October 2023

Comparative Custom Test Report:

Canon imagePROGRAF TM-240 vs. HP DesignJet T630

Advantage	Canon imagePROGRAF TM-240	HP DesignJet T630
Image Quality	✓	
Print Productivity	✓	
Banner Printing	✓	
Poster Printing	✓	
Direct Print Submission Functionality	=	=
Ink Consumption	✓	
Device Feature Set	✓	
Print Driver Feature Set	✓	

Test Objective

Keypoint Intelligence was commissioned by Canon Europe to conduct confidential document imaging device performance testing on the 24" Canon imagePROGRAF TM-240 and the HP DesignJet T630 and produce a report comparing the relative strengths and weaknesses of the two products in the areas of image quality, productivity, banner and poster printing, direct print submission functionality, device feature set, driver functionality, and ink consumption. All testing was performed in Keypoint Intelligence's European test facility in Wokingham, UK.

Executive Summary

In Keypoint Intelligence's rigorous wide format evaluation, the Canon TM-240 outclassed the HP DesignJet T630 in many areas, with higher productivity, lower ink consumption, and superior colour image quality. The TM-240 is packed full of features to raise productivity, for one, hot swap ink tanks allow for on-the-fly ink replacement, reducing downtime, and the CMY ink cartridge capacity of 55 ml exceeds that of the HP (only 29 ml) meaning they will need replacing less frequently. Usability is boosted by a new 4.3" colour touchscreen to simplify walk up operation. Videos guide operators through routine maintenance, while an LED light on the control panel (which can be raised or lowered) provides user intervention alerts. The HP unit's 2.7" control panel sits flush with the unit's body which makes the viewing position more limited.

In terms of print quality, output from both models will easily satisfy the expectations of architectural, engineering, CAD, and GIS customers. However, there were clear differences in certain areas with the Canon TM-240 delivering brighter colours, better depth of field and natural, warm skin tones, as well sharper and crisper text and fine lines, overall. It also produced the larger colour gamut on plain media. The HP T630 produced superior truer neutral greys whereas the Canon's greys exhibited a magenta bias in the higher quality modes. Both devices provide excellent additional flexibility with direct job submission utilities and mobile print support making it easier for workers to collaborate and sent to/print from the devices while on the go. The Canon TM-240 offers further benefits including unidirectional print mode that eliminates banding even in Fast mode, borderless printing, and flexible nesting to save on paper (which is also offered on the HP unit but without the same flexibility and control over image placement). Notably, the Canon TM-240 offers media remaining tracking capabilities which alerts users when there's not enough media to run a whole job, enabling a new roll to be loaded pre-emptively, whereas the HP T630 simply cancels the job when it runs out of media, requiring the outstanding pages to be resubmitted, which is laborious and time-consuming.

Increasingly, companies are taking the issue of sustainability seriously and it can affect buyers' criteria. When purchasing printing equipment, businesses may proactively look for a supplier that supports environmental initiatives regarding cartridge return programs, for example. To that end, both Canon and HP offer some key sustainability features. The Canon TM-240 is claimed to be the first large format printer in the market that does not use any polystyrene foam in its packaging, minimizing waste. It also offers more favourable low noise emissions, is EPEAT gold-certified (as is the HP T630) and provides an ink tank recycle collection scheme. The HP model is made up of 30% recycled plastic and the company offers a free program whereby HP T630 ink cartridges and printhead can be returned for recycling.

Image Quality

Advantage	Canon imagePROGRAF TM-240	HP DesignJet T630
Text	✓	
Fine Lines	✓	
Halftone Range	=	=
Halftone Fill	=	=
Solid Density	✓	
AEC Graphics	✓	
GIS Graphics	✓	
Colour Photographic Images	✓	
Monochrome Photographic Images		✓
Colour Gamut (Plain Paper, Fast)	✓	
Colour Gamut (Plain Paper, Standard/ Normal)	✓	
Colour Gamut (Plain Paper, High/Best Quality)	✓	
Colour Gamut (Matte Coated Paper, High/ Best Quality)	=	=

+, –, and O represent positive, negative, and neutral attributes, respectively.

All image quality testing was conducted on Canon Standard Plain Paper 2 and HP Universal Bond.

+ The Canon imagePROGRAF TM-240 delivered superior black optical densities on plain paper across all modes, particularly at the higher quality settings, compared to the HP model. The Canon unit produced higher colour densities in all modes as well.

+ When printing on plain media in Fast mode, the Canon TM-240 delivered an 18.1% larger colour gamut, with a volume of 197,793 versus a volume of 167,465 for the HP model.

+ The Canon device produced a 63.0% larger colour gamut when printing on plain paper using Standard/Normal settings, with a volume of 311,234 versus a volume of 190,979 for the HP model.

+ On plain paper in High/Best settings, the Canon TM-240 produced a 54.1% larger colour gamut, with a volume of 319,628 versus a volume of 207,466 for the HP model.

○ When printing on matte coated paper in highest quality settings, both models produced a similar-sized colour gamut—389,645 for Canon and 388,912 for HP.

+ The Canon TM-240 delivered very good colour serif text, which was legible and fully formed down to the 4-pt. level in Fast and Standard modes, and 3-pt in High quality mode. Black serif text was distinct in all tested modes and fully formed at the 5-pt. level in Fast and Standard modes, and 3-pt in High. Arial text produced by the TM-240 was pin sharp and fully formed at the smallest text size and judged excellent overall. The HP T630 produced colour and black serif text that was legible at the 3-pt. or 4-pt. levels and only rated good due to some ink bleed marring definition. The HP's Arial text was crisp and fully formed at 3-pt. level with some slight ink bleed evident and rated very good.

+ Fine lines produced by both devices were distinct at the 0.1-pt. level across all modes. The TM-240's output was slender and clean, and judged excellent overall. The HP T630 produced dark 0.1-pt lines that, in Normal mode, appeared thicker than 0.25-pt lines and rated fair, while in Fast and Best modes were not dissimilar to 0.25-pt fine lines and rated good.

+ Circles produced by the Canon unit were smooth and distinct and judged very good at the 0.1-pt. level across all modes. The HP T630 produced bold circles at the 0.1-pt. level which weren't distinguishable from 0.25-pt. circles in Fast and Normal modes and exhibited some jaggedness; in Best quality mode, however, circles were much smoother and rated very good.

+ The Canon TM-240 produced very good 1x1 pixel grids in CMYK in all modes, with consistent coverage and uniform dots. The HP model could only produce intact 1x1 grids in CMYK in Normal and Best modes and—as dot formation was inconsistent—rated good.

+ Colour halftone fills were smooth and punchier with the Canon and excellent overall, while the HP's colour fills were slightly grainy and rated very good.

- The HP T630's greyscale halftone fills were neutral grey throughout, whereas the Canon's greyscale fills exhibited a magenta bias in Standard and High modes.

○ Both devices delivered halftone output across the full range—from the 10% to 100% dot-fill levels—in all modes with distinct transitions between all levels.

+ Architectural, Engineering and Construction (AEC) graphics output from both devices exhibited an excellent level of detail in all modes. In Fast and Standard/Normal modes the Canon TM-240 had a slight edge over the HP unit for its crisper text and cleaner lines when viewed under magnification, while HP's output was bolder and displayed slight ink bleed, but only when viewed under magnification. In High/Best quality mode, both models produced comparable quality.

+ Geographic Information Systems (GIS) graphics in Standard/Normal and High/Best modes on plain paper were reproduced to a very high standard on both units, with excellent detailing. However, depth of field—a critical factor in delivering a realistic three-dimensional rendering of topographical features—was slightly better on the output from the Canon TM-240.

+ The Canon TM-240 produced very good colour halftone images overall. Colours were consistently bright and natural looking, metallics exhibited good contrast and detailing and it delivered greater depth of field in all tested modes. In contrast, images produced on the HP T630 lacked vibrancy and appeared flat in all modes, while tonal gradations were slightly grainy in Fast and Normal mode.

- The HP T630's greyscale images in Standard/Normal and High/Best modes had the edge as they exhibited truer neutral grey tones whereas the Canon's output showed heavy sepia tones (although with very good contrast and fine detailing).

+ Skin tones produced by the Canon TM-240 were warm and natural-looking in all tested modes, whereas those produced by the HP model were pale and lacked contrast in Normal and Best quality modes.

+ Image quality output from the Canon TM-240 was judged stronger by Keypoint Intelligence overall. It delivered crisper and more distinct text and fine lines, brighter colours, and natural-looking skin tones. It also produced larger colour gamuts on plain paper and higher optical densities. The HP unit produced better and truer neutral greys, but its text and fine lines output on plain paper suffered from slight ink bleed (under magnification) and could not match the Canon's bright and vibrant colours in photographic images.

Keypoint Intelligence's colour and greyscale halftone test targets

Print Productivity

Advantage	Canon imagePROGRAF TM-240	HP DesignJet T630
First-Page-Out from Weekend Non-Use	✓	
First-Page-Out from Ready State	✓	
Throughput Speed (Fastest mode)	✓	
Throughput Speed (Default mode)	=	=
Throughput Speed (Highest Quality mode)	✓	
Job Stream	✓	
A1 Throughput Speed (Default mode)	✓	

+ After a weekend of non-use, the Canon TM-240's first page out time was 49.5% faster than the HP model's (73.50 seconds versus 114.41 seconds for the HP T630). Start-up time before printing commenced was faster for the Canon model—23.02 seconds versus 35.41 seconds for the HP unit.

+ The Canon device delivered a 34.8% faster first page out time of 71.07 seconds from its ready state, compared with 109.05 seconds for the HP T630. Its start-up time before printing commenced was faster—16.53 seconds compared with 25.99 seconds for the HP model.

+ When printing Keypoint Intelligence's job stream, designed to simulate a typical mixed workflow for a large-format unit, the Canon TM-240 was faster than the HP model in all three workflows. In Fast mode, it was 36.1% faster; in Standard/Normal mode it was 41.9% faster; and in High/Best mode, it was 60.1% faster.

+ When printing the 12-page DWF test file in colour, the Canon TM-240 was faster than the HP unit in all three modes tested; it was 41.9% faster in Fast mode; 28.9% faster in Standard/Normal mode; and 63.0% faster in High/Best mode.

+ When printing the 12-page DWF test file in monochrome, the Canon model was faster in two of the three modes. It was 37.8% faster in Fast mode; 13.5% slower in Standard/Normal mode, and 64.7% faster in High/Best mode than the HP device.

