Operating instructions EN

Additional languages www.stahl-ex.com

Instrinsically Safe LED Visual Flashing or Status Signal

Series FD40IS, SD40IS

STAHL

EN

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1 General Information

1.1 Manufacturer

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1.2 Information regarding the operating instructions

ID-No.: 252166 / FD4060300010
Publication Code: 2016-04-18·BA00·III·en·00

The original instructions are the English edition.
They are legally binding in all legal affairs.

1.3 Further documents

- Data sheet

For documents in further languages, see www.stahl-ex.com.

1.4 Conformity with standards and regulations

See certificates and EC Declaration of Conformity: www.stahl-ex.com.
The device has IECEx approval. See IECEx homepage: http://iecex.iec.ch/

2 Explanation of the symbols

2.1 Symbols in these operating instructions

Symbol	Meaning
	Tips and recommendations on the use of the device
	General danger
	Danger due to explosive atmosphere
	Danger due to energised parts

2.2 Warning notes

Warnings must be observed under all circumstances, in order to minimize the risk due to construction and operation. The warning notes have the following structure:

- Signalling word: DANGER, WARNING, CAUTION, NOTICE
- Type and source of danger/damage
- Consequences of danger
- Taking countermeasures to avoid the danger or damage

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	DANGER Danger to persons Non-compliance with the instruction results in severe or fatal injuries to persons.
	WARNING Danger to persons Non-compliance with the instruction can result in severe or fatal injuries to persons.
	CAUTION Danger to persons Non-compliance with the instruction can result in light injuries to persons.
	NOTICE Avoiding material damage Non-compliance with the instruction can result in material damage to the device and / or its environment.

2.3 Symbols on the device

Symbol	Significance
CE 0158 05594E00	CE marking according to the current applicable directive.
Ex 02198E00	According to its marking, the device is certified for hazardous areas.
15649E00	Input
15648E00	Output
11048E00	Safety instructions that must always be followed: The respective data must be noted and/or the safety-related instructions contained in the operating instructions must be followed for devices with this symbol!

3 Safety notes

3.1 Operating instructions storage

- Read the operating instructions carefully.
- Store the operating instructions at the mounting location of the device.
- Observe applicable documents and operating instructions of the devices to be connected.

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3.2 Safe use

- Read and observe the safety notes in these operating instructions!
- Observe characteristic values and rated operating conditions on the rating and data plates!
- Observe additional information plates on the device!
- Use the device in accordance with its intended and approved purpose only!
- We cannot be held liable for damage caused by incorrect or unauthorized use or by non-compliance with these operating instructions.
- Before installation and commissioning, make sure that the device is not damaged!
- Work on the device (installation, maintenance, overhaul, repair) may only be carried out by appropriately authorized and trained personnel.
- During installation and operation, observe the information (characteristic values and rated operating conditions) on the rating, data and information plates located on the device.
- Only connect the power supply if certified safety barriers are in place (refer also to the "Technical data" chapter).
- The safety characteristic values of the connected field devices must match the specifications of the corresponding device.
- When interconnecting intrinsically safe circuits, the safety-related maximum values of field devices and corresponding equipment as well as cable parameters must be observed. This "verification of intrinsic safety" must be performed and documented according to IEC/EN 60079-14 or IEC/EN 60079-25.

3.3 Modifications and alterations

	DANGER Explosion hazard due to modifications and alterations to the device! Non-compliance results in severe or fatal injuries. • Do not modify or alter the device.
	No liability or warranty for damage resulting from modifications and alterations.

4 Function and device design

	DANGER Explosion hazard due to improper use! Non-compliance results in severe or fatal injuries. • Use the device only in accordance with the operating conditions described in these operating instructions. • Use the device only for the intended purpose specified in these operating instructions.

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4.1 Function

Application range

In hazardous areas the devices have explosion protection for ATEX Zones 0, 1 & 2 for gas and 20, 21 & 22 for dust.

Mode of operation

Product series FD40IS or SD40IS is designed to provide a visual signal which can be used to alert, warn or draw attention to an event. In hazardous areas the devices have explosion protection for ATEX Zones 0, 1 & 2 for gas and 20, 21 & 22 for dust. Gas groups covered are IIC, and dust protection for IIIC.

