

Wireless Capable / Mobile Device Ready A4 Color LED MFP equipped with Wireless LAN Function : MC362w/MC562w

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OKI Data has been selling its MC351/MC361/MC561¹⁾ model printers to the world's A4 desktop and A4 small work group market segments. Using these models as base, new models that are wireless capable/mobile device ready, simple to operate and eco-friendly have been developed. This article introduces these newly developed MC362w/MC562w multi-function printers. The model shown in **Photo 1** is the top-of-the-line MC562w.



Photo 1. MC562w A4 Color LED Multi-Function Printer

Target Market and Product Concepts

(1) Market Trend

Until now, the PC has been at the center of the business PC/mobile device market. Recently, the mobile device market that includes smartphones and tablets has been expanding. **Figure 1** shows shipments of PCs/mobile devices. Compared to the flat shipments of portable and desktop PCs, high growth rates of 16.5% for smartphones and 24% for tablets are expected between 2012 and 2017. In 2017, shipments of smartphones and tablets are estimated to be 1,500 million and 350 million units, respectively, while PC shipment is at 380 million.

As a result of the above trend, there is growing demand for printing from mobile terminals as well as from PCs, which require printers/MFPs to be wireless capable and support printing from mobile devices. **Figure 2** shows what OKI Data predicts, derived from IDC research data,

will be the shipments of xerography-based printers/MFPs with wireless capability. Shipment of wireless capable equipment in 2012 was 12.22 million units or 32% of the total, but this is expected to grow to 59% reaching 28.8 million units by 2017.

In order to increase sales in this growing market, OKI Data has developed a line products based on its existing printers and applying the concepts of “wireless capable/mobile device ready”, “simple operation” and “eco”.

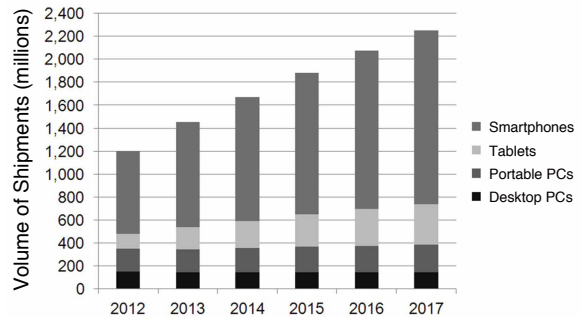


Figure 1. Worldwide Shipments of PCs and Mobile Devices²⁾

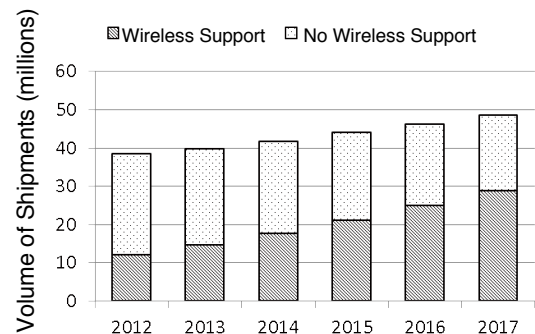


Figure 2. Worldwide Shipments of Xerography-Based Printers/MFPs

(2) Product Concepts

To differentiate from other manufacturers, the previous MC351/MC361/MC561¹⁾ models were developed using the concepts “high-speed/compact”, “simple operation” and “eco”. Along with the addition of the “wireless capable/mobile device ready” concept to meet market trend, the newer models continue the “simple operation” and “eco”

concepts making the printers even simpler to use and more eco-conscious.

In addition to the already available wired connection, “wireless capable/mobile device ready” offers connectivity to wireless networks, which is especially growing in the SOHO environment. Furthermore, printing from mobile devices such as smartphones and tablets is now possible.

“Simple operation” refines remote scanning and job macro operation making for a more simple and intuitive operation. Firmware update function has been implemented, which will enable addition of new functions and operability improvements through firmware upgrades.

”Eco” implements an auto OFF function (less than 0.5W) that complies with Europe’s Erp Lot 6 regulation.

(3) Product Specifications

Specifications for MC562w/MC362w are shown in **Table 1**.

Table 1. MC562w/MC362w Specifications

	MC562w	MC362w
Copy Speed (A4) Single Side Color/B&W	20/30cpm	20/24cpm
Copying Time from Start to Finish Color/B&W	17sec./12sec. (High Resolution)	
Magnification	25~400%	
Copy Density Adjustment	7 Levels (Manual)	
Operator Panel (3.5 inch LCD)	Yes	
Operator Panel (QWERTY Keyboard)	Yes	No
Print Speed (A4) Single Side Color/B&W	26/30ppm	22/24ppm
Print Resolution	600dpi	
Input Paper Capacity	250 Sheets	
Multi-Purpose Tray Capacity	100 Sheets	
FAX	Yes	
Wireless LAN	Yes	
Dimensions (WxDxH)	427x509x444mm	
Weight (including consumables)	29kg	

Wireless/Mobile Device Support

(1) Wireless LAN Function

The new models are the first OKI Data A4 color MFPs with wireless LAN capabilities.

