KEYENCE

516-903-0743

Continuous Inkjet Printer

MK-G Series

Simple

Reliable

Predictable





Continuous Inkjet Printer

MK-G Series

World’s first self-troubleshooting continuous inkjet printer

Building a reliable inkjet printer has always been a top goal at KEYENCE.
The newly developed MK-G Series furthers that goal with automatic processes that eliminate the need for user input, making it ideal for solving a wide variety of production site needs.

Simple

No prior inkjet printer experience is required.

Reliable

Robust design eliminates conventional risks.

Predictable

Automatic error detection and corrective maintenance.

The Evolution of KEYENCE Continuous Inkjet Printers

KEYENCE has been a leader in the ink jet printing industry since releasing its first generation printer in 1999. Each new generation of printer was designed to drive progress while meeting the needs of our customers.

1st, 2nd, and 3rd Generations

Automated, simple maintenance to keep production lines moving

These models automated and simplified work that would otherwise have been done manually.
This helped reduce the amount of employee interaction with the printer.





4th Generation

Reduction of ink and solvent exposure

Measures were taken to reduce operator exposure to ink and solvent in order to make the printer safer to use.

5th Generation

New solutions for today’s challenges

Today, it is increasingly necessary for equipment that can be operated without any specialized product knowledge or skill. By including functions that eliminate the need for user input, the 5th generation of the KEYENCE MK ensures smooth printer operation.



NEW
MK-G



Consistently superior print quality



Hands-free cleaning

Auto-shower Cleaning

The auto-shower cleaning function of the MK-G Series cleans not only the ink path but also all components necessary for maintaining print quality. Suction during cleaning also helps to reduce odors. After cleaning is complete, the built-in blower automatically dries the head.



Conventional head cleaning

Manual cleaning was required to wash residual ink off the inside of the head.



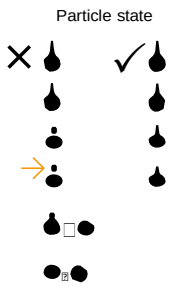
Auto-shower cleaning

In addition to cleaning the ink paths, the key parts of the head are also subject to high-pressure cleaning. This negates the need for manual cleaning.

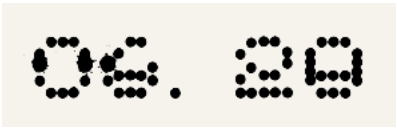
Eliminate temperature-based printing problems

Automatic Ink Particle Optimization

The surrounding environment, temperature, and ink viscosity all have an effect on the condition of ink particles and their suitability for printing. The MK-G Series senses the ink particles 10 times per second, which enables automatic adjustment to ensure the best conditions. This allows the device to provide superior printing at all times, regardless of the environment.



If the optimum ink state is not maintained, the inside of the head may become dirty, and print quality may deteriorate.



Less-than-optimal state of particles



Optimal particle state

No ink dilution due to cleaning operations

Conditioning Tank System

When ink becomes diluted, print quality deteriorates. The MK-G Series is equipped with a viscosity sensor and a conditioning tank for collecting solvent after cleaning. This prevents ink dilution and ensures print quality remains stable.

3 Main Advantages

Powerful cleaning

Thorough washing with no ink dilution.

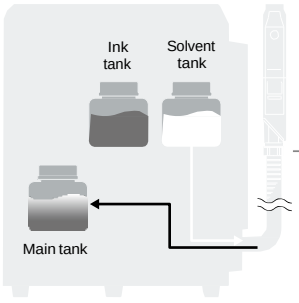
Dark printed text

Ensures dark and distinct printing.

No draining necessary

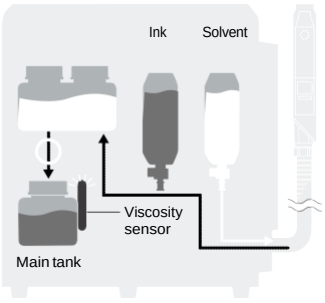
Reduced costs by eliminating wasteful drainage.

Conventional



When washing is performed, the ink viscosity decreases.

MK-G Series



The conditioning tank is used for temporary storage to prevent dilution of the ink.

* Included with MK-G1000/MF and MK-G1100 models.

Self-diagnosis and optimal cleaning with the MK Dock



MK Dock

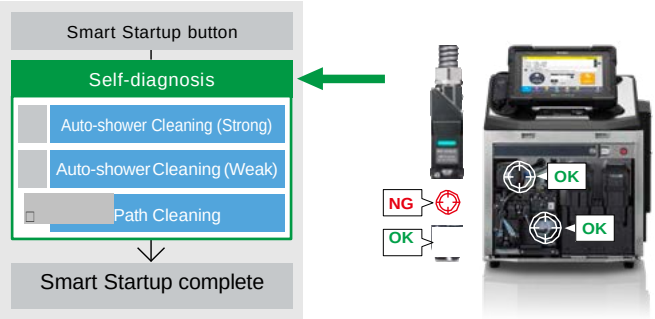
When the print head is placed in the MK Dock, the unit will perform self-diagnosis to check for faults and automatically resolve the issues. A bright LED enables users to see the printer status even from far away.

Self-diagnosis followed by automatic cleaning when necessary

INDUSTRY FIRST

Smart Startup

To start the MK-G Series, simply press the Smart Startup button. The printer will automatically obtain the device status and select the necessary cleaning method. Cleaning is performed only when required and the minimum amount of solvent is used, significantly reducing running costs.

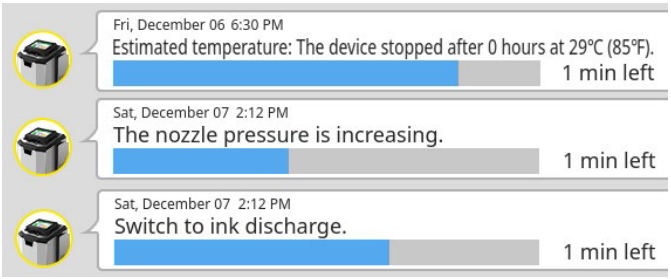


Using the MK Dock enables self-diagnosis and cleaning to ensure stable startup.

