



# IECEx Certificate of Conformity

## INTERNATIONAL ELECTROTECHNICAL COMMISSION IEC Certification System for Explosive Atmospheres

for rules and details of the IECEx Scheme visit [www.iecex.com](http://www.iecex.com)

Certificate No.:	<b>IECEx TUN 04.0015X</b>	Page 1 of 4	<u>Certificate history:</u>
Status:	<b>Current</b>	Issue No: 8	Issue 7 (2016-03-18)
Date of Issue:	2021-12-01		Issue 6 (2014-05-07)
Applicant:	<b>ABB AG (Division Measurement and Analytics)</b> Schillerstraße 72 Minden 32425 Germany		Issue 5 (2012-06-29)
Equipment:	<b>Positioner type TZIDC-xxx</b>		Issue 4 (2008-12-01)
Optional accessory:			Issue 3 (2008-09-02)
Type of Protection:	<b>Intrinsic safety "i", Increased Safety "e", Type of protection "n" electrical apparatus</b>		
Marking:	Ex ia IIC T6 resp. T4...T1 Gb, Ex ib IIC T6 resp. T4...T1 Gb, Ex ic IIC T6 resp. T4...T1 Gc, Ex ia IIIC T6 resp. T4...T1 Gb, Ex ib IIIC T6 resp. T4...T1 Gb, Ex nA IIC T6 resp. T4...T1 Gc, Ex ec IIC T6 resp. T4...T1 Gc		

Approved for issue on behalf of the IECEx  
Certification Body:

**Christian Roder**

Position:

**Head of IECEx Certification Body**

Signature:  
(for printed version)

Date:

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Hanover Office  
Am TÜV 1, 30519 Hannover  
Germany





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Manufacturer: **ABB AG (Division Measurement and Analytics)**  
Schillerstraße 72  
Minden 32425  
Germany

Additional  
manufacturing  
locations:

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 equipment 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 60079-0:2017](#) Explosive atmospheres - Part 0: Equipment - General requirements  
Edition:7.0

[IEC 60079-11:2011](#) Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"  
Edition:6.0

[IEC 60079-15:2010](#) Explosive atmospheres - Part 15: Equipment protection by type of protection "n"  
Edition:4

[IEC 60079-7:2017](#) Explosive atmospheres - Part 7: Equipment protection by increased safety "e"  
Edition:5.1

This Certificate **does not** indicate compliance with 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/TUN/ExTR08.0040/04](#)

Quality Assessment Report:

[DE/TUN/QAR06.0012/07](#)

IECEx ATR:

File reference:



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## EQUIPMENT:

Equipment and systems covered by this Certificate are as follows:

The Positioner type TZIDC-xxx is used for the control resp. closed loop control of pneumatic driven valves. The Positioner type TZIDC resp. TZIDC-200 transfers the reference value by means of an impressed signal current of 4...20 mA. The Positioner type TZIDC-110, TZIDC-210, TZIDC-120 resp. TZIDC-220 transfers the reference value via a field bus signal. An integrated distance sensor measures the current position of the valve drive. An integrated current/pressure transformer (I/P) is used for the pneumatic auxiliary power.

Additional technical data see "Attachment to IECEx TUN 04.0015X Issue\_8.pdf".

## SPECIFIC CONDITIONS OF USE: YES as shown below:

Special conditions for the safe use of intrinsically safe Positioners:

The "Local communication interface (LCI)" of the TZIDC and TZIDC-200 may only be used outside of the explosion hazardous area with  $U_m \leq 30$  V DC.

The positioner type TZIDC may only be operated as a source of auxiliary energy with gases of the group IIA and the temperature class T1 in outdoor applications or inside of buildings with sufficient ventilation.

The fed gas must be free of air and oxygen insofar as no explosive atmosphere can occur. The exhaust gas must always let outwards.

For use as II 2D apparatus the TZIDC equipment may only be used in areas with low risk of mechanical danger.

Cable entries which meet the requirements of EN 60079-11 for category II 2D; TZIDC and TZIDC-200, as well as the ambient temperature range have to be used.

