

# The "RefleX" Programmable Coating Detector

MODEL# RX1550

MADE IN THE USA

## OPERATOR'S MANUAL

The "RefleX" Coating Detector allows the user to easily identify the coated side of glass for a variety of applications. For some coating types, you can even differentiate between 2 or 3 similar coatings. The instrument is comprised of two separate functions: one for identifying coated surfaces, the second for identifying specifically Low E Coated surfaces of the glass. For identifying coated surfaces, the device is a first-surface detector, meaning it will only be testing the glass surface you have the meter placed against. It will not test the second surface of the glass for the coating. The Low E detector that is included in the design is the only part of the meter that will also check the second surface of the piece of glass you are testing.



This universal detector allows users to calibrate and store up to 22 unique coatings. Once you have selected the coating from the menu that you want to test, simply place the meter against the glass surface and push the button. The results will instantly be displayed on the LCD screen, telling if the surface is coated or uncoated, and also telling you if there is a Low E coating on surface 1 or 2. The instrument includes two MENU/NAVIGATIONAL buttons that allow the user to select from several pre-loaded coatings, a variety of operating modes, and various procedures to keep the meter functioning effectively in the field. The programmable feature of the meter allows users to create new coating calibrations, as well as modify existing calibrations that are stored in the instruments non-volatile memory. Our popular OPTO-CLEAN software monitors the condition of the meters "viewing lenses" on the back side of the meter, and will notify the user when it is necessary to clean the windows, and even suggest when it might be necessary to recalibrate the device.



### EDTM, INC.

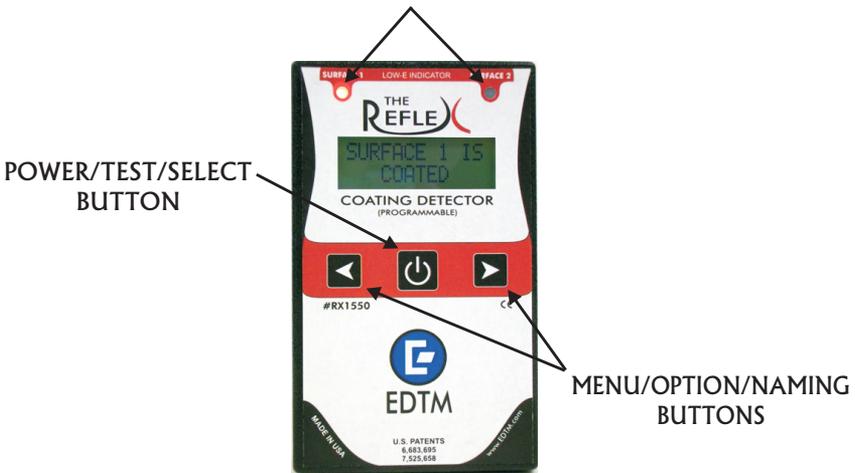
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# PRE-LOADED COATINGS

- Low E Surface (single pane)
- Tin Side of clear float glass
- Self-clean coatings (Pilkington Activ® and PPG Sunclean®)
- Guardian ShowerGuard® coatings
- Guardian DiamondGuard® coatings
- Guardian Surface 4 Low E coatings (IS15 & IS20)
- Cardinal Surface 4 Low E coatings (i81 & i89)
- Anti-reflective coatings (PPG, Pilkington, Guardian + more)
- Saint-Gobain Bioclean® coatings

## LAYOUT / FUNCTIONS

### LOW E COATING SURFACE 1 & 2 INDICATOR LEDS



### **POWER/TEST/SELECT BUTTON**

Push and release this button to turn the POWER on. To conduct a new TEST you will also push this momentary switch. When you have entered into the menu system and would like to SELECT the choice you have made in the menu system, push this button to confirm your choice. When naming your new custom coatings, this button will SELECT the letters you have chosen.

### **MENU/OPTION/NAMING**

Pushing either of these buttons will cause you to enter into the MENU system. Once you are in the menu, you will continue to use these 2 buttons to toggle through all of the OPTIONS that are available. When you have entered a custom coating and begin NAMING the new entry, use these buttons to scroll forward and backward through the alphabet and numeric choices to accurately name your coating.

### **LOW E COATING SURFACE 1 & 2 INDICATOR LEDS**

One of these indicators will light every time you test a piece of glass that contains a low e coating. Surface 1 is the surface the meter is touching during the test.

