MANUFACTURER DOCUMENT PACKAGE

Manufacturer's Manual

Reference package for procurement and maintenance review

ABB

V18345-1010261001

TZIDC ELECTRO PNEUMATIC POSITIONER

Used with the applicable ABB TZIDC configuration.

REFERENCE PACKAGE

OFFICIAL DOCUMENT

Complete official manufacturer PDF follows this cover.

Source: ABB official technical documentation for V18345-1010261001

Data Sheet
10/18-0.22-EN

Electro-Pneumatic Positioner TZIDC

for 4 … 20 mA two-wire technology

- **Low operating cost**
- **Compact design**
- **Well-proven technology**
- **Robust and environmentally ruggedized**
- **Wide operating temperature range**
  -40 ... 85 °C (-40 ... 185 °F)
- **Easy to commission, “single pushbutton” operating philosophy**
- **Mechanical position indicator**
- **ATEX, FM, CSA, GOST and IECEx approvals**
- **For SIL2 safety loops**



HART® FIELD COMMUNICATIONS PROTOCOL

Compact, well-proven, and flexible

ABB

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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 positioning 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 or a shutdown-module 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.

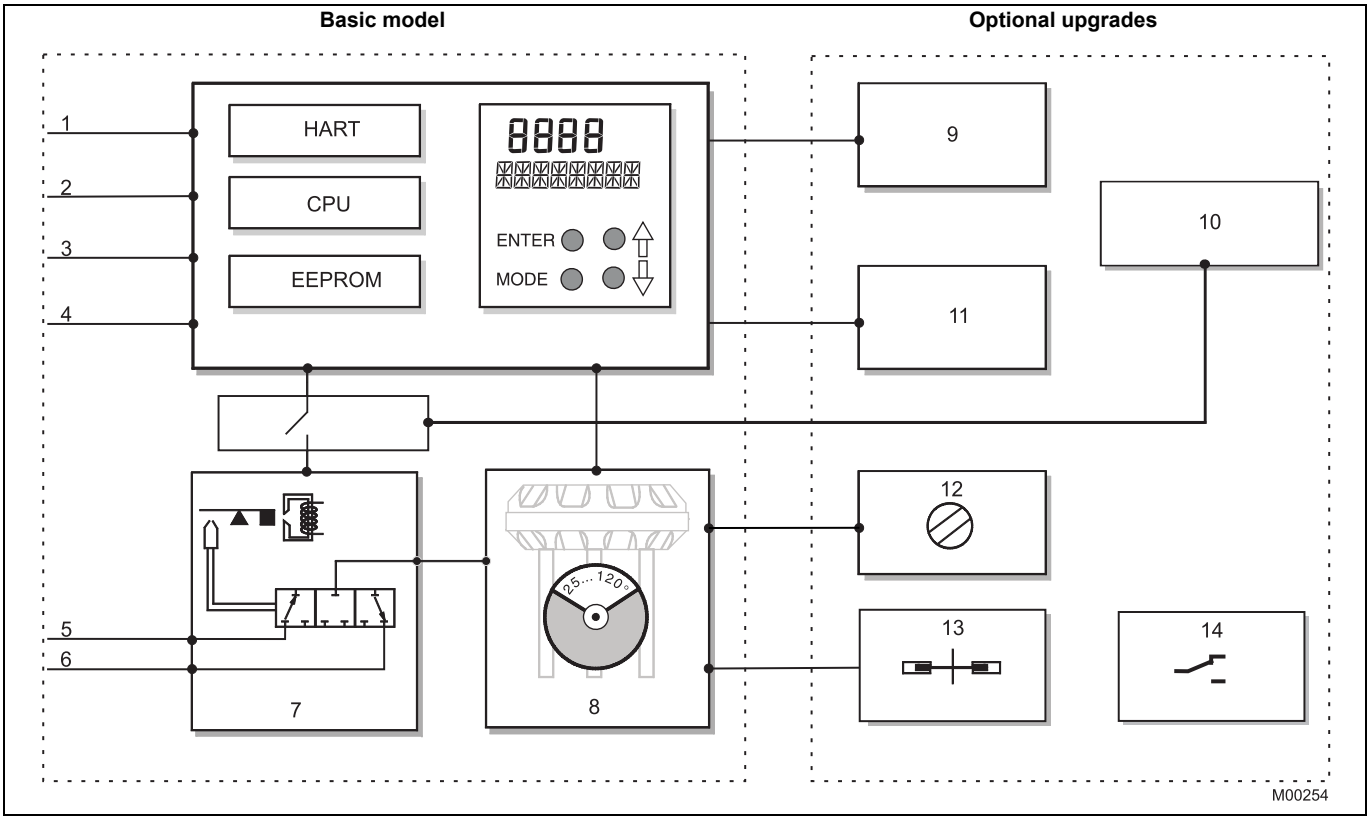


Fig. 1: TZIDC schematic diagram

Basic model

1 LKS plug
2 Positioning signal 4 … 20 mA
3 Digital input
4 Digital output DO
5 Supply, 1.4 … 6 bar
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-in module for safety shutdown (forced depressurization)
11 Plug module for digital feedback
12 Installation kit for mechanical position indicator
13 Installation kit for digital feedback with proximity switches
14 Installation kit for digital feedback with 24 V microswitches

Important

With optional upgrades either the “Installation kit for digital feedback with proximity switches” (13) or the “Installation kit for digital feedback with microswitches 24 V” (14) can be used.

In both cases, the “mechanical position indicator” (8) 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 single acting pneumatic action is also suitable 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.

