Electro-Pneumatic Positioner TZIDC-200
for 4...20 mA two-wire technology, with flameproof enclosure

- Low operating cost
- Compact design
- Well-proven technology and intelligence
- Robust and environmentally ruggedized
- Wide operating temperature range -40...+85 °C
- Easy to commission, “single push-button” operating philosophy
- Mechanical position indicator
- ATEX, FM, CSA and IECEx approvals
  - flameproof enclosure
  - intrinsically safe
- For SIL2 safety loops

Compact, well-proven, and flexible
Electro-Pneumatic Positioner TZIDC-200
for 4...20 mA two-wire technology, with flameproof enclosure

**Concept**

The TZIDC-200 positioner is a smart, electronically configurable instrument with communication capabilities, mounting to pneumatic actuators. It features a small and compact design, a modular construction, and an excellent cost-performance ratio.

The TZIDC-200’s functional heart is its microprocessor-controlled CPU where the operating system is running. The position feedback signal is polled with a sampling rate of 20 ms and an A/D resolution of 4000 steps. This ensures a rapid and high-precision signal processing for the input and the position feedback. The power for the CPU is derived from the 4...20 mA setpoint signal.

The operating program includes functions for fully automatic adjustment in the commissioning phase. These functions provide for optimal control of the position to minimize control deviation.

The pneumatic actuator is driven by an I/P module with subsequent 3/3-way valve. The electrical positioning signal from the CPU is proportionally converted into a pneumatic signal which, in turn, adjusts the 3/3-way valve. The cross-sectional area of the valve air channels for filling the actuator with air or evacuating air from it is changed in proportion with the adjustment. When reaching the set point, the 3/3-way valve is closed in center position.

The positioner has an operating panel providing a 2-line LCD and 4 push-buttons. The operating panel has the perfect design for optimal local configuration, commissioning, and operational monitoring. Alternatively, the TZIDC-200 can be configured, commissioned and monitored remotely via its communication port and the DTM. Communication is based on the HART Protocol and can be realized via the local communication interface (LKS) or in frequency-modulated mode via an FSK modem connected at any chosen point of the 4...20 mA signal line.

The modular design of the positioner allows you to add further functionality at a later time. Modules for analog or digital position feedback or for the shutdown function are available, as well as a mechanical position indicator and a digital position feedback option using proximity switches or 24 V microswitches.

Various TZIDC-200 features ensure safe valve operation on-site:
- Compliance with the EMC Directive
- Robust aluminum case, protection IP 65 / NEMA 4X
- High resistance to shock and vibration up to 10 g
- Operational reliability through permanent internal monitoring
- Message generation
- Operation at ambient temperatures of -40...+85 °C.

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**Fig. 1:** TZIDC-200 schematic diagram
Mounting

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.

To rotary actuators in accordance with the standard
Attachment to rotary actuators complies with VDI/VDE 3845. The attachment kit contains the bracket and the respective screws for attaching the positioner to the 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.

Integral mounting to control valves
A model of the TZIDC-200 positioner designed for integral mounting with the required threaded holes at the back (see Fig. 12: Front view and rear view) is also available. 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.

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 to linear actuators to DIN/IEC 534 / NAMUR
Fig. 3: Integral mounting to control valves
Fig. 4: Mounting to rotary actuators to VDI/VDE 3845
Fig. 5: Integral mounting to control valves by using an adapter panel
Operation

General
The smart, microprocessor-controlled TZIDC-200 positioner is designed for achieving optimal results. It features quick and precise control until reaching the set point and high operational reliability. The activation and adjustment of parameters necessary to achieve this goal is done automatically by the Autoadjust function. If required, the settings can be changed manually.

