New A4 LED Monochrome Printers B433dn/ B513dn Compliant with Environmental/Security Regulations and Offering Energy Saving/ Long Life for Eco-Friendly Operation

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Environmental issues such as global warming, resource depletion, and marine plastic waste have become more serious in recent years, requiring companies to be more environmentally conscious.

Moreover, with the advancement of telework and IoT, the risk of information leaks and cyberattacks via networks has increased, making it essential for printers and other IoT devices to also have advanced security measures and comply with regulations.

Furthermore, issues such as limited installation space, labor shortages, and the need for more convenient and efficient business operations have become more pronounced.

To meet these social needs, OKI has launched the new B433dn/B513dn printers with an updated print engine[1)] (**Photo 1**). The B433dn/B513dn printers not only comply with environmental and security regulations, but also reduce environmental impact through their energy-saving design and extended lifespan. These printers have also been developed with an emphasis on feedback from actual users. OKI is evolving its "on-site capabilities" based on customer voices from a wide range of industries and applications.

Photo 1. B433dn/B513dn Printers

Product Overview

The new printers leverage the advantages of the LED head to achieve a compact and simple design. They require 30% less installation space than previous printers, allowing them to be flexibly used in places with limited space availability such as medical, distribution, and service counters, as well as in back-offices. Additionally, to improve work efficiency, all maintenance can be completed by simply opening and closing the top cover, making rear access unnecessary. This enables users to easily perform maintenance without specialized knowledge or skills, and thereby significantly reduces burden on on-site personnel. As a result, downtime is reduced and stable operation is possible even in labor-shortage situations. B433dn/ B513dn are fitting as "printers that keep the workplace running."

From an environmental perspective, the energy-saving design and simplified parts replacement extend the printers' lifespan. The design that allows users to perform maintenance on their own reduces product disposal and replacement frequency, contributing to waste reduction and efficient resource utilization.

In terms of security, the printers comply with various regulations, ensuring reliability for use in companies and public institutions.

The printers' lifespan has also been significantly improved from the previous "5 years or 200,000 pages" to "7 years or 600,000 pages," providing durability assurance to industries that handle high print volumes. Additional improvements include shorter first print out time (FPOT) and warm-up (WU) time, enabling convenient operation suited to the business flow of various industries (**Table 1**).

Table 1. B433dn/B513dn Basic Specifications

	B433dn	B513dn
Print Speed	40 ppm	45 ppm
FPOT	4.5 sec	4.1 sec
WU Time	12 sec	
Control Panel	1.82 inch Monochrome graphic display	
Connectivity	Ethernet:1000BASE-T/100BASE-TX/10BASE-T, USB 2.0 Device (Type-B), USB 2.0 Host (Optional) Ethernet: 1000BASE-T/100BASE-TX/ 10BASE-T, Wi-Fi: IEEE802.11a/b/g/n/ac	
Dimensions	387 x 364 x 245 mm	387 x 394 x 286 mm
Life-Span	7 years or 600,000 pages	

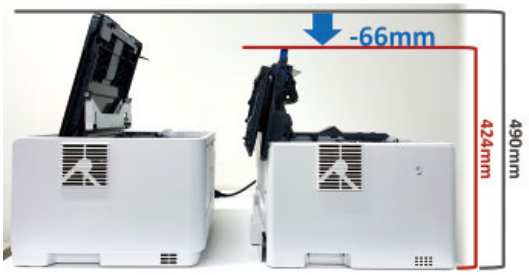
Space-Saving and Improved Maintenance

While maintaining the minimal footprint that was popular with previous printers, the "SpaceSaving Technology*1" has now significantly reduced the space required when performing maintenance.

- **Flip-Top Cover**

With previous printers, the entire top cover needed to be opened to replace toner cartridges and image drums or clear paper jams, which required clearance above the printers. The B433dn/B513dn printers' flip-top cover is divided into forward and rear sections. This reduces the cover's open height by 66mm, reducing the maintenance space above the printers (**Photo 2**).

Frequent tasks, such as replacing the toner cartridge, can be performed by opening and closing only the forward section of the top cover (**Photo 3**). For image drum replacement and paper jam removal, the top cover's rear section can also be opened to provide more working space, allowing for more efficient maintenance.



Previous B432dnw Printer New B433dn Printer

Photo 2. Flip-Top Cover

Photo 3. Toner Cartridge Replacement

- **Detachable Fuser Unit**

In previous printers, the fuser unit was fixed to the main body, and it was a major factor determining the printers' lifespan. The B433dn/B513dn feature a detachable fuser unit (**Photo 4**). To accommodate this fuser unit, which is larger than the ones in previous printers, internal space was effectively utilized. The guiding mechanism for installation and removal, the location of the connector, and the lock lever were all designed without changing the size of the printers to allow the fuser unit to be installed and removed .

