# IECEX TEST REPORT COVER





ExTR Reference Number ...... CH/SEV/ExTR12.0007/01

ExTR Free Reference Number.....: 09-IK-0051.42 E1

Compiled by + signature (ExTL) ....: Urban Strebel

**Product Qualification** 

Reviewed by + signature (ExTL)....: Stefan Hartmann

**Product Qualification** 

Approved by + signature (ExCB) ...: Martin Plüss

**Product Certification Manager** 

Date of issue ...... 2017-03-07

CB Testing Laboratory .....: Electrosuisse

Address ...... Luppmenstrasse 1, CH-8320 Fehraltorf

Switzerland

DE MR



Ex Certification Body (ExCB).....: Electrosuisse

Address ...... Luppmenstrasse 1, CH-8320 Fehraltorf, Switzerland

Applicant's name...... Trafag AG

Standards associated with this ExTR IEC 60079-0:2011, 6th Edition; IEC 60079-11:2011, 6th Edition

package ...... IEC 60079-26:2014, 3<sup>rd</sup> Edition

Clauses considered...... All clauses considered

Test procedure...... IECEx System (incl. group differences for ATEX)

Test Report Form Number..... ExTR Cover 4 (released 2010-12)

Test item description.....: Pressure sensing device

Model/type reference ...... 8854.xx, 8859.xx

Code (e.g. Ex \_ II\_ T\_) .....: See at general product information

Rating ......  $U_i \le 28V$ ,  $I_i \le 93mA$ ,  $P_i \le 0.65$  W,  $C_i = 12$  nF,  $L_i = 1.25$  mH

All testing fully performed by ExTL YES

staff at ExTL address above: (Yes / No, See below for additional details.)

#### Instructions for Intended Use of ExTR Cover:

An ExTR Cover is the sole top-level document to associate together all other parts of an IECEx Test Report (ExTR) package. An ExTR package is comprised of an ExTR Cover and one or more associated ExTR documents (which may include Ex Test Reports, ExTR Addendums and ExTR of National Differences). All ExTR package documents are compiled and reviewed by the ExTL. The Issuing ExCB indicates final approval of the overall ExTR package on this ExTR Cover.

Copyright © 2010 International Electrotechnical Commission System for Certification to Standards Relating to Equipment for use in Explosive Atmospheres (IECEx System), Geneva, Switzerland. All rights reserved.

This blank publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEx System is acknowledged as copyright owner and source of the material. The IECEx system takes no responsibility for, and will not assume liability for, damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Manufacturer's name:	STS Sensortechnik Sirnach AG		
Address:	Rütihofstrasse 8, CH-8370 Sirnach		
Trademark:			
Particulars: Test item vs. Test requirements			
Classification of installation and use	: stationary		
Ingress protection	: IP6X		
Rated ambient temperature range (°C	): See table below		

#### General remarks:

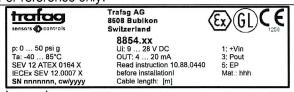
The test results presented in this ExTR package relate only to the item or product tested.

- "(see Attachment #)" refers to additional information appended to the ExTR package.
- "(see appended table)" refers to a table appended to the ExTR package.
- Throughout this ExTR package, a point is used as the decimal separator.
- Where the term "N/A" appears in any part of an ExTR package, it indicates that the associated issue was considered "Not applicable" to the involved evaluation.
- In accordance with IECEx 02, a Receiving ExCB may request a sample of the Ex equipment and copies of the documentation referred to in an ExTR Cover.

The technical content of this ExTR package shall not be reproduced except in full without the written approval of the Issuing ExCB and ExTL.

#### Copy of Marking Plate:

Copy of Marking Plate: The samples contain type designation ATM.xxx/ which is replaced by "ATM.1ST" or "ATM.ECO" on the real sensors. The reduced marking is applied acc. to clause 29.10 of IEC 60079-0. For reference only.