+ When printing Keypoint Intelligence's single-page A1-size test target in Standard/Normal mode, the Canon TM-240's first-page-out time of 75.13 seconds was 26.3% faster than that of the HP unit (101.89 seconds). The time to print five A1-size pages was 30.8% faster for the Canon TM-240 than for the HP device (300.58 seconds versus 434.51 seconds).

Banner Printing

Advantage	Canon imagePROGRAF TM-240	HP DesignJet T630
Image Quality	✓	
Productivity	✓	

+ The Canon imagePROGRAF TM-240 successfully printed Keypoint Intelligence's 20" x 70" banner (a 4,955-KB PDF file) in Fast mode, taking 30.22 seconds to generate a preview at the desktop, and an additional 1 minute, 57.35 seconds from preview to final paper cut. The HP T630 took 36.15 seconds to create a preview, and a further 2 minutes, 1.83 seconds to print the banner. The Canon device printed the entire image with some minimal banding, while the HP's banner exhibited heavy banding.

Poster Printing

Advantage	Canon imagePROGRAF TM-240	HP DesignJet T630
Image Quality	✓	
Productivity (Fast mode)	✓	
Productivity (Standard/Normal mode)	✓	
Productivity (High/Best Quality mode)	✓	

+ In Fast mode at 300 dpi, the Canon TM-240 printed Keypoint Intelligence's A1-sized Poster test target faster than the HP model, taking 36.62 seconds versus 56.95 seconds.

+ Banding was evident on output printed in Fast mode by both models (across the whole image with the HP

unit, but only in dark areas with the Canon model). When unidirectional printing was selected in the Canon print driver (not available with the HP), banding was eliminated with an increased (but still faster than the HP's time) print time of 52.77 seconds.

+ The Canon model took 1 minute, 1.83 seconds to print the poster in Standard mode at 600 dpi, besting the HP unit's 1 minute, 36.66 seconds in Normal mode.

+ In Standard/Normal mode, the Canon poster showed slight banding in a selected (grey) area only while HP's poster exhibited minimal banding in all areas/colours.

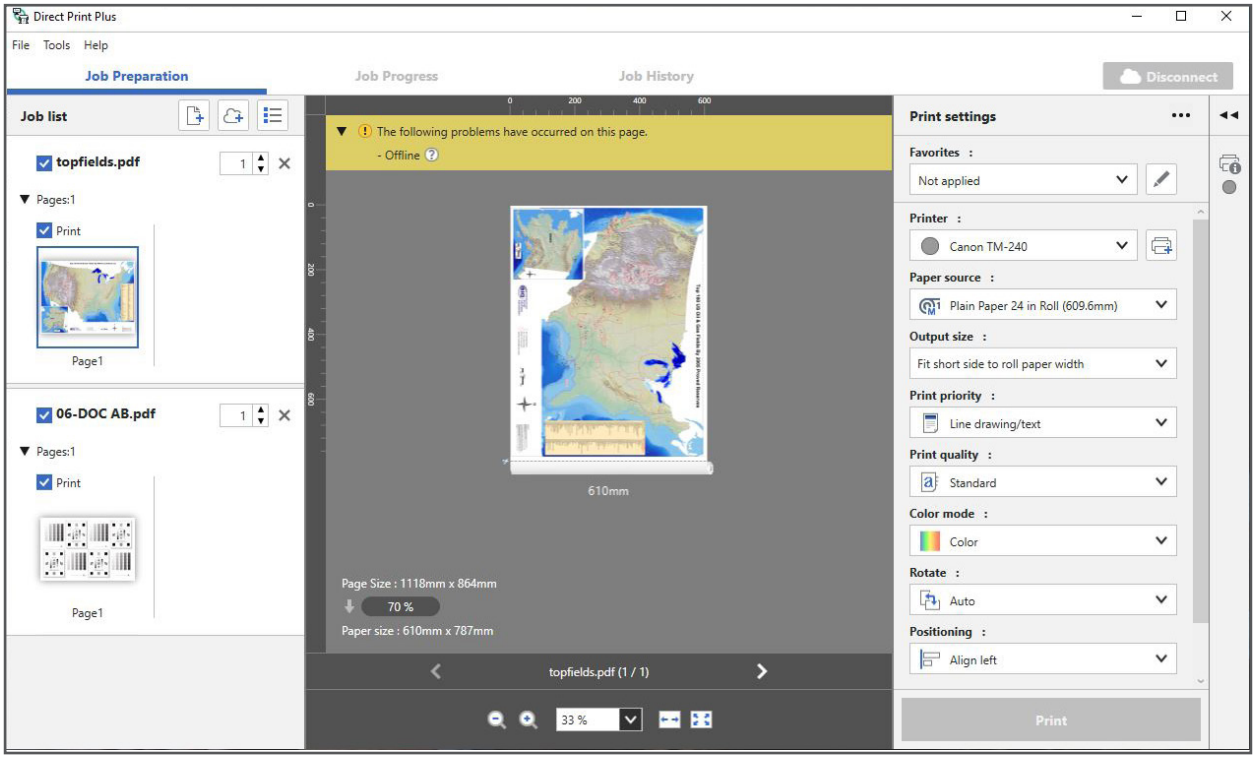
+ When printing the poster in High/Best mode, the Canon model took 1 minute, 51.78 seconds, 72.7% faster than the HP unit's 6 minutes, 49.43 seconds result when printing in Best mode.

○ As expected at the High/Best Quality settings, there was no observable banding on output from both models.

Direct Print Submission Functionality

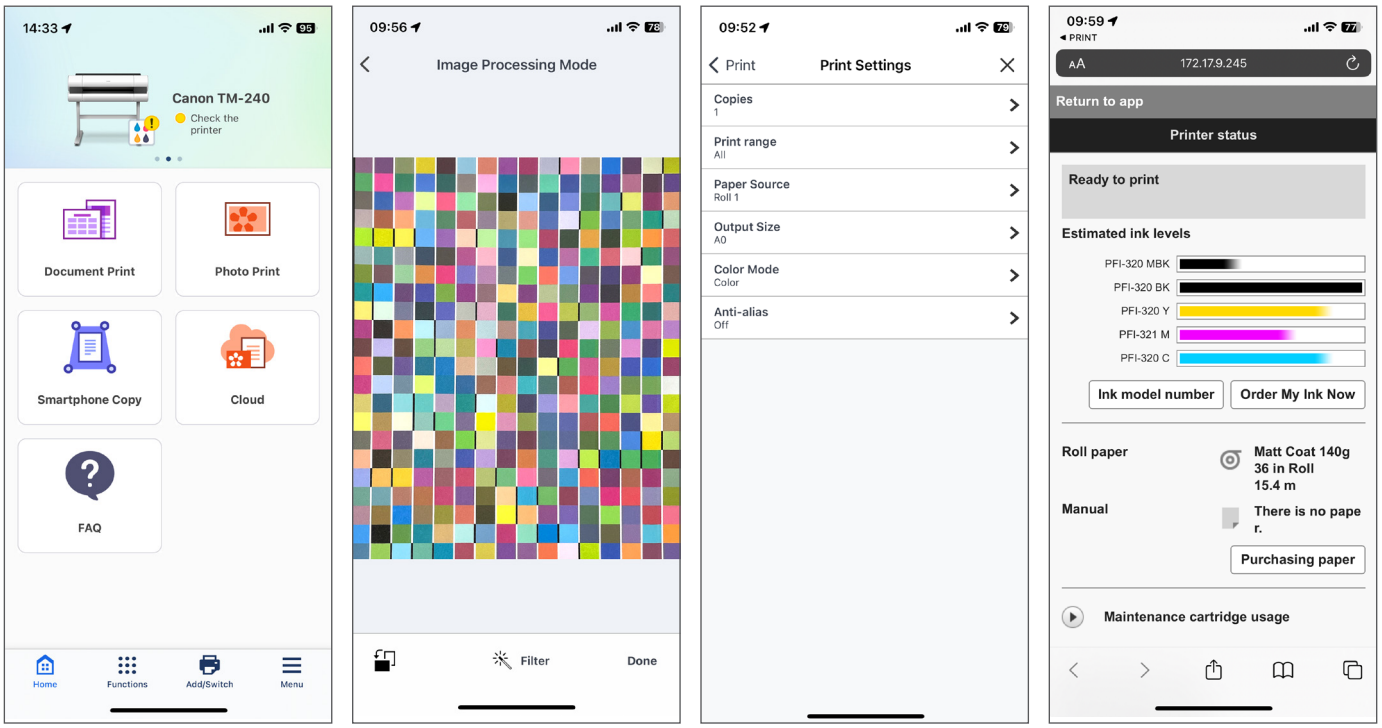
Advantage	Canon TM-240	HP DesignJet T630
Direct Print Submission Functionality	=	=
Mobile App Integration	=	=

○ Canon's Direct Print Plus offers a clean and appealing interface for user-friendly operation and—with a PDF engine developed by Canon—it provides improved processing and printing of PDF files. There are three tabbed sections: Job Preparation (the home screen), Job Progress, and Job History. The Job Preparation screen is arranged in four sections—Job list, Preview, Print settings, and Printer status—for easy and quick access to job settings, thumbnail previews and at-a-glance printer and consumable status information, without the need to link to the Status Monitor. The bi-communication between the utility and printer means there's less chance of media mismatch.

