



AC20 Actuator



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AC20 Actuator

Overview

It is suitable for all applications where precise control of rotational motion from 0 °to 90 °is required. If the power is disconnected, the actuator stops in the current position.

The combined design of actuator AC20 and control components to adjust the gas volume of various burners and flue gas pipes.

The AC20 actuator and butterfly valve combination is designed to control gases up to 10:1 (including hot and cold air).

AC20 actuators and linear flow controllers are designed to control up to 25:1 for gas and cold air. This function is only within the prescribed limits.

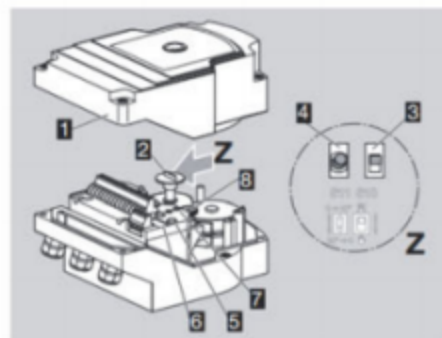
It can only be guaranteed when it is used. Any other use is considered to be non-compliant.



Model Code

Code	Description
AC20	Actuator
	Run time (s) / adjust Angl
-07	(.°)
-15	7.5/90
-30	1 5/90
-60	30/90
	60/90
W	Power supply voltage
Q	230 VAC 50/60HZ
	120 VAC 50/60HZ
2	Torsion moment
3	2.5Nm
E	3 Nm
T	Continuous control
R10	Three-point step control
	Feedback potentiometer control

Structural Description



- 1 Shell cover
- 2 Position indicator
- 3 Slide Switch (S10)
- 4 Switch Switch (s11)
- AC 20...E:
- 5 Minimum maximum buttons
- 6 Incremental Switch
- 7 Red and blue L ed
- 8 Feedback potentiometer (optional)

Safety Matters:

Please read this manual carefully before installation or operation and store it in a safe place. Please follow the installation steps and pass the instructions to the operator. The unit must be installed and put into use in accordance with current regulations and standards.

Responsibility:

We are not responsible for losses caused by non-compliance with the instructions and non-compliance with the use.

Security instructions:

All operation measures can only be carried out by qualified engineers and technicians, and only certified electricians can carry out electrical operation modification and spare parts:

All technical changes are prohibited and only the use of original spare parts is allowed.

Installation Description

Attention!

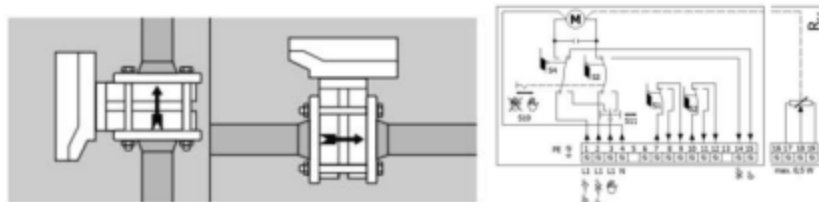
Please note the following to ensure that the actuator is not damaged:

Do not store or install outdoors.

Do not use thermal insulation to isolate the actuator.

Discarding the equipment may cause permanent damage. In this case, replace the entire equipment and related modules before use.

Install in vertical or horizontal position, do not install upside down.



Wiring:

Warning!

Beware of electric shock!

Make sure the unit is disconnected from the power supply before using parts that may be charged.

There must be a switch to disconnect the actuator from the power supply.

Use heat-resistant cable (above 90 degrees Celsius).

Install the power cord and the signal cable respectively.

Both ends of the unconnected wire (spare wire) must be insulated.

The installation of the cable should be away from the high voltage lines of other equipment.

Cable cross section: up to 2.5 mm².

When two or more actuators work in parallel, the three-point stepping controller (terminals 1 and 2) must be electrically isolated to avoid leakage current, and relays are recommended.

Anti-interference capacitors installed in the system can only be used with series resistors to avoid exceeding the maximum current on page 4 (Technical data).

The running time of 60 hertz is 0.83 times less than that of 50 hertz.

