IECEx Certificate of Conformity

INTERNATIONAL ELECTROTECHNICAL COMMISSION
IEC Certification Scheme for Explosive Atmospheres

for rules and details of the IECEx Scheme visit www.iecex.com

Certificate No.:	IECEx PTB 09.0014X	Issue No: 4	Certificate history:
Status:	**Current**		Issue No. 4 (2018-02-16)
		Page 1 of 5	Issue No. 3 (2015-06-25)
Date of Issue:	**2018-02-16**		Issue No. 2 (2011-05-27)
			Issue No. 1 (2009-05-04)
Applicant:	**ABB Automation Products GmbH**		Issue No. 0 (2009-03-04)
	Schillerstraße 72		
	32425 Minden		
	Germany		
	Germany		

Equipment: **Temperature measuring transducer TTH 300-*1..., TTH 200-*1..., TTF 300-*1..., TTF 200-*1..., TTR 200-*1...**

Optional accessory:

Type of Protection: **General requirements, Intrinsic Safety**

Marking:

Ex ia IIC T6...T1 Ga
resp.
Ex [ia IIC Ga] ib IIC T6...T1 Gb
resp.
Ex [ia IIIC Da] ib IIC T6...T1 Gb

Approved for issue on behalf of the IECEx Certification Body: Dr.-Ing. F. Lienesch

Position: Head of Department "Explosion Protection in Sensor Technology and Instrumentation"

Signature:
(for printed version)

Date: 21.2.18

1. This certificate and schedule may only be reproduced in full.
2. This certificate is not transferable and remains the property of the issuing body.
3. The Status and authenticity of this certificate may be verified by visiting the Official IECEx Website.

Certificate issued by:

Physikalisch-Technische Bundesanstalt (PTB)
Bundesallee 100
38116 Braunschweig
Germany

Physikalisch-Technische Bundesanstalt
Braunschweig und Berlin

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Manufacturer:	**ABB Automation Products GmbH** Schillerstrasse 72 32425 Minden Germany **Germany**	

Additional Manufacturing location(s):

This certificate is issued as verification that a sample(s), representative of production, was assessed and tested and found to comply with the IEC Standard list below and that the manufacturer's quality system, relating to the Ex products covered by this certificate, was assessed and found to comply with the IECEx Quality system requirements. This certificate is granted subject to the conditions as set out in IECEx Scheme Rules, IECEx 02 and Operational Documents as amended.

STANDARDS:

The electrical apparatus and any acceptable variations to it specified in the schedule of this certificate and the identified documents, was found to comply with the following standards:

IEC 60079-0 : 2011 Edition:6.0	Explosive atmospheres - Part 0: General requirements
IEC 60079-11 : 2011 Edition:6.0	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"

*This Certificate **does not** indicate compliance with electrical safety and performance requirements other than those expressly included in the Standards listed above.*

TEST & ASSESSMENT REPORTS:

A sample(s) of the equipment listed has successfully met the examination and test requirements as recorded in

Test Report:

DE/PTB/ExTR09.0017/01 DE/PTB/ExTR09.0017/02

Quality Assessment Report:

DE/TUN/QAR06.0012/04

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Schedule

EQUIPMENT:

Equipment and systems covered by this certificate are as follows:

In combination with sensors the temperature measuring transducers of types TTH 300-*1..., TTH 200-*1..., TTF 300-*1..., TTF 200-*1... as well as TTR 200-*1... are used for the detection, amplification and transmission of measured values in intrinsically safe circuits. Resistance thermometers, thermo-couples or other sensors with defined resistance or direct voltage quantities may be connected alternatively to the input.

