rotork®
SCHISCHEK

Schischek Explosionproof.

Protection of Life. Health. Assets.

TPrice listechnical short information

Schischek Global Coverage

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Safety, worldwide, in thousands of applications!

Explosion protection since 1975

Since 1975 Schischek has supplied electric explosion proof products worldwide for heating, ventilation and air-conditioning, for industrial and offshore applications.

Schischek Explosionproof has become an important partner for consultants, public authorities, control companies, installers, OEM's and, not least of all, the end user.

As supplier of components, we have always considered it our duty to develop products in conjunction with other control equipment. Modern Ex equipment, reliable, proven and with "state of the art" technology.

Safety is essential

With this motto we state that explosion protection is not a question of statistics or half hearted solutions but that 100% safety must be guaranteed at all times. Explosion protection means taking on responsibility.

"There is no little ex-protection!"

People have confidence in us as Ex protection specialists and in you as consultant, installer and contractor. All Schischek Ex products are, therefore, PTB certified, approved by and produced according to the very latest standards and regulations. According to type and kind of protection, our products are suitable for operation in Ex areas, zones 0, 1, 2, 20, 21 and 22, including gases, vapours, mists and dusts – of course in accordance with ATEX 94/9/EC.

Heating, Ventilation, Air-Conditioning

Schischek supplies control companies and contractors in the Building Automation market. We have developed equipment which is compatible with nearly all control systems. By combining Schischek products with conventional switching and control equipment, reliable high quality systems are implemented that conform to Ex protection standards. Some examples of use are fire and smoke dampers, paintspray areas, exhaust systems in chemical laboratories, battery rooms, sewage treatment plants, pumping stations etc.

Offshore, Onshore, Shipbuilding

Harsh environmental conditions and robust quality cause stringent design / construction requirements on components and materials. A fast closing electric actuator for fire / smoke dampers of less than 3 seconds is a requirement on oil and gas platforms as well as on FPSO's. After an intense development process including trials, a completely new concept in actuator engineering was produced. Since, thousands of Schischek actuators in special aluminium, C5-M and stainless steel housings have been delivered and installed, moreover, the product range has been continuously enlarged and refined.

Chemical, Pharmaceutical, Car Industries

Whether you need air flow control in a pharmaceutical plant or temperature regulation of paint tanks in the car industry, Schischek offers cost-effective solutions specifically designed for control integration. Ex protection is required for applications from paint spray shops to drying stations. System compatibility with all aspects of control facilitates integrated planning from design to completion. At the same time, safety and reliability increase in planning, installation, approval and operation. Since all equipment is maintenance-free, cost savings are realised.

Water Treatment Plants, Compressor Stations

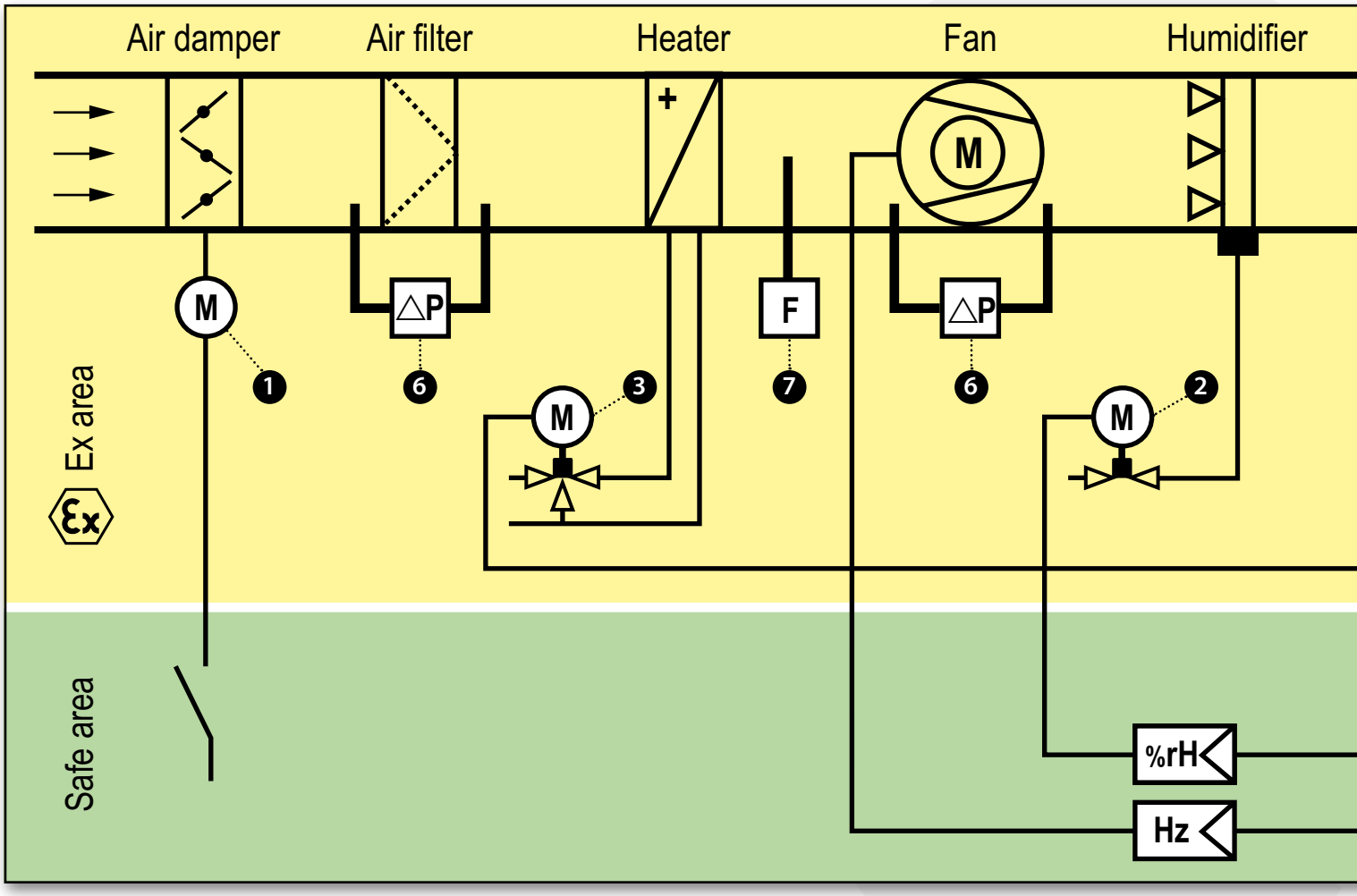
In co-operation with valve and damper manufacturers, industrial control companies and contractors, Schischek products are in use worldwide. Our products are characterised by the "highest protection class, compact size and easy handling".

We can provide solutions to problems as far as Ex ventilation and precise temperature control in industrial plants are concerned.

Which components have to be explosion proof?

In the diagram below, a typical air-handling system shows which equipment is allowed in the Ex area and which should only be placed in the safe area. The diagram does not claim to be complete.

If in doubt, please do not hesitate to consult us at Schischek. We will advise you in any case. A brief discussion in the early stages of planning can avoid substantial costs in remedial work later and gives you the peace of mind that you have a safely installed operating system.



1 Quarter turn actuators for dampers and valves

ExMax
RedMax

- 5…150 Nm
- 3...150 sec/90°
- On-off, 3-pos
- modulating
- with/without spring return

2 Failsafe linear valve actuators

ExMax + LIN
RedMax + LIN

- 500…3.000 N
- 7,5…42 mm stroke
- 0,1...15 sec/mm
- On-off, 3-pos
- modulating
- with spring return

3 Linear valve actuators

ExRun
RedRun

- 500…10.000 N
- 5…60 mm stroke
- 2...15 sec/mm
- On-off, 3-pos
- modulating

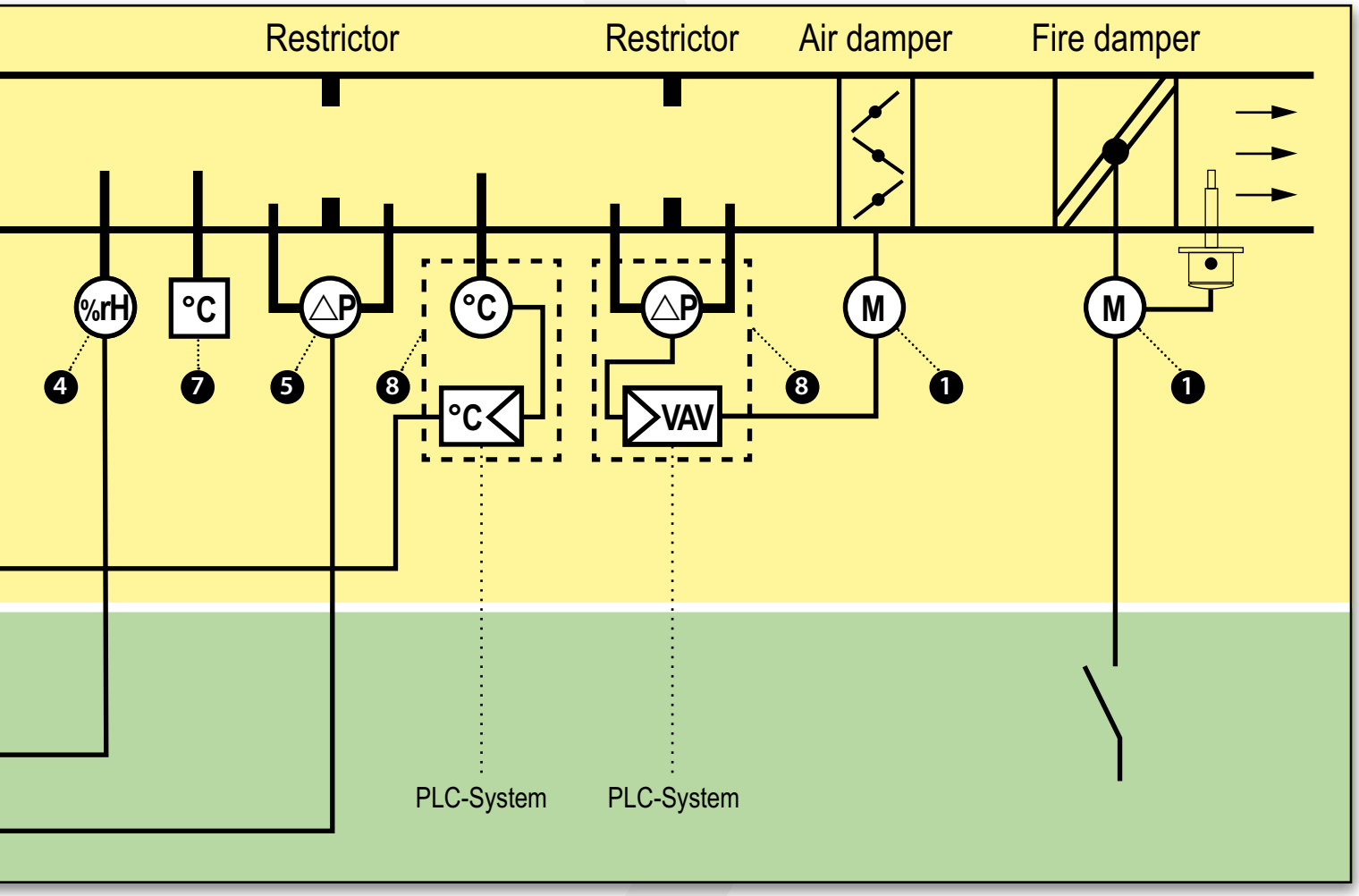
4 Temperature and humidity sensors

ExCos-D
RedCos-D

- −40°C…+125°C
- 0…100 %rH
- full range adjustable

You should be aware of the areas of installation where an explosive atmosphere may build up. Furthermore, you should have the responsible authority classify the relevant Ex zone and in combination with type and condition of the explosive medium, you should be able to select suitable explosion proof equipment.

With Schischek products this is simple because all equipment is certified according to the highest safety standards – according to ATEX, of course!



5 Pressure/differential pressure sensors

ExCos-P
RedCos-P

- ± 100…± 7.500 Pa
- full range adjustable

6 Filter monitoring, fan belt protection

ExBin-P
RedBin-P

- 0…5.000 Pa
- Pressure/Differential pressure
- Fan-belt protection
- Filter protection
- 1- or 2-stage switching point

7 Thermostats, humidistats, Frost protection

ExBin-D
RedBin-D

- −40°C…+125°C
- 0…100 %rH
- 1- or 2-stage

ExBin-FR
RedBin-FR

- −10°C…+15°C
- Capillary: 3 m, 6 m
- 1-stage switching point

8 Controller

ExReg-V
Differential pressure

- 0…300 Pa (VAV)

ExReg-D
Temperature/Humidity

- −40°C…+125°C
- 0…100 %rH

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*SA = Safe area
(●) = on request

Table of contents

*SA = Safe area
(●) = on request

Introducing ExMax – Damper actuators for explosion proof areas!

Quarter turn and rotary applications for damper control ...

HAZARDOUS LOCATIONS ZONE 1, 2, 21, 22

FAST SPRING RETURN TIME

SIL2 FAIL SAFE FUNCTION

UNIVERSAL POWER SUPPLY

STAINLESS STEEL SOLUTION

EASY INSTALLATION

COMPACT DIMENSIONS

..Max Electrical drive engineering with 90° angle of rotation – Overview

Overview ..Max quarter turn actuators

The actuator series are subdivided in 3 installation- and 5 application areas.

Installation areas:

ExMax- ..... actuators for use in hazardous areas zone 1, 2, 21, 22
RedMax- ..... actuators for use in hazardous areas zone 2, 22
InMax- ..... actuators for use in safe area

Application areas:

Ex / Red / InMax ..... for air and fire dampers, VAV control, ball valves, control dampers

The actuator concept offers obvious advantages:

1. Small dimension, compact, easy installation, highest protection classes, cost effective
2. Universal power supply 24 to 240 Volt AC/DC, selfadjustable
3. SIL2 fail safe function
4. With or without spring return (in acc. with type)
5. Robust aluminium housing, IP66, optional in stainless steel
6. Integrated heater for low temperatures
7. On site adjustable motor running time
8. Integrated manual override
9. Useful accessories such as retrofit limit switches
10. Actuators are direct coupling

Nm **ExMax**

95°

Actuators for air-dampers

normal wiring

ExMax.., RedMax.., InMax.. ¼ turn actuators

90° actuators from 5 to 150 Nm, with or w/o spring return (running time 1, 3, 10, 20 s depending on type), for air-dampers.

Nm **ExMax**

95°

Actuators for smoke- and fire-dampers

normal wiring

ExMax.., RedMax.., InMax.. ¼ turn actuators

90° actuators from 5 to 150 Nm, with or w/o spring return (running time 1, 3, 10, 20 s depending on type), for smoke- and fire-dampers.

Nm **ExMax**

95°

Actuators for VAV control

normal wiring

ExMax.., RedMax.., InMax.. ¼ turn actuators

90° actuators from 5 to 150 Nm, with or w/o spring return (running time 1, 3, 10, 20 s depending on type), for VAV control.

Nm **ExMax**

95°

Actuators for ball valves

normal wiring

ExMax.., RedMax.., InMax.. ¼ turn actuators

90° actuators from 5 to 150 Nm, with or w/o spring return (running time 1, 3, 10, 20 s depending on type), for ball valves.

Nm **ExMax**

95°

Actuators for butterfly valves and other ¼ turn valves

normal wiring

ExMax.., RedMax.., InMax.. ¼ turn actuators

90° actuators from 5 to 150 Nm, with or w/o spring return (running time 1, 3, 10, 20 s depending on type), for butterfly valves and other quarter turn valves.

Safe area | **Ex area**

ExMax 90° Ex quarter turn actuators size “S” for zone 1, 2, 21, 22

Explosion proof

ExMax-...

Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, SIL, IECEx,
GOST-R, RTN,
INMETRO, KOSHA
UL*, CSA*,
*...-A version only

Size S

Features of ExMax - ... size S

Description

ExMax are, in acc. with type, for automation of air dampers, fire and smoke dampers, volume control, as well as for ball valves, throttle valves and other quarter turn armatures.

Delivery:
1 actuator, ~ 1 m cable, allen key for manual override, 4 screws.

