

# AP-1 Semi-Automated Tube Printer

**Revolutionising tube labelling as we know it.**

The AP-1 Semi-Automated Tube Printer is the ultimate solution for direct printing onto plastic and glass tubes & vials. Featuring a cutting-edge dual-colour UV ink printing system, that prints durable, abrasion and chemical resistant labels, perfect for long-term storage. Designed for wide labware compatibility and seamless integration into automated workflows, maximising productivity and minimising downtime.

**With AP-1, adhesive labelling is a thing of the past.**



## UV ink technology

High-contrast dual-colour print system



## Ultra-durable labels

Smudge, abrasion and chemical-resistant labels



## Versatile

Use standalone or part of automated workflow



## Built for integration

Seamless automation compatibility



## Agnostic design

Prints onto plastic and glass tubes & vials



## Intuitive software

Full hardware control and custom label design



# Tube labelling. Directly.

The **dual-head UV ink printing system** allows the user to create high-contrast labels for **barcoding applications**. Offering unparalleled and superior performance to existing tube labellers and markers already present on the market.

The AP-1's **background printhead** applies a base layer directly onto the tube surface, while the **content printhead** applies clear and legible **text, barcodes, and graphics** on top; perfectly simulating a paper-based adhesive label. This unique design eliminates the need for expensive pre-barcoded tubes, providing the user flexibility to print text and barcodes personal to them and their application. For situations where a background is already present on the tube or simply not required, the content printhead can be used independently, offering even greater versatility.



AP-1 printed labels are designed to **endure mechanical abrasion**, remaining intact even with frequent handling or friction. These labels can withstand exposure to common **lab solvents** such as **isopropyl alcohol, ethanol, and DMSO\*** without fading or smearing. Compatible with **cold chain transportation** and **long-term storage**, remaining **legible** at extreme temperatures as low as -196°C.

\*resistance may vary depending on % of solvent used.

## Cost per print

The AP-1 is a highly economical solution, with the ability to print in excess of 100,000 dual-colour labels without changing cartridges. Depending on label design and content, printing costs are as little as 1 cent per label, making it an accessible alternative to sticky label printers or laser markers.

When printing in single-color mode, the AP-1 increases efficiency by 34%. This is particularly beneficial for tubes that already feature a white patch. This efficiency boost translates to more labels per cartridge, lower operational costs, and faster printing speeds—perfect for high-throughput environments where cost-effectiveness and reliability are key. The table below outlines the number of printed labels and cost per print when using the AP-1 to print onto popular tube types.

	96-format sample tube		Sarstedt screw cap		48-format sample tube		15ml conical tube		50ml conical tube	
Diameter	8		10		12		15		30	
Label width	25.13		31.42		37.70		47.12		94.25	
Label height	12.7		12.7		12.7		12.7		12.7	
	No. of prints		No. of prints		No. of prints		No. of prints		No. of prints	
	Single colour	Dual colour	Single colour	Dual colour	Single colour	Dual colour	Single colour	Dual colour	Single colour	Dual colour
	68772	45390	57310	37825	44426	29321	32937	21738	21148	13957
Cost per print	\$ 0.007	\$ 0.010	\$ 0.008	\$ 0.012	\$ 0.010	\$ 0.015	\$ 0.014	\$ 0.021	\$ 0.021	\$ 0.032





# Built for integration

AP-1 is designed with integrators in mind. Offering robust and flexible tools to streamline the development of mid to high-throughput applications.

To ensure effortless integration into your automated workflows, we provide:

C++ DLL

A powerful and lightweight library enabling direct control over the printer from native C++ applications.

.NET Assembly

A fully featured library for developers working with C#, providing seamless integration into .NET applications.

WebAPI

A modern, platform independent interface, ideal for web-based or distributed systems requiring remote control of the printer.

Each solution is accompanied by comprehensive documentation and ready-to-use example projects, ensuring you can hit the ground running with your development. Whether you're building benchtop applications or integrating into complex automated systems, the AP-1 is the printer to achieve this with.

# Technology comparison

	AP-1 Direct UV Ink Printer	Sticky Label Printer	Laser Marker
Label durability	UV-cured,abrasion & chemical resistant, -196°C stable	Can peel off, expensive specialised labels needed for cold chain storage	Permanent, but only on laser compatible tubes
Automation compatibility	Seamless robotic & LIMS integration, no label jams. Small footprint	Labels may fall off & jam automated systems. Increases diameter of tube, restricting fit in rack	Standalone automation, typically cannot be integrated within automated systems
Tube compatibility	Prints on plastic & glass tubes & vials from 0.5 - 50ml, even those with raised graduations	Limited by label adhesion to certain tube surfaces	Limited to tubes manufactured with laser additives
Customisation & flexibility	Full control via software: fonts, barcodes, graphics, dual-color	Restricted to label dimensions & material compatibility	Limited contrast without colour background
Cost per label	As little as 1 cent per print, efficient over 100k prints	Requires label and ink ribbon consumables starting at ~\$0.12 per label, with frequent changes	High upfront cost + tube type constraints which are costly
Maintenance	Automated printhead cleaning, simple consumable change	Manual label & ribbon loading, adhesive residue issues	Requires specialized maintenance

# Technical specifications

**Dimensions (W x L x H):** 450mm(W) X 645mm(D) X 470mm(H)

**Weight:** 13kg

**Printhead resolution:** 300dpi

**Power supply:** V in: 100~240VAC , 50/60Hz V out: DC24V/5.0A

**Power consumption:** 120W

**Working temperature range:** 15 ~ 30°C

**Operating humidity (RH):** 20 ~ 80%

**Connection:** USB port: USB 2.0 for Computer Connection; USB B-type for I/O

**Communication:** C++, C# & Web API

Arvensis AP-1 Semi-Automated Tube Printer	
AP-1001	AP-1 Semi-Automated Tube Printer, supplied with power supply, USB 2.0 cable, 5 x tube adapters (#1-#5) & AP-1001-CR
AP-1001-UVB	AP-1 UV Curable Ink Cartridge, Black
AP-1001-UVW	AP-1 UV Curable Ink Cartridge, White
AP-1001-SOB	AP-1 Solvent Ink Cartridge, Black
AP-1001-SOW	AP-1 Solvent Ink Cartridge, White
AP-1001-CR	AP-1 Printhead Cleaning Rolls, 2 rolls per pack

