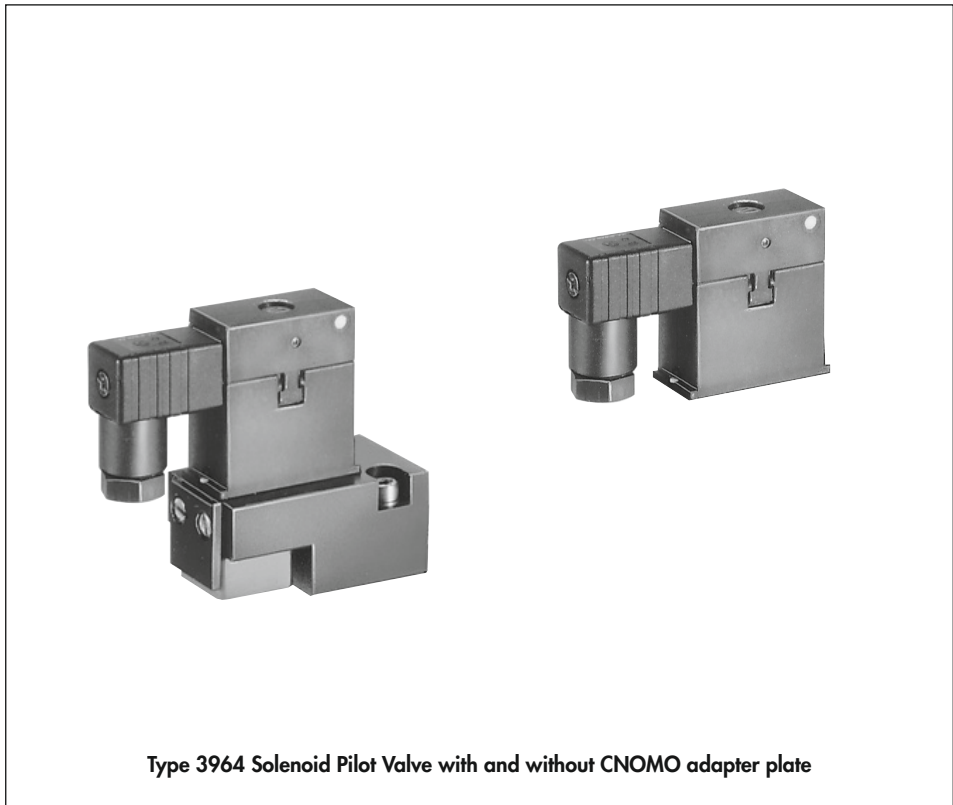


# MOUNTING AND OPERATING INSTRUCTIONS



## EB 3964 EN

Translation of original instructions



Type 3964 Solenoid Pilot Valve with and without CNOMO adapter plate

## Type 3964 Solenoid Pilot Valve



Edition July 2020

**CE** Ex  
certified

## Note on these mounting and operating instructions

These mounting and operating instructions assist you in mounting and operating the device safely. The instructions are binding for handling SAMSON devices. The images shown in these instructions are for illustration purposes only. The actual product may vary.

- For the safe and proper use of these instructions, read them carefully and keep them for later reference.
- If you have any questions about these instructions, contact SAMSON's After-sales Service (aftersaleservice@samsongroup.com).



Documents relating to the device, such as the mounting and operating instructions, are available on our website at [www.samsongroup.com](http://www.samsongroup.com) > **Service & Support > Downloads > Documentation.**

## 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*

<b>1</b>	<b>General information</b> .....	<b>4</b>
1.1	Model number and device index .....	4
1.2	Technical data .....	6
<b>2</b>	<b>Installation</b> .....	<b>9</b>
2.1	Devices with interface for direct mounting .....	9
2.2	Devices with CNOMO adapter plate without booster .....	10
2.3	Devices with CNOMO adapter plate and booster .....	11
<b>3</b>	<b>Pneumatic connection</b> .....	<b>11</b>
3.1	Pilot supply .....	11
3.2	Devices with interface for direct mounting .....	12
3.3	Devices with CNOMO adapter plate .....	13
<b>4</b>	<b>Electrical connection</b> .....	<b>13</b>
4.1	Connecting cable .....	14
4.2	Devices for Zones 2 and 22 .....	14
4.3	Degree of protection .....	15
4.4	Manual override .....	15
<b>5</b>	<b>Disposal</b> .....	<b>16</b>
<b>6</b>	<b>Certificates</b> .....	<b>16</b>

### 1 General information

**The devices must be mounted, started up or operated only by trained and experienced personnel familiar with the devices.**

According to these mounting and operating instructions, trained personnel refers to individuals who are able to judge the work they are assigned to and recognize possible hazards due to their specialized training, their knowledge and experience as well as their knowledge of the applicable standards.

Explosion-protected versions of this device must be operated only by personnel who has undergone special training or instructions or who is authorized to work on explosion-protected devices in hazardous areas.

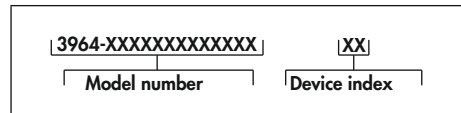
Proper shipping and storage are assumed.

For technical data, ordering specifications, spare parts and accessories, see Data Sheet

▶ T 3964.

#### 1.1 Model number and device index

The model number and device index are specified on the nameplate:



Article code of the Type 3964 Solenoid Pilot Valve

		Type 3964-XXXXXXX000												
<b>Type of protection</b>	No explosion protection	0												
	II 2G Ex ia IIC T6 Gb (ATEX)	1												
	Ex ia IIC (CSA) and AEx ia IIC (FM)	3												
	II 3G Ex nA II T6 Gc (ATEX)	8												
<b>Nominal signal</b>	6 V DC	1												
	12 V DC	2												
	24 V DC	3												
	24 V AC	8												
<b>Manual override</b>	Without manual override	0												
	Pushbutton	1												
	Pushbutton/switch	2												
<b>Mounting</b>	Direct mounting	0												
	CNOMO adapter plate, 30 mm	1												
<b>K<sub>vs</sub> coefficient</b>	0.01 without booster	0												
	0.02 including booster	1												
<b>Pressure reducer</b>	Without pressure reducer	0												
<b>Electrical connection</b>	Device connector according to EN 175301-803 without cable socket	0												
	Device connector according to general industry standard	1												
	Device connector according to EN 175301-803 with cable socket	3												
<b>Degree of protection</b>	IP 54	0												
	IP 20	2												
<b>Pilot supply</b>	1.4 to 2.0 bar	0												
	3.0 to 3.6 bar	1												
	3.0 to 8.0 bar	2												
<b>Indicator</b>	Without indicator	0												
<b>Permissible ambient temperature</b>	-25 to +60 °C	0												
	-25 to +80 °C	1												
	-45 to +80 °C	2												
	-45 to +60 °C	3												
<b>Safety function</b>	Without safety function	0												
	SIL	1												
<b>Special version</b>	Without special version												0	0