Basics for all ExMax-.. size S

- **24…240 VAC/DC** self adaptable power supply
- Up to 5 different running times adjustable on site
- 95°angle of rotation (5° for pretension)
- 100% overload protected
- Aluminium housing IP66, cable ~ 1 m
- -40...+40°C/+50°C, integrated heater
- Emergency manual override
- Squared shaft connection 12 × 12 mm
- Dimensions (H × W × D) 210 × 95 × 80 mm

Ex-d quarter turn actuators without spring return, 24 to 240 VAC/DC, for zone 1, 2, 21, 22

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
ExMax- 5.10	5 Nm / 10 Nm	3/15/30/60/120 sec.	-	On-off, 3-pos	-	-	S
ExMax-15.30	15 Nm / 30 Nm	3/15/30/60/120 sec.	-	On-off, 3-pos	-	-	S
ExMax- 5.10-S	5 Nm / 10 Nm	3/15/30/60/120 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	S
ExMax-15.30-S	15 Nm / 30 Nm	3/15/30/60/120 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	S
ExMax- 5.10-Y	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	-	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	S
ExMax-15.30-Y	15 Nm / 30 Nm	7,5/15/30/60/120 sec.	-	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	S

Ex-d quarter turn actuators with spring return, 24 to 240 VAC/DC, for zone 1, 2, 21, 22

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
ExMax-5.10- F	5 Nm / 10 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	-	-	S
ExMax- 15- F	15 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	-	-	S
ExMax-5.10-SF	5 Nm / 10 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	S
ExMax- 15-SF	15 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	S
ExMax-5.10-YF	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	~ 3 sec. / 10 sec.	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	S
ExMax- 15-YF	15 Nm	7,5/15/30/60/120 sec.	~ 3 sec. / 10 sec.	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	S
ExMax-5.10-BF	5 Nm / 10 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	S
ExMax- 15-BF	15 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	S

Ex-d quarter turn actuators with 1 sec. spring return for Offshore application, 24 to 240 VAC/DC, for zone 1, 2, 21, 22

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
ExMax- 8- F1	8 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	-	-	S
ExMax-15- F1	15 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	-	-	S
ExMax- 8-SF1	8 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	2 × aux. switches (5°/85°)	-	S
ExMax-15-SF1	15 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	2 × aux. switches (5°/85°)	-	S
ExMax- 8-BF1	8 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	S
ExMax-15-BF1	15 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	S

Accessories

Type	Technical data
ExSwitch	External, adaptable, on site adjustable Ex-d auxiliary switch with 2 potential free contacts, adaptable to ExMax-... actuators
ExBox-3P	Ex-e terminal box connectable to ExMax-… actuators with 1 cable for On-off or 3-pos operation
ExBox-3P/SW	Ex-e terminal box connectable to ExMax-… actuators with 1 cable for On-off or 3-pos operation + 2 cable for external aux. switches type ExSwitch
ExBox-Y/S	Ex-e terminal box connectable to ExMax-… actuators with 2 cable, for modulating operation or 3-pos + integrated switches (HS)
ExBox-Y/S/SW	Ex-e terminal box connectable to ExMax-… actuators with 2 cable, for modulating or 3-pos operation with feedback signal + 2 cable for external aux. switches
ExBox-BF	Ex-e terminal box connectable to ExMax-… actuators with 1 cable, for all ExMax-...-BF
ExBox-BF/SW	Ex-e terminal box connectable to ExMax-… actuators with 1 cable, for all ExMax-...-BF + 2 cable for external aux. switches type ExSwitch
MKK-S	Mounting bracket for …Box-terminal boxes for direct coupling to …Max... actuators size S
KB-S	Mounting clamp for round damper shaft Ø 10 to 20 mm and squared shafts 10 to 16 mm, incl. bracket, connectable to all ExMax-... size S
HV-SK, HV-SL	Manual override, connectable to actuators size S. HV-SK = short version, HV-SL = long version for add. mounting of ..Box/..Switch (not suitable for ..Max-..-..F1!)
AR-12-xx	Squared reduction part from 12 × 12 mm to shafts with 11 mm (type AR-12-11), 10 mm (type AR-12-10), 8 mm (type AR-12-08)
ExPro-TT-...	Safety temperature trigger for fire dampers, switching at 71°/72°C, with 1 m cable, suitable only for ExMax-/RedMax-…-BF actuators!
Retrofit-Kit ..Max-S	Mechanical adaptation for mounting on ..Max actuators size S, required to replace a previous type EXT15..-F1, EXT12..-F16, EXT15.. or EXT30..

Special options and offshore kits see page 23

ExMax 90° Ex quarter turn actuators size “M” for zone 1, 2, 21, 22

Explosion proof

ExMax-...

Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, SIL, IECEx,
GOST-R, RTN,
INMETRO
UL*, CSA*,
*...-A version only

Size M

Features of ExMax - ... size M

Description

ExMax are, in acc. with type, for automation of air dampers, fire and smoke dampers, volume control, as well as for ball valves, throttle valves and other quarter turn armatures.

Delivery:
1 actuator, ~ 1 m cable, allen key for manual override, 4 screws.

Basics for all ExMax-.. size M

- **24…240 VAC/DC** self adaptable power supply
- Up to 5 different running times adjustable on site
- 95°angle of rotation (5° for pretension)
- 100% overload protected
- Aluminium housing IP66, cable ~ 1 m
- -40...+40°C / +50°C, integrated heater
- Emergency manual override
- Squared shaft connection 16 × 16 mm
- Dimensions (H × W × D) 288 × 149 × 116 mm

Ex-d quarter turn actuators without spring return, 24 to 240 VAC/DC, for zone 1, 2, 21, 22

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
ExMax-50.75	50 Nm / 75 Nm	40/60/90/120/150 sec.	-	On-off, 3-pos	-	-	M
ExMax- 100	100 Nm	40/60/90/120/150 sec.	-	On-off, 3-pos	-	-	M
ExMax- 150	150 Nm	40/60/90/120 sec.	-	On-off, 3-pos	-	-	M
ExMax-50.75-S	50 Nm / 75 Nm	40/60/90/120/150 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
ExMax- 100-S	100 Nm	40/60/90/120/150 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
ExMax- 150-S	150 Nm	40/60/90/120 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
ExMax-50.75-Y	50 Nm / 75 Nm	40/60/90/120/150 sec.	-	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	M
ExMax- 100-Y	100 Nm	40/60/90/120/150 sec.	-	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	M

Ex-d quarter turn actuators with spring return, 24 to 240 VAC/DC, for zone 1, 2, 21, 22

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
ExMax-30- F	30 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	-	-	M
ExMax-50- F	50 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	-	-	M
ExMax-60- F	60 Nm	40/60/90/120 sec.	~ 20 sec.	On-off, 3-pos	-	-	M
ExMax-30-SF	30 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
ExMax-50-SF	50 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
ExMax-60-SF	60 Nm	40/60/90/120 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
ExMax-30-YF	30 Nm	40/60/90/120/150 sec.	~ 20 sec.	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	M
ExMax-50-YF	50 Nm	40/60/90/120/150 sec.	~ 20 sec.	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	M
ExMax-30-BF	30 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	M
ExMax-50-BF	50 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	M
ExMax-60-BF	60 Nm	40/60/90/120 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	M

Ex-d quarter turn actuators with 3 sec. spring return for Offshore application, 24 to 240 VAC/DC, for zone 1, 2, 21, 22

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
ExMax-30- F3	30 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	-	-	M
ExMax-50- F3	50 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	-	-	M
ExMax-30-SF3	30 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	2 × aux. switches (5°/85°)	-	M
ExMax-50-SF3	50 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	2 × aux. switches (5°/85°)	-	M
ExMax-30-BF3	30 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	M
ExMax-50-BF3	50 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	M

Accessories

Type	Technical data
ExSwitch	External, adaptable, on site adjustable Ex-d auxiliary switch with 2 potential free contacts, adaptable to ExMax-... actuators
ExBox-3P	Ex-e terminal box connectable to ExMax-... actuators with 1 cable for On-off or 3-pos operation
ExBox-3P/SW	Ex-e terminal box connectable to ExMax-... actuators with 1 cable for On-off or 3-pos operation + 2 cable for external aux. switches type ExSwitch
ExBox-Y/S	Ex-e terminal box connectable to ExMax-... actuators with 2 cable, for modulating operation or 3-pos + integrated switches (HS)
ExBox-Y/S/SW	Ex-e terminal box connectable to ExMax-... actuators with 2 cable, for modulating or 3-pos operation with feedback signal + 2 cable for external aux. switches
ExBox-BF	Ex-e terminal box connectable to ExMax-... actuators with 1 cable, for all ExMax-...-BF
ExBox-BF/SW	Ex-e terminal box connectable to ExMax-... actuators with 1 cable, for all ExMax-...-BF + 2 cable for external aux. switches type ExSwitch
MKK-M	Mounting bracket for …Box-terminal boxes for direct coupling to …Max... actuators size M
HV-MK	Manual override, connectable to actuators size M (not suitable for ..Max-..-..F3!)
AR-16-xx	Squared reduction part from 16 × 16 mm to shafts with 14 mm (type AR-16-14), 12 mm (type AR-16-12)
ExPro-TT-...	Safety temperature trigger for fire dampers, switching at 71°/72°C, with 1 m cable, suitable only for ExMax-/RedMax-…-BF actuators!
Retrofit-Kit ..Max-M	Mechanical adaptation for mounting on ..Max actuators size M, required to replace a previous type EXT30..-F3, EXT50..-F3 or EXT50..

Special options and offshore kits see page 23

RedMax 90° Ex quarter turn actuators “S” for zone 2, 22

Explosion proof

RedMax-…
Zone 2, 22
Gas + Dust
certified according
ATEX, SIL, IECEx,
GOST-R, RTN,
UL*, CSA*,
*…-A version only

Size S

Features of RedMax - ... size S

Description

RedMax are, in acc. with type, for automation of air dampers, fire and smoke dampers, volume control, as well as for ball valves, throttle valves and other quarter turn armatures.

Delivery:
1 actuator, ~ 1 m cable, allen key for manual override, 4 screws.

Basics for all RedMax-.. size S

- **24…240 VAC/DC** self adaptable power supply
- Up to 5 different running times adjustable on site
- 95°angle of rotation (5° for pretension)
- 100% overload protected
- Aluminium housing IP66, cable ~ 1 m
- -40...+40°C/+50°C, integrated heater
- Emergency manual override
- Squared shaft connection 12 × 12 mm
- Dimensions (H × W × D) 210 × 95 × 80 mm

Ex-n quarter turn actuators without spring return, 24 to 240 VAC/DC, for zone 2, 22

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
RedMax- 5.10	5 Nm / 10 Nm	3/15/30/60/120 sec.	-	On-off, 3-pos	-	-	S
RedMax-15.30	15 Nm / 30 Nm	3/15/30/60/120 sec.	-	On-off, 3-pos	-	-	S
RedMax- 5.10-S	5 Nm / 10 Nm	3/15/30/60/120 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	S
RedMax-15.30-S	15 Nm / 30 Nm	3/15/30/60/120 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	S
RedMax- 5.10-Y	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	-	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	S
RedMax-15.30-Y	15 Nm / 30 Nm	7,5/15/30/60/120 sec.	-	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	S

Ex-n quarter turn actuators with spring return, 24 to 240 VAC/DC, for zone 2, 22

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
RedMax-5.10- F	5 Nm / 10 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	-	-	S
RedMax- 15- F	15 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	-	-	S
RedMax-5.10-SF	5 Nm / 10 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	S
RedMax- 15-SF	15 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	S
RedMax-5.10-YF	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	~ 3 sec. / 10 sec.	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	S
RedMax- 15-YF	15 Nm	7,5/15/30/60/120 sec.	~ 3 sec. / 10 sec.	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	S
RedMax-5.10-BF	5 Nm / 10 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	S
RedMax- 15-BF	15 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	S

Ex-n quarter turn actuators with 1 sec. spring return for Offshore application, 24 to 240 VAC/DC, for zone 2, 22

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
RedMax- 8- F1	8 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	-	-	S
RedMax-15- F1	15 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	-	-	S
RedMax- 8-SF1	8 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	2 × aux. switches (5°/85°)	-	S
RedMax-15-SF1	15 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	2 × aux. switches (5°/85°)	-	S
RedMax- 8-BF1	8 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	S
RedMax-15-BF1	15 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	S

Accessories

Type	Technical data
RedSwitch	External, adaptable, on site adjustable auxiliary switch with 2 potential free contacts, adaptable to RedMax-... actuators
RedBox-3P	Ex-e terminal box connectable to RedMax-… actuators with 1 cable for On-off or 3-pos operation
RedBox-3P/SW	Ex-e terminal box connectable to RedMax-… actuators with 1 cable for On-off or 3-pos operation + 2 cable for external aux. switches type RedSwitch
RedBox-Y/S	Ex-e terminal box connectable to RedMax-… actuators with 2 cable, for modulating operation or 3-pos + integrated switches (HS)
RedBox-Y/S/SW	Ex-e terminal box connectable to RedMax-… actuators with 2 cable, for modulating or 3-pos operation with feedback signal + 2 cable for external aux. switches
RedBox-BF	Ex-e terminal box connectable to RedMax-… actuators with 1 cable, for all RedMax-…-BF
RedBox-BF/SW	Ex-e terminal box connectable to RedMax-… actuators with 1 cable, for all RedMax-…-BF + 2 cable for external aux. switches type RedSwitch
MKK-S	Mounting bracket for …Box-terminal boxes for direct coupling to …Max… actuators size S
KB-S	Mounting clamp for round damper shaft Ø 10 to 20 mm and squared shafts 10 to 16 mm, incl. bracket, connectable to all RedMax-… size S
HV-SK, HV-SL	Manual override, connectable to actuators size S. HV-SK = short version, HV-SL = long version for add. mounting of ..Box/..Switch (not suitable for ..Max-..-..F1!)
AR-12-xx	Squared reduction part from 12 × 12 mm to shafts with 11 mm (type AR-12-11), 10 mm (type AR-12-10), 8 mm (type AR-12-08)
ExPro-TT-…	Safety temperature trigger for fire dampers, switching at 71°/72°C, with 1 m cable, suitable only for ExMax-/RedMax-…-BF actuators!
Retrofit-Kit ..Max-S	Mechanical adaptation for mounting on ..Max actuators size S, required to replace a previous type EXT15..-F1, EXT12..-F16, EXT15.. or EXT30..

Special options and offshore kits see page 23

RedMax 90° Ex quarter turn actuators “M” for zone 2, 22

Explosion proof

RedMax-...
Zone 2, 22
Gas + Dust
certified according
ATEX, SIL, IECEx,
GOST-R, RTN,
UL*, CSA*,
*...-A version only

Size M

Features of RedMax - ... size M

Description

RedMax are, in acc. with type, for automation of air dampers, fire and smoke dampers, volume control, as well as for ball valves, throttle valves and other quarter turn armatures.

Delivery:
1 actuator, ~ 1 m cable, allen key for manual override, 4 screws.

Basics for all RedMax-.. size M

- **24…240 VAC/DC** self adaptable power supply
- Up to 5 different running times adjustable on site
- 95°angle of rotation (5° for pretension)
- 100% overload protected
- Aluminium housing IP66, cable ~ 1 m
- -40...+40°C / +50°C, integrated heater
- Emergency manual override
- Squared shaft connection 16 × 16 mm
- Dimensions (H × W × D) 288 × 149 × 116 mm

Ex-n quarter turn actuators without spring return, 24 to 240 VAC/DC, for zone 2, 22

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
RedMax-50.75	50 Nm / 75 Nm	40/60/90/120/150 sec.	-	On-off, 3-pos	-	-	M
RedMax- 100	100 Nm	40/60/90/120/150 sec.	-	On-off, 3-pos	-	-	M
RedMax- 150	150 Nm	40/60/90/120 sec.	-	On-off, 3-pos	-	-	M
RedMax-50.75-S	50 Nm / 75 Nm	40/60/90/120/150 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
RedMax- 100-S	100 Nm	40/60/90/120/150 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
RedMax- 150-S	150 Nm	40/60/90/120 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
RedMax-50.75-Y	50 Nm / 75 Nm	40/60/90/120/150 sec.	-	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	M
RedMax- 100-Y	100 Nm	40/60/90/120/150 sec.	-	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	M

Ex-n quarter turn actuators with spring return, 24 to 240 VAC/DC, for zone 2, 22

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
RedMax-30- F	30 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	-	-	M
RedMax-50- F	50 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	-	-	M
RedMax-60- F	60 Nm	40/60/90/120 sec.	~ 20 sec.	On-off, 3-pos	-	-	M
RedMax-30-SF	30 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
RedMax-50-SF	50 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
RedMax-60-SF	60 Nm	40/60/90/120 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
RedMax-30-YF	30 Nm	40/60/90/120/150 sec.	~ 20 sec.	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	M
RedMax-50-YF	50 Nm	40/60/90/120/150 sec.	~ 20 sec.	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	M
RedMax-30-BF	30 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	M
RedMax-50-BF	50 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	M
RedMax-60-BF	60 Nm	40/60/90/120 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	M

Ex-n quarter turn actuators with 3 sec. spring return for Offshore application, 24 to 240 VAC/DC, for zone 2, 22

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
RedMax-30- F3	30 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	-	-	M
RedMax-50- F3	50 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	-	-	M
RedMax-30-SF3	30 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	2 × aux. switches (5°/85°)	-	M
RedMax-50-SF3	50 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	2 × aux. switches (5°/85°)	-	M
RedMax-30-BF3	30 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	M
RedMax-50-BF3	50 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	2 × aux. switches (5°/85°)	ExPro-TT-.. connector	M

Accessories

Type	Technical data
RedSwitch	External, adaptable, on site adjustable auxiliary switch with 2 potential free contacts, adaptable to RedMax-... actuators
RedBox-3P	Ex-e terminal box connectable to RedMax-... actuators with 1 cable for On-off or 3-pos operation
RedBox-3P/SW	Ex-e terminal box connectable to RedMax-... actuators with 1 cable for On-off or 3-pos operation + 2 cable for external aux. switches type RedSwitch
RedBox-Y/S	Ex-e terminal box connectable to RedMax-... actuators with 2 cable, for modulating operation or 3-pos + integrated switches (HS)
RedBox-Y/S/SW	Ex-e terminal box connectable to RedMax-... actuators with 2 cable, for modulating or 3-pos operation with feedback signal + 2 cable for external aux. switches
RedBox-BF	Ex-e terminal box connectable to RedMax-... actuators with 1 cable, for all RedMax-...-BF
RedBox-BF/SW	Ex-e terminal box connectable to RedMax-... actuators with 1 cable, for all RedMax-...-BF + 2 cable for external aux. switches type RedSwitch
MKK-M	Mounting bracket for …Box-terminal boxes for direct coupling to …Max... actuators size M
HV-MK	Manual override, connectable to actuators size M (not suitable for ..Max-..-..F3!)
AR-16-xx	Squared reduction part from 16 × 16 mm to shafts with 14 mm (type AR-16-14), 12 mm (type AR-16-12)
ExPro-TT-...	Safety temperature trigger for fire dampers, switching at 71°/72°C, with 1 m cable, suitable only for ExMax-/RedMax-...-BF actuators!
Retrofit-Kit ..Max-M	Mechanical adaptation for mounting on ..Max actuators size M, required to replace a previous type EXT30..-F3, EXT50..-F3 or EXT50..

