

ExRun Valve Actuator On-Off, 3 Pos, 3 Pos-P, 3 Pos-U

Electrical, explosion proof linear actuator – from 500 N to 10,000 N

24..240 VAC/DC, 5-60 mm stroke

PTB-tested in acc. with ATEX RL 94/9/EC for zone 1, 2, 21, 22.

ExRun - 5.10
ExRun - 25.50
ExRun - 75.100
ExRun - ... - X
ExRun - ... - P
ExRun - ... - S
ExRun - ... - U
ExRun - ... - . - CTS

Subject to change!

Compact. Easy installation. Universal. Cost effective. Safe.

Type	Force	Supply	Motor running time	Control mode	Feedback	Wiring diagram
ExRun - 5.10	0,5 kN / 1,0 kN	24..240 VAC/DC	2 / 3 / 6 / 9 / 12 s/mm	On-Off, 3-Pos	-	SB 1.0
ExRun - 25.50	2,5 kN / 5,0 kN	24..240 VAC/DC	2 / 3 / 6 / 9 / 12 s/mm	On-Off, 3-Pos	-	SB 1.0
ExRun -75.100	7,5 kN / 10,0 kN	24..240 VAC/DC	4 / 6 / 9 / 12 / 15 s/mm	On-Off, 3-Pos	-	SB 1.0
ExRun - ... - X	Type as above but <u>without</u> possibility to assemble external aux. switches (ExSwitch)					SB 1.0
ExRun - ... - P	Type as above but with additional feedback potentiometer			On-Off, 3-Pos	Potentiometer 1000 Ohm	SB 4.0
ExRun - ... - U	Type as above but with additional feedback 0..10 V / 4..20 mA			On-Off, 3-Pos	0..10 V / 4..20 mA	SB 5.0
ExRun - ... - S	Type as above but with additional 2 integrated potential free aux. switches (fix set points), max.24 V/1 A, 240 V/0,25 A					SB 3.5
ExRun - ... - CTS	Type as above but with amercoat painting, outside parts in stainless steel, cable glands nickel-plated					

Product views/Application



Side view



Back view with terminal box



Front view



Actuator mounted on valve



Compact body

Description size S Highlights

The new ExRun valve actuators are a revolution for safety, control valve and other motorized applications for HVAC systems, in chemical, pharmaceutical, industrial and Offshore-/Onshore plants, for use in Ex-areas zone 1, 2 (gas) and zone 21, 22 (dust).

Highest protection class (ATEX) and IP66 protection, small dimensions, only 7 kg weight, universal functions and technical data, an integrated heater guarantee safe operation even under difficult environmental conditions. High quality brushless motors guarantee long life.

All actuators are programmable and adjustable on site. Special tools or equipment are not required. 5 motor running times and 2 forces, according to the actuator type, are selectable or adjustable on site. The integrated universal power supply is self adaptable to input voltages in the range of 24 to 240 VAC / DC.

The actuators are 100% overload protected and self locking.

The modular concept offers the possibility to mount adjustable end switches for signalization (except version ExRun -...- X).

ExRun -...- P actuators are additionally equipped with a feedback potentiometer. ExRun -...- U is a 3-pos. actuator but additionally equipped with an analogue output 0..10 V / 4..20 mA.

The ExRun -...- S has integrated aux. switches (fix positions).

- ▶ For all type of gas, mixtures, vapours and dust for use in zone 1, 2, 21 and 22
- ▶ Universal supply unit from 24 to 240 VAC/DC
- ▶ Selectable forces (0,5 - 1,0 kN) (2,5 - 5 kN) (7,5 - 10 kN), acc. to type
- ▶ Selectable motor running times (2-3-6-9-12 s/mm), (4-6-9-12-15 s/mm)
- ▶ Control : On-Off, 3-Pos, 3-Pos with feedback potentiometer, 3-Pos-U with 0-10V / 4-20mA feedback
- ▶ 0,5 - 1,0 - 2,5 - 5,0 - 7,5 - 10 kN actuator in only one housing (size S)
- ▶ 100 % overload protected, self locking
- ▶ Mechanical stroke limitation, 5...60 mm adjustable
- ▶ Adjustable feedback gear unit for strokes 10 / 20 / 30 / 60 mm
- ▶ integrated Ex-e junction box
- ▶ Compact design and small dimension (L x W x H = 298 x 208 x 115 mm)
- ▶ Robust aluminium housing (optional marine painting "Option CT")
- ▶ IP66 protection
- ▶ Manual override included
- ▶ Only 7 kg weight
- ▶ Integral safety temperature sensor
- ▶ Status indication by LED