# OPERATION

To begin, make sure the glass you are testing is clean. Dirty glass with dust, dirt, or smudges can affect the results of your test. Also make sure the lenses on the back side of the meter are clean. To turn the instrument on, press the momentary POWER switch on the front of the meter. When the meter is powered, the current operating mode will be confirmed on the display. It will then direct you to place the meter on the glass you want to test. Place the meter FLAT against the glass. Your test results will appear on the LCD screen.

## **CHANGING COATINGS/MODE**

If the coating you want to test was not shown as the current operating mode at power-up, you will need to enter the MENU system and select it. To do this, press either of the menu buttons until "CHANGE MODE" appears on the display. Select that option by pushing the center POWER/SELECT button. Then begin toggling through all the different coating/mode options by using either of the MENU buttons. When you find the coating you want to test, again press the POWER/SELECT button to confirm your choice.

## **CHOICE OF OPERATING METHODS**

When you enter the MENU system, you will see that you have two basic options for conducting tests: **SINGLE TEST MODE** and **FREE RUN MODE**.

### **"SINGLE TEST" MODE**

Each push of the button will result in one test being done on the surface of glass you are touching. Hold the instrument stationary while conducting the measurement. Single test mode is the most battery-efficient operating mode and the recommended mode of operation.

### **"FREE RUN" MODE**

In this mode, the meter will continually take measurements. There is no need to continually push the POWER/TEST button when you want to take a measurement, as the meter will be continually doing so. Measurements will be updated nearly every second. It should be noted that this operating mode will tend to shorten the life of the battery, as the electronics are powered for a much longer period of time, as opposed to single test mode. Free Run mode is helpful if you will be taking a large number of readings for a period of time.

# TEST RESULTS

## **SELF-CLEAN, SHOWERGUARD, DIAMONDGUARD, BIOCLEAN AND A.R.**

When you select any of these coatings for the operating mode, the RX1550 will test the surface of glass you are touching and confirm if that selected coating is present on the glass. One of the following screens will appear after a successful test, indicating that the glass surface you are in contact with (Surface 1) contains the following coating:

SURFACE IS COATED: surface 1 contains the selected coating  
SURFACE IS UNCOATED: surface 1 does not contain the selected coating

The RX1550 meter is always testing the first surface of the glass you are testing. It will make NO attempt to identify any coatings located on the opposite surface of the glass (surface #2). The only exception to this rule is the separate Low E coating detector that is always operating, and will confirm if there is a Low E Coating on surface 1 OR 2, while testing for your coating of choice.

## **TIN SIDE MODE**

Tin Side Mode is a special operating mode that allows you to test clear uncoated float glass to determine which side is the tin surface of the glass. During the production of float glass, one side of the molten glass comes into contact with a bath of molten tin. Traces of tin or tin oxide metal are deposited on the surface of glass as it is removed from the molten tin bath. This surface of the glass is identified as the "TIN SIDE" surface of the glass.

The TIN SIDE MODE is the only mode that functions as a 2-sided test, meaning you will be required to test both sides of the piece of glass you are working with. The meter will remind you to clean the glass before testing. The meter will then display "PLACE THE METER ON SIDE 1". You can choose either side of the glass to be SIDE 1. Place the meter FLAT against SIDE 1 of the glass and push the button to take a reading. The meter will say TESTING and show a measurement value on line 2. While the meter is testing, it is important to keep the meter stationary and flat against the glass. After 2 seconds, the display will prompt you to move to SIDE 2 of the glass. SIDE 2 will always be the side opposite SIDE 1. When you have the meter positioned on SIDE 2, push the button again. The display will again say TESTING and show a measurement value on line 2. After the meter has completed testing SIDE 2, it will show the results on the display, indicating if SIDE 1 or SIDE 2 was the tin side. SIDE 1 will always be the first side you tested, while SIDE 2 will always be the second side tested. If you forget which side was 1 versus 2, conduct the test again.

## **GUARDIAN IS-15 / IS-20**

This mode will not only identify the coated side of the glass, but it will also allow you to differentiate the two Surface 4 Low E Coatings produced by Guardian Industries. It will also differentiate the Surface 4 Low E Coatings from the traditional soft coat low e products produced by Guardian Industries. One of the following screens will appear after a successful test, indicating that the glass surface you are in contact with (Surface 1) contains the following coating:

COATED IS-15: surface 1 contains Guardian IS-15  
COATED IS-20: surface 1 contains Guardian IS-20  
UNCOATED: surface 1 does not contain any low e coatings  
STANDARD LOW-E: surface 1 contains a traditional low e coating that is not IS-15 or IS-20. This is likely a soft coat low e coating that could be comprised of 1, 2 or 3 silver layers. Please note, the meter will make NO attempt to identify they type of low e coating on surface #2.