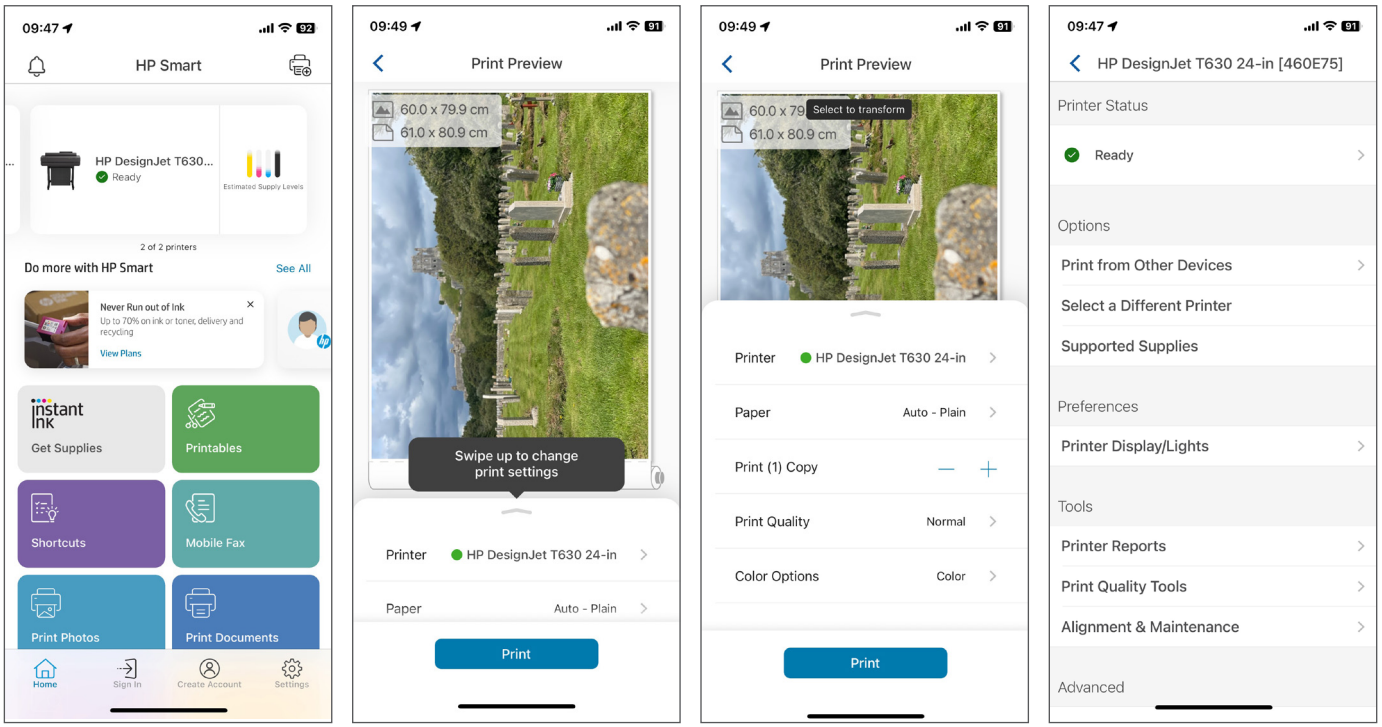


Direct Print Plus job submission software enables the direct printing of PDF, JPEG, TIFF, and HPGL/2 files without the need for native applications or print drivers. From the Job History tab, users can select and reprint jobs using the same settings as when last printed. Job progress indicates how many pages have been printed so far to provide operators with better visibility over the progress of a print job.

- Direct Print Plus supports “Shortcut Print” functionality which helps streamline print workflows. Akin to a hot folder workflow, users can create desktop shortcuts that allow drag and drop automatic file printing with predefined print settings. Multiple desktop icons can be created containing different print settings or combinations of print settings.
- A free Canon PRINT mobile app for Android and iOS users provides an easy way for them to print wirelessly to the Canon TM-240 on the same WiFi network, boosting both productivity and flexibility. The Canon PRINT app offers a basic range of print settings, including colour, orientation, and borderless printing and is very straightforward to use. Users can also view printer status and remaining ink levels as well as carry out some maintenance tasks remotely.
- Similarly intuitive and feature-packed, the HP Smart app provides an easy way for users print to the T630 from their smartphones and tablets. Features include the ability to scan documents directly to mobile devices, retrieve, print, or upload files to a variety of cloud storage services and monitor printer status. Document editing options are available through the Preview function.

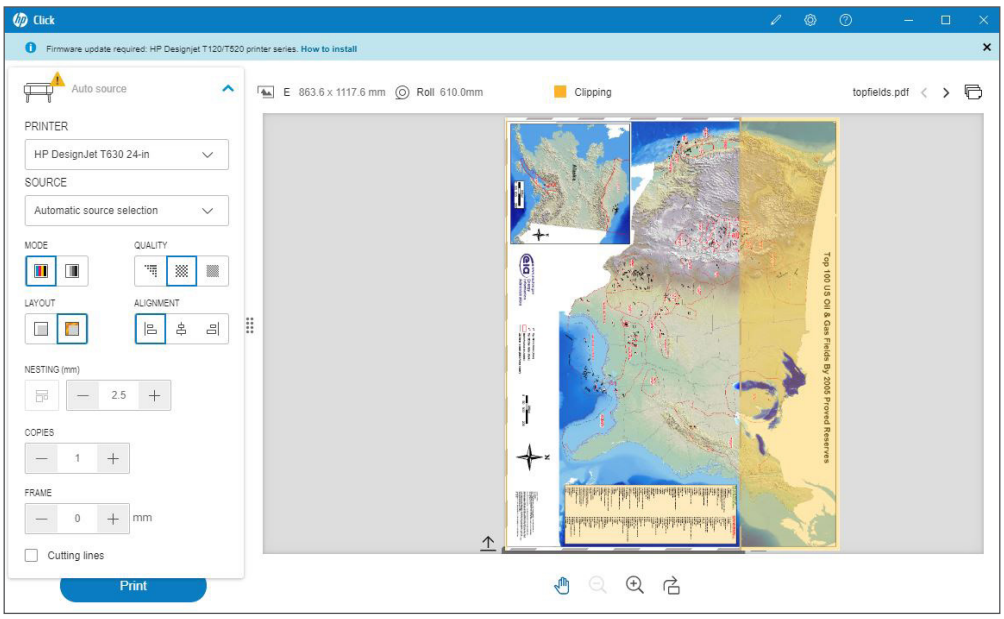


The Canon PRINT app has a clean and bright home screen and offers a wide range of print settings, as well as the ability to preview jobs. Printer, media, and consumable status and the ability to perform basic maintenance (nozzle check and printhead alignment amongst others) are relevant tools for ensuring print jobs run smoothly.



HP Smart app offers a clean and bright interface for user to view documents and make setting adjustments. It provides a similar set of features and tools as available with the Canon PRINT app.

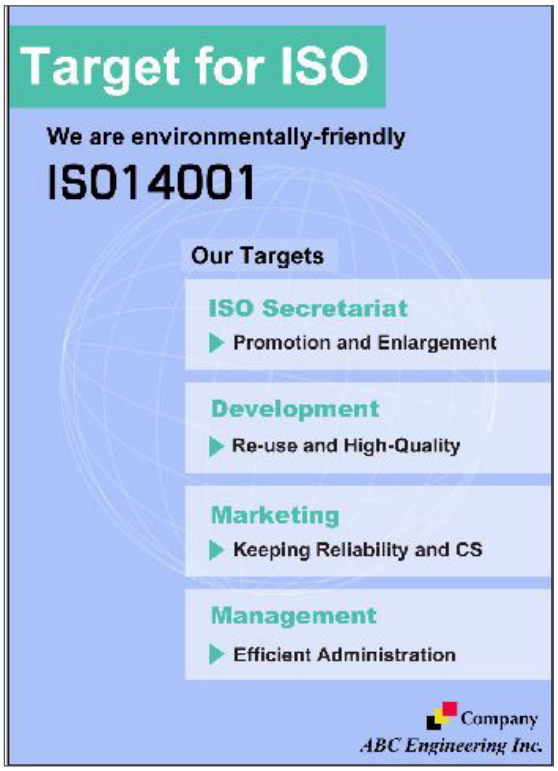
- HP's own direct job submission software, HP Click, is free to download and provides direct printing of PDF, JPEG, TIFF, and HPGL/2 files from the PC desktop, without the need for native applications or print drivers. Users can select print settings such as colour mode, quality setting, nesting, resize and align image, as well as preview the job file in the centre of the screen.
- HP ePrint functionality is also supported; users can submit print jobs remotely by email either via a workstation PC or a mobile device; PDF, TIFF, and JPEG files (up to 10 MB) are supported.



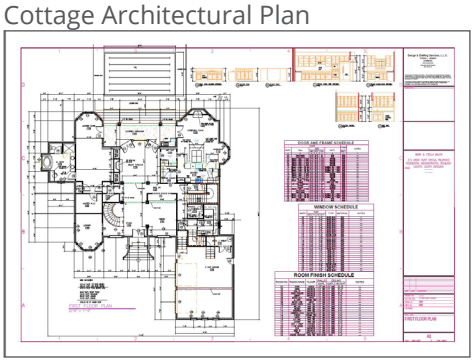
Similar to Canon's utility, HP Click lets users view job history and the status of current jobs in progress via the 'pages' graphic at the top right of the screen. Printer information and consumable status can be obtained via an 'Accounting' link which launches the device's embedded web utility (supported on some HP DesignJet printers).

Ink Consumption

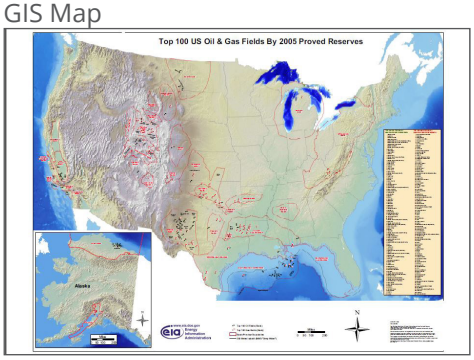
ISO Office Poster



Cottage Architectural Plan



GIS Map



Keypoint Intelligence technicians observed that, owing to the vagaries of inkjet technology (for example, head-flushing and calibration routines can occur at any time during testing), the same test can produce different results at different times. Although Keypoint Intelligence makes every effort to ensure that devices are tested on a level playing field, the test results should be regarded as an indicator of likely performance and not as a prediction of actual ink consumption in a real-world environment.

Overall Weight of Ink Used (in Grams)

	Canon imagePROGRAF TM-240	HP DesignJet T630
Cottage Architectural Plan	21.562	24.248
ISO Office Poster	54.859	79.021
GIS Map	42.569	71.268

Results are averaged across three sets of 50-page A1 printing in Standard/Normal mode.

+ The Canon TM-240 device used 11.1% less ink than the HP T630 when printing a Cottage Architectural Plan test target in Standard/Normal Mode. For the same print scenario, the Canon TM-240 used 7.8% of its total available ink, while the HP model used 14.1%.

+ When printing the ISO Poster in Standard/Normal mode on matte coated media, the Canon unit used 30.6% less ink compared with the HP device. For the same print scenario, the Canon TM-240 used 19.8% of its total available ink, while the HP model used 46.1%.

