IPG Photonics Welding Heads
from the World Leader in Fiber Lasers
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

15 kW Power
12 mm weld depth

20 kW Power
19 mm weld depth

50 kW Power
38 mm weld depth

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.
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
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

The Power to Transform®
Wobble Heads

**IPG Photonics’ D30 & D50 Processing Heads**

**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

**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**
Camera Options (Camera Arm Assembly Required)

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

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Can be used to deliver off-axis shield gas to weld site.
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Multiple inputs
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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

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

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

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Collimator</th>
<th>Focus</th>
<th>Fiber Receiver</th>
<th>Variant</th>
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<tbody>
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<td><strong>FLW-D30</strong></td>
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**Example:** P30-002417-V4E1: FLW-D30 Horizontal Head
100 mm Collimator
250 mm Focus
HLC-8 Fiber Receiver

**Example:** P30-002418-V4E1: FLW-D50-HP Horizontal LHS Head
100 mm Collimator
300 mm Focus
HLC-24 Fiber Receiver

**Example:** P30-002418-S7A3: FLW-D50-S Standalone Head
150 mm Collimator
150 mm Focus
HLC-16 Fiber Receiver

**Example:** P30-002418-S7A3: FLW-D50-S Standalone Head
150 mm Collimator
150 mm Focus
HLC-16 Fiber Receiver

**Rated up to 6 kW**

**FLW-D30**

**Rated up to 10 kW**

**FLW-D50-L**

**Rated up to 30 kW**

**FLW-D50-S**

**Rated up to 50 kW**

**FLW-D50-HP**

**Rated up to 100 kW**

**FLW-D85-HP**
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.