

IPG Photonics Welding Heads

from the World Leader in Fiber Lasers



Applications



Features



Advantages



www.ipgphotonics.com

IPG The Power to Transform®

Welding Heads

IPG Photonics' D30 & D50 Processing Heads

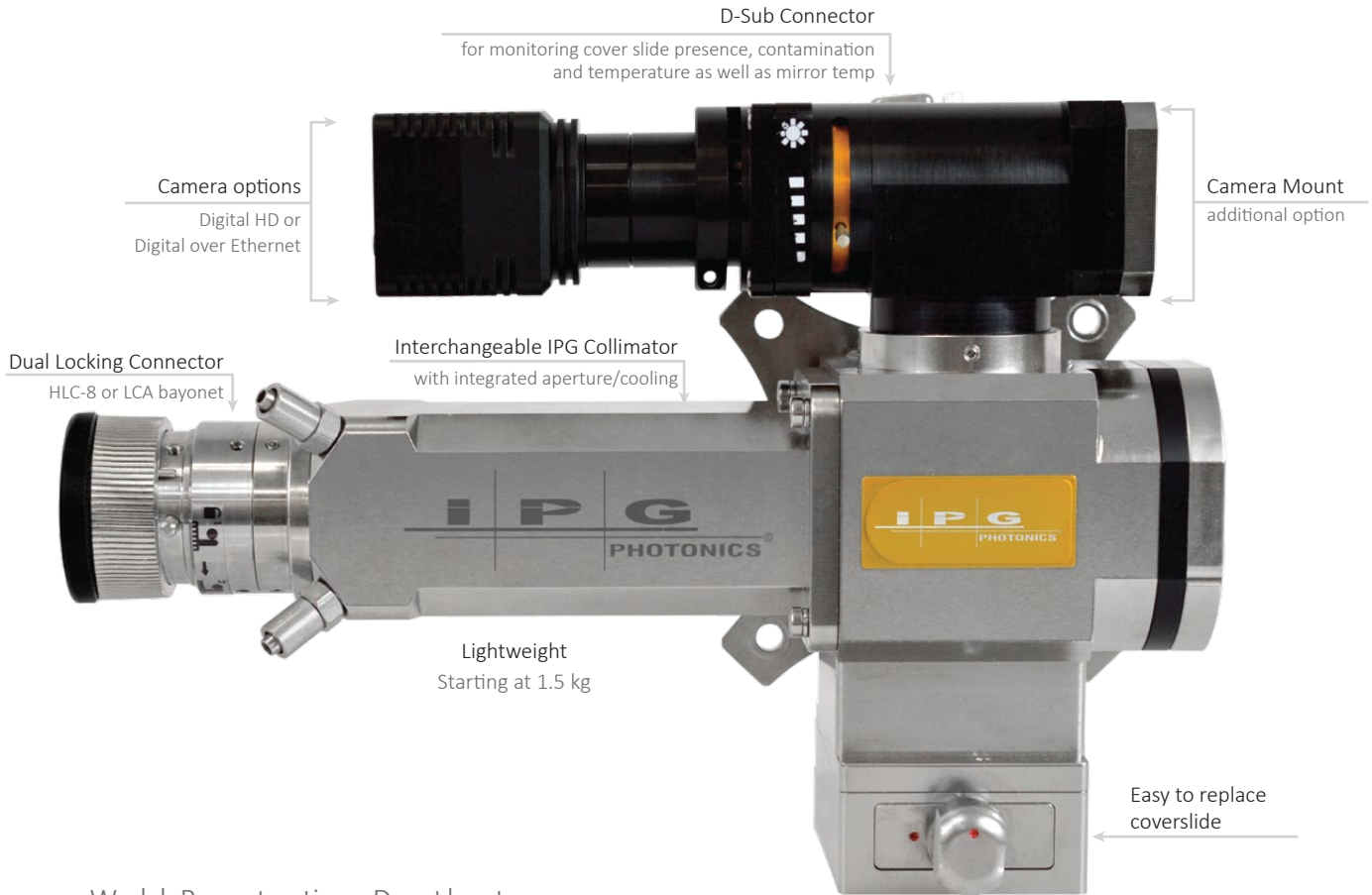
FLW-D30

Rated up to 6 kW

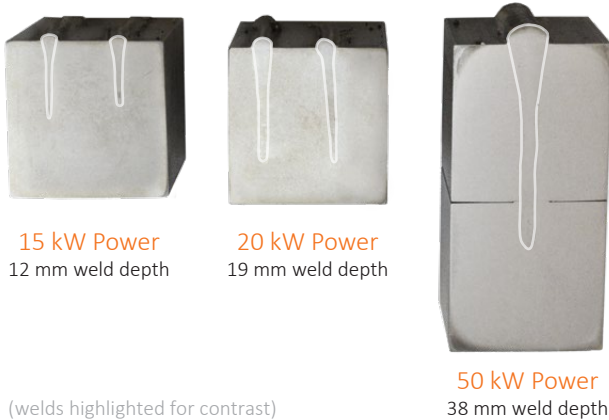
Horizontal Configuration

Left Horizontal (L)

Camera Arm Sold Separately



Weld Penetration Depth at Increasing Power Levels



Standard Features

IPG Photonics has revolutionized the welding industry by providing customers with reliable, compact, energy efficient fiber lasers. IPG now offers a range of optical heads to accompany its fiber lasers including the FLW-D30, FLW-D50-L, FLW-D50-S, FLW-D50-HP, and FLW-D85-HP welding heads suitable for various power levels. ▶

FLW-D50-L

Rated up to 10 kW

Vertical Configuration

Camera Arm Sold Separately



FLW-D50-S

