

## Digital Servomotor Control for Offset Printing

### Faster make-ready and accurate color

With servomotors to control the ink-keys, the press operator at the console uses a touch screen to make ink adjustments in seconds. Even operators with limited pressroom experience complete color make-ready with precision in record time, minimizing wasted material and reducing unproductive press time. Digital control makes it possible to preset the keys [optional feature] based on the prepress information to even further reduce make-ready time.

### Maximum Quality

Control ink thickness within 0.00001" (0.025mm) with an intuitive 0-99 key setting. Laser-cut, sharp-edged, fully segmented blades allow maximum difference in ink coverage between adjacent zones, hold color calibration accurately, and have no sliding components or leak points that can develop problems over time. Servomotors are modular and self-diagnostic, able to tell the operator if a stiff key or other problem is preventing the intended movement.

### Flexible Design

With designs for over 750 different presses, and thousands of successful installations worldwide, Mercury can be configured to your needs.

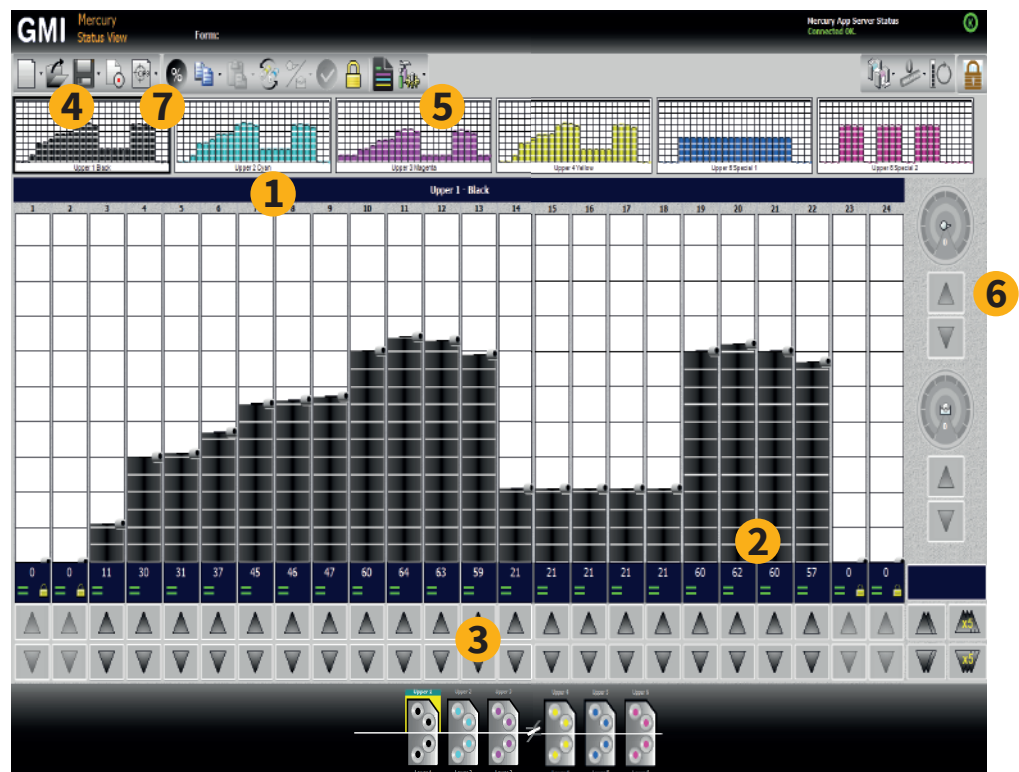
### 3-Year Warranty

3-Year Warranty on all new or replacement servomotors. We stand behind our product!

### Excellent for UV Ink

UV ink cures from friction as well as UV. Competitor "sliding segment" designs for ink keys will stick and bind over time. Mercury's industry-leading segmented blade ensures longevity in UV applications.