TZIDC-200 variants, which also comply with the type of protection "Flameproof Enclosure" according to a separate certificate, may not be operated in the type of protection "Intrinsically Safe" after use as apparatus in the type of protection "Flameproof Enclosure".

The TZIDC and TZIDC-200 for use in combustible dust an electrostatic charge due to propagating brush discharges has to be avoided, when the equipment is used for Applications involving combustible dust.

Conditions for safe use of Ex nA IIC and Ex ec IIC:

Only devices which are suitable for the operation in explosion hazardous areas declared as zone 2 and the conditions available at the place of operation are allowed to be connected to circuits in the zone 2 (manufacturer's declaration or certificate from the test centre).

For the circuit "Mechanical digital feedback" measures have to be taken outside the device that the rated voltage is exceeded not more than 40% by transient disturbances.

The connecting and disconnecting as well as the switching of circuits under voltage are only permitted during installation, for maintenance or repair purposes.

Note: The temporal coincidence of explosion hazardous atmosphere and installation, maintenance resp. repair purposes in zone 2 is assessed as improbably.

Only non combustible gases are allowed to be used as pneumatic auxiliary energy.

Only suitable cable entries which meet the requirements of IEC 60079-15 resp. IEC 60079-7 are allowed to be used.



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## **DETAILS OF CERTIFICATE CHANGES (for issues 1 and above)**

- Standard update to IEC 60079-0:2017, Ed. 7.0
- Introduction of protection class Ex e in cat. 3G according to IEC 60079-7: 2015, Ed. 5.1
- Introduction of the protection class Ex i for dust according to IEC 60079-11: 2011, Ed. 6.0
- Change of the capacities for the digital input and output from 4.2 nF to 14.5 nF
- Introduction of the slot initiators from Pepperl & Fuchs into the IECEx certificate
- Introduction of the remote displacement sensor into the IECEx certificate
- The temperature for IIIC was changed from -40 °C to -35 °C

## **Annex:**

[Attachment to IECEx TUN 04.0015X Issue 8.pdf](#)

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The Positioner type TZIDC-xxx is used for the control resp. closed loop control of pneumatic driven valves.  
 The Positioner type TZIDC resp. TZIDC-200 transfers the reference value by means of an impressed signal current of 4...20 mA.  
 The Positioner type TZIDC-110, TZIDC-210, TZIDC-120 resp. TZIDC-220 transfers the reference value via a field bus signal.  
 An integrated position sensor measures the current position of the valve drive. An integrated current/pressure transformer (I/P) is used for the pneumatic auxiliary power.

The permissible ambient temperature range, temperature marking in dependence on the type, the type of protection and the Temperature Classes has to be taken from the following table:

Type	TZIDC resp. TZIDC-200 TZIDC-110/-210/-120/-220	TZIDC resp. TZIDC-110/-120	TZIDC resp. TZIDC-200	
Type of protection	Ex ia IIC resp. Ex ib IIC resp. Ex ic IIC	Ex nA IIC resp. Ex ec IIC	Ex ia IIIC resp. Ex ib IIIC	
Temperature Class	Ambient temperature range		Temperature marking	Ambient temp. range
T4 to T1	-40 °C to +85 °C	-35 °C to +85 °C	T 125°C	-35°C to +85°C
T6*	-40 °C to +40 °C	-35 °C to +50 °C	T 85°C	-35°C to +40°C

\* For use with „ Plug-In module for digital feed back“ in the temperature class T6, the permissible ambient temperature range is -40 °C to +35 °C.

**Electrical data for type TZIDC resp. TZIDC-200, type of protection “Intrinsic Safety” with marking Ex ia IIC resp. Ex ib IIC resp. Ex ia IIIC resp. Ex ib IIIC**

