DATA SHEET

T 8331 EN

Type 3374 Electric Actuator

Application

Electric actuator designed for valves used in heating, ventilation and air-conditioning systems as well as in plant engineering

Fig. 1: *Construction with integrated yoke (form B)*

Fig. 2: *Construction with ring nut (form A)*

Special features

The actuator is a linear actuator, which can be combined with Series V2001 and 240 as well as Types 3260 and 3214 Valves.

- Construction with integrated yoke or using an M30x1.5 ring nut including the necessary stem connecting parts
- Available with or without fail-safe action
- Actuator with “actuator stem extends” fail-action tested by the German technical surveillance association TÜV according to DIN EN 14597 in combination with various SAMSON valves
- Motor switched off by torque switches
- Mechanical override [1)]
- No maintenance

[1)] Not in actuators with positioner and fail-safe action

Versions

- Version with three-step signal
  - Synchronous motor with maintenance-free planetary gear
- Version with positioner
  - Stepper motor with maintenance-free planetary gear
  - All function settings performed using a rotary pushbutton on the actuator
  - Settings made using the TROVIS-VIEW software

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Options

- Limit contacts
  - Mechanical
  - Over a relay (version with positioner only)

- Resistance transmitters (version with three-step signal only)
  - Two resistance transmitters with a resistance range from 0 to 1000 Ω

- Special version with three-key operation (version with positioner only)
  - The actuator with positioner 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.

- Communication (version with positioner only)
  - RS-485 module for Modbus RTU communication

Design and principle of operation

The Type 3374 Electric Actuator is linear actuator, which is used in combination with SAMSON valves in industrial plants as well as in heating, ventilation and air-conditioning systems.

Depending on the actuator version, either a three-step signal or continuous signal issued by an electronic controller is used to control the electric actuator. 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 switches in the end positions or in case of overload.

Fail-safe action

The Type 3374 Actuator is available with fail-safe action. The actuators with fail-safe action have a spring assembly and an electromagnet. The actuator is moved by the force of the spring to the fail-safe position when the electromagnet is de-energized. The direction of action depends on the actuator version and cannot be reversed.

- **"Actuator stem extends" fail-safe action:** The actuator stem extends upon supply voltage failure.
- **"Actuator stem retracts" fail-safe action:** The actuator stem retracts upon supply voltage failure.

Mechanical limit contacts

Mechanical limit contacts consist of two floating changeover switches. Their switching positions can be changed independently from one another by continuously adjustable cam disks.

The floating contacts can be used as either make or break contacts to influence the tasks of control equipment.

Resistance transmitter

The actuator with three-step control signal can optionally be equipped with two resistance transmitters. They consist of a potentiometer, which is linked to the gear of the actuator over gear wheels. The resistance value, which is proportional to the valve travel, can be used for position feedback.

It is possible to retrofit the resistance transmitter.

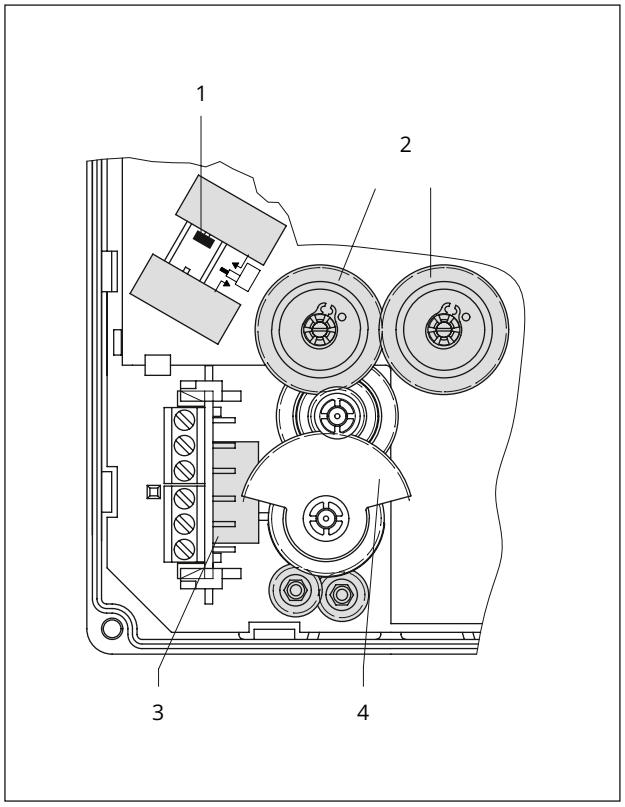


Fig. 3: *Partial view with opened cover · Type 3374*

1 Torque switches
2 Actuator gears for resistance transmitter
3 Limit contacts
4 Contact cams for limit contacts

Attachment

Actuators with an integrated yoke are primarily combined with the following valves:

For mounting on:

- Series V2001 (DN 15 to 50)
- Type 3214 (DN 65 to 100)
- Type 3260 (DN 65 to 80)
- Type 3260 (DN 100 to 150)

