PRESTO SPECTRO

SPECTRO-DENSITOMETER

Advanced LED Technology • Use 24-7-365 Without Recharging
User Friendly • The Industry's Most Affordable Spectro

L*a*b* L c h Delta E

Density • Dot Gain • Dot Area • Gray Balance

Color Match • Opacity

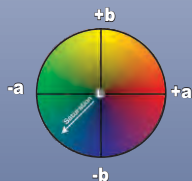## Measure Prints & Plates

L '100'

L '0'

IN / OUT of Tolerance
Traffic Lights

GO

STOP

+b

-a   +a

-b

Instruction Manual

ERGONOMIC DESIGN

The marvel of miniaturization has reduced the size, and weigh of the PRESTO SPECTRO into a precision color measuring instrument with unique advanced features that will increase measurement speed by more than 300%. **TRAFFIC LIGHTS** allow the operator total control without the inevitable errors associated with remembering long strings of confusing numbers.

Slide the PRESTO SPECTRO forward and hold until the measurement information is displayed.
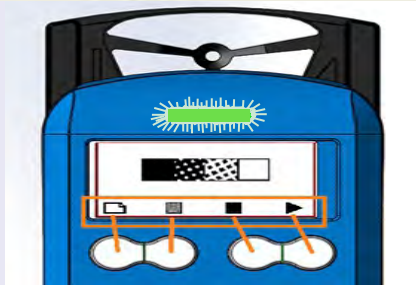
The display will continue to show information even in power down mode with no battery usage.
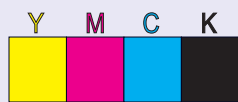
LED lights will flash **GREEN** when the measurement is within tolerance or **RED** when out of tolerance.

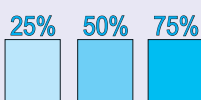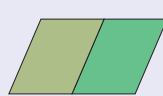**Memorize any color from multiple sources**

TABLE OF CONTENTS

Density

Trapping

Dot Gain

Color Match
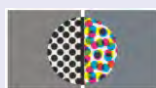
Gray Balance

Color Memory

Ver. 2.20

3
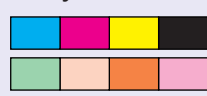
There are 4 Primary Screens

AUTO Mode - Measure
Paper, Density, Dot Gain

Automatic Density

BALANCE Mode
Set or Measure

Balance

TRAP Mode
Measure Overprints

Trapping

Lab

SPECTRO Mode - Set,
Select, Measure Colors

Color

GO **STOP**
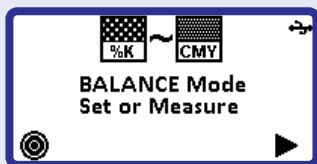
TRAFFIC LIGHTS

The PRESTO SPECTRO is designed to automatically ZERO to paper and measure DENSITY and DOT GAIN without changing programs.

The **GREEN** LED will flash when the measurements are within TOLERANCE thereby increasing speed and accuracy of measurements. TOLERANCES can be changed according to the quality control requirements.

The **RED** LED cautions the operator to look at the display and make corrections accordingly.

Color matching with CMYK is simply done in AUTO DENSITY mode using the MCM (Magic Color Match) feature or in the new exclusive COLOR REFERENCE LIBRARY with Lab Delta E that stores up to 32 colors in 4 separate channels for fast, accurate **AUTO** color matching. **Ideal for Flexo.**

To start, open the AUTO MODE screen and Zero to paper. Measure DENSITY, DOT GAIN and DOT AREA.
Press KEY D ▶ to advance to the other programs.

AUTO MODE DENSITY

In AUTO MODE measure DENSITY, DOT GAIN and DOT AREA. The unit will automatically ZERO to paper with a DENSITY lower than 0.15D.

C **M**

AUTO Mode - Measure
Paper, Density, Dot Gain

Y **K**
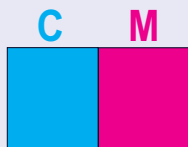
RELATIVE DENSITY MODE with **MM** (Magic Memory).
ZERO to paper or press and hold Key A to force Zero.
Measure a specific CMYK solid.
To memorize that color press Key A. The display will show **Target Density Updated**. Measuring another Density Target of the same color will cause a **RED** or **GREEN** light according to the TOLERANCE setting.
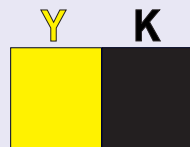Note: TOLERANCE Settings are +/- 5.0 dE & changeable

DOT AREA - ZERO to paper, measure solid, then press Key B and measure DOT AREA.
Press Key C to force a DENSITY measurement and temporarily disable DOT GAIN and ZERO detection.