Trafag AG 8608 Bubikon

Switzerland



white: +Vin yellow: Pout grey: EP Mat.: hhh

# Legend:

xx = Product type

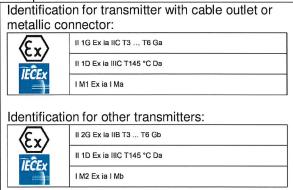
nnnnnnn = Serial number (e.g. 9876541)

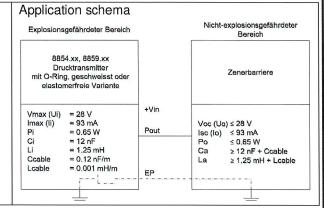
cw = Calendar week of production (e.g. 01) yyyy = Year of production (e.g. 2016)

hhh = housing material (SST or Ti)

More details see at the instruction manual:

Example for more details:





## General product information:

The sensor series 8854.xx and 8859.xx... are pressure sensors for gasses or liquids designed according to requirements Ex ia.

The temperature class depends on ambient-temperature and medium-temperature on the sensor. This relations are shown in the following tables:

Type 8854.xx	l.xx Temperature class			T4	Т3
	Ambient temperature	[℃]	50	85	125
	Medium temperature	[℃]	50	110	150
Type 8859.xx	Temperature class		T6	T4	Т3
	Ambient temperature	[℃]	50	80	80
1	Medium temperature	[%]	50	80	80

The relationship between the max. ambient temperature and surface temperature for dust environment is shown in the following table:

Ambient temperature  $[^{\circ}C]$  50 60 125 Surface temperature  $[^{\circ}C]$  70 80 145

See also Risk-analysis and Operating- and Safety- instructions 10.88.0092. from STS

Sensors with plug connection are delivered without the cable and the connector's counterpart. The enduser must install correct connector type and cable for the appliance and must check that no additional ignition risks occur with these parts.

The manual contains information about the risks of materials of the connector.

Code (e.g. Ex \_\_ II\_\_ T\_\_):

Only versions with cable outlet (cable jacket with metal mesh) or metallic plug.

Ex ia IIC T3 ...T6 Ga Ex ia IIIC T145 °C Da

Ex ia I Ma

For all other versions:

Ex ia IIB T3 ...T6 Gb Ex ia IIIC T145 ℃ Da

Ex ia I Mb

Remark: Without the European Group Ex code marking the code (same) is unclear for the different types.. Therefore it would be better if is not used the alternative name design by IEC 60079-0: 2012. Better use equipment protection level (Ga for first group types, Gb for the others).

In accordance with OD 024, testing not fully performed by ExTL staff at the above ExTL address:

YES

#### National differences considered as part of this evaluation, if any:

- The common European group differences are reported and appended in this report.
- The common European group differences for the type of protection are reported and appended in the specific report.

"Conditions of Use" for Ex Equipment or "Schedule of Limitations" for Ex Components, if any:

Pressure transmitters made with titanium housing must be adequately protected by appropriate measures in addition to mechanically generated impact and friction sparks.

# Routine tests, if any:

The routine test and/or necessary tests must be carried out by the manufacturer in order to verify that the design, components and materials of each produced device correspond with the test documents.

## Additional information:

The pressure transmitter Trafag 8854.xx and 8859.xx measure the signal of a piezo-resistive pressure measurement bridge and converts it into a standard signal. Input and signal transmission take place via an intrinsically safe three-wire 4-20 mA current loop circuit.

8854.xx are types featuring a screw-in flange, 8859.xx represent dive probes.

### Type Description

Placeholders "xx" stand for the accuracy level of the sensor exhibits. They do not have any impact on explosion protection and general security.

#### Assessment data

Measurement and power supply circuit of the ignition protection type intrinsic security Ex ia IIC, Ex ia IIIC and Ex ia I is only for connection to a certified and intrinsically safe electric circuit.

The pressure transmitter must be connected to a intrinsic safety certified barrier.

#### Maximum ratings:

 $U_i \le 28 \text{ V}$   $I_i \le 93 \text{ mA}$   $P_i \le 0.65 \text{ W}$ 

Effective internal capacitance

 $C_i = 12 nF$ 

plus per meter length of connecting cable

 $C_K = 0.12 \text{ nF}$ 

Effective internal inductance

 $L_i = 1.25 \text{ mH}$ 

plus per meter length of connecting cable

 $L_K = 0.001 \text{ mH}$ 

#### Verification of intrinsically safe circuit:

With the usage of the Trafag sensor cable types "cable relelative PUR" and "cable relative FEP" a maximum cable length up to 300 m is allowed even the abovementioned values of maximum permissible capacitance and inductance are greater than mentioned. This type of installation with cables up to 300 m was assessed as complete intrinsically safe system itself.

