10/18-0.25 EN



- Convenient, simple design
- Easy to handle
- User-friendly operation, easy to understand
- Reliable concept, I/P conversion through the 500,000 times field-proven module known from TEIP 11 signal converters
- Influence of shock and vibration <1% with a load of up to 10 g and frequencies between 20 and 80 HZ
- Mechanical position indicator,
- Wide operating temperature range, 40 to + 85 °C
- Output range 0 ... 20 or 4 ... 20 mA or split ranges
- Explosion protetion certificate, CENELEC FM CSA, intrinsically safe

- Robust case suitable for field/outdoor mounting, IP 65
- Stable control loop through continuous modulation of the output and through adjustable control parameters
- Attachment to linear or rotary actutators in accordance with the standard
- Complies with the directives for EMC and CE conformity
- Optional pressure gage block and filter regulator



Construction and mode of operation

The concept

The design goal was to develop an especially economic device with high operational reliability and robustness for use with pneumatic actuators.

This goal could be achieved in an optimal way by using the I/P module of the TEIP 11 signal converter. This module enabled the development of a simple, easy to understand and easy to handle device. The high operational reliability and the immunity to shock and vibration already known from the 500,000 times field-proven TEIP 11 module could be passed on to the TZIM positioner.

The function

The TZIM positioner uses the force balancing principle. Force balancing takes place at the I/P module balance arm. The forces applied to the balance arm result from both the 0/4....20 mA input signal and from mechanical position feedback.

The input signal generates a magnetic field through the coil and yoke. The magnetic force is applied to the magnet at the end of the balance arm. The counter-force is applied through a rotating movement at the tension band bearing of the balance arm. This is done through mechanical pick-up of the actuator position. If an imbalance occurs, air is either filled in or vented from the actuator through a nozzle control and a pneumatic amplifier. The only external energy required is compressed air. Electric power is derived from the input signal.

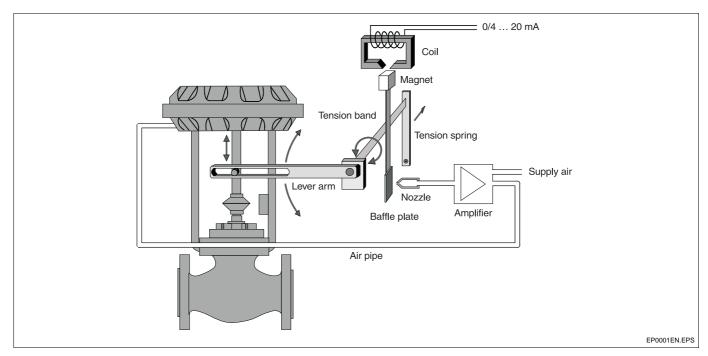


Fig. 1 TZIM schematic diagram

Matching to operating conditions

Adaptation of the positioner to the operating conditions is achieved in parts through the factory setting and in parts through adjustment while the positioner is being mounted to the actuator.

Adaptation through factory setting

Signal range: 0 ... 20 or 4 ... 20 mA

Valve action: Direct (input 0/4 ... 20 mA)

Reverse (input 20 ... 4/0 mA) (with increasing pressure in actuator)

Output: Single or double acting

Adaptation while mounting to actuator

Signal range: Split range 4 ... 12 or 12 ... 20 mA

or 0 ... 10 or 10 ... 20 mA

Stroke movement: Adjustment screws

for zero and span

Effective direction: Direct = feedback turning clockwise

Reverse= feedback turning ctclockw. (with increasing pressure in the actuator)

Control parameters: Adjustment screws for gain (Kp)

and air capacity

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Construction and mode of operation

Mounting

To linear actuators in accordance with the standard

Lateral attachment is in accordance with DIN/IEC 534 (lateral attachment to Namur). The attachment kit is a complete set of required attachment material, except for pipe connections and air pipes.

To rotary actuators in accordance with the standard

Attachment to rotary actuators is in accordance with VDI/VDE 3845. The desired angle of rotation of either 60 ° or 90 ° can be selected by using the appropriate cam. The attachment kit contains the adapter for coupling the positioner feedback shaft to the actuator shaft, and a mounting bracket for mounting the positioner to the actuator. Pipe connections and air pipes are not included in the kit and have to be provided by the customer.

