

Betacolor S1

Color Reflection Densitometer

Operating Instructions

ver. 2b

Introduction

The **BETACOLOR S1** Color Reflection Densitometer is easy-to-use for single and multicolor presswork, color proofing, and color calibration.

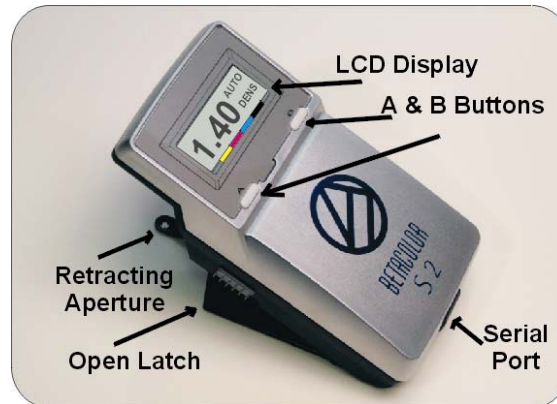
It is virtually maintenance free due to high efficiency LED's that provide more than 1,000,000 measurements with 2 AA alkaline batteries. Color channel switching is done electronically without the need of power consuming motors or bulky rechargeable battery packs. The AC charger and internal charging circuits have been eliminated.

Color density measurements are made simultaneously in all four color channels each time a sample is measured. The dominant color is displayed automatically while the others are available at the touch of a button.

The background density of the paper is auto-matically zeroed out, helping the pressman maintain optimum appearance across varying paper stocks.

The retracting sighting aperture and illumination aperture never touch the wet ink to avoid false subsequent measurements.

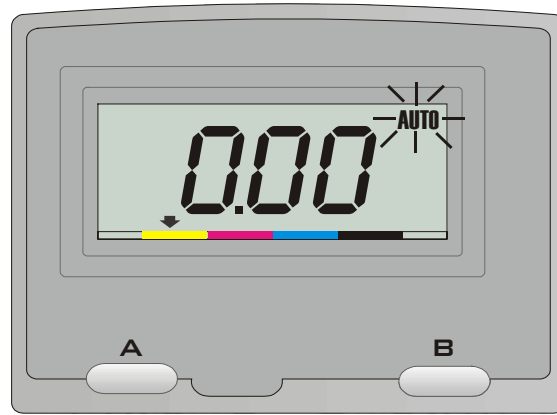
AUTOMATIC mode is the most convenient way to control density in a busy production environment. **MANUAL** mode gives additional control when needed for color calibration and special applications.



Getting Started

Open the densitometer by sliding the gray release latch forward, allowing the aperture to spring forward. Tap either button to turn on the unit if it has powered down.

Select **AUTO** mode with **B** if **MAN** appears in the display. Place the sighting arm on the white paper, press the unit down, and hold it down while zero is automatically set. When completed, the display will look like this.

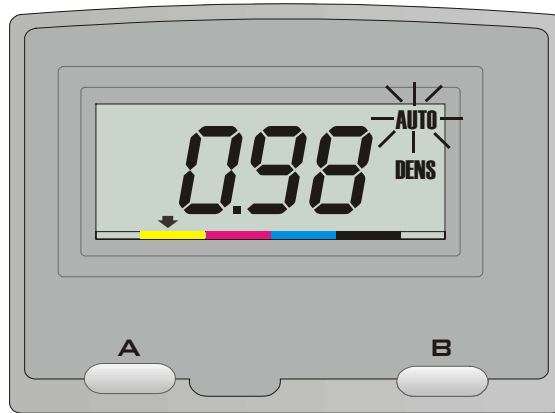


Zeroed in AUTO mode

The **AUTO** legend will be blinking and the arrow can be pointing to any color.

The background density of the paper is automatically zeroed out, helping the pressman maintain optimum appearance across varying paper stocks. Strongly tinted stocks can be zeroed out manually.

Place the aperture on the solid color target to be measured. Press the unit down and hold it while the measurement is taken. The entire process takes less than one second.



