ABB MEASUREMENT & ANALYTICS | DATA SHEET

TZIDC
Digital Positioner
Compact, well-proven, and flexible

- **HART® protocol**

- For 4 to 20 mA two-wire technology

- Low operating cost

- Compact design

- Well-proven technology

- Robust and environmentally ruggedized

- Wide operating temperature range
  - -40 to 85 °C (−40 to 185 °F)

- Easy to commission, ‘single pushbutton’ operating philosophy

- Mechanical position indicator

- ATEX, FM, CSA, GOST and IECEx approvals

- For SIL2 safety loops
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1 Description

The TZIDC is an electronically configurable positioner with communication capabilities designed for mounting to pneumatic linear or rotary actuators. It features a small and compact design, a modular construction, and an excellent cost-performance ratio. Fully automatic determination of the control parameters and adaptation to the final control element yield considerable time savings and an optimal control behavior.

1.1 Pneumatics

An I/P module with subsequent pneumatic amplifier is used to control the pneumatic actuator. The well-proven I/P module proportionally converts the permanent electrical setpoint signal from the CPU into a pneumatic signal used to adjust a 3/3-way valve. The air flow for pressurizing or depressurizing the actuator is continuously adjusted. As a result, excellent control is achieved. When reaching the set point, the 3/3-way valve is closed in center position to minimize the air consumption.

Four different pneumatics versions are available: for single-acting or double-acting actuators, each with "fail-safe" or "fail-freeze" function.

1.1.1 “Fail-safe” function

If the electrical power supply fails, the positioner output 1 is depressurized, and the pneumatic actuator's return spring moves the valve to the defined safe position. In case of a double-acting actuator the second output 2 is additionally pressurized.

1.1.2 “Fail-freeze” function

If the electrical power supply should fail, the positioner output 1 (and 2, if applicable) is closed and the pneumatic actuator stops ("freezes") the valve in the current position. If compressed air supply should fail, the positioner depressurizes the actuator.

1.2 Operation

The positioner has a built-in operating panel providing a 2-line LCD and 4 pushbuttons for optimal local configuration, commissioning and operational monitoring. Alternatively, the appropriate configuration program and the available communication option can be used.

1.3 Communication

The standard TZIDC model has a local communication interface (LKS connector). Additionally, a "HART communication" option for communication via the 20 mA signal is available. Both communications are based on the HART Protocol.

1.4 Inputs and outputs

In addition to its input for the analog position set point the TZIDC positioner is equipped with a digital input which can be used to activate various protective functions in the device via the process control system. A digital output allows you to output collective alarms or fault messages.

1.5 Modular design

The TZIDC basic model can be enhanced at any time by retrofitting optional equipment. Option modules for analog or digital position feedback can be installed. Additionally, a mechanical position indicator, proximity switches or 24 V microswitches are available for indicating the position independently of the mother board function.
**Basic model**

1. LKS plug
2. Setpoint signal 4 ... 20 mA
3. Digital input
4. Digital output DO
5. Supply, 1.4 ... 6 bar (20 ... 90 psi)
6. Exhaust
7. I/P module with 3/3-way valve
8. Position sensor (optional up to 270° rotation angle)

**Optional upgrades**

9. Plug module for analog feedback (4 ... 20 mA)
10. Plug module for digital feedback
11. Installation kit for mechanical position indicator
12. Installation kit for digital feedback with proximity switches
13. Installation kit for digital feedback with 24 V microswitches

**IMPORTANT (NOTE)**

With optional upgrades either the “Installation kit for digital feedback with proximity switches” (12) or the “Installation kit for digital feedback with microswitches 24 V” (13) can be used.

In both cases, the “mechanical position indicator” (11) must be installed.
2 Mounting versions

2.1 To linear actuators in accordance with the standard

Lateral attachment is in accordance with DIN / IEC 534 (lateral attachment to NAMUR). The required attachment kit is a complete set of attachment material, but does not include the screwed pipe connections and air pipes.

2.2 To rotary actuators in accordance with the standard

This attachment is designed for mounting according to the standard VDI/VDE 3845. The attachment kit consists of a console with mounting screws for mounting on a rotary actuator. The adapter for coupling the positioner feedback shaft to the actuator shaft has to be ordered separately. Screwed pipe connections and air pipes have to be provided on site.

2.3 Integral mounting to control valves

The TZIDC positioner featuring standard pneumatic action is available as an option for integral mounting. The required holes are found at the back of the device. The benefit of this design is that the point for mechanical stroke measurement is protected and that the positioner and actuator are linked internally. No external tubing is required.

2.4 Special actuator-specific mounting

In addition to the mounting methods described above, there are special actuator-specific attachments. Please contact us for details.
Fig. 2: Mounting options
1 Mounting to linear actuators acc. to DIN / IEC 534
2 Mounting to rotary actuators to VDI / VDE 3845
3 Integral mounting to control valves
4 Integral mounting to control valves by using an adapter panel
3 Operation

3.1 General

Microprocessor-based position control in the TZIDC provides for optimal results. The positioner features high-precision control functions and high operational reliability. Due to their elaborate structure and easy accessibility, the device parameters can be quickly adapted to the respective application.

The total range of parameters includes:
- Operating parameters
- Adjustment parameters
- Monitoring parameters
- Diagnosis parameters
- Maintenance parameters

3.1.1 Operating parameters

The following operating parameters can be set manually if required:

Setpoint Signal
Signal min. 4 mA, max. signal 20 mA (0 ... 100 %)
freely selectable for split-range operation
min. range 20 % (3.2 mA)
recommended range > 50 % (8.0 mA)

Action (setpoint signal)
Increasing: Setpoint Signal 4 ... 20 mA = position 0 ... 100 %
Decreasing: Setpoint Signal 20 ... 4 mA = position 0 ... 100 %

Characteristic curve (travel = f (setpoint signal))
Linear, equal percentage 1:25 or 1:50 or 25:1 or 50:1 or freely configurable with 20 reference points.

Travel limit
The positioning travel, i.e. the stroke or angle of rotation, can be reduced as required within the full range of 0 ... 100 %, provided that a minimum value of 20 % is observed.

Shut-off function
This parameter can be set separately for each end position. When the respective configured limit value is exceeded, the shut-off function causes immediate travel of the actuator until reaching the set end position.

When the shut-off value is set to “0”, the position is further controlled, even in the respective end position.

Travel time prolongation
This function can be used to increase the max. travel time for full travel. This time parameter can be set separately for each direction.

IMPORTANT (NOTE)
This function can only be used with the pneumatics with the safety function “fail-safe”.

Switching points for the position
This parameter allows you to define two position limits for signaling (see option “Module for digital position feedback”).

Digital output
The alarms generated in the TZIDC positioner can be polled via the digital output as a collective alarm.
The desired information can be selected via the operator panel or remotely via the configuration program.
The output can be set to “active high” or “active low”, as required.

Digital input
For the digital input, one of the following safety options can be selected. You may use the operator’s panel or configuration program to select an option.
- No function (default)
- Move to 0 % position
- Move to 100 % position
- Hold previous position
- disable local configuration
- Disable local configuration and operation
- Disable any access (no local or remote access via a PC)
The selected function is activated once the 24 V DC signal is no longer applied (< 11 V DC).

3.1.2 Adjustment parameters

The TZIDC positioner has a special function for automatic adjustment of the parameters.

Additionally, the control parameters can be set automatically (in adaptive control mode) or manually to optimally adapt them to the process requirements.

Tolerance band
Upon reaching the tolerance band, the position is slowly re-adjusted until the dead band has been reached.

