



Table of Contents

1	General Information	3
1.1	Purpose	3
1.2	Standards, Directives and Approvals	4
1.3	Classification of the Safety Instructions and Warnings	5
1.4	Terms and Definitions	6
2	General Safety Instructions	7
2.1	Intended Use	7
2.2	Safety Functions	7
2.3	Safe State	7
2.4	Scope of Application	7
2.5	Additional Components	8
2.6	Safety Values	8
2.7	Life Cycle	10
3	Installation and Commissioning	11
3.1	Verification	12
4	Operation	13
4.1	Proof Test	13
4.2	Proof Test Calculation and PTC	13
4.3	Proof Test Execution	14
5	Repair and Maintenance	15
6	Decommission and Dismount	16
7	Appendix	17
7.1	TÜV Confirmation	17
7.2	Hints and requirements for installation, commissioning, operation and verification	19
8	EU Declaration of Conformity	20

1 General Information

1.1 Purpose

The Safety Manual contains information for a device (E/E/PE-System) from the manufacture LAMTEC in the scope of functional safety. It provides the necessary information and data for all stages of the safety lifecycle according to IEC 61508:2010 (or DIN EN 61508:2011) and related standards. It helps the user to plan, operate, maintain and dismount the device in safety related appliances.

All given information is addressed to skilled and educated personnel, responsible for the planning, assembly, commissioning, operation, maintenance and dismount of the device. The plant operator is responsible for the correct execution of these operations.

NOTICE

The Safety Manual does not replace the operating and installation manuals of this device. It contains necessary information focussed on the usage of the device in safety functions. For additional manuals check the according product website at www.lamtec.de.

The Safety Manual applies to the following independent flames scanners:

- F200K Compact Flame Scanner

In single-burner and multiple-burner furnaces, the flame detector performs a safety monitoring of the burner flame.

The flame detector is mainly used in large-scale power plants, thermal power stations and chemical plants as well as for monitoring furnaces which are operated from.

- Oil
- Gas
- Bio-mass
- Dust coal
- Chemicals and other waste products

1 General Information

The Safety Manual is valid from device version **HW 2.0, 2.1, 2.2** for the following models:

F200Ka	bb-b	c	d	e	ff	
						50Hz: line frequency rejection 50Hz
						60Hz: line frequency rejection 60Hz
						-----: without line frequency rejection
						[empty]:
						V: for mounting holder 1 ½"
						FO: for fiber optic, not available for (d) = Ex (Zone)1
						[empty]: for use outside hazardous areas
						Ex: for use inside hazardous areas, Zone 1
						Ex-II: for use inside hazardous areas, Zone 2
						[empty]:
						F: with additional gain shift of low flicker frequencies
						H: with additional gain shift of low flicker frequencies
						UV-1: UV, spectral range 260...400 nm, normal sensitivity
						UV-2: UV, spectral range 210...380 nm, high sensitivity
						UV-3: UV, spectral range 210...380 nm, low sensitivity
						UV-6: UV, spectral range 215...360 nm, very high sensitivity
						IR-1: Infrared, spectral range 1200...2800 nm
						IR-2: Infrared, spectral range 850...1200 nm
						K1: 1 sensitivity range
						K2: 2 sensitivity ranges; high pass cut-off frequency selectable

NOTICE

Because of different sensor materials, there are different ambient temperature ranges of the models defined. The standard operating temperature range is -40 °C to +75 °C. See chapter Appendix 7.2 *Hints and requirements for installation, commissioning, operation and verification* defines, which models are divergent.



WARNING!

Neglecting the temperature range as defined in Appendix see chapter 7.2 *Hints and requirements for installation, commissioning, operation and verification* leads to a loss of the safety integrity and may cause personnel and material damage.

1.2 Standards, Directives and Approvals

The basis of test for this device are the following standards and directives:

- DIN EN 298: 2012-11
- DIN EN 13611: 2011-12
- DIN EN 60730-2-5: 2015-10
- DIN EN 60730-1: 2012-10

Technical requirements of DIN EN 61508-2:2011-02

- 2014/35/EU Low Voltage Directive (LVD)
- 2014/30/EU Electromagnetic Compatibility (EMC) Directive
- 2014/68/EU Pressure Equipment Directive Cat.4 Mod. B+D
- EU/2016/426 Gas Appliance Directive

1 General Information

1.3 Classification of the Safety Instructions and Warnings

The following symbols are used in this document to draw the user's attention to important safety information. They are located at points where the information is required. It is essential that the safety information is observed and followed, and that applies particularly to the warnings.



