

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 M30 x 1.5 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 override¹⁾
- Thrust up to 2.5 kN
- No maintenance required

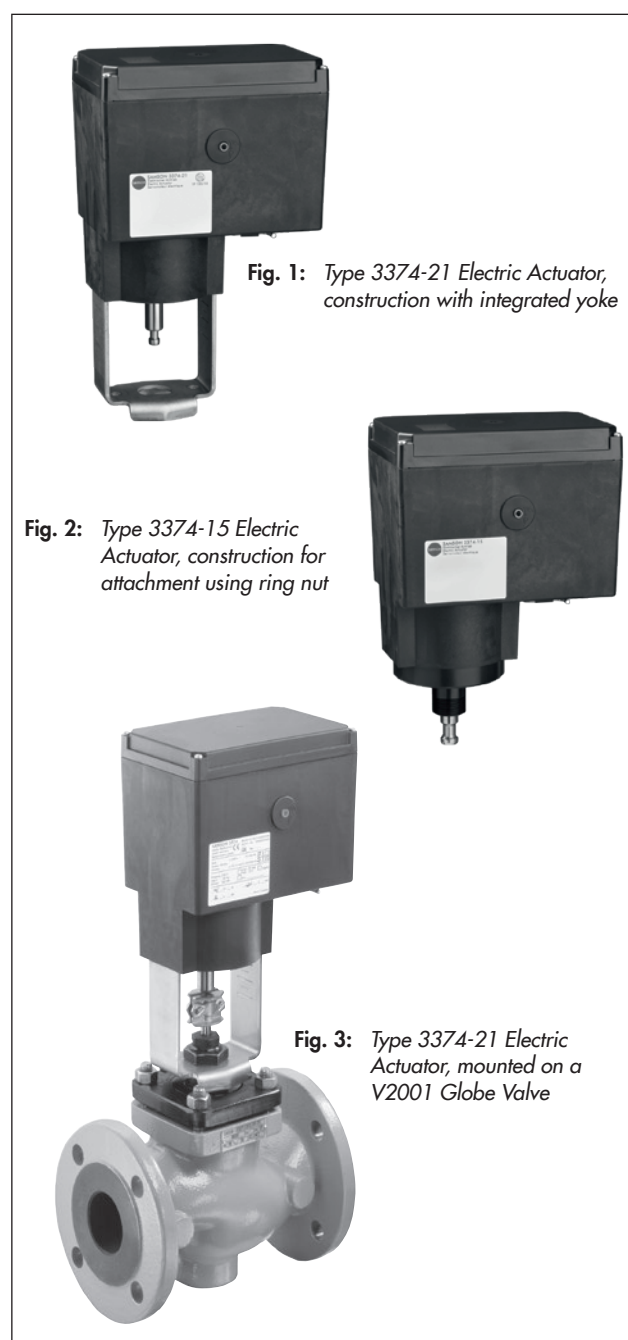
Three-step version

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

Version with digital positioner

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

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



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

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 transmitter

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.

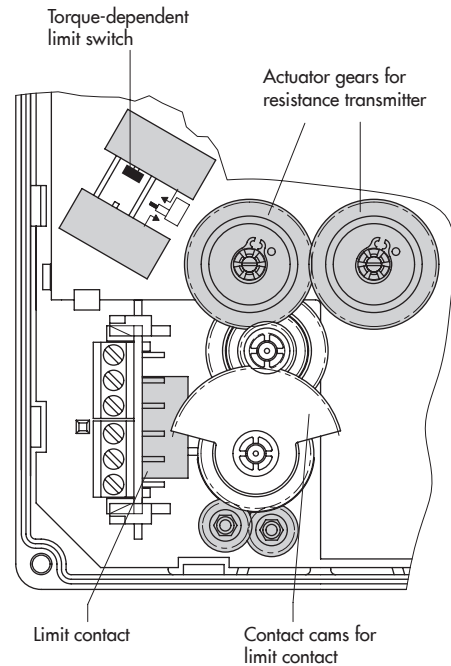
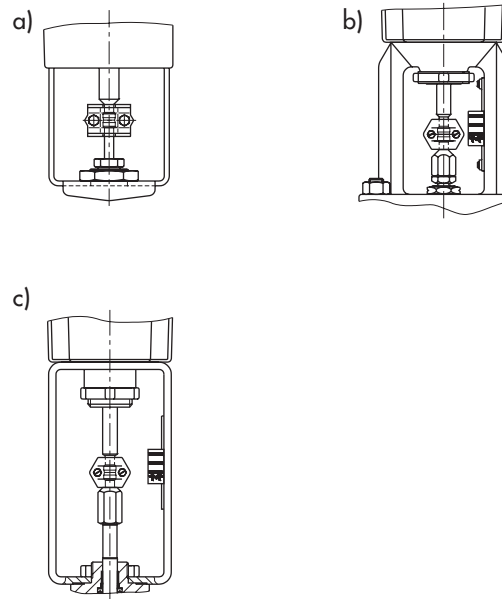


Fig. 4: Partial view with opened cover



With integrated yoke for

- a) Series V2001, Type 3260 (DN 65 to 150)
Type 3214 (DN 65 to 100)