Fig. 4: *For example, Type 3374-21 Electric Actuator, mounted on a Series V2001 Globe Valve*

Types 3374-10/-11/-21/-31
Connection with yoke (form B)
Mounting on Series V2001 Valves (DN 15 to 50)
Type 3260, DN 65 to 150
Type 3214, DN 65 to 100

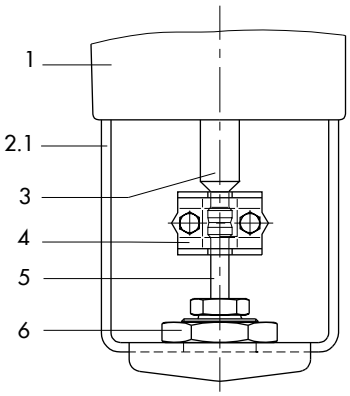


Fig. 5: *Mounting · Version with integrated yoke*

1 Actuator
2.1 Actuator yoke
3 Actuator stem
4 Stem connector
5 Plug stem
6 Nut

Mounting on Series V2001 Valves (DN 65 to 100)

⇨ See Fig. 6.

Types 3374-10/-11/-21/-31
Connection with yoke (form B)
Mounting on Series V2001 Valves (DN 65 to 100)

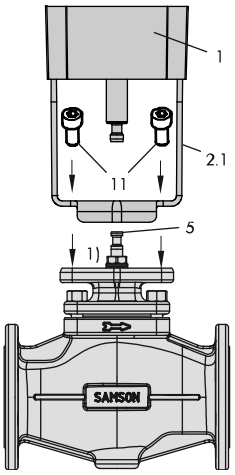


Fig. 6: *Mounting · Version with actuator yoke and V2001 accessories*

1 Actuator
2.1 Actuator yoke
3 Actuator stem
5 Plug stem
11 Screws
1) A spacer is required here to mount a Type 3323 Three-way Valve.

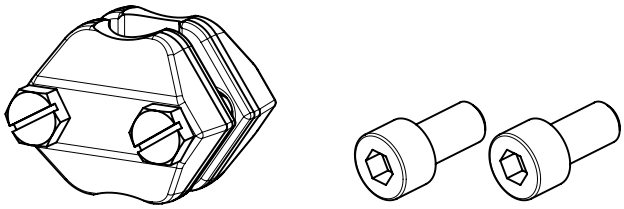


Fig. 7: *Mounting kit V2001*

i *Note*

The V2001 mounting kit is not included in the scope of delivery. It is available as an accessory.

Construction with ring nut (form A)

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

For mounting on:

- Series 240
- Series 250 (M30x1.5)
- Type 3214 balanced by a bellows (DN 125 to 250)
- Type 3260 (DN 65 to 100)
- Type 3260 (DN 100 to 150)

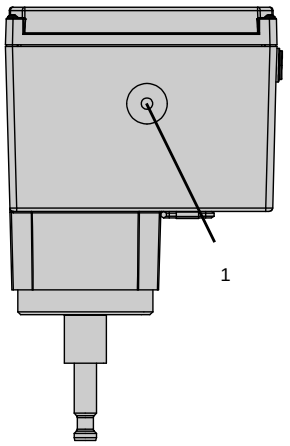


Fig. 8: *Actuating shaft for manual override (version with ring nut)*

1 Actuating shaft

Types 3374-15, -17, -25, -26, -27, -35, -36
Connection with ring nut (form A)
Mounting onto Series 240 Valves:

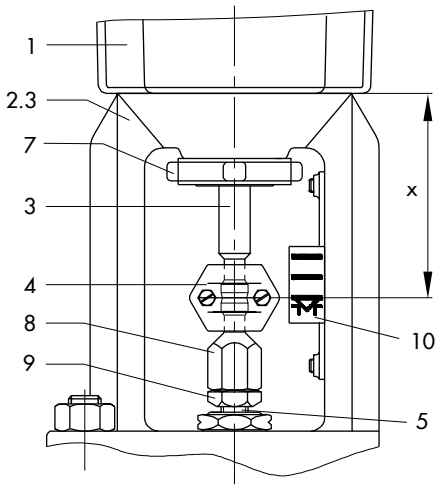


Fig. 9: *Mounting on Series 240 Valves*

1 Actuator
2.3 Bonnet
3 Actuator stem
4 Stem connector
5 Plug stem
7 Ring nut
8 Stem connector nut
9 Lock nut
10 Travel indicator scale

Type 3374-15, -27
Connection with ring nut (form A)
Mounting on Type 3214 (DN 125 to 250), balanced by a bellows

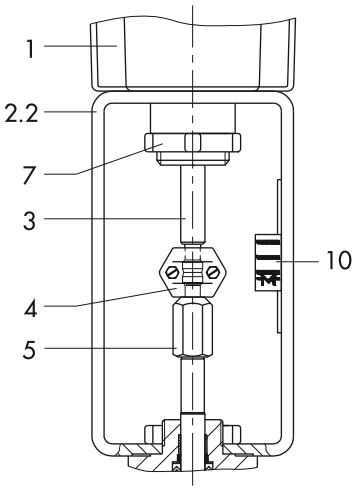


Fig. 10: *Mounting on Type 3214*

1 Actuator
2.2 Valve yoke
3 Actuator stem
4 Stem connector
5 Plug stem
7 Ring nut
10 Travel indicator scale

i Note

The permissible outside diameter of the lines used is 6 to 12 mm.