Dead band (sensitivity)
When reaching the dead band, the position is held. The factory setting for this parameter is 0,1 %.

Actuator spring action
Selection of the sensor shaft rotating sense (looking into the open case), if the valve is moved to the safe position by the actuator spring (actuator is depressurized via Y1 / OUT1).
For double-acting actuators the actuator spring action corresponds to pressurizing the pneumatic output (OUT2).

Display 0 ... 100 %
Adjusting the display (0 ... 100%) according to the direction of action for opening or closing the valve.

3.1.3 Monitoring parameters

Various functions for permanent operational monitoring are implemented in the TZIDC operating program. The following states will be detected and indicated, e.g.:
- 4 ... 20 mA setpoint signal out of range
- position out of the adjusted range
- positioning time-out (adjustable time parameter)
- position controller inactive
- counter limits (settable in the diagnosis phase) exceeded

While automatic commissioning is in progress, the current state is continuously indicated on the integrated LCD.
During operation, the LCD shows the most important process variables:
- current position (in %),
- malfunctions, alarms, messages (as code)
Access to extended monitoring parameters is possible via HART communication and the DTM.
3.1.4 Diagnosis parameters
The diagnosis parameters of the TZIDC program inform the operator about the operating conditions of the valve. From this information the operator can derive which maintenance works are required, and when. Additionally, limit values can be defined for these parameters. When they are exceeded, an alarm is reported.
The following values are e.g. determined:
- Number of movements performed by the valve
- Total travel
The diagnosis parameters and limit values can be called up, set, and reset via HART communication, using the configuration program.

3.2 Operator panel
The TZIDC positioner’s operator panel with four pushbuttons allows for
- operational monitoring
- manual control
- configuration
- fully automatic commissioning
The operator panel is protected by a cover which avoids unauthorized access to the operating elements.

3.2.1 Single-button commissioning
Commissioning the TZIDC positioner is especially easy. The standard Autoadjust function for automatic adaptation of the device parameters can be started by simply pressing a single front panel button, and without knowing parameterization details.
Depending on the selected actuator type (linear or rotary), the displayed zero position is automatically adapted:
- for linear actuators counter-clockwise (CTCLOCKW)
- for rotary actuators clockwise (CLOCKW).
Besides this standard function, a customized “Autoadjust” function is available. The function is launched either via the operator’s panel or HART communication.

3.2.2 Display
The information indicated by the 2-line LC display is permanently updated and adapted during operation, to inform the operator in an optimal way.
During control operation (control with or without adaptation) the following TZIDC data can be called up by pressing the pushbuttons briefly:
- Up button: Current setpoint (mA)
- Down button: Temperature in device
- Up + Down buttons: Current control deviation
4 Communication

4.1 DTM

The DTM (Device Type Manager) for TZIDC is based on the FDT / DTM technology (FDT 1.2) and can be integrated in a process control system or loaded in a PC with the DSV401 (SMART VISION) program. This allows you to work with the same user interface in the commissioning phase, during operation, and for service tasks for monitoring the device, setting parameters, and uploading data. Communication is based on the HART protocol. It occurs via a local interface connection (LKS) or in frequency-modulated mode using an FSK-modem connected at any chosen point of the 20 mA signal line. Communication has no effect on operation. Newly set parameters are saved in the non-volatile memory directly upon the download into the device, and become active immediately.

4.2 LKS adapter (RS-232 interface converter)

You can easily connect your TZIDC positioner to a PC, e.g., in the workshop or in the commissioning phase, by using the positioner’s LKS adapter (LKS = local communication interface). An RS-232 interface converter adapts the signals on the serial PC port to the level of the positioner’s LKS.

4.3 FSK Modem

The FSK modem establishes a digital frequency-modulated communication (Frequency Shift Keying) with the TZIDC positioner. Tapping is possible at any chosen point of the 20 mA signal line. We recommend that you use an electrically isolated FSK modem. It is bus-compatible when used with isolating amplifiers. Even connecting explosion-protected field devices is possible, on condition that the FSK modem is run outside the hazardous area.

Fig. 5: Local communication via LKS adapter

1 TZIDC
2 LKS adapter
3 Controller

Fig. 6: HART communication with FSK modem via 20 mA signal line

1 TZIDC
2 FSK modem
3 Controller
5 Specifications

5.1 Input

Setpoint signal (two-wire technology)
Nominal range 4 ... 20 mA
Split range configuration between 20 ... 100 % of the nominal range
Max. 50 mA
Min. 3.6 mA
Starting at 3.8 mA
Load voltage at 20 mA 9.7 V
Impedance at 20 mA 485 Ω

Digital input
Control voltage 0 ... 5 V DC
logical switching state "0"
11 ... 30 V DC
logical switching state "1"
Current max. 4 mA

5.2 Output

Compressed air output
Range 0 ... 6 bar (0 ... 90 psi)
Air capacity 5.0 kg/h = 3.9 Nm³/h = 2.3 scfm
at 1.4 bar (20 psi) supply pressure
13 kg/h = 10 Nm³/h = 6.0 scfm
at 6 bar (90 psi) supply pressure

Output function
For single or double-acting actuators, air is vented from actuator or actuator is blocked in case of (electrical) power failure

Shut-off values End position 0 % = 0 ... 45 %
End position 100 % = 55 ... 100 %

Digital output (control circuit to DIN 19234 / NAMUR)
Supply voltage 5 ... 11 V DC
Current > 0.35 mA ... < 1.2 mA Switching state logical "0"
Current > 2.1 mA Switching state logical "1"
Effective direction (configurable) normally logical "0" or logical "1"

5.3 Travel

Rotation angle Used range 25 ... 120° (rotary actuators, optional 270°)
25 ... 60 ° (linear actuators)
Travel limit Min. and max. limits, freely configurable between 0 ... 100 % of total travel (min. range > 20 %)
Travel time prolongation Range of 0 ... 200 s, separately for each direction
Dead band time limit Setting range 0 ... 200 s (monitoring parameter for control until the deviation reaches the dead band)

5.4 Air supply

Instrument air
free of oil, water and dust to DIN/ISO 8573-1. Pollution and oil content according to Class 3 (purity: max. particle size = 5 µm, max. particle density = 5 mg / m³; oil content: max. concentration = 1 mg / m³; pressure dew point: 10 K below operating temperature)

Supply pressure 1.4 ... 6 bar (20 ... 90 psi)

IMPORTANT (NOTE)
Do not exceed the maximum operating pressure of the actuator!

Air consumption < 0.03 kg/h / 0.015 scfm (independent of supply pressure)

5.5 Transmission data and influences

Output Y1
Increasing Increasing setpoint signal 0 ... 100 %
Increasing pressure at output
Decreasing Increasing setpoint signal 0 ... 100 %
Decreasing pressure at output

Action (setpoint signal)
Increasing Signal 4 ... 20 mA = Position 0 ... 100 %
Decreasing Signal 20 ... 4 mA = Position 0 ... 100 %

Characteristic curve (travel = f (setpoint signal))
Linear, equal percentage 1:25 or 1:50 or 25:1 or 50:1 and freely configurable with 20 reference points
Deviation ≤ 0.5 %
Tolerance band 0.3 ... 10 %, adjustable
Dead band 0.1 ... 10 %, adjustable
Resolution (A/D conversion) > 16,000 steps
Sample rate 20 ms
Influence of ambient temperature ≤ 0.5% per 10 K
Reference temperature 20 °C
Influence of vibration ≤ 1 % to 10 g and 80 Hz

Seismic vibration
Meets requirements of DIN/IEC 68-3-3 Class III for strong and strongest earthquakes

Influence of mounting orientation
Not measurable

Complies with the following directives
- EMC directive 2004/108/EC from December 2004
- EC Directive for CE conformity marking

Communication
- HART protocol 5.9
- Local connector for LKS (not in explosion protection area)
- HART communication via 20 mA signal line with (optional) FSK modem
5.6 Environmental capabilities

Ambient temperature
For operation, storage and transport: -40 ... 85 °C (-40 ... 185 °F)

Relative humidity
Operational (with closed housing and air supply switched on): 95 % (annual average), condensation permissible
Transport and storage: 75 % (annual average), non-condensing

5.7 Housing

Material / Degree of protection
Aluminum with ≤ 0.1 % copper, protection class IP 65 (optional IP 66) / NEMA 4X

Surface / Color
Electrostatic dipping varnish with epoxy resin, stove-hardened. Case varnished black, RAL 9005, matte, housing cover Pantone 420.

