Structured Light Laser Diode Module

Seamless Integration, Excellent Uniformity.

The 3D PRO Laser has been designed specifically for the demanding requirements of machine vision applications. The laser modules have a compact cylindrical form factor based on industry standard dimensions for easy integration into existing applications.

The 3D PRO Laser™ is 19mm in diameter, compatible with the majority of existing Machine Vision systems. The laser is available with a customer-specified fixed focus.

3D PRO lasers offer 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 output powers up to 100 mW and fan angles between 10° and 90°. Wavelengths range from 405nm to 850nm and include 635nm and 660nm. Electronic options consist of TTL modulation up to 1MHz and Analogue power control for intensity adjustment. The 3D PRO range is available in a wide variety of line and diffractive optic options.

PRO PHOTONIX
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Key Features

- Compact, cylindrical form factor for easy mounting
- Excellent uniformity
- Line width of 30µm at 120mm
- Available options include: wavelengths, power levels, fan angles, intensity control & modulation

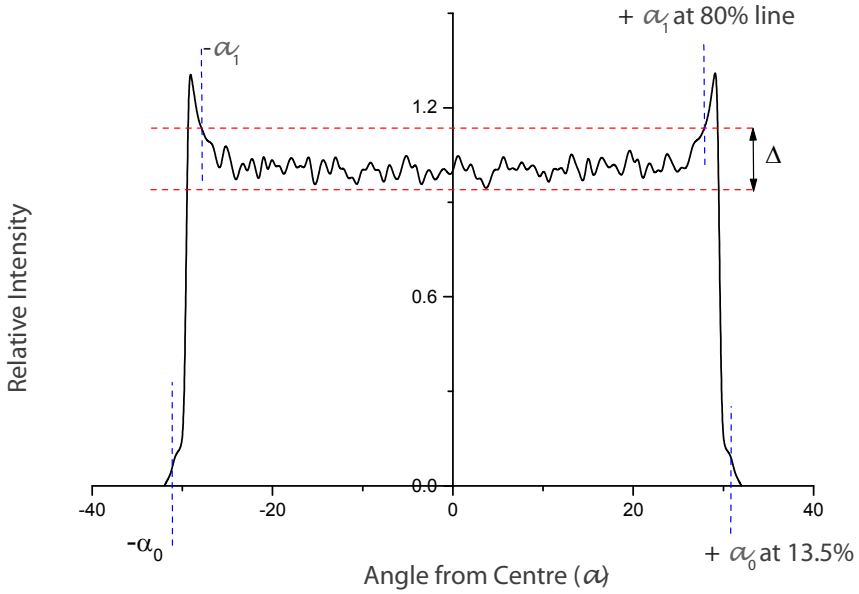
Key Applications

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

ALAVA INGENIEROS
Tecnología a su medida

Uniformity

3D PRO Lasers 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 achieves a standard uniformity ±22.5%. A higher uniformity option is available with a uniformity of ±12.5%.



I : Optical power

$2\alpha_0$: Fan angle

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

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

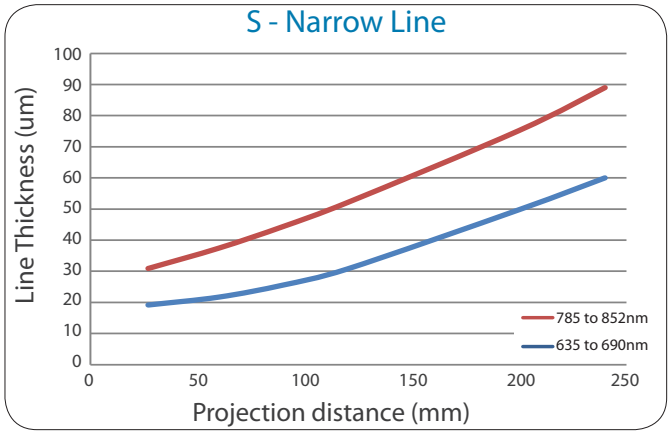
$$Uniformity = \pm \frac{\Delta}{2I(-\alpha_1, \alpha_1)} * 100$$

