

Translation

EU-Type Examination Certificate

Equipment intended for use in potentially explosive atmospheres
Directive 2014/34/EU

EU-Type Examination Certificate Number: **BVS 18 ATEX E 044 X**

Product: **Positioner with HART® communication TROVIS 3730-3-...**

Manufacturer: **SAMSON AG**

Address: **Weismüllerstraße 3, 60314 Frankfurt am Main, Germany**

This product and any acceptable variations thereto are specified in the appendix to this certificate and the documents referred to therein.

DEKRA EXAM GmbH, Notified Body number 0158, in accordance with Article 17 of 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 Report No. BVS PP 18.2081 EU.

The Essential Health and Safety Requirements are assured in consideration of:

EN 60079-0:2012 + A11:2013

EN 60079-11:2012

EN 60079-15:2010

EN 60079-31:2014

General requirements

Intrinsic safety "i"

Type of protection "n"

Protection by enclosures "t"

If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

This EU-Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

The marking of the product shall include the following:

 **II 2G Ex ia IIC T4/T6 Gb** for TROVIS 3730-3-110...
II 2D Ex ia IIIC T85°C Db

 **II 2D Ex tb IIIC T85°C Db** for TROVIS 3730-3-510...

 **II 3G Ex nA IIC T4/T6 Gc** for TROVIS 3730-3-810...
II 2D Ex tb IIIC T85°C Db

DEKRA EXAM GmbH
Bochum, 2018-06-07

Signed: Ralf Leiendecker

Certifier

Signed: Dr Michael Wittler

Approver

15.2 Description

The Positioner with HART® communication TROVIS 3730-3-... is a single acting positioner for attachment to pneumatic control valves.

The positioner ensures a predetermined assignment of the valve position (controlled variable x) to the input signal (reference variable w). It compares the input signal received from a control system to the travel or rotational angle of the control valve and issues a corresponding output signal pressure (output variable y) for the pneumatic actuator.

The apparatus consists of an enclosure with several fixed mounted PCBs. In addition to the power supply terminals +11 / -12 the device contains slots for different options modules. The options modules provide additional connection terminals for external circuits. The serial interface (5 pin socket) for performing a firmware update may only be used by the manufacturer.

Depending on the type of the apparatus there are different types of protection:

TROVIS 3730-3-110... has type of protection "ia" and may be used for Category 2G and 2D (Zone 1 and Zone 21).

TROVIS 3730-3-510... has type of protection "tb" and may be used for Category 2D in Zone 21.

TROVIS 3730-3-810... has type of protection "nA" and "tb" and may be used for Category 3G and 2D in Zone 2 and Zone 21.

The Options Module Code C includes a Pepperl+Fuchs inductive limit switch type SJ2-SN (Certificate: PTB 00 ATEX 2049X; standard EN 60079-0:2012-A11:2013, EN 60079-11:2012).

For TROVIS 3730-3-110... (type of protection "ia"), when using the options module Code C: Two different sets of input parameters are permissible (supply variant type 2 and type 3). If the options module is supplied with parameters type 3, the ambient temperature is limited.

15.3 Parameters

15.3.1 Electrical Parameters for TROVIS 3730-3-110

Type of protection "ia"

15.3.1.1 Signal Circuit Terminal +11 / -12

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		115	mA
Maximum input power	P_i		1	W
Maximum internal capacitance	C_i		14.6	nF
Maximum internal inductance	L_i		negligible	

15.3.1.2 Software Limit Switches (NAMUR) Terminals +45 / -46 and +55 / -56

Maximum input voltage	U_i	DC	16	V
Maximum input current	I_i		52	mA
Maximum input power	P_i		169	mW
Maximum internal capacitance	C_i		11.1	nF
Maximum internal inductance	L_i		negligible	

15.3.1.3 Binary Output (NAMUR) Terminal +83 / -84

Maximum input voltage	U_i	DC	16	V
Maximum input current	I_i		52	mA
Maximum input power	P_i		169	mW
Maximum internal capacitance	C_i		11.1	nF
Maximum internal inductance	L_i		negligible	

