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

TheTZIDC 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.

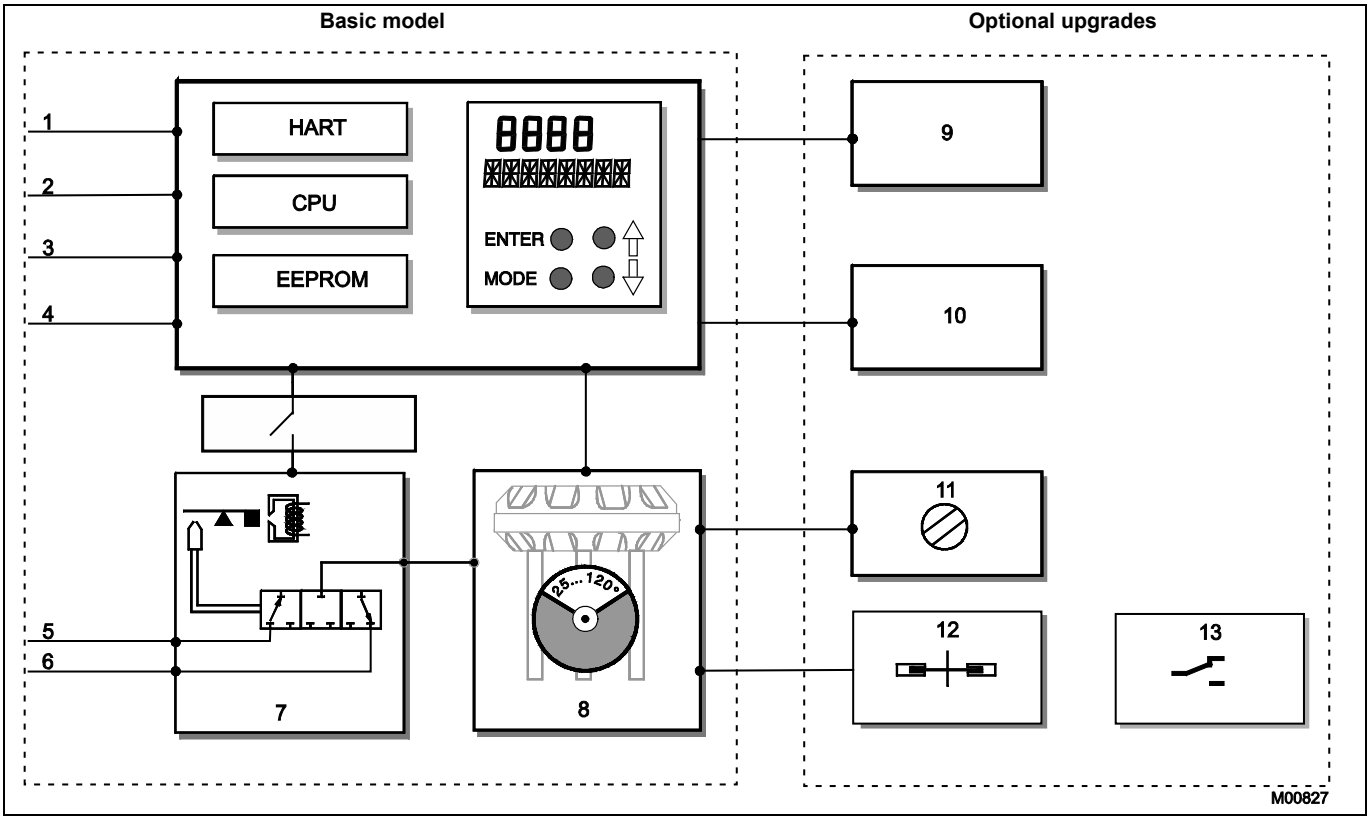


Fig. 1: TZIDC schematic diagram

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.

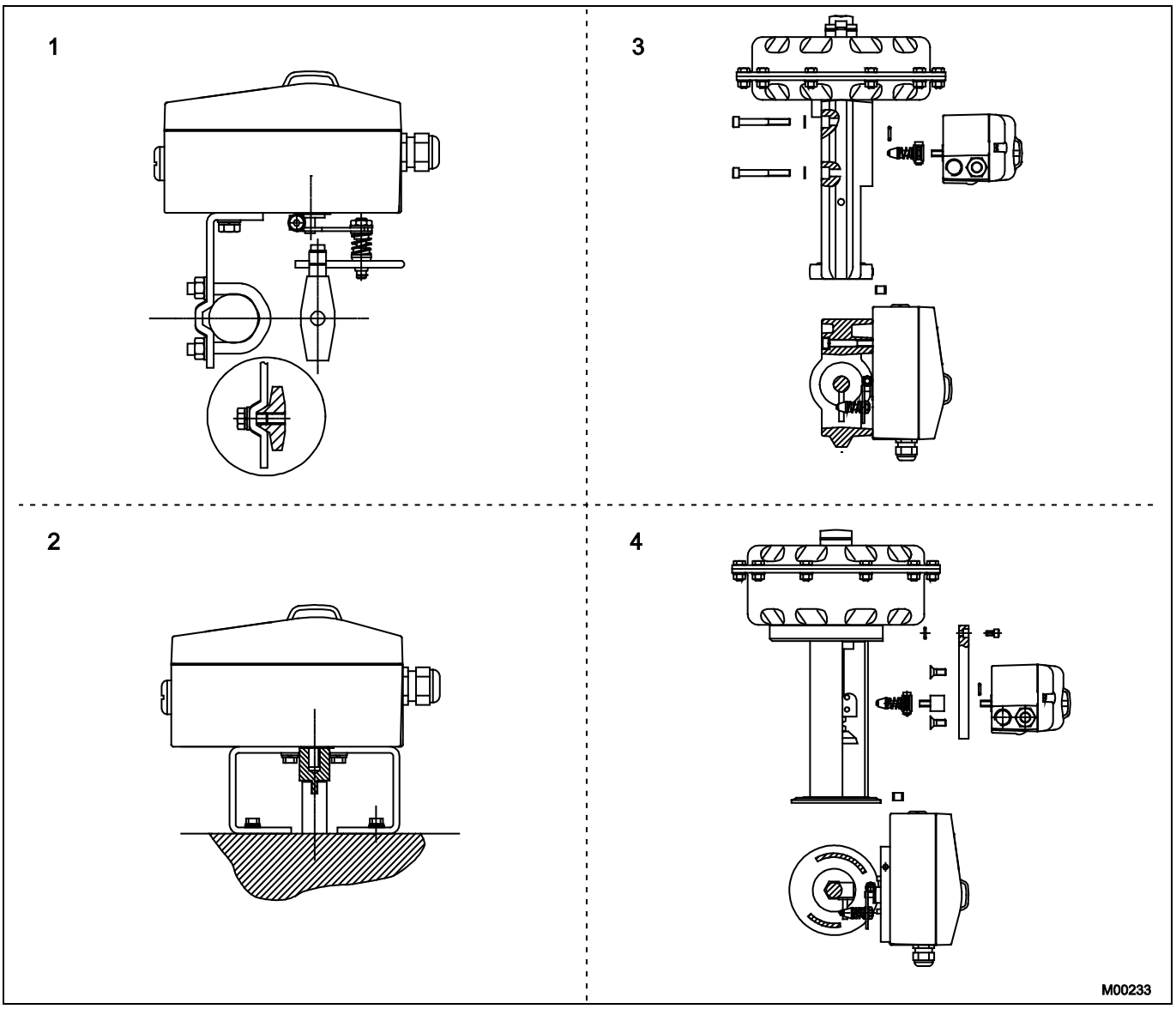


Fig. 2: Mounting options

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



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

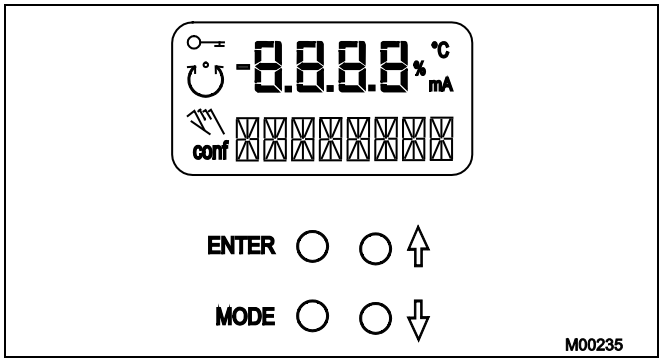


Fig. 4: TZIDC operating elements and display

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.

