ABB MEASUREMENT & ANALYTICS | DATA SHEET

PositionMaster EDP300

Digital Positioner



Compact, well-proven, and flexible

High air capacity

Diagnostics capability

Resistant to overpressure

Robust and environmentally ruggedized

Easy to commission

Approvals for explosion protection
- ATEX
- IECEx
- FM / CSA
- EAC TR-CU-012

Global approval for marine applications
- DNV_GL

For SIL2 safety loops

Advanced diagnostics

Brief description

The PositionMaster EDP300 is an electronically configurable positioner with communication capabilities designed for mounting on 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 positioner allow for considerable time savings as well as optimum control behavior.

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.
Dosing of the air flow for pressurizing or depressurizing the actuator is continuously adjusted. As a result, excellent control results are achieved. When reaching the setpoint, the 3/3-way valve is closed in center position to minimize the air consumption.
The pneumatic system can be supplied in four versions: for single acting and double acting actuators and each with the ‘fail-safe’ / ‘fail-freeze’ safety function.

‘Fail-safe’ safety function

If the electric power supply fails, the positioner output 1 is depressurized and the return spring in the pneumatic actuator moves the valve to the safe position. In case of a ‘double-acting’ version, output 2 is additionally pressurized.

‘Fail-freeze’ function

If the electric power supply fails, the positioner Output 1 (and Output 2 if applicable) is closed and the pneumatic actuator blocks the valve in the current position. If the compressed air supply power fails, the positioner depressurizes the actuator.

Use

The positioner has a built-in LCD indicator with a multi-line LCD display and 4 operating buttons for commissioning, configuration, and monitoring during live operation. Alternatively, the appropriate DTM/EDD can be used via the available communication interface.

Communication

The positioner supports HART5 and HART7 communication.

Inputs / Outputs

In addition to its input for the analog position setpoint, the positioner is equipped with a digital input which can be used to activate acontrol system functions in the device. A digital output allows you to output collective messages (alarms / faults).

Modular design

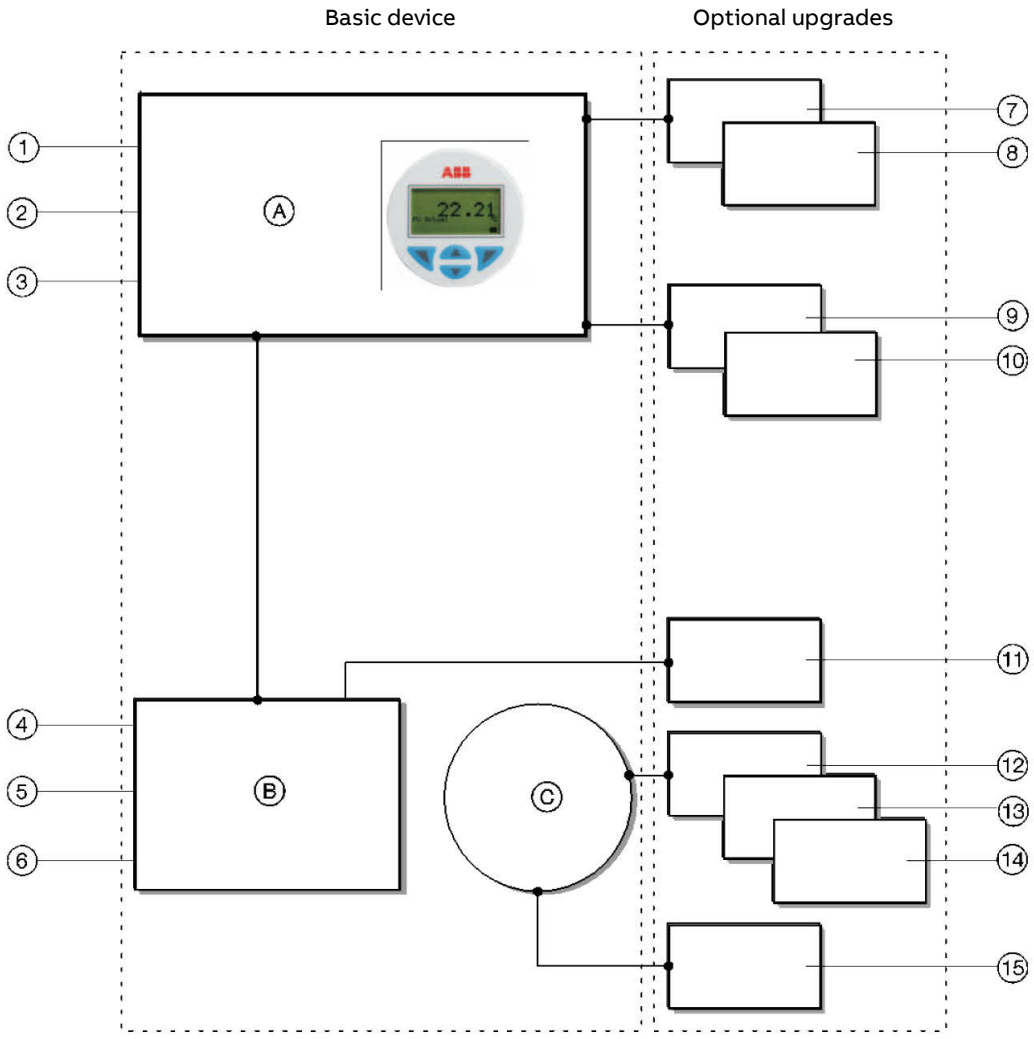
The basic model can be enhanced at any time by retrofitting optional equipment.
Option modules for analog and digital feedback, an emergency shutdown module, and pressure sensors for valve diagnostics can be installed.
A module for a universal analog input can also be installed to which any device supplying a 4 to 20 mA signal can be connected.
Additionally, a mechanical position indicator, proximity switches or 24 V microswitches are available for indicating the position independently of the mother board function.

Diagnostics

The positioner has three optional pressure sensors which can be used for reliable diagnostics of the valve, the pneumatic drive, and the positioner.

… Brief description

Schematic diagram



Ⓐ Electronics
Ⓑ Pneumatics
Ⓒ Position sensor
① 4 to 20 mA / Bus connection
② Digital input
③ Alarm output
④ Supply air
⑤ Output 1
⑥ Output 2
⑦ Analog feedback
⑧ Digital feedback
⑨ Emergency shutdown module
⑩ Universal input
⑪ Pressure sensor
⑫ Limit alarm with 24 V microswitch
⑬ Limit alarm with proximity switch (NC)
⑭ Limit alarm with proximity switch (NO)
⑮ Visual position indication

Figure 1: Schematic diagram of the positioner

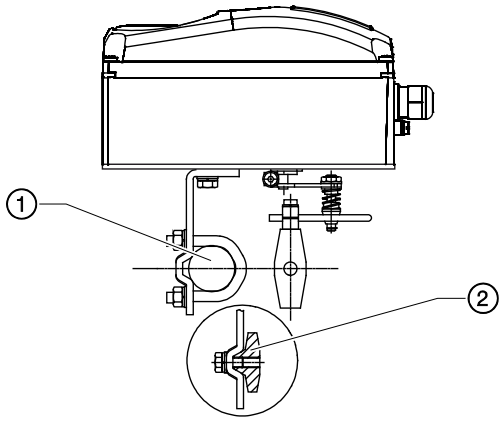
Note
In optional extensions, either the “Limit switch with proximity switch” (pos. ⑬ or pos. ⑭) or der “Limit switch with microswitch 24 V” (pos. ⑫) can be used.
It is not possible to combine both variants.

Mounting versions

Mounting to linear actuators in accordance with the standard

Lateral attachment is in accordance with DIN / IEC 534 (lateral attachment to NAMUR).

The required attachment kit is a complete set of attachment material, but does not include the pipe fittings and air pipes.



① Columnar yoke ② Cast iron yoke

Figure 2: Mounting to linear actuators in accordance with DIN / IEC 534

To pneumatic 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 corresponding feedback shaft adapter has to be ordered separately.
Screwed pipe connections and air pipes have to be provided on site.

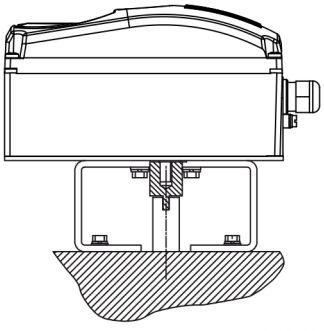


Figure 3: Mounting to rotary actuators in accordance with VDI/VDE 3845

Integral mounting on control valves

The 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.

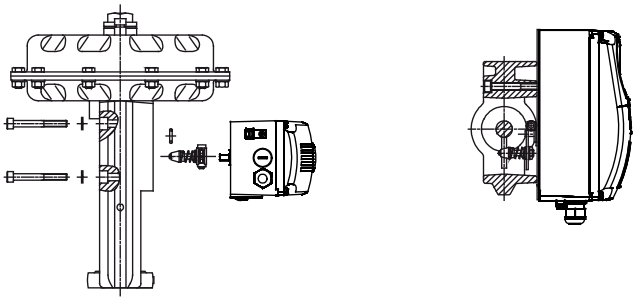


Figure 4: Integral mounting to control valves

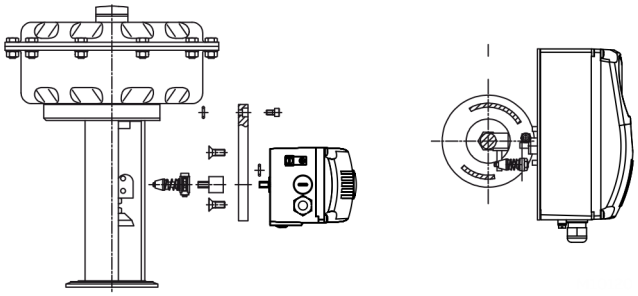


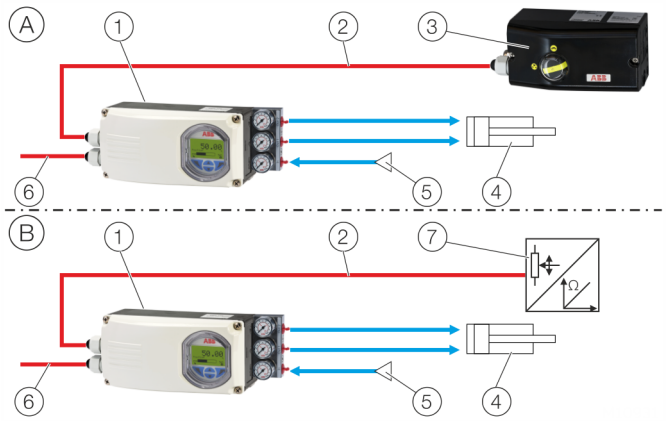
Figure 5: Integral mounting to control valves using adapter plate

Special actuator-specific mounting versions

In addition to the mounting methods described above, there are special actuator-specific attachments.

