

A4 LED Color Printer/MFP: New C5/MC5 Series

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Utilizing the unique features of its proprietary LED head, OKI Data provides printers/MFPs that are simple in structure, high in durability and easy to maintain. In addition to improving the basic functions and performances, the control panels of the newly developed C5 series color printers and MC5 series color MFP have been greatly revamped for further advancement in operability and maintainability. Features of the C5/MC5 series are introduced below.



Photo 1. C542dn A4 Color LED Printer



Photo 2. MC573dn A4 Color LED MFP

toward colorization and enlargement of the control panel to ease the operation for users. To improve operation further, machines equipped with a touch panel are also increasing. In response to this trend, operational improvement became the subject of development for the new models. The 7-inch color touch panel used on the MC8 series A3 color MFP, already on sale, was ported over to the new MFP to achieve the same ease of operation and operational consistency as with the MC8 series. Additionally, taking full advantage of the large panel's features, guidance for replacing consumables and troubleshooting procedures is displayed in an easy-to-understand manner to allow users to deal with the tasks on their own. The 7-inch panel was also installed in printers to enable the same ease of operation as the MFP in facilitating the replacement of consumables and troubleshooting, and at the same time make it possible to print data stored internally through a simple operation.

The specifications of the C5/MC5 series are shown in **Table 1**.

Table 1. C5/MC5 Series Specifications

	C532dn	C542dn	MC573dn
	A4 Color LED Printer		A4 Color LED MFP
Print Speed (A4 Single Side)	Color: 26 ppm Monochrome: 30ppm		
Print Resolution	1200dpi		
FPOT	7.5 secs (color, monochrome)		
Paper Capacity (80g/m ²)	Standard: 250 sheets Maximum: 1,410 sheets		
Control Panel	2.4-inch monochrome panel	7-inch color touch panel	
Interfaces	10BASE-T/100BASE-TX/1000BASE-T, USB2.0, IEEE802.11 a/b/g/n (optional)		
Dimensions (WxDxH)	427x571x276mm		427x576x472mm
Weight	Approx. 23kg	Approx. 24Kg	Approx. 31kg

Product Overview

C5 series and MC5 series are desktop A4 color printers and MFP, respectively. Since desktop A4 MFPs are generally equipped with many functions such as printing, copying, scanning and faxing, there is a trend

Mechanism and Design

Control unit attached to the scanner unit in the previous models was moved to the printer side, and together with

the adoption of the 7-inch color panel, the printer and MFP operation was made the same. Placement of the control unit on the printer side ensured the visibility of the panel even when the scanner unit is opened. Furthermore, a tilt mechanism allows the control unit to be adjusted toward the user so that maintenance, such as image drum/toner replacement and paper removal during a paper jam, can be easily performed while referencing the guidance displayed on the panel.



Photo 3. Maintenance

The exterior design as a whole consists of tight curved surfaces, and such smooth surfaces results in a simple clean design. While the pale white and light black coloring adds a feel of inheritance to the design, the soft form provided by the corner R's (rounded corners) aligned in the longitudinal direction (front and back directions) together with the sharp ridgelines gives the design a novel image.

Function of Control Unit

In the previous A4 color MFP, the printer unit and scanner unit each had a CPU mounted on their respective control boards for distributed processing. These have been replaced by a single SoC (System-on-a-Chip), thus allowing the three new models (two printers and one MFP) to share a common control board. The input voltage (100V system/200V system) of the printers and MFP can also share the same power board, and together with the control board, cost can be reduced and the development period shortened.

Function of Firmware

The printer/MFP common platform realized with the development of the monochrome models has been colorized to build a common platform for all color printers/MFPs and leading to the production of C532/C542/MC573.

Main Functional Improvements

(1) New Authentication Printing Specification

In the previous models, access control function and ID authentication printing based on user authentication were added to the already supported password authentication printing/encrypted printing. However, the added function resulted in the loss of uniformity, made it difficult for users to understand, and degraded usability. Therefore, the new models were unified to a new specification for improved usability.

<New specification> (see Table 2)

- Shared job printing: for shared usage
No password/unencrypted, can be accessed by anyone
- Private job printing: for secure personal printing
User authentication/encrypted, linked with access control
Both supports printing/deleting from the job list improving convenience.

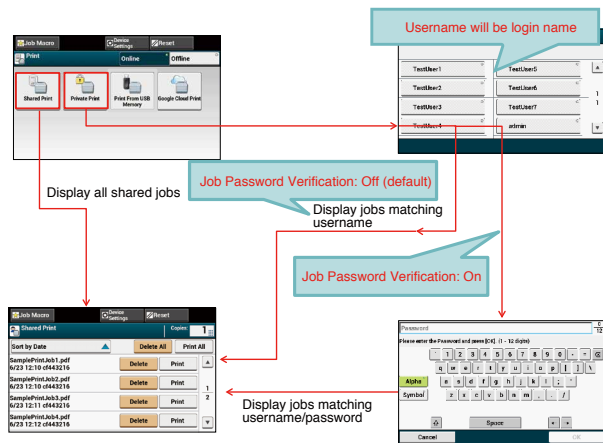


Figure 1. Illustration of Authentication Printing

Table 2. Authentication Printing Specification

	Shared Job Printing	Private Job Printing
Feature	Anyone can print	Only specific users can print
Password	No	Yes
Encryption	No	Yes
List Display	Yes	Yes
Access Control Link	No	Yes (Password not required if logged in)

(2) Expanded Network Function

Although the wireless LAN of previous models only supported infrastructure mode, in light of the recent popularity of smartphones and tablets, AP mode function (function to enable wireless connection directly with a

device without a wireless access point) has been added. Moreover, wired and wireless LANs could not be used at the same time in the previous models. Starting with these new models, the network function has been expanded to allow simultaneous use of wired and wireless LANs.

