SAFETY MANUAL

SH 8493 EN

Translation of original instructions

TROVIS 3793 Smart Positioner

Communication: HART®

SIL/PL Capability

TÜVRheinland CERTIFIED

www.tuv.com ID 0600000000

Edition July 2025

Definition of signal words

⚠ DANGER

Hazardous situations which, if not avoided, will result in death or serious injury

⚠ WARNING

Hazardous situations which, if not avoided, could result in death or serious injury

NOTICE

Property damage message or malfunction

Note

Additional information

Tip

Recommended action

Purpose of this manual

The Safety Manual SH 8493 contains information relevant to the use of the TROVIS 3793 Positioner in safety-instrumented systems according to IEC 61508 and IEC 61511. The safety manual is intended for planners, constructors and operators of safety-instrumented systems.

NOTICE

Risk of malfunction due to incorrect mounting, connection or start-up of the positioner.

➔ *Refer to Mounting and Operating Instructions EB 8493 for details on how to mount the device, perform the electric and pneumatic connections as well as start up the device.*

➔ *Observe the warnings and safety instructions written in the Mounting and Operating Instructions EB 8493.*

Further documentation

The documents listed below contain descriptions of the start-up, functioning and operation of the positioner. You can download these documents from the SAMSON website.

TROVIS 3793 Positioner

- T 8493: Data sheet
- EB 8493: Mounting and operating instructions
- KA 8493: Quick guide
- KH 8384-3: Configuration manual for HART® communication

EXPERTplus diagnostics

- T 8389-2: Data sheet
- EB 8389-2: Operating instructions

Note

In addition to the positioner documentation, observe the technical documentation for the pneumatic actuator, control valve and other valve accessories.

1 Scope

1.1 General

The TROVIS 3793 Smart Positioner is a single- or double-acting positioner with HART® communication in a modular design for attachment to pneumatic rotary and linear actuators with spring-return mechanism. It is combined with single-acting pneumatic actuators with spring-return mechanism in safety-instrumented systems.

The positioner is used to position control valves.

1.2 Use in safety-instrumented systems

Observing the requirements of IEC 61508, the systematic capability of the pilot valve for emergency venting as a component in safety-instrumented systems is given.

Use of the positioner is possible on observing the requirements of IEC 61511 and the required hardware fault tolerance in safety-instrumented systems up to SIL 2 (single device/ HFT = 0) and SIL 3 (redundant configuration/HFT = 1).

The positioner and its safety-instrumented functions are regarded as type A according to IEC 61508-2.

1.3 Versions and ordering data

The TROVIS 3793-xxx0xxxxxxxxx1xxxxx00xxxx Positioners are suitable up to +80 °C for use in safety-instrumented systems. This does not include versions for low temperatures.

The positioner can be upgraded by installing pneumatic and/or option modules.

The following pneumatic modules are suitable for use in safety-instrumented systems:

– Single/double acting, K_V = 0.35
– Single/double acting, K_V = 0.70
– Single acting, 2x independent K_V = 0.35

The optional 'forced venting' additional function of the option modules Z3799-xx21 [F] and Z3799-xxx80 [V] is suitable for use in safety-instrumented systems.

The outputs of the pneumatic modules are vented according to Chapter 4.1.1.

Positioner	TROVIS 3793- x x x 0 x x x x x x x x x x x x x x x x 0 0 x x x x
With LCD, autotune, HART® communication	
Pneumatics	
Single/double acting, K_V = 0.35	0 1
Single/double acting, K_V = 0.70	0 2
Single acting, 2x independent K_V = 0.35	0 3
Option module 1 (slot C)	
Forced venting function + binary input (24 V DC) + binary output (NAMUR), [V]	8 0
Option module 2 (slot D)	
Inductive limit switches (NAMUR NC) + forced venting [1], [F]; −50 to +85 °C	2 1
Additional certification	
SIL	1
Permissible ambient temperature	
Standard: −20 to +85 °C, plastic cable gland	0
−40 to +85 °C metal cable gland	1
Emergency shutdown	
3.8 mA	0
4.4 mA	1
Hardware version	
02.00.00	9 8

[1] Forced venting is only suitable for use in safety-instrumented systems. The inductive limit switches are not suitable for use in safety-instrumented systems (no SIL certification).