+ In the GIS Map ink consumption test conducted in Standard/Normal Mode using matte coated media, the Canon TM-240 used 40.3% less ink compared with the HP device. For the same print scenario, the Canon TM-240 used 15.4% of its total available ink, while the HP model used 41.6%.

Device Feature Set

+ Canon offers one size (55 ml) for all five colours while HP provides a smaller (29 ml) ink cartridge capacity for CMY and two sizes (38 ml and 80 ml) for K.

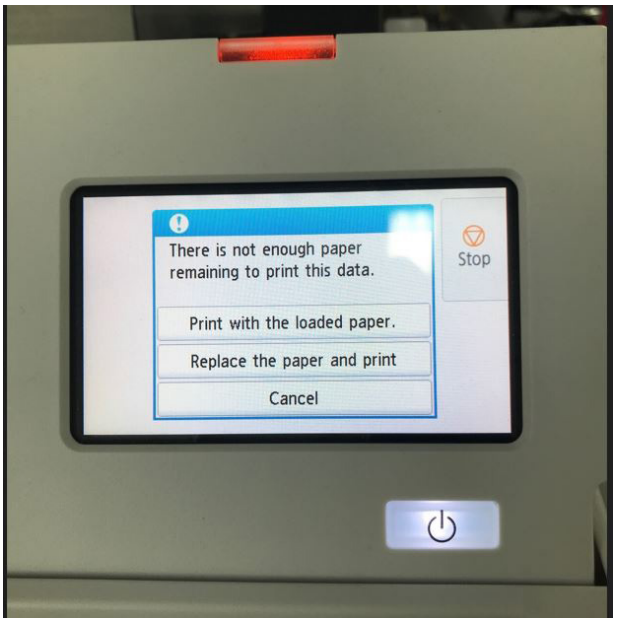
+ One advantage for Canon users, ink cartridges are replaceable during operation, which helps reduce downtime. HP's cartridges cannot be replaced during operation.

○ Both units utilize a single user-replaceable printhead, which takes under five minutes to replace on each.

○ Both printers provide quick and easy roll paper loading with auto paper feed. Canon users must feed the media into the device until the printer registers the media. It auto detects the media width and length, for simplified user handling. Similarly, once the user loads paper on to the HP device, alignment and width adjustments are automatically carried out without further user intervention.

+ Media handling on the Canon is boosted by its auto media type detection function. When changing to a different media, the device will select the right media type that is loaded (but the operator may need to ensure the correct weight is selected). The media type can be changed once the roll loaded, which is a fast and simple operation conducted on the touchscreen. HP operators have to choose media type and weight and as it is not automated, it's a slower process to load media.

+ One notable advantage for Canon users is the unit's media remaining detection capabilities. The device will alert operators if there is not enough media left to complete a print job prior to commencing. Users are asked whether they wish to continue with the job or load a new media roll, which helps minimize disruption. The HP model will accept and print a job even if it is low on media. If it runs out of media before completing the job, the unit cancels the job and alerts the user to replace the media. The user then must determine what point the job was at in order to resubmit the remaining pages, which is more time-consuming and unhelpful.



Canon TM-240's media remaining alert.

- Cut sheet media is supported on both devices. While the Canon model handles one sheet at a time (and the roll media must be removed first), multiple sheets can be loaded on the HP device and there's no need to remove and reload the roll media.

+ The Canon TM-240 supports borderless printing regardless of what roll media type is being used, whilst the HP model does not support this feature.

- The Canon device supports a maximum 1.6 m printable cut sheet media length, but the HP supports longer (1.9 m) cut sheet media.

+ The Canon TM-240 supports up to 0.8 mm media thickness and handles 150 mm as the outside diameter for roll paper, compared to HP's 0.3 mm and 100 mm in diameter.

○ Both models come with a simple catch bin/basket to collect output from media rolls.

+ The Canon model offers a standard, non-upgradable 2 GB physical RAM, while the HP unit supports 1 GB.

○ Neither device offers a hard drive (not even as an option), which would allow for the storage of documents that are frequently required and would aid spooling workflow.

- The HP model is lighter with a net weight of 30.5 kg versus 50.9 kg for the Canon unit.

+ Both models offer a colour touchscreen user interface, which are easy to use. The Canon unit has a larger touchscreen (4.3") that can be tilted, which boosts ease of use, whereas the smaller (2.7") HP control panel is set flush with the device so the operator must stand over it. The Canon control panel also has an alert LED that turns red when the printer requires operator attention, a feature not available on the HP unit.

Canon's touchscreen can be angled; HP's control panel sits flush with the printer.

- The Canon TM-240's power consumption while active is a higher—59 watts versus 35 watts—than that of the HP model.

+ Rated noise emissions during operation are slightly lower for the Canon model (39 dB) compared to the HP device (42 dB).

+ The Canon TM-240 does not feature any polystyrene in its packaging making it the first large format printer in the market to do so, according to Canon.

○ HP offers a free program whereby the HP T360's ink cartridges and printhead can be returned for recycling; Canon's ink tanks are recyclable, too.

The Canon TM-240's packaging contains no polystyrene.

Device Feature Set

○ The Canon TM-240 has five speed settings (Fast 300, Standard 600, Fast 600, High 600 and High 1200), which are matched by similar settings on the HP device (Economode 300, Fast 600, Normal 600, Best 600 and 1200), although not all speed settings are available with all media types on each.

○ Both the Canon imagePROGRAF Printer Driver and the HP-GL/2 driver provide a useful overview of the settings for predefined profiles.

+ Seven predefined profiles are available with the Canon driver, while the HP driver offers five.

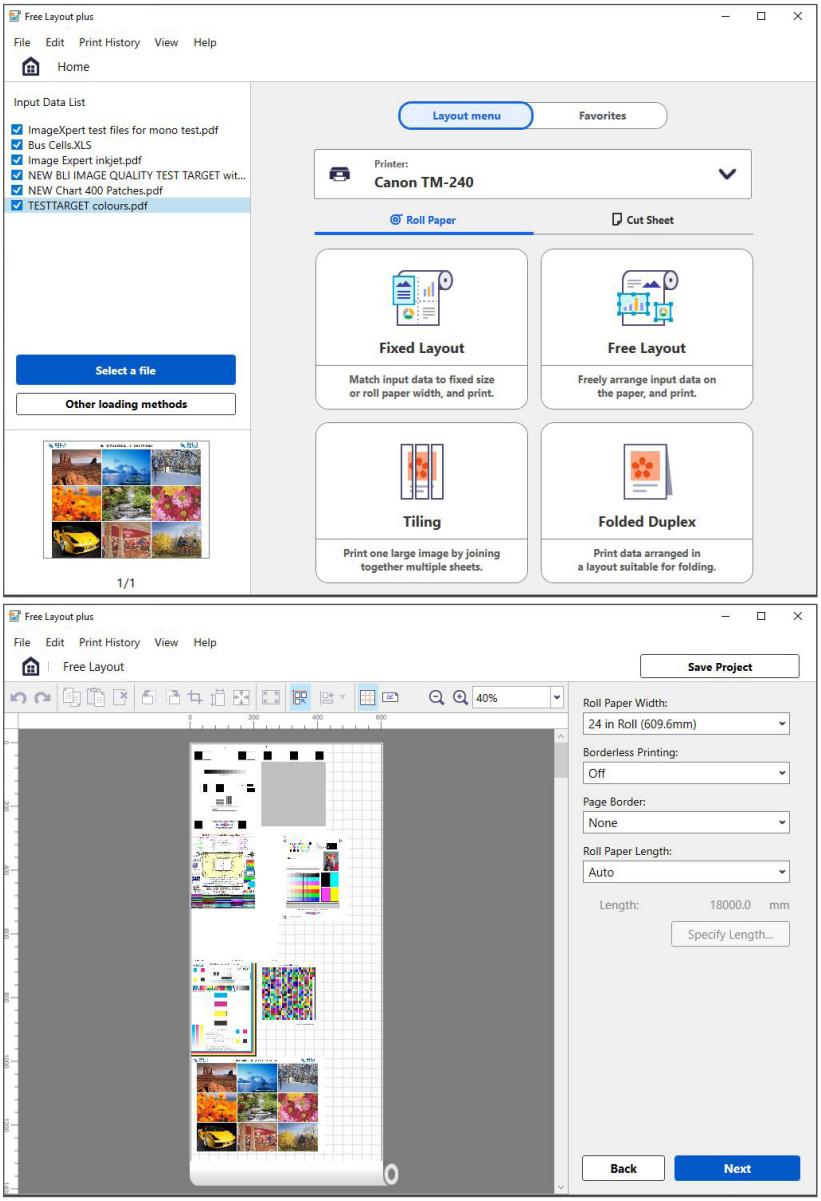
+ There are various features offered by the Canon driver which aren't supported on the HP driver, including multi-up (2 to 16) printing, poster printing (2 by 2), and page stamping.

+ The Canon imagePROGRAF Printer Driver offers a broad range of built-in adjustments for CMY balance, brightness, and contrast, which aren't available with the HP T630's HPGL/2 driver. The Canon driver's advanced colour-matching selections include the ability to match ICC profiles and select the rendering intent based on different elements in the document.

+ The Canon driver offers the option of unidirectional printing, even in Fast mode, which helps to avoid banding across output because the printhead travels in only one direction. The HP driver does not offer this feature.

+ Both 64-bit and 32-bit versions of the Canon driver now include the Color imageRUNNER Enlargement Copy Mode utility. This enables users to integrate a Canon small-format MFP device with the TM-240, whereby documents scanned at the MFP are automatically routed to a hot folder that is monitored by the TM-240 driver. The image is then resized and printed, offering a fast, easy-to-use poster creation tool for office users. There is no equivalent functionality in the HP driver.

