



## (1) EC-TYPE-EXAMINATION CERTIFICATE (Translation)

(2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres - **Directive 94/9/EC**



(3) EC-type-examination Certificate Number:

**PTB 99 ATEX 1028**

(4) Equipment: Flash lamp type dSLB20

(5) Manufacturer: Funke + Huster Fernsig ,  
Fernsprech- und Signalbau GmbH & Co. KG

(6) Address: D-42551 Velbert, Eintrachtstr. 95

(7) This equipment and any acceptable variation thereto are specified in the schedule to this certificate and the documents therein referred to.

(8) The Physikalisch-Technische Bundesanstalt, notified body No. 0102 in accordance with Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres, given in Annex II to the Directive.

The examination and test results are recorded in the confidential report PTB Ex 99-18139.

(9) Compliance with the Essential Health and Safety Requirements has been assured by compliance with:

**EN 50014:1997**

**EN 50018:1994**

**EN 50019:1994**

(10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use specified in the schedule to this certificate.

(11) This EC-type-examination Certificate relates only to the design and construction of the specified equipment in accordance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment.

(12) The marking of the equipment shall include the following:

**II 2 G EEx de IIC T6**

Zertifizierungsstelle Explosionsschutz

Braunschweig, May 26, 1999

By order:

Dr.-Ing. U. Klausmeyer  
Oberregierungsrat



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EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

(13) **SCHEDULE**

(14) **EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1028**

(15) Description of equipment

The flash lamp is composed of a lamp compartment of the type of protection flameproof enclosure and a terminal compartment of the type of protection increased safety. A glass cup, linked with the enclosure through a compound, serves as a light-transmitting part. Together with a microprocessor, a temperature detector prevents the temperature class from being exceeded in normal operation. A miniature fuse guarantees compliance with the temperature class in case of errors.

Technical data

Range of permissible ambient temperature	-20 °C to 40 °C		
Nominal voltage	230 V ±10 % AC	72 to 132 V DC	21 to 53 V DC
Power consumption	≤ 50 W	≤ 33 W	≤ 30 W
Flash energy	up to 15 Ws		
Flash frequency	0,5 to 1 Hz		
Operation mode	continuous operation		
Activation	flash signal is activated nominal voltage		
Position for use	no limitation		
Miniature fuse F1 F2	T 2 A	T 800 mA	T 2 A
	rated cut-off temperature: 102 °C		

(16) Test report PTB Ex 99-18139

(17) Special conditions for safe use

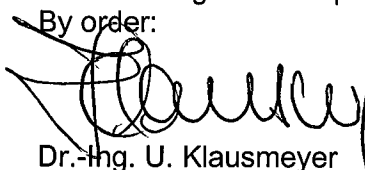
none

(18) Essential health and safety requirements

Met by correspondence to the standards mentioned above.

Zertifizierungsstelle Explosionschutz

By order:



Dr.-Ing. U. Klausmeyer  
Oberregierungsrat



Braunschweig, May 26, 1999

sheet 2/2

EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

## 1st SUPPLEMENT

according to Directive 94/9/EC Annex III.6

### to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1028

(Translation)

Equipment: Flashing beacon, type dSLB20

Marking:  II 2 G EEx de IIC T6

Manufacturer: Funke + Huster Fernsig;  
Fernsprech- und Signalbau GmbH & Co. KG

Address: D-42551 Velbert, Eintrachtstr. 95

#### Description of supplements and modifications

For better interception of vibrations, the flash tube may be provided with mechanical supports, in addition to the soldered connections.

The flash output of the flashing beacon can be optionally reduced from 15 Ws to 5 Ws by changing the connections and by using another light source. Under these conditions, operation with 115 V AC is permitted.

