

T 8331 EN Type 3374 Electric Actuator



Application

Electric actuator for plant engineering and HVAC

The actuator is a linear actuator with or without fail-safe action available either in a version with a three-step signal or a version with digital positioner. It can be combined with SAMSON Series V2001 and Series 240 Valves as well as Type 3260 and Type 3214 Valves.

Special features

- Actuator optionally available with either integrated yoke (Fig. 1) or using an M30x1.5 ring nut (Fig. 2) including the necessary stem connecting parts
- Actuator with fail-action "actuator stem extends" tested by the German Technical Inspectorate (TÜV) according to DIN EN 14597 in combination with various SAMSON valves
- Motor switched off by torque-dependent limit contacts
- Mechanical override ¹⁾
- Thrust up to 2.5 kN
- No maintenance required

¹⁾ Not in versions with positioner and fail-safe action

Three-step version

- Power supply:
 - 230 V with 50/60 Hz
 - 24 V with 50/60 Hz
- Synchronous motor with maintenance-free planetary gear
- Additional electrical equipment:
 - Mechanical limit contacts
 - Resistance transmitters

Version with digital positioner

- Power supply:
 - 85 to 264 V with 47 to 63 Hz
 - 24 V with 47 to 63 Hz and DC
- Stepper motor with maintenance-free planetary gear
- All function settings performed using a rotary pushbutton on the actuator
- Backlit LCD
- Additional electrical equipment:
 - Mechanical/electronic limit contacts
 - RS-485 module for Modbus-RTU communication

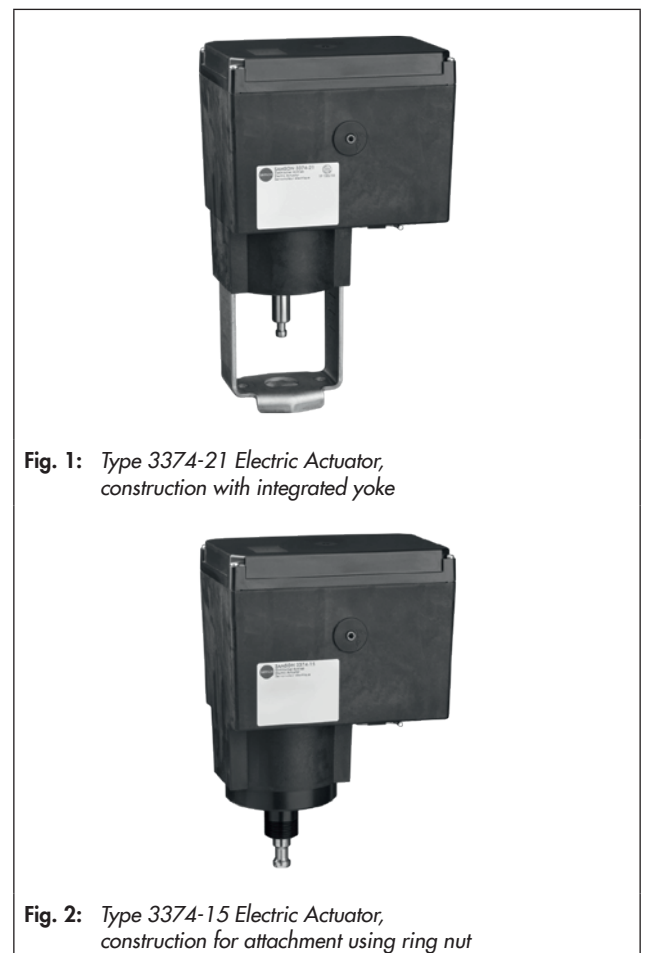


Fig. 1: Type 3374-21 Electric Actuator, construction with integrated yoke

Fig. 2: Type 3374-15 Electric Actuator, construction for attachment using ring nut

- Settings performed in TROVIS-VIEW

Special version with three-key operation

- The actuator is not operated using the rotary pushbutton. Instead, keys on the cover are used for operation.
- This actuator version can be operated without having to remove the housing cover.

Principle of operation

The electric actuator consists of a reversible motor and a maintenance-free planetary gear with ball screw drive. The motor is switched off by torque-dependent limit contacts or in case of overload.