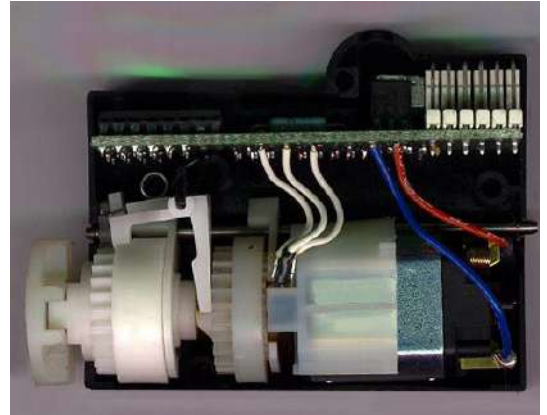
- 1 Single main screen controls all inkers from a central station.
- 2 Accuracy of 0.00001" (0.025mm) with an intuitive 0-99 scale for easy operation.
- 3 Adjust single ink key or select a group and adjust together.
- 4 Flexible job storage – name files and folders as you choose.
- 5 Advanced diagnostic features available to operators and/or maintenance.
- 6 [Option] Control ink and water sweeps from same interface.
- 7 [Option] Load presets for the ink keys, reducing start-up time by up 40% compared to subjectively estimated profiles.





## Embedded Intelligence

Mercury's servomotors are modular – you can swap them and they recognize their position on the press automatically when you plug them in. A microprocessor onboard every servomotor enables advanced control features like anti-backlash and self-diagnostic remote maintenance capabilities. After every move, each servomotor confirms its successful adjustment, and this information can be seen by the operator in real-time on the console. A mechanical “zero” position ensures that the calibration of the keys stays perfect in all conditions.



## Simple Operator Controls

Mercury is designed to make things clear and easy for your operators. The touch-screen interface is easily added to a master control desk, and Mercury also can have additional stations as needed to gain operator productivity. Inking on the whole press can be controlled from a single, easy-to-learn home screen. Settings for jobs can be easily created, stored, and recalled. Any problem in the system is automatically detected and displayed to the operator. For the power-user, Mercury also has advanced user features, such as calibrated non-linear response and zone locks.



## Options

### CIP Presetting

Translate PPF files from your laser CtP system into recommended ink key profiles. Starting the make-ready from calculated profiles, improved by built-in self-calibrating algorithms, CIP Presetting has proven to reduce start-up time and waste by up to 40% compared to subjectively estimated profiles.

### Ink and/or Water Sweep / Dampener Control

Motorized control of the sweep and/or dampener roller to control overall ink/water flow. Operates from the same console as the main Mercury system.

### 32” Monitor Upgrade

Recommended for presses with more than 36 keys, for easier operator use.

### Integrate with Automatic Register

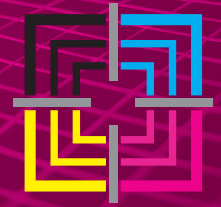
Mercury and GMI's SnapReg automatic register system are able to integrate into a single console, further simplifying life for your operators. Inquire about SnapReg from your GMI salesman, or refer to the SnapReg brochure.

### Integrate with Closed-loop-Color Control

GMI's Clarios or SnapReg color control systems are able to communicate with the Mercury to accomplish automatic closed-loop-color control for make-ready and throughout a run. Inquire about Clarios and SnapReg color control from your GMI salesman, or refer to the Clarios and SnapReg brochures.

# DRC-5000/5000L

Automatic Register



## Perfect Control of Side and Circumferential Color-to-Color Register

### Faster Make-Ready and Lower Running Waste

Acquiring and maintaining perfect register is a basic requirement of modern printing. The DRC-5000 enables your press to achieve register in minimum time at the start of a run, then holds and adjusts the register to maintain perfect print throughout the run. A scanning algorithm quickly finds the register marks and the DRC-5000's algorithm is accurate enough to correct register from its initial position with a single commanded motor movement.