DOT GAIN MEASUREMENTS

25% **50%** **75%** **100%**
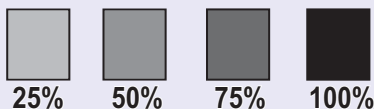
ZERO to paper
Measure the Solid target
Measure Dot Gain target of
the same color

C   40%   6%
C   80%   8%
C   1.289
ZERO
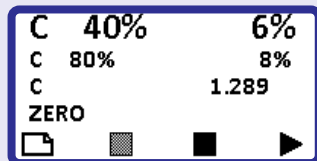
Select next measurement mode
Note: Status T PRESTO SPECTRO instruments are delivered with **25%, 50% and 75%** Dot Gain target values. Status E instruments are set at 25%, 40%, and 80%. These set points can be changed in the Configuration Mode.

DOT GAIN MEASUREMENTS

Dot gain is inherent in the printing process.
It is composed of two components;
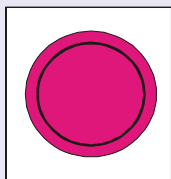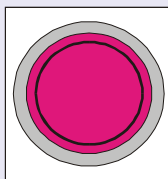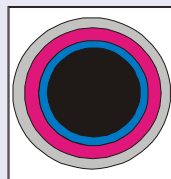
Mechanical Dot Gain	Optical Dot Gain	Total Dot Gain
+ 6%	+ 7%	13%

MECHANICAL DOT GAIN is the actual physical growth of the dot on the substrate and varies according to paper type, slurring, pressure, ink/water balance, etc.

OPTICAL DOT GAIN is the scattering of light within the substrate which results in a higher than expected dot gain when measured with a densitometer using the Murray/Davies equation.

Slur, Doubling or Ink Water Imbalance result in unexpected DOT GAIN

Note: When measuring DENSITY targets, the measurement may occasionally show a false Dot Gain in the display. This is caused by an abnormally low DENSITY target erroneously interpreted as a high Dot Gain target.
If this occurs, Zero to paper and measure any questionable DENSITY target again.

Solid	Solid	75% Tint
1.40 D	0.95 D	0.95 D

50% BAL

**K=50%
For Visual
Comparison**
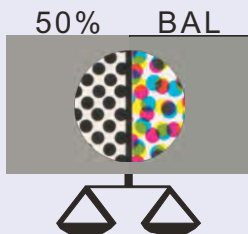
**Y=40%
M=40%
C=50%**

Gray Balance Targets are composed of Yellow, Magenta and Cyan tints balanced to produce a neutral gray when all the pre-press conditions are in control.

Making press corrections for slurring, doubling, ink water imbalance, etc. are fast and easy with ink key adjustments without stopping the press or wasted paper or downtime.

1.Open BALANCE MODE

2.Zero a 50% Black tint or an OK sheet CMY Balance patch with Key A.

**BALANCE Mode
Set or Measure**

1

C	0.00
M	0.00
Y	0.00
K	0.00

2

C	- 0.01
M	- 0.08 ↗
Y	- 0.02
K	0.00

3
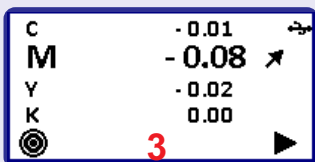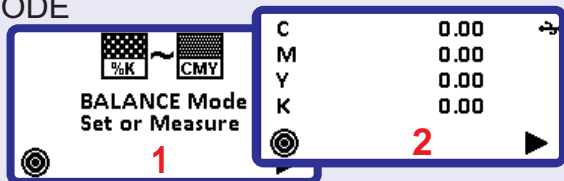
3.Measure any Gray Balance Patch without pressing any Keys.
The display arrow will indicate the greatest difference and direction followed by the remaining colors.

