



LAB REPORT

Sharp AR-507 Imager Copier - Printer with Axis or Integrated Scanning

Also Sold As:
Sharp AR-507

END USER PERSPECTIVE

This Lab Report, of the above-named devices, is designed to provide a Concise, Easy to Read, Independent Analysis of product performance based upon tests we have performed from the End-User's Perspective. We do not quote retail prices nor full product specifications within any of our Lab Reports as this information can be easily obtained via our DataCheck On-Line service at WWW.DIGITAL-TIMES.NET.

This Lab Report provides User-Relevant test analysis and constitutes a Summary of the Products, their Position within their Target Sectors and their Performance during Benchmarked Testing.

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TOUR DIGITAL TEST LAB

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Our hands-on approach differs from many labs-based tests where the manufacturer can control the environment that the tests are conducted in. We test products in our Lab (which is designed like an end-user site) and we also test on site at end user locations using a sophisticated set of portable test rigs.

BERTL (Digital Test Lab) has an enviable reputation for always being at the forefront of technology both in how it tests products and in how it delivers critical, unbiased purchasing advice and guidance to a worldwide audience of buyers, resellers and manufacturers.

Products are often tested in both USA and the United Kingdom. During testing, Lab Analysts check that a product is substantially the same in both locations and list any differences that are observed. Various paper sizes are used in most offices as well as different sizes being used in different countries; the most common international paper size is ISO A4 Metric, as such BERTL tests are performed to this standard (A4 = 8.27" x 11.69" USA Letter = 8.5" x 11"

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OVERALL SUMMARY

LAB STAR GRADING RANGES FROM 0 - 5 STARS

0 = POOR
 1 = BASIC PERFORMANCE
 2 = FUNCTIONAL but has limitations
 3 = RECOMMENDED
 4 = HIGHLY RECOMMENDED
 5 = EXCEPTIONAL



Printing	4
Copying	3
Scanning	3
Tandem	3

Pros	A good all rounder with all functions working to a reasonable standard. Copying: When printing multiple sets of the same document it ran very fast. Simple to use; high digital copy quality; good document production capabilities; easy to read \ large well laid out LCD control touch panel. Tandem option allows higher speed copying and increased volume by sharing two copiers. Printing: Tandem printing for clustering and load balancing, fast multi-copy/duplication printing in tandem and standard print modes; fault free copier-printer. When processing mixed applications from the network, file sizes and network traffic was on a par with Hewlett Packard's LaserJet 8100DN which puts it among the most efficient units tested. Good network management, bi-directional feedback and remote diagnostics. Tandem: Zero cost tandem connection which achieved up to 103.4 ppm excluding first page out time.
Cons	Copying: Default Text setting had a job reproducing gray. Tandem copying on some jobs did not offer speed advantage over single unit. Only one memory for copying - can not scan next job to memory. Printing: Lacks physical mailboxes, network management system and has limited user feedback (may be best suited to medium sized workgroups). Graphics were too black ; toner refill system could be easier to fill. Tandem: Longish first page out time reduced speed on short to medium length jobs.

Our Tests Were Conducted Across 5 Separate 50ppm Sharp Systems (2 in UK and 3 in USA)

In USA Sharp use the name Imager after the model number (ie: Sharp AR-507 Imager), for convenience we refer to the Sharp AR-507 in this report. Sharp's 'corporate' digital range extends from 16ppm up to 50ppm, they do not currently offer any faster single units. However, Sharp stress that their new 50ppm AR-507 can be tandem linked as a printer or copier to another AR-505 to deliver a maximum rated engine speed of 100ppm for longer jobs. Also worth considering is the fact that with NT4 / Windows 2000 Printer Pooling you can set up two or more Sharp AR-507s in a hunt sequence which will allow you to have print jobs sent to the first print engine which comes free. When you couple this Print Pooling with the Sharp low cost tandem print or copy you effectively have a low cost functional cluster system without the expense of third party software / servers. While there may be some advantages in using proprietary cluster servers / systems, for most business applications we found the Sharp AR-507 as simple to use in a cluster set up.

Sharp are one of the few companies to have completely dropped old fashioned lens and mirror / analog copiers. This may differ locally depending upon warehouse stocks which are being used up. We feel that this is a welcome move because many copier manufacturers send out a mixed message and seem uncertain as to whether they really consider them selves up to the Digital market place (ie: hedge their bets with analog) .

This report concentrates upon the 50ppm Sharp AR-507 used as a single unit and linked as a tandem system. Our tests were conducted on a total of five Sharp 50ppm units. **Unit-1** was configured as a digital copier with PCL printer interface (in UK); **Unit-2** was a stand-alone digital copier with tandem link (in UK); **Unit-3** was a digital copier with PCL printer interface and integrated scanner software/system (in USA); **Unit-4** was a digital copier (in USA) with PCL printer interface connected via tandem printer link to **Unit-5** (in USA) which was identical to Unit-4. Hardware specifications tested were as follows for the Sharp systems: Total RAM 48Mb (16Mb base and 32Mb optional memory), copier hard drive 4GB with 3 Tray Finisher, 3 Paper Input Trays (no large capacity tray). Print Tests were conducted via the AR-PB2A controller at 600dpi via PCL6 printer driver version 3.1.0 build 053. Client terminal processing speeds are removed from tests but configuration of client PC terminal was 475MHz, 64Mb RAM Windows 98 level 2 printing via TCP/IP.

