

## Modulo Pick and Place machine

### Modulo MP-200

The Modulo offers important features like precision, flexibility and usability and is designed modular, so you can create your ideal configuration. If necessary you can always change the specification of your machine by adding or changing specific modules. You only invest in what you need when you need it.

By ordering the MP-200 you can almost start assembling circuit boards. To get a working configuration you only need to order a PCB holder (in-line or stand-alone) and feeders. The basic machine is equipped with a Quadruple Placement Head (for max. 4 nozzles), one feeder bank for 30 feeders, one fiducial alignment camera and one large and four small component alignment cameras. If you want to place more than 30 feeders there is the option to add more feeder banks. The machine can be upgraded in the field.



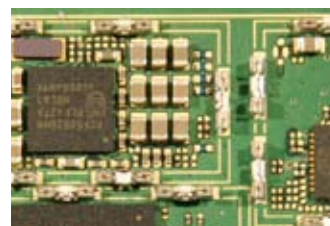
### Main Features

- Modular built for growth
- 120 8/12mm feeder positions in-line or 180 feeders off-line
- Standard with full vision alignment (no laser alignment)
- No feeder reduction for 12 mm feeder
- Quadruple Placement Head (for 4 nozzles)
- 9000 CPH (IPC rated)
- 12000 CPH (tact time)
- Intelligent feeders
- Dimasoft® one key operation software
- Linear encoders with 0.001 mm resolution
- Easy width adjust pass-through conveyor
- Off-line programming and optimization
- In-line or off-line available



MP-200 Pick and Place Head

### Applications



### Detailed information



#### Ergonomics prevail

The Modulo is extremely easy to access. No heavy sliding doors or doors that make you step back when opening the machine. The modulo is equipped with vertically rising doors making the entire front or back free for easy access.

#### PCB Transport Unit

The in-line machine fully complies with the SMEMA standard. Dual direction of transport is available enabling integration with global peripheral equipment. Stand-alone units have the added facility for IN/OUT at the same side if required.



Belt conveyor MP-1200



Quadruple Placement Head

#### Quadruple Placement Head

Placement head with four individual Z-axis controlled and programmable nozzles, with full vision alignment on the fly for all components. A large CCD camera for placement of fine pitch components up to 50x50 mm components is part of the standard features. 4 small cameras (15 x 15 mm) for chip components down to 0201 are mounted on the head. The vision system checks all components on dimensions, number of leads, tolerance of leadspace and coplanarity.



Large component camera (LCC)

#### High Speed Fiducial Camera

Dedicated to fiducial marks and teach in only. Not only an extremely fast reaction time, but also the ability to read practically any mark offered for correction are the key features of the fiducial alignment camera.

#### Real Intelligent Feeders

DIMA is now offering her fourth generation tape feeders. The feeders contain a fully programmable micro processor offering a high level of management information, component counting, part number information, component name, component value, pitch requirements, operator warning for component depletion. Unlike other systems this information is stored into the feeder so that the machine database is not required to determine what product is in the feeder. The DIMA feeders are equipped with the unique quick loading mechanism allowing you to change tapes within 40 seconds.



Real intelligent feeders

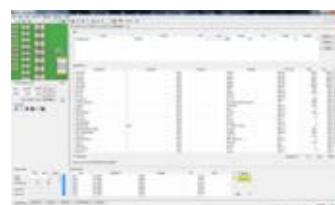
#### DIMAsoft® Windows®

Be flexible is the keyword for DIMA software making DIMAsoft one of the most advanced easy to use interfaces available in the market today. Its unique capabilities offer quick, informative one key operations, drastically reducing programming time. Material planning, management information, Remote diagnostics, output analysis and optimization are together with loads of other features standard available in the software. Software for CAD conversion, stock control and batch traceability are also available from DIMA. For off-line programming or diagnosis of management information you can install the pick & place software free of charge on a desktop PC.

Vision



Material planning



Production



Cad4dima



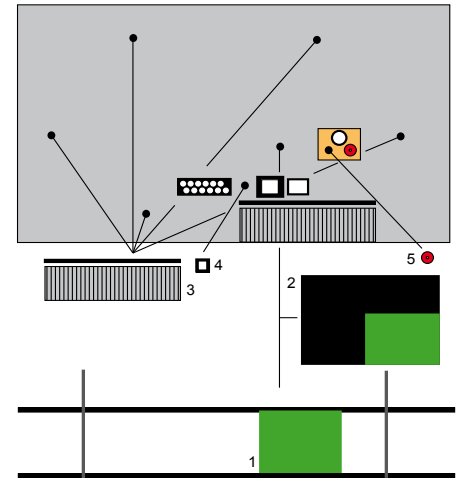
### Detailed information

#### Machine configuration

Starting with the MP-200 you get a basic machine including: quadruple placement head (for 4 nozzles), 1 fiducial camera, 1 large and 4 small component alignment cameras, 1 tool changer, 1 set of tools (see list below), 1 trash bin, 1 feeder bank (for 30 feeders) and all software with controls necessary to run the machine. You need to add: A PCB fixture (1 or 2, see picture, for in-line or off-line) and feeders. You are now ready to start. If you need more feeders, add feeder banks (3 in the picture).

