[translation of German original]

Physikalisch-Technische Bundesanstalt [PTB lettering]
Braunschweig and Berlin

[federal eagle logo]

(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 2072

(4) Equipment: Type 3776-1 Limit Switch

(5) Manufacturer: SAMSON AG

(6) Address: Weismüllerstraße 3, 60314 Frankfurt am Main, Germany

(7) The design of this equipment and its different permissible versions are specified in the schedule to this certificate.

(8) Physikalisch-Technische Bundesanstalt, notified body no. 0102 in accordance with 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, given in Annex II to the directive.

The examination and test results are recorded in the confidential Test Report PTB Ex 98-28049.

(9) Compliance with the essential health and safety requirements is ensured 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 specified in the schedule to this certificate.

(11) This EC type examination certificate relates only to the design and construction of the specified equipment or protective system in accordance with Directive 94/9/EC. Further requirements of this directive apply to the manufacture and playing on the market of this equipment.

(12) The marking of the equipment must include the following specifications:

II 2 G EEx ia IIC T6

Certification Sector for Explosion Protection
O/o

Braunschweig, 7 July 1998

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

Dr.-Ing. U. Johannsmeyer
Director

(13) # Schedule

(14) # EC Type Examination Certificate PTB 98 ATEX 2072

(15) Description of the equipment

The Type 3776-1… Limit Switches are suitable for attachment to rotary actuators according to VDE/DIN 3845 and for integral attachment to Type 3277 Linear Actuators with concealed linkage. Depending on their version, the limit switches are fitted with limit contacts in different designs and low-power solenoid valves.

The Type 3776-1… Limit Switches are passive dipoles that may be connected to all certified intrinsically safe current circuits, provided the permissible maximum values for U_i, I_i, and P_i are not exceeded.

The electrical connection is made using connectors or cable entries.

The relation between temperature class and the maximum permissible ambient temperature range is shown in the following table:

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

The relation between temperature class and the maximum permissible ambient temperature range shown in the following table applies to the Type 3779-17. Limit Switches:

T6	-20 °C to +55 °C
T5	-20 °C to +70 °C
T4	-20 °C to +80 °C

Electric data

Contact current circuits..... in type of protection Intrinsic Safety EEx ia IIC
For connection to a certified intrinsically safe current circuit only

Max. values:

Type 3776-11., Type 3776-12., Type 3776-14. with inductive two-wire sensor:
(terminals 41/42, 45/46, and 51/52)

U_i = 16 V
I_i = 52 mA
P_i = 169 mW
Effective inner capacitance C_i = 80 nF
Effective inner inductivity L_i = 500 µH

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Schedule to EC Type Examination Certificate PTB 98 ATEX 2072

Type 3776-17. with inductive double proximity switch:
(terminals 41/42 and 51/52)

U_i = 15 V
I_i = 52 mA
P_i = 169 mW
Effective inner capacitance C_i = 100 nF
Effective inner inductivity L_i = 100 µH

Type 3776-15., Type 3776-16. with electric microswitch:
(terminals 41/42/43, 44/45/46, and 51/52/53)

U_i = 45 V
P_i = 2 W
The effective inner capacitances and inductivities are negligibly small.

Type 3776-1…1, Type 3776-1…2, Type 3776-1…3 with solenoid valve:

Input current circuit..... in type of protection Intrinsic Safety EEx ia IIC
(terminals 81/82 und 83/84) For connection to a certified intrinsically safe current circuit only

Max. values:

U_i	25 V	27 V	28 V	30 V	32 V
I_i	150 mA	125 mA	115 mA	100 mA	90 mA

The effective inner capacitances and inductivities are negligibly small.

(16) Test report PTB Ex 98-28049

(17) Special conditions

Not applicable

(18) Essential health and safety requirements

Covered by the standards mentioned above.

