[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 **IBExU19ATEXB010 X** | Issue 1

[4] Product:

Hand scanner iSCAN102	Type iSCAN102X
Hand scanner iSCAN1092D	Type iSCAN1092D
Hand scanner iSCAN1022D	Type iSCAN1022D
Hand scanner iSCAN212	Type iSCAN212X
Hand scanner iSCAN2022D	Type iSCAN2022D
Hand scanner iSCAN2122D	Type iSCAN2122D
Base station iSCAN212EXB	Type iSCAN212EXB
Base station iSCAN202EXB2D	Type iSCAN202EXB2D
Supply module SDVM-SD160II^{ex}	Type SD.321.xxxx.xx
Supply module SDVE-SD160II^{ex}	Type SD.251.xxxx.xx
Supply cable iSCANPSCABU	Type iSCANPSCABUX
Supply cable iSCANPSCABR	Type iSCANPSCABRX

[5] Manufacturer: Extronics Ltd

[6] Address: 1 Dalton Way,
Midpoint 18
Middlewich
CHESHIRE
CW10 0HU
UNITED KINGDOM

[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-20-3-0048/1.

[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 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:

iSCAN102, iSCAN1092D

Ex II 3G Ex ic IIC T4 Gc

Ex II 3D Ex ic IIIC T135 °C Dc

$-20\ °C \leq T_{amb} \leq +50\ °C$

iSCAN1022D

Ⓔx II 3G Ex ic IIB T4 Gc
Ⓔx II 3D Ex ic IIIC T135 °C Dc
-20 °C ≤ T_{amb} ≤ +50 °C

Hand scanner, battery operated:
iSCAN212, iSCAN2022D, iSCAN2122D

Ⓔx II 3G Ex ic IIB T4 Gc
Ⓔx II 3D Ex ic IIIC T135 °C Dc
-20 °C ≤ T_{amb} ≤ +50 °C

Base station:
iSCAN212EXB, iSCAN202EXB2D

Ⓔx II 3G Ex ic IIC T4 Gc
Ⓔx II 3D Ex ic IIIC T135 °C Dc
-20 °C ≤ T_{amb} ≤ +50 °C

iSCAN212EXB2D

Ⓔx II 3G Ex ic IIC T4 Gc
Ⓔx II 3D Ex ic IIIC T135 °C Dc
-20 °C ≤ T_{amb} ≤ +50 °C

Supply module:
SDVM-SD160II^{ex}

Ⓔx II (3)G [Ex ic Gc] IIC
Ⓔx II (3)D [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} Ⓔx II 3G Ex ec [ic] IIC T4 Gc
(with SDVM-SD160II^{ex}) Ⓔx II 3D 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:
iSCANPSCABU and iSCANPSCABR

Ⓔx II 3G Ex mc [ic] IIC/IIB T4 Gc
Ⓔx II 3D Ex mc [ic] IIIC T135°C Dc
-20 °C ≤ T_{amb} ≤ +70 °C

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- Stamp -

Freiberg, 2020-04-30

[13] **Schedule**

[14] **Certificate number IBExU19ATEXB010 X** | Issue 1

[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 and 3D (Zone 2 or Zone 22).
The types iSCAN102, iSCAN1092D and iSCAN1022D are provided with a cable. Power supply and data transmission are carried out via an exchangeable connecting cable.

The types iSCAN212, iSCAN2022D and iSCAN2122D are battery operated. Power is supplied by an internal battery. Data can be transmitted wirelessly via Bluetooth connection to a base station of type iSCAN212EXB, iSCAN202EXB2D and iSCAN212EXB2D, which is also designed for operation in hazardous areas of categories 3G and 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 iSCAN20XBNOBT2D or iSCAN21XBNOBT, iSCAN211BNOBT2D, iSCAN212BNOBT2D) or using a base station (type iSCAN20XB2D or iSCAN21XB, iSCAN211B2D, iSCAN212B2D)) with power supply unit (type iSCAN2XXBLP) outside the Ex area. Furthermore, the Bluetooth handheld scanners can also be charged with a Zone 1 Bluetooth base station (type iSCAN201EXB2D, iSCAN211EXB, iSCAN211EXB2D) 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 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-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 categories 3G and 3D.
The supply cable type iSCANPSCABU and iSCANPSCABR 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 (iSCANPSCABU) or 20 m (iSCANPSCABR) may be used for connection.

Technical data of the devices:

Hand scanner with cable		**iSCAN102**	**iSCAN1092D**	**iSCAN1022D**
Type		iSCAN102X	iSCAN1092D	iSCAN1022D
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		**iSCAN212**	**iSCAN2022D**	**iSCAN2122D**
Type		iSCAN212X	iSCAN2022D	iSCAN2122D
optical radiation	P_{opt}	< 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		type iSCAN201BATT	(3,6 V; ≤ 2250 mAh)	
		type iSCAN202BATT	(3,6 V; ≤ 3000 mAh)	
		type iSCAN2X2BATT	(3,6 V; ≤ 2600 mAh)	

Base station, Bluetooth		**iSCAN212EXB**	**iSCAN212EXB2D**
Type		iSCAN212EXB	iSCAN212EXB2D
		iSCAN202EXB2D	
Type		iSCAN202EXB2D	
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
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 %	12 V DC ±10 %
		230 mA (xxxx.1x)	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
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 %	12 V DC ±10 %
		230 mA (xxxx.1x)	360 mA (xxxx.2x)
RS232-output	(TxD)	±12 V, 4 mA	±12 V, 4 mA
Equipotential bonding (shielding)	(PA)	terminal PA	terminal PA
Supply cable USB		**iSCANPSCABU**	
Type		iSCANPSCABUX	
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

Serial supply cable	**iSCANPSCABR**
Type	iSCANPSCABRX

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

Variations compared to issue 0 of this certificate:

Variation 1
Internal components have been changed.

Variation 2
A new revision of boards is provided without influence of type of protection.

[16] **Test report**
The test results are recorded in the confidential test report IB-20-3-0048/1 of 2020-04-29.

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.

Safety advice:

- The specified values for the maximum connectable capacitance Co and inductance Lo must not be combined with each other, but apply exclusively.
- The interconnection and connection of intrinsically safe circuits must be verified separately. The characteristics of the intrinsically safe circuits are specified in the operating instructions.

[17] **Specific conditions of use**

- 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 cable type iSCANPSCABU and iSCANPSCABR:

- Cleaning is permitted only with a damp cloth.
- The intrinsically safe parameters as well as the electrical parameters 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.

[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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Freiberg, 2020-04-30