IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.: **IECEx IBE 19.0020X**

Certificate history:
Issue 0 (2019-08-27)

Status: **Current**

Issue No: 1

Date of Issue: 2020-04-30

Applicant: **Sigmann Delta GmbH**
Hauptstraße 53
74928 Hüffenhardt
Germany

Equipment: **hand scanner and accessories**

Optional accessory:

Type of Protection: **Intrinsic safety "i", increased safety "e", encapsulation "m" or protection by enclosure "t"**

Marking: Hand scanner with cable:

SD160II^{ex} , SD260II^{ex}

Ex ic IIC T4 Gc

Ex ic IIIC T135 °C Dc

-20 °C ≤ T_{amb} ≤ +50 °C

SD260II^{ex} 3rd

Ex ic IIB T4 Gc

Ex ic IIIC T135 °C Dc

Approved for issue on behalf of the IECEx Certification Body: **Alexander Henker**

Position: **Deputy Head of department Certification Body**

Signature:
(for printed version)

Date:

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2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting www.iecex.com or use of this QR Code.

Certificate issued by:

IBExU Institut für Sicherheitstechnik GmbH
Fuchsmühlenweg 7
09599 Freiberg
Germany

-20 °C ≤ T_{amb} ≤ +50 °C

Hand scanner, battery operated:

SD161BTII^{ex} , SD261BTII^{ex} , SD261BTII^{ex} 3rd

Ex ic IIB T4 Gc

Ex ic IIIC T135 °C Dc

-20 °C ≤ T_{amb} ≤ +50 °C

Base station:

SDx61BTII^{ex} Basis

Ex ic IIC T4 Gc

Ex ic IIIC T135 °C Dc

-20 °C ≤ T_{amb} ≤ +50 °C

SDx61BTII^{ex} Basis 3rd

Ex ic IIC T4 Gc

Ex ic IIIC T135 °C Dc

-20 °C ≤ T_{amb} ≤ +50 °C

Supply module:

SDVM-SD160II^{ex}

[Ex ic Gc] IIC

[Ex ic Dc] IIIC

At type SD.321.xxxx.1x with -20 °C ≤ T_{amb} ≤ +60 °C

At type SD.321.xxxx.2x (High Power) with -20 °C ≤ T_{amb} ≤ +50 °C

Supply module:

SDVE-SD160II^{ex}

Ex ec [ic] IIC T4 Gc

(with SDVM-SD160II^{ex})

Ex tc [ic] IIIC T135°C Dc

at type SD.251.xxxx.1x with -20 °C ≤ Ta ≤ +60 °C

at type SD.251.xxxx.2x (High Power) with -20 °C ≤ Ta ≤ +50 °C

Supply cable:

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SDUSBII^{ex} and SDRS232II^{ex}

Ex mc [ic] IIC/IIB T4 Gc

Ex mc [ic] IIIC T135°C Dc

-20 °C ≤ T_{amb} ≤ +70 °C

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Date of issue: 2020-04-30

Issue No: 1

Manufacturer: **Sigmann Delta GmbH**
Hauptstraße 53
74928 Hüffenhardt
Germany

Additional manufacturing locations:

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements.This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended

STANDARDS :
The equipment and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards

IEC 60079-0:2017 Explosive atmospheres - Part 0: Equipment - General requirements
Edition:7.0

IEC 60079-11:2011 Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"
Edition:6.0

IEC 60079-18:2017 Explosive atmospheres - Part 18: Protection by encapsulation "m"
Edition:4.1

IEC 60079-31:2013 Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure "t"
Edition:2

IEC 60079-7:2017 Explosive atmospheres - Part 7: Equipment protection by increased safety "e"
Edition:5.1

This Certificate **does not** indicate compliance with safety and performance requirements other than those expressly included in the Standards listed above.

TEST & ASSESSMENT REPORTS:
A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in:

Test Reports:

DE/IBE/ExTR19.0017/00 DE/IBE/ExTR19.0017/01

Quality Assessment Report:

DE/IBE/QAR15.0005/01

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EQUIPMENT:
Equipment and systems covered by this Certificate are as follows:

The hand scanners are hand-held, intrinsically safe devices and are used to read barcodes in hazardous areas of EPL Gc and Dc (Zone 2 or Zone 22).