Version with three-step signal

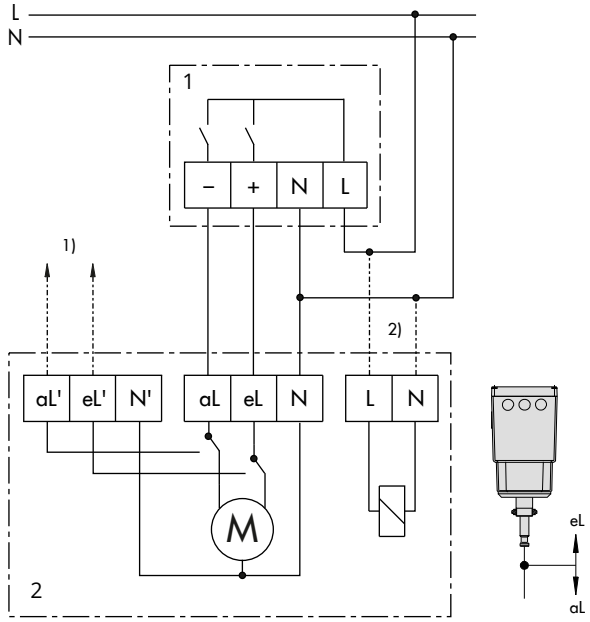


Fig. 11: *Electrical connection*

1 Controller
2 Type 3374 Electric Actuator
1) Signal feedforward for cascade control of several actuators after an actuator reaches its end position
2) Only for version with fail-safe action
The 'N' connection is not connected to the N terminals for actuator control. As a result, it is possible to connect an external supply for 'L' and 'N' connections.

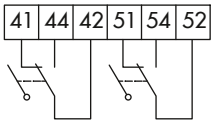


Fig. 12: *Mechanical limit contacts*

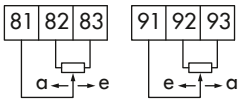
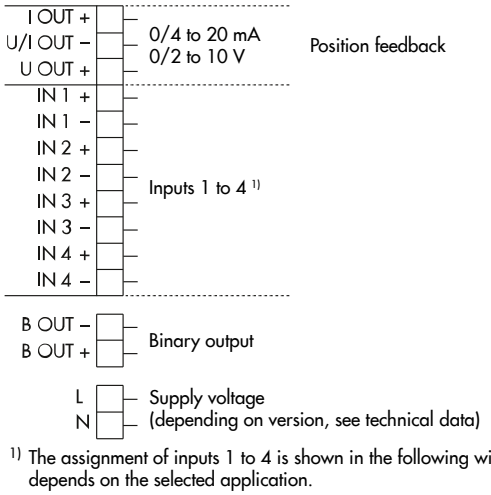


Fig. 13: *Resistance transmitters*

Version with positioner



1) The assignment of inputs 1 to 4 is shown in the following wiring plans and depends on the selected application.

Fig. 14: *Electrical connection*

1 Position feedback

2 Inputs 1 to 4

The assignment of the inputs is shown in the following wiring diagrams and depends on the application that has been selected.

