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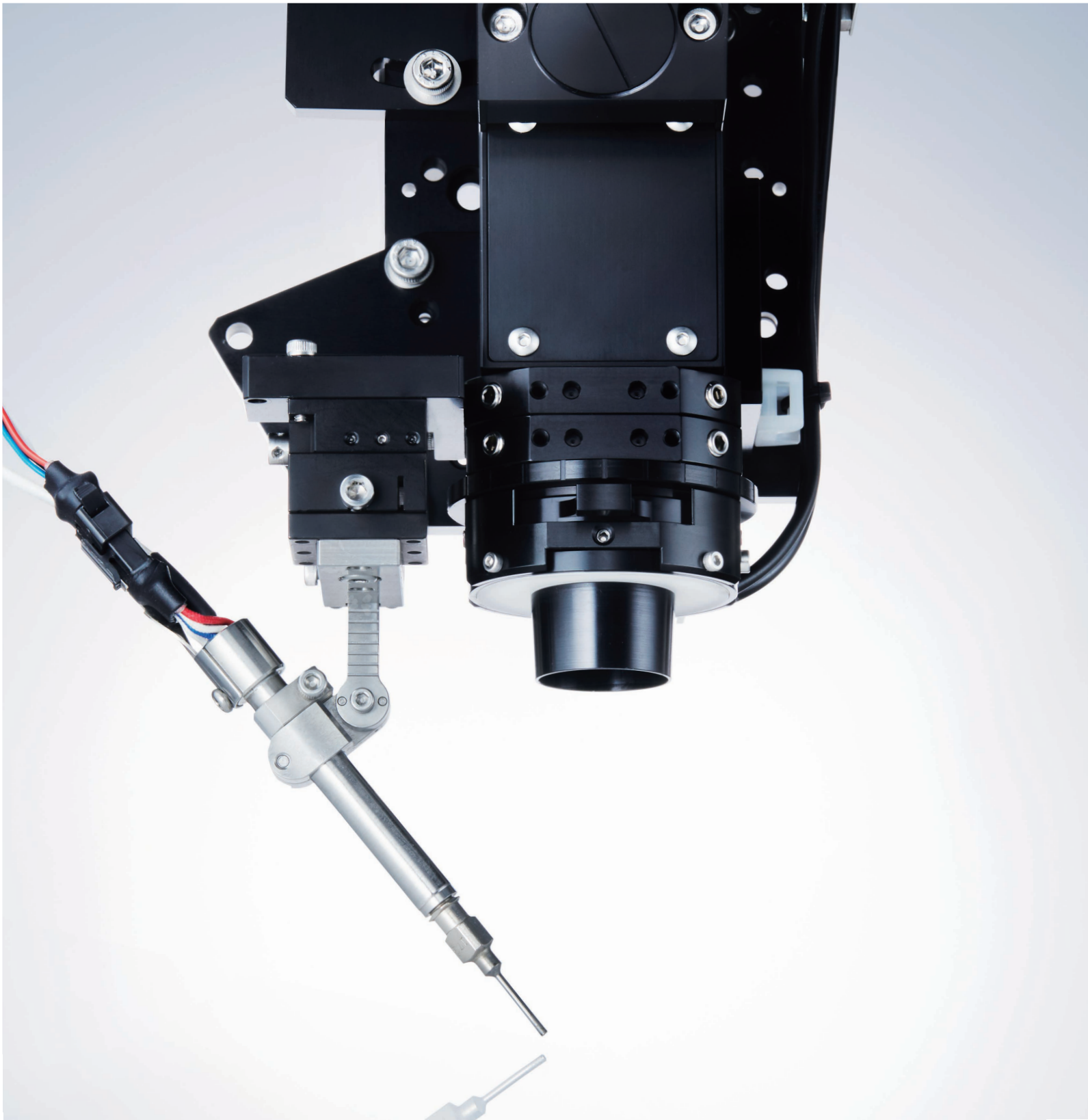
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• This catalog reflect the products as of June 2022. The product appearance and specifications can change without notice.
• Be sure to carefully read the operating instructions included with the product before use.