Continuous monitoring with notifications of important information

Notification Function

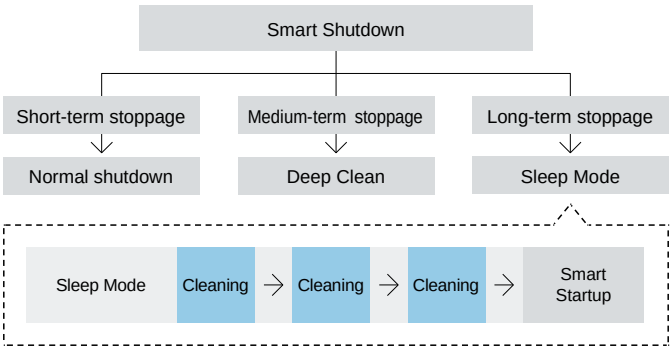
Important information regarding nozzles, solenoid valves, optimal ink viscosity for the current temperature, and more is monitored continuously. This information is displayed on the console in real time alongside MK-G Series status and error information.



Regular cleaning according to usage schedule

Sleep Mode

If the head is stored in the MK Dock when in Sleep Mode, the elapsed time and ambient temperature are detected, and cleaning is performed as required. This has a profound impact on preventing sticking in the nozzles and ink paths. The device can be started up whenever needed, ensuring reliable printing.



Even if the device is not used for a long time, periodic circulation is performed to prevent sticking.

Robust design



No need to worry about water exposure

IP55-rated Head & Controller

In addition to the controller and console, which were rated IP55 in previous models, the new MK-G Series incorporates an all-around IP55 structure, including the head, the MK Dock, and the Operation Assist Camera. The head is rated IP55 when not ejecting ink.



The MK-G Series is rated IP55, making it both waterproof and dustproof.

Solid jacket provides superior fall protection

INDUSTRY FIRST

MIL Standard-compliant Drop-resistant Structure

The head and console—two components often picked up and moved—come equipped with a robust, dedicated jacket. The structure of these devices, as well as the Operation Assist Camera, can withstand accidental drops.



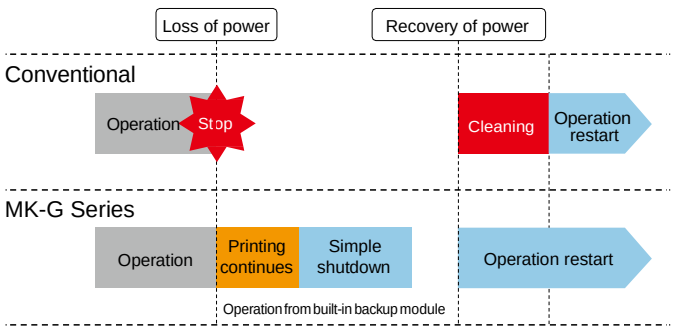
Both the head and the console comply with MIL Standard drop evaluation requirements.

Automatic shutdown even in the event of a sudden loss of power

INDUSTRY FIRST

Backup Module

The MK-G Series is available with a built-in backup module. This unit provides another 2 seconds of printing before a simple cleaning and shutdown is performed, even if the power cable is unplugged or a power outage occurs such as during a storm.



In the event of a momentary power failure, printing continues for 2 seconds. In the event that the power outage lasts longer than 2 seconds, the head is cleaned and the shutdown process is performed.

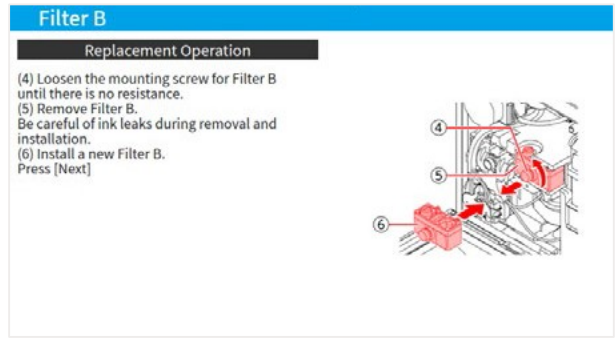
Tool-free part replacement with illustrated instructions



Simply follow the on-screen instructions to solve problems

Maintenance Guidance

Even in the event of a sudden error, illustrations that can be used to solve the problem are displayed on the console. Users are interactively guided through each step while checking the machine status, making it possible for inexperienced workers to complete tasks without having to worry about taking too long or making mistakes.



Quick recovery in the rare event of nozzle clogging

One-touch Nozzle Replacement

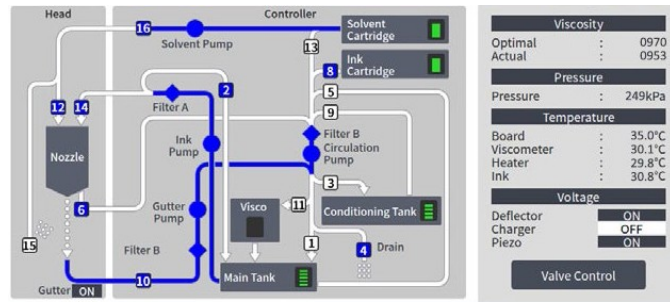
The main cause of problems with inkjet printers is clogging in the nozzle. In the event cleaning does not solve the problem, the MK-G Series enables quick replacement without the need for tools. This helps minimize downtime.



Easy-to-understand condition checking

Path Monitor

The path monitor offers a real-time look at solenoid valve conditions, temperatures of critical components, tank levels, ink viscosity, and flow rate.
By incorporating KEYENCE's proprietary sensor technologies to enhance self-diagnostic capabilities of the MK-G Series, immediate detection of abnormalities for predictive maintenance is possible and superior reliability is achieved.



Constant monitoring of internal conditions helps ensure the optimal conditions for each device.

Conventional systems

Special safety equipment is necessary for maintenance





Head Cleaning

Chemicals are needed to clean the print head. This means operators are at risk of being exposed to or inhaling the chemicals.



Solvent Refilling

Refilling the ink or solvent from tanks or bottles can result in chemical evaporation, and spilling the chemicals can lead to direct exposure.