15.3.1.4 Binary Input (24 V DC) Terminal +87 / -88

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		115	mA
Maximum input power	P_i		1	W
Maximum internal capacitance	C_i		37.1	nF
Maximum internal inductance	L_i		negligible	

15.3.1.5 Position Transmitter Terminal +31 / -32

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		115	mA
Maximum input power	P_i		1	W
Maximum internal capacitance	C_i		11.1	nF
Maximum internal inductance	L_i		negligible	

15.3.1.6 Forced Venting Terminal +81 / -82

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		115	mA
Maximum input power	P_i		1	W
Maximum internal capacitance	C_i		11.1	nF
Maximum internal inductance	L_i		negligible	

15.3.1.7 Inductive Limit Switches Terminals +41 / -42 and +51 / -52

		Type 2	Type 3
Maximum input voltage	U_i	16 V	16 V
Maximum input current	I_i	25 mA	52 mA
Maximum input power	P_i	64 mW	169 mW
Maximum internal capacitance	C_i	41.1 nF	41.1 nF
Maximum internal inductance	L_i	100 μ H	100 μ H

15.3.2 Electrical Parameters for type of protection "tb" and "nA"

15.3.2.1 Signal Circuit Terminal +11 / -12

Nominal input current	I_N	4 ... 20	mA
Nominal input voltage	U_N	9.8	V
Nominal input power	P_N	212	mW

15.3.2.2 Software Limit Switches (NAMUR) Terminals +45 / -46 and +55 / -56

Nominal input voltage	U_N	8.2	V
Nominal input power	P_N	17	mW

15.3.2.3 Binary Output (NAMUR) Terminal +83 / -84

Nominal input voltage	U_N	8.2	V
Nominal input power	P_N	17	mW

15.3.2.4 Binary Input (24 V DC) Terminal +87 / -88

Nominal input voltage	U_N	24	V
Nominal input power	P_N	12	mW

15.3.2.5 Position Transmitter Terminal +31 / -32

Nominal input voltage	U_N	24	V
Nominal input power	P_N	518	mW

15.3.2.6 Forced Venting Terminal +81 / -82

Nominal input voltage	U_N	24	V
Nominal input power	P_N	173	mW

15.3.2.7 Inductive Limit Switches Terminals +41 / -42 and +51 / -52

Nominal input voltage	U_N	8.2	V
Nominal input power	P_N	17	mW

15.3.3 Thermal Parameters

15.3.3.1 For TROVIS 3730-3-110... Group II application (type of protection "ia")

Temperature Class	T4	$-40\text{ °C} \leq T_{\text{amb}} \leq +80\text{ °C}$
Temperature Class	T6	$-40\text{ °C} \leq T_{\text{amb}} \leq +55\text{ °C}$

Operation with Inductive Limit Switches supply variant type 3

Temperature Class	T4	$-40\text{ °C} \leq T_{\text{amb}} \leq +70\text{ °C}$
Temperature Class	T6	$-40\text{ °C} \leq T_{\text{amb}} \leq +45\text{ °C}$

Operation with external position sensor

Temperature Class	T4	$-30\text{ °C} \leq T_{\text{amb}} \leq +80\text{ °C}$
Temperature Class	T6	$-30\text{ °C} \leq T_{\text{amb}} \leq +55\text{ °C}$

15.3.3.2 For TROVIS 3730-3-110... Group III application (type of protection "ia")

Maximum surface temperature	T 85 °C	$-40\text{ °C} \leq T_{\text{amb}} \leq +55\text{ °C}$
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Operation with external position sensor

Maximum surface temperature	T 85 °C	$-30\text{ °C} \leq T_{\text{amb}} \leq +55\text{ °C}$
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15.3.3.3 For TROVIS 3730-3-510... and TROVIS 3730-3-810... (type of protection "nA" and "tb")

Temperature Class	T4	$-40\text{ °C} \leq T_{\text{amb}} \leq +80\text{ °C}$
Temperature Class	T6	$-40\text{ °C} \leq T_{\text{amb}} \leq +55\text{ °C}$
Maximum surface temperature	T 85 °C	$-40\text{ °C} \leq T_{\text{amb}} \leq +70\text{ °C}$

16 Report Number

BVS PP 18.2081 EU, as of 2018-06-07

17 Special Conditions for Use

For TROVIS 3730-3-110...