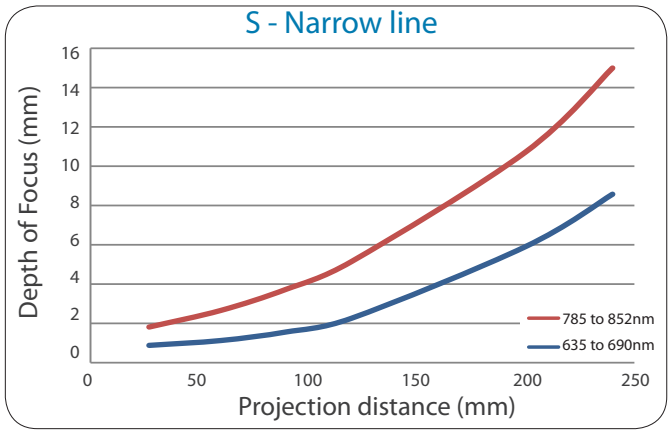
$I(-\alpha_1, \alpha_1)$: average intensity between $(-\alpha_1, \alpha_1)$

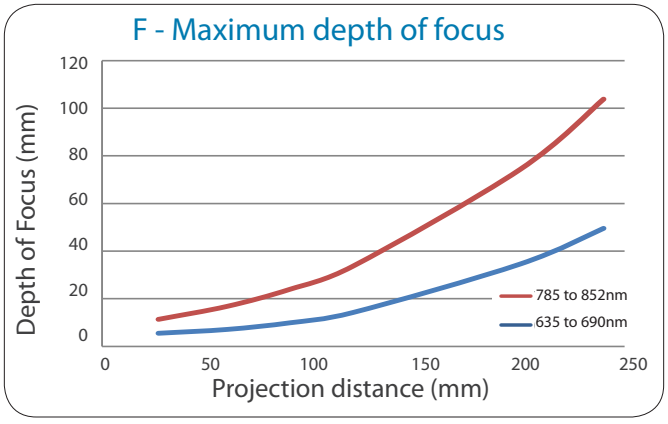
Uniformity		
S	Standard	±22.5%
H	Higher	±12.5%

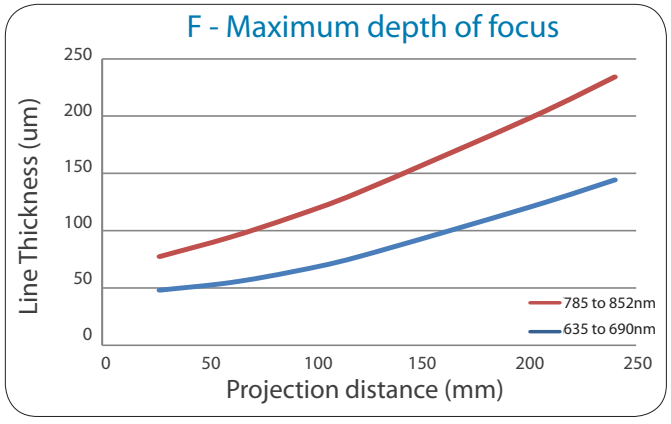
Focusing and Depth of Focus performance

The following graphs show the focusing and depth of focus performance of the 3D PRO Laser 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 √2.









Product Specifications

Mechanical Specifications	
Weight	<45g
Housing Material	Anodized Aluminum
Protection Category	IP56
Electrical Isolation	Potential-free Housing
Bore Sighting	<3mrad

Wavelength (nm)	Diode Power (mW)							
405	5	10	20	35				
635	1	5	10	15	35	45		
650	1	5	10					
660	1	5	10	20	35	50	80	100
670	5	10	15					
690	20	35	50					
785	20	35	50	80	100			
830	50	100						
850	35	50						

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.