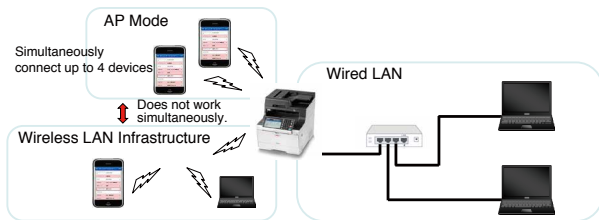


Figure 2. Illustration of LAN Connections

AP mode has the same function as Wi-Fi*¹⁾ Direct, and up to four devices can be connected simultaneously. The protocol supports 802.11a / b / g / n.

Apple's AirPrint*²⁾ and Google's Google Cloud Print*³⁾ are also supported, which enhances the convenience of use with smartphones and tablets.

Mobile Print Function

As of the end of 2015, household penetration rate of information and communication equipment was 72.0% for smartphones, 33.3% for tablets and 76.8% for personal computers¹⁾. The popularity of smartphones/tablets is spreading, and it is natural for printers/ MFPs to be utilized from these devices.

The use of smartphones/tablets with printers/MFPs is either the direct use of printer/MFP functions to print or scan documents or a secondary use in which smartphones/tablets are used to search the Internet for solutions when such problems as paper jam or printing failure occur.

In order to respond to such needs, a wireless LAN access point mode was implemented in the printers/MFPs. This allows smartphones/tablets to access the printers/MFPs directly for printing without the need to connect to the office backbone LAN.

In recent models, AirPrint for iOS and Google Cloud Print for Android have been implemented to support standard printing from smartphones/tablets. However, it is necessary to comply with the respective specifications, which makes it difficult to take full advantage of the unique

printer/MFP features without a proprietary app. Therefore, OKI Data provides a dedicated app called "Mobile Print."

On the TOP screen (Photo 4) of "Mobile Print," the user can select the printer or function. The app allows the printing of Web pages displayed in the app's built-in browser, photos and documents stored in the mobile device, and pictures taken with device's camera after preview and adjustments (keystone correction, monochrome conversion) are made.

Additionally in the Android version, documents can be scanned with the MFP then saved as files in the device or in the cloud via an app that supports cloud storage.

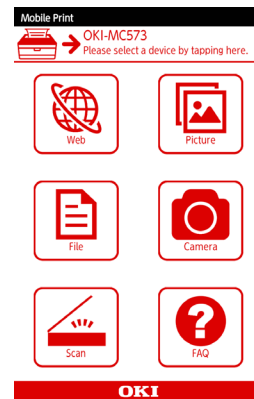


Photo 4. Example of TOP Screen

Furthermore, to aid in resolving problems such as paper jams and printing failures, there is a function to display the status of the machine and remaining amount of consumables before printing as well as a "search and resolve" function to display a FAQ site where the user can easily search for methods to solve problems. For troubleshooting, "Cloud Support" app is provided to offer more advanced support functions. If the print quality is poor, the sample of the printout can be scanned, linked with the machine then sent to the cloud. At the time of consultation with the call center, the sample printout can be referenced by the call center to provide a solution that will cope with the situation.

Solutions Support

Many MFP manufacturers have proprietary open platforms implemented in their machines to enable development of solutions that link with external business

*1) Wi-Fi is a registered trademark of the Wi-Fi Alliance. *2) Apple and AirPrint are trademarks of Apple Inc. registered in the United States and other countries. *3) Google, Android and Google Cloud Print are trademarks of Google Inc. Other company names and product names mentioned are trademarks or registered trademarks of their respective company.

software. The new models described here are implemented with OKI Data's own open platform called sXP (smart Extendable Platform). In addition to the basic network functions including receiving print data and MIB/SNMP for monitoring machine status, sXP provides three types of functions (services) for linkage with solution software as shown in **Figure 3**.

- (1) Built-in Web browser
- (2) Output management Web service
- (3) Scan Web service (only for MFP)

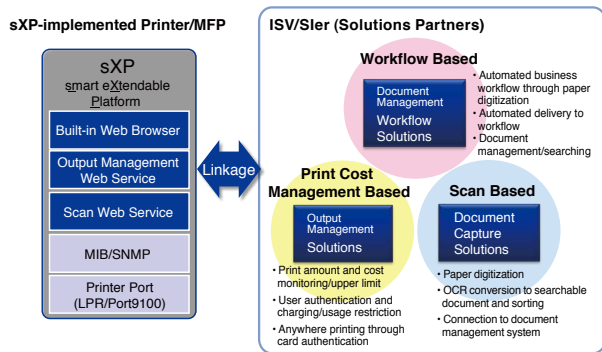


Figure 3. sXP Open Platform

Initially, open platform was available only in the MFPs, but the printers are now implemented with this function making solution development possible. The printers are implemented with following functions.

- (1) Built-in web browser
- (2) Output management Web service

The built-in Web browser displays the Web screen of the solution software on the printer's panel (touch panel). This allows the login and input operations for the solution software to be performed directly from the printer's control panel. The output management Web service is utilized by the print cost management software to obtain history information such as user authentication, printer function restrictions, number of printed sheets, and date/time for each user.

At present, numerous ISV (independent software vendor) solution software link with sXP-implemented printers/MFPs. OKI Data is working with each ISV to support new solution software in order to cultivate business projects and new markets in various countries.

The implementation of an open platform in the printers has opened the door to the development of new solutions for printers. ◆◆

References

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TIPPO [Glossary]

SoC (System-on-a-Chip)

A method of integrating all the functions necessary for the device or system on one semiconductor chip.