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As usual, with mono digital systems the processing speeds of our client PC have been eliminated in this test (and other tests) to ensure that the results that we publish show the performance of the printer rather than any limitations or differences imposed by the client PC. As always, we tested the printer functions at the highest level PCL mode on the printer across various of the latest software packages used in most businesses.

Like all other Sharp digital copiers, the AR-507 can be configured as a copier and network printer. You can also use the Sharp AR-507 as a flexible network scanner and digital-sender by purchasing either a Sharp approved external Axis Scanning system or Sharp's own integrated scanning system.

Sharp's current office range uses the same basic design and engine for both the new range and the previous two levels of their range (though there are some differences in the configuration / optional extras on each model). This approach reduces inventory and allows dealers to use common parts in a larger selection of products. From a service perspective this is good because, when an engineer is called, they are more likely have parts to hand and understand the product. The alternative, with some competitors, is that there are multiple machines and parts and you may find that the engineer does not fully understand the product nor carry a full inventory of parts.

In addition to the performance tests conducted on the AR-507, our Lab ran it's sister product (Sharp AR-405) for 350,000 pages and the full results are available in our 'Last Man Standing' LabCheck report (under 'Head to Head' in the Digital section of LabCheck).

At 50cpm / ppm, Sharp's AR-507 has some stiff competition. In general, Sharp's 50+ cpm competitors are scaled down versions of faster speed / higher specified units. This means that there are some elements of the Sharp AR-507 which needs consideration:

- < **Copy Memories:** Most competing units have a minimum of 2 copy memories (some have five or more). This allows you to store your next job in memory while the current job is printing. Sharp's AR-507 has no next job copy memory.
- < **MailBoxes:** Departments may need to have remote users store their work for collection in a physical mailbox, these are not present on the Sharp AR-507 (but a virtual mailbox / PIN secured electronic mailbox is supplied).

Overall, we have found the network printer performance of all of the recent Sharp products to be stable and simple to use as a departmental network printer. We were able to enter our choice of IP address into the Sharp controller straight from the easy to follow LCD control panel, and within seconds were ready to install the network options. Unlike many of the copier-printers tested we were able to perform a simple network installation. When asked which platforms we wished to share the printer across we selected Windows 98, etc, and the server installed all the required shared software automatically from Sharp's installation disks. This may not sound that special but the Sharp range is one of the few copier-printers which has been able to complete this basic stage our without having to involve technical support or hunt for additional software on Windows or other CD's.

By way of example:

- < Konica's copier-printers have no interaction between control panel and controller; this meant that we had to print the configuration page and then change our PC's IP address and Subnet Mask to match the Konica print controller. Next we had to browse to the Konica controller and then change its IP address to what we wanted. Once we had done this we then had to change our PC back to its original settings.
- < Canon's copier-printer's network set-up proved one of the more awkward undertaken. Canon use an EFI controller which works with the Canon engines but is not an integral part of the unit during configuration. Unlike most network printers the network settings cannot be simply entered via the control panel (we stress the word simply). To alter the network setting you reboot the RIP server and choose to amend / reset the RIP setup and network setup. You have to be quick though because when you reboot the RIP you only get a couple of seconds to catch the change setup option, if you miss it you have to start again. Alternatively you can alter the settings via Fieri web tools using a standard internet browser but (Catch 22) you can't access WebTools until you have successfully altered the IP address. When using the web browser to set up the network settings we had to alter the configuration and settings of our network server to match the configuration page print out from the Canon. Once our server matched the Canon we were able to connect via web tools and alter the IP address and Sub Net Mask to the required settings. Once this stage was completed we reconfigured the server to its original settings and were able to see the printer over the network.

Having set up the Sharp drivers on our NT-4 / Windows 2000 server we proceeded to set up the client terminals. Once again the installation of the Sharp printer drivers were network friendly. Most copier-printers have required us to load individual software installations onto each terminal, laboriously via CD or floppy disks (a time consuming effort in a 40 user environment).

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In contrast, the Sharp products allowed us to set up the units as a networked shared printer from the user terminal by simply selecting 'Add Printer, browsing through to the server, highlighting the Sharp printer icon and letting it instal itself, downloading the required shared files from the server. Why many other copier-printers have been unable to manage this simple standard network installation remains a mystery. It may make boring reading but, like other Sharp products tested, we had a virtually fault free test with the printer doing what we asked of it without any problem.

NETWORK TRAFFIC: When processing mixed applications from the network, the Sharp AR-507's file sizes and network traffic was on a par with Hewlett Packard's LaserJet 8100DN which puts it among the most efficient units tested. However, on Office 2000 standard work the Sharp AR-507's network traffic / file sizes were double that of the HP equivalent. When we analyzed the types of work that it was efficient on we found that it was more efficient on graphical work (ie: Adobe PDF, etc) than the HP.