Actuators with an integrated yoke (Fig. 5a) are primarily combined with the following valves:

- V2001
- Type 3260 in DN 65 to 150
- Type 3214 in DN 65 to 100
- Type 3214 balanced by a diaphragm, DN 125 to 250



Fig. 3: Type 3374-21 Electric Actuator, mounted on a V2001 Globe Valve

Actuators with central attachment are primarily combined with valves that have their own yoke:

Series 240 (Fig. 5b)

- Type 3214 balanced by a bellows, DN 125 to 250 (Fig. 5c)

Fail-safe action

The Type 3374 Electric Actuator is available optionally with fail-safe action:

Actuator stem extends: Upon power supply failure, the actuator stem extends

Actuator stem retracts: Upon power supply failure, the actuator stem retracts

Additional electrical equipment

• Mechanical limit contacts

The mechanical limit contacts can be adjusted independently from one another. They are actuated by continuously adjustable cam disks.

• Electronic limit contacts

The electronic limit contacts consist of relays with change-over contacts. In contrast to the mechanical limit contacts, the electronic limit contacts no longer function after a power supply failure. The relays are de-energized and the contacts change to the idle state.

• Resistance transmitters

The resistance transmitter is linked to the gear and produces a resistance signal between approx. 0 and 1000 Ω (usable range 0 to 800 Ω) proportional to the valve travel.

