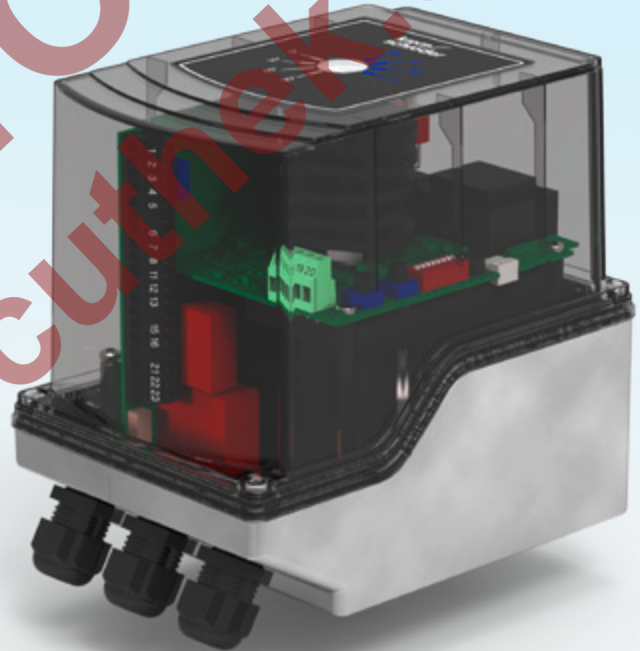


## Actuators IC 20, IC 30, IC 50

Product brochure · GB  
3 Edition 02.16

EARL CE

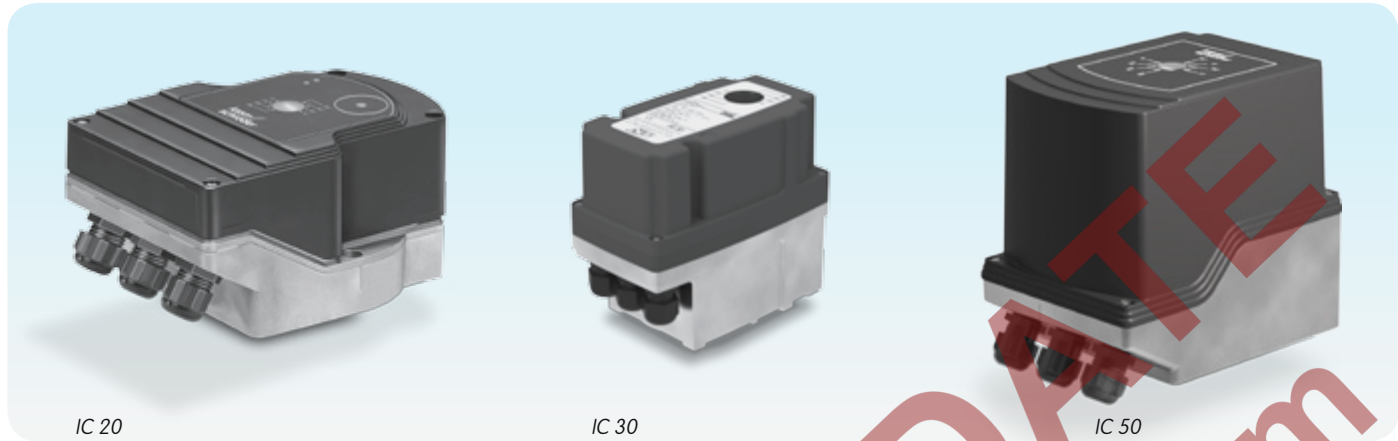


**krom  
schroder**



- Easy to switch between Automatic and Manual mode
- Position indicator that can be read externally
- Three-point step control
- IC 20..E and IC 50..E also for continuous control
- IC 20..E, IC 50..E with electronic positioning function
- IC 50 for high torques and with selectable direction of rotation
- IC 30 for 24 V DC
- IC 20 and IC 50 can be delivered ready installed on control element
- IC 20, IC 50: adjustable motor behaviour in the event of cable discontinuity, for example

## Applications



### Application

The actuators are designed for all applications that require precise, controlled rotary movement between 0° and 90°. In conjunction with a control element, they are suitable for regulating flow rates on gas and air appliances for modulating or stage-controlled combustion processes.

