FUJI
innovative spirit

Create the Future

NXTR
FUJI Smart Factory Platform

Create the future
with an evolving Smart Factory

Fuji is paving the way to the future of Smart Factories with NXTR.

The accompanying Smart Loader frees operators from changeover and supply work,
with additional features that strengthen the ability to maintain high-quality and productivity.

Automatic feeder exchange

Because the Smart Loader performs changeover and part supply according to the schedule, the amount of work at the line side can be reduced and efficient production can be achieved.

Load an abundance of parts

Utilizing specialized feeders and base buffers greatly increases the quantity of parts that can be loaded. When combined with the Smart Loader, these support a wide range of production.

Exchange heads in a single action

Fuji's original compact lightweight heads can be easily exchanged without using tools. This allows operators to perform maintenance and troubleshoot unexpected problems.

Build module configurations to be optimal for your production

The quantity of robots per module and types of heads used can be selected to match your product, giving you the optimal production equipment.

2R module　　1R module

Minimal investment per module

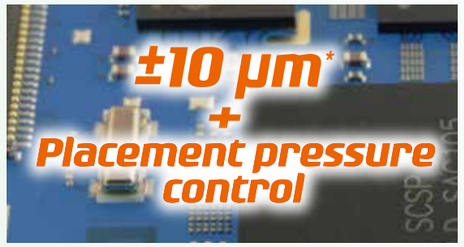
Additional investment can be made on the scale of single modules. You can gradually increase the production capacity to the necessary extent with minimal investment for each.

Simple work paths for efficiency

The modules are designed for single side operation that streamlines and optimizes the operation traffic.This increases efficiency in supplying materials and performing maintenance work.

Offers high accuracy placement

Placements can be performed with an accuracy of ±25 µm at all times without constraints for the head type or the parts to be placed. For parts requiring higher accuracy, placement with an accuracy of ±10 µm is possible by using heightened accuracy mode. Additionally, controlling the push-in amount during placement allows for placement with the appropriate pressure.



* Heightened accuracy mode

Checks for tombstoned, missing, and upside-down parts

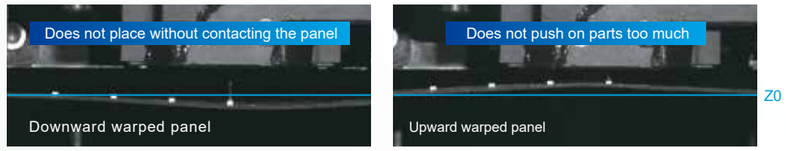
The installed IPS system can cater to a wide range of checks, from part pickup stance to parts remaining on nozzles, as well as upside-down checks for minimold parts. It prevents placement defects attributed to packaging, nozzles, and parts.

- Check for dropped parts
- Check of the part height
- Check for parts presence
- Check for parts remaining on nozzle
- Check for stuck nozzles

IPS

Not affected by changes in the surface height

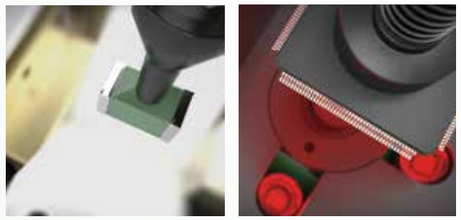
The placement stroke follows changes in the placement height due to panel warpage and distortions, which allows the machine to control the appropriate push-in amount and moreover prevents placement deviations and excess stress on parts and panels.



Placement height adjustment

Prevents defects associated with part properties

Placement defects caused by operation errors and defective parts are prevented by checking the electrical properties of chip parts with LCR checks and by checking the leads and bumps on IC parts with coplanarity checks. (Option)



LCR check

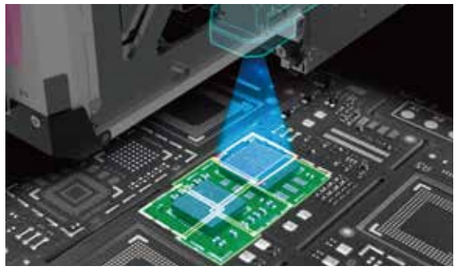
3D coplanarity check

Checks placement within placement machines

Various checks are available within placement machines to verify the process result shortly after that process: Checking placement immediately following placement, and checking placed parts before placing shield parts, for example. This prevents production of defective products and reduces wasted time and parts.