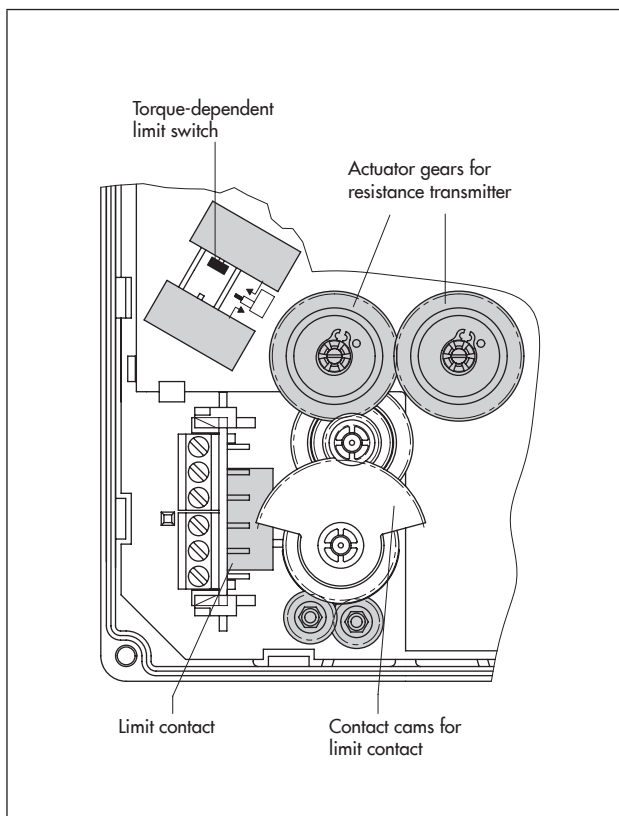


Fig. 4: Partial view with opened cover

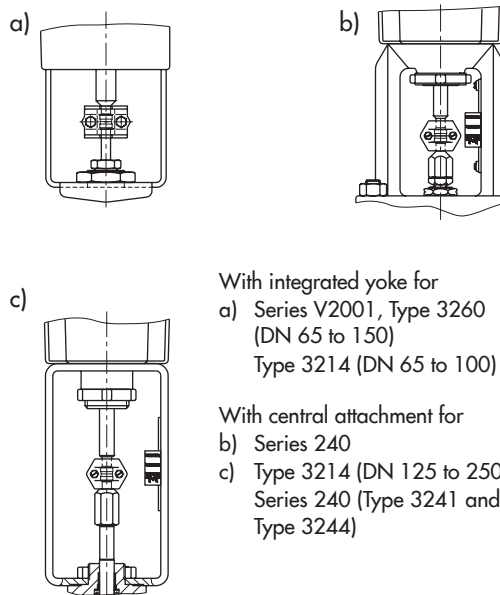


Fig. 5: Attachment to various valves

1. Three-step version

Table 1: *Technical data*

Type 3374		-10	-11	-15	-21	-26	-31	-36
Version with		Yoke		Ring nut	Yoke	Ring nut	Yoke	Ring nut
Fail-safe action		Without			Extends		Retracts	
Rated travel	mm	30	15	30	15			
Transit time for rated travel								
Standard	s	240	120	240	120			
Fast	s	120	60	120	60			
In the event of fail-safe action	s	-			12			
Stroking speed								
Standard	mm/s	0.125						
Fast	mm/s	0.25						
In the event of fail-safe action	mm/s	-			1.25			
Thrust	Retracts	2.5 kN			0.5 kN			
	Extends	2.5 kN			2 kN			
Power supply		230 V (+10/-15 %), 50 Hz 230 V (+10/-15 %), 60 Hz 24 V (+10/-15 %), 50 Hz 24 V (+10/-15 %), 60 Hz						
Duty type		S1 - 100 % according to EN 60034-1						
Power consumption	VA	7.5/13 ²⁾			10.5/16 ²⁾			
Motor switch-off		Torque dependent						
Degree of protection		IP 54 according to EN 60529, IP 65 with cable glands (can be retrofitted) ¹⁾ Suspended mounting not permitted						
Overtoltage category		II according to EN 60664						
Design and testing		According to EN 61010						
Class of protection		II according to EN 61140						
Noise immunity		According to EN 61000-6-2, EN 61326						
Noise emission		According to EN 61000-6-3, EN 61326						
Manual override		Hex wrench · Adjustment not possible after fail-safe action has been triggered.						
Weight	kg (approx.)	3.2	3.3	3.9	4.0	3.5	3.6	
Materials		Housing and cover: Plastic (glass-fiber reinforced PPO)						
Additional electrical equipment								
Limit contacts		Two travel-dependent, adjustable changeover switches, max. 250 V AC, 1 A						
Resistance transmitters		0 to 1000 Ω, (0 to 900 Ω at rated travel) max. permissible current 1 mA						

¹⁾ Cable glands M20x1.5 with metal nut SW 23/24 (order no. 1400-8828)

²⁾ Actuator with faster motor

2. Version with digital positioner


Table 2: Technical data · Without fail-safe action

Type 3374		-10	-11	-15
Type of connection		With yoke		With ring nut
Travel	mm	30	15	30
Travel limitation		Between 10 and 100 % of the rated travel		
Manual override		4 mm hex wrench		
Electrical connection				
Power supply		24 V ($\pm 15\%$), 47 to 63 Hz and 24 V DC ($\pm 15\%$) 85 to 264 V, 47 to 63 Hz		
Duty type		S1 - 100 % according to EN 60034-1		
Power consumption		Speed level: Normal · Fast		
24 V	AC	12.5 VA · 16.5 VA		
	DC	7.5 W · 11 W		
85 to 264 V	AC	13.8 to 20 VA		
Transit time in s · Stroking speed in mm/s				
Standard version	Standard	120 · 0.25	60 · 0.25	120 · 0.25
	Fast	60 · 0.5	30 · 0.5	60 · 0.5
Actuator with faster motor	Standard	60 · 0.5	30 · 0.5	60 · 0.5
	Fast	30 · 1.0	15 · 1.0	30 · 1.0
Thrust in kN (standard version · Version with faster motor)				
Extends		2.5 · 1.25	2.5 · 1.25	2.5 · 1.25
Retracts		2.5 · 1.25	2.5 · 1.25	2.5 · 1.25
Weight				
kg (approx.)		3.5	3.5	3.6

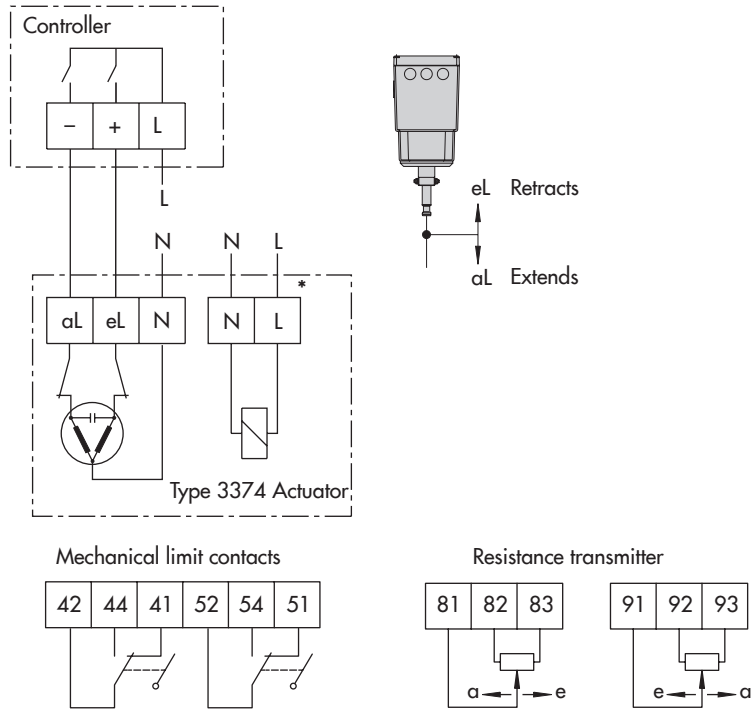
Table 3: Technical data · With fail-safe action