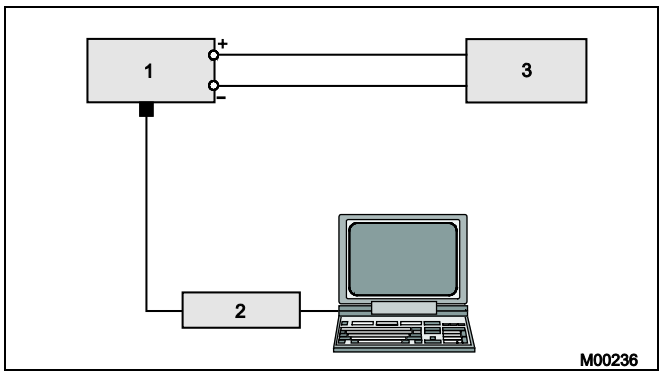


Fig. 5: Local communication via LKS adapter
1 TZIDC
2 LKS adapter
3 Controller

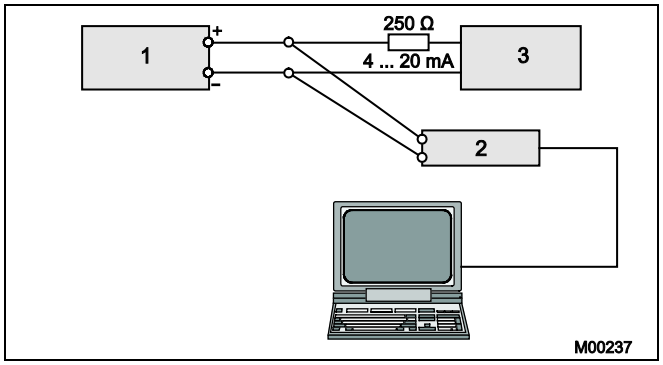


Fig. 6: HART communication with FSK modem via 20 mA signal line
1 TZIDC
2 FSK modem
3 Controller

5 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 Nm^3/h = 2.3 sfcm at 1.4 bar (20 psi) supply pressure 13 kg/h = 10 Nm^3/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 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 / 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)

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 mm^2 (AWG 17) for options
Max. 2.5 mm^2 (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:

Device	SFF	PFDav	$\lambda_{dd} + \lambda_s$	λ_{du}
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 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 (configurable)	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)

	Position			
Proximity switch	< Lim. 1	> Lim. 1	< Lim. 2	> Lim. 2
SJ2-SN (NC)	0	1	1	0

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 IIIC 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 2D
Standards:	EN 60079-0:2009 EN 61241-11:2006

II 2 G **Temperature class**	**Ta** **Ambient temperature range**
T4	-40 ... 85 °C
T5	-40 ... 50 °C
T6 [1)]	-40 ... 40 °C

1) When using the plug-in module for "Digital Feedback" in Temperature Class T6, the maximum permissible ambient temperature range is -40 ... 35 °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	**Electrical data**
Signal circuit (terminal +11 / -12)	Maximum values: U_i = 30 V I_i = 320 mA P_i = 1.1 W C_i = 6.6 nF L_i negligibly small
Contact input (terminal +81 / -82)	Maximum values: U_i = 30 V I_i = 320 mA P_i = 1.1 W C_i = 4.2 nF L_i negligibly small
Switch output (terminal +83 / -84)	Maximum values: U_i = 30 V I_i = 320 mA P_i = 500 mW C_i = 4.2 nF L_i negligibly small
Mechanical digital feedback (terminal limit1 +51 / -52 or limit2 +41 / -42)	For max. values, see EC type examination test certificate number PTB 00 ATEX 2049 X Proximity switches manuf. by Pepperl & Fuchs
Plug-in module for digital position feedback (terminal +51 / -52 or +41 / -42)	Maximum values: U_i = 30 V I_i = 320 mA P_i = 500 mW C_i = 3.7 nF L_i negligibly small
Plug-in module for analog position feedback (terminal +31 / -32)	Maximum values: U_i = 30 V I_i = 320 mA P_i = 1.1 W C_i = 6.6 nF L_i negligibly small
Optional interface to remote sensor (Terminal X2-2: $+U_{ref}$ X3-2: GND X3-1: Signal	Maximum values: U_0 = 5.4 V I_0 = 74 mA P_0 = 100 mW C_i negligibly small L_i negligibly small Ex ia or Ex ib type of ignition protection IIC: L_0 = 5mH C_0 = 2 µF IIB: L_0 = 5mH C_0 = 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.

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

II 3 G **Temperature class**	**Ta** **Ambient temperature range**
T4	-40 ... 85 °C
T6	-40 ... 50 °C

Electrical data

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

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

Type and designation	**TZIDC Ex ia IIC or Ex ib IIC**	
Temperature class	**Ambient temperature range**	
T4	-40 ... 85 °C	T4
T6 [1)]	-40 ... 40 °C	T6 [1)]

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	
Signal circuit (terminal +11 / -12)	Maximum values: U_i = 30 V I_i = 320 mA P_i = 1.1 W C_i = 6.6 nF L_i negligibly small
Contact input (terminal +81 / -82)	Maximum values: U_i = 30 V I_i = 320 mA P_i = 1.1 W C_i = 4.2 nF L_i negligibly small
Switch output (terminal +83 / -84)	Maximum values: U_i = 30 V I_i = 320 mA P_i = 500 mW C_i = 4.2 nF L_i negligibly small
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:

Electrical data	
Plug-in module for digital position feedback (terminal +51 / -52 or +41 / -42)	Maximum values: U_i = 30 V I_i = 320 mA P_i = 500 mW C_i = 3.7 nF L_i negligibly small
Plug-in module for analog position feedback (terminal +31 / -32)	Maximum values: U_i = 30 V I_i = 320 mA P_i = 1.1 mW C_i = 6.6 nF L_i negligibly small

6.2.2 1.1.3 IECEx n

Electrical data	
Signal circuit (terminal +11 / -12)	U = 9.7 V DC I = 4 ... 20 mA, max. 21.5 mA
Contact input (terminal +81 / -82)	U = 12 ... 24 V DC; 4 mA
Switch output (terminal +83 / -84)	U = 11 V DC

The following modules may be operated as an option:

Electrical data	
Plug-in module for digital position feedback (terminal +51 / -52 or +41 / -42)	U = 5 ... 11 V DC
Plug-in module for analog position feedback (terminal +31 / -32)	U = 10 ... 30 V DC I = 4 ... 20 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.

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	
Input rated	30 V DC; max. 4 ... 20 mA
Max output pressure	90 psi
Max. ambient	85 Deg C

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

Model TZIDC, P/N V18345-x0x2x2xx0x Intelligent Positioner intrinsically safe with entity parameters of:	
Terminals 11 / 12	V max = 30 V I max = 104 mA C_i = 6.6 nF L_i = 0 uH
Terminals 81 / 82	V max = 30 V I max = 110 mA C_i = 4.2 nF L_i = 0 uH
Terminals 83 / 84	V max = 30 V I max = 90 mA C_i = 4.2 nF L_i = 0 uH
Terminals 31 / 32	V max = 30 V I max = 110 mA C_i = 6.6 nF L_i = 0 uH
Terminals 41 / 42 and 51 / 52	V max = 30 V I max = 96 mA C_i = 3.7 nF L_i = 0 uH
Terminals Limit2 41 / 42 and Limit1 51 / 52	V max = 15.5 V I max = 52 mA C_i = 20 nF L_i = 30 uH

When installed per installation Drawing No 901064	
Temperature Code	Temperature Code
Max. Ambient	Max. Ambient

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:	
Terminals 11 / 12	V max = 30 V I max = 104 mA C_i = 6.6 nF L_i = 0 uH
Terminals 81 / 82	V max = 30 V I max = 110 mA C_i = 3.7 nF L_i = 0 uH
Terminals 83 / 84	V max = 30 V I max = 96 mA C_i = 3.7 nF L_i = 0 uH
Terminals 31 / 32	V max = 30 V I max = 110 mA C_i = 6.6 nF L_i = 0 uH
Terminals 41 / 42 and 51 / 52	V max = 30 V I max = 96 mA C_i = 3.7 nF L_i = 0 uH
Terminals Limit2 41 / 42 and Limit1 51 / 52	V max = 15.5 V I max = 52 mA C_i = 20 nF L_i = 30 uH

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.