## General information

### 1.2 Technical data

**Table 1:** *General data*

Design	Solenoid with flapper/nozzle assembly, diaphragm switching element with return spring as booster (optional)	
Degree of protection	IP 20/IP 54 (without/with mounted cable socket)	
Material	Enclosure	Polyamide PA6-3-T, black, polyoxymethylene, green (booster)
	Adapter plate	Black anodized aluminum
	Screws	Stainless steel 1.4571
	Springs	Stainless steel 1.4310
	Seals	Silicone rubber, Perbunan
	Diaphragms	Chloroprene rubber 57 Cr 868 (booster, at -25 to +60 °C), silicone rubber (booster, at -40 to +60 °C)
Ambient temperature	See Electrical data and Pneumatic data	
Mounting orientation	Any desired position	
Approx. weight	50 g · 100 g (with CNOMO adapter plate) · 150 g (with CNOMO adapter plate and booster)	

**Table 2:** *Pneumatic data*

Supply	Medium	Instrument air, free from corrosive substances
	Pressure	1.4 to 2.0 bar, 3.0 to 3.6 bar, 3.0 to 8.0 bar
Output signal	Without booster	≥1.2 bar at 1.4 bar pilot supply, ≥1.8 bar at 2.0 bar pilot supply, ≥2.5 bar at 3.6 bar pilot supply
	With booster	Same pressure as pilot supply
Air consumption	≤60 l/h at 1.4 bar pilot supply in neutral position ≤15 l/h at 1.4 bar pilot supply in operating position	
$K_{VS}^{1)}$	0.01 (without booster), 0.02 (with booster)	
Ambient temperature <sup>2)</sup>	-45 to +80 °C, -25 to +60 °C (booster with diaphragm made of chloroprene rubber 57 Cr 868), -45 to +60 °C (booster with diaphragm made of silicone rubber)	
Connection	Connection for direct mounting, optionally with CNOMO adapter plate or connecting plate	

<sup>1)</sup> The air flow rate when  $p_1 = 2.4$  bar and  $p_2 = 1.0$  bar is calculated using the following formula:  
 $Q = K_{VS} \times 36.22$  in  $m^3/h$ .

<sup>2)</sup> The maximum permissible ambient temperature of the solenoid pilot valve depends on type of protection and temperature class.

**Table 3: Electric data**

Type 3964		-X1	-X2	-X3	-X8	
Nominal signal	$U_N$	6 V DC max. 27 V <sup>1)</sup>	12 V DC max. 25 V <sup>1)</sup>	24 V DC max. 32 V <sup>1)</sup>	24 V AC max. 36 V <sup>1)</sup>	
	$f_N$	-			48 to 62 Hz	
Switching point	ON	$U_{80\text{ °C}}$	≥4.8 V	≥9.6 V	≥18.0 V	19 to 36 V
		$I_{20\text{ °C}}$	≥ 1.41 mA	≥ 1.52 mA	≥1.57 mA	≥ 1.9 mA
		$P_{20\text{ °C}}$	≥5.47 mW	≥13.05 mW	≥26.71 mW	≥0.04 VA
	OFF	$U_{-25\text{ °C}}$	≤1.0 V	≤2.4 V	≤4.7 V	≤4.5 V
Impedance	$R_{20\text{ °C}}$	2.6 kΩ	5.5 kΩ	10.7 kΩ	Approx. 10 kΩ	
Effect of temperature		0.4 %/°C	0.2 %/°C	0.1 %/°C	0.1 %/°C	
<b>Type of protection Ex ia IIC<sup>2)</sup> for use in hazardous areas (Zone 1)</b>						
Type 3964		-11	-12	-13		
Maximum values when connected to a certified intrinsically safe circuit						
Output voltage	$U_i$	Pairs of values $U_i/I_i$ apply to 6, 12, 24 V DC nominal signals: 25 V/150 mA, 27 V/125 mA, 28 V/115 mA, 30 V/100 mA, 32 V/85 mA				
Output current	$I_i$					
Outer capacitance	$C_i$	≈0				
Outer inductivity	$L_i$	≈0				
Ambient temperature in temperature class	T6	-20 to +60 °C				
	T5	-20 to +70 °C				
	T4	-20 to +80 °C				
<b>Type of protection Ex nA II<sup>3)</sup> for use in hazardous areas (Zone 2)</b>						
Type 3964		-81	-82	-83		
Ambient temperature in temperature class	T6	-45 to +60 °C				
	T5	-45 to +70 °C				
	T4	-45 to +80 °C				
Switching time		≤15 ms				
Effect of temperature		0.4 %/°C	0.2 %/°C	0.12 %/°C	0.15 %/°C	
Connection		Connector type C according to EN 175301-803, distance between contacts 8 mm <sup>4)</sup> or industrial standard type C, distance between contacts 9.4 mm <sup>5)</sup>				

<sup>1)</sup> Maximum permissible value at 100 % duty cycle. The maximum permissible value  $U_i$  applies to explosion-protected versions.

<sup>2)</sup> II 2 G Ex ia IIC T6 (Zone 1) according to EC Type Examination Certificate PTB 98 ATEX 2047

<sup>3)</sup> II 3 G Ex nA II T6 (Zone 2) according to Statement of Conformity PTB 06 ATEX 2193 X



Note: a manufacturer's declaration of use in explosive atmospheres (Zone 22) is available on request.

<sup>4)</sup> The cable socket with seal (option) is included in the scope of delivery.

<sup>5)</sup> The cable socket with seal is not included in the scope of delivery.

## General information

**Table 6:** *Explosion protection certificates*

Certification		Type of protection/comments
Type 3964-1		
	EC type examination certificate	
	Number	PTB 98 ATEX 2047
	Date	2016-01-29
II 2G Ex ia IIC T6 Gb		
Type 3964-3		
<b>CSA</b>	Number	1607848
	Date	2005-09-16
Ex ia IIC T6: Class I, Zone 0; Class I, Division 1, Groups A,B,C and D; Class II, Division 1, Groups E,F and G; Class III; Type 3 Enclosure		
<b>FM</b>	Number	3020228
	Date	2015-10-12
Class I, Zone 0 AEx ia IIC Class I,II,III;Div.1, Groups A....G Class I,II, Div.2, Groups A....G; Class III; Type 3R		
Type 3964-8		
	Statement of conformity	
	Number	PTB 01 ATEX 2193 X
	Date	2016-03-02
II 3G Ex nA II T6 Gc		



## 2 Installation

### **⚠ WARNING**

Before installation, depressurize the relevant plant section.  
Do not open the enclosure.

Solenoid pilot valves with an interface for direct mounting can be mounted on connecting plates. Solenoid pilot valves with CNOMO adapter plate can be mounted to Type 3756 Booster Valves and valves according to ISO 5999-1. Observe the corresponding mounting instructions (see section 2.1).

The valve can be mounted in any desired position. To ensure reliable functioning, do not cover the exhaust air filter integrated into the enclosure. Mount the cable socket in such a way that the cable gland faces downward (in cases where this is not possible, mount it in the horizontal position). See Fig. 1.

On mounting, make sure that at least 300 mm clearance is kept above the enclosure and at least 200 mm clearance at the electrical connection.