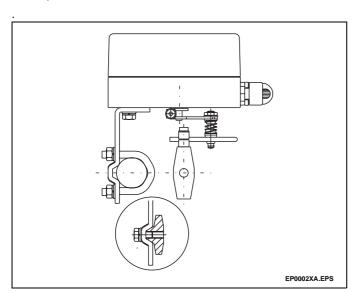


Fig. 2 Mounting to linear actuators to DIN/IEC 534

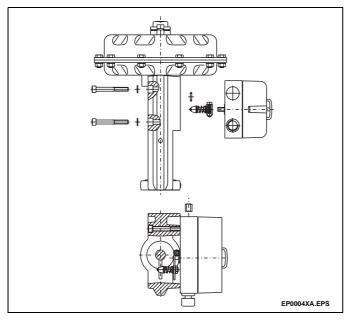


Fig. 3 Integral mounting to 23/24 + 23/25 control valves

Integral mounting to 23/24, 23/25 + 23 /26 control valves

The actuators of 23/24, 23/25 + 23/26 control valves have been prepared for special attachment of the positioner. The benefits of this design are that, on one hand, the point for mechanical stroke measurement is inside the yoke and, thus, protected by it, and, on the other hand, no external tubing is required, since the air flow from the positioner to the actuator is guided through an internal channel bore.

Special actuator-specific mounting

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

Please contact us for details.

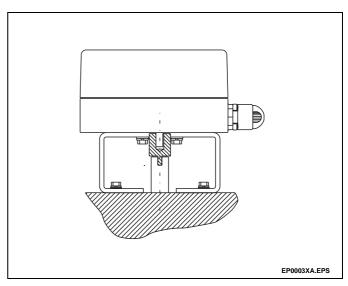


Fig. 4 Mounting to rotary actuators to VDI/VDE 3845

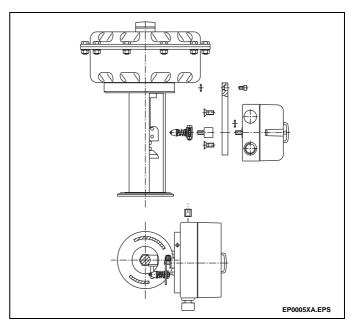


Fig. 5 Integral mounting to 23/26 control valves

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Technical data

Input

Signal range

0 ... 20 mA, 4 ... 20 mA or split ranges

Overload capacity

30 mA (see certificate for explosion-proof devices)

Input resistance

< 260 ohms at 20 °C (T_k = +0.4 % / K)

Output

Control pressure range

0 ... supply pressure (1.4 ... 6 bar / 20 ... 90 psi)

Air capacity

At supply pressure of 1.4 bar (20 psi) 3.5 kg/h = 2.8 Nm³/h = 1.8 scfm At supply pressure of 6 bar (90 psi) 14 kg/h = 11 Nm³/h = 7 scfm

(Booster, increases air capacity, available on request)

Function

For single-acting actuators or for double-acting actuators

Effective direction

Direct: Position feedback turning clockwise
Reverse: Position feedback turning counterclockwise
(with increasing pressure in the actuators)

Travel

Stroke of linear actuator

10 ... 100 mm

Angle of rotation of rotary actuator

60 ° or 90 °

Air supply

Instrument air

Free of oil, water and dust to DIN/ISO 8573-1 Pollution and oil contents according to Class 3 Dew point 10 K below operating temperature

Supply pressure

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

Caution: Do not exceed the max. operating pressure of the

actuator!

Air consumption

 $< 0.4 \text{ Nm}^3/\text{h}$

(at 1.4 bar air supply and gain Kp 100)

Transmission data and influences

Valve action

Direct: Signal range 0/4 ... 20 mA Reverse: Signal range 20 ... 4/0 mA (with increasing pressure in the actuator)

Characteristic curve (travel = $f \{positioning signal\}$)

Linear

Characteristic deviation Typically 1.5 % Hysteresis

≤ 0.5 %

Threshold

Gain

≤ 0.1 %

Kp 25 ... 200, adjustable

Influence of ambient temperature

≤ 1 % for every 10 K change in temperature

Air supply

≤ 0.3 % / 0.1 bar supply pressure

Influence of vibration

≤ 1 % up to 10 g and 20 ... 80 Hz

Seismic requirements

Meets requirements to DIN/IEC 68-3-3 class III for strong and

strongest earthquakes

Influence of mounting orientation

≤ 0.5 %

EMC

Complies with EMC directive 89/336/EEC as of May 1989

CE conformity

Complies with the EC directive for the CE conformity certificate

Environmental capabilities

Climate class

GPF to DIN 40040

Ambient temperature

-40 to +85 °C (-40 to +185 °F)

for operation, storage and transport

Relative humidity

<75% (for a short time 95%), non-condensing

Explosion protection

CENELEC "intrinsically safe"