5 Technical data

Explosion Protection

Europe (ATEX)

Gas and dust	Baseefa05ATEX0075 Ⓔx II 1G Ex ia IIC T4 Ga Ⓔx II 1D Ex ia IIIC T190°C Da

Certifications and certificates

Certificates	ATEX, India (PESO)

Technical Data

Electrical data

Rated operational voltage	16.2 ... 26.4 V
Current consumption	

Power supply	Certified barrier / isolator parameters	Current consumption
24 V DC	28 V / 300 Ω	22 mA
18 V DC*)	28 V / 300 Ω	14 mA

*) Light output reduced

Certified input parameters	U_i = 30 V I_i = 200 mA P_i = 0.7 W C_i = 0 L_i = 0
Line monitoring	yes

Luminous characteristics

Light source	8 array LED
Flash rate	1/s (FD40IS only)
Lens colour	amber, red, green, opal, blue, clear

Technical Data

Ambient conditions

Operating temperature range	-25 ... +40 °C
Storage temperature	-40 ... +70 °C
Max. relative humidity	90 % at 40 °C

Mechanical data

Cable entries	1 x M20
Material	
Enclosure	ABS, flame retardant
Lens	polycarbonate, flame retardant
Assembly parts	stainless steel fixings
Labels	polyester foil, adhesive
Degree of protection	IP65 acc. to IEC 60529

Mounting / Installation

Mounting	All units are supplied separately from the base for ease of installation. The base should be mounted to a reasonably flat surface or bulkhead. A gasket is supplied, should the surface be uneven, or if the unit is to be used in wet conditions. The installation is completed by fitting the beacon onto the base by means of the supplied screws.
Connection	Each beacon should be wired independently. 2.5 mm^2 terminals

For further technical data, see www.stahl-ex.com.

6 Transport and storage

- Transport and store the device only in the original packaging.
- Store the device in a dry place (no condensation) and vibration-free.
- Do not drop the device.

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7 Mounting and installation

The device is approved for use in gas explosion hazardous areas of Zones 1 and 2 and dust explosion hazardous area of Zones 21 and 22 and in safe areas.

DANGER

Explosion hazard due to installation without approved field enclosure!
Non-compliance results in severe or fatal injuries!

- When used in Zone 1, the device must be installed into an enclosure that complies with the requirements of IEC/EN 60079-11.
- When used in Zone 2, the device must be installed into an enclosure that complies with the requirements of IEC/EN 60079-15.
- When used in Zones 21 and 22, the device must be installed into an enclosure that complies with the requirements of IEC/EN 60079-31.

DANGER

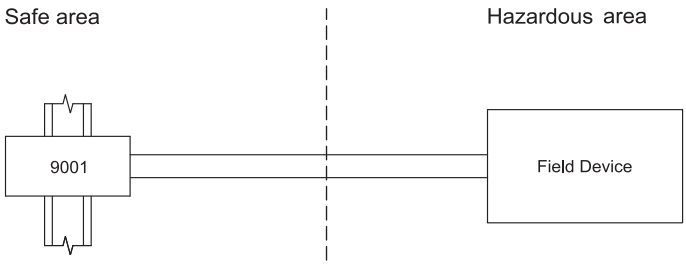
Explosion hazard due to incorrect installation of the device!
Non-compliance results in severe or fatal injuries.

- Carry out installation strictly according to the instructions and national safety and accident prevention regulations to maintain the explosion protection.
- Select and install the electrical device so that explosion protection is not affected due to external influences, i.e. pressure conditions, chemical, mechanical, thermal and electric impact such as vibration, humidity and corrosion (see IEC/EN 60079-14).
- The device must only be installed by trained qualified personnel who is familiar with the relevant standards.

DANGER

Explosion hazard due to improper mains power connection!
Non-compliance results in severe or fatal injuries.

- Under no circumstances is the device to be supplied using a regular power supply. It is only to be connected using certified barriers/isolators (see "Technical data")



Example of a standard installation using an intrinsically safe field device. Product series 9001 is a safety barrier manufactured by STAHL. Certified components from other manufactures are acceptable.