… Mounting versions

External position sensors



1 EDP300 Control Unit
2 Connection cable
3 EDP300 Remote Sensor
4 Actuator
5 Compressed air supply
6 Set point signal
7 Remote position sensor

Figure 6: EDP300 with external position sensors

Note
If the device is being operated on a cylinder, for reasons associated with linearity you should run the Auto Adjust function for rotary actuator.

(A) EDP300 control unit with EDP300 remote sensor
In this version, the components are supplied in two housings, which together form one harmonized unit.
The following points should be observed during installation:

- Housing 1 (EDP300 Control Unit) contains the electronics and pneumatics and is mounted separately from the actuator.
- Housing 2 (EDP300 Remote Sensor) contains the position sensor and is mounted on the linear and rotary actuator.

Note
To connect the EDP300 Remote Sensor, a cable with the following specifications needs to be used:

- 3-wire, cross-section 0.5 to 1.0 mm²
- shielded, with at least 85 % coverage
- Temperature range up to at least 100 °C (212 °F)

The cable glands must also be approved for a temperature range up to at least 100 °C (212 °F). The cable glands require a mounting for the shielding and strain relief for the cable in addition.
ABB optionally offers a cable gland and cable for the EDP300 Remote Version.

(B) EDP300 Control Unit for remote position sensor
In this version the positioner is supplied without a position sensor.
The following points should be observed during installation:

- Housing 1 (EDP300 Control Unit) contains the electronics and pneumatics and is mounted separately from the actuator.
- The remote position sensor is mounted on the linear actuator or rotary actuator. Follow the operating instructions for the remote position sensor for mechanical mounting!

Device parameters

General

Microprocessor-based position control in the positioner optimizes control. 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
- Operation monitoring parameters
- Diagnosis parameters
- Maintenance parameters

Operating parameters

The following operating parameters can be set manually if required:

Setpoint signal
0 to 100 % freely selectable for split-range operation

For 4 to 20 mA and HART® version:

- Signal min. 4 mA, max. signal 20 mA (0 to 100 %)
- Min. range 20 % (3.2 mA)
- Recommended range > 50 % (8.0 mA)

Action (setpoint signal)
Increasing:
Position value 0 to 100 % = direction 0 to 100 %
Decreasing:
Setpoint signal 100 to 0 % = direction 0 to 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 to 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.

Switching points for the position
You can use these parameters to define two position limits for signaling (see option “Module for digital position feedback”).

Alarm output
The alarms generated in the positioner can be polled via the digital output as a collective alarm.
The desired information can be selected via the LCD display 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 LCD display or configuration program to select an option.

- No function (default)
- Move to position substitute value (freely selectable)
- Start "Partial Stroke Test"
- Ventilate output 1, evacuate output 2
- Ventilate output 2, evacuate output 1
- Service required
- Move to 0 % position
- Move to 100 % position
- Hold previous position
- Disable local configuration
- Disable local configuration and operation
- Disable all 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).

… Device parameters

Adjustment parameters

The 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.

Zone
Upon reaching this value, the position is readjusted more slowly until the dead band is reached.

Dead band (sensitivity)
When reaching the dead band, the position is held.

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

Diagnostics
Various functions for permanent operational monitoring are implemented in the PositionMaster EDP300 operating program. The following states will be detected and indicated, e.g.:

- Setpoint signal out of range 0 to 100 % or 4 to 20 mA
- Position out of the adjusted range
- Positioning time-out (adjustable time parameter)
- Position controller inactive
- Counter limit values exceeded (can be set via DTM/EDD)

LCD display
The LCD indicator has a cover to protect against unauthorized operation.

Commissioning the positioner is especially easy. Autoadjust is triggered by pressing just a few pushbuttons. Detailed configuration knowledge is not necessary in order to start the device.
Depending on the selected actuator type (linear or rotary), the displayed zero position is automatically adapted.

Besides this standard function, a customized “Autoadjust” function is available. The function is launched either via the LCD display or HART communication.

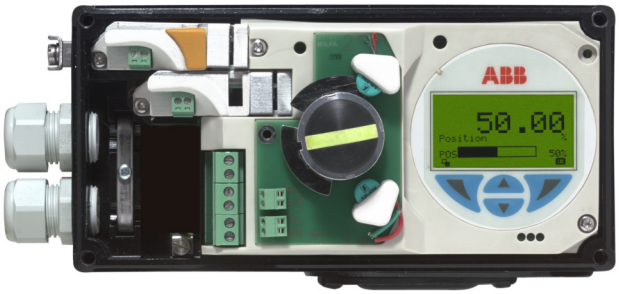


Figure 7: Open positioner with view of LCD indicator

The built-in LCD indicator with four pushbuttons supports the following functions:

- Operational monitoring
- Manual intervention during live operation
- Device configuration
- Fully automatic commissioning
- Display of diagnostic messages



Figure 8: LCD indicator with pushbuttons and LCD display

A menu-controlled configuration is available via the pushbuttons on the device.

The multi-line LCD indicator is permanently updated and adapted during operation to provide the user with optional information as relevant.

During control operation (control with or without adaptation) the following data can be called up by pressing the pushbuttons briefly:

- Position Pos [%]
- Position Pos [°]
- Setpoint SP [%]
- Setpoint SP [mA]
- Control deviation DEV [%]
- Electronics temperature [°C, °F, °R, K]
- Supply pressure PIN [unit]
- Pressure output 1 PY1 [unit]
- Pressure output 2 PY2 [unit]
- Differential pressure DP [unit]
- Universal input value UIN [unit]

- Malfunctions, alarms, messages
  The possible reason is also displayed, along with the recommended remedial action.
  In the event of an error, a message consisting of a symbol and text appears at the bottom of the process screen (e. g. electronics) The text displayed provides information about the area in which the error has occurred.
  The error messages are divided into four groups in accordance with the NAMUR classification scheme.

Symbol	Description
	Error / failure
	Function check
	Outside of the specification
	Maintenance required

(The group assignment can only be changed using a DTM or EDD).

The error messages are also divided into the following areas:

Range	Description
Actuator	Diagnosis notices affecting the valve or the pneumatic actuator
Operation	Diagnosis notices with a negative effect on the operation of the positioner
Process	Diagnosis notices that refer to the process and display impairments or states.
Sensor	Alarms indicating problems affecting the position feedback of the valve position
Electronic	Errors in the device electronics are displayed.
Configuration	Detects if the positioner configuration is missing or faulty

Histograms recording
- Positioning time-outs
- Valve movements
- Valve strokes
- Most used valve position
- Universal input

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

The diagnostics parameters in the operating program provide information about the operating conditions of the actuator.
For example:
- Dead band time limit
- Leakage detection
- Temperature monitoring
- Stiction detection
- Sliding friction detection
- Hysteresis
- Valve seat wear

From this information the operator can derive what maintenance work is required, and when.

Diagnostics with DTM
Access to extended monitoring parameters is possible via HART communication, in particular the DTM (reduced functions only with the EDD).

… Device parameters

Butterfly diagnostics

The trend (which relates to a number of relevant positioner parameter values) can be used to draw conclusions about the stiction and friction of a valve with a view to enabling preventive maintenance.

If the diagnostic parameters have changed, a triangle is displayed in signal color. The color and size of this triangle represent the direction and scope of the change.

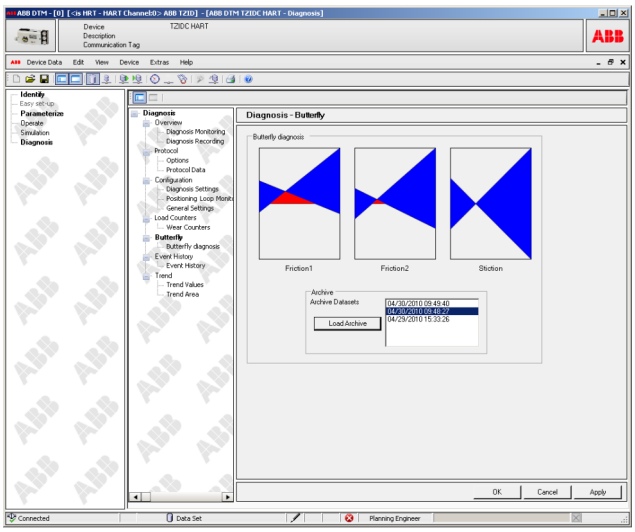


Figure 9: Example for increased friction

Online trend archive

The online trend archive does not merely indicate the current setpoint and actual value, but also the associated patterns, which can stretch back over a matter of hours. When you start the online trend archive, the saved data is read out and transmitted at such a high transmission rate (100 ms via HART®) that the latest data is displayed in next to no time.

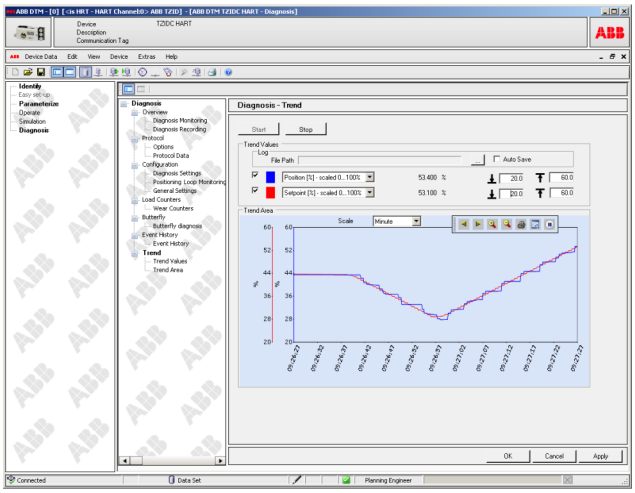


Figure 10: Example for online trend archive

Event history

Up to 100 events are saved in the event history in the device. The time each event occurred is also displayed, along with a suggested approach to solving the problem. The limit values for (pre-)alarms, e.g. a friction alarm, can be set.

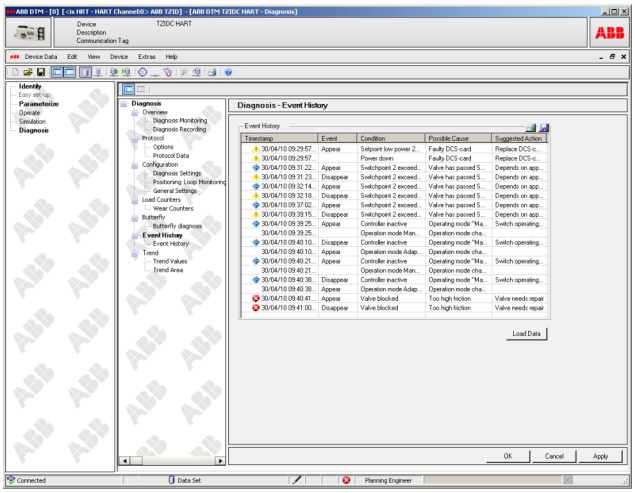


Figure 11: Example event history

Valve signature (only with pressure option)
When the valve signature starts, the entire valve operating range is covered for the "open and closed directions". High-resolution plots are generated for the pressure patterns at the diagnostic pressure sensors. In addition, the signal waveform for the universal input is recorded. Once the signature has expired, the parameters selected by the user are loaded from the device and displayed. Depending on the quantity of data selected, it may take several minutes to transfer all the parameter values. Up to 5 valve signatures can be saved in the device; these can be compared so that valve diagnostics can be performed for the purpose of preventive maintenance.

