



ExRun Valve Actuator continuous Control

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 - Y
ExRun - 25.50 - Y
ExRun - 75.100- Y
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-Y	0,5 kN / 1,0 kN	24..240 VAC/DC	2 / 3 / 6 / 9 / 12 s/mm	0..10 VDC, 4...20 mA	0..10 VDC, 4...20 mA	SB 4.0
ExRun - 25.50-Y	2,5 kN / 5,0 kN	24..240 VAC/DC	2 / 3 / 6 / 9 / 12 s/mm	0..10 VDC, 4...20 mA	0..10 VDC, 4...20 mA	SB 4.0
ExRun -75.100-Y	7,5 kN / 10,0 kN	24..240 VAC/DC	4 / 6 / 9 / 12 / 15 s/mm	0..10 VDC, 4...20 mA	0..10 VDC, 4...20 mA	SB 4.0
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

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 IP 66 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 as - 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.

Highlights

- ▶ 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) resp. (4-6-9-12-15 s/mm) acc. to type
- ▶ Force control, 0...10 VDC, 4...20 mA control mode,
- ▶ Feedback signal 0...10 VDC and 4...20 mA
- ▶ Reverse function
- ▶ 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 „Amercoat“)
- ▶ IP66 protection
- ▶ Manual override included
- ▶ Only 7 kg weight
- ▶ Integral safety temperature sensor
- ▶ Status indication by LED



Technical data	ExRun-5.10-Y	ExRun-25.50-Y	ExRun-75.100-Y
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 \pm 10 %, 50...60 Hz \pm 20 %		
Power consumption	max. starting currents see table "EL" (in acc. with voltage, $I_{start} \gg I_{rated}$), 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	Brushless DC Motor
Control mode Y	0...10 VDC, 4...20 mA in acc. with wiring, selectable on site, galvanic separation between supply and signals		
Feedback signal U	0...10 VDC, 4...20 mA in acc. with wiring, selectable on site		
Resistance of Y and U signals	Input signal Yu 0...10 VDC @ 10 k Ω , Yi 4...20 mA @ 100 Ω . Feedback signal Uu 0...10 VDC @ 1.000... ∞ Ω , Ui 4...20 mA @ 0...800 Ω		
Reverse function	bridge between wiring 3 and 4 (signal wise) gets a reverse function of Y and U		
Force control	in continuous mode is possible to control the actuator by supply input terminal 3 and 4 for open or close.		
Adjustment of Y and U	adjust the analogue signals to the selected stroke		
Electrical connection	junction box Ex-e incl. terminals 0,14...4 mm ²		
Cable gland	M20 x 1,5 II2GD Ex-e approved, cable diameter \varnothing 6...13 mm		
Manual override	change from auto to hand mode with sideways (red) switch and turn with the allen key top side		
Housing material	aluminium die cast housing, painted (optional marine coating type ...-CTS)		
Dimensions	L x W x H = 298 x 208 x 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...95 %rF 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		
Self adjustment	at initial system checkout for motor you need to start the self adjustment mode.		
Wiring diagrams (SB)	SB 4.0	SB 4.0	SB 4.0
	Control and feedback signal U_V / U_{mA} acc. to stroke adjustment note page 4		

Approvals

PTB-tested	PTB 09 ATEX 1016X
In acc. with ATEX	RL 94/9/EC (ATEX)
Approval for gas	II2(1)G Ex de [ia] IIC T6/T5 Zone 1, 2
Approval for dust	II2(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	IP66, 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



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.

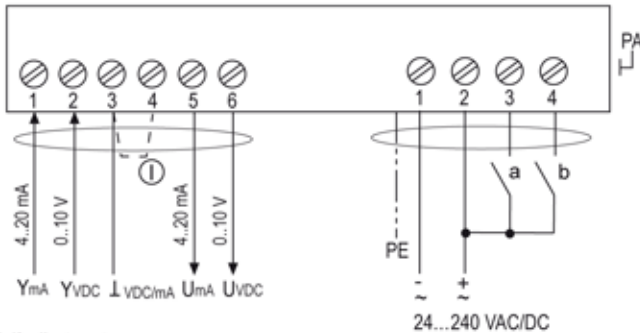
Wiring diagram ExRun-...-Y

Continuous control

SB 4.0

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

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



Self adjustment:

To adjust the signal input/output to the stroke of the valve the button T must be pushed for minimum 3 sec.

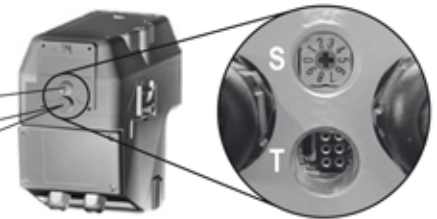
Parameter, Adjustment – Failure indication

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-Y

Requested parameter:
 Force 5000 N
 stroke/s 6 s/mm

Result:
 switch position (S) 07

Type	Forces	Forces	Forces	Forces
ExRun -5,10-Y	500 N	1,000 N		
ExRun-25.50-Y	2,500 N	5,000 N		
ExRun-75,100-Y			7,500 N	10,000 N
Running times	Pos. of switch	Running times	Pos. of switch	Running times
2 s/mm	00	05	4 s/mm	00
3 s/mm	01	06	6 s/mm	01
6 s/mm	02	07	9 s/mm	02
9 s/mm	03	08	12 s/mm	03
12 s/mm	04	09	15 s/mm	04

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) Force control:

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.

