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# STRONGEST LASER

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# Sichuan Strongest

# Laser Technology Co., Ltd (STR)

Based on its core competence in high power fiber laser technologies, STR has always been committing itself to R&D and equipment production in suchapplication fields as conventional laser welding, special laser hybrid welding andprecision cutting. It is a " National High-Tech Enterprise" engaged in R&D, production, sales, and technical service.

Guided by market demand and the national strategy of supporting thedevelopmentof emerging industries and industrialization, STR has strengthened thecomprehensive competitiveness of its core technologies, key components,and main products, and gradually established a product system in high- endindustrial applications, defense applications, and other fields.

Over the years of development, STR has provided various services to over 1000 enterprise users and professional services for over 10,000 times. Its sales network covers over 30 provinces and provincial-level municipalities in China, and its products are exported to dozens of countries including the United States and some in Europe, and Southeast Asia.

# Technology & R&D

**STR boasts a R&D team that can be rated as the first-class in China, which has been driving technological innovation in the industry and continuously enhancing its competitiveness as an enterprise.**

STR excels many other counterparts as a result of tremendous R&D strength supported by an average annual R&D investment of about CNY 30 million.

Through continuously introducing excellent talents and developing their professional competence,STR have established a proven and experienced R&D team consisting of 8 doctorate holders and over 20 master degree holders, the number of which accounts for more than 30% of the company's total staff.

## Multiple Industry-Leading Technologies

- Integration Technologies for High Power Fiber Laser
- Laser Thermal Management Technology
- High Power Pumping Beam Combining Technology
- Coaxial Arrangement Technology for Laser-Assisted Plasma Arc Welding
- Mode Instability Suppression Technology
- Ultra Stable Water Jet Technology

At present, the R&D and production workspace of STR has a total floor area of over 10,000 square meters, featuring a complete set of facilities for R&D, product production, and application testing, including a 4000 square meter optical cleaning workshop, and equipped with a full spectrum of internationally advanced experimental instruments and equipment.

## STR-HWSeries Handheld Laser Welding

## Redefine the Performance of Handheld Laser Welders

- Larger Penetration
- More Stable Operation
- Faster Welding Speed
- Longer LifeCycle and Up Time

Cooling

### Integrated Intelligent Handheld Laser Welders——True to their Names

Based on the self-developed "small core diameter" laser technology, the STR-HW Series handheld laser welders adopt a new dual circuit refrigerant direct cooling system and integrated structural design. These welders can provide customers with such experiences as high effectiveness, large penetration, high energy-efficiency, and high convenience.These welders can weld various metal materials, including aluminum, stainless steel, carbon steel, galvanized sheet, brass, etc. (The welder for welding special materials can be customized per user's requirements).

- **Integrated Engineering Design**
- **Adaptive Repair Process Package**
- **Dual-Circuit Refrigerant Direct**

# STR-HW Series Technical Parameter

**Technical data of STR-HW Series Handheld laser welding machines**

| Item | | STR-HW-200 | STR-HW-350 | STR-HW-450 | STR-HW-550 | STR-HWXXX |
|---|---|---|---|---|---|---|
| Rated input power supply | | Single phase 220V | | | | |
| Input power frequency | | 50/60HZ | | | | |
| Laser Power | | 700W | 900W | 1200W | 1500W | XXXXW |
| Peak Power | | 1000W | 1500W | 2000W | 2500W | XXXXW |
| Guide Beam | | Class 1 Red Guide Beam | | | | |
| Laser Type (Welding mode) | | Ytterbium Continuous Wave 1070 nm Fiber Laser | | | | |
| Wave length | | 1080nm | | | | |
| Spot Size | | 30μm | | 14μm | | |
| Wobble Length | | 5mm | | | | |
| Cooling | | Dual-circuit refrigerant direct cooling | | | | |
| Weld penetration (Single side) | Aluminum | <2mm | <3mm | <4mm | <=5mm | <=8mm |
| | Stainless Steel | 0.2~2.8mm | <3mm | <4mm | <=6mm | <=8mm |
| | Carbon Steel | 0.2~2.8mm | <3mm | <4mm | <=6mm | <=8mm |
| | Galvanized Sheet | 0.2~2.4mm | <3mm | <4mm | <=6mm | <=8mm |
| | Brass | <2mm | <2mm | <2mm | <=3mm | <=5mm |
| | Mild Steel | 0.2~2.8mm | <3mm | <4mm | <=6mm | <=8mm |
| Process Gas | | Argon, Nitrogen, Helium, compressed air | | | | |
| Applicable Wire diameter | | 0.8/1.0/1.2mm | 0.8/1.0/1.2/1.4/1.6mm | | | |
| Safety | | Class 4 Laser Device<br>Standard ANSI Z136.1 safety precautions. System features include key for laser ON/Off, 2-step laser operation trigger (Enable and Fire), Part-head contact safety circuit, Facility door interlock circuit. | | | | |
| Working Temperature | | -30~60°C | -30~60°C | -20~60°C | -20~60°C | -20~60°C |
| Storage Temperature | | -40~70°C | -40~70°C | -30~70°C | -30~70°C | -30~70°C |
| Working Humidity | | 0-90% | 0-90% | 0-90% | 0-90% | 0-90% |
| Product Dimensions | | 675×580×310mm | | 673×605×310mm | | |
| Product Weight | | 38KG | 39KG | 43KG | 45KG | 45KG |

