

## Flame rod for pilot light detection Model GFR-3



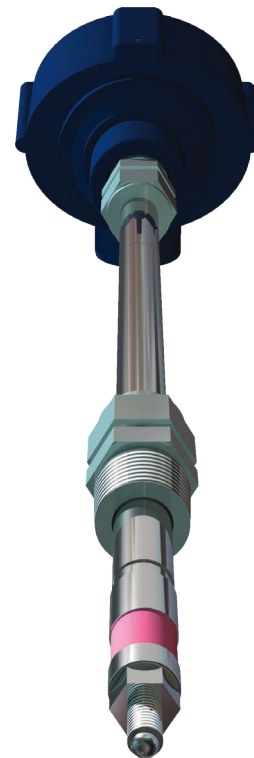
WIKA data sheet SP 05.17

### Applications

- Crude furnaces
- Fluid catalytic cracking furnaces
- Hydrotreater furnaces
- Hydrocracking furnaces

### Special features

- Designed for the rigors of higher preheat furnaces (482 °C / 900 °F)
- Significantly more robust design and materials for higher reliability
- Improved tip design to facilitate easier Kanthal tip replacement
- Simple maintenance



Flame rod, model GFR-3

### Description

The model GFR-3 is the newest generation flame rod for pilot light detection. It detects the actual flame present at the pilot. This allows the operator to be sure the pilot is lit before charging fuel to the burner. Flame rods are designed to simplify pilot light detection systems by creating a one piece instrument that allows for relatively easy access in changing the Kanthal tip. The GFR-3 is designed in response to ever more demanding furnace service requirements of our customers.

This design allows for discrete pilot flame indication and eliminates the non-discrete indication of optical scanners. It is suitable for pilots designed by Callidus, John Zink, and Zeeco and is the standard for major refineries as part of safe furnace operation programs.

## Design principle

The flame rod is positioned such that the high-temperature sensing rod would be in contact with the pilot flame. The flame creates an ionized "path" between the centre electrode/rod and the electrical ground. The excitation voltage induces a current flow across this "path". This current is a stable and measurable signal which can then be used in the appropriate control scheme.

## Instrument requirements

The electrical instrument requirements consist of an excitation voltage (AC 80 ... 240 V, single phase) applied across the two flexible extension leads and current sensing ability. In addition, relays and time delay capabilities are used to control the sequence between pilot and burner.

## Construction

The flame rod consists of a center electrode and an outer metallic sheath. The electrode is isolated from the outer sheath by an insulating material. The end of the flame rod, in the flame path, has a special high-temperature hermetic seal with a threaded adapter which is connected to the centre electrode.

A Kanthal tip is attached to the threaded adapter.

The opposite end of the flame rod, outside the furnace/boiler, has flexible extension leads which connect to the centre electrode and the outer sheath.

# Ordering information

Order code: **GFR - 3 -** [ ] **- C**  
                  "L"-Dimension

"L"-Dimension is from the "etch" mark to the bottom of the insulator cap assembly. This is 359 mm (14 1/8") short of the full length of the assembly minus the hex adapter and Kanthal tip.

