CE Declaration

Manufacturer's Name: X-Rite, Incorporated
Manufacturer's Address: 4300 44th Street, S.E.W • Grand Rapids, Michigan • U.S.A.
Model Name: Spectrophotometer
Model No.: DTP70

WEEE

As of August 13, 2005, X-Rite products meet the European Union – Waste Electrical and Electronic Equipment (WEEE) directive. Please refer to www.xrite.com for more information on X-Rite’s compliance with the WEEE directive.

Federal Communications Commission Notice

NOTE: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:
-- Reorient or relocate the receiving antenna.
-- Increase the separation between the equipment and receiver.
-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
-- Consult the dealer or an experienced radio/TV technician for help.

Industry Canada Compliance Statement

This Class B digital apparatus complies with Canadian ICES-003.
Cet appareil numérique de la classe B est conforme à la norme NMB-003 du Canada.

Equipment Information

Use of this equipment in a manner other than that specified by X-Rite, Incorporated may compromise design integrity and become unsafe.

WARNING: This instrument is not for use in explosive environments.
ADVERTENCIA - NO use este aparato en los ambientes explosivos.
AVVERTIMENTO - NON usare questo apparecchio in ambienti esplosivi.
WARNUNG: Das Gerät darf in einer explosiven Umgebung NICHT verwendet werden.
AVERTISSEMENT: Cet instrument ne doit pas être utilisé dans un environnement explosif.

Proprietary Notice

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This product may be covered by one or more patents. Refer to the instrument for actual patent numbers.

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Warranty Information

X-Rite, Incorporated (“X-Rite”) warrants each instrument manufactured to be free of defects in material and workmanship (excluding battery pack) for a period of 12 months. This warranty shall be fulfilled by the repair or replacement, at the option of X-Rite, of any part or parts, free of charge including labor, F.O.B. its factory or authorized service center.

This warranty shall be voided by any repair, alteration, or modification, by persons other than employees of X-Rite, or those expressly authorized by X-Rite to perform repairs, and by any abuse, misuse, or neglect of the product, or by use not in accordance with X-Rite’s published instructions.

X-Rite reserves the right to make changes in design and /or improvements to its products without any obligation to include these changes in any products previously manufactured. Correction of defects by repair or replacement shall constitute fulfillment of all warranty obligations on the part of X-Rite.

THIS WARRANTY IS EXPLICITLY IN LIEU OF ANY OTHER EXPRESSED OR IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE. THIS WARRANTY OBLIGATION IS LIMITED TO REPAIR OR REPLACEMENT OF THE UNIT RETURNED TO X-RITE OR AN AUTHORIZED SERVICE CENTER FOR THAT PURPOSE.

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
The DTP70 X-Y AutoScan Spectrophotometer is designed for on-demand and prepress professionals. This product dramatically reduces the time and difficulty in the process of measuring ICC color management test forms. The instrument reports densitometric, colorimetric and spectral data.

This manual covers the installation, basic operation and maintenance of the instrument. Specific instructions for using the instrument with your software application can be found in the software documentation.

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.

Packaging Contents:
- DTP70 X-Y AutoScan Spectrophotometer
- Backer Tray
- USB Cable
- Switching Power Supply with line cord
- Manuals and Utilities CD
- Registration Material
Attaching the Cabling

**IMPORTANT:** You must install the software before connecting the DTP70 to your computer.

1. Locate the DTP70 next to the computer and plug the input connector from the power supply into the back of the instrument.
   
   **CAUTION:** Use only the 100-240VAC input, +12VDC output Switching Power Supply provided to power the instrument.

2. Plug the detachable line cord into the power supply and then plug the line cord into the AC wall receptacle.

3. Turn the power switch to the On (I) position.

4. Plug the square end of the USB cable into the back of the DTP70.

5. Plug the other end of the USB cable into an available port on your computer. The computer should confirm that the USB connector is plugged in and automatically install the device driver for the instrument.

**NOTE:** If the third-party software application you are using does not contain the DTP70 USB driver, you will have to install it. The driver is located in the Drivers folder on the DTP Series Manuals and Utilities CD.
Installing the Backer Tray

The backer surface used when measuring targets can be alternated between black and white. The white and black surfaces are located on opposite sides of the backer tray. Insert the tray into the front of the instrument with the desired surface facing up and to the back. The tray should snap into position when it is installed properly.

Changing the UV Lever Position

The DTP70 has a UV lever built into the optics head that can be set to "Included" or "Excluded." The instrument is shipped from the factory with the UV lever in the "Excluded" position, indicating UV energy is excluded from the light.