Control

Switch control a closed
 Control signal 10 V
 Control signal 20 mA

Rod goes IN



Output (feedback) signal
 10 V
 20 mA

Switch control b closed
 Control signal 0 V
 Control signal 4 mA

Rod goes OUT



Output (feedback) signal
 0 V
 4 mA

Control reverse (bridge 3-4)

Switch control a closed
 Control signal 10 V
 Control signal 20 mA

Rod goes OUT



Output (feedback) signal
 10 V
 20 mA

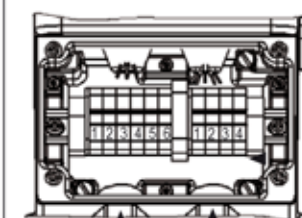
Switch control b closed
 Control signal 0 V
 Control signal 4 mA

Rod goes IN



Output (feedback) signal
 0 V
 4 mA

Junction Box



Continuous control wiring see diagram
 Supply (1-2)
 IN / OUT control (3-4)

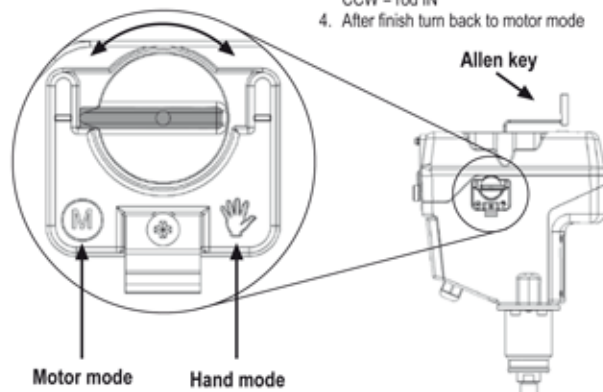
1. Switch of the power
2. Open cover junction box
3. put cable through cable gland into junction box
4. Strip wires approx. 7 mm
5. Connect wires acc to wiring diagram and type
 Note : wrong wiring expires warranty and guarantee
6. Connect protection earth PE
7. Fix wires, screw terminals
8. Close cable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



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



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.

Safety notes Ex

hazardous locations
Zone 1, 2, 21, 22



safe area



Supply
24...240 V AC/DC
Control- / Feedback Signal
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 / + 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

Accessory „ExSwitch-R-L“ (see separate data sheet)

adaptable external Ex-d aux. switch for mounting on spindle of ExRun-...

Accessory „ExSwitch-R“ (see separate data sheet)

adaptable external Ex-d aux. switch for mounting on top of the ExRun-... housing

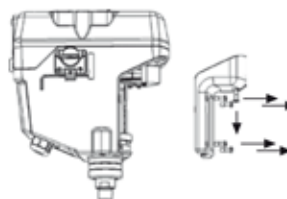
Extra information „EL-R“ (see additional data sheet)

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

1. Demounting cover for stroke adjustment/limitation

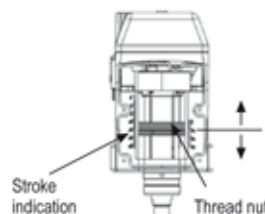


Switch off power

5 × open screw before remove cover.

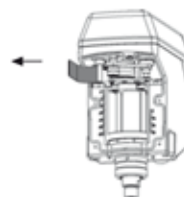
Note cover gasket must be fit in the groove after remounting.

2. Adjust stroke



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

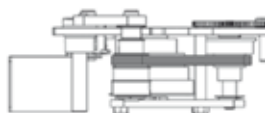
3. Open cover bracket feedback gear



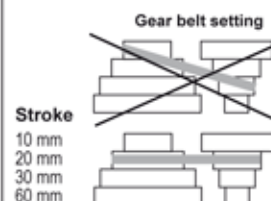
If open cover bracket gear belt is removed from tensions after this choose the right setting acc. to stroke by hand – not use any tools.

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 Feedback signal U



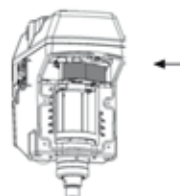
If open cover bracket gear belt is removed from tensions after this choose the right setting acc. to stroke by hand – not use any tools.



Feedback Signal
Due to gear belt adjustment the feedback signal (0-10 V / 4-20 mA) is settled to the stroke

Example:
Stroke is 26 mm
Follows gear belt setting is position 30 mm.
Push button (T) for 3 seconds „start adjustment drive“.
Thereby the feedback signal (0-10 V/4-20 mA) is setting to 26 mm stroke automatically.
(see also point 2 stroke adjustment)

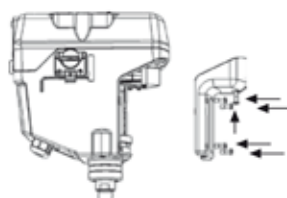
5. Close cover bracket for feedback gear setting



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