Related Test Reports etc.				
Title:	Reference Number:	No. of pages	Date:	
IEC 60079-0 (General requirements)	CH/SEV/ExTR10.0003/01	15	2014-01-15	
IEC 60079-11 (Intrinsic safety "i";)	CH/SEV/ExTR10.0003/01	15	2014-01-15	
IEC 60079-26 (Requirements for EPL Ga)	CH/SEV/ExTR10.0003/01	7	2014-01-15	
Report of measurement spark ignition test	CH/SEV/ExTR10.0003/01	7	2014-01-15	
Appendix Photo	CH/SEV/ExTR10.0003/01	3	2014-01-15	
IEC cover Trafag AG	CH/SEV/ExTR12.0007/00	7	2012-12-04	
IECEx Test Report Cover	CH/SEV/ExTR10.0003/02	6	2016-07-13	
Addendum	CH/SEV/ExTR10.0003/02	2	2016-07-13	
Addendum	CH/SEV/ExTR12.0007/01	2	2017-03-07	

Manufacturer's D	ocuments			
Title:	Document No.:	No. of pages	Rev. Level:	Date:
Same as before: S	See the list at Ex test report cover 09-IK-005	51.03 date 2014-01-14		

The above listed documents are provided with a stamp Electrosuisse dated 15.01.14.

Manufacturer's Documents				
Title:	Document No.:	No. of pages	Rev. Level:	Date:
Same as before: See the list at Ex test report cover 09-IK-0051.03 date 2014-01-14				
Operating and safety instruction manual	10.88.0440.A_DMM045	1	А	2016-10-30
Marking plate for types 8854.xx and 8859.xx	9.99.0134.B	1		2016-11-23



#### **EUROPEAN GROUP DIFFERENCES ATEX**

#### **Used Standards**

EN 60079-0:2012 + A11:13, EN 60079-11:2012, EN 60079-26:2015; EN 50303:2000

# ATEX Marking according to directive RL2014/34/EU

Name and address of the manufacturer	OK	PASS
CE marking	ОК	PASS
<ul> <li>designation of series or type</li> </ul>	ОК	PASS
- serial number, if any	ОК	PASS
<ul><li>year of construction</li></ul>	ОК	PASS
<ul> <li>the specific marking of explosion protection (€x) followed by the symbol of the equipment group and category,</li> </ul>	OK	PASS
- for equipment-group II, the letter 'G' (concerning explosive atmospheres caused by gases, vapours or mists), and/or the letter 'D' (concerning explosive atmospheres caused by dust).	Only versions with cable outlet (cable jacket with metal mesh) or metallic plug.  ☑ II 1G Ex ia IIC T3 T6 Ga ☑ II 1D Ex ia IIIC T145 °C Da ☑ I M1 Ex ia I Ma (complete code including Europ. Deviation)  For all other versions: ☑ II 2G Ex ia IIB T3 T6 Gb ☑ II 1D Ex ia IIIC T145 °C Da ☑ I M2 Ex ia I Mb (complete code including Europ. Deviation) See Operating and safety instructions for different configurations and applications	PASS

## Conformity with the documentation

The manufacturer shall carry out the verifications or tests necessary to ensure that the electrical equipment produced complies with the documentation.

### **Routine test**

The manufacturer shall also carry out any routine tests required by any of the standards listed in EN 60079-0 Clause 1 which were used for the examination and testing of the equipment.

## Additional Narrative Remarks to ATEX (as deemed applicable)

The test report 09-IK-0051.02 ATM.xxx/Ex, ATM.xxx/N/Ex EN 50303 (file description 09-IK-0051.02 STS ATM\_Ex EN 50303) is only valid for ATEX Certification.



