**News Release**

**Yamaha Motor Launches Premium High-efficiency**

**Dual-lane Modular YRM20DL**

**Reduces transport and head standby loss, as well as improving actual**

**and per-unit-area productivity**

Yamaha Motor Europe Robotics SMT Section announced today that the new YRM20DL surface mounter\*1 will be launched on April 3, 2023.

The YRM20DL is a premium high-efficiency modular that achieves improved actual and per-unit-area productivity with a newly developed high-rigidity dual-lane conveyor by further reducing transport losses etc. YRM20DL is built on the basic performance of the company’s flagship high-speed, high-accuracy, high-versatility, universal mounter YRM20.

YRM20DL supports a maximum PCB width of up to 330mm where the same width PCB is being conveyed at the front and rear while in dual-lane production mode. In the case of parallel mounting, the front and rear heads can operate without any interference up to a maximum PCB length of 380mm, enabling high-efficiency mounting without loss.

Furthermore, the basic performance of the unit has been further enhanced to achieve an overwhelming productivity of 120,000 CPH\*3 (under optimal conditions)\*2, the world’s highest level of speed in its class, along with a higher-accuracy placement of ±15µm (Cpk≥1.0) through the revision of the layout such as bringing the mounted components pick-up area and the mounting area closer together, optimizing the main spindle motion control, improving the rigidity of the conveyor and the corrective functionality etc.

Yamaha Motor has realized the ideal concept of a 1 STOP SMART SOLUTION by taking advantage of the company’s strengths as a full-lineup manufacturer of mounting equipment, including surface mounters, printers, dispensers, and inspection systems. The company promotes the Intelligent Factory system, which comprehensively realizes higher efficiency in the mounting process through smooth and advanced inter-equipment cooperation without black boxes.

\*1: Surface mounters: Production equipment designed to mount various electronic components onto PCB's (Printed Circuit Boards), which are then incorporated into electronic products.

\*2: Comparative mounting capacity (CPH) under optimal conditions for surface mounters in the 2-Beam, 2-Head Class. Yamaha Motor survey, February 01, 2023

\*3: CPH (Chips Per Hour): Total number of chips that can be mounted per hour (unit time). Indicates processing capacity under various conditions.



Premium, High-efficiency Modular YRM20DL

**Market Background and Product Outline**

In addition to the rapid electrification of powertrains for in-vehicle electronics, the miniaturization, high-densification, high functionality, and diversification, as well as shortened product cycles have increasingly accelerated for a variety of products such as appliances, personal computers, and mobile telephones. In response to this, the miniaturization of components have also progressed, and higher-performance, higher-efficiency equipment with greater flexibility and efficiency has been introduced, promoting a dramatic increase in production capacity at manufacturing sites. However, along with improvements of these throughputs, the ratio of fixed-value losses that do not generate value, such as transportation time to production time, have also come into focus.

Yamaha Motor has therefore newly developed the YRM20DL, a dual lane version of the YRM20 which is the latest flagship mounter to adopt the new generation platform. The unit supports various dual-lane production methods, such as transporting two PCBs of the same type by parallel mounting, transporting two PCBs of different types, and alternate mounting, making it possible to select and operate the optimal production system for each product PCB type. As a result, fixed-value losses such as

transport losses can be greatly reduced in a wide variety of SMT production lines, from high-speed mass production to high-mix low-volume production, along with improved actual productivity and per-unit-area productivity.

■ Mounting example using dual lanes (Arrows indicate movement of the head)

**Head**

**Head**

**A**

**B**

**A**

**A**

Transporting two PCBs of the same

type by parallel mounting

Transporting two PCBs of different types

**A**

**A**

**A**

**A**

**A**

**A**

**A**

**A**

\*Preparation work (transportation, fixing, etc.) for the next PCB can be performed in the lane on the side not currently mounted, allowing the head to immediately move to the next mounting action, reducing loss from waiting times.

Alternate mounting

**YRM20DL Main Features**

**1) Achieves higher speed and higher accuracy through improved basic performance**

By revising the dynamic layout, the unit has achieved the world's highest level of 120,000 CPH in its class (under company optimum conditions) realizing overwhelming productivity. This has been achieved by way of minimizing the movement distance by bringing the pickup and mounting areas closer to each of the two heads, and further optimizing the overall spindle motion control.

High-accuracy mounting of ±15 μm (Cpk≧1.0) is achieved by increasing the rigidity with the newly developed conveyor and improving the correction function. The RM head/HM head supports 0201 (0.25 x 0.125 mm) sized ultra-small chip component mounting and narrow adjacent mounting.