NOTE: The LED's will flash **GREEN** when measurements are within dE 5.0 or **RED** when out of TOLERANCE.

Balance Tolerance can be changed up to 7.0 dE.The factory default dE is 5.0 Edit instructions are on page 13.

BALANCE TOL

ΔE_{00} 5.0

K RES BAL **Y** M C K 50 BAL **Y**╂M C K TRAP BAL **Y**╂M C K TRAP BAL **Y**╂M C K TRAP BAL **Y** M C K 50 BAL **Y** M C K RES BAL

10   ╂11   Y/M   ╂12   Y/C   ╂13   C/M   14   15

Color Matching can be achieved using the same procedure as Gray Balance. The **PRESTO SPECTRO** will show Density differences of CMYK for fast, accurate correction on press, regardless of changes caused by slurring and other factors.

TRAPPING
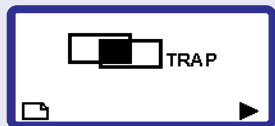
1 Open Trap Screen and measure Trap Color

2 Measure Magenta or Yellow

3 Measure the second color

4 See first and second color sequence and % efficiency

86%
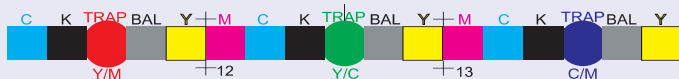
Trapping is the result of solid yellow, magenta, and cyan inks printed in two color combinations to produce red, green and blue solids. Trapping efficiency is the ability of the second color to be accepted or trapped by the first color. Measure overprint target (for example Red, composed of Magenta and Yellow) Matching the color sequence is necessary to match

OPACITY

The opacity mode measures the opacity of a white or color ink film.

■ Measure 100% transparent reference
□ Measure 100% opaque reference
▶ Select Mode
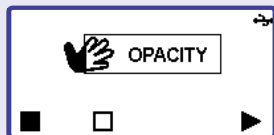
1 Measure 100% transparent reference (Black background) with key A depressed
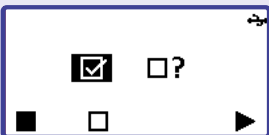
2 Measure 100% opaque reference (white film on white background) with key B depressed
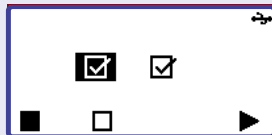
3 Finally measure up to 60 locations on the sample on black background. The current opacity is displayed. The average and the number of readings is displayed.

4
Opacity: 66%
AVG: 69% (7)
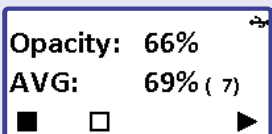
Measure the 100% opaque reference to restart the averaging process.

SPECTRO - Lab DELTA E

L '100'

+b

-a   +a

Saturation

L '0'

-b

1

Lab
SPECTRO Mode - Set
Select, Measure Colors
A ▶

Colors can be configured to use Lab or Lch in COLOR SPACE program.*

COLOR SPACE
◉ Lab
○ LCh
▲ ▼ ▶ ✖

SELECT REFERENCE - SAMPLE MEASUREMENTS

Measure a Reference color with Key A depressed. ◉

Measure print without pressing any key.

K TRAP BAL Y M C K TRAP BAL Y M C K TRAP BAL
Y/M 12 Y/C 13 C/M

Delta E will display and the arrow will indicate correction.

2

L	60.8
a	-32.3
b	19.8

◉ ■ 🗁 ▶

E

3

ΔE		9.1
L 54.4	ΔL	6.4
a -38.6	Δa	6.3
b 18.9	Δb	0.8

C↘

◉ ■ 🗁A ▶

DELTA E ACCEPTANCE LEVELS

Level 1 - **2.0** dE 2000 the most color critical applications.
Level 2 - **3.0** dE 2000, color critical applications, e.g. commercial printing
Level 3 - **4.5** dE 2000, pleasing process color printing
Level 4 - **6.0** dE 2000, non critical color

* See SELECT COLOR SPACE page14

COLOR REFERENCE LIBRARY

Presto Spectro will store 32 color References, conveniently organized in 4 Sections (A,B,C,D), each with 8 Colors. The AUTO Mode will recognize each of the 8 colors within the 4 Sections when a sample is measured. For example:

A **B** **C** **D**

* Section A is CMYK plus RGB, Gray Balance or spot color.
* Section B is CMYK plus OGV and White ink
 Section C and D are any random colors on a print job.