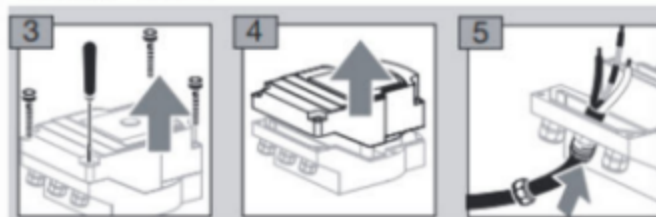
The external device can be activated or the intermediate position can be checked by two additional, floating, infinitely adjustable switches (cam S1 and S2).

The input signal of the driver can be set by an incremental switch.

The position of the incremental switch that is not indicated is free to choose, see connection diagram, page 2 (AC20). .e).

1. Disconnect the system from the power.

2. Cut off the gas supply.



6. The root connection line is shown on page 2 (AC20) and page 2 (AC20) as shown in the connection diagram. .e).

7. Set switch S10 to automatic mode.

Voltage applied to No. 3 and No. 4 terminals

Three-point step control

With the default setting "Off": When a voltage is applied to Terminal 2, the control element turns on. When a voltage is applied to terminal 1, the control element is turned off. Terminal blocks 6 to 12 must have the same voltage potential for operation.

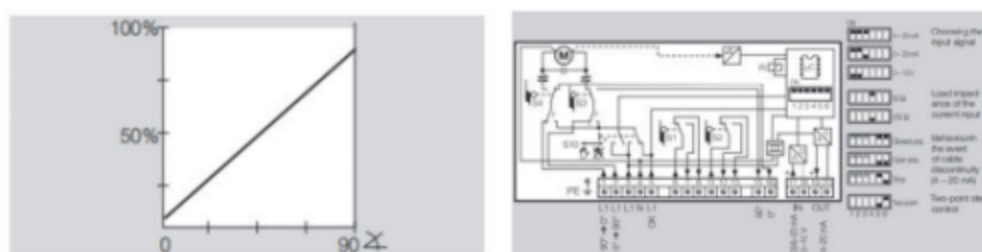
feedback

The feedback potentiometer monitors the current position actuator AC20.

The potentiometer must be used as a voltage divider. The change in potentiometer position (corresponding to the position of the actuator) can be measured as a change in voltage between u- and um.

AC20....

Other circuit layouts produce measurements that are inaccurate and cannot be stable or repeatable over time. They also shorten the lifetime of the feedback potentiometer. The available range depends on the adjustment of the switch cams S3 and S4.



Three-point step control

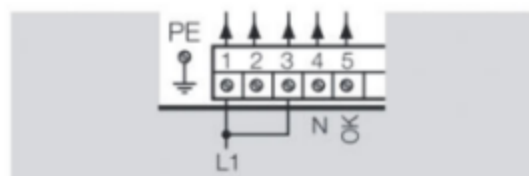
Terminal 5 has no voltage: three-point step control.

Voltage must be continuously applied to terminals 3 and 4.

Low rate of fire (off) and high rate of fire (open) are controlled through terminals No. 1 and No. 2

Two-point step control

Connect the bridge between terminal posts 1 and 3



Set the incremental switch to two-point step control. When a voltage is applied to terminal 5, the actuator opens. When there is no voltage at terminal 5, the actuator shuts down. In the case of two-point control, 17 and 18 terminals for continuous control are not required.

Continuous control

Voltage of terminal 5: continuous control.

Via terminal blocks 17 and 18, the driver reacts to the setpoint specifications (0(4)-20mA, 0-10V).

The continuous signal corresponds to the adjustment angle to be approached (e.g. 0-20mA signal, 10mA corresponds to valve angle 45°).

feedback

Terminals 19 and 20: AC20.E provides the option to monitor the current position of the actuator with a continuous 4-20 mA output signal.

Input signal

Positioning control hysteresis can be adjusted on the potentiometer to suppress fluctuations or interference in the input signal.

Turn the potentiometer clockwise to increase the hysteresis accordingly.



Debugging

Remind

Note the following to ensure that the actuator and butterfly valve are not damaged:

The angle of cam S4 is less than 0 ° or the angle of cam S3 is greater than 90 ° can damage the actuator or butterfly valve.

In the switching cam S3, the maximum opening angle can be set, and in S4, the minimum opening angle can be set.

The switch cam s1/s2 can be adjusted arbitrarily.

Warning:

Live components and cables are in danger of electric shock.

Manual mode settings.

The position in the low speed range can be accurately adjusted.