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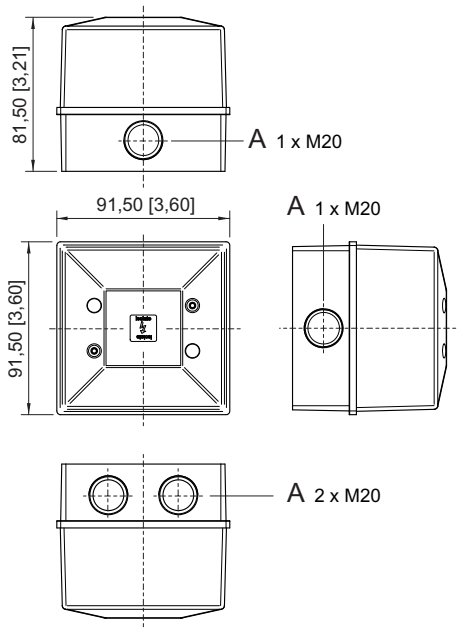
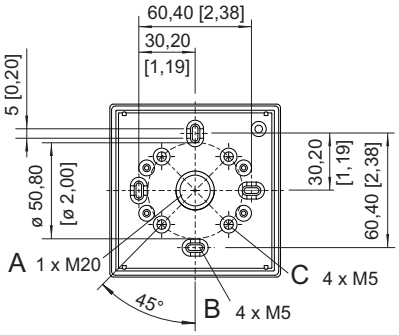
7.1 Dimensions / fastening dimensions

Dimensional Drawings (All Dimensions in mm [inches]) - Subject to Alterations



13984E



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A = knockout hole
B = drill hole
C = knockout hole

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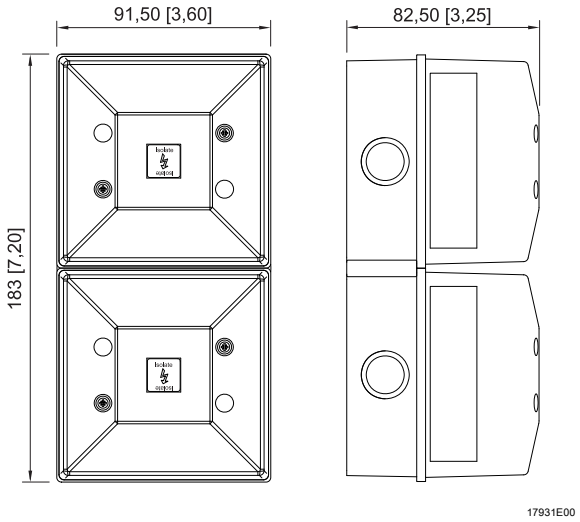
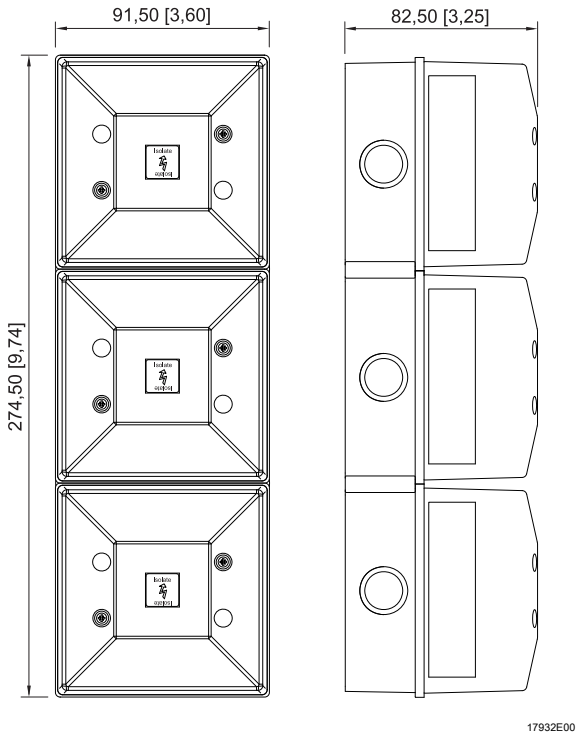
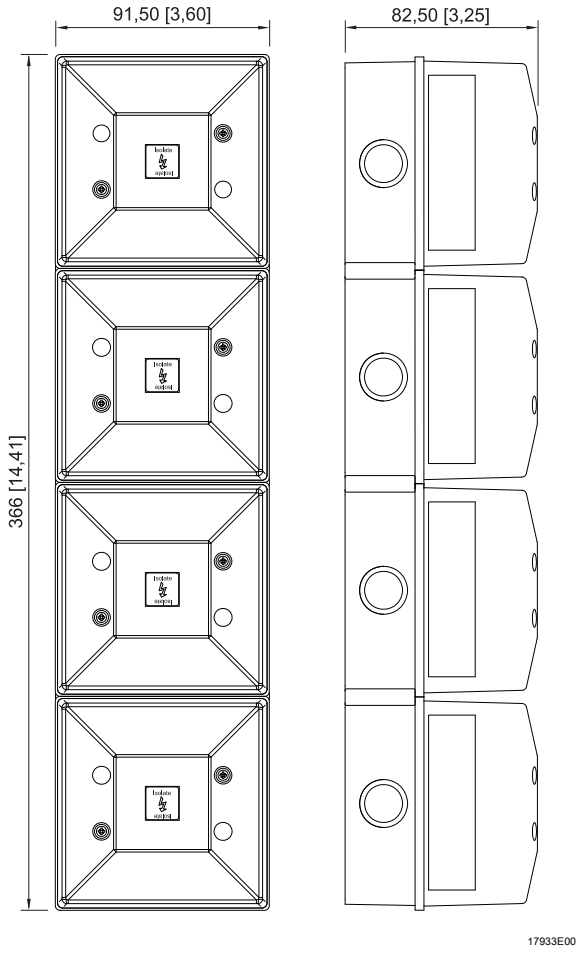
Dimensional Drawings (All Dimensions in mm [inches]) - Subject to Alterations