Special options and offshore kits see page 23

InMax 90° quarter turn actuators "S" for safe area

Industrial

Features of InMax - ... size S

InMax-...	Size S	Description	Basics for all InMax-.. size S
NOT Explosion proof and only for use in safe area IP66		InMax are, in acc. with type, for automation of air dampers, fire and smoke dampers, volume control, as well as for ball valves, throttle valves and other quarter turn armatures. **Delivery:** 1 actuator, ~ 1 m cable, allen key for manual override, 4 screws.	• **24…240 VAC/DC** self adaptable power supply • Up to 5 different running times adjustable on site • 95°angle of rotation (5° for pretension) • 100% overload protected • Aluminium housing IP66, cable ~ 1 m • -40...+40°C/+50°C, integrated heater • Emergency manual override • Squared shaft connection 12 × 12 mm • Dimensions (H × W × D) 210 × 95 × 80 mm

Quarter turn actuators without spring return, 24 to 240 VAC/DC, for safe area

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
InMax- 5.10	5 Nm / 10 Nm	3/15/30/60/120 sec.	-	On-off, 3-pos	-	-	S
InMax-15.30	15 Nm / 30 Nm	3/15/30/60/120 sec.	-	On-off, 3-pos	-	-	S
InMax- 5.10-S	5 Nm / 10 Nm	3/15/30/60/120 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	S
InMax-15.30-S	15 Nm / 30 Nm	3/15/30/60/120 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	S
InMax- 5.10-Y	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	-	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	S
InMax-15.30-Y	15 Nm / 30 Nm	7,5/15/30/60/120 sec.	-	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	S

Quarter turn actuators with spring return, 24 to 240 VAC/DC, for safe area

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
InMax-5.10-F	5 Nm / 10 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	-	-	S
InMax- 15-F	15 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	-	-	S
InMax-5.10-SF	5 Nm / 10 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	S
InMax- 15-SF	15 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	S
InMax-5.10-YF	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	~ 3 sec. / 10 sec.	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	S
InMax- 15-YF	15 Nm	7,5/15/30/60/120 sec.	~ 3 sec. / 10 sec.	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	S
InMax-5.10-BF	5 Nm / 10 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	InPro-TT-.. connector	S
InMax- 15-BF	15 Nm	3/15/30/60/120 sec.	~ 3 sec. / 10 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	InPro-TT-.. connector	S

Quarter turn actuators with 1 sec. spring return for Offshore application, 24 to 240 VAC/DC, for safe area

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
InMax- 8-F1	8 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	-	-	S
InMax-15-F1	15 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	-	-	S
InMax- 8-SF1	8 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	2 × aux. switches (5°/85°)	-	S
InMax-15-SF1	15 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	2 × aux. switches (5°/85°)	-	S
InMax- 8-BF1	8 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	2 × aux. switches (5°/85°)	InPro-TT-.. connector	S
InMax-15-BF1	15 Nm	3/15/30/60/120 sec.	≤ 1 sec.	On-off	2 × aux. switches (5°/85°)	InPro-TT-.. connector	S

Accessories

Type	Technical data
InSwitch	External, adaptable, on site adjustable auxiliary switch with 2 potential free contacts, adaptable to InMax-... actuators
InBox-3P	Terminal box connectable to InMax-… actuators with 1 cable for On-off or 3-pos operation
InBox-3P/SW	Terminal box connectable to InMax-… actuators with 1 cable for On-off or 3-pos operation + 2 cable for external aux. switches type InSwitch
InBox-Y/S	Terminal box connectable to InMax-… actuators with 2 cable, for modulating operation or 3-pos + integrated switches (HS)
InBox-Y/S/SW	Terminal box connectable to InMax-… actuators with 2 cable, for modulating or 3-pos operation with feedback signal + 2 cable for external aux. switches
InBox-BF	Terminal box connectable to InMax-… actuators with 1 cable, for all InMax-…-BF
InBox-BF/SW	Terminal box connectable to InMax-… actuators with 1 cable, for all InMax-…-BF + 2 cable for external aux. switches type InSwitch
MKK-S	Mounting bracket for …Box-terminal boxes for direct coupling to …Max… actuators size S
KB-S	Mounting clamp for round damper shaft Ø 10 to 20 mm and squared shafts 10 to 16 mm, incl. bracket, connectable to all InMax-… size S
HV-SK, HV-SL	Manual override, connectable to actuators size S. HV-SK = short version, HV-SL = long version for add. mounting of ..Box/..Switch (not suitable for ..Max-..-..F1!)
AR-12-xx	Squared reduction part from 12 × 12 mm to shafts with 11 mm (type AR-12-11), 10 mm (type AR-12-10), 8 mm (type AR-12-08)
InPro-TT-…	Safety temperature trigger for fire dampers, switching at 71°/72°C, with 1 m cable, suitable only for InMax-…-BF actuators!
Retrofit-Kit ..Max-S	Mechanical adaptation for mounting on ..Max actuators size S, required to replace a previous type NOT15..-F1, NOT12..-F16, NOT15.. or NOT30..

Special options and offshore kits see page 23

InMax 90° quarter turn actuators “M” for safe area

Industrial

InMax-…
NOT Explosion proof and only for use in safe area IP66

Size M

Description

InMax are, in acc. with type, for automation of air dampers, fire and smoke dampers, volume control, as well as for ball valves, throttle valves and other quarter turn armatures.

Delivery:
1 actuator, ~ 1 m cable, allen key for manual override, 4 screws.

Features of InMax - ... size M

Basics for all InMax-.. size M

- **24…240 VAC/DC** self adaptable power supply
- Up to 5 different running times adjustable on site
- 95°angle of rotation (5° for pretension)
- 100% overload protected
- Aluminium housing IP66, cable ~ 1 m
- -40...+40°C / +50°C, integrated heater
- Emergency manual override
- Squared shaft connection 16 × 16 mm
- Dimensions (H × W × D) 288 × 149 × 116 mm

Quarter turn actuators without spring return, 24 to 240 VAC/DC, for safe area

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
InMax-50.75	50 Nm / 75 Nm	40/60/90/120/150 sec.	-	On-off, 3-pos	-	-	M
InMax- 100	100 Nm	40/60/90/120/150 sec.	-	On-off, 3-pos	-	-	M
InMax- 150	150 Nm	40/60/90/120 sec.	-	On-off, 3-pos	-	-	M
InMax-50.75-S	50 Nm / 75 Nm	40/60/90/120/150 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
InMax- 100-S	100 Nm	40/60/90/120/150 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
InMax- 150-S	150 Nm	40/60/90/120 sec.	-	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
InMax-50.75-Y	50 Nm / 75 Nm	40/60/90/120/150 sec.	-	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	M
InMax- 100-Y	100 Nm	40/60/90/120/150 sec.	-	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	M

Quarter turn actuators with spring return, 24 to 240 VAC/DC, for safe area

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
InMax-30- F	30 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	-	-	M
InMax-50- F	50 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	-	-	M
InMax-60- F	60 Nm	40/60/90/120 sec.	~ 20 sec.	On-off, 3-pos	-	-	M
InMax-30-SF	30 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
InMax-50-SF	50 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
InMax-60-SF	60 Nm	40/60/90/120 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	-	M
InMax-30-YF	30 Nm	40/60/90/120/150 sec.	~ 20 sec.	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	M
InMax-50-YF	50 Nm	40/60/90/120/150 sec.	~ 20 sec.	3-pos, 0…10 VDC, 4...20 mA	0…10 VDC, 4...20 mA	-	M
InMax-30-BF	30 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	InPro-TT-.. connector	M
InMax-50-BF	50 Nm	40/60/90/120/150 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	InPro-TT-.. connector	M
InMax-60-BF	60 Nm	40/60/90/120 sec.	~ 20 sec.	On-off, 3-pos	2 × aux. switches (5°/85°)	InPro-TT-.. connector	M

Quarter turn actuators with 3 sec. spring return for Offshore application, 24 to 240 VAC/DC, for safe area

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
InMax-30- F3	30 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	-	-	M
InMax-50- F3	50 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	-	-	M
InMax-30-SF3	30 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	2 × aux. switches (5°/85°)	-	M
InMax-50-SF3	50 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	2 × aux. switches (5°/85°)	-	M
InMax-30-BF3	30 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	2 × aux. switches (5°/85°)	InPro-TT-.. connector	M
InMax-50-BF3	50 Nm	40/60/90/120/150 sec.	≤ 3 sec.	On-off	2 × aux. switches (5°/85°)	InPro-TT-.. connector	M

Accessories

Type	Technical data
InSwitch	External, adaptable, on site adjustable auxiliary switch with 2 potential free contacts, adaptable to InMax-… actuators
InBox-3P	Terminal box connectable to InMax-… actuators with 1 cable for On-off or 3-pos operation
InBox-3P/SW	Terminal box connectable to InMax-… actuators with 1 cable for On-off or 3-pos operation + 2 cable for external aux. switches type InSwitch
InBox-Y/S	Terminal box connectable to InMax-… actuators with 2 cable, for modulating operation or 3-pos + integrated switches (HS)
InBox-Y/S/SW	Terminal box connectable to InMax-… actuators with 2 cable, for modulating or 3-pos operation with feedback signal + 2 cable for external aux. switches
InBox-BF	Terminal box connectable to InMax-… actuators with 1 cable, for all InMax-…-BF
InBox-BF/SW	Terminal box connectable to InMax-… actuators with 1 cable, for all InMax-…-BF + 2 cable for external aux. switches type InSwitch
MKK-M	Mounting bracket for …Box-terminal boxes for direct coupling to …Max… actuators size M
HV-MK	Manual override, connectable to actuators size M (not suitable for ..Max-..-..F3!)
AR-16-xx	Squared reduction part from 16 × 16 mm to shafts with 14 mm (type AR-16-14), 12 mm (type AR-16-12)
InPro-TT-…	Safety temperature trigger for fire dampers, switching at 71°/72°C, with 1 m cable, suitable only for InMax-…-BF actuators!
Retrofit-Kit ..Max-M	Mechanical adaptation for mounting on ..Max actuators size M, required to replace a previous type NOT30..-F3, NOT50..-F3 or NOT50..

Special options and offshore kits see page 23

Introducing ExMax+LIN & ExRun – Valve actuators for explosion proof areas!

Linear applications for valve control ...

- HAZARDOUS LOCATIONS ZONE 1, 2, 21, 22
- FAST SPRING RETURN TIME
- SIL2 FAIL SAFE FUNCTION
- UNIVERSAL POWER SUPPLY
- C5-M SOLUTION
- EASY INSTALLATION
- COMPACT DIMENSIONS

..Max + LIN, ..Run Electrical drive engineering for valves – Overview

Overview ..Max + LIN linear guide unit and ..Run valve actuators

The actuator series are subdivided in 3 installation- and 2 application areas.

Installation areas:

ExMax-..+LIN, ExRun-.. ..... actuators for use in hazardous areas zone 1, 2, 21, 22
RedMax-..+LIN, RedRun-.. ..... actuators for use in hazardous areas zone 2, 22
InMax-..+LIN, InRun-.. ..... actuators for use in safe area

Application areas:

Ex/Red/InMax + LIN ..... for globe- or 3-way valves (with safety function)
Ex/Red/InRun ..... for globe- or 3-way valves

The actuator concept offers obvious advantages:

1. Small dimension, compact, easy installation, highest protection classes, cost effective
2. Universal power supply 24 to 240 Volt AC/DC, selfadjustable
3. SIL2 fail safe function (only at ..Max + LIN)
4. With or without spring return (spring return only at ..Max + LIN linear guide unit)
5. Robust aluminium housing, IP66
6. Integrated heater for low temperatures
7. On site adjustable motor running time
8. Integrated manual override
9. Useful accessories such as retrofit limit switches

N **ExMax+LIN**

7,5 mm-
42 mm

Actuators with spring return for 2-way and 3-way valves

ExMax.., RedMax.., InMax.. + LIN linear guide unit

Linear motion valve actuators with spring return from 500 to 3.000 N. Fixed stroke with 7.5, 10, 15, 20, 30, or 42 mm, for automation of globe- or 3-way valves. Linkage to numerous valve types and brands available.

N **ExRun**

5 mm-
60 mm

Actuators for 2-way and 3-way valves

ExRun.., RedRun.., InRun.. valve actuators

Valve actuators from 500 to 10.000 N. On site adjustable stroke from 5 to 60 mm, for automation of globe- or 3-way valves. Linkage to numerous valve types and brands available.

..Max-.. + LIN-.. Linear valve actuators size “S” and “M” *with spring return*

Explosion proof

ExMax-.. + LIN-..
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, SIL, IECEx,
GOST-R, RTN,
INMETRO, KOSHA[1]
[1]ExMax size S only
UL*, CSA*
*...-A version only

RedMax-.. + LIN-..
Zone 2, 22
Gas + Dust
certified according
ATEX, SIL, IECEx,
GOST-R, RTN,
INMETRO, UL*, CSA*
*...-A version only

Industrial

InMax-.. + LIN-..
NOT Explosion proof
and only for
use in safe area
IP66

Features ..Max-.. + LIN-.. (size S and M)

Description

..Max-.. + LIN-.. linear valve actuators **with spring return** for automation of globe- or 3-way valves.
Use as actuator with safety function, On-off or 3-pos. actuator or modulating actuator.

Delivery: Linear unit, suitable for all ..Max-..-F actuators size S or M.

Required accessories:
Valve adaptation in accordance with valve manufacturer, type and nominal size (diameter).

Ordering example:
Modulating valve actuator with spring return in Ex area zone 2, for a globe valve with 20 mm stroke and a required force of 1.500 N.

Actuator:	RedMax-30-YF
Linear adaptation:	LIN-20
Valve adaptation:	suitable for valve type on requ.
Optional:	Ex terminal box (RedBox-Y/S)
Optional:	Mounting bracket (MKK-M)

Basics for ..Max-.. + LIN-.. valve actuators

- 24…240 VAC/DC self adaptable power supply
- Running time 0,1…15 sec./mm [1]
- Stroke 7.5, 10, 15, 20, 30, 42 mm [1]
- Force 500…3.000 N [1]
- Spring return 3/10 sec. (size S) 20 sec. (size M) [1]
- Control mode On-off, 3-pos., 0-10 VDC, 4-20 mA [1]
- Aluminium housing, IP66 [2]
- Ambient temperature −20…+40 °C (T6), −20…+50 °C (T5)
- Weight (incl. actuator) ~ 8 kg (size S), ~ 14 kg (size M) [1]
- External terminal box optional [2]

[1] in acc. with type | [2] applies for actuator

Linear unit for actuators with spring return, 24 to 240 VAC/DC

Type	Stroke (max.)	Description
LIN-7.5	7,5 mm	Linear unit up to max. 7,5 mm stroke, suitable for all ..Max-..-F actuators size S or M with spring return
LIN-10	10 mm	Linear unit up to max. 10 mm stroke, suitable for all ..Max-..-F actuators size S or M with spring return
LIN-15	15 mm	Linear unit up to max. 15 mm stroke, suitable for all ..Max-..-F actuators size S or M with spring return
LIN-20	20 mm	Linear unit up to max. 20 mm stroke, suitable for all ..Max-..-F actuators size S or M with spring return
LIN-30	30 mm	Linear unit up to max. 30 mm stroke, suitable for all ..Max-..-F actuators size S or M with spring return
LIN-40	42 mm	Linear unit up to max. 42 mm stroke, suitable for all ..Max-..-F actuators size S or M with spring return

Additional price for adaptation, dependent on valve manufacturer, -type and stroke.

LIN Special options for linear unit suitable for actuators

Explosion proof / Safe area

LIN-...CT
available for linear
unit LIN-..
In accordance with ..Max
type for use in
Ex area or safe area

Special options

Features LIN-…-CT

Description

CT version with aluminium housing and C5-M painting, resistant against corrosive and maritime atmosphere, some parts nickel plated.

