

# LightWeld™

Handheld Laser Welding & Cleaning Systems

# AHB

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# LightWELD Handheld Laser Welding Technology

LightWELD™ handheld laser welding and cleaning systems are fast, easy to learn and operate, and produce high quality, consistent results across a wide range of materials and thicknesses. Pre-weld and post-weld laser cleaning functionality optimizes weld quality while increasing productivity.

## A Family of Productive Laser Processing Tools

Each LightWELD system is designed for high quality, speed, ease of use, and repeatability. LightWELD 1500, LightWELD XC, and LightWELD XR offer fabricators a complete range of highly productive solutions to choose from, specific to their welding applications.

### LightWELD XR

LightWELD XR delivers a higher-brightness beam for welding an extended range of materials and thicknesses up to 0.250" (6.35 mm), including reflective materials. Welding and cleaning materials such as titanium and copper are easy with LightWELD XR



### LightWELD XC

LightWELD XC provides additional functionality of pre- and post-weld cleaning with the same high-quality welding capabilities of the LightWELD 1500 system



### LightWELD 1500

The most cost-effective solution for laser welding steel, stainless steel, and aluminum up to .160" (4 mm) thick. LightWELD 1500 can be paired with a wire feeder, but does not have any cleaning capability



	LightWELD XR Extended Range Welding & Cleaning	LightWELD XC Welding & Cleaning	LightWELD 1500 Welding
<b>Welding Capability: Steels</b>	Stainless Steel, Mild Steel, Galvanized Steel 6.35 mm (0.250")	Stainless Steel, Mild Steel, Galvanized Steel 4 mm (0.160")	Stainless Steel, Mild Steel, Galvanized Steel 4 mm (0.160")
<b>Welding Capability: Aluminum 3 &amp; 5 Series</b>	Aluminum (3XXX, 5XXX, series) 6.35 mm (0.250")	Aluminum (3XXX, 5XXX series) 4 mm (0.160")	Aluminum (3XXX, 5XXX series) 4 mm (0.160")
<b>Welding Capability: Aluminum 6 Series</b>	3.0 mm (0.120")	---	---
<b>Welding Capability: Titanium &amp; Nickel Alloy</b>	Titanium and Nickel Alloys 5 mm (0.200")	---	---
<b>Welding Capability: Copper</b>	Copper 2 mm (0.080")	---	---
<b>Wobble Welding</b>	Up to 5 mm width	Up to 5 mm width	Up to 5 mm width
<b>Cleaning Scan Width</b>	Pre- & Post-weld up to 15 mm	Pre- & Post-weld up to 15 mm	---
<b>High Frequency Peak Power for Cleaning</b>	2500 W	2500 W	---
<b>Wire Welding Capability</b>	Yes	Yes	Yes



#### LASER WELDING

High speed, low heat input, and a small HAZ make laser welding thick, thin, reflective materials, and materials with dissimilar thicknesses far less challenging for all skill levels.



#### LASER PRE-CLEANING

Pre-weld cleaning removes rust and other contaminants from materials and increases weld quality. This is much faster than manual cleaning and uses no chemicals or abrasives.



#### LASER POST-CLEANING

Post-weld cleaning removes heat discoloration and improves visual finishes without post-weld grinding.



# LightWELD ADVANTAGES & BENEFITS

LightWELD enables dramatically faster welding and is easier to learn and operate than MIG or TIG. LightWELD provides higher-quality, consistent results with minimal distortion or part deformation.

	Traditional Systems	LightWELD Systems
Speed	Average	Fast - Over <b>4X Faster</b> than TIG
Quality	Depends on user experience	Consistent high-quality results
Learning curve	Steep	Quick and easy
Part Setup	Critical and time consuming	Minimal and fast
Material flexibility	Limited with consumables changes	Wide range with no set up
Heat affected zone	Large	Small
Distortion & Deformation	High	Very Low
Wobble welding	No	Yes - up to 5 mm
Pre-Weld Cleaning	No	Yes - Removes rust, oxides, oil & grease
Post-weld Polishing	No	Yes - Removes soot, debris & discoloration



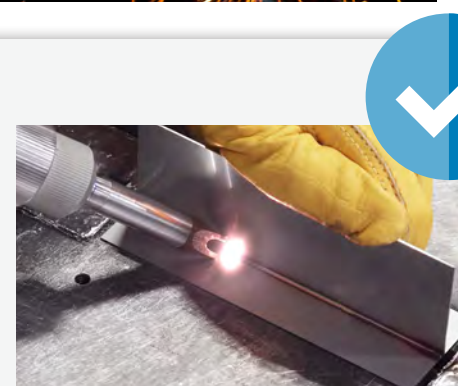
TIG Welding

**TIG welding** can generate extreme heat that deforms thin materials and produces poor visual finishes. Welding copper is difficult and welding metals of dissimilar thicknesses is limited. TIG welding is a highly skilled process, and experienced TIG welders are a scarce resource.



MIG Welding

**MIG welding** requires consumable wire, material pre-cleaning, and beveled joints for full penetration of thick metals. Travel and work angles are limited, and vertical positions are extremely challenging. MIG is a high-heat process that can cause part deformation.



LightWELD systems are easier to learn and operate and are **4X** faster than TIG welding. The low heat input and extensive material and thickness capabilities increase productivity, repeatability, and improve weld quality for operators of all skill levels.

LightWELD **XC** and LightWELD **XR** offer laser cleaning capability in addition to welding. Pre-weld cleaning remove oxides, rust, paint, oil, or grease from surfaces to be welded. Post-weld cleaning removes soot and weld-related debris.

