

ATMALINE RR3250/C

Fully Automatic Roll-To-Roll Screen Printing Line



- “inspection machine”, “idle section” and “dryer” configured in this line are optional.
- above layout is for view reference only; all line configuration up to actual specification schemed for a real project which often comes varying.



Awards won

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Application:

This line is suitable for various flexible roll materials, such as FPC flexible printed circuits, flexible displays, transfers, flexible thin-film batteries, RFID radio frequency ID tags ... to be screen-printed with graphs/texts, functional deposit layers...

Features:

A fully automatic screen printing line: unwind-feeding (with web-connecting table) → camera visual auto-alignment (optional) → printing → [inspection(optional) → idling(optional) →] drying (optional, IR+hot air, suspended routing) → rewind-collecting, for in-line fully automatic continuous production.

Characteristics:

- ◆ **Unwind / Rewind:** uses air shafts, assures concentricity and non-slip of material roll (stable rolling), fast roll loading/unloading, supplied with choice 3" air shafts (standard) or with 6" air shaft sleeve (optional);
- ◆ **Web flow:** servo-driven rolling, working with structural EPC tracking system; servo tensioning control;
- ◆ **Screen printer:** adopts ATMA 4-post "OE" precision version module, integrating all exquisite function sections:
 - Printer section: digital-controlled servo motor driven 4-post lift, to: print level(off-contact, digitally set, air locking - against heavy print pressure) / standby level / cleaning level.
 - Substrate base table section: with dynamical On/Off and volume-adjustable vacuum (to fix material); servo-driven 4-post up/down(not air-borne concept)-web pass without scratch);
 - Screen section: Adjustments: holder arm positioning / air-locking, pneumatic screen holder levels, holder arms(screen) leveling, supplementary positioning by screws, screen frame XYY digital-servo driven fine-adjustments; servo-driven gradual peel-up of screen during print stroke (to prevent sticking, stroke/ speed adjustable; servo-driven digital-set stroke length & start/stop points, automatically averaged to print stroke)
 - Squeegee section: servo-driven left-right stroke, coordinated to squeegee / flood coater alternative down for printing / flood coating (relative to screen-substrate in fixed position; Squeegee & flood coater both up to clear off screen);
Adjustment: digital-set stroke start/stop points & speed, skew angle (to overcome print skips at corners);
Squeegee / flood coater adjustments: manual mounting positioning, set-down level(depths), leveling(print evenness), inclination angle(deposit thickness), up/down speeds, digital-set pneumatic driven constant print pressure...
- ◆ **Printing / flood coating:** servo-driven, stroke / speed digital-controlled, solid drive torque, super stable run over entire stroke, fault free.
- ◆ **Printing / flood coating pressure:** digital-set / constant pressure systems, each providing 3~62 kgf pressure parameter setting in HMI.



- ◆ **Camera visual automatic screen-substrate alignment:** optional 4 cameras (2 as standard) cameras and servo-driven screen frame move auto-alignment system, achieving precisely registered printing.
- ◆ **High flatness table:** made of thick aluminum alloy board, fine smooth processed and hard anodized(scratch-resistant), achieving flatness at $\pm 0.02\text{mm}$, realizes fine line/dot printing. Servo-driven 4-post down during printing / material web pass.
- ◆ **Control / operation system:** high-level industrial computer integrated multiple controls, color LCD touch-operated HMI, provides multiple function parameter setting and immediate operation/monitoring, convenient for operation, complies to faultless demands in digitization, standardization and humanization.
- ◆ **Safety protection:** with error diagnose/alert system, safety restoration, emergency-stop, beacon, safety dust covers(optional)..., considerate in safety protection.
- ◆ Can add **Inspection / idle buffer sections:** to provide ink idling (flow-out, antifoaming...) before work goes for drying, and hand-held camera shooting + magnified monitor display that assist operator eye inspection. (optional)
- ◆ **Various dryer type for choice (optional):** according to material characteristics(thermal/tension durability), ink's drying characteristics(energy, speed), and productivity demand(type, section length), normal types:
 - IR + Hot Air drying: horizontal conveying type (with carrier belt, or pull-through type)
Up/down routing type
 - UV during: horizontal pull-through type(other types)