Delivery: 1 linear unit with special option
Ordering example: LIN-20-CT

Basics LIN-…-CT

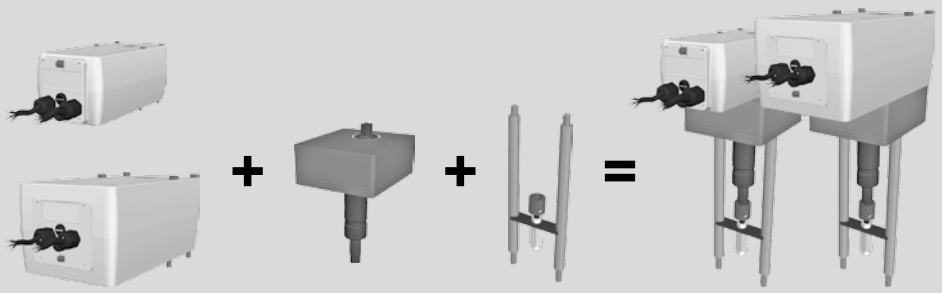
CT:
- C5-M painted aluminium housing
- Resistant against corrosive and / or maritime atmosphere

LIN-.. options

Type	Description / Technical data
LIN-..-CT	C5-M painted aluminium housing, resistant against corrosive and / or maritime atmosphere. Lifting rod, connecting parts and screws in VA (surcharge)

Additional price for adaptation in stainless steel (VA) for CT version.

Mounting variations



Actuator ..Max-..-F | LIN-.. | Adaption | Valve actuator with spring return

Valve adaptation

To select the right valve adaptation and get the right price information the following data are required:

1. **Valve manufacturer**
2. **Valve type**
3. **Valve nominal size (diameter) DN**

For adaptations which are already designed by Schischek this information is sufficient.

To design new adaptations we need additional details of the valve body as well as drawings.

With the purchase order you have to provide actuator type + type of adaptation.

Selection of recommended actuators in relation of force and max. stroke

Type	LIN - 7.5	LIN - 10	LIN - 15	LIN - 20	LIN - 30	LIN - 40	
max. stroke / Force	7.5 mm	10 mm	15 mm	20 mm	30 mm	42 mm	
500 N	...Max- 15 - ...F	...Max- 15 - ...F	...Max- 15 - ...F	...Max- 15 - ...F	...Max- 15 - ...F	...Max- 30 - ...F	At strokes between two values use the next higher linear unit e.g. 24 mm stroke = LIN-30
800 N					...Max- 30 - ...F		
1.000 N				...Max- 30 - ...F		...Max- 50 - ...F	
1.500 N			...Max- 30 - ...F		...Max- 50 - ...F		
2.000 N	...Max- 30 - ...F	...Max- 30 - ...F		...Max- 50 - ...F		–	
2.500 N			...Max- 50 - ...F		–	–	
3.000 N					–	–	

Attention: Limitation of resolution at YF-actuators with strokes < nominal (motor blockade)!
Note the maximum force of the actuator to prevent damage to your valve!

Info: Suitable actuators with spring return see page 10-15.

Nominal force (N) at spring of actuator in relation of max. stroke of LIN at temperatures between −20…+40 °C

Nominal force (N)	LIN - 7.5	LIN - 10	LIN - 15	LIN - 20	LIN - 30	LIN - 40	
...Max- 15 -F	1.500	1.500	1.000	800	500	–	Blocking force in motor is round about 3 to 4 times larger than nominal force. **Note valve dimensioning!**
...Max- 30 -F	3.000	3.000	2.000	1.500	1.000	800	
...Max- 50 -F	–	–	3.000	3.000	2.000	1.500	

Attention: Limitation of resolution at YF-actuators with strokes < nominal (motor blockade)!
Note the maximum force of the actuator to prevent damage to your valve!

Nominal force (N) at spring of actuator in relation of max. stroke of LIN at temperatures between 0…+40 °C

Nominal force (N)	LIN - 7.5	LIN - 10	LIN - 15	LIN - 20	LIN - 30	LIN - 40	
...Max- 15 -F	3.000	3.000	2.000	1.600	1.000	–	Blocking force in motor is round about 1.5 to 2 times larger than nominal force. **Note valve dimensioning!**
...Max- 30 -F	6.000	6.000	4.000	3.000	2.000	1.600	
...Max- 50 -F	–	–	6.000	6.000	4.000	3.000	

Attention: Above mentioned values are nominal trusts with performed self adjustment drive!

The maximum trusts can read values which are up to three to four times higher than values of tables!
Without performed self adjustment drive there can occur much higher trust values, which can cause damages on the mentioned valve or linkages!

ExRun / RedRun / InRun Valve actuators

Explosion proof

ExRun...
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx,
GOST-R, RTN,
KOSHA, UL*, CSA*
*...-A version only

RedRun...
Zone 2, 22
Gas + Dust
certified according
ATEX, IECEx,
GOST-R, RTN,
UL*, CSA*
*...-A version only

Industrial

InRun...
NOT Explosion proof
and only for
use in safe area
IP66

Features of ExRun, RedRun, InRun

Description

ExRun, RedRun and InRun valve actuators are used for automation of 2- and 3-way valves with 3-pos. on-off or modulating mode.

Delivery:
1 actuator with integrated Ex-e terminal box, Emergency manual override.

Required accessories:
Valve adaptation in accordance with valve manufacturer, type and nominal size (diameter).

Basics for all ...Run valve actuators

- **24...240 VAC/DC** self adaptable power supply
- Up to 5 different running times adjustable on site
- 5 to 60 mm stroke, mechanical limitation on each position
- Automatic adaptation of modulating signal at Ex-, Red-, InRun-...-Y..
- Aluminium housing IP66, integrated terminal box
- −20...+40°C / +50°C, integrated heater
- Emergency manual override
- Dimension (H[1] × W × D) 260[1] × 208 × 115 mm (without valve and adaptation)
- Approximate weight 7,3...7,7 kg[2] (without valve and adaptation)

[1]Height varies depending on type
[2]Weight varies depending on type

Ex-d valve actuators without spring return for zone 1, 2, 21, 22

Type	Force	Running time	Spring return	Control mode	Feedback	Features	Size
ExRun- 5.10	500 / 1.000 N	2/3/6/9/12 sec/mm	-	On-off, 3-pos	-	-	S
ExRun-25.50	2.500 / 5.000 N	2/3/6/9/12 sec/mm	-	On-off, 3-pos	-	-	S
ExRun-75.100	7.500 / 10.000 N (8.000 N)	4/6/9/12/15 sec/mm	-	On-off, 3-pos	-	-	S
ExRun- 5.10 -Y	500 / 1.000 N	2/3/6/9/12 sec/mm	-	0...10 VDC, 4...20 mA	0...10 VDC, 4...20 mA	-	S
ExRun-25.50 -Y	2.500 / 5.000 N	2/3/6/9/12 sec/mm	-	0...10 VDC, 4...20 mA	0...10 VDC, 4...20 mA	-	S
ExRun-75.100-Y	7.500 / 10.000 N (8.000 N)	4/6/9/12/15 sec/mm	-	0...10 VDC, 4...20 mA	0...10 VDC, 4...20 mA	-	S
ExRun- 5.10 -U	500 / 1.000 N	2/3/6/9/12 sec/mm	-	On-off, 3-pos	0...10 VDC, 4...20 mA	-	S
ExRun-25.50 -U	2.500 / 5.000 N	2/3/6/9/12 sec/mm	-	On-off, 3-pos	0...10 VDC, 4...20 mA	-	S
ExRun-75.100-U	7.500 / 10.000 N (8.000 N)	4/6/9/12/15 sec/mm	-	On-off, 3-pos	0...10 VDC, 4...20 mA	-	S

Ex-n valve actuators without spring return for zone 2, 22

Type	Force	Running time	Spring return	Control mode	Feedback	Features	Size
RedRun- 5.10	500 / 1.000 N	2/3/6/9/12 sec/mm	-	On-off, 3-pos	-	-	S
RedRun-25.50	2.500 / 5.000 N	2/3/6/9/12 sec/mm	-	On-off, 3-pos	-	-	S
RedRun-75.100	7.500 / 10.000 N (8.000 N)	4/6/9/12/15 sec/mm	-	On-off, 3-pos	-	-	S
RedRun- 5.10 -Y	500 / 1.000 N	2/3/6/9/12 sec/mm	-	0...10 VDC, 4...20 mA	0...10 VDC, 4...20 mA	-	S
RedRun-25.50 -Y	2.500 / 5.000 N	2/3/6/9/12 sec/mm	-	0...10 VDC, 4...20 mA	0...10 VDC, 4...20 mA	-	S
RedRun-75.100-Y	7.500 / 10.000 N (8.000 N)	4/6/9/12/15 sec/mm	-	0...10 VDC, 4...20 mA	0...10 VDC, 4...20 mA	-	S
RedRun- 5.10 -U	500 / 1.000 N	2/3/6/9/12 sec/mm	-	On-off, 3-pos	0...10 VDC, 4...20 mA	-	S
RedRun-25.50 -U	2.500 / 5.000 N	2/3/6/9/12 sec/mm	-	On-off, 3-pos	0...10 VDC, 4...20 mA	-	S
RedRun-75.100-U	7.500 / 10.000 N (8.000 N)	4/6/9/12/15 sec/mm	-	On-off, 3-pos	0...10 VDC, 4...20 mA	-	S

Valve actuators without spring return for safe area

Type	Force	Running time	Spring return	Control mode	Feedback	Features	Size
InRun- 5.10	500 / 1.000 N	2/3/6/9/12 sec/mm	-	On-off, 3-pos	-	-	S
InRun-25.50	2.500 / 5.000 N	2/3/6/9/12 sec/mm	-	On-off, 3-pos	-	-	S
InRun-75.100	7.500 / 10.000 N (8.000 N)	4/6/9/12/15 sec/mm	-	On-off, 3-pos	-	-	S
InRun- 5.10 -Y	500 / 1.000 N	2/3/6/9/12 sec/mm	-	0...10 VDC, 4...20 mA	0...10 VDC, 4...20 mA	-	S
InRun-25.50 -Y	2.500 / 5.000 N	2/3/6/9/12 sec/mm	-	0...10 VDC, 4...20 mA	0...10 VDC, 4...20 mA	-	S
InRun-75.100-Y	7.500 / 10.000 N (8.000 N)	4/6/9/12/15 sec/mm	-	0...10 VDC, 4...20 mA	0...10 VDC, 4...20 mA	-	S
InRun- 5.10 -U	500 / 1.000 N	2/3/6/9/12 sec/mm	-	On-off, 3-pos	0...10 VDC, 4...20 mA	-	S
InRun-25.50 -U	2.500 / 5.000 N	2/3/6/9/12 sec/mm	-	On-off, 3-pos	0...10 VDC, 4...20 mA	-	S
InRun-75.100-U	7.500 / 10.000 N (8.000 N)	4/6/9/12/15 sec/mm	-	On-off, 3-pos	0...10 VDC, 4...20 mA	-	S

Accessories

Type	Technical data
ExSwitch-R-L	External, adaptable, on site adjustable Ex-d auxiliary switch linear for Ex/RedRun-.. with 2 potential free contacts, additionally Ex-e terminal box + mounting bracket necessary
InSwitch- R-L	External, adaptable, on site adjustable auxiliary switch linear for InRun-.. with 2 potential free contacts, additionally terminal box + mounting bracket necessary
ExBox- SW	Ex-e terminal box suitable for ExRun.. valve-actuators with external switches ExSwitch-R-L
RedBox-SW	Ex-e terminal box suitable for RedRun.. valve-actuators with external switches ExSwitch-R-L
InBox- SW	Terminal box suitable for InRun.. valve-actuators with external switches InSwitch-R-L
MKK-S	Mounting-bracket suitable for ..Box-terminal boxes for direct mounting on ..Run actuators size S
HV-R	Manual override suitable for ..Run valve actuators size S
GMB-1	Rubber bellow up to 60 mm, colour black
Adaption	Different adaptations for different valve types and sizes available. Please don't hesitate to ask for technical solution

Special options and offshore kits see page 23

Required data for valve adaptation

To select the right valve adaptation and get the right price information the following data are required:

1. **Valve manufacturer**
2. **Valve type**
3. **Valve nominal size (diameter) DN**

For adaptations which are already designed by Schischek this information is sufficient.

To design new adaptations we need additional details of the valve body as well as drawings.

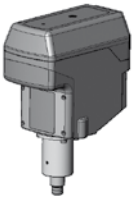
With the purchase order you have to provide actuator type and type of adaptation.

…Run + valve adaptation

ExRun-…

RedRun-…

InRun-…



+

Adaption

VA/CT Special options actuators – overview

Overview of special options of Schischek actuators for use under extreme weather conditions

Installation/Application area:

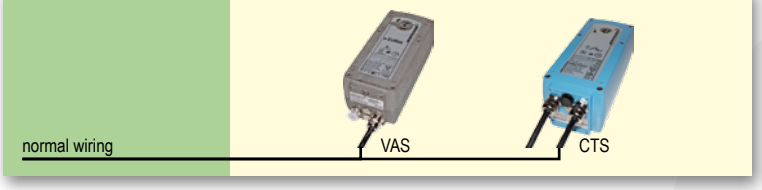
Usage in hazardous areas under extreme weather conditions and/or for offshore/onshore applications.

Advantages of special options:

- Resistant against corrosive and/or maritime atmosphere
- Usage under extreme weather conditions
- Approved for offshore-/onshore applications
- Robust and thereby extended period of application time of actuators

VAS CTS ..Max-.. S

Special options quarter turn actuators size S

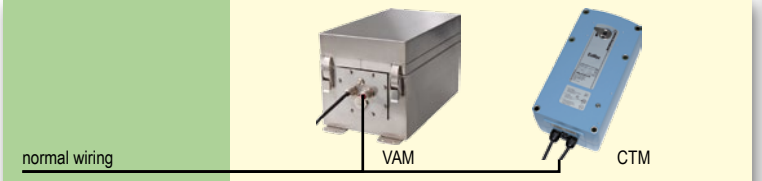


..Max-.. ¼ turn actuators size S

Housing material in stainless steel (VAS) or aluminium housing with C5-M painting (CTS) for use under extreme weather conditions.

VAM CTM ..Max-.. M

Special options quarter turn actuators size M

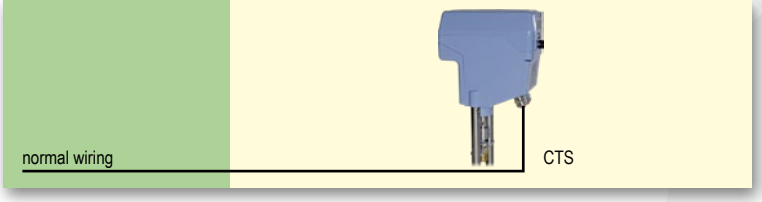


..Max-.. ¼ turn actuators size M

Surrounding housing in stainless steel (VAM) or aluminium housing with C5-M painting (CTM) for use under extreme weather conditions.

CTS ..Run-..

Special options valve actuators

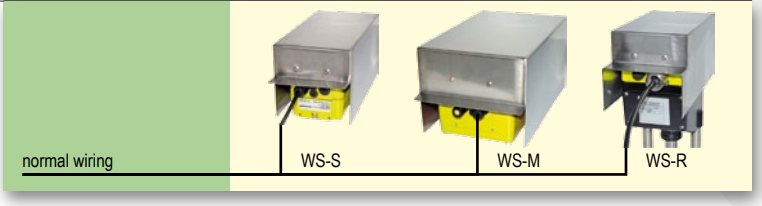


..Run-.. valve actuators

Aluminium housing with C5-M painting (CTS) for use under extreme weather conditions.

WS-S WS-M WS-R ..Max-.. S/M ..Run-..

Weather shield for quarter turn and valve actuators



..Max-.. ¼ turn and ..Run valve actuators

Weather shield made of stainless steel for protection against weather influences like rain, sun or snow.

Safe area | **Ex area**

..Max Special options for quarter turn actuators size S or M

Explosion proof

..Max-...VA/CT

available for ExMax, RedMax and InMax
In accordance with type for use in Ex area or safe area

Special options

Features ..Max-…VA/CT

Description

VA version with housing material in stainless steel AISI 316, some parts nickel plated.
CT version with aluminium housing and C5-M painting, resistant against corrosive and maritime atmosphere, some parts nickel plated.

Delivery: 1 quarter turn actuator size S or M with special option
Ordering example: ExMax-15.30-VAS

Basics ..Max-...VA/CT

VA:
- Housing material in stainless steel AISI 316, some parts nickel plated

CT:
- C5-M painted aluminium housing
- Resistant against corrosive and/or maritime atmosphere
- Cable glands brass nickel plated
- Screws in stainless steel

For general basics see ..Max quarter turn actuators.