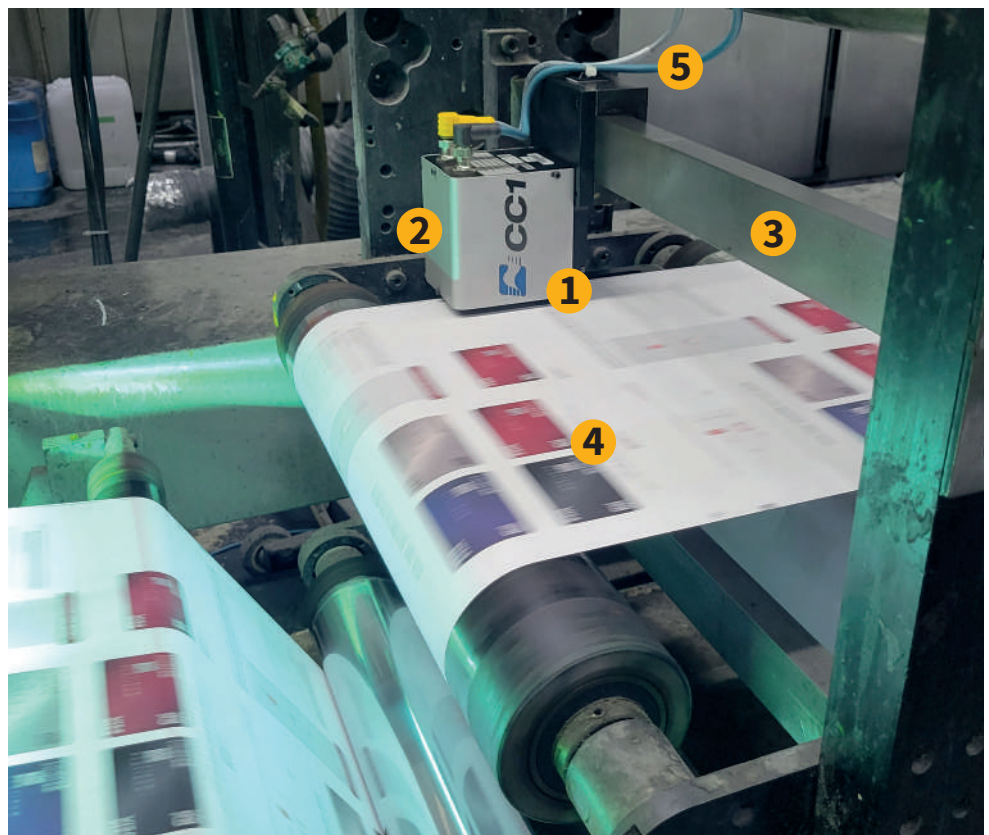
### Simple, Powerful, Effective

Smart cameras with embedded intelligence recognize register marks and automatically command the register adjustments required. Because the intelligence is embedded, the DRC-5000 can have as many cameras as needed without slowing down image processing speed. The DRC-5000 can interface directly to the register motors, enabling it to be retrofit onto any press, regardless of the original console. A simple user interface and job setup process makes training and operation quick and easy.

### Cutoff and Ribbons

The DRC-5000 can also control cutoff and/or ribbon position from the same master control screen. Additional cameras will be placed close to these operations to ensure accurate results.

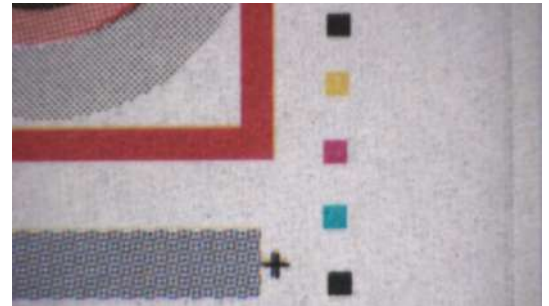
- 1 The DRC-5000 was formerly made by CC1, now owned and supported by GMI.
- 2 Compact camera makes for easy installation.
- 3 Transport can be motorized or non-motorized.
- 4 Identify and control any color, up to 16 colors per camera.
- 5 Modern ethernet-based wiring for high-speed and simplicity.





## Micromarks Save Paper

The DRC-5000 utilizes 0.5mm (0.020”) dots for register marks, taking up little of the precious space on your artwork. Place the mark pattern inside the color bar area or a gutter to eliminate any extra paper waste. Because of the small size, up to 16 marks can be placed in a single pattern and recognized by a single camera. The pattern can be read horizontally or vertically, further increasing flexibility in artwork. The DRC-5000L marks (Flexo application) are similarly compact, and can be individually recognized even if overlapping each other.



