

X-RiteColor® DTP34

QUICKCAL DENSITOMETER



Users Manual

CE DECLARATION

Manufacturer's Name: X-Rite, Incorporated
 Manufacturer's Address: 3100 44th Street, S.W.
 Grandville, Michigan
 U.S.A.
 Model Name: Densitometer
 Model No.: DTP34
 Directive(s) Conformance: EMC 89/336/EEC LVD 73/23/EEC

Federal Communications Commission Notice

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

NOTE: Shielded interface cables must be used in order to maintain compliance with the desired FCC and European emission requirements.

Industry Canada Compliance Statement

This Class A digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numérique de la classe A respecte toutes les exigences du Règlement sur le matériel brouilleur du Canada.

AVERTISSEMENT : Des câbles d'interface blindés doivent être utilisés afin de se conformer aux règlements européens et FCC (USA) sur l'émission.

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This product is covered by one or more of the following U.S. Patent: 4,591,978 5,015,098 5,062,714 and patents pending. Foreign patent numbers provided on request.

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Warranty Information

X-Rite, Incorporated warrants each instrument manufactured to be free of defects in material and workmanship for a period of twelve months. If the fault has been caused by misuse or abnormal conditions of operation, repairs will be billed at a nominal cost. In this case, an estimate will be submitted before work is started, if requested. The unit shall be returned with transportation charges prepaid.

THERE ARE NO WARRANTIES OF MERCHANTABILITY OR FITNESS. THIS WARRANTY OBLIGATION IS LIMITED TO SERVICING THE UNIT RETURNED TO X-RITE, INCORPORATED OR AN AUTHORIZED SERVICE DEALER FOR THAT PURPOSE.

X-Rite, Incorporated offers a repair program for instruments out of warranty. For more information, contact X-Rite Customer Service Department. Always include serial number in any correspondence concerning the unit. The serial number is located on the bottom plate of the instrument.

This agreement shall be interpreted in accordance with the laws of the State of Michigan and jurisdiction and venue shall lie with the courts of Michigan as selected by X-Rite, Incorporated.

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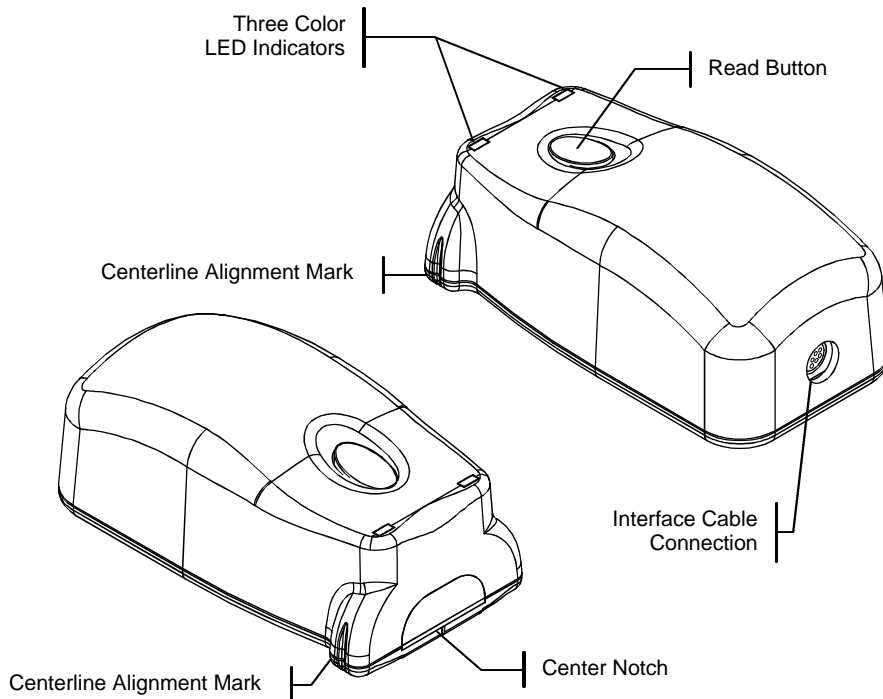
Overview and Setup

Instrument Description

X-RiteColor® DTP34 QuickCal Densitometer is a color measurement instrument that reports densitometric and dot data. The instrument is designed to calibrate color output devices including large format printers, proofers, and digitally connected color copiers. X-RiteColor® DTP34 QuickCal Densitometer is a “drop-in” replacement for the X-Rite DTP32 instrument.

This manual covers the installation, calibration and maintenance of the X-RiteColor DTP34 QuickCal Densitometer. Specific instructions for using the instrument with your third-party software program can be found in the third-party software documentation.

As the DTP34 QuickCal Densitometer is designed to be a drop-in replacement for the DTP32 Automatic Strip Reading Densitometer, reflection versions, it will by default report itself as a DTP32. Most existing software packages will reference a DTP32 in their connection menu while newer software may use DTP34. Select DTP34 if it is available, otherwise select the DTP32. Refer to Appendix B for further differences. See the Readme file on the CD for any late changes or known issues.



Unpacking and Inspection

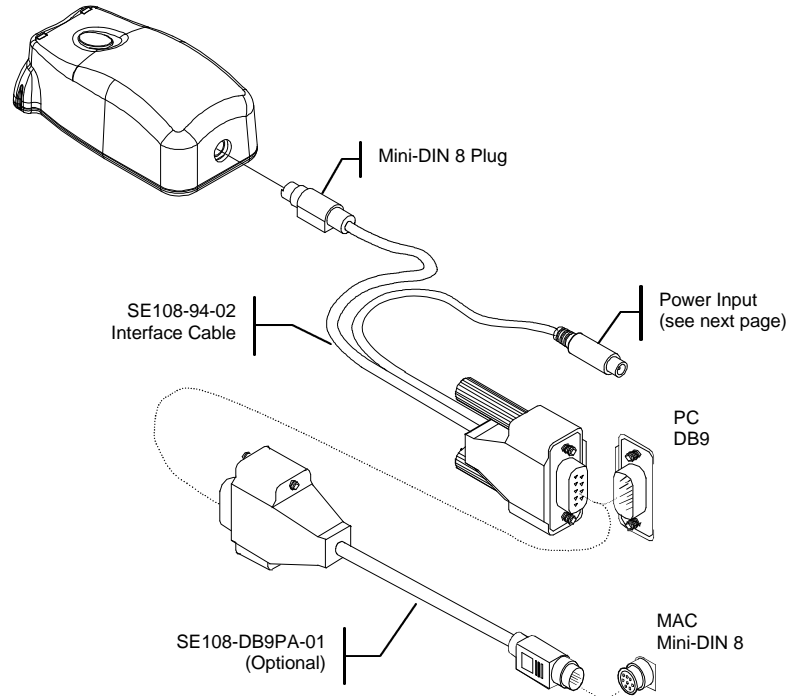
After removing the instrument from the shipping carton, inspect it for damage. If any damage has occurred during shipping, immediately contact the transportation company. Do not proceed with installation until the carrier’s agent has inspected the damage.