Technical data of the 5-Ws version

Range of permissible ambient temperatures		- 20 °C to 40 °C			
Rated voltage	230 V ± 10 % AC	72 V to 132 V DC	21 V to 53 V DC	115 V ± 10 % AC	
Wattage	≤ 33 W	≤ 12 W	≤ 15 W	≤ 18 W	
Flash output	Up to 5 Ws				
Flash frequency	0.5 Hz to 1 Hz				
Duty type	Continuous duty				
Activation	The flash signal is activated when the mains voltage is applied				
Position of normal use	No restrictions				
Protection	F1	T 1 A	T 0.315 A	T 1 A	T 0.315 A
	F2	Rated interrupt temperature: 102 °C			

Test report: PTB Ex 00-19001

Zertifizierungsstelle Explosionsschutz

Braunschweig, January 28, 2000

By order:  
(signature)

Dr.-Ing. U. Klausmeyer  
Regierungsdirektor

1 page, correct and complete as regards content.

By order:

  
Dr.-Ing. M. Thedens  
Oberregierungsrat



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EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

## 2<sup>nd</sup> SUPPLEMENT

according to Directive 94/9/EC Annex III.6

### to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1028

(Translation)

Equipment: Flashing beacon, type dSLB20

Marking:  II 2 G EEx de IIC T6

Manufacturer: FHF Funke + Huster Fernsig GmbH

Address: Gewerbeallee 15 -19, 45478 Mülheim, Germany  
Previously: Eintrachtstraße 95, 42551 Velbert, Germany

#### Description of supplements and modifications

- The thermal fuse that is currently used (with maximum interrupt temperature +102°C) is optionally replaced with other types of fuses.
- The material of the name/rating plate is changed.
- With modified components, the flashing beacon is optionally also manufactured as a 12 VDC / 5 Ws version.
- With a duplication of connection terminals, another version is produced, in addition to the previously certified dSLB20 flashing beacon type. With this version, flashing beacons can be connected in series.
- The company's address and company name are now as follows:  
**FHF Funke + Huster Fernsig GmbH, Gewerbeallee 15 -19, D 45478 Mülheim**

#### Applied standards

EN 50014:1997

EN 50018:1994

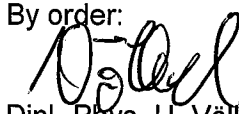
EN 50019:1994

Test report: PTB Ex 06-16276

Zertifizierungsstelle Explosionsschutz

Braunschweig, September 6, 2006

By order:

  
Dipl.-Phys. U. Völk



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EC-type-examination Certificates without signature and official stamp shall not be valid. The certificates may be circulated only without alteration. Extracts or alterations are subject to approval by the Physikalisch-Technische Bundesanstalt. In case of dispute, the German text shall prevail.

## 3rd SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1028

(Translation)

Equipment: Flashing beacon, type dSLB20

Marking:  II 2 G EEx de IIC T6

Manufacturer: FHF Funke + Huster Fernsig GmbH

Address: Gewerbeallee 15 -19, 45478 Mülheim, Germany

Description of supplements and modifications

- Conversion to the new generation of standards EN 60079-0 et seq.
- Heavy-duty LEDs used as an option.

Applied standards

EN 60079-0:2006

EN 60079-1:2004

EN 60079-7:2007

Test report: PTB Ex 08-17032

Zertifizierungsstelle Explosionsschutz

Braunschweig, February 1, 2008

By order:

(signature)

Dr.-Ing. U. Klausmeyer  
Direktor und Professor

1 pages, correct and complete as regards content.

By order:



Dr.-Ing. M. Friedehs, Braunschweig, October 28, 2010  
Oberregierungsrat



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## 4th SUPPLEMENT

according to Directive 94/9/EC Annex III.6

### to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1028

(Translation)

Equipment: Flashing filament, type dSLB20

Marking:  II 2 G Ex de IIC T6

Manufacturer: FHF Funke + Huster Fernsig GmbH

Address: Gewerbeallee 15-19, 45478 Mülheim an der Ruhr, Germany

#### Description of supplements and modifications

The flashing filament, type dSLB20, may also be employed in areas in which a potentially explosive atmosphere as a mixture of dust and air can occasionally form.

This is why the following marking is added:

 II 2 D Ex tD A21 IP66 T 80 °C

#### Technical data

Protection against el. shock, foreign objects and water:..... IP66 in compliance with EN 60529

All other technical data remain unchanged.

