



Miller OptX™ 2kW Fact Sheet and FAQs

All information embargoed until 8:15 a.m. CDT, May 1.

What is it?

The Miller OptX 2kW handheld laser welder unlocks workforce productivity for bustling welding shops. With trusted Miller quality and cutting-edge laser welding technology, the OptX 2kW multiplies the skills and know-how of both beginning and experienced welders, expanding the workforce and helping solve the longer-term welding labor shortage. The Miller OptX 2kW leads to better, faster production that helps manufacturers confidently meet deadlines and quotas so they can meet their growth and profitability goals.

Key Benefits

- With the near elimination of pre-weld prep and post-weld processing and faster travel speed, boost welding productivity up to 5 to 10 times.
- Reduce the welding learning curve, enabling novices to lay down professional-caliber welds.
- Comes with a three-year warranty supported by Miller's trusted national service network.

Specifications

- **Applications:** Ideal for precision welding applications with tight fit-up and minimal gaps where high productivity is needed.
 - Examples include: Sheet metal, fabrication, manufacturing, aerospace and defense, transportation and HVAC
- **Processes:** Laser welding, laser cleaning
- **Laser Output:** Weld mode: Class 2M red guide beam, 2,000 W average power, 3,000 W peak power
- **Input Power:** 40 A, 240 V, single-phase
- **Process Gas:** Argon, nitrogen, argon/CO₂ mix
- **Net Weight:** 140 lb. (64 kg)

Industries

The OptX 2kW is best for sheet metal and general fabrication applications mentioned above and TIG processes in place that are dealing with bottlenecks, often due to lack of throughput speed and labor force availability.

Material Types

Materials best suited to the OptX 2kW are:

- Stainless steel
- Mild Steel
- Aluminum
- Galvanized
- Nickel alloys
- Titanium
- Brass
- Copper
- Dissimilar metals (e.g., stainless steel to copper)

The OptX 2kW helps welders easily master joint configurations including:

- Lap welds
- Fillet/Inside corner welds
- Butt welds
- Outside corners
- Spot/Plug welds

When and Where to Buy

The OptX 2kW will be available for purchase May 1. Learn more at millerwelds.com/optx. (Website will go live on May 1 at 8:15 a.m. CDT.)

FAQs

Q: Who can benefit most from the OptX 2kW handheld laser welder?

A: The OptX 2kW increases welding speed and is easier to learn than TIG or MIG welding, leading to higher output and stronger bottom lines. This handheld laser welder is a new solution for high volume-low mix operations that have a backlog of projects. While these shops may not be in a position to fully commit to automation, they're also struggling to find TIG welders. Laser is the sweet spot between automation and manual welding.

Shop supervisors who are racing to reach production goals but are stymied by the ongoing shortage of skilled laborers will appreciate the OptX 2kW's power and versatility. Welders and non-welders alike can quickly train and excel at their craft with the Miller OptX 2kW — without the steep learning curve associated with arc welding. They'll be empowered to do their best at every stage of their career.

Q: How does the OptX 2kW virtually eliminate pre- and post-weld processing?

A: Pre-weld part preparation is significantly reduced. First, there's no need to purchase abrasives or chemicals. The cleaning area can be precisely and efficiently prepared with the laser welder's adjustable scan width, without contaminating the working environment badly. It can also clean profiled parts with limited accessibility. The cleaning work can be performed in-line with the welding process. Because it has very low heat input, there are no distortion effects. Parts are immediately available for the next process step.

Post-weld processing is easily handled with the OptX 2kW. The system quickly and effectively removes coloration from stainless steel. There are no more chemicals to buy or spills to clean up. The laser welder's low, concentrated heat eliminates distortion effects, lessens the chance of damaging the workpiece and reduces spatter.

Q: How many safety functions does the OptX 2kW have in place?

A: There are eight layers of safety that must be met before the OptX 2kW handheld laser welder will operate.

1. An activation code is required to activate the welder during initial setup.
2. A key is required to turn the machine on.
3. The E-Stop can be used for quick shutdown of the machine.
4. External door interlocks must detect that the enclosure is shut and the area is ready for welding before allowing the machine to fire.
5. The two-stage trigger requires positive engagements with the torch and prevents inadvertent activation.
6. The continuity clamp requires continuity between the torch nozzle and the workpiece in order for the laser welder to activate.
7. An error is shown if the machine senses light that is below the plasma threshold.
8. The machine shuts down if it senses the laser is reflecting back into the lens/fiber because of improper technique, improper angles or highly reflective material.

Q: What are the safety requirements to own and operate the OptX 2kW?

A: Operation of the OptX 2kW, a Class 4 laser, requires adherence to ANSI Standard Z136.1 and IEC Standard 60825-1.

One person at each company must be trained and certified as a Laser Safety Officer (LSO) who is responsible for:

- Ensuring the laser is operated/demonstrated safely by trained personnel and
- Ensuring the environment surrounding the laser welding cell or Laser Controlled Area is safe for people nearby when the laser is in operation.

LSO certification is open to anyone who is trained and certified by an accredited organization. Training courses, which can range from four hours to several days, are available in person and online from the Laser Institute of America and Kentek.

A company's LSO must register the OptX 2kW in order to have permission to initialize the machine.

Q: What are the hazards specific to laser welding and how can they be prevented?

A: 1. Laser welding generates invisible infrared light that does not trigger the blink reflex. Exposure to laser light can inflict severe retina and/or cornea injuries that may lead to permanent eye damage. Operators and all personnel working within the Laser Controlled Area must use eye protection including laser safety glasses with Optical Density greater than OD 7 or greater for nominal laser wavelength of 1070 (nm) nanometers, as well as an appropriate laser-safe welding helmet with additional filter for 1070nm wavelength.

2. Exposure to infrared and UV light radiation can cause serious injury to the skin. Operators and all personnel working within the Laser Controlled Area must wear protective clothing including laser-resistant and heat-resistant gloves, caps, a leather apron and other laser- and heat-resistant clothing.

3. Laser beams can reflect off metals like aluminum and copper, causing the reflection of the laser energy away from the targeted weld site into the surrounding area. This represents a hazard to all individuals in the Laser Controlled Area. Everyone in the Laser Controlled Area must wear all recommended PPE. Spectators should always view the welding process from behind the laser welder.

Q: How did Miller develop the OptX 2kW laser welder?

A: Miller developed the OptX 2kW in collaboration with IPG Photonics Corporation (NASDAQ: IPGP), a global leader in fiber laser technology. The strategic partnership pairs IPG's pioneering laser capabilities with Miller's renowned welding expertise and excellence. The alliance advances laser technologies for the handheld welding market, which urgently needs a product that can help expand worker capacity amid the ongoing labor shortage.

Q: How is this laser welder different from arc welding?

A: The key differences include:

- Laser is provided by highly focused light energy compared to the electrical arc in arc welding.
- Laser heat is highly concentrated versus the dispersed heat in arc welding.
- With laser welding, high-intensity laser melts and vaporizes metal to form a key hole-shaped cavity so that the energy can reach the bottom of the weld puddle directly . Arc welding heats metal from the surface and the heat is conducted into the part.
- Due to the internal reinforcement of laser welding, laser welded joints have less distortion. TIG/MIG joints have additional distortion because the external reinforcement creates torque or external pulling forces on the weld pieces.