1. Set the slide switch s 10 to manual mode and the blue led light is on.



2. The voltage must be continuously applied to the actuator (terminals 3 and 4) to allow the control element to open.

3. Press the switch S11 up and the control element opens.

4. Press the toggle switch S11 and the control element is turned off.

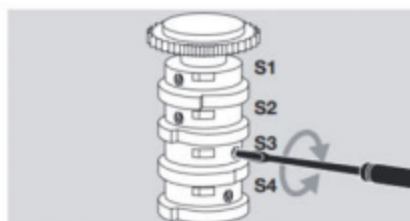
Use the switch cam S3 to set the maximum opening angle.

Only adjust S3 between 40 ° and 90 °. Feedback signal to terminal 15.

S3 can be accessed only when the control element is turned on.

5. Move the actuator to its maximum opening angle.

6. Adjust the release point of cam S3 with a screwdriver.



Counterclockwise = smaller opening angle, clockwise = larger opening angle.

Attention

Remove the screwdriver again before trying to start the switch cam.

Set the minimum opening angle with the switch cam S4.

Only adjust S4 between 0 ° and 30 °.

Feedback signal to Terminal 16.

7. Move the actuator to the minimum opening angle.

8. Adjust the release point of cam S4 with a screwdriver.

Adjust the s1/s2 switch cam.

9. Adjust the release point of the s1/s2 cam with a screwdriver.

The cam can be at the full corner of the drive (0-90°). Make adjustments.

AC20..E: in the case of continuous control, adapt the adjustment angle to the input signal.

The maximum input signal \leq the maximum angle, and the minimum input signal \leq the minimum angle.

The AC20..E is in manual mode and the blue led light is on.

Automatic calibration.

In the case of automatic calibration, the minimum and maximum opening angles correspond to the settings of the switching cam S3 and S4.

? Start manual mode. Press the minimum and maximum buttons at the same time (approximately 3 seconds) until the red (r) and blue (b) LEDs flash.

When the calibration is complete, the blue LED light is on and the red led light is off.



Manual calibration

The minimum and maximum opening angles can be set anywhere using switching cams S3 and S4.

1. The control element is moved to the desired minimum position by the button switch S11.

If the control element is already in the minimum position, the toggle switch S11 must be pressed briefly.

2. Press the minute button (about 3 seconds) until the blue led goes off briefly (about 0.5 seconds).

3. Move the control element to the desired maximum position through the button switch S11.

4. Press the largest button (about 3 seconds) until the blue LED goes out briefly (about 0.5 seconds).

Characteristic curve inversion.

The ma value of low fire is higher than that of high fire ($\min \geq \max$).

1. The control element is moved to the desired minimum position by the button switch S11.

If the control element is already in the minimum position, the toggle switch S11 must be pressed briefly.

2. Press the minute button (about 3 seconds) until the blue led goes off briefly (about 0.5 seconds).

The current maximum. Position, press the minute button until the red led light is on for a short time (about 0.5 seconds) and hold for about 3 seconds until the blue led light goes off for a short time (about 0.5 seconds).

3. Move the control element to the desired maximum position through the button switch S11.

4. Press the largest button (about 3 seconds) until the blue LED goes out briefly (about 0.5 seconds).

If the maximum position is less than the current minimum position, press the maximum button until the red led light is on (approximately 0.5 seconds) and hold for approximately 3 seconds until the blue led light goes off (approximately 0.5 seconds).

Maintain.

The actuator AC20 has less wear and less maintenance, so it is recommended to carry out a function check once a year.

Fault handling.

Fault: the control element did not move.

Reason 1: the actuator is in manual mode (AC20..E: blue light).

Measure: set the slide switch S10 to automatic mode?

Reason 2: terminal 5 has no voltage.

Measure: check the voltage of terminal 5

Reason 3: damage to motor coils or electronic equipment due to high ambient temperature and / or high working voltage.

Measures: check ambient temperature and / or operating voltage, see type label or page 9 (technical data).

Reason 4: the maladjustment of the cam tripping point. S4 is set to a wider angle than S3. (after automatic calibration, AC20.E: red led light is on, blue led light flashes once).

Measures: adjust the travel point, see page 5 (debugging). Then calibrate AC 20.

Reason 5: circuit failure.

Measure: replace the actuator.

AC20...E.

Reason 1: incorrect position of increment switch.

Measure: use the incremental switch to set the correct input signal.