## TEST RESULTS - continued

### **CARDINAL i81 / i89**

This mode will not only identify the coated side of the glass, but it will also allow you to differentiate the two Surface 4 Low E Coatings produced by Cardinal Glass Industries. It will also differentiate the Surface 4 Low E Coatings from the traditional soft coat low e products produced by Cardinal Glass Industries. One of the following screens will appear after a successful test, indicating that the glass surface you are in contact with (Surface 1) contains the following coating:

<b>SURFACE IS COATED i81:</b>	surface 1 contains Cardinal i81
<b>SURFACE IS COATED i89:</b>	surface 1 contains Cardinal i89
<b>UNCOATED:</b>	surface 1 does not contain any low e coatings
<b>STANDARD LOW-E:</b>	surface 1 contains a traditional low e coating that is not i81 or i89. This is likely a soft coat low e coating that could be comprised of 1, 2 or 3 silver layers. Please note, the meter will make NO attempt to identify they type of low e coating on surface #2.

### **LOW-E ONLY MODE**

When operating in this mode, the meter will act as one of our standard single pane Low E coating detectors. The meter will indicate if there is a Low E coating on surface 1 or surface 2. The RX1550 will indicate if the glass is clear glass, meaning there is no Low E coating present.

### **RAW DATA**

This mode is great for testing new coatings when you are trying to see if there is a measurable or detectable difference between coated and uncoated surfaces. It is also a great mode to identify differences between various types of coatings. All three sources of energy will be represented on the display, however only two can be shown at one time. The first screen will display two of the values, while the next screen will scroll up to the other value.

UV	The amount of Ultraviolet reflectance from surface 1 (355nm to 375nm)
VIS	The amount of Visible Light reflectance from surface 1 (400nm to 700nm)
IR	The amount of Infrared reflectance from surface 1(930nm to 970nm)

It should be noted that these values do not represent a true first and second surface reflectance value of 0 to 100%. Instead these values are scaled between 0 and 10,000 bits, with the higher number being calibrated to a first surface mirror reflectance. This method should be used as a relative reference between coatings, and not an absolute value of percent reflectance.

### **LOW-E INDICATOR LED'S**

One of the following conditions will be indicated with the LEDs on the top of the unit:

<b>SURFACE 1 LED:</b>	Surface 1 contains a Low-E coating
<b>SURFACE 2 LED:</b>	Surface 2 contains a Low-E coating
<b>NO LED LIGHT:</b>	No Low-E Coating was detected.



# CALIBRATION

In order to calibrate the meter you will need a known glass sample with the coating you are trying to detect. You will also need to know the coated side of that sample.

## **ENTER CALIBRATION MODE**

A press of either the left or right arrow will enter the menu system. When in the menu system use the left and right arrows to scroll through the selections, and the power button to select the option. Scroll through the option and select "SET-UP". The first option in the SET-UP listing will be CALIBRATE. Hit the POWER/SELECT button to choose this option. Before beginning, be sure to clean the back lenses of the meter, and clean the known sample of coating you are working with. Follow the instructions on the display to take a measurement on both sides of the sample. The instructions will ask you to place the meter on the coated side first, then the clear side second. The meter will indicate if the calibration was successful or not. If the calibration was not successful, the display will show you what error occurred during the calibration process. If an error occurs, check to see that the meter lenses are clean, and that your sample is valid and clean. If after several tries you are not able to calibrate your sample, contact EDTM for other possible solutions to detect your coating. NOTE: Custom software and hardware can be created from the RX1550 platform. Please provide samples of your coating to EDTM if you would like for us to evaluate your coating for a customized meter application.

## **USE PREV. CAL**

If you do not like the new calibration that you performed, you can restore the previous calibration that was stored in the instrument.

## **USE FACTORY**

If you want to return the meter to the calibration that was originally shipped in the meter as new from the factory, make this selection.

## **NAMING A NEW COATING**

Use the right arrow button to scroll up the alphabet and the left arrow to scroll down the alphabet. If you hold the button the meter will scroll faster. Once you find the first letter press the power button. This will move you to the next character. Keep repeating procedure until all spaces are filled or done naming. Characters A through Z, and 0-9 are available to use. If you accidentally select the wrong character, a back arrow "<" is provided to erase the last character. When finished naming select the enter character "8" to save, or simply push and hold down the power button.

# OPTO-CLEAN SOFTWARE

The RX1550 meter is equipped with our popular OPTO-CLEAN software. This custom software monitors every measurement taken by the meter. It will notify the user when the back lenses of the meter begin to get dirty, and may need cleaned. It also can help indicate when it may be necessary to recalibrate the device.

