Ricoh Aficio CL2000/CL2000N

16.9ppm Print - Scan - Scan To Email - Copy

Product Overview

The Ricoh Aficio CL2000/2000N series prints at an advertised speed of up to 16.9ppm in color or monochrome at a resolution of up to 1,200 x 1,200dpi. Its built-in print controller has a 350MHz processor and includes USB 2.0, Adobe PostScript 3, PCL 5c and Ricoh RPCS page description languages.

The device comes standard with a 530-sheet paper tray plus a 100-sheet bypass feeder. Up to two additional paper trays can be added, giving the Ricoh Aficio CL2000/2000N a total maximum paper capacity of 1,690 sheets (including bypass).

Duplex is available as an upgrade option. Also optional is a 10GB hard drive (needed for secure print functions and job spooling) and 10/100BaseTX Ethernet connectivity (for the CL2000 only; the CL2000N comes standard with Ethernet). Network scan/scan to email/copy functionality can be added via the optional IS100e Network Scanner upgrade.

PROS

- WebJetAdmin Plug-In option.
- PostScript 3, PCL 5c and RPCS page description languages standard.
- Good network management.
- Optional IEEE 802.11b and Bluetooth wireless connectivity.
- Cassette toners are easy for users to change.
- Good document management capabilities.
- Optional network scanner adds copy, scan and scan to email functionality.
- Optional network scanner is LDAP capable.

CONS

- Not all included print drivers allow users to select paper from more than one source within a document.
- Printer drivers all look and behave very differently.
Product Dynamics

**BERTL Brand Survey — ©Data Level June-04**

While this BERTL report concentrates specifically on an individual device and is designed to provide the reader with an independent perspective on its relative strengths, weaknesses and value proposition, the decision to buy, or not to buy, is not always “device-specific.” The brand behind the device and how it is perceived in the marketplace is also extremely important. This is where BERTL Brand Surveys come into play.

BERTL speaks to product buyers on a regular basis. In addition, BERTL conducts periodic surveys of the digital imaging marketplace. The valuable feedback we receive from buyers and product resellers is incorporated into our reports, in order to provide our subscribers with a perspective on the manufacturer behind the device.

The table below shows feedback received in BERTL’s latest survey of this manufacturer’s product(s). Note: Survey results change over time—the data level for this survey is shown at top.

<table>
<thead>
<tr>
<th></th>
<th>Good (%)</th>
<th>Met expectations (%)</th>
<th>Could be improved (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>COLOR:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How high do you rate the RELIABILITY of this supplier’s color devices?</td>
<td>90%</td>
<td>3%</td>
<td>5%</td>
</tr>
<tr>
<td><strong>MONOCHROME:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How high do you rate the RELIABILITY of this supplier’s black and white devices?</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MFP:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How high do you rate the RELIABILITY of this supplier’s MFP devices?</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PRICE:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do you consider this supplier’s devices EXPENSIVE when compared to rival products?</td>
<td>11%</td>
<td>78%</td>
<td>9%</td>
</tr>
<tr>
<td><strong>EASE OF USE:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How high do you rate this supplier’s MFP devices?</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PRODUCTIVITY:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How high do you rate this supplier’s MFP devices?</td>
<td>N/A</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>IMAGE QUALITY COLOR:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How do you rate the color image quality of this supplier’s devices?</td>
<td>87%</td>
<td>5%</td>
<td>7%</td>
</tr>
<tr>
<td><strong>COLOR RUNNING COSTS:</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>How do you rate your &quot;COLOR&quot; cost-per-page?</td>
<td>79%</td>
<td>12%</td>
<td>8%</td>
</tr>
</tbody>
</table>
Ricoh Aficio CL2000/CL2000N

Product Dynamics

Ricoh has a long history of developing and marketing good quality color digital imaging devices, and the release of the Ricoh Aficio CL2000/2000N is another well-deserved feather in the company’s cap.

