



LABCHECK

Toshiba e-STUDIO 810
configured with EFI GA-1140 print controller

81ppm Digital Copier - Printer - Scanner

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OVERALL SUMMARY

PROS

Good entry level pricing for copier base unit and printer.

Well designed icon based printer driver.

Powerful, flexible document production capabilities allows users to incorporate up to 6 paper sources into a single document (bypass, 3 trays, LCT and Post Process Inserter).

Good finishing options including booklet maker and post-process insertion. Post Process Inserter can add pages throughout document (not limited to covers). Finisher can also be used offline to produce up to 15-sheet documents (60 page booklet). Up to 115lb /209gsm paper weights and tab stock supported from all trays. The combination of heavier paper types and post process insertion makes the Toshiba e-STUDIO 810 one of the 'best in class' for paper weight / substrate capabilities.

Functional Scan to E-mail and Scan to File capability.



Toshiba e-STUDIO 810 with 4,000 sheet LCF, Post Process Insert and booklet making finisher

CONS

If fully configured, the GA-1140 is a relatively expensive print controller. The hard drive is not supplied as standard but can be purchased as an optional extra. Scan to e-Mail is functional but not as advanced as some competitors. Max 1,000 sheet ledger / A3 supply in drawers (this may only affect booklet maker users). 5 next job copy memories versus between 9-to-unlimited on some comparable devices. High bandwidth created on standard word processing documents, plus the driver was unable to recognise the collation commands within standard office applications.

This LabCheck report covers the Toshiba e-STUDIO 810 configured with the GA-1140, EFI print controller. We also tested the Toshiba e-STUDIO 810 configured with the Toshiba manufactured GL-1020 print controller. A separate LabCheck report exists for the GL-1020 configuration, as price, performance and functionality differs.

The Toshiba e-STUDIO 810 is a 'ground up' newly designed system. Also available from Toshiba are 55ppm and 65ppm models, each is built around the same engine / components. There have been numerous improvements over the previous Toshiba 80+ppm device, these include the addition of 5 next copy job reservation memories (earlier units had none); substantial upgrading of the printer driver's ability to control where individual pages of a document are printed from (i.e.: you can choose the paper source for each page of a document).

Paper Supply : The Toshiba e-STUDIO 810 ships with 3,600 sheets on-line paper capacity, which is adequate for most offices but not as high as some of its competitors. However, when fully configured, the paper capacity increases to a total of 7,600 sheets which, although not the highest in its class, is higher than some units currently on offer.

There is an optional 4,000 sheet Large Capacity Feeder, which departs from the older Toshiba models by being side mounted and front loading. As a further improvement, the new Toshiba e-STUDIO 810 supports 115lb / 209gsm from all paper sources with tab printing / copying and sheet insertion; 'Post Process' insertion is also possible. Post Process insertion allows the user to add extra pages to a document from a paper source positioned on the external / output side of the fuser unit. For example, a front cover which has been printed on a color laser printer can be added to the document via the Post Process Inserter, bypassing the hot fuser unit which could otherwise damage the color cover.

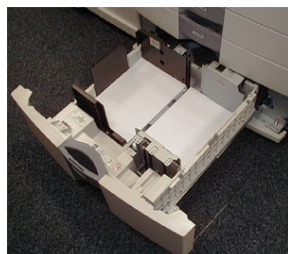
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In addition to feeding paper for the documents produced on the Toshiba e-STUDIO 810, the post process inserter can be used as an off-line finisher (i.e.: feed ledger/A3 printed work through the finisher as documents or saddle stitched folded magazine style booklets). **The combination of heavier paper types and post process insertion makes the Toshiba e-STUDIO 810 one of the 'best in class' for paper weight / substrate capabilities.**

The standard unit has a bypass tray, two 500 sheet universal paper drawers and a 2,500 sheet, letter / A4 sheet tandem feed (1,250 sheets per side). The tandem tray is a single drawer with two internal sides that take paper.

When the right hand supply has been depleted, the left hand stack of paper is pushed over to the right and printing continues. This gives a large paper supply in one drawer but is not as flexible as some other units. If the two paper holders were in separate drawers, like some alternatives, you could have a different paper stock in both drawers and / or could refill paper supplies more simply while the device was running.



Tandem paper drawer

Because Toshiba offers a fairly powerful booklet making finisher option, we would like to see more on-line ledger/A3 paper supplies than the two 500 sheet universal drawers and 100 sheet bypass provide. However, for most purposes the

combined 1,100 sheets ledger/A3 will suffice. Where it may be a limitation is in print shops or offices that want to make a lot of booklets (the maximum online booklets produced without a paper refill could be limited to 73 which is lower than some competing units).



Full Paper Supply is 7,600 sheets (1,000 ledger / A3)



Post Process Inserter

Document Feeder : There is a 600x600dpi, 100 sheet duplexing document feeder (RADF), that passes the original over a fixed scanner (similar to the e-Studio 35 and 45). Toshiba has stuck to a traditional 'one side at a time' scanning system rather than adopting a single pass scanner with two scan heads that pass over the top and bottom of originals at the same time. Toshiba's document feeder does not allow as wide a choice of original types as a single pass scanner but the duplex copy speeds were faster than other copiers which may put it on equal footing with a single pass dual head copy scanner. Toshiba advise that they have re-engineered the document feeder to dramatically improve the accuracy of the document feeder's deviation tolerances. The point here is that the scanning systems on modern copiers are increasingly used in document management systems where OCR based applications regularly scan and read forms and other standard documents which require respondents to fill in boxes. If the registration of the scanner is slightly out, the OCR may not correctly read and place the data into the appropriate slots on the computer system. Even if the scanner is only used for text OCR conversion, any minor skew in the original, during document feeding / scanning, can result in a document that is harder (or impossible) for the OCR software to convert.

A nice touch, is that the Toshiba e-STUDIO 810's document feeder outputs ledger/A3 and letter/A4 originals to separate trays.

Finishing Options : Chargeable extras include a multi position stapler finisher and folding, saddle stitch capability (automatic booklet maker) plus a hole punch (capable of 2-and-3 hole or 2-and-4 hole punching depending on which country you are in). There is also the new optional post process inserter which fits before the hole punch to act as an additional paper source for insert or cover sheets. Stapling of up to 50 sheets is currently possible; this is on par with many competing devices, but 100 sheet stapling is now available on some competing units. Toshiba advise that a 100 sheet staple finisher with booklet maker will be available a few months after launch.

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Design : The Toshiba e-STUDIO 810 uses bulk toner (which is loaded by the operator) while the system remains service engineer dependant for other maintenance. Toshiba support printing or copy volumes of up to 400,000 impressions a month, which is possible via a photoconductor / imaging system that Toshiba estimate lasts 460,000 pages between replacement / preventative maintenance.