#### Notes for manufacturing and operation

The flashing filament must not be used in areas in which highly charge-generating processes, mechanical friction and separation, discharge of electrons (e.g. in the vicinity of electrostatic coating devices), or pneumatically conveyed dust may occur.

All other notes for manufacturing and operation shall equally apply to this supplement.

Applied standards

EN 61241-0:2006

EN 61241-1:2004

Test report: PTB Ex 07-17070

Zertifizierungsstelle Explosionsschutz

Braunschweig, September 6, 2007

By order:

  
Dr.-Ing.  
Oberregierungs-  




## 5th SUPPLEMENT

according to Directive 94/9/EC Annex III.6

### to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1028

(Translation)

Equipment: Flash lamp type dSLB20

Marking:  II 2 G Ex de IIC T6  
 II 2 D Ex tD A21 IP66 T 80 °C

Manufacturer: FHF Funke + Huster Fernsig GmbH

Address: Gewerbeallee 15-19, 45478 Mülheim an der Ruhr, Germany

#### Description of supplements and modifications

- The high-power LED type LR W5SM-HYJY-1 (red; 625 nm – 5 nm / +7 nm) is added
- The setup of the cooling element is specified
- An option of the internal voltage transformation from 85 V AC to 265 V AC to 24 V DC is added

#### Applied standards

EN 60079-0:2006

Test report: PTB Ex 08-18135

Zertifizierungsstelle Explosionsschutz  
By order:

Braunschweig, June 10, 2008

  
Dr.-Ing. U. Klausmeyer  
Direktor und Professor



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## 6. SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1028

(Translation)

Equipment: Flash lamp type dSLB20

Marking:  II 2G Ex de IIC T6  
 II 2D Ex tD A21 IP66 T 80°C

Manufacturer: FHF Funke + Huster Fernsig GmbH

Address: Gewerbeallee 15 – 19, 45478 Mülheim an der Ruhr, Germany

### Description of supplements and modifications

- The electrical construction inside the equipment is supplemented by the "Monitoring" module.
- The number of the connection terminals is doubled including another connection.
- Installation of a high-power LED (white) of the manufacturer Osram.

### Applied standards

EN 60079-0:2006

EN 60079-1:2004

EN 60079-7:2007

EN 61241-0:2006

EN 61241-1:2004

Test report: PTB Ex 08-18271

Zertifizierungssektor Explosionsschutz

By order:

  
Dr.-Ing. U. Klausmeyer  
Direktor und Professor



Braunschweig, October 17, 2008

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## 7th SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1028

(Translation)

Equipment: Flash lamp type dSLB20

Marking:  II 2 G Ex de IIC T5, T6  
 II 2 D Ex tD A21 IP66 T95 °C, T80 °C

Manufacturer: FHF Funke + Huster Fernsig GmbH

Address: Gewerbeallee 15-19, 45478 Mülheim an der Ruhr, Germany

### Description of supplements and modifications

- Increase of the ambient temperature range to +55 °C → T5 or T95 °C (not the LED-variants)
- Reduction of the ambient temperature range to -40 °C and -55 °C

### Applied standards

EN 60079-0:2006

EN 60079-1:2004

EN 60079-7:2007

EN 61241-0:2006

EN 61241-1:2004

Assessment and test report: PTB Ex 09-19201

Zertifizierungssektor Explosionsschutz

By order:

Dipl.-Phys. U. Vökel



Braunschweig, September 7, 2009


## 8th SUPPLEMENT

according to Directive 94/9/EC Annex III.6

to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1028

(Translation)

Equipment: Flash lamp type dSLB20

Marking:  II 2 G Ex de IIC T5, T6

 II 2 D Ex tD A21 IP66 T95 °C, T80 °C

Manufacturer: FHF Funke + Huster Fernsig GmbH

Address: Gewerbeallee 15-19, 45478 Mülheim an der Ruhr, Germany

### Description of supplements and modifications

- The variant 115 VAC  $\pm$  10 % with 15 Ws is added to the flash lamp type dSLB20.