For applications in dust group IIIC, the cable glands and blanking plugs supplied must be replaced with certified ones. The cable glands and blanking plugs must be suitable for the corresponding ambient temperatures and have a degree of protection of at least IP54.

18 Essential Health and Safety Requirements

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 Drawings and Documents

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA EXAM GmbH
Bochum, dated 2018-06-07
BVS-Su/Nu A 20170879



Certifier



Approver

Translation

EU-Type Examination Certificate

Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014

EU-Type Examination Certificate Number: **BVS 18 ATEX E 044 X** Issue: **01**

Equipment: **Positioner with HART® communication TROVIS 3730-3-...**

Manufacturer: **SAMSON AG**

Address: **Weismüllerstraße 3, 60314 Frankfurt am Main, Germany**

This product and any acceptable variations thereto are specified in the appendix to this certificate and the documents referred to therein.

DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of 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 Report No. BVS PP 18.2081 EU/N1. This issue of the EU-Type Examination Certificate replaces the previous issue of the EU-Type Examination Certificate BVS 18 ATEX E 044 X.

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

EN IEC 60079-0:2018	General requirements
EN IEC 60079-7:2015 + A1:2018	Increased Safety "e"
EN 60079-11:2012	Intrinsic Safety "i"
EN 60079-31:2014	Protection by Enclosure "t"

If the sign "X" is placed after the certificate number, it indicates that the product is subject to the "Specific Conditions of Use" listed under item 17 of this certificate.

This EU-Type Examination Certificate relates only to the technical design 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.

The marking of the product shall include the following:

 **II 2G Ex ia IIC T4/T6 Gb** für TROVIS 3730-3-110...
II 2D Ex ia IIIC T85°C Db

 **II 2D Ex tb IIIC T85°C Db** für TROVIS 3730-3-510...

 **II 3G Ex ec IIC T4/T6 Gc** für TROVIS 3730-3-810...
II 2D Ex tb IIIC T85°C Db

DEKRA Testing and Certification GmbH
Bochum, 2023-05-11

Signed: Dr. Rolf Krökel

Managing Director



13 Appendix

14 EU-Type Examination Certificate

BVS 18 ATEX E 044 X issue 01

15 Product description

15.1 Subject and type

Positioner with HART® communication TROVIS 3730-3-*****

TROVIS 3730-3-

a	b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q	r	s	t
a	b	c	Explosion protection																
1	1	0	II 2G Ex ia IIC T4/T6 Gb / II 2G Ex ia IIIC T85°C Db																
5	1	0	II 2D Ex tb IIIC T85°C Db																
8	1	0	II 3G Ex ec IIC T4/T6 Gc / II 2D Ex tb IIIC T85°C Db																
			d	Function															
			-	Not relevant															
			e	Slot A Option															
			0	Without															
			1	Position transmitter 4 to 20 mA															
			2	Binary input 24 V DC															
			f	Slot B Option															
			0	Without															
			1	Position transmitter 4 to 20 mA															
			2	Binary input 24 V DC															
			3	Forced venting															
			g	Slot C Option															
			0	Without															
			2	Software limit switches + Binary output (NAMUR)															
			3	1 x Inductive limit switches + Binary output (NAMUR)															
			4	2 x Inductive limit switches + Binary output (NAMUR)															
			5	1 x Software limit switches + 1 x Inductive limit switches + Binary output (NAMUR)															
			h	Slot D Option															
			0	Without															
			1	External travel sensor, 1050-0650 housing with M12x1 connector; with 10 m connecting cable															
			2	External travel sensor, 1050-0650 housing with M12x1 connector; ready mounted															
			3	External travel sensor; 3712 housing with connector; ready mounted															
			4	External travel sensor; 3712 housing with connector; with 10 m connecting cable															
			5	External travel sensor; 3712 housing with cable gland; ready mounted															
			6	External travel sensor; 3712 housing with 10 m connecting cable															
			i	Reserved															
			-	Not relevant															
			j	Pressure Sensor															
			0	Without															
			1	With pressure sensor															
			k	Emergency shutdown															
			-	Not relevant															
			l	Electrical connection															
			0	Without															
			1	Two M20x1.5, one plastic cable gland															
			2	Two M20x1.5, two metal cable glands															
			m	Reserved															
			-	Not relevant															
			n	Housing material															
			0	Aluminium EN AC-44300DF															
			1	Stainless steel 1.4408															
			o	Cover															
			1	With round window															
			2	Closed (without window)															
			p	q	Housing version														
			-	-	Not relevant														
			r	Additional approval															
			-	Not relevant															
			s	Ship approval															
			-	Not relevant															
			t	Permissible ambient temperature															
			-	Not relevant															

