



## Model: LP-HFD2

<b>Max. power</b> 28 mW	<b>IP</b> 65	<b>Fiber-coupled laser</b>	<b>Highly precise</b>	<b>Multi system</b>	<b>Multi color possible</b>	<b>LPM Software</b>	<b>Operating voltage</b> 24 VDC
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### High-power laser with thermal management

The LP-HFD2 is the successor of our reliable laser projector LP-HFD. In addition to the new housing, stated IP65, the development has been focused on temperature stability in particular.

Fiber-coupled lasers (with red and/or green laser source) are applied with output power of 7 mW. When requested, output power up to 28 mW is possible. The range of standard optic focus is 0.5 m to 7.0 m. With a tele-optic, working distances up to 14 m can be realized. For higher ambient temperatures there are several cooling options available such as extended air hose or water cooling system.

Typical data connection is Ethernet, more communication options via PROFINET or serial connection are also possible.

### Highlights

- Very exact, fast and stable laser projection
- Optimized for projection on 3D objects
- High fiber-coupled laser beam performance
- Large fan angle enables large operating range (up to 80° x 80°)
- Industrial IP65 housing
- Improved thermal management
- Operating up to 60 °C ambient temperature with water cooling
- Optional extended air hose and water cooling
- Data transmission serial or Ethernet
- Integration to a multi projection system

### Applications

- Automotive
- Vehicle construction
- Aerospace
- Composites
- Metal
- Wood
- Stone
- Glass
- Concrete
- Construction
- Textile

## SYSTEM SPECIFICATIONS

Laser source	Fiber-coupled red or green laser diode			
Wavelength	520 nm		638 nm	
Output power	7 mW <sup>(1)</sup>	14 mW	7 mW <sup>(1)</sup>	28 mW
Laser class (on EN 60825)	2M	3R	2M	3R
Special features of the model	Standard	High Precision	Tele-optic	
Fan angle	80° x 80°	60° x 60°	60° x 60°	
Accuracy <sup>(2)</sup> (depends on projection distance)	0.25 mm/m	0.1 mm/m	0.2 mm/m	
Focus range	0.5 m up to 7 m (standard focus)		Up to 14 m	
Frequency of projection	Max. 50 Hz (depends on the projection)			
Weight	7.3 kg (plus ca. 1.4 kg for separate power supply)			
Dimensions (L x W x H)	500 x 200 x 141 mm (181 mm incl. fan) 19.685 x 7.874 x 5.551 in (7.126 incl fan)			
IP protection class	IP65			

## SOFTWARE / HANDLING

Software	LPM
Graphic files without LPM	HPGL / HPGL 3D

## ACCESSORIES

Remote control	Optional
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## ELECTRICAL SPECIFICATIONS

Operating voltage	24 VDC ±5%
Protection class electrical	3 (protective low voltage)
Electrical isolation	Potential-free housing, connection to GND through 500 kΩ
Interfaces	1. Ethernet TP, 100 Base TX Cat5/Cat6 2. RS-232 IV24 (max. cable length 15 m) 3. Profi Net external optional, other fieldbus systems on request
Power consumption (typical)	50 W (max. 100 W)

## AMBIENT CONDITIONS

Operating condition	+5 °C up to +45 °C (with passive cooling) +5 °C up to +50 °C (with cooling air hose) +5 °C up to +60 °C (with adaptive water cooling)	
Storage temperature	-5° C up to +60 °C	
Humidity (max.)	<80% relative, non-condensing	
Working range in relationship to the mounting height (in mm)	Optical angle 76° (in mm)	Optical angle 60° (in mm)
1.000	1.562	1.155
2.000	3.125	2.309
3.000	4.687	3.464
4.000	6.250	4.619
5.000	7.812	5.774
6.000	9.375	6.928
7.000	10.938	8.083
8.000	12.500	9.238
9.000	14.063	10.393

<sup>(1)</sup> (TÜV CDRH certified nominal at beam exit)

<sup>(2)</sup> (At 32° C block temperature, optical angle 70° and 0° incline)