This not only extends the printers' lifespan, but also makes it possible to use the space created when the fuser unit is removed to clear paper jams from the front of the printer (**Photo 5**). It also eliminates the need for rear access.

Photo 4. Detachable Fuser Unit

Photo 5. Elimination of Rear Access

Environmental Consideration: Energy Savings

With the future in mind, effort was placed on improving the energy efficiency of the printers. The aim was to reduce power consumption through shorter fuser warm-up time and lower fuser temperature.

- **Low-Melting Monochrome Toner**

The newly developed toner for the B433dn/B513dn melts faster at a lower temperature than the previously used toner, enabling it to fuse to the media at a lower temperature. This, combined with improvements to the fuser, allows the fuser temperature to be reduced by approximately 10% compared to previous printers, achieving a 30% improvement in energy savings.

*1) SpaceSaving Technology (logo) is a registered trademark of OKI Electric Industry Co., Ltd. in Japan.

The toner's low melting point was achieved by adopting a new low-melting material. This low-melting material, which was previously used in color toners, was improved and optimized for the monochrome toner, marking the first successful adoption in OKI monochrome printers.

Electrophotographic printers use electrostatically charged toner to form images, but OKI printers use a non-magnetic single-component development system in which the toner is charged by friction with the developing blade or developing roller. However, with low-melting toners, the heat generated during friction can easily soften the toner surface. This can lead to toner deterioration and a decline in image quality. Generally, this is addressed by attaching a high-melting external additive with excellent thermal stability to the toner surface. For the new toner, the type and amount of additive was optimized, enabling the external additive to adequately protect the toner surface and suppress deterioration caused by the frictional heat while also achieving a low melting point (**Figure 1**).

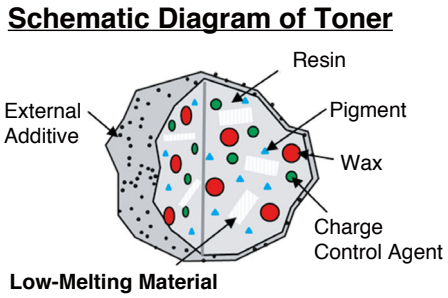


Figure 1. Schematic Diagram of Toner

- **Energy-Saving Fuser**

Compared to previous printers, the heat roller core of the B433dn/B513dn is thinner, resulting in lower thermal capacity. The halogen heater inside the heat roller has also been upgraded to a high-efficiency type. This improves the fuser's thermal response, resulting in a shorter warm-up time. These technologies significantly contribute to the printers' energy savings.

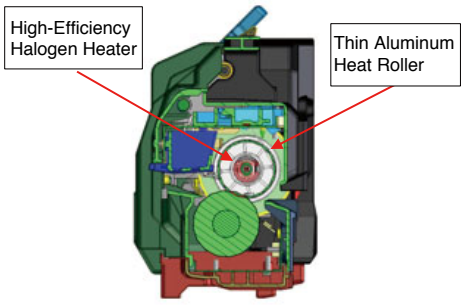


Figure 2. Fuser

Environmental Consideration: Eco-Reuse

To contribute to the preservation of the global environment, two initiatives have been implemented for printer consumables that are used in large quantities.

- **Molded Pulp Packaging**

Molded pulp, a technology attracting attention as a plastic-free material, has been adopted for the packaging of the image drum and fuser.

Molded pulp is made by using a mold to shape recycled paper fibers dissolved in water. It has less environmental impact compared with packaging made using conventional expanded polystyrene (EPS). Through repeated trial and error, a package shape that provides the same cushioning performance as conventional EPS without affecting load efficiency was achieved (**Photo 6**).

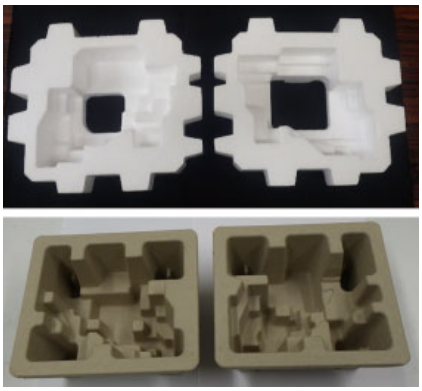


Photo 6. Cushioning Materials
Top: EPS, Bottom: Molded Pulp

- **Recyclable Toner Cartridge**

In advance of the mandatory recycling of consumable toner cartridges being promoted by the EU ErP (Ecodesign) Directive, OKI has improved the durability of its toner cartridges, which are part of the printer that is replaced most frequently.