Yellow target measured in AUTO mode

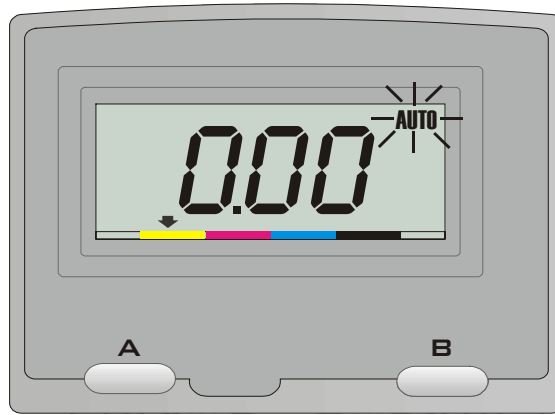
The display will look similar to this with the arrow pointing to the dominant color, the density value displayed, and **AUTO** and **DENS** appearing on the right.

Color density measurements are made simultaneously in all four color channels each time a sample is measured. The individual color channel density values can be displayed by stepping through the color channels with button **B**, the right hand button. This information can be used to calculate gray balance, hue error, and grayness.

Function Selection

Automatic mode

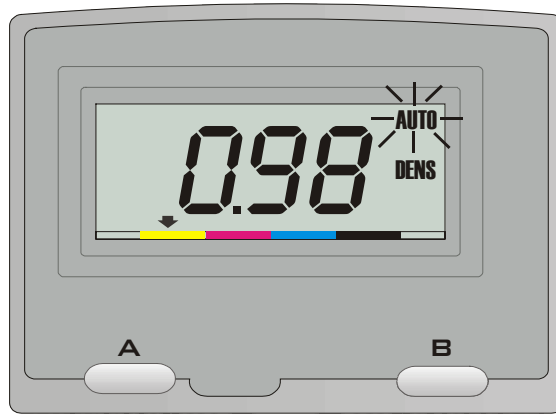
This is the most commonly used mode for measuring color bars with solid density targets. It offers precise control of press operation and operator convenience.



Zeroed in AUTO mode

1. Tap either button to activate the instrument. If **AUTO DENS** does not appear at the right of the display, press and hold **B** for three seconds with the head raised.
2. Measure the substrate to automatically zero all channels. Flashing **AUTO** will display and **0.00** will appear in the readout.
3. Measure the solid target. **DENS** will appear, the density will be displayed and the color indicator will move to the proper position.

Any target of any color can now be measured. The color channel pointer will automatically move to the dominant color. Spot colors will automatically be measured in the most sensitive channel, a great time saver for the pressman.

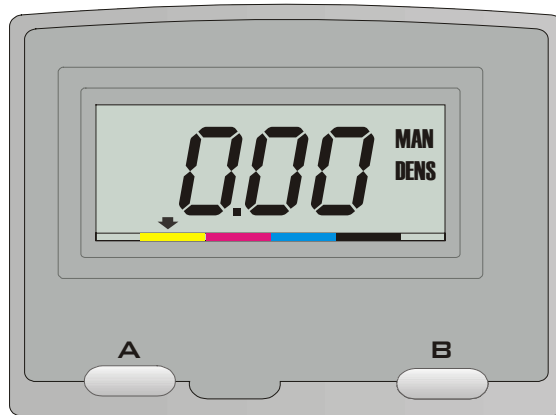


Yellow target measured in AUTO mode

Manual Mode

Use this mode to measure density and to disable the automatic zero function.

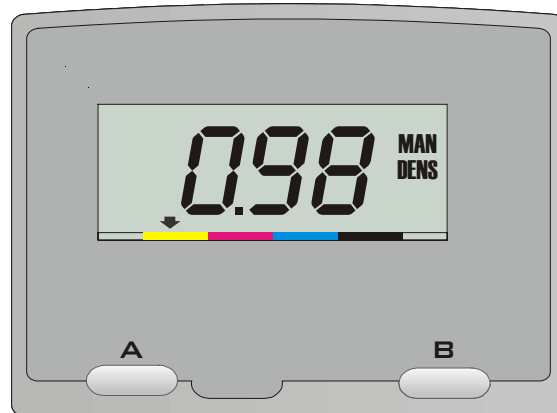
1. Tap either key to activate the instrument. If **MAN DENS** does not appear at the right of the display, press and hold **B** for three seconds with the head raised.