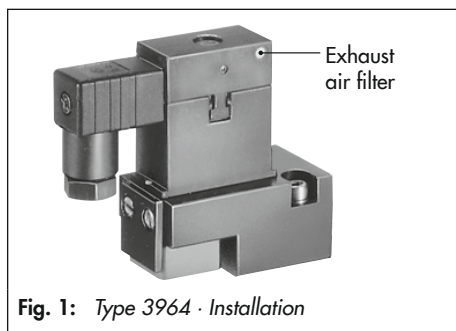


Fig. 1: Type 3964 · Installation

### 2.1 Devices with interface for direct mounting

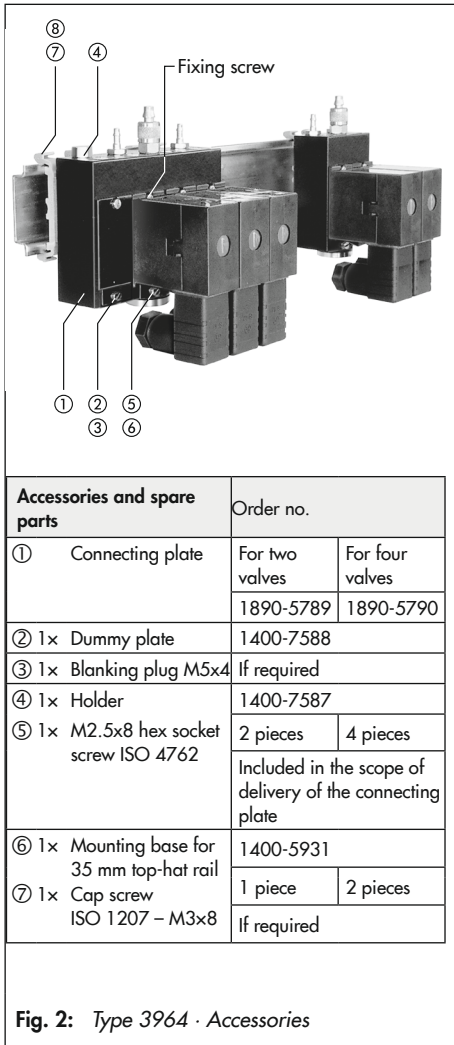
#### – Type 3964-XXX000X000XX

Push the device with interface for direct mounting onto the connecting plate (①) underneath of the head of the fixing screw and use a holder (④) and a hex socket screw (⑤) to fasten it. Make sure the two O-rings are seated properly on the interface of the connecting plate (see Fig. 2).

Any device spaces on the connecting plate that are not used must be covered by a dummy plate (②) and the output port sealed by a blanking plug (③). Push the dummy plate (②) underneath the head of the fixing screw and use a holder (④) and a hex socket screw (⑤) to fasten it (see Fig. 2).

The mounting accessories are included in scope of delivery of the connecting plate.

The connecting plate (①) can be mounted onto a mounting plate using two M3 cap screws or onto a 35 mm top-hat rail using one or two mounting bases (⑥) and cap screws (⑦) (see Fig. 2).



## 2.2 Devices with CNOMO adapter plate without booster

### – Type 3964-XXX100X00XXX

Devices with CNOMO adapter plate are mounted using two hex socket screws ① and two spring washers ② onto the booster valve (see Fig. 3). Make sure the two O-rings are seated correctly on the CNOMO interface of the booster valve.

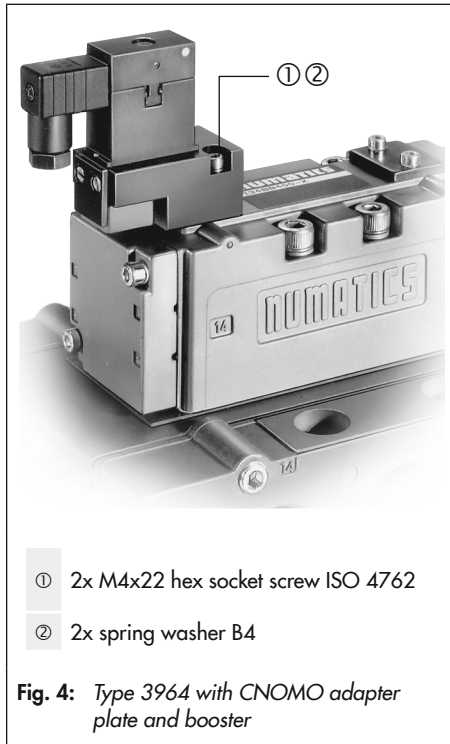
The mounting accessories are included in scope of delivery.



## 2.3 Devices with CNOMO adapter plate and booster

### – Type 3964-XXX110X00XXX

Devices with CNOMO adapter plate and booster are mounted using two hex socket screws ① and two spring washers ② onto the booster valve (see Fig. 4). Make sure the two O-rings are seated correctly on the CNOMO interface of the booster valve. The mounting accessories are included in scope of delivery.



## 3 Pneumatic connection

### **⚠ WARNING**

Run and attach the connecting lines and screw joints according to good professional practice.

Check them for leakage and damage at regular intervals and repair them, if necessary.

Before starting any repair work, depressurize any open connecting lines.

The maximum permissible pilot supply pressure must not be exceeded.

### 3.1 Pilot supply

#### Medium

Instrument air, free from corrosive substances

#### Pressure

See Table 5 on page 13

**Table 4:** Compressed air quality

Compressed air quality according to ISO 8573-1		
Particle size and quantity	Oil content	Pressure dew point
Class 4	Class 3	Class 3
≤5 µm and 1000/m <sup>3</sup>	≤1 mg/m <sup>3</sup>	–20 °C or at least 10 K below the lowest ambient temperature to be expected

### 3.2 Devices with interface for direct mounting

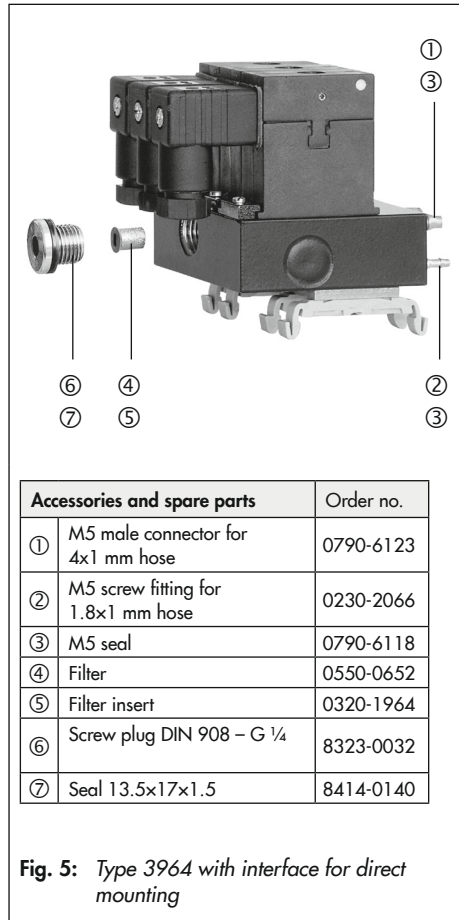
#### – Type 3964-XXX000X000XX

The connecting plate is used for pneumatic connection (see Fig. 5).

Preferably fit the output ports with M5 screw fittings for 1.8×1 mm hose (②) and the pilot supply port with an M5 male connector for 4×1 mm hose (①). Use an M5 seal (③) for all connections.

1.8×1 mm hoses (order no. 8082-0049) and 4×1 mm hoses (order no. 8082-0355) ensure reliable connection. Short switching times can be achieved by keeping the hose length as short as possible.

