

Spectral Products

Spectrometers · Spectrophotometers · Color Instruments · Spectrographs · Monochromators

111 Highland Drive · Putnam, CT · 06260 · USA
PHONE (860) 928-5834 · FAX (860) 928-2676
<http://www.spectralproducts.com>

Technical Note

Dark Correction

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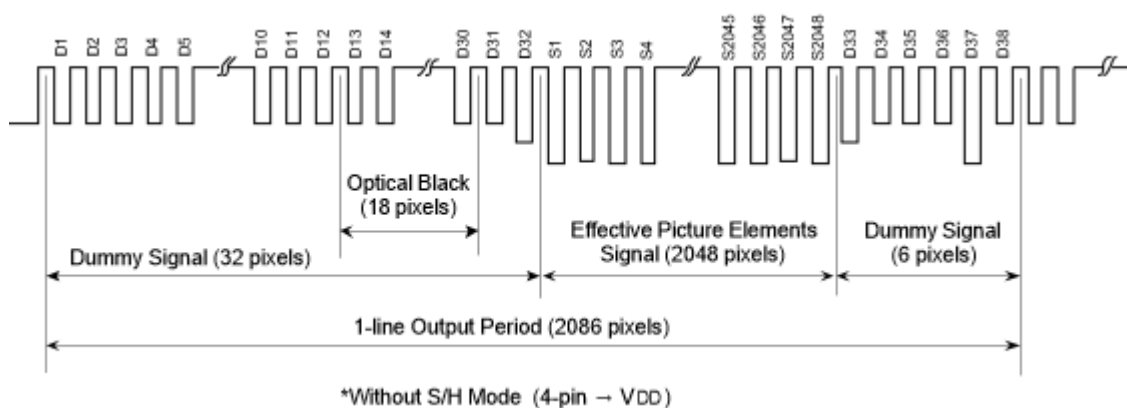
Description

The spectrometer has a background signal even when there is no light, and it is called the dark spectrum. The dark spectrum is changed by the dark current and the dark current is sensitive to temperature changes and affects the dark signal, so it is necessary to calibrate the dark spectrum for accurate measurement. In addition to this, the Dark measurement is also used to remove the stray light around the measurement object. The dark measurement of the SM Series spectrometer provides options for each spectrometer, and the user can select and customize it. Depending on the option, it can be used in the automatic (Auto Dark) or manual (Mechanic Shutter) method. Auto Dark automatically outputs the result of the dark correction when measuring data, and when manually measuring, it captures and corrects the dark spectrum using the mechanical shutter.

Dark measurement options are available in three ways:

- **Optical Black (Auto Dark)**

The compact spectrometer acquires spectral data using an array detector (CCD or CMOS). The detector is divided into an effective pixel for receiving the actual spectral light and outputting data, and a dummy pixel area that plays a functional role. It acquires and corrects a dark signal using an optical black area that does not react to light among dummy pixels.



- **Light Shield Filter (Auto Dark)**

If there is no optical black in the dummy pixel of the detector, a filter is inserted in the effective pixel area so that it cannot artificially react to light, and this area is

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corrected by using it as an optical black. In the actual spectral spectral data, data in this region acquires data that is not light responsive.

- **Mechanical Shutter (Manual Dark)**

A dark spectrum is obtained by physically blocking light by mounting a motorized mechanical shutter on the entrance slit. Therefore, the user must perform the dark measurement directly and the dark signal changes over time, so the dark spectrum must be obtained and corrected at regular intervals.

Dark Correction option by spectrometer model

Model Options	Optical Black	Light shield filter	Mechanical Shutter
SM303	X	O	O
SM304	X	X	O
SM642	X	O	O
SM440/SM445	O	O	X
SM240/SM245	O	X	X