



(1) **EU-TYPE EXAMINATION CERTIFICATE**
(Translation)

(2) Equipment or Protective Systems Intended for Use in
Potentially Explosive Atmospheres - **Directive 2014/34/EU**

(3) EU-Type Examination Certificate Number:

PTB 10 ATEX 2007

Issue: 1

(4) Product: Digital positioner, type 3730-6-110..., 3730-6-510... and 3730-6-210...
with HART communication

(5) Manufacturer: **SAMSON AG**

(6) Address: **Weismüllerstraße 3, 60314 Frankfurt, Germany**

(7) This product and any acceptable variation thereto is 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 17 of the Directive 2014/34/EU of the European Parliament and of the Council, dated 26 February 2014, 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 the Directive.

The examination and test results are recorded in the confidential Test Report PTB Ex 19-25141.

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

EN 60079-0:2018 EN 60079-11:2012 EN 60079-31:2014

(10) If the sign "X" 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 EU-Type Examination Certificate relates only to the design and construction of the specified product in accordance to the Directive 2014/34/EU. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

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

 **II 2G Ex ia IIC T6 Gb and II 2D Ex ia IIC T80 °C Db,**
II 2G Ex db [ia] IIC T6 Gb and II 2D Ex tb IIC T80 °C Db,
II 2D Ex tb IIC T80 °C Db

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, January 20, 2020

On behalf of PTB:

Dr.-Ing. F. Lienisch
Direktor und Professor



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EU-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) **EU-Type Examination Certificate Number PTB 10 ATEX 2007, Issue: 1**

(15) Description of Product

The digital positioner with HART communication is a single or double acting positioner. It is used for the conversion of electrical actuating signals into pneumatic actuating pressure signals.

The equipment is installed inside the hazardous area.

The equipment is available in three designs, type 3730-6-110... with an intrinsic safe supply, type 3730-6-210... with a field barrier connected in series and type 3730-6-510.

Marking

Type 3730-6-110



II 2 G Ex ia IIC T6 Gb and



II 2 D Ex ia IIIC T80 °C Db

Type 3730-6-210 with field barrier, type 3770-1



II 2 G Ex db [ia] IIC T6 Gb and



II 2 D Ex tb IIIC T80 °C Db

Typ 3730-6-510:



II 2 D Ex tb IIIC T80 °C Db

For relationship between type of protection, temperature class, options and permissible ambient temperature range, reference is made to the table:

Type of protection / Options	Permissible ambient temperature range
Ex ia IIC T6	60 °C
Ex ia IIC T5	-55 °C ... 70 °C
Ex ia IIC T4	80 °C
Ex ia IIIC	-55 °C ... 80 °C
Option, structure-borne sound sensor	60 °C
	-40 °C ... 70 °C
	80 °C

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Regarding type of protection „tb“

Dust group	Max. surface temperature	Permissible ambient temperature range
IIIC	T 80 °C	-40 °C ... 70 °C

Electrical data

Type 3730-6-210 with field barrier, type 3770-1 connected in series

Operating values: 4 ... 20 mA

Supply circuit $U_n = 10 \text{ V}$
or NAMUR-limit contact $U_m = 250 \text{ V}$

Type 3730-6-110

The positioner may be connected to certified intrinsically safe circuits provided the permissible maximum values for U_i , I_i and P_i are not exceeded.

The circuits for the voltage/power supply, the serial SSP interface and the external position sensor are operationally interconnected and safely electrically isolated from the other intrinsically safe circuits up to a peak value of the nominal voltage of 60 V. The intrinsically safe circuits are safely electrically isolated from each other up to a peak value of the nominal voltage of 60 V. All circuits are safely isolated from ground.

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Operating values:	4 ... 20 mA
Voltage/power supply (terminals 11/12)	type of protection Ex ia IIC/IIB/IIIC only for connection to a certified intrinsically safe circuit Maximum values: $\begin{aligned} U_i &= 28 \text{ V} \\ I_i &= 115 \text{ mA} \end{aligned}$ or $\begin{aligned} U_i &= 32 \text{ V} \\ I_i &= 87.5 \text{ mA} \\ P_i &= 1 \text{ W} \\ C_i &= 5.3 \text{ nF} \\ L_i &\text{ negligibly low} \end{aligned}$
Position check-back (terminals 31/32)	type of protection Ex ia IIC/IIB/IIIC only for connection to a certified intrinsically safe circuit Maximum values: $\begin{aligned} U_i &= 28 \text{ V} \\ I_i &= 115 \text{ mA} \end{aligned}$ or $\begin{aligned} U_i &= 32 \text{ V} \\ I_i &= 87.5 \text{ mA} \\ P_i &= 1 \text{ W} \\ C_i &= 5.3 \text{ nF} \\ L_i &\text{ negligibly low} \end{aligned}$
or	
Binary input (terminals 31/32)	type of protection Ex ia IIC/IIB/IIIC only for connection to a certified intrinsically safe circuit Maximum values: $\begin{aligned} U_i &= 30 \text{ V} \\ I_i &= 100 \text{ mA} \\ C_i &= 56.3 \text{ nF} \\ L_i &\text{ negligibly low} \end{aligned}$
or	

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Structure-borne sound sensor (passive) type of protection Ex ia IIC/IIB/IIIC
(terminals 31/32) only for connection to a certified
intrinsically safe circuit

Maximum values:

$U_i = 30 \text{ V}$
 $I_i = 100 \text{ mA}$
 $C_o = 1.4 \text{ nF}$
 $C_i = 5.3 \text{ nF}$
 $L_i = \text{negligibly low}$