ExRun-5.10

ExRun-25.50

ExRun-75.100

SCHISCHEK
EXPLOSIONPROOF

ExRun-...-X

ExRun-...-P

ExRun-...-S

ExRun-...-U

Technical data	ExRun-5.10 (basic type)	ExRun-25.50 (basic type)	ExRun-75.100 (basic type)
Force (nominal)	0,5 / 1,0 kN selectable	2,5 / 5,0 kN selectable	7,5 / 10 kN selectable
Force (blockade) approx.	0,8 / 1,5 kN	4,0 / 7,5 kN	12 / 16 kN
Dimension of external force	0,4 / 0,8 kN	2,0 / 4,0 kN	6,0 / 8,0 kN
Supply voltage/Frequency	24...240 VAC/DC ± 10 %, 50...60 Hz ± 20 %		
Power consumption	max. starting currents see table "EL" (in acc. with voltage, I _{start} >> I _{rated}), 2 A inrush current!		
Heater consumption	approx. 16 W, (motor is not running in this moment)		
Stroke	5...60 mm adjustable		
Motor running time	2 / 3 / 6 / 9 / 12 s/mm selectable	2 / 3 / 6 / 9 / 12 s/mm selectable	4 / 6 / 9 / 12 / 15 s/mm selectable
Motor	Brushless DC Motor		Brushless DC Motor
Control mode	On-Off and 3 Pos.		
Electrical connection	Junction box Ex-e incl. terminals 0,14...4 mm ²		
Cable gland	M20 × 1,5 mm II2GD Ex-e approved, cable diameter Ø 6...13 mm		
Manual override	Change from auto to hand mode with sidewise (red) switch and turn with the Allen key top side, max. 5 Nm		
Housing material	Aluminium die cast housing, painted (optional marine coating type ...-CTS)		
Dimensions	L × W × H = 298 × 208 × 115 mm, for diagram see extra information „ME-R“		
Weight	ca. 7 kg Standard version without adaption		
Ambient temperature	-20...+ 40°C at T6 / -20...+ 50°C at T5		
Ambient temperature -30° C	-30...+ 40°C at T6 / -30...+ 50°C at T5, reduced force approx. 60% of rated value e.g. 5 kN = 3 kN (max.) avoid icing!		
Storage temperature	-40...+ 70°C,		
Humidity	0...90 %rH non condensing		
Operation mode	S3/50 % ED = duty cycle (max. 300 operating cycles / h)		
Accuracy mechanically	< 1 mm stroke (hysteresis)		
Accuracy electrically	approx. 200 steps acc. to adjusted stroke		
Parameter at delivery	500 N, 6 s/mm	2,5 kN, 6 s/mm	7,5 kN, 9 s/mm
Delivery	Actuator with integrated Ex-e junction box, Allen key for manual override		
Wiring diagrams	SB 1.0	SB 1.0	SB 1.0

Deviate Data	ExRun-5.10-X	ExRun-25.50-X	ExRun-75.100-X
Actuator ExRun-...-X	as basic type, but without possibility to assemble external aux. switches		
Wiring diagrams (SB)	SB 1.0		

Deviate Data	ExRun-5.10-S	ExRun-25.50-S	ExRun-75.100-S
Actuator ExRun-...-S	as basic type, but incl. two fix adjusted aux. switch switch points at 0 - 10 - 20 - 30 - 60 mm acc. to gear belt setting		
Max values aux. switches	24 V / 1 A 240 VAC / 0,25 A (min. 10 mA)		
Wiring diagrams (SB)	SB 3.5 aux. switch setting acc. to stroke, note page 4		