In addition to setting the Min. and Max. positions using infinitely adjustable switching cams, floating limit switches mean that additional switching positions such as for ignition and high-fire rate positions can be set.

A standard Service switch allows the device to be switched from Automatic to Manual mode and a position indicator which can be read from the outside drastically simplifies the commissioning procedure.

IC 20, IC 30 and IC 50 are controlled by a three-point step signal. IC 20..E and IC 50..E can also be controlled by a continuous signal.

An integrated feedback potentiometer offers the option of monitoring the current position of the actuator. This checking function can be used in automation processes.

IC 20..E, IC 50..E

The behaviour of the actuator, e.g. if the input signal falls below the minimum limit in the event of cable discontinuity, can be set using DIP switches.

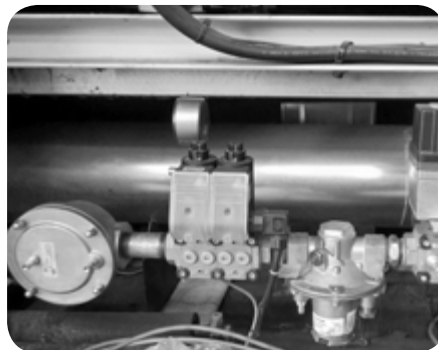
Fluctuations or interference in the input signal are suppressed by an adjustable potentiometer. In the case of continuous control, the input signal can be adapted to the minimum and maximum adjustment angles manually or automatically. This calibration process can be visualized using LEDs. The continuous signal offers the option of monitoring the current position of the actuator.



*Roller hearth kiln in the ceramics industry*



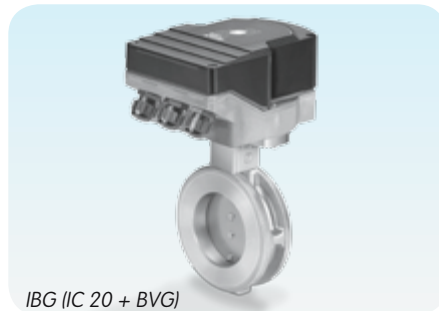
*Forging furnace*



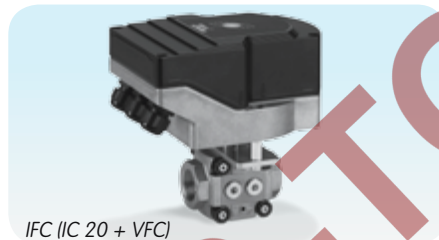
*CHP for generating electricity and heat*

### IC 20

The actuator IC 20 can be mounted directly onto the butterfly valves BVG, BVGF, BVA, BVAF, BVH or BVHS. The combination is designed for control ratios up to 10:1.



Actuator IC 20 and linear flow control VFC can be delivered ready assembled. The combination is designed for control ratios up to 25:1.

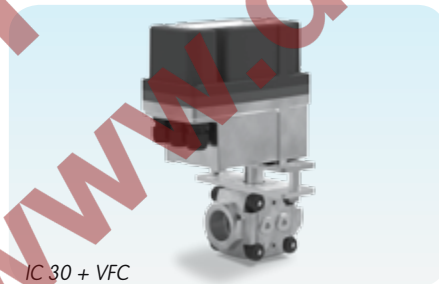


### IC 30

Actuator IC 30 is used as an actuator for linear flow control VFC. An adapter set must be used for assembly. The IC 30, linear flow control VFC and the adapter set are not assembled on delivery.

This combination is designed for a control ratio of up to 25:1.

IC 30 is suitable for 24 V DC applications.



