[1] **TYPE EXAMINATION CERTIFICATE** - Translation

[2] for non-electrical products of equipment-groups I and II,
equipment-categories M2 and 2 plus products of equipment-category 3

[3] Type examination certificate number **IBExU14ATEXB012 X** | Issue 6

[4] Product: **Hand scanner and accessories**

Hand scanner	Type
SD160II^{ex}	SD.122.****.**
SD260II^{ex}	SD.125.****.**
SD260II^{ex} 3rd	SD.123.****.**
SD164II^{ex}	SD.12D.****.**
SD264II^{ex}	SD.12E.****.**
SD161BTII^{ex}	SD.128.****.**
SD261BTII^{ex}	SD.126.****.**
SD261BTII^{ex}3rd	SD.124.****.**
SD164BTII^{ex}	SD.12F.****.**
SD264BTII^{ex}	SD.12G.****.**
Base station	Type
SDx61BTII^{ex}Basis	SD.129.****.**
SDx61BTII^{ex}Basis 3rd	SD.127.****.**
SDx64BTII^{ex}Basis	SD.12H.****.**
Supply module	Type
SDVM-SD160II^{ex}	SD.321.****.**
Supply unit	Type
SDVE-SD160II^{ex}	SD.251.****.**
Supply cable	Type
SDUSBII^{ex}	SD.121.***1.**
SDRS232II^{ex}	SD.121.***2.**

[5] Manufacturer: Sigmann Delta GmbH

[6] Address: Beim Braunstall 4
97980 Bad Mergentheim
GERMANY

[7] This product and any acceptable variation thereto is specified in the schedule to this certificate and the documents therein referred to.

[8] IBExU Institut für Sicherheitstechnik GmbH certifies that this product has been found to comply with the essential health and safety requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014.

The examination and test results are recorded in the confidential test report IB-22-3-0186.

[9] Compliance with the essential health and safety requirements has been assured by compliance with:
EN IEC 60079-0:2018, EN IEC 60079-7:2015/A1:2018, EN 60079-11:2012, EN 60079-18:2015/A1:2017 and EN 60079-31:2014
except in respect of those requirements listed at item [18] of the schedule.

[10] If the sign "X" or "U" is placed after the certificate number, it indicates that the product is subject to the specific conditions of use specified in the schedule to this certificate.

[11] This type examination certificate relates only to the design of the specified equipment and not to specific items of equipment subsequently manufactured or supplied.

[12] The marking of the product shall include the following:

Hand scanner with cable:

SD160II^{ex}, SD260II^{ex}, SD164II^{ex}:

⟨Ex⟩ II 3G Ex ic IIC T4 Gc X
⟨Ex⟩ II 3D Ex ic IIIC T135 °C Dc X
-20 °C ≤ Ta ≤ +50 °C

SD260II^{ex} 3rd, SD264II^{ex}:

⟨Ex⟩ II 3G Ex ic IIB T4 Gc X
⟨Ex⟩ II 3D Ex ic IIIC T135 °C Dc X
-20 °C ≤ Ta ≤ +50 °C

Handscanner, battery operated:

SD161BTII^{ex}, SD261BTII^{ex}, SD261BTII^{ex} 3rd, SD164BTII^{ex}, SD264BTII^{ex}:

⟨Ex⟩ II 3G Ex ic IIB T4 Gc X
⟨Ex⟩ II 3D Ex ic IIIC T135 °C Dc X
-20 °C ≤ Ta ≤ +50 °C

Base station:

SDx61BTII^{ex} Basis, SDx61BTII^{ex} Basis 3rd, SDx64BTII^{ex} Basis:

⟨Ex⟩ II 3G Ex ic IIC T4 Gc X
⟨Ex⟩ II 3D Ex ic IIIC T135 °C Dc X
-20 °C ≤ Ta ≤ +50 °C

Supply module:

SDVM-SD160II^{ex} ⟨Ex⟩ II (3)G [Ex ic Gc] IIC X
⟨Ex⟩ II (3)D [Ex ic Dc] IIIC X

At type SD.321.****.1* with -20 °C ≤ Ta ≤ +60 °C
at type SD.321.****.2* (High Power) with -20 °C ≤ Ta ≤ +50 °C

Supply unit:

SDVE-SD160II^{ex} ⟨Ex⟩ II 3G Ex ec [ic] IIC T4 Gc X
(with SDVM-SD160II^{ex}) ⟨Ex⟩ II 3D Ex tc [ic] IIIC T135°C Dc X

at type SD.251.****.1* with -20 °C ≤ Ta ≤ +60 °C
at type SD.251.****.2* (High Power) with -20 °C ≤ Ta ≤ +50 °C

Supply cable:

SDUSBII[ex] and SDRS232II[ex] Ⓔx II 3G Ex mc [ic] IIC T4 Gc X or
Ⓔx II 3G Ex mc [ic] IIB T4 Gc X
Ⓔx II 3D Ex mc [ic] IIIC T135°C Dc X
-20 °C ≤ Ta ≤ +70 °C

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Dr.-Ing. P. Cimalla - Stamp -

Certificates without signature and stamp are not valid. Certificates may only be duplicated completely and unchanged. In case of dispute, the German text shall prevail.