Speed in relation to position test
When the "Speed in relation to position test" is started, the entire valve operating range is covered for the valve's "open and closed directions" in an uncontrolled manner using an adjustable degree of openness for the pneumatics. The positioning times for opening and closing the valves are displayed.

The pattern of the graph provides information about friction in the valve and actuator. Up to 5 archived graphs can be saved in the device; these can be compared so that valve diagnostics can be performed for the purpose of preventive maintenance.

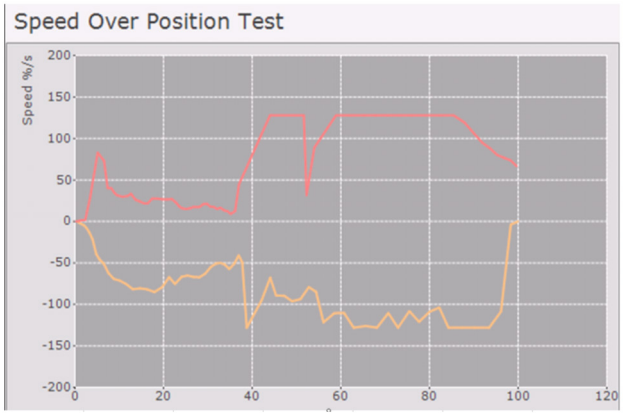


Figure 12: Example of Speed Over Position Test

Step response test
The step response allows the user to define the start position for the step change. When the start button is pressed, a setpoint step change is generated internally and a high-resolution plot is created for the valve position, pressure patterns, etc. At the end of the step response, the actuator automatically moves to the defined start position and reverts to control mode. Depending on the quantity of data selected, it may take several minutes to transfer all the parameter values and display them in the form of a graph.

The pattern of the graph provides information about friction in the valve and actuator. Up to 5 archived graphs can be saved in the device; these can be compared so that valve diagnostics can be performed for the purpose of preventive maintenance.

Valve seat test
During the valve seat test, the actuator is moved in the direction of the 0 % position with maximum force.
If the user-defined tolerance window for the 0 % position or the universal input signal is exceeded, this will be shown as an error. This error may be indicative of deposits or extreme wear of the valve seat.

If an ultrasonic sensor is used at the universal input for the purpose of measuring noise at the valve seat, even minor leakage at the valve fitting can be detected.

At the end of the test, the positioner moves the valve to the last valid position and reverts to the most recently active control mode.

Leakage test (only with pressure option)
During the leakage test, the positioner closes all pneumatic outputs. Then, if the valve position changes or there is a change in the pressure patterns at the diagnostic pressure sensors, the positioner will be able to detect leakage. It outputs a message indicating the area of the pneumatic piping or actuator that is leaking.

At the end of the test, the positioner moves the valve to the last valid position and reverts to the most recently active control mode.

… Device parameters

Partial Stroke Test
The Partial Stroke Test is used to check the function of the safe position of ESD (emergency shutdown) valves.
The test can be started both locally on the device, time-controlled or using the DTM. The positioner evacuates output 1 until the position change defined in advance occurs. If this does not happen within the set time, an alarm can be output.

This helps prevent unexpected failures of the valve.
At the end of the test, the positioner moves the valve to the last valid position and reverts to the most recently active control mode.

There are two separate parameters available for reducing the speed at which the valve moves in the corresponding direction.

Drag indicator
This diagram shows the minimum, maximum, and average values for a selectable parameter in 3 different intervals, which are offset in relation to one another. The drag indicator trend, which is plotted against time, makes it possible to plan preventive action so that a failure in terms of the valves and fittings can be avoided.

Trend histogram
This histogram shows, for example, the position range of the valve within which control is most frequently performed. The parameters to be displayed can be selected by the user. This graph can be used, for example, to determine the most commonly used valve position so that the valve design can be evaluated. The friction within a valve range can be determined on the basis of the differential pressure, dead band time limit alarms, etc.

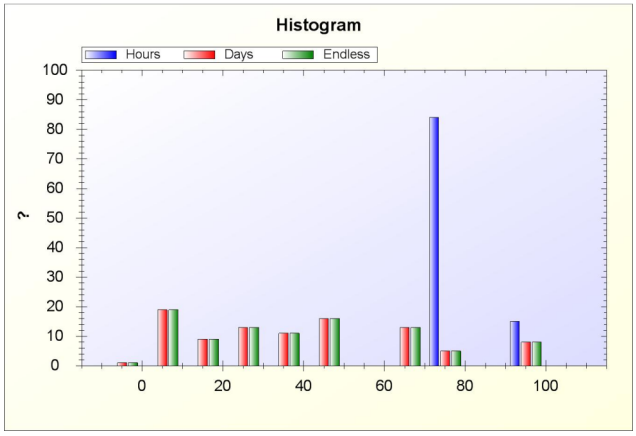


Figure 13: Example trend histogram

Trend diagram
This diagram indicates in which valve positioning range the greatest control deviation has occurred. This allows you to derive the valve friction, actuator size or supply air pressure.

Friction detection test (only with pressure option)
Once the function is initiated, a high-resolution plot of the differential pressure and universal input signal is generated for the valve's entire operating range.
At the end of the test, the positioner moves the valve to the last valid position and reverts to the most recently active control mode.

Limit values for the dynamic friction, stiction and universal input signal can be defined, using 11 reference points in each case. If the corresponding alarms are also activated in "Diagnostics -> Configure diagnostics", alarms can be output during operation as soon as the defined limit values are overshot.

Further diagnostic parameters are possible with the optional pressure sensors. They include:

- Supply air pressure too low
- Supply air pressure too high
- Pressure shocks in the supply air
- Valve signature
- Leakage localization

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 actuator
- Total travel

Test cycles
Characteristic curves mapping a setpoint cyclically and internally are stored in the device. The DTM can be used to track the position of the actuator. This provides a means of checking the dynamic response of the entire actuator, for example, and determining the limit frequency automatically.

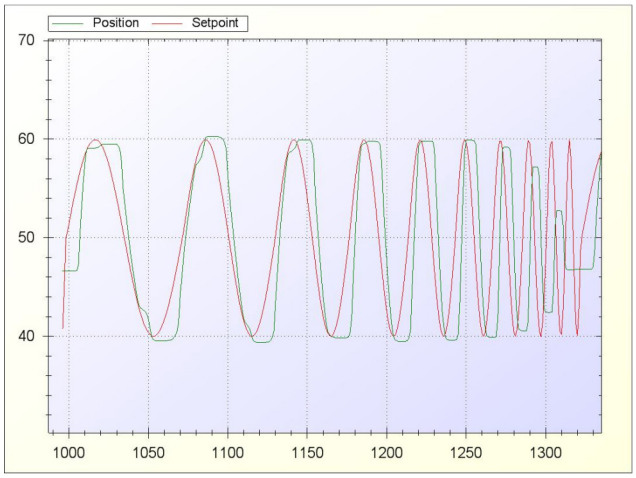


Figure 14: Example test cycles

Communication

DTM

The DTM (Device Type Manager) for the positioner PositionMaster EDP300 is based on FDT/DTM technology (FDT 1.2/1.2.1) and can be either integrated into a control system or loaded on a PC with DAT200 Asset Vision Basic. This allows you to work with the same user interface in the commissioning phase, during operation, and for service tasks involving monitoring the device, setting parameters, and reading out data.
Communication is based on the HART protocol. Reading data out from the device has no effect on active operation.
Newly set parameters are saved in the non-volatile memory directly upon download to the device, and become active immediately.

EDD

The EDD (Electronic Device Description) is used to read and modify simple device parameters on handheld terminals or in the vicinity of the system.

Specification

Actuator travel

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

Pneumatic connections

Input / Output	
Threaded holes	G ¼ in ¼-18 NPT

Compressed air output	
Range	0 to 10 bar (0 to 145 psi)
Air capacity	Standard: 40 kg/h (31 Nm^3/h / 20 scfm) Optional: 50 kg/h (40 Nm^3/h / 23 scfm)
Output function	For single acting 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 to 45 % End position 100 % = 55 to 100 %

Instrument air*	
Purity	Maximum particle size: 5 µm Maximum particle density: 5 mg/m³
Oil content	Maximum concentration 1 mg/m³
Pressure dew point	10 K below operating temperature
Supply pressure	Standard design: 1.4 to 10 bar (20 to 145 psi) Marine version: 1.5 to 8 bar (22 to 116 psi)
Air consumption**	< 0.03 kg/h / 0.015 scfm

* Free of oil, water and dust in accordance with DIN / ISO 8573-1. Pollution and oil content n accordance with Class 3

** Independent of supply pressure

Accessories

Mounting material

- Attachment kit for linear actuators in accordance with DIN / IEC 534 / NAMUR
- Attachment kit for rotary actuators in accordance with VDI / VDE 3845
- Attachment kit for integral mounting
- Attachment kit for actuator-specific mounting

Pressure gauge block

With pressure gauges for supply air and output pressure. Pressure gauges with housing ø 28 mm (1.10 in), with connection block in aluminum, black

PC adapter for communication

USB HART® Modem for HART® communication
(see data sheet 63-6.71)

Control program for operation and parameterization on a PC

DAT200 Asset Vision Basic with DTM for EDP300
(see data sheet DS/DTM/DAT200)

Housing

Material / Degree of protection	
Aluminum with ≤ 0.1% copper	Optional stainless steel 1.4404 (316L)
Degree of protection	IP 65 / NEMA 4X (NEMA 4X does not permit overhead mounting)

Surface / color (aluminum housing only)	
Dipping varnish	With epoxy resin, stove-hardened
Housing varnished black	RAL 9005 RAL 9002

Weight	
Aluminum	2.4 kg (5.29 lb)
Stainless steel 1.4404 (316L)	5.5 kg (12.13 lb)

Mounting orientation

Any

… Specification

Transmission data and contributing factors

Output Y1	
Increasing set point signal	0 to 100 %
	Increasing pressure at output
Decreasing set point signal	0 to 100 %
	Decreasing pressure at output

Action (set point signal)	
Increasing set point	4 to 20 mA
	= actuator position 0 to 100 %
Decreasing set point	20 to 4 mA
	= actuator position 0 to 100 %

Characteristic curve (actuator travel = f {set point signal})	
Linear	Equal percentage 1:25 or 1:50 or 25:1 or 50:1*
Deviation	< 0.5 %
Configurable zone	0 to 100 %,
Configurable dead zone	0.1 to 10 %,
Resolution (AD-conversion)	> 16,000 steps
Sampling frequency	20 ms
Ambient temperature effect	< 0.5 % for each 10 K
Influence of vibration	Standard design: < 1 % to 10 g and 80 Hz Marine version: < 1 % to 4 g and 100 Hz – EDP300 and remote design (control unit) < 1 % to 10 g and 100 Hz for remote design (position sensor)

* freely configurable with 20 reference points

Seismic vibration

Meets requirements of DIN / IEC 60068-3-3 Class III for strong and strongest earthquakes.