Electrical connections
Screw terminals: Max. 1.0 mm² (AWG 17) for options
Max. 2.5 mm² (14 AWG) for bus connector

IMPORTANT (NOTE)
Do not expose the terminals to strain.

Four thread combinations for cable entry and pneumatic connection
- Cable: thread 1/2-14NPT, air pipe: thread 1/4-18 NPT
- Cable: thread M20 x 1.5, air pipe: thread 1/4-18 NPT
- Cable: thread M20 x 1.5, air pipe: thread G 1/4
- Cable: thread G 1/2, air pipe: thread Rc 1/4
(Optional: With cable gland(s) and pipe plugs if necessary)

Weight
1.7 kg (3.75 lb)

Mounting orientation
Any

5.8 Safety Integrity Level

IMPORTANT (NOTE)
Applies to applications with single-acting and depressurizing pneumatics.

The positioner TZIDC / TZIDC-200 meets the requirements at:
- functional safety acc. to IEC 61508
- explosion protection (depending on the model)
- electromagnetic compatibility in accordance with EN 61000

Without the input signal, the pneumatic module in the positioner vents the drive and the installed spring in it moves the valve in a predetermined end position (OPEN or CLOSED).

SIL specific safety-related characteristics:

<table>
<thead>
<tr>
<th>Device</th>
<th>SFF</th>
<th>PFDav</th>
<th>$\lambda_{dd} + \lambda_s$</th>
<th>$\lambda_{du}$</th>
</tr>
</thead>
<tbody>
<tr>
<td>TZIDC / TZIDC-200 with supply current 0 mA</td>
<td>94 %</td>
<td>1.76 * 10⁻⁴</td>
<td>651 FIT</td>
<td>40 FIT</td>
</tr>
</tbody>
</table>

For details refer to the Management Summary in the SIL-Safety Instructions 37/18-79XA.
5.9 Options

Module for analog position feedback ¹)
Signal range: 4 ... 20 mA (configurable split ranges)
Supply, 2-wire circuitry: 24 V DC (10 ... 30 V DC)
Characteristic curve: Rising or falling
Deviation: < 1 %

IMPORTANT (NOTE)
Without a signal from the positioner (e.g., “no power” or “initializing”) the module sets the output to > 20 mA (alarm level)

Module for digital position feedback ¹)
Two switches for digital position feedback (position adjustable within the range of 0 ... 100 %, ranges cannot overlap)
Current circuits acc. to DIN 19234 / NAMUR
Supply voltage: 5 ... 11 V DC
Signal current < 1.2 mA: Switching state logical “0”
Signal current > 2.1 mA: Switching state logical “1”
Direction of action: normally logical “0” or logical “1” (configurable)

¹) The module for analog position feedback and the module for digital position feedback plug in separate slots and can be used together.

Digital position feedback with proximity switches
Two proximity switches for independent position signaling,
Switching points adjustable between 0 ... 100 %
Current circuits acc. to DIN 19234 / NAMUR
Supply voltage: 5 ... 11 V DC
Signal current < 1.2 mA: Switching state logical “0”
Signal current > 2.1 mA: Switching state logical “1”

Direction of action (logical state)

<table>
<thead>
<tr>
<th>Proximity switch</th>
<th>&lt; Lim. 1</th>
<th>&gt; Lim. 1</th>
<th>&lt; Lim. 2</th>
<th>&gt; Lim. 2</th>
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</thead>
<tbody>
<tr>
<td>SJ2-SN (NC)</td>
<td>0</td>
<td>1</td>
<td>1</td>
<td>0</td>
</tr>
</tbody>
</table>

Digital position feedback with 24 V microswitches
Two microswitches for independent position signaling. Switching points can be adjusted from 0 ... 100 %.
Voltage: max. 24 V AC / DC
Load rating: max. 2 A
Contact surface: 10 µm Gold (AU)

Mechanical position indicator
Indicator disk in enclosure cover linked with positioner feedback shaft.

IMPORTANT (NOTE)
These options are also available for retrofitting by Service.

5.10 Accessories

Mounting material
- Attachment kit for linear actuators to DIN/IEC 534 / NAMUR
- Attachment kit for part-turn actuators to VDI / VDE 3845
- Attachment kit for integral mounting to control valves
- Attachment kit for actuator-specific attachment upon request

Pressure gauge block
- With pressure gauges for supply and output pressure.
- Pressure gauges with housing Ø 28 mm
- Aluminum connection block in black
- Installation material in black for mounting to TZIDC

Filter regulator
All metal version in brass, varnished black, bronze filter element, (40 µm), with condensate drain.
max. pre-pressure 16 bar (232 psi), output adjustable to 1.4 ... 6 bar (20 ... 90 psi).

IMPORTANT (NOTE)
The filter regulator may only be installed in combination with the pressure gauge block (accessory).

PC adapter for communication
LKS adapter for plug-in connection to TZIDC
FSK modem for HART communication

PC software for remote configuration and operation
DAT200 Asset Vision Basic with DTM for TZIDC on CD-ROM
6 Ex relevant specifications

6.1 ATEX

6.1.1 ATEX Ex i

Designation: II 2 G Ex ia IIC T6 resp. T4 Gb
II 2 G Ex ib IIC T6 resp. T4 Gb
II 2 D Ex ia IIC T51°C resp. 70°C Db

Type Examination Test Certificate: TÜV 04 ATEX 2702 X

Type: Intrinsically safe equipment

Device class: II 2 G
Standards: EN 60079-0:2009
EN 60079-11:2007

Device class: II 2 D
Standards: EN 60079-0:2009
EN 61241-11:2006

II 2 G

Temperature class | Ta | Ambient temperature range
--- | --- | ---
T4 | -40 ... 65 °C
T5 | -40 ... 50 °C
T6 1) | -40 ... 40 °C

II 2 D

Housing surface temperature | Ta | Ambient temperature range (II 2 D)
--- | --- | ---
T81 °C | -40... 70 °C
T61 °C | -40 ... 50 °C
T51 °C | -40 ... 40 °C

Electrical data

In intrinsically safe explosion protection types Ex ib IIC/Ex ia IIC or Ex iaD, only for connection to a certified intrinsically safe circuit.