Filter Replacement

When replacing the filter, the operator may come into direct contact with the ink or solvent, so equipment for preventing exposure is necessary.



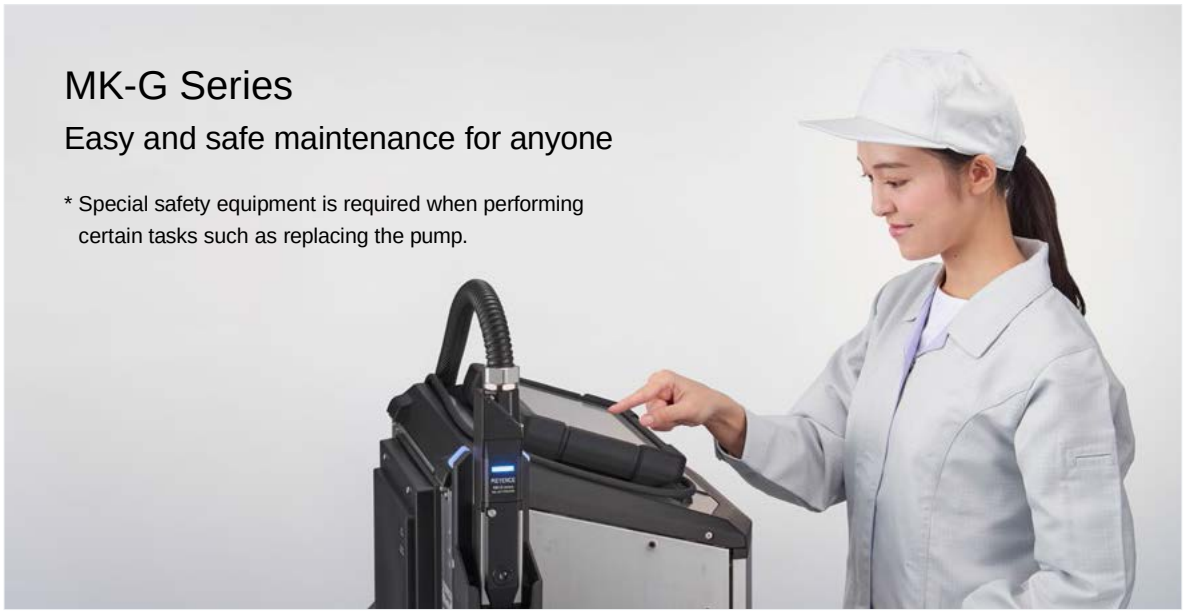
Ink Draining

Draining the ink or solvent from the tank can result in operators being exposed to or inhaling the chemicals. This means a structure that prevents operators from coming into contact with the chemicals is necessary.

MK-G Series

Easy and safe maintenance for anyone

* Special safety equipment is required when performing certain tasks such as replacing the pump.





Auto-shower Cleaning Function

Placing the print head in the MK Dock prevents chemical evaporation during cleaning by using an automatic shower. This eliminates the risk of exposure to the chemicals.



Ink & Solvent Cartridge System

There is no need to pour ink or solvent into the tank, eliminating the risk of evaporation and spills. When a cartridge runs out, simply replace with a new one with just one touch.



One-Touch Replacement

The filter replacement procedure prevents ink leakage and does not require any tools.



Connected-Cartridge Draining

To prevent chemical leakage, firmly affix the bottle and cap before draining. This ensures operators are not at risk of being exposed to or inhaling the chemicals.

Remotely perform checks and operations



Check status and perform operations from the Web

Web Console

Connecting the MK-G Series to the Web via Ethernet makes it possible to check the status of the printer from a PC or smartphone. Check remaining ink and solvent levels, or change the print details without ever being on-site.



Get the device status anytime, anywhere.
* The MK-G Series does not come equipped with Wi-Fi connectivity.

Email notifications in the event of problems

E-mail Notification Function

Whether just before the ink or solvent runs out, or just after a problem occurs, the MK-G Series is capable of sending out notification emails to a PC or smartphone. These emails ensure users get the on-site information they need in a timely manner, regardless of where they are.



Information on errors is sent by e-mail, making sure users get the information they need quickly.

Graph-based operation status and error checking

Performance Analytics

The hourly operation status of the MK-G Series is displayed on a graph. Visualize a wide range of information including error counts, operating hours, temperature, and viscosity as far back as 100 days.



View a graph showing the MK-G Series operation status.

Change settings and character strings using just the camera

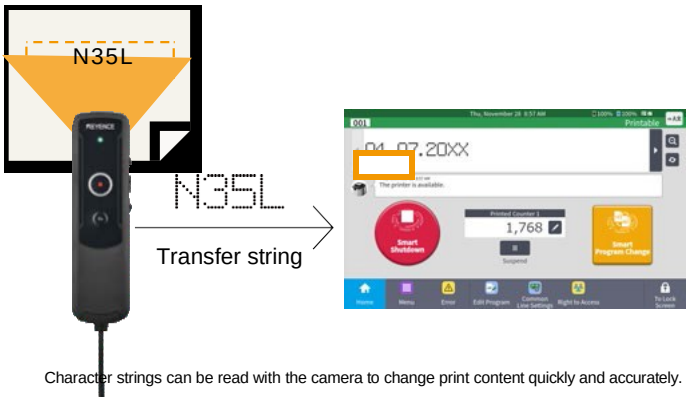


Correction of print details simply by scanning text

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Changing Character Strings Using the Camera

Easily change print content simply by reading a barcode or character string on a work order or other location. With no need for input from the console, mistakes can be prevented altogether.



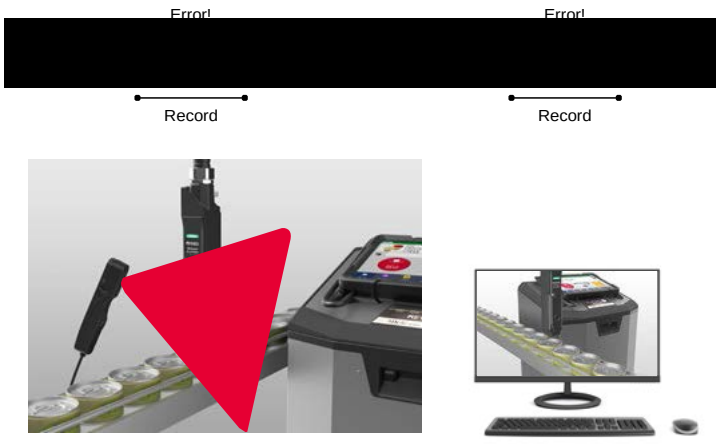
Character strings can be read with the camera to change print content quickly and accurately.