Inquiry No. C00515
Printed in Japan 22071000(BASIS)

LASER SOLDERING SYSTEM
vol.5



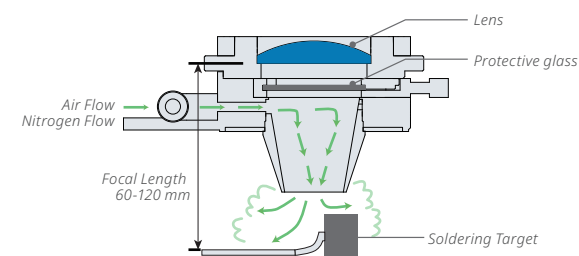
1 Standard Functions

Laser Systems Specialized for Soldering

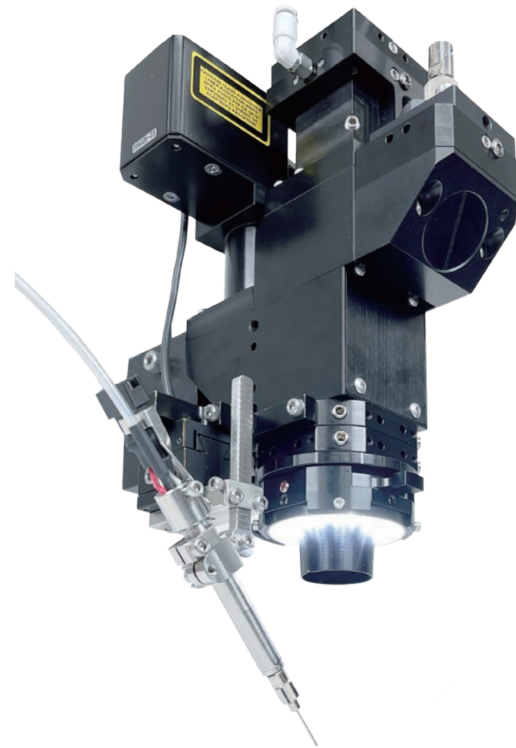
Laser Head

The laser head irradiates the selected area with the laser beam focused in the proper spot size transmitted through an optical fiber from the laser. The coaxial CCD camera is built in the laser head as standard, and many other features come along to make daily production more efficient.

[Internal Structure of Laser Head]



The laser head is protected from flux fume by the air jet feature, and the inside optical component is sealed off. The CCD camera is coaxially aligned with the laser optics.



Laser Controller / Generator

Controlling the laser output value is the key to laser soldering. Fiber coupled LD is used to transmit the laser beam to the laser head through an optical fiber.

ULD-02 consists of the controller (control unit), the touch panel operation box, the laser, and the power supply unit. Our laser equipment is compliant with the International Electrotechnical Commission IEC60825-1:2014 and the Japan Industrial Standards, JIS C 6802:2018. The laser class is Class 4. The export to the United States is approved by the FDA.



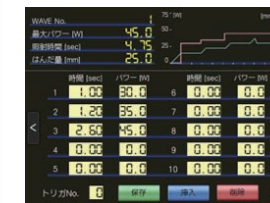
- Qualified product: ULD-02.

Easy and Correct Parameter Setup for Your Work

127 Patterns of Waveform in Program and Power Usage Set at 10 Levels

Waveform Patterns

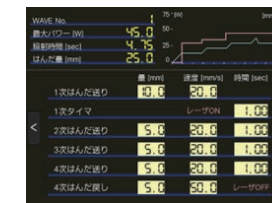
Waveforms can be selected from up to 127 patterns. You can easily set 10 levels of power output and the time for each waveform.



Centralized Solder Feeding

Solder Feeder

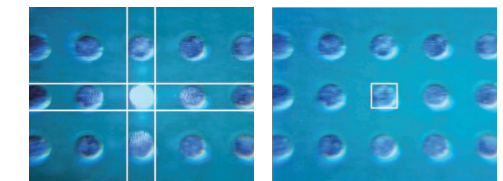
Solder feed setting will be available with an optional feature.



Selectable Laser Irradiation Location Mark

Irradiation Location Mark

Laser irradiation location can be viewed on a monitor in multiple modes.