DANGER!

This draws the user's attention to imminent danger. If it is not avoided, it will result in death or very serious injury. The plant including its surroundings could be damaged.



WARNING!

This draws the user's attention to the possibility of imminent danger. If it is not avoided, it may result in death or very serious injury. The plant including its surroundings could be damaged.



CAUTION!

This draws the user's attention to the possibility of imminent danger. If it is not avoided, it may result in minor injuries. The plant including its surroundings could be damaged.

NOTICE

This draws the user's attention to important additional information about the system or system components and offers further tips.

The safety information described above is incorporated into the instructions.

Thus, the operator is requested to:

- 1 Comply with the accident prevention regulations whenever work is being carried out.
- 2 Do everything possible within his control to prevent personal injury and damage to property.

1 General Information

1.4 Terms and Definitions

For further explanations of terms and definitions see IEC 61508-4 (or DIN EN 61508-4).

DC	Diagnostic coverage
DC_{AVG}	Average diagnostic coverage
E/E/PE-System	Electrical/electronic/programmable electronic system
EUC	Equipment under control
FIT	Failure In Time in 10^{-9} 1/h
FMEDA	Failure Mode, Effects, and Diagnostics Analysis
λ_s	Probability of safe failure (detected and undetected)
λ_d	Probability of dangerous failure
λ_{dd}	Probability of dangerous detected failure
λ_{du}	Probability of dangerous undetected failure
$\lambda_{no\ effect}$	Probability of failures with no effect (not used in SFF calculation)
HFT	Hardware fault tolerance
MooN	M out of N channel architecture
MTBF	Mean time between failures
MTTR	Mean time to repair
MTTF	Mean time to failure
PFD	Probability of dangerous failure on demand (Low Demand mode)
PFD_{AVG}	Average probability of dangerous failure on demand
PFH	Average frequency of a dangerous failure per hour (Continuous mode)
PTC	Proof Test Coverage, proportion of detectable unsafe failures
SFF	Safe failure fraction
SIF	Safety instrumented function
SIS	Safety instrumented system
SIL	Safety integrity level
SIL AC	Safety integrity level architectural constraint
SC	Systematic Capability
T₁	Proof test interval
T₂	Diagnostic test interval
T₂ IBD	Interval between demands of the safety function

2 General Safety Instructions

2.1 Intended Use

The device is developed and approved for appropriate and intended use. If the device is used improperly, the protection of personnel and plant is not ensured.

The corresponding manuals or chapters for each particular stage of the product life cycle must be regarded in addition to this Safety Manual see chapter *1.1 Purpose*. Ignoring these instructions will void any warranty and absolve the manufacturer from any liability.

2.2 Safety Functions

The independent compact flame scanner F200K is suitable for flame detection of burners and combustion systems for gaseous, liquid or solid fuels with permanent operation.



WARNING!

The type approval lapses in the event of modifications to the unit. The unit's inputs and outputs must be wired according to the specifications in the instruction manual only.



DANGER!

The appendix Hints and requirements for installation, commissioning, operation and verification" must be considered properly.

2.3 Safe State

The safe state is achieved when the flame signal contact is opened (Flame OFF) and in a de-energized condition.

2.4 Scope of Application

The F200K flame scanner fulfil

- technical requirements according to **DIN EN 61508:2011**, part 2 for **SIL 3**
- the requirements to be used as single device for SIF according to **DIN EN 61511-1:2005-05** up to **SIL 3**.
- the requirements to be used as single device for safety related control functions (SRCF) according to **EN ISO 13849-1:2006** up to performance level **PL e** (CAT. 3) and
- the applicable requirements according to **DIN EN 746-2:2011-02** for flame detection in industrial thermo processing equipment.

2 General Safety Instructions

2.5 Additional Components

The safety parameters do not include external components such as burner controls or any other sensors and actors.