At-a-glance cause identification

INDUSTRY FIRST

Event Recording Function

Add an Operation Assist Camera to the line to take advantage of the Event Recording functionality. This provides a record of the equipment situation just before and after a problem occurs—a period most essential for handling errors. The Event Recording function is particularly useful for cause analysis.

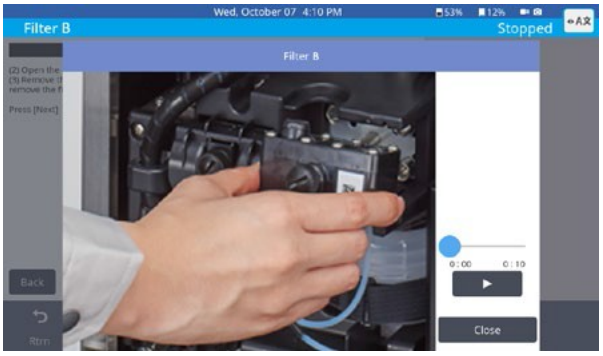


Using the camera to record printer situation info before and after errors makes it easy to analyze problems.

Access helpful component replacement instructional videos

Replacement Instructional Videos

When replacing a component, simply read the barcode or 2D code on the component to watch a helpful instructional video. These easy-to-follow videos make replacement simple even for beginners.



Simply follow the instructional video for error-free replacement.

Inspection device linking with just a LAN cable

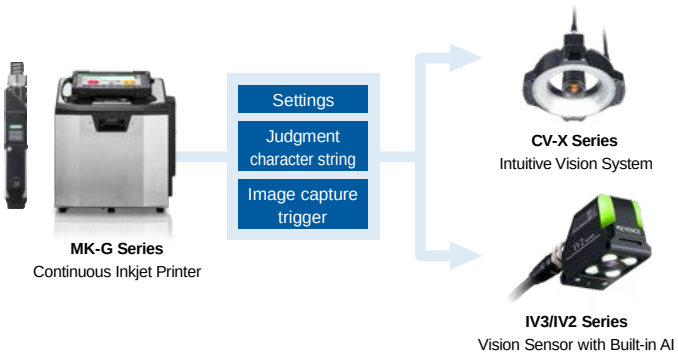


Vision Sensor with Built-in AI
IV3/IV2 Series

LAN cable connectivity

Direct Connection to Print Inspection Equipment

The MK-G Series can be easily linked to a print inspection device by connecting a LAN cable. Easily transfer settings, judgment character strings, image capture triggers, and more. Print inspection devices ensure products are not released if printed details are missing or incorrect, providing an extra layer of reliability.

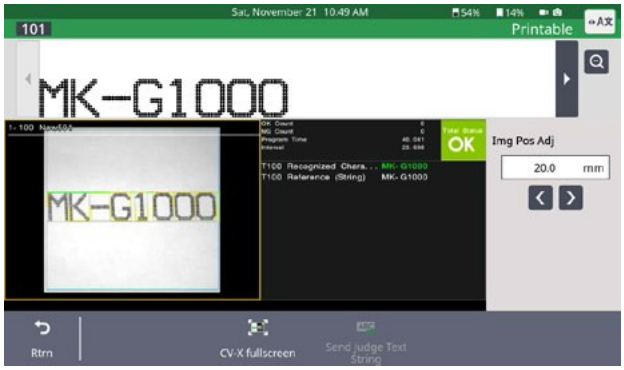


Easily link to a print inspection device with just a LAN cable.

Onscreen display of print inspection results

Print Inspection Device Display

The console screen on the MK-G Series can be used to view the print inspection device display for immediate verification of inspection results when changing print settings. Inspection device settings can also be changed directly on the screen.



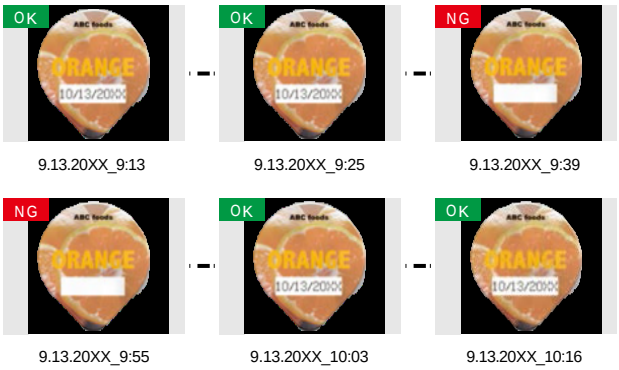
View the inspection device display directly on the console screen.

Print inspection history

Capture Data Storage

Image data captured using an IV3/IV2 Series Vision Sensor can be saved to a USB memory device in the MK-G Series and retrieved for

has shipped. This is useful for tracing the causes of problems.



Save captured data to check inspection results for shipped products.

Other standard functions

Useful functions and capabilities



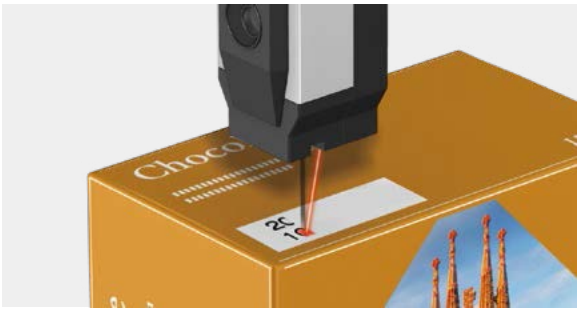
One-touch connector

The ability to connect I/O signal devices such as sensors and encoders makes moving the MK-G Series to a different production line simple. Line operation can be continued with as little interruption as possible.