IEEE802.11b/g/n wireless protocols are supported, and Wi-Fi authentication has been acquired to ensure interoperability between wireless LAN devices. WPS (Wi-Fi Protected Setup) and WPA (Wi-Fi Protected Access) are provided to simplify connection with wireless LAN devices and security setup.

(2) Wireless LAN Module Connection

To add wireless LAN function, a wireless bridge-type module was adopted to convert devices equipped with wired LAN ports to wireless.

Wireless LAN function was achieved by installing a LAN switch to the IEEE802.3 (10Base-T/100Base-TX) wired LAN port on the printer control board then switching the communication path between wired and wireless (**Figure 3**).

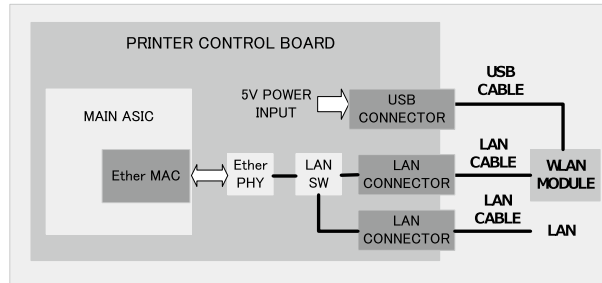


Figure 3. Diagram of Wireless LAN Module Connection

This method was previously adopted for the MB471w³⁾ model. Using circuit configuration essentially identical as the MB471w³⁾ printer control board and adopting the same wireless LAN module kept firmware development costs to a minimum.

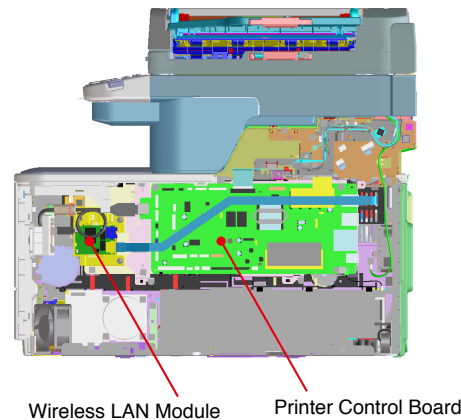


Figure 4. Internal Diagram of Board Implementation

(3) AirPrint™^{*1)}

Apple’s AirPrint is supported for direct printing from an iPhone^{®1)} or iPad^{®1)}. AirPrint is an architecture that enables printing from iOS/Mac OS X without a driver. Printing can be accomplished from AirPrint compatible applications with a simple operation.

*1) AirPrint, iPhone and iPad are registered trademarks of Apple Inc.

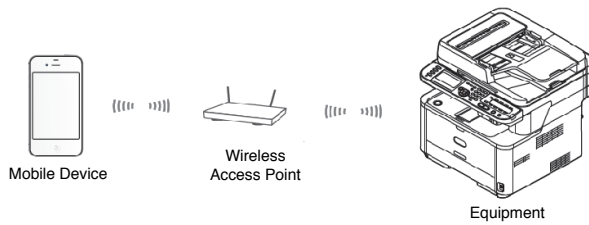


Figure 5. Diagram of Device Connection Using AirPrint

Simple Operation Design

(1) Wireless Network Search

To establish connection with a wireless access point, a function was added to search and display a list of active wireless access points from which the user can make a selection. If the access point does not support WPS, manual connection is necessary, and the procedure can be troublesome. In order to alleviate this problem, a search function was added to the wireless bridge firmware. Together with the addition of a function to display the found access points on the panel and a selection function, setup procedure was minimized to simplify the connection process.



Figure 6. Wireless Connection Setup

(2) One Touch Job Macros

One touch keys used to store fax numbers have been modified to double as Job Macro keys. Although Job Macros are convenient for storing multiple settings that are frequently used in copying, faxing or scanning jobs, the number of steps required to call up and execute the macros has been an issue. As shown in **Figure 7**, the modification allows a Job Macro to be called up using the one touch key thus reducing the steps required for execution.

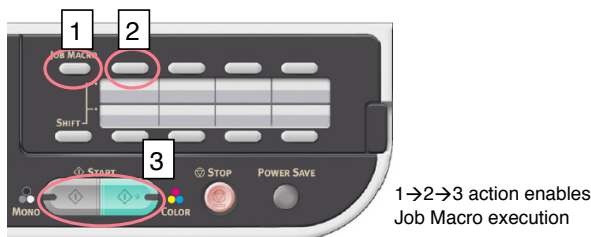


Figure 7. One Touch Job Macro Operation

(3) Firmware Update Function

End users can now automatically update firmware by visiting OKI's website and using the specialized web tool (firmware update tool). Previous equipment required a technician to update firmware. The new function allows firmware updates without calling a technician to the user site.