3 Binary output

4 Supply voltage (depending on version, see Technical data)

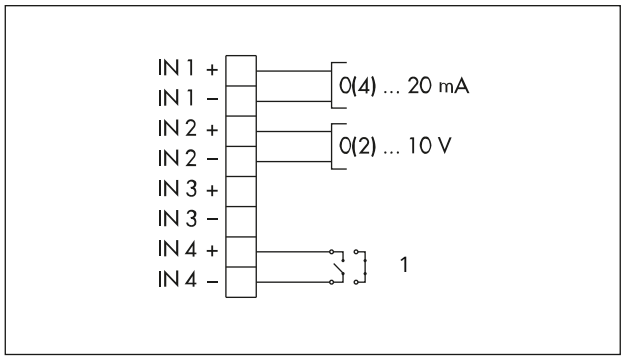


Fig. 15: *Terminal assignment for 'Positioner' application*

1 Binary input; function configurable in c11 and c12

► **Wire the input free of voltage.**

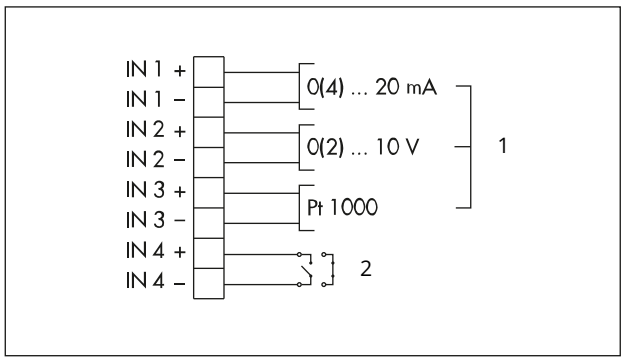


Fig. 16: *Terminal assignment for 'PID controller' application*

1 Controlled variable selection

2 Binary input; function configurable in c11 and c12

► **Wire the input free of voltage.**

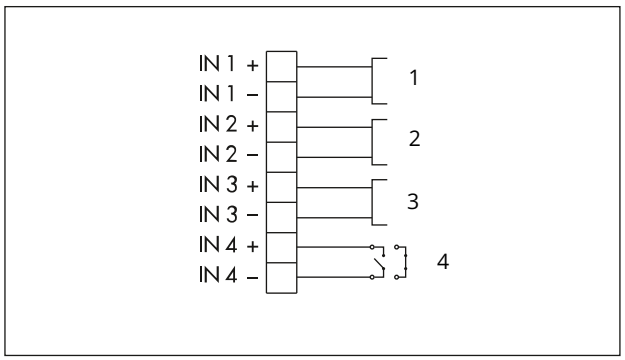


Fig. 17: *Terminal assignment for 'PID controller' application · Temperature control*

1 Pt 1000 (readout only possible using Modbus)

2 Pt 1000 (readout only possible using Modbus)

3 Pt1000 (controlled variable)

4 Binary input; function configurable in c11 and c12

► **Wire the input free of voltage.**

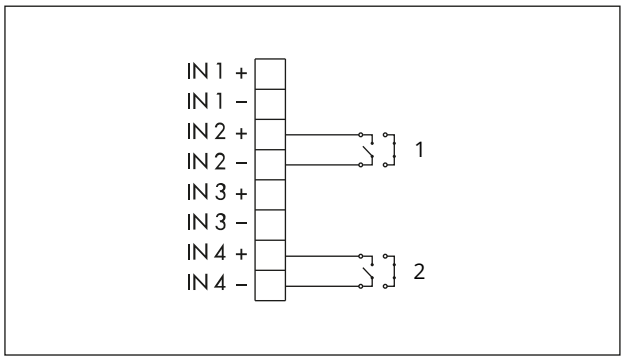


Fig. 18: *Terminal assignment for 'Two-step mode' application*

1 On/off control

2 Binary input; function configurable in c11 and c12

► **Wire the input free of voltage.**

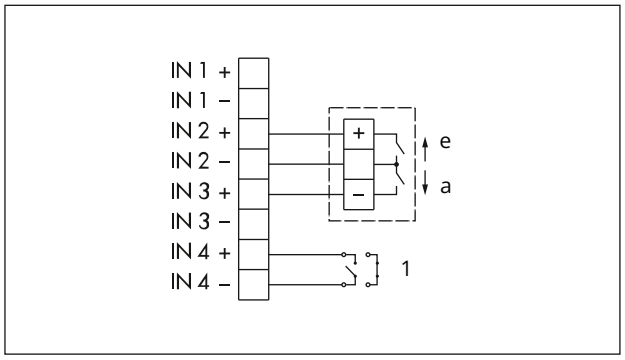


Fig. 19: *Terminal assignment for 'Three-step mode' application with three-wire connection*

e Retracts

a Extends

1 Binary input; function configurable in c11 and c12

► **Wire inputs free of voltage.**

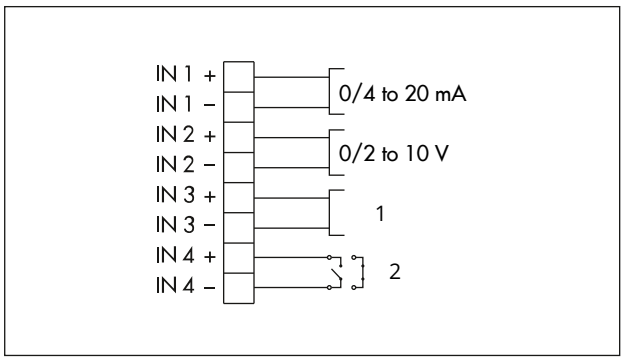


Fig. 20: *Terminal assignment for 'Temperature closed-loop control upon input signal failure' application*

1 Pt1000 (controlled variable)

2 Binary input; function configurable in c11 and c12

► **Wire the input free of voltage.**

Options:

Fig. 21: *RS-485 interface*

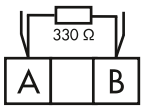


Fig. 22: *RS-485 interface with external bus termination*

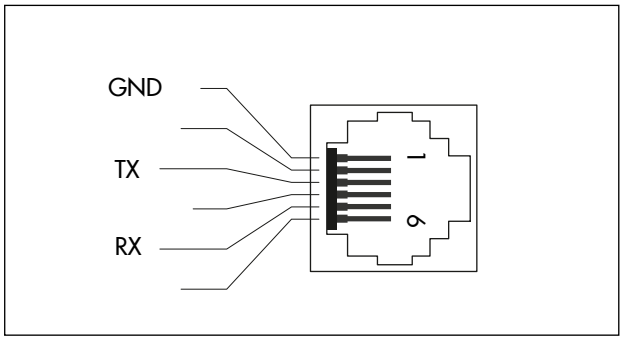


Fig. 23: *Assignment of the RJ-12 jack*

Technical data

Table 1: *Technical data · General*

Type 3374	-10	-11	-15	-17	-21	-25	-26	-27	-31	-35	-36
Form [1)]	B		A		B	A			B	A	
Fail-safe action	Without				Actuator stem extends				Actuator stem retracts		
Testing according to DIN EN 14597	–				✓				–		
Rated travel in mm	30	15	30		15	30	15	30	15	30	15
Motor switch-off	Torque switches										

Type 3374	-10	-11	-15	-17	-21	-25	-26	-27	-31	-35	-36
Operating mode	S1 - 100 % according to EN 60034-1										
Permissible temperature ranges [2]											
Ambient	5 to 60 °C										
Storage	-25 to +70 °C										
Humidity	5 to 95 % relative humidity, no dew formation										
Material	Housing and cover: Plastic (glass-fiber reinforced PPO)										
Safety											
Degree of protection [3]	IP65 according to EN 60529 with mounted cable glands, suspended mounting position not permitted according to EN 60664-1										
Class of protection [3]	II according to EN 61140										
Device safety [3]	According to EN 61010-1										
Noise immunity	According to EN 61000-6-2 and EN 61326-1										
Noise emission	According to EN 61000-6-3 and EN 61326-1										
Conformity	CE										

1) Form A: with ring nut; form B: with mounted yoke

2) The permissible medium temperature depends on the valve on which the electric actuator is mounted. The limits in the valve documentation apply.

3) Only when the housing cover is attached and fastened

Table 2: *Technical data · Version with three-step signal*

Type 3374		-10	-11	-15	-17	-21	-25	-26	-27	-31	-35	-36
Thrust in kN												
	Extends	2.5	2.5	2.5	5	2	1.8	2	3	2	2.1	2
	Retracts	2.5	2.5	2.5	5	0.5	2.1	0.5	0.5	0.5	1.8	0.5
Nominal thrust of safety spring in kN		–	–	–	–	2	1.8	2	3	0.5	1.8	0.5
Handwheel		With hex wrench				Only possible with hex wrench when supply voltage is connected Adjustment not possible after fail-safe action has been triggered						
Stroking speed in mm/s												
Standard		0.125			0.1	0.125	0.1	0.125	0.1	0.125	0.1	0.125
Fast		0.25			–	0.25	–	0.25	–	0.25	–	0.25
In the event of fail-safe action		–				1.25						
Transit time in s for rated travel												
Standard		240	120	240	300	120	300	120	300	120	300	120
Fast		120	60	120	–	60	–	60	–	60	–	60
In the event of fail-safe action		–				12	24	12	24	12	24	12
Electrical connection												
Supply voltage		230 V, +10/–15 % 24 V, +10/–15 %										
Power line frequency		50 Hz										
Power consumption in VA												
	Normal	7.5			13	10.5	16	10.5	16	10.5	16	10.5
	Fast	13			–	16	–	16	–	16	–	16
Weight in kg (approx.)		3.2	3.2	3.3	3.3	3.9	5.8	4.0	6.2	3.5	5.8	3.6
Additional equipment												
Limit contacts		Two adjustable limit contacts with mechanical changeover switches; max. 240 V AC, max. 1 A, without contact protection [1)]										
Resistance transmitter		Two potentiometers, 0 to 1000 Ω ±15 %, max. 200 mW, usable range approx. 0 to 900 Ω										

1) Contact protection with suitable spark suppression must be fitted for the switching contact. Observe the manufacturer's specifications concerning the connected load to select the appropriate spark suppression. A fuse, which is suitable for the application's circuit, must be used for the short-circuit and overload protection.