1 Lab
SPECTRO Mode - Set, Select, Measure Colors
AUTO

2 REFERENCE EMPTY
A0001

3
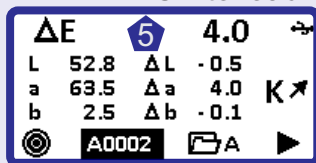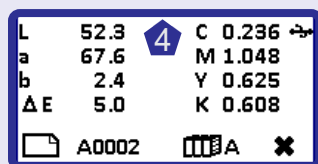| L | 61.7 | C 0.772 |
a	- 21.7	M 0.264
b	- 43.7	Y 0.088
ΔE	5.0	K 0.507
A0001

1 If the selected Volume is empty, SPECTRO Mode will open as shown here.

2   Press Key C ⌸A to open the Library. Volume A is shown here, B, C, and D are also available with Key C.

3   Zero to white paper with Key A ⊠ to erase previous imeasurements. Measure your REFERENCE to load A001.

4
L	52.3	C 0.236
a	67.6	M 1.048
b	2.4	Y 0.625
ΔE	5.0	K 0.608
A0002

5
ΔE		4.0
L	52.8	ΔL - 0.5
a	63.5	Δa 4.0
b	2.5	Δb - 0.1
A0002

4 Press Key B to advance to A0002, measure your REFERENCE to load the value in A0002. Repeat as needed for A0003, A0004, etc. Press Key D ✖ to save Volume A.

5 AUTO Mode will now open, high-lighting the recognized REFERENCEin reverse type, displaying the Lab delta E, and the correction needed.

The **RED** or **GREEN** LED's will flash to indicate in or out of TOLERANCE and is adjustable in Δ**E TOLERANCE** Prog. The Default setting is dE 5.0 and the range is dE 1.0 - 7.0

* Suggested values

EDIT DENSITY & TOLERANCES

C   M   Y   K

PRESTO SPECTRO
SN 00068 v03.06 EPL
≡   ☑   ⊑⊙   ▶

Press key B (the check mark)

CERTIFICATE
Production: 2017/10/11
Calibration: 2019/09/26
BAT 100%
ᗰ   ▶   ✖

Press key C

DENSITY Calibration
▭   ▶   ✖

Press and hold key A and measure white paper

DENSITY Calibration
C
M
Y
K
▭   ▶   ✖

Measure Cyan

DENSITY Calibration
C   1.309 ⬦
M
Y
K
▲   ▼   ▶   ✖

Adjust using Key A (up) and key B (down)

DENSITY Calibration
C   1.310 ⬦
M
Y
K
▲   ▼   ▶   ✖

Measure M,Y,K accordingly and adjust if required

DENSITY Calibration
C   1.310 ⬦
M
Y
K
▲   ▼   ▶   ✖

Click key D (exit) to go back to the main screen

Now go to AUTO mode and zero on white paper, measure the CMYK to check the calibration if you need to. Activating the reset icon ᗰ returns the CMYK DENSITY and TOLERANCE values to factory settings.
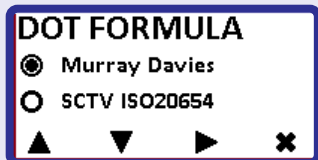
EDIT DOT GAIN & TOLERANCES

PRESTO SPECTRO
SN 00063 v02.01 TUL
≡ ☑
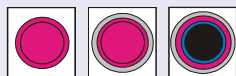
COLOR SPACE
◉ Lab
○ LCh
▲ ▼ ▶ ✖

1. Open the reset Screen by holding Key A and then press Key D *****

2. Press Key A ≡ to open COLOR SPACE SCREEN

3. Press Key C 3X to open **DOT FORMULA** screen.

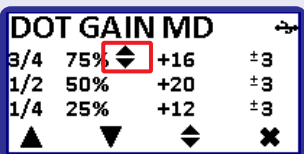**DOT FORMULA**
◉ Murray Davies
○ SCTV ISO20654
▲ ▼ ▶ ✖

4. Select **Murray Davies** for standard Dot Gain measurements on paper or **SCTV** for Packaging or special colors. ******