Actuator	Type 3374	-21	-26	-31	-36
Type of connection		With yoke	With ring nut	With yoke	With ring nut
Fail-safe action		Extends		Retracts	
Travel	mm	15		15	
Travel limitation		Between 10 and 100 % of the rated travel			
Manual override		-			
Electrical connection					
Power supply		24 V ($\pm 15\%$), 47 to 63 Hz and 24 V DC ($\pm 15\%$) 85 to 264 V, 47 to 63 Hz			
Duty type		S1 - 100 % according to EN 60034-1			
Power consumption		Speed level: Normal · Fast			
24 V	AC	18 VA · 23 VA			
	DC	11.5 W · 15 W			
85 to 264 V	AC	19.8 to 26 VA			
Transit time in s · Stroking speed in mm/s					
Standard		60 · 0.25	60 · 0.25	60 · 0.25	60 · 0.25
Fast		30 · 0.5	30 · 0.5	30 · 0.5	30 · 0.5
Upon fail-safe action		12 · 1.25	12 · 1.25	12 · 1.25	12 · 1.25
Forces in kN					
Thrust (stem extends)		2	2	2	2
Thrust (stem retracts)		0.5	0.5	0.5	0.5
Nominal thrust of safety spring		2	2	0.5	0.5
Weight					
kg (approx.)		4.2	4.3	3.8	3.9

Table 4: Common technical data (version with positioner)

Type 3374-xx			
Input signal	Current input	0/4 to 20 mA, adjustable · $R_i = 50 \Omega$	
	Voltage input	0/2 to 10 V, adjustable · $R_i = 20 k\Omega$	
	Pt 1000 input	Measuring range: -50 to 150 °C, 300 μ A	
	Binary input	By jumpering the terminals, not galvanically isolated	
Position feedback	Current	0/4 to 20 mA, adjustable · Error message 24 mA	
		Resolution	1000 steps or 0.02 mA
	Voltage	Load	Max. 200 Ω
		0/2 to 10 V, adjustable · Error message 12 V	
		Resolution	1000 steps or 0.01 V
Load	Minimum 5 k Ω		
Binary input	Open-circuit voltage: 10 V; short-circuit current: 5 mA By jumpering the terminals, not galvanically isolated		
Binary output (floating)	Revision 2	Galvanically isolated · Max. 24 V DC/50 mA · No short-circuit protection · Reversible polarity	
	Revision 3	Max. 230 V AC/1 A	
Applications	Positioner	The travel follows the input signal	
	PID controller	Fixed set point control	
	Two-step mode	Two-step behavior, control over binary input	
	Three-step mode ¹⁾	Three-step behavior, control over binary input	
	Temperature closed-loop control upon input signal failure ¹⁾	The integrated PID controller uses a fixed set point for closed-loop control when the input signal is missing.	
Display	Icons for functions, codes and text field with backlight		
Rotary pushbutton	Operating control for on-site operation to select and confirm codes and values		
Interface	Standard	RS-232 · For point-to-point connection to communication participants or for memory pen · Permanently installed · Connection: RJ-12 connector socket	
Motor switch-off	By torque-dependent limit contacts		
Degree of protection acc. to EN 60529	IP 54 with cable entries, IP 65 with cable glands (can be retrofitted) ²⁾ Suspended mounting not permitted according to EN 60664		
Overvoltage category	II according to EN 61010		
Design and testing	According to EN 61010		
Class of protection	II according to EN 61140		
EMC	According to EN 61000-6-2, EN 61000-6-3 and EN 61326		
Degree of contamination	2 according to EN 61010		
Noise immunity	According to EN 61000-6-2		
Noise emission	According to EN 61000-6-3		
Mechanical environmental conditions	Class 1M2 according to EN 60721-3-1:1998		
	Class 2M1 according to EN 60721-3-2:1998		
	Class 3M4 according to EN 60721-3-3:1998		
	Class 4M4 according to EN 60721-3-4:1998		
Permissible temperatures ³⁾	Ambient	5 to 60 °C	
	Storage	-25 to +70 °C	
Humidity	5 to 95 % relative humidity, no dew formation		
Compliance			
Additional electrical equipment			
Limit contacts	Mechanical	Two adjustable limit contacts with changeover switches; 230 V AC/1 A · Without contact protection	
	Electronic	Two adjustable limit contacts with relay and changeover switches; 230 V AC/1 A · Without contact protection	
RS-485 module (order no. 1402-1522)	Module for Modbus-RTU communication		