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

Operating parameters
The following operating parameters can be set manually if required:

- **Signal range**
  Minimum signal 4 mA, maximum signal 20 mA (0...100 %)
  freely selectable for split-range operation
  minimum range 20 % (3.2 mA),
  recommended range ≥ 50% (8.0 mA)
- **Action (signal)**
  Direct: Signal 4...20 mA = position 0...100 %
  Reverse: Signal 20...4 mA = position 0...100 %
- **Characteristic curve (travel = f (signal))**
  linear,
  equal percentage 1:25 or 1:50 or 25:1 or 50:1,
  or user-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**
  With this function the max. travel time for full travel can be increased. This time parameter can be set separately for each direction.
- **Switching points for the position**
  This parameter allows you to define two position limits for signalling (see Options: Module for digital position feedback).
- **Digital output**
  The alarms generated in the TZIDC-200 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 DTM.
  The output can be set to “active high” or “active low”, as required.

- **Digital input**
  One of the following protective functions can be selected for the digital input, either via the local operator panel or remotely via the DTM:
  - no function (default setting)
  - move to 0% position
  - move to 100 % position
  - hold last 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 (< 10 V DC).

Adjustment parameters
The TZIDC-200 positioner has a special function (Autoadjust) for automatic adjustment of the relevant parameters, e.g.:

- **Control parameters**
  To adapt the TZIDC-200 positioner to the control action of the valve, the control parameters can be adjusted individually to achieve optimal control until reaching the set point.
- **Tolerance band**
  When reaching the tolerance band the position is considered as having reached the set point. From this point on, the position is further slowly re-adjusted until the dead band is reached.
  The factory setting for this parameter is 0.3 %.
- **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 effective direction:
  Air to close/spring force to open
  or
  Air to open/spring force to close
- **Display 0...100 %**
  Adjusting the display (0...100 %) according to the direction of action for opening or closing the valve.
Monitoring parameters

Various functions for permanent operational monitoring are implemented in the TZIDC-200 operating program. The following states will be detected and indicated:

- 4...20 mA 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 LC display.

During operation, the LC display shows the most important process variables:

- current position (in %),
- malfunctions, alarms, messages (as plain text)

Access to extended monitoring parameters is possible via HART communication and the DTM.

Diagnosis parameters

The diagnosis parameters of the TZIDC-200 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 control actions performed by the valve
- Total travel

The diagnosis parameters and limit values can be called up, set, and reset via HART communication, by using the DTM.

Operator panel

The TZIDC-200 positioner’s operator panel with four push-buttons allows for

- operational monitoring
- manual control
- configuration
- fully automatic commissioning

The operator panel is protected by a hinged cover which can be opened during operation even in hazardous areas, i.e. the positioner can be locally operated any time as required.

Single-button commissioning

In addition to the usual operating functions the TZIDC-200 smart positioner has a special feature providing operating convenience in the commissioning phase: the standard Autoadjust function can be started by simply pressing a single front panel button, and without knowing parameterization details.

When selecting the actuator type (linear or rotary), the displayed zero position is automatically adapted: turning counter-clockwise for linear and clockwise for rotary actuators.

Besides this standard function, a customized Autoadjust function is available, which can be started either locally by pressing the respective push-buttons or remotely by using the DTM.

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-200 data can be called up by pressing the push-buttons briefly:

- Up arrow button current setpoint (mA)
- Down arrow button internal device temperature
- Up + Down arrow buttons current control deviation
Communication

DTM
The DTM (Device Type Manager) for TZIDC/TZIDC-200 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 and can be realized via the local communication interface (LKS) or in frequency-modulated mode via an FSK modem connected at any chosen point of the 4...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.

LKS adapter (RS-232 interface converter)
You can easily connect your TZIDC-200 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.

FSK Modem
The FSK modem establishes a digital frequency-modulated communication (Frequency Shift Keying) with the TZIDC-200 positioner.

Tapping is possible at any chosen point of the 4...20 mA signal line.