CONNECTION: Network connection is via Sharp's AR-PB2A print controller though an EFI option is supported. The AR-507's 16 MB of memory is expandable to 80 MB, and connectivity is supported by a standard bi-directional parallel port and optional network interface. The optional network card connects the various models via Token Ring, Ethernet 10BaseT / 10Base2 or Ethernet 10/100BaseT network topologies and supports SNMP, TCP/IP and IPX protocols and Novell Netware 3.1X, 4.0, AppleTalk and UNIX network operating systems.

Print Driver: Sharp's print driver is easy to use and well laid out with all of the standard options in logical places. There was also a well documented, easy to follow set of Help files built in to the printer driver.

Like most copier based unit the print engine prints face up but the finisher inverts the pages to deliver face down printing which is faster on multiple copies of the same document than face up finishing.

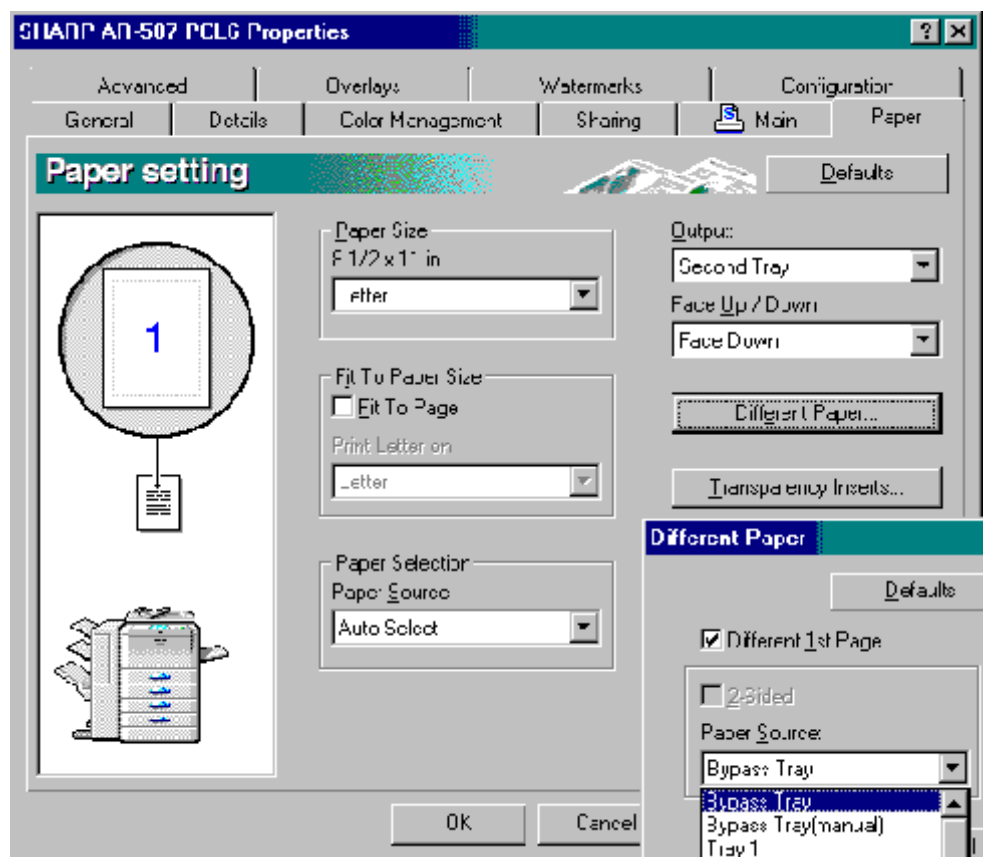
PostScript -Vs- PCL6: A lot of work has gone into Sharp's printer driver to make it simple to use. This includes programming the PostScript driver to be virtually identical in look and feel to the PCL6 driver.

Output, Paper, Finishing & Booklet Making:

The 3 bin finisher option delivers face down printing, large job stacking and offsetting and 50 sheet stapling. Missing from the Sharp AR-507 are physical mailboxes which some larger departments need to separate print jobs by user or workgroups. Compensating for this to some degree are (a) virtual mailboxes / secure printing which are PIN (Personal ID Number) protected / controlled and (b) a three bin sorter option which could be used as a three bin mailbox.

Paper supplies are good (though you only get 2 x 500 sheets with the standard unit) and you can add 2 x 500 sheet drawers plus a 3,000 sheet Large Capacity Tray to provide a total of 5.050 sheets from 6 sources (including the 50 sheet bypass).

We would have liked to see a booklet making option which could fold and saddle stitch finished magazine style booklets, especially because of the tandem print and copy option. Booklet making lets you make folded magazine style booklets with centre saddle stitch/staple; it is now available on many competing systems but not on the Sharp AR-507. However, the print driver allowed us to set up and print booklets (ie: laid out for a magazine) which we could then manually centre staple and fold.