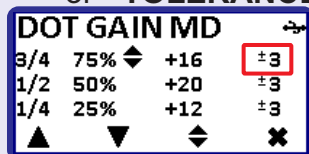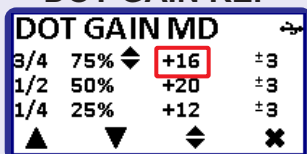**5.** Press Key C to open **DOT GAIN MD** or **SCTV** if selected

DOT GAIN MD
DOT 3/4   75% +16% ±3%
DOT 1/2   50% +20% ±3%
DOT 1/4   25% +12% ±3%
⬍ ▶ ✖

DOT GAIN MD
3/4 75% ⬍ +16   ±3
1/2 50%   +20   ±3
1/4 25%   +12   ±3
▲ ▼ ⬍ ✖
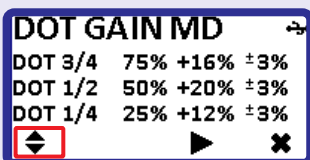
6. Press Key A. The ⬍ Icon will appear at 3/4 75%.
Press ▲ to raise or ▼ to lower target values

7. Press Key C to adjust **DOT GAIN REF**

DOT GAIN MD
3/4 75% ⬍ +16   ±3
1/2 50%   +20   ±3
1/4 25%   +12   ±3
▲ ▼ ⬍ ✖

8. Press Key C to adjust + or - **TOLERANCE**

DOT GAIN MD
3/4 75% ⬍ +16   ±3
1/2 50%   +20   ±3
1/4 25%   +12   ±3
▲ ▼ ⬍ ✖

Press Key C to continue **DOT GAIN** adjustments

*The reset screen can also be opened by pressing the recessed button on the underside.
** SCTV (Spot Color Tone Value)

EDIT GRAY BALANCE TOLERANCE

PRESTO SPECTRO
SN 00063 v02.01 TUL
≡ ☑ **1** ▶

COLOR SPACE
◉ Lab
○ LCh
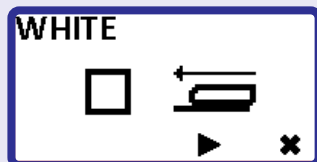▲ ▼ **2** ▶ ✖

ΔE TOLERANCE
ΔE 5.0
▲ ▼ ▶ ✖

1.Open Screen by holding Key A , then press Key D.
2. Press Key A ≡ to open COLOR SPACE SCREEN
3. Press Key C 2X to open Δ E
TOLERANCE SCREEN. Press Keys A
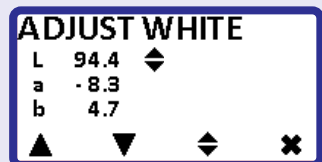and B to raise or lower the dE from 1 to 7

ABSOLUTE WHITE CALIBRATION

1.Open the PRESTO Screen
by holding Key A and then
press Key D
2. Press Key B ☑
3. Press Key C 2X

PRESTO SPECTRO
SN 00063 v02.01 TUL
≡ ☑ ▶

WHITE
□ ⬒
▶ ✖

Measure
the white
Lab
plaque

ADJUST WHITE
L 94.4 ⬍
a - 8.3
b 4.7
▲ ▼ ⬍ ✖

▲ Increase highlighted value (L,a,b) ▼ Decrease value
⬍ Select next value (L,a,b) ✖ Return to calibration mode

DENSITY CALIBRATION

DENSITY Calibration
⬒
▢ ▶ ✖

▢ Press Key A - Zero to paper.
Measure solid Cyan, Magenta,
Yellow or Black from a
Calibration Chart

DENSITY Calibration
C
M
Y
K 1.653 ⬍
▲ ▼ ▶ ✖

Adjust each Density to agree
with Calibration Chart.
▲ Increase Density
▼ Decrease Density

CERTIFICATION & RESET

CERTIFICATE
Production: 2016/10/25
Calibration: 2016/10/25

ᴍ ▶ ✖

Select the calibration mode to check the calibration date.
ᴍ Click the Factory Setting Icon Key to reset all settings