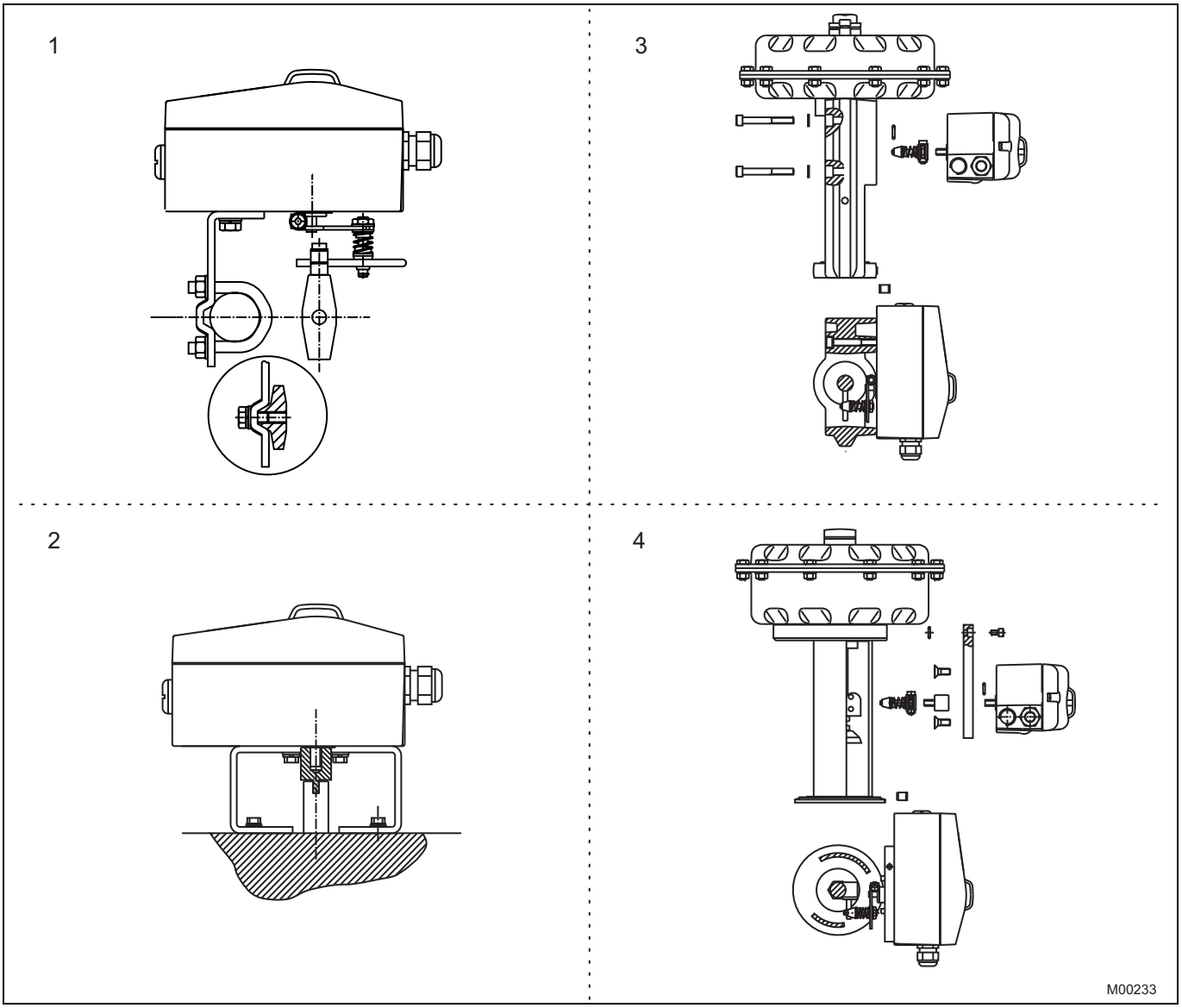


Fig. 2: Mounting options

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:

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 (positioning signal)

Increasing: Signal 4 ... 20 mA = position 0 ... 100 %

Increasing: 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 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

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 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.



Fig. 3: TZIDC with removed cover, view of the operator panel

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

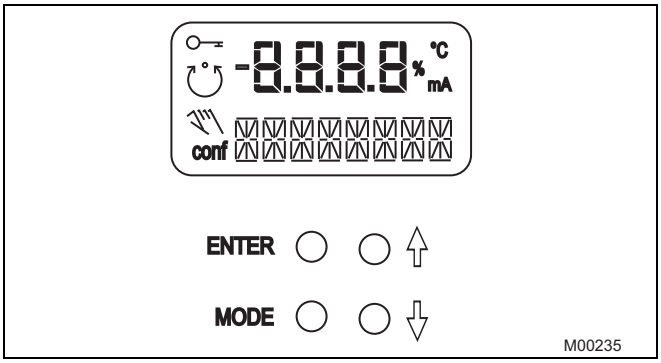


Fig. 4: TZIDC operating elements and display

4 Communication

4.1 DTM

The DTM (**D**evice **T**ype **M**anager) 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 (**F**requency **S**hift **K**eying) 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.

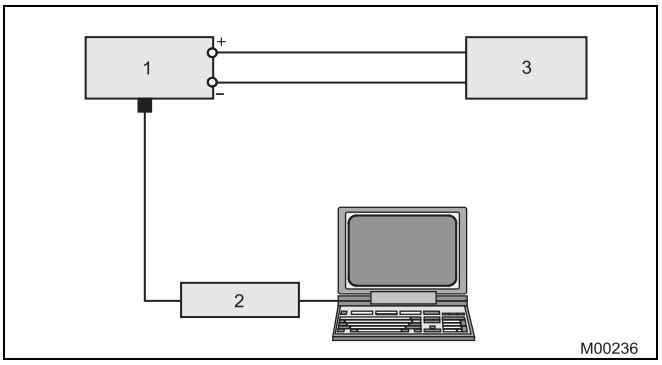


Fig. 5: Local communication via LKS adapter

1 TZIDC
2 LKS adapter
3 Controller

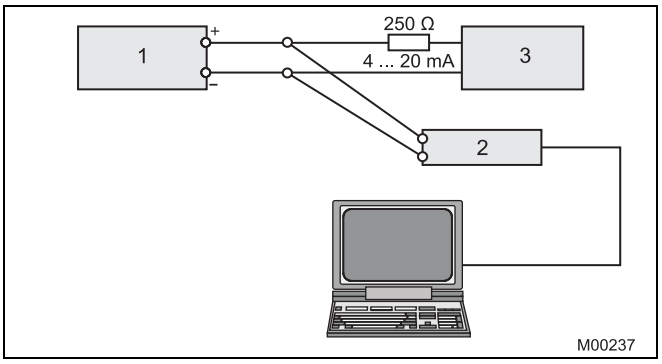


Fig. 6: HART communication with FSK modem via 20 mA signal line

1 TZIDC
2 FSK modem
3 Controller

5 Technical data

5.1 Input

Output 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 sfcm at 1.4 bar (20 psi) supply pressure 13 kg/h = 10 Nm³/h = 6.0 sfcm 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 seconds, separately for each direction
Dead band time limit	Setting range 0 ... 200 seconds (monitoring parameter for control until the deviation reaches the dead band)

5.4 Air supply

Instrument air	free of oil, water and dust acc. to DIN / ISO 8573-1 pollution and oil content according to Class 3 (purity: max. particle size: 5 µm, max. particle density: 5 mg / m^3; oil content: max. concentration: 1 mg / m^3; pressure dew point: 10 K below operating temperature
Supply pressure	1.4 ... 6 bar (20 ... 90 psi) Note: Do not exceed the max. 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 output signal 0 ... 100 % Increasing pressure at output
Decreasing	Increasing output signal 0 ... 100 % Decreasing pressure at output

Action (output signal)

Increasing	Signal 4 ... 20 mA = actuator position 0 ... 100%
Decreasing	Signal 20 ... 4 mA = actuator 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.

