DATA SHEET

T 3997 EN

Type 7315 Single-channel Emergency Shutdown System

Application

To protect a downstream network or plant against excessively high or excessively low pressures or temperatures

Special features

- SIL 2

General SIL solutions

Our emergency shutdown systems include single-channel solutions for SIL 2 applications and dual-channel solutions for applications up to SIL 3.

SAMSON's safety-instrumented systems consist of one SAMSON on/off valve (single-channel) or two SAMSON on/off valves (dual-channel), a SAMSON SIS logic solver and the application-specific sensor instrumentation.

All SAMSON SIL solutions use components that are perfectly tailored to one another. The safety integrity level of the safety-instrumented system (including all the PFD values) is documented in a manufacturer's declaration.

Application range

SAMSON safety-instrumented systems are designed exclusively for **low demand mode**. SAMSON emergency shutdown systems are available with a probability of failure (PFD_{AVG}) to meet SIL 2 or SIL 3 requirements.

Application

The Type 7315 Single-channel Emergency Shutdown System (SIL 2) and Type 7316 Dual-channel Emergency Shutdown System (SIL 3) protect a downstream network, plant or heat exchanger etc. against excessively high or excessively low pressures or temperatures.

Backflow protection units monitor the medium flow by measuring the differential pressure across the valve assembly unit. The Type 7305 Backflow Protection Unit is used for dual-channel systems (SIL 3) and the Type 7301 Backflow Protection Unit for single-channel systems (SIL 2).

Version

Type 7315 Single-channel Emergency Shutdown System

The single-channel emergency shutdown system protects a downstream network, plant or heat exchanger etc. against excessively high or excessively low pressures or temperatures. If the temperature or pressure exceeds or falls below a certain limit, the emergency shutdown system is triggered. The use of the shut-off valve as a control valve is permitted. The reliability is indicated in the risk analysis of the plant in which it is installed.

Design and function

The Type 7315 Single-channel Emergency Shutdown System consists of a shut-off valve (Pos. 01), a pressure/temperature sensor (Pos. 02) and the Type 7401 SIS Logic Solver (Pos. 03).

The pressure/temperature sensor (Pos. 02 A+B) transmits the signal to the Type 7401 SIS Logic Solver. The signal is analyzed by the SIS logic solver. The shut-off valve is closed in the safety-instrumented system when the temperature/pressure exceeds or falls below the corresponding set point.

Signals to indicate the safety demand, status and malfunction of the SIS logic solver can be transmitted to a higher-level control system These signals are optional since the control system works independently.

The Type 7315 Single-channel Emergency Shutdown System can optionally be constructed for use in hazardous areas. The SIS logic solver must always be installed outside the hazardous area.

Any component not shown in Fig. 2 is not part of the SIS loop.

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

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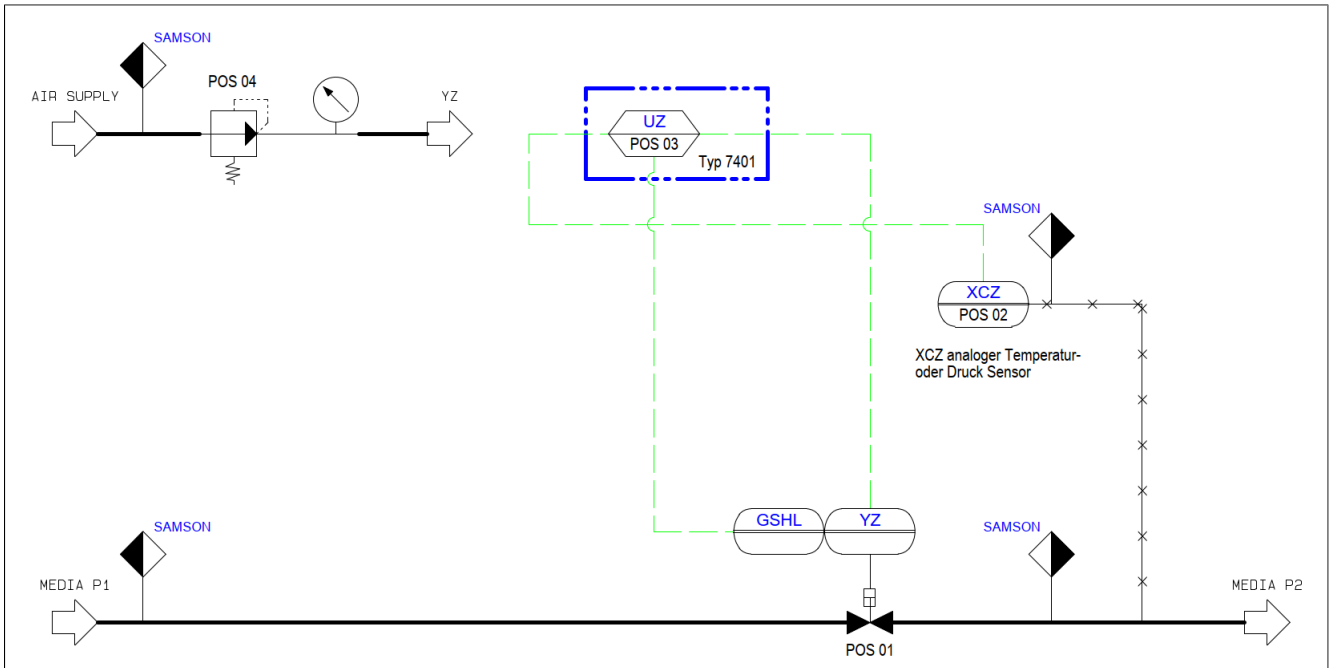