With central attachment for

- b) Series 240
- c) Type 3214 (DN 125 to 250)
Series 240 (Type 3241 and Type 3244)

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 120 V (90 to 132 V), 60 Hz | | | | | | |
| 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 | | | | | | |
| Overvoltage 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 M20 x 1.5 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 (±15 %), 47 to 63 Hz and 24 V DC (±15 %) 85 to 264 V, 47 to 63 Hz | | |
| 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 |
| Thrusts 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 (±15 %), 47 to 63 Hz and 24 V DC (±15 %) 85 to 264 V, 47 to 63 Hz | | | |
| 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 |
| Thrusts 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

| 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 bridging the terminals, not galvanically isolated | |
| Position feed-back | Current | 0/4 to 20 mA, adjustable · Error message 24 mA | |
| | | Resolution | 1000 steps or 0.02 mA |
| | Voltage | Load | Max. 200 Ω |
| | | Resolution | 0/2 to 10 V, adjustable · Error message 12 V |
| | | Load | 1000 steps or 0.01 V |
| Binary input | | Open-circuit voltage: 10 V; short-circuit current: 5 mA By bridging the terminals, not galvanically isolated | |
| Binary output (floating) | Revision 2 | Galvanically isolated, max. 24 V DC/50 mA, no short-circuit protection, polarity configurable | |
| | Revision 3 | Max. 24 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 3

²⁾ Cable glands M20 x 1.5 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.

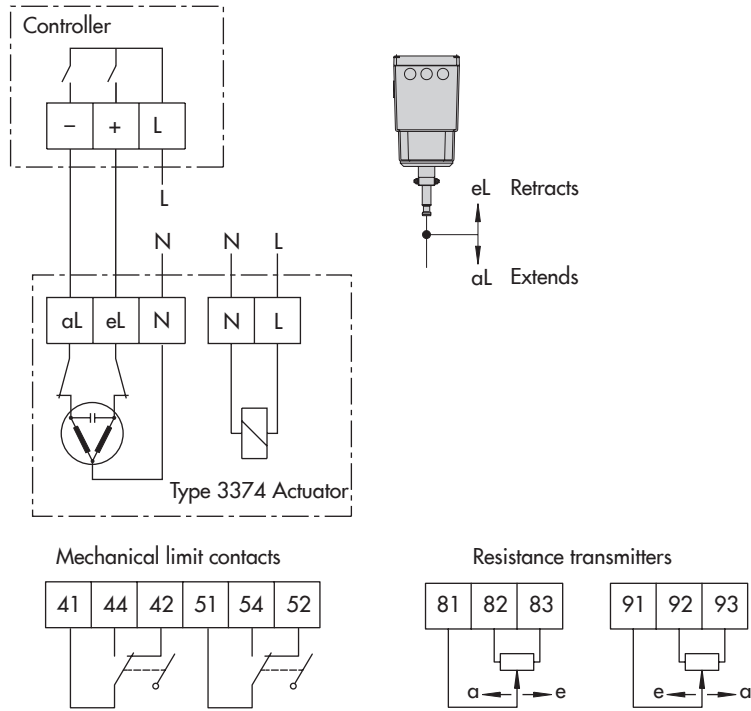
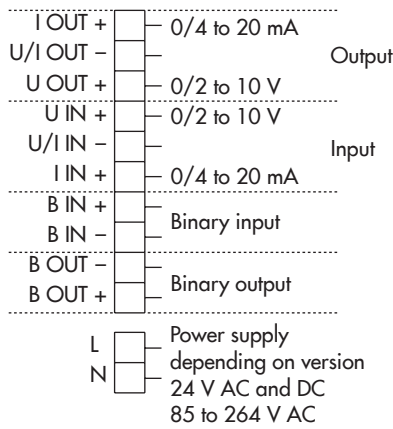


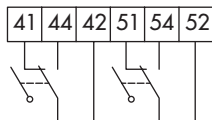
Fig. 6: Electrical connection · Three-step version

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

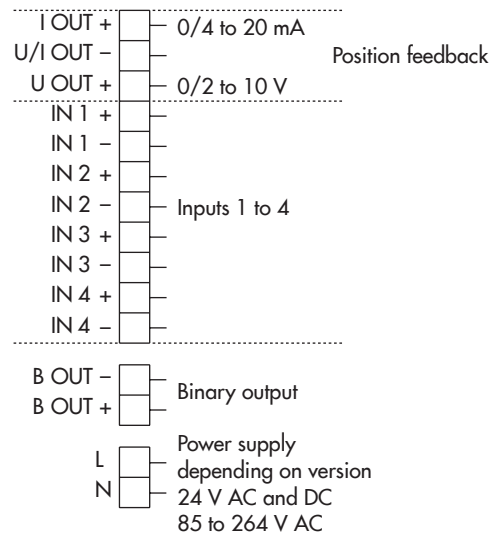


Options:

Mechanical limit contacts



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



Electronic limit contacts

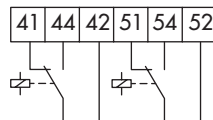
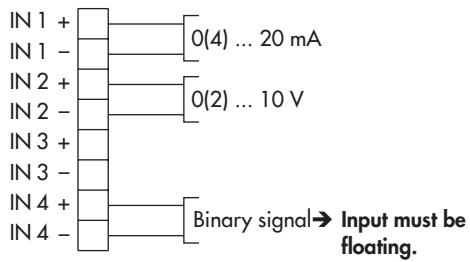
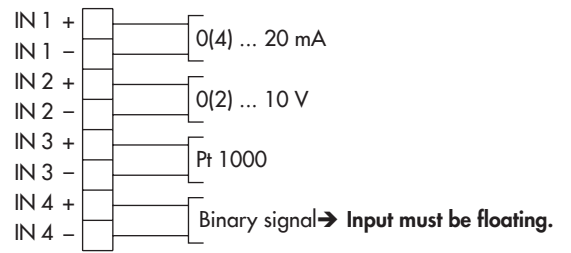


Fig. 7: Electrical connection · Version with digital positioner

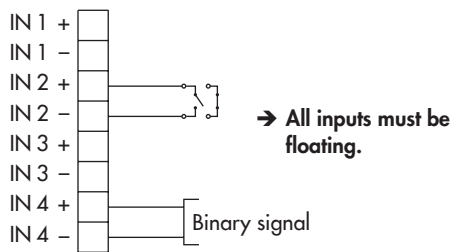
Application: Positioner (POSI)



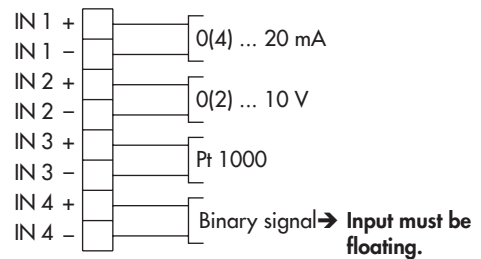
Application: PID controller (PID)



Application: Two-step mode (2STP)



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



Application: Three-step mode (3STP)

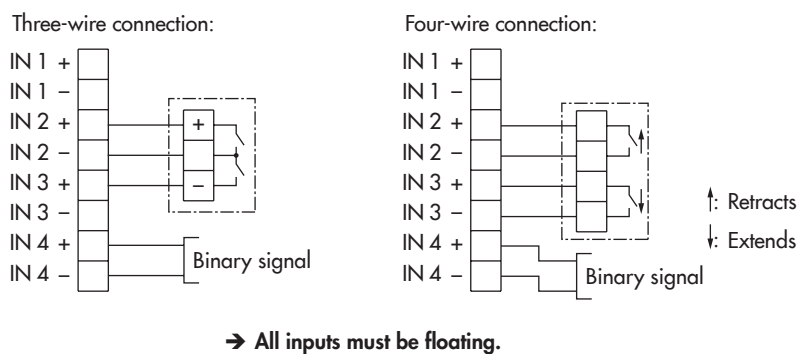
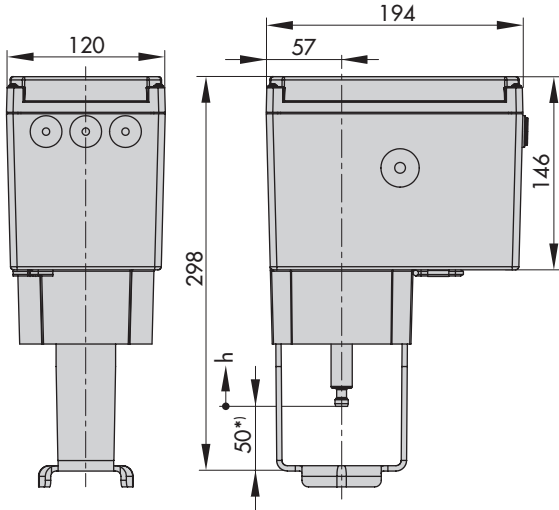


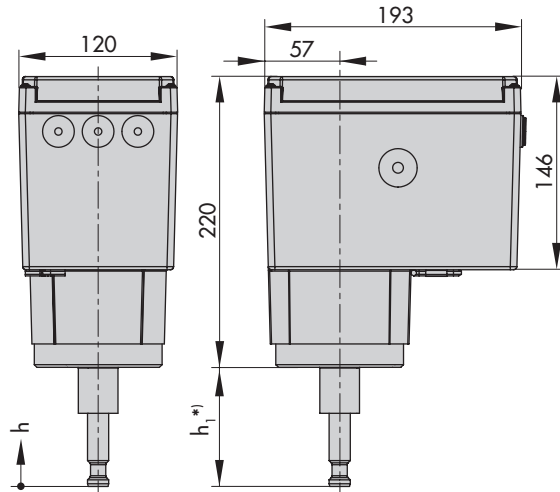
Fig. 8: Terminal assignment depending on application

Dimensions in mm

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



Types 3374-15/-26/-36



*) 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 or
 120 V/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 24 V, 50/60 Hz and DC
 85 to 264 V, 50/60 Hz

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)

Specifications subject to change without notice



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