# LightWELD LASER WELDING & CLEANING CAPABILITY

LightWELD built-in optimized presets provide high-quality, consistent welds for any skill level. LightWELD **XC** and LightWELD **XR** offer the added functionality of pre- and post-weld cleaning. Pre-weld cleaning removes oil, grease, paint, or any potential contaminants that can affect weld quality. Post-weld cleaning creates visually appealing welds while eliminating need for post processing



Maximum Welding Capability For Minimal Rework

LightWELD **XR** easily welds steel, stainless steel, aluminum, titanium, copper, and nickel alloys without part deformation. Preset modes ensure proper laser settings for consistent high-quality welds. Built-in wobble function accommodates wider seams, while wire welding capability extends welding application to poorly fit up parts.



Pre-Weld Cleaning for Improved Weld Quality

LightWELD is powerful enough to melt metal and create a weld pool even if contaminants are present. However, to improve weld quality and reduce porosity, best results are attained by pre-cleaning to remove any oil, grease, or any debris that could enter the weld pool and create a defect.



Post-Weld Cleaning for Improved Visual Appearance

Even the best welders can leave soot, debris, and visual signs of localized heating. A quick, final cleaning pass with LightWELD **XC** or LightWELD **XR** leaves a beautiful, clean weld without the need for manual post-finishing.



Welding & Cleaning In a Single System

Switching between welding and cleaning is fast and easy. Simply loosen the collet, insert the welding or cleaning nozzle, select a preset from the front panel, and the system is ready to clean or weld.



# LightWELD FEATURES

Laser welding power up to 1500 W is easily adjusted with intuitive controls to quickly dial in optimum weld settings for various materials and thicknesses. With up to 74 stored preset and user-defined process parameters, novice welders can be trained and welding in a matter of hours.



## Optimized Factory Presets and Laser Power Control

- Built-in parameters ensure high-quality results and can be customized for later use
- Operators can instantly switch between presets to accommodate many material thickness combinations
- Simple controls allow new welders to be trained within hours and experienced welders realize an immediate increase in productivity

## Lightweight Handheld Welding & Cleaning Gun

The handheld welding & cleaning gun is compact, ergonomic, and comfortable. Specially designed nozzle tips for welding and cleaning applications, plus built in wobble functionality enable operators to produce high quality welds consistently. Nozzle tips switch out quickly and easily to accommodate fusion welding, wire welding, and cleaning, further optimizing and increasing productivity.



## Built-in Wobble Welding for Increased Productivity

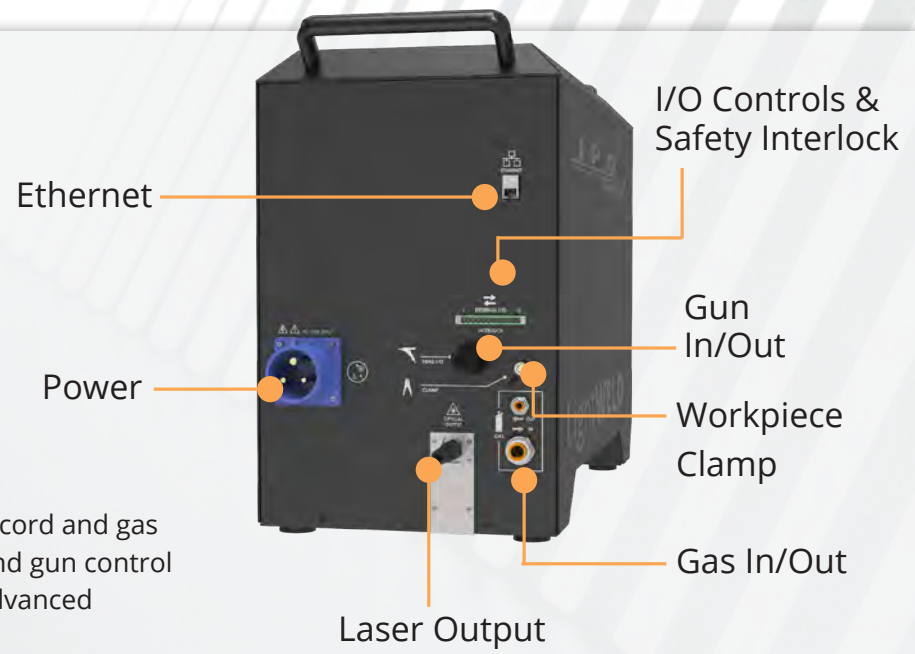
- Create highly aesthetic seams and weld parts with poor fit up
- Adjustable frequency and weld width up to 5 mm optimizes results
- Wobble parameters are preprogrammed and can be adjusted on the fly, saved, and recalled immediately



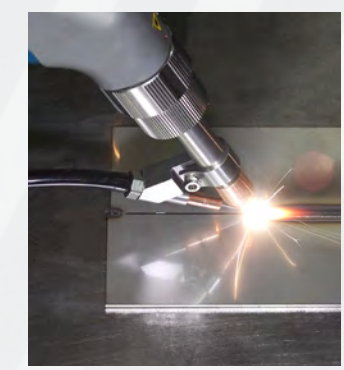
## Simple Installation and Operation



Clearly labeled rear connections make getting started fast and easy. Just plug in the power cord and gas connection, attach the workpiece clamp, and the system is ready to go. Laser power, gas and gun control is delivered through a single cable. An ethernet computer connection provides access to advanced settings to fine tune and save process parameters.



## Optional Wire Feeding Package



- Wire welding capability extends laser welding applications to poorly fit-up parts
- Used for low carbon steel, stainless steel, aluminum, non-ferrous metals & alloys





**IPG Photonics is the world leader in fiber laser technology,** with revolutionary laser solutions that enable greater **PRECISION**, higher **PRODUCTIVITY** and more **FLEXIBLE PRODUCTION** for applications across any industry.



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