We recommend to 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.
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Technical data

Input

Signal
Nominal range 4…20 mA
Split range configuration betw. 20% and 100% of the nominal range
Max. 25 mA / 30 V
Two-wire technology
Load voltage at 20 mA 8.7 V DC without explosion protection
9.7 V DC for intrinsically safe device
Impedance at 20 mA 435 ohms without explosion protection
485 ohms for intrinsically safe device

Digital input
Control voltage 24 V DC (12…30 V DC)
Current max. 4 mA

Digital output (control circuit to DIN 19234/NAMUR)
Supply voltage 5…11 V DC
Current < 1.0 mA Logical “0”
Current > 2.0 mA Logical “1”
Effective direction: normally logical “0” or logical “1”
(configurable)

Output

Range
0…6 bar (0…90 psi)
Air capacity
at supply pressure of 1.4 bar (20 psi)
5.0 kg/h = 3.9 Nm³/h = 2.3 scfm
at supply pressure of 6 bar (90 psi)
13 kg/h = 10 Nm³/h = 6.0 scfm (Booster on request)
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 %

Travel

Angle of rotation
Used range 25…120 ° (rotary actuators, optionally 270 °)
25…60 ° (linear actuators)
Travel limit
Min. and max. limits,
freely configurable within 0…100 % of total travel (min. range > 20 %)
Travel time prolongation
Range of 0…200 seconds, separately for each direction
Positioning time limit
Range 0…200 seconds (monitoring parameter for control until the deviation reaches the tolerance band)

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)
NOTICE: Do not exceed the max. operating pressure of the actuator!

Air consumption
< 0.1 kg/h / 0.05 scfm (independent of supply pressure)

Transmission data and influences

Output OUT 1
Increasing: increasing signal 0…100 %
ingoing output pressure OUT 1
Decreasing: increasing signal 0…100 %
decreasing output pressure OUT 1
Action (signal)
Direct: signal 4…20 mA = position 0…100 %
Reverse: signal 20…4 mA = position 0…100 %

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

Characteristic deviation
≤ 0.5 %
Tolerance band
0.3…10 %, adjustable
Dead band
0.1…10 %, adjustable

Resolution (A/D conversion)
> 4000 steps
Sample rate
20 msec

Influence of ambient temperature
≤ 0.5 % for every 10 °C change in temperature

Influence of vibration
≤ ± 1 % up to 10 g and 80 Hz

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

Influence of mounting orientation
No effect

Meets the requirements of the following directives
EMC Directive 89/336/EEC as of May 1989
EC Directive for CE conformity marking

Communication
HART Protocol 5.1

Communication connection
- Connector for LKS (local communication interface) adapter
- HART communication (FSK modem) via 20 mA signal line

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)
NOTICE: Do not exceed the max. operating pressure of the actuator!

Air consumption
< 0.1 kg/h / 0.05 scfm (independent of supply pressure)

Transmission data and influences

Output OUT 1
Increasing: increasing signal 0…100 %
ingoing output pressure OUT 1
Decreasing: increasing signal 0…100 %
decreasing output pressure OUT 1
Action (signal)
Direct: signal 4…20 mA = position 0…100 %
Reverse: signal 20…4 mA = position 0…100 %

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

Characteristic deviation
≤ 0.5 %
Tolerance band
0.3…10 %, adjustable
Dead band
0.1…10 %, adjustable

Resolution (A/D conversion)
> 4000 steps
Sample rate
20 msec

Influence of ambient temperature
≤ 0.5 % for every 10 °C change in temperature

Influence of vibration
≤ ± 1 % up to 10 g and 80 Hz

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

Influence of mounting orientation
No effect

Meets the requirements of the following directives
EMC Directive 89/336/EEC as of May 1989
EC Directive for CE conformity marking

Communication
HART Protocol 5.1

Communication connection
- Connector for LKS (local communication interface) adapter
- HART communication (FSK modem) via 20 mA signal line
Electro-Pneumatic Positioner TZIDC-200
for 4...20 mA two-wire technology, with flameproof enclosure

Environmental capabilities

Ambient temperature
-40 °C to +85 °C for operation, storage and transport
-25 °C to +85 °C with proximity switches SJ2-S1N (NO)

Relative humidity
Operational (with closed housing and air supply switched on):
100 %, condensation permissible
Transport and storage:
75 % (average annual), non-condensing

Case

Material/Protections
Aluminum, protection class IP 65 / NEMA 4X

Surface/color
Electrostatic dipping varnish with epoxy resin, stove-hardened
Case varnished black, RAL 9005, matt,
Cap Pantone 420

