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" failaction tested by the German technical surveillance association TÜV according to DI-N 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

Options

- Limit contacts
 - Mechanical
 - Over a relay (version with positioner only)
- Resistance transmitters (version with threestep signal only)
 - Two resistance transmitters with a resistance range from 0 to 1000 $\ensuremath{\Omega}$
- 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 threestep 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 failsafe 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 (DN 65 to 80).





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 (see Chapter).

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)

- Actuator
- 2.3 Bonnet

1

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



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

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

Electrical connection

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





- 1) Signal feedforward for cascade control of several actuators after an actuator reaches its end position
- 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. 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.





 \rightarrow Wire the input free of voltage.

¹⁾ Function configurable in c11 and c12





¹⁾ Function configurable in c11 and c12





→ Wire the input free of voltage.

¹⁾ Function configurable in c11 and c12

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





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



¹⁾ Function configurable in c11 and c12

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



\rightarrow Wire the input free of voltage.

¹⁾ Function configurable in c11 and c12

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

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

Туре 3374	-10 -11 -15 -17 -21 -25 -26 -27 -31							-35	-36			
Form ¹⁾	E	3	1	4	В		Α		B A			
Fail-safe action		Wit	nout		Actuator stem extends				Actuator stem retracts			
Testing according to DI- N EN 14597			-		1				-			
Rated travel in mm	30	15	3	0	15	30	15	30	15	30	15	
Motor switch-off	Torque	orque switches										
Operating mode	erating mode S1 - 100 % according to EN 60034-1											
Permissible temperature ranges ²⁾												
Ambient	5 to 60 °C											
Storage	-25 to +	-25 to +70 °C										
Humidity	5 to 95	% relativ	e humid	ity, no d	ew form	ation						
Material	Housing	g and co	ver: Plas	tic (glass	-fiber re	inforced	PPO)					
Safety												
Degree of protection ³⁾	IP65 aco not per	cording t mitted a	ccording	529 with to EN 6	mounte 0664-1	d cable §	glands, s	uspende	ed moun	ting posi	tion	
Class of protection ³⁾	II accor	ding to E	N 61140									
Device safety ³⁾	Accordi	ng to EN	61010-1									
Noise immunity	Accordi	ng to EN	61000-6	5-2 and E	N 61326	5-1						
Noise emission	Accordi	ng to EN	61000-6	5-3 and E	N 61326	5-1						
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

Туре 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 o	f 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 con- nected Adjustment not possible after fail-safe action has been trig- gered					
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 fa	-			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 fa	il-safe action			_		12	24	12	24	12	24	12
Electrical conne	ction											
Supply voltage						230 V, +10/-15 % 24 V, +10/-15 %						
Power line frequ	ency						50 Hz					-
Power consump	tion 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 (ap	pprox.)	3.2	3.2	3.3	3.3	3.9	5.8	4.0	6.2	3.5	5.8	3.6
Additional equi	pment											
Limit contacts		Two adji out cont	ustable lii act prote	mit conta ction ¹⁾	cts with r	mechanica	al change	over swite	ches; max	k. 240 V A	C, max. 1	A, with-
Resistance trans	mitter	Two pot	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