Your instrument was packaged in a specially designed carton to assure against damage. If shipment is necessary, the instrument should be packaged in the original carton along with all the accessories. If the original carton is not available, contact X-Rite to have a replacement shipped to you.

Instrument Interface

The Quick Cal Densitometer must be interfaced directly with one of the computer's Serial Ports. Installation differs slightly for Macs and PCs (see below). For attachment to a Mac Mini-DIN 8 Serial Port, you need to use the optional adapter (P/N SE108-DB9PA-01).

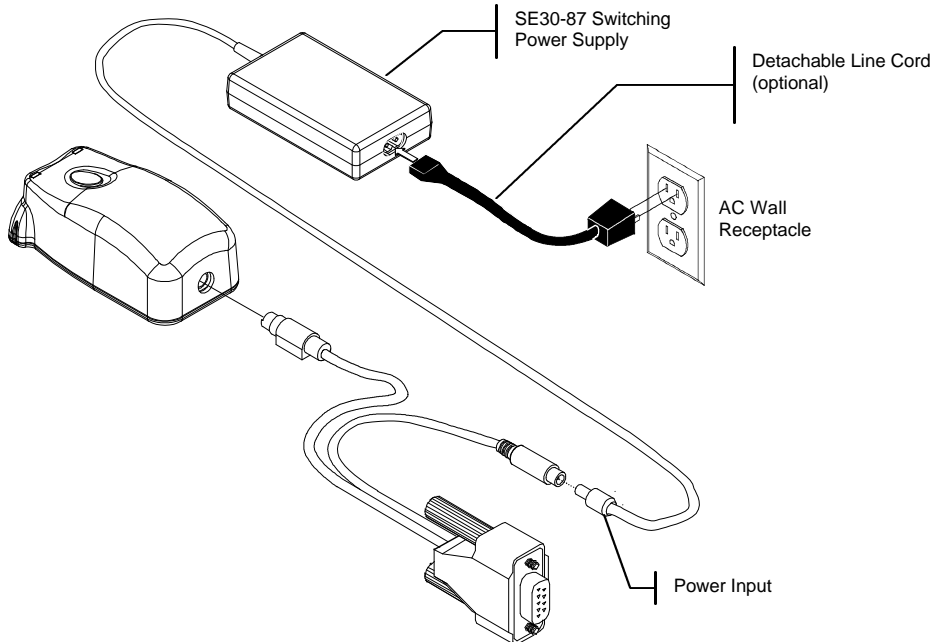
NOTE: Quit all programs and shut down the computer before installing interface cabling.



Applying Power

CAUTION: Use only the 115V/230V Switching Power Supply (SE30-87) to power the instrument.

Power is supplied to the instrument when the Power Supply is plugged into the AC wall receptacle. The instrument does not have a ON/OFF switch.



Instrument LED Indicator

The LED indicates a variety of instrument operation conditions, such as calibration mode, and operation. Below is a complete list of all conditions reported by the LED.

Operation Mode

- *Solid Green*—self-test passed and instrument is ready for use with defined strip.
- *Slow Flashing Green*—strip reading in progress or waiting to read a strip.
- *Fast Flashing Green*—strip reading was attempted but the wrong strip was read, or strip was skewed during reading.
- *Flashing Amber/Green*—a configuration barcode was scanned and the instrument is waiting for the 2nd or 3rd barcode pass.
- *Fast Flashing Amber/Green*—there was an error in recognizing a barcode or the configuration failed. Reread the entire barcode, starting with the first pass.

Calibration Mode

- *Solid Amber*—calibration is required before any measurements can be taken.
- *Slow Flashing Amber*—instrument calibration in progress (strip being read).
- *Solid Green after Amber*—instrument calibration was successful and instrument is ready for use.

Error/Reset Mode

NOTE: When the instrument is first turned on the LED will be red while it performs its self-tests. The self-tests will complete in approximately 2 to 3 seconds, at which time it will turn green under normal conditions.

- *Fast Flashing Red*—incorrect power supply attached. Verify correct 12-volt power supply is used.
- *Slow Flashing Red*—a factory reset is in progress.
- *Flashing Red/Green*— the host firmware loader program is reprogramming the instrument.

Calibration

The X-RiteColor Quick Cal Densitometer has a unique semi automatic calibration feature. When the reflection reference is scanned, the calibration values are also automatically scanned.

Frequency of Calibration

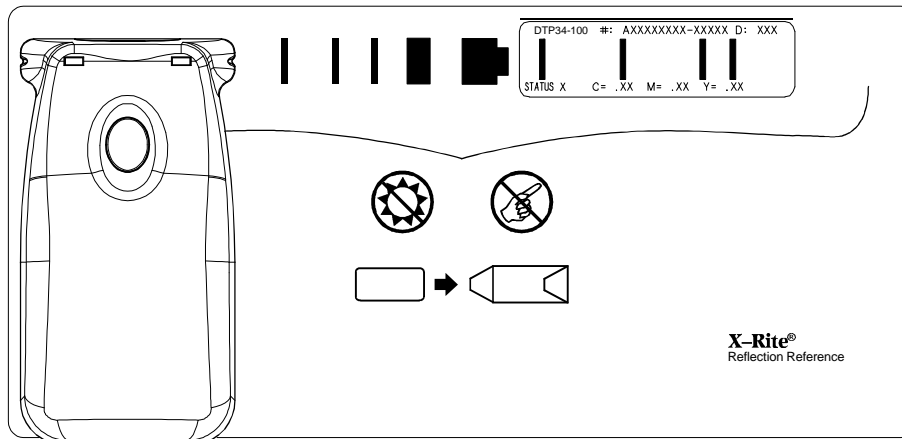
Your QuickCal Densitometer should have a Quick Calibration performed weekly. A Full Calibration should be performed annually, during heavy usage to provide accurate measurements, or if the Quick Calibration consistently fails. Typically, the host computer prompts for an instrument calibration (amber LED) when required but the process can be invoked manually at any time. Refer to the following procedure for details on the calibration process.