### IC 50

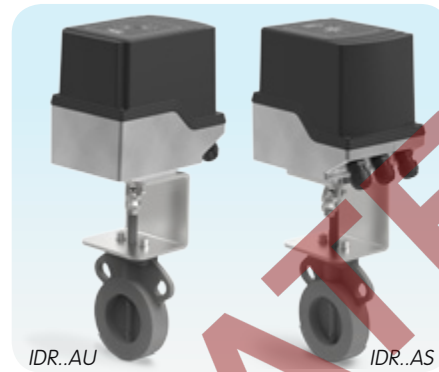
IC 50 is designed for applications with high torques of up to 30 Nm.

Actuator IC 50 and butterfly valve DKR are also delivered ready assembled up to nominal size 300.

The direction of rotation of the valve disc can be switched. The valve disc position can be read from the outside whereby the direction of rotation is indicated using a colour code.

Depending on the application, the actuator can be aligned to the butterfly valve using various attachment sets.

### Axial mounting



The actuator is axially aligned to butterfly valve DKR and can be mounted rotated in increments of 90°. The connections are then positioned above the pipe or to the side of the pipe.

### Attachment with linkage

If the actuator is to be operated offset to the side of the butterfly valve, an attachment set with linkage can be used. The actuator may be installed rotated by 180°.



This attachment set ..GD is used for butterfly valves with disc clearance DKR..D.

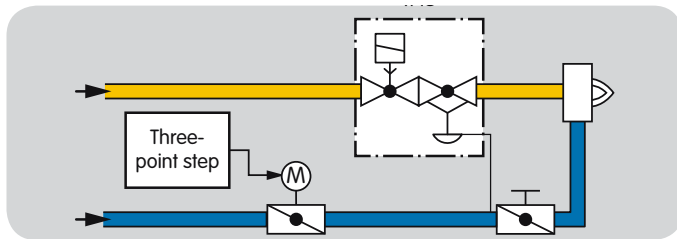


In the case of butterfly valves with stop bar DKR..A, an attachment set. GA with shock suppressor must be used.

As of a medium temperature of > 250°C, the actuator is to be protected by a heat deflector.

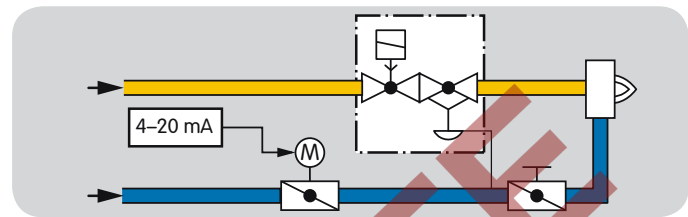
### Examples of application

#### Modulating control via three-point step signal

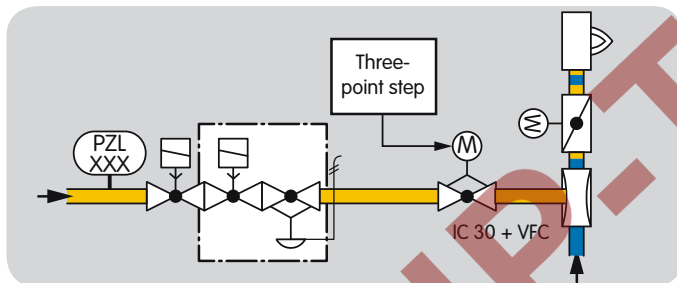


For processes that require high temperature accuracy and low circulation in the furnace. Actuator IC is controlled by a three-point step controller and moves the butterfly valve to the ignition position. The burner starts. The butterfly valve opens or closes between the low-fire/high-fire rate positions depending on the capacity demand of the burner. When the three-point step signal is disconnected, the butterfly valve stops at its current position.