To prevent dirt particles entering, a filter (④) with 30 µm mesh size is installed in the pilot supply port. When the filter is blocked, remove the screw plug (⑥) and seal (⑦) from the filter insert (⑤) and use a screwdriver (4.5 mm blade) to unscrew the filter (④). Clean or exchange the filter.



Accessories and spare parts		Order no.
①	M5 male connector for 4x1 mm hose	0790-6123
②	M5 screw fitting for 1.8x1 mm hose	0230-2066
③	M5 seal	0790-6118
④	Filter	0550-0652
⑤	Filter insert	0320-1964
⑥	Screw plug DIN 908 – G ¼	8323-0032
⑦	Seal 13.5x17x1.5	8414-0140

**Fig. 5:** Type 3964 with interface for direct mounting

### 3.3 Devices with CNOMO adapter plate

#### – Type 3964-XXX100X000XX

The air is connected over the CNOMO interface at the booster valve (see Table 5).

**Table 5:** Connection data for booster valves with CNOMO interface

Version	Pressure	Connection	Valve size
Type ... Booster Valve 3756-1XX1XXXX <sup>1)</sup>	2.4 to 3.6 bar	9	DN 4
		4	DN 10
3756-1XX0XXXX	2.4 to 3.6 bar	9	DN 4
		1	DN 6
Valves according to ISO 5599-1 <sup>1) 2)</sup>	2.4 to 3.6 bar	12 and 14	<sup>3)</sup>

- 1) Only for Type 3964-XXXX10XXX0XX Solenoid Pilot Valves with booster
- 2) See technical data provided by the valve manufacturer for the minimum pressure
- 3) See technical data provided by the valve manufacturer for the valve size

## 4 Electrical connection

### **⚠ WARNING**

For electrical installation, observe the relevant electrotechnical regulations and the accident prevention regulations that apply in the country of use. In Germany, these are the VDE regulations and the accident prevention regulations of the employers' liability insurance.

The following regulations apply to installation in hazardous areas: EN 60079-14: 2008 (VDE 0165, Part 1) Explosive Atmospheres – Electrical Installations Design, Selection and Erection.

The specifications in the EC Type Examination Certificate PTB 98 ATEX 2047 for Zone 1 (see page 17) and the Statement of Conformity PTB 01 ATEX 2193 X for Zone 2 (page 20) apply for connection to intrinsically safe current circuits.

### 4.1 Connecting cable

A connector type C according to EN 175301-803 (distance between contacts 8 mm) or a connector type C according to industrial standard (distance between contacts 9.4 mm) is used for the electrical connection.

Observe **clause 12 of EN 60079-14: 2008** (VDE 0165, Part 1) for installation of the intrinsically safe circuits. Clause 12.2.2.7 applies when running multi-core cables and wires with more than one intrinsically safe circuit.

Preferably use connecting lines with minimum 0.5 mm<sup>2</sup> conductor cross-section and 3.5 to 6 mm outside diameter.

The radial thickness of the insulation of a conductor for common insulating materials (e.g. polyethylene) must not be smaller than 0.2 mm. The diameter of an individual wire in a fine-stranded conductor must not be smaller than 0.1 mm. Protect the conductor ends against splicing, e.g. by using wire-end ferrules.

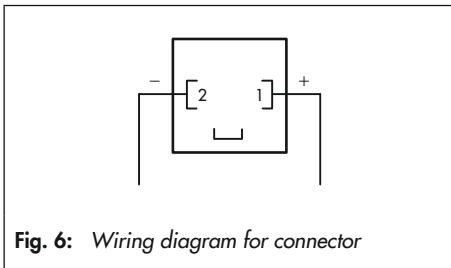


Fig. 6: Wiring diagram for connector

### **⚠ WARNING**

*Adhere to the terminal assignment. Switching the assignment of the electrical terminals may cause the explosion protection to become ineffective.*

*Do not loosen enameled screws in or on the housing.*

*The maximum permissible values specified in the EC type examination certificates apply when interconnecting intrinsically safe electrical equipment ( $U_i$  or  $U_{0i}$ ,  $I_i$  or  $I_{0i}$ ,  $P_i$  or  $P_{0i}$ ,  $C_i$  or  $C_0$  and  $L_i$  or  $L_0$ ). See page 17.*

### 4.2 Devices for Zones 2 and 22

In equipment operated according to type of protection Ex nA II (non-sparking equipment) according to EN 60079-15:2003, circuits may be connected, interrupted or switched while energized only during installation, maintenance or repair.

Equipment connected to energy-limited circuits with type of protection Ex nL (energy-limited equipment) according to EN 60079-15:2003 may be switched under normal operating conditions.

The maximum permissible values specified in the statement of conformity or its addenda (see page 20) apply when interconnecting the equipment with energy-limited circuits in type of protection Ex nL IIC.

### 4.3 Degree of protection

#### **⚠ WARNING**

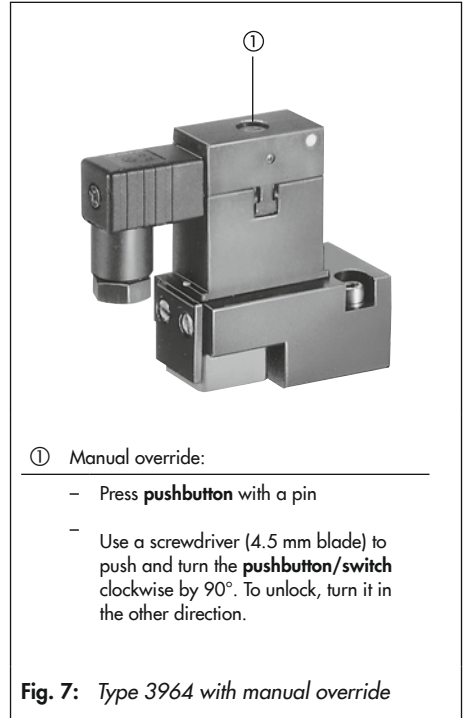
The degree of protection IP 54 (according to IEC 60529: 1989) is only guaranteed when the cable socket is mounted with a seal underneath it and the connections have been properly mounted.

### 4.4 Manual override

The solenoid pilot valves can be optionally fitted with a manual override (①) to allow the device to be manually operated when a nominal signal is not available (see Fig. 7).

#### **⚠ WARNING**

Solenoid pilot valves without manual override must be used for safety circuits.



### 5 Disposal



SAMSON is a producer registered at the following European institution ► <https://www.ewrn.org/national-registers/national-registers>.  
WEEE reg. no.:  
DE 62194439/FR 025665

- Observe local, national and international refuse regulations.
- Do not dispose of components, lubricants and hazardous substances together with your other household waste.

---

#### **i Note**

*We can provide you with a recycling passport according to PAS 1049 on request. Simply e-mail us at [aftersaleservice@samsongroup.com](mailto:aftersaleservice@samsongroup.com) giving details of your company address.*

---

---

#### **💡 Tip**

*On request, we can appoint a service provider to dismantle and recycle the product as part of a distributor take-back scheme.*

---

### 6 Certificates

The certificates valid at the time when these instructions were published are included on the next pages.

The latest certificates can be found on our website ([www.samsongroup.com](http://www.samsongroup.com) > Product selector > Valve accessories > Product type > 3964).