Positioning the Instrument on the Calibration Reference

Handle the reflection reference by the edges. Make sure that the reflection reference is free of dust, dirt and smudgemarks. Refer to General Maintenance Section for cleaning procedure. Always store the reflection reference in its protective envelope away from light and heat.

NOTE: To obtain the most accurate calibration, hold the instrument with consistent and nominal pressure during the calibration procedures.

Position the instrument on the designated location of the reflection reference (indicated by a dotted outline of the instrument). Do Not move the instrument more than .25" (6.35mm) before reading the strip.



Quick Calibration

A quick calibration can be performed at any time. All that is required is that you scan the reflection reference as you would with any other strip. A quick calibration should only be performed after a full calibration has been done. The instrument comes from the factory with a full calibration already stored.

1. Position instrument on reference as previously mentioned.
2. Press and hold the button and scan the reference to the opposite end. Release the button. The LED should indicate green if calibration was successful. If calibration fails, (fast flashing amber LED), verify the strip is clean and re-read.
3. Place the reflection reference in its protective envelope and store away from light and heat.

Full Calibration

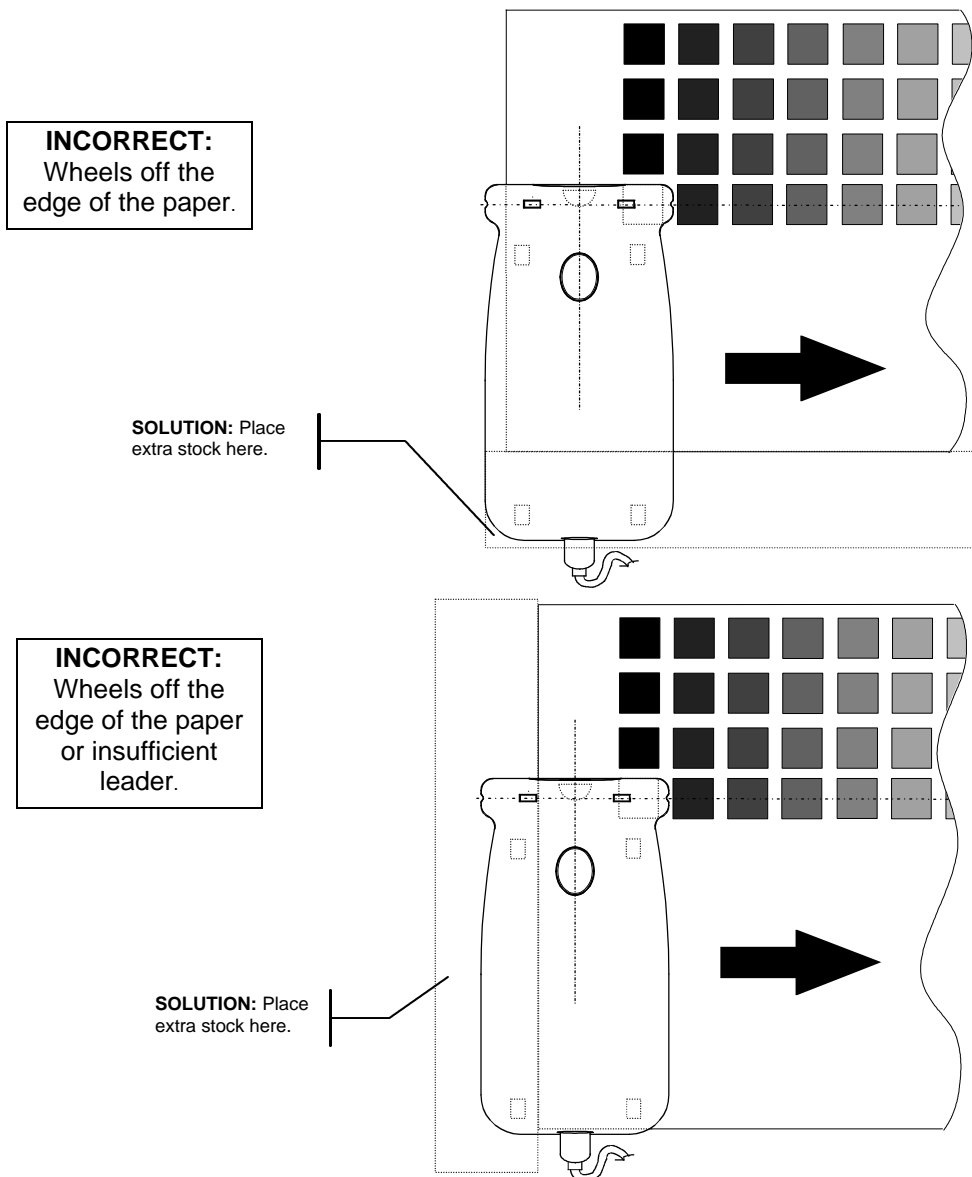
NOTE: If the host computer initiated calibration (amber LED), skip to step 2.

1. To manually invoke the calibration mode, press and hold the instrument button for a minimum of three seconds. The LED will slowly flash amber when calibration is initiated.
2. Press and the hold button (if not previously held) and scan the reference to the opposite end. Release the button. The LED should indicate green if calibration was successful. If calibration fails, (fast flashing amber LED), verify the strip is clean and re-read.
3. Place the reflection reference in its protective envelope and store away from light and heat.

Measurements

Measurement Notes and Tips

- You should refer to the documentation for the software program that you are using with your instrument. All applications that utilize this instrument must be running during measurements.
- The strip must have at least a 1.2" (30.5mm) leader before the leading edge of the first step. Contact X-Rite Applications Support if additional information is required. Inspect the strip for spots or defects on the steps. Defects may cause inaccurate measurements.
- If a strip does not have the necessary 1.2" (30.5mm) unprinted leader before the first patch or a reading would cause one or more of the wheels to be off the sample, follow the steps listed below:
 - Obtain extra pieces of the sample stock.
 - Position the pieces so that all four wheels of the instrument ride along the same height stock when patches are measured.