The firmware made available on Web is encrypted to ensure security.

(4) Remote Scan Modification

Remote scan function has been modified to enable scanning from standby mode. Remote scan is a function that allows scanning to be initiated from the PC. However, previous models first required the remote scan mode to be set using the operator panel before the scanning can be initiated. Despite being a remote function, the user needed to go to the equipment and operate the operator panel, which was an inconvenient task. The new mode was added to enable remote scanning without the need for panel operation. There are three remote scan modes as indicated below.

1) Simple Scan Mode

Remote scan is possible from standby mode. Panel operation is not required.

2) Manual Scan Mode

Mode must be set to remote scan using the operator panel. Scan can be initiated from any PC.

3) Secure Scan Mode

Mode must be set to remote scan using the operator panel. Scan can only be initiated from specific PCs.

Eco Design

(1) Sleep Mode

Like the previous OKI Data printers/MFPs, the new models are equipped with sleep mode. The MFP enters sleep mode to conserve energy when there is no user operation, fax reception or network print jobs for a certain length of time. In sleep mode, minimum power is supplied only to required circuits of the printer and scanner control boards thus reducing power consumption to less than 1.5W. When a specific button is pressed on the operator panel or there is a print job from USB/LAN or a fax reception, the MFP will wake from sleep mode and return to normal operation in approximately three seconds avoiding user frustration.

(2) Auto OFF Function

Similar to the previously developed MB491/MB471w/MB461³⁾, the new models come equipped with an auto OFF function that complies with Europe's Erp Lot6 regulation. If the MFP is not used for a certain length of time, it will automatically turn itself off for further savings in energy. Auto OFF function was achieved by implementing a low power sub-microcomputer onto the printer control board. This sub-microcomputer interacts with the ASIC on the printer control board to control the ON/OFF of the main power (Figure 8). Power consumption during the OFF state is less than 0.5W satisfying the Erp Lot6 regulation.

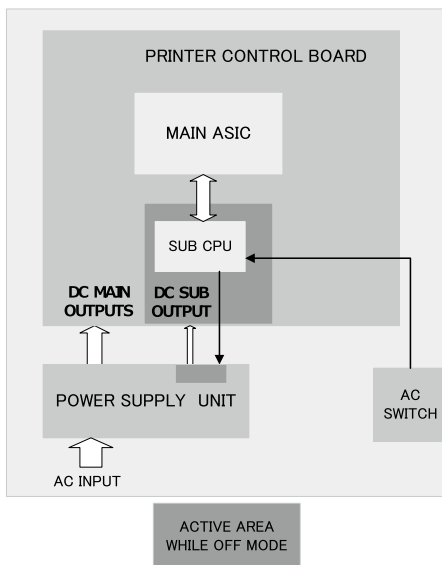


Figure 8. Block Diagram of Auto OFF Function

Summary

The presented compact color MFPs are “wireless capable/mobile device ready”, have “simple operation” and are “eco”-friendly all at a low cost. As demand for wireless/mobile device capabilities increase, plans call for support of Google Cloud Print²⁾ and continued development of products that respond to customer needs in a timely fashion. ◆◆

References

- 1) Hiroto Nonaka et al, “World's thinnest A4 color LED MFP with automatic duplex-scanning and printing units equipped: MC361/561”, OKI Technical Review, October 2011/Issue 218 Vol. 78 No.1, pp.50-55
- 2) DC, Worldwide Quarterly Smart Connected Device Tracker, 2013Q1

²⁾ Google Cloud Print™ is a registered trademark of Google Inc.

- 3) Hiroto Nonaka et al, “Compact and Fastest A4 Monochrome LED MFP Equipped with Automatic Duplex-Scanning and Printing Units MB491/MB471w/MB461”, OKI Technical Review (Japanese ver.), November 2012/Issue 220 Vol. 79 No. 2, pp.38-41

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TIPS [Glossary]

QWERTY keyboard

The term refers to the arrangement of keys on a standard PC keyboard. The name is derived from the first six characters, “Q-W-E-R-T-Y”, on the top alphabetic line of the keyboard.

Erp Lot6 Regulation

Erp is an eco-design regulation covering energy related products. Lot6 Tier 2 enforcement began on January 7, 2013 and requires automatic switching to OFF Mode, and in that Mode, power consumption must be less than 0.5W.

WPS (Wi-Fi Protected Setup)

Standard that simplifies wireless LAN connection and security setup. Wireless LAN connection can be accomplished by simply entering the passcode.

WPA (Wi-Fi Protected Access)

Standard for wireless LAN encryption defined to address the vulnerability issues associated with the previously used WEP. User authentication function and TKIP (automatically updates encryption key at regular intervals) were adopted to strengthen security.