HITACHI
Inspire the Next

Coding & Marking Solutions

Inkjet Printer

UX2 Series

HITACHI QP 1312

HITACHI

UX2

RELIABILITY
Highly reliable design and
superior construction

EFFICIENCY
Environmentally friendly with low
operational costs

EASE OF USE
Simple touchscreen operation
with video-based guidance

For over 45 years, Hitachi has developed and produced **high-performance inkjet printers** based on the **well-proven Continuous Inkjet (CIJ)** principle for **industrial marking**.

Hitachi Industrial IJ printers are **high-speed printers** adopting a **non-contact printing method**, ideal for a **wide range of applications**. They are capable of applying best-before dates, logos, barcodes, lot numbers and data matrix codes, which makes the **new UX2 Series the perfect solution** for both complex and standard applications.

Highly Reliable

Hitachi products are renowned for being extremely reliable in harsh environments. All functionally **critical parts** are manufactured in-house. The use of Hitachi's own components reinforces the high quality levels, reliability and excellent value for money.

Cost-Effective

The new, economical ink recovery technique achieves industry-leading levels of solvent consumption and the **very low maintenance costs** minimise the total cost of ownership.

Global Sales & Service Network

Are you looking for a **global company** that can work with you at a **local level?** Hitachi offers a **global sales and service network** when marking, coding and traceability challenges demand a **coordinated answer**. For each of your locations, and across your entire organisation, we will **champion your goals** by providing international consistency, a global perspective, broad expertise and coordinated services provided by dedicated contacts. Our global team applies its **worldwide technical expertise** to your unique challenges in a consistent way. Tangible deliverables and proven solutions are the results of our business analysis and project implementation. In addition, we offer **cross-border** project management and coordination between suppliers, OEMs and end-users. **You gain more visibility and save time and money.**

Overview of UX2

INTUITIVE HMI

VIDEO GUIDANCE ONBOARD

SAFE-CLEAN STATION (OPTIONAL)

LESS PRINT HEAD CLEANING

IMPROVED PRINT QUALITY

Standard print head (up to 6 lines)
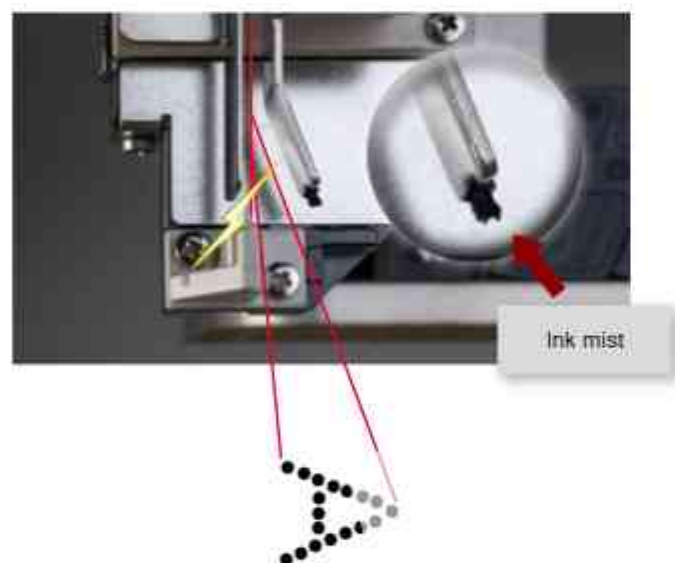
Short print head (up to 2 lines)

Newly designed to stay cleaner, longer

Conventional Printers

With **conventional print heads**, ink mist[1] deposits onto the surface of components that control the inkjet. Over time, the build-up of ink can result in **downtime lead to lost production**.

[1] Ink mist build-up may vary depending on operating conditions.

Ink mist

Print Longer with Ink Guard

UX2 printers can print for **3 times longer** than previous generations[2] due to a **unique print head design**. The ink guard feature attracts the ink mist to a collection area away from the sensitive printing components. The result is **fewer print quality issues** and **less frequent print head cleaning**. Keeping your production running while maintaining a **clean production environment**.

[2] Results refer to the same test environment and test conditions compared with UX Standard.