Therefore the IECEx certificate comprises the temperature measuring transducers according to the following type code:

TTH 300-*1H.. : temperature measuring transducer TTH 300-...., analog HART, Ex-variant

two-channel, with HW-Rev. 1.06 and 1.07

TTH 200-*1H.. : temperature measuring transducer TTH 200-...., analog HART, Ex-variant

single-channel, with HW-Rev. 1.06,1.07, 1.12 and 1.15

TTR 200-*1 H.. : Electronics system of TTH 200-*1H.. encapsulated in rail-mounting enclosure

TTF 200-*1 A.H : TTH 200-*1H.. in single-chamber enclosure (AGLF)/ without indicator

TTF 200-*1 B.H : TTH 200-*1H.. in single-chamber enclosure (AGSF)/ without indicator

TTF 200-*1 E.H : TTH 200-*1H.. in single-chamber enclosure (AGLFD)/ with LCD-display HMI BS

TTF 200-*1 F.H : TTH 200-*1H.. in single-chamber enclosure (AGSFD)/ with LCD-display HMI BS

TTF 300-*1 A.H : TTH 300-*1H.. in single-chamber enclosure (AGLF)/ without indicator

TTF 300-*1 B.H : TTH 300-*1H.. in single-chamber enclosure (AGSF)/ without indicator

TTF 300-*1 C.H : TTH 300-*1H.. in single-chamber enclosure (AGLFD)/ with LCD-display HMI B

TTF 300-*1 D.H : TTH 300-*1H.. in single-chamber enclosure (AGSFD)/ with LCD-display HMI B

SPECIFIC CONDITIONS OF USE: YES as shown below:

1. The connection facilities of the temperature measuring transducer, type TTH 300-*1H.. / TTH 200- *1H.. shall be installed as such, that the degree of protection IP 20 according to IEC 60529 is fulfilled as a minimum.

2. Inadmissible electrostatic charge of the plastic housing of the temperature measuring transducers, types TTH 300-*1H../ TTH 200-*1H.. as well as TTR 200-*1 H.. shall be avoided. A warning label affixed on the equipment shall point to this risc.

3. When the temperature measuring transducers of types TTF 300-*1 A.H, TTF 300-*1 C.H, TTF 200-*1 A.H resp. TTF 200-*1 E.H are applied according to EPL "Ga", these shall be installed such that they are protected against heavy impact or friction.

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DETAILS OF CERTIFICATE CHANGES (for issues 1 and above):

The modifications concern the extension of the IECEx Certificate of Conformity to the temperature measuring transducer of type TTH200-*1 *.H (installation of the temperature measuring transducers of type TTH200-*1H.. into various single-chamber enclosures with / without indicator).

In the future the temperature measuring transducers of types TTF 350-*1..., TTR 300-*1 H.. as well as TTR 200-*1 H2.. are no longer subject matter of this IECEx Certificate of Conformity. These types of temperature measuring transducers are no longer manufactured.

Furthermore the modifications include the introduction of a new HW-Rev. 1.15 for temperature measuring transducer, type TTH 200-*1H.. .

Position 8 of the type code has been changed. A distinction between ATEX- and IECEx-version of the temperature measuring transducer does no longer exist.

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Additional information:

For electrical data reference is made to the annex IECExPTB0900144.pdf.

Annex:

IECEx_PTB_0900144.pdf

Applicant: ABB Automation Products GmbH
Schillerstraße 72
32425 Minden
Germany

Electrical Apparatus: Temperature measuring transducer
TTH 300-*1..., TTH 200-*1..., TTR 200-*1...,
TTF 300-*1..., TTF 200-*1...

Electrical data

The permissible range of the ambient temperature depends on the temperature class and the respective equipment protection levels as specified in the following table:

Temperature class	T6	T6	T4...T1	T4...T1
Temperature measuring transducer, type	TT*300-*1...	TT*200-*1...	TT*300-*1...	TT*200-*1...
Ambient temperature range, EPL Ga	-50 °C...+44 °C	-40 °C...+44 °C	-50 °C...+60 °C	-40 °C...+60 °C
Ambient temperature range, EPL Gb	-50 °C...+56 °C	-40 °C...+56 °C	-50 °C...+85 °C	-40 °C...+85 °C

Temperature measuring transducer: TT*200-*1...