## **“PLEASE CLEAN BACK LENS”**

This message will appear if the meter has determined that its back lens may be dirty. Simply use compressed air to blow off any dirt or dust from the back lens of the meter. This message is the first level of warning that your meter may need to be cleaned.

## **“MUST CLEAN BACK LENS”**

This message is the second level of warning that indicates the meter has a back lens that needs to be cleaned. The validity of your test results could be affected soon. Clean the back lens of the meter.

## **“MUST CLEAN AND/OR RECAL”**

If the meter has been neglected and the back lens has continually been degrading in cleanliness, this message will appear. Once this message appears, the validity of test results would be jeopardized, and the meter will NOT allow test results to be shown. Before any re-calibration is performed, it is pertinent that the back lens of the meter is cleaned first. This may be all that is needed to get the meter performing correctly again. Try cleaning the lens first and then test the meter again. If the same warning message appears, then it is necessary to recalibrate the instrument. Find a clean sample of the coating you are working with, and choose the proper recalibration procedure from the MENU. Before re-calibrating, make sure the glass sample is a valid sample and that it is clean.

## **“CLEAN & RE-TEST”**

This result screen will show up if the measurement was not in the range anticipated by the meter. This typically happens when the glass is dirty. Clean the glass and test again. If this does not correct the problem, you may want to clean the back lens of the instrument by using compressed air to blow off the lens. If smudges still remain, use a lint-free cloth to wipe the smudges from the lens.

## **“KEEP METER FLAT ON GLASS DURING TEST”**

If you pick up the meter or the instrument is not setting flat against the glass during the test, this error message will occur. The instrument is monitoring the measurement and if it determines that the meter has been pulled away from the surface of glass, it will display this message and ask you to start a new test

## MISCELLANEOUS

### **POWER**

If the user wants to turn the power off manually, you need to press AND HOLD the power button for 2 seconds. After 2 seconds the powering-down screen will appear, and the meter will begin its countdown to shutting off. You must continue to hold the button down during the countdown to complete the powering off sequence. If you let up on the button too early, the instrument will resume operation.

The instrument also has a built-in timer that will automatically power down the product if no button presses occur for approximately 2 minutes. This energy conservation design helps to extend the life of the battery in the instrument in case the user forgets to turn it off. To turn the meter back on, simply push the button.

### **MAINTENANCE**

You should occasionally inspect the cleanliness of the viewing windows on the back side of the meter. If you see dust or dirt in the window, please use compressed air to blow it off. If you begin receiving a large number of error messages during your testing, this may be a sign that the back window needs cleaned. If there are smudges on the window that do not clean off with compressed air, use a soft lint-free cloth to wipe the lens. Always use compressed air first to remove any particles that may scratch the surface of the lens.

## BATTERY REPLACEMENT

The instrument is powered by a 9-volt alkaline battery (supplied). The instrument will notify you when the battery is starting to get low. The meter will continue to operate, as this is just a warning that you will need to replace the battery in the near future. Once the battery has reached a level that is too low, the instrument will lock up the display with a "REPLACE BATTERY" message. To access the battery, remove the battery cover and replace with a new 9-volt alkaline battery. If the unit is going to be stored for more than a month without use, we recommend removing the battery during storage.

## USE / MIS-USE

Do not tamper with the enclosure of the instrument. Opening the enclosure WILL affect the calibration of the instrument AND will void the warranty.

Do not apply excessive force to the switch. Doing so could affect the performance of the instrument, especially if excessive force is applied during testing.

The instrument has been calibrated for several different coatings. Although the latest version of coating was obtained during development, EDTM can not guaranty that the manufacturer did not change the coating.

Testing of materials other than those listed is not warranted to produce the correct test results. If you have a custom application, consult the factory to find out if the product is applicable.

## WARRANTY

The manufacturer warrants the electronics included in all models of the RX1550 to be free from defects in material and workmanship under normal use and service as specified within the operator's manual. The manufacturer shall repair or replace the unit within twelve (12) months from the original date of shipment after the unit is returned to the manufacturers factory, prepaid by the user, and the unit is disclosed to the manufacturers satisfaction, to be thus defective. This warranty shall not apply to any unit that has been repaired or altered other than by the manufacturer. The aforementioned provisions do not extend the original warranty period of the unit which has been repaired or replaced by the manufacturer. Batteries and lenses are not covered by warranty.

The manufacturer assumes no liability for the consequential damages of any kind through the use or misuse of the RX1550 product by the purchaser or others. No other obligations or liabilities are expressed or implied. All damage or liability claims will be limited to an amount equal to the sale price of the RX1550, as established by the manufacturer.