- If Slot D options 5/6 are configured only Slot A option 0 is permitted.
- For TROVIS 3730-3-510...: For Slot D, only options 0, 5 and 6 are permitted.
- For TROVIS 3730-3-810...: For Slot D, only option 0 is permitted.

15.2 Description

The Positioner with HART® communication TROVIS 3730-3-... is a single acting positioner for attachment to pneumatic control valves.

The positioner ensures a predetermined assignment of the valve position (controlled variable x) to the input signal (reference variable w). It compares the input signal received from a control system to the travel or rotational angle of the control valve and issues a corresponding output signal pressure (output variable y) for the pneumatic actuator.

The apparatus consists of an enclosure with several fixed mounted PCBs. In addition to the power supply terminals +11 / -12 the device contains slots for different options modules. The options modules provide additional connection terminals for external circuits. The serial interface (5 pin socket) for performing a firmware update may only be used by the manufacturer.

Depending on the type of the apparatus there are different types of protection:

TROVIS 3730-3-110... has type of protection "ia" and may be used for Category 2G and 2D (Zone 1 and Zone 21).

TROVIS 3730-3-510... has type of protection "tb" and may be used for Category 2D in Zone 21. TROVIS 3730-3-810... has type of protection "ec" and "tb" and may be used for Category 3G and 2D in Zone 2 and Zone 21.

The options modules are exchangeable.

The type of protection of the apparatus shall be marked on the type label of the options modules. It is not allowed to use an options module with type of protection "ia" if it has ever been supplied with a non-intrinsically safe circuit.

The Options Module Code C includes a Pepperl+Fuchs inductive limit switch type SJ2-SN (Certificate: PTB 00 ATEX 2049X; standard EN IEC 60079-0:2018, EN 60079-11:2012). The special conditions for safe use when operated below -20 °C are satisfied by mounting conditions of the sensor in the positioner enclosure.

For TROVIS 3730-3-110... (type of protection "ia"), when using the options module Code C: Two different sets of input parameters are permissible (supply variant type 2 and type 3). If the options module is supplied with parameters type 3, the ambient temperature is limited. Refer to thermal ratings.

For configuration Slot D options 1/2 the external position sensor 1050-0650 with closed cover and Flange coupling connector is used.

For Slot D options 3/4/5/6 the position sensor Type 3712 with Flange coupling connector or with Cable entry (Additional PCB with connectors at SLOT D) is used.