Electrical connections
Screw terminals:
max. 1.0 mm² for options, max. 2.5 mm² for analog signal
NOTICE: Do not expose the terminals to strain!
Cable entry:
2 threads 1/2-14 NPT or M20x1.5
(cable gland or pipe plug must be ordered separately)

Pneumatic connections
Threads G 1/4 or 1/4-18 NPT

Weight
3.0 kg

Mounting orientation
any orientation allowed

Dimensions
see dimensional drawings

Safety Integrity Level SIL2

EXIDA report No.: ABB 03/09-13 R003, Revision R1.0

The positioner TZIDC-200 and the shutdown module for TZIDC-200
meet the requirements regarding
- functional safety in accordance with IEC 61508/IEC 61511-1
- explosion protection (depending on the model)
- electromagnetic compatibility in accordance with EN 61000

In case of a failure of electrical power or compressed air supply or
when a positioner malfunction occurs, the actuator is depressurized
by the TZIDC-200, and the return spring in the actuator moves the
valve to a pre-defined, safe end position (either OPEN or CLOSED).

SIL specific safety-related characteristics

<table>
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<tr>
<th>Device</th>
<th>Category</th>
<th>SFF</th>
<th>PFDav</th>
<th>λdd + λs</th>
<th>λdu</th>
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<td>TZIDC-200</td>
<td>SIL2</td>
<td>85 %</td>
<td>7.52 × 10⁻⁴</td>
<td>1011 FIT</td>
<td>172 FIT</td>
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<tr>
<td>Shutdown module for</td>
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<td></td>
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<tr>
<td>TZIDC-200</td>
<td>SIL2</td>
<td>94 %</td>
<td>1.76 × 10⁻⁴</td>
<td>718 FIT</td>
<td>40 FIT</td>
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For details refer to the Management Summary in the SIL Safety Instructions 37/18-79XA

Explosion protection

The values indicated here have been taken out of
the respective approval certificates.
Always observe the specifications and supplements
in the certificates (see operating instructions)

FM Approval HLC 8/02 3010829

Explosion proof; enclosure 4X; T5, max. 82°C
CL I, Div. 1, Group C, D

Intrinsically safe; enclosure 4X; T5, max. 82°C
CL I, II, III, Div. 1, Group A, B, C, D, E, F, G

Non-incendive, enclosure 4X; T4, max. 85°C
CL I, Div. 2, Group A, B, C, D
CL II, III, Div. 2, Group F, G

Dust ignition-proof; enclosure 4X; T5, max. 82°C
CL I, II, III, Div. 1, Group E, F, G

CSA Certificate 1393920

Explosion proof; enclosure 4X; T5, max. 85°C
CL I, Div. 1, Group C, D
CL II, Div. 1, Group E, F, G
CL III

Intrinsically safe; enclosure 4X; T5, max. 82°C
CL I, Div. 1, Group A, B, C, D
CL II, Div. 1, Group E, F, G
CL III

ATEX

Ex II 2G EEx d IIC T4/T5/T6

Examination certificate DMT 02 ATEX E 029 X
Flameproof enclosure

Type:
II 2G (EEx d IIC)
Temperature class:
T4, T5, T6
Perm. ambient temperature:
T4: -40 °C ≤ Tamb ≤ 85 °C
T5: -40 °C ≤ Tamb ≤ 80 °C
T6: -40 °C ≤ Tamb ≤ 65 °C

ATEX

Ex II 2G EEx ib IIC T6

Examination certificate TÜV 98 ATEX 1370 X
Intrinsically safe

Type:
II 2G (EEx ib IIC)
Temperature class:
T4, T5, T6
Perm. ambient temperature:
T4: -40 °C ≤ Tamb ≤ 85 °C
T5: -40 °C ≤ Tamb ≤ 50 °C
T6: -40 °C ≤ Tamb ≤ 35 °C

ATEX

Ex II 3G EEx n A II T6

Examination certificate TÜV 02 ATEX 1943 X
Non-sparking

Type:
II 3G (EEx n A)
Temperature class:
T4, T5, T6
Perm. ambient temperature:
T4: -40 °C ≤ Tamb ≤ 85 °C
T5: -40 °C ≤ Tamb ≤ 65 °C
T6: -40 °C ≤ Tamb ≤ 50 °C