Current circuit

<table>
<thead>
<tr>
<th>Signal circuit</th>
<th>Electrical data</th>
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<tbody>
<tr>
<td>Maximum values:</td>
<td></td>
</tr>
<tr>
<td>U0 = 30 V</td>
<td></td>
</tr>
<tr>
<td>I0 = 320 mA</td>
<td></td>
</tr>
<tr>
<td>P0 = 500 mW</td>
<td></td>
</tr>
<tr>
<td>C0 = 4.2 nF</td>
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</tr>
<tr>
<td>L0 negligibly small</td>
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<table>
<thead>
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<th>Contact input</th>
<th>Electrical data</th>
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<td>Maximum values:</td>
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<tr>
<td>U0 = 30 V</td>
<td></td>
</tr>
<tr>
<td>I0 = 320 mA</td>
<td></td>
</tr>
<tr>
<td>P0 = 1.1 W</td>
<td></td>
</tr>
<tr>
<td>C0 = 6.6 nF</td>
<td></td>
</tr>
<tr>
<td>L0 negligibly small</td>
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<table>
<thead>
<tr>
<th>Switch output</th>
<th>Electrical data</th>
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<td>I0 = 320 mA</td>
<td></td>
</tr>
<tr>
<td>P0 = 500 mW</td>
<td></td>
</tr>
<tr>
<td>C0 = 4.2 nF</td>
<td></td>
</tr>
<tr>
<td>L0 negligibly small</td>
<td></td>
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<table>
<thead>
<tr>
<th>Mechanical digital feedback</th>
<th>Electrical data</th>
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<tbody>
<tr>
<td>For max. values, see EC type examination test certificate number PTB 00 ATEX 2049 X</td>
<td></td>
</tr>
<tr>
<td>Proximity switches manuf. by Pepperl &amp; Fuchs</td>
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Current circuit

<table>
<thead>
<tr>
<th>Electrical data</th>
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<tbody>
<tr>
<td>Maximum values:</td>
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<tr>
<td>U = 30 V</td>
</tr>
<tr>
<td>I = 320 mA</td>
</tr>
<tr>
<td>P = 500 mW</td>
</tr>
<tr>
<td>C = 3.7 nF</td>
</tr>
<tr>
<td>L negligibly small</td>
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Plug-in module for analog position feedback (terminal +31 / -32)

<table>
<thead>
<tr>
<th>Electrical data</th>
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<tbody>
<tr>
<td>Maximum values:</td>
</tr>
<tr>
<td>U = 30 V</td>
</tr>
<tr>
<td>I = 320 mA</td>
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<tr>
<td>P = 1.1 W</td>
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<tr>
<td>C = 6.6 nF</td>
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<tr>
<td>L negligibly small</td>
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Optional interface to remote sensor

<table>
<thead>
<tr>
<th>Electrical data</th>
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<tbody>
<tr>
<td>Maximum values:</td>
</tr>
<tr>
<td>U0 = 5.4 V</td>
</tr>
<tr>
<td>I0 = 74 mA</td>
</tr>
<tr>
<td>P0 = 100 mW</td>
</tr>
<tr>
<td>C0 negligibly small</td>
</tr>
<tr>
<td>L0 negligibly small</td>
</tr>
</tbody>
</table>

Ex ia or Ex ib type of ignition protection

IIC:
L0 = 5mH
C0 = 2 µF

IIB:
L0 = 5mH
C0 = 10 µF

Local communication interface (LKS)

Only for connection to a programmer outside the potentially explosive area.
(See special conditions)

Special Requirements

- The local communication interface (LKS) may only be operated at Um ≤ 30 V DC outside the potentially explosive area.
- Variants with special certification confirming that they meet the requirements for the "flameproof enclosure" type of ignition protection may not be used as "intrinsically safe", if they have been previously used as a flameproof type of ignition protection.
- When used with gases from group IIA and a temperature class of T1 for auxiliary power, the TZIDC positioner may only be used outdoors or inside sufficiently ventilated buildings.
- The gas supplied must be kept sufficiently free of air and oxygen to prevent an ignitable atmosphere from forming.
- The equipment may only be used as a II 2 D type device in areas where the level of mechanical hazard is "low".
- Cable and wire entries that meet the requirements of EN 61241-11 for Category II 2 D as well as the ambient temperature range must be used.
- Prevent electrostatic charging due to propagating brush discharge when the equipment is used for applications involving combustible dust.

1) When using the plug-in module for "Digital Feedback" in Temperature Class T6, the maximum permissible ambient temperature range is -40 ... 35 °C.
6.1.2 ATEX Ex n

Designation: II 3 G Ex nA IIC T6 or T4 Gc
Declaration of conformity: TÜV 02 ATEX 1943 X
Type: "n" type of protection
Device class: II 3 G
Standards: EN 60079-15:2010
EN 60079-0:2009

<table>
<thead>
<tr>
<th>II 3 G</th>
<th>Temperature class</th>
<th>Ta</th>
<th>Ambient temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>T4</td>
<td>-40 ... 85 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>T6</td>
<td>-40 ... 50 °C</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Electrical data

<table>
<thead>
<tr>
<th>Current circuit</th>
<th>Electrical data</th>
<th>Signal circuit (terminal +11 / -12)</th>
<th>U = 9.7 V DC</th>
<th>I = 4 ... 20 mA, max. 21.5 mA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contact input (terminal +81 / -82)</td>
<td>U = 12 ... 24 V DC; 4 mA</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switch output (terminal +83 / -84)</td>
<td>U = 11 V DC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical digital feedback (terminal limit1 +51 / -52 or limit2 +41 / -42)</td>
<td>U = 5 to 11 V DC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plug-in module for digital position feedback (terminal +51 / -52 or +41 / -42)</td>
<td>U = 5 ... 11 V DC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plug-in module for analog position feedback (terminal +31 / -32)</td>
<td>U = 10 ... 30 V DC</td>
<td>I = 4 ... 20 mA, max. 21.5 mA</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Special Requirements

- Devices may only be connected to circuits in zone 2 if they are suitable for operation in zone 2 potentially explosive atmospheres and for the conditions prevailing at the installation location (manufacturer's declaration or certificate from an inspection authority).
- For the "digital feedback with proximity switches" circuit, external measures must be implemented to prevent the rated voltage from being exceeded by more than 40 % in the event of transient disturbances.
- It is only permissible to connect, disconnect, and switch live circuits during installation or maintenance, or for the purpose of carrying out repairs. Note: It is considered very unlikely that a potentially explosive atmosphere would be present in zone 2 at the same time that installation or maintenance/repair work was being carried out.
- Only non-flammable gases may be used for the pneumatic auxiliary power.
- Only use suitable cable entries which meet the requirements of IEC 60079-15.

6.2 IECEx

Designation: Ex ia IIC T6 or T4 Gb
Ex ib IIC T6 or T4 Gb
Ex nA IIC T6 or T4 Gc
Certificate No.: IECEx TUN 04.0015X
Issue No.: 5
Type: Intrinsic safety "i" or "n" type of protection
Standards: IEC 60079-0:2011
IEC 60079-11:2011
IEC 60079-15:2010

<table>
<thead>
<tr>
<th>Type and designation</th>
<th>TZIDC Ex ia IIC or Ex ib IIC</th>
<th>Temperature class</th>
<th>Ambient temperature range</th>
</tr>
</thead>
<tbody>
<tr>
<td>T4</td>
<td>-40 ... 85 °C</td>
<td>T4</td>
<td></td>
</tr>
<tr>
<td>T6 1)</td>
<td>-40 ... 40 °C</td>
<td>T6 1)</td>
<td></td>
</tr>
</tbody>
</table>

1) When using the plug-in module for "Digital Feedback" in Temperature Class T6, the maximum permissible ambient temperature range is -40 ... 35 °C.

6.2.1 IECEx i

Electrical data for a TZIDC designated as Ex ia IIC or Ex ib IIC With the intrinsically safe Ex ib IIC / Ex ia IIC types of ignition protection, only for connection to a certified intrinsically safe circuit.