# STR-HW WELDER FEATURES

## Integrated Design of the Complete Set Ensures Higher Welding Efficiency Longer Service Life, and Lower Maintenance Costs

The whole set of the welders features integrated design, proprietary welding guns and welding wire feeder, built-in welding process packages, linked operation and smoother coordination among different components. Meanwhile, it is the first product of its kind to incorporate the adaptive welding process package repair function, bringing higher working efficiency and better welding experience.

## Higher Stability Ensures Round-the-clock Operation

Capable of 24 × 7 continuous welding, thanks to the refrigerant direct cooling system that is developed independently by STR and welding gun insulation material that can ensure long-term use without becoming hot or shutdown.

## Adopting Dual Circuit Refrigerant Direct Cooling Technology to Eliminate the Shortcomings of Traditional Air-cooled and Water-cooled Welder

The operating environment temperature of conventional water-cooled handheld welders is between 5 ℃ and 50 ℃, while that of air-cooled handheld welders is between -10 ℃ and 35 ℃. The refrigerant direct cooling system developed independently by STR ensures the handheld welder good environmental temperature adaptability with an operating temperature ranging from -20 ℃ to 60 ℃.

## Adaptive Repair Process Package Ensures Life-cycle Reliability

STR is the first in the industry to launch the adaptive repair function of the process package, which can regularly self check the machine status, perform parameter calibration, and ensure continuous use reliability throughout the life cycle, without compromising the welding effectiveness.

# Unique Design of Welding Torch

### Fully-enclosed and Interface-free Integrated Design
### Eliminate the Need to Use QBH or QCS

Reduced energy loss, high transmission efficiency, and good welding effect;
Reduced probability of failure and extended service life;

Uninterrupted normal operation in harsh environments;
Unique shielding gas output passage that can effectively suppress splashes;

Longer fatigue-free welding owing to greatly reduced dimensions and weight, ergonomic design, comfortable grip due to a handle angle of 120°, and a wire feeding angle of 50°~60°.

**Dimensions: 230 × 270**

**Net weight < 800g**

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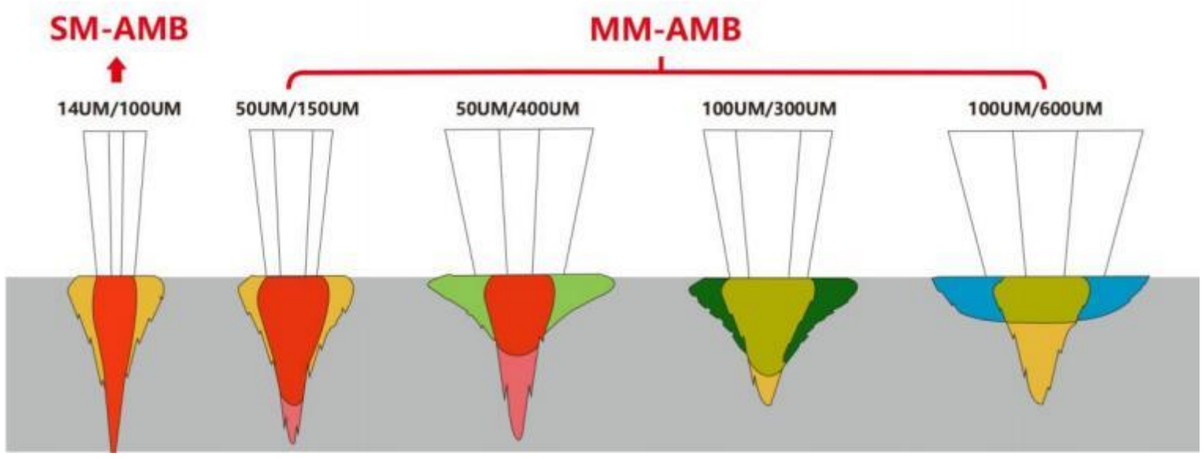
# Special Designs of STR-HW welders