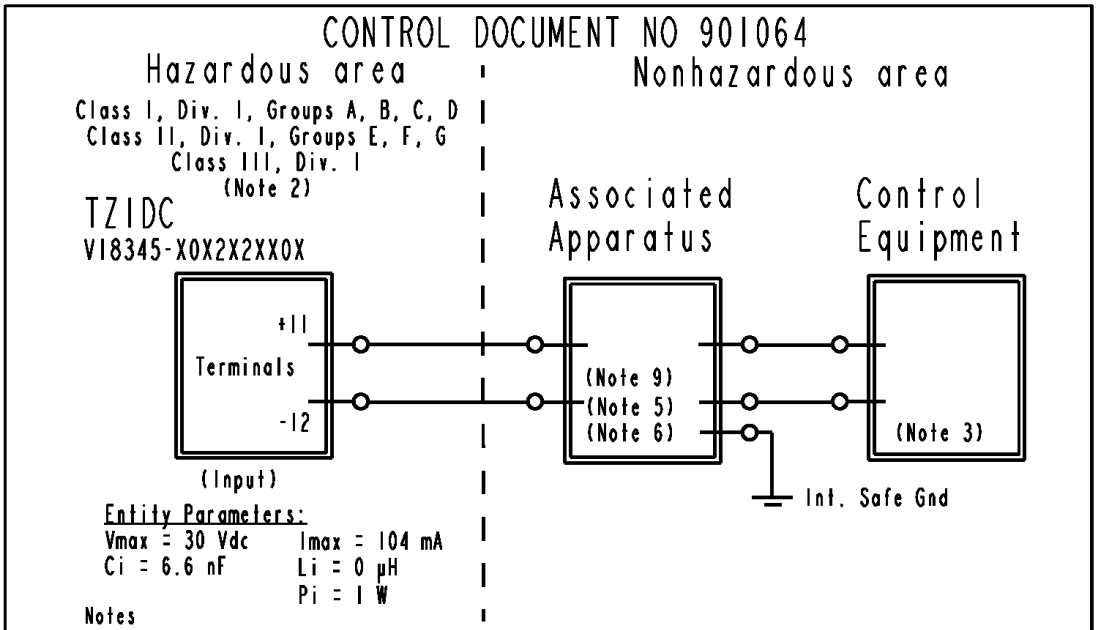
6.3.3 FM Approvals

TZIDC Positioner, Model V18345-a0b2c2de0f
IS/I,II,III/1/ABCDEFG/T4 Ta = 85 °C – 901064/7/4; Enity;
NI/I/2/ABCD/T4 Ta = 85 °C;
S/II,III/2/FG/T4 Ta =85 °C; Type 4XMax Enity 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 swiches) 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



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+Ccable, La >= Li + Lcable; 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 RP12.6 "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 manufacturers installation drawing must be followed when installing this equipment.
7. When connecting conduit to the enclosure use conduit hubs that have the 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 - EXPLOSION HAZARD - Substitution of components may impair suitability for Class I, Division 2.
13. For Div 2 Models: WARNING - EXPLOSION HAZARD - Do not connect while circuit is live unless area is known to be nonhazardous.
14. Local communication interface LKS 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.
16. Caution: Substitution of components may impair intrinsic safety.

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Rev.	Amendment	Date	Name
10	-	05.10.09	Laszarzik