The types SD160IIex, SD260IIex and SD260IIex 3rd are provided with a cable. Power supply and data transmission are carried out via an exchangeable connecting cable.

The types SD161BTIIex and SD261BTIIex and SD261BTIIex 3rd are battery operated. Power is supplied by an internal battery. Data can be transmitted wirelessly via Bluetooth connection to a base station of type SDx61BTIIex Basic and SDx61BTIIex Basic 3rd, which is also designed for operation in hazardous areas of EPL Gc and Dc.

The integrated rechargeable battery is charged after the hand scanner has been placed on the charging charger of the base station. The battery can also be charged outside the hazardous area with a separate charging tray (type SD.Z10.0025.xx or SD.Z10.0027.xx, SD.Z10.0034.xx, SD.Z10.0036.xx) or using a base station (type SD.Z10.0026.xx or SD.Z10.0028.xx, SD.Z10.0035.xx, SD.Z10.0037.xx) with power supply unit (type SD.Z10.0016.xx) outside the Ex area. Furthermore, the Bluetooth handheld scanners can also be charged with a Zone 1 Bluetooth base station (type SD.114.XXXX.XX, SD.117.XXXX.XX, SD.119.XXXX.XX, SD.11C.XXXX.XX) in Zone 2/22.

The wired hand-held scanner and the wired base station are connected to a SDVM-SD160IIex power supply module via a connection cable. Two different variants of the supply module differ in output power (Low Power / High Power) and thus also in the permissible ambient temperature range.

The SDVM-SD160IIex power supply module may be installed and operated in hazardous areas of EPL Gc and Dc when installed in a separately certified housing. The combination of the power supply module with a housing designed for this purpose is referred to as the SDVE-SD160IIex power supply unit.

As an alternative to the supply module, a device designated as a supply line can be used, which is also intended for operation in potentially explosive areas of EPL Gc and Dc.

The supply cable type SDUSBIIex and SDRS232IIex are devices which, in addition to the data connection via USB or via the serial interfaces RS232 or RS422, provide the intrinsically safe power supply for wired hand-held scanners or for the base station with charging cradle. Only cables type SD.Z10.xxxx.xx with a maximum length of 5 m (SDUSBIIex) or 20 m (SDRS232IIex) may be used for connection.

For technical data see Annex

SPECIFIC CONDITIONS OF USE: YES as shown below:

- The ambient temperature range depends on the equipment used and is maximum -20 °C up to +70 °C.

The following conditions are valid only for the supply cables SDUSBII^{ex} and SDRS232II^{ex}:

- Cleaning is permitted only with a damp cloth.
- The intrinsically safe parameter as well as the electrical parameter are mentioned in the instructions.
- The intrinsically safe circuit is grounded.
- The non-intrinsically safe USB connection as well as the free cable ends of the serial supply cable have to be connected outside of the hazardous area.
- The device has to be removed from the hazardous area immediately after detecting damage.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)

- Internal components have been changed.
- A new revision of boards is provided.

Annex:

Annex_IBE19.0020X_01.pdf

IECEx Certificate of Conformity - Annex

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Technical data of the devices:

Hand scanner with cable		**SD160II^{ex}**	**SD260II^{ex}**	**SD260IIex 3rd**
Type		SD.122.xxxx.xx	SD.125.xxxx.xx	SD.123.xxxx.xx
Type of protection:		Ex ic IIC T4 Ex ic IIIC T135°C	Ex ic IIC T4 Ex ic IIIC T135°C	Ex ic IIB T4 Ex ic IIIC T135°C
Ambient temperature range:	T_{amb}	-20 °C … +50 °C	-20 °C … +50 °C	-20 °C … +50 °C
Supply and data circuit:				
maximum input voltage	U_i	6.5 V	6.5 V	6.5 V
maximum internal inductance	L_i	negligible	negligible	negligible
maximum internal capacitance	C_i	< 150 µF	< 203 µF	< 869 µF
optical radiation	P_{opt}	< 35 mW	< 35 mW	< 35 mW
light source		visible red light, λ= 630 nm		