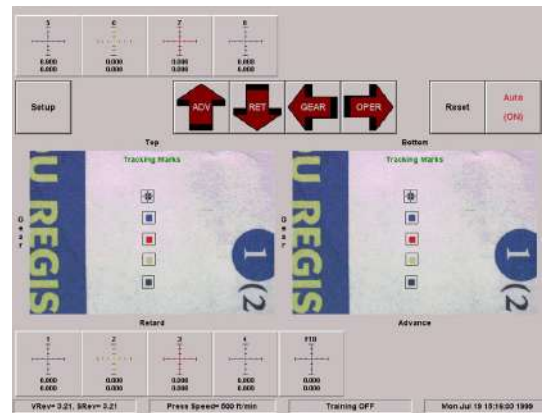
DRC-5000



DRC-5000L

## Robust Hardware and Software

The hardware components of the DRC-5000 are designed for maximum longevity. The strobing LED light source has a design life of over 20 years, the camera is industrial-grade, and standardized components are used throughout the design – such as common ethernet cabling. The software incorporates advanced features for data collection and reporting, while maintaining simplicity and reliability for the basic tasks. Because the critical algorithms are hosted on the camera itself rather than the user-interface computer, there is a low risk of software corruption. Furthermore, GMI can provide 24-hour remote support through secure access to the system (if enabled by the customer).



## Options

### Cutoff and/or Ribbon Control

Add cameras to control a cut or perforation location and/or the position of ribbons. The DRC-5000 can support up to 6 separate cutoff control cameras. Just as for register, the system will hold the proper position by making adjustments as needed throughout the run.

### DRC-5000L (Flexo Applications)

For Flexo, the DRC-5000L is a variant that uses an alternative mark pattern that enables it to correct for larger variances in initial register and to quickly react to e.g. stretch in the material. The primary features of the systems are the same. Up to 11 colors per camera.

### Front-to-Back Registration

This option is available for any DRC-5000 that is controlling register on both surfaces. Control the relative position of the print on each surface with the same precision as normal one-sided register.

### Clear Film Application (Back-strobe)

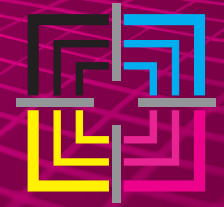
A back-strobe provides the needed background for recognizing marks on clear film.

### TRAM – Register Data View and Export

Prove to customers that you had perfect register throughout a run, or diagnose problems with register.

### Motorized Transport

For customers who change width of material frequently, it may be convenient to have a motorized transport to move the camera into position. Manual override remains available.



## Advanced Control of Side and Circumferential Color-to-Color Register for Offset Web Press

### Maximum Features

Every SnapReg includes an automated transport for the compact camera, a square-dance anti-piling feature, and the ability to measure register on both edges of the web to detect plate cocking or other problems. These advanced features are on top of a rock-solid automatic register algorithm that directly controls the register motors on your press. SnapReg is designed to make your operators' lives as simple and easy as possible.

### Accuracy without compromise

SnapReg utilizes micromarks as small as 0.2 mm, but the high-resolution camera can use these tiny marks to control register precisely, reaching good register from a cold start-up within 250 impressions on average. SnapReg is a compact and rugged system, allowing flexibility in placement when retrofitting an existing press. Ideal placement is close to the printing units, to prevent any additional paper waste. SnapReg has very simple and clear user controls, and the automated transport means your operators can control everything directly from the main interface. In the >10 years that GMI has been selling SnapReg, we have never had a single camera failure in the field except due to externally-caused damage – this is a system you can truly rely on!

### Cutoff and Ribbons

The SnapReg can also control cutoff and/or ribbon position from the same master control screen. Additional cameras will be placed close to these operations to ensure accurate results.

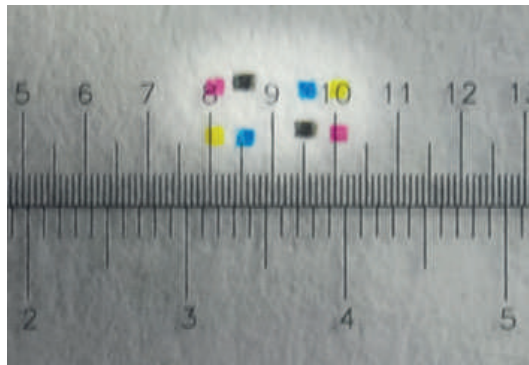
- 1 SnapReg handles up to 8 colors per side of the web.
- 2 See the current register result in a simple graphical representation.
- 3 Turn on or off automatic control at the push of a button. Press signals are recognized to prevent making moves at the wrong time.
- 4 Easy to change viewing between top / bottom surface and multiple webs (if applicable).
- 5 Phaser control available as an option (manual).
- 6 Press event signals are captured by the system, reacted to, and also displayed on the user interface.





