

Translation

EU-Type Examination Certificate

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

EU-Type Examination Certificate Number: **BVS 16 ATEX E 117**

Product: **Positioner type TROVIS / TROVIS SAFE 3793 - **0 HART®**

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 16.2199 EU.

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

EN 60079-0:2012 + A11:2013	General requirements
EN 60079-11:2012	Intrinsic Safety "i"
EN 60079-15:2010	Equipment protection by type of protection "n"
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 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 type 3793 - 110
	II 2D Ex ia IIIC T85°C Db	
	II 3G Ex nA IIC T4/T6 Gc	for type 3793 - 810
	II 2D Ex tb IIIC T85°C Db	
	II 2D Ex tb IIIC T85°C Db	for type 3793 - 510

DEKRA EXAM GmbH
Bochum, 2016-12-01

Signed: Dr. Franz Eickhoff

Certifier

Signed: Ralf Leiendecker

Approver

13 **Appendix**
14 **EU-Type Examination Certificate**
BVS 16 ATEX E 117

15 **Product description**

15.1 **Subject and type**

Positioner TROVIS / TROVIS SAFE 3793 HART®

3 7 9 3 - b c d e f g h i j k l m n o p q

b	c	d	e	f	g	h	i	j	k	l	m	n	o	p	q
x	x	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Explosion protection

1 1 0 II 2G Ex ia IIC T4/T6 Gb / II 2D Ex ia IIIC T85°C Db

5 1 0 II 2D Ex tb IIIC T85°C Db

8 1 0 II 3G Ex nA IIC T4/T6 Gc / II 2D Ex tb IIIC T85°C Db

b c d

Function (not safety relevant)

e

Pneumatics (not safety relevant)

f g

Option module 1

0 0 Without

1 0 with Software Limit Switches, Binary Input and Output (Code N)

4 0 with Position Transmitter Binary Input and Output (Code T)

8 0 with Forced Venting, Binary Input and Output (Code V)

h i

Option module 2

0 0 Without

1 0 with Software Limit Switches, Binary Input and Output (Code N)

4 0 with Position Transmitter, Binary Input and Output (Code T)

8 0 with Forced Venting, Binary Input and Output (Code V)

1 5 with Inductive Limit Switches (NC) and Binary Output (Code P)

1 6 with Inductive Limit Switches (NO) and Binary Output (Code P)

3 0 with Mechanical Limit Switches (NO/NC)

j k

Pressure sensor

0 Without

1 with Pressure Sensors for p_{zul}, Y1 and Y2

l

Electrical connections

0 4 blanking plugs

1 1 cable gland, 3 blanking plugs

m

Housing material

0 Standard aluminum die cast

1 Stainless steel

n

Special applications (not safety relevant)

o

Additional approvals (not safety relevant)

p

Ambient temperature (not safety relevant)

q

15.2 Description

The TROVIS/TROVIS SAFE 3793 HART® Positioner is a single or double 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 degree of protection IP66 and contains several fixed mounted PCBs. In addition to the power supply terminals +11 / -12 the device contains two 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:

Type 3793 - 110... has type of protection 'ia' and it may be used for Category 2G and 2D (Zone 1 and Zone 21).

Type 3793 - 510... has type of protection 'tb' and it may be used for Category 2D (Zone 21).

Type 3793 - 810... has type of protection 'nA' and 'tb' and it may be used for Category 3G and 2D (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 connected to a non-intrinsically safe circuit.

The Options Module Code P includes a Pepperl+Fuchs inductive limit switch type SJ2-SN (Certificate: PTB 00 ATEX 2049X).

For types 3793 - 110... (type of protection 'ia'), when using the options module Code P:

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.

15.3 Parameters

15.3.1 Electrical Parameters

15.3.1.1 Signal Circuit Terminal +11 / -12

Nominal input current	I_N	4 ... 20	mA
Nominal input power	P_N	212	mW
For types 3793 - 110...			
Maximum input voltage	U_i	28	V
Maximum input current	I_i	115	mA
Maximum input power	P_i	1	W
Maximum internal capacitance	C_i	16.3	nF
Maximum internal inductance	L_i	negligible	

15.3.1.2 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
For types 3793 - 110...		
Maximum input voltage	U_i	16 V
Maximum input current	I_i	52 mA
Maximum input power	P_i	169 mW
Maximum internal capacitance	C_i	12.2 nF
Maximum internal inductance	L_i	negligible

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

Nominal input voltage	U_N	8.2 V
Nominal input power	P_N	17 mW
For types 3793 - 110...		
Maximum input voltage	U_i	16 V
Maximum input current	I_i	52 mA
Maximum input power	P_i	169 mW
Maximum internal capacitance	C_i	12.2 nF
Maximum internal inductance	L_i	negligible

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

Nominal input voltage	U_N	24 V
Nominal input power	P_N	120 mW
For types 3793 - 110...		
Maximum input voltage	U_i	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

15.3.1.5 Position Transmitter Terminal +31 / -32

Nominal input voltage	U_N	24 V
Nominal input power	P_N	518 mW
For types 3793 - 110...		
Maximum input voltage	U_i	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

Nominal input voltage	U_N	24	V
Nominal input power	P_N	173	mW
For types 3793 - 110...			
Maximum input voltage	U_i	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

Nominal input voltage	U_N	8.2	V
Nominal input power	P_N	17	mW
For types 3793 - 110...			
Supply variant		Type 2	Type 3
Maximum input voltage	U_i	16	V
Maximum input current	I_i	25	mA
Maximum input power	P_i	64	mW
Maximum internal capacitance	C_i	71.1	nF
Maximum internal inductance	L_i	100	μ H

15.3.1.8 Mechanical Limit Switches Terminals 47 / 48 / 49 and 57 / 58 / 59

Nominal input voltage	U_N	28	V
Nominal input power	P_N	10	mW
For types 3793 - 110...			
Maximum input voltage	U_i	28	V
Maximum input current	I_i	115	mA
Maximum input power	P_i	500	mW
Maximum internal capacitance	C_i	22.2	nF
Maximum internal inductance	L_i	150	μ H

15.3.2 Thermal Parameters

15.3.2.1 Types 3793 - 110... Group II applications (type of protection ia)

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

Operation with Inductive Limit Switches supply variant type 3

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

15.3.2.2 Types 3793 - 110... Group III applications (type of protection ia)

Maximum surface temperature	$T_{85}\text{ }^{\circ}\text{C}$	$-40\text{ }^{\circ}\text{C} \leq T_{\text{amb}} \leq +55\text{ }^{\circ}\text{C}$
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15.3.2.3 Types 3793 - 810... (type of protection nA)

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

15.3.2.4 Types 3793 - 510... and types 3793 - 810... (type of protection tb)

Maximum surface temperature T 85 °C

$-40\text{ °C} \leq T_{\text{amb}} \leq +70\text{ °C}$

16 **Report Number**

BVS PP 16.2199 EU, as of 2016-12-01

17 **Special Conditions for Use**

None

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**

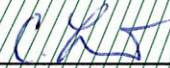
Drawings and documents are listed in the confidential report.

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 2016-12-01
BVS-Le/Mu A 20131206



Certifier



Approver