2.6 Safety Values

The safety values have been determined by the use of a FMEDA with the following basic conditions:

- Component failure rates based on Siemens standard SN 29500, DIN EN 13611: 2011-12 and B10d values of manufactures where no other values are available.
- Specific load parameters, quality factors and an ambient temperature of 60 °C have been used for the calculation.
- Failure models from DIN EN 13611 and additionally failure model drift have been used. Under special circumstances short circuits have not to be assumed.
- Estimation of common cause factors $\beta = 2\%$ $\beta_D = 1\%$.
- The "Proof test interval" T_1 is equivalent to the product mission or life time.
- The calculation of the safety probability values has been done with a lifetime of 10 years¹.
- For redundant structures a diagnostic test interval of $T_2 = 120s$ has been defined.
- For redundant subsystems ($HFT \geq 1$) the SFF is $> 90\%$, for subsystems without redundancy ($HFT=0$) the SFF is $> 99\%$
- The F200K is designed as one safety unit (PES). There is no separation within the F200K electronic between safety and non safety related components by architectural design.
- There is no difference between λ_s detected and undetected. All safe failures can be assumed as safe undetected (λ_{su}).

¹ See chapter 2.7 *Life Cycle* for more information.

2 General Safety Instructions

Device type	Type B (complex component)
Mode of operation	High demand or continuous mode ⁵
Safety function	De-energized flame contact (safety valves)
HFT ²	0
SIL (SC)	3
λ_s (λ_{su})	1,31E+03 FIT
λ_{dd}	6,32E+02 FIT
λ_{du}	6,43E+01 FIT
$\lambda_{no\ effect}$, $\lambda_{don't\ care}$	2,04E+03 FIT
SFF ³	96,4%
DC _{AVG}	90,7%
PFH	1,8E-09 1/h
PFD _{AVG}	7,2E-05
T1	10 years
T2	120 seconds
MTTF	28 years
MTTR ⁴	8 hours
MTBF	28 years

² According to DIN EN 61508:2011 HFT > 0 requires complete redundancy, including sensors, actors and power supplies. Nevertheless, a HFT=0 device may reach the safety integrity for the usage in SIL3 safety functions according to DIN EN 61508 or DIN EN 61511 (see 2.4 Scope of Application).

³ SFF is relevant for elements, subsystems or systems in a complete safety loop. This device is always part of a complete safety loop. A SIL calculation of a safety loop must be evaluated finally with the safe failure fraction of elements, subsystems and the complete system. Nevertheless, the SFF of the device is given in this document for reference.

⁴ The MTTR is assumed with 8h for the calculation of PFD/PFH (exchange of the device). In practise, the devices will be locked in the safe state until it is replaced.

⁵ An electronic safety device without wear which is certified for the usage in safety functions in high demand mode can be used in low demand functions as well. Therefore the diagnostic test intervall must be sufficient. For F200K this is given and the PDF_{AVG} can be used for further calculations.

2 General Safety Instructions

2.7 Life Cycle

The mission time or life time of the device is 10 years.

In accordance with the DIN EN 61508 the life time is 8 to 12 years under normal operating conditions, because electronic components are assumed to have a constant failure rate λ through this period. After that period the failure rates of the components will increase significantly with time (see "bathtub curve" for electronic components).

The life time of 10 years does not mean, that the device will become unsafe after this time immediately. The extensive diagnosis of safety related components remains still active. DIN EN 61508-2:2011 Note N3 gives the hint, that appropriate measures taken by the manufacturer and plant operator can extend the useful lifetime.

The burner control is designed for 250.000 switching cycles with nominal switch loads. For normal operation this is equal to 10 years of operation⁵. For industrial use with reduced loads and a lower ambient temperature more switching cycles are possible.

Nevertheless, when the device stays in operation after the end of the life time, LAMTEC does not guarantees the proper function and all calculated safety values become invalid.

⁵ Base on the switching cycles and the corresponding lifetime are EN 13611, DIN EN 298 and an overview from the European Control Manufacturers Association (Afecor, www.afecor.org)

3 Installation and Commissioning

For installing the device, check the instruction and installation manuals as well as valid norms, standards and directives for the application (see also chapter 1.2 *Standards, Directives and Approvals*).