#### Modulating control with continuous input signal

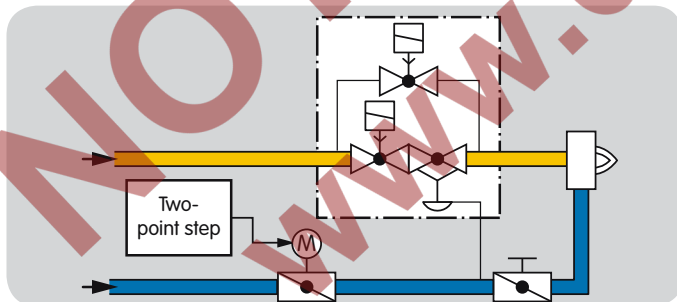


For processes that require high temperature accuracy and low circulation in the furnace. Actuator IC..E is controlled by a (0) 4–20 mA or 0–10 V signal. The continuous signal corresponds to the adjustment angle to be approached and offers the option of monitoring the current position of the actuator.

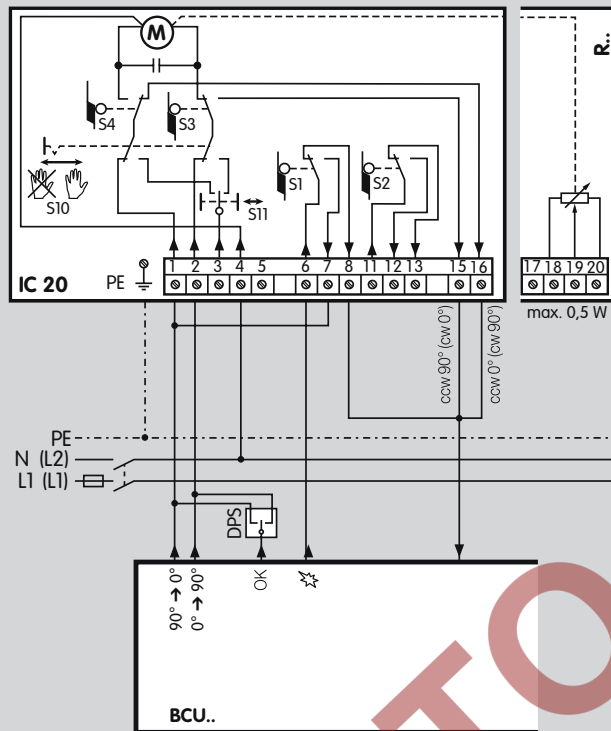


For processes that require high control accuracy. The low-fire and high-fire rates are adjusted using the control element upstream of the burner. Actuator IC 30 is controlled by a three-point step controller and ensures the desired gas/air mixture is produced.

#### Staged control via two-point step signal



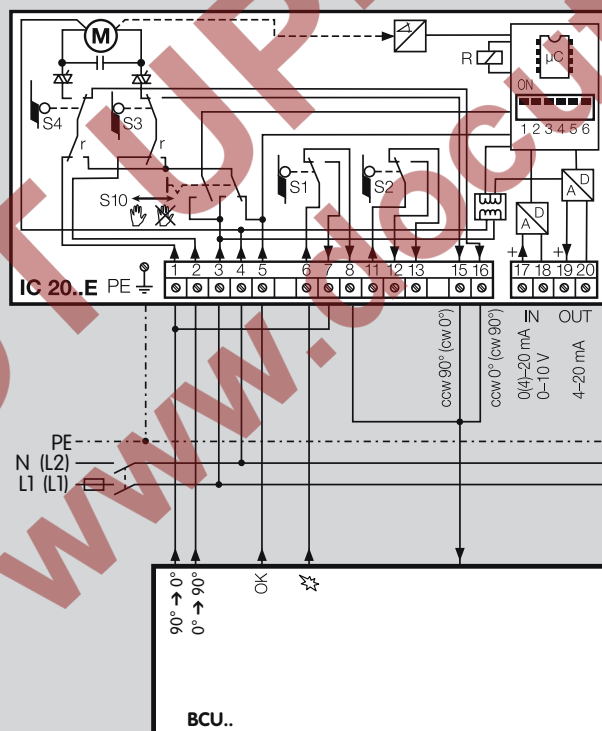
For processes that require a homogeneous temperature distribution in the furnace. Actuator IC..E is controlled by a two-point step controller and operates in On/Off or High/Low intermittent mode. The actuator closes when the voltage supply is disconnected.