Job Control & Accounting: If you select the **Advanced tab** you are offered a **Job Control** button which includes **Confidential Print**. This holds the print job on the copier hard drive until the user selects the job from the LCD of the copier and enters a PIN number. Job Control also has **Account Number**. If the user has enabled the copier's Accounting function then the driver allows you to send the print job with the Account number so that Print and Copy jobs can be billed. Job Control further includes **Auto Job Control Review**. If the user selects this tick box then every time the user prints a job (even using tool bar print icon) the Job Control box will pop up automatically. This is handy for users that print jobs and need to bill to many different customer account numbers (i.e. Lawyers or Accountants).

REMOTE DIAGNOSTICS AND BI-DIRECTIONAL FEEDBACK:

Via **Sharp Monitor** users can check the status of the print engine, receive job completion notifications, be notified of paper-out, toner-out, paper jams or receive 'device-notification' in the form of a pop-up screen. There is also **Sharp Printer Administration** (Standard with AR-PB2AN Controller) the Network Administrator can monitor all devices on a TCP/IP network provided they are SNMP compliant. The administrator can: view default settings, view clicks and will receive "Pop up" alert messages.

At key operator / administrator level the Sharp AR-507 has a neat email notification system. From the Administrative setup we could set up two types of alerts to be sent to between 1 to 3 email addresses (two internal personnel and 1 external service agent). Paper Jams, Toner Low, No Toner, Paper Out, Service Required and Preventative Maintenance Required messages could be sent to up to 3 key operators (though the screens indicate a preference for emailing the dealer as number 3). We could also select each level of alert separately. For example (1) a local user could be notified when the Sharp AR-507 has a 'Paper Jam, Toner Low, No Toner or Paper Out' (to prompt them to sort out the issue) while (2) the admin manager could receive only the messages telling them when service or PM was required and (3) the service agent could be emailed to say that Service or PM was required.

The second level of email notification could include pages printed and other service / unit status information (ie: receive monthly page counts to prepare invoices) which is sent direct to (1) the service agent's engineers, (2) service agent's accounts department and (3) the local admin manager. This level of message is a timed event which can be set to be emailed every X days, every X weeks on (Day of Week) or every X months on (date).

The service level emailing is a good feature and saves a lot of time and effort. However, while the key operator may diligently respond to email and maintain the copier/printer there is always the chance that they do not read their email regularly, are out of the office, etc.

PRINT SPEEDS:

Sharp's AR-507 is advertised at a maximum speed of 50ppm but their market segmentation differs from most of the competing manufacturers. Canon have a 40ppm or 55ppm unit; Konica has 40ppm or 55ppm, Ricoh has 45ppm or 55ppm, Xerox had 40ppm or 55ppm, Minolta have nothing in the 40ppm range but offer a 52ppm unit while Panasonic has a bigger gap with 45ppm or 60ppm. For this reason our print speed comparisons are based upon a selection of 40ppm to 45 ppm copier-printers. Obviously you can not compare network printing without considering how they compare to dedicated network printers; for this reason we include the Lexmark Optra Image W810 in our sample comparisons. While this is a 35ppm unit, it is the highest speed offering from Lexmark and is a fully functional printer based copier-printer.

Printer Productivity Tests					
	Sharp AR-507	Lexmark Optra W810	Panasonic FP-D450	Xerox Document Centre 440	Ricoh Aficio 450
Print Job	Pages Per Minute (not seconds)				
Advertised CPM	50	35	45	40	45
35 Pages Word 2000 (Simplex)	38.51	32.31	7.13	28.03	38.21
5 sets 6 page Word Perfect (duplex)	33.38	24.00	17.09	24.00	18.40
Network Loading (simulates network traffic and mixed work).	2.61	10.06	4.85	10.47	11.32
Average PPM	24.83	22.12	9.69	20.83	22.64
% of Engine Speed	49.66%	63.20 %	21.53 %	52.07 %	50.31 %

On standard Word and Word Perfect jobs the Sharp AR-507 was fairly fast. The network load test result was disappointing but we highlight the fact that it was the Sharp AR-507's ability to process graphical documents that slowed it down on this test. If you rarely print graphical based documents you may never see the lower speeds. Prior to considering the results / comparisons, remember that we tested some 5 units in total in both UK and USA. On our 35 page Word 2000 test document we achieved 38.51ppm on a UK tested system versus 38.46ppm on a USA tested unit. Both these results are within the plus or minus 3% variations that we would expect to see between two identical Sharp AR-507 units tested side by side in UK or USA.

TANDEM

Sharp's AR-507 supports both tandem printing and tandem copying. Sharp have taken a very simplistic approach to tandem and offer a very low cost connection as part of the package. Every Sharp AR-507 has tandem copy capability as standard; all that you need is a SCSI cable to connect.