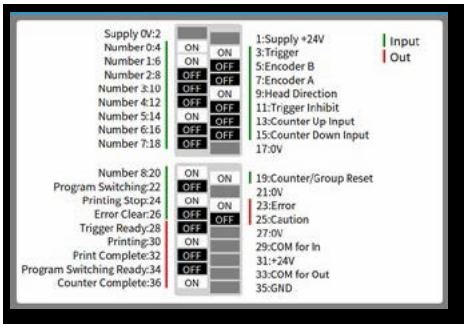
Operation Reports

Record and manage tasks easily and reliably by capturing the initial print conditions using the Operation Assist Camera and outputting operation reports at the start and end of production.



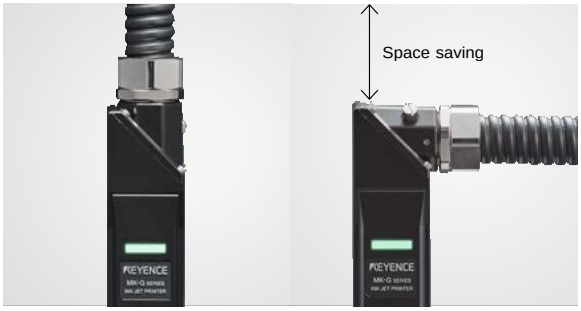
LED pointer

The MK-G Series is equipped with an LED pointer that indicates the print location. This makes it easy to align the print position on the line. This feature is extremely useful for lines that undergo retooling and/or product changeovers.



Terminal block monitor

The terminal block monitor displays terminal block ON/OFF statuses and simulates output. Input/output signal statuses can be seen at a glance for improved startup efficiency and checking in the event of an error.



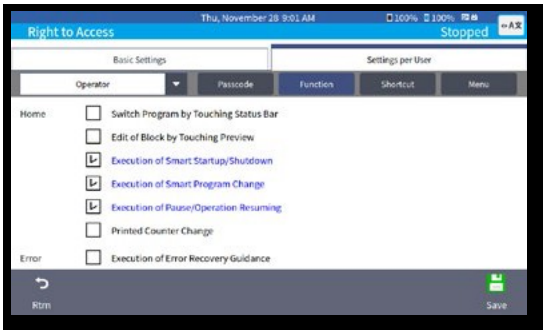
Head direction switching

The direction of the head cable can be changed by 90 degrees. This removes the inconvenience of cable routing, and makes it easy to install the device on a wide variety of lines.



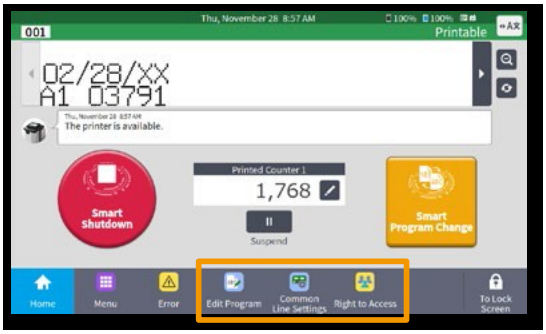
Long-distance mode

Printing can be performed with the print head located up to 35 mm 1.38" away from the target. This helps minimize variations even when a set printing distance cannot be guaranteed, such as with bagged products.



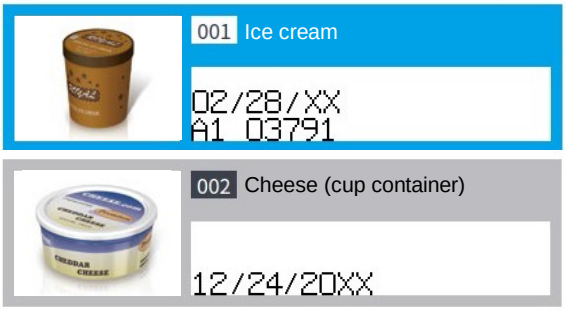
User management function

Multiple user profiles can be created, each with a unique password. This allows supervisors to lock out certain functions and prevent mistakes.



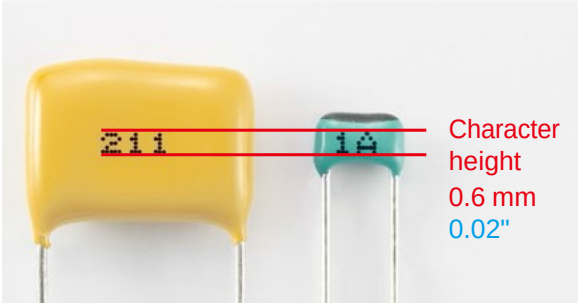
Shortcut function

Shortcuts for frequently used operation buttons can be placed at the bottom of the screen, allowing for faster navigation of the console and thereby increasing workability.



Registering Images Using the Camera

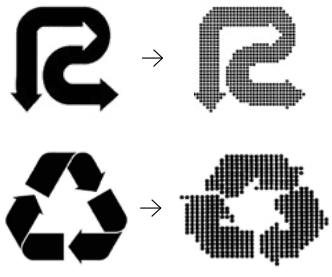
The Operation Assist Camera can be used to save both captured product images and product names at the same time. This makes it possible to tell instantly if the settings have been changed correctly, thereby reducing the risk of printing mistakes.



Printing of extremely small characters

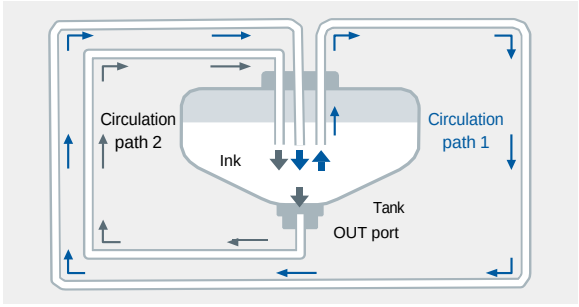
The MK-G Series includes a extremely small-diameter 40 µm 1.57 Mil nozzle for printing small characters and 2D codes.

* MK-G1100 small character type



Logo converter

BMP, JPEG, and other image files can be automatically converted into logos. This is useful not only for company logos, but also foreign languages that do not use alphabetic characters.