Rated up to 30 kW

Vertical Configuration

Camera Arm Sold Separately



FLW-D50-HP

Rated up to 50 kW

Vertical Configuration

Camera Arm Sold Separately



FLW-D85-HP

Rated up to 100 kW

Vertical Configuration

Camera Arm Sold Separately



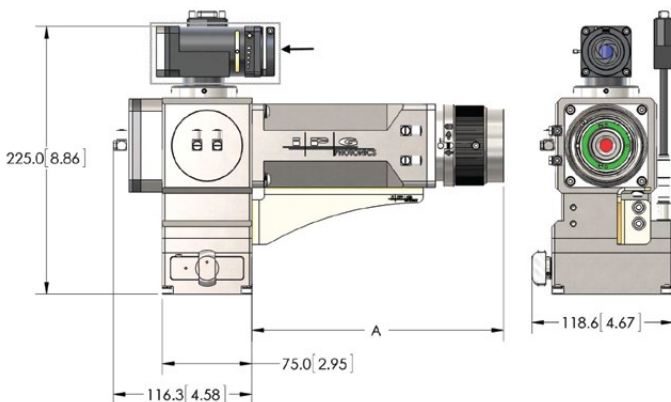
► The FLW line of processing heads offers multiple features, including vertical or horizontal configuration, real time contamination monitoring functionality, camera options, fine focus adjustment and wide range of collimator and focus lens options, all packaged in a lightweight form. IPG Welding heads are available with a broad range of accessories including air-knife, gas assist/plume suppression, coaxial nozzle, and a variety of add-on modules for advanced welding applications.

Examples of Configurations Available

Horizontal Configuration

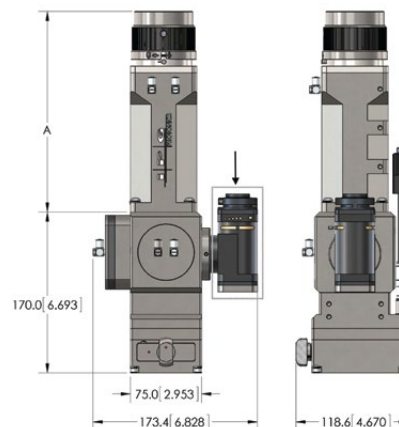
Right Horizontal (R)