IECEEx

Ex ib IIC T6

Examination certificate IECEEx TUN 04.0015X, Issue No.: 0
Intrinsically safe

Type:
Temperature class:
T4, T5, T6
Perm. ambient temperature:
T4: -40 °C ≤ Tamb ≤ 85 °C
T5: -40 °C ≤ Tamb ≤ 50 °C
T6: -40 °C ≤ Tamb ≤ 35 °C

WARNING
Options

Module for analog position feedback
- Range 4...20 mA (configurable split ranges)
- Two-wire circuitry, power supply 24 V DC (10...30 V DC)
- 48 V DC (20...48 V DC, no explosion protection)
- Action direct or reverse (configurable)
- Characteristic deviation ≤ 1 %
- Note: Without a signal from the positioner (e.g. no energy or initializing) the module sets the output to > 20 mA (alarm level)

Module for digital position feedback
- 2 switches for position signals (position adjustable within the range of 0...100%, ranges cannot overlap)
- Current circuits to DIN 19234/NAMUR
- 48 V DC (20...48 V DC, no explosion protection)
- Action direct or reverse (configurable)
- Characteristic deviation < 1 %

Module for the shutdown function
- Supply voltage 24 V DC (20...30 V DC)
- Safe position is activated when U < 5 V
- Test report No. 101/S01/148
- Explosion protection SIL2 (see page 8)
- AK approval AK 4 to DIN V 19250
- Touch protection see certificates (operating instr.)
- In case of a 24 V DC power failure, the positioner can let the valve move to the safe position by depressurizing the actuator independently of the processor. To achieve this, the I/P module power supply is separated by an optocoupler. Both the communication and feedback are still active. The shutdown input is electrically isolated from the control signal.
- Due to the shutdown function no additional solenoid valves are required. It has a safety certificate from TÜV Rheinland in accordance with AK4. The plug-in module also has an Ex certificate for use in intrinsically safe current circuits.

Digital position feedback with proximity switches
- 2 proximity switches for position feedback
- Switching points adjustable between 0 and 100%
- Current circuits to DIN 19234/NAMUR
- Supply voltage 5...11 V DC
- Control current < 1 mA = logical "0"
- Control current > 2 mA = logical "1"
- Direction of action (logical state):

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<tr>
<th>Proximity switch</th>
<th>Position</th>
<th>Proximity switch</th>
<th>Position</th>
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<tbody>
<tr>
<td>SJ2-SN (NC)</td>
<td>&lt; min. 0</td>
<td>SJ2-SN (NC)</td>
<td>&gt; max. 1</td>
</tr>
<tr>
<td>SJ2-S1N (NO)</td>
<td>&lt; min. 1</td>
<td>SJ2-S1N (NO)</td>
<td>&gt; max. 0 1</td>
</tr>
</tbody>
</table>

When using proximity switch type SJ2-S1N (NO) the TZIDC-200 positioner may be exposed to an ambient temperature of -25 °C ... +85 °C, only.

Digital position feedback with 24 V micro switches

Only approved for Ex d version!

WARNING

Two microswitches for independent position signaling.
- Switching points adjustable between 0 and 100%
- Voltage max. 24 V AC / DC
- Current load max. 2 A
- Contact surface 10 µm gold (AU)

Mechanical position indicator
- Indicator disk in enclosure cover, linked with positioner feedback shaft through magnetic coupling

Accessories

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

EEx d cable glands
- Cable gland and pipe plug approved for Ex d, securing adhesive

Pressure gauge block
- With pressure gauges for supply and output pressure, pressure gauges with plastic case Ø 28 mm,
- with aluminum connection block, varnished black
- inclusive of mounting material for attachment to TZIDC-200.