When considering speeds of a 50 page per minute system you can compare results against alternative units built for similar speeds. However, when comparing clustered or tandem systems - how do you compare results? Three 40ppm clustered systems have an advertised speed of 120ppm while two tandemed 50ppm units equate to an advertised 100ppm; meanwhile they are being pitched at replacing / supplementing larger print room devices which are advertised at up to 135 pages a minute. For this reason the range of products that we compare tandem and cluster print options to is reasonably wide. To test tandem copying we produced multiple runs comprising eight copies of a 35 page duplexed document (70 printed sides x 8 sets = 560 page job). We copied in 2:2, 1:2, 2:1 and 1:1 modes to evaluate benefits and productivity of tandem versus a traditional high volume / repro room copier.

Tandem Copy Productivity Tests					
35 Pages x 8 Sets / copies - Timed from Starting to Scan (Go) until Final Page Out					
System Printed On	Source of Job	Duplex	Sides / Images	Advertised PPM of combined system	Tested PPM
1 x Digimaster 9110	Copy	No	280	110	53.15
	Copy	Yes	560	110	51.15
1 x Digimaster 9110	Print	No	280	110	104.71
	Print	Yes	280	110	112.01
1 x Xerox 5800 (Analog Copier)	Copy	No	280	120	111.11
	Copy	Yes	560	120	109.57
Ricoh Aficio 850	Copy	No	280	85	81.55
2 x Ricoh Aficio 700 (Tandem)	Copy	No	280	140	106.33
	Copy	Yes	560	140	95.45
2 x Konica 7065 (Tandem)	Copy	No	280	130	94.73
	Copy	Yes	560	130	92.46
1 x Konica 7075	Copy	No	280	75	73.68
1 x Minolta Di620 and 1 x Minolta Di620PE (MicroPress tandem)	Print	No	280	124	91.8
	Print	Yes	280	124	90.9
Sharp AR-507 (Tandem)	Print	Yes	280	100	61.53
	Print	No	280	100	64.27
Sharp AR-507 (Tandem)	Copy	No	560	100	64.36
	Copy	Yes	280	100	48.97

Speed of subsequent sets: On short to mid length runs, Sharp's tandem did not blaze any trails because of the time it took to process and transfer the initial set of data to both engines. However, once the transfer was achieved the speed of the system increased to 20.29 seconds per simplex set and 21.61 seconds per duplex set which equates to a **maximum speed of 103.4 pages a minute** (excluding first page out time).

Tandem is a relatively new market where you link two copiers or two printers together and share the print or copy job between units. In essence, tandem printing is identical to two-printer cluster printing, with MicroSoft NT/2000 Printer Pooling you can configure the Sharp AR-507 to "hunt for first free printer", redirect on busy or split jobs across two AR-507s (similar to Ricoh's Port Navi and T/R's MicroPress) to build a competent cluster. You can also set up more than one tandem system to have multiple Sharp AR-507s running. How the tandem split takes place differs from product to product. Some copier-printers switch jobs backwards and forwards between print engines utilizing each product when it is free but swapping the job back to the other unit if/when someone interrupts and uses the unit for a copy job, etc.

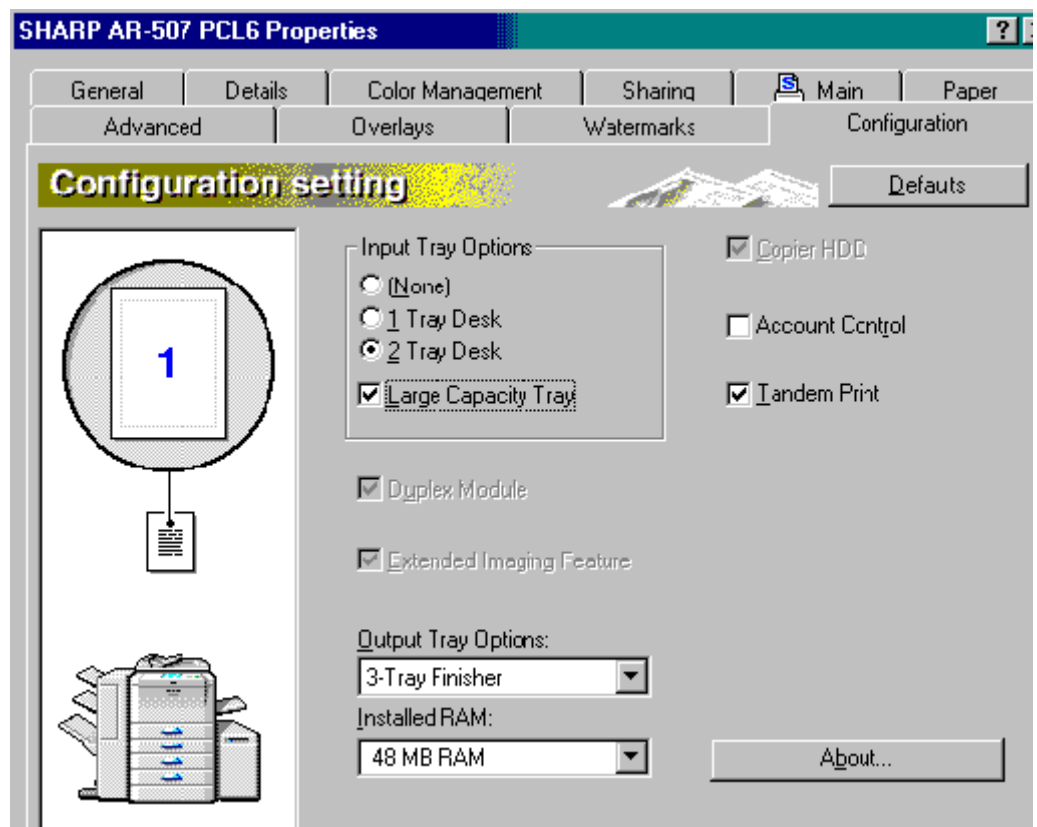
Sharp's tandem system sends the print or copy job direct to the first unit online. The split is then processed on the first Sharp AR-507 which sends data over to the second linked unit. This was slower on duplex copying than on printing or simplex copying.

