OmniCure®
UV Curing • In Control

Custom UV Curing Solutions

Fully Automated S2000 Calibration Using R2000 Radiometer

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Application Overview

In the UV curing process, it is important to maintain optical output stability in order to ensure that adhesive bond strength is adequate and repeatable. Optical degradation naturally occurs as lamps age and without a calibrated optical regulation system, parts can fail due to compromised bond joints.

The Optimal accuracy of the OmniCure® S2000 light source is attained when it is used in a calibrated mode which allows irradiance exposure settings to be programmed with an accuracy better than +/-3%.

Placing the S2000 in calibrated mode requires the use of our OmniCure R2000 which is typically coupled to the S2000 with a light guide. A serial communications cable is connected between the R2000 and the S2000. The R2000 is powered on and the CAL button on the R2000 is depressed. A 10 point calibration process commences with the R2000 transmitting optical measurement information to the S2000 at each step.

The process is complete when all of the optical measurements have been received and deemed acceptable; the S2000 is now calibrated and ready to be programmed using actual irradiance values rather than relative (%) numbers.

The Challenge

The S2000 calibration process is a manual process requiring user initiated key presses. The R2000 can also be serially commanded to wake up from SLEEP mode followed by the controlling PC issuing a start calibration command (DoCal). This, however becomes impractical as the serial port on the R2000 used for PC communications is the same serial port used to communicate with the S2000.

In an automated production line, it is quite difficult to calibrate a S2000 as the production line has to be temporarily halted. In an unmanned production line, this becomes further impractical without adding significant time and cost.

The Solution

A fully-automated calibration process requires a 3-fold approach:

1. A light guide with a feedback leg is an ideal optical sampling method. A feedback leg requires the addition of one sampling leg with the additional leg permanently installed into the R2000.

2. A custom serial interface adapter to allow the R2000 to have bi- directional communications with the R2000 and "receive only" communications with a connected PC. The same R2000 serial port can then receive commands from a PC to wake up and initiate a calibration cycle.

3. Custom firmware for the R2000 that redirects PC serial command responses from the legacy IrDA port to the physical serial port.

For more information on this custom application, please contact:
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