Ink guard
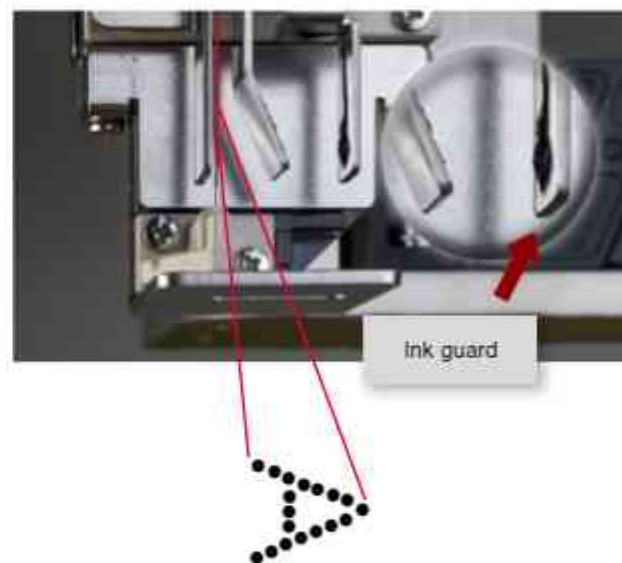
Benefits

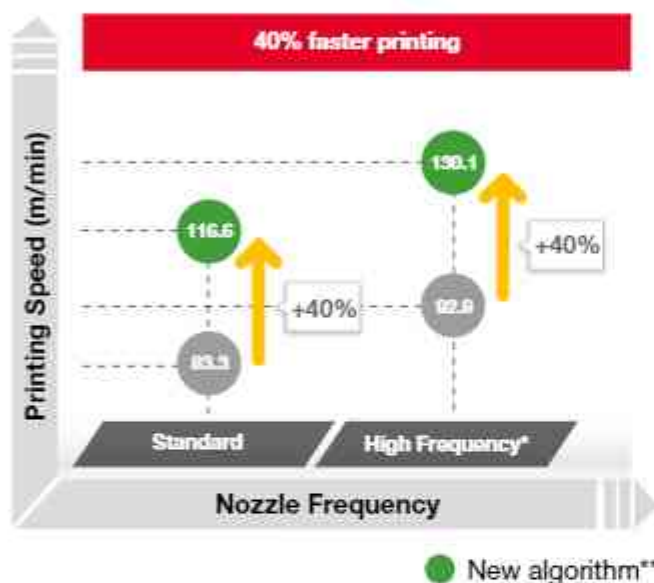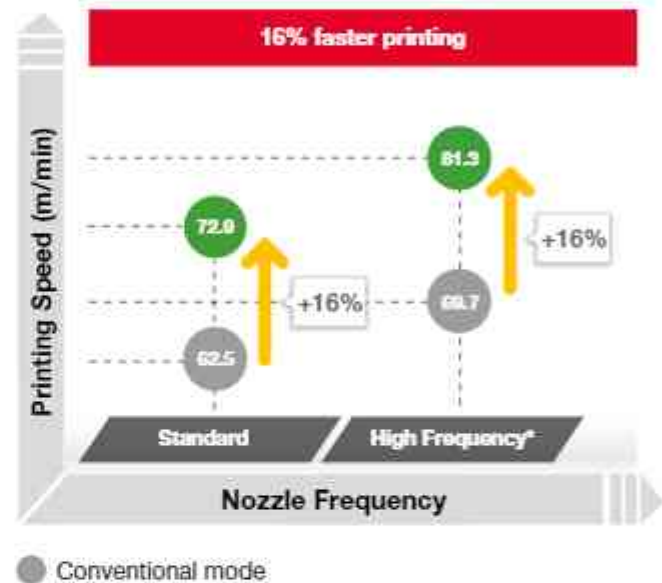|	
Fewer print quality issues ✔	Print for 3 times as long between cleaning cycles ✔
Less print head cleaning ✔	More production output ✔
Reduced ink contamination in print head ✔	Cleaner production environment ✔

Speed & Quality

Clear, **Precise Codes** at the Most Demanding Speeds

Using improved **dot control algorithms**, our newly designed UX2 printer is capable of producing clearly legible codes at the **most demanding production speeds**.
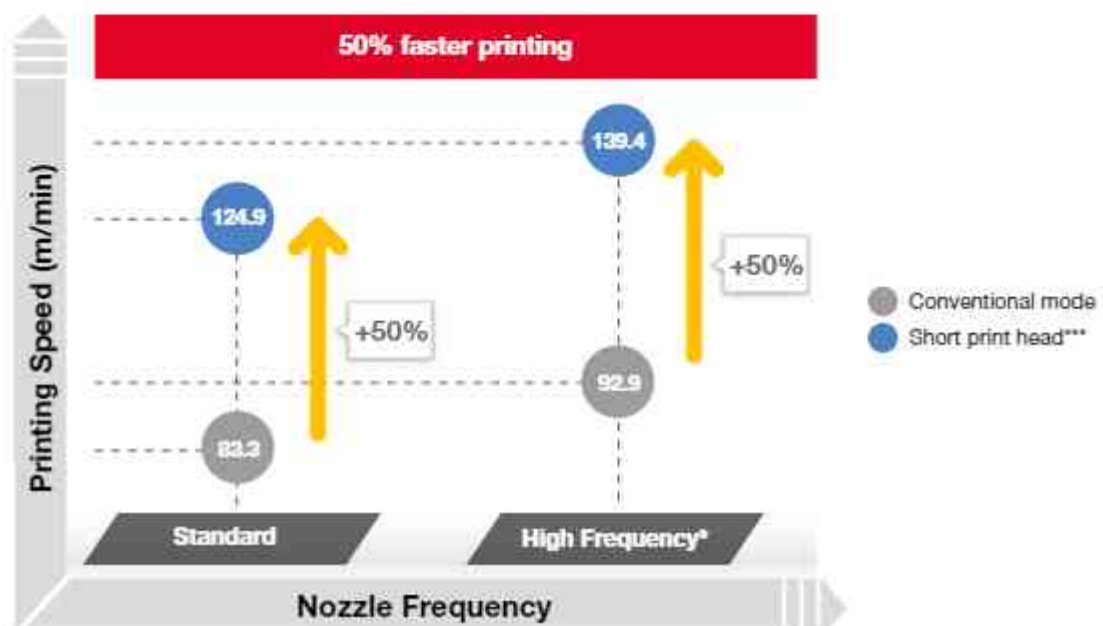
Dual Line Printing

40% faster printing

Printing Speed (m/min)

130.1
116.6
92.0
+40%
83.5
+40%

Standard | High Frequency*

Nozzle Frequency

Three-Line Printing

16% faster printing

Printing Speed (m/min)

81.3
72.0
69.7
+16%
62.5
+16%

Standard | High Frequency*

Nozzle Frequency

● New algorithm**   ● Conventional mode

Available with Two Head Sizes to Optimise Print Quality

Our standard head produces crisp code quality from 1 to 6 lines of print. A field configurable "short" print head option focuses on the most demanding print speed applications that require 1 or 2 lines of print.