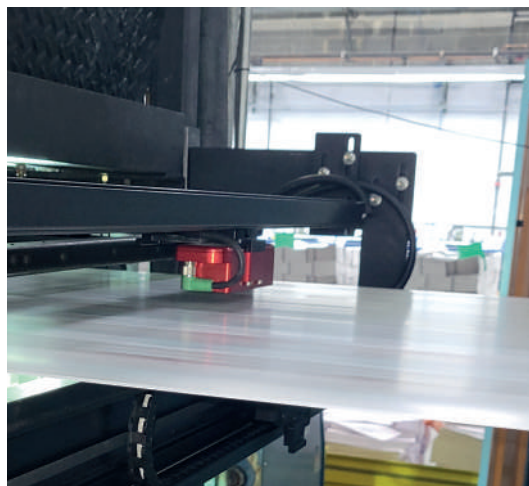
## Micromarks Save Paper

The SnapReg utilizes the smallest register marks in the industry, at just 0.2 mm (0.008”), taking up little precious space on your artwork. Place the mark pattern inside the color bar area or a gutter to eliminate any extra paper waste. Because of the small size, it is possible to fit two rows of micromarks in a 2 mm-high colorbar. The camera has a wide field of view, to easily and automatically find these micromarks in the artwork, despite their small size.



## Integrate with GMI Mercury or Clarios

SnapReg can be purchased as an add-on to an existing GMI Mercury or Clarios system, sharing the workstations and host computers already in place. This upgrade does not require new computers or additional screens, saving expense and minimizing the number of different control screens your operator uses.



## Optional Closed-Loop-Color

SnapReg CLC uses the RGB sensors of the camera to make a reading of density. Accuracy with process colors is usually  $\pm 0.07D$  if using the same micromarks as used for register, or  $\pm 0.05D$  if using larger, traditional colorbar swatches. The RGB camera can see several ink keys at once, and the automated transport moves the camera to scan across the web, resulting in a very short time to achieve good color at the start of a run. SnapReg CLC can integrate to GMI’s Mercury and a variety of OEM consoles to accomplish the ink key moves required.

## Options

### Cutoff and/or Ribbon Control

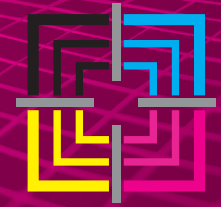
Add cameras to control a cut or perforation location and/or the position of ribbons. The SnapReg can support up to 8 separate cutoff control cameras. Just as for register, the system will hold the proper position by making adjustments as needed throughout the run.

### Closed-Loop-Color

Add extra cameras and software to also control color.

### Extra User Control Station

Required if not integrating to GMI Mercury or Clarios. Also available as addition to main station, for example to have a control station close to a cutoff control that is far from the main control station.



## Fast, Intuitive Spectral Measurement for High-Speed Webs

### Key-by-Key I\*a\*b Values in Realtime

Clarios uses GMI's proprietary spectrophotometer design that uses a neutral-color strobe flash and a high-count wavelength splitter to achieve highly accurate, ISO 13655 M0 spectral readings of colorbar patches. White and black calibration tiles allow Clarios to automatically self-calibrate to maintain accuracy overtime without need to frequent recertification. After each scan, Clarios displays the color data for each key, along with a chart that allows the operator to see whether the measured value falls within acceptable tolerance for that print job, allowing your operator to "run to the numbers."