All Dimensions in mm

	Date	Name
Drawn	08-Apr-99	Laszarzik
Checked		

ABB Automation

Title: CONTROL_DOCUMENT

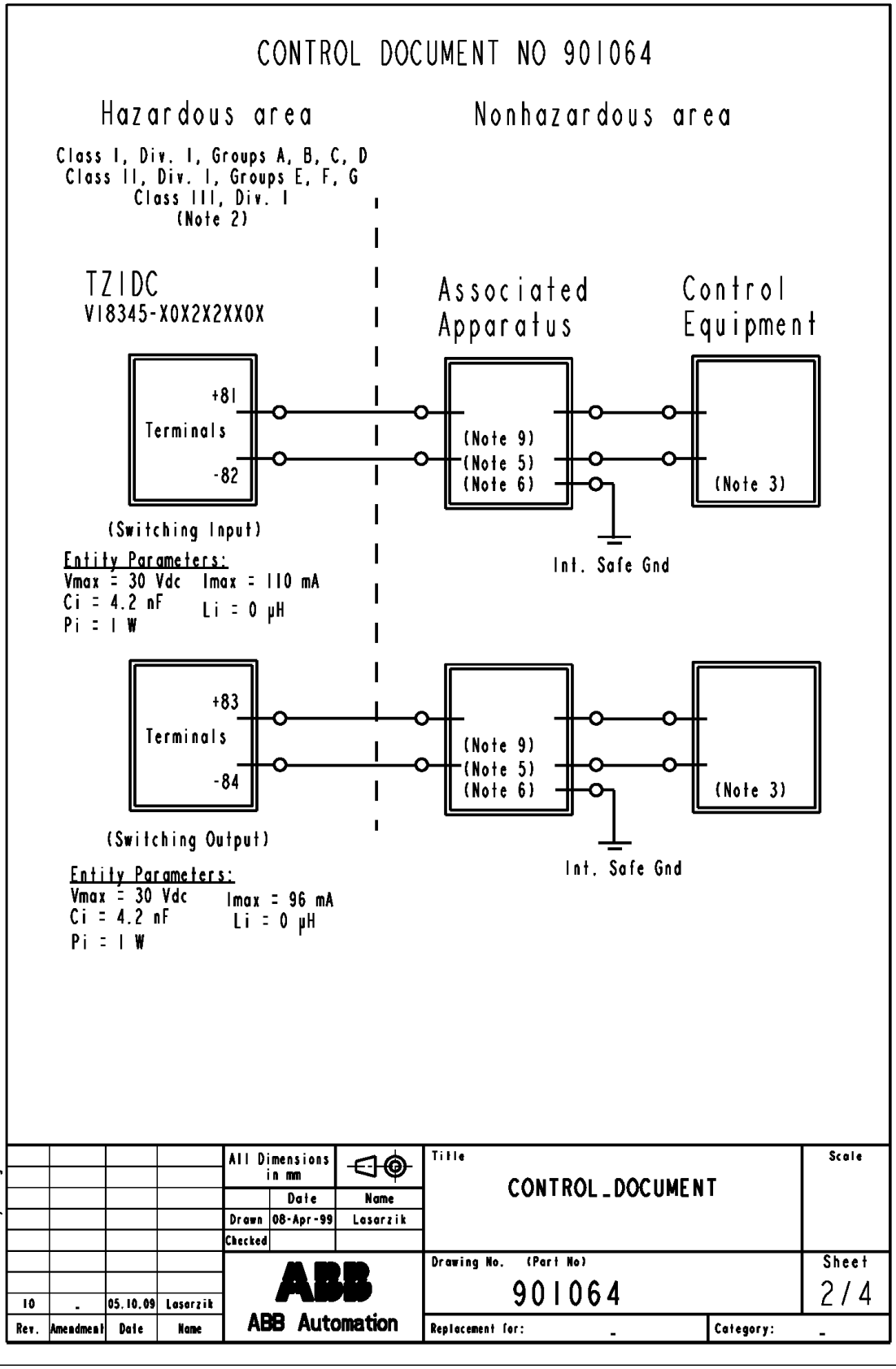
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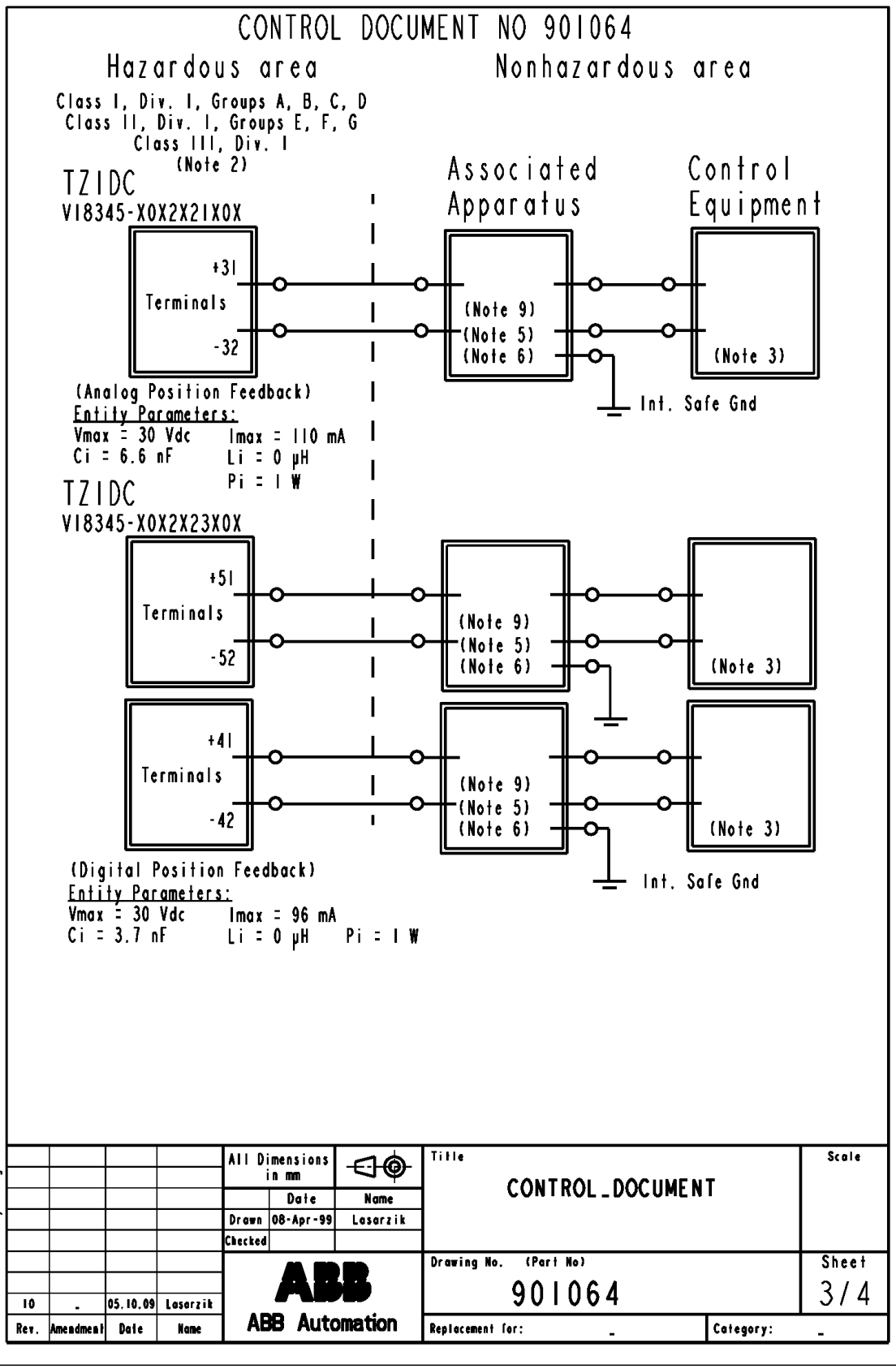
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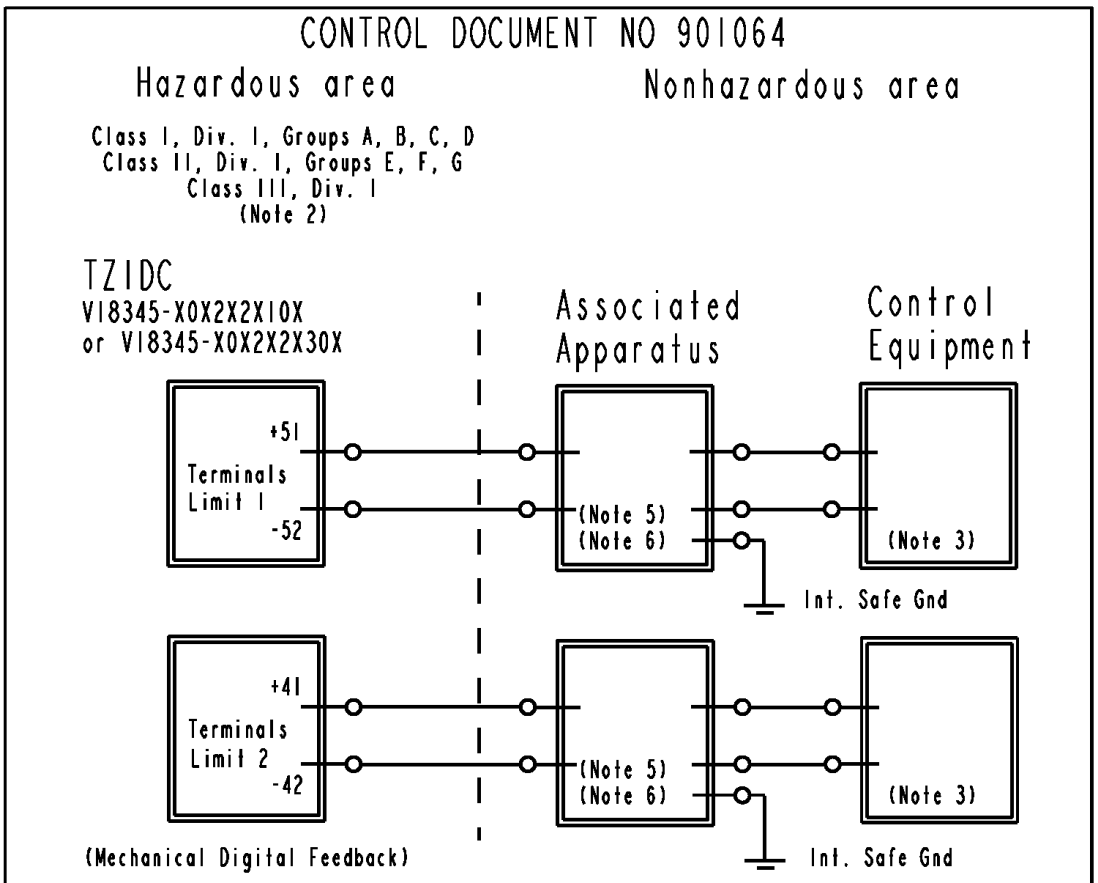
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Replacement for: -

Category: -


CONTROL DOCUMENT NO 901064
Hazardous area
Nonhazardous 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-X0X2X2XX0X
Associated Apparatus
Control Equipment
+81
Terminals
-82
(Switching Input)
Entity Parameters:
Vmax = 30 Vdc Imax = 110 mA
Ci = 4.2 nF Li = 0 µH
Pi = 1 W
(Note 9)
(Note 5)
(Note 6)
(Note 3)
Int. Safe Gnd
+83
Terminals
-84
(Switching Output)
Entity Parameters:
Vmax = 30 Vdc Imax = 96 mA
Ci = 4.2 nF Li = 0 µH
Pi = 1 W
(Note 9)
(Note 5)
(Note 6)
(Note 3)
Int. Safe Gnd
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901064
Sheet
2/4
10 - 05.10.09 Lasarzik
Rev. Amendment Date Name
ABB Automation
Replacement for: -
Category: -


CONTROL DOCUMENT NO 901064
Hazardous area
Nonhazardous 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
VI8345-X0X2X21X0X
Associated Apparatus
Control Equipment
+31
Terminals
-32
(Note 9)
(Note 5)
(Note 6)
(Note 3)
Int. Safe Gnd
(Analog Position Feedback)
Entity Parameters:
Vmax = 30 Vdc
Imax = 110 mA
Ci = 6.6 nF
Li = 0 µH
Pi = 1 W
TZIDC
VI8345-X0X2X23X0X
+51
Terminals
-52
+41
Terminals
-42
(Note 9)
(Note 5)
(Note 6)
(Note 3)
Int. Safe Gnd
(Digital Position Feedback)
Entity Parameters:
Vmax = 30 Vdc
Imax = 96 mA
Ci = 3.7 nF
Li = 0 µH
Pi = 1 W
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Category: -



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Rev.	Amendment	Date	Name
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All Dimensions in mm

	Date	Name
Drawn	08-Apr-99	Lasarzik
Checked		

ABB Automation

Title: CONTROL_DOCUMENT

Scale:

Drawing No. (Part No): 901064

Sheet: 4/4

Replacement for: -

Category: -

7 Electrical connections

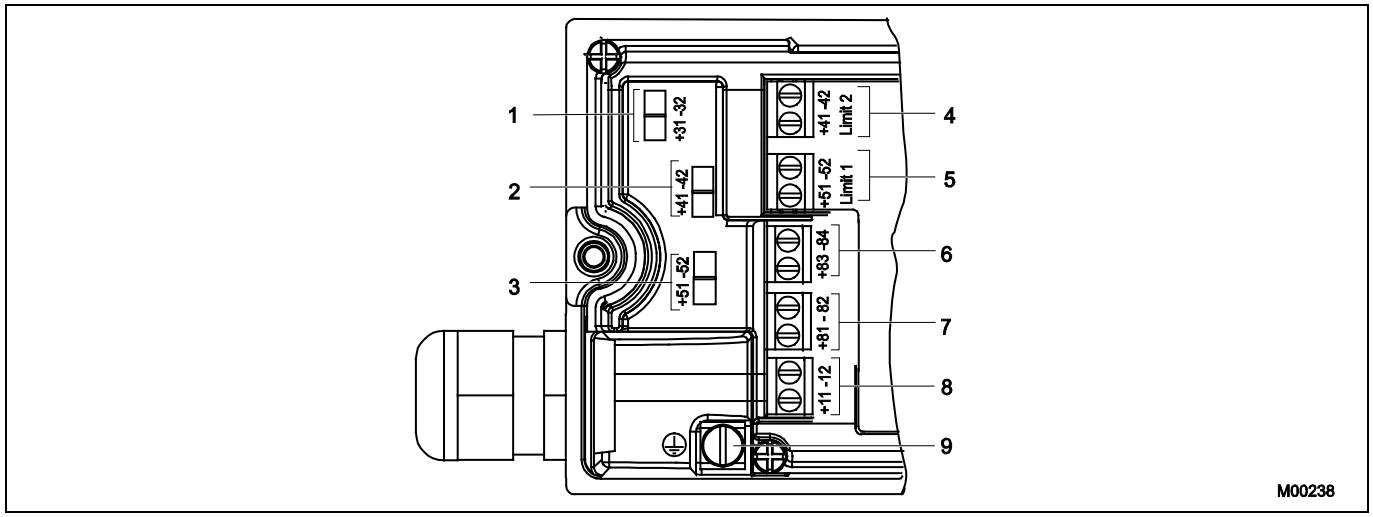


Fig. 7: Screw terminals, overview

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

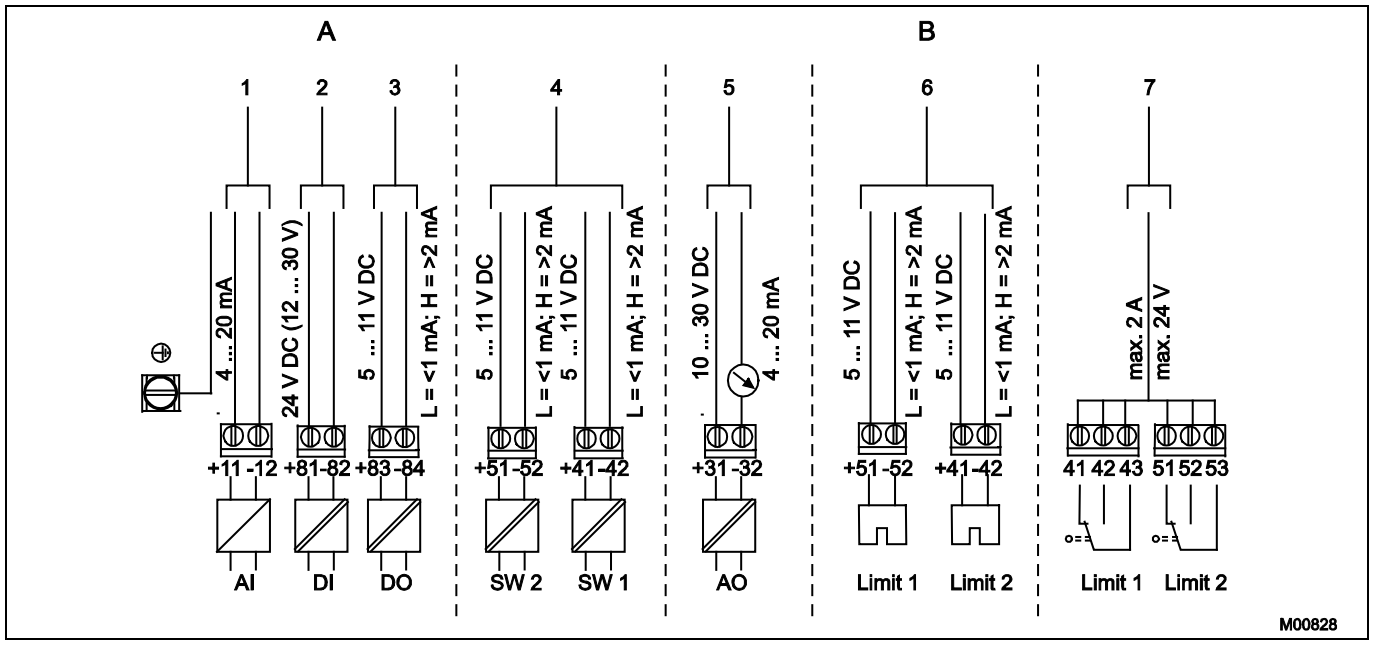


Fig. 8: Pin configuration

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).

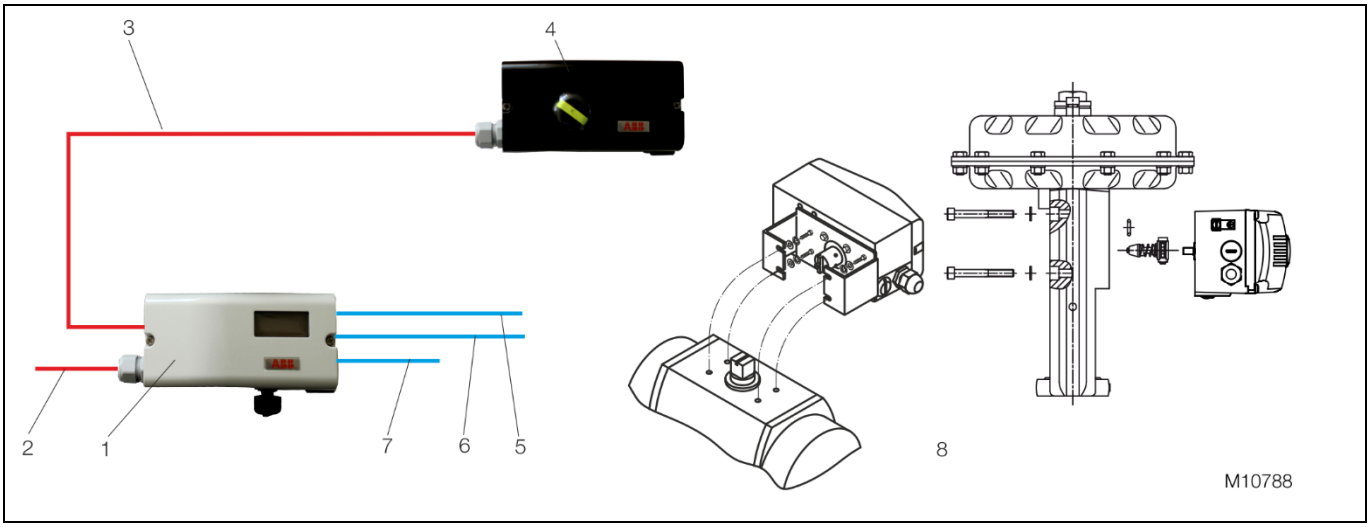


Fig. 9: TZIDC with remote position sensor

1 Housing 1 (control unit)
2 Setpoint signal
3 Connecting cable
4 Housing 2 (remote sensor)
5 Pneumatic output 2
6 Pneumatic output 1
7 Air supply
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.

