

Hydrogen flame detection

SiC based UV photodiodes and UV sensors compliant with EN298



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INTRODUCTION



The detection of a gas burner flame can be done by means of electrical or optical methods. A simple and reliable electrical approach is the detection of the flame while measuring ionisation effects inside the burner chamber generated by the chemical reaction of hydrocarbon gas (e.g. petroleum gas) and oxygen. However, with increasing addition of hydrogen to the hydrocarbon gas this ionisation effect gets weaker and the sensor's signal comes too close to the noise limit. Accordingly ionisation sensors unsuited to detect hydrogen flames. Optical methods for flame detection can be applied. Measuring of the ultraviolet part of a flame is a state of the art approach which is regulated by various standards, e.g. EN289. Any flame, either a petroleum gas flame or a hydrogen flame emits UV radiation with one peak at approx. 310nm. Thus, the presence of UV radiation is a definite indication of the presence of a flame.

SGLUX PRODUCTS FOR FLAME DETECTION

Since 2003 we supply the combustion control market with SiC based UV detectors. The benefit of this detector chip is that no additional filter is needed to meet the EN298 visible blindness requirement. Below listed are our standard products for flame detection. Please contact us for customized solutions.



SG01D-5LENS

The SG01D-5LENS is a photodiode with 0.5mm² active area and a concentrator lens creating a virtual active area of 27.5 mm². This photodiode requires an external signal transducer, e.g. a transimpedance amplifier.



TOCON_ABC1 and TOCON_ABC2

UV sensor with concentrator lens and integrated signal transducer (0...5 V output). The TOCON_ABC2 is less sensitive than the TOCON_ABC1 and is used if the sensor directly looks at a flame. The 10 times more sensitive TOCON_ABC1 is used when the sensor does not directly look at the flame, e.g. if the sensor is placed behind a bulkhead. Both sensors are also available with log amplifiers.



SG01F-5ISO90

UV photodiode with a 1.82 mm² active area chip. 1 μW/cm² results in a photocurrent of approx. 2.4nA. This photodiode needs an external signal transducer, e.g. a transimpedance amplifier and an external concentrator lens. The product is usually used for industrial burners. Household burners work with the SG01D-5LENS or one of the above presented TOCONs.