- Part presence check
- Misaligned placement check
- Part direction check*

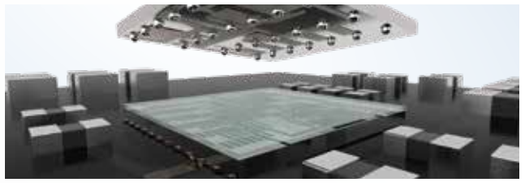
* Under development

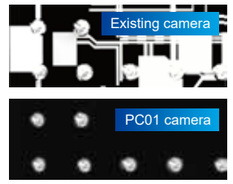


MPI

Places WL-CSPs with high accuracy

The camera equipped with advanced lighting technology, ensures reliable vision processing of WL-CSPs and other parts for which the background of parts are likely to be captured in acquired images. Using a high-resolution camera enables reliable recognition of bumps as small as 45 µm in diameter. This results in high accuracy placement.





High quality placement

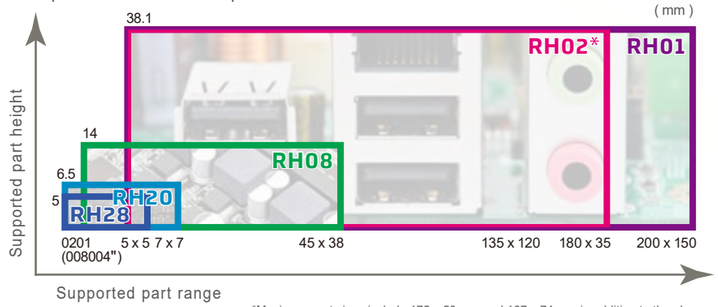
Maintaining a high level of quality on all placements

Support for various production types

Building production lines with the flexibility to handle various types of production

Placement heads that demonstrate strong capability in production

The newly-developed heads are capable of handling an expanded part range. They contribute to line balancing and flexible production without drops in production rates even when a different set of parts is used in the next production.



*Maximum part sizes include 175 x 50 mm and 167 x 74 mm in addition to the above.

World-class speed of placement

Fuji's unique rotary head technology with simultaneous pickup and improved feeder indexing speed provides 60,000 cph per robot.This industry-leading placement speed takes productivity to the next level.

* This is the throughput in productivity priority mode for two robot modules.

Expanded conveyable panel size

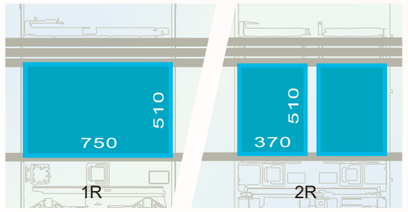
The panel size coverage is expanded so that panels up to and up to 370 x 280 mm "with double conveyors" when using highly-efficient production of producing panels in the same supporting a greater variety of production. 750 x 610 mm are supported "with single conveyors" dual lane production. From large panel production to size, NXTR line configurations are capable of

(mm)

Single conveyor

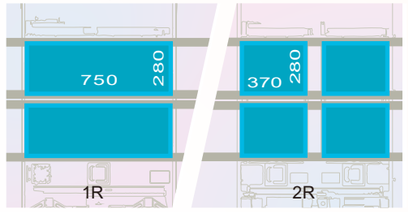
Single conveyance

Double conveyor



Single conveyance

Double conveyor

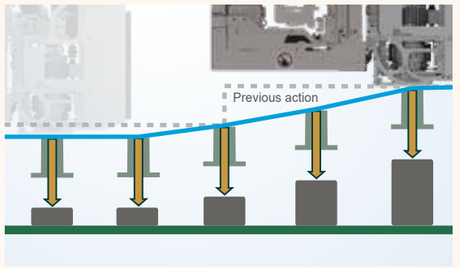


Dual conveyance

Optimal placement actions tailored to the part

The stable and optimum operation speeds can be selected to suit the parts to be placed. In addition, head operation can be optimized by streamlining Z direction strokes in view of the part height.In addition to making it possible to support various parts, this also improves cycle time as well.