Camera Arm Sold Separately



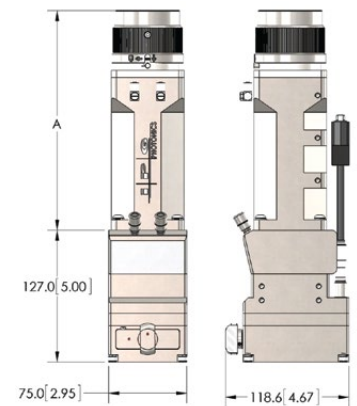
Vertical (V)

Camera Arm Sold Separately



Standalone (S)

No Camera Arm

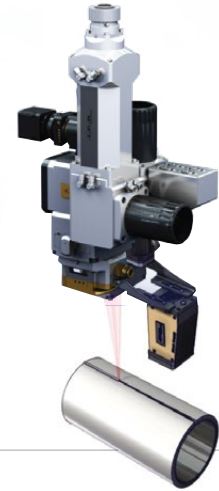


Optional Features

Expanding Process Capabilities

Seam Finder

- Seamless integration with IPG welding heads
- Utilizes high speed CCD camera and LED strobe illumination to image fast moving parts
- Locates seams with <10 um accuracy and sends the new seam location to a stage controller
- Provides increased process consistency
- Increases productivity through automated adjustment of weld location to match varying seam positions



Dual Spot Module

- Rated up to 10 kW
- Installed between the collimator and core block assembly
- 50/50 power distribution for beam separation in the X or Y direction

Available for D30:

P30-010747-001 (spot separation 11 mm*)

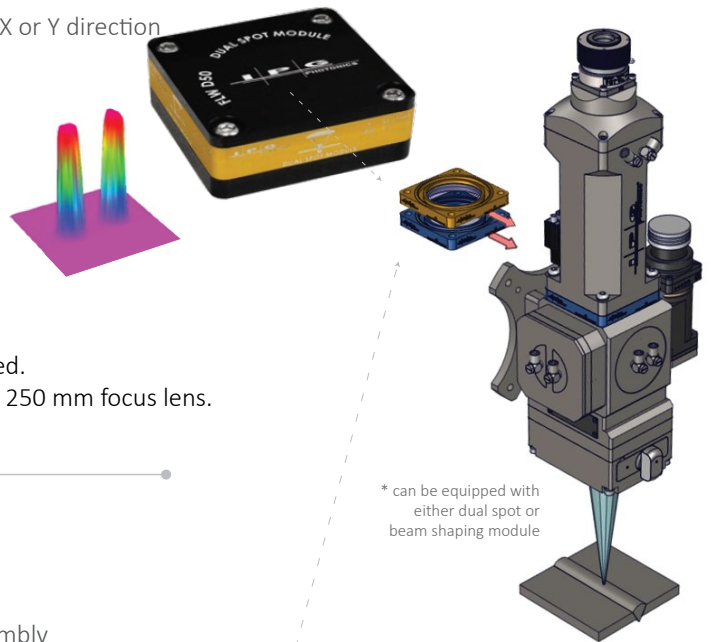
Available for D50:

P30-007438-001 (spot separation 0.7 mm*)

P30-007438-002 (spot separation 1.4 mm*)

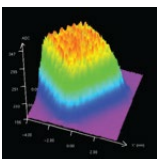
P30-007438-003 (spot separation 0.35 mm*)

* The spot separation depends on the focus lens used.
Examples above applicable for welding heads with 250 mm focus lens.

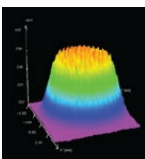


Beam Shaper Module for FLW-D50

- Rated up to 10 kW
- Installed between the collimator and core block assembly
- Uniform (flat-top) power distribution over the area
- Long Rayleigh length



6mm x 6mm square output:
P30-003444-SQR



6mm circular output:
P30-003444-CIR





Welding with Wobble

IPG's welding heads are also available with integrated wobble modules. IPG's Wobble welding heads are designed to provide the highest laser power handling capability in the industry in a completely sealed and lightweight package. These process heads provide effortless integration with IPG lasers and offer improved weld quality and better visual finish. Available in multiple configurations with the broadest focus and collimator lens options, the Wobblers are the ultimate tool to weld a multitude of different material types and thicknesses. For more information about IPG's new line of Wobble heads including available configurations, please see the designated IPG Wobbler brochure.