#### IC 20, modulating control with burner control unit BCU

The BCU moves the butterfly valve to pre-purge and ignition positions. After pre-purge and burner start, the controller enable signal is issued to an external three-point step controller which positions the butterfly valve in accordance with the capacity demand.

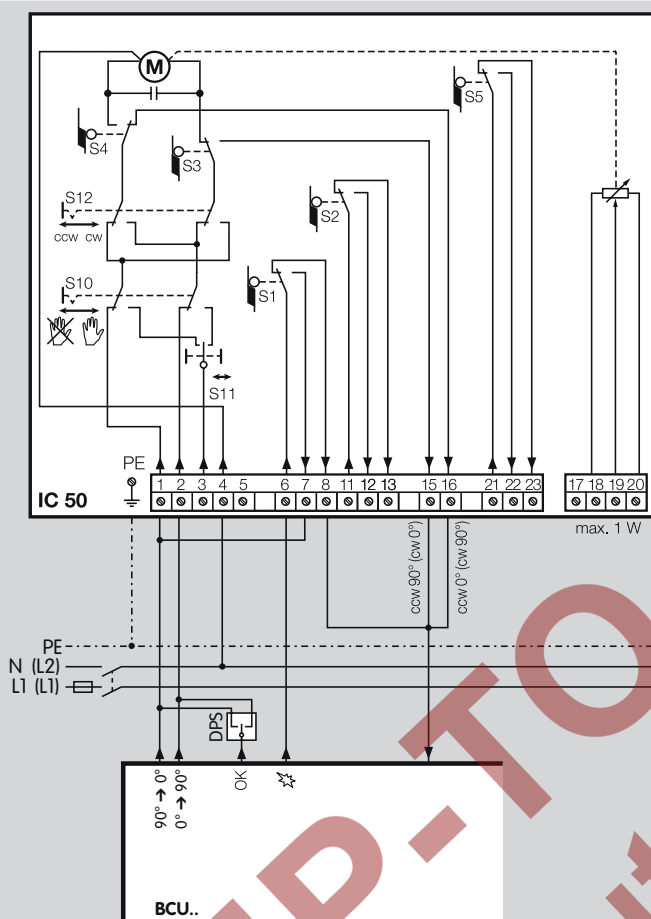
Once the pre-purge or ignition positions has been reached, a feedback signal is sent to the BCU.



#### IC 20..E, continuous control with burner control unit BCU

The BCU controls pre-purge and moves the butterfly valve to pre-purge and ignition positions.

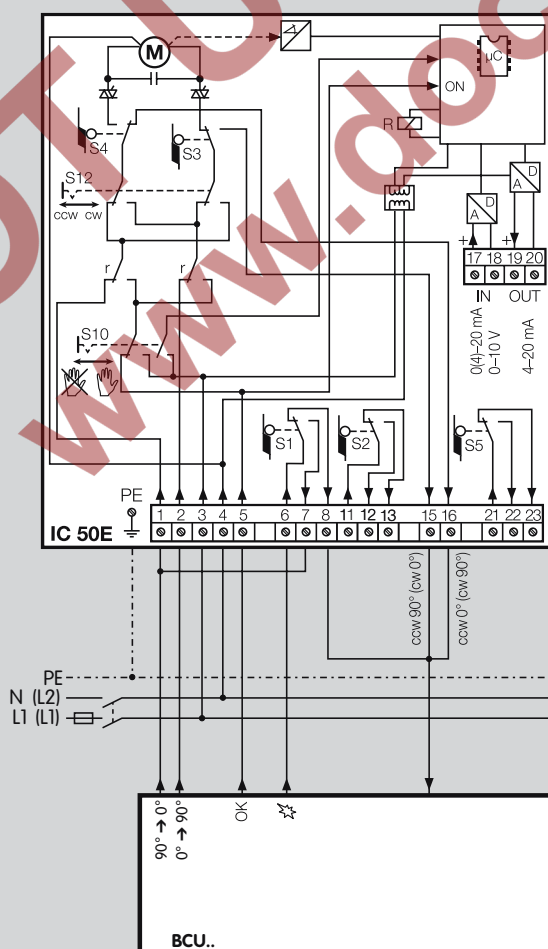
Once the BCU has started the burner, the modulation enable signal is issued via terminal 5 (OK). Actuator IC 20..E reacts to the (I) 4 – 20 mA or 0 – 10 V setpoint specification signals.