Page Coverage / Pixel Counter : Newly featured in Toshiba's 55-81ppm devices is a pixel counter which Toshiba claim enables the machine to calculate and store the average toner page coverage for both print and copy documents. This figure is based on the average page size and figures related to the laser diode write times. Our advice is to treat the pixel counter as a general guide only. While it can provide users with a rough feel of the types of documents that are being printed, it was not accurate enough to be used in true cost calculation or for contracting purposes. The reason for this, is that like most pixel counters, the image data that is being calculated is based upon the **ELECTRONIC IMAGE** (i.e.: the data that is being sent to the print engine) and **NOT THE FINAL PRINTED PAGE**. Scientific tests have established that an electronic (i.e.: pixel counted document) that measures, let's say, 5.34% page coverage, when it actually becomes a "printed" document could have a true final "toner on paper" coverage ranging between 7.5% to 18%.

So, what changes 5.34% "electronically calculated pixel coverage" to 18% true "toner on printed page coverage"?

For a start there is the toner.

Different toner has varying electronic charge properties and particle sizes. Tests have found that using third party toner can result in higher page coverage, on standard identical test patterns, which in turn can lead to lower life per toner cartridge.

Then there is the photoconductor itself.

As the photoconductor ages, it's electrical charge properties change and this affects toner usage.

Next you have atmospheric conditions.

Some offices will have lower page coverage and higher toner yields simply because of their relative humidity and temperature. In contrast some offices may have lower coverage on the same device, even if using the identical consumables and parts, because of atmospheric conditions.

To test the Toshiba e-STUDIO 810's page coverage calculator, BERTL took a certified 11.3% coverage test original (containing mixed text and various graphic elements).

The test original was copied multiple times on the Toshiba e-STUDIO 810 and the average page coverage measured on the device was obtained from its control panel.

According to the Toshiba e-STUDIO 810 the page coverage was 9%.

In reality, BERTL's original had 25% heavier page coverage than the estimate from the Toshiba e-STUDIO 810. This means that there could be a fairly wide margin of error between 'electronic pixel counted page coverage' and the actual amount of "toner page coverage" on the "printed" page.

The accuracy may be even less reliable if third party (ie: not Toshiba manufactured) toner is used.

This will only really affect people who are contracting to purchase (or supply), either the equipment or a service contract, in reliance upon the estimated toner coverage from Toshiba's pixel counter / page coverage calculator. Ultimately, several other manufacturers use similar pixel based toner coverage / usage estimating systems and they all have similar limitations.

TECHNICAL IMPROVEMENTS

Toshiba use what they call 'IH fusing' technology to provide a fast warm up time, especially when recovering from energy save mode. Toshiba claim that it is 'typically 160 seconds to first copy / print from cold'.

The IH system is similar to that used in the e-Studio 35 and the e-Studio 45 and is said to be more energy efficient than other types of heat based fusing systems.

For example, Toshiba quote that energy conversion in the Toshiba e-STUDIO 810's IH system is typically around 90% of a Halogen system, (which, at best, can manage 65-70%).

An improvement to earlier Toshiba copier designs is the introduction of a 3 part coil. This is meant to deliver better temperature control, in particular at the ends of roller, which have a tendency to retain heat outside the range of the paper passing through.

The cleaning system of the fuser is further enhanced by using a web cleaner rather than traditional silicon and felt cleaner rollers.

The result is a fusing system that is claimed to have improved reliability and energy efficiency, resulting in the extended preventative maintenance cycles, up to 500K.

Toshiba also incorporated a series of quality control sensors, in the print system, that continually measure the surface potential of the drum in terms of photoconductive ability, drum temperature and humidity.

The toner delivery systems and charging systems adjust during the running cycle to maintain optimum output conditions.

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Disabled Persons Usage / Section 508 Compliance (USA) : The Toshiba e-STUDIO 810 did not appear to be any harder to access than other copiers; although the control panel and post process inserter (when used as a manual off line finisher) may prove a bit awkward from a wheelchair. To assist users with disabilities, Toshiba has angled the control panel and placed large keys in logical groups all with a concave surface, some also have a back light. There is also a Quick Tab with the most used features shown in reverse plus large font sizes to aid the visually impaired.

Network Connectivity / Controller Strategy : Toshiba offers the e-STUDIO 810 with a choice of two network connections / print controllers (1) EFI's GA-1140 or (2) Toshiba's GL-1020. This LabCheck report covers the Toshiba e-STUDIO 810 configured with the EFI GA-1140.

The GA-1140 is built for Toshiba by EFI (Electronics For Imaging). The entry level price of the GA-1140 is lower than the Toshiba GL-1020 ; it becomes more expensive as you add functionality.

The Toshiba e-STUDIO 810's GA-1140 controller ships with PCL only. If you want PostScript you need to buy it as an optional extra. Like most EFI controllers, you get a choice of adding good quality software/applications including DocBuilder Pro (document imposition software) and Fiery FreeForm (variable data printing facility).

Administration can be via Toshiba's 'Top Access' web browser based utility or EFI's optional 'Command Workstation' (we cover this at the end of this report).

In most respects the EFI built GA-1140 is similar to the existing GA-1040 and GA-1110 controllers on earlier Toshiba products, although there are some additions to the driver including Tab Page printing.

Unlike Toshiba's earlier EFI made controllers, the new GA-1140 controller can be upgraded to include Network Scanning once the optional hard disk has been fitted. This option supports both scan to file (it saves to a mailbox on the GL-1140's internal hard disk drive) plus scan to email and FTP options. People who have purchased 'DocBuilder Pro', will also be able to scan direct to 'DocBuilder Pro' and use EFI's 'Job Build' or 'Composer' functionality which will give them the additional benefit of a full page layout / imposition functionality.

Finally, the GA-1140 supports new features from EFI including 'Print Me' and their 'Sky Spooler' system (for more details on these - visit www.EFI.com). We do not cover these applications in this report but it is worth noting that most printers will require a separate device attached to the parallel port of their printer to access stored or "spooled" print jobs resident on a web server for Print Me. If you have the GA-1140 it supports "Print Me" internally, which cuts out the need for the extra device. Cluster Printing (join multiple printers and use them as one combined printing system) and load balancing (split jobs between multiple printers to speed work up or balance volume throughput across devices) is available on the GA-1140 controller by buying/using EFI's 'Velocity' suite of applications. This differs on the Toshiba made GL-1020 controller which will not link to EFI's Velocity. The Hard Disk Drive option (GE-1060) which also includes the Adobe PS3 chip is required to use the GA-1140 with EFI's Velocity Workflow software.

Toshiba E-STUDIO 810 Configured with GL-1020 Print Controller

BERTL has published a separate LabCheck Report on the Toshiba e-STUDIO 810 configured with Toshiba's own GL-1020 controller.

The GL-1020 is based on a Linux Server platform; this differs from the earlier GL-1010 and SC-2 which were NT4 based.

Toshiba advise that its goal is to have high-speed print control and RIP functions with an easy to use graphical icon based driver.

Unlike earlier Toshiba controllers, the GL-1020 offers "Scanning At No Extra Cost".

From BERTL's perspective, scanning is a critical application for many offices. It is understood that EFI is moving their controllers over to Linux.

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PRINTER FUNCTION

The Toshiba e-STUDIO 810 can be upgraded, at relatively low cost, to a network printer via the purchase of the optional embedded GA-1140 print controller.