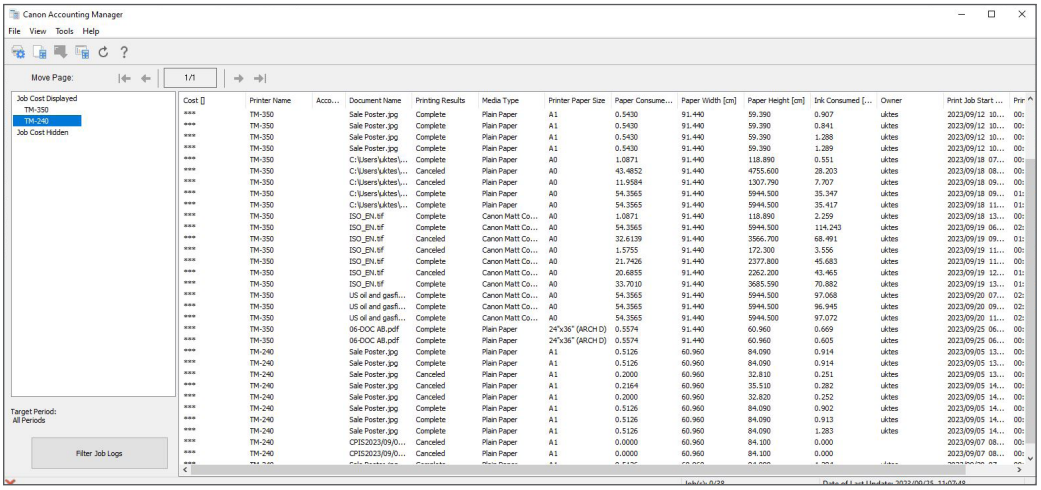
+ Canon's Free Layout plus software enables files—even those created with different applications—to be scaled, resized, or grouped together as a single job from the printer driver. Images can be dragged and dropped to the desired locations and printed together on a single page, helping to save on media. The HP unit offers a similar nesting feature, which can be activated directly on the control panel or from the print driver utility, or when using HP Click. However, unlike the Canon tool, users don't have the same precise control over the positioning of jobs, rather jobs are randomly positioned to print across the width of a page, either in the order they were submitted or in 'optimized' layout order.



Canon's Free Layout plus enables users to arrange documents from different applications on a page meaning they can use paper more efficiently.

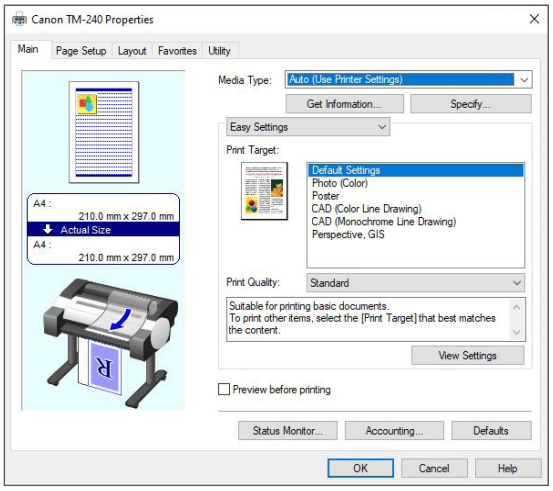
+ The Canon model also offers a plug-in for printing from Microsoft Office applications, which includes useful tools for borderless printing, amongst others. HP offers no equivalent software.

+ Canon's Accounting Manager, accessed via the Status Monitor, offers comprehensive accounting management for all print jobs. Once the costs for individual inks and media types are entered, the total cost per job is calculated automatically after printing. For each job, the media type, area, ink used, and total print time are listed, and more detailed cost and consumption information can be obtained by double-clicking on an individual job name or by highlighting a range of different jobs. Job cost information can then be saved in .CSV format and opened in Excel. We could not find any similar accounting support utilities offered on the HP T630.

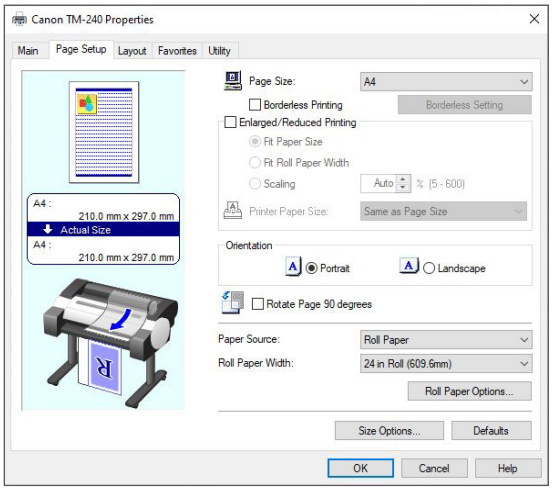


Canon Accounting Manager

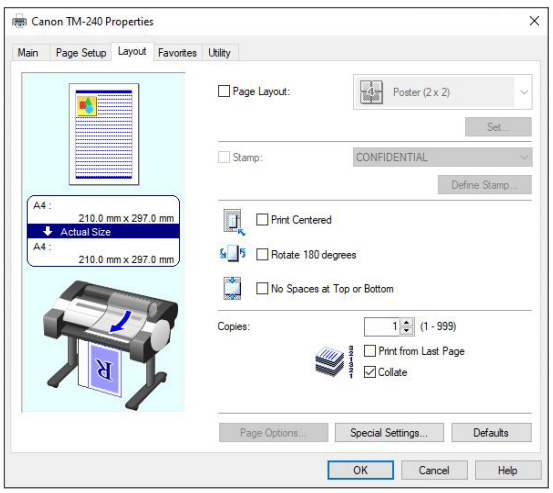
Print Drivers



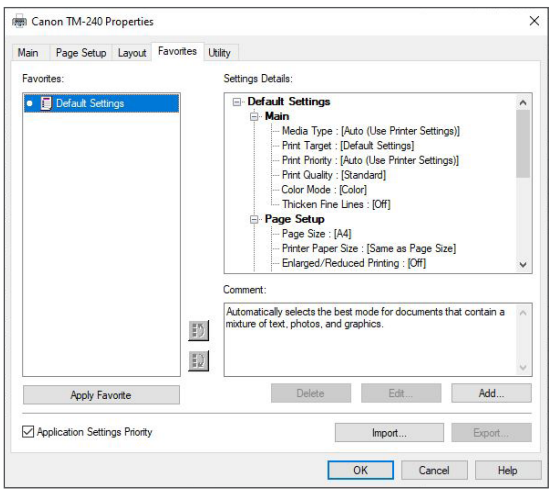
Canon imagePROGRAF TM-240 Print Driver Main Tab



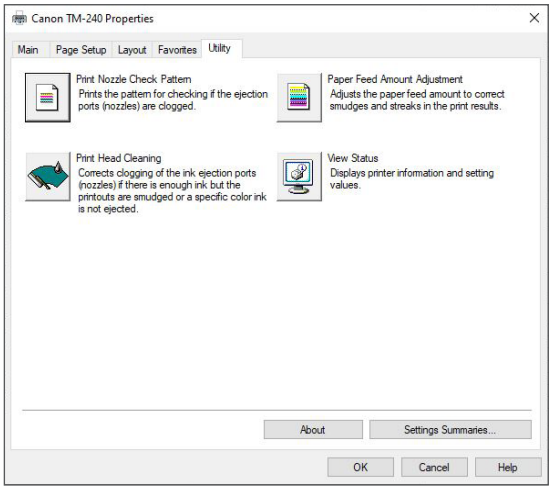
Canon imagePROGRAF TM-240 Print Driver Page Setup Tab



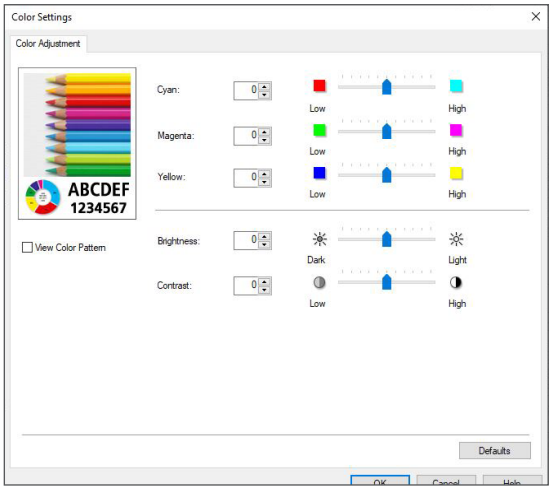
Canon imagePROGRAF TM-240 Print Driver Layout Tab



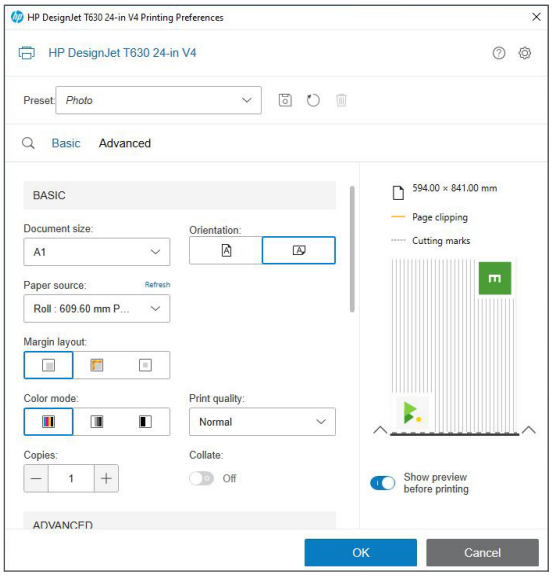
Canon imagePROGRAF TM-240 Print Driver Favourites Tab



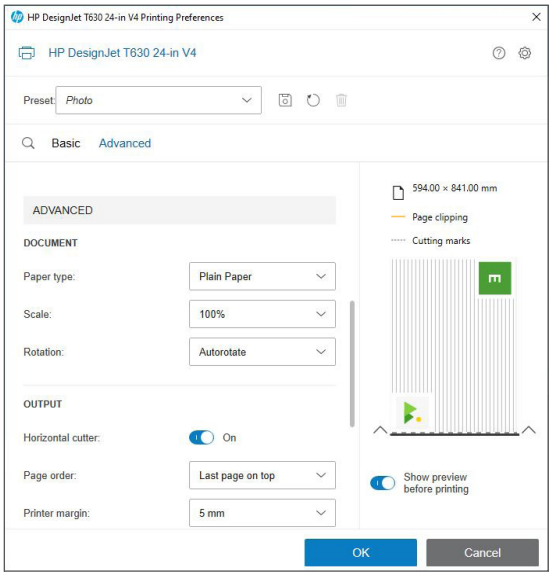
Canon imagePROGRAF TM-240 Print Driver Utility Tab