50% faster printing

Printing Speed (m/min)

139.4
124.9
+50%
92.9
+50%
83.2

Standard | High Frequency*

Nozzle Frequency

● Conventional mode
● Short print head***

*   with high frequency compatible inks
** only support the specific font
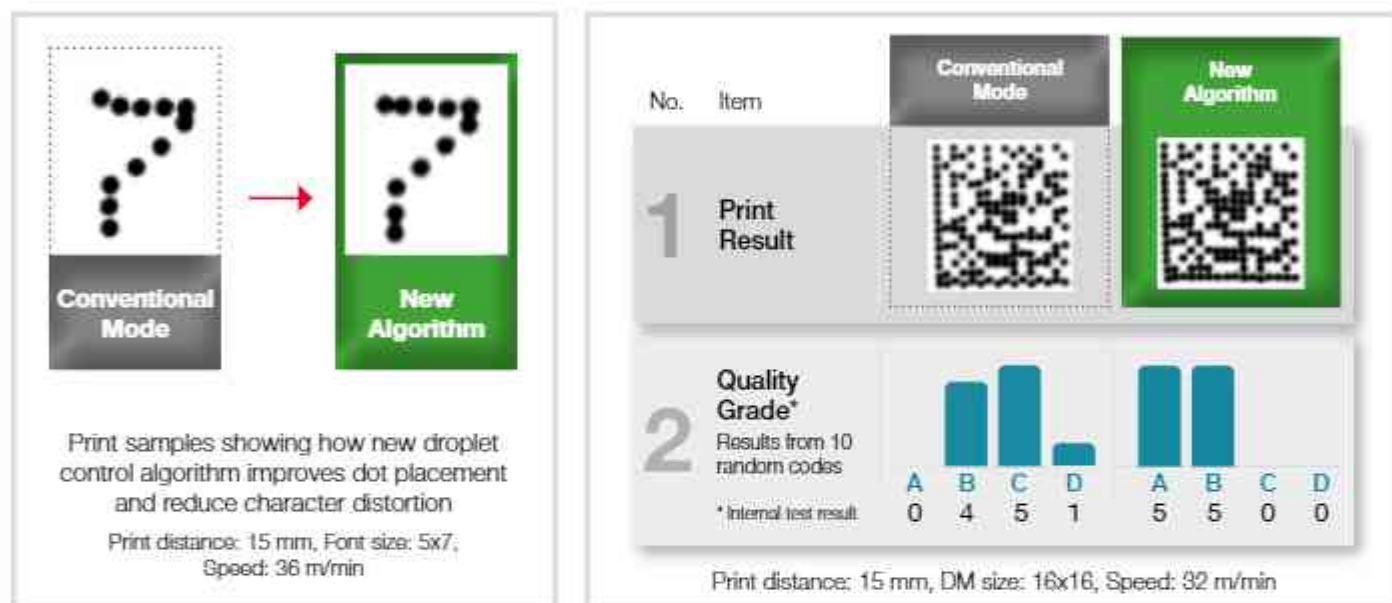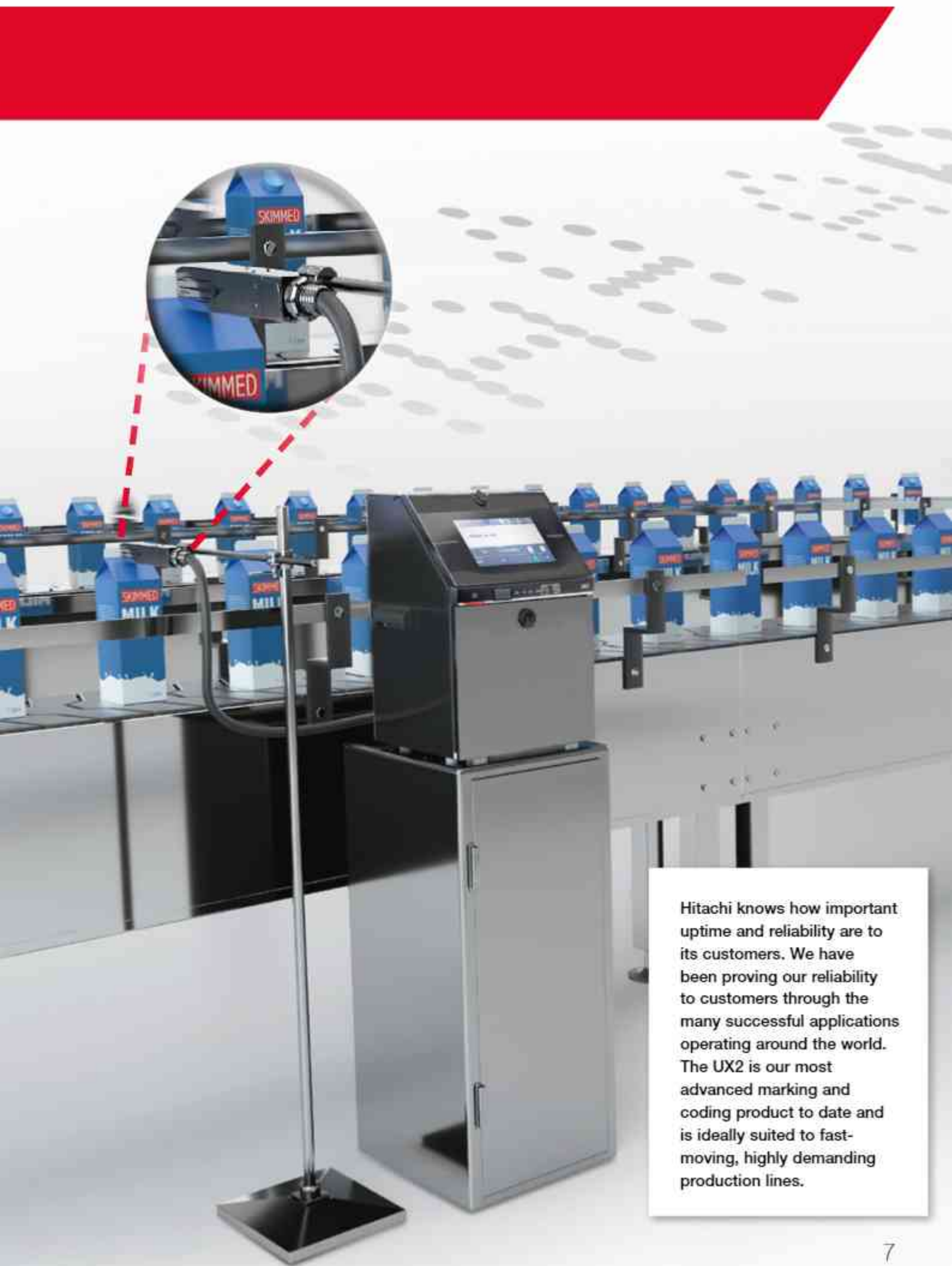*** print speed shown in the diagram are tested with 2 line print

