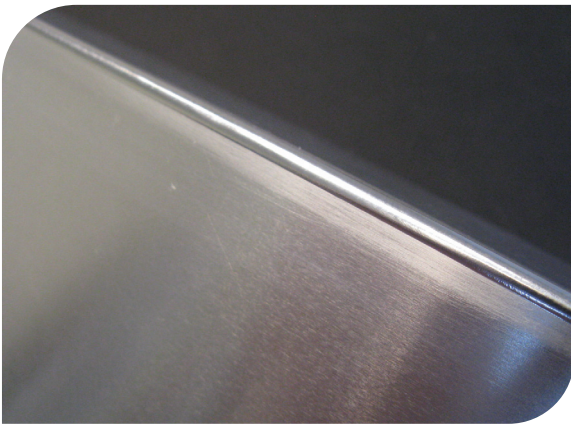


# IPG Photonics Welding Heads

from the World Leader in Fiber Lasers



Applications



Features



Advantages



[www.ipgphotonics.com](http://www.ipgphotonics.com)

IPG The Power to Transform®

# Welding Heads

IPG Photonics' D30 & D50 Processing Heads

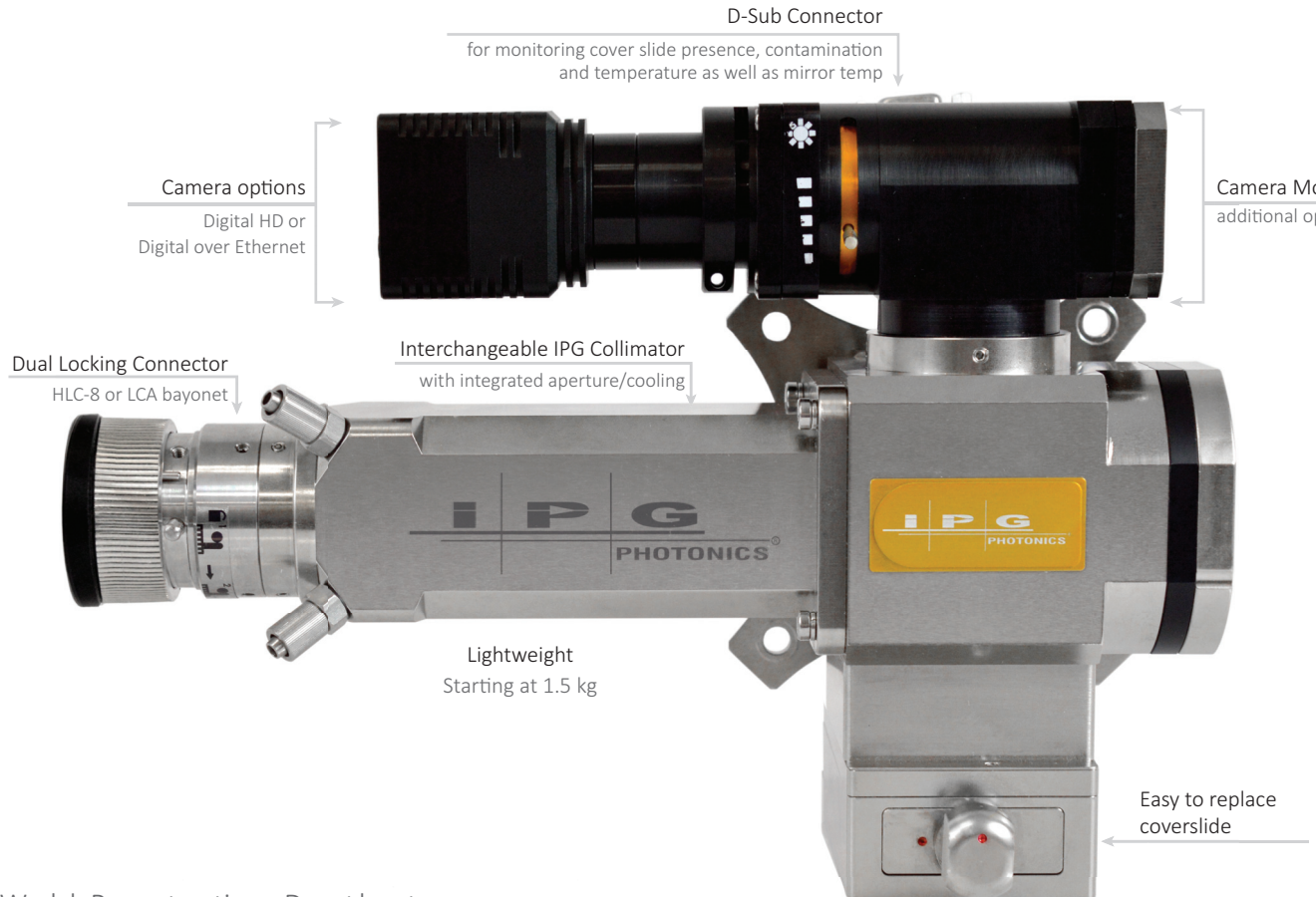
## FLW-D30

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



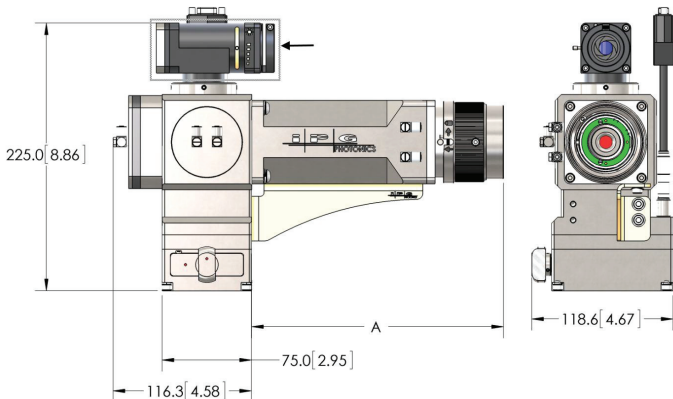