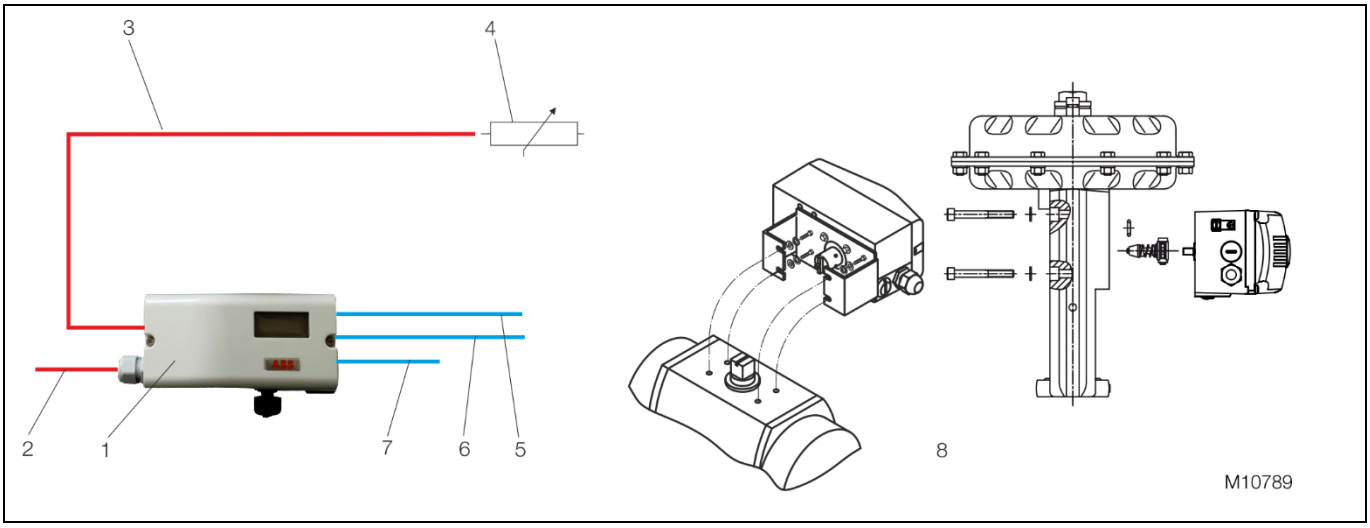


Fig. 10: TZIDC for remote sensors

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

8 Dimensions

All dimensions in mm (inch)

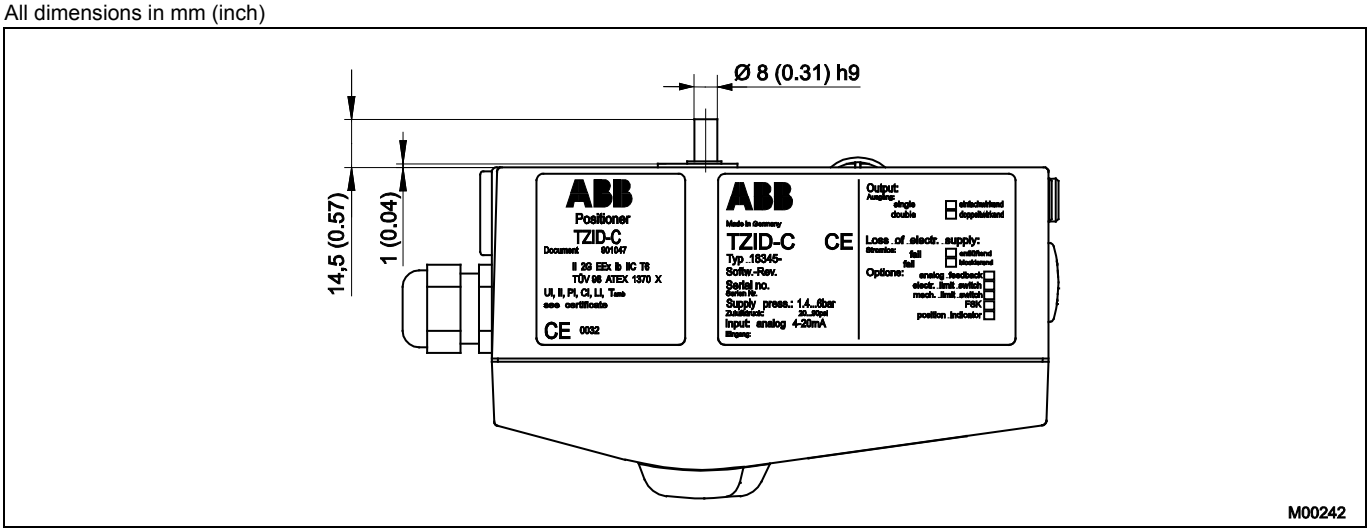


Fig. 11: Top view

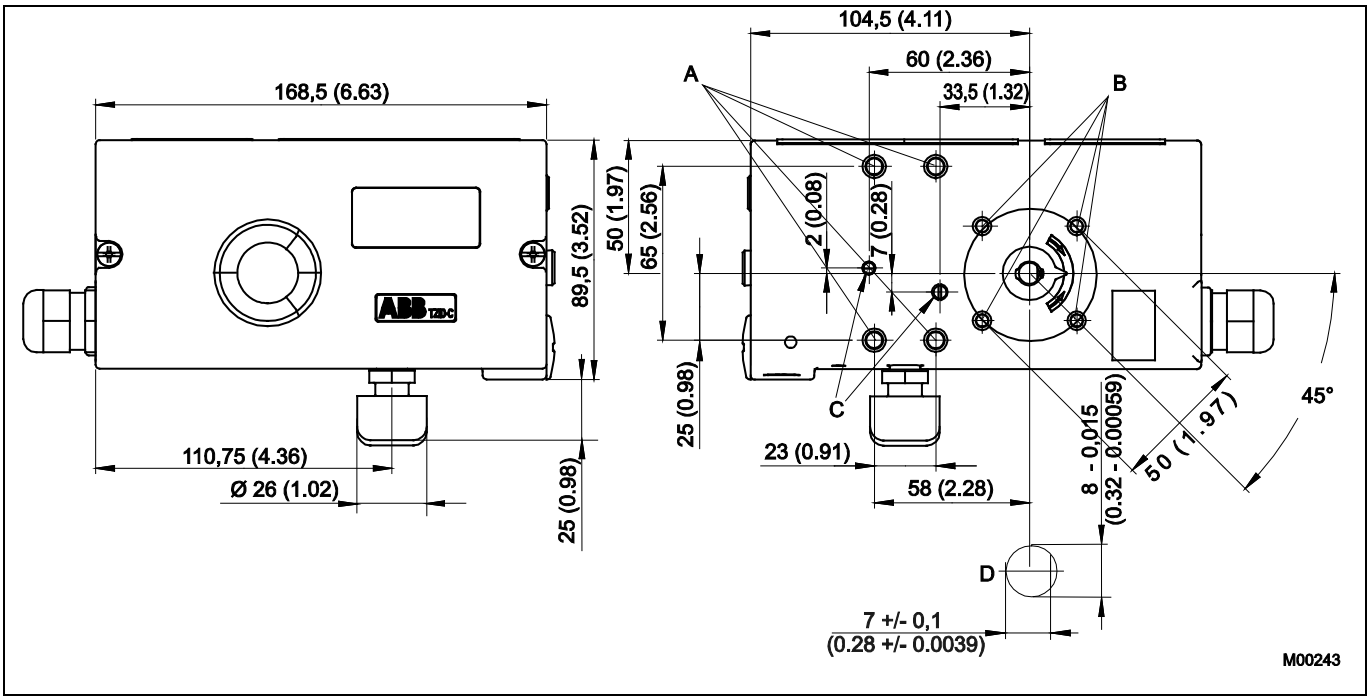


Fig. 12: Front and rear views

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)