Base print controller specifications are :

- 500Mhz Processor
- 128MB RAM (upgrades to 256MB)
- No hard drive
- PCL6 printing
- No PostScript printing

Upgrading Specifications :

- If you need a hard drive or PostScript, you can buy a 10GB hard drive option (GE-1060) which includes the Adobe PS3 Chip (GE-1020).
- The hard Disk Drive additionally includes EFI's FreeForm as well as DocBuilder, Command Workstation, Fiery Scan and EFI's Web Tools. With this option the system can be used with Velocity and DocBuilder Pro, both from EFI.
- Both the maximum RAM and hard drive size are lower than a number of alternative systems.
- If you want to use the scanning options, you must buy the optional hard drive.
- The price of the PostScript upgrade is reasonable, by copier-printer standards, but this has to be balanced against the fact that many printers and some copier-printers provide PostScript as standard in the entry level printing price.
- The entry level price of the print enabled Toshiba e-STUDIO 810 (with GA-1140) is attractive but if you need scanning you have to add the hard drive and then the price increases sharply.
- On the other hand, if you have no requirement for scanning, Toshiba offers you a good overall price and high speed print (and copy) productivity.

The Toshiba e-STUDIO 810 test unit had no hard drive. It was installed with 256MB RAM, PCL6 software driver level 1.0, side mounted large capacity paper tray and entry level finisher (not the booklet maker).

We connected to the Toshiba e-STUDIO 810, via a direct 10BaseT TCP/IP connection in Windows XP. Some of the installation could be improved. For example, when you place the Toshiba CD into your computer it automatically runs an installation which, unless you choose to install only required components, installs Agfa fonts onto your computer. At the end of the installation it forced the client computer to close and reboot; this was both time consuming and unwanted.

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Toshiba e-STUDIO 810 Printer Productivity Table
 All speeds expressed in pages per minute (ppm)

	Toshiba eSTUDIO 810	Copier-Printer 1	Copier-Printer 2
Advertised Engine Speed (PPM)	81	75	72
Word 35 page document (printed in simplex)	62.37	62.28	55.69
Word Perfect 5 sets of 6 page document (printed in duplex)	48.91	54.81	45.24
Netload Load Test (Multiple documents)	19.27	34.25	20.14
Average Speed (PPM)	43.52	50.44	40.35

As the table above illustrates, the Toshiba e-STUDIO 810 delivered reasonable speeds but its duplex speed did not match the simplex performance.

During the network load test, a series of simplex and duplex print files (combining color and mono files from multiple applications) are sent to print.

Our Network Load Test examines how well the processor is able to cope with transitioning between different print job types. As can be seen above, most printers slow considerably when asked to perform this test. However, the Toshiba e-STUDIO 810 was slower on this work pattern than our benchmark comparison devices.



Evaluating the Toshiba systems

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Our next test measured the comparative performance of the Toshiba e-STUDIO 810 when processing larger streams of network traffic and more complex and varied work loads. **As our results show, the print performance of the Toshiba Toshiba eSTUDIO 810 was reasonable and much faster than one of our benchmark devices.**

Mixed Work - Sent as Separate Print Jobs					
Product			Toshiba eSTUDIO 810	Copier-Printer 1	Copier-Printer 2
Maximum Advertised Engine Speed			81 ppm	75 ppm	72 ppm
	Sets	Type	Print Time	Print Time	Print Time
6 Pages WP9	5	Duplex	36.80	32.84	39.79
3 Pages Word	1	Simplex	8.97	8.50	12.44
10 Pages Acrobat	1	Simplex	14.77	16.31	67.97
6 Pages WP9	1	Simplex	15.88	11.87	22.44
1 Page Acrobat	1	Simplex	7.44	7.87	20.25
Acrobat 5 Pages	1	Simplex	12.28	11.31	47.15
Word 35 Pages	1	Simplex	33.67	33.72	37.71
Word 22 Pages	1	Simplex	24.50	22.38	29.69
Acrobat 1 Page	1	Simplex	8.70	7.91	15.50
Acrobat 2 Pages	1	Simplex	10.15	7.94	12.31
PowerPoint 15 Pages	1	Simplex	86.31	46.85	291.16
Access 10 Pages	1	Simplex	31.56	24.22	21.62
Total Time to print jobs			291.03	231.72	618.03

When processing the entire set of jobs as a rapid sequence of jobs arriving from the network, the Toshiba e-STUDIO 810 delivered reasonable productivity with a substantial differential over one of the benchmark devices.

Mixed Work - Sent As One Continuous Network Stream			
Product	Toshiba eSTUDIO 810	Copier Printer 1	Copier Printer 4
Maximum Advertised Engine Speed	55 ppm	55ppm	60ppm
All above jobs sent as one network load	157.09	132.85	352.00

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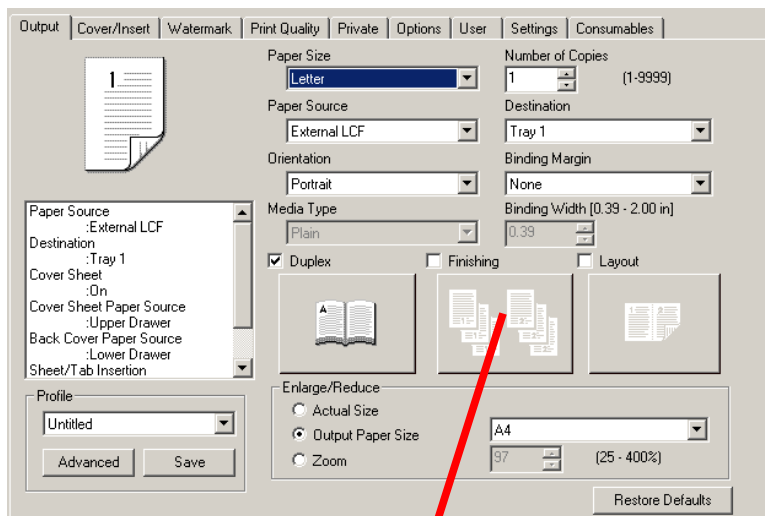
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The printer driver was well laid out, graphically orientated and relatively simple to use.

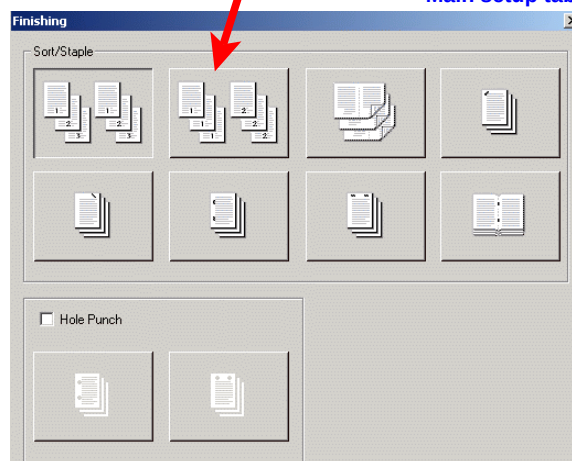
Some of the more complex functions are accessed via graphical icons on the main tab (marked Output).

To set up 'Finishing', you simply click on the named icon which presents a new and more detailed graphical tab with icons that show you the type of finishing you can select. All you do is point and click to set the type.