Dual circulation system

The new structure of the MK-G Series prevents precipitation and solidification of pigment inks by constantly circulating the ink during operation.

* Included with MK-G1000PY/PW models.

Applications

Flexible usage in various production lines beyond food and cosmetic manufacturing

Printing examples



Form-filled packages



Cartons



Glass containers



Plastic bottles



Packaging film



Cardboard boxes



Heat-sealed packages



Bottle labels



Film



Pipes



Paper tubes

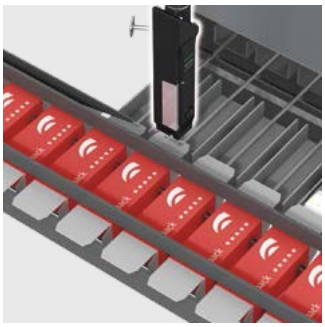


Cans

Installation examples



Vertical form-filled packaging machine



Cartoner



Grip conveyor



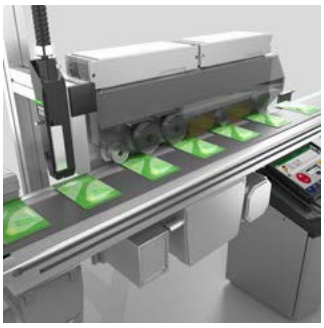
Line conveyor



Designated conveyor



Sealer



Heat sealer



Hopper labeler



Defect inspection printing



Extrusion molding machine



Conveyor (diagonal application)



Conveyor (horizontal application)

Optional accessories for even greater convenience and simplicity



MK Dock

MK-D1A / MK-D1B

Keeps the head in the optimum condition when storing after use.



Operation Assist Camera

MK-C1

Multi-function smart camera for switching character strings and settings or Event Recording functionality.



Backup Module

MK-B1W

Prevents problems from occurring in the event of a power outage.



QD Unit

MK-QD1

Enables smooth replacement for devices with quick disconnects for the I/O signals.



Nozzles

OP-87836/OP-87837/ OP-87838/OP-87839

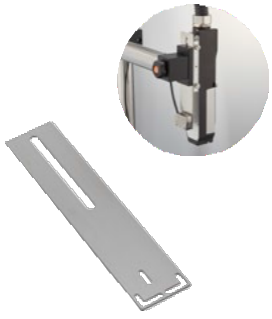
One-touch replacement of clogged nozzles.



Snap-on Attachment

OP-35373

Used to mount the head and enables one-touch removal.



Sensor Bracket

OP-78632

A sensor bracket that can be used to adjust the sensor distance and direction.



Stand (Pole + Base)

OP-87826/OP-87827

For mounting a print head at a specific height or angle.

A wide range of inks and solvents to choose from



Standard ink

MK-10

Fast-drying, highly versatile black ink for clearer black printing.



Strong-adhesive ink

MK-13

Highly adhesive ink suitable for film and other hard-to-print-on materials.



MEK-free ink

MK-14

Safe and reliable ink with no MEK.



Yellow ink

MK-30

The easiest pigment-type ink to use.



White ink

MK-33

Pigment-type ink for greatly improved maintenance.



Solvent

MK-20

Solvent for cleaning and controlling the viscosity of MEK ink.