Influence of mounting orientation

Not measurable.

Noise emissions

Max. 100 db (A)
Noise-reduced version max. 85 db (A)

Ambient conditions

Ambient temperature range	
During operation, storage,	−40 to 85 °C (−40 to 185 °F)
and transport	−40 to 100 °C (−40 to 212 °F)*

* Increased temperature range only with EDP300 Remote Sensor.

Relative humidity	
During operation with housing	95 % (annual average), condensation
closed and air supply switched on	permissible
Transport and storage	75 % (annual average)

Electromagnetic compatibility

Component / Connection	Disturbance variable	EMC basic standard	Test value	Assessment criteria	
				Required	Complied
Housing	Discharge of static electricity (ESD)	IEC 61000-4-2	4 kV Contact discharge	B	A
			8 kV Air discharge	B	A
	Electromagnetic fields*	IEC 61000-4-3	10 V/m (80 MHz to 1 GHz)	A	A
			3 V/m (1.4 GHz to 2 GHz)	A	A
			1 V/m (2.0 GHz to 2.7 GHz)	A	A
	Supply frequency magnetic fields	IEC 61000-4-8	30 A/m (50 Hz, 60 Hz)	A	A
Input / Output signals	Fast transients (burst)	IEC 61000-4-4	2 kV (5 / 50 ns, 5 kHz)	B	A
	Impulse voltage (surge)	IEC 61000-4-5	1 kV (wire / wire),	B	A
			2 kV (wire / PE)		
	Conducted HF signals	IEC 61000-4-6	10 V (150 kHz to 80 MHz)	A	A

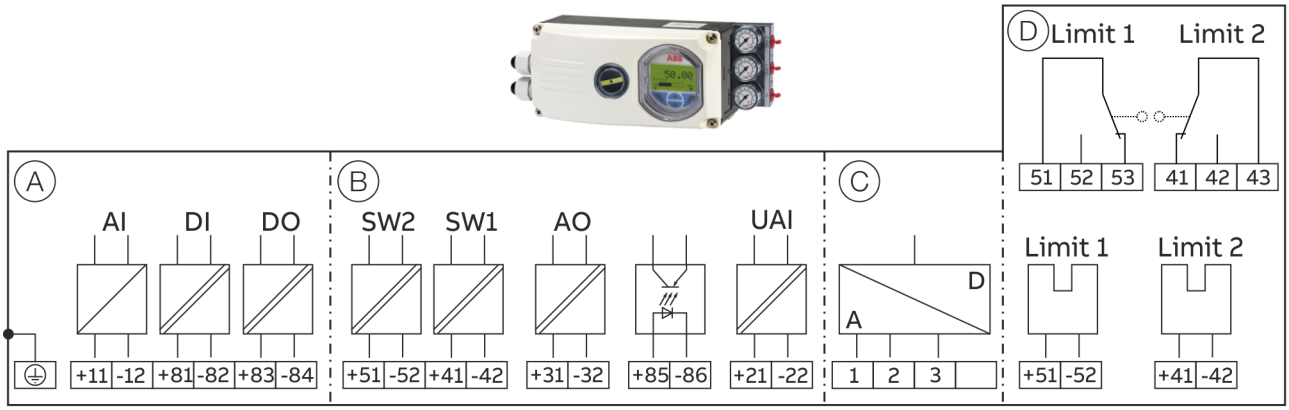
* The digital positioner meets the requirements of Class 3 for environments with heavy electromagnetic radiation. The distance between radio transmitters (e.g. mobile telephones) and the digital positioner, as well as its input and output signals must be at least 1 m (3.3 ft).

Assessment criteria A:
The device must work as intended during and after the test.

Assessment criteria B:
Impairment in operating performance of the device is permitted during the test. The device must continue to work as intended after the test.

Electrical connections

Positioner / EDP300 Control Unit Electrical Connection



(A) Basic device
(B) Options
(C) Connection EDP Remote Sensor / remote position sensor (only for EDP Control Unit version)
(D) Options, limit monitor with proximity switches or microswitches (not for EDP300 Control Unit)

Figure 15: EDP300 Electrical Connection

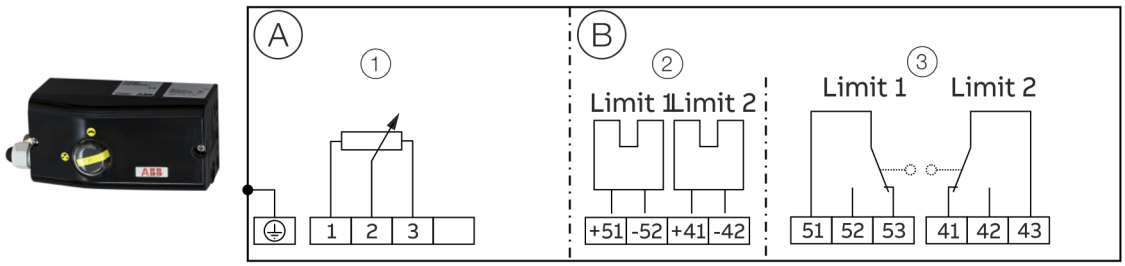
Connections for inputs and outputs

Terminal	Function / comments
+11 / −12	**Analog input AI or field bus connection**
+81 / −82	**Digital input DI**
+83 / −84	**Digital output DO2**
+51 / −52	**Limit alarm SW1** (Option module)
+41 / −42	**Limit alarm SW2** (Option module)
+31 / −32	**Analog feedback AO** (Option module)
+85 / −86	**Emergency shutdown module** (Option module)
+21 / −22	**Universal input UAI**
1 / 2 / 3	**EDP300 remote sensor** (Only for options EDP300 Remote Sensor or EDP300 for remote position sensor)

Terminal	Function / comments
+51 / −52	**Limit switch Limit 1 with proximity switch** (optional)
+41 / −42	**Limit switch Limit 2 with proximity switch** (optional)
51 / 52 / 53	**Limit switch Limit 1 with microswitch** (optional)
41 / 42 / 43	**Limit switch Limit 2 with microswitch** (optional)

Note
The EDP300 can be fitted either with proximity switches or microswitches as limit switches. It is not possible to combine both variants.
For the EDP300 Control Unit with EDP300 Remote Sensor version, the limit switches are located in the EDP300 Remote Sensor.

EDP300 Remote Sensor Electrical Connection



Ⓐ Basic device
Ⓑ Options
① Position sensor
② Limit monitor with proximity switches (optional)
③ Limit monitor with microswitches (optional)

Figure 16: EDP300 Remote Sensor Electrical Connection

Connections for inputs and outputs

Terminal	Function / comments
1 / 2 / 3	**EDP300 Control Unit**
+51 / −52	**Limit switch Limit 1 with proximity switch** (optional)
+41 / −42	**Limit switch Limit 2 with proximity switch** (optional)
51 / 52 / 53	**Limit switch Limit 1 with microswitch** (optional)
41 / 42 / 43	**Limit switch Limit 2 with microswitch** (optional)

Note
The EDP300 Remote Sensor can be fitted either with proximity switches or microswitches as limit switches. It is not possible to combine both variants.

… Electrical connections

Electrical data for inputs and outputs

Note

When using the device in potentially explosive atmospheres, note the additional data in chapters **Use in potentially explosive atmospheres in accordance with ATEX and** IECEx on page 27 and **Use in potentially explosive atmospheres in accordance with FM and** CSA on page 31!

Set point signal analog (two-wire technology)	
Terminals	+11 / −12
Nominal operating range	4 to 20 mA
Limit values	Maximum: 50 mA (overload) Minimum: 3.6 mA
Starting at	≥ 3.8 mA
Load voltage	9.7 V at 20 mA
Impedance	485 Ω at 20 mA

Digital input DI	
Terminals	+81 / −82
Supply voltage	24 V DC (12 to 30 V DC)
Input ‘logical 0’	0 to 5 V DC
Input ‘logical 1’	11 to 30 V DC
Input Current	Maximum 4 mA

Digital output DO	
Terminals	+83 / −84
Supply voltage	5 to 30 V DC (Control circuit to DIN 19234/NAMUR)
Switching state logical	‘0’: current > 0.35 mA to < 1.2 mA ‘1’: Current > 2,1 mA
Direction of action	standard logical ‘0’ or logical ‘1’ (configurable)

Option modules

Module for analog feedback AO*

Without any signal from the positioner (e.g. ‘no power’ or ‘initializing’) the module sets the output to > 20 mA (alarm level).

Terminals	+31 / −32
Signal range	4 to 20 mA (split ranges can be parameterized)
Supply voltage, two-wire technology	24 V DC (10 to 30 V DC)
Characteristic curve	rising or falling (configurable)
Deviation	< 1 %

Module for digital feedback SW1, SW2*

Two switches for binary position feedback (position adjustable within the range of 0 to 100 %, ranges cannot overlap)

Terminals	+41 / −42, +51 / −52
Supply voltage	5 to 11 V DC (Control circuit to DIN 19234/NAMUR)
Signal current	< 1,2 mA: Switching state logical ‘0’ > 2,1 mA: Switching state logical ‘1’
Direction of action	standard logical ‘0’ or logical ‘1’ (configurable)

Module for universal input UAI*

Module for a 4 to 20 mA input for universal use.
The range can be scaled. It is used for advanced valve diagnostics. For example, an ultrasonic sensor can be connected to detect a faulty valve seat or a phonometer can be connected to detect cavitation.
The limit values for detecting up-scaling can be freely selected.

Terminals	+21 / −22
Nominal operating range	4 to 20 mA
Load voltage	8 V at 20 mA
Impedance	400 Ω at 20 mA

Module for the emergency shutdown function*

When the 24 V DC signal is interrupted, the I/P 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, output 2 is additionally pressurized.

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

Terminals	+85 / −86
Supply voltage	24 V DC (20 to 30 V DC) (electrically isolated from the input signal)
Safe position	Active at < 5 V DC

* There are two slots for the option modules. Any combination of different option modules is possible. However, identical option modules cannot be combined.

Limit switch

The limit switch can either be equipped with proximity switches or with potential-free microswitches.