When copying: Our jobs were scanned into the document feeder in the usual fashion for a walk up copier. All we had to do to use tandem was to press the tandem button. While the first AR-507 started printing very quickly we found that it took over a minute for the copy job's data file to transfer to the second AR-507 and start printing. This had a detrimental effect on short run productivity which was absorbed better into long copy jobs than short runs.

When printing: Tandem printing was not an option on the the main driver screen but was a tick box on the configuration page. Once the box is ticked you can select Tandem from the "Advanced" tab of the driver by selecting the "Job Control" button and from here Tandem can be turned on/off for each job.

The speed of processing the tandem print job was much faster in duplex print mode than the duplex copy mode and we achieved similar speeds for both duplex and simplex tandem printing.

Paper misfeed or end of paper: When sent in tandem mode our copy job was split across the two machines with four sets being produced on each machine. When one machine ran out of paper the remaining job **did not** switch back to the machine which had paper; this was repeated when we had a mis-feed. We could not set up the next copy job until the first job had finished. Splitting the jobs between the two machines worked reasonably well and we achieved the speeds shown in the above table.



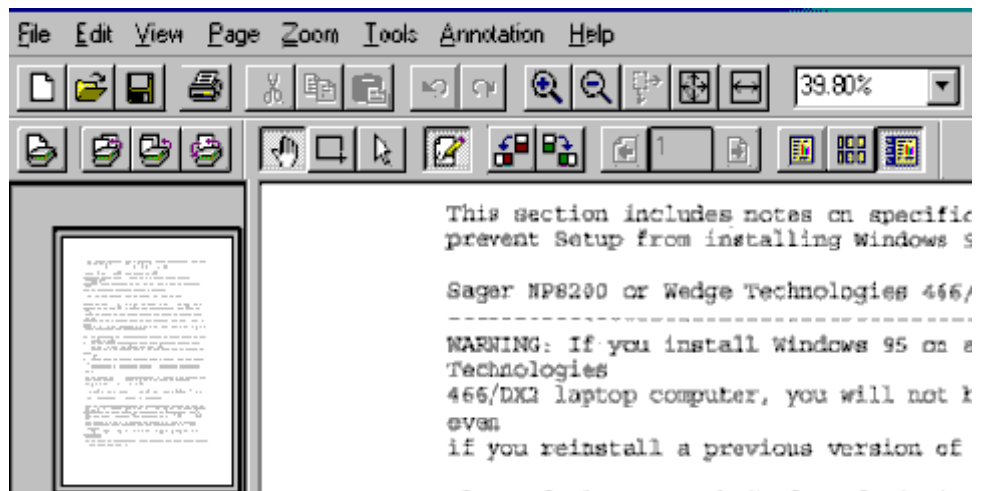
SCANNER BASED OPTIONS (SCANNING & COPYING)

Sharp offer two different scanning options (1) their own integrated scanning option which is incorporated into the control panel and firmware of the main copier body and (2) an External Axis scanning option.

SHARP SCANNING: Our preference was for Sharp's integrated scanning option. For simplicity we start our evaluation from the user terminal where we were presented with the following applications:

NetScan is installed as part of the Windows Start Up routine. Once installed NetScan monitored our computer for jobs arriving from the Sharp AR-507. When it sensed a job arriving (ie: we scanned an image back to our PC to work on) it automatically opened Sharpdesk.

Sharpdesk is Sharp's desktop management program for the scanning options. From Sharpdesk we could browse, save or retrieve jobs using the standard Windows filing system. All arriving scan jobs were automatically placed onto the desktop of Sharpdesk as thumbnail images with a linked name and file date. This meant that we did not have to go looking for any documents nor rely upon a coded index system (a common limitation on some competing units) across the network. With Sharpdesk we could instantly see the documents at a glance and to open the document to full size we simply double clicked it. This opened 'Imaging for Windows' which is a standard component within Windows 98. It is worth noting that some competing products have nothing comparable to Sharpdesk but make you browse to the copier hard drive, retrieve a coded document blind (ie: no thumbnail image), copy it to your PC and then rely upon 'Imaging for Windows' as the sole scanned document utility. Imaging for Windows gave us reasonable control over the document / scan. From Scan Desk we could simply drag and drop scanned images into OCR, send to email, print or send to other locations or programs. All Sharp scanner users get a choice of two 'Expert Vision™' OCR packages with the installation CD. The standard free OCR package is Expert Vision Lite which delivered pretty much everything that most users will need. Also included with the CD is Expert Vision Pro which requires registration and payment of a small fee but delivers a superior OCR package with more professional capabilities.