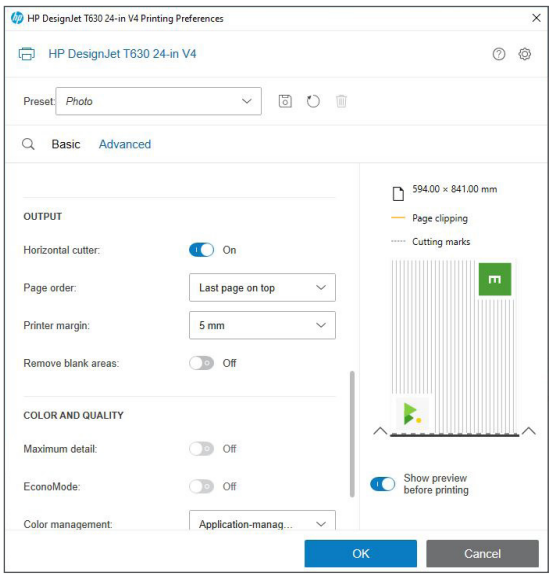
Canon imagePROGRAF TM-240 Print Driver Colour Adjustment Tab



HP DesignJet T630 Print Driver Basic Tab



HP DesignJet T630 Advanced Tab-1



HP DesignJet T630 Advanced Tab-2

Supporting Test Data

Print Productivity

Job Stream Productivity (in Seconds)			
Mixed File Types, Same Size			
Canon imagePROGRAF TM-240		HP DesignJet T630	
Fast	625.25	Fast	978.30
Standard	1,200.05	Normal	2,067.26
High	3,036.63	Best	7,619.48

Keypoint Intelligence's job stream consists of nine files, including PDF, TIFF, and DWF files totalling 19 pages, all at Arch D-size, ensuring that the files are set to fit to page. This test replicates the type of traffic a typical wide-format device might experience in a real-world, multi-user environment. All files are submitted to the controller in a specific order and sent to the printer as a group, at which time the stopwatch begins; timing ends when the last page of the last file exits the device. Both devices were loaded with 610 mm rolls, with each file set to auto-rotate to save media.

Colour Productivity (in Seconds)

Canon imagePROGRAF TM-240		HP DesignJet T630	
Fast	344.85	Fast	593.11
Standard	723.76	Normal	1,017.75
High	1,769.85	Best	4,786.66

The 12-page DWF test file was printed using the device driver set to the plain paper/colour setting. Both devices were loaded with 610-mm rolls. The actual time indicated is the time it took to RIP, image, and deliver all pages of the test document to the collection bin.

Monochrome Productivity (in Seconds)

Canon imagePROGRAF TM-240		HP DesignJet T630	
Fast	339.44	Fast	545.77
Standard	718.25	Normal	632.93
High	1,733.30	Best	4,907.62

The 12-page DWF test file was printed with the Canon driver set to the plain paper/monochrome setting and the HP driver set to plain paper, black mode. Both devices were loaded with 610-mm rolls. The actual time indicated is the time it took to RIP, image, and deliver all pages of the test document to the collection bin.

First-Page-Out Productivity After a Weekend of Non-Use (in Seconds)

	Canon imagePROGRAF TM-240	HP DesignJet T630
Time Before Printing Commences	23.02	35.41
First-Page-Out Time	73.50	145.41

First-Page-Out Productivity from Ready State (in Seconds)

	Canon imagePROGRAF TM-240	HP DesignJet T630
Time Before Printing Commences	16.73	25.99
First-Page-Out Time	71.07	109.05

First-page-out times are achieved by sending an Arch D-size PDF file to print in Fast mode, timed from release to page out with the Canon driver set to the plain paper/monochrome setting and the HP driver set to plain paper, black mode. Both devices were loaded with 610-mm rolls.

A1 First-Page-Out and Throughput Productivity (in Seconds)

	Canon imagePROGRAF TM-240	HP DesignJet T630
First-Page-Out Time	75.13	101.89
Five-Pages-Out Time	300.58	434.51

The single-page A1-size Cottage Architectural Plan DWG TrueView Drawing test file was printed using the device driver with the plain paper/colour setting in Standard/Normal mode. The actual time indicated is the time it took to RIP, image, and deliver five pages of the test document to the collection bin.

Colour Print Quality

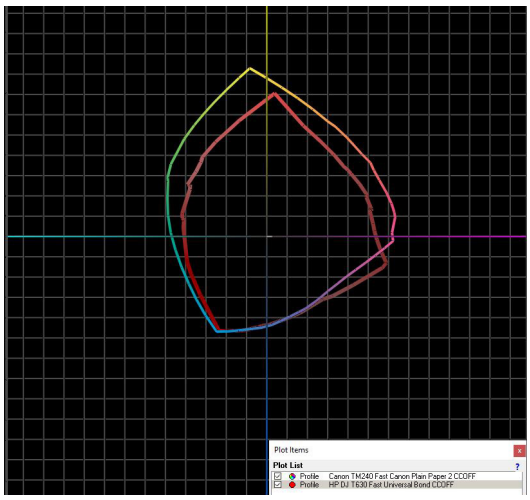
Colour Optical Density Evaluation						
Canon imagePROGRAF TM-240						
	Fast		Standard		High	
	50%	100%	50%	100%	50%	100%
Cyan	0.44	1.02	0.52	1.29	0.52	1.31
Magenta	0.44	0.99	0.54	1.29	0.55	1.33
Yellow	0.40	0.83	0.47	1.02	0.47	1.04
Black	0.46	1.48	0.67	1.51	0.68	1.57

HP DesignJet T630						
	Fast		Normal		Best	
	50%	100%	50%	100%	50%	100%
Cyan	0.69	0.96	0.75	1.05	0.78	1.10
Magenta	0.66	0.93	0.74	1.05	0.77	1.11
Yellow	0.53	0.75	0.56	0.83	0.63	0.90
Black	0.67	1.41	0.69	1.46	0.65	1.36

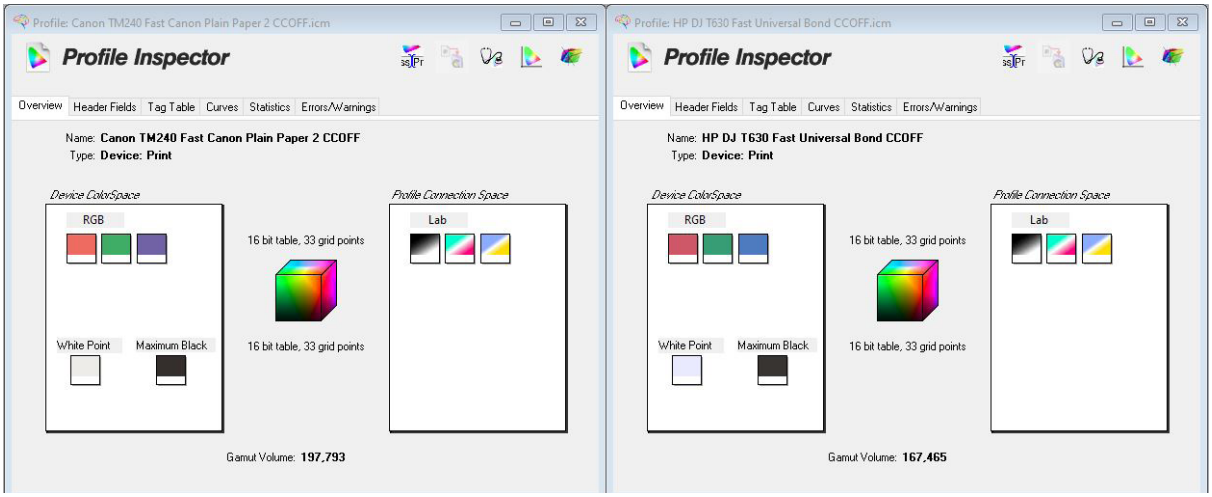
Colour density readings were assessed by printing a Keypoint Intelligence proprietary PDF test target file on plain paper in default colour settings at all quality settings available and measuring the density of 100% dot fill and 50% dot fill using an XRite 508 densitometer and XRite exact^{Xp} densitometer.

Colour Gamut Cubic L*a*b* Unit Volume Comparisons

Media Type/Settings	Canon imagePROGRAF TM-240	HP DesignJet T630
Plain Paper Fast	197,793	167,465
Plain Paper Standard/Normal	311,234	190,979
Plain Paper High/Best	319,628	207,466
Matte Coated High/Best	389,645	388,912

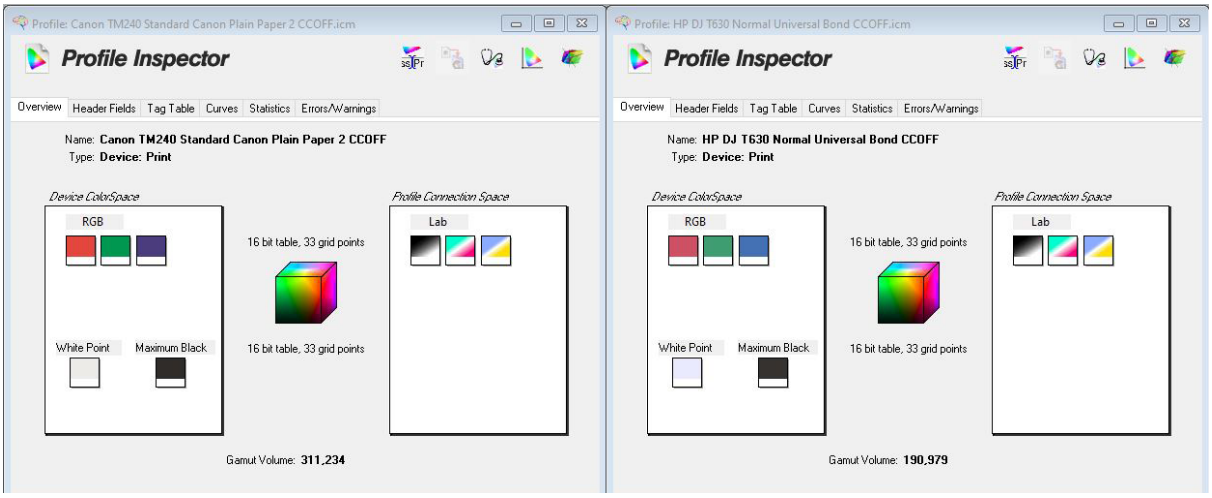


Canon imagePROGRAF TM-240 colour gamut on plain paper in Fast settings (shown chromatically) versus HP DesignJet T630 colour gamut (shown in red) on plain paper in Fast settings.