To change the position of the UV lever:

1. Remove the front cover by pulling forward on the lower portion. After the lower portion of the cover is free, rotate it upwards to free the upper portion from the rear cover. Set the cover aside.
2. The reading head must be moved to the center of the measurement path to gain access to the UV lever. This is accomplished by using the reading head positioning feature built into the X-Rite ToolCrib utility application. Your software application may also have this feature. Refer to your software documentation for further information. **Never slide the reading head by hand to gain access to the UV lever. This can cause damage to the transport mechanism.** Refer to Moving the Reading Head in the Appendices for the procedure on using ToolCrib.

3. After the reading head is centered, slightly depress the UV lever and slide it to the “left” for UV Included or to the “right” for UV Excluded.

4. Reinstall the front cover by inserting the top portion into the rear cover and rotating downward. Push the lower portion of the front cover inward until it is flush with the bottom housing.

**Instrument Indicator**

The instrument indicator that surrounds the operation button conveys a variety of instrument conditions. Below is a complete list of conditions reported by the instrument indicator.

- **Solid Amber**—instrument is on and ready for use
- **Solid Green**—a Target Definition Language (TDL) file was successfully loaded and the instrument is now ready to perform a scan by pressing the button
- **Slow Flashing Green**—instrument is busy (scan in progress, calibration in progress, etc)
- **Solid Red**—instrument is in an error state
- **Slow Flashing Green/Red**—the host firmware loader program is reprogramming the instrument
- **Fast Flashing Amber**—instrument reset required after instrument reprogramming

**Instrument Calibration**

The DTP70 is auto-calibrating, requiring no user intervention. The white calibration reference is a permanent part of the instrument, located to the left of the backer tray. When a calibration is initiated by the software application, the reading head automatically positions itself over the reference to take the measurement.

The calibration reference should be cleaned periodically to maintain calibration accuracy. Refer to the General Maintenance section for the cleaning procedure.
Measuring Targets

Important Notes

• A Target Definition Language (TDL) file must be loaded into the instrument before measuring a target. If required, you can create your own TDL files using the X-Rite ToolCrib application. This application is located on the Manuals and Utilities CD supplied with your system. Refer to the readme.txt file within ToolCrib for instructions on creating TDL files.

• The target must have at least a 1.2 inch (30.5 mm) leader before the leading edge of the first row of patches. Contact X-Rite Applications Support if additional information is required.

• Inspect the target for spots or defects on the patches. Defects may cause inaccurate measurements.

• Some TDL files are set up as “multi-page targets” where all targets must be measured before a confirmation is displayed on the monitor. In these cases, targets are scanned one after the other in the sequence defined.

Loading a Target

A target must be positioned in the center of the tray with the patches facing up. The TDL file loaded defines what direction the target is positioned. Once centered, slowly insert the target into the instrument until it rests against the feed rollers.

Thicker Stock Paper

It may be necessary to apply slight pressure to the target after the Operation button is pressed to get the feeding process started.

Crumpled Paper

A side to side motion may be required when inserting the target in order to reach the feed rollers.
Measurement Techniques

You should refer to the documentation provided with the software application that you are using with your instrument. All applications that use this instrument must be running during measurements. The following information is provided to familiarize you with the mechanical aspects required to measure a target.

1. Make sure the instrument is connected to the computer and powered on.
2. Verify that the backer tray is inserted with the correct surface facing up and the UV filter is set to the correct position. Refer to Overview and Setup section.
3. Select the target to measure from the software application. The instrument indicator should be in a scan ready condition (solid green) after the target file is loaded.
4. Position the target in the center of the backer tray and insert it until it stops against the feed rollers.
5. Press the Operation button to start measuring. The instrument indicator slowly flashes green while the target is measured.

**NOTE:** If you want to abort the target measurement at anytime, simply press the Operation button. The measurement sequence will stop and the target will eject.

6. After the target is measured, remove it from the instrument.

A successful reading is verified by a solid green instrument indicator and a confirmation message on the computer monitor. If an error message is noted, try re-measuring the target.
Appendices

Troubleshooting
The DTP70 is used with a number of third-party software vendors. To get the most specialized technical assistance, you should first contact the technical service representative for the specific third-party software that you are using.

Prior to contacting X-Rite’s Customer Service for instrument problems, try the applicable solution(s) described below. If the condition persists, contact a Customer Service Representative toll-free by phone at 1-888-826-3059 or by fax at 1-888-826-3061. You can also contact X-Rite’s support staff through our Support page at www.xrite.com.