1.4 Attachment

The positioner is suitable for the following types of attachment in combination with various mounting parts:

- Direct attachment to SAMSON Type 3277 Linear Actuators
- Attachment to linear actuators according to IEC 60534-6 (NAMUR)
- Attachment to linear actuators according to VDI/VDE 3847-1
- Attachment to rotary actuators according to VDI/VDE 3845, fixing levels 1 and 2
- Attachment to rotary actuators according to VDI/VDE 3847-2

2 Technical data (excerpt from EB 8493)

Table 1: *TROVIS 3793 Electropneumatic Positioner*

Set point w		
Signal range	4 to 20 mA Two-wire device, reverse polarity protection, split-range operation (can be configured as required, minimum span 4 mA)	
Static destruction limit	40 V, internal current limit approx. 40 mA	
Minimum current	3.75 mA for display/operation (HART® communication and configuration) 3.90 mA for pneumatic function	
Load impedance	≤9.9 V (corresponds to 495 Ω at 20 mA)	
Supply		
Supply air	2.5 to 10 bar/30 to 150 psi	
Air quality acc. to ISO 8573-1	Max. particle size and density: Oil content: Pressure dew point:	Class 4 Class 3 Class 3 or at least 10 K below the lowest ambient temperature to be expected
Signal pressure (output)	0 bar up to supply pressure	
Hysteresis	≤0.3 %	
Sensitivity	≤0.1 %, adjustable by software	
Start-up time	After interrupted operation < 300 ms: 100 ms After interrupted operation > 300 ms: ≤2 s	
Transit time	Up to 10000 s separately adjustable for exhaust and supply by software	
Air output capacity (when Δp = 6 bar)		
Actuator (supply)	32 m_n^3/h with one pneumatic module ($K_{V\ max\ (20\ °C)}$ = 0.34)	
	60 m_n^3/h with two pneumatic modules of the same sort ($K_{V\ max\ (20\ °C)}$ = 0.64)	
Actuator (exhaust)	37 m_n^3/h with one pneumatic module ($K_{V\ max\ (20\ °C)}$ = 0.40)	
	70 m_n^3/h with two pneumatic modules of the same sort ($K_{V\ max\ (20\ °C)}$ = 0.75)	

Environmental conditions and permissible temperatures (see also Table 3)	
Permissible environmental conditions according to EN 60721-3	
Storage	1K6 (relative humidity ≤95 %)
Transport	2K4
Operation	4K4 –20 to +85 °C: All versions [1] –40 to +85 °C: With metal cable glands [1] [2] –55 to +85 °C: Low-temperature versions [3] with metal cable glands Observe the limits in the test certificate for explosion-protected versions.

1) Up to +80 °C suitable for use in safety-instrumented systems.
2) Up to –40 °C suitable for use in safety-instrumented systems.
3) Not suitable for use in safety-instrumented systems

Table 2: *Safety-relevant option*

Forced venting: approval acc. to IEC 61508/SIL		
Version		Galvanic isolation, reverse polarity protection
Voltage input		0 to 24 V DC
Input current		At V_{in} = 24 V: approx. 7 mA In the switching point (at approx. 13 V): approx. 3.3 mA
Signal state	Active	Ue <11 V
	Not active	Ue >18 V
Static destruction limit		38 V DC/30 V AC

Table 3: *Permissible ambient temperatures of SIL functions*

Function	Temperature range
Emergency venting 3.8 mA	–40 to +80 °C
Emergency venting 4.4 mA	–40 to +80 °C
Emergency venting by the forced venting function	–40 to +80 °C

3 Safety-related functions

The TROVIS 3793 Positioner is fitted with the following safety-instrumented functions. They become effective independently from the microcontroller and software.

Emergency venting by an mA signal

➔ See Fig. 1, path ———

Fail-safe action is triggered when a signal below 3.8 mA or 4.4 mA is applied to terminals 11/12. The i/p converter is de-energized and the pneumatic module triggers the fail-safe action depending on the spring-return mechanism of the actuator (see Table 4).

Emergency venting by the optional 'forced venting' additional function

➔ See Fig. 1, path - - - - - - -

If the voltage falls below 11 V at the terminals of the option module, the pneumatic outputs of the positioner are vented depending on the combination of the pneumatic modules (see Table 4). This occurs regardless of the set point. A voltage above 15 V keeps the forced venting function inactive.