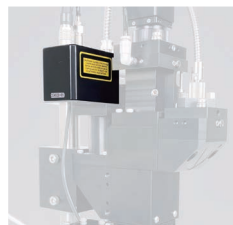
LINE mode

□ (square) mode

Compliant with the safety standard of Laser Class 4

Mechanical Shutter *Option

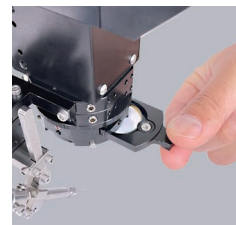
A device that blocks laser transmission within the head.



Blocks fume and provides stable focused beam.

Sliding Protective Glass

This glass protects the focusing lens from flux fumes coming into the soldering head. The sliding structure allows one-touch detachment and easy maintenance.



Easy to check laser irradiation locations and soldering results.

Coaxial CCD Camera built in.

A coaxial camera allows you to facilitate settings and teaching of the laser irradiation locations according to your work as you can view the implemented area on a monitor.



Solder Feeder

Patented

The required amount of solder is provided to target points with high precision. A built-in solder encoder detects solder feed issues.

(The solder feeder varies according to the solder diameter. $\phi 0.2\text{mm}$ - $\phi 1.2\text{mm}$)



UPM-052D
 $\phi 0.2\text{mm}$ - $\phi 0.8\text{mm}$



UPM-057
 $\phi 0.3\text{mm}$ - $\phi 1.2\text{mm}$

2 How to Get Started

How to Get Started According to Your Needs

1 Integration

Laser head
Laser Controller
Laser

Solder Feeder

Robot

Safety Cover

Transportation
Systems

Our laser soldering system optimizes for a production line according to your requirements and provide comprehensive services from design to construction/adoption in compliance with international safety standards for lasers. Our expert engineers provides strong technical support (e.g., parameter settings) so that customers can save time and effort and focus on the comprehensive management of the production line. We can offer various ideas on the production line such as in-line, indexing, two slider, etc.



In-line specifications



Slider type off-line specifications

2 Standard Safety Cover for Laser

Laser head
Laser Controller
Laser

Solder Feeder

Robot

Safety Cover

By preliminarily preparing the product in a fixed size, its delivery will be three times faster than made-to-order products.



Standard safety cover for laser

3 Optional

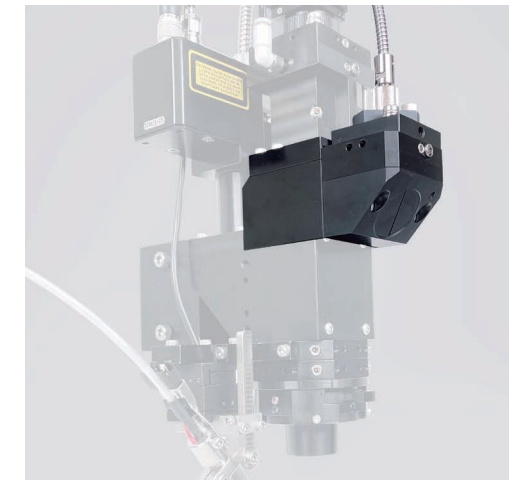
Thermo Pro™

Thermo Pro™

Patented

Laser Soldering Temperature Management and Control System

Thermo Pro™ is the laser that uses a built-in pyrometer to control the temperature. In addition to conventional control items in laser soldering (e.g., output, time, etc.), Thermo Pro™ enables temperature control and management during soldering.



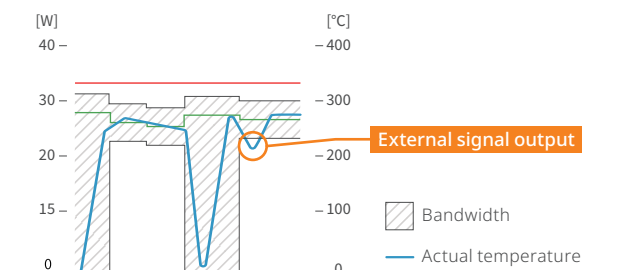
Visualization

Together with Soldering Manager Pro for ULD-02, measured temperatures are shown in the graph. All the temperatures and laser outputs in control can also be saved as video files.