Enhanced Dot Control Algorithm

Each printed character is made up of many dots of ink. If the dots are not correctly positioned, the printed characters are distorted and can be difficult to read. This becomes critical when printing barcodes. The new UX2 incorporates the latest advances in individual dot control, resulting in unparalleled print quality. Both text and barcodes are printed with substantially improved clarity.

Conventional Mode → **New Algorithm**

Print samples showing how new droplet control algorithm improves dot placement and reduce character distortion

Print distance: 15 mm, Font size: 5x7, Speed: 36 m/min

No.	Item	Conventional Mode				New Algorithm			
1	Print Result								
2	Quality Grade* Results from 10 random codes *Internal test result	A	B	C	D	A	B	C	D
		0	4	5	1	5	5	0	0

Print distance: 15 mm, DM size: 16x16, Speed: 32 m/min

Hitachi knows how important uptime and reliability are to its customers. We have been proving our reliability to customers through the many successful applications operating around the world. The UX2 is our most advanced marking and coding product to date and is ideally suited to fast-moving, highly demanding production lines.
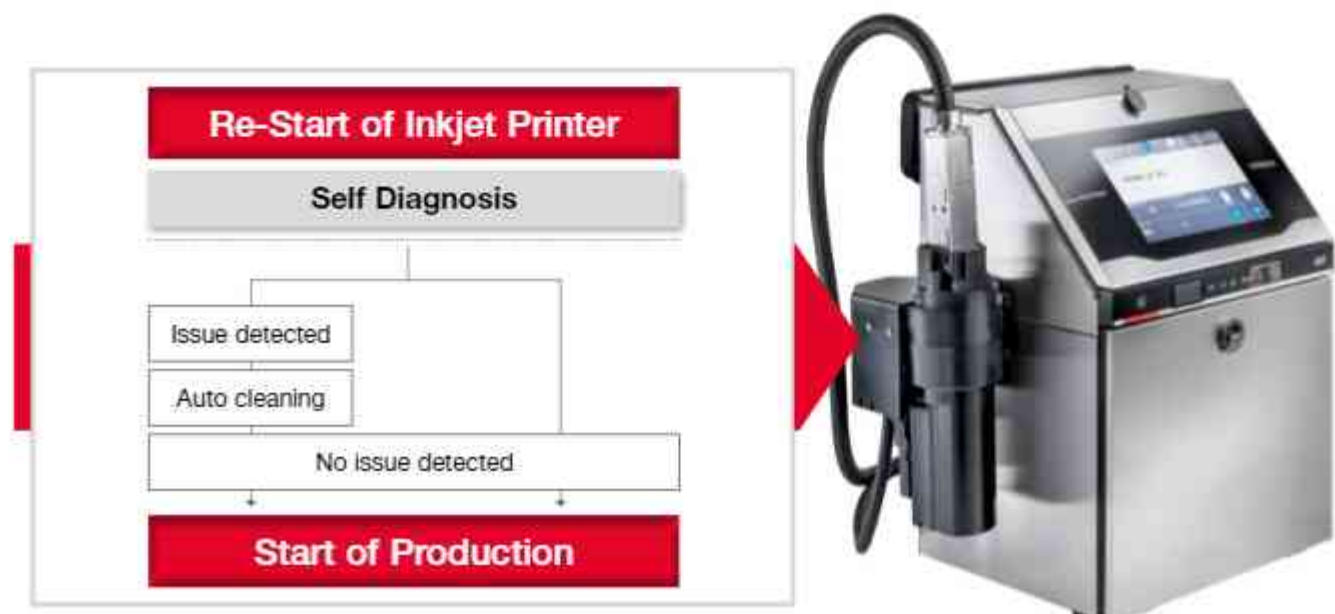
Safe-Clean Station

Added Convenience and Safety

The sealed Safe-Clean Station thoroughly cleans and dries in one simple operation. Eliminate the need for open solvents when cleaning the print head. As the solvent volatilized during drying is sucked out by the air pump and discharged through the exhaust duct, the operator is not exposed to the solvent gas. All used make-up cleaning solvent is captured in a sealed reservoir - for safe disposal.

