

Data sheet

Ultraviolet Flame Sensor UV

Application



Danfoss UV sensors are used to detect the flame in blue flame oil burners. They are intended for use together with Danfoss controls in the OBC 80 and BHO 70 series.

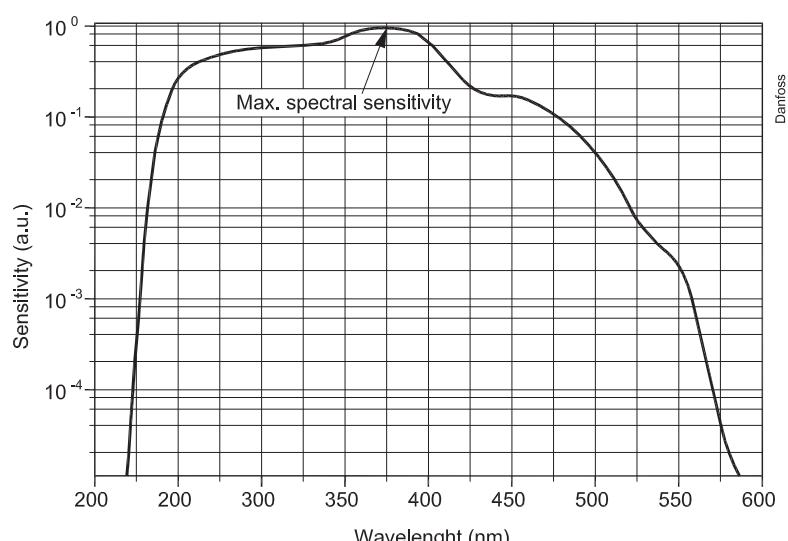
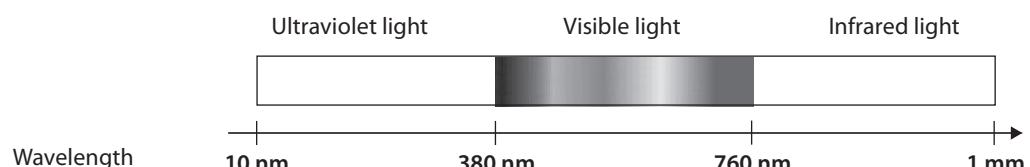
The UV sensors meet the requirements of the EN230:2005 standard and also meets the requirements of the RoHS and WEEE Directives.

Function

Light rays are sent at different wavelengths. The light that the human eye can see lies in the range of 380 to 760 nm and is called visible light. In the blue flame oil burner the flame's visible light is very dim and therefore cannot be detected by the LD/LDS sensor series, which is built on the photoresistance principle. In the case of UV sensors, the flame's ultraviolet light is used instead, which is detected by a UV diode. In the sensors, the sensor signal is converted by an amplifier circuit into a signal that the control can use.

To ensure unambiguous detection of the ultraviolet light, it is first transmitted through a lens that focusses the light rays onto the surface of the UV diode, and then through a filter that reduces the sensitivity to a desired wavelength range.

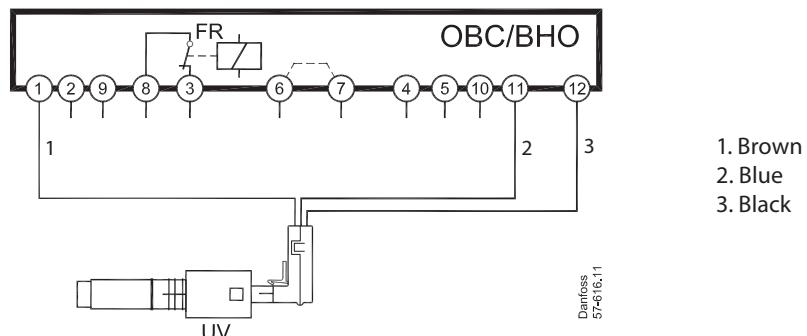
Danfoss UV sensors have max. sensitivity at 375 nm, which is apparent from the logarithmic diagram, where sensitivity at 375 nm is given to 100%.



Electrical connection

The UV sensors are connected to Danfoss controls in the OBC 80 and BHO 70 series as shown in the diagram.

Note that the blue wire must be connected to terminal 11 and not to the common 0 on terminal 2 or the appertaining auxiliary terminals in the base section.