Table 3: *Technical data · Version with positioner*

Type 3374		-10	-11	-15	-17	-21	-25	-26	-27	-31	-35	-36
Thrust in kN												
Standard	Extends	2.5	2.5	2.5	5	2	1.8	2	3	2	2.1	2
	Retracts	2.5	2.5	2.5	5	0.5	2.1	0.5	0.5	0.5	1.8	0.5
Faster motor	Extends	1.25	1.25	1.25	–	–	–	–	–	–	–	–
	Retracts	1.25	1.25	1.25	–	–	–	–	–	–	–	–
Nominal thrust of safety spring (for rated travel) in kN		–	–	–	–	2	1.8	2	3	0.5	1.8	0.5
Manual override		4 mm hex wrench or electric [1]				Electric						
Stroking speed in mm/s												
Standard motor/normal speed		0.25	0.25	0.25	0.125	0.25	0.125	0.25	0.125	0.25	0.125	0.25
Standard motor/fast speed		0.5	0.5	0.5	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5
Faster motor/normal speed		0.5	0.5	0.5	–	–	–	–	–	–	–	–
Faster motor/fast speed		1	1	1	–	–	–	–	–	–	–	–
In the event of fail-safe action		–	–	–	–	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Transit time in s for rated travel												
Standard motor/normal speed		120	60	120	240	60	240	60	240	60	240	60
Standard motor/fast speed		60	30	60	120	30	120	30	120	30	120	30
Faster motor/normal speed		60	30	60	–	–	–	–	–	–	–	–
Faster motor/fast speed		30	15	30	–	–	–	–	–	–	–	–
In the event of fail-safe action		–	–	–	–	12	24	12	24	12	24	12
Electrical connection												
Supply voltage; power line frequency		24 V (±15 %), 50 to 60 Hz (tolerance: 47 to 63 Hz) and 24 V DC (±15 %) 100 to 240 V (tolerance: 85 to 264 V), 50 to 60 Hz (tolerance: 47 to 63 Hz)										
Power consumption												
	24 V AC in VA											
	Standard	12.5			19	18	25	18	25	18	25	18
	Fast	16.5			–	23	–	23	–	23	–	23
	24 V DC in W											
	Standard	7.5			13	11.5	17	11.5	17	11.5	17	11.5
	Fast	11			–	15	17	15	17	15	17	15
	100 to 240 V AC in VA											
	Standard	13.8 to 20			22	19.8 to 26	28	19.8 to 26	28	19.8 to 26	28	19.8 to 26
	Fast				–							
Duty type		S1 - 100 % according to EN 60034-1										
Additional equipment												
Limit contacts	Mechanical	Two adjustable limit contacts with mechanical changeover switches; Max. 240 V AC, max. 1 A, without contact protection [2]										
	Electronic	Two adjustable limit contacts with relay and changeover switches; Max. 240 V AC, max. 1 A, without contact protection [2]										
RS-485 module		Module for Modbus RTU communication										
Weight in kg (approx.)		3.5	3.5	3.6	3.6	4.2	5.7	4.3	6.1	3.8	5.7	3.9

[1] Special version with handwheel on request

[2] Contact protection with suitable spark suppression must be fitted for the switching contact. Observe the manufacturer's specifications concerning the connected load to select the appropriate spark suppression. A fuse, which is suitable for the application's circuit, must be used for the short-circuit and overload protection.

Table 4: *Technical data · Positioner*

Type 3374			
Input	Current input		0/4 to 20 mA, adjustable, R_i = 50 Ω
	Voltage input		0/2 to 10 V, adjustable, R_i =20 kΩ
	Pt1000 input [1]		Measuring range: -50 to +150 °C, 300 µA
	Binary input [2]		Activation by jumpering the terminals, not galvanically isolated
Output	Current output		0/4 to 20 mA, adjustable; error indication 24 mA
		Resolution	1000 steps or 0.02 mA
		Load	Max. 200 Ω
	Voltage output		0/2 to 10 V, adjustable; error indication 12 V
		Resolution	1000 steps or 0.01 V
		Load	Min. 5 kΩ
	Binary output		Floating, max. 240 V AC, max. 1 A, without contact protection [3]
Applications	Positioner		The travel follows the input signal
	PID controller		Fixed set point control
	Two-step mode		Two-step mode, floating binary input for actuation
	Three-step mode		Three-step mode, floating binary input for actuation
	Temperature closed-loop control upon input signal failure		The integrated PID controller uses a fixed set point for closed-loop control after the input signal fails.
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			RS-232, for point-to-point connection to communication participants or for memory pen; permanently installed; connection: RJ-12 jack

[1] For PID controller (PID) and Temperature closed-loop control upon input signal failure (POSF) applications only

[2] For two-step mode (2STP) and three-step mode (3STP) applications

[3] Contact protection with suitable spark suppression must be fitted for the switching contact. Observe the manufacturer's specifications concerning the connected load to select the appropriate spark suppression. A fuse, which is suitable for the application's circuit, must be used for the short-circuit and overload protection.