Deviate Data	ExRun-5.10-P	ExRun-25.50-P	ExRun-75.100-P
Actuator ExRun-...-P	as basic type, but incl. feedback potentiometer by gear belt, adjustable for max. resolution at 10 - 20 - 30 - 60 mm		
Potentiometer	1 kOhm		1 kOhm
Wiring diagrams (SB)	SB 4.0 Feedback signal potentiometer acc. to stroke setting, note page 4		

Deviate Data	ExRun-5.10-U	ExRun-25.50-U	ExRun-75.100-U
Actuator ExRun-...-U	as basic type, but incl. feedback signal U by gear belt, adjustable for max. resolution at 10 - 20 - 30 - 60 mm		
Feedback signal U	0...10 VDC, 4...20 mA acc. on wiring selectable on site, U _u 0...10 VDC @ 1.000...∞ Ω, U _i 4...20 mA @ 0...800 Ω		
Wiring diagrams (SB)	SB 5.0 Feedback signal V / mA acc. to stroke setting, note page 4		

Approvals	
PTB-tested	PTB 09 ATEX 1016X
In acc. with ATEX	RL 94/9/EC (ATEX)
Approval for gas	II(1)G Ex de [ia] IIC T6/T5 Zone 1, 2
Approval for dust	II(1)D Ex tD [iaD] A21 IP66 T80°C Zone 21, 22
CE-Mark	CE Nr. 0158
EMC	RL 2004/108/EC
Low voltage	RL 2006/95/EC
Protection class	Protection class I (grounded)
IP-Protection	IP 66, in acc. with EN 60529

Accessories or special solutions	
...-CTS	marine coating (Amercoat), parts in stainless steel, cable gland nickel plated
ExSwitch-R-L	external auxiliary switch with 2 adjustable contacts, mounting on spindle of ExRun-...
ExSwitch-R	external auxiliary switch with 2 adjustable contacts, mounting on top of the ExRun-... housing
ExBox-SW	Ex-e junction box for aux. switches ExSwitch zone 1, 2, 21, 22
MKK-S	mounting bracket in VA for terminal boxes type ExBox-... direct on actuator
GMB-1	rubber bellow
Adaptions	for fittings and manufacturer on request

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Electrical connection

All actuators are equipped with an universal supply unit working at a voltage from 24 to 240 VAC/DC. The supply unit is self adjustable to the connected voltage! Device must be fuse protected max. 5 AT. Note current consumption acc. to running time and applied voltage. Do not open the junction box when circuit alive. When controlled by relays equipped these with protective components eg RC elements.

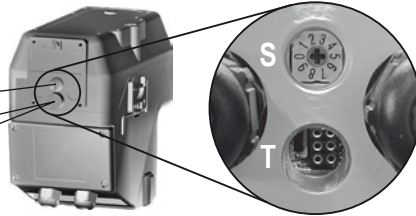
Parameter, Adjustment – Failure indication

Switch – Push button – Lamp for adjustment, behind the blanking plug

10-position switch (S)

Push button (T)

3-colour LED



Parameter selection

Example:
ExRun-25.50

Type	Forces		Forces	
ExRun -5.10	500 N	1.000 N		
ExRun-25.50	2.500 N	5.000 N		
ExRun-75.100			7.500 N	10.000 N

Requested parameter:	Running times	Pos. of switch	Running times	Pos. of switch
Force 5000 N	2 s/mm	00	4 s/mm	00
stroke/s 6 s/mm	3 s/mm	01	6 s/mm	01
	6 s/mm	02	9 s/mm	02
	9 s/mm	03	12 s/mm	03
	12 s/mm	04	15 s/mm	04

Result:
switch position (S) 07

Function, adjustment and parameter

A) Self adjustment:

Push button T for min. 3 seconds. The actuator will drive into both end positions to be adjusted. LED indicates green blinking. The adjustment drive could be applied in any switch position (S).

B) Selection of running time and force:

Put 10 position switch (S) into the correct/selected position in acc. to above table. The selected parameter will work at next operation of the actuator. Adjustment can be done even without supply voltage. If supply voltage is available turn switch only if actuator is not running.