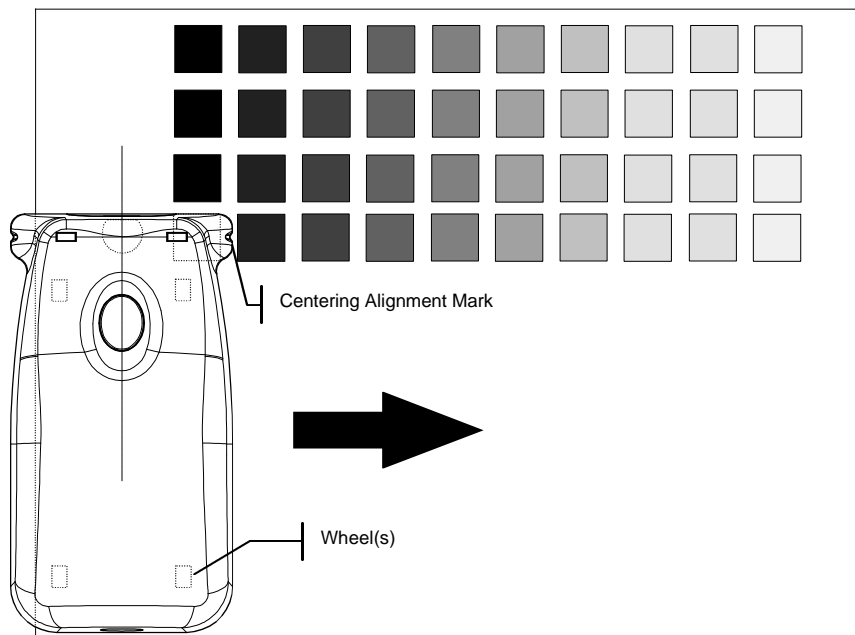


- The darkest patch of a strip must be read first unless there is at least 1.1" (27.9mm) unprinted trailer after the last patch.
- When possible, strips should be read so that the instrument does not ride on un-read patches. This prevents accidental marring of un-read patches that may cause reading variations.
- To obtain consistent measurements the same backer should be used underneath every sample. ANSI/ISO specifies a neutral gray of at least 1.5D, which will appear black. Backers consisting of the same print stock have also been utilized.

Strip Measurement

The following information is provided to familiarize you with reading strips, a series of printed control patches.

1. Select strip type to measure from the host software.
2. Position the instrument at the leading edge of the strip to be measured. The centering alignment marks should be centered on the strip patches.



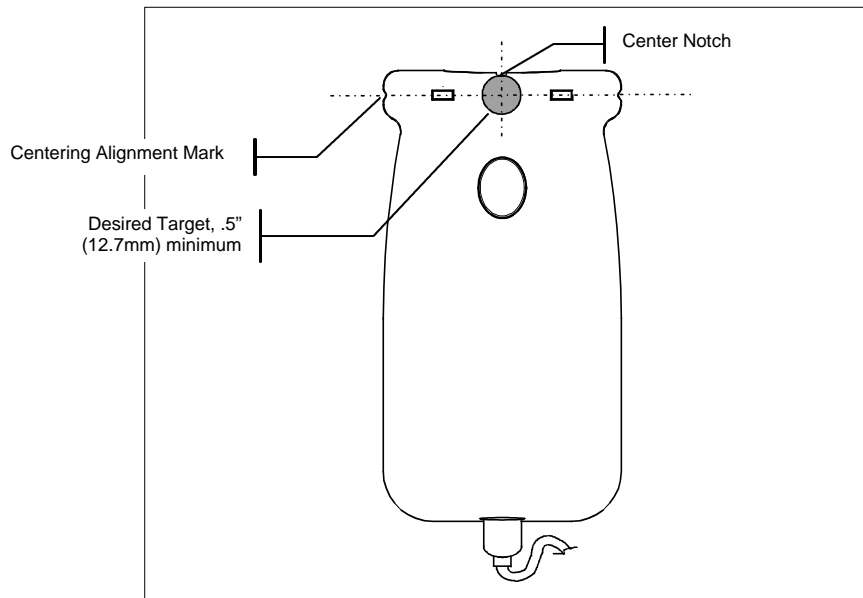
3. Press and hold the instrument button while rolling the QuickCal across the strip. The LED indicators will slowly flash green during the reading. For best results, pause with the button depressed before starting a scan, and release the button only after the scan has been completed.
4. A successfully reading is verified by a beep and solid green LEDs on the instrument, or a conformation message on the computer monitor.

Some software packages define strips as “multi-pass” where all color passes must be read before a conformation is displayed on the monitor. In these cases, a successful reading of a color pass is shown by the instrument slowly flashing green after the reading. This indicates that you may continue to the next color pass. Fast flashing of green indicates a re-read is required on the pass. The instruments LEDs will stay at solid green after all passes are successfully read.

Spot Measurement

Your QuickCal Densitometer is designed to read spots, single readings of specific locations. This feature can be manually activated or if supported, activated by your software application. Refer to your software program documentation to see if this feature is supported. **To manually activate this feature, scan the “Spot Read” X-Rite Setup Barcode enclosed.**

1. Select a desired target of at least .5" (12.7mm) diameter.
2. Position the instrument to line up the center of the target with the instrument centering alignment marks and center notch. The instrument may be placed or rolled into position over the target.
3. Press and release the instrument button.
4. A successfully reading is verified by a beep and solid green LEDs on the instrument, or a conformation message on the computer monitor.



Troubleshooting and Service

Troubleshooting

Prior to contacting X-Rite, Inc. Customer Service for instrument problems try the applicable solution(s) described below. If the condition persists contact a Customer Service Representative (see Service Information).

LEDs are not lit:

- Ensure that the power supply is plugged in and connected to the Interface Cable.
- Insure that the Interface Cable is properly connected to the instrument.
- Reset the instrument (see Instrument Reset).

Fast Flashing Amber LEDs:

- If error persists, clean instrument and calibration strip (see General Cleaning).
- Reset the instrument (see Instrument Reset).

Solid Amber LEDs:

- Instrument needs a calibration before any strips can be read (see Calibration section).

Solid Red LEDs:

- Remove power from the instrument, reapply power and see if the condition is corrected.
- Reset the instrument (see Instrument Reset) and calibrate.
- This could indicate that the unit may not be programmed properly, which could happen if power was removed during reprogramming. Try reprogramming the instrument again (refer to the programming instructions that came with your update).

QuickCal Densitometer and software not communicating:

- Verify that the instrument LEDs indicate normal operation (see Instrument LED Indicator). If normal, close and restart the software application. If this does not work reboot the computer.
- Remove power from the instrument, reapply power and see if the condition is corrected.
- Check for proper configuration setting from the software provider.
- Reset the instrument (see Instrument Reset) and calibrate.

Repeated Strip Measurement Failures:

- Ensure that the strip is being read in accordance with your software's documentation.
- Close and restart the software application.
- Perform a full calibration on the instrument (see Full calibration).
- Reset the instrument (see Instrument Reset).