### Whole Machine Integrated Deisgn

Integrated design of the whole machine with self-developed welding torch, wire feeders, preset welding process packages, etc., make the operation better. And fully enclosed design makes less failure rate, low loss, longer service life and lower maintenance, etc.

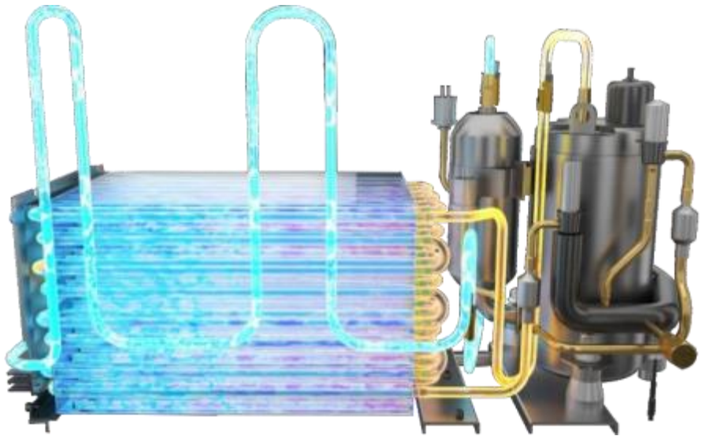
### "Small-core diameter" Laser Technology

Small core fibers have better beam quality and higher energy density under the same power.



## Modular Design of Welding Torch

The simplified design welding torch, adopt beam collimation module input , and the fully enclosed design minimize the refraction and scattering of laser energy transmitted between the lenses. Industrial plastic + soft rubber design ofthe gun handle greatly reduces the torch weight and have better thermal insulation performance.



## Dual-Circuit Refrigerant Direct Cooling Techonology

Different from the air cooling system, STR-HW series handheld welding laser uses refrigeration cooling system.

The operating temperature range is: -20°C~+60°C with better ambient temperature adaptability, and 7x24 continuously work.

## Inegrated Cable Technology

Integrating multiple connecting wires between various components in a traditional welding torch into armored cable with diameter ofonly 17mm. Greatly improve the welding results and operation flexibility. Makeseaslier angle rotation and less fatigue with long term operation.

# STR-HW WELDERS ADVANTAGES

An Innovation to Traditional Arc Welding Technology Effectively Improves Welding Efficiency

| | STR's Handheld Laser Welding | Traditional Argon Arc Welding |
|---|---|---|
| Welding effect | Beautiful welded joints | Post-processing grinding or polishing is needed for welded joints |
| Heterogeneous metal splicing | Yes | No |
| Workpiece deformation | Small | Large |
| Welding efficiency | It is 6-10 times the efficiency of argon arc welding | Energy is not concentrated and efficiency is wasted |
| Processing technology | High processing accuracy and controllable welding process | High requirements for the welding operation skill of welders |
| Operational difficulty | Small | Large |
| Convenience of filling wire | Adaptive automatic wire filling (optional) | Manual wire filling |
| Cost of use | Unskilled workers can operate, savign labor costs | High Grade Level welders required |
| Forming of welded joint | When applying laser welding, what to do is only to drag the welding wire and the resulted welded joints appear smooth | Relying on manual wobble to form ripple weld |
| Physical hazards | Low radiation, protective spectacles can filter out strong light | Welders should closely observe the arc status which is greatly affected by light and heat posing high risk to the safety of the welder and having high incidence of occupational diseases |
| Environmental Pollution | Low photoelectric pollution, basically no volatile matters which is green and safe, and ensures more environmentally friendly operation and use | A large amount of heat is converted into smoke and dust, causing significant pollution |
| Welding Consumables | Welding can be acceptable without wire filling saving production costs | During welding process, welding rods are used to produce the welding effect as required |

# Welding application cases

After accurately and effectively presetting the process package of the welder, the wire feeder can achieve real-time linkage with the weld base unit.

