

SYSTEM 3000 / 4000

FLAME SCANNER

4.1

TECHNICAL DESCRIPTION

EDITION: TB 4.1-SZ1

Flame Scanner

4.1

- **Selective Monitoring of Oil and Coal flame firings**
- **TÜV and DIN-DVGW approved**
- **Fail-Safe, Self-Monitoring**
- **Fully Electronic Design**
- **UV-VIS-IR Integral Procedure**
- **Type of Protection IP 65**
- **approved in acc. to DIN-DVGW and DIN- CERTCO**

Application

In connection with a flame amplifier of the **3000** or **4000** line, the flame scanner **4.1** forms a complete flame monitoring system and meets the safety requirements for steam generators acc. to TRD.

The flame monitoring system **3000/4000** is tested and approved acc. to EN 230 and EN 298.

The main application for this fully electronic flame scanner is the selective flame detection at coal flame firings. An automatic amplification adjustment with adaption to the dust-typical flame modulation under low-NO_x conditions, is the

basic requirement for the use of high volatile and heavy-ballast hard and brown coal. The oil ignition flame is controlled simultaneously, thus increasing the availability during the critical transition phases which in general occur during start-up and shut-down of mills. By choosing the optical size of the flame monitoring field by means of a 3-step aperture, a reliable monitoring is achieved, also at boxer and tangential firings, and even if the sight tube is not in the optimal position.

Function

The flame scanner **4.1** utilizes the well approved integral procedure of the flame radiation analysis. The radiation sensed by a photo element is immediately processed by a control circuit (AGC) optimizing the operating point of the flame scanner in slave-operation with the fuel radiation.

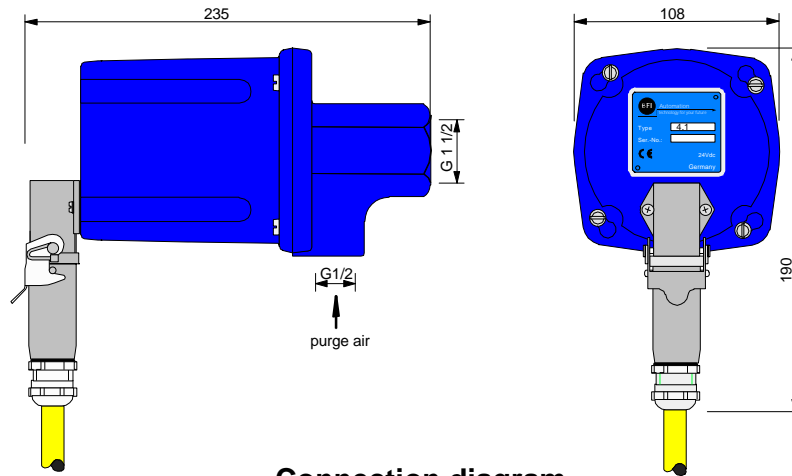
Then a precise suppression of the flicker frequencies smaller 40Hz, achieves the suppression of background radiation caused by adjacent burners or combustion chambers.

An additional automatic frequency control (AFC) avoids unsteady signals, caused by either changing dust quality or by changing ignition zone on the burner load range.

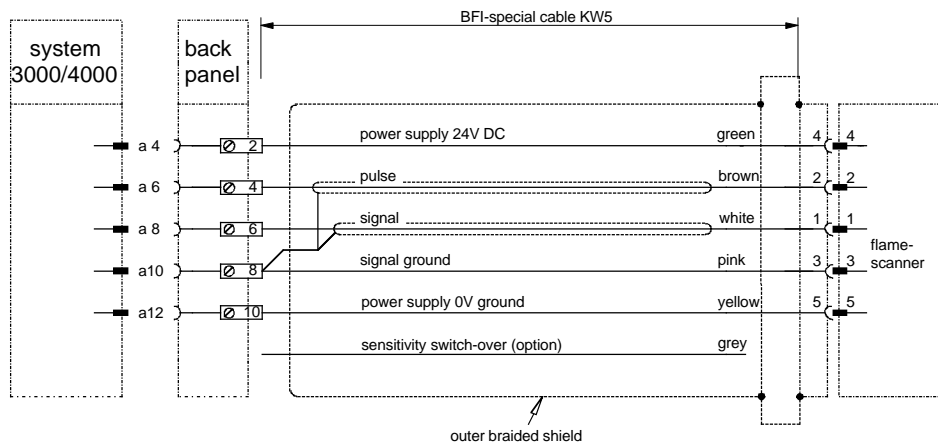
The further possibilities to choose 3 different flame modulation characteristics, and the size de-

termination of the sight field, permits the application of this flame scanner in all combustion chamber geometries and burner constructions. The following functional groups serve for the signal processing of the flame evaluation and conversion into standardized digital signals transmitted to the flame monitoring unit. This fully electronic flame scanner has no moveable mechanical parts. The photo element is non-ageing, thus achieving that the sensitivity of the monitoring equipment remains unaffected even after years of service, maintenance is not necessary. This means that the user has a significantly enhanced usage of the entire firing equipment.

Dimensions



Connection diagram



Technical Data

Self-monitoring for the fail-safe function control accordance to EN 230, EN 298. Conforms to the requirement of DIN VDE 0116 and TRD 411 to 414, approved accordance to DIN-DVGW and DIN CERTCO.
 Variable 3-step sight field, automatic sensitivity control (AGC), automatic frequency control (AFC) 3 selectable modulation filter.

Spectral sensitivity 300 to 1050 nm
 Viewing angle 1°, 2° or 3°
 Self-monitoring fully electronic, 1* per second

Operating voltage 24 V DC, inner electrical isolation
 Current consumption max. 100mA
 Operating temperature range -20 to +70°C
 Electric connection dust-proof plug connector
 Protection IP 65
 Length of cable max. 1000m (KW 5)

Sight tube connection 1" internal thread ISO 228
 Purging air connection 1/2" internal thread. ISO 228
 Purging air quantity 10 Nm³/h
 or
 Purging air pressure 0,02 bar above combustion chamber inner pressure
 Weight approximate 1kg
 Part no S 508.0

This flame scanner is also available in an Ex-casing or in LWL – technique.

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