Repeated Calibration Failures:

- Clean instrument and reference (see General Maintenance).
- Reset the instrument (see Instrument Reset) and calibrate.

Spot Measurement does not work:

- Ensure that your software supports the Spot Measurement function.
- Ensure that the instrument's 'Spot Read' function is turned on. (see Barcode Operation).
- Reset the instrument (see Instrument Reset).

Note: When performing an Instrument Reset, which restores the X-Rite Factory Defaults, you will have to ensure the correct configuration for your software is then restored.

Instrument Reset

The following procedure will reset the factory defaults to your X-RiteColor QuickCal Densitometer:

1. Disconnect power from the instrument.
2. Push and hold the Read Button while applying power to the instrument.
3. Hold the Read Button until the LEDs begin to flash red slowly.
4. Release the Read Button.

Service Information

The X-RiteColor Quick Cal Densitometer is covered by a one-year limited warranty and should be referred to an authorized service center for repairs within the warranty period.

X-Rite provides repair service to their customers. Because of the complexity of the circuitry, all repairs should be referred an authorized service center.

X-Rite will repair any instrument past warranty. The customer shall pay shipping and repair cost to the authorized service center, and the instrument shall be submitted in the original carton, as a complete unaltered unit along with all the supplied accessories.

General Maintenance

Cleaning the Instrument

Your instrument requires very little maintenance to achieve years of reliable operation. However, to protect your investment and maintain reading accuracy, a few simple-cleaning procedures should be performed from time to time.

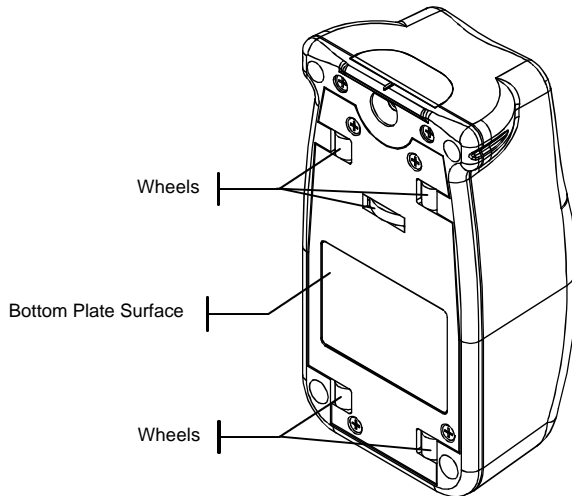
General Cleaning

- Whenever required, the exterior of the instrument may be wiped clean with a cloth dampened in water or mild cleaner.

NOTE: DO NOT use any solvents to clean the instrument, this will cause damage to the cover.

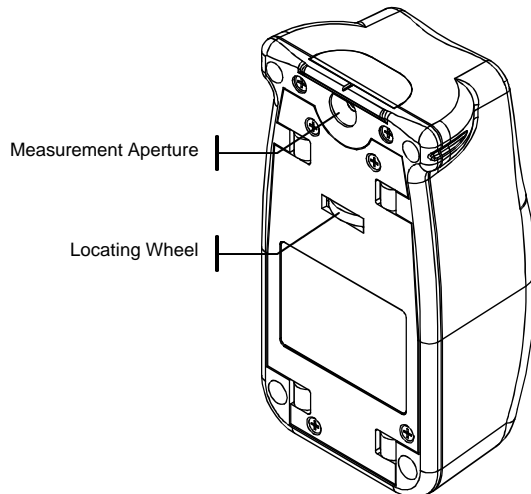
Cleaning the Instrument Wheels

- Turn the instrument upside-down and clean the bottom plate surface and wheels with a lint free cloth.



Cleaning the Instrument Optics and Locating Wheel

- Carefully rotate instrument and blow short bursts of clean, dry air into the measurement aperture and locating wheel. This should remove any accumulated dust in these areas.

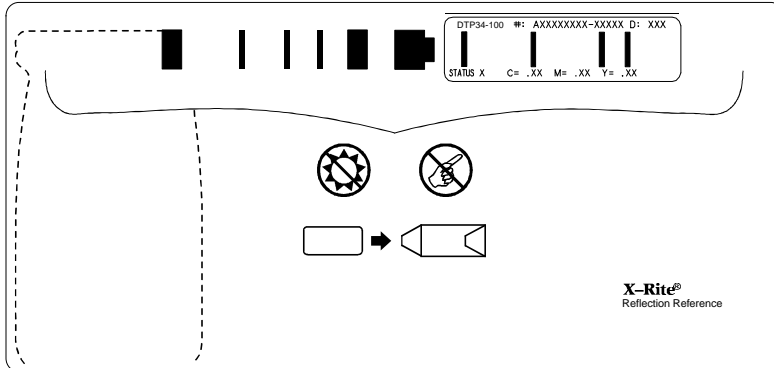


Cleaning the Reflection Reference

- The reflection reference can be cleaned with a lint free cloth whenever required. Make sure to return the reference to its protective case when finished.

- If required, a new calibration reference can be ordered from X-Rite. Order calibration reference part number DTP34-100-KIT.

Always handle calibration reference by the edges.



Instrument Specifications - Preliminary

Measurement Geometry

- Reflection: 0°/45° per ANSI/NAPM 2.17 and ANSI/ISO 5-4
- Multi-sensor array

Measurement Area

- 2 mm x 4 mm, 2 mm in the direction of travel. Instrument must set on sample for accurate measurement.

Light Source

- Gas pressure @ 2850°K
- Lamp life, approx. 1,000,000 scans @ 11" (279.4 mm)

Receiver

- Blue enhanced silicon photodiodes

Sample Characteristics

- Patch Size: .400" (10.16 mm) min. in direction of travel by .350" (9 mm) min. wide. 1 mm wide 1.0D contrast space between patches or .5D min difference between patches.

Measurement Rate

- >6" (>154mm)/sec maximum controlled by operator.

System Response

- ANSI/ISO Status T

Output

- Density, +Dot, -Dot, or Reflectance. Output has x10 capability.

Measurement Range

- 0.00D to 2.50D absolute

Linearity

- $\pm 0.02D$ or $\pm 2\%$, 0 to 2.5D

Repeatability

- $\pm 0.01D$, 0 to 2.5D

Inter Instrument Agreement

- $\pm 0.02D$ or 2%, 0 to 2.5D

Zero Stability

- $\pm 0.01D$ max

I/O Connection

- DB9 socket and USB (future)

Data Interface

- Interface: RS-232 with baud rates from 1200 to 19.2k
- Protocol: RCI commands

Power Requirements

- +12v @ 700 mA

Environmental

- Operating range: +10°C (50°F) to 35°C (104°F); 30% to 60% RH

Physical

- Height: 4.83 cm (1.90 in.)
- Width: 6.10 cm (2.40 in.)
- Length: 11.55 cm (4.55 in.)