► The FLW line of processing heads offers multiple features, including vertical or horizontal configuration, real time contamination monitoring functionality, camera options, fine focus adjustment and wide range of collimator and focus lens options, all packaged in a lightweight form. IPG Welding heads 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

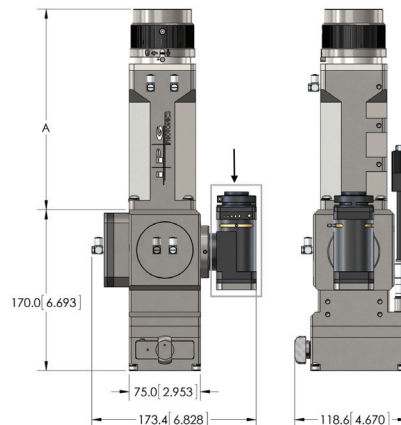
Right Horizontal (R)

Camera Arm Sold Separately



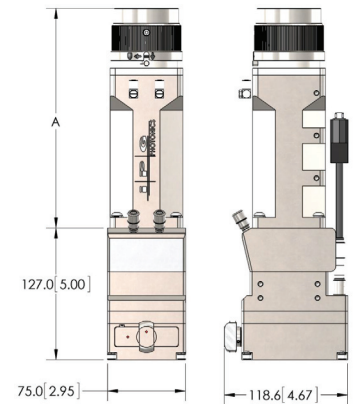
### Vertical (V)