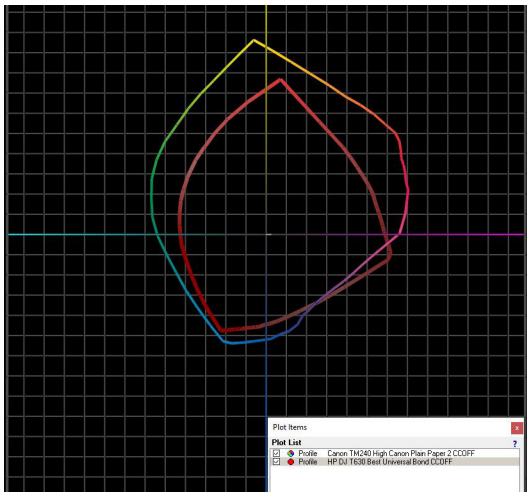


Colour gamut profile for Canon imagePROGRAF TM-240 (left) and HP DesignJet T630 (right) on plain paper in Fast mode.

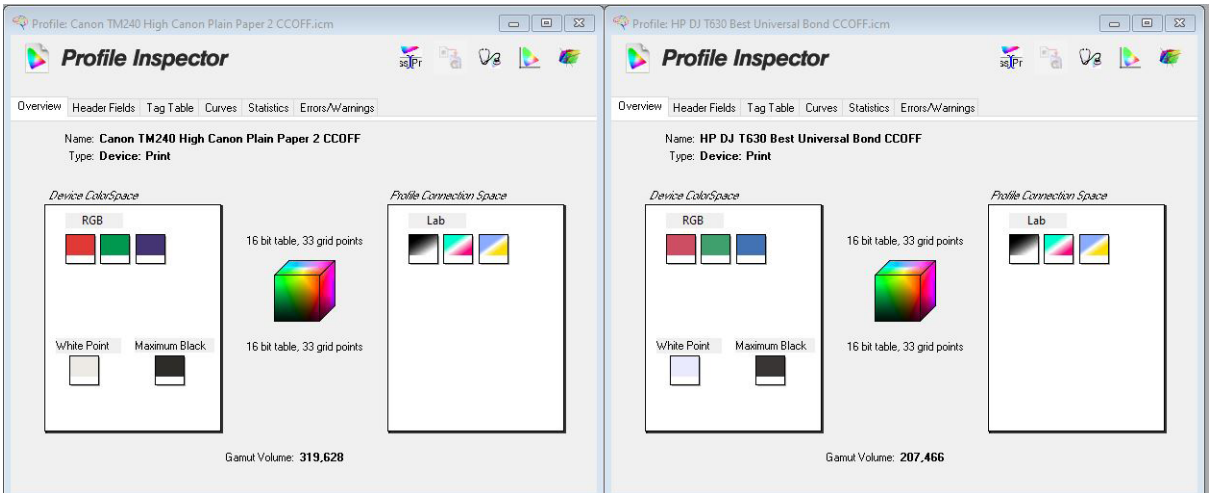
Canon imagePROGRAF TM-240 colour gamut on plain paper in Standard settings (shown chromatically) versus HP DesignJet T630 colour gamut (shown in red) on plain paper in Normal settings.



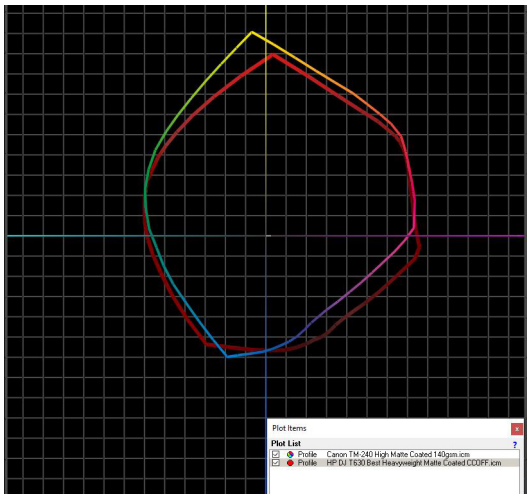
Colour gamut profile for Canon imagePROGRAF TM-240 (left) and HP DesignJet T630 (right) on plain paper in Standard/Normal modes.



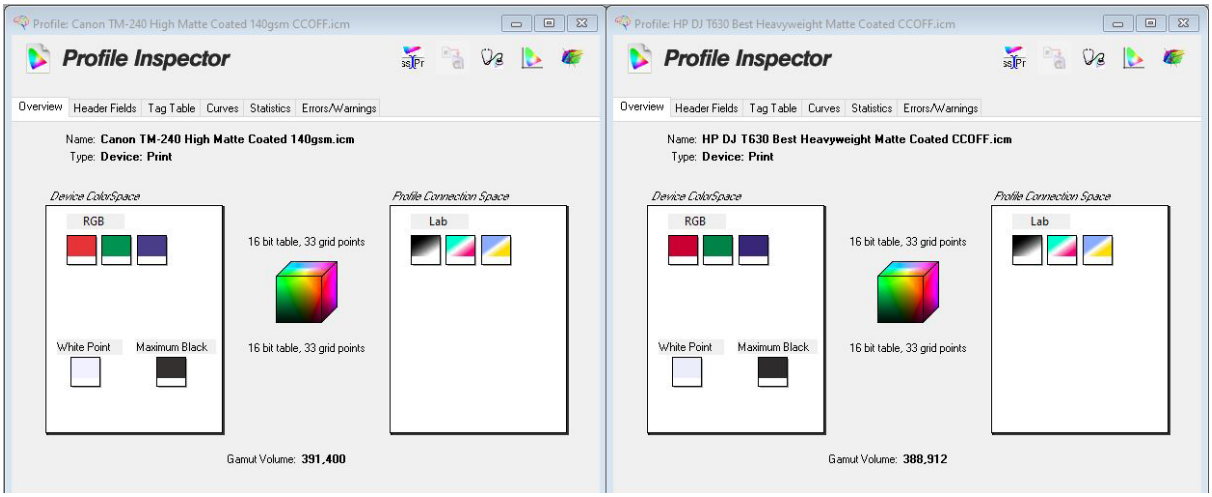
Canon imagePROGRAF TM-240 colour gamut on plain paper in High settings (shown chromatically) versus HP DesignJet T630 colour gamut (shown in red) on plain paper in Best settings.



Colour gamut profile for Canon imagePROGRAF TM-240 (left) and HP DesignJet T630 (right) on plain paper in High/Best Quality modes.



Canon TM-240 colour gamut on matte coated paper in High quality settings (shown chromatically) versus HP DesignJet T630 colour gamut (shown in red) on matte coated paper in Best settings.



Colour gamut profile for Canon imagePROGRAF TM-240 (left) and HP DesignJet T630 (right) on matte coated paper in High/Best Quality modes.

Black Print Quality

Solid Density

	Canon imagePROGRAF TM-240			HP DesignJet T630		
	Density Block					
	Fast	Standard	High	Fast	Normal	Best
1	1.49	1.54	1.56	1.40	1.44	1.41
2	1.48	1.55	1.57	1.45	1.40	1.38
3	1.47	1.54	1.56	1.41	1.46	1.43
4	1.44	1.51	1.55	1.45	1.46	1.44

Solid black density measurements are based on four readings taken from a Keypoint Intelligence proprietary PDF test target file corresponding to four different 100% solid black locations on the output. The output was assessed at all quality settings available, with the Canon driver set to plain paper/monochrome setting and the HP driver set to plain paper, black mode. Density was measured using an XRite 508 densitometer and XRite exact^{Xp} densitometer.

Device Feature Set

	Canon imagePROGRAF TM-240	Advantage		HP DesignJet T630
Maximum Image Resolution	2400 x 1200 dpi			2400 x 1200 dpi
Number of Inks	5 (MBk, CMYK)	✓		4 (CMYK)
Ink Tanks Replaceable During Operation	Yes	✓		No
Ink Drop Size	5 picoliter	✓		5.5 picoliter (CMY); 12 picoliter (K)
Ink Cartridge Capacity	55 ml (all colours)			29 ml (CMY); 38/80 ml (K)
Number of Nozzles	MBK: 5,120 nozzles; CMYK: 2,560 nozzles each; 15,360 in total	✓		5,504 in total (1,376 per colour)
Number of Printheads	1 (User-replaceable)			1 (User-replaceable)
Line Accuracy	+/-0.1%			+/-0.1%
Minimum Line Width	0.02 mm			0.02 mm
Minimum Print Margins	20 mm Top and 3 mm Bottom and Side (Roll); 20 mm Top and Bottom, 3 mm Side (Cut sheet)			5 mm (Roll and Cut sheet input tray); 5 mm Top and Side and 17 mm Bottom (Cut sheet manual)
Borderless (0 mm) Printing	Yes (Roll only)	✓		No
Maximum outside diameter of roll paper	150 mm	✓		100 mm
Maximum Printable Paper Roll Length	18 m (depending on OS and application)			INA
Maximum Cut-Sheet Media Length	1.6 m		✓	1.9 m
Maximum Media Thickness for Roll Paper	0.07-0.8 mm	✓		0.3 mm
Maximum Media Width	610 mm (24 inches)			610 mm (24 inches)
Media Loading	Top loading			Top loading
Optional Media Handling	2/3 inch roll holder set			INA
Standard/Maximum RAM	2 GB physical	✓		1 GB
Hard Drive	NA			NA
Interface	Hi-Speed USB; 10/100/1000Base-T/TX Ethernet; Wireless LAN 802.11			Gigabit Ethernet (1000Base-T), Hi-Speed USB 2.0, Wi-Fi 802.11
PDL	SGRaster, HP-GL/2, HP RTL, JPEG (Ver. JFIF 1.02), CALS G4,			HP-GL/2, HP-RTL, CALS G4, JPEG, URF
Net Weight (unpacked)	50.9 kg (including Roll Holder Set, Stand and Basket; excluding ink and printhead)		✓	30.5 kg (with all accessories installed)

Power Consumption in Standby Mode	INA			< 0.2 W
Power Consumption when Active	59 W (approximately)		✓	< 35 W
Acoustic Pressure	Operation: 39 dB (A); Standby: INA			Operation: 42 dB (A); Standby: < 16 dB (A)
Acoustic Power	Operation: 6.0 Bels			Operation: 5.8 B(A); Standby: < 3.4 B(A)