Hand scanner BT, battery operated		**SD161BTII^{ex}**	**SD261BTII^{ex}**	**SD261BTII^{ex} 3rd**
Type		SD.128.xxxx.xx	SD.126.xxxx.xx	SD.124.xxxx.xx
Type of protection:		Ex ic IIB T4 Ex ic IIIC T135°C	Ex ic IIB T4 Ex ic IIIC T135°C	Ex ic IIB T4 Ex ic IIIC T135°C
Ambient temperature range:	T_{amb}	-20 °C … +50 °C	-20 °C … +50 °C	-20 °C … +50 °C
optical radiation	P_{opt}	< 35 mW	< 35 mW	< 35 mW
light source		visible red light, λ= 630 nm		
Bluetooth		V4.0 EDR, 20 dBm (100 mW)		
Frequency		2.402 … 2.483 GHz		
Permitted batteries		Typ SD.Z10.0017.xx (3.6 V; ≤ 1500 mAh) Typ SD.Z10.0018.xx (3.6 V; ≤ 2250 mAh) Typ SD.Z10.0029.xx (3.6 V; ≤ 3000 mAh) Typ SD.Z10.0039.xx (3.6 V; ≤ 2600 mAh)		

Base station, Bluetooth		**SDx61BTII^{ex}**	**SDx61BTII^{ex} 3rd**
Type		SD.129.xxxx.xx	SD.127.xxxx.xx
Type of protection:		Ex ic IIC T4 Ex ic IIIC T135°C	Ex ic IIC T4 Ex ic IIIC T135°C
Ambient temperature range:	T_{amb}	-20 °C … +50 °C	-20 °C … +50 °C
Supply and data circuit:			
maximum input voltage	U_i	6.5 V	6.5 V
maximum internal inductance	L_i	negligible	negligible
maximum internal capacitance	C_i	< 144 µF	< 191 µF
Bluetooth		V4.0 EDR, 20 dBm (100 mW)	
Frequency		2.402 … 2.483 GHz	

Supply module		**SDVM-SD160II**[ex]	
Type		SD.321.xxxx.1x	SD.321.xxxx.2x
Type of protection:		[Ex ic] IIC [Ex ic] IIIC	[Ex ic] IIC [Ex ic] IIIC
Ambient temperature range:	T_{amb}	-20 °C … +60 °C	-20 °C … +50 °C
Intrinsically safe data and supply circuit (terminals X5…X10):			
maximum voltage	U_m	253 V AC	253 V AC
maximum output voltage	U_o	5.5 V DC	5.5 V DC
maximum output current	I_o	440 mA	769 mA
maximum output power	P_o	1.25 W	2.17 W
minimum internal resistance	R_i	25 Ω	14.7 Ω
characteristic		trapezoid	trapezoid
maximum external capacitance	C_o	< 997 µF (L_o = 0)	< 997 µF (L_o = 0)
max. external inductance	L_o	< 0.4 mH (C_o = 0)	< 0.11 mH (C_o = 0)
max. internal inductance	L_i	negligible	negligible
max. internal capacitance	C_i	< 2.2 µF	< 2.2 µF
Non-intrinsically safe data and supply circuit (terminals X1…X4):			
Supply circuit		12 V DC ±10 % 230 mA (xxxx.1x)	12 V DC ±10 % 360 mA (xxxx.2x)
RS232-output	(TxD)	±12 V, 4 mA	±12 V, 4 mA
Equipotential bonding (shielding)	(PA)	terminal PA	terminal PA