Inductive limit contact type of protection Ex ia IIC/IIB/IIIC
(terminals 41/42) only for connection to a certified
intrinsically safe circuit

Maximum values:

$U_i = 16 \text{ V}$
 $I_i = 52 \text{ mA}$
 $P_i = 169 \text{ mW}$

or

$U_i = 16 \text{ V}$
 $I_i = 25 \text{ mA}$
 $P_i = 64 \text{ mW}$
 $C_i = 30 \text{ nF}$
 $L_i = 100 \text{ } \mu\text{H}$

For relationship between temperature class, permissible ranges of the ambient temperature, maximum short-circuit currents and maximum power for analyzing units connected to these clamps, reference is made to the table:

Temperature class	Permissible ambient temperature range	I_o / P_o
T6	... 45 °C	52 mA / 169 mW
T5	-55 °C ... 60 °C	
T4	... 75 °C	
T6	... 60 °C	25 mA / 64 mW
T5	-55 °C ... 80 °C	
T4	... 80 °C	

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Software-limit contact type of protection Ex ia IIC/IIB/IIIC
(terminals 41/42 and 51/52) only for connection to a certified
intrinsically safe circuit

Maximum values:

$U_i = 20 \text{ V}$
 $I_i = 60 \text{ mA}$
 $P_i = 250 \text{ mW}$
 $C_i = 5.3 \text{ nF}$
 L_i negligibly low

Magnet valve type of protection Ex ia IIC/IIB/IIIC
(terminals 81/82) only for connection to a certified
intrinsically safe circuit

Maximum values:

$U_i = 28 \text{ V}$
 $I_i = 115 \text{ mA}$
or
 $U_i = 32 \text{ V}$
 $I_i = 87.5 \text{ mA}$
 $C_i = 5.3 \text{ nF}$
 L_i negligibly low

Fault signal output type of protection Ex ia IIC/IIB/IIIC
(terminals 83/84) only for connection to a certified
intrinsically safe circuit

Maximum values:

$U_i = 20 \text{ V}$
 $I_i = 60 \text{ mA}$
 $P_i = 250 \text{ mW}$
 $C_i = 5.3 \text{ nF}$
 L_i negligibly low

Serial SSP interface type of protection Ex ia IIC/IIB/IIIC
(plug connector)

Maximum values (active):

$U_o = 7.88 \text{ V}$
 $I_o = 69.2 \text{ mA}$
 $P_o = 137 \text{ mW}$

linear characteristic

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$C_o = 650 \text{ nF}$
 $L_o = 10 \text{ mH}$

or

only for connection to a certified
intrinsically safe circuit

Maximum values (passive):

$U_i = 20 \text{ V}$
 $I_i = 60 \text{ mA}$
 $P_i = 200 \text{ mW}$

C_i negligibly low
 L_i negligibly low

External position sensor type of protection Ex ia IIC/IIB/IIIC
(Analog PCB, pins p9, p10, p11)

Maximum values:

$U_o = 7.88 \text{ V}$
 $I_o = 13.2 \text{ mA}$
 $P_o = 27 \text{ mW}$

linear characteristic

$L_o = 10 \text{ mH}$
 $C_o = 1 \text{ }\mu\text{F}$
 $L_i = 370 \text{ }\mu\text{H}$
 $C_i = 66 \text{ nF}$

type 3730-6-510:

type of protection „tb“

Voltage/power supply Nominal signal: 4 ... 20 mA
(terminals 11/12) Rated voltage: 28V

Position check-back Nominal signal: 4 ... 20mA
(terminals 31/32) Rated voltage: 28V

Structure-borne sound sensor (passive) Capacity: max. 1,4 nF
(terminals 31/32) Rated voltage: 30V

Binary input Nominal signal: 0 ... 30 V DC
(terminals 31/32) Rated voltage: 30 V

Inductive limit contact Nominal signal: 8 V DC, 8 mA
(terminals 41/42) Rated voltage: 16 V

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Software-limit contact (terminals 41/42; 51/52)	Nominal signal: 8 V DC, 8 mA Rated voltage: 20 V
Magnet valve (terminals 81/82)	Nominal signal: 6 ... 24 V DC Rated voltage: 28 V
Fault signal output (terminals 83/84)	Nominal signal: 6 ... 24 V DC Rated voltage: 28 V
Serial SSP interface (plug connector)	Nominal signal: SSP-interface Rated voltage: 20 V
External position sensor (flange coupling)	Nominal signal: 4 ... 20 mA Rated voltage: 28V

Changes with respect to previous editions

- Adaption to the state of the standards given above.
- Type 3730-6-510 is included in this edition. The changes only concern the marking for dust explosion protection.
- Incorporation of dust explosion protection through intrinsic safety.

(16) Test Report PTB Ex 19-25141

(17) Specific conditions of use
none

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(18) Essential health and safety requirements

Met by compliance with the aforementioned standards.

According to Article 41 of Directive 2014/34/EU, EC-type examination certificates which have been issued according to Directive 94/9/EC prior to the date of coming into force of Directive 2014/34/EU (April 20, 2016) may be considered as if they were issued already in compliance with Directive 2014/34/EU. By permission of the European Commission supplements to such EC-type examination certificates and new issues of such certificates may continue to hold the original certificate number issued before April 20, 2016.

Konformitätsbewertungsstelle, Sektor Explosionsschutz

Braunschweig, January 20, 2020

On behalf of PTB:


Dr.-Ing. F. Lienesch
Direktor und Professor