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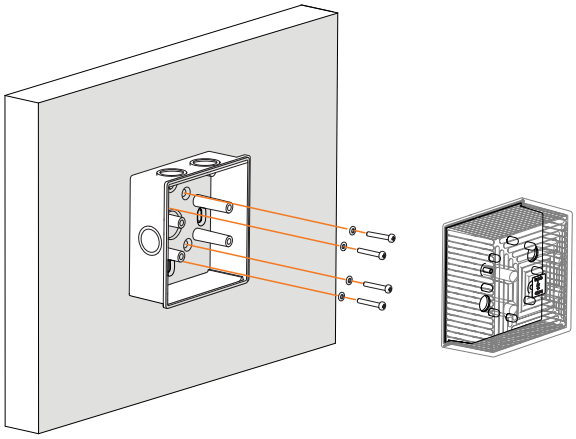
7.2 Mounting / dismounting, operating position

7.2.1 Assembly

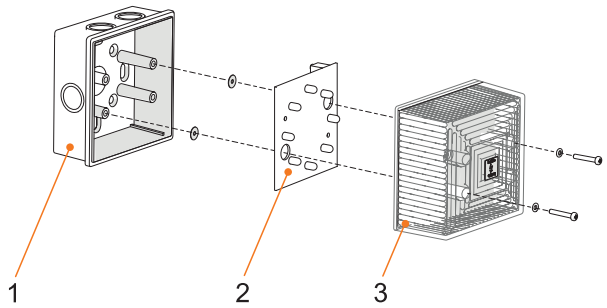


17934E00

- Open the device.
- Drill holes for mounting the back of the enclosure to a flat surface.
- Install the seal for the IP protective enclosure that was included in delivery.
- Mount the device to the surface, as depicted.
- Close the enclosure.

7.3 Installation

7.3.1 Key components



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1 Gehäuseunterteil
2 Leiterplatte für Signalleuchte
3 Linsenabdeckung

7.3.2 Electrical Connection

PCB

- Remove the lens cover.
- Connect the leads according to the circuit diagram.
- Replace the PCB and lens covers.

7.3.3 Circuit diagrams

Single stage alarm

- Connect the leads according to the circuit diagram.
- Supply the active device with power.

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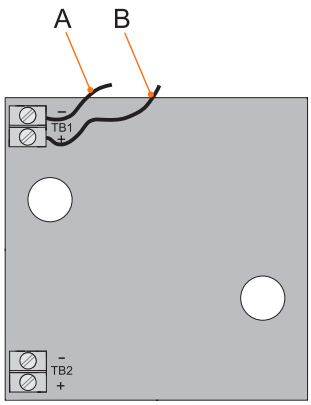
Independent wiring

	DANGER
EX	Explosion hazard due to selecting the wrong cables! Non-compliance results in severe or fatal injuries. • If using separate safety barriers for the sounder and beacon, observe the cable specifications stated on the selected Zener barrier or on the isolator certificate.