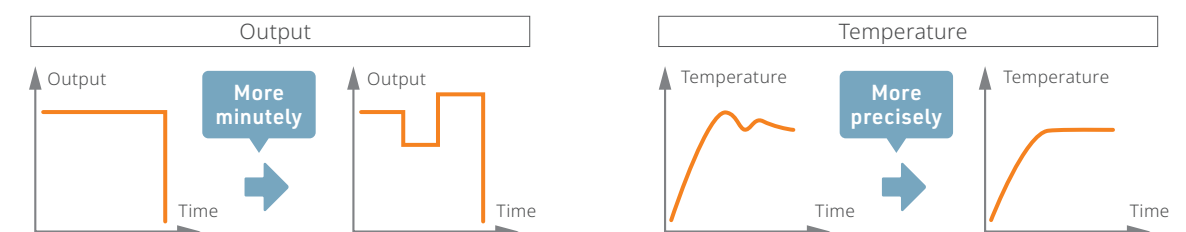
Feature: Temperature Band Checker

This function allows transferring data to external devices when the temperature is out of a set temperature range. It can be set to work with laser conditions and used as an alarm when irregularities occur.



Support for optimizing laser conditions

Thermo Pro™ can optimize laser conditions based on the laser output when it controls the temperature. It can also be leveraged not only for process control in mass production but also for optimizing evaluations.



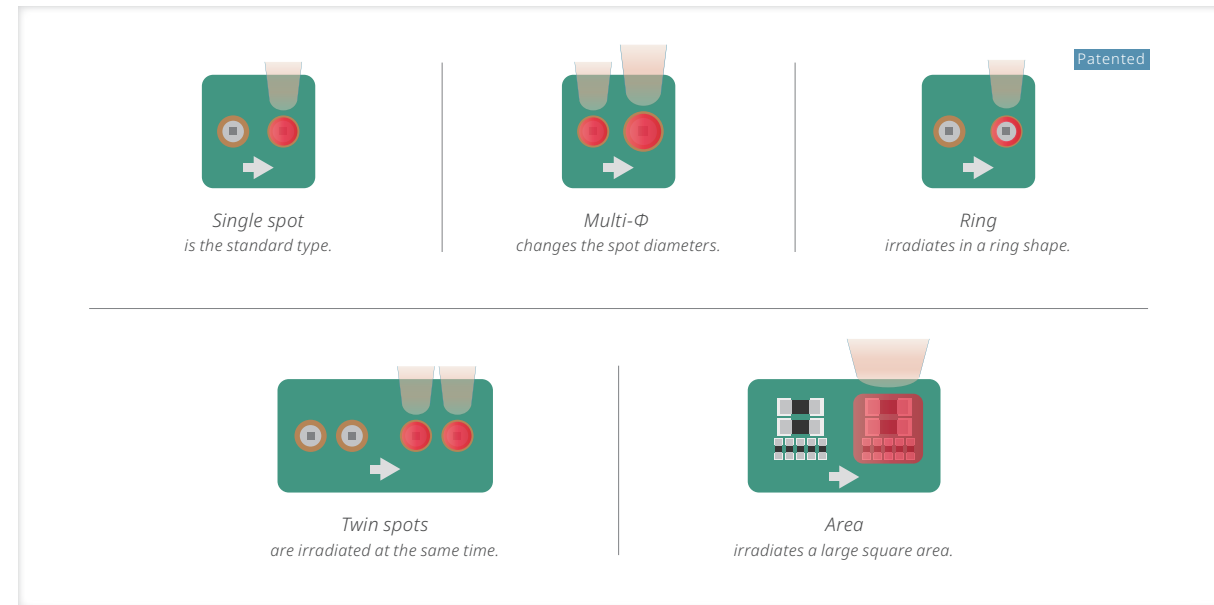
3 Optional

A Variety of Functions for Strong Quality Assurance

Laser Output Variations

* Some options may not be available depending on the type of robot is used.
* Some options are still available if you purchase only the unit.