Camera Arm Sold Separately



### Standalone (S)

No Camera Arm

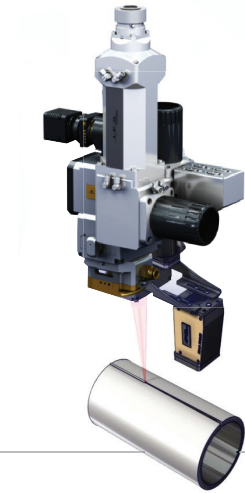


# Optional Features

## 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\*)

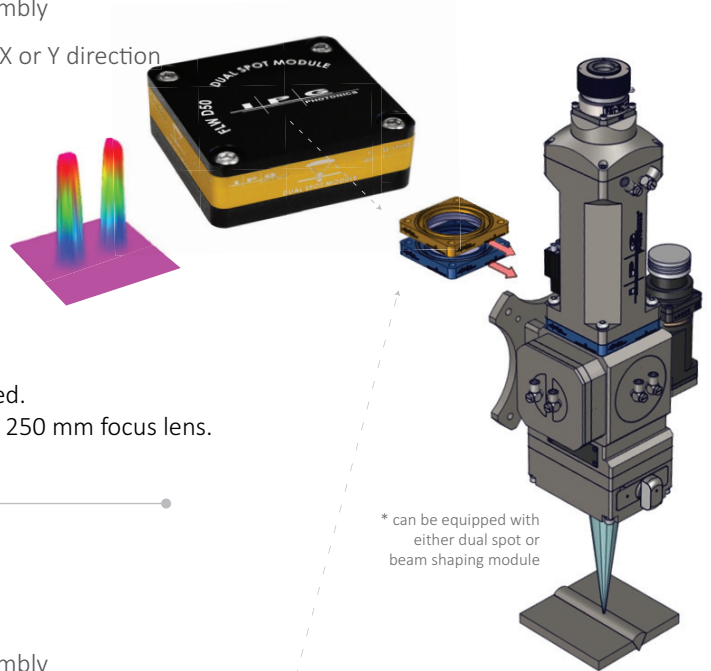
Available for D50:

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

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

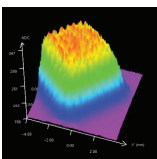
P30-007438-003 (spot separation 0.35 mm\*)

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

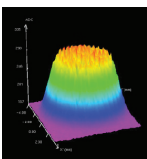


### Beam Shaper Module for FLW-D50

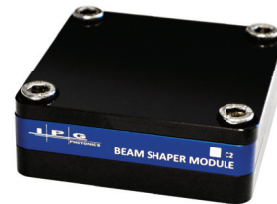
- Rated up to 10 kW
- Installed between the collimator and core block assembly
- Uniform (flat-top) power distribution over the area
- Long Rayleigh length



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



6mm circular output:  
P30-003444-CIR



\* can be equipped with either dual spot or beam shaping module



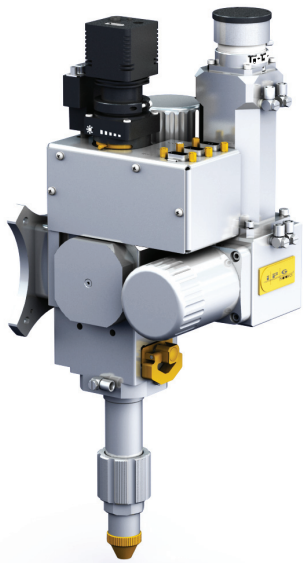


## Welding with Wobble

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



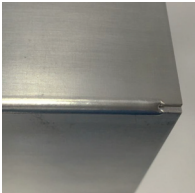
### FLW-D30-W

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

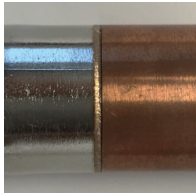


### FLW-D50-W

IPG D50 Wobble Welding Head  
Power Handling up to 12 kW with a variety of wobble shapes at frequencies up to 500 Hz