Weight

- 165g. (5.8 oz.)

Provided Accessories

- Calibration Reference
- Operation Manual
- Interface Cable
- AC Adapter (P/N SE30-87)

Optional Accessories

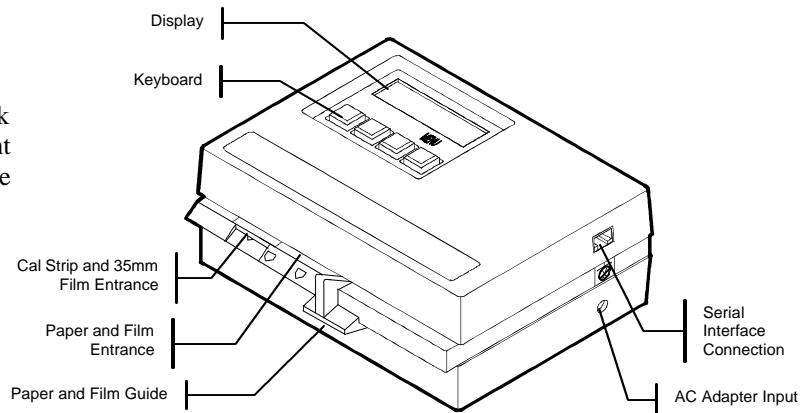
- Mac Serial Adapter (P/N SE108-DB9PA-01)
- 25 Pin Serial Adapter (P/N SE08-231-01)
- Line Cords

For the most recent list of supporting third-party software, see X-RiteColor Enabled Partner literature item L11-031A and L11-031B, or visit www.x-rite.com/support/partners.asp and browse to the Support and Training page. Specifications and design subject to change without notice.

Appendix A - Operational considerations between a DTP32R and a DTP34

The DTP 34 Quick Cal Densitometer is a “drop in replacement” for the X-Rite DTP32R (R for reflective) strip reading densitometer.

There are a few differences in operation of the Quick Cal compared to the DTP32. The DTP32 (see diagram at right) has a display, keyboard, and strip guide, whereas the Quick Cal product has a single key and the different process of reading a strip. In order to use the Quick Cal product where a software application expects the DTP32 product, please consider the following.



X-Rite DTP32R AutoScan Densitometer

Operation

Below we list some of the ways that the use of the instruments will differ. The items in *italic* are phrases often indicated in the host software for the DTP32R.

- **Use of the strip guide** – *Insert strip at X*
The DTP32R has a strip guide mechanism that ranged numerically from 5 to 30. Some software packages indicate a setting for this guide. These prompts can be ignored with the QuickCal as no guide is required.
- **Inserting as strip** – *Insert Cyan strip*
When asked to insert a strip, a QuickCal user will then position the instrument at the start of the row to be read, push the measure button and read. For more about reading a strip see the Measurement Notes and Tips section of the Manual.
- **Using the keyboard** – *Push Key #X*
The DTP32R has four keys to control the menus found on the LCD. The DTP34 does not require unique key sequences, because it is software driven, therefore these prompts can be ignored.
- **Calibration of the instrument** – *Go to page 2 to Calibrate*
The DTP34 can be calibrated without using menus, as is required for the DTP32 product. A quick calibration can be initiated like any other reading, and a full calibration is initiated by holding the button until the lights turn amber. Please see the calibration section in the manual for a full explanation.
- **Configuration of the instrument** – *Go to page 3 to Configure the Instrument*
Most software will automatically configure and setup the DTP32R or the DTP34 for use. Often, this equates to selecting from various communications settings so the software can take over control of the instrument once it is connected. For the few packages that require a manual configuration the DTP34 allows manual configuration by reading X-Rite Set-up Barcodes. X-Rite Set-up Barcode pages are supplied on the QuickCal CD-ROM for some manual configurations. Check the third party support folder on the CD-ROM to see if there is a configuration page that contains all the settings for your software package. More information about reading bar codes is found in section 2 of the manual. Further information about Quick Cal and third party support can be referenced at the X-Rite website under the help desk area at the following location:
<http://www.xrite.com/HelpDesk/3PSort.asp?RecType=6&id=272>

Appendix B - Barcode Operation

You can change several configuration settings of your QuickCal Densitometer using the special format barcodes supplied by X-Rite, Inc. or your software provider. These set-up barcodes consist of multiple strips that must be read in the proper order.

In most cases your software will automatically configure your instrument. If your software or software documentation prompts you to configure your instrument, the enclosed X-Rite Set-up Barcodes contain some commonly used commands that can be scanned immediately to get you up and running. Additional barcode set-up and information is available on the CD that is shipped with your instrument.

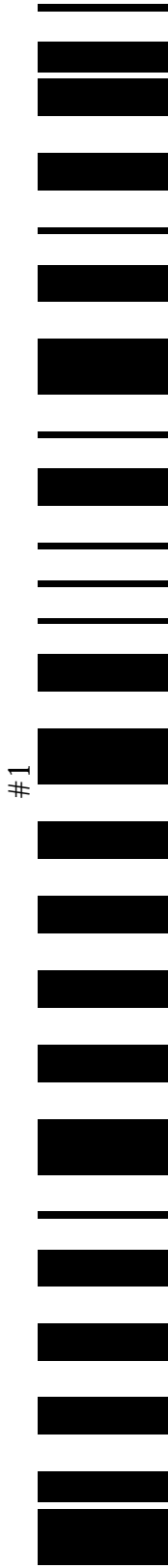
The LEDs signal the status of the instrument when reading a set-up barcode. While scanning the initial barcode, the LEDs will flash slowly between off and green, the same as any normal scan. Once the unit has recognized the initial barcode as being part of a set-up barcode, the LEDs will slowly flash between yellow and green. This same flash pattern will continue while scanning continuation barcodes. Upon completion of the entire set-up barcode, the LEDs will come on steady green, indicating a successful completion.

REFER TO THE FOLLOWING PAGES FOR X-RITE SET-UP BARCODES.