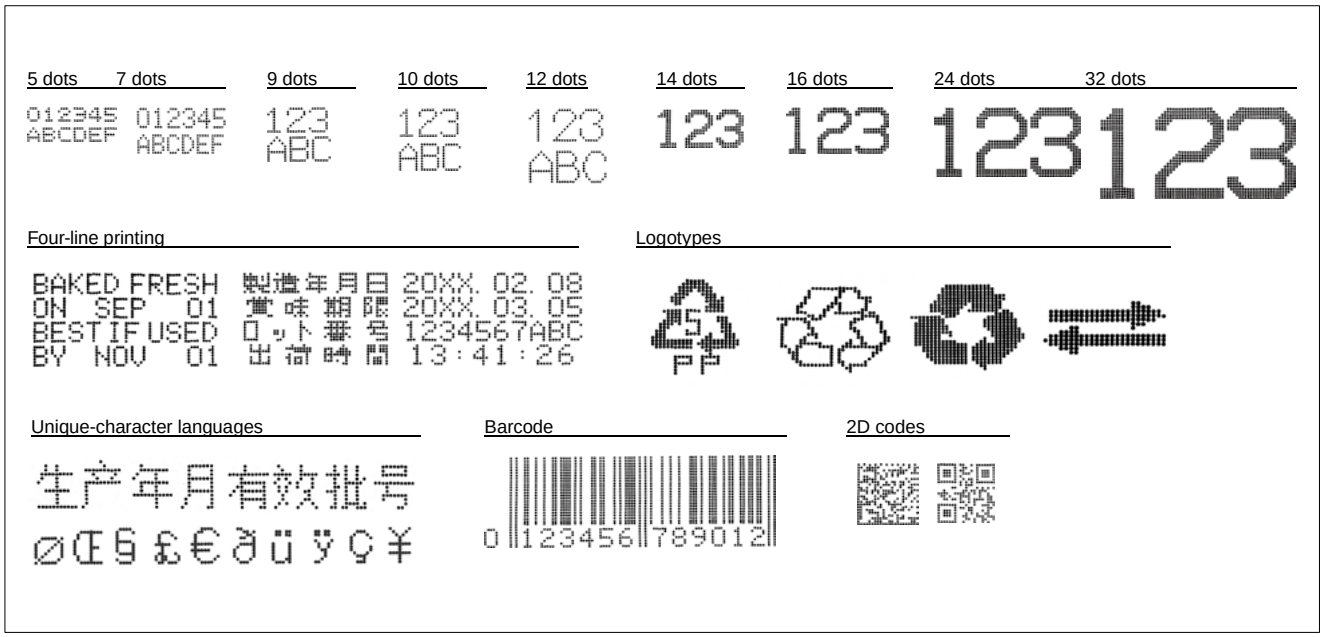
Solvent for MEK-free ink

MK-21

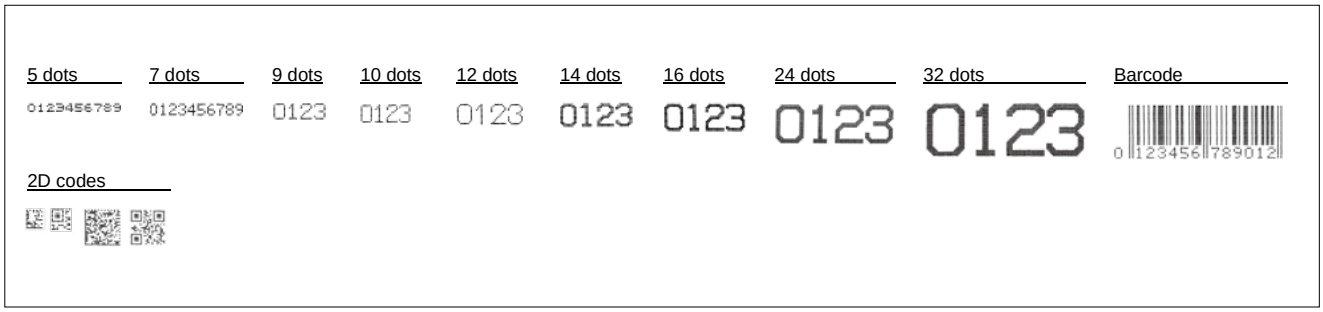
Solvent for cleaning and controlling the viscosity of MEK-free ink (MK-14).

Printing examples (actual size)