Specification

1. Screen Printer (with Unwinder)

Item	Individual model	AT-RR3250/C Screen Printing Machine (with Unwinder)
1	Machine dimension	L 3545 x W 1725 x H 2350 mm
2	Machine weight	2,220 kgs
3	Compressed air source	5 ~ 7 kg/cm ²
4	Electric power	3 phase / 380 V / 50/60 Hz
5	Air consumption	60 L/min
6	Material web flow direction	left to right
7	Material web flow drive	by vacuum roller
8	Material roll loading	3" air shaft x3 (1 each for main material roll, spare material roll, and delaminated protective layer rewind) 6" air shaft sleeve (optional)
9	Shaft drive	servo-driven
10	Unwind web edge tracking	structural EPC
11	Tracking detection range	±10 mm
12	Tensioning control	servo-driven vertical type
13	Tension adj. range	0.5 ~ 3.0 kgf
14	Web speed	10 ~ 100 mm/sec
15	Cutting/joint table	with
16	Anti-static device (optional)	anti-static bar (L 340mm)
17	Dust cleaning device (optional)	contact cleaning roller + dust-collection adhesive roll cleaning roller size: ϕ 37.4 x L 355mm
18	Printing alignment	camera visual + screen move auto alignment (optional)
19	Camera	4 sets
20	Lens FOV	15 x 20 mm
21	Image shooting	top/bottom both at same time (targets)
22	Camera adj. range	X= ±75 ~ ±250 mm Y= ±100 ~ ±170 mm
23	Working table size	380 x 570 mm
24	Vacuum area	320 x 480 mm

Item	Individual model	AT-RR3250/C Screen Printing Machine (with Unwinder)
25	Printing area	340 × 500 mm
26	Table vacuum source	ring-blower
27	Vacuum hole size	∅ 0.8 mm (pitch 20 x 20 mm)
28	Table height	980+60 mm
29	Table up/down	servo-driven
30	Screen frame O/D size	max. 950 × 950 mm ~ min. 700 × 700 mm
31	Screen frame height	25 ~ 40 mm
32	Screen frame holding	pneumatic + manual locking
33	Screen alignment	XXYY 4 axes ± 9.5 mm (working with CCD visual auto digitalized alignment system)
34	Screen alignment drive	servo
35	Screen peel-off drive	servo-driven, from print stroke start to end
36	Screen peel-off distance	0 ~ 20 mm
37	Screen cleaning level height	350 mm
38	Printing direction	left to right
39	Printing drive	servo
40	Printing speed	20 ~ 625 mm/sec
41	Max. printing stroke	620 mm
42	Squeegee/flood coater pressure	3 ~ 62 Kgf
43	Squeegee inclination angle range	20 ± 5°
44	Flood coater inclination angle range	45 ± 5°
45	Print head skew angle	± 4°
46	Squeegee depth range	12 mm adjustable
47	Operation interface	touch-operated HMI, parameter setting/momory/call-out/reset
48	Dust cover (optional)	unwinder: top dust cover
		printer: overall dust cover + HEPA