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

PC adapter for communication
- LKS adapter for connector on TZIDC-200 (s. data sheet 63-6.71 EN)
- FSK modem for frequency shift keying (s. data sheet 63-6.71 EN)

PC software for remote configuration and operation
- DSV401 (SMART VISION) with DTM for TZIDC/TZIDC-200
- available on CD ROM (see data sheet 63-1.20 EN)

1. The module for analog position feedback and the module for digital position feedback plug in separate slots and can be used together.
2. The module for the shutdown function uses the same space as the module for analog feedback and the module for digital feedback and cannot be plugged in and run together with any of them.
Wiring diagrams

1. Module for analog position feedback
2. Module for digital position feedback (1st. terminal) or shutdown module
3. Module for digital position feedback (2nd. terminal)
4. Digital position feedback, either proximity switches or 24 V microswitches
5. Same as 4
6. Digital output DO
7. Digital input DI
8. 4...20 mA signal
9. Grounding screw

Fig. 10: Screw terminals, overview

Fig. 11: Terminal assignment
Electro-Pneumatic Positioner TZIDC-200
for 4...20 mA two-wire technology, with flameproof enclosure

**Dimensional drawings**

(all dimensions in mm and (inches))

![Front view and rear view](image)

**Fig. 12:** Front view and rear view

![Left and right side view](image)

**Fig. 13:** Left and right side view

![Bottom view](image)

**Fig. 14:** Bottom view
Electro-Pneumatic Positioner TZIDC-200
for 4...20 mA two-wire technology, with flameproof enclosure

Fig. 15: Mounting to linear actuators to DIN/IEC 534

Fig. 16: Mounting to rotary actuators to VDI/VDE 3845

Fig. 17: Positioner TZIDC-200 with pressure gauge block and filter regulator

*) Dimensions A and B depend on rotary actuator size
Electro-Pneumatic Positioner TZIDC-200
for 4...20 mA two-wire technology, with flameproof enclosure

Ordering information

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Code</th>
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<td>V18348-0</td>
<td></td>
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</table>

intelligent, software-configurable with local communication interface (LKS) and HART communication

Case/Mounting
Case made of aluminium, varnished, protection IP 65 / NEMA 4X
For mounting to linear actuators acc. to DIN/IEC 534 / NAMUR or to rotary actuators acc. to VDI/VDE 3845
- As above, but with mechanical position indicator
- For integral mounting to control valves
- As above, but with mechanical position indicator
- For mounting to rotary actuators acc. to VDI/VDE 3845 with extended rotation angle up to 270°
- As above, but with mechanical position indicator

See Options/Accessories for customer-specific mounting
Please specify the actuator type and type of mounting

Note:
Special mounting material is required
(see "Accessories")

Operation
with operator panel and display integrated in the enclosure cover

Explosion protection
ATEX Ex il 2 G Ex d IIC T4, T5, T6
FM/CSA Class 1, Div. 1, Group C-D (explosion-proof)
ATEX Ex ib and EEx d IIC T6
FM/CSA intrinsically safe and explosion-proof
other explosion protection certificates upon request

Output/safe position (in case of an electrical power failure)
Single acting, fail safe
fail freeze
Double acting, fail safe
fail freeze

Connections
Cable: Thread M20 x 1.5 Air pipe: Thread G 1/4
Cable: Thread M20 x 1.5 Air pipe: Thread 1/4-18 NPT
Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT

Option modules for analog or digital position feedback
Without
Plug-in module for
analog position feedback, signal range 4...20 mA, two-wire
digital position feedback
analog position feedback, sign. range 4...20 mA, two-wire
and digital position feedback
shutdown module

Mechanical kit for digital position feedback (option)
without
Mechanical kit for digital position feedback
- With proximity switches SJ2-SN (NC or logical 1)
- With proximity switches SJ2-S1N (NO or logical 0)
- with 24V DC/AC microswitches (change-over contacts)

1) only with cable connection NPT thread
2) EEx d cable glands see accessories
3) only for ambient temperature range -25...+85 °C
4) only for Ex d version
**Ordering information (continued)**

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Electro-Pneumatic Positioner TZIDC-200 V18348-</td>
<td></td>
</tr>
</tbody>
</table>