WARNING!

Connect the device only to other components or devices which are suitable for this safety application.



WARNING!

The Appendix see chapter 7.2 *Hints and requirements for installation, commissioning, operation and verification* shall be considered properly. Check the installation requirements of IP40 or IP54 in the open air (EN 60529).



WARNING!

For the power supply of the flame detector and for potential separation of the flame detector contact use the FN20 power supply. Instead of FN20 a safety power supply must be used to generate the power supply of the flame detector (e.g. According to EN 61558-2-6 or EN 60950-1).



WARNING!

Use a floating contact which is fed by the flame detector's 24 V supply for the remote switching of the F200K2's range. Or use a SELV or PELV power supply according to EN 60730-1 or EN 60950-1 (i.e. a safety power supply).



WARNING!

The current loop for remote indication of the flame intensity must be connected to devices which have a safe isolation of the measuring circuit to dangerous active parts in accordance with EN 61140 (e.g. by double or reinforced isolation in accordance with EN 61010-1). This can be, for example, passive instruments or isolating transformers with galvanic 3-way isolation.



WARNING!

Models F200K...IR... without line frequency rejection shall be mounted such that they can only be removed from the mounting fixture by use of a special tool.

NOTICE

The cables are designed for a special temperature range. Do not open the devices in temperatures below -20 °C.

For the commissioning of the F200K please refer to the manual (Chapter 7).

3 Installation and Commissioning

3.1 Verification

Check the safety functions to ensure the expected operation of the device before using it in a safety related environment.



DANGER!

Appendix "7.2 B: Conditions" shall be taken into account in an appropriate way.

NOTICE

Checking the Flame Shut-down on Fault:

Simulate a flame rupture or flame extinction by shunting off the fuel supply to the burner to be monitored by the flame detector. Check that the signal for shutting-off the safety valve is triggered off within the period of $TS < 1 \text{ s}$ (on safety period 'Operation' at $tVOff = 1 \text{ s}$) after extinction of the flame.

'Red' LED lights

'Green' LED dark

For the IR compact flame detectors of the F200K1(2) IR-1 and/or F200K1(2) IR-2 types, take into account the radiation effects characteristic of the combustion chamber. Consequently, switch-off tests should be carried out when the boiler has reached operating temperature. In particular, make sure that the sensitivity of the compact flame detector is increased only to such a value required to safely and reliably monitor the flame throughout the operating range of the burner.

4 Operation

During operation the device must not be deactivated or bypassed. The operator must be familiar with the displayed information of the device and the measures to be executed in the moment of any signalized disturbance. The information in the instruction manual must be regarded.

Only suitable elements and devices must be connected, also for the commission of the device (see chapter 2.5 *Additional Components*).


WARNING!

Failures must be reported to LAMTEC as soon as possible.


DANGER!

Danger to life and material: Do not put the safety loop out of service

4.1 Proof Test

The "Proof Test Interval" T_1 is equivalent to the product's mission or life time. There are no components or elements used that can be set into an "as new condition" by a proof test of the device.

Nevertheless, a proof test can ensure proper operation and decrease the average probability of dangerous failure on demand (PFD_{AVG}) during the defined mission time.

According to DIN EN 61508:2011-6, the PFD_{AVG} can be calculated by the use of a proof test coverage (PTC, proportion of detectable unsafe failures through a proof test), a proof test interval (T_1) and a request interval of the safety function ($T_{2\ IBD}$).

4.2 Proof Test Calculation and PTC

The PFD_{AVG} can be calculated with the formulas of the DIN EN 61508-6:2011, B.3.2.5. Exemplarily the calculation is done with a request interval ($T_{2\ IBD}$) of 1,2,3,4,5 and 10 years and a proof test interval (T_1) of 1 year.