Deviation	≤ 0.5 %
Tolerance band	0.3 ... 10 %, adjustable
Dead band	0.1 ... 10 %, adjustable
Resolution (A/D conversion)	> 16000 steps
Sample rate	20 ms
Influence of ambient temperature	≤ 0.5 % per 10 K
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 89 / 336 / EWG as of May 1989
- EC Directive for CE conformity marking

Communication

- HART Protocol 5.9
- Local connector for LKS (not in Ex 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)
When using proximity switches SJ2-S1N (NO):	-25 … 85 °C (-13 ... 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/Protections
Aluminum, protection class IP 65 / 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 for options,
Max. 2.5 mm² for analog signal.
Note: Do not expose the terminals to strain.
Cable entry: 2 tap holes 1/2-14 NPT or
M20 x 1.5 (1 x with cable gland and
1 x with pipe plug)

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

Weight
1.7 kg

Mounting orientation
any orientation allowed

Dimensions
see dimensional drawings

5.8 Safety Integrity Level

Important
Applies to applications with single-acting and depressurizing pneumatics.

The positioner TZIDC and the emergency shutdown module for TZIDC meet the requirements regarding:

- 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:

Device	SFF	PFDav	$\lambda_{dd} + \lambda_s$	λ_{du}
TZIDC / TZIDC-200 as shutdown module	94 %	$1{,}76 * 10^{-4}$	718 FIT	40 FIT
TZIDC / TZIDC-200 with supply current 0 mA	94 %	$1{,}76 * 10^{-4}$	651 FIT	40 FIT

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

5.9 Explosion protection

Important
The values indicated here are taken from the respective approval certificates.
Always observe the specifications and supplements in the certificates.
(see operating instructions).

FM J.I. 3005029 (3610, 3611)
Intrinsically safe
Class I, Div. 1 Grp. A-B-C-D
Class II, Div. 1 Grp. E-F-G
CL III, Div. 1
Non-incendive, suitable for use in Div. 2 environment

CSA Certification 1052414
Intrinsically safe; Enclosure 4X; T4, max. 85 °C
Class I, Div. 1 Grp. A-B-C-D
Class II, Div. 1 Grp. E-F-G
CL III, Div. 1

Non-incendive; Enclosure 4X, max. 85 °C
Class I, Div. 2 Grp. A-B-C-D
Class II, Div. 2 Grp. E-F-G
CL III

ATEX / GOST Russia / GOST Ukraine	**II 2G EEx ib IIC T6**
Prototype test certificate:	TÜV 98 ATEX 1370 X
Type:	Intrinsically safe equipment
Device class:	II 2G (EEx ib IIC)
Temperature class:	T4, T5, T6
Permissible ambient temperature:	T4: -40 °C ≤ T_{amb} ≤ 85 °C
	T5: -40 °C ≤ T_{amb} ≤ 50 °C
	T6: -40 °C ≤ T_{amb} ≤ 35 °C

ATEX	**II 2G EEx ib IIC T6** **II 2G EEx ia IIC T6**
Prototype test certificate:	TÜV 04 ATEX 2702 X
Type:	Intrinsically safe equipment
Device class:	II 2G (EEx ib IIC)
	II 2G (EEx ia IIC)
Temperature class:	T4, T5, T6
Permissible ambient temperature:	T4: -40 °C ≤ T_{amb} ≤ 85 °C
	T5: -40 °C ≤ T_{amb} ≤ 50 °C
	T6: -40 °C ≤ T_{amb} ≤ 35 °C

ATEX	**II 3G EEx n A II T6**
Prototype test certificate:	TÜV 02 ATEX 1943 X
Type:	Explosion-proof equipment (Zone 2)
Device class:	II 3G (EEx n A II)
Temperature class:	T4, T5, T6
Permissible ambient temperature:	T4: -40 °C ≤ T_{amb} ≤ 85 °C
	T5: -40 °C ≤ T_{amb} ≤ 65 °C
	T6: -40 °C ≤ T_{amb} ≤ 50 °C

ATEX	**II 2 D IP 6X T 46 °C**
Prototype test certificate:	TÜV 04 ATEX 2702 X
Type:	Intrinsically safe equipment
Device class:	II 2 D (IP 6X)

Permissible housing surface temperature	**Permissible ambient temperature (II D)**
T81 °C	-40 … 70 °C
T61 °C	-40 … 50 °C
T46 °C	-40 … 35 °C

IECEx	**Ex ib IIC T6**
Prototype test certificate:	IECEx TUN 04.0015X, Issue no.: 0
Type:	Intrinsically safe
Temperature class:	T4, T5, T6
Permissible ambient temperature:	T4: -40 °C ≤ T_{amb} ≤ 85 °C
	T5: -40 °C ≤ T_{amb} ≤ 50 °C
	T6: -40 °C ≤ T_{amb} ≤ 35 °C

5.10 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)
	48 V DC (20 ... 48 V DC, no ignition protection)
Characteristic curve (configurable)	Rising or falling
Deviation	< 1 %

Important
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[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)

Module for the emergency shutdown function[2)]

Supply voltage	24 V DC (20 ... 30 V DC) (galvanically isolated from input signal)
Safe position is activated when	Voltage < 5 V
Explosion protection	see certificate (operating instructions)
SIL	See "Safety Integrity Level"

A separate 24 V DC signal is normally applied to the emergency shutdown module, which connects through the signal from the microprocessor to the I/P module.
When the 24 V DC signal is interrupted, the pneumatic module executes the respective safety function, depending on the mechanical construction:

The positioner output 1 is depressurized, and the valve is moved to the safe position. In case of a double-acting actuator the second output 2 is additionally pressurized.

Important
The emergency shutdown module can only be used with pneumatics with the safe position “fail-safe”.

The emergency shutdown module works independently of the mother board, i.e. all information from the final control element is available in the supervisory process control system at any time.

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 emergency shutdown function uses the same space as the module for analog feedback and the module for analog or digital feedback and cannot be plugged in and run together with any of them.