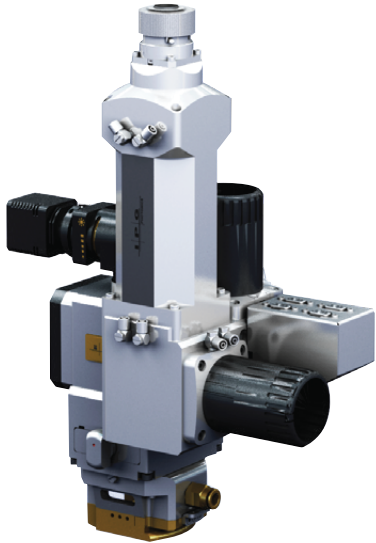
Ideal for applications which require

- Impeccable Visual Finish
- Enhanced Weld Quality and Consistency
- Greater tolerance for variation in:
 - Seam location
 - Seam size (gap)
- Improved Welding of
 - Dissimilar Materials
 - Materials prone to cracking



FLW-D30-W

IPG D30 Wobble Welding Head
Power Handling up to 6 kW with a variety of wobble shapes at frequencies up to 1 kHz

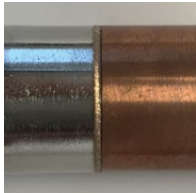


FLW-D50-W

IPG D50 Wobble Welding Head
Power Handling up to 12 kW with a variety of wobble shapes at frequencies up to 700 Hz



Corner weld on 6061-T6 aluminum (thickness 1.5 mm)



304 stainless steel and oxygen free copper tubes

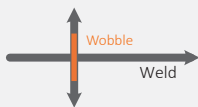
Wobble Modes

In addition to the wobble modes, both wobble frequency and amplitude can be easily adjusted for process optimization

CW/CCW CIRCLE



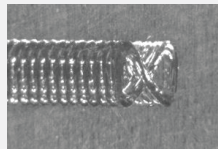
LINEAR



EIGHT



INFINITY

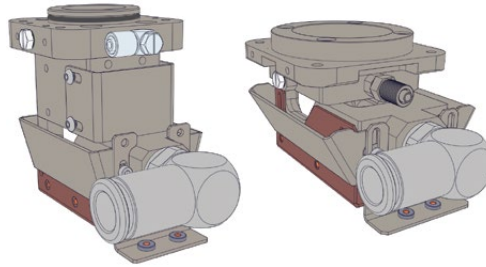


Welding Accessories

Expanding Process Capabilities



Camera Arm Assembly
with C-mount extension tube
to mount camera.
Precision image position adjustment
Integrated iris
Image focus and lock
P30-002424 (90 Degree)
P30-009929 (Straight)



Air Knife with Purge
Integrated purge module
provides additional protection
for cover slide.

Gas assist can be attached to
serve as plume suppression.
D30 Air Knife / Crossjet:
P30-002163-1 (D30, F100-F200)
P30-002163-2 (D30, F200-F300)
P30-002163-3 (D30, F250-F500)
D50 Air Knife / Crossjet:
P30-007272-001 (D50, F150-F300)
P30-007272-002 (D50, F400-F1000)

Coaxial Nozzle
Shield gas is delivered coaxially to
the weld site. Telescoping option
available. Suppresses weld plume.
FLW-D30: P30-002650-XXX
F100, F125, F150, F200, F250, F300
FLW-D50: P30-007401-XXX
F150, F200, F250, F300



Gas Assist
Can be attached to air knife or
directly to head.
Can be used to deliver off-axis
shield gas to weld site.
Suppresses weld plume.
Multiple inputs
P30-002452



Welding Head Alarm Module
Monitors cover slide presence,
contamination and temperature
as well as mirror temperature
P30-007325



Coverslide
Single Unit:
FLW-D30: P45-009483
FLW-D50: P45-009286
Pack of 25:
FLW-D30: P30-007534
FLW-D50: P30-007536
Pack of 100:
FLW-D30: P30-007535
FLW-D50: P30-007537