..Max-.. options

Type	Description/Technical data
..Max-...- VAS	Housing material of ..Max quarter turn actuator size S in stainless steel AISI 316, some parts nickel plated (surcharge)
..Max-...- VAM	Enclosure for ..Max quarter turn actuator size M, made of stainless steel AISI 316
..Max-...- CTS	Aluminium housing of ..Max quarter turn actuator size S with C5-M painting, resistant against corrosive and maritime atmosphere, some parts nickel plated (surcharge)
..Max-...- CTM	Aluminium housing of ..Max quarter turn actuator size M with C5-M painting, resistant against corrosive and maritime atmosphere, some parts nickel plated (surcharge)
..Box-.../ VA	Ex-e terminal-box, housing made of stainless-steel type AISI 316 L, some parts nickel plated (surcharge)
..Box-.../ CT	Ex-e terminal-box, housing C5-M painted, resistant against corrosive/maritime atmosphere, some parts nickel plated (surcharge)
..Switch- CT	Auxiliary switch for ..Max.., housing C5-M painted, resistant against corrosive/maritime atmosphere, some parts nickel plated (surcharge)
MKK- S/VA	Mounting bracket, made of stainless-steel suitable for ..Box...VA for direct coupling to ..Max actuators size S
MKK- M/VA	Mounting bracket, made of stainless-steel suitable for ..Box...VA for direct coupling to ..Max actuators size M
MKK-VAM/VA	Mounting bracket, made of stainless-steel suitable for ..Box...VA for coupling to ..Max actuators size M in combination with surrounding housing VAM
Kit-S8-Max	Cable glands 2 × M16 × 1,5 mm Ex-e standard Ø 5-10 mm in brass nickel plated, 1 blind plug for replace the plastic version of quarter turn actuator ..Max
Kit-S8-Box	Cable glands 4 × M20 × 1,5 mm Ex-e Ø 6-13 mm, brass nickel plated, for replace the plastic version of terminal ..Box
Kit-Offs-PMC-1C	Protection metal conduit incl. SS terminal box and glands for 1 armoured cable
Kit-Offs-PMC-2C	Protection metal conduit incl. SS terminal box and glands for 2 armoured cables
WS-S	Weather shield in stainless steel, suitable for all ..Max actuators size S
WS-M	Weather shield in stainless steel, suitable for all ..Max actuators size M

..Run Special options for valve actuators

Explosion proof

..Run-...CTS

available for ExRun, RedRun and InRun
In accordance with type for use in Ex area or safe area

Special options

Features ..Run-…CTS

Description

CTS version with aluminium housing and C5-M painting, resistant against corrosive and maritime atmosphere, some parts nickel plated.

Delivery: 1 valve actuator with special option
Ordering example: ExRun-25.50-CTS

Basics ..Run-...CTS

CTS:
- C5-M painted aluminium housing
- Resistant against corrosive and/or maritime atmosphere
- Cable glands brass nickel plated
- Screws in stainless steel

For general basics see ..Run valve actuators.

..Run-.. options

Type	Description/Technical data
..Run-...-CTS	Aluminium housing with C5-M painting for ..Run valve actuator, resistant against corrosive/maritime atmosphere, some parts nickel plated (surcharge)
Kit-S8- Run	Cable glands 2 × M20 × 1,5 mm Ex-e Ø 6-13 mm, brass nickel plated, for replace the plastic version of valve actuators ..Run
Kit-Offs-GL-Run	Cable glands 2 × M25 × 1,5 mm Ex-d in brass nickel plated for armoured cables suitable for ..Run valve actuators
WS-R	Weather shield in stainless steel, suitable for all ..Run valve actuators

ExPolar Heating system – overview

Overview of new heating system for use with Schischek actuators down to −50°C

Installation / Application area:

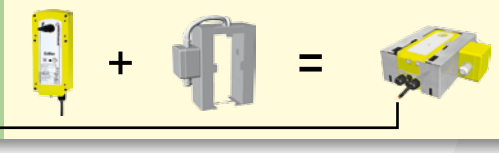
Usage in hazardous areas for temperatures down to −50 °C.

Advantages of ExPolar:

- Especially for usage under high sub-zero temperatures (down to −50°C)
- Suitable for applications with high temperature fluctuations (−50 °C up to +50 °C)
- Usage directly in hazardous locations
- Adaptable on Schischek actuator series type ExMax size S or M, ExRun

°C ExPolar-..-MS

Heating system for quarter turn actuators ExMax size S

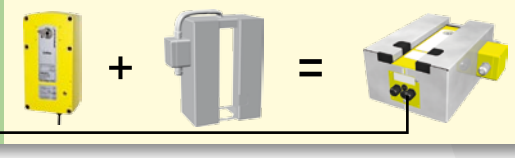


ExPolar-..-MS

Adaptable on Schischek quarter turn actuators type ExMax-.. size S.

°C ExPolar-..-MM

Heating system for quarter turn actuators ExMax size M

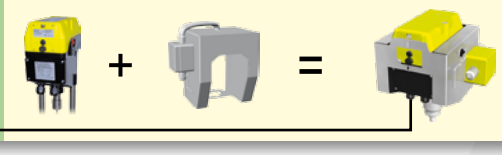


ExPolar-..-MM

Adaptable on Schischek quarter turn actuators type ExMax-.. size M.

°C ExPolar-..-R

Heating system for valve actuators ExRun



ExPolar-..-R

Adaptable on Schischek valve actuators type ExRun-...

Safe area	Ex area

ExPolar/InPolar Heating system for ¼ turn actuators ..Max-.. size S

Explosion proof	Industrial	Features ..Polar-…-MS

ExPolar-…-MS
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx

InPolar-…-MS
NOT explosion proof
and only for
use in safe area
IP66

Description

Controlled heating system for use in sub-zero regions down to −50 °C or at high temperature fluctuations from −50 °C up to +50 °C.
Adaptable on Schischek quarter turn actuators ..Max-.. size S (depending on type).

Delivery: 1 heating system (adaptable)

Ordering example: ExPolar-240-MS

Basics ..Polar

- 24/48 VAC/DC, 120/240 VAC
- 40 W
- −50 °C… +50 °C
- ExPolar for zone 1, 2, 21, 22
- InPolar for safe area

ExPolar-…-MS/InPolar-…-MS

Type	Adaptable on	Operation temperature	Supply				Power*	Installation area
ExPolar-…-MS	ExMax-../RedMax size S	−50 °C up to +50 °C	24 VAC/DC	48 VAC/DC	120 VAC	240 VAC	40 W	zone 1, 2, 21, 22
InPolar- …-MS	InMax-.. size S	−50 °C up to +50 °C	24 VAC/DC	48 VAC/DC	120 VAC	240 VAC	40 W	safe area

Supply voltage

*Nominal value

VAS option not considered!

ExPolar/InPolar Heating system for ¼ turn actuators ..Max-.. size M

Explosion proof	Industrial	Features ..Polar-…-MM

ExPolar-…-MM
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx

InPolar-…-MM
NOT explosion proof
and only for
use in safe area
IP66

Description

Controlled heating system for use in sub-zero regions down to −50 °C or at high temperature fluctuations from −50 °C up to +50 °C.
Adaptable on Schischek quarter turn actuators ..Max-.. size M (depending on type).

Delivery: 1 heating system (adaptable)

Ordering example: ExPolar-240-MM

Basics ..Polar

- 24/48 VAC/DC, 120/240 VAC
- 60 W
- −50 °C… +50 °C
- ExPolar for zone 1, 2, 21, 22
- InPolar for safe area

ExPolar-…-MM/InPolar-…-MM

Type	Adaptable on	Operation temperature	Supply				Power*	Installation area
ExPolar-…-MM	ExMax-../RedMax size M	−50 °C up to +50 °C	24 VAC/DC	48 VAC/DC	120 VAC	240 VAC	60 W	zone 1, 2, 21, 22
InPolar- …-MM	InMax-.. size M	−50 °C up to +50 °C	24 VAC/DC	48 VAC/DC	120 VAC	240 VAC	60 W	safe area

Supply voltage

*Nominal value

ExPolar/InPolar Heating system for valve actuators ..Run

Explosion proof	Industrial	Features ..Polar-…-R

ExPolar-…-R
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx

InPolar-…-R
NOT explosion proof
and only for
use in safe area
IP66

Description

Controlled heating system for use in sub-zero regions down to −50 °C or at high temperature fluctuations from −50 °C up to +50 °C.
Adaptable on Schischek valve actuators ..Run (depending on type).

Delivery: 1 heating system (adaptable)

Ordering example: ExPolar-240-R

Basics ..Polar

- 24/48 VAC/DC, 120/240 VAC
- 60 W
- −50 °C… +50 °C
- ExPolar for zone 1, 2, 21, 22
- InPolar for safe area

ExPolar-…-R/InPolar-…-R

Type	Adaptable on	Operation temperature	Supply				Power*	Installation area
ExPolar-…-R	ExRun/RedRun	−50 °C up to +50 °C	24 VAC/DC	48 VAC/DC	120 VAC	240 VAC	60 W	zone 1, 2, 21, 22
InPolar- …-R	InRun	−50 °C up to +50 °C	24 VAC/DC	48 VAC/DC	120 VAC	240 VAC	60 W	safe area

Supply voltage

*Nominal value

Introducing ExReg – HVAC control unit for explosion proof areas!

VAV / CAV and pressure control applications ...

HAZARDOUS LOCATIONS ZONE 1, 2, 21, 22

DECENTRALISED CONTROL STRUCTURES

REDUCED LIFE-CYCLE-COSTS

NO INTRINSIC SAFE CIRCUITS NEEDED

INTEGRAL PID LOOP

COMPATIBILITY TO MARKET STANDARDS

PREDEFINED SETTINGS

PREDEFINED DAMPER CHARACTERISTICS

ExReg../InReg.. Control systems – overview

Overview of the new ExReg.. and InReg.. control systems solution

The controllers are subdevided in 2 installation and 4 application areas.

Installation areas:

ExReg- ..... Modules for Ex-area zone 1, 2, 21, 22
InReg- ..... Modules for safe area

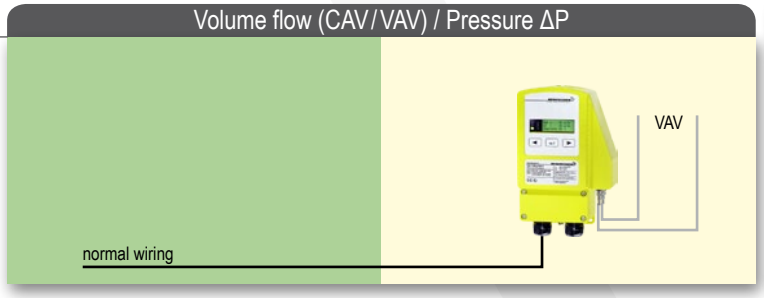
Application areas:

ExReg/InReg-V ..... Modules for volume flow control (CAV/VAV)
ExReg/InReg-V ..... Modules for pressure and differential pressure control
ExReg/InReg-D ..... Modules for temperature control
ExReg/InReg-D ..... Modules for humidity control

The new control systems concept offers especially in Ex-area huge benefits:

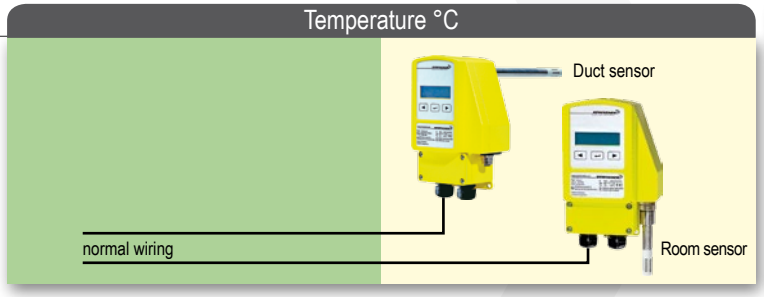
1. Usage directly in hazardous areas in zone 1, 2, 21, 22
2. Can be configured on site in the hazardous location
3. Decentralised control structures
4. Fewer components
5. Reduced Life-Cycle-Costs
6. No necessity to install safety barriers or to use special wiring
7. Integral PID loop
8. Optional in stainless steel (AISI 316) or with C5-M painting
9. Predefined Settings and damper characteristics
10. Cost effective

VAV ΔP **ExReg-V**



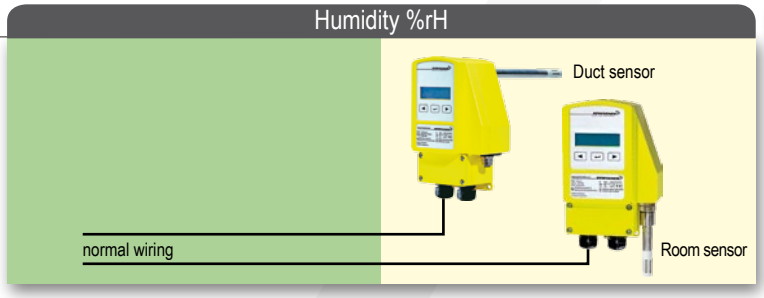
ExReg-V-.., InReg-V-..
Control of air flows and pressure in ventilation systems for building management control equipment, for chemical, pharmaceutical, industrial and offshore plants directly in hazardous areas zones 1, 2 (gas) and 21, 22 (dust), (InReg-V-.. in safe area). To complete the technical solution on a ventilation damper (with orifice plate and known shield/k-factor) an additional actuator type ExMax-...-CY or ExMax-...-CYF (with fail safe spring return) is required.

°C **ExReg-D**



ExReg-D-.., InReg-D-..
Control of temperature in ventilation systems for building management control equipment, for chemical, pharmaceutical, industrial and offshore plants directly in hazardous areas zones 1, 2 (gas) and 21, 22 (dust), (InReg-D-.. in safe area). To complete the technical solution an additional valve actuator type ExMax-...-CY, ExMax-...-CYF (with fail safe spring return) or ExRun-... is required.

%rH **ExReg-D**

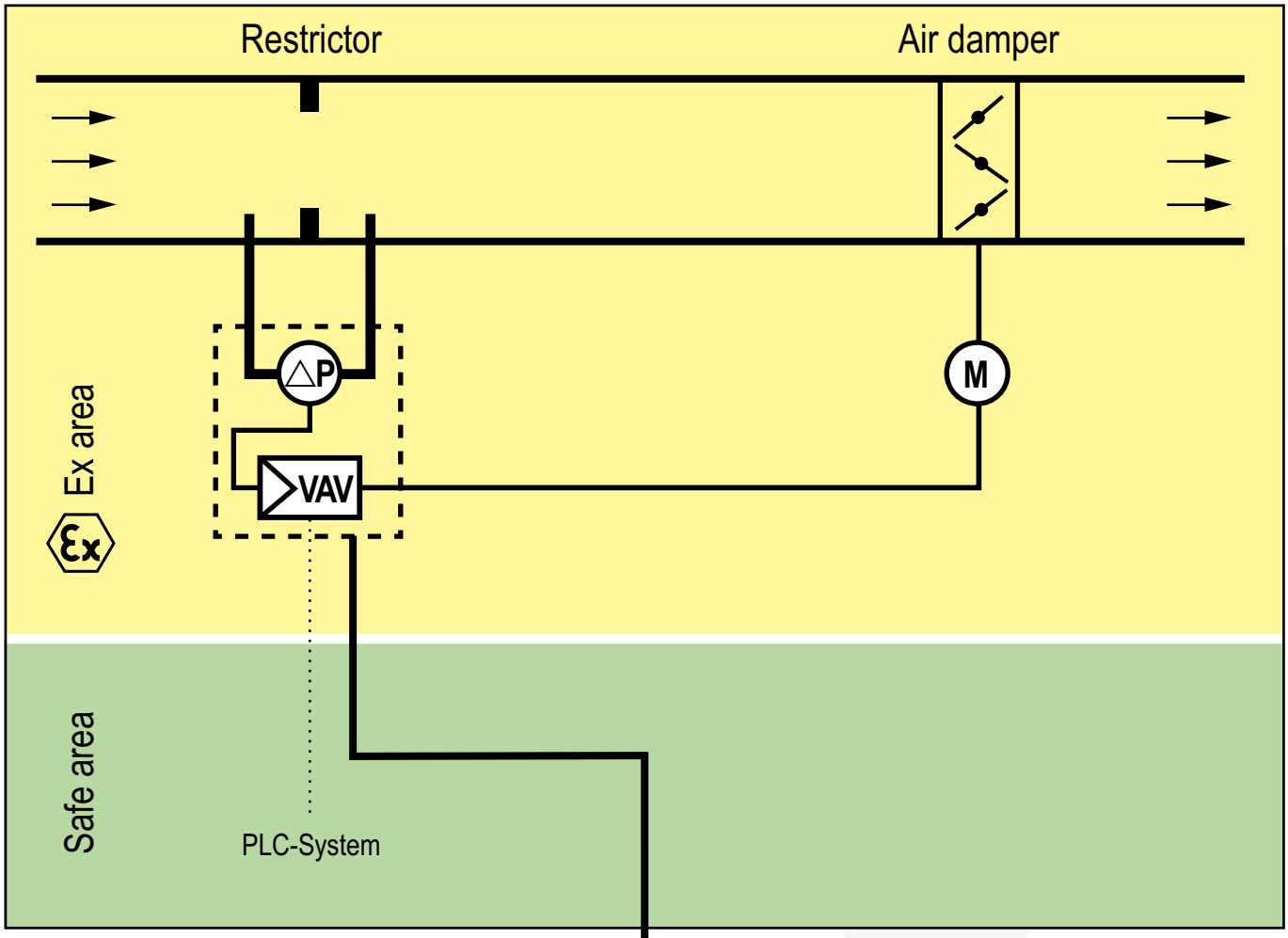


ExReg-D-.., InReg-D-..
Control of humidity in ventilation systems for building management control equipment, for chemical, pharmaceutical, industrial and offshore plants directly in hazardous areas zones 1, 2 (gas) and 21, 22 (dust), (InReg-D-.. in safe area). To complete the technical solution an additional valve actuator type ExMax-...-CY, ExMax-...-CYF (with fail safe spring return) or ExRun-... is required.