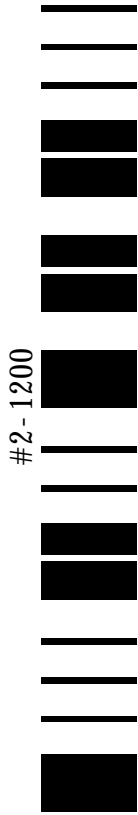
CAUTION: Only use the Set-up barcodes if instructed to manually set-up your instrument. This will avoid changing configurations that may cause the QuickCal Densitometer and your software to cease communicating. If this does happen reference the Troubleshooting and Service section.

NOTE: To enable the following barcodes to print at their intended size, make sure the "Fit to Page" check box is disabled (un-checked) in the Print dialog.

Baud Rate – First scan #1, then scan one #2 for the desired setting.



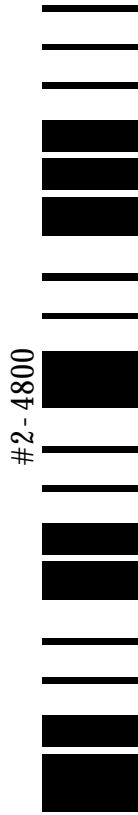
#1



#2-1200



#2-2400



#2-4800

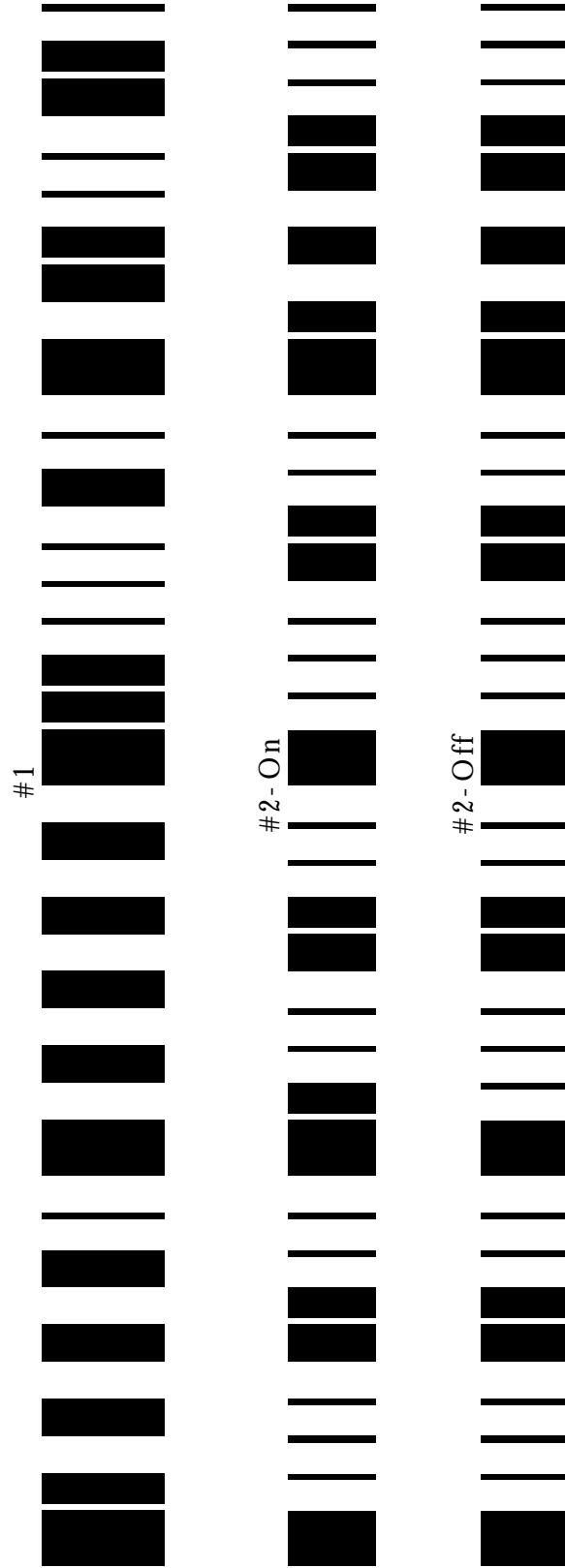


#2-9600

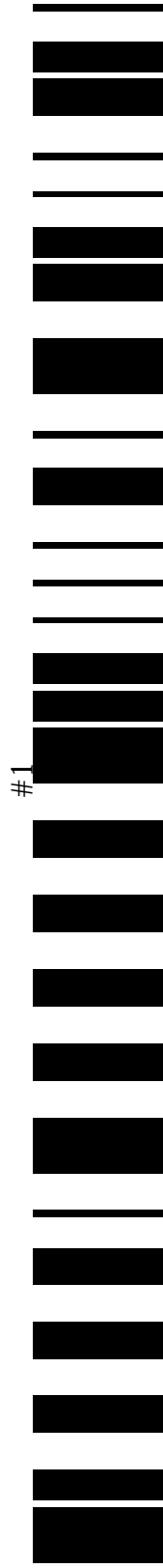


#2-19200

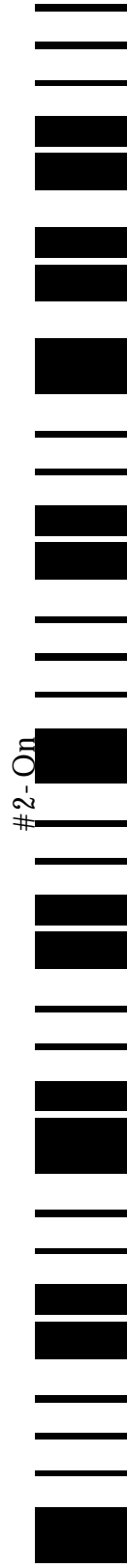
Autotransmit – First scan #1, then scan one #2 for the desired setting.



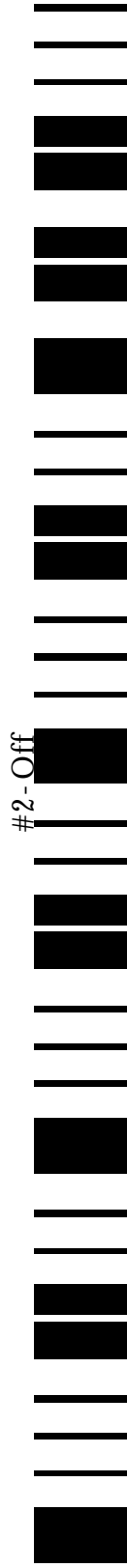
Decimal Point – First scan #1, then
scan one #2 for the desired setting.