Yellow channel zeroed in MANUAL mode

2. Each color channel must be individually zeroed prior to making density measurements. Press the head down

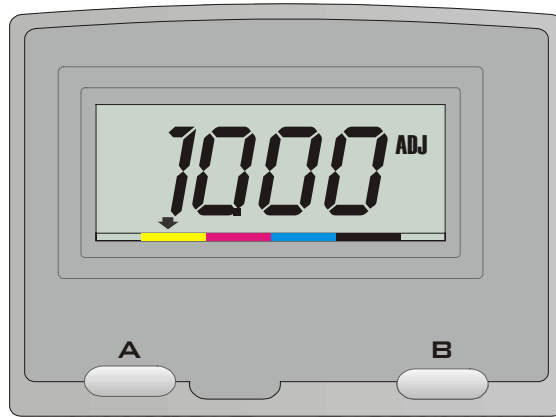
- while holding **A** to zero the color channel marked by the indicator.
3. Change the color channel by pressing **B** with the head up. Zero each channel as described above.
 4. Place the measuring aperture on the sample and press the head down. The density of the sample as measured in the selected color channel will be displayed. The other color component values of that color may be displayed by pressing **B** after raising the head.



Yellow target measured in MANUAL mode

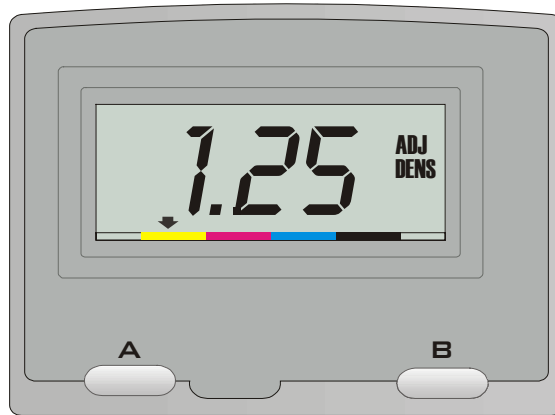
Instrument Setup

Density Slope Controls - Use these controls to restore calibration or force the instrument into agreement with another standard.



Factory slope setting of the yellow channel

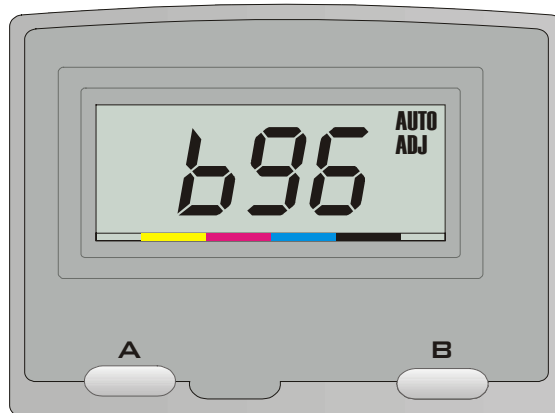
1. Put the unit in **AUTO** mode by pressing **B** and holding for three seconds.
2. Measure the solid process color standard. **AUTO**, **DENS**, and the color indicator will appear along with the measured value.
3. Raise the head and press **A** and **B** simultaneously. **ADJ** will appear and the current slope value will be displayed. Raise or lower this value directly by pressing **A** or **B**.
4. Measure the sample again. **ADJ DENS** will appear and the density value can be changed directly by pressing **A** or **B** after raising the head.



Yellow target measured in ADJ DENS mode

5. Measure the next solid color to be adjusted. The density can be changed by pressing **A** or **B** as above. Finish adjusting all four channels as described above.
6. Press **A** and **B** simultaneously with the head raised to exit the **ADJ** mode.

Serial Port Baud Rate Adjustment - Adjust the baud rate of the unit to match the requirements of the connected printer or computer. The serial port can be set to any of six standard rates between 300 and 9600 baud.



BAUD ADJ set to 9600

1. Place unit in **AUTO** mode by pressing and holding **B** for three seconds.
2. Press **B** and quickly press and hold the head down.
2. The currently selected baud rate, (**b96**) **AUTO** and **ADJ** appear. Press **A** to step through the available baud rates; 300, 600, 1200, 2400, 4800, or 9600.
3. Press the head down while holding **B** to return to the operating mode.