## TRANSLATION

(1) **EC TYPE EXAMINATION CERTIFICATE**

- (2) Equipment and Protective Systems Intended for Use  
in Potentially Explosive Atmospheres – Directive 94/9/EC



- (3) EC Type Examination Certificate Number

**PTB 98 ATEX 2047**

- (4) Equipment: Pilot Valve Model 3964 - 1
- (5) Manufacturer: SAMSON AG, Mess- und Regeltechnik
- (6) Address: Weismüllerstrasse 3, 60314 Frankfurt am Main, Germany
- (7) The design of this equipment and the various approved versions thereof are specified in the schedule to this type examination certificate and the documents referred to therein
- (8) The Physikalisch-Technische Bundesanstalt, notified body number 0102 according to Article 9 of the Council Directive 94/9/EC of 23 March 1994, certifies that this equipment has been found to comply with the essential health and safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres as specified in Annex II to the Directive.

The examination and test results are recorded in the confidential report **PTB Ex 98 - 28005**

- (9) The essential health and safety requirements are satisfied by compliance with

**EN 50014:1997**

**EN 50020:1994**

- (10) If the sign "X" is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use as specified in the schedule to this certificate.

The results laid down in this test report refer exclusively to the test object and the technical documentation submitted. Test reports without signature and seal are invalid. This test report may be reproduced unaltered only. Extracts or amendments shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

Physikalisch-Technische Bundesanstalt – Bundesallee 100 - D 38116 Braunschweig

Ptb.03-3964.doc

- (11) This EC Type Examination Certificate relates only to the design and examination of the specified equipment in compliance with Directive 94/9/EC. Further requirements of this Directive apply to the manufacture and supply of this equipment. These requirements are not covered by this Certificate.
- (12) The marking of the equipment shall include the following:



Zertifizierungsstelle Explosionsschutz

Braunschweig, 21.04.1998

By order  
(Signature)  
(Seal)

Dr. Ing. U. Johannsmeyer  
Regierungsdirektor

The results laid down in this test report refer exclusively to the test object and the technical documentation submitted. Test reports without signature and seal are invalid. This test report may be reproduced unaltered only. Extracts or amendments shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

Ptb.03-3964.doc

Physikalisch-Technische Bundesanstalt – Bundesallee 100 - D 38116 Braunschweig

## Schedule

- (13)
- (14) EC Type Examination Certificate Number PTB 98 ATEX 2047
- (15) **Description of Equipment**

The Model 3964-1 Pilot Valves consist of the Model 1079-22.. I/P Binary Converter Coil With Journal Bearing installed in a plastic enclosure. The coil has been certified under PTB-Number Ex-96.D.2130 U.

The pilot valves are intended for attachment to pneumatic switches and control valves of various manufacturers for constructing electro pneumatic control systems. They are used inside and outside of potentially explosive atmospheres.

Connection is made by means of plug connectors.

The relationship between temperature classification and permissible maximum ambient temperature is specified in the table below:

T6	-20 °C ... +60 °C
T5	-20 °C ... +70 °C
T4	-20 °C ... +80 °C

### Electrical data

Input circuit ... Type of protection: Intrinsic safety EEx ia IIC

The maximum values for connection of a certified intrinsically safe circuit are specified in the table below:

U <sub>i</sub>	25 V	27 V	28 V	30 V	32 V
i <sub>i</sub>	150 mA	125 mA	115 mA	100 mA	90 mA

The effective internal capacitances and inductances are negligible.

- (16) **Test report PTB Ex 98-28005**
- (17) **Special conditions:** Inapplicable
- (18) **Basic safety and health requirements:** In compliance with standards

Zertifizierungsstelle Explosionsschutz  
By order

Braunschweig, 21.04.1998

(Signature)  
Dr.-Ing. U. Johannsmeyer  
Regierungsdirektor

(Seal)

The results laid down in this test report refer exclusively to the test object and the technical documentation submitted. Test reports without signature and seal are invalid. This test report may be reproduced unaltered only. Extracts or amendments shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

Physikalisch-Technische Bundesanstalt – Bundesallee 100 - D 38116 Braunschweig

Ptb.03-3964.doc

**2<sup>nd</sup> ADDENDUM**  
**according to Directive 94/9/EC, Annex III, Clause 6**  
**to EC Type Examination Certificate PTB 98 ATEX 2047**

Equipment: Type 3964-1 Pilot Valve  
Marking:  II 2 G EEx ia IIC T6  
Manufacturer: SAMSON AG, Mess- und Regeltechnik  
Address: Weismüllerstraße 3, 60314 Frankfurt, Germany

Description of additions and modifications

In the future, the Type 3964-1 Pilot Valve may also be manufactured and operated according to the documents listed in section 3 of this test report.

The modifications apply to the marking, electric data, and test specifications. No technical changes were made to the product.

Versions with different rated voltage:  $U_N = 6\text{ V}$ ,  $U_N = 12\text{ V}$  or  $U_N = 24\text{ V}$

The following table lists the relation between equipment type, type of protection, temperature class and permissible ambient temperature range:

Temperature class	Permissible ambient temperature range
T6	-45 °C to +60 °C
T5	-45 °C to +70 °C
T4	-45 °C to +80 °C

Electric data

Signal current circuit..... in type of protection Intrinsic Safety Ex ia IIC (+/-)

For connection to a certified intrinsically safe current circuit only

Max. values:

- $U_i = 32\text{ V}$
- $I_i = 150\text{ mA}$
- $L_i$  negligibly small
- $C_i$  negligibly small


[PTB logo  
and lettering]

**Physikalisch-Technische Bundesanstalt**  
**Braunschweig and Berlin**  
**National Metrology Institute**

[Ex logo]

**2<sup>nd</sup> Addendum to EC Type Examination Certificate PTB 98 ATEX 2047**

The future marking is as follows:

 II 2 G Ex ia IIC T6 Gb

Applied standards

**EN 60079-0:2012 + A11:2013**

**EN 60079-11:2012**

Test Report PTB Ex 16-25095

Certification Sector for Explosion Protection

Braunschweig, 29 January 2016

[signature Johannsmeyer, round stamp with federal eagle logo and Physikalisch Technische Bundesanstalt 56 lettering]

Dr.-Ing. U. Johannsmeyer  
Direktor und Professor [director and professor]



TRANSLATION

Statement of Conformity



- (1)
- (2) Equipment and Protective Systems Intended for Use in Potentially Explosive Atmospheres – **Directive 94/9/EC**
- (3) EC Type Examination Certificate Number  
**PTB 01 ATEX 2193 X**
- (4) Equipment: Model 3964-8.. Pilot Valve
- (5) Manufacturer: SAMSON AG Mess- und Regeltechnik
- (6) Address: Weismüllerstr. 3, 60314 Frankfurt am Main, Germany
- (7) The equipment and any acceptable variation thereof are specified in the schedule to this certificate and the documents referred to therein.
- (8) The Physikalisch-Technische Bundesanstalt, notified body number 0102 according to Article 9 of the Council Directive 94/9/ of 23 March 1994, certifies that this equipment has been found to comply with the essential health and safety requirements relating to the design and construction of equipment and protective systems intended for use in potentially explosive atmospheres specified in Annex II to the Directive.  
  
