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on the examination of an independent flame detector device
according to DIN EN 298 and DIN EN 13611, Annex J

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Test Laboratory TÜV SÜD Industrie Service GmbH
Abteilung Feuerungs- und Wärmetechnik
Prüfbereich Sicherheits-, Kontroll-
und Regeleinrichtungen

Page 1

Product description Flame detector device

Subject of Test Type **Phoenix**
Models 85...

Ordering Company Fireye Inc.
Derry, NH 03038, USA

The document consists of
2 pages

Basis of Test DIN EN 230:2005-10;
DIN EN 298:2004-01 +Ber. 1:2006-09;
DIN EN 13611:2011-12, Annex J, **SIL 3**
DIN EN 50156-1:2005-03


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Test Report no. C-F 1171-11/13 dated 2013-12-19

The test results refer exclusively
to the units under test.

The results in detail, the evaluation of the results and the conclusions out of
the results are described in the above mentioned test report. Excerpts from
this test report and from the test documentation are printed on the reverse.

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Product description	Flame detector device
Type designation	Phoenix
Software version	V3.1

The flame detector device is suitable for flame detection of burners and combustion systems for gaseous, liquid or solid fuels with permanent operation.

The independent flame detector device fulfils the requirements of DIN EN 230:2005-10 and of DIN EN 298:2004-01 +Ber. 1:2006-09.

The independent flame detector device also fulfils the applicable technical requirements of DIN EN 13611: 2011-12, Annex J, for safety functions up to safety integrity level **SIL 3**.

The following safety parameters have been determined under the assumption of a Diagnostic Test Interval $T_2 = 24$ hours, and of a Proof Test Interval $T_1 = 1$ year:

Probability of a dangerous failure (high demand / continuous mode)	PFH _D	$17,8 \cdot 10^{-9} 1/h$
Safe failure fraction	SFF	98,5 %

The flame detector device is suitable to be used as single device for safety instrumented functions up to safety integrity level SIL 3.

The flame detector device also fulfils the requirements of DIN EN 50156-1: 2005-03, clause 10.5, for shut-down of the entire fuel supply of furnaces and combustion systems with permanent operation up to safety integrity level SIL 3.

In addition to test report no. C-F 1171-09/12 dated 2012-10-08 the following condition shall be considered:

- In order to achieve safety integrity level SIL 3 an annual proof test shall be performed according to the installation and operation manual (bulletin CU-114).