Freiberg, 2023-12-12

[13] **Schedule**

[14] **Certificate number IBExU14ATEXB012 X** | Issue 6

[15] **Description of product**

The hand scanners are hand-held, intrinsically safe devices and are used to read barcodes in hazardous areas of categories 3G or 3D (Zone 2 or Zone 22).
The types SD160II^{ex}, SD260II^{ex} and SD260II^{ex} 3rd as well as SD164II^{ex} and SD264II^{ex} are provided with a cable. Power supply and data transmission are carried out via an exchangeable connecting cable.

The types SD161BTII^{ex}, SD261BTII^{ex} and SD261BTII^{ex} 3rd as well as SD164BTII^{ex} and SD264BTII^{ex} are battery operated. Power is supplied by an internal battery. Data can be transmitted wirelessly via Bluetooth connection to a base station of type SDx61BTII^{ex} Basis and SDx61BTII^{ex} Basis 3rd as well as SDx64BTII^{ex}Basis, which is also designed for operation in hazardous areas requiring equipment of categories 3G or 3D.
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.** or SD.Z10.0027.**, SD.Z10.0034.**, SD.Z10.0036.**) or using a base station (type SD.Z10.0026.** or SD.Z10.0028.**, SD.Z10.0035.**, SD.Z10.0037.**, SD.Z10.0041.**, SD.Z10.0042.**) with power supply unit (type SD.Z10.0016.**) outside the Ex area. Furthermore, the Bluetooth handheld scanners can also be charged with a Zone 1 Bluetooth base station (type SD.114.****.**, SD.117.****.**, SD.119.****.**, SD.11C.****.**, SD.11H.****.**) in Zone 2/22.

The wired hand-held scanner and the wired base station are connected to a SDVM-SD160II^{ex} 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-SD160II^{ex} power supply module may be installed and operated in hazardous areas of categories 3G and 3D 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-SD160II^{ex} 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 categories 3G or 3D.
The supply cable type SDUSBII^{ex} and SDRS232II^{ex} 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.****.** with a maximum length of 5 m (SDUSBII^{ex}) or 20 m (SDRS232II^{ex}) may be used for connection.

Technical Data:

	Hand scanner Type SD160II^{ex} SD.122.****.**	Hand scanner Type SD260II^{ex} SD.125.****.**	Hand scanner Type SD260II^{ex} 3rd SD.123.****.**	Hand scanner Type SD164II^{ex} SD.12D.****.**	Hand scanner Type SD264II^{ex} SD.12E.****.**
maximum input voltage U_i	6.5 V	6.5 V	6.5 V	6.5 V	6.5 V
maximum input current I_i	-	-	-	1180 mA	1180 mA
maximum internal inductance L_i	negligible	negligible	negligible	negligible	negligible
maximum internal capacitance C_i	< 150 µF	< 203 µF	< 869 µF	< 141 µF	< 374 µF
Ambient temperature range	-20 °C … +50 °C				
light source	visible red light, P_{opt} < 35 mW				

	BT Hand scanner Type SD161BTII^{ex} SD.128.****.**	BT Hand scanner Type SD261BTII^{ex} SD.126.****.**	BT Hand scanner Type SD261BTII^{ex} 3rd SD.124.****.**	BT Hand scanner Type SD164BTII^{ex} SD.12F.****.**	BT Hand scanner Type SD264BTII^{ex} SD.12G.****.**
maximum input voltage U_i	-	-	-	-	-
maximum internal inductance L_i	negligible	negligible	negligible	negligible	negligible
maximum internal capacitance C_i	401 µF	415 µF	1180 µF	278 µF	521 µF
Ambient temperature range	-20 °C ... +50 °C				
light source	visible red light, P_{opt} < 35 mW				
interface	Bluetooth V2.1/4.0 EDR; Bluetooth class 2/1, 2.402 – 2.4830 GHz; maximum range 30 m / 100 m serial interface RS-232/422; USB				
nominal current	330 mA (standby 80/130 mA; peak 500 mA)				
Battery	Type SD.Z10.0017.** (3.6 V; ≤ 1500 mAh) Type SD.Z10.0018.** (3.6 V; ≤ 2250 mAh) Type SD.Z10.0029.** (3.6 V; ≤ 3000 mAh) Type SD.Z10.0039.** (3.6 V; ≤ 2600 mAh)				

