# Specifications

| Model | UNIX-FR | | |
|---|---|---|---|
| SPEC CODE※1 | UNIX-HFR354✱-✱✱ | UNIX-HFR454✱-✱✱ | UNIX-HFR554✱-✱✱ |
| Environmental specifications | General environmental specifications | | |
| Installation posture | Flooring | | |
| Movement / Structure | 4-axis / Horizontal multiple-joint | | |
| Drive system / Position detection method | AC Servo Motor / Absolute Encoder | | |
| Motor capacity | J1:750W　J2:400W　J3(Z):200W　J4(θ):100W | | |
| Brake | J1, J2, J4: without a brake　　J3: with a brake | | |
| Arm length (Arm No.1 /Arm No.2) | 125mm / 225mm | 225mm / 225mm | 325mm / 225mm |
| Maximum reach radius | 350mm | 450mm | 550mm |
| Operating range | J1:±170deg　J2:±145deg　J3(Z):200mm　J4(θ):±360deg※2 | | |
| Maximum speed | J1:400deg/sec　J2:670deg/sec　J3(Z):2,400mm/sec　J4(θ):2,500deg/sec | | |
| Maximum speed ※3 | 6,900mm/sec | 7,600mm/sec | 8,300mm/sec |
| Position repetition Accuracy — X-Y composition | ±0.01mm | ±0.01mm | ±0.012mm |
| Position repetition Accuracy — J3(Z) / J4(θ axis) | ±0.01mm / ±0.004deg | | |
| Ambient temperature / Supply air pressure | 0〜40℃ / 0.5±10%MPa | | |
| Weight (main unit) | About 39 kg | About 39 kg | About 40 kg |

## Robot Controller

| Path control method | PTP control, CP control | |
|---|---|---|
| Number of control axis | 4 axis at a same time Maximum 8 additional axis | |
| Program language | MELFA-BASIC VI | |
| Position teaching method | Teaching method, MDI method | |
| Number of programs | 504 | |
| Number of steps | 52,000 | |
| Number of teaching positions | 15,000 | |
| External input/output | General-purpose input/output ※4 | input : 32, output : 32 |
| | Dedicated input/output ※4 | Assigned at general-purpose input/output. (1 point of "STOP" is fixed) |
| | Emergency stop input/output ※5 | 1 point each (double) |
| | Door switch input※5 | 1 point (double) |
| | Mode selector Switch input※5 | 1 point (double) |
| | Mode output※5 | 1 point (double) |
| | Robot error output※5 | 1 point (double) |
| Interface | RS-422 | 1 (for the teaching box) |
| | Ethernet | 1 (10000BASE-T/100BASE-TX/10BASE-T) |
| | USB | 1 (for PC software "RT ToolBox3") |
| | Option slot | 1 |
| | SD memory card slot | 1 (for logging) |
| Ambient temperature | 0 – 40 ℃(In use) / -15 – 75 ℃(During transportation/storage) | |
| Ambient humidity | 45 – 85% RH(In use) / 90.0 % RH or less(During transportation/storage) | |
| Power Input ※6 | Single-phase AC200 to 230V　50/60Hz　1.0 kVA | |
| Outer dimensions (including legs) | W430×D425×H99.5 mm (excluding projection) IP20 | |
| Weight (main unit) | 12.5 kg | |
| Structure | Self-standing stationary type, open structure, vertical positioning/ flat positioning possible ※7 | |
| Over voltage category | II or lower | |
| Degree of contamination | 2 or lower | |
| Altitude | 1000 m or lower | |
| Grounding | 100 Ω or less (D type grounding) ※8 | |