Although the Ricoh Aficio CL2000/2000N prints at the same speed in both color and black & white, Ricoh says that this machine automatically recognizes and differentiates between color and black & white pages (black & white is the default mode). When the device prints color pages, it uses all four toner cartridges and developers. However, when the device detects a black & white page, only the black toner and developer are used.

This delivers the same cost advantages users of ‘occasional color’ devices enjoy, without requiring the usual drop in speed when switching from black & white printing to color.

The Ricoh Aficio CL2000 also has an aggressively low price — as of the time of this report, its MSRP is about 25% lower than that of its nearest competitor.

Design Features:

Ricoh says it has designed the Ricoh Aficio CL2000 for individual users, with the network-enabled CL2000N model aimed at workgroup environments.

The difference between the Ricoh Aficio CL2000 and the CL2000N models is that the N version comes standard with Ethernet connectivity. This can be added to the base CL2000 as an option if users find they need it after the device has been purchased.

Processing power is 350MHz, with print resolution ranging from 600dpi up to true 1,200 x 1,200dpi. Standard RAM is 64MB, which can be upgraded to a maximum of 256MB, and three page description languages are included in the entry-level price: RPCS (the manufacturer’s proprietary print driver), Adobe PostScript 3 and PCL 5c emulation. A duplex unit and a 10GB hard drive are available as upgrade options.

The standard paper supply of 630 sheets (including one 530-sheet paper tray and a 100-sheet bypass feeder) can be upgraded to a maximum of 1,690 sheets. The device prints on paper up to legal size (8.5” x 14”). The manufacturer quotes a warmup time of less than 30 seconds and a first print out time of less than 15.5 seconds.

The device can be turned into an MFP offering network scan/scan to email/copy functionality with the addition of the optional IS100e Network Scanner.
Product Dynamics

The Control Panel:
The Ricoh Aficio CL2000’s control panel is very simple. It features a small LCD display and a total of five buttons plus two arrow keys used for scrolling through various menu options.

Lights indicate power, error, data in and whether the machine is online.

Section 508 / Disabled Access:
The control panel sits on top of the device, where it is reasonably accessible by wheelchair users. If the device is equipped with its maximum paper trays, it might be a little tall for wheelchair users to reach, depending on the stand it sits on.

Compatibility:
All three of the Ricoh Aficio CL2000/2000N’s printer drivers are compatible with Windows 98, 98SE, NT 4.0, Me, 2000, Server 2003 and XP. PostScript 3 is also available in versions for Macintosh OS 8.6 or later, OS X (v. 10.1, 10.2, 10.3) and UNIX (Solaris, HP-UX, Red Hat Linux, SCO, IBM AIX).

Connectivity:
Parallel and USB 2.0 connectivity is standard on both models. USB 2.0 transfers data at a much faster rate than USB 1.1 (still offered on many devices in this range by many competitors).

The Ricoh Aficio CL2000N version comes standard with 10/100BaseTX Ethernet, which is sold as an upgrade option for the base CL2000 device.

Other optional connections include IEEE 802.11b wireless, Bluetooth and IEEE 1394.

Only one of the optional connections can be installed at a time.
Product Dynamics

Maintenance:

Ricoh advertises a duty cycle of 50,000 prints. This is lower than a number of competing devices, which can go as high as 85,000 prints per duty cycle. However, will not be an issue for any but the highest volume users.

Each of the four colored toner cartridges (cyan, magenta, yellow and black) have an advertised yield of approximately 5,500 pages, based on 5% coverage. Image drum life is quoted at 13,000 prints per unit and fuser life is advertised at 100,000 prints.

The four toner cartridges slot into a compartment on the top left side of the device. This design allows users to change each color as it runs out, while still running the remaining color cartridges until each is empty.

Replacing toner cartridges is a simple process. Likewise, the fuser unit, waste toner bottle and image drums are all within easy reach of users and can be easily changed without a visit from a service engineer.
Product Dynamics

Paper Handling:

Input:

The Ricoh Aficio CL2000/2000N comes with a standard paper supply of 630 sheets, consisting of one 530-sheet paper tray plus a 100-sheet bypass feed.