Reason for this issue

- Introduction of a new Pressure sensor PCB
- Extension of the type code
- Modification of Multifunction and Modem PCBs
- Changeover of protection type "nA" to "ec"
- Updating of the applied standard EN IEC 60079-0:2018

15.3 Parameters

15.3.1 Electrical Parameters for type of protection "ia"

15.3.1.1 Signal Circuit Terminal +11 / -12

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		115	mA
Maximum input power	P_i		1	W
Maximum internal capacitance	C_i		14.6	nF
Maximum internal inductance	L_i		negligible	

15.3.1.2 Software Limit Switches (NAMUR) Terminals +45 / -46 and +55 / -56

Maximum input voltage	U_i	DC	16	V
Maximum input current	I_i		52	mA
Maximum input power	P_i		169	mW
Maximum internal capacitance	C_i		11.1	nF
Maximum internal inductance	L_i		negligible	

15.3.1.3 Binary Output (NAMUR) Terminal +83 / -84

Maximum input voltage	U_i	DC	16	V
Maximum input current	I_i		52	mA
Maximum input power	P_i		169	mW
Maximum internal capacitance	C_i		16	nF
Maximum internal inductance	L_i		negligible	

15.3.1.4 Binary Input (24 V DC) Terminal +87 / -88

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		115	mA
Maximum input power	P_i		1	W
Maximum internal capacitance	C_i		37.1	nF
Maximum internal inductance	L_i		negligible	

15.3.1.5 Position Transmitter Terminal +31 / -32

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		115	mA
Maximum input power	P_i		1	W
Maximum internal capacitance	C_i		16	nF
Maximum internal inductance	L_i		negligible	

15.3.1.6 Forced Venting Terminal +81 / -82

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		115	mA
Maximum input power	P_i		1	W
Maximum internal capacitance	C_i		13.5	nF
Maximum internal inductance	L_i		negligible	

15.3.1.7 Inductive Limit Switches Terminals +41 / -42 and +51 / -52

		Type 2	Type 3
Maximum input voltage	U_i	16 V	16 V
Maximum input current	I_i	25 mA	52 mA
Maximum input power	P_i	64 mW	169 mW
Maximum internal capacitance	C_i	46 nF	46 nF
Maximum internal inductance	L_i	100 μ H	100 μ H

15.3.2 Electrical Parameters for types of protection “tb” and “ec”

15.3.2.1 Signal Circuit Terminal +11 / -12

Nominal input current	I_N	4 ... 20	mA
Nominal input voltage	U_N	9.8	V
Nominal input power	P_N	212	mW

15.3.2.2 Software Limit Switches (NAMUR) Terminals +45 / -46 and +55 / -56

Nominal input voltage	U_N	8.2	V
Nominal input power	P_N	17	mW

15.3.2.3 Binary Output (NAMUR) Terminal +83 / -84

Nominal input voltage	U_N	8.2	V
Nominal input power	P_N	17	mW

15.3.2.4 Binary Input (24 V DC) Terminal +87 / -88

Nominal input voltage	U_N	24	V
Nominal input power	P_N	12	mW

15.3.2.5 Position Transmitter Terminal +31 / -32

Nominal input voltage	U_N	24	V
Nominal input power	P_N	518	mW

15.3.2.6 Forced Venting Terminal +81 / -82

Nominal input voltage	U_N	24	V
Nominal input power	P_N	173	mW

15.3.2.7 Inductive Limit Switches Terminals +41 / -42 and +51 / -52

Nominal input voltage	U_N	8.2	V
Nominal input power	P_N	17	mW

15.3.3 Thermal Parameters

15.3.3.1 For TROVIS 3730-3-110... Group II application (type of protection “ia”)

Temperature Class	T4	$-40\text{ °C} \leq T_{\text{amb}} \leq +80\text{ °C}$
Temperature Class	T6	$-40\text{ °C} \leq T_{\text{amb}} \leq +55\text{ °C}$

Operation with Inductive Limit Switches supply variant type 3

Temperature Class	T4	$-40\text{ °C} \leq T_{\text{amb}} \leq +70\text{ °C}$
Temperature Class	T6	$-40\text{ °C} \leq T_{\text{amb}} \leq +45\text{ °C}$

Operation with external position sensor

Temperature Class	T4	$-30\text{ °C} \leq T_{\text{amb}} \leq +80\text{ °C}$
Temperature Class	T6	$-30\text{ °C} \leq T_{\text{amb}} \leq +55\text{ °C}$