**Parameter setting/bus address**
- Factory setting for HART devices
- Customized parameter setting for HART devices

**Design (varnish/coding)**
- Standard
- As specified (on request)

**Device identification label**
- (provide list, if available)
- without
- label including text (plain text, max. 16 letters), with separate sticker
- same as above, but with separate stainless steel label 11.5 x 60 mm

**Certificates**
- SIL2 - Declaration of conformity
- Certificate of compliance with the order acc. to EN 10204-2.1 (DIN 50049-2.1)
- Certificate of compliance with the order acc. to EN 10204-2.1 (DIN 50049-2.1) with item description
- Test Report acc. to EN 10204-2.2 (DIN 50049-2.2)
- Constructors test certificate O acc. to DIN 55350-18-4.2.2
- Constructors test certificate M acc. to DIN 55350-18-4.2.2 with item description
- Inspectors Certificate 3.1B acc. to EN 10204 with max. deviation
- Inspectors Certificate 3.1B acc. to EN 10204 with add. data and item description
- Test Certificate & Letter of Conformity with item description

**Accessories**

<table>
<thead>
<tr>
<th>Catalog No.</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting material and cost</td>
<td></td>
</tr>
<tr>
<td>Attachment kit for linear actuators (lateral attachm. to DIN/IEC 534 / NAMUR)</td>
<td></td>
</tr>
<tr>
<td>Stroke 10... 35 mm</td>
<td>7959125</td>
</tr>
<tr>
<td>Stroke 20...100 mm</td>
<td>7959126</td>
</tr>
<tr>
<td>Attachment kit for integral mounting to</td>
<td></td>
</tr>
<tr>
<td>23/24 and 23/25 cont. valve</td>
<td>7959106</td>
</tr>
<tr>
<td>23/24 and 23/25 cont. valve</td>
<td>7959107</td>
</tr>
<tr>
<td>23/26 control valve</td>
<td>7959108</td>
</tr>
<tr>
<td>23/26 control valve</td>
<td>7959109</td>
</tr>
<tr>
<td>Attachment kit for rotary actuators (mounting to VDI/VDE 3845), consisting of</td>
<td></td>
</tr>
<tr>
<td>a) Adapter (shaft coupler)</td>
<td>7959110</td>
</tr>
<tr>
<td>b) Mounting bracket, dimensions</td>
<td></td>
</tr>
<tr>
<td>A/B = 80/20 mm</td>
<td>319603</td>
</tr>
<tr>
<td>A/B = 80/30 mm</td>
<td>319604</td>
</tr>
<tr>
<td>A/B = 130/30 mm</td>
<td>319605</td>
</tr>
<tr>
<td>A/B = 130/50 mm</td>
<td>319606</td>
</tr>
<tr>
<td>see separate data sheet for specific mounting</td>
<td></td>
</tr>
<tr>
<td>Mounting cost, material and adjustment</td>
<td></td>
</tr>
<tr>
<td>for mounting to linear actuators to DIN/IEC 534 / NAMUR</td>
<td></td>
</tr>
<tr>
<td>or to rotary actuators to VDI/VDE 3845</td>
<td></td>
</tr>
<tr>
<td>External tubing with Plastic tube</td>
<td>319628</td>
</tr>
<tr>
<td>Copper pipe</td>
<td>319629</td>
</tr>
<tr>
<td>Stainless steel pipe</td>
<td>319630</td>
</tr>
<tr>
<td>for integral mounting to 23/24, 23/25 or 23/26 control valves</td>
<td></td>
</tr>
<tr>
<td>Internal tubing</td>
<td>319627</td>
</tr>
<tr>
<td>External tubing with Copper pipe</td>
<td>1) 7959015</td>
</tr>
<tr>
<td>Stainless steel pipe</td>
<td>7959016</td>
</tr>
</tbody>
</table>

1) External tubing only for 23/24 and 23/25 control valves with "air to close/spring to open" action, otherwise internal tubing only
## Accessories (continued)