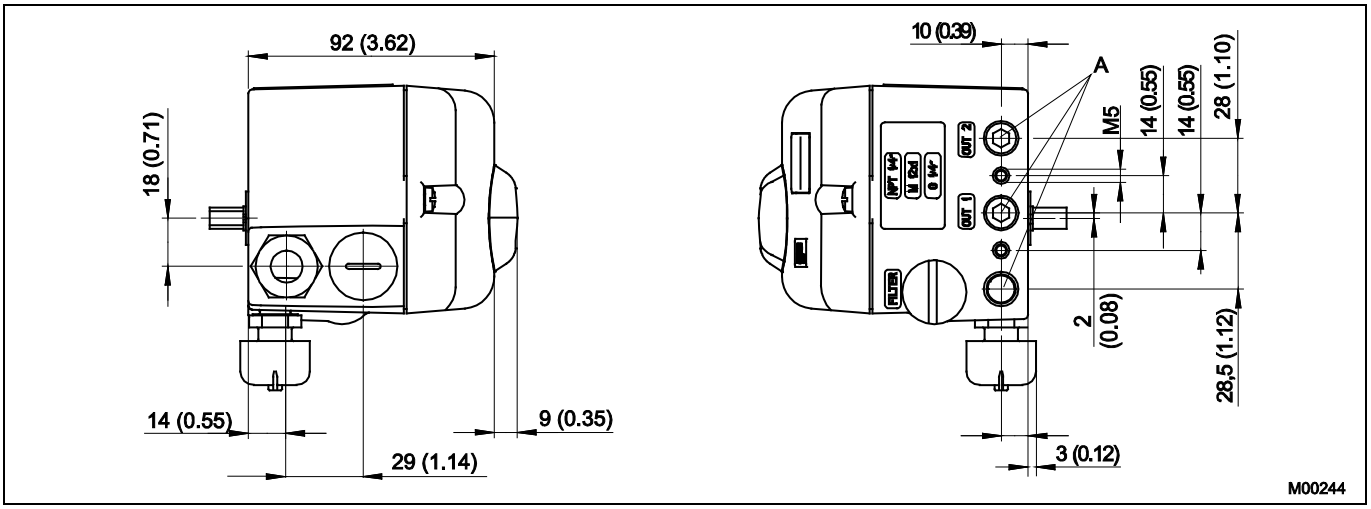
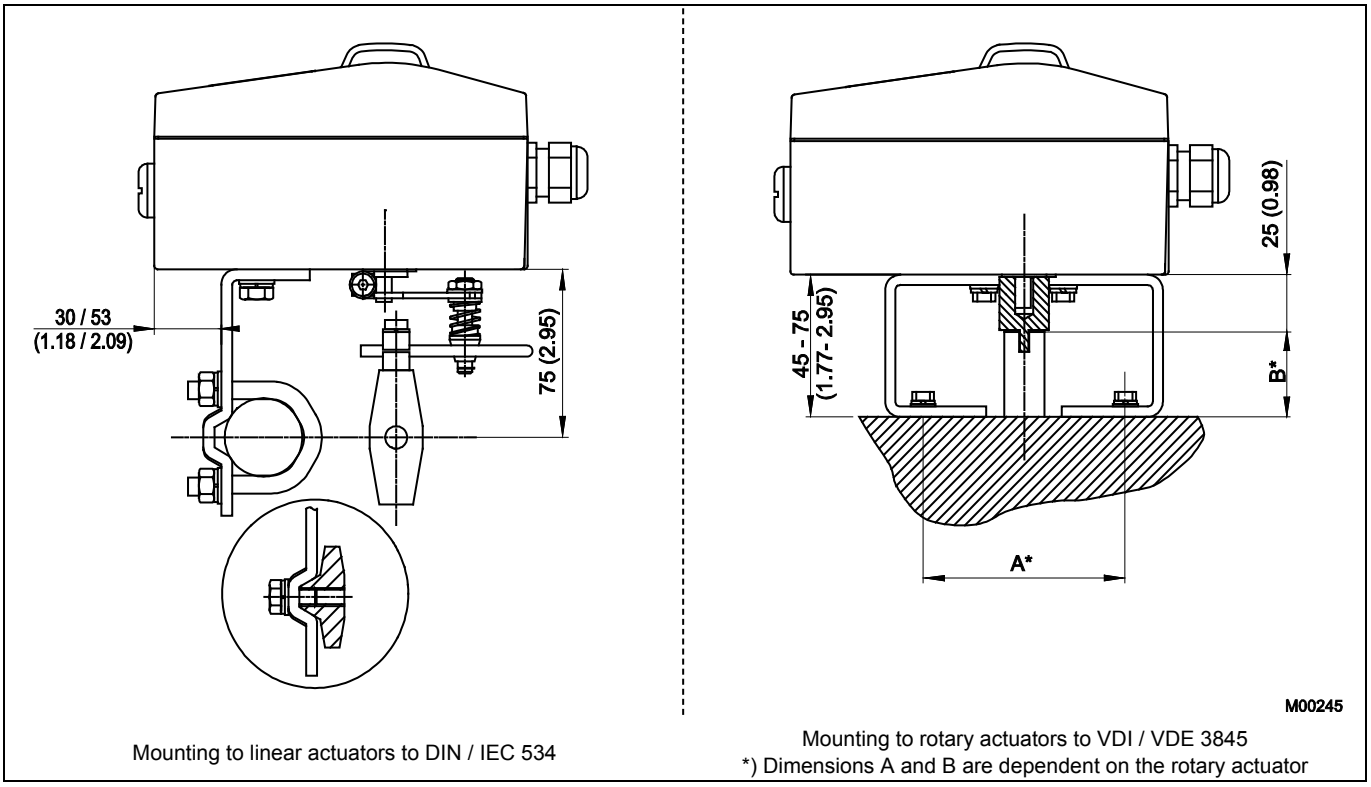


Fig. 13: side view (from left to right)
A Pneumatic connections, NPT 1/4"-18 or G1/4"