### IC 50, three-point step control with burner control unit BCU

The BCU moves the butterfly valve to pre-purge and ignition positions. After pre-purge and burner start, the controller enable signal is issued to an external three-point step controller which positions the butterfly valve in accordance with the capacity demand.

Once the pre-purge or ignition position has been reached, a feedback signal is sent to the BCU.



### IC 50..E, continuous control with burner control unit BCU

The BCU controls pre-purge and moves the butterfly valve to pre-purge and ignition positions.

Once the BCU has started the burner, the modulation enable signal is issued via terminal 5 (OK). Actuator IC 50..E reacts to the (I) 4–20 mA or 0–10 V setpoint specification signals.



## Type code

### IC 20

Code	Description
IC 20	Actuator
	Running time in s/90°:
-07	7.5
-15	15
-30	30
-60	60
	Mains voltage:
W	230 V AC, 50/60 Hz
Q	120 V AC, 50/60 Hz
	Torque:
2	2.5 Nm
3	3 Nm
E	Continuous control
T	Three-point step control
R10	Feedback potentiometer

### IC 30

Code	Description
IC 30	Actuator
	Running time in s/90°:
-30	30
-60	60
K	Mains voltage 24 V DC, ± 20%
3	Torque 3 Nm
T	Three-point step control
R10	Feedback potentiometer

### IC 50

Code	Description
IC 50	Actuator
	Running time in s/90°:
-03	3.7
-07	7.5
-15	15
-30	30
-60	60
	Mains voltage:
W	230 V AC, 50/60 Hz
Q	120 V AC, 50/60 Hz
H	24 V AC, 50/60 Hz
	Torque:
3	3 Nm
7	7.5 Nm
15	15 Nm
20	20 Nm
30	30 Nm
E	Continuous control
T	Three-point step control
R10	Feedback potentiometer

## Technical data

### IC 20, IC 50

Angle of rotation: 0–90°, adjustable.

Holding torque = torque.

Duty cycle: 100%.

Contact rating of the cam switches:

Voltage	Min. current (resistive load)	Max. current (resistive load)
24–230 V, 50/60 Hz	1 mA	2 A
24 V DC	1 mA	100 mA

Line entrance for electrical connection:  
3 × M20 plastic cable glands.

Screw terminals using the elevator principles for cables up to 4 mm<sup>2</sup> (single core cables) and for cables up to 2.5 mm<sup>2</sup> with wire end ferrules.

Typical designed lifetime:

Switching current	Switching cycles	
	cos φ = 1	cos φ = 0.3
1 mA	1,000,000	–
22 mA <sup>1)</sup>	–	1,000,000
100 mA	1,000,000	–
2 A	100,000	–

<sup>1)</sup> Typical contactor application (230 V, 50/60 Hz, 22 mA, cos φ = 0.3)

Three-point step signal to terminals

1 and 2:

minimum pulse duration: 100 ms,

minimum pause between 2 pulses:

100 ms.

Enclosure: IP 65, safety class: I.

Ambient temperature:

-20 to +60°C, no condensation permitted.

Storage temperature: -20 to +40°C.