Electrical data

<table>
<thead>
<tr>
<th>Signal circuit (terminal +11 / -12)</th>
<th>Maximum values:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U = 30 V</td>
</tr>
<tr>
<td></td>
<td>I = 320 mA</td>
</tr>
<tr>
<td></td>
<td>P = 1.1 W</td>
</tr>
<tr>
<td></td>
<td>C = 6.6 nF</td>
</tr>
<tr>
<td></td>
<td>L negligibly small</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contact input (terminal +81 / -82)</th>
<th>Maximum values:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U = 30 V</td>
</tr>
<tr>
<td></td>
<td>I = 320 mA</td>
</tr>
<tr>
<td></td>
<td>P = 1.1 W</td>
</tr>
<tr>
<td></td>
<td>C = 4.2 nF</td>
</tr>
<tr>
<td></td>
<td>L negligibly small</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Switch output (terminal +83 / -84)</th>
<th>Maximum values:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>U = 30 V</td>
</tr>
<tr>
<td></td>
<td>I = 320 mA</td>
</tr>
<tr>
<td></td>
<td>P = 500 mW</td>
</tr>
<tr>
<td></td>
<td>C = 4.2 nF</td>
</tr>
<tr>
<td></td>
<td>L negligibly small</td>
</tr>
</tbody>
</table>

Local communication interface (LKS) | Only for connection to a programmer outside the potentially explosive area. (See Special conditions) |
The following modules may be operated as an option:

<table>
<thead>
<tr>
<th>Electrical data</th>
</tr>
</thead>
</table>
| **Plug-in module for digital position feedback** (terminal +51 / -52 or +41 / -42) | Maximum values:  
| | $U_i = 30 \text{ V}$  
| | $I_i = 320 \text{ mA}$  
| | $P_i = 500 \text{ mW}$  
| | $C_i = 3.7 \text{ nF}$  
| | $L_i$ negligibly small |

| **Plug-in module for analog position feedback** (terminal +31 / -32) | Maximum values:  
| | $U_i = 30 \text{ V}$  
| | $I_i = 320 \text{ mA}$  
| | $P_i = 1.1 \text{ mW}$  
| | $C_i = 6.6 \text{ nF}$  
| | $L_i$ negligibly small |

6.2.2 1.1.3 IECEx n

<table>
<thead>
<tr>
<th>Electrical data</th>
</tr>
</thead>
</table>
| **Signal circuit** (terminal +11 / -12) | $U = 9.7 \text{ V DC}$  
| | $I = 4 \ldots 20 \text{ mA, max. 21.5 mA}$ |

| **Contact input** (terminal +81 / -82) | $U = 12 \ldots 24 \text{ V DC, 4 mA}$ |

| **Switch output** (terminal +83 / -84) | $U = 11 \text{ V DC}$ |

The following modules may be operated as an option:

<table>
<thead>
<tr>
<th>Electrical data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Plug-in module for digital position feedback</strong> (terminal +51 / -52 or +41 / -42)</td>
</tr>
</tbody>
</table>

| **Plug-in module for analog position feedback** (terminal +31 / -32) | $U = 10 \ldots 30 \text{ V DC}$  
| | $I = 4 \ldots 20 \text{ mA, max. 21.5 mA}$ |

Special Requirements

- Devices may only be connected to circuits in zone 2 if they are suitable for operation in zone 2 potentially explosive atmospheres and for the conditions prevailing at the installation location (manufacturer's declaration or certificate from an inspection authority).
- For the "digital feedback with proximity switches" circuit, external measures must be implemented to prevent the rated voltage from being exceeded by more than 40 % in the event of transient disturbances.
- It is only permissible to connect, disconnect, and switch live circuits during installation or maintenance, or for the purpose of carrying out repairs. Note: It is considered very unlikely that a potentially explosive atmosphere would be present in zone 2 at the same time that installation or maintenance/repair work was being carried out.
- Only non-flammable gases may be used for the pneumatic auxiliary power.
- Only use suitable cable entries which meet the requirements of IEC 60079-15.
Electro-Pneumatic Positioner TZIDC
for 4 ... 20 mA two-wire technology

6.3 FM/CSA

6.3.1 CSA International

Certificate: 1052414
Class 2258 02 PROCESS CONTROL EQUIPMENT – For Hazardous Locations
Class 2258 04 PROCESS CONTROL EQUIPMENT – Intrinsically Safe, Entity – For Hazardous Locations

Class I, Div 2, Groups A, B, C and D;
Class II, Div 2, Groups E, F, and G,
Class III, Enclosure Type 4X:

Model TZIDC, P/N V18345-x0x2x2xx0x Intelligent Positioner
intrinsically safe with entity parameters of:

<table>
<thead>
<tr>
<th>Terminals</th>
<th>V max</th>
<th>I max</th>
<th>C i</th>
<th>L i</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 / 12</td>
<td>30 V</td>
<td>104 mA</td>
<td>6.6 nF</td>
<td>0 uH</td>
</tr>
<tr>
<td>81 / 82</td>
<td>30 V</td>
<td>110 mA</td>
<td>4.2 nF</td>
<td>0 uH</td>
</tr>
<tr>
<td>83 / 84</td>
<td>30 V</td>
<td>90 mA</td>
<td>4.2 nF</td>
<td>0 uH</td>
</tr>
<tr>
<td>31 / 32</td>
<td>30 V</td>
<td>110 mA</td>
<td>6.6 nF</td>
<td>0 uH</td>
</tr>
<tr>
<td>41 / 42 and 51 / 52</td>
<td>30 V</td>
<td>96 mA</td>
<td>3.7 nF</td>
<td>0 uH</td>
</tr>
<tr>
<td>Limit2 41 / 42 and Limit1 51 / 52</td>
<td>15.5 V</td>
<td>52 mA</td>
<td>20 nF</td>
<td>30 uH</td>
</tr>
</tbody>
</table>

When installed per installation Drawing No 901064
Temperature Code T4
Max. Ambient 85 Deg C

IMPORTANT (NOTE)
• The "x" in P/N denotes minor mechanical variations or optional features.
• Local communication interface LKS shall not be used in hazardous location.
• Each pair of conductors of each intrinsic safety circuit shall be shielded.

6.3.2 CSA Certification Record

Certificate: 1649904 (LR 20312)
Class 2258 04 PROCESS CONTROL EQUIPMENT – Intrinsically Safe, Entity – For Hazardous Locations

Class I, Div 1, Groups A, B, C and D;
Class II, Div 1, Groups E, F, and G,
Class III, Div 1, Enclosure Type 4X:

Model TZIDC, P/N V18345-x0x2x2xx0x Intelligent Positioner
Input rated 30 V DC; max. 4 ... 20 mA
Output pressure Max. 90 psi

Intrinsically safe with entity parameters of:

<table>
<thead>
<tr>
<th>Terminals</th>
<th>V max</th>
<th>I max</th>
<th>C i</th>
<th>L i</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 / 12</td>
<td>30 V</td>
<td>104 mA</td>
<td>6.6 nF</td>
<td>0 uH</td>
</tr>
<tr>
<td>81 / 82</td>
<td>30 V</td>
<td>110 mA</td>
<td>4.2 nF</td>
<td>0 uH</td>
</tr>
<tr>
<td>83 / 84</td>
<td>30 V</td>
<td>90 mA</td>
<td>4.2 nF</td>
<td>0 uH</td>
</tr>
<tr>
<td>31 / 32</td>
<td>30 V</td>
<td>110 mA</td>
<td>6.6 nF</td>
<td>0 uH</td>
</tr>
<tr>
<td>41 / 42 and 51 / 52</td>
<td>30 V</td>
<td>96 mA</td>
<td>3.7 nF</td>
<td>0 uH</td>
</tr>
<tr>
<td>Limit2 41 / 42 and Limit1 51 / 52</td>
<td>15.5 V</td>
<td>52 mA</td>
<td>20 nF</td>
<td>30 uH</td>
</tr>
</tbody>
</table>