**2) Adoption of a newly developed dual-lane conveyor that reduces transport loss and improves per-unit-area productivity**

The newly developed high-rigidity dual-lane conveyor supports a maximum PCB width of up to 330mm where the same width PCB is being conveyed at the front and rear while in dual-lane production mode. An ultra-high-speed rotary RM head that employs overdrive motion (mutual head insertion) allows the front and rear heads to operate without any interference up to a maximum PCB length of 380mm, enabling highly efficient mounting without head standby loss.

In single-lane production, which uses only one of the two lanes, it is possible to transport PCBs up to a maximum length of 810mm, a maximum width of 610mm, a transportable weight of 3kg, and a maximum PCB thickness of up to 6.5 mm. This new model is also compatible with a wide range of extra-large-sized PCB's, jig conveyance, etc., including for automotive products, industrial, medical, power devices, and LED lighting.

**3) Other key features**

Head can be selected from 3 types

- Ultra-high-speed rotary RM head with overdrive motion

- In-line HM head that combines high speed and high versatility with "1 head solution" that can handle ultra-small chip components to larger components with one type of head

- In-line type FM head capable of handling tall and odd-shaped components

Supports various labor-saving functions

- Auto-loading feeder that can easily replenish tape components at any time without the need to stop production

- eATS30, a non-stop tray supply device that can supply tray components in units of pallets/magazines without the need to stop production

- Non-stop loading/unloading feeder carriages that enables setup work for feeder carriages replacement without the need to stop production on one lane

- Automatic exchange of push-up pins, greatly reducing workloads when changing products

Integrity and ease of maintenance

- Nozzle ID management that enables maintenance optimization according to the number of accumulated shots

- Self-diagnostic and self-recovery functions maintain a clean state, allowing continued high-quality production nozzle health care/feeder maintenance warnings

**YRM20DL Basic Specifications**

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Super high-speed rotary RM head** | **High-speed general-purpose in-line HM head** | **Odd-shaped components In-line FM (flexible-multi) head** |
| Nozzles(per 1 head unit) | 18 | 10 | 5 |
| Applicable components | 0201mm to W12xL12mm Height 6.5mm or less | 0201mm to W55xL100mm Height 15mm or less | 03015mm to W55xL100mm Height 30mm or less |
| Mounting capability(under optimum conditions) | 120,000 CPH(In high production mode) | 100,000 CPH(In high production mode) | 2-beam: 35,000 CPH1-beam: 17,500 CPH |
| Mounting accuracy(Cpk ≥ 1.0) | ±15 μm (high-accuracy mode) | ±35μm |
| Number of component types | Feeder carriage exchange: Max. 128 types = 32 feeders ×4 (conversion for 8mm tape feeder)Fixed plate: Max. 128 types (conversion for 8mm tape feeder)Trays: 60 types (maximum when equipped with eATS30 x 2) |
| PCB dimensions | Dual use: W50 x L50 mm to W330 x L810 mm Single use: W50 x L50 mm to W610 x L810 mm  |
| Power supply | 3-phase AC 200/208/220/240/380/400/416 V ±10% 50/60 Hz  |
| Air supply source | 0.45 MPa or more, in clean, dry state  |
| External dimensions (excluding projections) | L1,374 x W2,102 x H1,445 mm  |
| Weight | Approx. 2,550kg (main unit only) |

**About Yamaha Robotics SMT Section**

Yamaha Surface Mount Technology (SMT) Section, a subdivision of Yamaha Motor Robotics Business Unit in Yamaha Motor Corporation, produces a complete selection of equipment for high-speed inline electronic assembly. This 1 STOP SMART SOLUTION includes solder paste printers, component mounters, 3D solder paste inspection machines, 3D PCB inspection machines, flip-chip hybrid placers, dispensers, intelligent component storage, and management software.

Bringing the Yamaha way to electronics manufacturing, these systems prioritize intuitive operator interaction, efficient coordination between all inline processes, and modularity enabling users to meet the latest manufacturing demands. Group competencies in servo-motor control and image recognition for vision (camera) systems ensure extreme accuracy with high speed.

The current product line includes the latest YR equipment generation, with advanced automated features for programming, setup, and changeovers, and new YSUP management software with state-of-the-art graphics and built-in data analytics.

Combining design and engineering, manufacture, sales, and service competencies, Yamaha SMT Section ensures operational efficiency and easy access to support for customers and partners. With regional offices in Japan, China, Southeast Asia, Europe and North America, the company provides truly global presence.

[www.yamaha-motor-robotics.eu](http://www.yamaha-motor-robotics.eu)

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