Network Scanner Tool is a macro / programming tool that allows you to configure automated routines for arriving documents. For example: When sending text based documents back to the PC you can have the document arrive, be auto sensed, sent to OCR and sitting waiting as a word processing document on your screen by the time you get back to the terminal. When configured with MicroSoft 'Front Page' and their scan to web program you can have a usable web page on your PC by the time you get back to your PC (example only - not included with Sharp AR-507).

Web Based Administration: The Sharp AR-507's control panel allows you to choose pre-set destinations, email addresses and desktops but, currently, has no alpha-numeric keypad facility to let you key in your destination at the copier/scanner. Authorised users and administrators can browse to the scanner configuration settings and enter, or alter, email addresses and other locations. In practice it was quite easy to set up.

From the copier you have a reasonable amount of control over the scanned documents and it was relatively simple to use. Sharp have installed a 'Scan' button on the control panel which we preferred over software based buttons built into LCD touch screens. All you do is press Scan and the scanning software menu opens in the LCD touch panel. Simple tabs let us choose the dpi of the scanned image or select from three large tabs marked: **e-Mail, FTP or Desktop**. Whichever we chose presented the destination in a simple format. On the screen we could see up to 8 large buttons which contained the name of the location, email or person that we could send to. All we did was press the appropriate button and our scan started and sent. For names that were off-screen we could scroll up and down the lists of names. This scrolling was not ideal but was functional; Sharp advised that in later generations of the product they will be including an alpha-numeric keypad, with support for lists and tabs (ie: A, B, etc).

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We could also choose the file format from Tiff Group 4, Tiff Group 3-1D, Tiff Uncompressed, Acrobat PDF level 4 or Acrobat Level 3. Depending upon our preference, we could select that each page of a multipage document was saved as a separate file (ideal for IT managers and reduction of network packet sizes) or as a single multipage document (may have advantages for security because it keeps the job together as one complete file).

AXIS SCANNING: Sharp also offer a second scanning option which is achieved using a system called AXIS 700. AXIS 700 uses Axis Communications' ThinServer Technology to operate completely independent of any file server or PC. Designed to work on open standards like e-mail (SMTP) and file (FTP) clients and an embedded HTTP (Web) server, the AXIS 700 is suited to intranets and the Internet. Since it uses TCP/IP, the Sharp copiers can send documents in Windows, UNIX, NetWare, OS/2 and Macintosh network environments. When used as a distribution tool, corporate resources are optimized by sending information directly to enterprise applications from the copier. The solution comes with support for applications and destinations such as e-mail, desktops, fax servers, groupware, workflow and document management.

Network administrators manage the copier's scanning functions through a Web browser and since the AXIS 700 uses automated configuration techniques, like DHCP, it may eliminate the frustration of installation. Support of Industry Standards: Standards like TCP/IP, PDF, LDAP, FTP and DHCP, are all common when using the AXIS 700 to connect the Sharp copier to the network. Users can choose the document format ranging from TIFF, JPEG, or PDF. Because Axis supports open standards users can use existing tools which are already on their desktops to view documents.

We found that the scanning system worked quite well. Documents scanned quickly and the image quality was to a good standard. The use of the Axis system meant that the scanner was a true network scanner rather than connecting via a dedicated PC through a SCSI cable. We would have liked to have seen a method of fully controlling the scanner via a local keypad (we had to go to a nearby computer screen to use the system) and found it a bit complex trying to add a new party / name to our distribution list.

COPIER FUNCTIONS: All Sharp copiers are currently limited to holding only one copy job in memory at a time. This means that such units are printing a long copy job the walk up users can not access the copier and must walk away and return later. This limitation somewhat counteracts the productivity advantages of digital copiers. A number of their competitors now have multiple copy memories and linked capabilities that were missing from the Sharp range.

The reason why these memories are important is illustrated below: When configured with the print option you need to scan copy jobs into the print queue. With copy memories, our copy jobs are scheduled to print very easily. In contrast, tests on units with no scan ahead memories caused some delays. Because the Sharp AR-507 has no advance copy job memories it can only hold one copy job in memory and that is limited to the current job. You can scan a copy job into the Sharp AR-507 memory to print multiple copies without re-scanning the originals but you can not scan a copy job into memory when: (a) an existing copy job is in progress, nor; (b) when the Sharp AR-507 is printing.

The lack of copy memories was most noticeable when a print job was in progress. If you walked up to get a copy the unit was effectively frozen; you could set the job up but it would sit in the document feeder until the print queue cleared or the current copy job finished. This left us with the choice of : (i) do we risk our originals by leaving them unattended in the document feeder until our job auto-scanned, or (ii) do we stand and wait for the copier to become free and scan our jobs, or (iii) do we come back later and try our luck again (potentially having the same problems on our next attempt). None of these options were ideal.