Beacon PCB



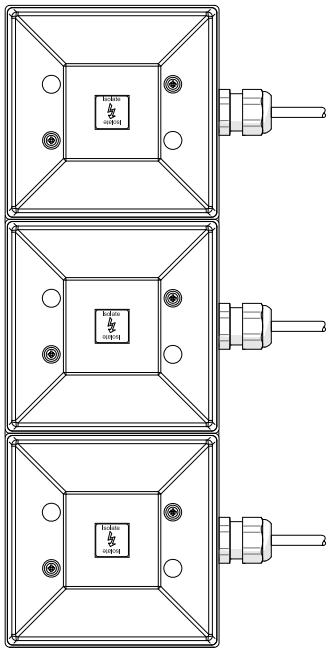
17776E00

A 0v
B +v

Multiple devices

Multiple device should be installed independently; that is separate cable entry into each device individual power supplies.

- Connect the leads according to the circuit diagram.
- Supply the active device with power.
- A single-channel safety barrier or single intrinsically safe connection for each device is required



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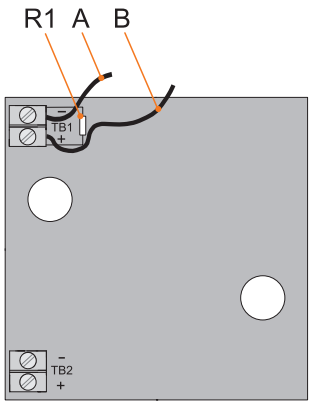
7.3.4 Line monitoring

If line monitoring is required, this can be achieved by using an end-of-line resistor. For this purpose, use a wire-wound or metal layer resistor with a resistance value of at least 750 Ohm and a rated power of at least 2 W or at least 4700 Ohm and a rated power of at least 0.4 W!

The line monitoring facility allows the integrity of the line to the sounder to be monitored through the barrier to the control system fault detection and indication circuits. Two sounders of the same type can be connected in parallel. The resistor can be fitted as per the diagram below.

Line monitoring is optional. The system designer should inform users if this is necessary or not.

Standard termination with monitoring resistor fitted.



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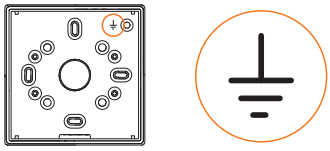
R1 Resistor – Value to be defined by system designer
A 0v
B +v

7.3.5 Earth connection



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8 Commissioning

DANGER

Explosion hazard due to incorrect installation!
Non-compliance results in severe or fatal injuries.
- Check the device for proper installation before commissioning.
- Comply with national regulations.

Before commissioning, ensure the following:
- Check the mounting and installation.
- Enclosure must not be damaged.
- If necessary, remove foreign bodies.
- If necessary, clean the connection chamber.
- Check if the conductors have been inserted correctly.
- Check if all screws and nuts have been tightened firmly.
- Check if all conductors have been clamped firmly.
- Check if all prescribed tightening torques have been observed.
- Check whether the bayonet lock is tightened firmly.
- Make sure that the plug pin surface is not damaged.
- Use only in completely mounted state.

9 Maintenance and repair

CAUTION

Risk of electric shock or malfunction of the device due to unauthorized work!
Non-compliance can result in light injuries!
- Before carrying out work on the device, switch off voltage supply.
- Work performed on the device must only be carried out by authorized and appropriately trained qualified electricians.

9.1 Maintenance

Observe the relevant national regulations in the country of use.

9.2 Repair

DANGER

Explosion hazard due to improper repair!
Non-compliance results in severe or fatal injuries.
- Repair work on the devices must be performed only by R. STAHL Schaltgeräte GmbH.

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9.3 Returning the device

Use the "Service form" to return the device if repair or service is required. On the internet site "www.stahl-ex.com" under "Downloads > Customer service":

- Download the service form.
- Fill out the service form.
- Send the device along with the service form in the original packaging to R. STAHL Schaltgeräte GmbH.

10 Cleaning

- To avoid electrostatic charging, the devices located in potentially explosive areas may only be cleaned using a damp cloth.
- When cleaning with a damp cloth, use water or mild, non-abrasive, non-scratching cleaning agents.
- Do not use aggressive detergents or solvents.

11 Disposal

- Observe national and local regulations and statutory regulation regarding disposal.
- Separate materials when sending it for recycling.
- Ensure environmentally friendly disposal of all components according to the statutory regulations.