Camera Options (Camera Arm Assembly Required)



Digital HD Camera
P30-007443- HD Camera

- Direct connectivity to any HD monitor (No PC Required)
- 1/3" CCD
- True 720p HD O/P @ 60fps
- Inbuilt Cross-Hair Generator
- 40w x 40h x 45.8d

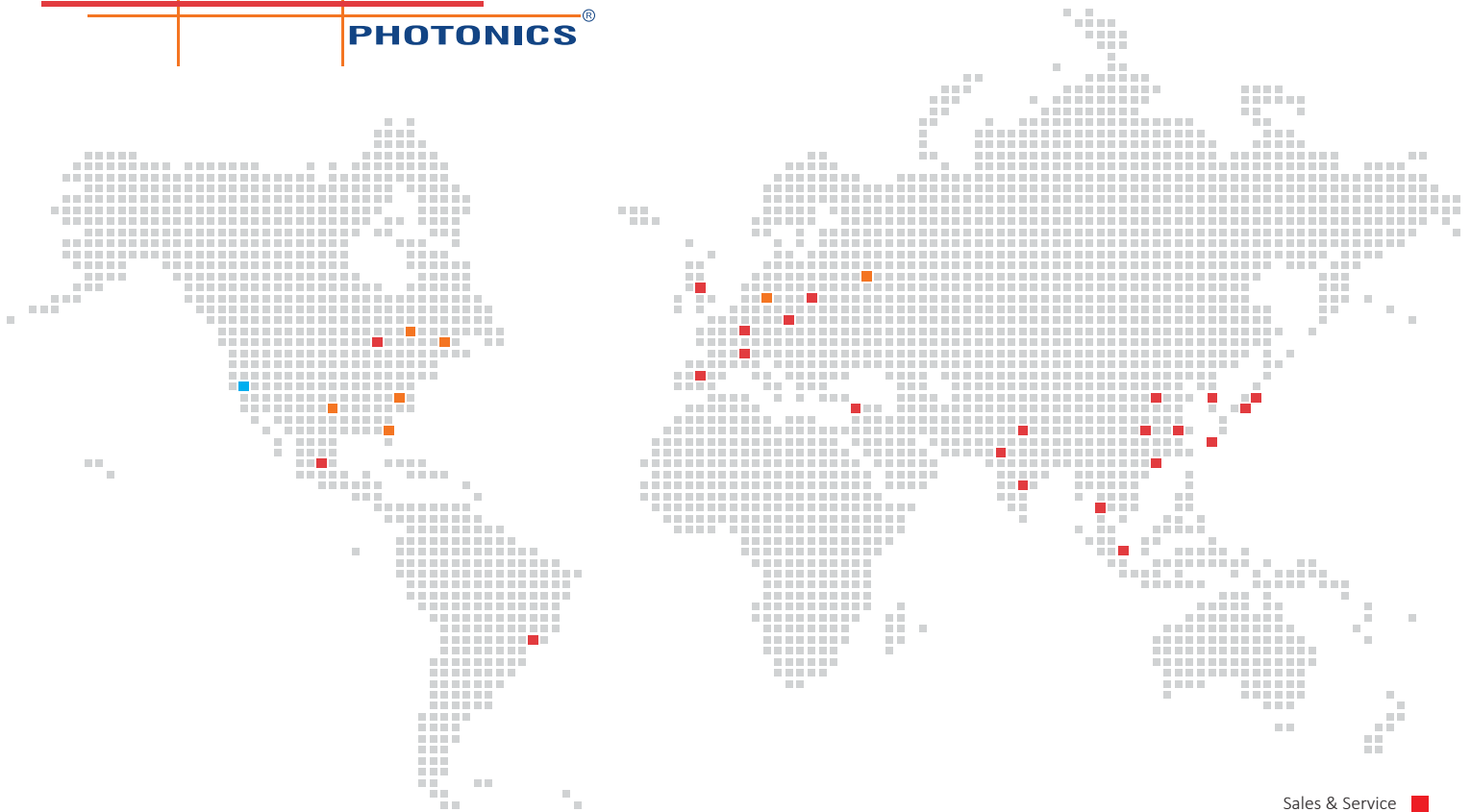
Digital Power Over Ethernet Camera
P30-007444- Ethernet Camera