2. Inspection Machine (by operator eye) -- optional

Item	Individual model	AT-RI3250 inspection machine
1	Machine dimension	L 1475 x W 870 x H 1840 mm
2	Machine weight	700 kgs
3	Compressed air source	5~7 kg/cm ²
4	Rated power capacity	1.1 kw 2.15 A
5	Electric power	3 phase / 220 V / 60 Hz
6	Flow direction	left to right
7	Pass height	980+60 mm
8	Inspection	Hand-held camera shooting + monitor screen display (12.1")
9	Camera	1 set (color)
10	Lens FOV	12.5 x 17 mm
11	Inspection area	340 x 500 mm
12	Camera inspection height	91 mm
13	Material web speed	10 ~ 100 mm/sec (adjustable)
14	Material web drive	by servo-driven vacuum roller
15	Vacuum source	ring-blower
16	Operation interface	buttons
17	Cutting/joint table	with
18	Air-borne inspection table	with
19	Material web continuity	with (3" air shaft)
20	Dust cover (optional)	top-lid dust cover



3. Idling Section -- optional

Item	Individual model	AT-RB3250 idling section
1	Machine dimension	L 3495 x W 995 x H 2410 mm
2	Machine weight	1150 kgs
3	Compressed air source	0.8 kw / 2.88 A
4	Electric power	3 phase / 220 V / 50/60 Hz
5	Material web flow direction	left to right
6	Material web speed	10 ~ 100 mm/sec (adjustable)
7	Material web drive	by servo-driven vacuum roller
8	Vacuum roller height	1780+60 mm
9	Vacuum roller	6 sets driven by induction motors
10	Vacuum source	ring-blower
11	Dust cover (optional)	overall dust cover

4. IR + Hot Air Circulation Dryer -- optional

Item	Individual model	AT-RIO4032 IR + Hot Air Circulation Dryer
1	Machine dimension	L 4300 × W 1500 × H 2100mm (heating length 3760mm)
2	Machine weight	3,270 kgs
3	Electric power	3 phase / 380 V / 50/60 Hz
4	Power consumption	102.9 kw
5	Material web drive	by servo-driven vacuum rollers
6	Effective web drive width	250 、 300 、 320 、 340mm
7	Conveyor height	1750+60 mm
8	Conveyor direction	left to right
9	Conveyor speed	0.5 ~ 6 m/min
10	Heating	by IR + Hot air circulation
11	Heating zone	4 zones
12	Conveyor length	total 16 m
13	Air flow source	ring-blower
14	Air flow direction	top-down
15	Body material	Inside SUS430 outside SS41 painted
16	Temperature control	IR - SCR Hot air: SSR
17	Temperature range	room temp +20°C ~ 200°C
18	Circulation system	10.5" fan-blower
19	Temperature evenness	within set temp ± 3 %
20	Operation interface	Proface 7" touch-operated HMI, parameter setting
21	Air exhaust	hot air 16 CMM (adjustable by mechanical flow valve)
22	Protection measures	<ol style="list-style-type: none"> 1. over-temp setting on temperature controller, 10°C over set heaters are shut off. 2. electronic over-temp protector(temp settable, normally highest temp +20°C), if over heaters are shut off. 3. error display on HMI, beacon + buzzer alert, emergency-stop buttons.

5. Rewinder

Item	Individual model	AT-RW3250 Rewinder
1	Machine dimension	L 1250 × W 1195 × H 1390 mm
2	Machine weight	650 kgs
3	Compressed air source	5 ~ 7 kg/cm ²
4	Electric power	3phase / 220 V / 50/60Hz
5	Material web flow direction	left to right
6	Material roll loading	3"air shaft x3 (1 each for rewind, spare rewind, & protective layer roll unwind)
7	Adding protective layer roll (optional)	3"air shaft 6"air shaft sleeve (optional)
8	Material web drive	by servo-driven 90° angle vacuum roller
9	Vacuum roller diameter	∅ 164mm
10	Material web speed	10 ~ 100 mm/sec
11	Vacuum source	ring-blower
12	Unwind web edge tracking	Web guide + structural EPC ± 10 mm
13	Tension control	by load cell + servo-drive
14	Rewind tension adj. range	0.5 ~ 3 kgf
15	Operation interface	Proface 7" touch-operated HMI, parameter setting
16	Dust cover (optional)	top dust cover

View drawing (ATMALINE RR3250/C)