3.1 Fail-safe action

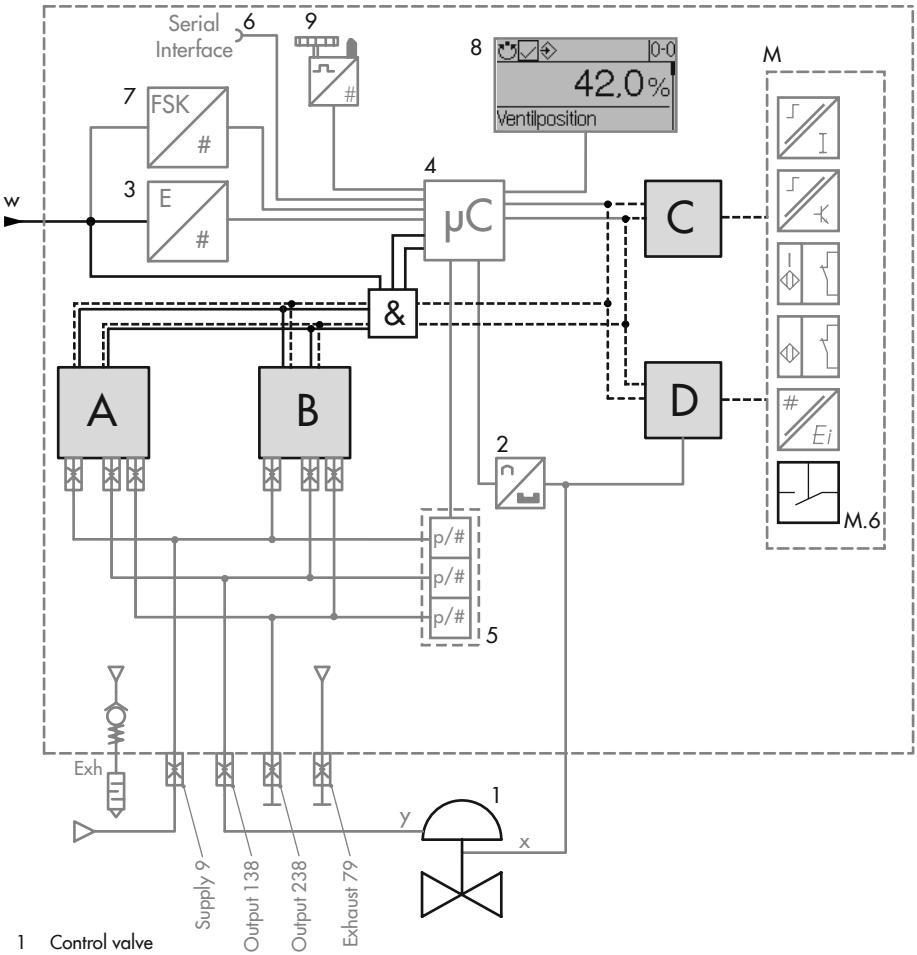
Fail-safe action is triggered by the i/p converter and upon supply air failure. Upon failure of the air supply, the positioner vents the actuator, causing the valve to move to the fail-safe position determined by the actuator. Upon failure of the electrical signal, the pneumatic outputs of the positioner are either vented or supplied with air depending on the combination of the pneumatic modules (see Table 4). As a result, the valve moves to the fail-safe position. The fail-safe position depends on how the springs are arranged in the pneumatic actuator (air-to-close or air-to-open).

When the air supply fails and the forced venting is triggered, all positioner functions, except open/closed loop control, remain active (including diagnostics, HART® communication as well as position and status feedback).

---

i ***Note***

The pneumatic outputs of the positioner can also be vented to the atmosphere over the software, e.g. by entering a corresponding set point. This procedure is not a safety-instrumented function.



1 Control valve
2 Travel sensor
3 A/D converter
4 Microcontroller
5 Pressure sensors
6 Communication interface
7 HART® connection
8 Display
9 Rotary pushbutton

A Slot for pneumatic module A
B Slot for pneumatic module B
C Slot for option module C
D Slot for option module D
M Available option modules (see Chapter 4.2)
M.6 Forced venting

Fig. 1: *Functional diagram of the positioner*

3.2 Protection against unauthorized changes to the configuration

A change to the configuration in the firmware cannot affect the safety-instrumented function nor cause it to be deactivated.