## Soldering Controller

| Number of soldering conditions | 255 | |
|---|---|---|
| Number of laser conditions (for laser spec) | 63 | |
| Heater power | 250 W (Cross Heater L / Cross Heater LS) | |
| Iron tip temperature control range | 200 to 450 ℃ | |
| Heater alarm value | Set temperature deviation upper limit: 5 to 99 ℃ Set temperature deviation lower limit: -5 to -99 ℃ | |
| Feeder | Drive system | 5-phase stepping motor drive |
| | Applicable solder diameter ※9 | RF: φ0.3 to 1.6　/　CCF: φ0.5 to 1.2 |
| | Solder feed accuracy ※10 | Solder diameter of less than φ1.0: larger value of either ± 1 % or ± 1 mm |
| | | Solder diameter of φ1.0 or more: larger value of either ± 2 % or ± 2 mm |
| Alarm displays | Heater break/temperature sensor break/ solder clogging, etc. | |
| Outer dimensionsincluding legs) | W430×D425×H83 mm (excluding projection) | |
| Weight (main unit) | 10.3 kg | |
| Power supply capacity ※11 | Single-phase AC200 to 230V　50/60 Hz　1.7-1.9A | |
| Fuse | FUSE1 | AC250V, 3.1 A |
| | FUSE2 | AC250V, 5A |

※1　The content indicated with an asterisk(✱) will change depending on the specifications. Please contact us for details.
※2　Depending on the robot's surroundings and the cable installation, ±360 deg operation may be difficult.
※3　Value when combining J1, J2, and J4.
※4　Sink type or source type must be specified.
※5　For details, please refer to the operation manual.
※6　The power supply capacity is the rated value in normal operation. The power supply capacity does not include the inrush current when the power is turned ON.
　　Power supply capacity is a guide, and the guarantee of operation is affected by the input voltage. Please use a leakage breaker compatible with inverter products that operate at a leakage current in the commercial power supply frequency range (50 to 60 Hz). Products sensitive to high-frequency components may cause tripping even below the maximum leakage current value.
※7　This controller is designed for a general environmental specification.
※8　Please perform the grounding connection by the customer.
※9　The applicable solder diameter may not be applied depending on the solder manufacturer or the material used. We strongly recommend you confirm the soldering operation by a prior testing. When using a sub feeder, the applicable solder diameter of the sub feeder is (RF: φ0.3 to 1.2 / CCF: φ0.5 to 1.0).
※10　Accuracy for RF specs
※11　The current consumption changes depending on the type of heater.　The noted values show the maximum current consumption.

# JAPAN UNIX

## SOLDER MEISTER®
### SCARA type Soldering Robot UNIX-FR | Digest vol.1

● This catalog reflect the products as of September 2021. The product appearance and specifications can change without notice.
● Be sure to carefully read the operating instructions included with the product before use.

# Toward an Era of Fully Automated Lines
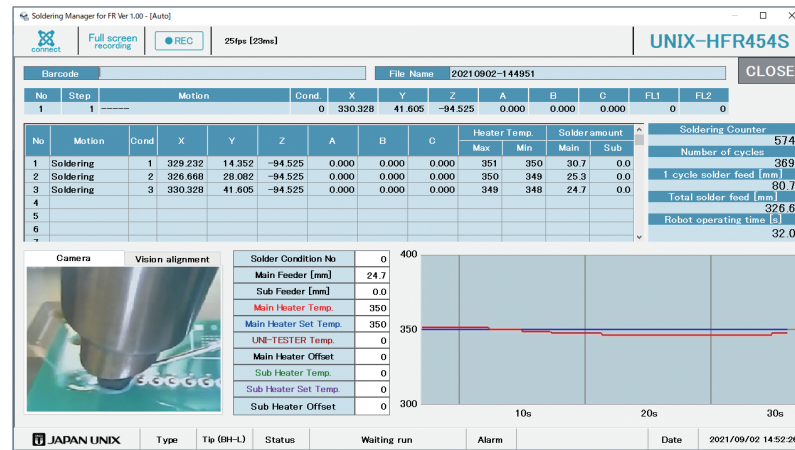## A New Generation of SCARA Type Soldering Robot
# UNIX-FR

# Features

## Visualizing process management

### Enhanced communication network functions for outputting and storing soldering-related data

- Real-time monitoring and record keeping of soldering information.
- External command control for editing and setting soldering conditions, etc.