### IC 20, IC 20..E

Mains voltage:

120 V AC, -15/+10%, 50/60 Hz,

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

Type	Running time [s/90°]		Torque [Nm]	
	50 Hz	60 Hz	50 Hz	60 Hz
IC 20-07	7.5	6.25	2.5	2
IC 20-15	15	12.5	3	3
IC 20-30	30	25	3	3
IC 20-60	60	50	3	3

### IC 20

Power consumption:

4.9 VA at 50 Hz, 5.8 VA at 60 Hz.

Resistance of the feedback potentiometer:

1 kΩ, max. 1 W.

**IC 20..E**

Power consumption:

terminals 1, 2 and 5:

4.9 VA at 50 Hz, 5.8 VA at 60 Hz,  
terminal 3:

8.4 VA at 50 Hz, 9.5 VA at 60 Hz,

in total not exceeding:

8.4 VA at 50 Hz, 9.5 VA at 60 Hz.

Position feedback output:

4–20 mA, electrically isolated, max. 500 Ω  
load impedance.

The output is always active when supply  
voltage is applied to terminals 3 and 4.

Input: electrically isolated,

0 (4)–20 mA: load impedance switchable  
between 50 Ω and 250 Ω,

0–10 V: 100 kΩ input resistance.

**IC 50, IC 50..E**

Mains voltage:

24 V AC, -15/+10%, 50/60 Hz,

120 V AC, -15/+10%, 50/60 Hz,

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

Type	Running time [s/90°]		Torque [Nm] 50 Hz/60 Hz
	50 Hz	60 Hz	
IC 50-03	3.7	3.1	3
IC 50-07	7.5	6.25	7
IC 50-15	15	12.5	15
IC 50-30	30	25	20
IC 50-60	60	50	30

**IC 50**

Power consumption:

16 VA at 60 Hz, 13 VA at 50 Hz.

Resistance of the feedback potentiometer:

1 kΩ, max. 1 W, max. wiper current : 0.1 mA.

**IC 50..E**

Power consumption:

terminals 1, 2 and 5: 16 VA at 60 Hz, 13 VA  
at 50 Hz,

terminal 3: 19 VA at 60 Hz, 16 VA at 50 Hz,  
in total not exceeding: 19 VA at 60 Hz, 16  
VA at 50 Hz.

Feedback output:

galvanically isolated, max. 500 Ω load  
impedance.

The output is always active when mains  
voltage is applied to terminal 3.

Input: electrically isolated,

4 (0)–20 mA: load impedance switchable  
between 50 Ω and 250 Ω,

0–10 V: 100 kΩ input resistance.

**IC 30**

Angle of rotation: 0–90°, adjustable.

Holding torque = torque.

Mains voltage: 24 V DC, ±20%.

Line entrance for electrical connection:

3 x M16 plastic cable glands (enclosed).

Screw terminals using the elevator prin-  
ciples for cables up to 2.5 mm<sup>2</sup> with wire  
end ferrules.

The running time changes depending on  
the load. It refers to the torque, see type  
label.

Contact rating of the cam switches:

Voltage	Min. current (resistive load)	Max. current (resistive load)
24–230 V, 50/60 Hz	1 mA	2 A
24 V DC	1 mA	100 mA

Enclosure: IP 65.

Duty cycle: 100%.

Power consumption: 4 W,  
when switching on: briefly 8 W.

Ambient temperature:

-15 to +60°C, no condensation permitted.

Storage temperature: -15 to +40°C.

Resistance of the feedback potentiometer:

1 kΩ, < 50 V,  
recommended wiper current: 0.2 μA.

**Maintenance**

Actuators IC suffer little wear and require  
little servicing.

We recommend a function check once a year.

## Detailed information on this product



## Contact

[www.kromschroeder.com](http://www.kromschroeder.com) → Sales

Elster GmbH  
Postfach 2809 · 49018 Osnabrück  
Strothweg 1 · 49504 Lotte (Büren)  
Germany  
T +49 541 1214-0  
F +49 541 1214-370  
[info@kromschroeder.com](mailto:info@kromschroeder.com)  
[www.kromschroeder.com](http://www.kromschroeder.com)

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