15.3.3.2 For TROVIS 3730-3-110... Group III application (type of protection “ia”)

Maximum surface temperature	T 85 °C	$-40\text{ °C} \leq T_{\text{amb}} \leq +55\text{ °C}$
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Operation with external position sensor

Maximum surface temperature	T 85 °C	$-30\text{ °C} \leq T_{\text{amb}} \leq +55\text{ °C}$
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15.3.3.3 For TROVIS 3730-3-810... (type of protection “ec”)

Temperature Class	T4	$-40\text{ °C} \leq T_{\text{amb}} \leq +80\text{ °C}$
Temperature Class	T6	$-40\text{ °C} \leq T_{\text{amb}} \leq +55\text{ °C}$

15.3.3.4 For TROVIS 3730-3-510... and TROVIS 3730-3-810... (type of protection “tb”)

Maximum surface temperature	T 85 °C	$-40\text{ °C} \leq T_{\text{amb}} \leq +70\text{ °C}$
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16 Report Number

BVS PP 18.2081 EU, as of 2023-05-11

17 **Specific Conditions of Use**

For TROVIS 3730-3-110...:

For applications in Dust Group IIIC, the cable glands and blanking plugs supplied must be replaced with certified ones. The cable glands and blanking plugs must be suitable for the corresponding ambient temperatures and have a degree of protection of at least IP54.

18 **Essential Health and Safety Requirements**

Met by compliance with the requirements mentioned in item 9.

19 **Remarks and additional information**

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2023-05-11
BVS-Fro/Mu A 20210707 / 342369000



Managing Director

Translation

EU-Type Examination Certificate

Directive 2014/34/EU of the European Parliament and of the Council of 26 February 2014

EU-Type Examination Certificate Number: **BVS 18 ATEX E 044 X** Issue: **02**

Equipment: **Positioner with HART® communication TROVIS 3730-3-...**

Manufacturer: **SAMSON AG**

Address: **Weismüllerstraße 3, 60314 Frankfurt am Main, Germany**

This product and any acceptable variations thereto are specified in the appendix to this certificate and the documents referred to therein.

DEKRA Testing and Certification GmbH, Notified Body number 0158, in accordance with Article 17 of 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 Report No. BVS PP 18.2081 EU/N2. This issue of the EU-Type Examination Certificate replaces the previous issue of the EU-Type Examination Certificate BVS 18 ATEX E 044 X issue 01.

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

EN IEC 60079-0:2018	General requirements
EN IEC 60079-7:2015 + A1:2018	Increased Safety "e"
EN 60079-11:2012	Intrinsic Safety "i"
EN 60079-31:2014	Protection by Enclosure "t"

If the sign "X" is placed after the certificate number, it indicates that the product is subject to the "Specific Conditions of Use" listed under item 17 of this certificate.

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The marking of the product shall include the following:

 **II 2G Ex ia IIC T4/T6 Gb** for TROVIS 3730-3-110...
II 2D Ex ia IIIC T85°C Db

 **II 2D Ex tb IIIC T85°C Db** for TROVIS 3730-3-510...

 **II 3G Ex ec IIC T4/T6 Gc** for TROVIS 3730-3-810...
II 2D Ex tb IIIC T85°C Db

 **II 2G Ex ia IIC T4/T6 Gb** for TROVIS 3730-3-429...
II 2D Ex ia IIIC T85°C Db; or
II 2D Ex tb IIIC T85°C Db and
II 3G Ex ec IIC T4/T6 Gc

DEKRA Testing and Certification GmbH
Bochum, 2025-02-21

Signed: Oliver Brumm

Managing Director

15.2 Description

The Positioner with HART® communication TROVIS 3730-3-... is a single acting positioner for attachment to pneumatic control valves.

The positioner ensures a predetermined assignment of the valve position (controlled variable x) to the input signal (reference variable w). It compares the input signal received from a control system to the travel or rotational angle of the control valve and issues a corresponding output signal pressure (output variable y) for the pneumatic actuator.