Instrument Indicator not illuminated:
• Ensure that the power supply is plugged in and the power switch is on.
• Reset the instrument (see Instrument Reset).

Solid red LED:
• An error occurred while the instrument was scanning a target. Use the third-party software application to clear the error. You can then retry measuring the target.
• Remove power from the instrument, reapply power and see if the condition is corrected.
• Reading optics are dirty (see General Maintenance for cleaning procedure).
• Reset the instrument (see Instrument Reset).
• 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).

Instrument and software not communicating:
• Check USB cable for proper connection.
• Close the software application, cycle power on the instrument and restart the software application. If this does not work reboot the computer.
• Reset the instrument (see Instrument Reset).

Target not feeding properly:
• Target has creases.
• Backer tray not positioned properly.
• Debris is present in the measurement path. See General Maintenance for cleaning procedure.

Repeated target measurement failures:
• Ensure that the proper target file is loaded for the target measured (which includes page size).
• Close and restart the software application.
• Reset the instrument (see Instrument Reset).
Service Information

The DTP70 Spectrophotometer 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 to 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. The instrument shall be submitted in the original carton, as a complete unaltered unit along with all the supplied accessories.

Moving the Reading Head Using ToolCrib

The reading head must be positioned in the center of the measurement path when cleaning the optics glass, changing the UV lever, and when cleaning the calibration reference.

Never move the reading head by hand. This can cause damage to the transport mechanism.

The X-Rite ToolCrib software utility has a built in function that is used for positioning the reading head to the center of the measurement path. Your software application may also have this feature. Refer to your software documentation for further information.

1. Install the ToolCrib application if not already installed. The application is located on the DTP Series Manuals and Utilities CD.
2. Start the application and select **DTP70** on the Instrument Connection Parameters screen.
3. Click **Connect** and then select the **Instrument Configuration** tab.
4. Click **Read Head Clean**. The reading head should move to the center of the measurement path.
5. Close the ToolCrib application.

General Maintenance

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

The exterior of the instrument may be wiped clean with a cloth dampened in water or mild cleaner. DO NOT use solvents to the clean the instrument, this will cause damage to the cover.

Cleaning the Target Measurement Path

1. Disconnect the power supply from the instrument.
2. Remove the front cover by pulling forward on the lower portion. After the lower portion of the cover is free, rotate it upwards to free the upper portion. Set the cover aside.
3. Using a back and forth motion, blow short bursts of clean, dry air into the target measurement path. This should remove any accumulated dust and debris.

4. Reinstall the front cover by inserting the top portion into the rear cover and rotating downward. Push the lower portion of the front cover inward until it is flush with the bottom housing.

5. Reconnect power.

**Cleaning the Reading Head Optics Glass**

1. Position the reading head to the center of the measurement path using ToolCrib. Refer to Moving the Reading Head using ToolCrib.
2. Disconnect the power supply and USB cable from the instrument.
3. Remove the backer tray and carefully turn the instrument upside down.
4. Using a cotton swab, clean the optics glass on the bottom of the reading head. This is accessed through the cut-out in the middle of the bottom plate.

5. Turn the instrument back over and install the backer tray.
6. Reattach the power supply and USB cable.
Cleaning the Calibration Reference

1. Position the reading head to the center of the measurement path using ToolCrib. Refer to Moving the Reading Head using ToolCrib.
2. Disconnect the power supply from the instrument.
3. Remove the front cover by pulling forward on the lower portion. After the lower portion of the cover is free, rotate it upwards to free the upper portion from the rear cover. Set the cover aside.
4. Clean the calibration reference using a cotton swab or lint free cloth. Wipe from left-to-right as shown to minimize lint collection.
5. Reinstall the front cover by inserting the top portion into the rear cover and rotating downward. Push the lower portion of the front cover inward until it is flush with the bottom housing.
6. Reconnect power.
Clearing a Paper Jam

1. If the target is jammed in the instrument, press and hold the Operation button to remove it from the measurement path.
2. Disconnect the power supply from the instrument.
3. Remove the front cover by pulling forward on the lower portion. After the lower portion of the cover is free, rotate it upwards to free the upper portion from the rear cover. Set the cover aside.

4. Remove the rear cover by pulling inward on the locking tabs using your finger nail. The tabs are located on both sides of the front cover.

5. When the tabs are free of the holes in the side plates, pull backwards on the upper portion of the rear cover and lift it upwards.
6. Inspect the measurement path at the rear of the instrument and remove any paper shards that remain.