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



304 stainless steel and oxygen free copper tubes

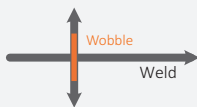
## Wobble Modes

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

### CW/CCW CIRCLE



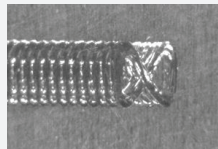
### LINEAR



### EIGHT



### INFINITY

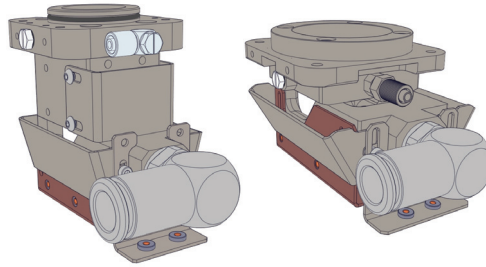


# Welding Accessories

## 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><b>FLW-D30</b> 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>	<b>R</b> Horizontal RHS	<b>1</b> 50 mm	<b>A</b> 100 mm	<b>E</b> 250 mm	<b>1</b> HLC-8 (QBH type)
	<b>L</b> Horizontal LHS	<b>2</b> 60 mm	<b>B</b> 125 mm	<b>F</b> 300 mm	<b>2</b> LCA (QD type)
	<b>V</b> Vertical	<b>3</b> 85 mm	<b>C</b> 150 mm	<b>G</b> 500 mm	<b>A</b> Adjustable collimator
	<b>S</b> Standalone	<b>4</b> 100 mm	<b>D</b> 200 mm	<b>F</b> Fixed collimator	
<p><b>FLW-D50-L</b> 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>	<b>R</b> Horizontal RHS	<b>1</b> 100 mm	<b>A</b> 150 mm	<b>H</b> 700 mm	<b>1</b> HLC-8 (QBH type)
	<b>L</b> Horizontal LHS	<b>2</b> 120 mm	<b>B</b> 200 mm	<b>I</b> 800 mm	<b>2</b> LCA (QD type)
	<b>V</b> Vertical	<b>3</b> 140 mm	<b>C</b> 250 mm	<b>J</b> 900 mm	<b>A</b> Adjustable collimator
	<b>S</b> Standalone	<b>4</b> 160 mm	<b>D</b> 300 mm	<b>K</b> 1000 mm	<b>F</b> Fixed collimator
	<b>B</b> Backwards	<b>5</b> 180 mm	<b>E</b> 400 mm		
		<b>6</b> 200 mm	<b>F</b> 500 mm		
		<b>7</b> 150 mm	<b>G</b> 600 mm		
<p><b>FLW-D50-S</b> 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>	<b>R</b> Horizontal RHS	<b>1</b> 100 mm	<b>A</b> 150 mm	<b>G</b> 600 mm	<b>1</b> HLC-8 (QBH type)
	<b>L</b> Horizontal LHS	<b>2</b> 120 mm	<b>B</b> 200 mm	<b>H</b> 700 mm	<b>2</b> LCA (QD type)
	<b>V</b> Vertical	<b>3</b> 140 mm	<b>C</b> 250 mm	<b>I</b> 800 mm	<b>3</b> HLC-16
	<b>S</b> Standalone	<b>4</b> 160 mm	<b>D</b> 300 mm	<b>J</b> 900 mm	
		<b>5</b> 180 mm	<b>E</b> 400 mm	<b>K</b> 1000 mm	
		<b>7</b> 150 mm	<b>F</b> 500 mm		
<p><b>FLW-D50-HP</b> 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>	<b>R</b> Horizontal RHS	<b>1</b> 100 mm	<b>D</b> 300 mm	<b>H</b> 700 mm	<b>3</b> HLC-16
	<b>L</b> Horizontal LHS	<b>2</b> 120 mm	<b>E</b> 400 mm	<b>I</b> 800 mm	<b>4</b> HLC-24
	<b>V</b> Vertical	<b>3</b> 140 mm	<b>F</b> 500 mm	<b>J</b> 900 mm	
	<b>S</b> Standalone	<b>4</b> 150 mm	<b>G</b> 600 mm	<b>K</b> 1000 mm	
		<b>5</b> 160 mm			
<p><b>FLW-D85-HP</b> 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>	<b>V</b> Vertical	<b>1</b> 250 mm	<b>A</b> 250 mm		<b>1</b> HLC-16
		<b>2</b> 300 mm	<b>B</b> 300 mm		<b>2</b> HLC-24
		<b>3</b> 350 mm	<b>C</b> 350 mm		
			<b>D</b> 400 mm		



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■ Manufacturing, Development, Sales & Service

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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.