Welding parameters can be quickly and intelligently selected and automatically matching wire feeding speed without manual debugging.

Even novices can easily and efficiently weld high-quality welded joints that achieve ideal penetration.

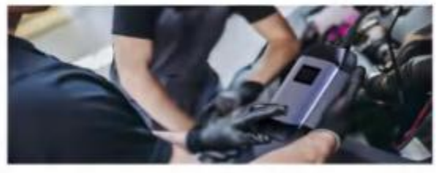
## Applications

Suitable for welding various metals, including but not limited to aluminum, stainless steel, carbon steel, galvanized sheet, brass, etc.

Hardware processing

Sheet metal processing

Home appliance



Equipment maintenance

Automotive body processing

Aviation space and transportation

Construction and pipeline processing

Advertising and other applications

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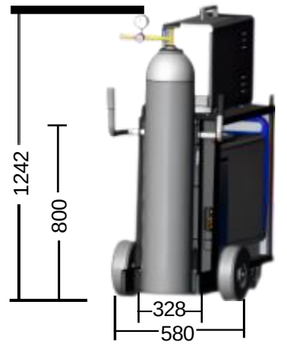
## Trolley

Weight:30KG-35KG




## Automatic Laser Welding Solutions

Welding troch

DWO2

DWO2C

# Standard configuration

Laser welder x 1; Wire feeder x 1; Accessory package x 1

Unit: mm

## STR-Wire Feeder

**PARAMETERS FOR WIRE FEEDER**

| Items | STR-WF00C | STR-WF00B | STR-WF00D | STR-WF00S |
|---|---|---|---|---|
| Wire feed tube length | 3M / 5M | | | 5M |
| Control interfaces | Control cable | | | |
| Compatible wire diameter | 0.8/1/1.2/1.6/2.0mm | | 1/1.2/1.6mm | 1.6/2.0/2.5mm |
| Welding wire spool weight | 5/7.5/15/20 kgs | | | <20 kgs |
| Compatible wire materials | Stainless steel/Carbon steel/Aluminum alloy | | | |
| Wire feeder weight | 18kgs | 12kgs | 13.5kgs | 32kgs |
| Power supply | 220V 50Hz/60Hz | Power supply by welding machine | 220V 50Hz/60Hz or Power supply by welding machine | 220V±5% 50Hz/60Hz |
| Overall dimensions | 585×265×457 | 510x290x425 | 625x350x440 | 575x250x670 |
| Maximum allowable wire spool diameter | 270mm | 300mm | 300mm | 300mm |
| Wire feed mode | Single feed mode | Single feed mode | Double feed mode | Double feed mode |

# Standard accessories list

| No. | Name | Qty. | Pictures | Remarks |
|---|---|---|---|---|
| Accessory box | Protective window | 10 pcs | | 10 pcs protective windows+ 1 pc cover |
| | Focusing lens | 2 pcs | | Already installed 1 with torch |
| | Copper nozzle | 15 pcs | | 7 types nozzles (1.0,1.2,1.6mm) |
| | Cutting copper nozzle | 1 pc | | |
| | Wire feeding guide nozzle | 3 pcs | | 1.0, 1.2, 1.6 for each |
| | Wire feeding clamp set | 1 set | | |
| | Wire feeding fixed tube set | 1 set | | For all types of wires |
| | Screws | 2 pcs | | 2pcs Hexagon Cylindrical screw M3x8 |
| | Allen wrench | 3 pcs | | One short flat head: 1x 2.5mm 58 * 20mm,1x 4mm 73.5 * 28.5mm<br>1x 2mm 51.5 * 17.5mm |
| | Cross screwdriver | 1 pc | | 2mm with length 65mm |
| Welding machine | Goggles | 1 pair | | 6-grade protective |
| | Gloves | 1 pair | | |
| | Safety Clamping cable | 1 pc | | 10M |
| | Wire feeding control cable | 1 pc | | 5M |
| | Welder power cable | 1 pc | | 5M |
| Wire feeder | Wire feeding tube | 2 pcs | | 5M spring tube for wire φ0.8-2.0) -carbon steel, stainless steel<br>5M graphite tube for wire φ0.8-2.0)-aluminum |
| | Wire feeding wheel | 4 sets | | 0.8-1.0V installed<br>Additional 1.2V-1.6V Suitable for carbon steel, stainless steel<br>0.8U-1.0U,1.2U-1.6U Suitable for aluminum |
| | Wire feeder power cable | 1 pc | | 5M |