EEx ia IIC T4/T5/T6, PTB No. Ex-93.C.2104X

Other approvals on request

e.g. FM and CSA approval for "intrinsically safe"

Case

Material

Aluminum base plate with plastic cap, IP 65

Case varnished black, RAL 9005 Cap varnished light gray, RAL 9002

Connections

Electrical: Screw terminal for 2.5 mm²

and Pg 13.5 cable gland

or 1/2 NPT thread

Pneumatic: G 1/4 or 1/4 NPT threads

Weight

Approx. 1.5 kg Dimensions

See dimensional drawings

Accessories

Attachment material

For linear actuators to DIN/IEC 534, (lateral attachment to Namur)

For rotary actuators to VDI/VDE 3845, angle of rotation 60 ° or 90 °

For integral mounting to 23,24, 23/25 + 23/26 control valves

For special actuator-specific mounting, upon request

Pressure gages for supply pressure and output pressure

Pressure gage block with pressure gages, consisting of: Aluminum connection block, varnished black, Pressure gage with black plastic case Ø 28 mm and attachment material for mounting to the positioner

Filter regulator

All-metal (brass), varnished

Bronze filter element, 40 µm, with condensate drain, Max. pre-pressure 16 bar, output adjustable to 1.4 ... 6 bar

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Catalog No TZIM Positioner, electro-pneumatic Case / Mounting Aluminium/plastic case, protection IP 65 with mechanical position indicator for mounting to linear or rotary actuators for actuator-specific mounting (upon request) *Coding acc. to special device specification Note: For attachment according to standard additional mounting material as listed in chapter "accessories" is required. Attachment can be carried out to linear actuators according to DIN/IEC 534, to rotary actuators according to VDIV/DE 3845 and as integrated version to control valves 23/24, 23/25 and 23/26. Explosion protection certificate without CENELEC EEx ia IIC (explosion protection certificate acc. to special agreement upon request) Input / Valve action 4 20 mA, direct action (with increasing pressure in the actuator) 4 20 mA, direct action (with increasing pressure in the actuator) 5 20 mA, reverse action (with increasing pressure in the actuator) 6 20 mA, reverse action (with increasing pressure in the actuator) Characteristic curve Linear (other characteristics on request) Output Single-acting Double-acting Cable: Thread Pg. 13.5 Air pipe: Thread G1/4 Cable: Thread Pg. 13.5 Air pipe: Thread 1/4-18 NPT 2	Ordering information											
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O 20 mA, reverse action (with increasing pressure in the actuator) Characteristic curve Linear (other characteristics on request) 1 Output Single-acting Double-acting Connections Cable: Thread Pg. 13.5 Air pipe: Thread G 1/4 Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT	, , , , , , , , , , , , , , , , , , , ,											
Characteristic curve Linear (other characteristics on request) Output Single-acting Double-acting Connections Cable: Thread Pg. 13.5 Air pipe: Thread G 1/4 Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT												
Linear (other characteristics on request) Output Single-acting Double-acting Connections Cable: Thread Pg. 13.5 Air pipe: Thread G 1/4 Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT	0 20 mA, reverse action (with increasing pressure in the ac	stuator)			6							
Linear (other characteristics on request) Output Single-acting Double-acting Connections Cable: Thread Pg. 13.5 Air pipe: Thread G 1/4 Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT	Characteristic curve				<u> </u>							
(other characteristics on request) Output Single-acting Double-acting Connections Cable: Thread Pg. 13.5 Air pipe: Thread G 1/4 Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT 2						1						
Output Single-acting Double-acting Connections Cable: Thread Pg. 13.5 Air pipe: Thread G 1/4 Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT Air pipe: Thread 1/4-18 NPT 2						l :						
Single-acting Double-acting Connections Cable: Thread Pg. 13.5 Air pipe: Thread G 1/4 Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT 2	(out of other action case of Foqueout)											
Single-acting Double-acting Connections Cable: Thread Pg. 13.5 Air pipe: Thread G 1/4 Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT 2												
Connections Cable: Thread Pg. 13.5 Air pipe: Thread G 1/4 Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT 2							1					
Cable: Thread Pg. 13.5 Air pipe: Thread G 1/4 Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT	Double-acting						2					
Cable: Thread Pg. 13.5 Air pipe: Thread G 1/4 Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT	Connections							\vdash			\dashv	
Cable: Thread 1/2-14 NPT Air pipe: Thread 1/4-18 NPT								1				
Cable: Thread Pg 13.5 Air pipe: Thread 1/4-18 NPT												
Cable. Threading 10.5 All pipe. Thread 1/4-10101	Cable. Thread 1 g 10.0 All pipe. Thread 1/4-10 NFT											
Design (varnish / labeling)	Design (varnish / labeling)										7	
Standard 1									1			
As specified (upon request)	As specified (upon request)											
									•	•		•
Stock versions	Stock versions											

