UVTRONIX

User Manual

For Radiometer models: UVT-RAD-100
UVT-RAD-100DL

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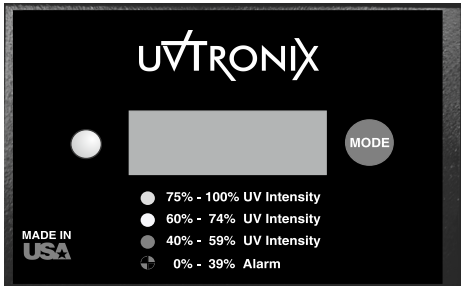

PROUDLY DESIGNED AND MADE IN THE USA

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WARNING

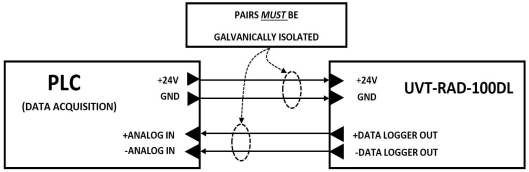
All power should be turned off prior to installation.

Never expose eyes or skin to UV light from any source.

Wear gloves, glasses/face shield per ANSI Z87.1 and coverall exposed skin.

The UV lamp(s) should not be touched without gloves.

IMPORTANT NOTE ON 0-10V DATALOGGER CONNECTION



Because of the variable supply voltage range accepted by the UVT-RAD-100DL radiometer (10-30VAC 50/60Hz, or DC), the power supplied to the unit **MUST** be galvanically isolated (floating) from the **GROUND AND OUTPUT** connections of the datalogging channel.

For this reason, all UVT-RAD-100DL radiometers are supplied with their own floating, universal power supply.

If the use of an external power source is required during installation, the installer **MUST** make sure that there is no electrical continuity between **BOTH** power supply leads supplying power to the radiometer and the datalogging input channel.

FAILURE TO DO SO WILL CREATE A GROUND LOOP THAT WILL DAMAGE THE RADIOMETER BEYOND REPAIR. GROUND LOOP-INDUCED FAILURES WILL NOT BE COVERED UNDER THE MANUFACTURER'S WARRANTY.

For example, if the installation requires a PLC to supply power to the radiometer (normally +24VDC) while monitoring the datalogging channel via, for example, a PLC analog input, galvanic isolation **MUST** be maintained between the power feed and the analog input channel(s) of the PLC. Most reputable PLCs allow (via jumper) separation of grounds of the auxiliary power supply output and the analog input ports of the PLC.

Warranty

UVTronix warrants to the original buyer that the Radiometer shall be free from defects in material or workmanship under normal use and service for one year. The warranty is contingent upon proper use of the Radiometer and will not apply if adjustment, repair or parts replacement is required because of an accident, unusual physical electrical or electro-mechanical stress, neglect, misuse, failure of electric power, humidity control, transportation, unauthorized repair actions, or not installed or maintained in accordance with UVTronix specifications including the use of any cable other than the supplied interface cable.

This warranty does not cover any labor or subsequent damage incurred as the result of a Radiometer failure or indirectly arising from the design, construction, installation, servicing or operation of the Radiometer.

Buyer must provide proof of purchase. Buyer shall not return to UVTronix any allegedly defective goods without UVTronix prior written authorization.

It is recommended to replace the UV sensor every 2 years when the radiometer is being used for high-intensity applications.

All specifications subject to change due to a continuous program of improvement

Please read this entire instruction manual before starting installation.

Product

The UVT-RAD-100/100DL Radiometer is an advanced, state of the art, UV Radiometer

Included

- Controller
- UV Sensor
- Interface Cable
- User Manual

Features

- 4 digit, high intensity, alphanumeric display is easily readable in high light conditions.
- Multi-function Single MODE button is very intuitive to operate.
- 3 color LED indicator.
- Audible Alarm Buzzer.
- UV sensor supplied.
- Metal housing of the sensor lasts a lifetime as opposed to (UV vulnerable) plastic housings.
- Data Logger Analog Output Voltage (optional)
- Factory programmable UV thresholds (NRE fee may apply)

Specs

- Power supply: 24VAC, 50-60Hz or 24VDC, 0.35A
- Dry contact output (Maximum) : 1A – 250VAC resistive loads.
- Data logging analog output: 0VDC = 0% intensity, 10VDC = 100% UV intensity.
- Operating temperature: 0-50°C (120°F).
- Maximum intensity range: 20,000 µW/cm².
- Maximum accumulated days counter: 999 days.

Dimensions

- Width: 3.75” (9.5cm)
- Length: 2.5” (6.2cm)
- Height: 1.125” (3.8cm)

Software, Screens and Operation

Screen 1

Upon powering up the unit, the software revision will be displayed for about 5 seconds. If the “MODE” button is depressed the screen will stop showing the revision and jump to the next screen.

SCREEN #1: r1-6 (Revision 1.6)

If the optional data logging is installed, after the revision the unit will scroll “data logger.”

Screen 2

Next, the unit will advance to the default screen to indicate “Pxyz” where “P” equals the percentage of UV light detected as referenced to the baseline* and “xyz” represents the value of “P.” See instructions for SCREEN #5 to learn how to set the baseline.

For example:

SCREEN #2: “P73” (the measured intensity is at 73% of the maximum set intensity of 100%).