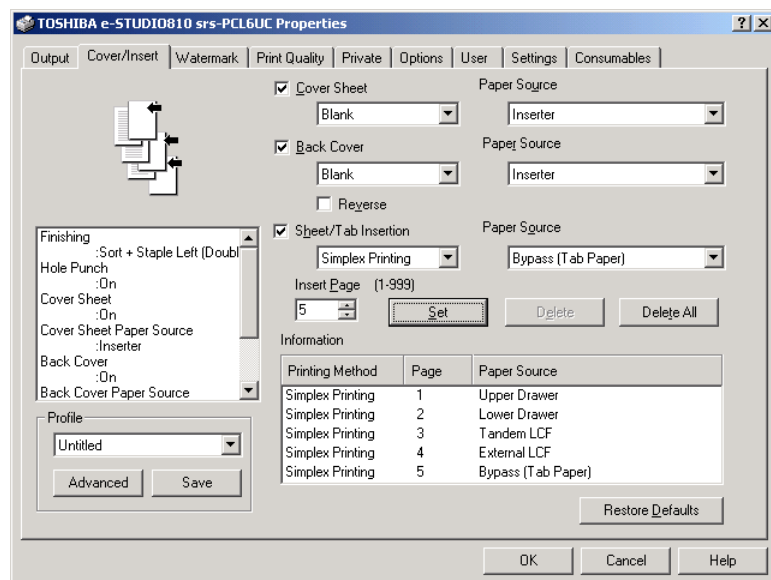
A major advantage of the Toshiba e-STUDIO 810 is its ability to select each page of a document from up to six different paper sources. This makes the Toshiba e-STUDIO 810 the most flexible, for document production, in its class. For example, you can produce a 20 page manual with covers, photos and other color papers throughout (up to 6 different paper types). The Post Process Inserter can be used to deliver photographs or other paper types to any page within the document (this differs from most devices with Post Process Inserters that can only be used for front and back covers).



Main setup tab



Icon based sub menus (ie: Finishing)



In our example (see images top right and bottom left) we set :

1. Front cover/letter headed paper to feed from the top drawer (using Cover Sheet setting on the Cover/Insert tab);
2. Main paper to feed from large capacity side feeder;
3. Various numbered pages to feed from bypass tray (but it could have been via the Post Process Inserter for photos, etc) using the Sheet/Tab insertion setting;
4. Back page from lower drawer (using Cover Sheet setting on the Cover/Insert tab).

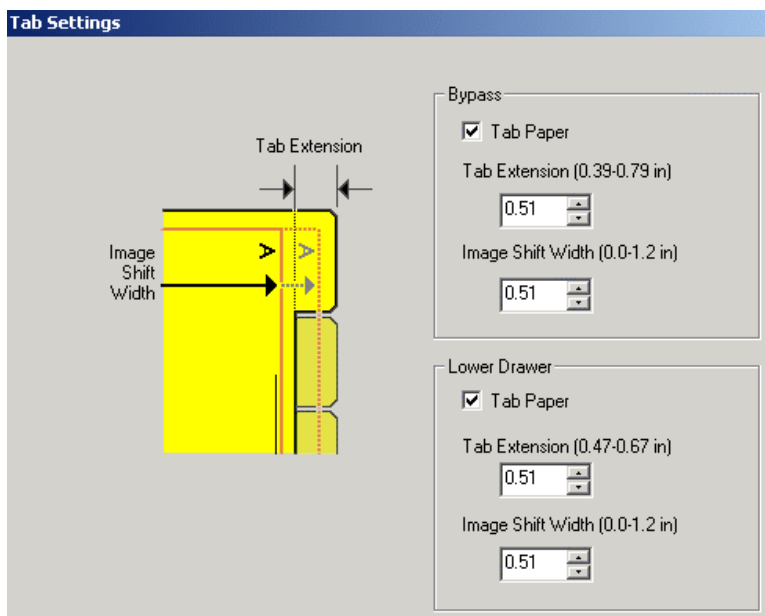
Select multiple papers sources via Cover/Insert tab

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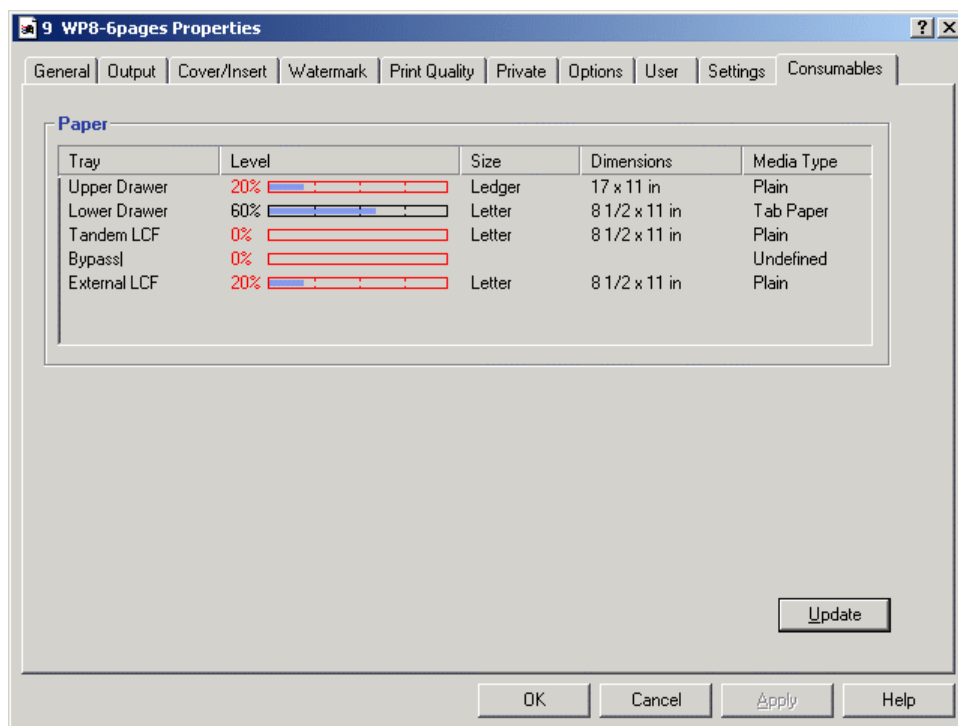
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Tab Printing is also supported on the Toshiba e-STUDIO 810. This was simple to set up using the graphical icon based settings.

As the image (right) shows, you can have two sets of tabs fed from either the bypass or lower paper drawer of the Toshiba e-STUDIO 810.



Tab settings



Dynamic Printer Status fed back to PC screen

Paper Levels / Dynamic Feedback from printer was better than most copier MFP's tested.

Under the consumables tab, in the printer driver, the printer's paper levels are displayed.

This handy screen lets you see if there is adequate paper for your job before sending it to print.

Toshiba's naming conventions could be improved, however. For example, we expected to find toner levels under the 'consumables' tab while paper should have been under either 'paper' or 'substrates' (see image to the left).

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BOOKLET MAKING

The Toshiba e-STUDIO 810 can be configured with an automatic booklet making finisher (saddle stitch finisher).

The printer driver's menu for creating saddle stitched booklets is simple to follow.