Cleaning

Drying

Multiple cleaning modes

## Self-diagnosis by new Smart Start function

Most of the downtime associated with inkjet printers is a result of a dirty nozzle. The self-diagnosis start-up with Safe clean station can be used to automatically clean the nozzle by reversing the flow of solvent when necessary, which help ensure that IJP restarts smoothly.

Re-Start of Inkjet Printer

Self Diagnosis

Issue detected

Auto cleaning

No issue detected

Start of Production

Always ready to print

Even after long periods of inactivity, the cleaning station eliminates build-up of dried ink by periodically running an automatic nozzle-rinse according to a pre-programmed schedule. This means that the printer is always ready to print and will not need any manual cleaning at start of production.

Example: 3-day interval
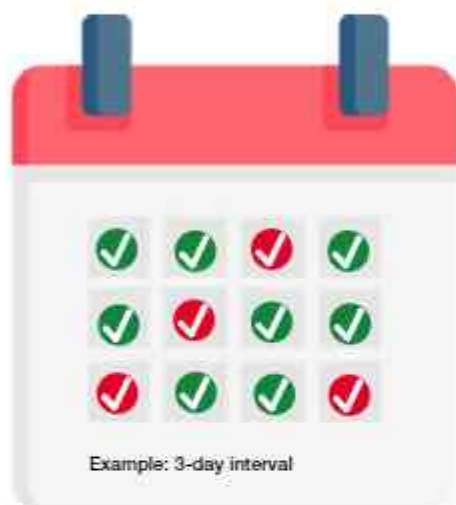
Self-Guided Troubleshooting

Video on Board, for Preventative Maintenance and Recovery

An **interactive video** on the printer screen guides users to carry out **routine tasks, preventative maintenance activities** and even **recover the** printer from a fault condition. It's so intuitive, even untrained users can **easily follow** the on board video guidance.

As a result, daily interaction with the UX2 is **instinctive with no surprises.** When needed, users will be guided by the **video to clean the** print head and add fluids.


- Interactive video guide
- High-resolution video
- Guides the user to carry out **routine tasks, preventative maintenance** and **recovery from faults**

Intuitive Display & Simplified Printer Setup

Flexibility to **Meet Your Needs**

The printer screen is designed with **flexibility in mind**. With a **configurable home screen**, you can choose what information is critical to display to operators.

- Choose the information critical to your **production needs**.
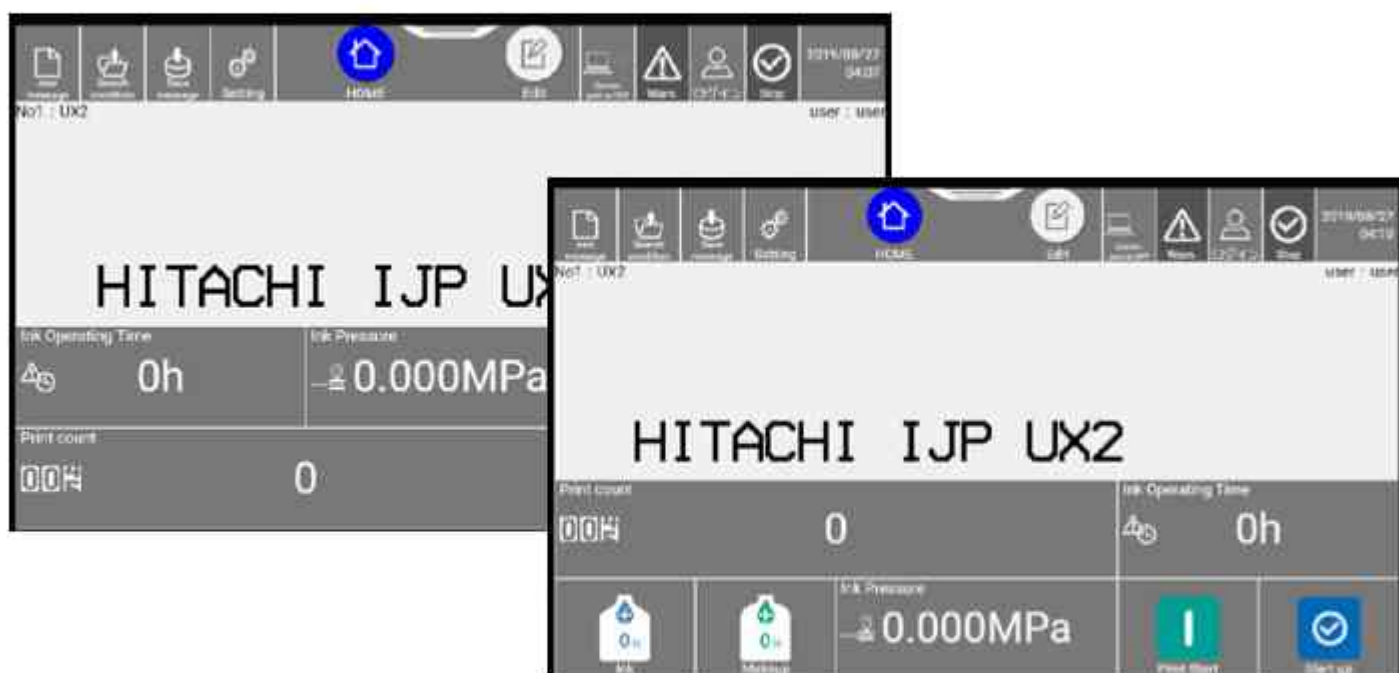
Familiar **tablet-style** touchscreen allows swipe functionality similar to smartphones and tablets.