# IECEX TEST REPORT ADDENDUM



ExTR Reference Number.....: CH/SEV/ExTR12.0007/01

ExTR Free Reference Number.....: 09-IK-0051.42 E1

Compiled by + signature (ExTL) ....: Urban Strebel

Product Qualification

Reviewed by + signature (ExTL)....: Stefan Hartmann

Product Qualification

Date of issue .....: 2017-03-07

Applicant's name.....:

CB Testing Laboratory .....: Electrosuisse

Address .....: Luppmenstrasse 1, 8320 Fehraltorf

**SWITZERLAND** 

Trafag AG

Address ...... Industriestrasse 11, 8608 Bubikon, SWITZERLAND

Standards ....... IEC 60079-0:2011, 6<sup>th</sup> Edition (EN 60079-0:2012+A11:2013)

IEC 60079-11:2011, 6<sup>th</sup> Edition

dition (EN 60079-11:2012)

IEC 60079-26:2014, 3<sup>rd</sup> Edition (EN 60079-26:2015)

EN 50303:00

Test procedure.....: IECEx/ATEX System

Test Report Form Number...... ExTR Addendum 2B (released 2015-07)

#### Instructions for Intended Use of ExTR Addendum:

An ExTR Addendum is to supplement a previously issued ExTR package. Only those clauses applicable to the supplemental issue being addressed are to be tabulated and remarked upon as part of this document. An ExTR of National Differences may also supplement this document. An ExTR Addendum is to be compiled and reviewed by the ExTL. The Issuing ExCB indicates final approval of the ExTR Addendum as part of the overall ExTR package on the associated ExTR Cover.

Copyright © 2010 International Electrotechnical Commission System for Certification to Standards Relating to Equipment for use in Explosive Atmospheres (IECEx System), Geneva, Switzerland. All rights reserved.

This blank publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEx System is acknowledged as copyright owner and source of the material. The IECEx system takes no responsibility for, and will not assume liability for, damages resulting from the reader's interpretation of the reproduced material due to its placement and context.

Possible test case verdicts:

- test case does not apply to the test item

: N/A

- test item does meet the requirement

: Pass

### General remarks:

The test results presented in this ExTR Addendum relate only to the item or product tested, and are only valid when considered together with the related Ex Test Report that was previously issued, along with any previously issued ExTR Addendums for the same item or product.

Only clauses and manufacturer's documents impacted by this document are detailed.

- "(see Attachment #)" refers to additional information appended to this document.
- "(see appended table)" refers to a table appended to this document.
- Throughout this document, a point is used as the decimal separator.

The technical content of this ExTR Addendum shall not be reproduced except in full without the written approval of the Issuing ExCB and ExTL.

The common European group differences to this standard are reported and appended at the end of this report.

ExTR Ref. No.: CH/SEV/ExTR12.0007/01

ExTR Free Ref. No.: 09-IK-0051.42 E1

## Addendum E1 Report:

The information contained in the basic test report Ref. 09-IK-0051.03 issued 15-01-2014 remains unchanged, followed with Ref. 09-IK-0051.03 E1 13-07-2016 issued with the exception of the sections and reports specified below, and apply to this addendum.

	IEC 60079-26:2007 edition 2.0 to IEC 60079-26:2014 edition 3.0					
Clause	Requirement – Test	Result – Remark	Verdict			
4.1.3.2	Requirement for separation element detailed regarding external influences	See at the test report "ExTR10.0003/01 of 09-IK-0051.03 IEC 60079-26 clause 4.2.5.2 partition wall: Intrinsic safety as a sole means of protection.	Pass			
4.3	Process connections requires a sufficiently tight joint: IP66 added alternatively to IP67	See at the test report "ExTR10.0003/01 of 09-IK-0051.03 IEC 60079-26 clause 4.6.: Versions are intended for installation in the boundary wall between an area requiring EPL Ga and less hazardous areas. Standardized process connections are used (Sentence was easily corrected).	Pass			
5.2	Test of partition walls according to 4.1.3.2 b) is specified in more detail	See at the test report "ExTR10.0003/01 od 09-IK-0051.03 IEC 60079-26 clause 4.6.: Not used	N/A			
7	Specification of material of partition wall required in instructions (also required in 4.1.3.2)	The sensors have intrinsic safety as a sole means of protection. The sensors do not have a partition wall within the meaning of this standard or by this clause 7.	N/A			

# Measurement Section, including Additional Narrative Remarks (as deemed applicable)

See at the test report cover 09-IK-0051.03 related Test reports.



#### **EUROPEAN GROUP DIFFERENCES ATEX**

See at the test report cover 09-IK-0051.42 E1.