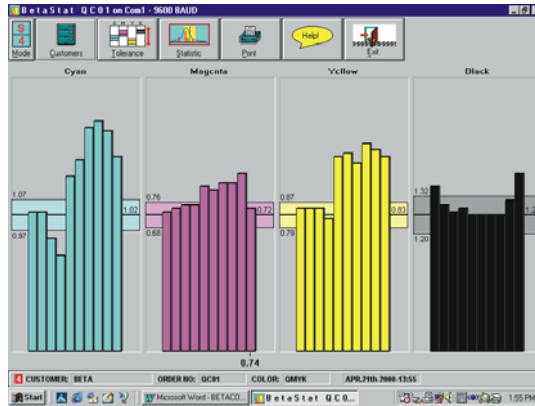
Battery Replacement - When the two AA alkaline batteries need to be replaced, **LO BATT** will appear on the display. The unique illumination system and power conservation features provide more than one million measurements on a set of batteries. Loosen the screw on the bottom of the unit and remove the battery cover plate. Discard the old batteries and install two new ones in the same positions.

Reset Button - If the unit fails to respond or an unusual display appears, press the red reset button located on the bottom of the display. The display will blank and then display a number. Press the unit down on the white substrate to zero in **AUTO** mode or press and hold **B** to switch to **MAN** mode.

Optional Equipment

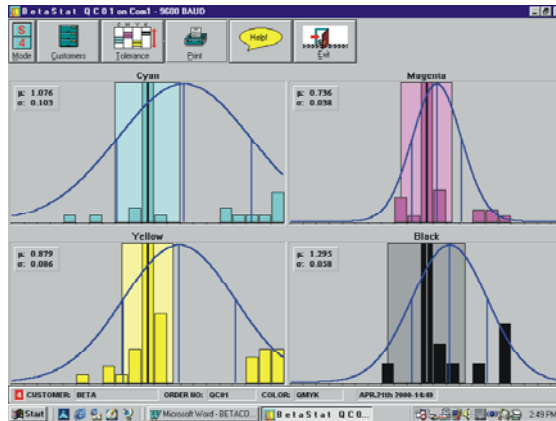
QC01 Statistical Analysis Software

Automatic data collection, display, and statistical analysis is provided by QC01. Running on any Windows system, measurement data is transferred via the serial port and displayed on screen. Density values are plotted vertically against a horizontal tolerance band, visualizing trends and error conditions. Spot colors and process color modes are supported.



Data Collection screen of QCO1

Mean, standard deviation, and normal distribution plots are available with one click. Time and date stamped data and plots can be saved to disk or printed in color. The network client version supports centralized data collection.



Statistical analysis screen of QCO1

BetaTab Data Collection Software

Eliminate re-keying of data into spreadsheets, calibration software, or any Windows application with BetaTab.

Density data is collected via the serial port and dropped into the active window on screen. Numerous options allow automatic formatting, file and application selection.

System 1 Press Kit

Complement your new **Betacolor S1** densitometer with a complete set of quality control tools. Everything that you need to run spot and process color work on one and two color presses is included in the rugged fitted case.

The Beta Color Proofing Viewer is fitted with a 10x color corrected lens, a brilliant tungsten halogen lamp, and color separation filters. Verify register, dot quality, coverage, and more in every color, including the nearly invisible yellow. Optional microscopes of 25x to 100x and a 20x lens satisfy the most demanding quality control requirements.



Beta Gray Balance Color Bars complete the **SYSTEM 1** package. Customized to fit the plate width and ink key layout of all the popular presses, they simplify control of the press and eliminate errors in trying to read the live matter. They are available on film for conventional

platemaking or on disk for imagesetter and CTP workflows.

Contact Beta for all your other quality control tool requirements. We stock a wide variety of instruments for measurement and control of pH, conductivity, temperature, packing, colorimetry, and much more.

Technical Specifications

Detector..... GaAsP diode
Illumination Source..... LED w/Perma filters
Spectral Response..... Status T (wide band)
Measuring Aperture.....3mm (optional 1 or 2mm)
Battery set.....Two AA alkaline cells
Measurements per battery set.....>1,000,000
Serial Port..... 8 pin RS232, 300 - 9600 baud
Weight..... 10.4 oz (290 g)
Dimensions..... 3 x 5.5 x 1.5in (145 x 75 x 40mm)

Warranty

Your densitometer is warranted to be free of manufacturing defects for two years from the date of purchase. Parts and labor are covered for any instrument returned to our facility during that time period.

Technical Support

Call our toll free number if you have any questions concerning your new densitometer. We can assist you in solving most pressroom, proofing, and prepress problems. Ask about our other quality control products to make your shop more productive and profitable.

UV Process Supply
1229 W. Cortland St.
Chicago, IL 60614
Tel. 800-621-1296 773-248-0099
Fax 773-880-6647
info@uvps.com
www.uvprocess.com