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. 14: Mounting drawings

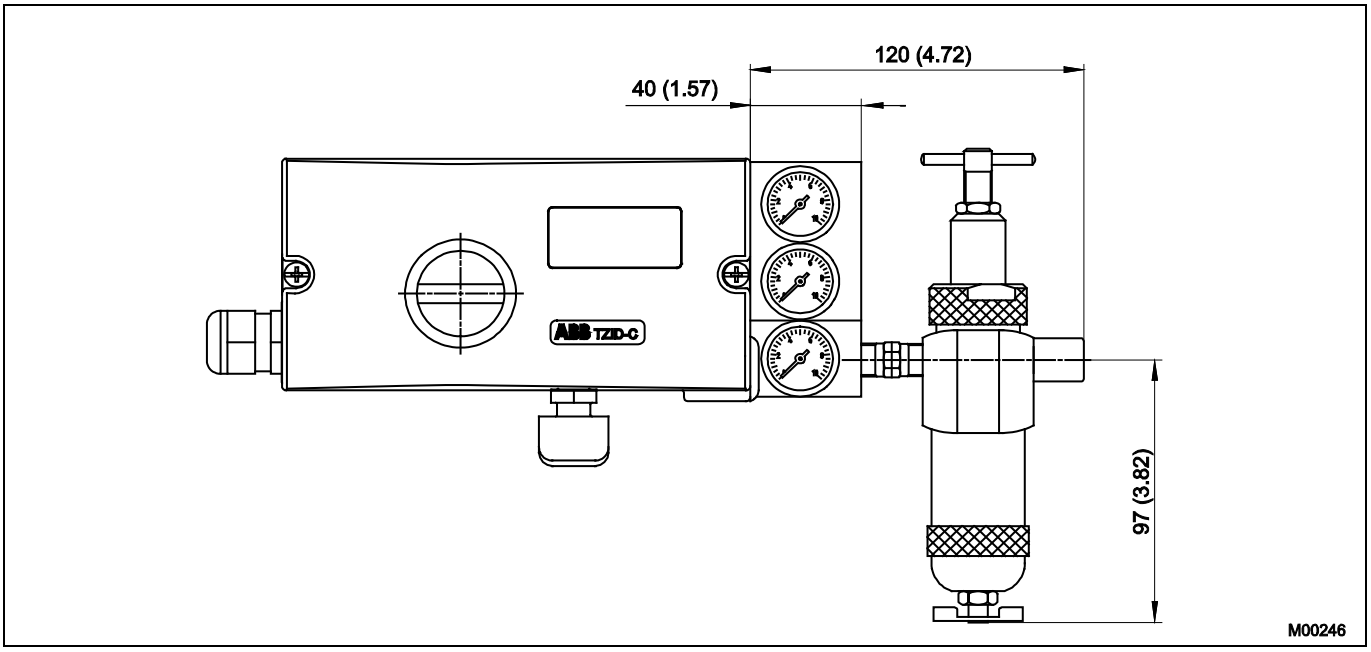


Fig. 15: Positioner TZIDC with pressure gauge block and filter regulator

9 Ordering information

		Main Code										Add. Code
Variant	1 - 6	7	8	9	10	11	12	13	14	15	16	XX
TZIDC Electro-Pneumatic Positioner, intelligent, configurable, with indicator and operator panel	**V18345**	**X**	**X**	**X**	**X**	**X**	**X**	X	X	X	X	XX
Case / Mounting												
Case made of aluminium, varnished, for mounting to linear actuators acc. DIN / IEC 534 / NAMUR or to rotary actuators acc. VDI / VDE 3845		**1**	**0**									
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		2	0									
Case made of aluminium, varnished, for integral mounting to control valves (see dimensional drawing)		3	0									
Case made of aluminium, varnished, with mechanical position indicator, for integral mounting to control valves (see dimensional drawing)		4	0									
Case made of aluminium, varnished, for mounting to rotary actuators acc. VDI / VDE 3845 with extended rotation angle up to 270°		5	0									
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°		6	0									
SRemote sensor control unit	1)	7	0									
Input / Communication Port												
Input 4 ... 20 mA, two-wire, with connector plug for LKS adapter				**1**								
Input 4 ... 20 mA, two-wire, with connector plug for LKS adapter and FSK module for HART communication				2								
Explosion Protection												
Without					**0**							
ATEX II 2 G Ex ib IIC T6 resp. T4 Gb					1							
FM / CSA					2							
ATEX II 3 G Ex nA IIC T6 resp. T4 Gc					4							
IECEx Ex ib IIC T6 resp. T4 Gb					5							
IECEx Ex nA IIC T6 resp. T4 Gc					6							
ATEX II 2 G Ex ia IIC T6 resp. T4 Gb					7							
ATEX II 2 D Ex ia IIIC T51°C resp. 81°C Db					8							
GOST Russia - Ex II 2 G EEx ib II C T6					B							
GOST Russia - 0 Ex iA IIC T6					E							
GOST Russia - Ex iaD 21 T5					F							
IECEx ia IIC T6 resp. T4 Gb					K							
Output / Safe Position (in case of an electrical power failure)												
Single acting, fail safe						**1**						
Single acting, fail freeze						2						
Double acting, fail safe					2)	4						
Double acting, fail freeze					2)	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					
Cable: Thread G 1/2, air pipe: Thread Rc 1/4							7					

Continued on next page

1) With standard characteristic curve, if delivered without remote sensor
2) Not for integral mounting

Variant	Main Code. 1 - 6	7	8	9	10	11	12	13	14	15	16	Add. Code XX
TZIDC Electro-Pneumatic Positioner, intelligent, configurable, with indicator and operator panel	**V18345**	X	X	X	X	X	X	**X**	**X**	**X**	**X**	**XX**
Option Modules for Analog or Digital Position Feedback												
Without								**0**				
Plug-in module for analog position feedback, signal range 4 ... 20 mA, two-wire								1				
Plug-in module for digital position feedback								3				
Plug-in module for analog position feedback, signal range 4 ... 20 mA, two-wire, and digital position feedback								5				
Optional Mechanical Kit for Digital Position Feedback												
Without									**0**	**0**		
Mechanical kit for digital position feedback with proximity switches SJ2-SN (NC or logical 1)								3)	1	0		
Mechanical kit for digital position feedback with 24 V AC / DC microswitches (change-over contacts)								4)	5	0		
Design (Varnish / Coding)												
Standard											**1**	
Special version for Chemical Industries										5)	E	
Sprache der Documentation												
German												M1
Italian												M2
Spanish												M3
French												M4
English												M5
Swedish												M7
Finnish												M8
Polish												M9
Portuguese												MA
Russian												MB
Czech												MC
Dutch												MD
Danish												MF
Greek												MG
Latvian												ML
Hungarian												MM
Estonian												MO
Bulgarian												MP
Romanian												MR
Slovak												MS
Lithuanian												MU
Slovenian												MV
SIL2 - Declaration of Conformity												
SIL2 - Declaration of Conformity											6)	CS2
Certificate of Compliance												
Certificate of compliance with the order acc. EN 10204-2.1 (DIN 50049-2.1) with item description												CF2
Test report 2.2 acc. EN 10204 (DIN 50049-2.2)												CF3

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

	Main Code.											Add. Code
Variant	1 - 6	7	8	9	10	11	12	13	14	15	16	XX
TZIDC Electro-Pneumatic Positioner, intelligent, configurable, with indicator and operator panel	**V18345**	X	X	X	X	X	X	X	X	X	X	**XX**
Inspection Certificate												
Inspection certificate 3.1 acc. EN 10204												CBA
Device Identification Label												
Stainless steel 11.5 x 60 mm (0.45 x 2.36 in.)												MK1
Sticker 11 x 25 mm (0.43 x 0.98 in.)												MK3
Special Option Cable Gland												
With cable gland												ZG1
Remote Sensor												
Basic unit											7)	RS
Basic unit with position indicator											7)	RD
Remote Sensor Temperature Range												
Extended ambient temperature range -40 ... 100 °C (-40 ... 212 °F)											7)	RT
Remote Sensor Vibration Resistance												
Advanced vibration range 2 g @ 300 Hz												RV
Remote Sensor Protection Class												
Protection class IP 67											7)	RP
Remote Sensor Cable												
5 m cable enclosed											7)	R5
10 m cable enclosed											7)	R6

7) Only with remote sensor control unit

9.1 Accessories

Accessories	Order number
Mounting bracket	
EDP300 / TZIDC Mounting bracket for rotary actuators (mounting to VDI / VDE 3845), dimension A/B = 80/20 mm	319603
EDP300 / TZIDC Mounting bracket for rotary actuators (mounting to VDI / VDE 3845), dimension A/B = 80/30 mm	319604
EDP300 / TZIDC Mounting bracket for rotary actuators (mounting to VDI / VDE 3845), dimension A/B = 130/30 mm	319605
EDP300 / TZIDC Mounting bracket for rotary actuators (mounting to VDI / VDE 3845), dimension A/B = 130/50 mm	319606
Lever	
EDP300 / TZIDC Lever 30 mm	7959151
EDP300 / TZIDC Lever 100 mm	7959152
Adapter	
EDP300 / TZIDC Adapter (shaft coupler) for rotary actuators (mounting to VDI / VDE 3845)	7959110
EDP300 / TZIDC Form - locking shaft adapter	7959371
Pressure gauge block	
TZIDC Pressure gauge block, 0.6 MPa, single acting, G 1/4 connection	7959364
TTZIDC Pressure gauge block, 0.6 MPa, single acting, Rc 1/4 connection	7959358
TZIDC Pressure gauge block, 0.6 MPa, single acting, NPT 1/4 connection	7959360
TZIDC Pressure gauge block, 0.6 MPa, double acting, G 1/4 connection	7959365
TZIDC Pressure gauge block, 0.6 MPa, double acting, Rc 1/4 connection	7959359
TZIDC Pressure gauge block, 0.6 MPa, double acting, NPT 1/4 connection	7959361
Filter regulator	
TZIDC Filter regulator, brass, connections thread G 1/4, incl. material for mounting to pressure gauge block	7959119
TTZIDC Filter regulator, brass, connections thread 1/4-18 NPT, incl. material for mounting to pressure gauge block	7959120
Attachment kit	
EDP300 / TZIDC Attachment kit for linear actuators, stroke 10 ... 35 mm	7959125
EDP300 / TZIDC Attachment kit for linear actuators, stroke 20 ... 100 mm	7959126
EDP300 / TZIDC Attachment for remote sensor control unit (for wall or pipe mounting)	7959381
EDP300 / TZIDC Attachment kit for Fisher 1051-30, 1052-30	7959214
EDP300 / TZIDC Attachment kit for Fisher 1061 size 130	7959206
EDP300 / TZIDC Attachment kit for Fisher 471	7959195
EDP300 / TZIDC Attachment kit for Fisher 657 / 667 Size 10 ... 90 mm	7959177
EDP300 / TZIDC Attachment kit for Fisher Gulde 32/34	7959344
EDP300 / TZIDC Attachment kit for Gulde DK	7959161
EDP300 / TZIDC Attachment kit for Keystone 79U/E-002(S) ... 79U/E-181(S)	7959147
EDP300 / TZIDC Attachment kit for Masoneilan CAMFLEX II, VARIMAX, MINITORK II	7959144
EDP300 / TZIDC Attachment kit for Masoneilan VariPak 28000 series	7959163
EDP300 / TZIDC Attachment kit for MaxFlo MaxFlo	7959140
EDP300 / TZIDC Attachment kit for NAF 791290	7959207
EDP300 / TZIDC Attachment kit for NAMUR stroke 100 ... 170 mm	7959339
EDP300 / TZIDC Attachment kit for NELES BC6-20, B1C6-20, BJ8-20, B1J8-20	7959146
EDP300 / TZIDC Attachment kit for Valves Nuovo Pignone, lever for linear stroke, length 150 ... 250 mm	7959210
EDP300 / TZIDC Attachment kit for Samson 241, 271, 3271	7959145
EDP300 / TZIDC Attachment kit for Samson 3277	7959136
EDP300 / TZIDC Attachment kit for Schubert&Salzer GS 8020 / 8021 / 8023	7959200
EDP300 / TZIDC Attachment kit for SED SED stroke 100 mm	7959141
EDP300 / TZIDC Mounting Kit Uhde Type 4 Stroke 400 mm cropped	7959500



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