7. Reinstall the rear cover by aligning the bottom portion at the back of the instrument. The locking tabs at the bottom of the cover must be inserted into the slots on both sides of the bottom plate.

8. Rotate the rear cover upwards while lifting it slightly. Make sure the power switch clears the opening and the side plate edges are inserted into the channels in the cover.

9. As the cover nears it closed position, press inward slightly on the upper locking tabs until they are aligned with the holes in the side plate. Release tabs to lock in cover.

10. Reinstall the front cover by inserting the top portion into the rear cover and rotating downward. Push the lower portion of the front cover inward until it is flush with the bottom housing.

11. Reconnect power.
Technical Information

Instrument Reset
Performing a reset will eject the target (if any), return the reading head to its home position, and restore the instrument indicator to amber.
1. Make sure the instrument is powered on, then press and hold the Operation button for approximately five seconds.
2. Release the Operation button.

Boot Code Update
After updating the instrument boot code, you must power down the instrument and then power it back up. This ensures that the instrument will function properly.
1. Make sure the instrument is on and start the ToolCrib application.
2. Select DTP70 on the Instrument Connection Parameters screen and then Connect.
3. Select the Firmware Loader tab and Boot Code option.
4. Specify the file to load and then select Load.
5. Close the ToolCrib application, turn the instrument off and then back on.

Firmware Update
After updating the instrument firmware, the instrument will automatically reset.
1. Make sure the instrument is on and start the ToolCrib application.
2. Select DTP70 on the Instrument Connection Parameters screen and then Connect.
3. Select the Firmware Loader tab and Permanent Firmware option.
4. Specify the file to load and then select Load.
5. Close the ToolCrib application.

Target Definition Languages Files
You can create your own TDL files using the X-Rite ToolCrib application. This application is located on the DTP Series Manuals and Utilities CD supplied with your system. Refer to the readme.txt file within ToolCrib for instructions on creating TDL files.
**Instrument Specifications**

**General**

- **Measurement Geometry:** ........ Reflection 45°/0° per ANSI/ISO 5-4 (IT2.17)
- **Spot Size:** ......................... 3.2 mm diameter
- **Light Source:** ....................... Gas pressure @ 2850°K
- **Spectral Sensor:** .................... FAST technology, 16-point engine, 31-point reporting
- **Spectral Range:** ..................... 400 – 700 nm
- **Illuminant Types:** ................. A, C, D50, D65, D75, F2, F7, F11 & F12
- **Standard Observer:** ............... 2° & 10°
- **Density Responses:** ............... Status T, E, I, A, Spectral, HiFi, Hexachrome
- **Measurement Speed:** ............. 100 measurements per second
  - IT8 7/3: 2.5 minutes minimum
  - ECI: 4.2 minutes minimum
  - IT8 7/4: 4.5 minutes minimum
- **Inter-instrument agreement:** (based on DTP70 standard for 12 BCRA tiles) ............ 0.3 ∆E 94 average; 0.5 ∆E 94 maximum
- **Measurement range:** .............. 0.00D to 2.50D; 0 to 160% R (reflection)
- **Repeatability on White:** ........... 0.2 ∆E max.; ±0.01D max.
- **Linearity:** .......................... ±0.02D or 2%, 0 to 2.5D
- **Media Thickness:** ................... 0.08 mm (0.003 in) to 0.36mm (.014 in)
- **Physical filter:** ...................... UV in / ex – field switchable
- **Backer Tray:** ....................... Black / White – field switchable
- **Data Interface:** ..................... USB 2.0 certified full-speed peripheral device
- **Calibration:** ......................... Internal calibration reference provided
- **Warm-up Time:** ..................... None
- **Physical Dimensions:** ............. W: 315 mm (12.4 in), D: 193 mm (7.6 in),
  - H: 150 mm (5.9 in)
- **Weight:** ............................ 3320 g (7.32 lbs.)

**Environmental**

- **Operating Temp:** ................. +10° (50°F) to +35°C (95°F)
- **Humidity Range:** .................... 0 - 85% RH non-condensing
- **Usage:** .............................. Indoor Only
- **Altitude:** ............................ 2000m
- **Pollution Degree:** ................. 2
- **Transient Overvoltage:** ............ Category II

**Accessories Included**

- Calibration Reference (built in)
- DTP Series Manuals and Utilities CD
- USB Communication Cable
- Auto-Ranging Power Supply (P/N SE30-77): 100-240VAC, 50-60 Hz; 30W
- UV excluded & UV included optics covers (built in)
- Backer Tray

Design and specifications subject to change without notice.
Please visit www.xrite.com for a local office near you.