#### Overview standard tools/nozzles in Modulo MP-200

Article number	Description	Pieces
HP-2700	Height Calibration tool	1
CS-2705-SS-01	Nozzle 0.5 mm	4
CS-2710-SS-01	Nozzle 1.0 mm	2
CS-2715-SS-01	Nozzle 1.5 mm	2
CS-2720-SS-01	Nozzle 2.0 mm	2
HP-2730-SS-01	Nozzle 3.0 mm	2
HP-2750-SS-01	Nozzle 5.0 mm	1



Configurations drawing



Tape strip feeder SMCS-400x



Vibration/stick and tape feeders

#### Tape strip feeder

For small strips of SMD tape DIMA offers a tape strip feeder that can be adjusted to any width of tape. The feet of the tape strip feeder are magnetic for easy placement within the machine.

#### Vibration/Stick feeders

For plastic sticks up to 50 mm wide. Max. 6 (small) lanes of components in one feeder.

#### Life time warranty

The contacts on the feeder interface PCB are of outstanding quality, so that DIMA gives lifetime warranty on these contacts.



Tray Sequencer  
HP-2200

#### Tray Sequencer

DIMA Group also offers a broad selection of feeders for tray components. A tray sequencer for up to 6 tray's can be mounted on the machine, with loss of only 15 feeder positions. Including tray detection. Optional an extra tray for fast changeover can be ordered.



Light tower  
HP-3050



Large reel holder  
MP-3250

Modulo MP-200	
Type	Pick and Place machine
Dimension off-line (L x W x H)	2150 x 1700 x 1500 mm (+500 mm for signal light)
Dimension in-line (L x W x H)	1750 x 1300 x 1500 mm (+500 mm for signal light)
Board thickness	min. 0.5 mm - max. 3.2 mm thick
Board size	min. 30 x 30 mm - max. 380 x 500 mm (off-line) max. 310 x 510 mm (in-line) Optional extension up to: 550 x 950 mm.
Maximum Warpage	0.5 mm up - 1 mm down
Component Height	In fly max. 10 mm - bottom max. 20 mm
Placement Accuracy	16.7 $\mu\text{m}$ @ $1\sigma$ 50 $\mu\text{m}$ @ $3\sigma$ , using 1 $\mu\text{m}$ encoders
Placement Rate	9000 cph (IPC rated) - quadruple placement head 12.000 cph (tact time) - quadruple placement head
Components	Chip, MELF, SOT, SOIC, TSOP, PLCC, QFP, BGA, LCC, $\mu\text{BGA}$ , etc. smallest pitch 0.3 mm (with second camera)
Component size	0201 up to QFP208, field of view 50 x 50 mm. Optional size: 01005
Motion	X and Y, AC/DC servo motors with linear encoder and digital motion controller.
Increment Axis	X: 0.001 mm, Y: 0.001 mm, Z 0.02 mm, Theta: 0.045 degr.
Control	Integrated microprocessor controller with CAN interface combined with PC running on Windows® 7
Interface	Fully SMEMA compatible as option: MP-1290, Conveyer height 865 to 970 mm.
Feeder Characteristics	Intelligent feeders, in-line 30 expandable to 120 8 or 12 mm tape feeders, off-line 30 expandable to 180 8 or 12 mm tape feeders, Number of trays depending on PCB size, tape feeders from 8 to 44 mm, plastic stick up to 50 mm wide, tray 335 x 185 mm for tape sequencer
Vision System	ESI Correctplace®, Automatic board alignment - full vision component alignment and analysis by vision system. Test on lead pitch, sqew angle, BGA bal size and number of balls.
Cameras	1 Fiducial and 5 component alignment cameras with CMOS chip
Power Requirement	220 Vac / 50 - 60Hz / 2500 Watt
Air Requirement	6.5 - 7 Bar / 100 L/Min.
Operating Temperature	15 - 30° Celsius
Noise Level	Noise emission during operation < 70 dB(A)
Weight	700kg without feeders, 950kg with feeders

For more detailed information, please contact our Sales Representatives. We are very willing to explain you the product application opportunities, all the available system configurations as well as our customized turn-key automation facilities. We are pleased to serve you with the best process technologies and going for the best system fit into your manufacturing processes. Your success is ours too!

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