The examination and test results are recorded in confidential report: **PTB Ex 01-21222**
- (9) The essential health and safety requirements are satisfied by compliance with  
**EN 50021: 1999**
- (10) If the sign “X” is placed after the certificate number, it indicates that the equipment is subject to special conditions for safe use as specified in the schedule to this certificate.
- (11) In compliance with the Directive 94/9&EX this Statement of Conformity relates only to the design and construction of the equipment specified. Further requirements of this Directive apply to manufacture and marketing of this equipment.

Statements of conformity without signature and seal are invalid.  
This Statement of conformity may be reproduced only in its entirety and without any changes, schedule.  
Extracts or changes shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

Physikalisch-Technische Bundesanstalt., Bundesallee 100, D-38116 Braunschweig

Ptb03-Ex n.doc

- (12) The marking of the equipment shall include the following:



Zertifizierungsstelle Explosionsschutz  
By order

Braunschweig, 19 December 2001

(Signature)

(Seal)

Dr. Ing. U. Johannsmeyer  
Regierungsdirektor

Statements of conformity without signature and seal are invalid.  
This Statement of conformity may be reproduced only in its entirety and without any changes, schedule.  
Extracts or changes shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

Physikalisch-Technische Bundesanstalt, Bundesallee 100, D-38116 Braunschweig

Ptb03-Ex n.doc

## Schedule

(13)

(14)

Statement of Conformity PTB 01 ATEX 2193 X

(15) Description of Equipment

The model 3964-8.. Pilot Valve consists of the Model 1079-27 . . e/p Binary Coil with Pin Bearing which is installed in a plastic enclosure. The Pilot valve is intended for attachment to pneumatic switches and control valves of different manufacturers for constructing electro pneumatic control systems.

The devices is intended for use inside and outside of hazardous areas.

The correlation between the version and temperature is shown in the table below:

Version U <sub>N</sub>	6V	12 V	24 V
Temperature class T6	60°C		
T5	-45°C . . .70°C		
T4	80°C		

(16) Test report PTB Ex 01-21222

(17) Special conditions for safe use

1. The Model 3964-8.. Pilot valve shall be installed in an enclosure providing at least Degree of Protection IP 54 according to IEC Publication 60529:1989.
2. The wiring shall be connected in such a manner that the connection facilities are free of tensile and torsional load.

(18) Special health and safety requirements

In compliance with the standard specified above.

Zertifizierungsstelle Explosionsschutz  
By order

Braunschweig, 19 December 2001

(Signature) (seal)

Dr. Ing. U. Johannsmeyer  
Regierungsdirektor

Statements of conformity without signature and seal are invalid.  
This Statement of conformity may be reproduced only in its entirety and without any changes, schedule.  
Extracts or changes shall require the prior approval of the Physikalisch-Technische Bundesanstalt.

Physikalisch-Technische Bundesanstalt., Bundesallee 100, D-38116 Braunschweig

Ptb03-Ex n.doc



Physikalisch-Technische Bundesanstalt • Postfach 33 45 • 38023 Braunschweig

**SAMSON AG**  
Mess- und Regeltechnik  
Weismüllerstr. 3  
60314 Frankfurt am MainIhr Zeichen: Pg/E83  
Ihre Nachricht vom: 26. November 2011  
Unser Zeichen: 3.61-2348/12-BI  
Unsere Nachricht vom:Bearbeitet von: H. Bienmüller  
Telefondurchwahl: +49 (0) 631-592-3811  
Telefaxdurchwahl: +49 (0) 631-592-3605  
E-Mail: Hartmut.Bienmueller@ptb.de


Datum: 4. Juni 2012

**Normengenerationsänderung nach EN 60079-0 ff**  
*Change of the standard generation to EN 60079-0 ff***Vorsteuerventil Typen 3964-1.. und 3964-8..**  
*Pilot Valve, types 3964-1.. and 3964-8..***Bescheinigungsnummern / EC-Type-Examination Certificates**  
PTB 98 ATEX 2047 und / and PTB 01 ATEX 2193 XSehr geehrte Damen und Herren,  
*Dear Sirs,*

die Selbsterklärung zu dem o.g. Gerät auf Übereinstimmung mit den vorgenannten Normen hat die PTB zur Kenntnis genommen und den zugehörigen Prüfungsunterlagen beigelegt.

*Your statement relating the above-named equipment concerning the conformity with the aforementioned standards was acknowledged by PTB and added to the related test documentation.*

Es bestehen keine sicherheitstechnischen Bedenken, die o.g. Geräte mit folgenden Kennzeichnungen zu versehen:

 **II 2 G Ex ia IIC T6** bzw. **II 3 G Ex nA II T6***There are no safety-related objections from PTB to mark the above mentioned equipment as follows:* **II 2 G Ex ia IIC T6** resp. **II 3 G Ex nA II T6**

Bitte nehmen Sie dieses Schreiben mit in Ihre Zulassungsunterlagen auf und reichen Sie diese Änderung in einer möglichen späteren Ergänzung mit ein.

*Please add this letter to your approval documents and include this modification in a possible later supplement.*Mit freundlichen Grüßen / *Best regards*  
Im Auftrag / *By order*

H. Bienmüller

Hausadresse, Lieferanschrift:  
Abbestr. 2 - 12  
10587 Berlin  
DEUTSCHLANDTelefon: +49 30 3481-0  
Telefax: +49 30 3481-7490  
E-Mail: [poststelle\\_lb@ptb.de](mailto:poststelle_lb@ptb.de)  
Internet: <http://www.ptb.de>Deutsche Bundesbank, Filiale Leipzig  
Kto.-Nr.: 860 010 40 BLZ 860 000 00  
IBAN: DE38 8600 0000 0088 0010 40  
BIC: MARKDEF1880, VAT-Nr.: DE 811 240 952PTB Braunschweig  
Bundesallee 100  
38116 Braunschweig  
DEUTSCHLAND

**Installation Manual for apparatus certified by CSA for use in hazardous locations.**

Electrical rating of intrinsically safe apparatus and apparatus for installation in hazardous locations.

**Table 1: Maximum values Solenoid valve**

Version	U <sub>i</sub> or V <sub>max</sub>	I <sub>i</sub> or I <sub>max</sub>	P <sub>i</sub> or P <sub>max</sub>	C <sub>i</sub>	L <sub>i</sub>
12V/24 V	28V	115mA	no limited	0 nF	0 μH
6 V	28V	115mA	250mW	0 nF	0 μH

**U<sub>0</sub> or V<sub>0c</sub> ≤ U<sub>i</sub> or V<sub>max</sub> / I<sub>0</sub> or I<sub>0c</sub> ≤ I<sub>i</sub> or I<sub>max</sub> / P<sub>0</sub> ≤ P<sub>i</sub> or P<sub>max</sub>; C<sub>a</sub> ≥ C<sub>i</sub> and L<sub>a</sub> ≥ L<sub>i</sub>**

**Table 2: CSA - certified barrier parameters of solenoid valve circuit**

Barrier	Supply barrier		Evaluation barrier	
	V <sub>max</sub>	R <sub>min</sub>	V <sub>max</sub>	
12V/24 V version	≤ 28V	≥ 280Ω	≤ 28V	Diode Return
6 V version	≤ 28V	≥ 280Ω	28V	Diode Return

**Table 3: The correlation between temperature classification and permissible ambient temperature ranges is shown in the table below:**

Temperature class	Permissible ambient temperature range
T6	- 45°C ... 60°C
T5	- 45°C ... 70°C
T4	- 45°C ... 80°C