Certification Sector for Explosion Protection
O/o

Braunschweig, 7 July 1998

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Dr.-Ing. U. Johannsmeyer
Director

[translation of German original]

Physikalisch-Technische Bundesanstalt [PTB lettering]
Braunschweig and Berlin

1st ADDENDUM

according to Directive 94/9/EC, Annex III, item 6

to EC Type Examination Certificate PTB 98 ATEX 2072

Equipment: Type 3776-1 Limit Switch

Marking: **II 2 G EEx ia IIC T6**

Manufacturer: SAMSON AG Mess- und Regeltechnik

Address: Weismüllerstraße 3, 60314 Frankfurt am Main, Germany

Description of additions and modifications

In the future, the Type 3776-1 Limit Switch may be manufactured according to the test documents listed in the test report. The modifications are made with respect to Directive 94/9/EC, article 14.

The modifications apply to the internal and external design.

The electric data are changed as follows:

The relation between the device types, temperature classes, permissible ambient temperature ranges, and maximum short-circuit currents is shown in the following table:

Type 3776-11., Type 3776-12., and Type 3776-14.

Temperature class	Permissible ambient temperature range	Max. short-circuit current
T6 T5 T4	-45 °C to 45 °C -45 °C to 60 °C -45 °C to 80 °C	52 mA
T6 T5 T4	-45 °C to 65 °C -45 °C to 80 °C -45 °C to 100 °C	25 mA

Physikalisch-Technische Bundesanstalt [PTB lettering]
Braunschweig and Berlin

1st Addendum to EC Type Examination Certificate PTB 98 ATEX 2072

Type 3776-17.

Temperature class	Permissible ambient temperature range	Max. short-circuit current
T6 T5 T4	-45 °C to 55 °C -45 °C to 70 °C -45 °C to 85 °C	52 mA
T6 T5 T4	-45 °C to 70 °C -45 °C to 80 °C -45 °C to 100 °C	25 mA

Electric data

Contact current circuits ..... in type of protection Intrinsic Safety EEx ia IIC
For connection to a certified intrinsically safe current circuit only

Type 3776-11., Type 3776-12., Type 3776-14. with inductive two-wire sensor:
(terminals 41/42, 45/46, and 51/52) Max. values:

U_i = 16 V
I_i = 52 mA
P_i = 169 mW

C_i = 50 nF
L_i = 250 µH

Type 3776-17. with inductive double proximity switch:
(terminals 41/42 and 51/52) Max. values:

U_i = 15 V
I_i = 52 mA
P_i = 169 mW

C_i = 100 nF
L_i = 100 µH

Type 3776-1…1, Type 3776-1…2, Type 3776-1…3 with solenoid valve:
Input current circuit ..... in type of protection Intrinsic Safety EEx ia IIC
(terminals 81/82 und 83/84)

Physikalisch-Technische Bundesanstalt

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1st Addendum to EC Type Examination Certificate PTB 98 ATEX 2072

The relation between the version, temperature class, permissible ambient temperature range, and maximum power dissipation is shown in the following table:

Version	U_N	6 V	12 V	24 V
Temperature class	T6	-45 °C to 60 °C		
	T5	-45 °C to 70 °C		
	T4	-45 °C to 80 °C		
Linear or rectangular characteristic	P_i	*	**	

C_i negligibly small
L_i negligibly small

* The maximum permissible power dissipation P_i of the 6 V version is 250 mW.

** The maximum values for connection to a certified intrinsically safe current circuit are shown in the following table:

U_i	25 V	27 V	28 V	30 V	32 V
I_i	150 mA	125 mA	115 mA	100 mA	85 mA
P_i	No restriction				

All other specifications remain valid also for this 1st addendum.

Test report: PTB Ex 01-21202

Certification Sector for Explosion Protection
O/o

Braunschweig, 9 August 2001

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Dr.-Ing. U. Johannsmeyer
Director

[translation of German original]

Physikalisch-Technische Bundesanstalt [PTB lettering]
Braunschweig and Berlin

2nd ADDENDUM

according to Directive 94/9/EC, Annex III, item 6

to EC Type Examination Certificate PTB 98 ATEX 2072

Equipment: Type 3776-1 Limit Switch

Marking:  **II 2 G EEx ia IIC T6**

Manufacturer: SAMSON AG Mess- und Regeltechnik

Address: Weismüllerstraße 3, 60314 Frankfurt am Main, Germany

Description of additions and modifications

In the future, the Type 3776-1 Limit Switch may also be manufactured and operated according to the test documents listed in the test report.