Туре	3374		-10	-11	-15	-17	-21	-25	-26	-27	-31	-35	-36
Thru	st in kN												
	Extends		2.5	2.5	2.5	5	2	1.8	2	3	2	2.1	2
Standard	Retracts		2.5	2.5	2.5	5	0.5	2.1	0.5	0.5	0.5	1.8	0.5
	Extends		1.25	1.25	1.25	-	_	_	_	_	_	_	_
Faster motor	Retracts		1.25	1.25	1.25	_	_	-		_	_		_
Nomi rated	nal thrust of safety s travel) in kN	oring (for	-	-	-	-	2	1.8	2	3	0.5	1.8	0.5
Manu	ial override		4 m	m hex wre	nch or elec	tric ¹⁾				Electric			
Strok	king speed in mm/s												
Stanc	lard motor/normal sp	beed	0.25	0.25	0.25	0.125	0.25	0.125	0.25	0.125	0.25	0.125	0.25
Stanc	lard motor/fast speed	b	0.5	0.5	0.5	0.25	0.5	0.25	0.5	0.25	0.5	0.25	0.5
Faste	r motor/normal spee	d	0.5	0.5	0.5	-	-	-	-	-	-	-	-
Faste	r motor/fast speed		1	1	1	-	-	-	-	-	-	-	-
In the event of fail-safe action		ion	-	-	-	-	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Trans	sit time in s for rate	d travel											
Stanc	lard motor/normal sp	beed	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	
Faste	r motor/normal spee	d	60	30	60	-	-	-	-	-	-	-	-
Faste	r motor/fast speed		30	15	30	-	-	-	-	-	-	-	-
In the	e event of fail-safe act	ion	-	-	-	-	12	24	12	24	12	24	12
Elect	rical connection												
Supp	ly voltage; power line	fre-			24 V (±1	5 %), 50 to	60 Hz (tole	rance: 47 t	o 63 Hz) ar	d 24 V DC (±15 %)		
quen	cy				100 to 240) V (tolerar	ice: 85 to 2	64 V), 50 to	60 Hz (tole	erance: 47 t	:o 63 Hz)		
Powe	er consumption				_		-			-			-
	24 V AC in VA							1	1			1	1
		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	1/	15	1/	15	1/	15
	100 to 240 V AC in V	A			-		1	1					1
		Fast		13.8 to 20		-	19.8 to 26	28	19.8 to 26	28	19.8 to 26	28	19.8 to 26
Duty	type					S1	- 100 % ac	cording to	EN 60034-	1			
Addit	tional equipment			-									
Limit	contacts Mech	nanical	Two adju Max. 240	stable limit V AC, max.	contacts w 1 A, withou	ith mechai ut contact j	nical chang protection ²	eover swite	ches;				_
	Elect	ronic	Two adju Max. 240	stable limit V AC, max.	contacts w 1 A, withou	ith relay ar ut contact p	nd changed protection ²	over switch	es;				
RS-48	35 module		Module fo	or Modbus	RTU comm	unication							
Weigl	Weight in kg (approx.) 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 3	37	4							
	С	urrent input	0/4 to 20 mA, adjustable, R _i = 50 Ω						
rt	V	oltage input	0/2 to 10 V, adjustable, R_i =20 k Ω						
lnp	P	t1000 input ¹⁾	Measuring range: -50 to +150 °C, 300 μA						
	В	inary input ²⁾	Activation by jumpering the terminals, not galvanically isolated						
Current output		urrent output	0/4 to 20 mA, adjustable; error indication 24 mA						
		Resolution	1000 steps or 0.02 mA						
Ч	Load		Max. 200 Ω						
utpu	Voltage output		0/2 to 10 V, adjustable; error indication 12 V						
Ō	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⁾						
	Ρ	ositioner	The travel follows the input signal						
s	Ρ	ID controller	Fixed set point control						
tion	Τ١	wo-step mode	Two-step mode, floating binary input for actuation						
olica	TI	hree-step mode	Three-step mode, floating binary input for actuation						
App	Temperature closed-loop control upon input signal failure		The integrated PID controller uses a fixed set point for closed-loop control after the input sig- nal fails.						
Display	,		Icons for functions, codes and text field; with backlight						
Rotary	pu	shbutton	Operating control for on-site operation to select and confirm codes and values						
Interface			.S-232, for point-to-point connection to communication participants or for memory pen; per- nanently 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.



¹⁾ When the actuator stem is fully extended

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

Legend	for	Fig.	24:
LCGCIIG	101	1 151	<u> </u>

0 0		
Туре 3374	Dimension h	Dimension h _x
-10	30 mm	
-11	15 mm	>60 mm
-21	15 mm	200 mm
-31	15 mm	



¹⁾ When the actuator stem is fully extended

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

Legend for Fig. 25	Legend	for	Fig.	25
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Туре 3374	Dimension h	Dimension h ₁	Dimension h _x			
-15	20 mm	00 mm				
-17	5011111	90 11111	>100 mm			
-26	15 mm	75 mm	2100 mm			
-36		7511111				





¹⁾ When the actuator stem is fully extended

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



 $^{\scriptscriptstyle 1)}$ When the actuator stem is fully extended

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



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

Table 5:	Parts for	retrofitting	and	accessories
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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 (DN 65 to 80)	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	RS232 RJ12				
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 \cdot Selecting the actuator board 1)

Supply voltage	Type 3374 -		-10	-11	-15	-17	-21	-26	-31	-36	-25	-27	-35
230 V, 50 Hz	Standard	Order no.	100216330		330	100216334		100216332			100216337		
	Faster motor Order no.		100)2163	334	4 –		100216337			-		
24 V, 50 Hz	Standard	Order no.	100	100216332 100216325 100		0021	16322	2	100)2163	327		
	Faster motor	Order no.	100216325		325	-	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 mechanical limit contacts Mechanical/electronic/without

Associated mounting and operating instructions

-	Туре 3374	► EB 8331-3
	(version with three-step signal)	
-	Туре 3374	► EB 8331-4
	(version with positioner)	