When installed per installation Drawing No 901064
Temperature Code T4
Max. Ambient 85 Deg C

IMPORTANT (NOTE)
• The "x" in P/N denotes minor mechanical variations or optional features.
• Local communication interface LKS shall not be used in hazardous location.
• Each pair of conductors of each intrinsic safety circuit shall be shielded..
6.3.3 FM Approvals
TZIDC Positioner, Model V18345-a0b2c2de0f
IS/I,II,III/1/ABCDEFG/T4 Ta = 85 °C – 901064/7/4; Entity;
NI/I/2/ABCDE/T4 Ta = 85 °C;
SI/II,III/2/FG/T4 Ta =85 °C; Type 4XMax Entity Parameters: Per Control
Drawings

a = Case/mounting – 1, 2, 3, 4 or 9
b = Input/communication port – 1 or 2
c = Output/safe protection – 1, 2, 4 or 5
d = Option modules for analog or digital position feedback – 0, 1, 3
or 5
e = Mechanical kit (proximity switches) for digital position feedback
(option) – 0, 1 or 3
f = Design (varnish/coding) – 1 or 2
6.3.4 FM Control Document

CONTROL DOCUMENT NO 901064

Hazardous area

Class I, Div. 1, Groups A, B, C, D
Class II, Div. 1, Groups E, F, G
Class III, Div. 1

Associated Apparatus

TZIDC
V1B345-X0X2X2XX0X

Terminals

-12

(Control Equipment)

Int. Safe Gnd

Entity Parameters:

Vmax = 30 Vdc
Imax = 104 mA
Ci = 6.6 nF
Li = 0 μH
Pi = 1 W

Notes

1. Voc or Vi <= Vmax, Isc or It <= Imax, Ca >= Ci+Cb=able, La >= Li + L=able; Po <= Pi
2. Dust tight conduit seal must be used when installed in Class II and Class III environments.
3. Control equipment connected to barrier must not use or generate more than 250 Vrms or Vdc
4. Installation should be in accordance with ANSI/ISA RP1Z-6 "Installation of Intrinsically Safe System for Hazardous (Classified) Locations" and the National Electrical Code (ANSI/NFPA 70).
5. The configuration of associated apparatus must be FMRC Approved/CSA Approved as required.
6. Associated apparatus manufacturer's installation drawing must be followed when installing this equipment.
7. When connecting conduit to the enclosure use conduit hubs that have the same environmental rating as the enclosure.
8. No revision to drawing without prior FMRC Approval/CSA Approval.
9. OUTPUT CURRENT MUST BE LIMITED BY A RESISTOR SUCH THAT THE OUTPUT VOLTAGE CURRENT PLOT IS A STRAIGHT LINE DRAWN BETWEEN OPEN CIRCUIT VOLTAGE AND SHORT CIRCUIT CURRENT.
10. Tampering and replacement with non-factory components may adversely affect the safe use of the system. Substitution of components may impair suitability for hazardous locations.
11. FOR FM DIV. 2 USE: Do not connect or disconnect unless the power was switched off or the area is known to be non-hazardous.
12. For Div 2 Models: WARNING - EXPLOSIVE HAZARD - Substitution of components may impair suitability for Class I, Division 2.
13. For Div 2 Models: WARNING - EXPLOSIVE HAZARD - Do not connect while circuit is live unless area is known to be non-hazardous.
14. Local communication interface IKS shall not be used in hazardous locations.
15. To maintain intrinsic safety, wiring associated with each channel must be run in separate cable shields connected to intrinsically safe (associated apparatus) ground.
Electro-Pneumatic Positioner TZIDC

for 4 ... 20 mA two-wire technology

CONTROL DOCUMENT NO 901064

Hazardous area

Class I, Div. 1, Groups A, B, C, D
Class II, Div. 1, Groups E, F, G
Class III, Div. 1
(Note 2)

TZIDC
V18345-X0X2X2XX0X

Associated Apparatus

Control Equipment

Terminals
+(81)
-(82)
(Switching Input)

Entity Parameters:
Vmax = 30 Vdc
Imax = 110 mA
C = 4.2 fF
L = 0 pH
P = 1 W

Int. Safe Gnd

Terminals
+(83)
-(84)
(Switching Output)

Entity Parameters:
Vmax = 30 Vdc
Imax = 96 mA
C = 4.2 fF
L = 0 pH
P = 1 W

Int. Safe Gnd
Electro-Pneumatic Positioner TZIDC 10/18-0.22-EN

for 4 ... 20 mA two-wire technology

CONTROL DOCUMENT NO 901064

Hazardous area

Class I, Div. I, Groups A, B, C, D
Class II, Div. I, Groups E, F, G
Class III, Div. I
(Note 2)

TZIDC
V18345-XOX2X21XOX

-31
Terminals
-32

(Antid Position Feedback)

Entity Parameters:
Vmax = 30 Vdc  Imax = 110 mA
Ci = 6.6 nF  Li = 0 pH
Pi = 1 W

TZIDC
V18345-XOX2X23XOX

+51
Terminals
-52

(Digital Position Feedback)

Entity Parameters:
Vmax = 30 Vdc  Imax = 96 mA
Ci = 3.7 nF  Li = 0 pH  Pi = 1 W

Associated
Apparatus
(Note 9)
(Note 5)
(Note 6)

Control
Equipment
(Note 3)

Int. Safe Gnd

Int. Safe Gnd

ABB Automation
Electro-Pneumatic Positioner TZIDC

for 4 ... 20 mA two-wire technology

CONTROL DOCUMENT NO 901064

Hazardous area

Class I, Div. 1, Groups A, B, C, D
Class II, Div. 1, Groups E, F, G
Class III, Div. 1
(Note 2)

Nonhazardous area

TZIDC
V18345-X0X2X2X10X
or V18345-X0X2X2X30X

Associated
Apparatus

Control
Equipment

Terminals
Limit 1
+51
-52

Terminals
Limit 2
+41
-42

(Int. Safe Gnd)

(Mechanical Digital Feedback)

Entity Parameters:
Vmax = 15.5 V
Imax = 52 mA
C1 = 20 nF
L1 = 30 pH
P1 = 1 W
7 Electrical connections

Fig. 7: Screw terminals, overview

1. Module for analog position feedback
2. Module for digital feedback
3. Module for digital feedback
4. Digital position feedback, either proximity switches or 24 V microswitches
5. Digital position feedback, either proximity switches or 24 V microswitches
6. Digital output DO
7. Digital input
8. Signal 4 ... 20 mA
9. Grounding screw

Fig. 8: Pin configuration

A: Basic model
B: Options

1. Analog input
2. Digital input
3. Digital output DO
4. Digital feedback
5. Analog feedback
6. Proximity switches
7. Microswitches
7.1 TZIDC with remote sensor

In the case of the "TZIDC with remote sensor" design, the components are supplied in two housings, which together form one harmonized unit.