SELECT DELTA E CALCULATION FORMULA

ΔE FORMULA
◉ Δ E
○ Δ E2000

▲ ▼ ▶ ✖

⚠ Ε

▲ Select Delta E1976 (not recommended except for compatibility)
▼ Select Delta E2000 (the current international standard)
▶ Select next configuration
✖ Exit

SELECT COLOR SPACE

COLOR SPACE
◉ Lab
○ LCh

▲ ▼ ▶ ✖

▲ Select CIE Lab color space
▼ Select CIE LCh color space
▶ Select next main configuration function
✖ Exit

SELECT USB OUTPUT FORMAT

USB OUTPUT
◉ PRESTO DX
○ ALL

▲ ▼ ▶ ✖

▲ Select DX Output format

```
C -0.019 M  0.087 Y  1.222 K  0.028 L   0.00 a   0.00 b   0.00[13][10]
```

Select ALL Output format

```
L   0.00 a   0.00 b   0.00 C   0.00 h   0.00 [13][10]
C -0.022 M  0.084 Y  1.219 K  0.026 R  0.000 G  0.000 B  0.000 [13][10]
```
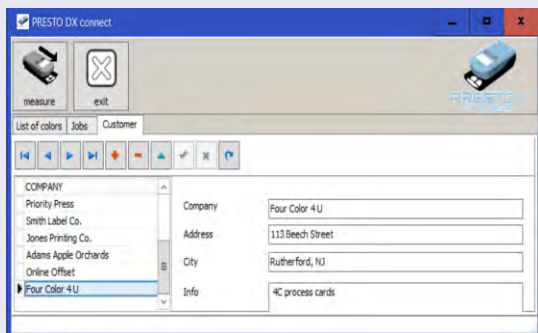
▶ Move to next main configuration function
✖ Exit the configuration mode

OPTIONAL COLOR LIBRARY SOFTWARE

PrestoConnect
Color Library Management Software

The optional PrestoConnect Windows software allows the user to create, collect, and manage an unlimited number of colors in conjunction with the new Beta Presto Spectro portable spectrodensitometer.

Name	L	a	b	dE	C	M	Y	K	D-Tol	Descr	RGB
Cyan	55.76	-37.67	-49.17	3	1.25	0.313	0.107	0.642	0.05		
Magenta	51.68	69.38	-6.6	3	0.154	1.117	0.51	0.561	0.05		
Yellow	90.45	-4.82	89.34	3	-0.027	0.04	0.821	-0.009	0.05		
Black	20.59	1.65	4	3	1.42	1.487	1.599	1.394	0.05		
Red	50.65	64.43	41.91	3	0.158	1.113	1.296	0.561	0.05		
Green	52.17	-50.45	25.12	3	0.982	0.384	0.932	0.623	0.05		
Blue	32.3	7.92	-45.82	3	1.182	0.964	0.465	1.146	0.05		
Violet	31.16	35.07	-56.54	3	0.903	1.262	0.367	1.121	0.05		
Seafoam	65.11	-62.43	0.05	3	0.889	0.147	0.352	0.387	0.05		
Beige	75.46	3.8	27.32	3	0.112	0.204	0.391	0.166	0.05		
Ivy	35.38	-34.91	23.93	3	1.21	0.748	1.419	0.94	0.05		
Tan	60.55	17.76	49	3	0.237	0.447	0.995	0.386	0.05		
Orange 021c	64.1	63.8	78.1	3	-0.027	1.127	1.676	0.282	0.06		
Warm Grey 3c	76.64	2.22	7.7	3	0.131	0.172	0.207	0.162	0.05		
Red 032c	56.69	70.81	37.99	3	0.028	1.208	1.039	0.415	0.05		
Blue 072c	16.43	26.89	-68.95	3	2.071	1.588	0.495	1.968	0.05		
Purple c	46.8	64.84	-41.29	3	0.352	0.95	0.254	0.689	0.05		
Light Green 6	76.4	-46.85	22.36	3	0.442	0.024	0.324	0.182	0.05		

The database organizes the work by Color, Customer, and Job making it easy for production personnel to use and understand the system.

Physical samples are measured with the instrument and automatically written to the database with Lab and Density values, a user-entered color name, and delta E and density tolerances. A representation of the color is generated on-screen for confirmation to the operator. Once the sample is measured the operator has the option to accept the entry, as shown here.