The F200K the following PTCs are calculated:

- PTC = 70% for a basic proof test (see chapter 4.3) of the device
- PTC = 98% for a advanced proof test of the device by LAMTEC
- PTC = 100% exchange with a new device

T1= 1 year T2 IBD [a]	PTC 70% PFD _{AVG}	PTC 98% PFD _{AVG}	PTC 100% PFD _{AVG}
1	6,4E-06	6,4E-06	6,4E-06
2	8,7E-06	7,1E-06	6,4E-06
3	1,1E-05	7,7E-06	6,4E-06
4	1,3E-05	8,3E-06	6,4E-06
5	1,6E-05	9,0E-06	6,4E-06
10	2,8E-05	1,2E-05	6,4E-06

4 Operation

4.3 Proof Test Execution

To execute a proof test, the following test equipment is needed:

- Continuity tester with test current $\leq 50\text{mA}$
- LAMTEC proof spotlight FFP30 (659M5000) or any suitable flame simulation
- LAMTEC operation manual F200K DLT7620

For the proof test of the F200K, the flame states ON and OFF must be stimulated. During the test, the F200K is connected to the operating voltage.



WARNING!

The proof test is done with a continuity tester at the connecting cables of the flame relay. To protect the environment and to guarantee the correctness of the test, the cables of the flame relay (BN, GN, WH) must be disconnected before starting the test sequence.



DANGER!

If the cables of the flame relay (BN, GN, WH) are not disconnected completely, dangerous voltages can be applied at the cable contacts.

To execute a basic proof test with a PTC of 70% for the F200K series, the following test steps must be executed and approved.

- Disconnect cables BN, GN, WH (see operation manual DLT7620 chapter Circuit Diagrams).
- Simulate state flame OFF.
- LED OFF (red) lights up (see operation manual DLT7620 chapter Appendix 'Layout of the Operational Controls').
- The flame relay opening contacts must be closed (cables BN and WH connected).
- The flame relay closing contacts must be open (cables BN and GN disconnected).
- Simulate state flame ON.
- LED ON (green) lights up and pulses (see operation manual DLT7620 chapter Appendix Layout of the Operational Controls).
- The flame relay opening contacts must be opened (cables BN and WH disconnected).
- The flame relay closing contacts must be closed (cables BN and GN connected).
- Connect cables BN, GN, WH and check the proper operation of the device in the application.

5 Repair and Maintenance



WARNING!

The device must not be repaired, modified or manipulated. Otherwise the safety integrity can be lost and LAMTEC will not guarantee for the proper operation any more.

NOTICE

Defects and failures must be reported to LAMTEC as soon as possible, including type, version and serial number of the device.

In case of a repair or maintenance, comply with instructions from the installation manual. Defective devices must be sent to LAMTEC for a repair. The safe operation of the application must be ensured while the device is being repaired or a maintenance is ongoing. After a repair or a maintenance, follow chapter 3 *Installation and Commissioning* again.



WARNING!

Replace the device only by one of the same type and version and check the corresponding data and parameter set.



DANGER!

The flame detector is a safety device. Any repair work or other changes to the device shall only be carried out by the manufacturer's specialist staff or by some other persons appointed by the manufacturer. Any other persons are not allowed to operate on parts inside the device. In particular, this concerns the unauthorized exchange of the flame contact fuse. Any unauthorized replacement, repair or modification of the device can lead to a loss of the safety integrity.

6 Decommission and Dismount

To put the device out of service, comply with instructions from the installation manual and ensure the safe operation of the application after that. The device should be replaced after the product's mission or life time (see chapter *2.7 Life Cycle*).

The device must be disposed properly. This device is designed for industrial usage and must be disposed accordingly.

7 Appendix

7.1 TÜV Confirmation

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CONFIRMATION

on the examination of an independent flame detector device according to DIN EN 298 and DIN EN 61508-2

Test Laboratory	TÜV SÜD Industrie Service GmbH Abteilung Feuerungs- und Wärmetechnik Prüfbereich Sicherheits-, Kontroll- und Regeleinrichtungen
Subject of Test	Independent flame detector device Type F200K
Ordering Company	LAMTEC Leipzig GmbH & Co. KG D-04425 Taucha
Basis of Test	DIN EN 61508-2:2011-02, DIN EN 298:2012-11
Test Report	No. C-F 1104-08/18 dated 2018-03-12

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.

Feuerungs- und Wärmetechnik

Johannes Steiglechner

Date: 2018-03-12

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Page 1

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page 2 / 2
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The independent flame detector device is suitable for flame detection of burners and combustion systems for gaseous, liquid or solid fuels (e.g. wood, coal dust, etc.) with permanent operation.