4 Mounting, connection and start-up

Refer to Mounting and Operating Instructions ▶ EB 8493 for details on how to mount, perform the electric and pneumatic connections as well as start up the positioner.
Only use the specified original mounting parts and accessories.

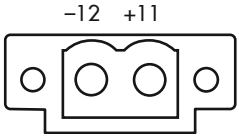


Fig. 2: *Terminal assignment*

4.1 Optional modules

4.1.1 Pneumatic modules

The air capacity and direction of action in the TROVIS 3793 Positioner can be varied by using and combining different pneumatic modules. A maximum of two pneumatic modules can be used in a positioner.

Table 4: *Permissible combinations of pneumatic modules*

Slot A	Slot B	Function	Air capacity	Fail-safe position	
				Output 138	Output 238
P3799-0001	P3799-0000	Single/double acting	K_{VS} 0.35	Exhaust	Supply
P3799-0001	P3799-0001	Single/double acting	K_{VS} 0.70	Exhaust	Supply
P3799-0002	P3799-0003	Single acting, 2x independent	K_{VS} 0.35	Exhaust	Exhaust

⚠ WARNING

The use of the incorrect or old pneumatic modules will impair the safety-instrumented functions.

➔ *Only use original pneumatic modules according to Table 4.*
The P3799-0004 module described in the Mounting and Operating Instructions EB 8493 must not be used in safety-instrumented systems.

➔ *Only use new modules when retrofitting or replacing pneumatic modules.*

❗ NOTICE

Risk of malfunction due to the incorrect combination of pneumatic modules.

➔ *Do not combine modules P3799-0001 and P3799-003.*

4.2 Safety-relevant additional function (optional)

Additional functions are available for the TROVIS 3793 Positioner, which can be added to the positioner as option modules. The 'forced venting' function is safety relevant and is available in the option module [V].

Table 5: *Option module with the 'forced venting' option suitable for use in safety-instrumented systems*

		Function				
		Inductive limit switches				
			Binary input (24 V)			
				Forced venting		
					Binary output	
Z3799-xxx21 [1]	[F]	•		•		
Z3799-xxx80	[V]		•	•	•	

[1] Forced venting is only suitable for use in safety-instrumented systems. The inductive limit switches are not suitable for use in safety-instrumented systems (no SIL certification).

⚠ WARNING

The use of the incorrect or old option modules will impair the safety-instrumented function.

➔ *Only the original option module listed in Table 5 are used for the 'forced venting' safety-instrumented function.*

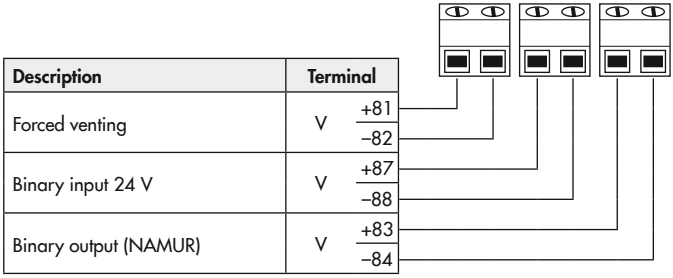
➔ *Only use new modules when retrofitting or replacing option modules.*

Forced venting

If the voltage falls below 11 V at the terminals of the option module, the pneumatic outputs of the positioner are either vented or supplied with air depending on the combination of the pneumatic modules. This occurs regardless of the set point. A voltage above 15 V keeps the forced venting function inactive.

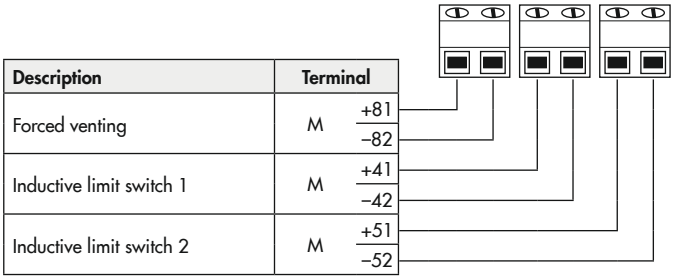
Table 6: *Connection of the option module [V] (option module with the 'forced venting' option suitable for use in safety-instrumented systems)*

Z3799-xxx80 [V] · Forced venting, binary input (24 V) and binary output (NAMUR)

Slot	Terminal assignment
C or D **NOTICE!** Set switch for forced venting function accordingly (▶ EB 8493).	