Fig. 1: *PI&D of Type 7315 Single-channel Emergency Shutdown System · SIL 2 architecture*

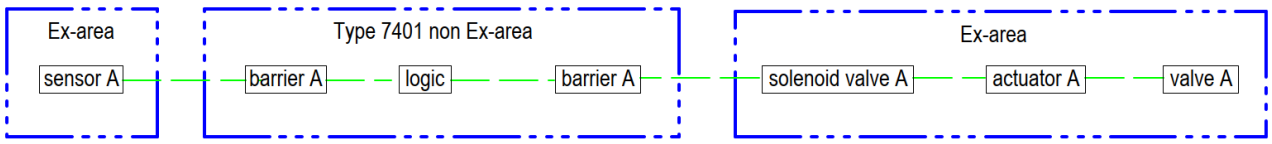

Fig. 2: *SIL 2 single-channel block diagram*

Table 1: Components

Item	Designation	Types
01	Valve body	e.g. Type 3241, Type 3251, Type 3510, Type 26d, Type 14
	Actuator	e.g. Type 3271, Type 3277, Type 31a
02	Sensor (pressure)	E+H Type PMP71B
		ABB Type 266 GST/AST
		Labom Type PASCAL CI4
	Sensor (temperature)	Jumo Type 902006/2x Pt100
03		Type 7401 SIS Logic Solver
04		Type 4708/Type 3999 Supply Air Station

Table 2: Technical data

Single-channel emergency shutdown system	**Type 7315** [1]
Safety integrity level	SIL 2
Medium	Gases and liquids according to the data sheets for Type 3241 Valve (▶T 8015)/ Type 3251 Valve (▶T 8051)/Type 3510 Valve (▶T 8091)/Type 26d Valve (▶T 26d) and Type 14b Valve (▶T 14b). Special applications on request
Nominal size	DN 15 to 500 (larger nominal sizes on request)
Pressure rating	PN 16 to 400 (higher pressure ratings on request)
Standards	DIN EN 61508; DIN EN 61511; PED
Bleed function	Optional
Supply	24 V DC/instrument air according to ISO 8573-1
Feedback signal to meet SIL requirements	1x floating contact

1) Special versions on agreement

Type 7315 Single-channel Emergency Shutdown System

Customer data	
Company	
Address	
Name	
Phone number	
E-mail	
Send your inquiry to your regional SAMSON contact or e-mail it to ▶ systems-de@samsongroup.com.	
Operating data	
Nominal size/pressure rating	DN PN
Instrument air	bar(g)
Process medium	Process medium = T_{max} = °C P_{max} = bar(g)
Min. flow rate [1]	kg/h Nm³/h (gases)
Max. flow rate [1]	kg/h Nm³/h (gases)
Flow rate during operation	kg/h Nm³/h (gases)
Operating pressure	P_1 = bar (g) Max. perm. pressure loss = bar
Material	Pipeline Valve body
Version	✓ According to SAMSON standard ☐ With control function (version according to SAMSON standard with Type 3730 Positioner) ☐ Without control function
SIS logic solver	✓ SAMSON Type 7401 (indoor installation) ☐ Outdoor installation
Terminal box	✓ According to SAMSON standard to connect SIS logic solver in hazardous areas
Valve type	✓ Sized by SAMSON
SIL probability of failure	✓ According to SAMSON manufacturer's declaration (overall system)
Sensor	**Pressure sensor** ☐ E+H PMP71B ☐ ABB 266GST/AST ☐ Labom PASCAL CI4 **Temperature sensor** ☐ Jumo 902006/2x Pt100
SIL 2	✓ **SIL 2**
ATEX	☐ Without ☐ Up to Zone 1 (intrinsically safe)
Notes	

[1] Specification required when a valve with control function is selected