A minor design limitation is that only two of the paper drawers (plus the bypass) on the Toshiba e-STUDIO 810 can handle ledger / A3 paper which means that up to 1,000 sheets (via auto drawer switching on empty) are available on line for continuous booklet production. While this is similar to most 50-60ppm devices, at least one competitor can print up to 6,600 sheets of ledger paper, (up to 600% more ledger paper than competing units).

When calculating the number of booklets that can be produced via the two paper drawers, bear in mind that a booklet requires 15 sheets of paper to produce a 60 page booklet.

Like the other printer tests, the Toshiba e-STUDIO 810 delivered reasonable speeds but was not as fast as some alternative devices.

20 PAGE MAGAZINE STYLE BOOKLET CREATION

	Toshiba e-STUDIO 810	Digital Copier-Printer 1	Digital Copier Printer 2	Digital Copier Printer 3
Engine Speed	81	85	75	72
Status When Ejected	Fully folded, center stapled and stacked for packing	Fully folded, center stapled and stacked for packing	Fully folded, center stapled and stacked for packing	Fully folded, center stapled and stacked for packing
Seconds per booklet (after first out)	18.69 secs	14.66 secs	23.91 secs	17.16 secs

To test the booklet making speeds and functionality, a 20 page letter/A4 document is sent to print 'magazine style' with centre folding, saddle stitch finishing onto ledger / A3 paper.

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Our next test was to produce a 17 page manual. This test requires 5 different paper sources, and a total of 7 paper tray changes throughout the document production life cycle.

The Toshiba studio 810 proved to be one of the few devices capable of performing this test.

This test requires the automatic insertion and printing of front covers, back covers, tabs / chapters plus the ability to switch paper sources for the various sections and chapters.

This test job simulates 20 sets of a single sided (simplex) print job which requires the fully automatic production of a manual comprising :

- Front cover from 1st paper source
- 2nd page on letter head from 2nd paper source
- 4 pages plain paper from 3rd paper source
- Tab from 4th paper source
- 5 pages on plain paper from 3rd paper source
- Tab from 4th paper source
- 3 pages on plain paper from 3rd paper source
- Back cover from 5th paper source

This function is likely to be required in a print-shop / CRD (central reprographics department).

Toshiba stress that it is not targeting the Toshiba e-STUDIO 810 into this sector but envisages the device being used primarily as an office system. If you need to produce manuals with 5 or more paper sources in one document there is limited choice, therefore Toshiba e-STUDIO 810's 6 paper source capability is considered ideally suited for most purposes including specialized applications / print shops.

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Bandwidth : Like most EFI built controllers, the Toshiba e-STUDIO 810's GA-1140 produced low file sizes for Acrobat and graphical documents but delivered larger than average print file sizes / network traffic on standard office documents. For example, a 35 page Microsoft Word document was 1.5MB which is close to 5 times larger than some network printers.

This limitation was compounded by the Toshiba e-STUDIO 810 printer driver not interacting effectively with the collation function within the first / main printer driver in the application.

On 5 sets of the 6 page Word Perfect document Toshiba e-STUDIO 810's GA-1140 print driver created a 30 page document (instead of one five page set with a command to print 5 copies). This led to bandwidth use of almost five times larger than a single set. The driver RIP's the 30 page job, sending it as a single file across the network; instead of 5 separate stapled documents you get one single 30 page document. When duplex printing multiple sets of a 5 page document, Page 1 of the second copy of the document will be printed on the back of page 5 from the first copy. A consequential mismatching will occur throughout the entire run and make virtually all the copies unusable. However, you can get around this by manually unselecting the collate option in the application's print menu.

Job Queue Management : Within the control panel of the Toshiba e-STUDIO 810, we could view a list of printer and copy jobs queued to print. We could move jobs up and down the queue and delete jobs. This function worked reasonably well.

Print image quality on the Toshiba e-STUDIO 810 was acceptable for most offices purposes : Some images, including photographs were reproduced a bit darker than preferred but not to a worrying degree and no jaggiess was seen, (a common problem on some other units). Solid black and grayscale blocks were reproduced with some visible banding and graininess. Because some images were a bit dark, the ability to clearly print colored text (screen colors reproduced in gray shades) on solid colors was impaired and sometimes hard to read. If purchasing the device for a print shop / reprographics business, we recommend buyers take their own print samples to see if they suit their purpose.

Network Management System : Administration can be via Toshiba's "Top Access" web browser based utility or EFI's optional "Command Workstation". Buyers may want to save money by trying Toshiba's "Top Access" first to see if it suits their requirements, if it doesn't then they can add EFI's "Command Workstation" at a later date. The Toshiba e-STUDIO 810 includes a browser based printer management system from which we could view various details on the Toshiba e-STUDIO 810 including; device status, job queue details, device specification / configuration, etc.

Print to e-Mail : Provided you have the appropriate upgrade(s) you can print direct from the print driver to an email address.

PDF / Direct Printing : Provided you install the optional hard drive, the Toshiba e-STUDIO 810 with GA-1140 has the capability to print files directly from the PC without first being processed by either the PCL or PostScript driver. To do this you must use EFI's web based utility and, using a browser, go to the GA-1140's web page, select the appropriate mode, browse to the PDF file and then upload the file to the GA-1140 for processing and printing. This works reasonably well but some devices have the capability to print PDF, TIFF and other file formats directly to the print engine without the extra time / bandwidth that is required to process the jobs in this way.

Internet Printing / IPP : The Toshiba e-STUDIO 810 supports IPP printing. By this we mean that the device can be set up to receive jobs from remote locations across the internet. IPP printing needs to be enabled at the printer engine and an address set up for the device. Once this has been done, users can set up an IPP printer driver by typing in the URL of the device in the port location on the printer driver.

Mailbins / Mailboxes : There is no physical mailbin option, so sharing the Toshiba e-STUDIO 810 across a larger department may be awkward. On the other hand, Toshiba e-STUDIO 810's driver includes virtual mailboxes which they call 'Private Job' (located under the Private Job tab in the driver). While we do not consider virtual mailboxes to be as convenient as physical mailbins, virtual mailboxes do allow users to send jobs to the printing device and hold the jobs in memory until the user arrives and enters a password. This keeps the work separate from other work arriving at the printer and is an approach adopted by various manufacturers. The obvious limitation to all virtual mailbox systems is that when you get to the printer you have to wait in line for your print job to be processed once you have entered your passcode and submitted the job to the print engine (the Toshiba is at par with other systems in this respect). While the user has to wait at the printer for their job to get into the queue and print - the stored job is pre-RIPed and therefore processes reasonably fast.

E-Mail Notifications : We could find no internal interface in the base machine that can be configured to send e-mails for jams, toner out, paper out, service calls etc. Toshiba advise that they can provide pop up messages at client terminals and support third party network management tools that may already be running on the network and can provide similar capabilities.

