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Technical specification for flame detector system of boiler

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TECHNICAL SPECIFICATION FOR FLAME DETECTOR SYSTEM OF BOILER

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The text of this PAS is based on the following document:	This PAS was approved for publication by the P-members of the committee concerned as indicated in the following document
Draft PAS	**Report on voting**
65B/1175/DPAS	65B/1180/RVDPAS

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INTRODUCTION

The flame detector is the key testing equipment for the boiler furnace safety protection and burner interlock control. In the whole combustion process of the boiler (especially in the variable operating condition), it detects the change of the combustion condition, and the corresponding control measures are taken through the connected terminal devices; so its reliability is related to the safety of the combustion system and the quality of the terminal products. Due to the difference in combustion conditions in the furnace, the reliability of the flame detector itself and the quality of the installation and maintenance, many problems are exposed during the operation, such as peeping of fire detection signals, missed detection, instability, false alarm information, fiber overheating loss, etc. All of these will bring safety hazards to the industrial production.

The purpose of this PAS is to develop comprehensive technical specifications for the functions and performance of industrial boiler flame detectors, as well as the technical requirements related to design, manufacture, installation, testing, operation, maintenance, etc., so as to provide the technical basis for flame detector system users.

TECHNICAL SPECIFICATION FOR FLAME DETECTOR SYSTEM OF BOILER

1 Scope

This PAS deals with the general requirements, classification and technical requirements, installation and commissioning requirements, inspection and maintenance requirements, test methods and requirements of radiant energy sensing flame detectors (including IR, UV, visible light, and imaging-based flame detectors).

This PAS is applicable to the type selection, design, installation, commissioning, inspection, maintenance and acceptance of the radiant energy sensing flame detectors, which monitor the flame status of burners.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 60034-30-1, *Rotating electrical machines – Part 30-1: Efficiency classes of line operated AC motors (IE code)*

IEC 60068-2-1, *Environmental testing – Part 2-1: Tests – Test A: Cold*

IEC 60068-2-2, *Environmental testing – Part 2-2: Tests – Test B: Dry heat*

IEC 60068-2-6, *Environmental testing – Part 2-6: Tests – Test Fc: Vibration (sinusoidal)*

IEC 60068-2-27, *Environmental testing – Part 2-27: Tests – Test Ea and guidance: Shock*

IEC 60068-2-78, *Environmental testing – Part 2-78: Tests – Test Cab: Damp heat, steady state*

IEC 60079-0, *Explosive atmospheres – Part 0: Equipment – General requirements*

IEC 60079-1, *Explosive atmospheres – Part 1: Equipment protection by flameproof enclosures "d"*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 61010-1, *Safety requirements for electrical equipment for measurement, control, and laboratory use – Part 1: General requirements*

IEC 61326-1, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements*

IEC 61326-2-5, *Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 2-5: Particular requirements – Test configurations, operational conditions and performance criteria for field devices with field bus interfaces according to IEC 61784-1*

NFPA 85, *Boiler and Combustion Systems Hazards Code*

ANSI/TIA/EIA-232-F, *Interface between Data Terminal Equipment and Data Circuit-Terminating Equipment Employing Serial Binary Data Interchange*

ANSI/TIA/EIA-422-B, *Electrical Characteristics of Balance Voltage Digital Interface Circuits*

ANSI/TIA/EIA-644-A, *Electrical Characteristics of Low Voltage Differential Signaling (LVDS) Interface Circuits*