Limit switch Limit 1 / Limit 2 with proximity switches

Two proximity switches for independent position signaling.		
Terminals		+41 / −42, +51 / −52
Supply voltage		5 to 11 V DC (Control circuit in accordance with DIN 19234/NAMUR)
Output 'logical 0'		< 1.2 mA
Output 'logical 1'		> 2.1 mA
Switching point		Adjustable between 0 and 100 %
Direction of action	Metal tag in proximity switch	Metal tag outside proximity switch
Type SJ2-SN (NC; log. 1)	< 1.2 mA	> 2.1 mA

Limit switch Limit 1 / Limit 2 with 24 V - microswitches

Terminals	41 / 42 / 43, 51 / 52 / 53
Supply voltage	maximum 24 V AC/DC
Load rating	Maximum 2 A

Wire cross-sectional areas

Basic device

Electrical connections	
4 to 20 mA input	Screw terminals max. 2.5 mm^2 (AWG14)
Options	Screw terminals max. 1.0 mm^2 (AWG18)

Cross section	
Rigid / flexible wires	0.14 to 2.5 mm^2 (AWG26 to AWG14)
Flexible with wire end sleeve no plastic sleeve	0.25 to 2.5 mm^2 (AWG23 to AWG14)
Flexible with wire end sleeve with plastic sleeve	0.25 to 1.5 mm^2 (AWG23 to AWG17)
	0.14 to 0.75 mm^2 (AWG26 to AWG20)

Multi-wire connection capacity (two wire with the same cross-section)	
Rigid / flexible wires	0.14 to 0.75 mm^2 (AWG26 to AWG20)
Flexible with wire end sleeve no plastic sleeve	0.25 to 0.75 mm^2 (AWG23 to AWG20)
Flexible with wire end sleeve with plastic sleeve	0.5 to 1.5 mm^2 (AWG21 to AWG17)

Option modules

Cross section	
Rigid / flexible wires	0.14 to 1.5 mm^2 (AWG26 to AWG17)
Flexible with wire end sleeve no plastic sleeve	0.25 to 1.5 mm^2 (AWG23 to AWG17)
Flexible with wire end sleeve with plastic sleeve	0.25 to 1.5 mm^2 (AWG23 to AWG17)

Multi-wire connection capacity (two wire with the same cross-section)	
Rigid / flexible wires	0.14 to 0.75 mm^2 (AWG26 to AWG20)
Flexible with wire end sleeve no plastic sleeve	0.25 to 0.5 mm^2 (AWG23 to AWG22)
Flexible with wire end sleeve with plastic sleeve	0.5 to 1 mm^2 (AWG21 to AWG18)

Limit switch with proximity switches or 24 V microswitches	
Rigid wire	0.14 to 1.5 mm^2 (AWG26 to AWG17)
Flexible wire	0.14 to 1.0 mm^2 (AWG26 to AWG18)
Flexible with wire end sleeve no plastic sleeve	0.25 to 0.5 mm^2 (AWG23 to AWG22)
Flexible with wire end sleeve with plastic sleeve	0.25 to 0.5 mm^2 (AWG23 to AWG22)

Dimensions

All dimensions in mm (in)

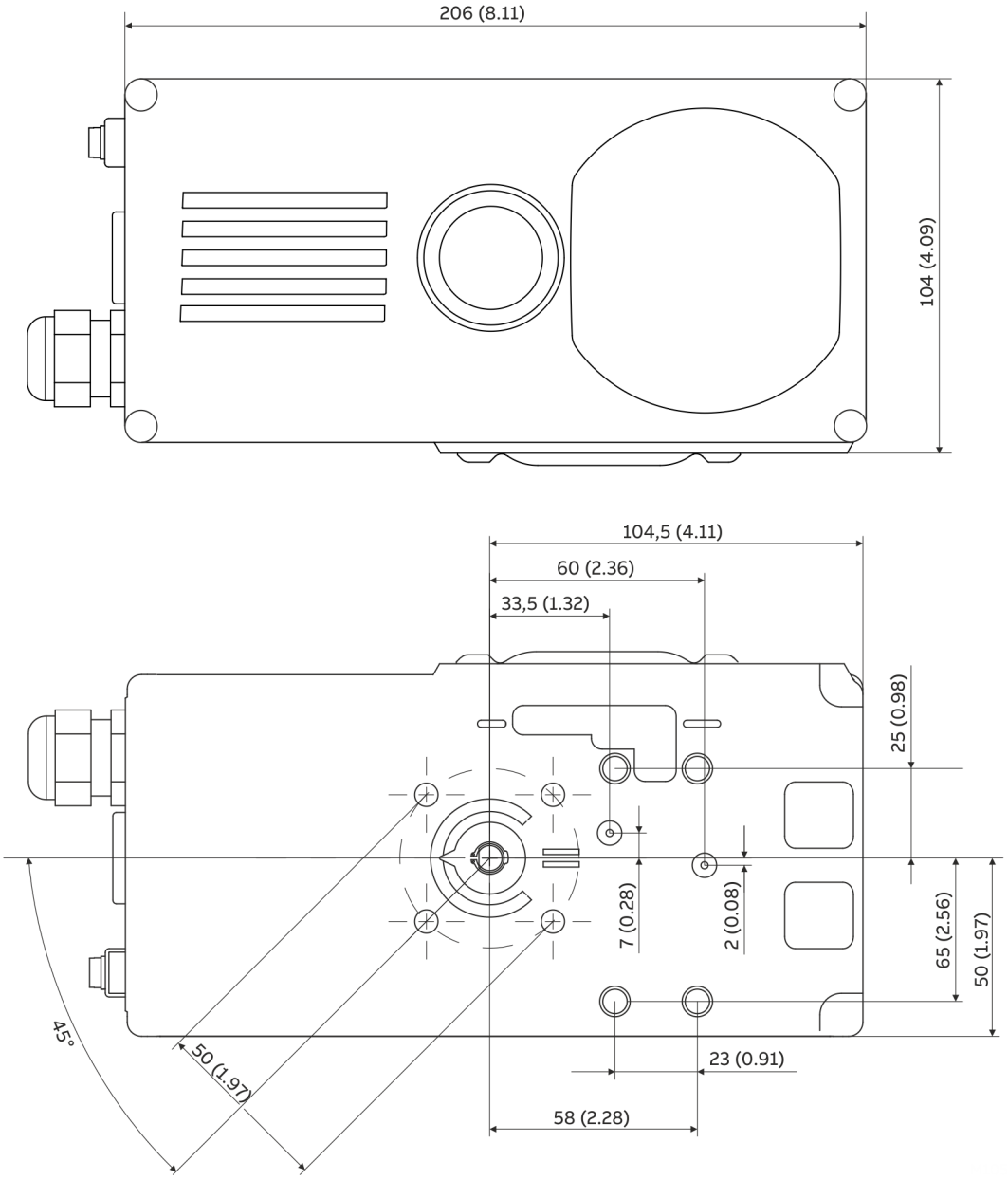


Figure 17: Front and rear views

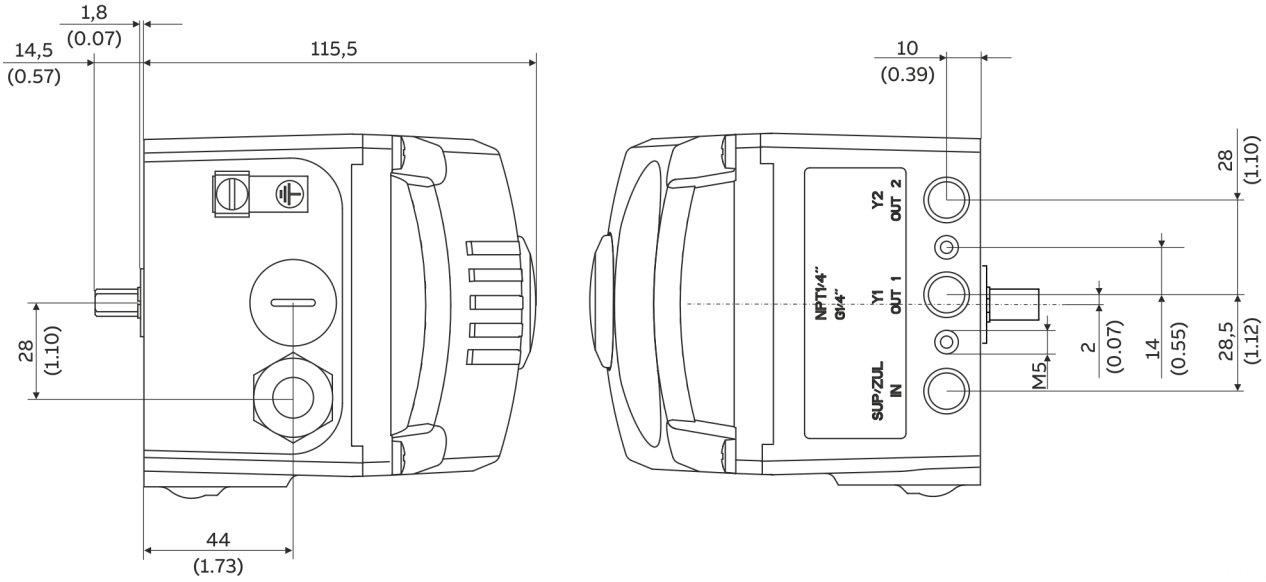


Figure 18: Side view (from left to right)

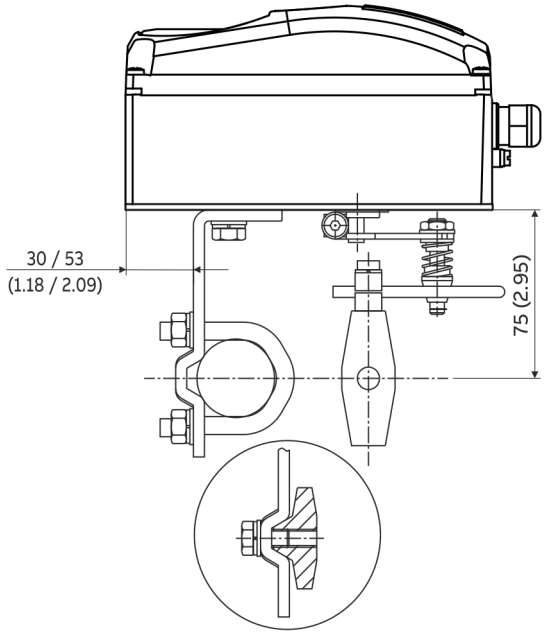
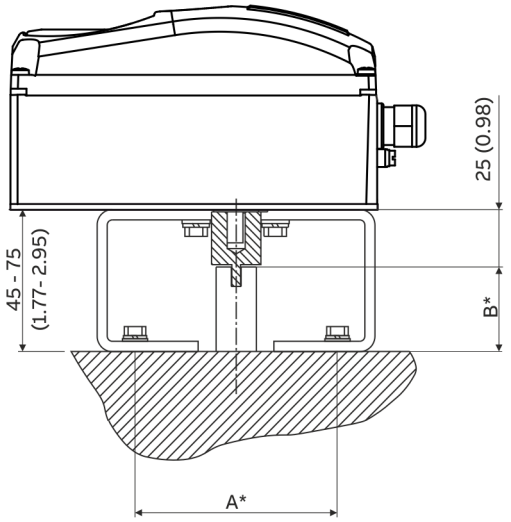