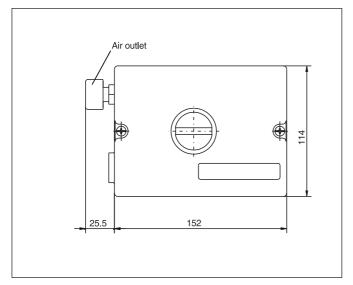
Stock versions										
			Catalog No							
TZIM Positioner										
Input 4 20 mA, direct action Output single-acting										
Explosion protection: without	Connections:	Pg 13.5 / G 1/4	18333-1111111							
		1/2 NPT / 1/4 NPT	18333-1111121							
EEx ia IIC		Pg 13.5 / G 1/4	18333-1211111							
		1/2 NPT / 1/4 NPT	18333-1211121							

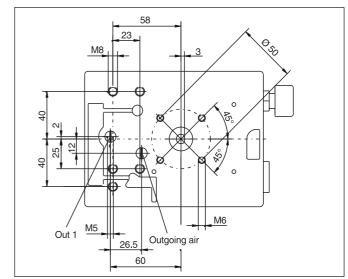
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Accessories					
Accessories			Catalog No	ı	
Mounting motorial and			Catalog NO		
Mounting material and		I mounting to DIN/IEC 524 or Namur)			
_	iuaiors (laiera	I mounting to DIN/IEC 534 or Namur)	10004 7050405		
Stroke 10 35 mm			18391-7959125		
Stroke 20 100 mm			18391-7959126		
Mouning kit for integral m	-				
23/24 and 23/25 valve		5 up to DN 100, stroke 1035 mm	18391-7959106		
		25 up to DN 150, stroke 2565 mm	18391-7959107		
23/26 valve	DN 2	5 up to DN 100, stroke 1035 mm	18391-7959108		
	DN 1:	25 up to DN 150, stroke 2565 mm	18391-7959109		
Mounting kit for rotary ac	tuators (moun	iting to VDI/VDE 3845), cosisting of			
a) Adapter (shaft cou	upler)		18391-7859110		
b) Mounting bracket,		A/B = 80/20 mm	18391-0319603		
, , , , , , , , , , , , , , , , , , , ,		A/B = 80/30 mm	18391-0319604		
		A/B = 130/30 mm	18391-0319605		
		A/B = 130/50 mm	18391-0319606		
Mounting cost, incl. mater	rial and adjust		10391-0319000		
	•				
for mounting to linear				l	
or to rotary actuators			10001 001000		
External tubing		ctube	18391-0319628		
		er pipe	18391-0319629		
		ess steel pipe	18391-0319630		
for integral mounting	to 23/24, 23/2	5 or 23/26 control valves			
Internal tubing	18391-0319627				
External tubing	*) with Copp	er pipe	18391-7959015		
	Stainl	ess steel pipe	18391-7959016		
*) External tubing only	for 23/24 and	23/25 control valves with			
		otherwise "Internal tubing" only.			
Pressure gage block		· · · · · · · · · · · · · · · · · · ·			
Pressure gage block inclu	udina mountine	g material			
for single acting TZIM	_	=			
(1 x for air supply and		= =			
		r pressure/ ure range 010 bar/ 0140 psi			
			10201 7050111		
		ure range 04 bar/ 060 psi	18381-7959111		
		ure range 010 bar/ 0140 psi	18381-7959112		
		ure range 010 bar/ 0140 psi			
		ure range 04 bar/ 060 psi	18381-7959113		
		ure range 010 bar/ 0140 psi	18381-7959114		
_	•	sure gauges Ø 28 mm			
(1 x for air supply and	d 2 x for outpu	t pressure)			
G 1/4 connections	Supply pressu	ure range 010 bar/ 0140 psi			
	Output pressu	ure range 04 bar/ 060 psi	18381-7959115		
		ure range 010 bar/ 0140 psi	18381-7959116		
		ure range 010 bar/ 0140 psi			
		ure range 04 bar/ 060 psi	18381-7959117		
		ure range 010 bar/ 0140 psi	18381-7959118		
		s separate units for mounting by the	10001-1909110		
	c delivered as	soparate units for mounting by the			
customer)			Catalog No		
Filter regulator		and the state of t	Catalog No		
_	. material for r Thread G 1/4	nounting to pressure gage block	40004 ==== : : :		
	18381-7959119				
	Thread 1/4-1		18381-7959120		
(Filter regulators are deli	vered as sepa	rate units for mounting by the customer)		l	