Safe area | **Ex area**

ExReg-V300-../InReg-V300-.. Volume flow and pressure controller CAV/VAV

VAV applications in a typical HVAC system



Controller

ExReg-V300-..
Differential pressure
- 0...300 Pa (VAV)

ExReg-V300-../InReg-V300-.. Volume flow and pressure controller CAV/VAV

Explosion proof

ExReg-V300-..

Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx, GOST-R

Industrial

InReg-V300-..

NOT explosion proof
and only for
use in safe area
IP66

Features of ExReg-V300-.., InReg-V300-..

Description

Compact controller for use in hazardous areas zone 1, 2, 21, 22 for control/regulation of air/gas flows and pressure in ventilation systems.
Suitable actuator ..Max-...-CY or ..Max-...-CYF (with fail safe spring return) available separately.

Delivery:
Electric volume flow/pressure controller with integrated terminal box (ExReg.. with "Ex-e"), 3 tapping screws, short circuit tube

Basics for all ..Reg-V300-.. controller

- No additional module in the panel required
- No intrinsically safe wiring required
- Adjustable "k-factor"
- Measurement range 0…300 Pa
- 24 VAC/DC
- Switch-on delay 3 seconds
- Air volume monitoring
- PID controller
- Programmable w/o additional tools
- Alarm with alarm delay function
- LCD backlight (which can be switched off)
- Aluminium housing, protection IP66
- Integrated terminal box (ExReg.. with "Ex-e")
- Optional "C5-M" or stainless steel edition
- H × W × D = 180 × 107 × 66 mm

ExReg-V300-.. Volume flow and pressure controller for zone 1, 2, 21, 22

Type	Sensor	Supply	Meas. range	Connection/Interface (analogue)	Installation
ExReg-V300-A	Differential pressure	24 VAC/DC	0…300 Pa	1 × actuator, 1 × set point, 1 × actual value, 1 × position actuator	zone 1, 2, 21, 22
ExReg-V300-B	Differential pressure	24 VAC/DC	0…300 Pa	1 × actuator, RS485 communication	zone 1, 2, 21, 22

InReg-V300-.. Volume flow and pressure controller for safe area

Type	Sensor	Supply	Meas. range	Connection/Interface (analogue)	Installation
InReg-V300-A	Differential pressure	24 VAC/DC	0…300 Pa	1 × actuator, 1 × set point, 1 × actual value, 1 × position actuator	safe area
InReg-V300-B	Differential pressure	24 VAC/DC	0…300 Pa	1 × actuator, RS485 communication	safe area

Actuators for ..Reg-V300-.. controller

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
ExMax- 5.10-CY	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	-	4...20 mA	0…10 VDC	combination with ExReg-V..	S
ExMax-15.30-CY	15 Nm / 30 Nm	7,5/15/30/60/120 sec.	-	4...20 mA	0…10 VDC	combination with ExReg-V..	S
ExMax- 5.10-CYF	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	~ 10 sec.	4...20 mA	0…10 VDC	combination with ExReg-V..	S
ExMax-15- CYF	15 Nm	7,5/15/30/60/120 sec.	~ 10 sec.	4...20 mA	0…10 VDC	combination with ExReg-V..	S
InMax- 5.10-CY	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	-	4...20 mA	0…10 VDC	combination with InReg-V..	S
InMax- 15.30-CY	15 Nm / 30 Nm	7,5/15/30/60/120 sec.	-	4...20 mA	0…10 VDC	combination with InReg-V..	S
InMax- 5.10-CYF	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	~ 10 sec.	4...20 mA	0…10 VDC	combination with InReg-V..	S
InMax- 15- CYF	15 Nm	7,5/15/30/60/120 sec.	~ 10 sec.	4...20 mA	0…10 VDC	combination with InReg-V..	S

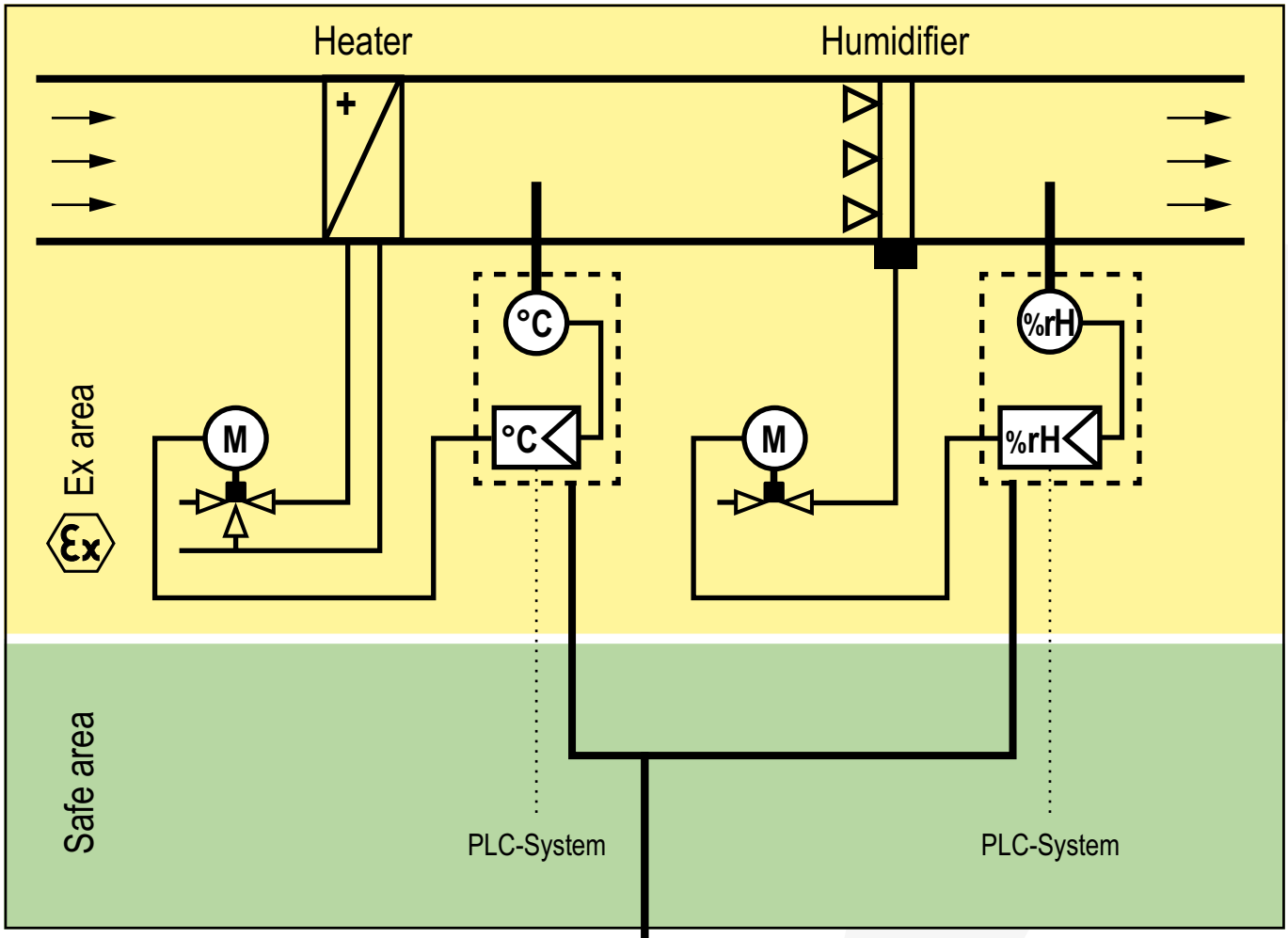
Accessories

Type	Technical data
MKR	Mounting bracket for installation on round air-ducts (diameter up to 600 mm)
Kit 2	Includes 2 meter pressure hose (inner diameter 6 mm) and 2 plastic fittings

Special options and offshore kits see page 50

ExReg-D-../InReg-D-.. Temperature °C/humidity %rH controller

Temperature and humidity applications in a typical HVAC system



Controller

ExReg-D-..
Temperature/Humidity

- −40°C…+125°C
- 0…100 %rH

ExReg-D-../InReg-D-.. Temperature °C/humidity %rH controller

Explosion proof

ExReg-D-..

Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx, GOST-R

Industrial

InReg-D-..

NOT explosion proof
and only for
use in safe area
IP66

Features ExReg-D-.., InReg-D-..

Description

Compact temperature or humidity controller for use in hazardous areas zone 1, 2, 21, 22. Suitable actuator ..Max-...-CY, ..Max-...-CYF (with fail safe spring return) or ExRun-.. available separately.

Delivery:
Electric temperature or humidity controller with integrated terminal box (ExReg.. with "Ex-e") and connection for 1 ExPro-C../ InPro-C.. sensor probe, 3 tapping screws

Basics for all ..Reg-D-.. controller

- No additional module in the panel required
- No intrinsically safe wiring required
- Meas. range −40…+125 °C/0…100 %rH
- 24 VAC/DC
- Switch-on delay 3 seconds
- PID controller
- Programmable w/o additional tools
- Alarm with alarm delay function
- LCD backlight (which can be switched off)
- Aluminium housing, protection IP66
- Integrated terminal box (ExReg.. with "Ex-e")
- Optional "C5-M" or stainless steel edition
- H × W × D = 180 × 107 × 66 mm

ExReg-D-.. Temperature/humidity controller for zone 1, 2, 21, 22

Type	Sensor	Supply	Meas. range	Connection/Interface (analogue)	Installation
ExReg-D-A*	ExPro-C..	24 VAC/DC	−40…+125 °C/0…100 %rH	1 × actuator, 1 × set point, 1 × actual value, 1 × position actuator	zone 1, 2, 21, 22
ExReg-D-B*	ExPro-C..	24 VAC/DC	−40…+125 °C/0…100 %rH	1 × actuator, RS485 communication	zone 1, 2, 21, 22

*Availability in second quarter.

InReg-D-.. Temperature/humidity controller for safe area

Type	Sensor	Supply	Meas. range	Connection/Interface (analogue)	Installation
InReg-D-A*	InPro-C..	24 VAC/DC	−40…+125 °C/0…100 %rH	1 × actuator, 1 × set point, 1 × actual value, 1 × position actuator	safe area
InReg-D-B*	InPro-C..	24 VAC/DC	−40…+125 °C/0…100 %rH	1 × actuator, RS485 communication	safe area

*Availability in second quarter.

Actuators for ..Reg-D.. controller

Type	Torque	Running time 90°	Spring return	Control mode	Feedback	Features	Size
ExMax- 5.10-CY	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	-	4...20 mA	0…10 VDC	combination with ExReg-D..	S
ExMax-15.30-CY	15 Nm / 30 Nm	7,5/15/30/60/120 sec.	-	4...20 mA	0…10 VDC	combination with ExReg-D..	S
ExMax- 5.10-CYF	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	~ 10 sec.	4...20 mA	0…10 VDC	combination with ExReg-D..	S
ExMax-15- CYF	15 Nm	7,5/15/30/60/120 sec.	~ 10 sec.	4...20 mA	0…10 VDC	combination with ExReg-D..	S
InMax- 5.10-CY	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	-	4...20 mA	0…10 VDC	combination with InReg-D..	S
InMax- 15.30-CY	15 Nm / 30 Nm	7,5/15/30/60/120 sec.	-	4...20 mA	0…10 VDC	combination with InReg-D..	S
InMax- 5.10-CYF	5 Nm / 10 Nm	7,5/15/30/60/120 sec.	~ 10 sec.	4...20 mA	0…10 VDC	combination with InReg-D..	S
InMax- 15- CYF	15 Nm	7,5/15/30/60/120 sec.	~ 10 sec.	4...20 mA	0…10 VDC	combination with InReg-D..	S

For suitable ..Run valve actuators see page 20

Sensor probes for ..Reg-D.. controller

Type	Technical data
ExPro-CT..	Temperature sensor probe for connection on ExReg-D-.. controller, installation in zone 1, 2, 21, 22
ExPro-CF..	Humidity sensor probe for connection on ExReg-D-.. controller, installation in zone 1, 2, 21, 22
InPro- CT..	Temperature sensor probe for connection on InReg-D-.. controller, installation in safe area
InPro- CF..	Humidity sensor probe for connection on InReg-D-.. controller, installation in safe area

Combi sensor probes not applicable!
For more details about ExPro-C../InPro-C.. see page 37

Accessories

Type	Technical data
MKR	Mounting bracket for installation on round air-ducts (diameter up to 600 mm)

Special options and offshore kits see page 50

Introducing ExCos – Modulating sensor series for explosion proof areas!

Differential pressure, temperature and humidity control applications ...

HAZARDOUS LOCATIONS ZONE 1, 2, 21, 22

NO TRANSDUCER IN PANEL NEEDED

NO INTRINSIC SAFE CIRCUITS NEEDED

EASY INSTALLATION

EASY PARAMETERISATION

ACTUAL VALUE INDICATION

REDUCED INSTALLATION COST

STAINLESS STEEL SOLUTION

Table of contents

*SA = Safe area
(●) = on request

ExCos../RedCos../InCos.. Sensors – Overview

The new ExCos..., RedCos and InCos Sensor-Technology

The sensors are subdevided in 3 installation- and 3 application areas.

Installation areas:

ExCos- .....Sensors for Ex-area zone 1, 2, 21, 22
RedCos- .....Sensors for Ex-area zone 2, 22
InCos- .....Sensors for safe area

Application areas:

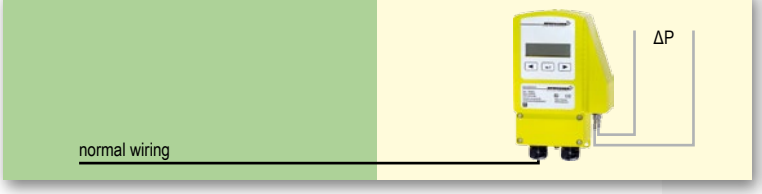
Ex/Red/InCos-P .....sensors for pressure and differential pressure
Ex/Red/InCos-D + ..Pro-C .....active sensor-heads for temperature and/or humidity
Ex/Red/InCos-A + ..Sens .....passive sensors for temperature, humidity and potentiometer

The sensor concept offers especially in Ex-area huge benefits:

1. No intrinsically safe wiring required between the control panel and the sensor
2. No intrinsically safe circuit necessary inside the control panel
3. No transducer needed in the electrical control panel
4. Reduced installation cost
5. Easy installation
6. Easy parameterisation
7. Cost savings for electrical components
8. Actual value indication
9. Optional in stainless steel (AISI 316) or with C5-M painting

ΔP ExCos-P

Pressure, Differential Pressure, VAV – modulating, active

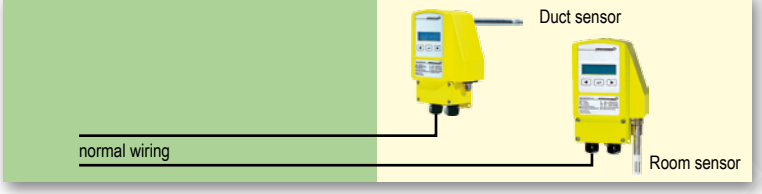


ExCos-P.., RedCos-P.., InCos-P.. Sensors

Transducers with integrated differential-pressure sensor for direct connection of the air-hoses. IP66 aluminium housing with integrated terminal-box. Measuring range parametrizable on site. Outputs 0…10V VDC/4…20 mA. Integrated actual value indication, illuminated.

°C %rH ExCos-D + ExPro-C..

Temperature and/or Humidity – modulating, active

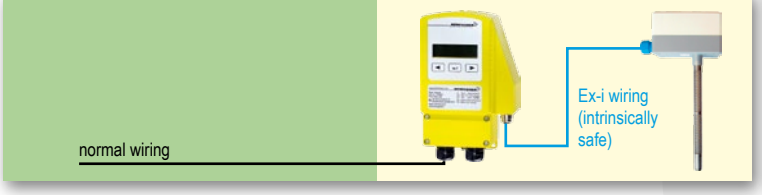


ExCos-D.., RedCos-D.., InCos-D..
Transducer + ExPro-C.., InPro-C.. sensor probe

Transducer for the installation of an ExPro-C.. or InPro-C.. (with InCos-D) for temperature °C and/or humidity in %. IP66 aluminium housing with integrated terminal box. Measuring range parametrizable on site. Outputs 0…10V VDC/4…20 mA. Integrated actual value indication, illuminated.

°C %rH ExCos-A + ExSens

Temperature and/or Humidity, Potentiometer – modulating, passive

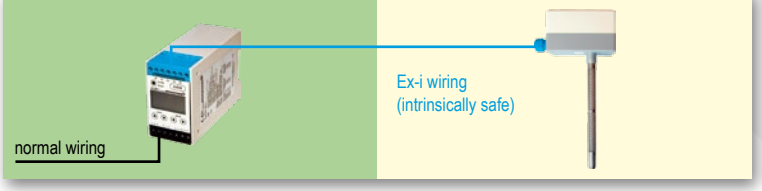


ExCos-A.., RedCos-A.., InCos-A..
Transducer + ExSens sensor

Transducer for a connection of an passive, modulating ExSens sensor type Pt 100, Ni 1000, 0…10 kΩ over Ex-i electrical conduit. IP66 aluminium housing with integrated terminal box. Measuring range parametrizable on site. Outputs 0…10V VDC/4…20 mA. Integrated actual value indication, illuminated.