C) Additional information for 3-pos operation:

- a closed, b open = rod goes IN
- b closed, a open = rod goes OUT
- a and b closed = Motor doesn't work, No function
- a and b opened = Motor doesn't work, No function

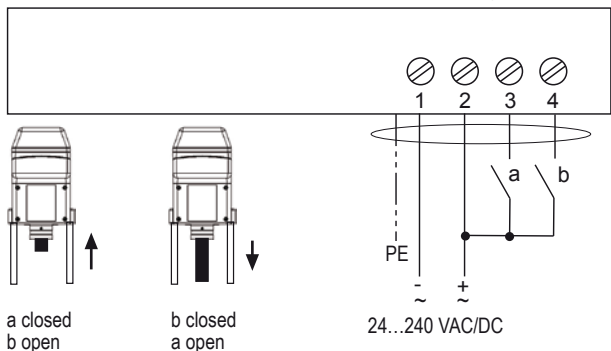
D) Force in blocking position:

The force in the end position could be much more than the nominal force. Generally the valve is to check together with actuator and construed accordingly.

Wiring diagram ExRun- / ExRun-...-X

On-Off / 3 Pos. SB 1.0

Function of switch a and b:
- a closed, rod goes inn
- b closed, rod goes out

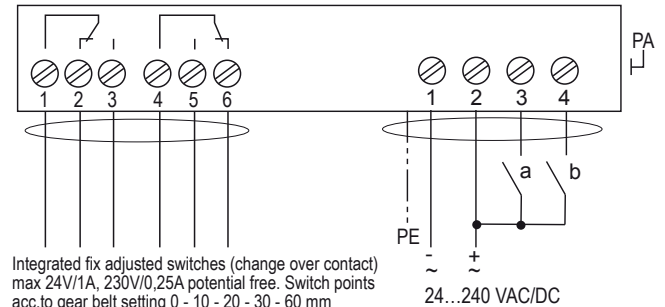


Wiring diagram ExRun-...-S

Wiring internal switches SB 3.5

Wiring internal potential free switches. switchpoints acc. to gear belt adjustment 10/20/30/60 mm

Function of switch a and b:
- a closed, rod goes inn
- b closed, rod goes out

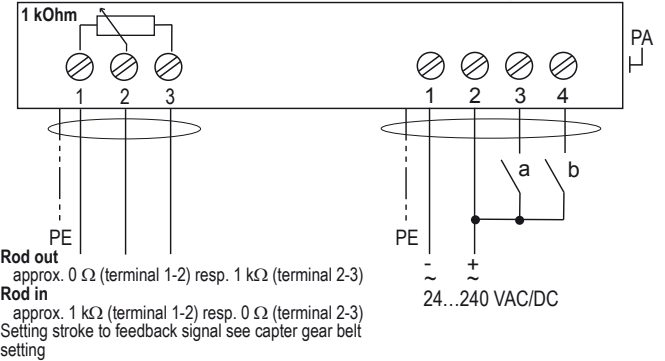


Wiring diagram ExRun-...-P

Potentiometer SB 4.0

Note gear belt setting 0, 10, 20, 30, 60 mm (see capter gear belt setting)

Function of switch a and b:
- a closed, rod goes inn
- b closed, rod goes out

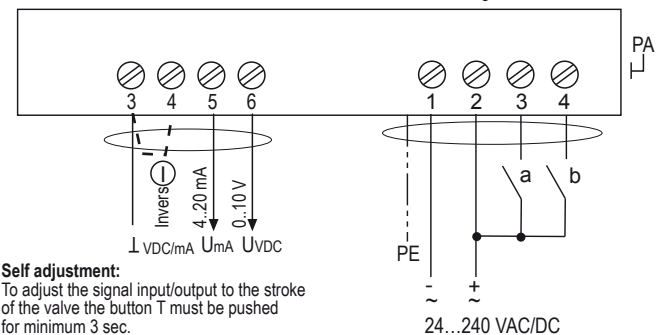


Wiring diagram ExRun-...-U

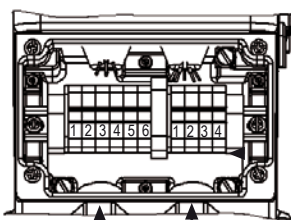
Wiring feedback signal V / mA SB 5.0

Note gear belt setting 0 - 10 - 20 - 30 - 60 mm (see capter gear belt setting)