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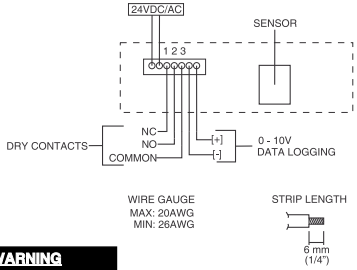
Electrical Connections



WARNING

Incorrect wiring will damage the unit and void the warranty. Make sure to double check all connections before powering on the unit.

To remove a wire from the terminal block, insert a small flathead screwdriver above the terminal and gently pull out the wire.

Dry Contact Output

Under normal operating conditions, the relay is energized.This means that a power failure will trigger an alarm when the dry contacts are used. This is purposely done so a power failure in the UV room can be monitored and signaled.

Data logging output (optional)

If this option is installed, a linearized analog voltage is output with the following end points:

0% = 0 Volts $^{+\ 100\ mVolts}_{-\ 0\ mVolts}$

100% = 10 Volts ± 500 mVolts

The data logging voltage will be set according to the baseline reset procedure outlined above.

Mounting the Sensor

The UV sensor must be mounted facing the lamp(s), approximately 3-10" (8-25 cm) away from the lamp(s). If the radiometer displays "Sensor Saturated" – the sensor has detected UV intensity greater than 21,300 µW/cm². Move the sensor away from the lamps until this condition is resolved.

Using two screws, mount the sensor on a flat, clean surface where no water will drip directly on the sensor.

For optimal performance be sure to keep the sensor clean. To clean the sensor, we recommend using a cotton swab and isopropyl alcohol with compressed air.

Mounting the Controller

- The controller should be mounted outside of the air handling unit.
- Mount in an area with a temperature less than 50˚C and 90% RH.
- Mount on a flat, clean surface within the range of the cable.
- Use two or three screws to mount the controller by using the keyholes in the back of the controller.
- Connect the sensor to the output port of the controller using the supplied cable
- Connect power to the controller

Note: Using any cable other than the supplied cable may ruin the unit and will void warranty

Screen 3

Tapping the "MODE" key once more will advance the unit to SCREEN #3. SCREEN #3 will scroll "Intensity xxxx" to indicate absolute UV measured intensity times 10, in µW/cm² where "xxxx" is the value of measured intensity in µW/cm² x 10.

For example:

SCREEN #3: "Intensity 1234" (the absolute measured intensity is 1234 x 10 – 12,340 µW/cm²).

Screen 4

Tapping the "MODE" key once more will advance the unit to SCREEN #4. SCREEN #4 will display "dxyz" to indicate the number of days elapsed since the baseline* reset where "d" signifies days and "xyz" is the measured value of days elapsed.

For example:

SCREEN #4: "d321" (the lamp has been used for 321 days since the baseline* reset).

Screen 5

Tapping the "MODE" key once more will advance the unit to SCREEN #5. SCREEN #5 will scroll "Hold To Reset". By holding down the "MODE" key for more than 3 seconds the radiometer will reset the lamp percentage's reading to 100% and days elapsed to 0.

**This is to reset the baseline of all measurements with the exception of the absolute intensity measurement (SCREEN #3).*

For example:

SCREEN #5: "Hold To Reset".After the baseline is reset by holding down the "MODE" key for more than 3 seconds, the screen will display "done".

When the screen changes to "done", indicating that the baseline was reset SCREEN #2 (percentage) will show 100 (%) and SCREEN #4 (days) will show 0 (days).

Screen 6

Tapping the "MODE" key once more will advance the unit to SCREEN #6. SCREEN #6 will scroll either "beeper enabled" or "beeper disabled" depending on the last saved state of the alarm buzzer. To change between states, hold down the "MODE" button while in this screen for more than 3 seconds.

"Beeper enabled":
When the beeper is enabled the radiometer will beep when the "MODE" key is pressed and also when the measured lamp percentage is lower than YYY%, where "YYY%" equals a factory programmed threshold.

"Beeper disabled":
When the beeper is disabled the unit will not beep during alarms, but will continue to beep on key presses.

For example:

SCREEN #6: "beeper enabled" or "beeper disabled"

The state of the beeper (enabled/disabled) is saved in non-volatile memory and will not be affected by a loss of power.

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Error Screens

The following scrolling screens will indicate abnormal operations of the radiometer. The radiometer will revert to normal operation once the problem is corrected:

1- "Connect Sensor" – a proper sensor is not attached to the radiometer.
To correct this error check that the sensor is properly plugged into the unit.

2- "Sensor Saturated" – the sensor detects UV intensity greater than 21,300 $\mu W/cm^2$. To correct this error move the sensor to a more suitable distance from the UV source being measured.

Factory Programmable Thresholds

Thresholds are expressed by measured lamp percentage.

- aa%: Green LED threshold
- bb%: Yellow LED threshold
- cc%: Blinking RED LED threshold
- YYY%: Buzzer threshold

LED color indication:

- Green: > aa% of the UV irradiance
- Yellow: aa - 1% to bb% of the UV irradiance
- Red: < bb% of the UV irradiance
- Blinking RED : < cc%

Defaul thresholds:

LED color indication:

- Green: 75% - 100% UV Intensity
- Yellow: 60% - 74% UV Intensity
- Red: 40% - 59% UV Intensity
- Alarm: 0% - 39% UV Intensity