Supply circuit ..... type of protection Intrinsic Safety Ex ia IIB / IIC
(terminals „+" and „-" or Ex ib IIB / IIC
or „+", „11", „-") for connection to certified intrinsically safe circuits

maximum input values:

U_i = 30 V
I_i = 130 mA
P_i = 0.8 W

HW-Rev.	1.06	1.07	1.12 / 1.15
C_i	5 nF	0.57 nF	0.57 nF
L_i	0.5 mH	0.5 mH	160 µH

Measuring circuit ..... type of protection Intrinsic Safety Ex ia IIC or Ex ia IIB
(terminals „1", „2", „3", „4") with the following maximum values:

HW-Rev.	1.06 / 1.07	1.12 / 1.15
U_o	6.5 V	6.5 V
I_o	25 mA	17.8 mA
P_o	38 mW	29 mW
characteri-stic	linear	linear
C_i	49 nF	118 nF
L_i	≈ 0	≈ 0

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Postfach 33 45, 38023 Braunschweig, Germany
Telephone +49 531 592-0, Telefax +49 531 592-3605

The maximum permissible external inductance and capacitance depend on the connected intrinsically safe circuit as follows:

passive sensors:

Type of protection	Ex ia	
	IIC	IIB
L_o	5 mH	5 mH
C_o	1.55 µF	8.75 µF

active sensors with the following maximum values:

U_o = 1.2 V
I_o = 50 mA
P_o = 60 mW

Type of protection	Ex ia	
	IIC	IIB
L_o	5 mH	5 mH
C_o	1.05 µF	6.15 µF

TTH 200-*1H..

Display- / service interface (plug connector) ..... type of protection Intrinsic Safety Ex ia IIB / IIC
or Ex ib IIB / IIC
with the following maximum values:

U_o = 6.2 V
I_o = 65.2 mA
P_o = 101 mW
linear characteristic
$C_i \approx 0$
$L_i \approx 0$

Type of protection	Ex ia / ib	
	IIC	IIB
L_o	5 mH	5 mH
C_o	1.4 µF	8.9 µF

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TTR 200-*1 H..

Display- / service interface (plug connector) ..... type of protection Intrinsic Safety Ex ia IIB / IIC
or Ex ib IIB / IIC
with the following maximum values:

U_o = 6.2 V
I_o = 65.2 mA
P_o = 101 mW
linear characteristic

C_i = 30 nF
$L_i \approx 0$

Type of protection	Ex ia / ib	
	IIC	IIB
L_o	5 mH	5 mH
C_o	1.37 µF	8.87 µF

The measuring circuit is safely electrically isolated from the supply circuit and from the display / service interface up to total voltage of 30 V.

Temperature measuring transducer: TT*300-*1...

Supply circuit (terminals „+" and „-" or „+", „11", „-") ..... type of protection Intrinsic Safety Ex ia IIB / IIC
or Ex ib IIB / IIC
for connection to certified intrinsically safe circuits

maximum input values:

U_i = 30 V
I_i = 130 mA
P_i = 0.8 W

HW-Rev.	1.06	1.07
C_i	5 nF	0.57 nF
L_i	0.5 mH	0.5 mH

Measuring circuit (terminals „1", „2", „3", „4", „5", „6" or „1", „2", „3", „4") ..... type of protection Intrinsic Safety Ex ia IIC or Ex ia IIB with the following maximum values:

HW-Rev.	1.06 / 1.07
U_o	6.5 V
I_o	25 mA
P_o	38 mW
characteristic	linear
C_i	49 nF
L_i	≈ 0

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The maximum permissible external inductance and capacitance depend on the connected intrinsically safe circuit as follows:

passive sensors:

Type of protection	Ex ia	
	IIC	IIB
L_o	5 mH	5 mH
C_o	1.55 µF	8.75 µF

active sensors with the following maximum values:

U_o = 1.2 V
I_o = 50 mA
P_o = 60 mW

Type of protection	Ex ia	
	IIC	IIB
L_o	5 mH	5 mH
C_o	1.05 µF	6.15 µF

Temperature measuring transducer: **TTH 300-*1H..**

Display- / service interface ..... type of protection Intrinsic Safety Ex ia IIB / IIC
(plug connector) or Ex ib IIB / IIC
with the following maximum values:

U_o = 6.2 V
I_o = 65.2 mA
P_o = 101 mW
linear characteristic
$C_i \approx 0$
$L_i \approx 0$

Type of protection	Ex ia / ib	
	IIC	IIB
L_o	5 mH	5 mH
C_o	1.4 µF	8.9 µF

The measuring circuit is safely electrically isolated from the supply circuit and from the display / service interface up to total voltage of 30 V.

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