By reviewing the structure and materials of the shaft bearings and selecting a new sponge material for the seal that prevents toner leakage, durability that is approximately five times greater than previous printers was achieved. This makes it possible to recycle cartridges multiple times, contributing to reducing environmental impact (**Figure 3**).

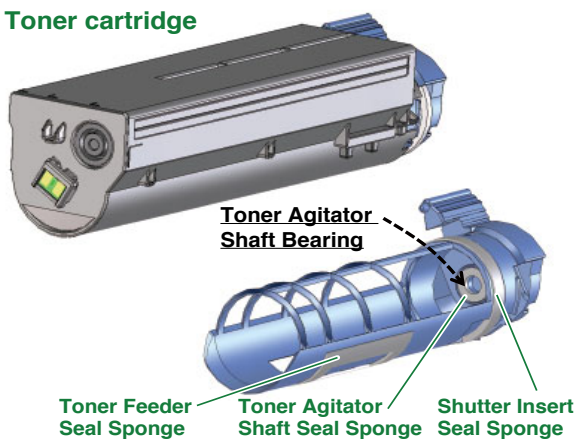


Figure 3. Toner Cartridge

Compliance with Security Regulations

As security requirements for IoT devices increase in recent years, printers have also become a significant risk factor for businesses and public institutions. In addition to concerns about cyberattacks and information leaks, countries around the world are increasingly enforcing stricter regulations and certification standards.

In light of these circumstances, OKI has strengthened the security features and developed new products that comply with regulations.

- **Compliance with International Standards and Regulations**

Aiming at the global market, OKI has made an effort to comply with the security standards and regulations required in each country and region (**Table 2**).

Table 2. Compliant Security Regulations

Country/Region	Security Standard/Regulation
EU	Radio Equipment Directive
Japan	JC-STAR*2)
UK	Product Security and Telecommunications Infrastructure Act
Singapore	Cybersecurity Labelling Scheme (Level 1)
Australia	Cyber Security Act 2024

These standards ensure safety and reliability through comprehensive checks of hardware, communications, authentication, access control, and more. This allows users to install and operate their equipment with a sense of security.

- **Enhanced Security Features**

The enhanced security features required changes to the fundamental layers on which many functions depend, resulting in significant impacts on other functions, and therefore required more careful implementation than previous features. In adding the security features, compatibility with existing functions and operational performance was thoroughly verified, the scope of impact was identified, and test cases were enhanced to ensure quality.

1. Enhanced Password Authentication

Strong passwords can now be set by configuring the password length and character types used. A lock function has also been implemented to prevent unauthorized access and reduce the risk of external attacks.

2. Print Data Encryption

The communication path when sending print data is encrypted to prevent information leaks and tampering during transmission. Data stored in the printer's storage device is also encrypted, protecting information if the storage device is lost or stolen, thereby reducing the risk of unauthorized data recovery and information leaks.

3. Access and Job Logs

Detailed operational logs, including user operations and job history, enable quick tracking and response when incidents occur.

4. Enhanced Network Protocol Security

Communication encryption using Secure Sockets Layer (SSL) and Transport Layer Security (TLS), and the implementation of Hypertext Transfer Protocol Secure (HTTPS) when accessing the management screen, reduce the risk of information leaks and unauthorized access on the network.

Conclusion

The B433dn/B513dn are new-generation A4 monochrome LED printers that meet the latest social demands, such as stricter environmental and security regulations, energy efficiency, and a long lifespan, while flexibly adapting to diverse user needs. In addition to reducing environmental impact and improving maintenance efficiency, these printers also comply with various international regulations, providing a safer, more secure, and more convenient printing. OKI will continue to develop valuable products that meet the expectations of its customers and society, contributing to the realization of a sustainable society and solving customer issues. ◆◆

*2) JC-STAR is a registered trademark of the Information-technology Promotion Agency, Japan (IPA).

References

1) OKI Press Release: OKI Europe Unveils New B433 and B513 Printers: Built to Perform, Designed to Last https://www.oki.com/eu/printing/about-us/news-room/press-releases/2025/oki-europe-unveils-new-b433-and-b513-printers-built-to-perform-designed-to-last/index.html

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TIPS【Glossary】

Radio Equipment Directive (RED)
Regulation stipulating the safety, electromagnetic compatibility, and frequency utilization efficiency of wireless devices sold within the EU.

JC-STAR
(Japan Cyber-Security Technical Assessment Requirements)
A system operated by the Information-technology Promotion Agency, Japan (IPA) based on the guidelines of the Ministry of Economy, Trade and Industry (METI) to evaluate and visualize the security features of IoT products.