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)

	Position			
Proximity switch	< Lim. 1	> Lim. 1	< Lim. 2	> Lim. 2
SJ2-SN (NC)	0	1	1	0
SJ2-S1N (NO)	1	0	0	1

Important
When using proximity switch SJ2_S1N (NO), the positionerTZIDC may only be used at an ambient temperature range
-25 ... 85 °C (-13 ... 185 °F).

Digital position feedback with 24 V microswitches

Two microswitches for independent position signaling. Switching points adjustable between 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
These options are also available for retrofitting by Service.

5.11 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

Pressure gauge block

With pressure gauges for supply and output pressure. Pressure gauges with housing ø 28 mm (1.10 inch), with connection block in aluminum, black with installation material 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 (20.31 ... 87.02 psi)

Important

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

PC adapter for communication

LKS adapter f. plug conn. to TZIDC

FSK modem for HART communication

(see data sheet 63_6.71)

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)

6 Electrical connection

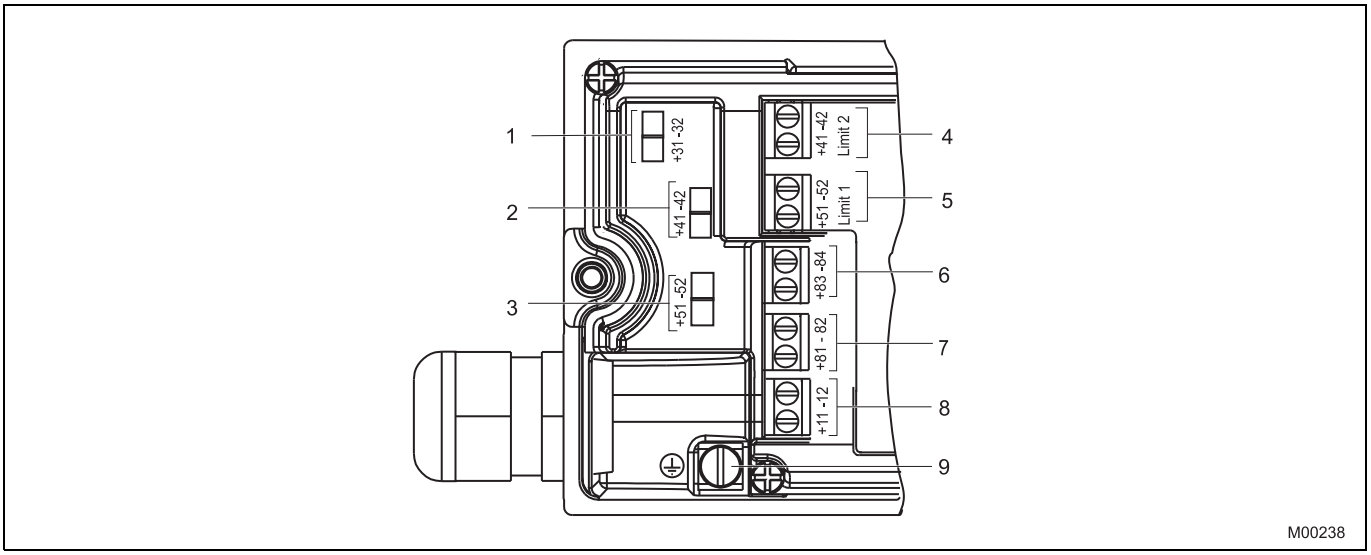


Fig. 7: Screw terminals, overview

1 Module for analog position feedback
2 Module for digital feedback or service switch of emergency shutdown module
3 Module for digital feedback or terminals for emergency shutdown module
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

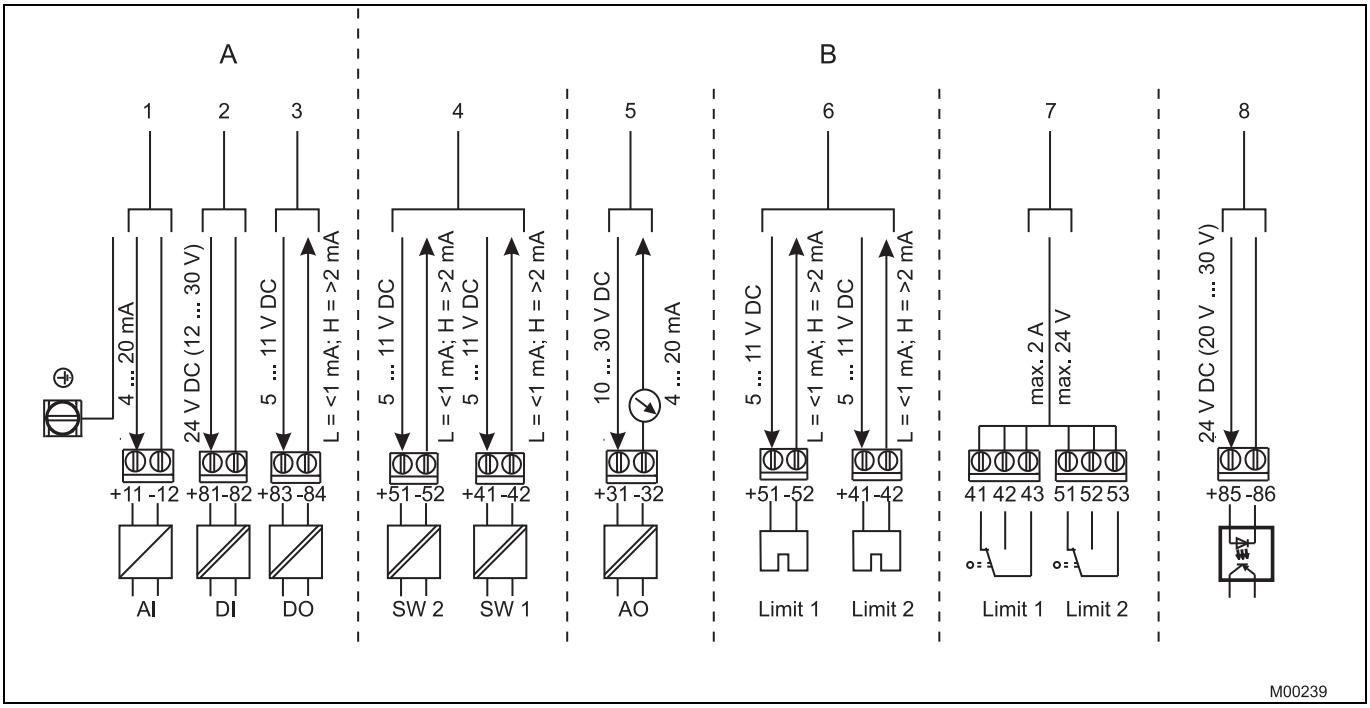


Fig. 8: Pin configuration

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
8 Emergency shutdown module