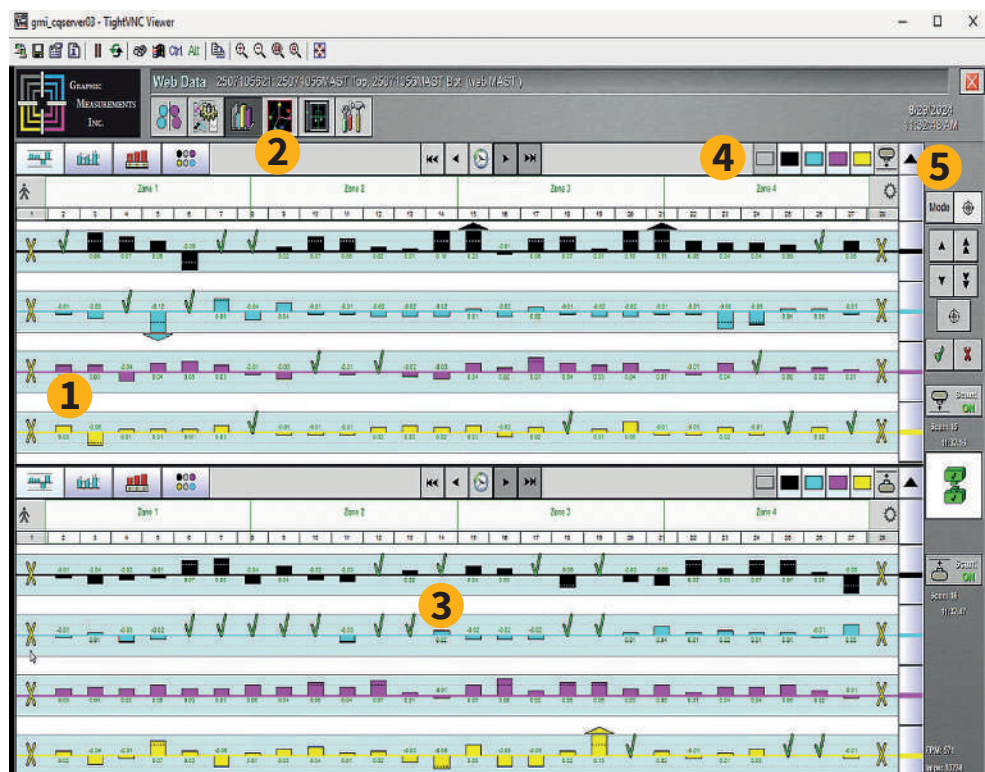
### Exportable I\*a\*b data

Clarios runtime data export feature allows all the spectral data to be exported to a file (.csv, .xml, or other options) in a hot folder, where this data can be used by your other systems.

### Closed-Loop Color Control

When combined with GMI's Mercury or another compatible ink key control system, Clarios can control color in a "closed loop." When the Clarios detects that a color is not accurate to the target, it will communicate with the ink key controls to command a key move to fix that mistake. Over a long run, plate wear, ink variation, and other factors can cause a change in color that requires a key adjustment, but in closed-loop mode the Clarios will detect and correct for this without any operator input required.

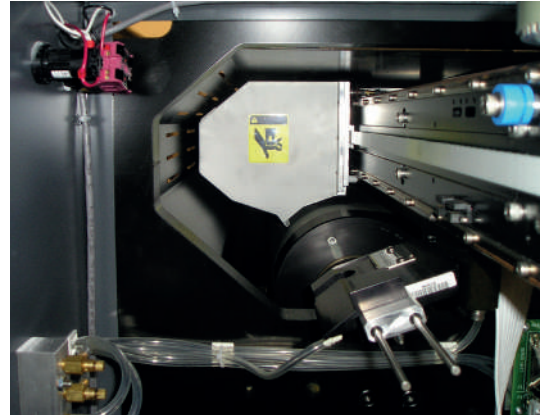
- 1 Values are shown in density so your operator can understand them quickly, but...
- 2 ...spectral data is only one button push away any time, in a separate view.
- 3 The latest measurement for each ink key, top and bottom surface, is shown on the screen, which can be easily interpreted to make manual key adjustments (if not using closed-loop).
- 4 Clarios can support up to 8 colors in a standard color bar, or 16 colors in a 2-layer color bar.
- 5 Turn on/off closed-loop color easily. Clarios can also pick up press signals to automatically handle events like stop-print or a splice.





## Designed for High-Speed Webs

Clarios uses a special color bar only 2mm high with a locating mark in it that allows a camera to automatically detect the color bar patch and fire the spectrophotometer at the exact right time, for a perfect reading on every scan. Clarios can take a measurement on every impression for webs up to 2000 ft/min (600 m/min). Hardened steel rails and wheels combined with a powerful stepper motor ensure precision and long life at high speed.