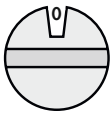
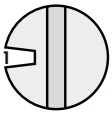
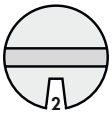
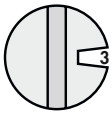
Description	Terminal	
Forced venting	V	+81 / –82
Binary input 24 V	V	+87 / –88
Binary output (NAMUR)	V	+83 / –84

Z3799-xxx21 [F] · Inductive limit switches and forced venting

Slot	Terminal assignment
D **NOTICE!** Do not insert the module into slot C. The option module will be damaged. Set switch for forced venting function accordingly (see Chapter 5.2.4).	

Description	Terminal	
Forced venting	M	+81 / –82
Inductive limit switch 1	M	+41 / –42
Inductive limit switch 2	M	+51 / –52

Table 7: *Switch position at the positioner*

	Option module for forced venting function			
Slot C	Not used	Used	Not used	Used
Slot D	Not used	Not used	Used	Used
Switch position				

⚠ WARNING

The incorrect switch position for the 'forced venting' option module will impair the safety-instrumented function.

➔ *Adjust the rotary switch at the positioner according to Table 7.*

5 Required conditions

⚠ WARNING

Risk of malfunction due to incorrect selection or wrong installation and operating conditions.

➔ *Only use control valves in safety-instrumented systems if the necessary conditions in the plant are fulfilled. The same applies to the mounted positioner.*

5.1 Selection

➔ The inserted pneumatic modules are selected to allow single-acting actuators to move to the required fail-safe position on demand (see Table 4).

➔ Only the original option modules listed in Table 5 are used to use the 'forced venting' safety-instrumented function.

➔ The required transit times of the control valve are observed.
The transit times to be implemented are determined by the process engineering requirements.

Tip

The minimum transit times for supply and exhaust can be read in menu items 7.95.70 and 7.95.74 respectively after the positioner (firmware 1.01.xx) has been initialized.

➔ The positioner is suitable for the prevailing ambient temperature (see Table 1) and for use in safety-instrumented systems (see Table 3).

➔ The temperature limits are observed.

5.2 Mechanical and pneumatic installation

➔ The positioner is mounted properly as described in the mounting and operating instructions and connected to the air supply.

Tip

The corresponding error messages indicate incorrect attachment (▶ EB 8493, 'Malfunctions' chapter). For safety-instrumented systems, we recommend assigning the 'Failure' status to these errors to quickly recognize them when they occur (indicated by ⊗ on the display).

➔ The actuator used is single acting with a spring-return mechanism.

➔ The maximum supply pressure does not exceed 10 bar.

➔ The actuator bench range is designed to ensure that a sufficient tight-closing force exists even with 0.2 bar pressure at the pneumatic outputs.
The maximum pressure at the output has been taken into account when observing the safety-instrumented function of downstream pneumatic devices.

➔ The pneumatic air supply meets the instrument air specifications.

Particle size and quantity	Oil content	Moisture and water
Class 4	Class 3	Class 3
≤5 µm and 1000/m³	≤1 mg/m³	–20 °C or pressure dew point: at least 10 K below the lowest ambient temperature to be expected

Tip

We recommend installing a supply pressure regulator/filter upstream of the device. For example, the SAMSON Type 4708 Supply Pressure Regulator with 5 µm filter cartridge can be used.

➔ The positioner is mounted as prescribed.

➔ The vent opening at the back of the positioner remains open when the positioner is installed on site.
The maximum pressure at the output may increase due to the higher backpressure while venting to a connected chamber.

5.3 Electrical installation

➔ The positioner is connected to the electric power supply properly as described in the mounting and operating instructions.

➔ Only cables whose outside diameters are suitable for the cable glands are used.

➔ The electrical cables in Ex i circuits comply with the data that planning was based on.

➔ The cable glands and cover screws are fastened tightly to ensure that the degree of protection is met.

➔ The installation requirements for the applicable explosion protection measures are observed.

➔ The special conditions specified in the explosion protection certificates are observed.

5.4 Operation

➔ The positioner is put into operation and initialized (a positioner that has not yet been initialized is in the fail-safe position) according to the mounting and operating instructions.