Paper supplies can be upgraded to a maximum of 1,690 sheets by adding up to two additional 530-sheet paper trays. This is neither the highest nor the lowest paper capacity in its market sector, but falls somewhere in the middle and should be adequate for the needs of most workgroups.

All of the device’s paper input sources can handle paper weight from 16-28 lb. bond (60-105 gsm), in sizes up to legal (8.5” x 14”/216mm x 355mm).

Output:

The device’s exit tray can hold up to 250 sheets at a time.

Duplex:

The optional duplex unit can handle paper from 16-28 lb. bond (60-105 gsm) in sizes up to legal/B4. We liked seeing duplex as an upgrade option; at least one competing manufacturer forces buyers to decide if they need duplex the day they purchase their printer.

Finishing:

There are no finishing options, such as staplers, stackers or hole punchers, available for the Ricoh Aficio CL2000/2000N. In its sector of the market, BERTL does not consider this to be a drawback.

If You Need More:

A 10GB hard drive is available as an upgrade option. This is necessary to enable storage-based functions such as spooled/secure print, as well as for permanent font storage. Several devices in this market sector (including one by the ‘market leader’) do not offer hard drives for printers in this range.

Owners of the base Ricoh Aficio CL2000 device can add 10/100BaseTX Ethernet as an upgrade option (it comes standard on the CL2000N model).

Memory upgrades are also available, which can increase the device’s RAM from its standard 64MB to a maximum of 256MB.

The device can be given network scan, scan to email and copy functionality with the addition of the IS100e Network Scanner upgrade.
Network Management


Web Image Monitor:
This provides the IT Manager with administration access to a single device via a remote TCP/IP browser-based connection. Using Web Image Monitor the IT manager can view the current status of the printer; view job and error history; view and change network configuration settings; set up email alerts; reset the printer, install SSL/TLS security certificates and more.

SmartDeviceMonitor/Web SmartDeviceMonitor:
This allows users and administrators to monitor multiple devices around the network at once. The user module allows clients to view the status and availability of a device. The administrator module includes additional management and configuration rights.

SmartDeviceMonitor includes two valuable additional printing functions; parallel and recovery printing. Both functions are set up by first linking multiple printers in the network into a group.

Parallel printing allows users to split large jobs between multiple devices, sharing the workload and increasing the productivity of the printing solution.

Recovery printing provides a level of redundancy by automatically rerouting print traffic away from offline devices to other devices set up within the group. A message is sent to the sender so they know to collect their job from a different device, allowing the IT manager to remedy the situation without creating network printing bottlenecks.

WebJetAdmin Plug-In
Many IT managers rely upon HP's WebJetAdmin for cross platform device monitoring and management. Ricoh's WebJetAdmin plug-in provides greater integration and information sharing with this utility than would be achieved via standard SNMP data from the network card. It also provides remote management capabilities that would not be available on third party devices being monitored by WebJetAdmin. Ricoh also provides plug-ins for other network management utilities such as HP OpenView, Tivoli, UniCenter.
Print

Printer Languages:

Included with the purchase of the Ricoh Aficio CL2000/2000N are three printer drivers: RPCS, the manufacturer's own proprietary printer driver; PostScript 3; and PCL 5c emulation.

All three printer drivers look and feel quite different, which could increase the learning curve for users who need to work with all three.

Functionality also varies widely between each driver, with some drivers having some standard functions (such as Multi-Up) but lacking others (such as the ability to print the first page of a document on a different paper source).

Printer Memory:

Standard RAM is 64MB and can be upgraded to a maximum of 256MB.

Print Resolution:

Print resolution is 1,200 x 1,200dpi. Users can also choose to print in 600 x 1,200 or 600 x 600dpi.

Image Quality:

Color image quality is suitable for business use. Some printer drivers give users the ability to customize print settings or adjust colors as needed. Color customization options are not as advanced as they would be on a high-end graphics device, but at this level of the market that is not unexpected.

Features In All Three Print Drivers:

If/when the hard drive is installed, all three drivers are capable of Locked Print, Spooled Print (RIP Once, Print Many) and Sample Print.