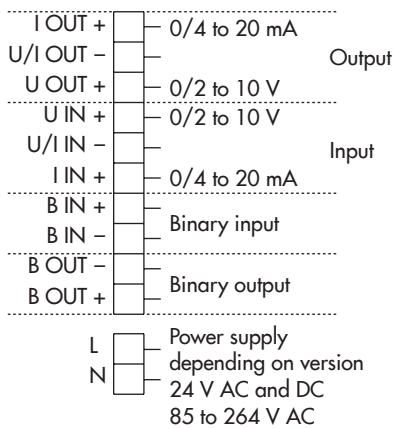
¹⁾ Application only available in Type 3374, revision 3²⁾ Cable glands M20x1.5 with metal nut SW 23/24 (order no. 1400-8828)³⁾ The permissible medium temperature depends on the valve on which the electric actuator is mounted. The limits in the valve documentation apply.



* L and N terminal for solenoid with actuator with fail-safe action only

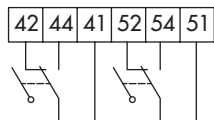
Fig. 6: Electrical connection · Three-step version

For actuators with firmware version 2.xx (revision 2)

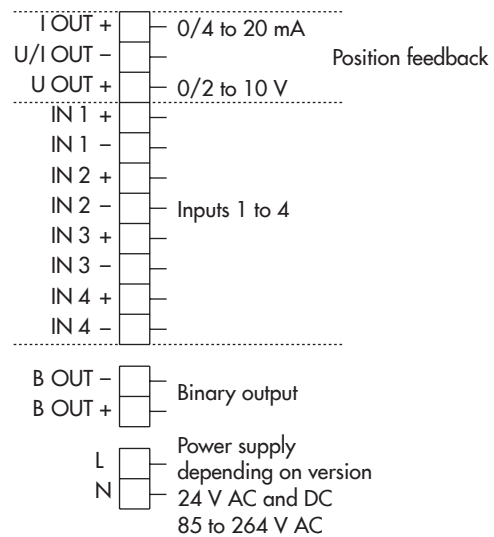


Options:

Mechanical limit contacts



For actuators with firmware version 3.xx (revision 3)



Electronic limit contacts

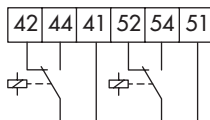
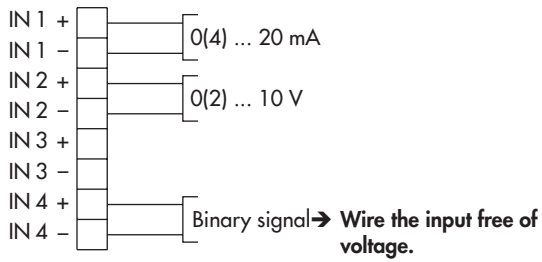
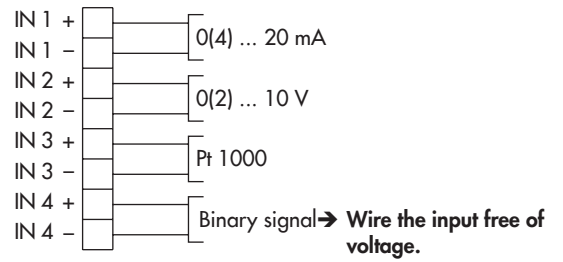


Fig. 7: Electrical connection · Version with digital positioner

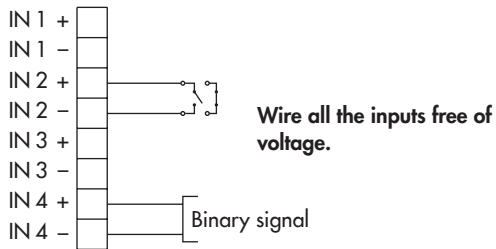
Application: Positioner (POSI)