Function of switch a and b:
- a closed, rod goes inn
- b closed, rod goes out



Junction Box



- Switch of the power
- Open cover junction box
- put cable through cable gland into junction box
- Strip wires approx. 7 mm
- Connect wires acc to wiring diagram and type warranty and guarantee
Note : wrong wiring expires
- Connect protection earth PE
- Fix wires, screw terminals
- Close cable entries tighten (IP66)
- Close cover junction box regard gasket

int. switches (1-6) resp. potentiometer (1-3) resp. feedback V/mA (3-6)
Supply (1-2) IN / OUT control (3-4)



Mounting instructions and important information for operation and installation

Manual Override

1. Actuator must be in stop position
2. Turn „red“ switch from motor to hand mode
3. Turn with allen key to needed stroke (top side)
CW = rod OUT
CCW = rod IN
4. After finish turn back to motor mode

Motor mode **Hand mode**

When operating the manual override in case of failure it is possible that the gear decouples. It can be seen that the selector switch is turned on motor, the actuator when controlled does not execute any stroke movement. The blockade is resolved by simultaneously rotating the motor-hand switch and turning the Allen key in the hexagon shaft. The gear engages.

1. Demounting cover for stroke adjustment / limitation

Switch off power.
5 × open screw before remove cover.
Note cover gasket must be fit in the groove after remounting.

2. Adjust stroke

Stroke can be adjusted by thread nut from min 5 mm to 60 mm.

3. Open cover bracket feedback gear

If open cover bracket gear belt is removed from tensions after this choose the right setting acc. to stroke by hand – not use any tools. Due to repeatedly move of the red bar the setting of the gear belt gear can be changed. The position is corrected by closing the cover and starting a re-adjustment drive.

4. Gear belt adjustment for internal switches resp. potentiometer

If open cover bracket gear belt is removed from tension after this choose the right setting acc. to stroke by hand – not use any tools. **Internal switches** acc. to gear belt setting adjust the switch points lower / higher limit.

setting	switch points at	
10 mm	0-1 mm	10-11 mm
20 mm	0-1 mm	19-20 mm
30 mm	0-1 mm	28-30 mm
60 mm	0-1 mm	55-60 mm

Note: there is no possibility to adjust interim values only with ExSwitch (accessory).

Potentiometer adjust the feedback signal (0-1000 Ohm), (0-10 V / 4...20 mA) to stroke

5. Close cover bracket for feedback gear setting

Note right position of gear belt.
Close bracket thereby the gear belt is automatically tensioned.

6. Remounting cover

5 × fix screws tighten.
Note cover gasket must be fit in the groove after remounting.
Switch on power.

Safety notes Ex

hazardous locations Zone 1, 2, 21, 22

safe area

Supply	24...240 VAC/DC
Version ...Run-...-S	limit switches 24 V/1 A, 240 V/0,25 A
Version ...Run-...-P	potentiometer 0-1000 Ohm
Version ...Run-...-U	feedback 0-10 V / 4-20 mA

- Do not open the cover when circuit alive
- The cable must be installed in a fixed position and protected against mechanical damage
- Connect potential earth.
- Avoid temperature transfer from valve to actuator (note max. ambient temperature !)
- Ambient temperature -20...+40 °C at T6 / -20...+ 50°C at T5
- Close all openings with min IP66
- Regard all regional standards, rules and regulations.
- Flameproof enclosure is protected against mechanical damages acc. to EN 60079-ff.
- For outdoor installation a protective housing against rain, snow and sun should be applied to the actuator, as well as a constant supply at terminal 1 and 2 for the integral heater.
- Use for wiring the integrated Ex-e junction box
- Actuators are maintenance free

Extra information „EL-R“ (see additional data sheet)

extra technical information, versions of circuit diagrams and failure indication

Extra information „ME-R“ (see additional data sheet)

extra technical information, dimensions, installation instruction and illustration