## Speedy setting and adjustment of mass-produced motions

### Comprehensive and user-friendly software that can be used regardless of operator skills

- Soldering conditions can be easily programmed using the PC-specific software "Soldering Configurator".
- Soldering-specific commands are used to make robot instruction easier to understand.
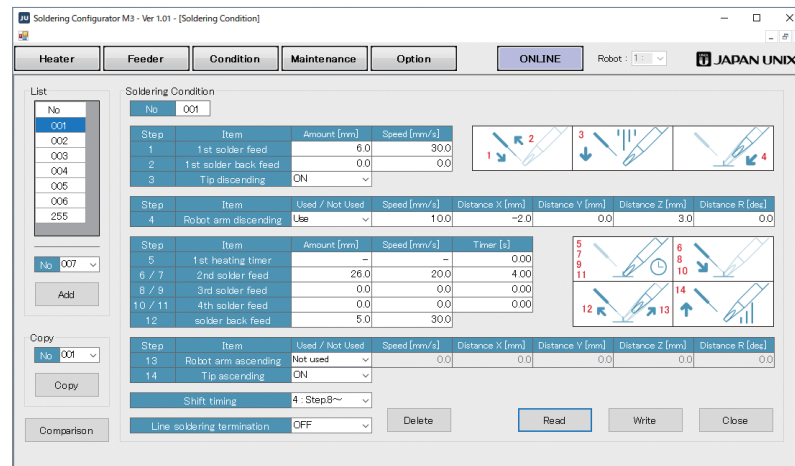
## Reduces man-hours for manual maintenance

### Automatic adjustment and maintenance functions

- Automatic calibration of iron tip position and temperature. (Only for iron tip soldering)

# Standard Configurations

## Iron tip / Laser common part

Robot

Robot Controller
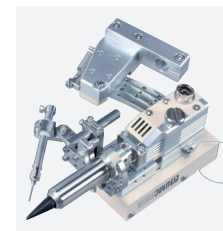
Soldering Controller

Solder Feeder (Standard)

**Clean Cut Feeder**
Cutting into the solder during solder feeding prevents flux splattering and the generation of solder balls.
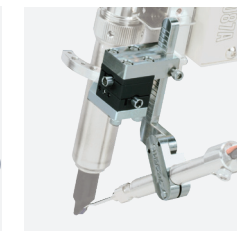PATENTED

Solder Feeder ＊Choose from 2 types

## Iron tip part

**Soldering Head / Heater**
＊Choose from 2 types
・UMC-090B-BHL/ Cross Heater L
・UMC-090B-BHS/ Cross Heater LS

**Lock-on Mechanism (For iron tip)**
The angle block prevents misalignment of the solder supply position, which tends to occur during maintenance.
PATENTED
＊Can be changed to an angle setter with scale.

**Iron Tip Cleaner (Standard) UJC-214**

**Iron Tip Cleaner (With air curtain mechanism) UJC-219**
Reduces the scattering of solders and prevents them from accumulating locally, making maintenance easier.
PATENTED

**Iron Tip Cleaner (With vacuum function)**
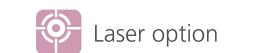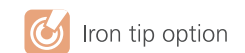＊Choose from 2 types

## Laser part

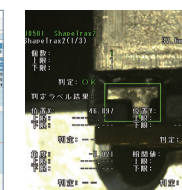Laser Soldering Unit

Laser Head

# Options

Iron tip option    Laser option

**Soldering Manager**
In addition to numerical information during the operation of the soldering robot, the videos captured by a small USB camera can be saved automatically. This information can be used for later analysis of defects.

**Vision Position Correction Sensor**
Detects target shape with a camera and automatically corrects misalignments in the workpiece.

**Three-Axis Tip Position Corrector**
Quickly and automatically corrects position gap due to tip erosion and/or thermal expansion.
PATENTED

**Silicone Brush Cleaner UJC-218A**
Two silicone brushes enable easier cleaning work and less tips wear and tear.

**Soldering Iron Tester UNI-TESTER**
Capable of measuring tip to ground potential, tip to ground resistance, and iron tip temperature of soldering robots. Data communication to external devices is possible via serial communication.
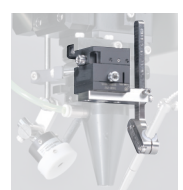
**Lock-on Mechanism (For Laser)**
The angle block prevents misalignment of the solder supply position, which tends to occur during maintenance.
PATENTED
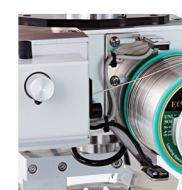
**Remaining solder sensor**
When solder is running out, the sensor detects its exisistence and alerts that it needs to be replaced.