As a single device, the independent detector device also conforms to the applicable technical requirements of DIN EN 61508:2011-02 for safety functions up to safety integrity level **SIL 3**. The following safety parameters have been determined:

Probability of a dangerous failure per hour (high demand / continuous mode)	$PFH_0 = 1,8 \cdot 10^{-9} \text{ 1/h}$
Probability of a dangerous failure on demand (low demand mode)	$PFD_{avg} = 7,2 \cdot 10^{-5}$
Safe failure fraction	$SFF \geq 96,4 \%$
Average diagnostic coverage	$DC_{avg} \geq 90,7 \%$

These parameters have been calculated under the assumption of a Mean Time to Restoration MTTR= 8 hours, a Diagnostic Test Interval of $T_2 = 120$ seconds, and of a Proof Test Interval $T_1 = 10$ years, which is equivalent to the specified life time of the independent flame detector device.

The independent flame detector device is capable to be used as single device for safety instrumented functions (SIF) according to DIN EN 61511-1 up to safety integrity level **SIL 3**.

According to DIN EN ISO 13849-1:2016-06, table 3, the independent flame detector device is capable to be used as single device for safety related control functions (SRCF) up to performance level **PL e** (Cat. 3).

The independent flame detector device also fulfils the applicable requirements of DIN EN 746-2 for flame detection in industrial thermo processing equipment.

The conditions mentioned in test report no. C-F 1104-08/18 dated 2018-03-12 shall be considered during incorporation, adjustment, operation and maintenance.

Note

Depending on the Proof Test Interval T_1 and on the proof test coverage (PTC), the average probability of a dangerous failure can be furthermore reduced. Under the assumption of a Proof Test Interval $T_1 = 1$ year, a MTTR = 8 h and of a MRT = 8 h the **average probability of a dangerous failure on demand PFD_{AVG}** depending on the demand interval T_2 and the coverage of proof tests as described in the safety manual has been determined as follows:

Demand interval	Coverage of proof tests	
	PTC = 72 %	PTC = 98 %
$T_2 = 1 \text{ year}$	$PFD_{AVG} = 6,4 \cdot 10^{-6}$	$PFD_{AVG} = 6,4 \cdot 10^{-6}$
$T_2 = 2 \text{ years}$	$PFD_{AVG} = 8,7 \cdot 10^{-6}$	$PFD_{AVG} = 7,1 \cdot 10^{-6}$
$T_2 = 5 \text{ years}$	$PFD_{AVG} = 1,6 \cdot 10^{-5}$	$PFD_{AVG} = 9,0 \cdot 10^{-6}$
$T_2 = 10 \text{ years}$	$PFD_{AVG} = 2,8 \cdot 10^{-5}$	$PFD_{AVG} = 1,2 \cdot 10^{-5}$

7.2 Hints and requirements for installation, commissioning, operation and verification

Page 8 of 8
Our reference / date: IS-TAF-MUC/ku, 2018-03-12
Document: CF11040918_BE rev1.docx
Report no. C-F 1104-09/18



11 Conditions

- 11.1 After installation, the degree of protection of the independent flame detector device and its power supply shall be a minimum of IP 40 – or IP 54 for use in the open air – according to EN 60529.
- 11.2 The manufacturer's instructions and the safety manual shall be observed concerning proof tests, external power supply, adjustment of the sensitivity and of the lower filter cut-off frequency, range selection, connection of the continuous current output (0/4-20 mA), and connection to test jacks S and L to external devices.
- 11.3 The use of models **F200K...Ex-II...** and of all models with a flame failure detection time **FFDT = 4 s** or **FFDT = 5 s** is restricted to a minimum ambient temperature of -20 °C.
- 11.4 Models **F200K...IR...** without line frequency rejection shall be mounted such that they can only be removed from the mounting fixture by use of a special tool.
- 11.5 Models **F200K...IR...FO...** shall only be used with a LAMTEC IR fibre optic assembly type **FOR...-IR** or **FOF...-IR**, which include an optical filter in the process optics suppressing spectral components below 850 nm resp. 1000 nm.
- 11.6 Adequate information for incorporation, adjustment, operation and maintenance of the independent flame detector device shall be included into the instructions for installation, servicing and use of the burner or combustion system in an official language of the country in which it is to be used.