Figure 19: Mounting to linear actuators to DIN/IEC 534



* Dimensions A and B are dependent on the rotary actuator

Figure 20: Mounting to rotary actuators to VDI/VDE 3845

… Dimensions

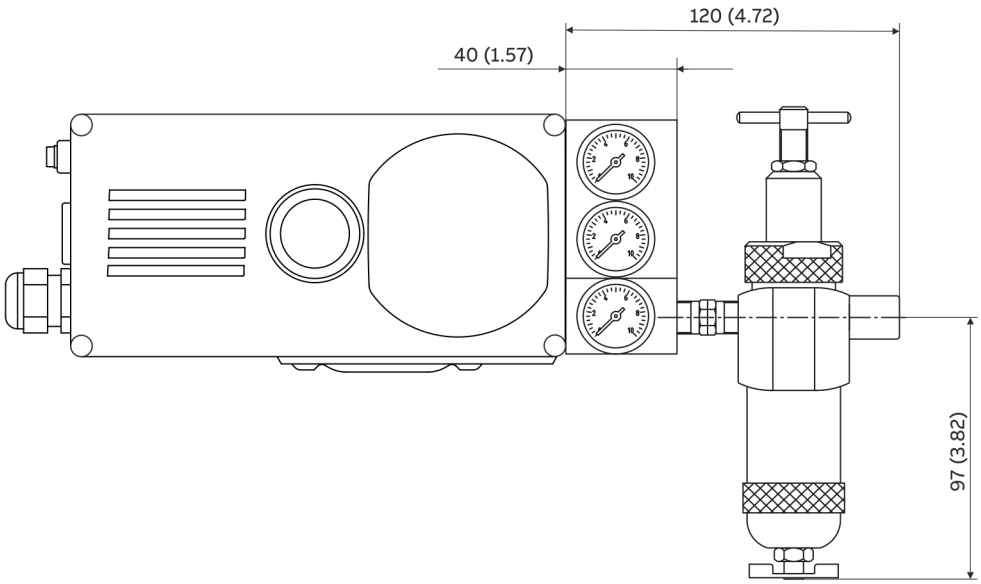


Figure 21: EDP300 positioner with pressure gauge block and filter regulator mounted

EDP300 Remote sensor dimensions (aluminum housing)

All dimensions in mm (in)

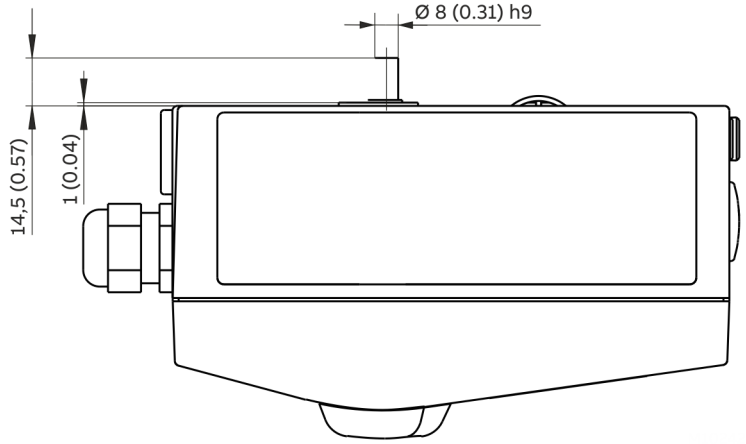
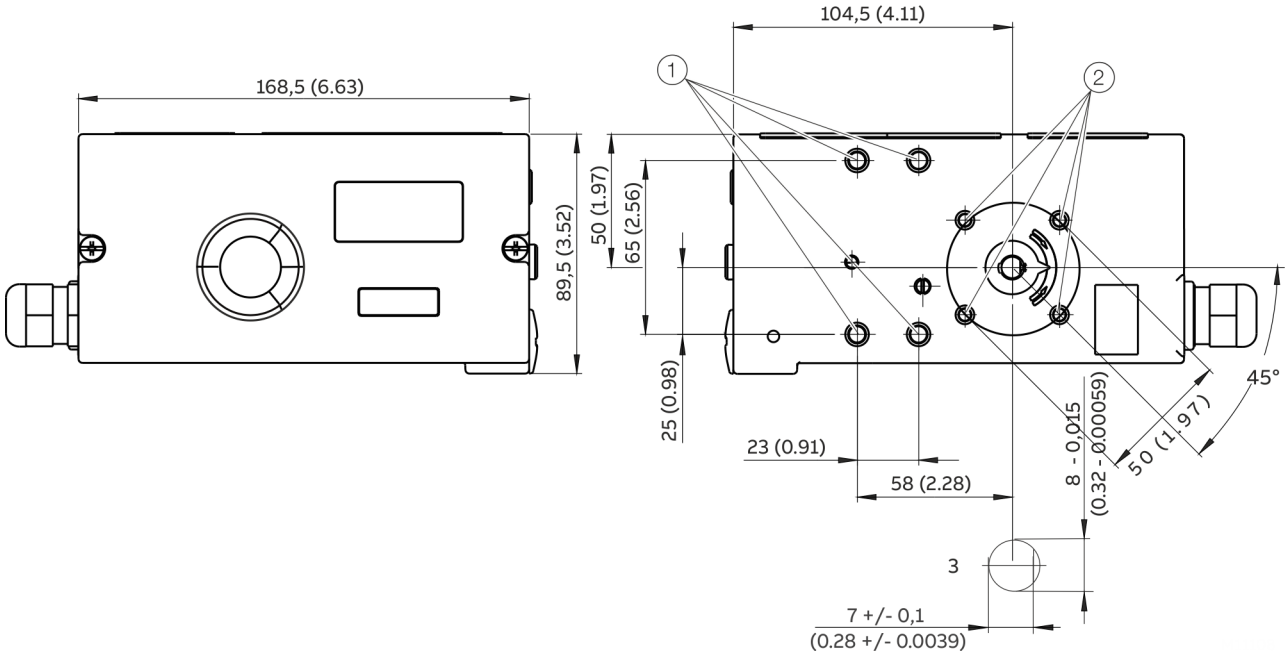


Figure 22: Top view



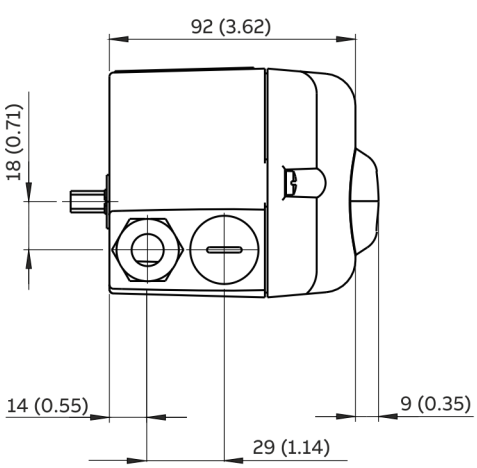
① Threaded hole M8 (10 mm [0.39 in] deep)

② Threaded hole M6 (8 mm deep [0.31 in])

③ Sensor shaft (shown enlarged)

Figure 23: Front and rear views

… Dimensions



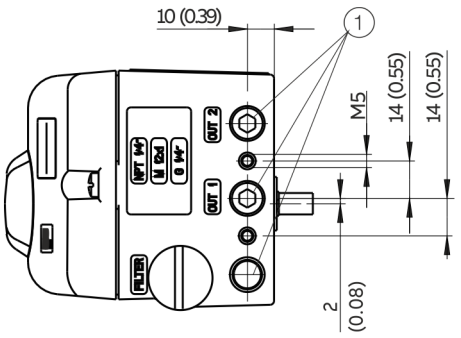


Figure 24: Side view (from left to right)

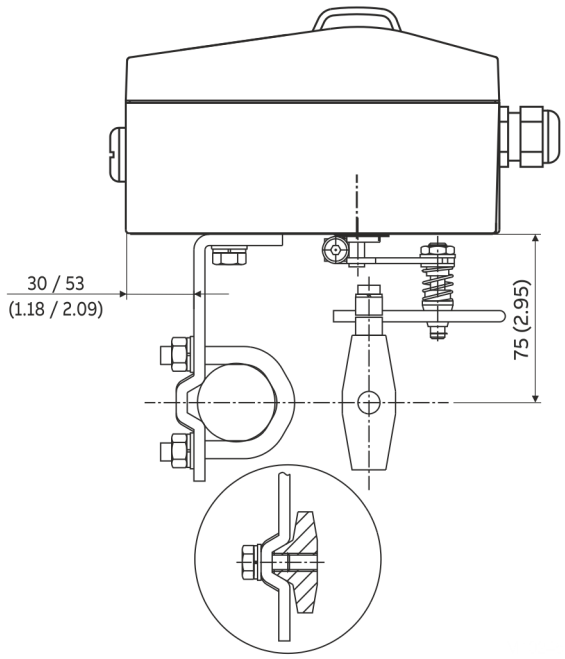
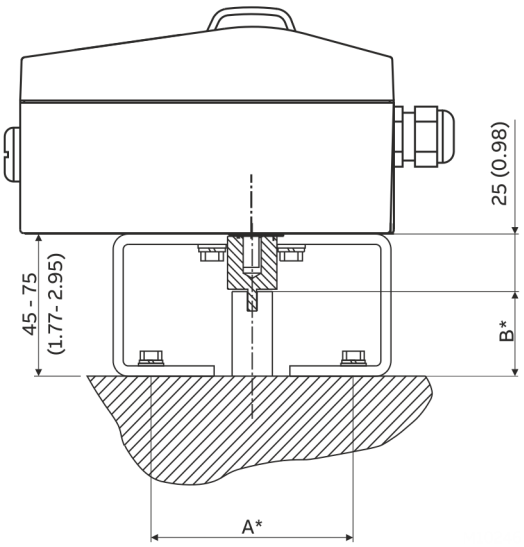


Figure 25: Mounting to linear actuators in accordance with DIN / IEC 534



* Dimensions A and B depend on the rotary actuator

Figure 26: Mounting on rotary actuators in accordance with VDI / VDE 3845

Use in potentially explosive atmospheres in accordance with ATEX and IECEx

Note
Further information on the Ex-Approval of devices can be found in the type examination certificates or the relevant certificates at www.abb.com/positioners.

Product identification

Depending on the type of explosion protection, an Ex name plate is attached next to the main name plate on the positioner.
This indicates the level of explosion protection and the device's relevant Ex certificate.