°C %rH EXL-IMU-1 + ExSens

Temperature, Humidity, Potentiometer – modulating, passive



EXL-IMU-1 transducer + ExSens sensor

Transducer for a connection of an passive, modulating ExSens sensor type Pt 100, Ni 1000, 0…10 kΩ over Ex-i electrical conduit. Installation in control box onto DIN-rail. Measuring range parametrizable on site. Outputs 0…10V VDC/4…20 mA. Integrated actual value indication.

Safe area | **Ex area**

ExCos-P / RedCos-P / InCos-P Differential pressure sensors

Explosion proof

ExCos-P...
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx,
GOST-R, RTN, KOSHA

RedCos-P...
Zone 2, 22
Gas + Dust
certified according
ATEX,
GOST-R, RTN, CSA

Industrial

InCos-P...
NOT Explosion proof
and only for
use in safe area
IP66

Features of ExCos-P, RedCos-P, InCos-P

Description

ExCos-P, RedCos-P and InCos-P are pressure sensors for HVAC systems, e.g. for differential pressure control.
VAV control must be tested by the manufacturerer of VAV dampers in acc. with diameter, design and characteristics of the air damper.

Delivery:
1 sensor with integrated terminal box,
3 tapping screws, short circuit tube

Basics for all ...Cos-P sensors

- No additional module in the panel required!
- No intrinsically safe wiring required!
- 24 VAC/DC supply
- Outputs 0…10 VDC, (0)4…20 mA selectable
- Measurement range adjustable
- Actual value indication (which can be switched off)
- All parameters can be adjusted on site without additional tools and measurement devices
- Aluminium housing IP66
- Integrated terminal box
- Dimensions (H × W × D) 180 × 107 × 66 mm

ExCos-P... Differential pressure and volume control sensors for zone 1, 2, 21, 22

Type	Max. range	Overload protected	Measurement range, min. 20% of max. range	Installation module
ExCos-P- 100	± 100 Pa	up to 25.000 Pa	± Measurement range free adjustable, min. range 20 Pa	zone 1, 2, 21, 22
ExCos-P- 250	± 250 Pa	up to 25.000 Pa	± Measurement range free adjustable, min. range 50 Pa	zone 1, 2, 21, 22
ExCos-P- 500	± 500 Pa	up to 50.000 Pa	± Measurement range free adjustable, min. range 100 Pa	zone 1, 2, 21, 22
ExCos-P-1250	± 1.250 Pa	up to 50.000 Pa	± Measurement range free adjustable, min. range 250 Pa	zone 1, 2, 21, 22
ExCos-P-2500	± 2.500 Pa	up to 50.000 Pa	± Measurement range free adjustable, min. range 500 Pa	zone 1, 2, 21, 22
ExCos-P-5000	± 5.000 Pa	up to 75.000 Pa	± Measurement range free adjustable, min. range 1.000 Pa	zone 1, 2, 21, 22
ExCos-P-7500	± 7.500 Pa	up to 120.000 Pa	± Measurement range free adjustable, min. range 1.500 Pa	zone 1, 2, 21, 22

RedCos-P... Differential pressure and volume control sensors for zone 2, 22

Type	Max. range	Overload protected	Measurement range, min. 20% of max. range	Installation module
RedCos-P- 100	± 100 Pa	up to 25.000 Pa	± Measurement range free adjustable, min. range 20 Pa	zone 2, 22
RedCos-P- 250	± 250 Pa	up to 25.000 Pa	± Measurement range free adjustable, min. range 50 Pa	zone 2, 22
RedCos-P- 500	± 500 Pa	up to 50.000 Pa	± Measurement range free adjustable, min. range 100 Pa	zone 2, 22
RedCos-P-1250	± 1.250 Pa	up to 50.000 Pa	± Measurement range free adjustable, min. range 250 Pa	zone 2, 22
RedCos-P-2500	± 2.500 Pa	up to 50.000 Pa	± Measurement range free adjustable, min. range 500 Pa	zone 2, 22
RedCos-P-5000	± 5.000 Pa	up to 75.000 Pa	± Measurement range free adjustable, min. range 1.000 Pa	zone 2, 22
RedCos-P-7500	± 7.500 Pa	up to 120.000 Pa	± Measurement range free adjustable, min. range 1.500 Pa	zone 2, 22

InCos-P... Differential pressure and volume control sensors for safe area

Type	Max. range	Overload protected	Measurement range, min. 20% of max. range	Installation module
InCos-P- 100	± 100 Pa	up to 25.000 Pa	± Measurement range free adjustable, min. range 20 Pa	safe area
InCos-P- 250	± 250 Pa	up to 25.000 Pa	± Measurement range free adjustable, min. range 50 Pa	safe area
InCos-P- 500	± 500 Pa	up to 50.000 Pa	± Measurement range free adjustable, min. range 100 Pa	safe area
InCos-P-1250	± 1.250 Pa	up to 50.000 Pa	± Measurement range free adjustable, min. range 250 Pa	safe area
InCos-P-2500	± 2.500 Pa	up to 50.000 Pa	± Measurement range free adjustable, min. range 500 Pa	safe area
InCos-P-5000	± 5.000 Pa	up to 75.000 Pa	± Measurement range free adjustable, min. range 1.000 Pa	safe area
InCos-P-7500	± 7.500 Pa	up to 120.000 Pa	± Measurement range free adjustable, min. range 1.500 Pa	safe area

Accessories and special designs

Type	Technical data
Ex/RedCos-P..-A	Version with one additional intrinsically safe circuit (0)4…20 mA output to connect external actual value indicator in Ex areas (surcharge)
InCos- P..-A	Version with one additional (0)4…20 mA output to connect external actual value indicator in safe area (surcharge)
EXC-RIA-16	Intrinsic safe actual value LCD indicator, for use in zone 1, 2, 21, 22, connectable to ExCos-P..-A or RedCos-P..-A sensors
NOC-RIA-16	LCD indicator, connectable to InCos-P..-A sensors
MKR	Mounting bracket for installation on round air-ducts (diameter up to 600 mm)
Kit 2	Includes 2 meter pressure hose (inner diameter 6 mm) and 2 plastic fittings

Special options and offshore kits see page 50

ExCos-D / RedCos-D / InCos-D Temperature / humidity transducer

Explosion proof

ExCos-D...
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx,
GOST-R, RTN, KOSHA

RedCos-D...
Zone 2, 22
Gas + Dust
certified according
ATEX,
GOST-R, RTN, CSA

Industrial

InCos-D...
NOT Explosion proof
and only for
use in safe area
IP66

Features ExCos-D, RedCos-D, InCos-D

Description

ExCos-D, RedCos-D and InCos-D transducer together with ExPro-C… / InPro-C… digital sensors are for temperature and / or humidity measurement in HVAC systems.
Delivery: 1 transducer with connection for 1 ExPro-C… sensor, 3 tapping screws
Required accessory (additional price):
1 ExPro-C… or InPro-C… sensor
Ordering example for 1 temperature duct sensing, 150 mm sensor tube, additional external value indication, sensor in zone 21, indicator in zone 22.
Types to order:
1 × ExCos-D + type addition …- A (Ex-i transducer)
1 × ExPro-CT150 + (Ex-i sensor)
1 × EXC-RIA-16 (Ex-i indicator)

Basics for all …Cos-D sensors

- No additional module in the panel required!
- No intrinsically safe wiring required!
- 24 VAC / DC supply
- Connector for ExPro-C… sensors for room or duct mounting
- Outputs 0…10 VDC, 4…(0)20 mA selectable
- Measurement range adjustable
- Actual value indication (which can be switched off)
- All parameters can be adjusted on site without additional tools and measurement devices
- Aluminium housing IP66
- Integrated terminal box
- Dimensions (H × W × D) 180 × 107 × 66 mm

ExCos-D temperature- / humidity module for zone 1, 2, 21, 22

Type	Technical data	Installation module	Installation ExPro sensor
ExCos-D	Module to connect 1 ExPro-C… sensor for temperture and / or humidity for use in hazardous areas	zone 1, 2, 21, 22	zone 1, 2, 21, 22

RedCos-D temperature- / humidity module for zone 2, 22

Type	Technical data	Installation module	Installation ExPro sensor
RedCos-D	Module to connect 1 ExPro-C… sensor for temperture and / or humidity for use in hazardous areas	zone 2, 22	zone 1, 2, 21, 22

InCos-D temperature- / humidity module for safe area

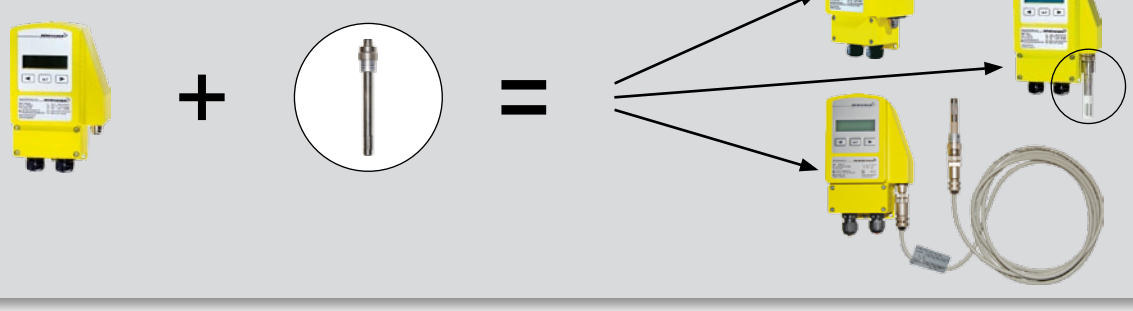
Type	Technical data	Installation module	Installation InPro sensor
InCos-D	Module to connect 1 InPro-C… sensor for temperture and / or humidity for use in safe area	safe area	safe area

Accessories and special designs

Type	Technical data
Ex/RedCos-D-A	Version with two* additional intrinsic safe circuit (0)4…20 mA outputs to connect external actual value indicator in Ex areas (surcharge)
InCos- D-A	Version with two* additional (0)4…20 mA outputs to connect external actual value indicator in safe area (surcharge)
EXC-RIA-16	Intrinsic safe actual value LCD indicator, for use in zone 1, 2, 21, 22, connectable to ExCos-D-A or RedCos-D-A sensors
NOC-RIA-16	Actual value LCD indicator, for use in safe area, connectable to InCos-D-A sensors
MKR	Mounting bracket for installation on round air-ducts (diameter up to 600 mm)
VL3	Sensor extension cable 3 m

*Output 1 = for °C, Output 2 = for %rH
Special options and offshore kits see page 50

Example of combinations



ExPro-C…/InPro-C… Digital temperature/humidity sensors

Explosion proof | Industrial | Features ExPro-C…, InPro-C…

ExPro-C…
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx
PTB-certified in acc.
with ExCos-D/RedCos-D
transducer

InPro-C…
Only for use with
InCos-D… transducers!
NOT for use in
Ex area!

Description

ExPro-C… sensors are used for measurements of temperature and/or humidity in hazardous areas, for **exclusive** use with ExCos-D… / RedCos-D… transducers!

InPro-C… sensors are suitable for temperature and/or humidity measurement in safe areas, for **exclusive** use with InCos-D… transducers!

Delivery: 1 sensor with connector

Example: room-humidity sensor, 50 mm length
Type: 1 x ExPro-CF-50

Attention: only in combination with:
1 × ExCos-D or RedCos-D
(InCos-D by InPro-C… sensors)

Basics for all ExPro-C…/InPro-C… sensors

- Sensors for connection to ExCos-D…, RedCos-D… transducers. Mechanical and electrical adaptation via connector
- ExPro-C…/InPro-C… sensors can be screwed to the housing optionally at the back (duct measurement) or bottom (room measurement)
- When using humidity-sensors, the contamination and aggressiveness of the medium has to be regarded

Sensor probes for ExCos-D and RedCos-D transducer

Type	Function	Range	Sensor length	Main use	Connectable to		Installation area
ExPro-CT - 50	Temperature sensor	−40…+ 80 °C	50 mm	Room/Duct	ExCos-D	RedCos-D	zone 1, 2, 21, 22
ExPro-CT -100	Temperature sensor	−40…+ 125 °C	100 mm	Duct	ExCos-D	RedCos-D	zone 1, 2, 21, 22
ExPro-CT -150	Temperature sensor	−40…+ 125 °C	150 mm	Duct	ExCos-D	RedCos-D	zone 1, 2, 21, 22
ExPro-CT -200	Temperature sensor	−40…+ 125 °C	200 mm	Duct	ExCos-D	RedCos-D	zone 1, 2, 21, 22
ExPro-CF - 50	Humidity sensor	0…100 %rF	50 mm	Room/Duct	ExCos-D	RedCos-D	zone 1, 2, 21, 22
ExPro-CF -100	Humidity sensor	0…100 %rF	100 mm	Duct	ExCos-D	RedCos-D	zone 1, 2, 21, 22
ExPro-CF -150	Humidity sensor	0…100 %rF	150 mm	Duct	ExCos-D	RedCos-D	zone 1, 2, 21, 22
ExPro-CF -200	Humidity sensor	0…100 %rF	200 mm	Duct	ExCos-D	RedCos-D	zone 1, 2, 21, 22
ExPro-CTF- 50	Combination temperature/humidity	−40…+ 80 °C, 0…100 %rH	50 mm	Room/Duct	ExCos-D	RedCos-D	zone 1, 2, 21, 22
ExPro-CTF-100	Combination temperature/humidity	−40…+ 125 °C, 0…100 %rH	100 mm	Duct	ExCos-D	RedCos-D	zone 1, 2, 21, 22
ExPro-CTF-150	Combination temperature/humidity	−40…+ 125 °C, 0…100 %rH	150 mm	Duct	ExCos-D	RedCos-D	zone 1, 2, 21, 22
ExPro-CTF-200	Combination temperature/humidity	−40…+ 125 °C, 0…100 %rH	200 mm	Duct	ExCos-D	RedCos-D	zone 1, 2, 21, 22

Sensor probes for InCos-D transducer

Type	Function	Range	Sensor length	Main use	Connectable to	Installation area
InPro-CT - 50	Temperature sensor	−40…+ 80 °C	50 mm	Room/Duct	InCos-D	safe area
InPro-CT -100	Temperature sensor	−40…+ 125 °C	100 mm	Duct	InCos-D	safe area
InPro-CT -150	Temperature sensor	−40…+ 125 °C	150 mm	Duct	InCos-D	safe area
InPro-CT -200	Temperature sensor	−40…+ 125 °C	200 mm	Duct	InCos-D	safe area
InPro-CF - 50	Humidity sensor	0…100 %rF	50 mm	Room/Duct	InCos-D	safe area
InPro-CF -100	Humidity sensor	0…100 %rF	100 mm	Duct	InCos-D	safe area
InPro-CF -150	Humidity sensor	0…100 %rF	150 mm	Duct	InCos-D	safe area
InPro-CF -200	Humidity sensor	0…100 %rF	200 mm	Duct	InCos-D	safe area
InPro-CTF- 50	Combination temperature/humidity	−40…+ 80 °C, 0…100 %rH	50 mm	Room/Duct	InCos-D	safe area
InPro-CTF-100	Combination temperature/humidity	−40…+ 125 °C, 0…100 %rH	100 mm	Duct	InCos-D	safe area
InPro-CTF-150	Combination temperature/humidity	−40…+ 125 °C, 0…100 %rH	150 mm	Duct	InCos-D	safe area
InPro-CTF-200	Combination temperature/humidity	−40…+ 125 °C, 0…100 %rH	200 mm	Duct	InCos-D	safe area

Accessories

Type	Technical data
MFK	Mounting flange for duct-installation, for variable depth of immersion in the air duct
TH- VA	Probe made of stainless-steel V4A 1.4571, length 120 mm. Other lengths on request
Kit-FA-VA	Sinter filter cap for humidity sensor
MKR	Mounting bracket for installation on round air-ducts (diameter up to 600 mm)

ExCos-A / RedCos-A / InCos-A Temperature / humidity transducer

Explosion proof

ExCos-A...
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx,
GOST-R, RTN, KOSHA

RedCos-A...
Zone 2, 22
Gas + Dust
certified according
ATEX,
GOST-R, RTN, CSA

Industrial

InCos-A...
NOT Explosion proof
and only for
use in safe area
IP66

Features of ExCos-A, RedCos-A, InCos-A

Description

ExCos-A, RedCos-A and InCos-A transducer together with modulating ExSens passive sensors are for temperature or humidity measurement in HVAC systems.
Delivery: 1 transducer with connection for modulating, 3 tapping screws
Required accessory (additional price):
1 ExSens sensor, see next page
Ordering example for measuring of temperature in air duct, with Pt 100 in zone 1.
Types to order:
1 × ExCos-A (Ex-i transducer)
1 × TFR-2G (Ex-i sensor)

Basics for all ...Cos-A transducer

- No additional module in the panel required!
- No intrinsically safe wiring required!
- 24 VAC/DC supply
- Connector for 1 ExSens sensor for room or duct mounting
- Outputs: 0...10 VDC, (0)4...20 mA selectable
- Input: Pt 100, Pt 500, Pt 1000, Ni 100, Ni 200, Ni 500, Ni 1000, Ni 1000 Siemens, KP 250, Passive sensors with resistance output 0...1.000 Ohm, 0...10.000 Ohm
- Measuring range adjustable
- Actual value indication (which can be switched off)
- All parameters can be adjusted on site without additional tools and measurement devices
- Aluminium housing IP66
- Integrated terminal box
- Dimensions (H × W × D) 180 × 107 × 66 mm

ExCos-A Transducer for passive sensors for zone 1, 2, 21, 22

Type	Technical data	Installation module	Installation sensor*
ExCos-A	Module to connect 1 modulating ExSens sensor for temperture or humidity for use in hazardous areas	zone 1, 2, 21, 22	zone 0, 1, 2, 20, 21, 22

* in acc. with certification of sensor!