Mounting

The UV sensors are designed to be very directional to limit the influence of other light sources, primarily the ignition spark that emits UV light. The sensors must be installed so that they are not affected by light from the ignition spark and, at the same time, so that the best possible input from the flame is achieved. It is very important that the mounting flange or piping used has the UV sensor fixed in the correct position.

The UV sensors' sensitivity is shown as a function of the angle deviation in Fig. 1 and 2.

If a sufficient signal is not achieved, we recommend selecting a UV sensor of higher sensitivity. To determine the quality of the signal, use the measurement setup below. If there is no flame/darkness, the value should be $\leq 5 \mu\text{A}$ and when there is a flame/light it should be $\geq 65 \mu\text{A}$.

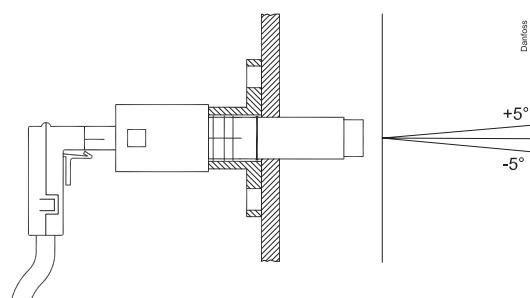


Fig. 1

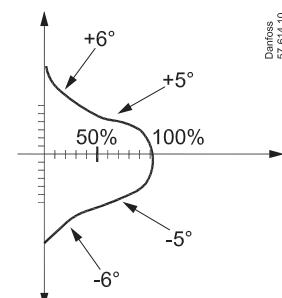


Fig. 2

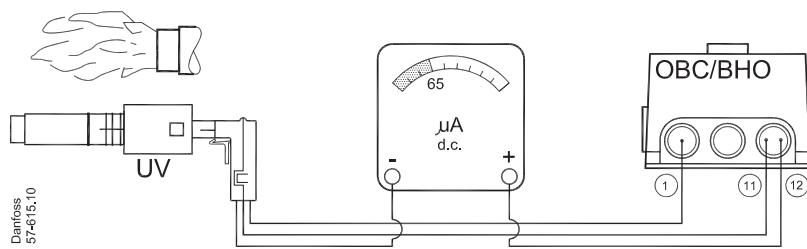


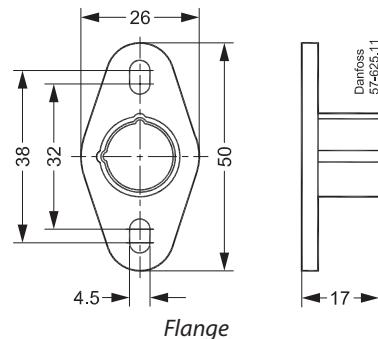
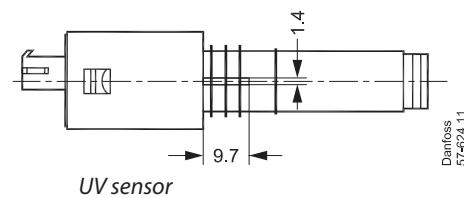
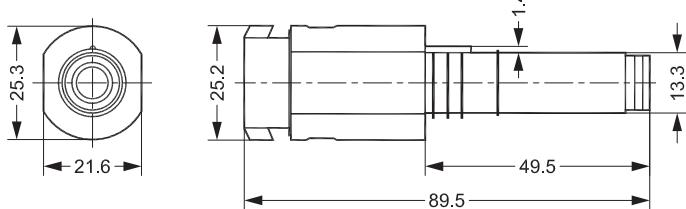
Fig. 3

Technical Data

Mains connection	230 V, 50/60 Hz, 0.3 VA	
Enclosure	IP 40	
Signal output	max. 100 μ A	
Recommended min. signal output	65 μ A	
Signal for no light	max. 5 μ A	
Ambient temperature	Operation	-20 - +70 °C, short time operation up to 75 °C
	Transport	-30 - +70 °C
Weight	23 g	
Wiring OBC 80/ BHO 70 series	Brown wire, 230 V mains	terminal 1
	Blue wire, neutral	terminal 11
	Black wire, signal	terminal 12

Ordering

Product	Code no.
UV1 – Normal sensitivity	057H7051
Flange	057H7061
300 mm cable	057H1040
400 mm cable	057H1041
500 mm cable	057H1042

Dimensions


Additional documentation on burner components is available on <http://heating.danfoss.com/>

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