Ex marking

ATEX	
Type Examination Test Certificate	ZELM 11 ATEX 0456 X
II 1G Ex ia IIC T6 or T4 Ga II 1D Ex iaD IIIC T55°C or T100°C Da Ta = −40°C to 40°C or 85°C	
II 3G Ex nA IIC T6 or T4 Gc II 2D Ex tb IIIC T55°C or T100°C Db Ta = 40°C to 40°C or 80°C	

IECEx	
Type Examination Test Certificate	IECEx ZLM 11.0001 X
Ex ia IIC T6 or T4 Ga Ex iaD IIIC T55 °C or T100°C Da Ta = −40 ° to 40 ° or 85 °C	
Ex nA IIC T6 or T4 Gc Ex tb IIIC T55 °C or T100°C Db Ta = −40 ° to 40 ° or 80 °C	

EAC TR-CU-012
Ex ia IIC T4/T6 Ga X
Ex ia IIIC T100°C/T55°C Da IP65
EX nA IIC T4/T6 Gc X
Ex tb IIIC T100°C/T55°C Db IP65

Mounting

The installation, commissioning, maintenance and repair of devices in potentially explosive atmospheres must only be carried out by appropriately trained personnel. Works may be carried out only by persons, whose training has included instructions on different types of protection and installation techniques, concerned rules and regulations as well as general principles of zoning. The person must possess the appropriate competences for the type of work to be conducted.
When operating with combustible dusts, comply with EN 60079-31.
The safety instructions for electrical apparatus in potentially explosive areas must be in accordance with Directive 2014/34/EU (ATEX) and IEC 60079-14 (Installation of electrical equipment in potentially explosive areas).
Comply with the applicable regulations for the protection of employees to ensure safe operation.

Note
Observe the device's applicable specifications and special conditions in accordance with the type examination certificate or other certificates!

- Any manipulation in the device by users is not permitted. Only the manufacturer or an explosion protection specialist may modify the device
- The device may only be operated using instrument air that is free from oil, water and dust.

… Use in potentially explosive atmospheres in accordance with ATEX and IECEx

Cable gland
Limited temperature range of the M20 × 1.5 plastic cable gland for explosion protection variants.
The permissible ambient temperature range of the cable gland is −20 to 80 °C (−4 to 176 °F). When using the cable gland, make sure that the ambient temperature is within this range. The cable gland must be installed in the housing with a tightening torque of 3.8 Nm. When installing the connection of the cable gland and cable, check for tightness to ensure that the required IP rating is met.

Operation with flammable gases
Observe the following points when operating a device with flammable gases:

- The device must be used in accordance with the specifications in the relevant certificate.
- Only the design with the 'Intrinsic Safety' type of protection may be used for operation with natural gas. The pneumatic outputs must be vented in non-Ex areas.
- The maximum ambient temperature may not up-scale 60 °C (140 °F).
- During operation with flammable gases in type of protection 'Ex n', the device may only be operated with approved cable glands.
- During operation with flammable gases, the cover cap for the air outlets can be removed, and the air outlets can be tubed separately. Both pipes must not be joined in one pipe.

Operation in areas with combustible dust
Observe the following points when operating a device with combustible dust:

- To prevent loss of type of protection, the housing must not be opened.
- Only use cable glands which are approved for the type of protection and correspond to IP rating ≥ IP 6X.
- Danger due to propagating brush discharge must be avoided.

Operation in temperature class T6
During operation in temperature class T6, when the equipment is partially or fully depressurized, ensure that there is no possibility of a hazardous atmosphere getting into the pneumatic system or that any hazardous atmosphere is removed prior to compression by taking suitable action.
When commissioning in temperature class T6, flush the pneumatic system by applying 1.4 (+/- 0.1) bar until all traces of any explosive mixture have been removed, yet for at least 5 minutes. Ventilate and evacuate the EDP300 fully several times.

ATEX and IECEx temperature data

Type of protection Ex i, intrinsic safety

Temperature class	Ambient temperature	Surface temperature
T4	−40 to 85 °C (−40 to 185 °F)	100 °C (212 °F)
T6	−40 to 40 °C (−40 to 104 °F)	55° C (131 °F)

Type of protection Ex n - non-sparking

Temperature class	Ambient temperature	Surface temperature
T4	−40 to 80 °C (−40 to 176 °F)	100 °C (212 °F)
T6	−40 to 40 °C (−40 to 104 °F)	55° C (131 °F)

ATEX und IECEx electrical data

Type of protection Ex i, intrinsic safety Basic device

Signal circuit (AI)	
Terminals	+11 / −12
Temperature class T1 – T4	**Temperature class T6**
U_i = 30 V	U_i = 28 V
I_i = 320 mA	I_i = 320 mA
P_i = 1.1 W	P_i = 0.8 W
C_i = 6.5 nF without pressure option; 8.8 nF with pressure option	
L_i = negligibly small	

Digital input (DI)	
Terminals	+81 / −82
Temperature class T1 – T4	**Temperature class T6**
U_i = 30 V	U_i = 28 V
P_i = 500 mW	P_i = 400 mW
C_i = 4.2 nF	
L_i = negligibly small	

Digital output (DO)	
Terminals	+83 / −84
Temperature class T1 – T4	**Temperature class T6**
U_i = 30 V	U_i = 28 V
P_i = 500 mW	P_i = 400 mW
C_i = 4.2 nF	
L_i = negligibly small	

Option modules

Module for the emergency shutdown function
Terminals +85 / −86
Temperature class T1 – T6
U_i = 30 V
P_i = 1 W
C_i = 5.3 nF
L_i = negligibly small

… Use in potentially explosive atmospheres in accordance with ATEX and IECEx

Module for analog feedback (AO)	
Terminals	+31 / −32
Temperature class T1 – T4	**Temperature class T6**
U_i = 30 V	U_i = 28 V
I_i = 320 mA	I_i = 320 mA
P_i = 1 W	P_i = 0.8 W
C_i = 11.3 nF	
L_i = 150 µH	

Module for universal input (UAI)	
Terminals	+21 / −22
Temperature class T1 – T4	**Temperature class T6**
U_i = 30 V	U_i = 28 V
I_i = 320 mA	I_i = 320 mA
P_i = 1 W	P_i = 0.8 W
C_i = 11.3 nF	
L_i = 150 µH	

Module for digital feedback (SW1 / SW2)	
Terminals	SW 1: +41 / −42
	SW 2: +51 / −52
Temperature class T1 – T4	**Temperature class T6**
Per output:	Per output:
U_i = 30 V	U_i = 28 V
P_i = 0.5 W	P_i = 0.4 W
I_i = 250 mA	
C_i = 2.2 nF per output	
L_i = negligibly small	

Limit switch (Limit 1 / Limit 2)	
Limit monitor with proximity switches	
Terminals	Limit 1: +51 / −52
	Limit 2: +41 / −42
Temperature class T1 – T4	**Temperature class T6**
In accordance with type examination certificate PTB 00 ATEX 2049X	

* No IECEx approval

Type of protection Ex n - non-sparking

Basic device

Signal circuit (AI)	
Terminals	+11 / −12
Electrical values	$I_N \leq 22$ mA; $U_{max} \leq 30$ V

Digital input (DI)	
Terminals	+81 / −82
Electrical values	$U_N \leq 30$ V

Digital output (DO)	
Terminals	+83 / −84
Electrical values	$U_N \leq 30$ V

Option modules

Module for the emergency shutdown function	
Terminals	+85 / −86
Electrical values	$U_N \leq 30$ V

Module for analog feedback (AO)	
Terminals	+31 / −32
Electrical values	$I_N \leq 22$ mA; $U_N \leq 30$ V

Module for universal input (UAI)	
Terminals	+21 / −22
Electrical values	$I_N \leq 22$ mA; $U_{max} \leq 30$ V

Module for digital feedback (SW1 / SW2)	
Terminals	SW 1: +41 / −42
	SW 2: +51 / −52
Electrical values	Per output: $U_N \leq 30$ V

Limit switch (Limit 1 / Limit 2)	
Limit monitor with proximity switches	
Terminals	Limit 1: +51 / −52
	Limit 2: +41 / −42
Electrical values	Per output: $I_N \leq 25$ mA; $U_N \leq 16$ V

* No IECEx approval

Use in potentially explosive atmospheres in accordance with FM and CSA

Note
Further information on the Ex-Approval of devices can be found in the type examination certificates or the relevant certificates at www.abb.com/positioners.

Product identification

Depending on the type of explosion protection, an Ex name plate is attached next to the main name plate on the positioner.
This indicates the level of explosion protection and the device's relevant Ex certificate.

Ex marking

FM	
FM Approval	3043773
Control drawing	901305
IS, CL. I, Div. 1, Gr. A, B, C, D, T4 or T6	
IS, CL. II, Div. 1, Gr. E, F, G, T4 or T6	
IS, CL. III, Div. 1, T4 or T6	
Class I Zone 0, AEx ia IIC, T4 or T6	
NI, Cl. I, Div. 2, Gr. A, B, C, D, T4 or T6	
NI. Cl. II, Div. 2, Gr. E, F, G, T4 or T6	
NI, Cl. III, Div. 2, T4 or T6	
Class I Zone 2, IIC T4 or T6	
T4 Ta=(−40 to +85) °C; (−40 to +185) °F	
T6 Ta=(−40 to +40) °C; (−40 to +104) °F	
Type 4X	

CSA	
Certificate	2419437
Control drawing	901305
CL I, Div. 1, Gr. A, B, C, D, T4 or T6	
CL II, Div. 1, Gr. E, F, G, T4 or T6	
CL III, Div. 1	
Class I Zone 0, AEx ia IIC T4 or T6	
CL I, Div. 2, Gr. A, B, C, D, T4 or T6	
CL II, Div. 2, Gr. E, F, G, T4 or T6	
CL III, Div. 2, T4 or T6	
Class I Zone 2, AEx nA IIC, T4 or T6	
T4 Ta=(−40 to +85) °C; (−40 to +185) °F	
T6 Ta=(−40 to +40) °C; (−40 to +104) °F	
IP64	

Mounting

The installation, commissioning, maintenance and repair of devices in areas with explosion hazard must only be carried out by appropriately trained personnel.
The operator must strictly observe the applicable national regulations with regard to installation, function tests, repairs, and maintenance of electrical devices. (e. g. NEC, CEC).

Note
Observe the device's applicable specifications and special conditions in accordance with the relevant certificate.

- Any manipulation in the device by users is not permitted. Only the manufacturer or an explosion protection specialist may modify the device
- The device may only be operated using instrument air that is free from oil, water and dust.

… Use in potentially explosive atmospheres in accordance with FM and CSA

Cable gland
Limited temperature range of the M20 × 1.5 plastic cable gland for explosion protection variants.
The permissible ambient temperature range of the cable gland is −20 to 80 °C (−4 to 176 °F). When using the cable gland, make sure that the ambient temperature is within this range. The cable gland must be installed in the housing with a tightening torque of 3.8 Nm. When installing the connection of the cable gland and cable, check for tightness to ensure that the required IP rating is met.

Operation with flammable gases
Observe the following points when operating a device with flammable gases:

- The device must be used in accordance with the specifications in the relevant certificate.
- Only the design with the IS 'Intrinsic Safety ' type of protection may be operated with natural gas. The pneumatic outputs must be vented in non-hazardous areas.
- During operation with flammable gases, the cover cap for the air outlets must be removed and the air outlets tubed separately. Both pipes must not be joined in one pipe.
- The maximum ambient temperature must not up-scale 60 °C (140 °F).