Once the color sample is named and accepted it becomes part of the List of Colors as shown.

BETA Digital Electronic Rulers

EXACT NON-CONTACT MEASUREMENT OF MATERIALS & STRETCH
Measure Films, Plates, Dies, Prints, Circuit Boards & More
For Flexo, Offset, Screen, Wide Format, Electronics

Labels

Print

The Precision Digital Electronic Ruler's Non-Contact measurement system accommodates samples of any thickness in lengths up to 80 inches / 2000 mm. The digital readout displays absolute or incremental measurements with 0.0005" / 0.01mm resolution.

Electronics
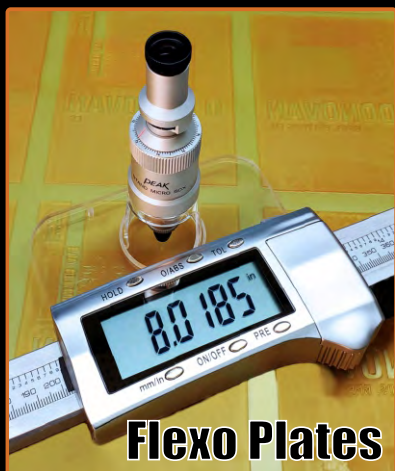
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More Cost Effective Flexo From Superior Image Control & Analysis In One Affordable, Easy-To-Use Device

The Best Just Got Better!

Measure & Control

.5% Highlights & Better (2D)

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& More

BETA EYE SCAN COLOR BARS

The BETA EYE **SCAN CUSTOM GRAY BALANCE COLOR BAR SYSTEM** is designed for faster make ready, precise press monitoring and quicker turn around using a densitometer for objective measurements and optical tools for subjective evaluation. This **SEE IT** and **MEASURE IT** system is a precise, cost effective control system guaranteed to produce the highest quality printing. The heart of the system is a customized color bar designed to match the size of your press and numbered ink keys in exact alignment to the ink keys of the press thereby making faster and more accurate corrections.
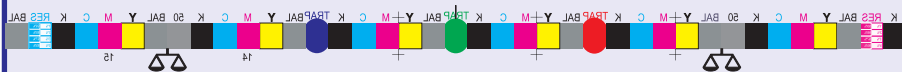
Targets of solid yellow, magenta, cyan, black, and gray balance appear in every ink zone for ultimate control across the full width of the sheet. Trapping, dot gain, and resolution targets are centered for smaller sheets.

Y   M   C   K   BAL   50   BAL
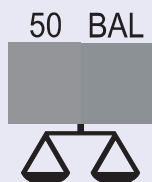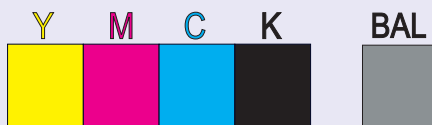
CMYK and Gray Balance appear in every ink zone. 50% and Gray Balance appear every 4th zone

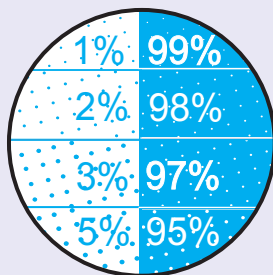Y/M   Y/C   C/M   25%   50%   75%   RES   RES   RES   RES
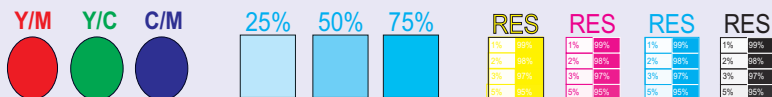
RESOLUTION TARGETS WITH MICRO DOTS of 1%, 2%, 3%, and
5% minimum printable dot targets detect press slur and doubling. Maximum printable dot targets of 95%, 97%, 98% and 99% indicate press slur, print contrast problems and/or plate production errors.
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BETAFOLD CREASE & FOLD ANALYZER

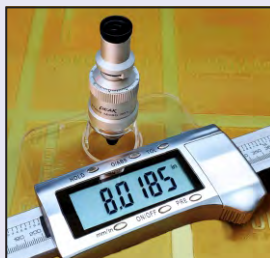Portable, hand-held analysis of crease height, width, angles, and symmetry.

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