➔ The rotary switch at the positioner is set as shown in Table 7 for the 'forced venting' safety-instrumented function.

6 Proof testing

The proof test interval and the extent of testing lie within the operator's responsibility. The operator must draw up a test plan, in which the proof tests and the interval between them are specified. We recommend summarizing the requirements of the proof test in a checklist.

⚠ WARNING

Risk of dangerous failure due to malfunction in the event of emergency (actuator is not vented or the valve does not move to the fail-safe position).

➔ *Only use devices in safety-instrumented systems that have passed the proof test according to the test plan drawn up by the operator.*

Regularly check the safety-instrumented function of the entire SIS loop. The test intervals are determined, for example on calculating each single SIS loop in a plant (PFD_{avg}).

6.1 Visual inspection to avoid systematic failure

To avoid systematic failure, inspect the positioner regularly. The frequency and the scope of the inspection lie within the operator's responsibility. Take application-specific influences into account, such as:

– Dirt blocking the pneumatic connections
– Corrosion (destruction primarily of metals due to chemical and physical processes)
– Material fatigue
– Aging (damage caused to organic materials, e.g. plastics or elastomers, by exposure to light and heat)
– Chemical attack (organic materials, e.g. plastics or elastomer, which swell, leach out or decompose due to exposure to chemicals)

NOTICE

Risk of malfunction due to the use of unauthorized parts.

➔ *Only use original parts to replace worn parts.*
➔ *Only use new modules when retrofitting or replacing pneumatic and option modules.*

6.2 Function testing

Regularly check the safety-instrumented function according to the test plan drawn up by the operator.

Note

Record any positioner faults and e-mail (aftersalesservice@samsongroup.com) them to SAMSON.

Emergency venting by an mA signal applied to terminals 11/12 (control signal)

1. Supply the initialized positioner with air within the permissible supply pressure range (max. 10 bar) which allows the valve to move to the maximum travel/angle of rotation.
2. Connect an electric input signal ≥3.8 mA or ≥4.4 mA to the positioner (terminals 11/12).
3. Switch the positioner to automatic or manual mode (if it has not already been done).
4. Adjust the set point of the positioner in such a way that the valve moves to a position between 50 and 100 % (full supply).

Tip

The travel/angle of rotation in automatic mode can be read at the positioner in the main display.

---

5. Disconnect the electric input signal or apply <3.8 mA or <4.4 mA.
   This must cause the valve to move to its fail-safe position.
6. Check whether the actuator is fully vented within the demanded time.

Tip

Connect a pressure gauge to check that the actuator has completely vented.

Emergency venting by forced venting (signal <11 V at terminals 81/82).

1. Supply the initialized positioner with air within the permissible supply pressure range (max. 10 bar) which allows the valve to move to the maximum travel/angle of rotation.
2. Connect an electric input signal ≥3.8 mA or ≥4.4 mA to the positioner (terminals 11/12).
3. Switch the positioner to automatic mode (if it has not already been done).
4. Supply the forced venting with a voltage >15 V DC (terminals 81/82).
5. Adjust the set point of the positioner in such a way that the valve moves to a position between 50 and 100 % (full supply).

Tip

The travel/angle of rotation in automatic mode can be read at the positioner in the main display.

---

6. Disconnect the voltage or set the voltage to <11 V DC (terminals 81/82).
7. Check whether the actuator is fully vented within the demanded time.

Tip

Connect a pressure gauge to check that the actuator has completely vented.

Proof test

A full stroke test must be performed as the proof test. The following value can be used for Proof Test Coverage to calculate PFD_{avg}:

PTC (Proof Test Coverage) = 92 % for a proof test

7 Maintenance and repair

Only perform the work on the positioner described in ▶ EB 8493.

NOTICE

Safety-instrumented function will be impaired if repair work is performed incorrectly.

➔ *Only allow trained staff to perform service and repair work.*

For devices operated in the low demand mode, a useful lifetime of 11 years (plus 1.5 years storage time) is confirmed by TÜV Rheinland® from the date of manufacture while taking into account the specific conditions of use specified in the Safety Manual and the Mounting and Operating Instructions.

The results of the proof test must be assessed and the maintenance scheduled based on it. In particular, after changes (e.g. signs of aging in elastomers, changed switching times or leakage etc.), it is essential that the manufacturer performs maintenance or repair work on the device.