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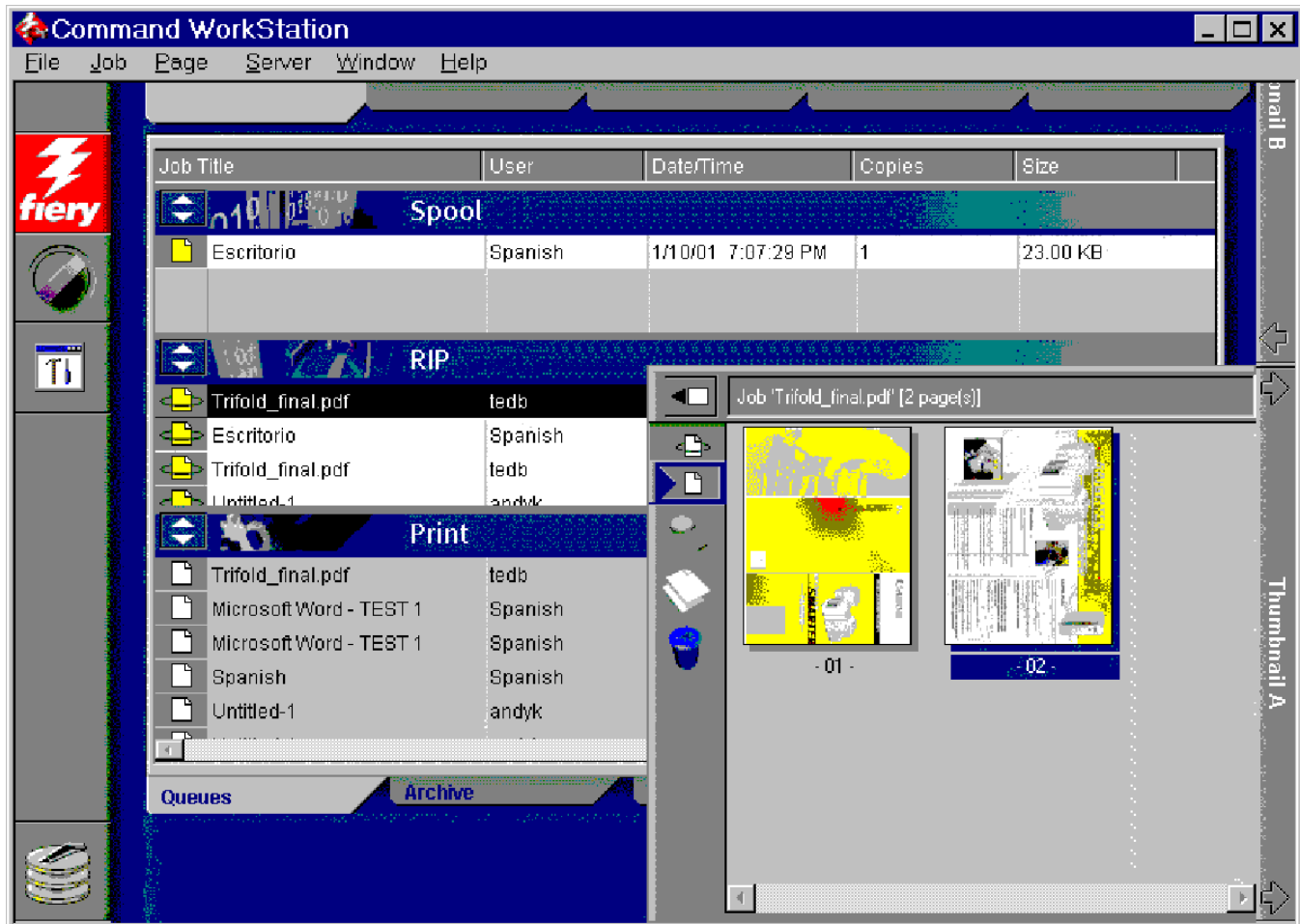
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FIERY COMMAND WORKSTATION

The GA-1140 is produced by EFI, consequently users have access to various EFI options including Command WorkStation, which is designed to make centralized print job management easy. Command WorkStation automatically identifies Fiery servers on your network, and offers new customization options so you can choose how to display information about connected Fiery servers more efficiently. It sets the standard for conveniently managing and manipulating digital print jobs. Some features are useful to general users of the Toshiba e-STUDIO 810, other functions will only be useful if the user has other EFI controllers connected to their network(s).

Features

- Three levels of security for administration and printing
- Extensive job controls
- Thumbnail and full-screen job previews for remote job management
- Load balancing available to maximize printing resources (needs more than one print engine)
- Archiving of files for accessing and re-printing later (you save files on the hard drive and then reprint via a browser).
- Job log window for detailed information on every print job
- Customizable user interface can be tailored to workflow requirements and operator skill level.



EFI's Command WorkStation

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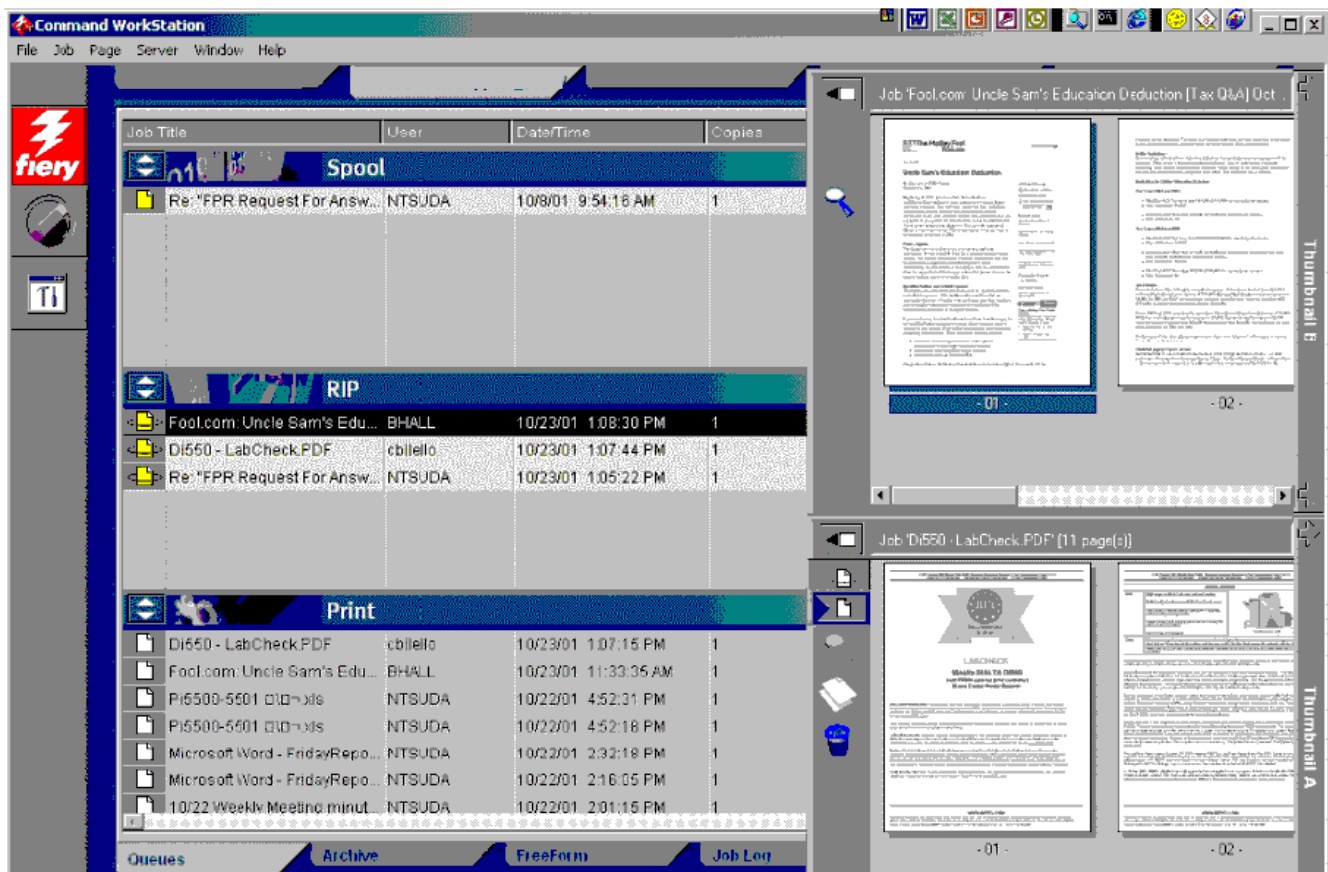
FIERY DOCBUILDER