## Free Your Operators

Without the use of an in-line closed-loop system like Clarios, managing color takes up to 25% of an operator's time, and an even higher portion during the critical early stages of a job. Free your operators for other work by making color Clarios' job. Job store and recall cuts down setup time for repeat jobs, and your operator can queue the next job in advance during a free moment. Ready-to-go color control and conformance reports make it easy for management to know that everything has printed properly.



## Options

### Closed-Loop Color Control

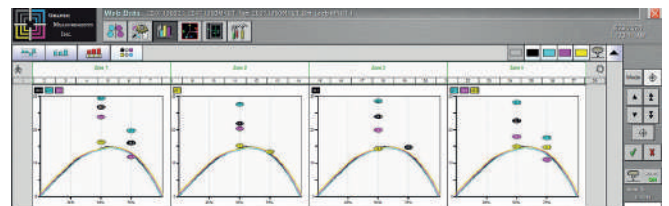
Available for no extra charge if you install Clarios on a press that has GMI's Mercury or earlier generation ink-key control system. Charge may apply if integrating to an OEM console or non-GMI ink-key control system.

### CIP Presetting

Add a CIP3 presetting server to translate PPF files from your laser CtP system into recommended ink key profiles. Starting the make-ready from calculated profiles, improved by built-in self-calibrating algorithms, CIP Presetting has proven to reduce start-up time and waste by up to 40% compared to subjectively estimated profiles.

### Tone Value Analysis

Improve pre-press plate curves and other color management controls with precise information extracted from actual production runs. Collect and report detailed data on



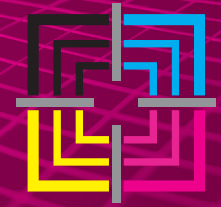
Tone Value Increase, and other important print condition metrics, from highlights through shadow tones. Measurement results can be formatted for export to Excel®, and in other general-purpose formats.

### RunTime Data Export

The results of each Clarios scan are formatted in conformance with ISO 28178 and then delivered in near-real time to a shared network drive. The measurements are ready for immediate processing by any of a range of third-party color management tools that can support ISO 28178 data input. This data export is automated, so manual operator intervention is not needed to reliably gather detailed spectral results from a running press.

# Visionary II

Web Viewer



## Camera Viewer for Roll-to-Roll Offset, Flexo, and Digital Presses with 17x Optical Zoom

### See Individual Process dots at 2000 ft/min (600 m/min)

When you're running a high-speed web press, the last thing you can afford is an unnecessary press stop. Visionary allows you to view any part of the print at any time, to ensure that the quality is up to your standards. With a 17x optical zoom, your operator can see small features, down to a highlight process dot, or take advantage of the full 4" by 3" (100mm x 75mm) viewing area. The Visionary can be directed by your operator to stay in one area of the image such as register marks, or to automatically cycle through a set of areas. As soon as a new image is captured, it is displayed to the operator on a separate screen, so that the operator can both view the image and control the camera at the same time. Importantly, the Visionary uses an indirect lightbox that creates even lighting for the image, so you never have to doubt whether there is a print problem or just a lighting problem.