Housing 1 (control unit) contains the electronics and pneumatics along with the following options (where applicable):

- Analog position feedback
- Digital position feedback

Housing 2 (remote sensor) contains the position sensor and is suitable for mounting on linear and part-turn actuators. The following options can be installed if required:

- Optical position indicator
- Mechanical feedback contacts (proximity switch or microswitch design)

The two housings can be or are connected to a shielded 3-wire cable. The maximum cable length is 10 m.

For Housing 1 (control unit) an attachment kit is available for pipe and wall mounting (see Accessories).

![TZIDC with remote position sensor diagram]

Fig. 9: TZIDC with remote position sensor

1 Housing 1 (control unit) 5 Pneumatic output 2
2 Setpoint signal 6 Pneumatic output 1
3 Connecting cable 7 Air supply
4 Housing 2 (remote sensor) 8 Pneumatic actuator
7.2 TZIDC for external remote sensor

In the case of the TZIDC design for remote sensor, the positioner is supplied without position detection.

The housing (control unit) contains the electronics and pneumatics along with the following options (where applicable):
- Analog position feedback
- Digital position feedback

The TZIDC designed for the remote sensors can be connected to any position sensor (4 ... 30 kΩ, with open circuit detection 4 ... 18 kΩ). The maximum length of the shielded 3-wire cable is 10 m.

Fig. 10: TZIDC for remote sensors

1 Housing (control unit) 5 Pneumatic output 2
2 Setpoint signal 6 Pneumatic output 1
3 Connecting cable 7 Air supply
4 Remote sensor 8 Pneumatic drive
8 Dimensions

All dimensions in mm (inch)

Fig. 11: Top view

Fig. 12: Front and rear views

A Tap hole M8 (10 mm low)
B Tap hole M6 (8 mm low)
C Tap hole M5 x 0.5 (air vents for direct mount)
D Sensor shaft (larger than scale)
Electro-Pneumatic Positioner TZIDC
for 4 ... 20 mA two-wire technology

Fig. 13: side view (from left to right)
A  Pneumatic connections, NPT 1/4"-18 or G1/4"

Fig. 14: Mounting drawings
* Dimensions A and B are dependent on the rotary actuator

Mounting to linear actuators to DIN / IEC 534
Mounting to rotary actuators to VDI / VDE 3845
Fig. 15: Positioner TZIDC with pressure gauge block and filter regulator
9 Ordering information

<table>
<thead>
<tr>
<th>Case / Mounting</th>
<th>Main Code</th>
<th>Add. Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Case made of aluminium, varnished, for mounting to linear actuators acc. DIN / IEC 534 / NAMUR or to rotary actuators acc. VDI / VDE 3845</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Case made of aluminium, varnished, with mechanical position indicator, for mounting to linear actuators acc. DIN / IEC 534 / NAMUR or to rotary actuators acc. VDI / VDE 3845</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Case made of aluminium, varnished, for integral mounting to control valves (see dimensional drawing)</td>
<td>3</td>
<td>0</td>
</tr>
<tr>
<td>Case made of aluminium, varnished, with mechanical position indicator, for integral mounting to control valves</td>
<td>4</td>
<td>0</td>
</tr>
<tr>
<td>Case made of aluminium, varnished, for mounting to rotary actuators acc. VDI / VDE 3845 with extended rotation angle up to 270°</td>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>Case made of aluminium, varnished, with mechanical position indicator, for mounting to rotary actuators acc. VDI / VDE 3845 with extended rotation angle up to 270°</td>
<td>6</td>
<td>0</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input / Communication Port</th>
<th>Main Code</th>
<th>Add. Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input 4 ... 20 mA, two-wire, with connector plug for LKS adapter</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>Input 4 ... 20 mA, two-wire, with connector plug for LKS adapter and FSK module for HART communication</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Explosion Protection</th>
<th>Main Code</th>
<th>Add. Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Without</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>ATEX II 2 G Ex ib IIC T6 resp. T4 Gb</td>
<td>1</td>
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<td>FM / CSA</td>
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<td>ATEX II 3 G Ex na IIC T6 resp. T4 Gc</td>
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<td>IECEx Ex ib IIC T6 resp. T4 Gb</td>
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<td>IECEx Ex na IIC T6 resp. T4 Gc</td>
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<td>ATEX II 2 G Ex ia IIC T6 resp. T4 Gb</td>
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<tr>
<td>GOST Russia - Ex ia II C T6</td>
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<td>GOST Russia - 0 Ex Ia IIC T6</td>
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<td>GOST Russia - Ex ia D 21 T5</td>
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<tr>
<td>IECEx ia IIC T6 resp. T4 Gb</td>
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<tr>
<td>Single acting, fail safe</td>
<td>1</td>
<td></td>
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<tr>
<td>Single acting, fail freeze</td>
<td>2</td>
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<tr>
<td>Double acting, fail safe</td>
<td>4</td>
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<tr>
<td>Double acting, fail freeze</td>
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<table>
<thead>
<tr>
<th>Connections</th>
<th>Main Code</th>
<th>Add. Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cable: Thread 1/2-14 NPT, air pipe: Thread 1/4-18 NPT</td>
<td>2</td>
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</tr>
<tr>
<td>Cable: Thread M20 x 1.5, air pipe: Thread 1/4-18 NPT</td>
<td>5</td>
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</tr>
<tr>
<td>Cable: Thread M20 x 1.5, air pipe: Thread G 1/4</td>
<td>6</td>
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</tr>
<tr>
<td>Cable: Thread G 1/2, air pipe: Thread Rc 1/4</td>
<td>7</td>
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</tbody>
</table>

Continued on next page

1) With standard characteristic curve, if delivered without remote sensor
2) Not for integral mounting
Electro-Pneumatic Positioner TZIDC
for 4 ... 20 mA two-wire technology

<table>
<thead>
<tr>
<th>Main Code.</th>
<th>Add. Code</th>
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<tbody>
<tr>
<td>TZIDC Electro-Pneumatic Positioner, intelligent, configurable, with indicator and operator panel</td>
<td>V18345 X X X X X X X X XX</td>
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</table>

Option Modules for Analog or Digital Position Feedback

<table>
<thead>
<tr>
<th>Without</th>
<th>Plug-in module for analog position feedback, signal range 4 ... 20 mA, two-wire</th>
<th>Plug-in module for digital position feedback</th>
<th>Plug-in module for analog position feedback, signal range 4 ... 20 mA, two-wire, and digital position feedback</th>
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</thead>
<tbody>
<tr>
<td>0</td>
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Optional Mechanical Kit for Digital Position Feedback

<table>
<thead>
<tr>
<th>Without</th>
<th>Mechanical kit for digital position feedback with proximity switches SJ2-SN (NC or logical 1)</th>
<th>Mechanical kit for digital position feedback with 24 V AC / DC microswitches (change-over contacts)</th>
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</thead>
<tbody>
<tr>
<td>0 0</td>
<td>3 1 0</td>
<td>4 5 0</td>
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Design (Varnish / Coding)

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<tr>
<th>Standard</th>
<th>Special version for Chemical Industries</th>
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<td>1</td>
<td>5) E</td>
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Sprache der Dokumentation

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<tr>
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<th>Italian</th>
<th>Spanish</th>
<th>French</th>
<th>English</th>
<th>Swedish</th>
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<th>Polish</th>
<th>Portuguese</th>
<th>Russian</th>
<th>Czech</th>
<th>Dutch</th>
<th>Danish</th>
<th>Greek</th>
<th>Latvian</th>
<th>Hungarian</th>
<th>Estonian</th>
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<tbody>
<tr>
<td>M1</td>
<td>M2</td>
<td>M3</td>
<td>M4</td>
<td>M5</td>
<td>M7</td>
<td>M8</td>
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<td>MP</td>
<td>MR</td>
<td>MS</td>
<td>MU</td>
<td>MV</td>
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SIL2 - Declaration of Conformity