- Multi-level transfer speed
- Shortest Z stroke control



Automatic pin allocation even for soft backup pins

The appropriate hard-type or soft-type backup pins are allocated automatically.This function is an effective measure to reduce work and prevent mistakes during changeover. (Option)

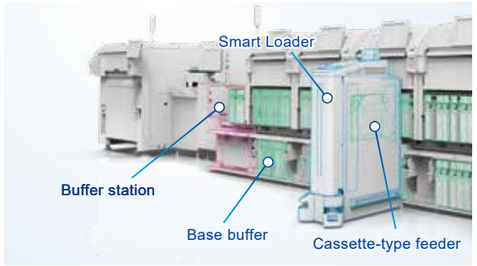
- Program-based positioning
- Auto allocation position check

Evolving manufacturing

Responding to evolving parts and production models, and advancing total line efficiency

Reducing changeover work

By simply setting cassette-type feeders at buffer stations, the Smart Loader automatically exchanges the feeders in production slots and base buffers according to parts out warnings and the changeover schedule.



Production methods utilizing Smart Loader

Smart Loaders exchange feeders during production, preventing production stops. A production method in which parts are supplied from the base buffer during production is effective for mass production. For high-mix, high-volume production, Smart Loaders enable changeover during production by changing the different parts only.

For high-volume production

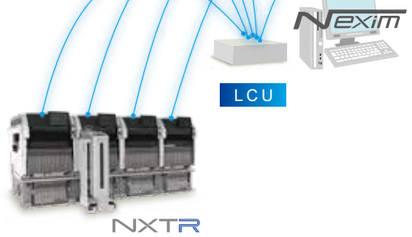
Placement with feeder allocation optimized for each production model or in a shortest cycle time

For high-mix production

Common parts among multiple production models are shared and only parts that are different are exchanged

Towards non-stop production

By automatically saving logs and image data, signs of issues that would cause machine stops and information that would lead to problem solving is not missed, leading to error prevention and faster recovery times.



LCU functions

- Collects logs automatically
- Saves all images
- On-machine editing
- Multiple language support
- Responds to network issues*

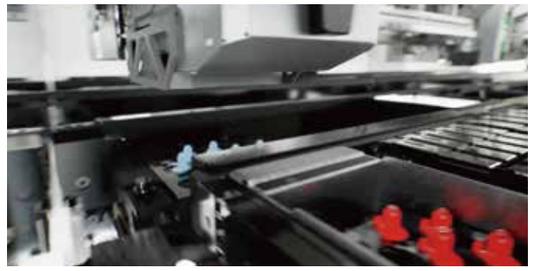
* Under development

Collects waste tape automatically

Waste tape is collected automatically into one place to reduce operator work that previously needed to be performed regularly for each module.

Frees operators from nozzle related work

In addition to exchanging nozzles based on production schedules, nozzles subject to maintenance and defective nozzles are also automatically exchanged. Automated transport and exchange of nozzles eliminates the need for operators to perform this work.