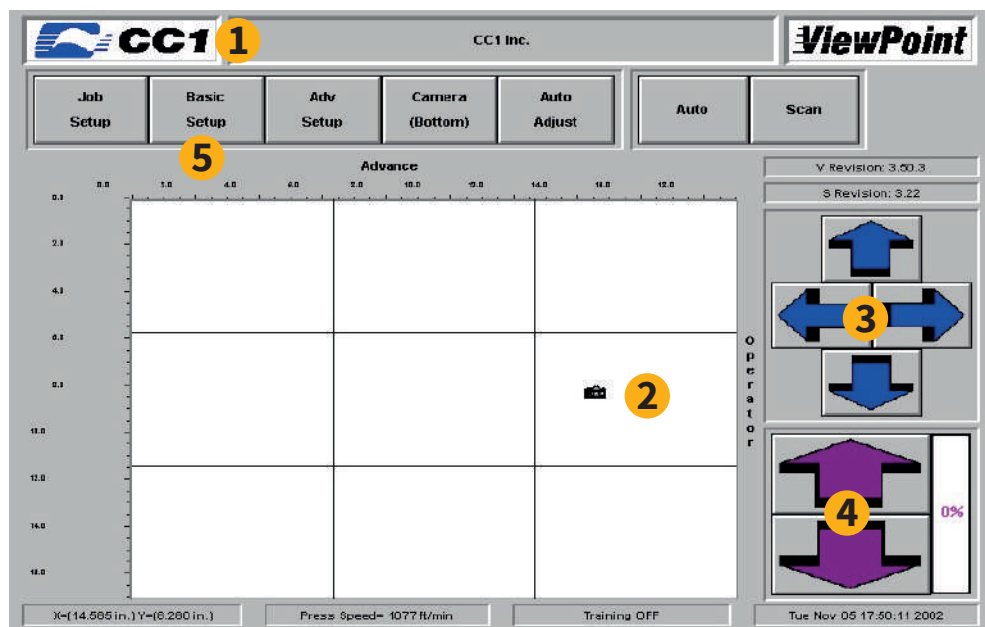
### Rugged, Proven Design

The Visionary II uses a steel, high-stiffness, positive-capture transport system, that ensures the position and alignment of the camera stays accurate over a long service life. The digital camera, LED lighting, and on-board electronics are all modern and state-of-the-art. Because the LED lights only flash for a few microseconds for each image, the expected service life is over 20 years.

### Front-to-Back Registration

When you buy a 2-camera Visionary system, the cameras can fire with synchronized timing to allow a comparison of the exact same area on the front and back of the web. This is primarily used to determine that registration is correct between the front and back images.

- 1 The Visionary II was formerly made by CC1, now owned and supported by GMI.
- 2 Touch any spot on repeat area to create a point for the camera to move to. In manual mode, the camera moves right away. In auto mode, you can set a waypoint for the camera's movement.
- 3 "Nudge" buttons allow fine adjustment of the camera position.
- 4 Easily increase or decrease the zoom – the lens moves in real-time with the button press.
- 5 Access job setup and configuration settings easily in this simple user interface.



Note: The current image from the camera is always available on a separate screen. Image Store allows you to store the images for later review as well.

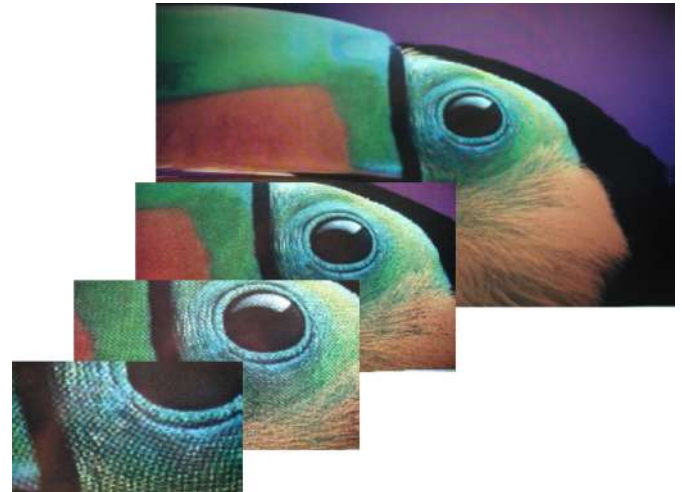


## Operator-focused Design

One of the key features of the Visionary II is a separate control screen and viewing screen. The image taken by the Visionary is always available on the display screen, even when the operator is setting up an automated routine, adjusting the zoom, or making any other command to the system. “Drag and Drop” camera positioning makes it easy to maneuver the view to any place on the image. Three modes of operation – Manual, Scan, and Auto – cover any style of use that you might need from the camera.



*Visionary II with Print*



*Visionary Zoom In*

## Options

### Two-Camera System

Add a second camera to view both surfaces of the web. A second display monitor will also be provided so that both images can be seen simultaneously.

### Make it easy to spot any error

For a two surfaces of the web align to one another. A super-imposed image is generated and shown to the operator so

they can immediately spot any problem. Make it easy to spot any error.

### Image Store

Add a high-storage image archive for visual documentation of print quality.

### Additional Monitor

Place an additional display and/or control monitor anywhere along the press that your operators need it.