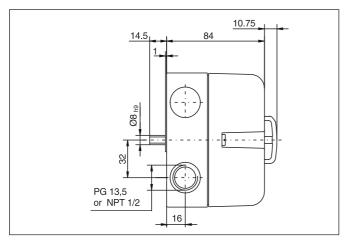
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Dimensional drawings

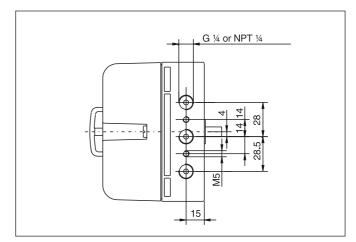




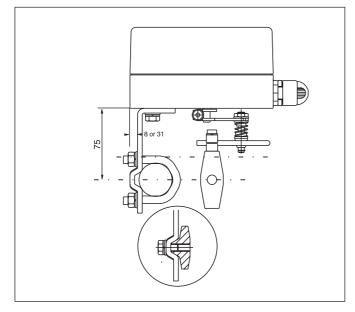
Front view



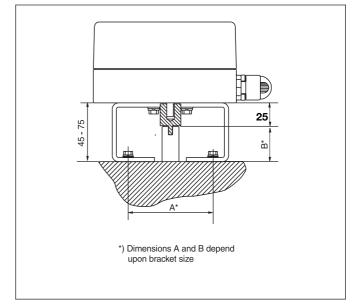
Rear view



Side view (left)



Side view (right)



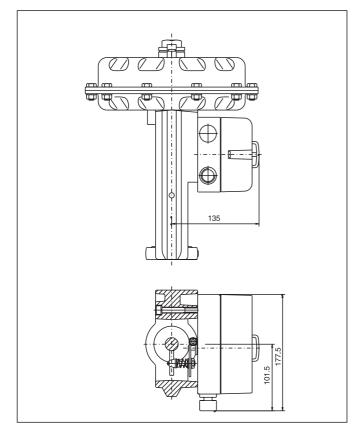
Mounting to linear actuators to DIN/IEC 534

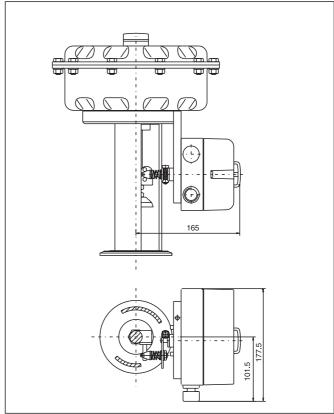
Mounting to rotary actuators to VDI/VDE 3345

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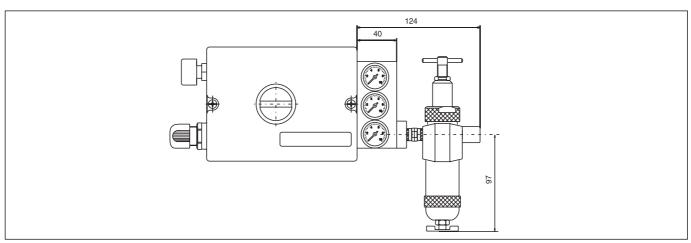
Dimensional drawings





Mounting to 23/24 and 23/25 control valves

Mounting to 23/26 control valves



TZIM with mounted pressure gage block and filter regulator

EP0007XA.EPS



ABB Automation Products GmbH

Schillerstraße 72 32425 Minden Tel. (05 71) 8 30 - 0 Fax (05 71) 8 30 - 18 60 http://www.abb.de