Supply module		**SDVE-SD160II**[ex]	
Type		SD.251.xxxx.1x	SD.251.xxxx.2x
Type of protection:		Ex ec [ic] IIC T4 Ex tc [ic] IIIC T135°C	Ex ec [ic] IIC T4 Ex tc [ic] IIIC T135°C
Ambient temperature range:	T_{amb}	-20 °C … +60 °C	-20 °C … +50 °C
Intrinsically safe data and supply circuit (terminals X5…X10):			
maximum voltage	U_m	253 V AC	253 V AC
maximum output voltage	U_o	5.5 V DC	5.5 V DC
maximum output current	I_o	440 mA	769 mA
maximum output power	P_o	1.25 W	2.17 W
minimum internal resistance	R_i	25 Ω	14.7 Ω
characteristic		trapezoid	trapezoid
maximum external capacitance	C_o	< 997 µF (L_o = 0)	< 997 µF (L_o = 0)
max. external inductance	L_o	< 0.4 mH (C_o = 0)	< 0.11 mH (C_o = 0)
max. internal inductance	L_i	negligible	negligible
max. internal capacitance	C_i	< 2.2 µF	< 2.2 µF
Non-intrinsically safe data and supply circuit (terminals X1…X4):			
Supply circuit		12 V DC ±10 % 230 mA (xxxx.1x)	12 V DC ±10 % 360 mA (xxxx.2x)
RS232-output	(TxD)	±12 V, 4 mA	±12 V, 4 mA
Equipotential bonding (shielding)	(PA)	terminal PA	terminal PA

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Supply cable USB		**SDUSBII^{ex}**
Type		SD.121.xxx1.xx
Type of protection:		Ex mc [ic] IIC/IIB T4 Ex mc [ic] IIIC T135°C
Ambient temperature range:	T_{amb}	-20 °C … +70 °C

Intrinsically safe supply circuit (terminals X8…X10):

maximum voltage	U_m	253 V AC
maximum output voltage	U_o	6.38 V DC
maximum output current	I_o	1.071 A
maximum output power	P_o	6.83 W
characteristic		rectangular

Intrinsically safe data circuit (terminals X6, X7):

maximum voltage	U_m	253 V AC
maximum output voltage	U_o	4.82 V DC
max. output current / sum	I_o	39.2 mA
maximum output current / D+	I_o	19.6 mA
maximum output current / D-	I_o	19.6 mA
maximum output power	P_o	47.1 mW

intrinsically safe circuit (in total) (terminals X6 … X10):

maximum voltage	U_m	253 V AC
maximum output voltage	U_o	6.38 V DC
max. output current / sum	I_o	1.11 A
maximum output power	P_o	6.88 W
max. internal capacitance	C_i	< 4.53 µF
max. internal inductance	L_i	negligible
maximum external capacitance	C_o	< 265 µF (L_o = 0) (for IIC) < 1500 µF (L_o = 0) (for IIB)
max. external inductance	L_o	< 0.06 mH (C_o = 0) (for IIC and IIB)

Non-intrinsically safe data and supply circuit (terminals X1 … X5):

Supply circuit	5 V DC ±10 % (USB2.0)
USB-circuit	5 V, D+: 68 mA (X1), D-: 68 mA (X2)
Equipotential bonding (shielding)	terminal X3

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Serial supply cable		**SDRS232II^{ex}**
Type		SD.121.xxx2.xx
Type of protection:		Ex mc [ic] IIC/IIB T4 Ex mc [ic] IIIC T135°C
Ambient temperature range:	T_{amb}	-20 °C … +70 °C
Intrinsically safe supply circuit (terminals X8…X10):		
maximum voltage	U_m	253 V AC
maximum output voltage	U_o	6.38 V DC
max. output current	I_o	1.071 A
maximum output power	P_o	6.83 W
characteristic		rectangular
Intrinsically safe data circuit (terminals X10, X11):		
maximum voltage	U_m	253 V AC
intrinsically safe circuit (in total) (terminals X8 … X11):		
maximum voltage	U_m	253 V AC
maximum output voltage	U_o	6.38 V DC
max. output current / sum	I_o	1.071 A
maximum output power	P_o	6.83 W
max. internal capacitance	C_i	126.2 nF
max. internal inductance	L_i	negligible
maximum external capacitance	C_o	< 280 µF (L_o = 0) (for IIC) < 1500 µF (L_o = 0) (for IIB)
max. external inductance	L_o	< 0.068 mH (C_o = 0) (for IIC and IIB)
Non-intrinsically safe data and supply circuit (terminals X1 … X7):		
Supply circuit		8 … 30 V DC (terminals X5, X7)
Data circuits		RS232 TxD: ±12 V, 4 mA (X1) RS422: +12 V / -7 V T+: 4 mA (X3), T-: 4 mA (X4)
Equipotential bonding (shielding)		terminal X6