Dimensions

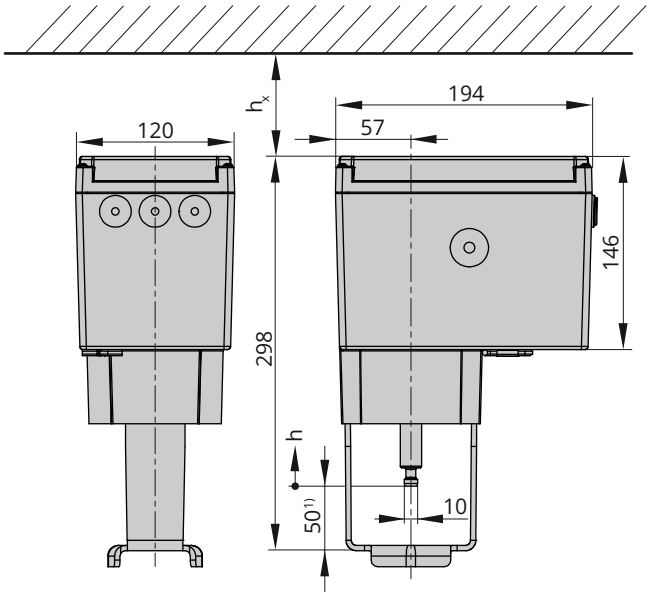


Fig. 24: *Dimensions in mm · Type 3374-10, -11, -21 and -31 (form B)*

1) When the actuator stem is fully extended

Legend for Fig. 24:

Type 3374	Dimension h	Dimension h_x
-10	30 mm	≥60 mm
-11	15 mm	
-21	15 mm	
-31	15 mm	

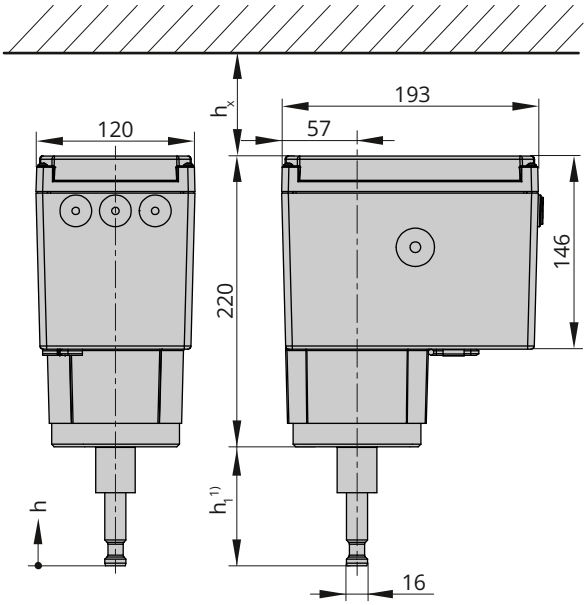


Fig. 25: *Dimensions in mm · Type 3374-15, -17, -26 and -36 (form A)*

1) When the actuator stem is fully extended

Legend for Fig. 25:

Type 3374	Dimension h	Dimension h_1	Dimension h_x
-15	30 mm	90 mm	≥100 mm
-17			
-26	15 mm	75 mm	
-36			