The apparatus consists of an enclosure with several fixed mounted PCBs. In addition to the power supply terminals +11 / -12 the device contains slots for different options modules. The options modules provide additional connection terminals for external circuits. The serial interface (5 pin socket) for performing a firmware update may only be used by the manufacturer.

Depending on the type of the apparatus there are different types of protection:

TROVIS 3730-3-110... has type of protection "ia" and may be used for Category 2G and 2D (Zone 1 and Zone 21).

TROVIS 3730-3-510... has type of protection "tb" and may be used for Category 2D in Zone 21.

TROVIS 3730-3-810... has type of protection "ec" and "tb" and may be used for Category 3G and 2D in Zone 2 and Zone 21.

TROVIS 3730-3-429... has type of protection "ia" or "ec" and "tb" and it may be used for Category 2G or 3G and 2D (Zone 1 or Zone 2 and Zone 21). If the device is operated in non-intrinsically safe manner, it may no longer used as an intrinsically safe device (it is included in the safety instructions).

The options modules are exchangeable.

The type of protection of the apparatus shall be marked on the type label of the options modules. It is not allowed to use an options module with type of protection "ia" if it has ever been supplied with a non-intrinsically safe circuit.

The Options Module Code C includes a Pepperl+Fuchs inductive limit switch type SJ2-SN (Certificate: PTB 00 ATEX 2049X; standard EN IEC 60079-0:2018, EN 60079-11:2012). The special conditions for safe use when operated below -20 °C are satisfied by mounting conditions of the sensor in the positioner enclosure.

For TROVIS 3730-3-110... and TROVIS 3730-3-429 (type of protection "ia"), when using the options module Code C:

Two different sets of input parameters are permissible (supply variant type 2 and type 3). If the options module is supplied with parameters type 3, the ambient temperature is limited. Refer to thermal ratings.

Reason for this issue

- Modification of the Multifunction - PCB
- Modification of the Pressure sensor - PCB
- Removing the external position sensors
- Summarizing ATEX and IECEx marking
- Modification of the type code

15.3 Parameters

15.3.1 Electrical Parameters for type of protection "ia"

15.3.1.1 Signal Circuit Terminal +11 / -12

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		115	mA
Maximum input power	P_i		1	W
Maximum internal capacitance	C_i		14.6	nF
Maximum internal inductance	L_i		negligible	

15.3.1.2 Software Limit Switches (NAMUR) Terminals +45 / -46 and +55 / -56

Maximum input voltage	U_i	DC	16	V
Maximum input current	I_i		52	mA
Maximum input power	P_i		169	mW
Maximum internal capacitance	C_i		11.1	nF
Maximum internal inductance	L_i		negligible	

15.3.1.3 Binary Output (NAMUR) Terminal +83 / -84

Maximum input voltage	U_i	DC	16	V
Maximum input current	I_i		52	mA
Maximum input power	P_i		169	mW
Maximum internal capacitance	C_i		16	nF
Maximum internal inductance	L_i		negligible	

15.3.1.4 Binary Input (24 V DC) Terminal +87 / -88

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		115	mA
Maximum input power	P_i		1	W
Maximum internal capacitance	C_i		37.1	nF
Maximum internal inductance	L_i		negligible	

15.3.1.5 Position Transmitter Terminal +31 / -32

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		115	mA
Maximum input power	P_i		1	W
Maximum internal capacitance	C_i		16	nF
Maximum internal inductance	L_i		negligible	

15.3.1.6 Forced Venting Terminal +81 / -82

Maximum input voltage	U_i	DC	28	V
Maximum input current	I_i		115	mA
Maximum input power	P_i		1	W
Maximum internal capacitance	C_i		13.5	nF
Maximum internal inductance	L_i		negligible	

15.3.1.7 Inductive Limit Switches Terminals +41 / -42 and +51 / -52

	Type 2	Type 3		
Maximum input voltage	U_i	16 V	16	V
Maximum input current	I_i	25 mA	52	mA
Maximum input power	P_i	64 mW	169	mW
Maximum internal capacitance	C_i	46 nF	46	nF
Maximum internal inductance	L_i	100 μ H	100	μ H