In the RPCS and PCL 5c drivers, secure functions can be selected under the main Setup print preferences screen. In the PostScript 3 driver, users select the Job Log tab to enable sample and locked print functions.

- **Sample Print** allows users to send a multi-set job to print, with the device then printing one single copy, which can be proofread before releasing the balance of the job to print. This can save time and bandwidth, as well as supplies, if an error is found in the sample print.

- **Locked Print** sends the job to the printer, where it is stored until a user enters a password (up to 8 digits) to release it for printing.

Multi-Up Printing:

All three print drivers allow users to print up to 16 pages on a single sheet of paper, as well as in Booklet mode. Multi-Up can be convenient for offices which archive documents on paper, saving paper and toner as well as storage space. The usefulness of Multi-Up could be limited by legibility issues involved in having sixteen pages printed on a single legal-sized sheet.
Print

The RPCS Driver:

Ricoh’s proprietary print driver looks and feels a bit different than either of the other two included drivers.

The main print settings screen displays a number of icons representing page layout options (2-Up, duplex, watermark, etc.). Users can change custom settings that appear in the scroll box or can create and save their own.

The main screen also lets users select orientation (portrait or landscape), paper type and size, and choose color or black & white print. It also provides a simple menu allowing users to pick Normal, Sample or Locked print settings, or to save the document being printed as overlay data.

The second tab, Print Quality, lets users select pre-designed settings created for General, Photograph, DTP (desktop publishing) or CAD printing, or they can choose from up to 8 custom print quality settings or design and save their own.

This tab also gives users the option to print for Quality or Speed, as well as to select Toner Save mode when printing drafts.

Cover Page/Letterhead:

This driver hides the cover page option under the Add/Change Custom Settings button. Under the Setup tab there, users can choose to add a cover sheet, or a slip sheet, from a different paper source than the rest of the document.

Overlay:

This is similar in function to a watermark: users store a standard image for reproduction within another document. This feature can be used for electronic form printing, saving the processor-intensive form template data on the local device, with users simply printing the raw data file from the desktop PC (leaving the device to merge the form data with the raw data at the print controller, thus saving network bandwidth and reducing processing time).
Print

The PCL 5c Driver:

Of the three standard print drivers included with the Ricoh Aficio CL2000/2000N series, the PCL 5c print driver offers the most advanced functionality.

On the main tab, users can select paper size, orientation, layout, duplex (on/off), collation, number of copies (1-999) and job type (Sample or Locked print).

The PCL 5c driver has a Paper tab, where users can select a different paper source for the first page of a document, or insert a slip sheet. This is a very useful feature in many offices and one which we would have liked to see included in the other two drivers as well.

The Print Quality tab lets users select resolution, graphics mode (vector or raster), import TrueType fonts or adjust color.

The Statistics screen is where users enter their ID codes (up to 8 letters or numbers) if administrators have set up security. The Watermarks tab lets users import and adjust watermarks.
Print

The PostScript Driver:

The PostScript driver is very simple and operates similarly to many PostScript drivers on the market.

The main tab, Layout, allows users to select orientation (portrait, landscape or rotated landscape), choose duplex (flip on long edge/short edge) and set page order (front to back or back to front).

This tab also enables Multi-Up printing, allowing users to print up to 16 pages on a single sheet of paper or automatically print in booklet layout.

The second tab, Paper Quality, allows users to choose the paper source and media type the document will be printed on. It also allows a choice of black & white or color printing.

The Job Log tab asks for user ID (if applicable) and gives the option to print normal, Sample or Locked print. For Locked print, it also asks for a user code, which can be up to 8 digits long.

Cover Page/Letterhead:

Unlike the other two print drivers included standard with the Ricoh Aficio CL2000/2000N series, this print driver does not give users the option of inserting cover sheets or slip sheets. Users are confined to a single paper source for all a document’s pages.

This could be inconvenient for offices which routinely print the first page of every document on company letterhead.
Bandwidth Use Between Printer Drivers:

Each of the three printer drivers processes documents differently. In general, the PCL 5c driver generated the least bandwidth over the widest variety of jobs and the PostScript 3 driver generated the most.