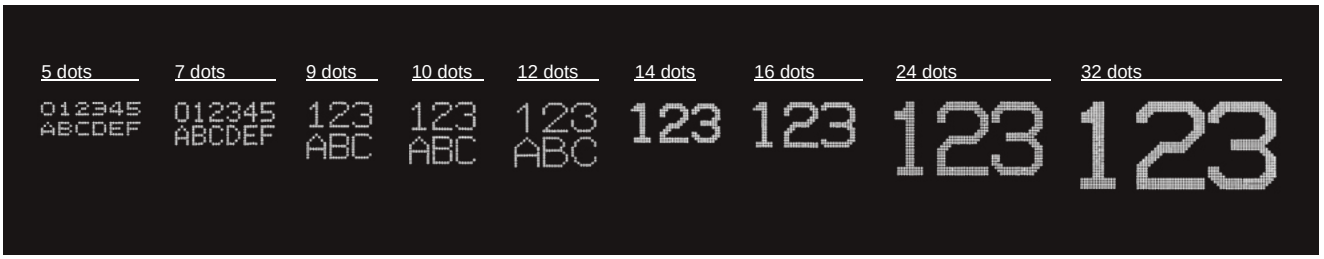
Standard ink type **MK-G1000**



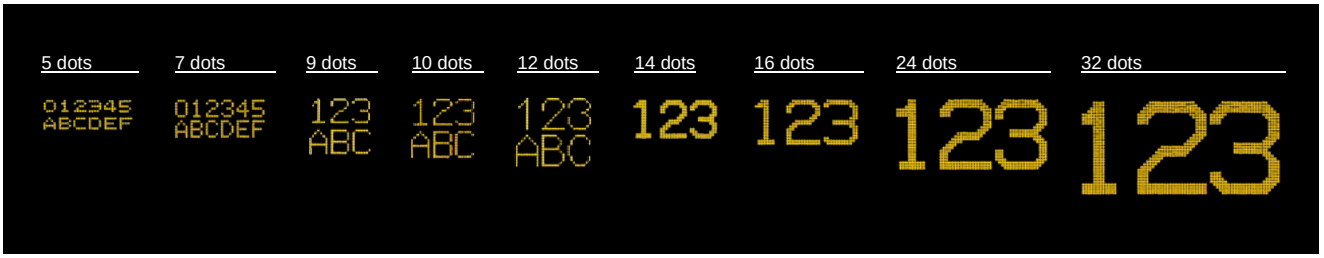
Small character type **MK-G1100**



White ink type **MK-G1000PW**



Yellow ink type **MK-G1000PY**



Specifications

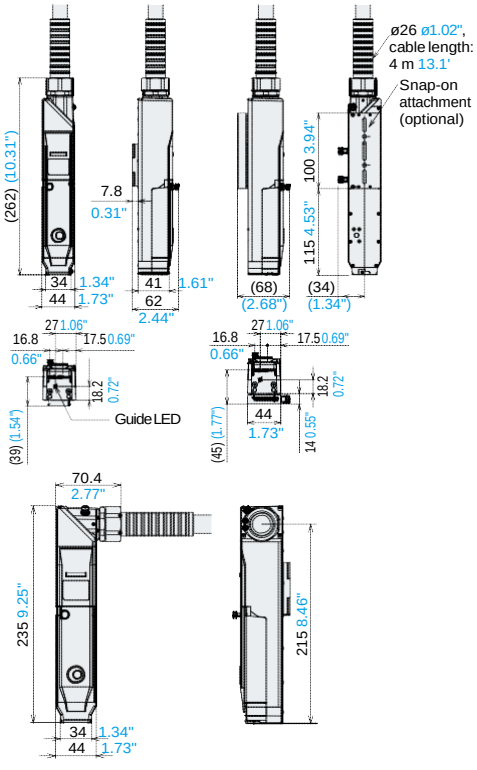
Model	Main unit	**MK-G1000/SA**	**MK-G1000MF**	**MK-G1000PY/PW**	**MK-G1100**
	Ink	Standard ink	MEK free ink	Yellow ink/White ink	Standard ink
	Touch panel console	**MK-P5**			
Character height		1 to 12 mm 0.04" to 0.47"			0.6 to 7 mm 0.02" to 0.28"
Maximum number of printable lines		6			
Dot configuration (vertical)		5, 7, 9, 10, 12, 14, 16, 24, 32 dots			
Font		Original, Serif, Sans Serif			
Character types		Alphabetic characters, numbers, katakana, hiragana, symbols, kanji (JIS levels 1 and 2), Chinese (GB2312), Latin characters, logotypes, custom characters (fonts created by users)			
Barcodes		CODE39, ITF, NW7 (Codabar), 2of5, CODE128, JAN/EAN/UPC, check digit addition function (except for 2of5)			
2D codes		QR code models 1 and 2, Micro QR, DataMatrix (ECC200)			
Head distance		15 mm 0.59" (24 dots or less), 20 mm 0.79" (25 dots or more), 35 mm 1.38"			10 mm 0.39"
Head direction		All directions			
Positioning guide		Guide printing, guide beam emission			Guide printing
Maximum printing speed*1		2525 characters/sec	2349 characters/sec	2525 characters/sec	1827 characters/sec
Print data registration		500 settings			
Functions		Automatic calendar, expiration date, hold printing for desired time, automatic counter, 2- to 36-number system counter, automatic operation, character direction setting (90, 180, 270 degrees), double-width character, logo creation, font creation, character height and width adjustment, sensor pass fi , workpiece-stop alarm, input time constant setting, barcode comparison setting switch, automatic setting switch at print completion (group printing), terminal block monitor, communication buffer, error level change, CV-X link, IV3/IV2 link, MK link, smart startup/shutdown/recovery (when connected to MK Dock), smart program change, operation report (when connected to Operation Assist Camera), Event Recording (when connected to Operation Assist Camera), access rights confi Web Console*2, E-mail notifi Customization functions			
Maintenance functions		Automatic nozzle cleaning, ink draining, internal cleaning, jet operation (nozzle and gutter suction, intermittent spraying), error display, error history, maintenance history, internal path monitor, maintenance guidance, replacement instructional videos (when connected to Operation Assist Camera), error clearing guidance, auto-shower, sleep mode (when connected to MK Dock), path recovery			
Input (NPN/PNP)		Printing start, encoder (A, B), setting number selection, setting number switching, printing start disabling, printing stop, printing direction switching, counter/group reset, counter increase (startup), counter decrease (shut down), error clearing, head detection input, Event Recording input (when connected to Operation Assist Camera)			
Output (NPN/PNP)		Error, caution, printing ready, setting switch ready, busy (printing), printing complete, counter complete (image capture trigger), service power supply (24 V)			
Console display language		Japanese, English, Chinese, Thai, German, French, Italian, Spanish, Portuguese, Dutch, Polish, Czech, Hungarian, Slovenian			
Interface		RS-232C, USB 2.0*3, Ethernet (100Base-TX/10Base-T)			
Print head cable length		4 m 13.1'			
Console cable length		4 m 13.1'			
Operation Assist Camera cable length*4		2.8 m 9.2'			
MK Dock cable length*4		4 m 13.1'			
Ratings	Power supply voltage	Single-phase, 100 to 240 VAC ±10%, 50/60 Hz			
	Power consumption	150 VA			
Environmental resistance	Ambient storage temperature	-10 to +60°C 14 to 140°F (No freezing)			
	Ambient operating temperature	0 to 45°C 32 to 113°F	5 to 35°C 41 to 95°F	5 to 40°C 41 to 104°F	
	Ambient operating humidity	0 to 90% RH			
Housing		Stainless steel			
Enclosure rating		IP55*5			
Drop resistance		Compliant with MIL-STD-810G Change 1 Method 516.7 Procedure IV Transit Drop*6			
Weight	Main unit	30.9 kg		31.5 kg	30.9 kg
	Console	1.7 kg (with jacket: 2.1 kg)			
	Operation Assist Camera*4	0.25 kg			
	MK Dock*4	MK-D1A: 1.0 kg, MK-D1B: 1.15 kg			
Dimensions		465 × 388 × 499 mm 18.31" × 15.28" × 19.65" (W × D × H)			

*1 With 5-dot character, 1-line printing with 1-dot character spacing. *2 The Web Console can only be used in the following environments. Microsoft Internet Explorer 11, Microsoft Edge 84, Google Chrome 84, Mozilla Firefox 79, iOS/Safari 604, Android OS 9/Chrome 84. *3 Usable size for USB memory devices: 65 × 25 × 18 mm 2.56" × 0.98" × 0.71" (W × D × H) *4 Operation Assist Camera and MK Dock are optional accessories. *5 The print head is IP55-rated when not ejecting ink. The console, Operation Assist Camera and the MK Dock (without waste ink bottle attached) are also IP55-rated. *6 Print head, console, and Operation Assist Camera only. When the print head and console are fi with a jacket. The drop resistance does not guarantee against destruction or failure.

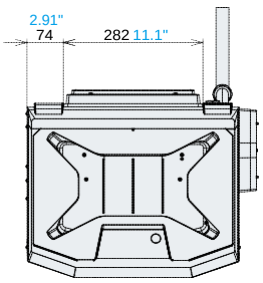
Dimensions

Unit: mm inch

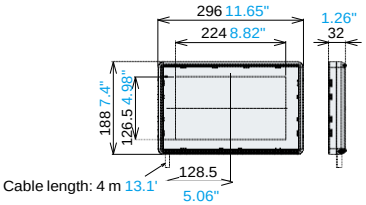
Print head

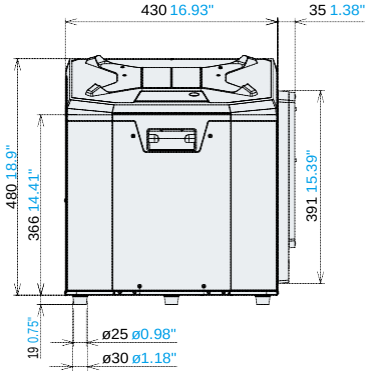


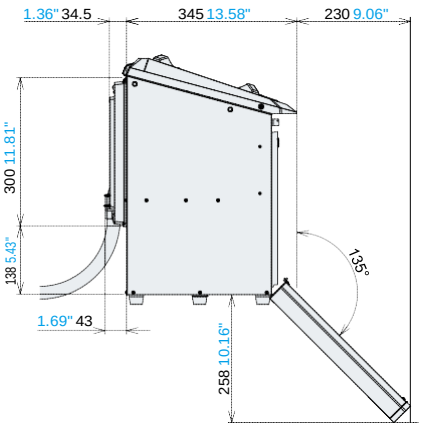
Controller



Console **MK-P5**







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