### Applied standards

EN 60079-0:2006

EN 60079-1:2004

EN 60079-7:2007

EN 61241-0:2006


EN 61241-1:2004

Assessment and test report: PTB Ex 19-19212

Zertifizierungssektor Explosionsschutz

Braunschweig, September 10, 2009

By order:

  
Dipl.-Phys. U. Völkel




## 9<sup>th</sup> SUPPLEMENT

according to Directive 94/9/EC Annex III.6

### to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1028

(Translation)

Equipment: Flash lamp type dSLB20 and type dSLB20-LED

Marking:  II 2 G Ex d e IIC T5, T6

 II 2 D Ex tD A21 IP66 T 95 °C, T80 °C

Manufacturer: FHF Funke + Huster Fernsig GmbH

Address: Gewerbeallee 15-19, 45478 Mülheim an der Ruhr, Germany

#### Description of supplements and modifications

- Increase of the LED-range of intensity and partly change of the range of wavelength
- Additional use of a breathing device
- Reduction of the ambient temperature down to -55 °C

#### Applied standards


EN 60079-0:2006

EN 60079-1:2004

Assessment and test report: PTB Ex 11-11047

Zertifizierungssektor Explosionsschutz  
On behalf of PTB:

Braunschweig, February 16, 2011

  
Dipl.-Phys. U. Völkel





## 10<sup>th</sup> SUPPLEMENT

according to Directive 94/9/EC Annex III.6

### to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1028

(Translation)

Equipment: Flash lamp type dSLB20 and type dSLB20-LED

Marking:  II 2 G Ex d e IIC T5, T6  
 II 2 D Ex tD A21 IP66 T95 °C, T80 °C

Manufacturer: FHF Funke + Huster Fernsig GmbH

Address: Gewerbeallee 15-19, 45478 Mülheim an der Ruhr, Germany

#### Description of supplements and modifications

#### Applied standards

EN 60079-0:2009, EN 60079-1:2007, EN 60079-7:2007, EN 60079-31:2009

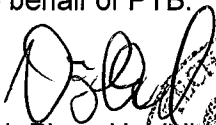
With the application of the above mentioned standards, the marking changes to:

 II 2 G Ex d e IIC T5, T6 Gb  
 II 2 D Ex tb IIC T95 °C, T80 °C Db

Assessment and test report: PTB Ex 12-12061

Zertifizierungssektor Explosionsschutz  
On behalf of PTB:

Braunschweig, March 27, 2012

  
Dipl.-Phys. U. Volkel





## 11<sup>th</sup> SUPPLEMENT

according to Directive 94/9/EC Annex III.6

### to EC-TYPE-EXAMINATION CERTIFICATE PTB 99 ATEX 1028

(Translation)

Equipment: Flash lamp type dSLB20 / dSLB20-LED

Marking:  II 2 G Ex d e IIC T5, T6 Gb  
 II 2 D Ex tb T95 °C, T80 °C Db

Manufacturer: FHF Funke + Huster Fernsig GmbH

Address: Gewerbeallee 15-19, 45478 Mülheim an der Ruhr, Germany

#### Description of supplements and modifications

The rated voltage and rated current is changed on the name plate and in the operating instructions as follows:

Type	Rated voltage	Rated current I <sub>max</sub>	Protection	
			F1	F2; F3
dSLB20-LED	48 VDC	800 mA	T 1A	Rated cut-off temperature 136°C
dSLB20	48 VDC	500 mA	T 1A	Rated cut-off temperature 102°C

A detailed description, technical data and appropriate documentation is defined in the technical documents attached to the test report.

#### Applied standards

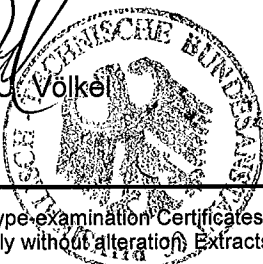
EN 60079-0:2009, EN 60079-1:2007, EN 60079-7:2007, EN 60079-31:2009

Assessment and test report: PTB Ex 12-12248

Zertifizierungssektor Explosionsschutz  
On behalf of PTB

Braunschweig, October 10, 2012

Dipl.-Phys. U. Völkel



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