None of the drivers created file sizes that would be considered unwieldy over a network.

When all three drivers were asked to create five sets of a multipage document, all three of them performed the task correctly (collating sets without generating separate bandwidth for each individual set). This means documents were processed once and then printed from that single processing.

### Bandwidth Use Between Printer Drivers

<table>
<thead>
<tr>
<th>Document Type</th>
<th>RPCS</th>
<th>PCL 5c</th>
<th>PostScript 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>5-page Acrobat</td>
<td>1.65 MB</td>
<td>1.77 MB</td>
<td>1.77 MB</td>
</tr>
<tr>
<td>3-page Microsoft Word</td>
<td>110 KB</td>
<td>62.9 KB</td>
<td>181 KB</td>
</tr>
<tr>
<td>35-page Microsoft Word</td>
<td>1.34 MB</td>
<td>819 KB</td>
<td>2.29 MB</td>
</tr>
<tr>
<td>6-page WordPerfect (duplex)</td>
<td>590 KB</td>
<td>164 KB</td>
<td>765 KB</td>
</tr>
<tr>
<td>6-page WordPerfect (duplex) 5 copies, collated</td>
<td>590 KB</td>
<td>163 MB</td>
<td>765 KB</td>
</tr>
</tbody>
</table>
Color Management

The ability to control color manually varies according to which print driver is used.

For example, in the PCL 5c driver, it is possible to adjust color manually by selecting Manual Color and then adjusting brightness and saturation using a scroll bar. Here, users can also select individual color profiles (Presentation, Photographic or CLP Simulation) for text, graphics and photographs.

Additionally, grey reproduction allows users to specify how the printer will handle black and grey areas. It can be set to K (Black), CMY + K or Black Over Print.

**K (Black) mode** prints black and gray using black toner only. Compared to the black printed with CMYK toner, this results in a black that is relatively flatter and purer.

**CMY + K mode** prints black and gray on all pages using four colors: CMY (Cyan, Magenta, and Yellow) and K (Black).

**Black Over Print mode** prints black text and graphics on a colored background using CMYK toner. If there is no background color, black toner only is used.

The PostScript 3 driver gives users only two color options: Color, or Black & White. There is no way to adjust colors unless you click on the Advanced button, which allows a choice of color profiles (Auto, Photographic, Presentation, Solid Color or User Setting).
Color Management

In the RPCS driver, users have the choice of choosing General, Photograph, DTP or CAD image quality settings, or can create their own custom settings.

In the Change User Settings menu, users can set resolution, color profile, dithering and ICM method/intent. Color balance can be adjusted for the entire document or a single component.

The RPCS driver gives users the option of selecting ICM color, as well as the ability to adjust image and color balances using a sliding bar.
Scan

The optional IS100e Network Scanner adds network scan, scan to email and copy functionality. It connects to the printer via parallel connection; this works reasonably well, but it would have been faster through the USB port. The scanner can also be connected directly to the network via Ethernet.

The scanner runs at an advertised speed of up to 9 originals per minute in black & white or 1.5 originals per minute in color. Warmup time is advertised at 45 seconds.

Scan resolution can be set at either 150 or 300dpi (it scans up to 600dpi in copy mode only), with files saved as TIFF, PCX or PDF in black & white, or TIFF, JPEG or PDF in color.

Supported email applications include MS Outlook 2000, MS Outlook Express 5.0/6, Netscape Messenger 4.7/4.73, and others.

The scanner option comes with a 25-sheet automatic document feeder as well as a glass copy platen. This gives users flexibility in the types of documents that can be scanned, with cut sheet pages fed through the automatic document feeder while bound or oddly-shaped material can be scanned or copied via the copy platen.

Scan To Email:

Scan to email data can be saved as PDF, JPEG or TIFF in color or PDF, TIFF or PCX in black and white. Data compression is via JPEG, G3 MH/MR and Run Length Encoding (RLE). Supported viewers include Windows Paint, Adobe Acrobat 4.0 or later, Adobe PhotoShop 4.0 or later, Ulead PhotoImpact 6.0 and others.