12 Note

Depending on the Proof Test Interval T_1 and on the proof test coverage (PTC), the average probability of a dangerous failure can be furthermore reduced. Under the assumption of a Proof Test Interval $T_1 = 1$ year, a MTTR = 8 h and of a MRT = 8 h the **average probability of a dangerous failure on demand PFD_{AVG}** depending on the demand interval T_2 and the coverage of proof tests as described in the safety manual has been determined as follows:

Demand interval	Coverage of proof tests	
	PTC = 70 %	PTC = 98 %
$T_2 = 1$ year	$PFD_{AVG} = 6,4 \cdot 10^{-6}$	$PFD_{AVG} = 6,4 \cdot 10^{-6}$
$T_2 = 2$ years	$PFD_{AVG} = 8,7 \cdot 10^{-6}$	$PFD_{AVG} = 7,1 \cdot 10^{-6}$
$T_2 = 5$ years	$PFD_{AVG} = 1,6 \cdot 10^{-5}$	$PFD_{AVG} = 9,0 \cdot 10^{-6}$
$T_2 = 10$ years	$PFD_{AVG} = 2,8 \cdot 10^{-5}$	$PFD_{AVG} = 1,2 \cdot 10^{-5}$

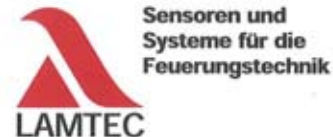
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8 EU Declaration of Conformity



EU-Konformitätserklärung

EU Declaration of Conformity
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modules complémentaires
FN20 - 230VAC / 115VAC

659R6010 /XX

auf welche sich diese Erklärung bezieht, mit den folgenden Norm(en) übereinstimmt
to which this declaration relates conforms to the following standard(s)
sur laquelle cette déclaration se réfère, et conformément aux dispositions de la norme(s)

DIN EN 298: 2012-11
DIN EN 60730-2-5: 2015-10
DIN EN 60730-1: 2012-10

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print 16/04/18



gemäß den Bestimmungen der folgenden Richtlinie(n).
according to the provisions of the following directive(s) / conformément aux dispositions de la directive(s)

Nummer (Number / Numéro)	Text (Text / Texte)
2014/35/EU	Niederspannungsrichtlinie
2014/35/EU/	Low Voltage Directive
2014/35/UE	Directive basse tension
2014/30/EU	EMV-Richtlinie
2014/30/EU	EMC Directive
2014/30/UE	Directive CEM
2014/68/EU	Druckgeräterichtlinie Kat. 4 Mod. B+D
2014/68/EU	Pressure Equipment Directive cat. 4 mod. B+D
2014/68/UE	Directive équipements sous pression cat. 4 mod. B+D
(EU) 2016/426	Gasgeräte Verordnung (GAR)
(EU) 2016/142	Gas Appliances Regulation
(UE) 2016/142	Règlement appareils à gaz
2011/65/EU	RoHS
2011/65/EU	RoHS
2011/65/UE	RoHS

Das Datenblatt und gegebenenfalls die Basisdokumentation sind zu beachten.
The data sheet and basic documentation, if any, have to be considered.
La consultation de la fiche technique, et éventuellement de la documentation technique de base, est requise.

Hinweise zur Anwendung der Richtlinie 2014/35/EU und 2014/30/EU:

Die Konformität mit (EU) 2016/426 setzt die Übereinstimmung mit 2014/35/EU voraus und beinhaltet diese. Die Konformität mit 2014/30/EU ist nach Einbau des Bauteils in das Endgerät nachzuweisen und zu erklären.

Remarks regarding the application of directive 2014/35/EU and 2014/30/EU:

Conformity with (EU) 2016/142 presupposes that requirements of 2014/35/EU are fulfilled and includes these. Conformity with 2014/30/EU has to be proved and declared after installation of the component.

Remarques sur l'application des directives 2014/35/UE et 2014/30/UE:

La conformité avec la (UE) 2016/142 intègre la conformité avec la 2014/35/UE. La conformité avec la 2014/30/UE après l'installation de l'appareil est à prouver et à déclarer.