	Bluetooth Base station Type SDx61BTII^{ex}Basis SD.129.****.**	Bluetooth Base station Type SDx61BTII^{ex}Basis 3rd SD.127.****.**	Bluetooth Base station Type SDx64BTII^{ex}Basis SD.12H.****.**
maximum input voltage U_i	6.5 V	6.5 V	6.5 V
maximum input current I_i	-	-	1180 mA
maximum internal inductance L_i	negligible	negligible	negligible
maximum internal capacitance C_i	144 µF	191 µF	231 µF
Ambient temperature range	-20 °C ... +50 °C		
interface	Bluetooth 4.0 EDR; Bluetooth class 2/1, 20 dBm (100 mW) 2.402 – 2.4830 GHz; maximum range 100 m		

Supply module		**SDVM-SD160II^{ex}**	
Type		SD.321.****.1*	SD.321.****.2*
Ambient temperature range:	T_a	-20 °C ... +60 °C	-20 °C ... +50 °C
maximum voltage	U_m	253 V AC	253 V AC
Intrinsically safe data and supply circuit (terminals X5...X10):			
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)
maximum external inductance	L_o	< 0.4 mH (C_o = 0)	< 0.11 mH (C_o = 0)

maximum internal inductance	L_i	negligible	negligible
maximum 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 (****.1*)	12 V DC ±10 % 360 mA (****.2*)
RS232-output	(TxD)	±12 V, 4 mA	±12 V, 4 mA
Equipotential bonding (shielding)	(PA)	terminal PA	terminal PA

Supply unit		**SDVE-SD160II^{ex}**	
Type		SD.251.****.1*	SD.251.****.2*
Ambient temperature range:	T_a	-20 °C ... +60 °C	-20 °C ... +50 °C
maximum voltage	U_m	253 V AC	253 V AC

Intrinsically safe data and supply circuit (terminals X5...X10):

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)
maximum external inductance	L_o	< 0,4 mH (C_o = 0)	< 0,11 mH (C_o = 0)
maximum internal inductance	L_i	negligible	negligible
maximum 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 (****.1*)	12 V DC ±10 % 360 mA (****.2*)
RS232-output	(TxD)	±12 V, 4 mA	±12 V, 4 mA
Equipotential bonding (shielding)	(PA)	terminal PA	terminal PA

Supply cable USB		**SDUSBII^{ex}**	
Type		SD.121.***1.**	
Ambient temperature range:	T_a	-20 °C ... +70 °C	
maximum voltage	U_m	253 V AC	

Intrinsically safe supply circuit (terminals X8...X10):

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 output voltage	U_o	4.82 V DC
maximum 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 output voltage	U_o	6.38 V DC
maximum output current / sum	I_o	1.11 A
maximum output power	P_o	6.88 W
maximum internal capacitance	C_i	< 4.53 µF
maximum internal inductance	L_i	negligible
maximum external capacitance	C_o	< 265 µF (L_o = 0) (for IIC) < 1500 µF (L_o = 0) (for IIB)
maximum 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 (USB)
USB-circuit		5 V, D+: 68 mA (X1), D-: 68 mA (X2)
Equipotential bonding (shielding)		terminal X3

Serial supply cable		**SDRS232II^{ex}**
Type		SD.121.***2.**
Ambient temperature range:	T_a	-20 °C … +70 °C
maximum voltage	U_m	253 V AC

Intrinsically safe supply circuit (terminals X8…X10):		
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 circuit (in total) (terminals X8 … X11):		
maximum output voltage	U_o	6.38 V DC
maximum output current / sum	I_o	1.071 A
maximum output power	P_o	6.83 W
maximum internal capacitance	C_i	126.2 nF
maximum internal inductance	L_i	negligible
maximum external capacitance	C_o	< 280 µF (L_o = 0) (for IIC) < 1500 µF (L_o = 0) (for IIB)
maximum 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	10 … 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

Variations compared to issue 5 of this certificate:

Variation 1
The manufacturer's address has been changed.

Variation 2
Further types SD164II^{ex} and SD264II^{ex}, SD164BTII^{ex} and SD264BTII^{ex} as well as SDx64BTII^{ex}Basis have been added.

[16] **Test report**
The test results are recorded in the confidential test report IB-22-3-0186 of 2023-10-19.
The test documents are part of the test report and they are listed there.

Summary of the test results
The equipment mentioned under [4] further fulfils the requirements for electrical equipment of type of protection intrinsic safety in addition with several types of protection for group II, category 3G and 3D.

[17] **Specific conditions of use**
- The intrinsically safe parameter are mentioned in the instructions.
- Replacing of battery is permitted outside the hazardous area.

The following conditions are valid only for the supply cable types 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 the hazardous area.
- The device has to be removed from the hazardous area immediately after detecting damage.

[18] **Essential health and safety requirements**
In addition to the essential health and safety requirements (EHSRs) covered by the standards listed at item [9], the following are considered relevant to this product, and conformity is demonstrated in the test report:
None

[19] **Drawings and Documents**
The documents are listed in the test report.

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By order

Dr.-Ing. P. Cimalla

Freiberg, 2023-12-12