Easier Setup Screen

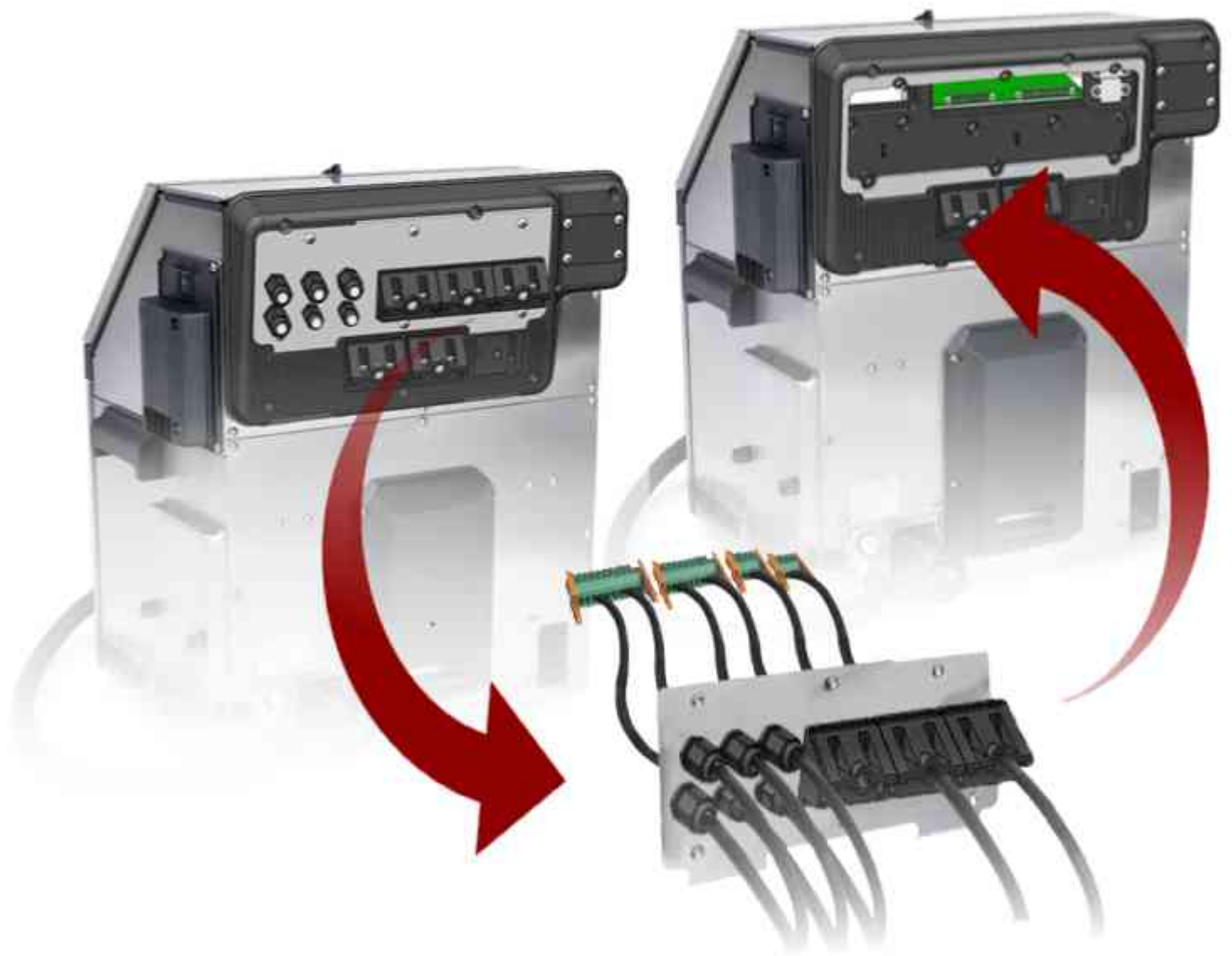The new, **intuitive on-screen setup** eliminates confusion when creating messages, which saves the user time.

Move Printers with **Ease**

Our quick-change I/O connectors enable printers to **quickly move from line to line.**

Eliminate time-consuming mistakes by preconfiguring the I/O routing in advance.

Integration with **modern industrial protocols**

Modern Communication Protocols

By employing **modern open protocols** such as OPC-UA, Hitachi's printers are **ready for the upcoming Industry 4.0/IoT revolution.** This open-style data connectivity enables our printers to be **compatible with virtually any networked platform,** regardless of OS. In addition, the latest UX printers come equipped with Ethernet/IP, OPC-UA, Modbus and Serial RS-232. **Hitachi is currently the first CIJ manufacturer to gain ODVA* approval for Ethernet/IP.**

* ODVA is a trade and standards development organisation, based in Michigan, USA.