12 Accessories and Spare parts

NOTE
Malfunction or damage to the device due to the use of non-original components. Non-compliance can result in material damage. • Use only original accessories and spare parts from R. STAHL Schaltgeräte GmbH.

i	For accessories and spare parts, see data sheet on our homepage www.stahl-ex.com.

EG/EU-Konformitätserklärung
EC/EU Declaration of Conformity
Déclaration de Conformité CE/UE

R. STAHL Schaltgeräte GmbH • Am Bahnhof 30 • 74638 Waldenburg, Germany
erklärt in alleiniger Verantwortung, *declares in its sole responsibility, déclare sous sa seule responsabilité,*

dass das Produkt: *that the product:* *que le produit:*	**Eigensichere LED-Blitz- oder Statusleuchten** *Instrinsically Safe LED Visual Flashing or Status Signal* *Modules de signalisation à LED*
Typ(en), *type(s), type(s):*	**FD40IS**

mit den Anforderungen der folgenden Richtlinien und Normen übereinstimmt.
is in conformity with the requirements of the following directives and standards.
est conforme aux exigences des directives et des normes suivantes.

Richtlinie(n) *Directive(s)* *Directive(s)*	**Norm(en)** *Standard(s)* *Norme(s)*
Bis/*Until/Jusque* **2016-04-19:** **Ab/*From/De*** **2016-04-20:** **94/9/EG:** **ATEX-Richtlinie** **2014/34/EU:** *94/9/EC: ATEX Directive 2014/34/EU:* *94/9/CE: Directive ATEX 2014/34/UE:*	EN 60079-0:2012 + A11: 2013 EN 60079-11:2012 EN 60079-31: 2014
Kennzeichnung, *marking, marquage:*	**(Ex) II 1 G Ex ia IIC T4 Ga** **II 1 D Ex ia IIIC T190°C Da** **CE 0158**
EG-Baumusterprüfbescheinigung: *EC Type Examination Certificate:* *Attestation d'examen CE de type:*	**Baseefa 05 ATEX 0075X** (Baseefa Ltd., Rockhead Business Park Staden Lane, Buxton Derbyshire, SK17 9RZ United Kingdom)
Produktnormen nach Niederspannungsrichtlinie: *Product standards according to Low Voltage Directive:* *Normes des produit pour la Directive Basse Tension:*	EN 60947-1: 2007 + A1: 2011/A2:2014
Bis/*Until/Jusque* **2016-04-19:** **Ab/*From/De*** **2016-04-20:** **2004/108/EG:** **EMV-Richtlinie** **2014/30/EU:** *2004/108/EC: EMC Directive 2014/30/EU:* *2004/108/CE: Directive CEM 2014/30/UE:*	EN 61000-6-1: 2007 EN 61000-6-2: 2006 EN 61000-6-3: 2007 + A1: 2011 / AC:2012 EN 61000-6-4: 2007 + A1: 2011
2011/65/EU **RoHS-Richtlinie** *2011/65/EU RoHS Directive* *2011/65/UE Directive RoHS*	EN 50581: 2012

Waldenburg, 01.02.2016
Ort und Datum
Place and date
Lieu et date

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Leiter BU Leuchten & Signalgeräte
Head of BU Lightings & Signalling
Directeur BU Eclairage & Appareils de Signal

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EG/EU-Konformitätserklärung
EC/EU Declaration of Conformity
Déclaration de Conformité CE/UE

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Typ(en), *type(s), type(s):*	**SD40IS**

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Bis/*Until/Jusque* **2016-04-19:** — **Ab/*From/De*** **2016-04-20:** **94/9/EG:** **ATEX-Richtlinie** **2014/34/EU:** *94/9/EC: ATEX Directive 2014/34/EU:* *94/9/CE: Directive ATEX 2014/34/UE:*	EN 60079-0:2012 + A11:2013 EN 60079-11:2012 EN 60079-31: 2014
Kennzeichnung, *marking, marquage:*	Ⓔx **II 1 G Ex ia IIC T4 Ga** **II 1 D Ex ia IIIC T190°C Da** CE **0158**
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Waldenburg, 01.02.2016 — i.V. — i.V.

Ort und Datum
Place and date
Lieu et date

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Leiter BU Leuchten & Signalgeräte
Head of BU Lightings & Signalling
Directeur BU Eclairage & Appareils de Signal

J.-P. Rückgauer
Leiter Qualitätsmanagement
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Directeur Assurance de Qualité