LDAP:

This device is LDAP compliant, meaning that it can interface directly with the main corporate database. This means users can pull email addresses directly off the main database, instead of having to maintain a separate address book just for the IS100e scanner.
Software

Standard Software:

The Ricoh Aficio CL2000/2000N series includes SmartDeviceMonitor (formerly called SmartNetMonitor) as well as Web SmartDeviceMonitor and Web JetAdmin Plug-In software in its standard purchase price.

SmartDeviceMonitor allows network administrators to install, monitor and manage all networked Ricoh devices in the enterprise. It also gives users the ability to view that status and availability of networked Ricoh peripherals.

Web SmartDeviceMonitor enables non-Windows users to access the remote status viewing functionality of SmartDeviceMonitor.

Web JetAdmin Plug-In provides real-time status error messages and remote diagnostics for networks which already use HP's WebJetAdmin.

Optional Software:

A number of optional software packages are offered for the device, including DeskTopBinder V2 Lite (supported by the RPCS driver only). This document management utility enables users to search for and manipulate files created by different Windows applications. They can copy files from a server to the desktop and mix and match pages from different applications to create new documents.

With Printer Cost and Security Manager (PCSM), users can gather data on page counts, color/black & white output, simplex, duplex and finishing for a fleet of devices.

PCSM is a server-based solution that allows the administrator to set customized criteria for each user ID. However, unlike both SmartDeviceMonitor and also WebImageMonitor, which store the user code list locally on the device, PCSM stores the user code directory in a central location, with devices browsing to the central file to check on the authenticity of a user. This allows updates/new user ID codes to be added to the list once, in a matter of seconds, rather than having to send the data to each device individually.

The central storage/management of user ID code data and activity also allows PCSM to provide more reporting capabilities and more sophisticated job control functions. For example, the administrator can set billing limitations for a user/group of users across the entire office copier/printer fleet. Every time a user ID is used to print or copy a color page on any device around the building, it goes onto the overall page count until the maximum allowed quantity has been reached. To exceed the maximum allowed color page count the user/department head would need to go to the administrator to get the limit changed.

PCSM also comes with the capability to create 70 different reports covering all aspects of output across the organization.

PCSM’s open architecture also means that organizations with multi-vendor device inventories can monitor/control all the devices using the PCSM resource, rather than having to monitor each manufacturer device range independently.

Also available as an option is a Printer Utility For Mac, which enables Macintosh clients to manage the device over the network.
Copy

Installing the scanner upgrade on the device automatically adds copy functionality to the Ricoh Aficio CL2000/2000N series. Users can make up to 99 copies at a time. Copy resolution can be set to either 300dpi or 600dpi.

The automatic document feeder (included in the price of the scanner upgrade) can handle up to 25 sheets at a time, in weights from 14-28 lb. bond (53-105 gsm).

Summing Up:

The Ricoh Aficio CL2000/2000N series packs a lot of functionality into an aggressively low price. It comes with a range of user-friendly software utilities designed to make it easy to install and manage.

IT managers will like the lengths to which Ricoh has gone to integrate the device with common management platforms such as HP’s WebJetAdmin, Tivoli, UniCenter and others.

Accountants will like the advanced cost containment and management abilities offered with the device.

Offering full-color output (and print speed) along with the ability to use only black consumables when printing in black & white, this device has the potential to deliver the kind of cost advantages enjoyed by users of occasional color printers (assuming that users select Black & White printing in the drivers when appropriate), while still delivering color print at full engine speed.

Another plus is its upgrade path, which allows users to add color network scanning, scan to email and copy capabilities without increasing the device’s footprint.

Duplex is another convenient option; at least one competing manufacturer forces users to decide if they want duplex capability the day they buy their printer.

Overall, the Ricoh Aficio CL2000 is a well-designed device which is well-suited the needs of individual users or workgroups. BERTL feels that the Ricoh Aficio CL2000/2000N strongly deserves our Four-Star “Highly Recommended” rating.