These limitations exist on most other 40-50 ppm copier-printers which are similarly configured. However, Sharp are offering a tandem option and therefore there is a chance that very large print job or copy jobs could be run on the system - this could heighten the need for memories.

At 50cpm the Sharp AR-507 falls between most other manufacturers ranges. Some manufacturers have a 40 or 45cpm copier and then jump to 55cpm or higher with a comparable price increase. Sharp is competitively priced and we felt that the most suitable comparison may be the 40-45cpm copiers rather than the higher priced / higher specified 55-60 or higher speed systems. Compared to these competitors the Sharp AR-507 has copier productivity advantages in various modes as well as on overall / average throughput speed.

Copier Productivity Tests					
	Sharp AR-507	Panasonic FP-D450	Canon GP405 ImageRunner 400	Xerox Document Centre 440	Ricoh Aficio 450
Copy Job	Copies Per Minute (not seconds)				
Next Job - Copy Memories	None	None	None	None	None
Advertised CPM	50	45	40	40	45
1 Set 1:1 (5 images)	24.37	21.58	18.75	19.75	28.47
5 Sets 1:1 (25 images)	40.08	30.33	30.93	24.94	30.93
1 Set 2:2 (10 images)	19.12	10.32	14.97	11	14.88
5 Sets 2:2 (50 images)	25.31	26.52	24.19	21.38	25.23
20 Pages 2:2 (40 images)	13.43	11.86	19.05	12.43	11.44
Average CPM	24.46	20.12	21.57	17.9	22.19

We felt that the copier had a really nice LCD touch control panel. It was well laid out, icons and text were of a good size and most of the main user options were simple to find.

There is a 400dpi copy scanner that for most office applications gave reasonable image quality. However, the limitations of 400dpi were visible on smaller text sizes that did not have the definition of 600dpi and small point text and fine lines started to break up. However, it allowed us to get a far better image quality than from most other 400dpi copiers. This quality came into its own on 'Mixed Text and Photo' mode where images and text looked really good. It is worth noting that the trend from competing manufacturers is to upgrade their copiers to include 600dpi copy scanning.

For buyers who need greys and subtle shades Sharp's AR-507 may not be the best choice because it showed a weakness for grey shades and colours which often faded completely or were banded, half visible and mottled on standard text mode. It was substantially better in the Mixed mode but the image quality fell away at 24% black and below. Some of these qualities are common to 400dpi copiers.

There is one of the largest zoom enlargement facility that allows you to blow sections of documents up by 800%.

Productivity Tests			
Output Origin	Job		
Copying A4/Letter	5 pages	24.37	CPM
Copying A4/Letter	5 sets of 5 pages	40.08	CPM
Copying 1:2	10 single to 5 double	31.2	CPM
Copying 2:1	5 double to 10 single	30.8	CPM
Copying 2:2	5 double to 5 double	19.12	CPM
Copying 2:2 Short documents	5 sets 5 double to 5 sets 5 double	25.31	CPM
Copying 2:2 Long Documents	20 double to 20 double	13.43	CPM
Printing Multiple Sets in Duplex	5 sets of 6 pages Word Perfect 9.	33.38	PPM
Printing Various Networked Jobs	Mixed Network Workload	2.61	PPM
Printing Simplex:	35 Page Word 2000	38.51	PPM
Concurrency	Mixed Print & Copy	Single Copy Memory only	

Remote Control from Client Terminals on Network	
View Toner Levels before printing	Yes, via Sharp Monitor
Estimate max pages printed from toner	Yes
View paper levels in trays	Yes
Check page throughput \ copy totals	Ye,
Specify problem (paper jam, door open)	Yes
Obtain departmental management figures	Some info, Via Accounting Function
See \ View 3 rd party products	No
Estimate toner usage	No

Bandwidth \ File Sizes & Send Once Print Many		
Print Job	File size Mb HP 320 Mopier	This Printer
Network Load Test	10.07 Mb	10.19 Mb
1 copy of 6 pages WP-8	140 Kb	300 Kb
35 Page Word 2000	300 Kb	327 Kb

Production Efficiency & Network Usability\ Capability	
Copier: Scan Once Print Many	Yes
Copier: Max Jobs Auto Scanned into memory	1
Print: 1 st page from different tray than rest of page	Yes
Print: Insert dividers for chapters from driver	No
Print: Insert front and back cover from driver	Front only
Print: Offset separate finished documents	Yes
Print: Send to physical mailbox for later collection	No
Print: Send to virtual mailbox & print with password	Yes

Reproduction Quality		
	Copying	Printing
Banding \ Screen Clash	Slight	None
Small Text \ Lines	Reasonable	Good
Colour Definition (in grey)	Low	Average
Photo Fine detail	Good	Reasonable on all but PDF
General impression	Good	Good

Copy Quality measured to ISO standard from test pattern placed on copy glass	Clarity High 50 Low 140	Lines High 5.0 Low 2.0
	70	4.5