7 Dimensions

All dimensions in mm (inch)

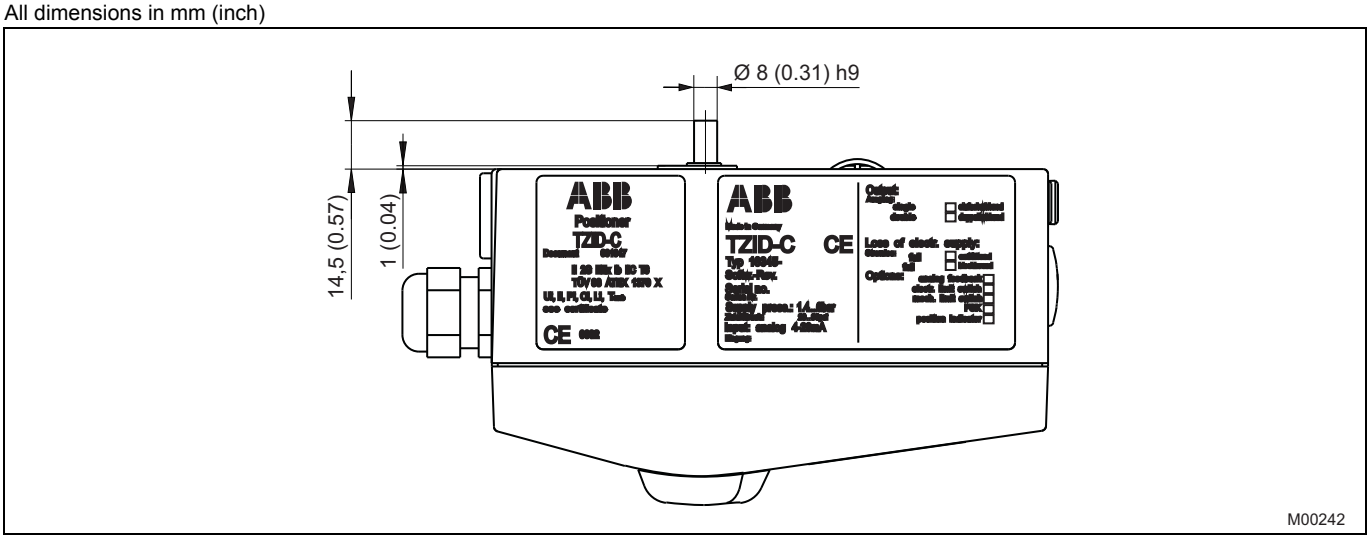


Fig. 9: Top view

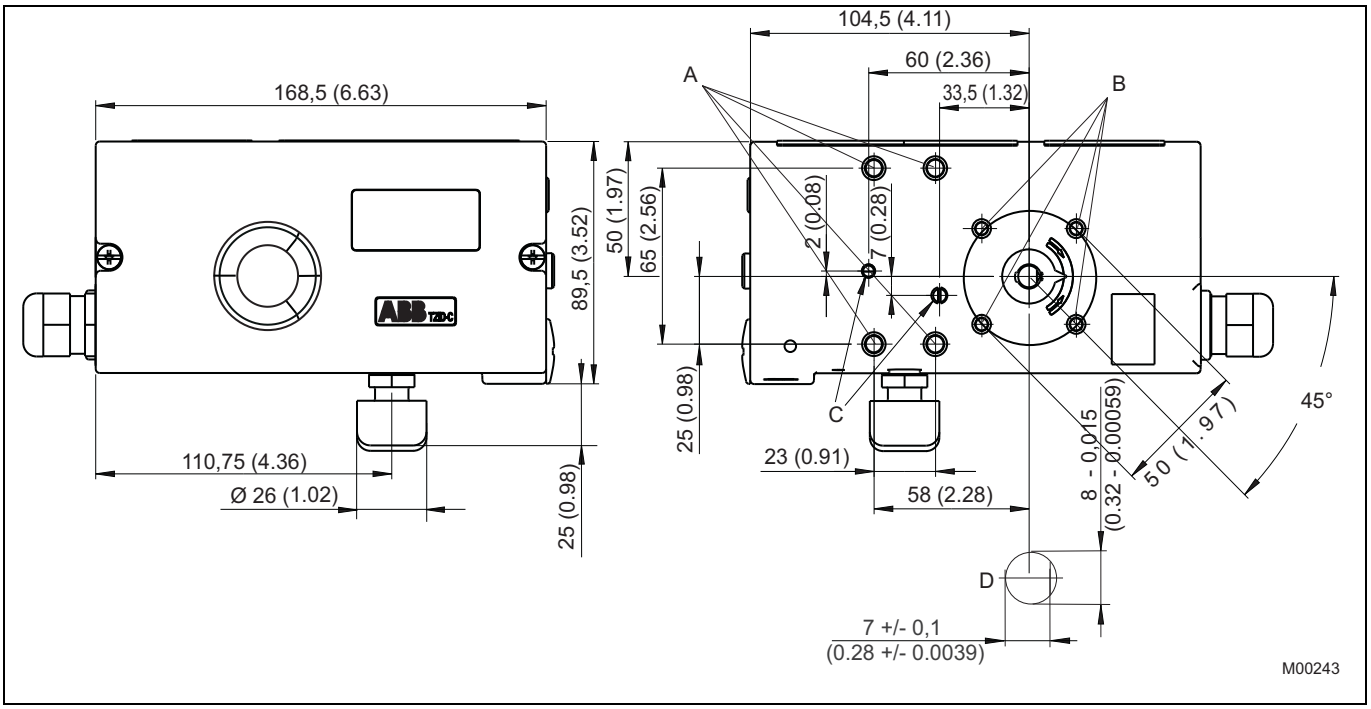


Fig. 10: Front and rear views

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)