**Intrinsically safe if installed as specified in manufacturer’s installation manual.**

**CSA-certified for hazardous locations**

**Ex ia IIC; Class I, Zone 0**

**Class I; Groups A, B, C, D;**

**Type 3 Enclosure**

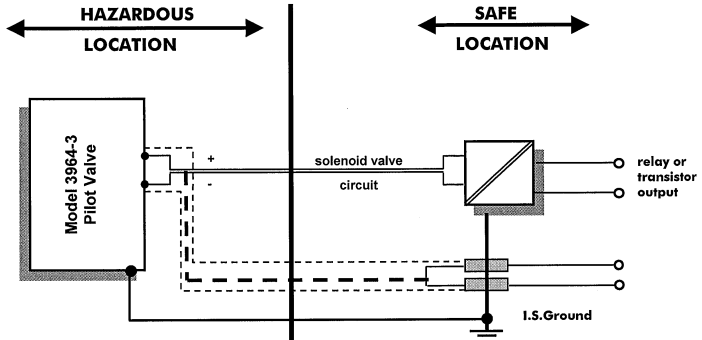
**Notes:**

- 1.) The apparatus may be installed in intrinsically safe circuit only when used in conjunction with the CSA certified apparatus.
- 2.) For maximum values of **U<sub>i</sub> or V<sub>max</sub>**; **I<sub>i</sub> or I<sub>max</sub>**; **P<sub>i</sub> or P<sub>max</sub>**; C<sub>i</sub> and L<sub>i</sub> of the various apparatus see Table 1. For barrier selection see Table 2.
- 3.) Installation shall be in accordance with the Canadian Electrical Code Part 1

**Revisions Control Number: 1 May 05**

**Addendum to EB 3964 EN**

- 3.) Use only supply wires suitable for 5°C above surrounding temperature.

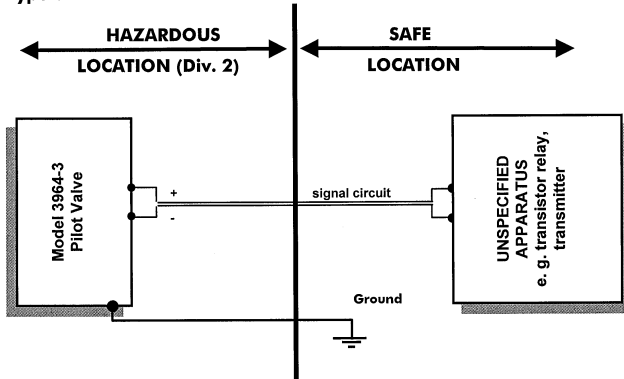


**Version:** Model 3964-3 Pilot Valve. Supply and evaluation barrier CSA- certified.

**CSA- certified for hazardous locations**

**Class I; Div. 2, Groups A, B, C, D.**

**Type 3 Enclosure**



Revisions Control Number: 1 May 05

Addendum to EB 3964 EN

**Installation Manual for apparatus approved by FM for use in hazardous locations.**

Electrical rating of intrinsically safe apparatus and apparatus for installation in hazardous locations.

**Table 1: Maximum values**

Version	U <sub>i</sub> or V <sub>max</sub>	I <sub>i</sub> or I <sub>max</sub>	P <sub>i</sub> or P <sub>max</sub>	C <sub>i</sub>	L <sub>i</sub>
Solenoid valve 12V/24 V	28V	115mA	no limited	0nF	0 μH
Solenoid valve 6 V	28V	115 mA	250mW	0nF	0 μH

Notes: U<sub>0</sub> or V<sub>0c</sub> or V<sub>t</sub> ≤ U<sub>i</sub> or V<sub>max</sub> / I<sub>0</sub> or I<sub>sc</sub> or I<sub>t</sub> ≤ I<sub>i</sub> or I<sub>max</sub> , P<sub>0</sub> or P<sub>max</sub> ≤ P<sub>i</sub> or P<sub>max</sub>

**Table 2: FM - approved barrier parameters of solenoid valve circuit**

Barrier	Supply barrier			Evaluation barrier		
	V <sub>0c</sub>	R <sub>min</sub>	I <sub>sc</sub>	V <sub>0c</sub>	R <sub>min</sub>	I <sub>sc</sub>
Solenoid valve 12V/24 V version	≤ 28V	≥ 240Ω	≤ 115mA	≤ 28V	#	0mA
Solenoid valve 6 V version	≤ 28V	≥ 785Ω	≤ 115mA	28V	#	0mA

**Table 3:** The correlation between temperature classification and permissible ambient temperature ranges is shown in the table below:

Temperature class	Permissible ambient temperature range
T6	60°C
T5	- 45°C ≤ t <sub>a</sub> ≤ 70°C
T4	80°C

**WARNING!** In hazardous areas, make sure to install and service the device in such a way that electrostatic charging cannot take place.

**Intrinsically safe if installed as specified in manufacturer’s installation manual.**

**FM-approved for hazardous locations**

**Class I, Zone 0, A Ex ia IIC T6,  
Class I, Division 1, Groups A, B, C, D;**

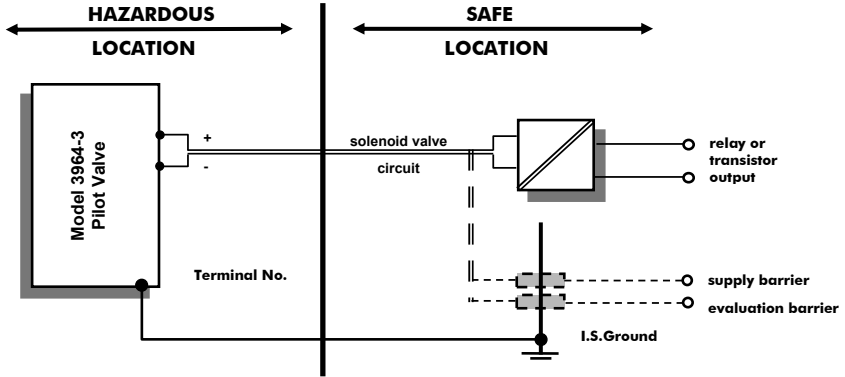
**NEMA 3R**

Revisions Control Number: 2 March 2011

Addendum to EB 3964 EN

**Notes:**

- 1.) The apparatus may be installed in intrinsically safe circuits only when used in conjunction with the FM approved apparatus.
- 2.) For maximum values of  $U_i$  or  $V_{max}$ ;  $I_i$  or  $I_{max}$ ;  $P_i$  or  $P_{max}$ ;  $C_i$  and  $L_i$  of the various apparatus see Table 1. For barrier selection see Table 2.
- 3.) Installation must be in accordance with the National Electrical Code ANSI/NFPA 70 and ANSI/ISA RP 12.06.01
- 4.) Use only supply wires suitable for 5°C above surrounding temperature.