Our laser systems can change the shape of the laser beam that allows to adapt to irregular shapes of boards/components.

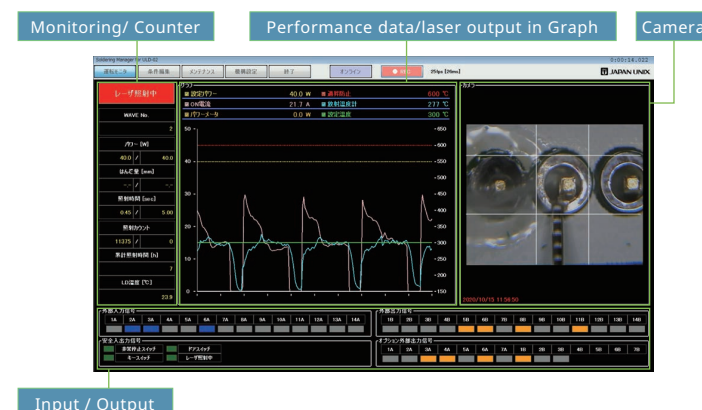


The Soldering Robot Management Software "Soldering Manager Pro for ULD-02"

Soldering Manager visualizes the status of the robot soldering in real time by showing various data.

IoT for Soldering to Optimize Production Site

Soldering manager visualizes the operational status of the soldering unit in real time. Recording videos and data during soldering makes on-site process control more efficient.



- Visualizes and records information at each point such as laser output, output time, solder amount *(for internal control feature only)
- Fully traceable with videos and various data during soldering
- Enables easier process control globally by sharing acquired data
- Using Thermo Pro™ (temperature control feature) together, it can manage the information on:
 - Soldering temperature
 - Control of target temperature Over-heat function to alarm/stop in case of anomaly detected
 - Initial check OK/Failed by the temperature band feature

Image Position Adjustment (Vision Sensor)

It detects the positions of laser irradiation and solder feed to automatically adjust the discrepancy in the XY coordinates. It enables image processing such as the simple OK/Failed detection.

*The simple detection function may not be available depending on your workpiece. Our company offers a simple detection test upon your request.
*Full integration - We offer proposals to the customers who use our robots.

Clean-cut Feeder

CCF cuts notches in solder during feeding which drastically prevents flux explosions. Patented two blade mechanism stabilizes rewind operation and prevents slippage.



Precision Needles

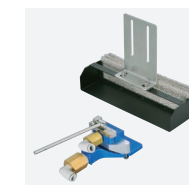
They make the most out of our precision solder feeder. They are used for ultra-fine solder, which requires more careful control of solder amount.

*For the details of the model numbers, please refer to the parts list in this catalog.
*used for $\phi 0.3$ or smaller



Air Curtain

Creating an air curtain at the tip of the laser/solder feeder prevents the laser head from flux adhesion.



Nitrogen Generator

It creates a nitrogen gas ambient to improve the workability using lead-free solder. Preventing oxidation of workpieces can improve spreading and wettability of the solder as well as protection of the laser optics.



Height Adjustment

A Z-axis sensor corrects for irregularity in the height and the orientation of the solder position.

Precision Solder Feeder

It is the best solder feeder for laser soldering to a minute fraction with the feed of ultra-fine solder $\phi 0.2$ in diameter. The encoder detects clogging/shortage of solder.



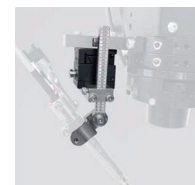
UPM-052D
 $\phi 0.2\text{mm}-\phi 0.8\text{mm}$



UPM-057
 $\phi 0.3\text{mm}-\phi 1.2\text{mm}$

Lock-on Mechanism

The angle block with memory fixes a solder supply position and prevents position misalignment. Along with an adjustment mechanism for XY coordinates, it allows fine adjustment both in the horizontal and in the vertical directions. Re-positioning after maintenance is also easy.



Solder Feed Position Checker

It is a checking mechanism to see if the solder supply position is correctly set.



Power Meter

It measures and controls the actual laser output values, which are key to stabilizing soldering quality.