EtherNet/IP   **OPC UA**   **Modbus**

Improve Operations, Quality and Transformation with IoT Analytics

Hitachi is one of the few companies in the world with decades of **experience and deep expertise in both OT (operational technology) and IT.** In the industrial arena, we're developing data-driven smart manufacturing and maintenance solutions that are **rapidly displacing traditional processes.**
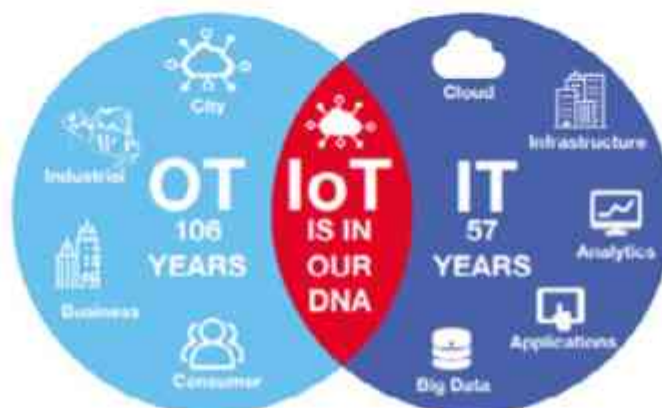
Simple Fluid Management

IC tags are adopted for the ink and solvent fluid cartridges. Installation of the wrong cartridge can be prevented by simply passing the cartridges over the main unit, which is equipped with RFID* (Radio Frequency Identification) reader. A message appears on the screen if the wrong cartridge is scanned.
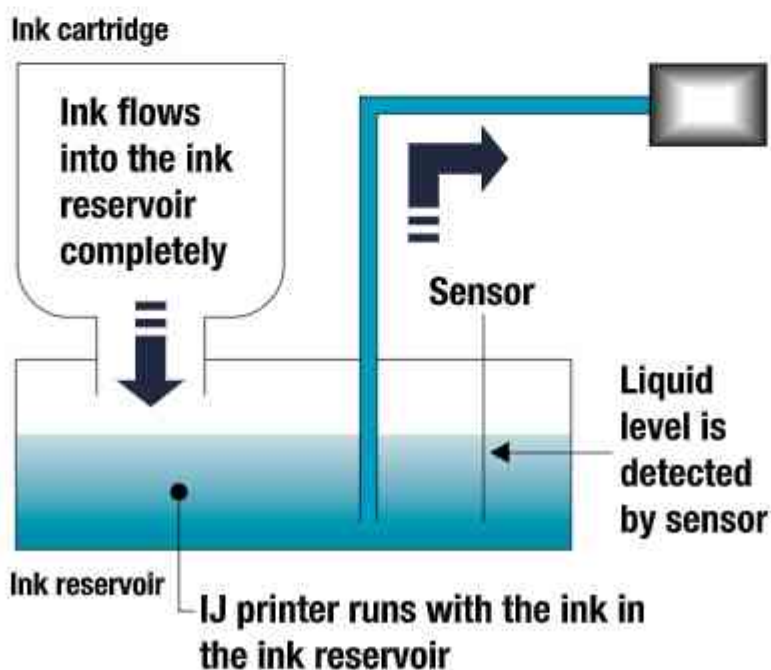
* Some geographic areas are excluded.
* Hitachi Industrial Equipment Systems Co., Ltd. declares that the IC tag reader is in compliance with the essential requirements and other relevant provisions of the FCC Part15 subpart C, EN 301 489-1/-3, EN 300 330-1/-2.

RFID prevents the installation of the wrong cartridge

Simple, Ecological Disposal

Ink and solvent cartridges are good right down to the last drop and drain fully into their respective reservoirs. All fluid drains out of the containers ensuring that both the ink and make-up cartridges can be disposed of easily, instead of incurring costly hazardous waste disposal.

Ink cartridge

Ink flows into the ink reservoir completely

Sensor

Liquid level is detected by sensor

Ink reservoir

IJ printer runs with the ink in the ink reservoir

Tapered Print Head

By designing the print head with a taper, Hitachi is able to get closer to certain packaging formats. One example is the gable-top carton. This shorter distance ensures improved print quality. The print head has also been coated with anti-corrosive plating to keep it operating even in severe environments.

New printing Printing Technology, „6-Line Print" to Suit a Wider Variety of Needs

6-line printing is now possible from one print head. Even with multiple print lines, the original Hitachi interlaced-drop control ensures that each character is accurately printed. Whilst for single-line printing at high speed the print quality is improved using the new print control system.

Made in Japan

Hitachi industrial IJ printers are manufactured using the know-how and technological expertise that have been accumulated since 1975 in Hitachi City, where Hitachi was first founded.

After production, all printers have to pass Hitachi's strict quality management testing process before shipment. We provide quality products to our customers worldwide.
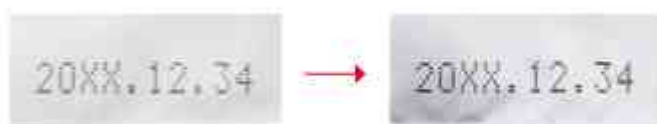
Speciality printing is possible with a wide array of ink types

Highly Adhesive
Metal / Paper / Plastic

Suitable for containers made from PP (polypropylene) or PE, or two-piece can, three-piece can in the food, medicine and cosmetics industries, etc.

20XX.12.34 → 20XX.12.34

Ethanol Ink
Metal / Paper / Plastic

Suitable for applications where MEK-based ink is not acceptable in the food, pharmaceutical and cosmetics industries.

| Can | Paper | PET bottle |

Quick Dry Ink
Film

Suitable for food packaging, film and applications where quick drying is required, such as pillow packaging machines.

| Time	Quick-Dry Ink	Standard Ink
0.3	19.12.16	19.12.16
0.5	19.12.16	19.12.16
1.0	19.12.16	19.12.16

Solvent-Resistant
Film / Plastic

Suitable for food packaging and processing in which containers are cleaned by ethanol. This ink is resistant to being wiped with ethanol during the sterilisation process.