- Recommended for image processing applications (PC Required)
- 1/3" CCD
- 1.2 Megapixel resolution @ 40fps
- Cross-Hair can be generated via bundled software
- 35w x 35h x 57.3d

Welding Head Configurations

D30 & D50 Available Options

	Configuration	Collimator	Focus	Fiber Receiver	Variant
<p>FLW-D30 Rated up to 6 kW</p> <p>Example: P30-002417-V4E1: FLW-D30 Horizontal Head 100 mm Collimator 250 mm Focus HLC-8 Fiber Receiver</p>	R Horizontal RHS	1 50 mm	A 100 mm E 250 mm	1 HLC-8 (QBH type)	A Adjustable collimator
	L Horizontal LHS	2 60 mm	B 125 mm F 300 mm	2 LCA (QD type)	F Fixed collimator
	V Vertical	3 85 mm	C 150 mm G 500 mm		
	S Standalone	4 100 mm	D 200 mm		
<p>FLW-D50-L Rated up to 10 kW</p> <p>Example: P30-007484-R7K2A: FLW-D50-L Horizontal RHS Head 150 mm Collimator 1000 mm Focus LCA Fiber Receiver Adjustable Collimator</p>	R Horizontal RHS	1 100 mm	A 150 mm H 700 mm	1 HLC-8 (QBH type)	A Adjustable collimator
	L Horizontal LHS	2 120 mm	B 200 mm I 800 mm	2 LCA (QD type)	F Fixed collimator
	V Vertical	3 140 mm	C 250 mm J 900 mm		
	S Standalone	4 160 mm	D 300 mm K 1000 mm		
	B Backwards	5 180 mm	E 400 mm		
		6 200 mm	F 500 mm		
		7 150 mm	G 600 mm		
<p>FLW-D50-S Rated up to 30 kW</p> <p>Example: P30-002418-S7A3: FLW-D50-S Standalone Head 150 mm Collimator 150 mm Focus HLC-16 Fiber Receiver</p>	R Horizontal RHS	1 100 mm	A 150 mm G 600 mm	1 HLC-8 (QBH type)	
	L Horizontal LHS	2 120 mm	B 200 mm H 700 mm	2 LCA (QD type)	
	V Vertical	3 140 mm	C 250 mm I 800 mm	3 HLC-16	
	S Standalone	4 160 mm	D 300 mm J 900 mm		
		5 180 mm	E 400 mm K 1000 mm		
		7 150 mm	F 500 mm		
<p>FLW-D50-HP Rated up to 50 kW</p> <p>Example: P30-003357-L1D4: FLW-D50-HP Horizontal LHS Head 100 mm Collimator 300 mm Focus HLC-24 Fiber Receiver</p>	R Horizontal RHS	1 100 mm	D 300 mm H 700 mm	3 HLC-16	
	L Horizontal LHS	2 120 mm	E 400 mm I 800 mm	4 HLC-24	
	V Vertical	3 140 mm	F 500 mm J 900 mm		
	S Standalone	4 150 mm	G 600 mm K 1000 mm		
		5 160 mm			
<p>FLW-D85-HP Rated up to 100 kW</p> <p>Example: P30-010282-V2D1: FLW-D85-HP Vertical Head 300 mm Collimator 400 mm Focus HLC-16 Fiber Receiver</p>	V Vertical	1 250 mm	A 250 mm	1 HLC-16	
		2 300 mm	B 300 mm	2 HLC-24	
		3 350 mm	C 350 mm		
			D 400 mm		



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IPG Photonics manufactures a wide range of laser products with laser classifications ranging from Class I to Class IV. Please review the individual product specification for the optical performance characteristics specific to the device. This information typically includes the wavelength range, output power (CW and/or Peak), Pulse Energy, Pulse Repetition Rate, Pulse Width, etc.