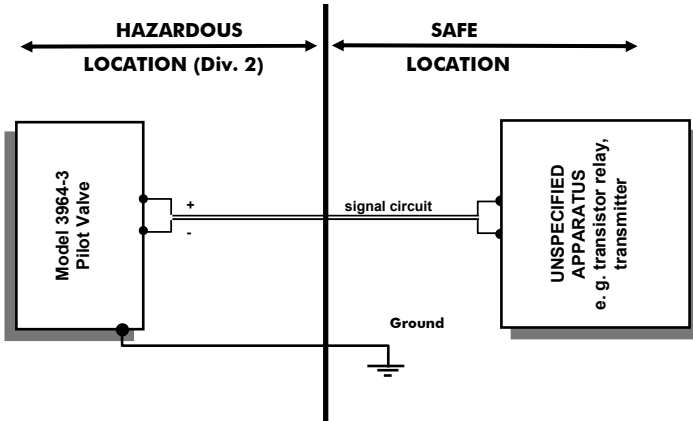


**Version:** Model 3964-3 Pilot Valve. Supply and evaluation barrier FM/CSA- approved.

**FM- approved for hazardous locations**

**Class I, Division 2, Groups A, B, C, D**

**NEMA 3R**



**Revisions Control Number: 2 March 2011**

**Addendum to EB 3964 EN**

# SAMSON REGULATION S.A.S.



1/1

**DECLARATION UE DE CONFORMITE**  
**EU DECLARATION OF CONFORMITY**  
EU KONFORMITÄTSEKTLÄRUNG

**DC008**  
**2018-11**

La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.  
This declaration of conformity is issued under the sole responsibility of the manufacturer.  
Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.

Nous certifions pour les produits suivants en exécution standard :  
For the following products in standard execution:  
Für die folgenden Produkte in Standard-Ausführung:

Type / type / Typ : 2371, 3249, 3252, 3310, 3331, 3345, 3347, 3349, 3351, 3710, 3711, 3963, 3964,  
4708, 5090, Samstation

sont conformes à la législation applicable harmonisée de l'Union :  
the conformity with the relevant Union harmonization legislation is declared with:  
wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt:

**RoHS 2011/65/EU**

**EN50581:2012-09**

Fabricant : SAMSON REGULATION S.A.S.  
Manufacturer: 1, rue Jean Corona  
Hersteller: 69511 Vaulx-en-Velin  
France

Vaulx-en-Velin, le 09/11/2018

Au nom du fabricant,  
On behalf of the Manufacturer,  
Im Namen des Herstellers,

SAMSON REGULATION S.A.S.

Joséphine SIGNOLES-FONTAINE  
Responsable QSE



## EU Konformitätserklärung / EU Declaration of Conformity / Déclaration UE de conformité

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller/  
This declaration of conformity is issued under the sole responsibility of the manufacturer/  
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.  
Für das folgende Produkt / For the following product / Nous certifions que le produit

### Magnetventil / Solenoid Valve / Solenoid Valve Typ/Type/Type 3964

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /  
the conformity with the relevant Union harmonisation legislation is declared with/  
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU	EN 61000-6-2:2005, EN 61000-6-3:2007 +A1:2011, EN 61326-1:2013
LVD 2014/35/EU	EN 61010-1:2010
RoHS 2011/65/EU	EN 50581:2012

Hersteller / Manufacturer / Fabricant:

SAMSON AKTIENGESELLSCHAFT  
Weismüllerstraße 3  
D-60314 Frankfurt am Main  
Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2017-07-29

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

Hanno Zager  
Leiter Qualitätssicherung/Head of Quality Management/  
Responsable de l'assurance de la qualité

Dirk Hoffmann  
Zentralabteilungsleiter/Head of Department/Chef du département  
Entwicklungsorganisation/Development Organization



## EU Konformitätserklärung / EU Declaration of Conformity / Déclaration UE de conformité

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller/  
This declaration of conformity is issued under the sole responsibility of the manufacturer/  
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.  
Für das folgende Produkt / For the following product / Nous certifions que le produit

### Magnetventil / Solenoid Valve / Solenoid Valve Typ/Type/Type 3964-1...

entsprechend der EU-Baumusterprüfbescheinigung PTB 98 ATEX 2047 ausgestellt von der/  
according to the EU Type Examination PTB 98 ATEX 2047 issued by/  
établi selon le certificat CE d'essais sur échantillons PTB 98 ATEX 2047 émis par:

Physikalisch Technische Bundesanstalt  
Bundesallee 100  
D-38116 Braunschweig

Benannte Stelle/Notified Body/Organisme notifié 0102

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /  
the conformity with the relevant Union harmonisation legislation is declared with/  
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU

EN 61000-6-2:2005, EN 61000-6-3:2007  
+A1:2011, EN 61326-1:2013

Explosion Protection 94/9/EC (bis/to 2016-04-19)  
Explosion Protection 2014/34/EU (ab/from 2016-04-20)

EN 60079-0:2012+A11:2013,  
EN 60079-11:2012

RoHS 2011/65/EU

EN 50581:2012

Hersteller / Manufacturer / Fabricant:

SAMSON AKTIENGESELLSCHAFT  
Weismüllerstraße 3  
D-60314 Frankfurt am Main  
Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2017-07-29

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

Hanno Zager  
Leiter Qualitätssicherung/Head of Quality Management/  
Responsable de l'assurance de la qualité

Dirk Hoffmann  
Zentralabteilungsleiter/Head of Department/Chef de département  
Entwicklungsorganisation/Development Organization





## EU Konformitätserklärung / EU Declaration of Conformity / Déclaration UE de conformité

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller/  
This declaration of conformity is issued under the sole responsibility of the manufacturer/  
La présente déclaration de conformité est établie sous la seule responsabilité du fabricant.  
Für das folgende Produkt / For the following product / Nous certifions que le produit

### Magnetventil / Solenoid Valve / Solenoid Valve Typ/Type/Type 3964-8...

entsprechend der EU-Baumusterprüfbescheinigung PTB 01 ATEX 2193 X ausgestellt von der/  
according to the EU Type Examination PTB 01 ATEX 2193 X issued by/  
établi selon le certificat CE d'essais sur échantillons PTB 01 ATEX 2193 X émis par:

Physikalisch Technische Bundesanstalt  
Bundesallee 100

D-38116 Braunschweig

Benannte Stelle/Notified Body/Organisme notifié 0102

wird die Konformität mit den einschlägigen Harmonisierungsrechtsvorschriften der Union bestätigt /  
the conformity with the relevant Union harmonisation legislation is declared with/  
est conforme à la législation d'harmonisation de l'Union applicable selon les normes:

EMC 2014/30/EU

EN 61000-6-2:2005, EN 61000-6-3:2007  
+A1:2011, EN 61326-1:2013

Explosion Protection 94/9/EC (bis/to 2016-04-19)

EN 60079-0:2012+A11:2013,

Explosion Protection 2014/34/EU (ab/from 2016-04-20)

EN 60079-15:2010

RoHS 2011/65/EU

EN 50581:2012

Hersteller / Manufacturer / Fabricant:

SAMSON AKTIENGESELLSCHAFT

Weismüllerstraße 3

D-60314 Frankfurt am Main

Deutschland/Germany/Allemagne

Frankfurt / Francfort, 2017-07-29

Im Namen des Herstellers/ On behalf of the Manufacturer/ Au nom du fabricant.

Hanno Zager

Leiter Qualitätssicherung/Head of Quality Management/  
Responsable de l'assurance de la qualité

Dirk Hoffmann

Zentralabteilungsleiter/Head of Department/Chef de département  
Entwicklungsorganisation/Development Organization





**EB 3964 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