#1

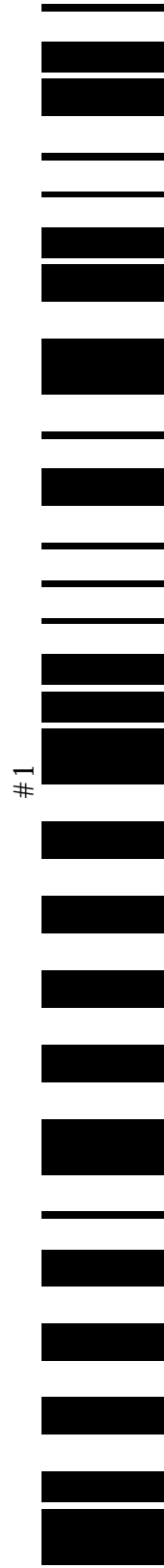


#2-On

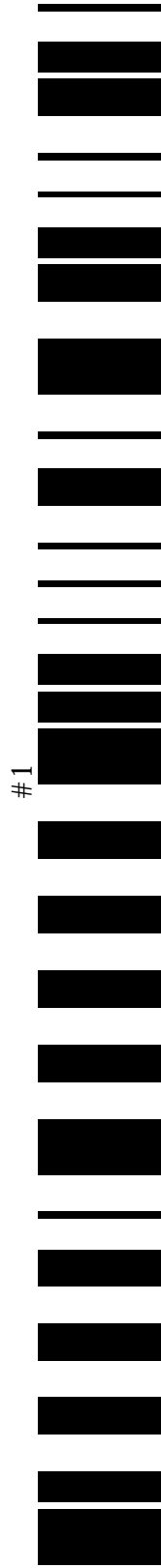


#2-Off

Times 10 – First scan #1, then scan
one #2 for the desired setting.



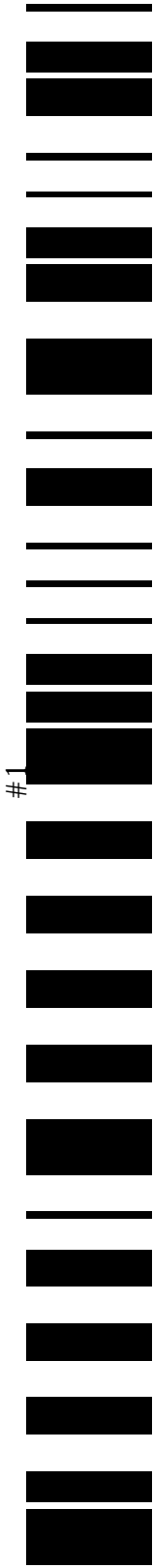
Data After Pass— First scan #1, then
scan one #2 for the desired setting.



Delimiter – First scan #1, then scan
one #2 for the desired setting.



Separator – First scan #1, then scan one #2 for the desired setting.



#1



#2 - Space



#2 - Comma



#2 - Tab

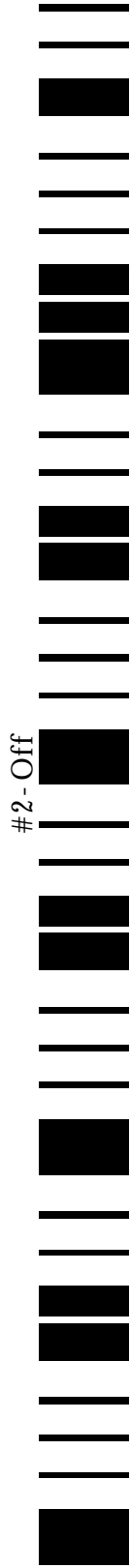
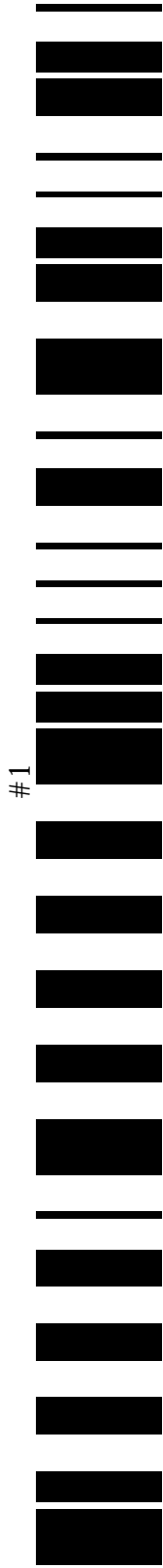


#2 - Carriage Return



#2 - Carriage Return and Line Feed

Min/Max – First scan #1, then scan
one #2 for the desired setting.



Spot Read Command- First scan barcode #1, then scan ONE of the subsequent to enable or disable spot reading capability:

Barcode #1: Spot read:



Enable



Disable



X-Rite, Incorporated - World Headquarters

3100 44th Street S.W. • Grandville, Michigan 49418 • USA
www.x-rite.com • (616) 534-7663

Toll-Free U.S. Numbers

Tel: 1-888-826-3044 • Fax: 1-888-826-3045

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X-Rite GmbH

Stollwerkstraße 32 • 51149 Köln • Germany

Tel: (49) 22 03 – 91 45-0 • Fax: (49) 22 03 – 91 45-19

X-Rite GmbH

Sochorova 705 • CZ-682 • 11 Vyskov • Czech Republic

Tel: (420) 507-328197 • Fax: (420) 507-328138

X-Rite Asia Pacific Ltd.

Room 808-10 • Kornhill Metro Tower • 1 Kornhill Road • Quarry Bay

Hong Kong • Tel: (852) 2-568-6283 • Fax: (852) 2-885-8610

X-Rite Ltd.

The Acumen Centre • First Avenue

Poynton, Cheshire • England

Tel: 44-0-1625-871100 • Fax: 44-0-1625-871444

X-Rite Méditerranée

Parc du moulin de Massy • 35, rue du Saule Trapu • 91300 Massy • France

Tel: 33-1-69.53.66.20 • FAX 33-1-69.53.00.52

X-Rite Asia Pacific Ltd. - Japan Office

7F, IMAS Hamamatsu-cho Bldg. • 2-10-4, Hamamatsu-cho

Minato-ku, Tokyo • 105-0013 Japan

Tel: +81-3-5777-5488 • Fax: +81-3-5777-5489

X-Rite Asia Pacific Ltd. - Singapore Representative Office

14 Science Park Drive • #02-04 The Maxwell

Singapore Science Park • Singapore 118226

Tel: + 65 7788-773 • Fax: + 65 7788-645