<table>
<thead>
<tr>
<th>Pressure gauge block</th>
<th>Catalog No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pressure gauge block, including attachment material</td>
<td></td>
</tr>
<tr>
<td>for single acting TZIDC-200, with 2 pressure gauges Ø 28 mm (1 x for air supply and 1 x for output pressure)</td>
<td></td>
</tr>
<tr>
<td>G 1/4 connections</td>
<td>Supply pressure range 0...10 bar/ 0...140 psi</td>
</tr>
<tr>
<td></td>
<td>Output pressure range 0...4 bar/ 0...60 psi 7959111</td>
</tr>
<tr>
<td></td>
<td>Output pressure range 0...10 bar/ 0...140 psi 7959112</td>
</tr>
<tr>
<td>1/4-18 NPT connections</td>
<td>Supply pressure range 0...10 bar/ 0...140 psi</td>
</tr>
<tr>
<td></td>
<td>Output pressure range 0...4 bar/ 0...60 psi 7959113</td>
</tr>
<tr>
<td></td>
<td>Output pressure range 0...10 bar/ 0...140 psi 7959114</td>
</tr>
<tr>
<td>for double acting TZIDC-200, with 3 pressure gauges Ø 28 mm (1 x for air supply and 2 x for output pressure)</td>
<td></td>
</tr>
<tr>
<td>G 1/4 connections</td>
<td>Supply pressure range 0...10 bar/ 0...140 psi</td>
</tr>
<tr>
<td></td>
<td>Output pressure range 0...4 bar/ 0...60 psi 7959115</td>
</tr>
<tr>
<td></td>
<td>Output pressure range 0...10 bar/ 0...140 psi 7959116</td>
</tr>
<tr>
<td>1/4-18 NPT connections</td>
<td>Supply pressure range 0...10 bar/ 0...140 psi</td>
</tr>
<tr>
<td></td>
<td>Output pressure range 0...4 bar/ 0...60 psi 7959117</td>
</tr>
<tr>
<td></td>
<td>Output pressure range 0...10 bar/ 0...140 psi 7959118</td>
</tr>
<tr>
<td>(Pressure gauge blocks are delivered as separate units for mounting by the customer)</td>
<td></td>
</tr>
</tbody>
</table>

| Filter regulator | |
| Brass filter regulator, incl. material for mounting to pressure gauge block | |
| Connections | Thread G 1/4 7959119 |
| Thread 1/4-18 NPT 7959120 |
| (Filter regulators are delivered as separate units for mounting by the customer) | |

| PC adapter for communication | |
| LKS adapter | see Data Sheet 10/63-6.71 EN |
| FSK modem | see Data Sheet 10/63-6.71 EN |
| DSV401 (SMART VISION) on CD-ROM | see Data Sheet 10/63-1.20 EN |

| Option Modules (can be added later) | |
| Plug-in module for analog position feedback, signal range 4...20 mA, 2-wire | 7959128 |
| Plug-in module for digital position feedback | 7959129 |
| Plug-in module for shutdown function | 7959199 |
| Kit for Mechanical position indicator | 7959238 |
| Kit for Digital position feedback with 24 V DC/AC microswitches (change-over contacts) 1) | 7959230 |
| with proximiy switches SJ2 - SN (NC or logical 1) | 7959231 |
| SJ2 - S1N (NO or logical 0) 2) | 7959232 |
| Kit for Digital position feedback with existing mechanical position indicator with 24 V DC/AC microswitches (change-over contacts) 1) | 7959240 |
| with proximity switches SJ2 - SN (NC or logical 1) | 7959241 |
| SJ2 - S1N (NO or logical 0) 2) | 7959242 |
| EEx d cable glands 3) | |
| 1 x EEx d cable gland M20x1.5, 1 pipe plug M20x1.5 and securing adhesive | 7959244 |
| 2 x EEx d cable glands M20x1.5 and securing adhesive | 7959245 |
| 1 x EEx d cable gland 1/2" NPT, 1 pipe plug 1/2" NPT and securing adhesive | 7959246 |
| 2 x EEx d cable glands 1/2" NPT and securing adhesive | 7959247 |

1) only for Ex d version
2) only for ambient temperature range -25...+85 °C
3) for cable diameter 7.2...11.7 mm