DocBuilder is a standard software tool provided with the GA-1140 controller (and most EFI controllers). It is accessible via Command WorkStation or the Fiery Web Spooler. It provides users with a flexible print on demand solution.

The user can retrieve print files stored on the GA-1140's hard drive and then carry out a variety of functions before sending the file to reprint.

Users can scroll through the post-Ripped documents viewing the individual pages on screen. Having displayed documents on screen the user can then carry out a variety of editing functions on the document including:

- (1) Merge two or more existing documents into one large document (image shows 2 documents in view ready to merge).
- (2) Insert and delete pages from the existing document and save the file under a new name. This function is especially useful when updating large files with new information, such as a training manual. Without this function the user would have to make the changes to the original electronic file, re-RIP the whole job then send it across the network which creates more bandwidth. With DocBuilder the user can simply create the new pages, send them to the hard drive and replace the old pages with the updated pages to save time and network resources.



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SCANNING FUNCTION

Scanning requires the addition of the optional EFI GA-1140 controller, hard drive and scan accelerator board. Once installed, you have functional scanning but not the most advanced available. EFI has recently increased the scanning functionality to include the ability to scan to e-mail addresses and scan to the Command WorkStation hold queue (Command WorkStation is an optional extra on the EFI GA-1140 controller).

Mono scanning is set up via the copier control panel; you push a button marked "SCAN" to access it. We were able to convert hard copy originals into PDF, JPEG or TIFF files with resolutions of 150dpi, 300dpi or 600dpi. Because of the duplex document feeder, double sided documents can be scanned and digitized. Most of this is good by modern standards but some IT departments may prefer to have lower than 150dpi for document management systems where smaller file sizes are important for archiving.

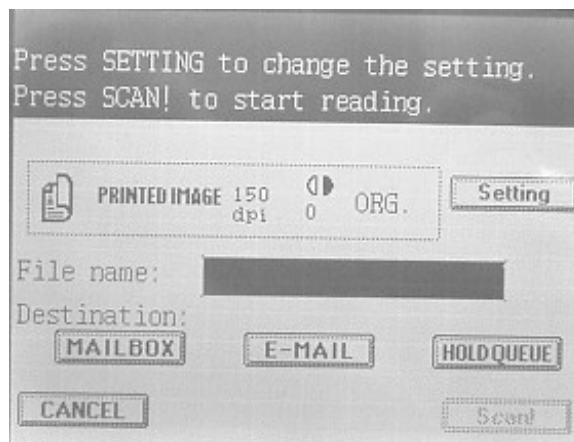
Scan to Mailbox Function : This feature uses the hard drive on the GA-1140 and allows users to scan originals straight to a virtual mailbox. The user chooses a mailbox number between 1-9999, selects scanning settings for the job and scans the job. To retrieve the job, the desktop user browses to the IP address of the GA-1140, enters the mailbox number and then accesses the file. The user can choose to download the file as a JPEG or PDF straight to their desktop PC. This is not as efficient as multifunctional scanning solutions that allow users to scan straight to a network location (one rival device automatically shows a dynamic list of connected computers and lets you browse to and save on them).

Scan to Hold Queue : You can scan originals directly to the hold queue at the optional Fiery Command WorkStation. This feature allows users to then incorporate hard copy documents within other print files using the extensive document manipulation features on the Command WorkStation.

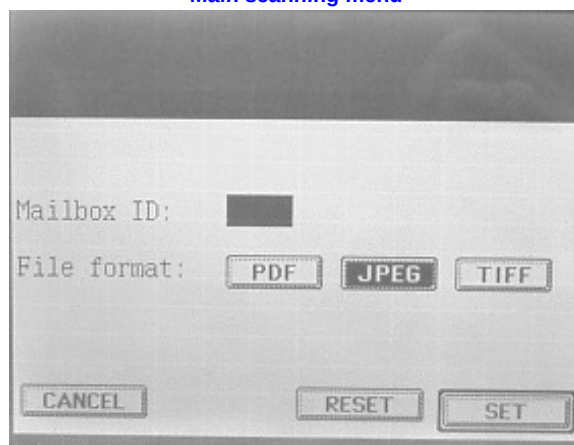
Scan to E-Mail : This is best described as 'functional' because it performs the basics but lacks subtleties. There is no QWERTY keypad, instead you get an A-Z layout but it has all required keys (including the " sign) on the main keypad. You can choose an e-mail address stored on the GA-1140 or type in an ad-hoc e-mail address using the keypad. Dynamic linking with central corporate email address books (such as LDAP - Lightweight Directory Access Protocol) is missing. However, with a bit of training, you can send address lists to the GA-1140 via email and the scanning system will merge them into an address book on the hard drive; from which you pull up names as required. Compared to other systems, the level of personalization that could be applied to the e-mail is low.

The GA-1140 scan to e-mail solution did not allow us to identify: (1) who the e-mail had come from; or (2) add a subject line; or (3) type a message. In its favor, it had the ability to give the file attachment a name of our choosing; but this was restricted to 8 characters.

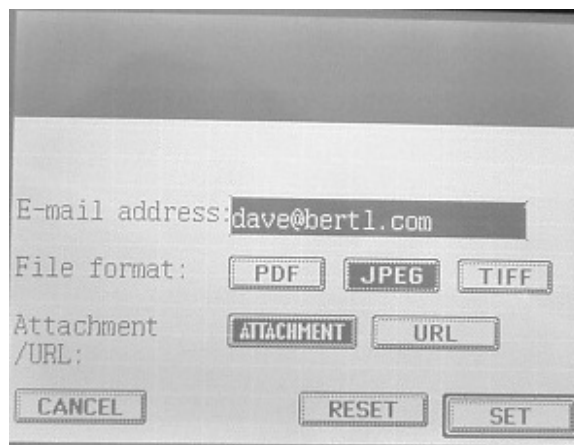
As an alternative to sending an attachment, the GA-1140 can save files on its hard drive and just send a text URL hyperlink to connected users. Recipients click on the URL hyperlink which takes them straight to file on the GA-1140 hard drive; from here they can decide whether to download the file or not.