<table>
<thead>
<tr>
<th>Certificate of Compliance</th>
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<tbody>
<tr>
<td>Certificate of compliance with the order acc. EN 10204-2.1 (DIN 50049-2.1) with item description CF2</td>
</tr>
<tr>
<td>Test report 2.2 acc. EN 10204 (DIN 50049-2.2) CF3</td>
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Continued on next page

3) Only for model with mechanical position indicator, no IECEx
4) Not for explosion protected version and only for model with mechanical position indicator
5) Details on request
6) With single acting, fail safe pneumatic only
**Electro-Pneumatic Positioner TZIDC**
for 4 ... 20 mA two-wire technology

<table>
<thead>
<tr>
<th>TZIDC Electro-Pneumatic Positioner, intelligent, configurable, with indicator and operator panel</th>
<th>V18345</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
<th>X</th>
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<td>Inspection certificate 3.1 acc. EN 10204</td>
<td>CBA</td>
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<tr>
<td>Stainless steel 11.5 x 60 mm (0.45 x 2.36 in.)</td>
<td>MK1</td>
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<td>Slicker 11 x 25 mm (0.43 x 0.98 in.)</td>
<td>MK3</td>
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<td><strong>Special Option Cable Gland</strong></td>
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<tr>
<td>With cable gland</td>
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<td><strong>Remote Sensor</strong></td>
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<tr>
<td>Basic unit with position indicator</td>
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<td><strong>Remote Sensor Temperature Range</strong></td>
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<td>Extended ambient temperature range -40 ... 100 °C (-40 ... 212 °F)</td>
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<td><strong>Remote Sensor Vibration Resistance</strong></td>
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<tr>
<td>Advanced vibration range 2 g @ 300 Hz</td>
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<td><strong>Remote Sensor Protection Class</strong></td>
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<td>Protection class IP 67</td>
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<td><strong>Remote Sensor Cable</strong></td>
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<td>5 m cable enclosed</td>
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<td>R5</td>
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<td>10 m cable enclosed</td>
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7) Only with remote sensor control unit
9.1 Accessories

<table>
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<tr>
<th>Accessories</th>
<th>Order number</th>
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<tbody>
<tr>
<td>Mounting bracket</td>
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<tr>
<td>EDP300 / TZIDC Mounting bracket for rotary actuators (mounting to VDI / VDE 3845), dimension A/B = 80/20 mm</td>
<td>319603</td>
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<tr>
<td>EDP300 / TZIDC Mounting bracket for rotary actuators (mounting to VDI / VDE 3845), dimension A/B = 80/30 mm</td>
<td>319604</td>
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<tr>
<td>EDP300 / TZIDC Mounting bracket for rotary actuators (mounting to VDI / VDE 3845), dimension A/B = 130/30 mm</td>
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<tr>
<td>EDP300 / TZIDC Mounting bracket for rotary actuators (mounting to VDI / VDE 3845), dimension A/B = 130/50 mm</td>
<td>319606</td>
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<tr>
<td>Lever</td>
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<tr>
<td>EDP300 / TZIDC Lever 30 mm</td>
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<td>EDP300 / TZIDC Lever 100 mm</td>
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<td>Adapter</td>
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<tr>
<td>EDP300 / TZIDC Adapter (shaft coupler) for rotary actuators (mounting to VDI / VDE 3845)</td>
<td>7959110</td>
</tr>
<tr>
<td>EDP300 / TZIDC Form - locking shaft adapter</td>
<td>7959371</td>
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<tr>
<td>Pressure gauge block</td>
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<tr>
<td>TZIDC Pressure gauge block, 0.6 MPa, single acting, G 1/4 connection</td>
<td>7959364</td>
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<tr>
<td>TTZIDC Pressure gauge block, 0.6 MPa, single acting, Rc 1/4 connection</td>
<td>7959358</td>
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<tr>
<td>TZIDC Pressure gauge block, 0.6 MPa, single acting, NPT 1/4 connection</td>
<td>7959360</td>
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<tr>
<td>TZIDC Pressure gauge block, 0.6 MPa, double acting, G 1/4 connection</td>
<td>7959365</td>
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<tr>
<td>TZIDC Pressure gauge block, 0.6 MPa, double acting, Rc 1/4 connection</td>
<td>7959359</td>
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<tr>
<td>TZIDC Pressure gauge block, 0.6 MPa, double acting, NPT 1/4 connection</td>
<td>7959361</td>
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<tr>
<td>Filter regulator</td>
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<tr>
<td>TZIDC Filter regulator, brass, connections thread G 1/4, incl. material for mounting to pressure gauge block</td>
<td>7959119</td>
</tr>
<tr>
<td>TTZIDC Filter regulator, brass, connections thread 1/4-18 NPT, incl. material for mounting to pressure gauge block</td>
<td>7959120</td>
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<tr>
<td>Attachment kit</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for linear actuators, stroke 10 ... 35 mm</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for linear actuators, stroke 20 ... 100 mm</td>
<td>7959126</td>
</tr>
<tr>
<td>EDP300 / TZIDC Attachment kit for remote sensor control unit (for wall or pipe mounting)</td>
<td>7959381</td>
</tr>
<tr>
<td>EDP300 / TZIDC Attachment kit for Fisher 1051-30, 1052-30</td>
<td>7959214</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for Fisher 1061 size 130</td>
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<td>EDP300 / TZIDC Attachment kit for Fisher 471</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for Fisher 657 / 667 Size 10 ... 90 mm</td>
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<td>EDP300 / TZIDC Attachment kit for Fisher Guidie 32/34</td>
<td>7959344</td>
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<td>EDP300 / TZIDC Attachment kit for Guidie DK</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for Keystone 79U/E-002(S) ... 79U/E-181(S)</td>
<td>7959147</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for Masonell CAMFLEX II, VARIMAX, MINITORK II</td>
<td>7959144</td>
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<td>EDP300 / TZIDC Attachment kit for Masonelain VariPak 28000 series</td>
<td>7959163</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for MaxFlo MaxFlo</td>
<td>7959140</td>
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<td>EDP300 / TZIDC Attachment kit for NAF 791290</td>
<td>7959207</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for NAMUR stroke 100 ... 170 mm</td>
<td>7959339</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for NELES BC6-20, B1C6-20, BJ8-20, B1J8-20</td>
<td>7959146</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for Valves Nuovo Pignone, lever for linear stroke, length 150 ... 250 mm</td>
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<td>EDP300 / TZIDC Attachment kit for Samson 241, 271, 3271</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for Samson 3277</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for Schubert&amp;Salzer GS 8020 / 8021 / 8023</td>
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<tr>
<td>EDP300 / TZIDC Attachment kit for SED SED stroke 100 mm</td>
<td>7959141</td>
</tr>
<tr>
<td>EDP300 / TZIDC Mounting Kit Uhde Type 4 Stroke 400 mm cropped</td>
<td>7959500</td>
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</table>
Compact, well-proven, and flexible

HART® protocol

For 4 to 20 mA two-wire technology

Low operating cost

Compact design

Well-proven technology

Robust and environmentally rugged

Wide operating temperature range

• −40 to 85 °C (−40 to 185 °F)

Easy to commission, 'single pushbutton' operating philosophy

Mechanical position indicator

ATEX, FM, CSA, GOST and IECEx approvals

For SIL2 safety loops