Driver Feature Set

	Canon imagePROGRAF TM-240	Advantage		HP DesignJet T630
Speed Settings	Fast 300, Standard 600, Fast 600, High 600, and High 1200			Economode 300, Fast 600, Normal 600, Best 600 and 1200
Economy Mode	Yes			Yes (Economode)
Predefined Profiles	7 (Default, Photo colour, Poster, CAD colour line drawing, CAD mono line drawing, and Perspective, GIS, Custom)	✓		5 (Default, CAD, GIS, Photo and B/W Photo)
Overview of Profile Settings Provided	Yes			Yes
Media Profiles	53 + 10 user customizable special options	✓		31
IQ Optimized for Print Profiles	Yes			Yes
Watermark	Yes	✓		No
Sharpen text	Yes			Yes (Max. Detail setting)
Thicken Fine Lines	Yes			Yes (Max. Detail setting)
Mirror Image	Yes			Yes
Multi-Up Printing	Yes, 2 to 16	✓		No
Poster Print Mode	Yes (2 by 2)	✓		No
Page Stamping	Yes (Date, Time, Name, Page Number plus the ability to add custom stamps)	✓		Not supported
Image Rotation	Yes, 90 degrees and auto 180 degrees		✓	Yes, auto rotate and 90, 180, or 270 degrees
Option to Preview Before Print	Yes			Yes
CMYK Balance Adjustment	Yes (CMY only)	✓		No
Brightness Adjustment	Yes	✓		No
Contrast Adjustment	Yes	✓		No

Saturation Adjustment	No			No
Advanced Colour Management Options	Yes	✓		No
Enlargement Copy Mode	Yes	✓		No
Free Layout Capability	Yes (flexible placement)	✓		Yes (automatic placement)
MS Office Plug-In	Yes	✓		No
Accounting Capability	Yes			INA
Disable Automatic Cutter	Yes			Yes
Unidirectional Printing Selection Option	Yes	✓		No
Integration with MFP	Yes	✓		No

The Canon imagePROGRAF TM-240 comes bundled with PosterArtist Lite.

Ink Consumption

Table 1: Amount of Ink in Each Canon imagePROGRAF TM-240 Cartridge (in Grams)

	Matte Black	Black	Yellow	Magenta	Cyan
Weight of Cartridge Prior to Installation	89.912	82.135	82.847	89.788	89.758
Weight of Cartridge at End of Life	33.387	30.693	30.693	30.693	31.906
Net Weight of Ink	56.525	51.442	52.154	59.095	57.852
Total Ink Weight Across Five Cartridges					**277.068**

Table 2: Amount of Ink in Each HP DesignJet T630 Cartridge (in Grams)

	Yellow	Magenta	Cyan	Black
Weight of Cartridge Prior to Installation	57.049	57.049	57.370	130.832
Weight of Cartridge at End of Life	27.195	27.339	27.405	49.915
Net Weight of Ink	29.854	29.710	29.965	81.917
Total Ink Weight Across Four Cartridges				**171.446**

Table 3: Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Standard Mode) on the Canon imagePROGRAF TM-240 (in Grams)

	Matte Black	Black	Yellow	Magenta	Cyan
Test Run 1 Net Weight of Ink Used	12.614	0.580	0.987	2.630	4.288
Test Run 2 Net Weight of Ink Used	12.455	0.642	1.233	2.734	4.443
Test Run 3 Net Weight of Ink Used	13.681	0.523	1.340	2.381	4.154
Average Amount of Ink Used Across Three Runs	12.917	0.582	1.187	2.582	4.295
Total Ink Weight Across Five Cartridges for 50-Page Run (Based on Averages)					**21.562**

Table 4: Ink Used in Three 50-Page Runs of Cottage Architectural Plan Test Document (Normal Mode) on the HP DesignJet T630 (in Grams)

	Yellow	Magenta	Cyan	Black
Test Run 1 Net Weight of Ink Used	0.773	2.430	8.079	12.771
Test Run 2 Net Weight of Ink Used	0.697	2.276	8.112	11.514
Test Run 3 Net Weight of Ink Used	0.699	2.255	11.102	12.037
Average Amount of Ink Used Across Three Runs	0.723	2.320	9.098	12.107
Total Ink Weight Across Four Cartridges for 50-Page Run (Based on Averages)				**24.248**

Table 5: Ink Used in Three 50-Page Runs of ISO Poster Test Document (Standard Mode) on the Canon imagePROGRAF TM-240 (in Grams)

	Matte Black	Black	Yellow	Magenta	Cyan
Test Run 1 Net Weight of Ink Used	11.537	1.275	1.715	9.960	30.674
Test Run 2 Net Weight of Ink Used	11.313	1.242	1.665	9.532	30.686
Test Run 3 Net Weight of Ink Used	11.369	1.267	1.577	9.866	30.900
Average Amount of Ink Used Across Three Runs	11.406	1.261	1.652	9.786	30.753
Total Ink Weight Across Five Cartridges for 50-Page Run (Based on Averages)					**54.859**

Table 6: Ink Used in Three 50-Page Runs of ISO Poster Test Document (Normal Mode) on the HP DesignJet T630 (in Grams)

	Yellow	Magenta	Cyan	Black
Test Run 1 Net Weight of Ink Used	4.520	9.940	51.231	11.154
Test Run 2 Net Weight of Ink Used	5.465	10.700	51.245	12.565
Test Run 3 Net Weight of Ink Used	5.207	10.823	51.307	12.906
Average Amount of Ink Used Across Three Runs	5.064	10.488	51.261	12.208
Total Ink Weight Across Four Cartridges for 50-Page Run (Based on Averages)				**79.021**

Table 7: Ink Used in Three 50-Page Runs of GIS Map Test Document (Standard Mode) on the Canon imagePROGRAF TM-240 (in Grams)

	Matte Black	Black	Yellow	Magenta	Cyan
Test Run 1 Net Weight of Ink Used	12.332	0.637	5.642	6.830	16.104
Test Run 2 Net Weight of Ink Used	14.288	0.696	6.221	6.397	15.141
Test Run 3 Net Weight of Ink Used	13.884	0.565	6.259	6.639	16.072

Average Amount of Ink Used Across Three Runs	13.501	0.633	6.041	6.622	15.772
Total Ink Weight Across Five Cartridges for 50-Page Run (Based on Averages)					**42.569**

Table 8: Ink Used in Three 50-page Runs of GIS Map Test Document (Normal Mode) on the HP DesignJet T630 (in Grams)

	Yellow	Magenta	Cyan	Black
Test Run 1 Net Weight of Ink Used	18.627	15.136	27.440	8.205
Test Run 2 Net Weight of Ink Used	17.852	15.114	30.827	7.607
Test Run 3 Net Weight of Ink Used	18.276	15.380	31.251	8.090
Average Amount of Ink Used Across Three Runs	18.252	15.210	29.839	7.967
Total Ink Weight Across Four Cartridges for 50-Page Run (Based on Averages)				**71.268**

Ink Consumption Test Methodology Overview

Keypoint Intelligence's ink consumption analysis was conducted using three document types (Cottage Architectural Plan, ISO Office Poster and a GIS map). Each document was formatted as a PDF (except for the Cottage Architectural Plan, which was formatted as a DWG TrueView Drawing) and sized at ISO A1.

The Canon TM-240 was installed in Keypoint Intelligence's lab with the latest "01.00" level of firmware (as of launch) and connected to a Windows 10 Pro workstation using a 1000BaseT TCP/IP connection. The Canon imagePROGRAF Printer Driver was used for all testing with media selection set to plain paper and the image set to print at actual size. For the Cottage Architectural Plan, print priority settings were set to Line Drawing/Text with quality set to Standard (600 dpi). For the ISO Poster and the GIS map, print priority settings were set to Image with quality set to Standard (600 dpi).

The HP DesignJet T630 was installed in Keypoint Intelligence's lab with the latest "SPRKLFPR2N001.2306B.00" level of firmware (as of May 2023) and connected to a Windows 10 workstation using a 1000BaseT TCP/IP connection. The HP GL/2 driver was used for all testing and was left in default colour setting, with media selection set to plain paper and the image set to print at actual size. All three document types were printed with quality set to Normal mode.

Before installing the ink cartridges, lab technicians weighed and recorded the weight of each with all packaging removed. At the end of each 50-print test run, the cartridges were weighed again, and the resulting weight of ink used for the test run calculated for each colour. To ensure that the sub-tank on the Canon model did not affect results, a procedure was followed to ensure that the sub-tank level was at its maximum before the

print run commenced and again after the print run was completed, thereby ensuring that ink replenishment of the sub-tanks was taken into account for each print run.

For both models, one cartridge was then run to exhaustion and the weight of the empty cartridge was recorded.

Test Environment: Products were tested in Keypoint Intelligence's environmentally controlled UK test lab, which replicates typical office conditions.

Test Equipment: Keypoint Intelligence's dedicated test network in Europe, consisting of Windows 2012 servers and Windows 10 Professional workstations, 10/100/1000BaseTX network switches and CAT5e/6 cabling.

Test Procedures: The test methods and procedures employed by Keypoint Intelligence in its lab testing include Keypoint Intelligence's proprietary procedures and industry-standard test procedures. In addition to a number of proprietary test documents, Keypoint Intelligence uses industry standard files including a Keypoint Intelligence test file and an ASTM monochrome test document for evaluating black image quality. In addition to a visual observation, colour print quality and gamut size are evaluated using XRite i1 profile software and an i1 Pro colour spectrophotometer and analysed using XRite i1i0 Advanced Scanning Table. Density of black and colour output was measured using XRite 508 and XRite exact^{Xp} densitometers.

About Keypoint Intelligence

For over 60 years, clients in the digital imaging industry have relied on Keypoint Intelligence for independent hands-on testing, lab data, and extensive market research to drive their product and sales success. Keypoint Intelligence has been recognized as the industry's most trusted resource for unbiased information, analysis, and awards due to decades of analyst experience. Customers have harnessed this mission-critical knowledge for strategic decision-making, daily sales enablement, and operational excellence to improve business goals and increase bottom lines. With a central focus on clients, Keypoint Intelligence continues to evolve as the industry changes by expanding offerings and updating methods, while intimately understanding and serving manufacturers', channels', and their customers' transformation in the digital printing and imaging sector.

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