15.3.2 Electrical Parameters for types of protection "tb" and "ec"

15.3.2.1 Signal Circuit Terminal +11 / -12

Nominal input current	I_N	4 ... 20	mA
Nominal input voltage	U_N	9.8	V
Nominal input power	P_N	212	mW

15.3.2.2 Software Limit Switches (NAMUR) Terminals +45 / -46 and +55 / -56

Nominal input voltage	U_N	8.2	V
Nominal input power	P_N	17	mW

15.3.2.3 Binary Output (NAMUR) Terminal +83 / -84

Nominal input voltage	U_N	8.2	V
Nominal input power	P_N	17	mW

15.3.2.4 Binary Input (24 V DC) Terminal +87 / -88

Nominal input voltage	U_N	24	V
Nominal input power	P_N	12	mW

15.3.2.5 Position Transmitter Terminal +31 / -32

Nominal input voltage	U_N	24	V
Nominal input power	P_N	518	mW

15.3.2.6 Forced Venting Terminal +81 / -82

Nominal input voltage	U_N	24	V
Nominal input power	P_N	173	mW

15.3.2.7 Inductive Limit Switches Terminals +41 / -42 and +51 / -52

Nominal input voltage	U_N	8.2	V
Nominal input power	P_N	17	mW

15.3.3 Thermal Parameters

- 15.3.3.1 For TROVIS 3730-3-110... and TROVIS 3730-3-429... Group II application (type of protection "ia")
- | | | |
|-------------------|----|---|
| Temperature Class | T4 | $-40\text{ °C} \leq T_{amb} \leq +80\text{ °C}$ |
| Temperature Class | T6 | $-40\text{ °C} \leq T_{amb} \leq +55\text{ °C}$ |

Operation with Inductive Limit Switches supply variant type 3

Temperature Class	T4	$-40\text{ °C} \leq T_{amb} \leq +70\text{ °C}$
Temperature Class	T6	$-40\text{ °C} \leq T_{amb} \leq +45\text{ °C}$

- 15.3.3.2 For TROVIS 3730-3-110... and TROVIS 3730-3-429... Group III application (type of protection "ia")
- | | | |
|-----------------------------|--------------------|---|
| Maximum surface temperature | $T_{85}\text{ °C}$ | $-40\text{ °C} \leq T_{amb} \leq +55\text{ °C}$ |
|-----------------------------|--------------------|---|

- 15.3.3.3 For TROVIS 3730-3-429... (type of protection "ec")

Temperature Class	T4	$-40\text{ °C} \leq T_{amb} \leq +80\text{ °C}$
Temperature Class	T6	$-40\text{ °C} \leq T_{amb} \leq +55\text{ °C}$

- 15.3.3.4 For TROVIS 3730-3-510 ..., TROVIS 3730-3-810... and TROVIS 3730-3-429... (type of protection "tb")
- | | | |
|-----------------------------|--------------------|---|
| Maximum surface temperature | $T_{85}\text{ °C}$ | $-40\text{ °C} \leq T_{amb} \leq +70\text{ °C}$ |
|-----------------------------|--------------------|---|

16 Report Number

BVS PP 18.2081 EU, as of 2025-02-21

17 Specific Conditions of Use

For TROVIS 3730-3-110... and TROVIS 3730-3-429... for Category 2D
(Type of protection "ia"):

For applications in Dust Group IIIC, the cable glands and blanking plugs supplied must be replaced with certified ones. The cable glands and blanking plugs must be suitable for the corresponding ambient temperatures and have a degree of protection of at least IP54.

18 **Essential Health and Safety Requirements**

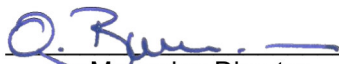
Met by compliance with the requirements mentioned in item 9.

19 **Remarks and additional information**

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2025-02-21
BVS-Fro/MGR A 20240233 / 3433922


Managing Director