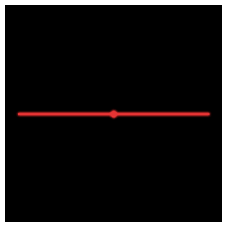
Electrical and Environmental Specifications	Min	Max
Input Voltage	5VDC	30VDC
Input Current	Up to 200mA	
Mode of Operation	Automatic Power Control with current limiting	
Optical Power Stability	±3%	
Operating Temperature*	-10°C	40°C
Storage Temperature	-10°C	80°C
Reverse polarity voltage	-30VDC	
Digital Modulation	TTL, 0-5V DC up to 1MHz	
Analog Modulation (Amplitude, Frequency)	0 - 3.3VDC, DC up to 100kHz	

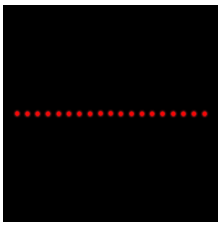
*Module surface temperature

Fan Angle
10°, 20°, 30°, 45°, 60°,75°,90°

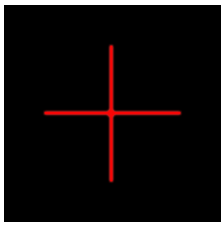
Diffractive Options	
L01	1 Line
L05	5 Lines
L07	7 Lines
↓	↓
L65	65 Lines
S01	Spot
X01	Crosshair

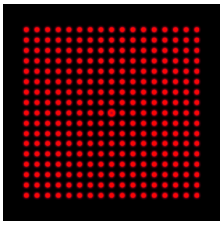
Other Diffractive Options are available on request

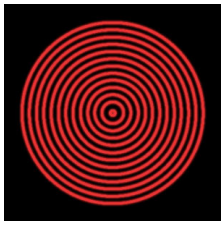

Single Line


Dot Line


Multilines


Cross

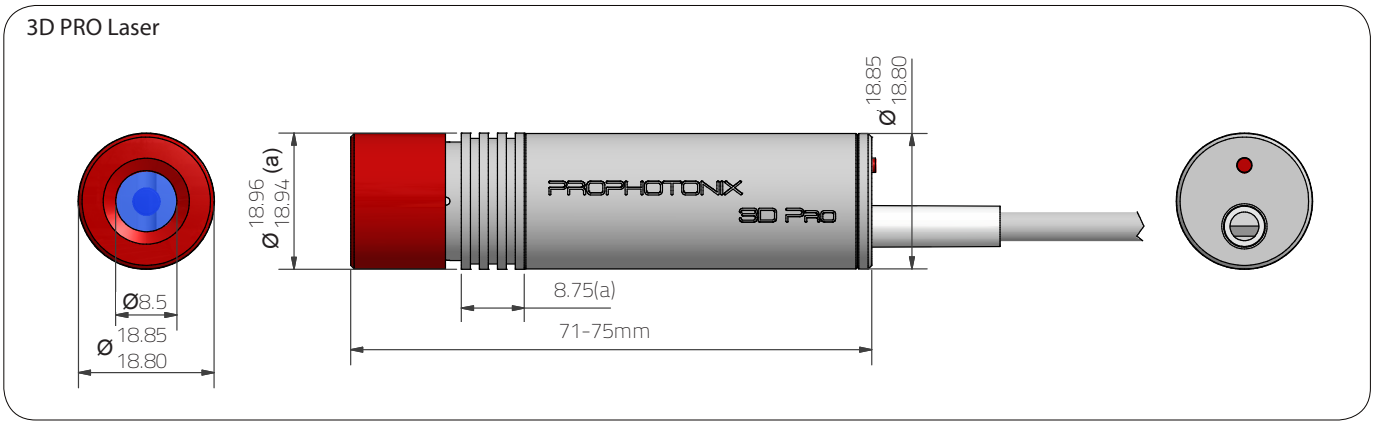

Dot Matrix


Concentric Circles

Electronic Options	
S	Standard
A	Analogue Control
T	TTL Modulation
B	Both Analogue & TTL

*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 use the product code D – Select Wavelength(XXX)- Select Diode Power (XXX) - 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 (X) – Select Cable Length in metres (X)

E.G. D – 660 – 005 – 0250 - L01 - S -10 – S –S – 2

D	—	XXX	—	XXX	—	XXXX	—	XXX	—	X	—	XX	—	X	—	X	—	X
		Wavelength		Diode Power		Working Distance		Diffractive Option		Optical Configuration		Fan Angle		Uniformity		Electronic Option		Cable Length
D	—	660	—	005	—	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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