Main scanning menu



Main scan to mailbox screen



Scan to e-mail main screen

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COPIER FUNCTIONALITY

The Toshiba studio 810's scanner has a maximum speed of 65 sheets per minute (simplex), slower on duplexed documents. This is some 16 sheets a minute slower than the engine speed which means that the initial processing time of a long copy job may be lengthened. This is partially counteracted by the device's ability to output completed sets of documents face down (most copiers deliver face up output). The overall performance was acceptable but not particularly fast.

Copier Productivity : A series of office style copy jobs were run through the device. The test procedures are based upon "most likely usage" of the copier functionality. By this we mean that we do not de-feature automatic functions, nor do we pre-set paper sources in order to optimize the speeds. (i.e.: show the fastest speed achievable).

Our productivity tests were run via the high capacity paper tray which is the most likely paper source used for plain paper in most offices. The following table shows how the Toshiba e-STUDIO 810 productivity speeds compared against several competing products. Our test was conducted with the standard finisher which delivered slightly faster finished sets than the saddle stitch finisher.

Toshiba e-STUDIO 810 Copier Printer Productivity Table
 All speeds expressed in copies per minute (cpm)

	Toshiba e-STUDIO 810	Digital Copier-Printer 3	Digital Copier Printer 1	Digital Copier Printer 2
Engine Speed	81	85	75	72
1 set of 5 single sided to single sided	31.28	38.70	30.27	26.53
5 sets of 5 single sided to single sided	57.33	68.56	57.89	51.44
1 set of 10 single sided to 5 double sided	14.72	33.50	36.99	29.91
1 set of 5 double sided to 10 single sided	35.21	41.38	41.84	25.73
1 set of 5 double sided to 5 double sided	25.87	29.04	37.64	22.20
5 sets of 5 double sided to 5 double sided	56.87	61.43	63.16	49.28
1 set of 20 double sided to 20 double sided	39.98	48.36	60.33	28.68
Average Copy Speed	37.32	45.85	46.87	33.40

Copy Concurrency : The Toshiba e-STUDIO 810 includes 5 copy memories. This compares to some rival devices which have either 9 copy memories or unlimited copy memories. At 81ppm the Toshiba studio 810 is more likely to require multiple jobs to be stacked into the copier memory ready for printing therefore we feel that its 5 memories are a limitation.

When a job is stored in the first memory slot the remaining four memories can be used to store copy jobs. Unlike at least one 5-memory device, the Toshiba e-STUDIO 810's five copy job memories are not also used for print jobs. On one 5-memory product, each print job took up one of the five memories. *On one device, we sent five print jobs and found they could no longer scan in a copy job until the first print job had finished processing. Meanwhile, further print jobs may be queuing up at the server / desktop of network users. These print jobs will continue to fill the five memories and block copying until the backlog has been cleared.* **Because the Toshiba e-STUDIO 810 has a separate copy processor and print controller, it does not suffer from this limitation but delivered good concurrency.**

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Control Panel : The Toshiba e-STUDIO 810 has a touch screen control panel which was reasonably well laid out, with simple to follow menus. Toshiba has arranged the copier control panel buttons / screens into different groups which they say assists with disabled access. Not so easy to find was scanning, which did not have its own button but was found when you press "Printer/Network".



Job Build : The Toshiba e-STUDIO 810 allows documents (larger than the capacity of the document feeder) to be created using its job build feature. Jobs can be built from both the ADF and the platen, allowing pages from books and / or originals which can not be placed through the document feeder to be incorporated in the document.

Print on Demand : The Toshiba e-STUDIO 810 ships with a standard document storage facility enabling print on demand of up to 24 documents of 400 pages. Also, when configured with the GL-1140 controller you get all of the EFI controller's storage and reprinting capabilities.

Tandem Copying : There is currently no tandem copy option (link two copiers to act as one) but Toshiba indicated that it may be introduced. If available, we have been advised, users will not have to buy the print controller to link devices as a combined tandem copying system. If this feature is important to you - check the status with Toshiba.

Finishing Productivity : The Toshiba e-STUDIO 810 finisher proved efficient with no reduction of speed to add single corner or two side staples (this differs from the saddle stitch finisher which had a reduction in speed).

Toshiba e-STUDIO 810 Copy Finishing Effect on Productivity 5 sets of 5 simplex pages with 2 side staples Timed with standard finisher (not booklet-making finisher)		
	Finishing Time (in seconds)	Time added per set (in seconds)
Toshiba e-STUDIO 810 standard finisher	1.47	0.29
Toshiba E-STUDIO 810 booklet maker finisher	13.2	2.64
Alternative 55ppm device booklet maker finisher	1.94	0.38

Copy Image Quality : Copy image quality was acceptable but not outstanding. Some work was lighter than desired. Toshiba advise that service technicians can set image quality to suit user requirements at time of set up, therefore the image quality may be improved upon at client locations.

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Productivity Tests

.Output Origin	Job		
Copying A4/Letter	5 pages	31.28	CPM
Copying A4/Letter	5 sets of 5 pages	57.33	CPM
Copying 1:2	10 single to 5 double	14.72	CPM
Copying 2:1	5 double to 10 single	35.21	CPM
Copying 2:2	5 double to 5 double	25.87	CPM
Copying 2:2 Short documents	5 sets 5 double to 5 sets 5 double	56.87	CPM
Copying 2:2 Long Documents	20 double to 20 double	39.98	CPM
Printing Multiple Sets in Simplex	5 sets of 6 page WP 9	62.37	PPM
Printing Various Networked Jobs	Small Mixed Network Workload	19.27	PPM
Printing Simplex:	35 Page Word 2000	62.37	PPM

Production Efficiency & Network Usability / Capability

Copier :	Scan Once Print Many	Yes
Copier :	Max Jobs Auto Scanned into memory	5
Print :	1 st page from a different tray than rest of page	Yes
Print :	Insert dividers for chapters from the driver	Yes
Print :	Insert front and back cover from the driver	Yes
Print :	Offset separate finished documents	Yes
Print :	Send to physical mailbox for later collection	No
Print :	Send to virtual mailbox & print with a password	Yes

Remote Control from Client Terminals / Network

View Toner Levels before printing	No
Estimate max pages printed from toner	No
View paper levels in trays	Yes - in 25% increments. Including from print driver.
Specify problem (paper jam, door open)	Yes
Obtain departmental management figures	Yes - web based via Top Access
See \ View 3 rd party products	No
Check page throughput \ copy totals	Yes
Estimate toner usage	Counts pixel data sent to print

Bandwidth \ File Sizes & Send Once Print Many

Print Job	Lowest Recorded Network Printer	This Printer
Network Load Test	3.64 Mb	4.64 MB
5 copies of 6 pages WP-9 Collate set at Application	367 Kb	1.45 MB
5 copies of 6 pages WP-9 Collate set at Printer Driver	367 Kb	766 KB
35 Page Word 2000	811 Kb	1.50 MB

Reproduction Quality

	Copying	Printing
Banding \ Screen Clash	None visible	None Visible
Small Text \ Lines	Average	Average
Color Definition (in grey)	Slightly light	Slightly dark
Photo Fine detail	Slightly light	Slightly dark
General impression	Good for most offices	Good

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