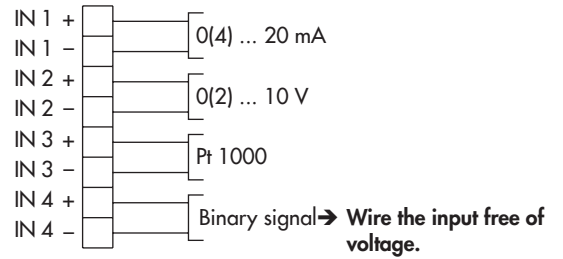
Application: PID controller (PID)



Application: Two-step mode (2STP)

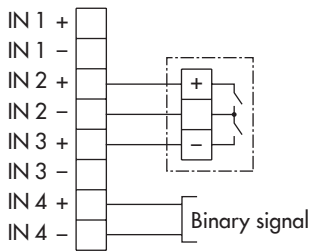


Application: Temperature closed-loop control upon input signal failure (POSF)

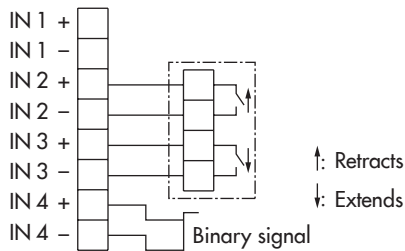


Application: Three-step mode (3STP)

Three-wire connection:



Four-wire connection:

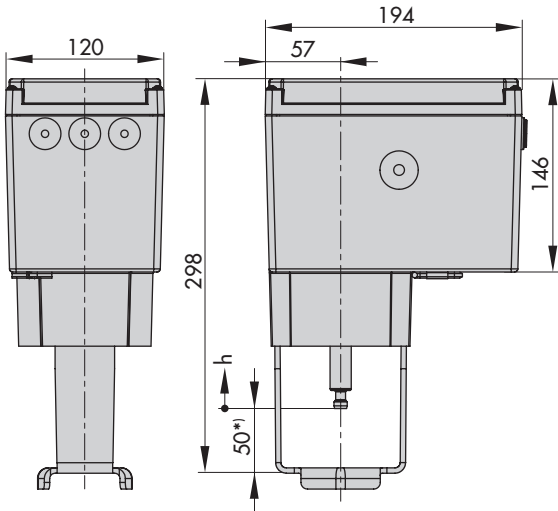


Wire all the inputs free of voltage.

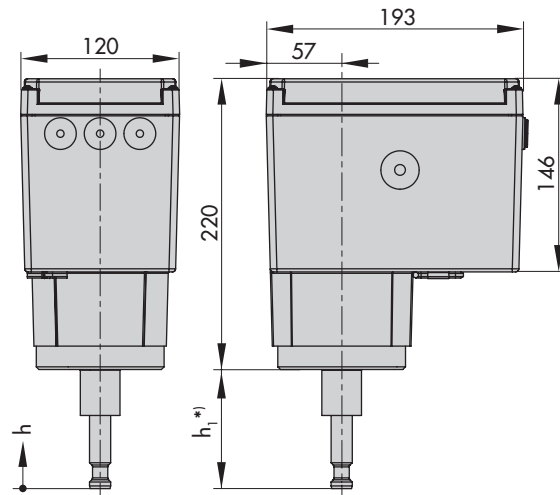
Fig. 8: Terminal assignment depending on the application selected

Dimensions in mm

Type 3374-10/-11/-21/-31



Types 3374-15/-26/-36



*1) When actuator stem is fully extended

Type 3374	Dimension h	Dimension h ₁
-10	30	–
-11	15	–
-21	15	–
-31	15	–
-15	30	90
-26	15	75
-36	15	75

Ordering text · Three-step version

Electric actuator	Type 3374- ...
Rated travel	15/30 mm
Version with fail-safe action	Actuator stem extends or retracts only with 15 mm travel
Power supply	230 V/50 or 60 Hz, 24 V/50 or 60 Hz
Additional electrical equipment	
Two mechanical limit contacts	
Two resistance transmitters	0 to 1000 Ω

Ordering text · Version with digital positioner

Electric actuator	Type 3374- ...
Rated travel	15/30 mm
Version with fail-safe action	With/without
Gear version	Standard or actuator with faster motor
Power supply	85 to 264 V, 50/60 Hz 24 V, 50/60 Hz and DC
Additional electrical equipment	
Two limit contacts	Mechanical/electronic

List of documentation

Mounting and operating instructions

- for Type 3374, revision 2: ► EB 8331-4 (rev. 2)
- for Type 3374, revision 3: ► EB 8331-4 (rev. 3)