See also **Control Drawing 901305**.

Operation in areas with combustible dust
Observe the following points when operating a device with combustible dust:

- To prevent loss of type of protection, the housing must not be opened.
- Only use cable glands which are approved for the type of protection and correspond to IP rating ≥ IP 6X.
- Danger due to propagating brush discharge must be avoided.

Operation in temperature class T6
During operation in temperature class T6, when the equipment is partially or fully depressurized, ensure that there is no possibility of an explosive atmosphere getting into the pneumatic system or that any explosive atmosphere is removed prior to compression by taking suitable action. When commissioning in temperature class T6, flush the pneumatic system by applying 1.4 (+/- 0.1) bar until all traces of any explosive mixture have been removed, yet for at least 5 minutes. Ventilate and evacuate the EDP300 fully several times.

Temperature data

Note
Legibility of the display is guaranteed at an ambient temperature of −20 to 70 °C. At 20 °C and lower, legibility can become limited. Legibility can be compensated by adjusting contrast. Contrast adjustment can be made manually directly on the device.
The display can fail at temperatures below −20 °C. Moreover, functioning of the device is guaranteed up to −40 °C.

FM	
Temperature class	**Ambient temperature T_{amb}**
T1 to T4	−40 °C to 85 °C
T6	−40 °C to 40 °C

CSA	
Temperature class	**Ambient temperature T_{amb}**
T4	−40 °C to 85 °C
T6	−40 °C to 40 °C

Electrical data

Basic device

Signal circuit (AI)	
Terminals	+11 / −12
Temperature class T1 – T4	**Temperature class T6**
U_i = 30 V	U_i = 28 V
I_i = 320 mA	I_i = 320 mA
P_i = 1.1 W	P_i = 0.8 W
C_i = 6.5 nF without pressure option; 8.8 nF with pressure option	
L_i = negligibly small	

Digital input (DI)	
Terminals	+81 / −82
Temperature class T1 – T4	**Temperature class T6**
U_i = 30 V	U_i = 28 V
P_i = 500 mW	P_i = 400 mW
C_i = 4.2 nF	
L_i = negligibly small	

Digital output (DO)	
Terminals	+83 / −84
Temperature class T1 – T4	**Temperature class T6**
U_i = 30 V	U_i = 28 V
P_i = 500 mW	P_i = 400 mW
C_i = 4.2 nF	
L_i = negligibly small	

Option modules

Module for the emergency shutdown function	
Terminals	+85 / −86
Temperature class T1 – T6	
U_i = 30 V	
P_i = 1 W	
C_i = 5.3 nF	
L_i = negligibly small	

Module for analog feedback (AO)	
Terminals	+31 / −32
Temperature class T1 – T4	**Temperature class T6**
U_i = 30 V	U_i = 28 V
I_i = 320 mA	I_i = 320 mA
P_i = 1 W	P_i = 0.8 W
C_i = 11.3 nF	
L_i = 150 µH	

Module for universal input (UAI)	
Terminals	+21 / −22
Temperature class T1 – T4	**Temperature class T6**
U_i = 30 V	U_i = 28 V
I_i = 320 mA	I_i = 320 mA
P_i = 1 W	P_i = 0.8 W
C_i = 11.3 nF	
L_i = 150 µH	

Module for digital feedback (SW1 / SW2)	
Terminals	SW 1: +41 / −42 SW 2: +51 / −52
Temperature class T1 – T4	**Temperature class T6**
Per output:	Per output:
U_i = 30 V	U_i = 28 V
P_i = 0.5 W	P_i = 0.4 W
I_i = 250 mA	
C_i = 2.2 nF per output	
L_i = negligibly small	

Limit switch (Limit 1 / Limit 2) **Limit monitor with proximity switches**	
Terminals	Limit 1: +51 / −52 Limit 2: +41 / −42
Temperature class T1 – T4	**Temperature class T6**
−25 to 85 °C	−25°C to 40°C

* No IECEx approval

Ordering Information

Main ordering information PositionMaster EDP300 digital positioner

Base model	**EDP300**	**XX**	**X**	**X**	**X**	**X**	**X**
PositionMaster EDP300 digital positioner							
Explosion Protection Certification							
Without		Y0					
ATEX II 1G Ex ia IIC / II 1D Ex ia IIIC		A1					
ATEX II 3G Ex nA IIC / II 2D Ex tb IIIC		B1					
FM / CSA Intrinsically Safe Class I, II, III Div. 1 Groups A, B, C, D, E, F, G		F1					
IEC ExEx ia IIC Ga / Ex ia IIIC Da		M1					
IEC ExEx nA IIC Gc / Ex tb IIIC Db		N1					
EAC TR-CU-012 Ex ia IIC T4/T6 Ga X		P1					
EAC TR-CU-012 Ex ia IIIC T100°C/T55 °C DA IP 65		P2					
EAC TR-CU-012 Ex nA IIC T4/T& Gc X		P3					
EAC TR-CU-012 Ex tb IIIC T100 °C/T55 °C Db IP 65		P4					
NEPSI China - Ex ia II C T6 (on request)		S1					
Input Signal / Communication Port							
4 to 20 mA			A				
HART digital communication and 4 to 20 mA			H				
Pneumatic Output Type							
Single acting				1			
Double acting				2			
Safe Position							
Fail-safe					S		
Fail-freeze					F		
Air Pipe Connection							
Thread G ¼ female						1	
Thread ¼ in -18 NPT female						2*	
Cable Conduits							
M20 × 1.5 with cable gland							A
NPT ½ in with cable gland							B
Thread M20 × 1.5 female							C
Thread NPT ½ in female							D*

* Needed for FM / CSA certification

Additional ordering information

PositionMaster EDP300 digital positioner	**XX**	**XX**	**XX**	**XX**	**XX**	**XX**	**XX**	**XX**	**XX**	**XX**
Option Module Slot 1										
Analog feedback output	A1									
Digital feedback output	A2									
Analog universal input	A3									
Option Module Slot 2										
Analog feedback output		B1								
Digital feedback output		B2								
Analog universal input		B3								
Emergency shutdown module		B4								
Option, Air Power										
50kg/h			L5							
Usage Certifications										
Inspection certificate 2.1 acc. EN 10204, Declaration of Conformity				C4						
Inspection certificate 2.1 acc. EN 10204, Declaration of Conformity, with description				CP						
Test report 2.2 acc. EN 10204				C5						
Ships Register Certifications DNV_GL				CM						
Inspection Certificate 3.1 acc. EN 10204, with maximum deviation				C6						
SIL 2 - Declaration of Conformity				CS**						
Handling of Certificates										
Send via e-mail					GHE					
Send via mail					GHP					
Send via mail express					GHD					
Send with instrument					GHA					
Only archived					GHS					
Certificate preparation										
per device						GPD				
per salesorder item						GPP				
Position Indicator										
Visual Indicator, integrated into cover							D1			
Limit Switches										
Microswitches								F1**		
Proximity switches (NC) SJ2-SN								F2***		
Housing Material										
Stainless steel									H1	
Position Sensor Type										
With integrated (contactless) position sensor										K1
Control Unit for remote position sensor										K2**

* With single acting, fail safe pneumatic only

** Not for Ex-versions

*** Not for IECEx-versions

… Ordering Information

Additional ordering information	**XX**	**XX**	**XX**	**XX**
Documentation Language				
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			
Crotian	MH			
Latvian	ML			
Hungarian	MM			
Estonian	MO			
Bulgarian	MP			
Romanian	MR			
Slovak	MS			
Lithuanian	MU			
Slovenian	MV			
Special Applications				
Operation with natural gas		P8*		
With noise reduction		P9		
Type of pressure gauge block				
0 to 1 MPa (0 to 10 bar, 0 to 145 psi)			R3	
Diagnosis Module				
Pressure sensors				S3

* Only with Explosion protection

Additional ordering information	**XX**	**XX**	**XX**	**XX**	**XX**	**XX**	**XX**
Additional TAG Plate							
Stainless steel 18.5 mm × 65 mm (0.73 in × 2.5 in)	T1						
Sticker 11 mm × 25 mm (0.44 in × 1 in)	T3*						
Mounting Options							
Prepared for integral mounting		V1					
Remote Sensor							
Basic unit			RS				
Remote Sensor Temperature Range							
Extended ambient temperature range −40 bis 100 °C (−40 bis 212 °F)				RT			
Remote Sensor Vibration Resistance							
Advanced vibration range 2 g @ 300 Hz					RV		
Remote Sensor Protection Class							
Protection class IP 66						RP	
Remote Sensor Cable							
5 m cable enclosed							R5
10 m cable enclosed							R6

* Not for Ex-versions

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
Mounting Kit	
EDP300 / TZIDC Mounting Kit Uhde Type 4 Stroke 400 mm cropped	7959500
Attachment kit for linear actuators	
EDP300 / TZIDC Attachment kit for linear actuators, stroke 10 to 35 mm	7959125
EDP300 / TZIDC Attachment kit for linear actuators, stroke 20 to 100 mm	7959126
Lever	
EDP300 / TZIDC Lever 30 mm	7959151
EDP300 / TZIDC Lever 100 mm	7959152

… Ordering Information

Accessories	Order number
Adapter	
EDP300 / TZIDC Adapter (shaft coupler) for rotary actuators (mounting to VDI / VDE 3845)	7959110
EDP300 / TZIDC Form – locking shaft adapter	7959371
Attachment kit	
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 to 30 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 to 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 to 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 Attachment for remote sensor control unit (for wall or pipe mounting)	7959381

Trademarks

HART is a registered trademark of FieldComm Group, Austin, Texas, USA

Sales **Service**

Castel Maggiore (BO) 40013
Via Lirone 60/i

e-mail: info@eurotecsrl.com
Tel: +39 051/6321595
Website: www.eurotecsrl.com

C.F.: 04103780377
P.I.: 01596581205

ABB Limited
Measurement & Analytics
Howard Road, St. Neots
Cambridgeshire, PE19 8EU
UK
Tel: +44 (0)870 600 6122
Fax: +44 (0)1480 213 339
Email: enquiries.mp.uk@gb.abb.com

ABB Inc.
Measurement & Analytics
125 E. County Line Road
Warminster, PA 18974
USA
Tel: +1 215 674 6000
Fax: +1 215 674 7183

ABB Automation Products GmbH
Measurement & Analytics
Schillerstr. 72
32425 Minden
Germany
Tel: +49 571 830-0
Fax: +49 571 830-1806

abb.com/positioners

We reserve the right to make technical changes or modify the contents of this document without prior notice. With regard to purchase orders, the agreed particulars shall prevail.
ABB does not accept any responsibility whatsoever for potential errors or possible lack of information in this document.

We reserve all rights in this document and in the subject matter and illustrations contained therein. Any reproduction, disclosure to third parties or utilization of its contents – in whole or in parts – is forbidden without prior written consent of ABB.

© ABB 2020

3KXE341010R1001

DS/EDP300-EN Rev. D 01.2020