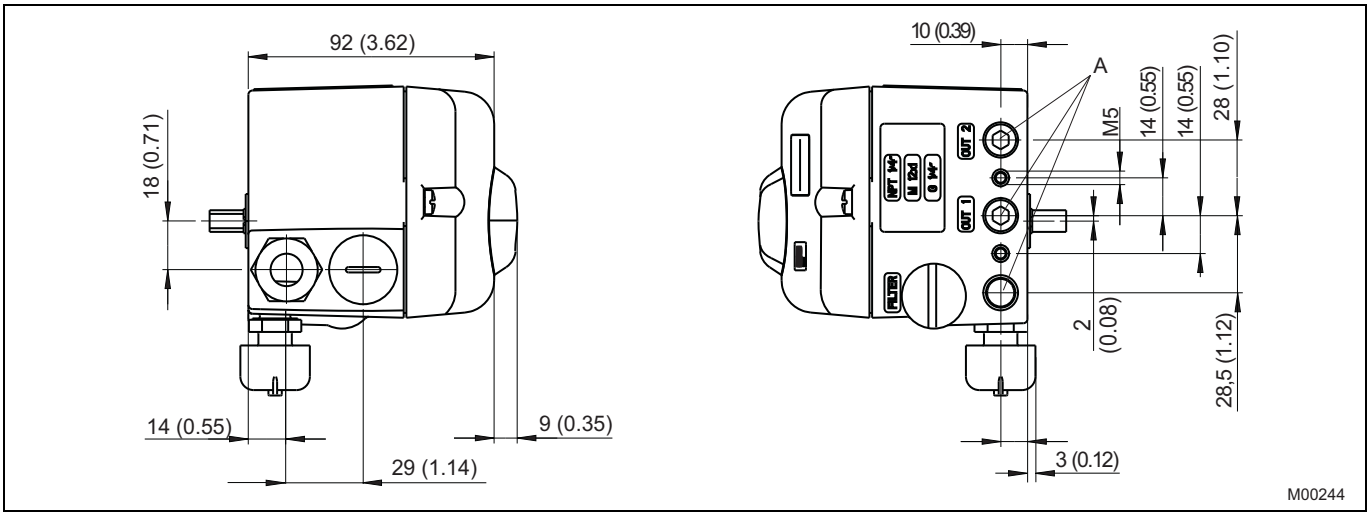
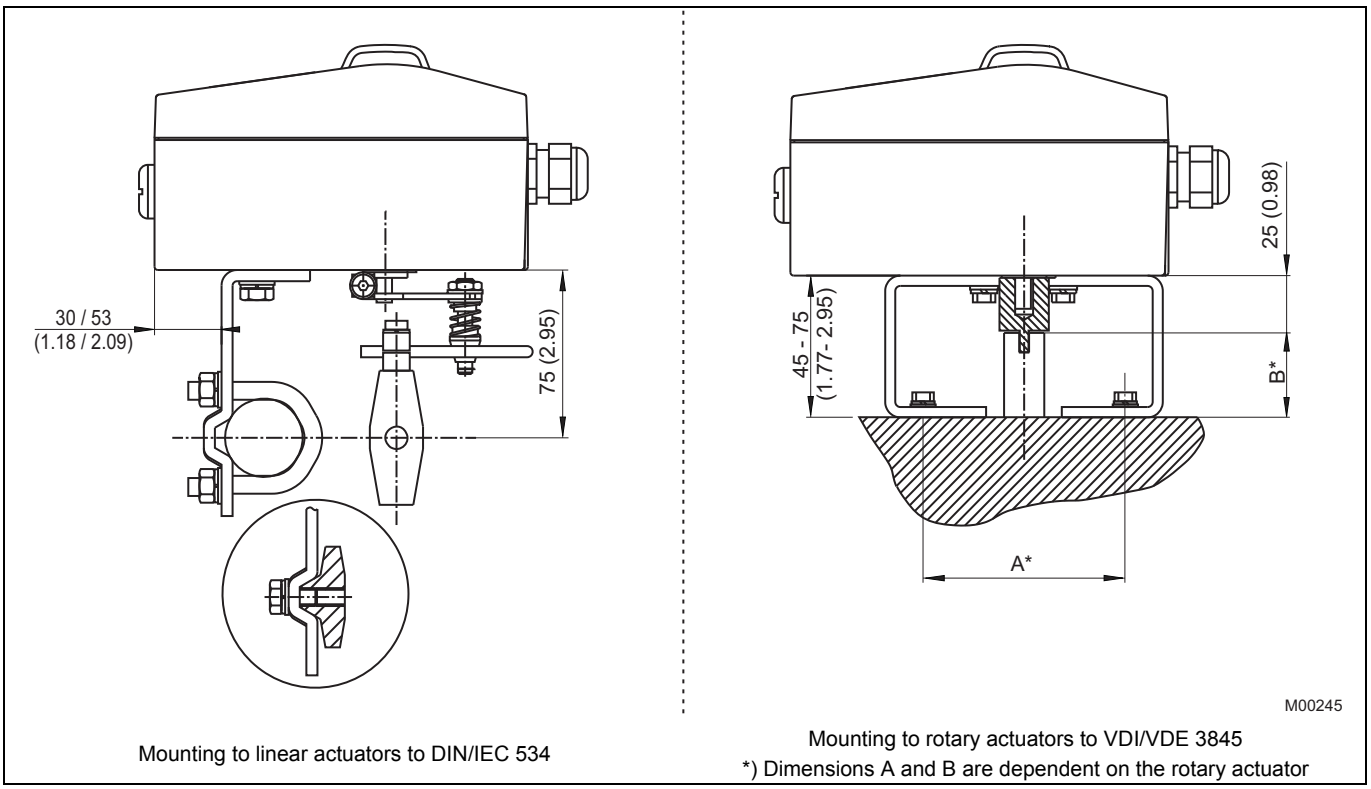


Fig. 11: side view (from left to right)
A Pneumatic connections, NPT 1/4"-18 or G1/4"



Mounting to linear actuators to DIN/IEC 534

Mounting to rotary actuators to VDI/VDE 3845
*) Dimensions A and B are dependent on the rotary actuator