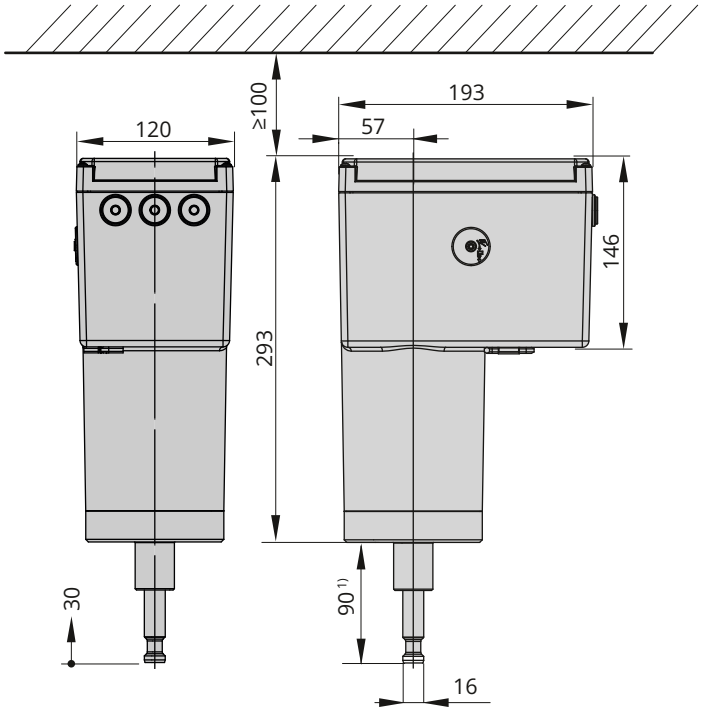


Fig. 26: *Dimensions in mm · Type 3374-25 and -27, form A version*

1) When the actuator stem is fully extended

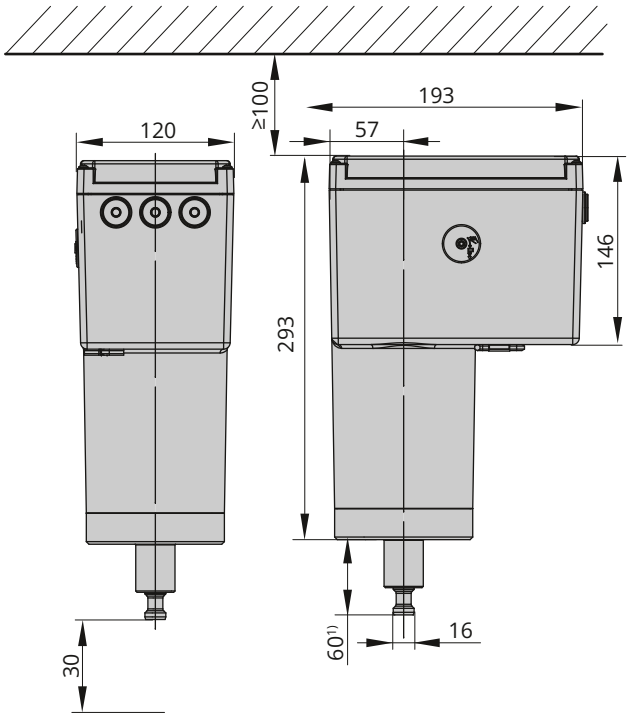


Fig. 27: *Dimensions in mm · Type 3374-35, form A version*

1) When the actuator stem is fully retracted

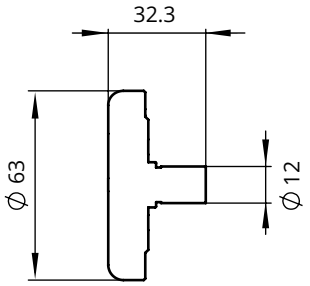
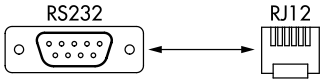


Fig. 28: *Dimensions in mm · Handwheel as special version*

Parts for retrofitting and accessories

Table 5: *Parts for retrofitting and accessories*

Parts for retrofitting/accessories	Order no.
For all versions	
Set with three cable glands M20x1.5 with metal nut (A/F 23/24; spare part)	1400-8828
Mounting kit V2001	1400-9515
Spacer to mount the actuator on Type 3323 Valve	0340-3031
Yoke to mount the actuator on Type 3260 Valve (DN 65 to 80)	1890-8696
Yoke to mount the actuator on Type 3260 Valve (DN 100 to 150)	1400-8822
For version with three-step signal	
Basic unit for limit contacts and/or resistance transmitters	1400-8829
Mechanical limit contacts	100213441
Resistance transmitter	⇨ See Table 6.
Gear wheel for resistance transmitter PCB	1992-5885
For version with positioner	
Electronic limit contacts	1402-0591
RS-485 module	1402-1522
Hardware package consisting of: – Memory pen-64 – Connecting cable RJ-12/D-sub, 9 pin – Modular adapter	1400-9998
Memory pen-64	1400-9753 
Connecting cable RJ-12/D-sub, 9 pin	1400-7699 
Modular adapter	1400-7698 
USB to RS-232 adapter	8812-2001 
TROVIS-VIEW software (free of charge)	▶ www.samsongroup.com > DOWNLOADS > Software & Drivers > TROVIS-VIEW

Resistance transmitters (version with three-step signal only)

Table 6: *Resistance transmitters · Selecting the actuator board* [1)]

Type 3374		-10	-11	-15	-17	-21	-26	-31	-36	-25	-27	-35
Supply voltage	Stroking speed	Order no.										
230 V, 50 Hz	0.125 mm/s	100216330			–	100216332				–		
	0.25 mm/s	100216334			–	100216337				–		
	0.1 mm/s	–			100216334	–				100216337		
24 V, 50 Hz	0.125 mm/s	100216320			–	100216322				–		
	0.25 mm/s	100216325			–	100216327				–		
	0.1 mm/s	–			100216325	–				100216327		

[1)] Two gear wheels (order no. 1992-5885) are additionally required for a retrofit; the basic unit (1400-8829) is additionally required for the version without limit contacts and for a retrofit.

Ordering text

Type 3374 Electric Actuator

- **Version with three-step signal**

  Rated travel
  15/30 mm
  Fail-safe action
  Stem extends/Stem retracts/Without
  Gear version
  Normal/Fast
  Supply voltage
  230 V, 50 Hz
  24 V, 50 Hz
  Additional electrical equipment
  Two mechanical limit contacts
  With/without

- **Version with positioner**

  Rated travel
  15/30 mm
  Fail-safe action
  Stem extends/Stem retracts/Without
  Gear version
  Normal/Fast
  Supply voltage
  85 to 264 V, 50/60 Hz
  24 V, 50/60 Hz and DC
  Additional electrical equipment
  Two limit contacts
  Mechanical/electronic/without

Associated mounting and operating instructions

- Type 3374 (version with three-step signal) ▶ EB 8331-3
- Type 3374 (version with positioner) ▶ EB 8331-4