Reason 2: manual timing adjustment range is too small, red LED light flashes 3 times.

Measures: increase the adjustment range using the minimum and maximum buttons, see page 5 (debugging).

Reason 3: 4-20ma set point input signal is less than 3ma. The red light flashed once.

Measures: check the input signal and repair the line.

Fault: the motor and drive shaft of the actuator do not work as required.

Reason 1: defective gears.

Measures: replace new parts.

Reason 2: excessive gear load.

Measure: check whether the torque exceeds the rated value.

Fault: the feedback potentiometer shows incorrect values?

Reason 1: the installation position of the potentiometer is incorrect.

Measures: install the potentiometer correctly-refer to the potentiometer operation instructions.

Reason 2: wrong connection line on the terminal block.

Measures: check the junction board. The wiring on the.

Reason 3: incorrect use of potentiometer.

Measures: using potentiometer as voltage divider.

Reason 4: the coil of the potentiometer is defective.

Action: replace the potentiometer-refer to the potentiometer operation instructions.

Fault: the control element is constantly moving.

Reason 1: AC 20... E: the current signal fluctuates and the red indicator flashes twice.

Measures: check the control loop, eliminate interference, increase lag using potentiometer, see page 5 (input signal).

Reason 2: Ic 20: 3 step signal fluctuation.

Measures: check / adjust the three-point stepper controller?

Technical data environmental conditions.

Freezing, condensation and dew are not allowed in this machine to avoid direct sunlight or red heat radiation on the surface of the fuselage.

Pay attention to the maximum medium and ambient temperature.

Avoid corrosive effects, such as salty ambient air or so2. This machine can only be stored / installed in airtight rooms / buildings.

Housing: AC20 for use with other sealed butterfly valves: ip65.

The AC 20 is used with the unsealed butterfly valve installed on the AC 20 housing: ip64.

Safety level: this machine is not suitable for cleaning with high pressure cleaners and / or cleaning products.

Ambient temperature:-20 to + 60 °C, condensation is not allowed.

Mechanical data.

Rotation angle: 0-90 °, adjustable.

Hold torque = torque

Model	Elapsed time (Scord 90 °)		Torque (Nm)	
	50HZ	60HZ	50HZ	60HZ
AC20-07	7.5	6.25	2.5	2
AC20-15	15	12.5	3	3
AC20-30	30	25	3	3
AC20-60	60	30	3	3

Electrical data

Supply voltage: 120 VAC, -15/+ 10%, 50/60 Hz,

230 volts AC, - 15/+ 10%, 50/60 Hz

Wires can use single-core cables up to 4 square millimeters

or multi-core sheathed cables up to 2.5 mm².

Contact rating of the cam switch

Supply voltage	Minimum current (resistive load)	Maximum current (resistive load)
24-230V.50/60HZ	1mA	2A
24VDC	1mA	100mA

Duty cycle: 100% electrical connection: Line entry: 3XM20 plastic cable gland.

AC 20 power consumption: 50 Hz 4. 9 voltam, 60 Hz 5. 8 volt amperes,

Feedback potentiometer resistance: 1kw max. 0.5w.

Ac.. 20E

Power consumption: Terminal 1, 2, 5: 4.9VA(50HZ), 5.8VA(60HZ)

Terminal 3: 8. 4VA(50HZ), 9. 5VA(60HZ)

Total not exceeds: 8. 4VA(50HZ), 9.5VA(60HZ)

Feedback output: galvanically isolated, maximum load impedance of 500W

When the supply voltage is applied to terminal 3, the output is always active:

Input: Galvanic isolation

4(0)-20mA: Load impedance can be switched between 50W and 250W,

0-10V: 100kw input resistance.

Transport protection

Protection of components from external forces (shock, shock, vibration).

Transport temperature: See page 9 (technical data).

Transportation is affected by the surrounding environmental conditions.

Promptly report any damaged units or packages for transportation

To check if the delivery is complete, see page 2 (Part Name).

Storage

Storage temperature: See page 9 (technical data). Storage is described by environmental conditions

Storage time: 6 months before first use

Scrapped Description

Devices with electronic components:

At the end of the product life cycle (the number of times the operating cycle has been reached), the packaging and product are disposed of to the appropriate recycling center. Never place the unit

Dispose of together with general household waste. Do not burn the product.