Fig. 12: Mounting drawings

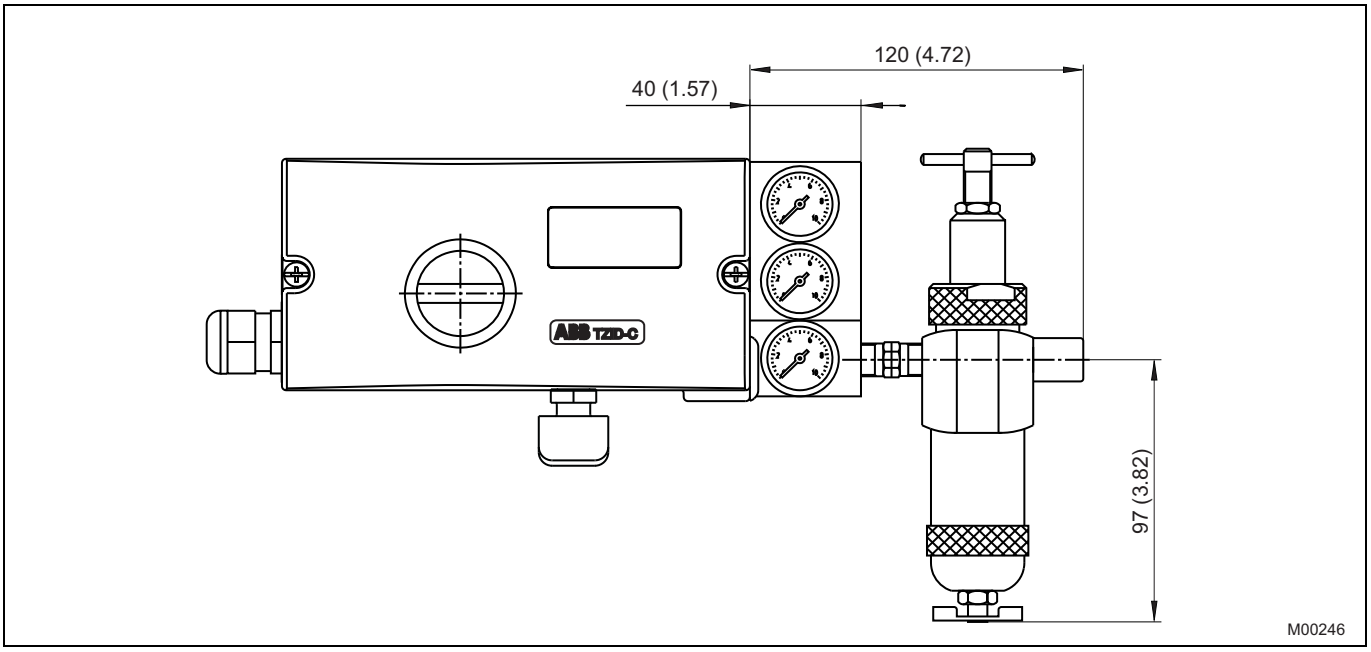


Fig. 13: Positioner TZIDC with pressure gauge block and filter regulator

8 Ordering information

Electro-Pneumatic Positioner Variant digit No.	1 - 7	8	9	10	11	12	13	14	Code			
TZIDC Catalog No.	**V18345-**		**0**									
intelligent, configurable												
with indicator and operator panel												
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												
also ready for integral mounting		1										
as above, but with mechanical position indicator		2										
for mounting to rotary actuators acc. to VDI/VDE 3845												
with extended rotation angle up to 270°		5										
as above, but with mechanical position indicator		6										
Note:												
For attachment according to standard, additional												
mounting material is required (see "Accessories")												
Input / communication port												
Input 4...20 mA, two-wire												
with connector plug for LKS adapter				1								
with connector plug for LKS adapter and												
FSK module for HART communication				2								
Explosion protection												
without					0							
ATEX Ex II 2 G EEx ib II C T6					1							
FM/CSA					2							
ATEX EEx n A II T6					4							
IECEx Ex ib IIC T6					5							
IECEx Ex nA II T6					6							
ATEX Ex II 2 G EEx ia II C T6					7							
GOST Russia Ex II 2 G EEx ib II C T6					B							
GOST Russia EEx n A II T6					C							
other explosion protection certificates upon request												
Output / safe position (in case of an electrical power failure)												
Single acting, fail safe						1						
fail freeze						2						
Double acting, fail safe						4						
fail freeze						5						
Connections												
Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT							2					
Cable: Thread M20 x 1.5 Air pipe: Thread 1/4-18 NPT							5					
Cable: Thread M20 x 1.5 Air pipe: Thread G 1/4							6					
Option modules for analog or digital position feedback												
without								0				
Plug-in module analog position feedback (sign. range 4 … 20 mA)								1				
digital position feedback								3				
shutdown module						1)		4				
analog position feedback (sign. range 4 … 20 mA) and digital position feedback								5				
analog position feedback (sign. range 4 … 20 mA) and shutdown module						1)		6				
analog position feedback (sign. range 4 … 20 mA / 48 V)						2)		7				

1) only for fail safe pneumatic

Continued on next page

2) not for explosion protected version

Electro-Pneumatic Positioner	Variant digit No.	1 - 7	11	12	13	14	15	16	17	Code			
TZIDC intelligent, configurable with indicator and operator panel	Catalog No.	**V18345-**						**0**					
Optional mechanical kit for digital position feedback													
without							0						
Mechanical kit for digital position feedback													
with proximity switches SJ2-SN (NC or logical 1)					3)		1						
with proximity switches SJ2-S1N (NO or logical 0)					3) 4)		3						
with 24 V DC/AC microswitches (change-over contacts)					2) 3)		5						
Design (varnish / coding)													
Standard									1				
Special version chemistry (details on request)									E				
As specified (on request)													

8.1 Additional ordering information

		Code			
Certificates					
SIL2 - Declaration of conformity	5) 6)	CS2			
Certificate of compliance	with the order acc. to EN 10204-2.1 (DIN 50049-2.1)	CF1			
Certificate of compliance	with the order acc. to EN 10204-2.1 (DIN 50049-2.1) with item description	CF2			
Test Report acc. to EN 10204-2.2 (DIN 50049-2.2)		CF3			
Inspection certificate	3.1 acc. to EN 10204 with max. deviation	CBA			
Device identification label					
includes lettering	(plain text, max. 16 letters)				
stainless steel	18.5 x 65 mm	MK1			
sticker	41 x 32 mm	MK2			
sticker	11 x 25 mm	MK3			

2) not for explosion protected version
3) only for model with mechanical position indicator
4) only for ambient temperature range -25 °C to +85 °C
5) not with Explosion protection ATEX Ex II 2 G EEx ia II C T6 (code 7)
6) only for single acting and fail safe pneumatic