Signal circuit (terminals 11(+), 12(-))	only for the connection to a certified intrinsically safe circuit with the following maximum values: $U_i = 30 \text{ V}$ $I_i = 320 \text{ mA}$ $P_i = 1.1 \text{ W}$ The effective internal capacitance: $C_i = 6.6 \text{ nF}$ The effective internal inductance is negligibly small.
Switch input (terminals 81(+), 82(-))	only for the connection to a certified intrinsically safe circuit with the following maximum values: $U_i = 30 \text{ V}$ $I_i = 320 \text{ mA}$ $P_i = 1.1 \text{ W}$ effective internal capacitance: $C_i = 14.5 \text{ nF}$ The effective internal inductance is negligibly small.
Switch output (terminals 83(+), 84(-))	only for the connection to a certified intrinsically safe circuit with the following maximum values: $U_i = 30 \text{ V}$ $I_i = 320 \text{ mA}$ $P_i = 500 \text{ mW}$ effective internal capacitance: $C_i = 14.5 \text{ nF}$ The effective internal inductance is negligibly small.
Local interface for communication (LCI)	Only for connection to a programmer outside of the explosive hazardous area. (Look also to the “conditions of certification”)

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Optionally the following modules are allowed to be used:	
Plug-In module for digital feedback (terminals 51(+), 52(-) resp. 41(+), 42(-))	only for the connection to a certified intrinsically safe circuit with the following maximum values: $U_i = 30 \text{ V}$ $I_i = 320 \text{ mA}$ $P_i = 250 \text{ mW}$ effective internal capacitance: $C_i = 3.7 \text{ nF}$ The effective internal inductance is negligibly small.
Mechanical digital feed back (terminals 51(+), 52(-) Limit1 resp. 41(+), 42(-) Limit2)	Maximum values see IECEx PTB 11.0092 (Slot-type initiators of the company Pepperl & Fuchs)
Plug-In module for analogue feedback (terminals 31(+), 32(-))	only for the connection to a certified intrinsically safe circuit with the following maximum values: $U_i = 30 \text{ V}$ $I_i = 320 \text{ mA}$ $P_i = 1.1 \text{ W}$ effective internal capacitance: $C_i = 6.6 \text{ nF}$ The effective internal inductance is negligibly small.

<b>Electrical data for type TZIDC-110, TZIDC-210, TZIDC-120 resp. TZIDC-220 with marking Ex ia IIC resp. Ex ib IIC resp. Ex ic IIC</b>			
Input circuit (terminals 11(+), 12(- resp. +, -))	only for the connection to a certified Power supply and following maximum values:		
	Power Supply or Barrier	FISCO-Power Supply (only valid for TZIDC-120 resp. TZIDC-220)	
Voltage	24 V	17.5 V	17.5 V
Current	250 mA	380 mA	360 mA
Power	1.2 W	5.32 W	2.52 W
Characteristic line	Linear	rectangular	trapezoid
The effective internal capacitance and inductance are negligibly small.			
Optionally the following modules are allowed to be used:			
Mechanical digital feed back (terminals 51(+), 52(-) Limit1 resp. 41(+), 42(-) Limit2)	Maximum values see IECEx PTB 11.0092 (Slot-type initiators of the company Pepperl & Fuchs)		
Local interface for communication (LCI)	Only for connection to a programmer outside of the explosive hazardous area. (Look also to the "conditions of certification")		

<b>Electrical data for type TZIDC, TZIDC-110 resp. TZIDC-120 with marking Ex nA IIC resp. Ex ec IIC</b>	
<b>Type TZIDC</b>	
Signal circuit (terminals 11(+), 12(-))	$U = 9.7 \text{ VDC}; 4 \dots 20 \text{ mA}, \text{ max. } 21.5 \text{ mA}$
Switch input (terminals 81(+), 82(-))	$U = 12 \dots 24 \text{ VDC}; 4 \text{ mA}$

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Switch output (terminals 83(+), 84(-))	U = 11 VDC
Optionally the following modules are allowed to be used with type TZIDC:	
Plug-In module for analogue feedback (terminals 31(+), 32)	U = 10...30 VDC; 4...20 mA, max. 21.5 mA
<b>Type TZIDC-110</b>	
Input circuit (terminals 11(+), 12(-))	U = 9..32 VDC; 10.5 mA
<b>Type TZIDC-120</b>	
Input circuit (terminals 11(+), 12(-))	U = 9..32 VDC; 11.5 mA
Additionally the following modules are allowed to be used with all types:	
Plug in module for mechanical digital feedback (terminals 51(+), 52(-) Limit1 resp. 41(+), 42(-) Limit2)	U = 5...11 VDC

**CONDITIONS OF CERTIFICATION:**

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