Time	Solvent-Resistant Ink	Standard Ink
Right after printing	2019.8.18 OPS	2019.8.18 OPS
Wiping with alcohol		
After being wiped with alcohol	2019.8.18 OPS	2019.8.18 OPS

UV Curing
Electronic parts

Suitable for PCB and electronic parts.
Curing by UV light makes the printed ink resistant to oils and solvents.

01234
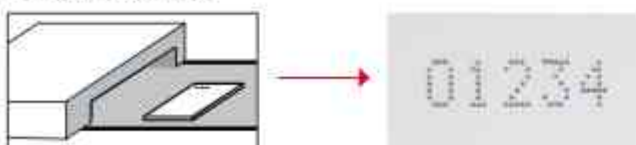
Coloured Ink
Metal / Paper / Plastic

Highlighting the printed object with a different coloured ink.

01234ABCDE — Red
01234ABCDE — Blue
01234ABCDE — Yellow
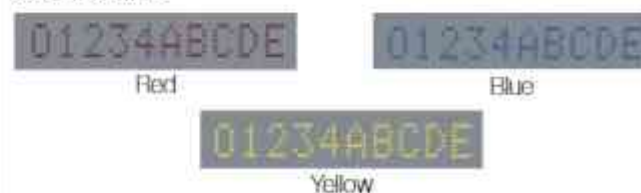
Ultraviolet Luminescence
Can / Plastic

Only seen in UV light, this is suitable for security applications to ensure the integrity of your brand or product.

After printing (invisible) → UV → Irradiated by UV light (luminescence)

Printer Specifications

		UX2 UX2-D160W
Nozzle size		65μm
Max. number of print lines		up to 6 lines
Max. number of print characters		240 characters (option: up to 1,000 characters)
Font (Horizontal × Vertical)	4x5	1 to 6 lines (Short printhead option : up to 2 lines)
	5x5	1 to 6 lines (Short printhead option : up to 2 lines)
	5x8 or 5x7	1 to 4 lines (Short printhead option : up to 2 lines)
	9x8 or 9x7	1 to 4 lines (Short printhead option : up to 2 lines)
	7x10	1 to 3 lines (Short printhead option : 1 line)
	10x12	1 to 2 lines (Short printhead option : 1 line)
	12x16	1 to 2 lines (Short printhead option : 1 line)
	18x24	1 line
	24x32	1 line
	30x40	1 line
	36x48	1 line
Character height		2-10mm (optional short print head: 2.0-6.5mm)
Input device & display		WYSWYG design Display: 10.1" color TFT LCD, WSVGA(1024x600) Input device: Touch panel, Input sound provided
Maximum print rate (character per second) (Font 4x5, space 1 dot, 1 line, 76.9kHz)		Up to 1,538 (option: up to 3,076)
Standard characters		Alphanumeric(A-Z, a-z,0-9), symbols(27) and space: Total 90
User pattern		200 patterns each for dot matrix (50 patterns for Free size)
Barcode print		code39, ITF, NW-7, JAN-13, JAN-8, code128/EAN128, UPC-A, UPC-E, GS-1 Databar
2D code printing		Data Matrix (Alphabet: 49 characters/Numericals: 98 characters), QR code (Alphabetical characters only: 61, Numbers only: 101), Micro-QR code (Alphabetical characters only: 11, Numbers only: 18)
Print functions		Calendar, Count, (Option: Shift code)
Message storage capacity		300 messages (option: up to 2000 messages)
Input signal		Print target detection, Printing stop, Rotary encoder pulse, Reciprocative printing, Remote control (Run, Stop, High-voltage ON/OFF, Reset), (NPN/PNP selectable)
Output signal		Print in progress or Print complete, Online (NPN/PNP selectable), Print ready, Fault, Warning (NPN only)
Customizable screen		✓
Animation guidance		✓
Safe-Clean-Station		Optional
Data interface		USB/RS-232 Converters at baud rates selectable up to 115,200bps
Ethernet communication		Modbus, EtherNet/IP, OPC-UA
Print head cable length / angle		4m (in-line/90 degrees)
Operating temperature range		0-50°C (1067K Ink)
Operating humidity range		30-90%RH (no condensation)
International protection		IP65
Power supply (Automatic voltage selection)		AC100-120/200-240V±10%, 50/60Hz
Dimension		460x425x534mm (Width×Depth×Height)
Approximate weight		27 kg (60 lbs)

Safe-Clean Station 300mm

Cable 4m

Height 534mm

Depth 425mm

Width 460mm

40mm 40mm 235mm 40mm 230mm 40mm

Short print head

Standard print head

Font (horizontal x vertical)							
5 x 5	1 LINE	0123456789ABCDEFGH 01234567	2 LINE	012345678 ABCDEFGHI	3 LINE	012345678 ABCDEFGHI JKLMNOPQR	6 LINE
5 x 7	1 LINE	0123456789ABC 0123456	2 LINE	012345678 ABCDEFGHI	3 LINE	012345678 ABCDEFGHI JKLMNOPQR	4 LINE
7 x 10	1 LINE	0123456789 012345	2 LINE	01234567 ABCDEFGH	3 LINE	0123456789013456 ABCDEFGHIJKLNOPQ TUVWXYZABCDEGHIJ	
10 x 12	1 LINE	0123456789ABC 0123456789	2 LINE	01234567890 ABCDEFGHIJK			
12 x 16	1 LINE	0123456789ABC 0123456 01	2 LINE	012 ABC			
18 x 24	1 LINE	0123456789 0123456ABC					
24 x 32	1 LINE	012345ABCD					
30 x 40	1 LINE	012345ABCDEF					
36 x 48	1 LINE	012345ABCD					

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