The modifications apply to the internal and external design.

The relation between the device types, temperature classes, permissible ambient temperature ranges, and electric data is shown in the following table:

Type 3776-11., Type 3776-12., and Type 3776-14.

Temperature class	Permissible ambient temperature range	U_i	I_i	P_i
T6 T5 T4	-45 °C to 45 °C -45 °C to 60 °C -45 °C to 80 °C	16 V	52 mA	169 mW
T6 T5 T4	-45 °C to 65 °C -45 °C to 80 °C -45 °C to 100 °C	16 V	25 mA	64 mW

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2nd Addendum to EC Type Examination Certificate PTB 98 ATEX 2072

Type 3776-17.

Temperature class	Permissible ambient temperature range	U_i	I_i	P_i
T6 T5 T4	to 55 °C -45 °C to 70 °C to 85 °C	15 V/16 V	52 mA	169 mW
T6 T5 T4	to 70 °C -45 °C to 80 °C to 100 °C	15 V/16 V	25 mA	64 mW

The electric data are changed as follows:

Electric data

Contact current circuits ..... in type of protection Intrinsic Safety EEx ia IIC
For connection to a certified intrinsically safe current circuit only

Max. values:

Type 3776-11., Type 3776-12., Type 3776-14.

a) with inductive two-wire sensor:

(terminals 41/42, 45/46, and 51/52)
U_i = 16 V
I_i = 52 mA/25 mA
P_i = 169 mW/64 mW

The relation between the sensor type and the maximum permissible reactance is shown in the following table:

Sensor type	SC3.5…-NO…	SJ3.5-SN…	SJ3.5-…-N…
C_i	150 nF	30 nF	50 nF
L_i	150 µH	100 µH	250 µH

b) with inductive proximity switch:

(terminals 41/42, 45/46, and 51/52)
U_i = 16 V
I_i = 52 mA/25 mA
P_i = 169 mW/64 mW

The relation between the sensor type and the maximum permissible reactance is shown in the following table:

Sensor type	NJ2-V3-N…	NCN3-F24.-N4…
C_i	40 nF	100 nF
L_i	50 µH	100 µH

[translation of German original]

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2nd Addendum to EC Type Examination Certificate PTB 98 ATEX 2072

All other specifications remain valid also for this 2nd addendum.

Test report: PTB Ex 04-23528

Certification Sector for Explosion Protection
O/o

Braunschweig, 1 March 2004

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Dr.-Ing. U. Johannsmeyer
Director

[translation of German original]

Physikalisch-Technische Bundesanstalt [PTB lettering]
Braunschweig and Berlin

3rd ADDENDUM

according to Directive 94/9/EC, Annex III, item 6

to EC Type Examination Certificate PTB 98 ATEX 2072

Equipment: Type 3776-1 Limit Switch

Marking: **II 2 G EEx ia IIC T6**

Manufacturer: SAMSON AG Mess- und Regeltechnik

Address: Weismüllerstraße 3, 60314 Frankfurt am Main, Germany

Description of additions and modifications

With this addendum, the temperature classes for the Type 3776-15. and Type 3776-16. Limit Switches are defined and the electric data are added for organizational reasons. No further changes were made.

Type 3776-15., Type 3776-16. with electric microswitch

The relation between the temperature class and permissible ambient temperature range is shown in the following table:

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

Electric data

(terminals 41/42/43, 44/45/46, and 51/52/53)

Max. values:

U_i = 45 V
P_i = 2 W

C_i negligibly small
L_i negligibly small

[translation of German original]

Physikalisch-Technische Bundesanstalt

[PTB lettering]

Braunschweig and Berlin

3rd Addendum to EC Type Examination Certificate PTB 98 ATEX 2072

All other specifications mentioned in the EC type examination certificate remain valid also for this 3rd addendum.

Test report: PTB Ex 06-26195

Certification Sector for Explosion Protection
O/o

Braunschweig, 25 August 2006

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Dr.-Ing. U. Johannsmeyer
Director and Professor