Rechtsverbindliche Unterschrift
Authorized signature / Signature autorisée

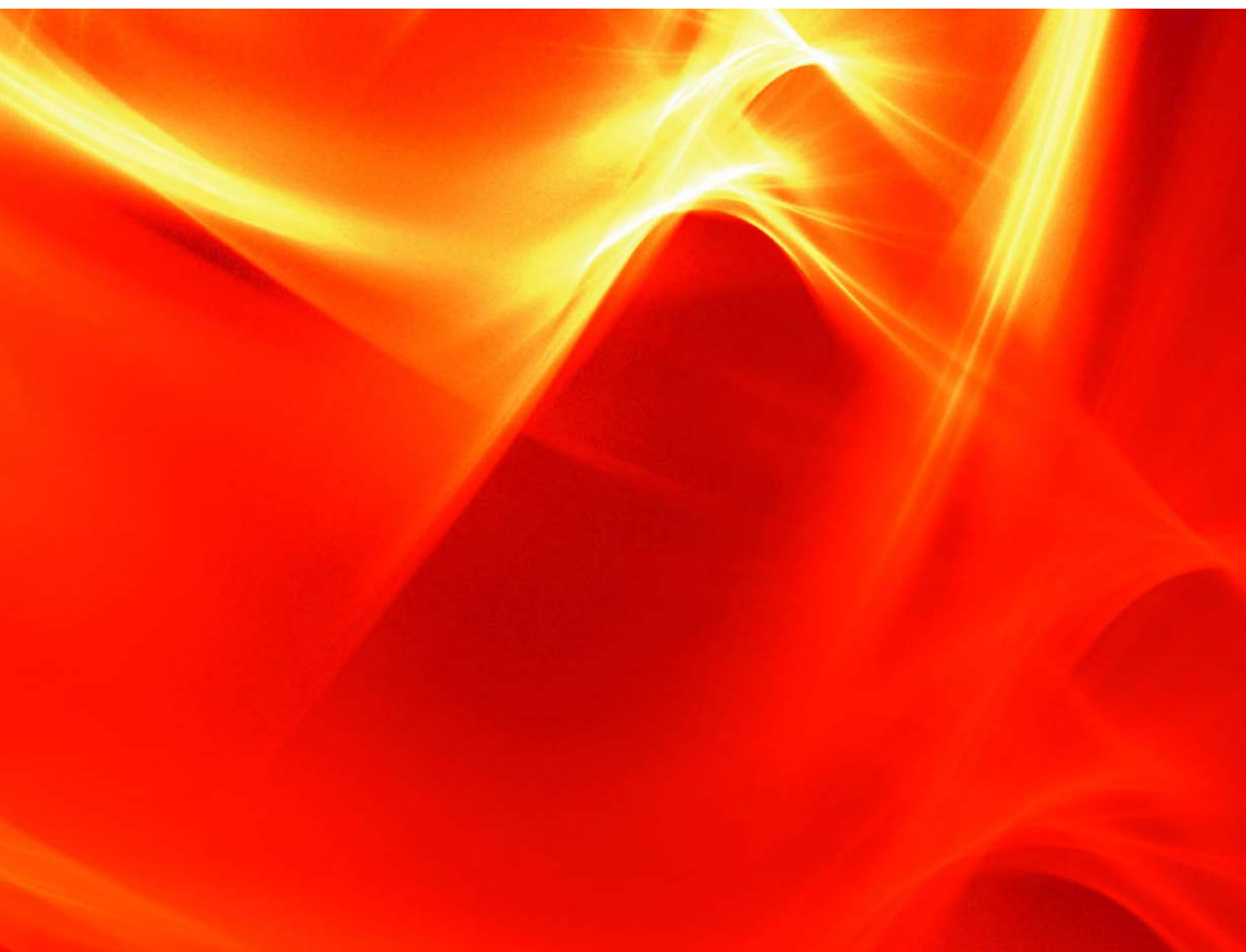
Taucha, 21.04.2018
Olaf Winke, General Manager

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The information in this publication is subject to technical changes.



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