8.2 Order information, accessories 1

TZIDC			Catalog No.			
Mounting material and cost						
Attachment kit for linear actuators						
(lateral attachment to DIN/IEC 534 / NAMUR)	stroke 10 ... 35 mm		7959125			
	stroke 20 ... 100 mm		7959126			
Attachment kit for rotary actuators (mounting to VDI/VDE 3845)						
consisting of:						
a) Adapter (shaft coupler)			7959110			
b) Mounting bracket	dimension A/B = 80/20 mm		319603			
	dimension A/B = 80/30 mm		319604			
	dimension A/B = 130/30 mm		319605			
	dimension A/B = 130/50 mm		319606			
Pressure gauge block	including attachment material					
for single acting TZIDC	with 2 pressure gauges Ø 28 mm					
(1 x for air supply and 1 x for output pressure)						
G 1/4 connections	Supply pressure range					
	0...10 bar/ 0...140 psi					
	Output pressure range	0...4 bar/ 0...60 psi	7959111			
		0...10 bar/ 0...140 psi	7959112			
1/4-18 NPT connections	Supply pressure range					
	0...10 bar/ 0...140 psi					
	Output pressure range	0...4 bar/ 0...60 psi	7959113			
		0...10 bar/ 0...140 psi	7959114			
for double acting TZIDC	with 3 pressure gauges Ø 28 mm					
(1 x for air supply and 2 x for output pressure)						
G 1/4 connections	Supply pressure range					
	0...10 bar/ 0...140 psi					
	Output pressure range	0...4 bar/ 0...60 psi	7959115			
		0...10 bar/ 0...140 psi	7959116			
1/4-18 NPT connections	Supply pressure range					
	0...10 bar/ 0...140 psi					
	Output pressure range	0...4 bar/ 0...60 psi	7959117			
		0...10 bar/ 0...140 psi	7959118			
(Pressure gauge blocks are delivered as separate units for mounting by the customer)						
Filter regulator, brass	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)						
Adapter and operating program for digital 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			

8.3 Order information, accessories 2

TZIDC , TZIDC-110, TZIDC-120, TZIDC-200, TZIDC-210, TZIDC-220			Catalog No.			
Attachment kit for	**Manufacturer / Type**					
Air Torque	SC 30	9)	319604			
Air Torque	SC-P-60-4	9)	319604			
Air Torque	SR 30	9)	319603			
ARI	DP32, DP33, DP34		7959125			
AMG	SAD 010 ... SAF 040	9)	319603			
AMG	SAD 040 ... SAF 050	9)	319605			
ARCA	812 stroke 30 mm		7959107			
ARCA	812 stroke 60 mm		7959106			
ARCA	813 stroke 30 mm		7959109			
ARCA	813 stroke 60 mm		7959108			
Automax	DA 85 ... DA150	9)	319603			
Badger Meter	ATC 754/755		7959123			
bar	GTE / GTD 045 ... 127	9)	319604			
bar	GTE / GTD 143 ... 254	9)	319605			
Bray	92 / 93 series	9)	319603			
Conovalve	Series 740.000 / 750.000 / 770.000 / 795.000		7959125			
El-O-Matic	ED / ED / PE / PD 500 ... 4004	9)	319605			
El-O-Matic	ED / ED / PE / PD 25 ... 350	9)	319603			
FESTO	DRD-4-F05 ... DRD-50F10	9)	319603			
FESTO	DRD-77-F10 ... DRD-255-F14	9)	319605			
Fisher	1051-30, 1052-30		7959214			
Fisher	1061 size 130		7959206			
Fisher	471		7959195			
Fisher	585 C		7959250			
Fisher	657 / 667 Size 10 ... 30 mm		7959177			
Flow Serve	DA 85 ... 150	9)	319603			
Foxboro	FoxPak IP127 / V725		7959168			
Foxboro	V713 stroke 10 ... 35 mm		7959125			
Foxboro	V713 stroke 25 ... 90 mm		7959126			
GEFA	AC 020 ... AC 1750	9)	319604			
GEFA	MC 063 FA	9)	319603			
GEMÜ	690/25 and 50		7959103			
GEMÜ	CleanStar		7959125			
Gulde	DK		7959161			

9) need additional Adapter (Shaft Coupler), Catalog No. 7959110

8.4 Order information, accessories 3

TZIDC , TZIDC-110, TZIDC-120, TZIDC-200, TZIDC-210, TZIDC-220			Catalog No.			
Attachment kit for	**Manufacturer / Type**					
Honeywell	600-11, 600-15		7959126			
Hytork	XL26 ... XL680	9)	319603			
Hytork	XL1125, XL1370, XL2585, XL4580	9)	319605			
Keystone	79U/E-002(S) ... 79U/E-181(S)		7959147			
Mapag	A/F 30 ... A/F 500	9)	319603			
Masoneilan	CAMFLEX II, VARIMAX, MINITORK II		7959144			
Masoneilan	VariPak 28000 series		7959163			
MaxFlo	MaxFlo		7959140			
NAF	791290		7959207			
NAMUR	stroke 10 ... 35 mm		7959125			
NAMUR	stroke 25 ... 90 mm		7959126			
NAMUR	stroke 100 ... 170 mm		7959339			
NELES	B1JU8, B1J8U, B1CU9/20E, B1CU17/55, B1CU13-32, B1C6U-20U, 1JAU10/20, BC6U-20U	9)	319603			
NELES	BC6-20, B1C6-20, BJ8-20, B1J8-20		7959146			
Norbro	10AR40, 20BR40, 20AR40, 20RDA40, 15AR40, 15BR40	9)	319603			
Norbro	25AR40, 25BR40, 35AR40, 35BR40, 33-40, 30AR40	9)	319604			
Norbro	45BR40, 45AR40	9)	319606			
Prisma	PP10, PP20	9)	319604			
Prisma	PPW	9)	319603			
Remote Control	RCD 05-DA/SR ... RCD 60-DA/SR	9)	319603			
Revo	FD/FS 12, 25, 50	9)	319603			
Revo	FD/FS 90, 130, 180, 205, 306	9)	319605			
Richter	RA-1/2 046 ... RA-1/2 127	9)	319604			
Richter	RA-1/2 185 ... RA-1/2 300	9)	319605			
Samson	241, 271, 3271		7959145			
Samson	3277		7959136			
Schubert&Salzer	GS 8020 / 8021 / 8023		7959200			
SED	SED stroke 100 mm		7959141			
VDI / VDE 3845	80 / 20 mm	9)	319603			
VDI / VDE 3845	80 / 30 mm	9)	319604			
VDI / VDE 3845	130 / 30 mm	9)	319605			
VDI / VDE 3845	130 / 50 mm	9)	319606			

9) need additional Adapter (Shaft Coupler), Catalog No. 7959110

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Printed in the Fed. Rep. of Germany (03.2008)

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3KXE341001R1001

10/18-0.22-EN Rev. C

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