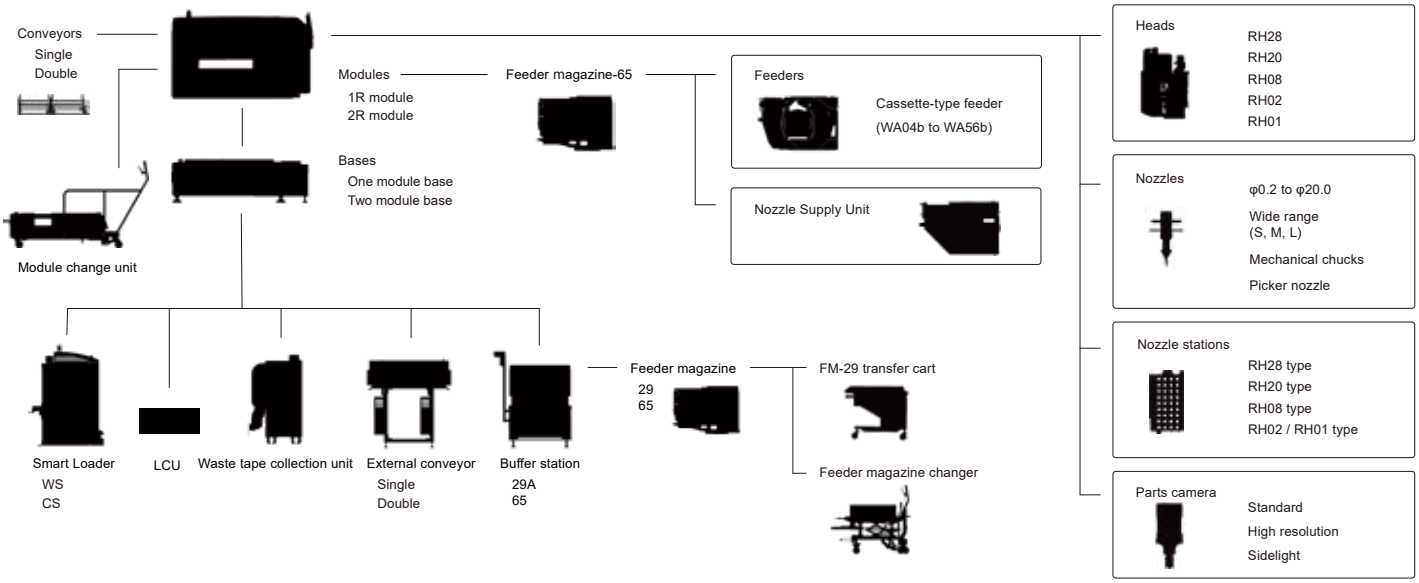


Automatic, easy, and reliable maintenance offline

Nozzles and also heads can have maintenance performed offline. Using automation units ensures reliable maintenance without requiring any skills. Linking these units with Nexim improves maintenance management.

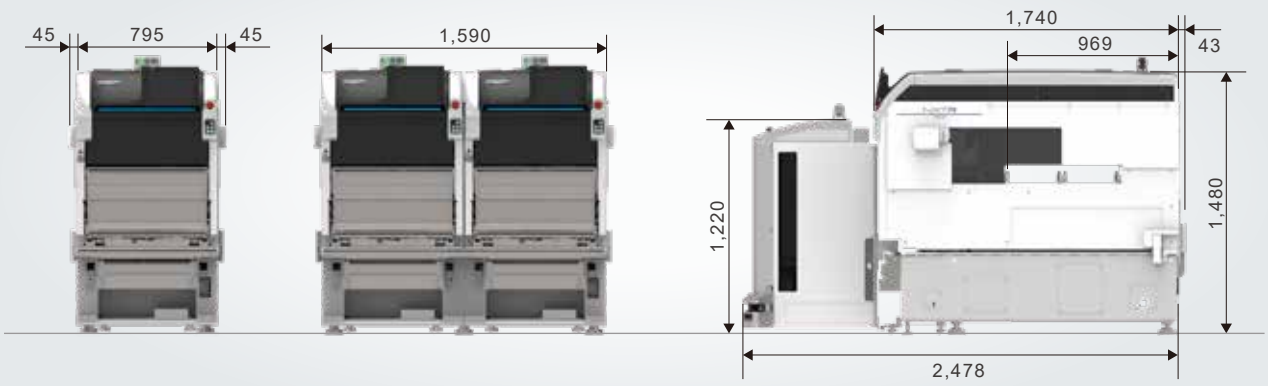
Manufacturing sites are all unique, and they have different ways of production that involve a variety of issues.
Fuji Smart Factory aims to solve these issues, which in turn improves factory productivity and flexibility as well as maximizes the QCD performance of manufacturing.

System overview



External dimensions

(mm)



Specifications NXTR A model

Module			1R module	2R module
Panel size (L x W)	Single conveyor		48 x 48 to 750 x 610 mm	48 x 48 to 370 x 610 mm
	Double conveyor	Single conveyance	48 x 48 to 750 x 510 mm	48 x 48 to 370 x 510 mm
		Dual conveyance	48 x 48 to 750 x 280 mm	48 x 48 to 370 x 280 mm
Weight	Double conveyor		610 kg	730 kg
Base			One module base	Two module base
Air consumption			70 L/min (ANR)	140 L/min (ANR)
Weight *1			480 kg	910 kg

Head		RH28	RH20	RH08	RH02	RH01
Throughput *2		55,000 cph	50,000 cph	30,000 cph	9,000 cph	6,000 cph
	Productivity priority mode	60,000 cph	55,000 cph	-	-	-
Placing accuracy *2		±0.025 mm Cpk ≥ 1.00				
	Heightened accuracy mode *3	±0.015 mm 3σ	±0.010 mm 3σ		-	-

Power	3-phase AC 200 to 230 V ±10 V (50/60 Hz)
Air	0.4 MPa

*1 The two module base dedicated for 1R modules is 890 kg.
*2 Under optimum Fuji conditions.
*3 This mode applies to 2R modules.

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