MTC (Maintenance Coverage) > 99 %

8 Safety-related data and certificates

Further safety-related data are listed in the following certificate.

Certificate

SIL/PL Capability

TÜVRheinland CERTIFIED

www.tuv.com
ID 0600000000

No.: 968/V 1264.00/22

Product tested	Electro Pneumatic Positioner	**Certificate holder**	SAMSON AG Weismüllerstr. 3 60314 Frankfurt / Main Germany
Type designation	TROVIS 3793 TROVIS SAFE 3793		
Codes and standards	IEC 61508 Parts 1-2 and 4-7:2010		
Intended application	Safety functions: - Safe venting via the setpoint input - Safe venting via the forced venting option The positioners are suitable for use in a safety instrumented system up to SIL 2 (low demand mode). Under consideration of the minimum required hardware fault tolerance HFT = 1 for the complete final element the positioners may be used up to SIL 3.		
Specific requirements	The instructions of the associated Installation, Operating and Safety Manual shall be considered.		

Summary of test results see back side of this certificate.

Valid until 2027-01-27

The issue of this certificate is based upon an evaluation in accordance with the Certification Program CERT FSP1 V1.0:2017 in its actual version, whose results are documented in Report No. 968/V 1264.00/22 dated 2022-01-21. This certificate is valid only for products, which are identical with the product tested.

TÜV Rheinland Industrie Service GmbH
Bereich Automation
Funktionale Sicherheit

Köln, 2022-01-27 — Certification Body Safety & Security for Automation & Grid — Dipl.-Ing. (FH) Wolf Rückwart

TÜV Rheinland Industrie Service GmbH, Am Grauen Stein, 51105 Köln / Germany
Tel.: +49 221 806-1790, Fax: +49 221 806-1539, E-Mail: industrie-service@de.tuv.com

www.fs-products.com
www.tuv.com

TÜVRheinland®
Precisely Right.

TÜVRheinland®
Precisely Right.

Holder: **SAMSON AG**
Weismüllerstr. 3
60314 Frankfurt am Main
Germany

Product tested: **Electro pneumatic positioner**
TROVIS 3793
TROVIS SAFE 3793

Results of Assessment

Route of Assessment		2_H / 1_S
Type of Sub-system		Type A
Mode of Operation		Low Demand Mode
Hardware Fault Tolerance	HFT	0
Systematic Capability		SC 3

Safe venting by setpoint input

Dangerous Failure Rate	λ_D	1.08 E-07 / h	**108 FIT**
Safe Failure Rate	λ_S	7.55 E-07 / h	755 FIT
Average Probability of Failure on Demand 1oo1	$PFD_{avg}(T_1)$	4.81 E-04	
Average Probability of Failure on Demand 1oo2	$PFD_{avg}(T_1)$	4.83 E-05	

Safe venting via forced venting option

Dangerous Failure Rate	λ_D	1.08 E-07 / h	**108 FIT**
Safe Failure Rate	λ_S	7.30 E-07 / h	730 FIT
Average Probability of Failure on Demand 1oo1	$PFD_{avg}(T_1)$	4.81 E-04	
Average Probability of Failure on Demand 1oo2	$PFD_{avg}(T_1)$	4.83 E-05	

Assumptions for the calculations above: DC = 0 %, T_1 = 1 year, MRT = 72 h, β_{1oo2} = 10 %

Origin of failure rates
The stated failure rates for low demand are the result of an FMEDA with tailored failure rates for the design and manufacturing process.
Furthermore the results have been verified by qualification tests.
Failure rates include failures that occur at a random point in time and are due to degradation mechanisms such as ageing.
The stated failure rates do not release the end-user from collecting and evaluating application-specific reliability data.

Periodic Tests and Maintenance
The given values require periodic tests and maintenance as described in the Safety Manual.
The operator is responsible for the consideration of specific external conditions (e.g. ensuring of required quality of media, max. temperature, time of impact), and adequate test cycles.

SH 8493 EN

SAMSON AKTIENGESELLSCHAFT
Weismüllerstraße 3 · 60314 Frankfurt am Main, Germany
Phone: +49 69 4009-0 · Fax: +49 69 4009-1507
samson@samsongroup.com · www.samsongroup.com

2025-07-07 · English