RedCos-A Transducer for passive sensors for zone 2, 22

Type	Technical data	Installation module	Installation sensor*
RedCos-A	Module to connect 1 modulating ExSens sensor for temperture or humidity for use in hazardous areas	zone 2, 22	zone 0, 1, 2, 20, 21, 22

* in acc. with certification of sensor!

InCos-A Transducer for passive sensors for safe area

Type	Technical data	Installation module	Installation sensor
InCos-A	Module to connect 1 modulating sensor for temperture or humidity for use in safe area Sensors: all passive sensors like Pt 100, Pt 1000, Ni 100, 200, 1000	safe area	safe area

Accessories and special designs

Type	Technical data
Ex/RedCos-A-A	Version with one additional intrinsically safe circuit (0)4...20 mA output to connect external actual value indicator in Ex areas (surcharge)
InCos- A-A	Version with one additional (0)4...20 mA output to connect external indicator in safe area (surcharge)
EXC-RIA-16	Intrinsic safe actual value LCD indicator, for use in zone 1, 2, 21, 22, connectable to ExCos-A-A or RedCos-A-A sensors
NOC-RIA-16	Actual value LCD indicator, for use in safe area, connectable to InCos-A-A sensors
MKR	Mounting bracket for installation on round air-ducts (diameter up to 600 mm)

Special options and offshore kits see page 50

ExLine Ex-transducer with Ex-i circuit for zone 0, 1, 2, 20, 21, 22

Explosion proof

EXL-IMU-1

Zone 0, 1, 2, 20, 21, 22
Gas + Dust
certified according
ATEX

EXL-IMU-1

Features EXL-IMU-1

Description

EXL-IMU-1 module with intrinsically safe circuit to change a passive sensor signal (e.g. Pt 100) into an active mA/VDC signal.

Delivery:
1 Ex-i module for DIN rail mounting

Accessory (optional):
modulating sensors type ExSens

Basics EXL-IMU-1

- Transducer for passive, potential free, modulating sensors series ExSens. 2-3-4-wire connection
- 24 VAC/DC supply
- Output: 0…10 VDC, 4…20 mA
- Input: Pt 100/500/1000, Ni 100/200/500/1000, LS-Ni 1000 Siemens, KP 250, LF 20, DFK-.., VFK-.., passive sensors with resistance output 0…1.000 Ohm, 0…10.000 Ohm
- Display for adjustment and actual value indication
- Module must be installed in the safe area, sensor in the hazardous area

EXL-IMU-1 transducer

Type	Technical data	Installation module	Installation sensor*
EXL-IMU-1	1 module (rail mounting) for 1 passive sensor series ExSens	safe area	zone 0, 1, 2, 20, 21, 22
Optional:			
N1 supply unit	Input 120…240 VAC, output 24 VDC, max. 0,5 A, max. 4 pcs. EXL-IMU-1 connectable. N1 supply unit is required only in case of 120…240 VAC supply!		

* in acc. with certification of sensor!

ExSens passive modulating sensors for zone 1, 2, 22

Explosion proof

ExSens

Zone 1, 2, 22
Gas + Dust
certified according
ATEX
Manufacturer certificate

passive

Features modulating ExSens

Description

ExSens sensors for temperature, humidity or pressure measurement in hazardous areas with manufacturer certification in acc. with ATEX 94/9/EC. The sensors are passive and potential free.

Delivery: 1 Sensor
Ordering example for 1 room humidity sensor
Type to purchase: 1 × FFR-2G

Basics for ExSens sensors

- Sensors for installation in hazardous areas, connected to a relevant transducer, e.g. ExCos-A, RedCos-A or EXL-IMU-1
- The transducer changes the passive resistance signal into an acitve 0...10 VDC/4...20 mA signal

Sensors, connectable to ExCos-A, RedCos-A and EXL-IMU-1 transducer

Type	Function	Measuring range	Sensor	Connectable to transducers	Sensor in zone
TFR -2G	Room temperature	−30…+ 60 °C	Pt 100 DIN	EXL-IMU-1, ExCos-A, RedCos-A	1, 2
TFR -2G3D	Room temperature (IP65)	−40…+ 60 °C	Pt 100 DIN	EXL-IMU-1, ExCos-A, RedCos-A	1, 2, 22
TFK -2G3D	Duct temperature (IP65), 200 mm	−30…+150 °C	Pt 100 DIN	EXL-IMU-1, ExCos-A, RedCos-A	1, 2, 22
TFK -2G3D-400	Duct temperature, length 400 mm	−30…+150 °C	Pt 100 DIN	EXL-IMU-1, ExCos-A, RedCos-A	1, 2, 22
TFT -2G3D	Probe temperature (IP65), 100 mm	−30…+150 °C	Pt 100 DIN, tubing G½" Ms	EXL-IMU-1, ExCos-A, RedCos-A	1, 2, 22
TFT-V4A-2G3D	Probe temperature (IP65), 100 mm	−30…+150 °C	Pt 100 DIN, tubing G½" VA	EXL-IMU-1, ExCos-A, RedCos-A	1, 2, 22
TFM -2G-3	Mean value temperature 3 m	−20…+ 70 °C	Pt 100 DIN	EXL-IMU-1, ExCos-A, RedCos-A	1, 2
TFR-AN -2G3D	Room temperature direct contact	−30…+110 °C	Pt 100 DIN	EXL-IMU-1, ExCos-A, RedCos-A	1, 2, 22
FFR -2G	Room humidity	30…100 %rF	0…1 kΩ	EXL-IMU-1, ExCos-A, RedCos-A	1, 2
FFK -2G	Duct humidity	30…100 %rF	0…1 kΩ	EXL-IMU-1, ExCos-A, RedCos-A	1, 2
TFFR -2G	Room combination temp./humidity	30…100 %rF, -10…+60 °C	0…1 kΩ, Pt 100	2 × EXL-IMU-1, 2 × ExCos-A, 2 × RedCos-A	1, 2
TFFK -2G	Duct combination temp./humidity	30…100 %rF, -20…+60 °C	0…1 kΩ, Pt 100	2 × EXL-IMU-1, 2 × ExCos-A, 2 × RedCos-A	1, 2
DFK-07 -2G-FP	Differential pressure (IP65)	ΔP < 700 Pa	x…y Ω	EXL-IMU-1	1, 2
DFK-17 -2G-FP	Differential pressure (IP65)	ΔP < 1700 Pa	x…y Ω	EXL-IMU-1	1, 2
VFK-07 -2G-FP	Volume control (IP65)	0…15 m/s	x…y Ω	EXL-IMU-1	1, 2
SGR -2G	Potentiometer	Resistance	0…1 kΩ	EXL-IMU-1, ExCos-A, RedCos-A	1, 2
ExPro-AT-100	Duct temperature, length 100 mm	−40…+150 °C	Pt 100 DIN	EXL-IMU-1, ExCos-A, RedCos-A	1, 2, 21, 22
ExPro-AT-150	Duct temperature, length 150 mm	−40…+150 °C	Pt 100 DIN	EXL-IMU-1, ExCos-A, RedCos-A	1, 2, 21, 22
ExPro-AT-200	Duct temperature, length 200 mm	−40…+150 °C	Pt 100 DIN	EXL-IMU-1, ExCos-A, RedCos-A	1, 2, 21, 22

Introducing ExBin – Binary sensor series for explosion proof areas!

Differential pressure, temperature, humidity, fan belt monitoring and frost protection applications ...

- HAZARDOUS LOCATIONS ZONE 1, 2, 21, 22
- NO MODULE IN PANEL NEEDED
- NO INTRINSIC SAFE CIRCUITS NEEDED
- EASY INSTALLATION
- EASY PARAMETERISATION
- ACTUAL VALUE INDICATION
- REDUCED INSTALLATION COST
- STAINLESS STEEL SOLUTION

Table of contents

*SA = Safe area
(●) = on request

ExBin../RedBin../InBin.. Binary Sensors – Overview

Overview of the ExBin.., RedBin.. and InBin.. sensor technology

The binary sensors are subdevided in 3 installation- and 5 application areas.

Installation areas:

ExBin- .....Sensors for Explosion proof zones 1, 2, 21, 22
RedBin- .....Sensors for Explosion proof zones 2, 22
InBin- .....Sensors for safe area (IP66)

Application areas:

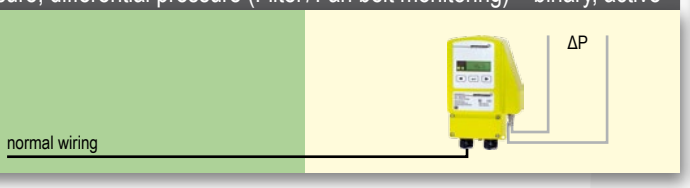
Ex/Red/InBin-P .....sensors for pressure and differential pressure monitoring
Ex/Red/InBin-FR .....sensors for frost protection monitoring
Ex/Red/InBin-N.....sensors for drive belt monitoring
Ex/Red/InBin-D + ..Pro-B....active probe sensors for temperature and/or humidity monitoring
Ex/Red/InBin-A + ..Sens ..... passive probe sensors for temperature, humidity, pressure monitoring

The binary sensor concept offers especially in Ex-area huge benefits:

1. No intrinsically safe wiring required between the control panel and the sensor
2. No intrinsically safe circuit necessary inside the control panel
3. No switching module needed in the electrical control panel
4. Reduced installation cost
5. Easy installation
6. Easy parameterisation
7. 1- and 2-stage versions available
8. Actual value indication
9. Optional in stainless steel (AISI 316) or with C5-M painting

ΔP ExBin-P

Pressure, differential pressure (Filter/Fan belt monitoring) – binary, active



ExBin-P.., RedBin-P.., InBin-P..

Binary pressure/differential pressure auxiliary switch 0…5.000 Pa, for direct connection of air hoses. IP66 aluminium die-cast housing with integrated terminal box. Set points adjustable on site, output 1 potential-free make contact. Integrated indication of actual value, illuminated. 2-stage version optionally available.

°C ExBin-FR

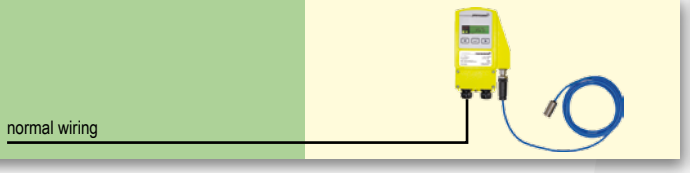
Frost protection thermostats – binary, active

ExBin-FR.., RedBin-FR.., InBin-FR..

Frost protection thermostat mechanically adjustable and switching. Setting range −10…+15 °C. 3 or 6 m capillary as sensor with a resolution of 40 cm effective range. Switching status display with LED. IP66 Aluminium die-cast housing with integrated terminal box. Output 1 potential-free make contact.

U^{min} ExBin-N

Drive belt monitoring via speed control – binary, active

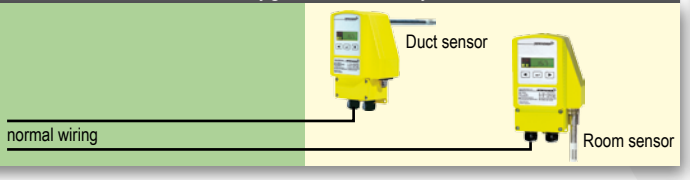


ExBin-N.., RedBin-N.., InBin-N..

Binary, contactless fan belt monitoring by inductive speed control. Measurement range 0…10.000 min^{-1}, Setting range 50…10.000 min^{-1}, incl. time switch relais and indication of actual value. IP66 Aluminium die-cast housing with integrated terminal box. Output 1 potential-free make contact. 2-stage version available optional.

°C %rH ExBin-D + ExPro-B..

Thermostats, hygrostats – binary, active

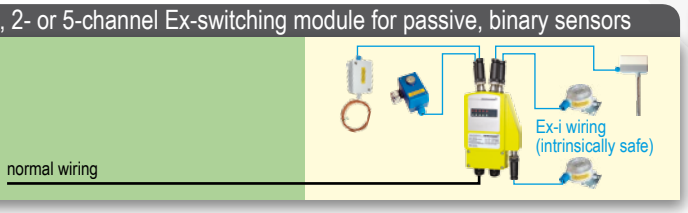


ExBin-D.., RedBin-D.., InBin-D.. + ExPro-B.. respectively InPro-B... Sensor probes

Thermostats and/or hygrostats for connection of one ExPro-B.. respectively InPro-B.. sensor probe. Operating range adjustable. Indication of actual value. IP66 Aluminium die-cast housing with integrated terminal box. Output 1 potential-free make contact. 2-stage version optionally available.

°C %rH ΔP ExBin-A + ExSens

1-, 2- or 5-channel Ex-switching module for passive, binary sensors



ExBin-A1/A2/A5, RedBin-A1/A2/A5 + ExSens sensors binary

1-, 2- or 5-channel Ex-switching module for connection of max. 5 passive, potential-free binary sensors. Switching status display with LED. IP66 Aluminium die-cast housing with integrated terminal box. Output depending on type 1-5 make contacts with collective supply unit.

°C %rH ΔP EXL-IRU-1 + ExSens

Temperature, humidity, differential pressure – binary, passive

EXL-IRU-1 switching module + ExSens sensor

Ex-switching module for connection of one passive, binary ExSens sensor, such as differential pressure switch, frost protection thermostat or hygrostat through intrinsically safe electrical conduit. Installation in control box onto DIN-rail. Output is potential-free.

Safe area | **Ex area**

ExBin-P / RedBin-P / InBin-P Pressure / differential pressure switch, binary

Explosion proof

ExBin-P...
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx,
GOST-R, RTN, KOSHA

RedBin-P...
Zone 2, 22
Gas + Dust
certified according
ATEX,
GOST-R, RTN, CSA

Industrial

InBin-P...
NOT Explosion proof
and only for
use in safe area
IP66

Features of ExBin-P, RedBin-P, InBin-P

Description

ExBin-P, RedBin-P and InBin-P are pressure switches for HVAC systems, e.g. for differential pressure control for filter- or fan belt monitoring.
..Bin-P-100 pressure switch allows an achievement of new applications with a smaller differential pressure range.
Additionally the ..Bin-P-100 has an adjustable switch activation delay contact for applications which require a time-delayed fault indication, for example short opening of doors in clean room environment.

Delivery:
1 Pressure switch with integrated terminal box, 3 tapping screws

Basics for all ...Bin-P sensors

- No additional module in the panel required!
- No intrinsically safe wiring required!
- 24 VAC/DC supply
- 1-channel: 1 potential-free contact
- 2-channel (optional): 2 potential-free contacts
- Switch-point is digitally adjustable
- Indication of actual value (can be switched off)
- Switching status display over LED
- All parameters can be adjusted on site without additional tools and measurement devices
- Aluminium housing IP66 with integrated terminal box
- ..Bin-P-100 with switch activation delay, adjustable from 0…240 s
- Dimensions (H × W × D) 180 × 107 × 66 mm

ExBin-P... Differential pressure switch for zone 1, 2, 21, 22

Type	Measurement range	Safe overload	Setting range	Special feature	Installation module
ExBin-P- 100	0... 100 Pa	up to 5.000 Pa	1-stage adjustable switch-point in meas. range	adjustable switch activation delay 0…240 s	zone 1, 2, 21, 22
ExBin-P- 500	0... 500 Pa	up to 5.000 Pa	1-stage adjustable switch-point in meas. range		zone 1, 2, 21, 22
ExBin-P- 500-2	0... 500 Pa	up to 5.000 Pa	2-stage adjustable switch-point in meas. range		zone 1, 2, 21, 22
ExBin-P-5000	0...5.000 Pa	up to 50.000 Pa	1-stage adjustable switch-point in meas. range		zone 1, 2, 21, 22
ExBin-P-5000-2	0...5.000 Pa	up to 50.000 Pa	2-stage adjustable switch-point in meas. range		zone 1, 2, 21, 22

RedBin-P... Differential pressure switch for zone 2, 22

Type	Measurement range	Safe overload	Setting range	Special feature	Installation module
RedBin-P- 100	0... 100 Pa	up to 5.000 Pa	1-stage adjustable switch-point in meas. range	adjustable switch activation delay 0…240 s	zone 2, 22
RedBin-P- 500	0... 500 Pa	up to 5.000 Pa	1-stage adjustable switch-point in meas. range		zone 2, 22
RedBin-P- 500-2	0... 500 Pa	up to 5.000 Pa	2-stage adjustable switch-point in meas. range		zone 2, 22
RedBin-P-5000	0...5.000 Pa	up to 50.000 Pa	1-stage adjustable switch-point in meas. range		zone 2, 22
RedBin-P-5000-2	0...5.000 Pa	up to 50.000 Pa	2-stage adjustable switch-point in meas. range		zone 2, 22

InBin-P... Differential pressure switch for safe area

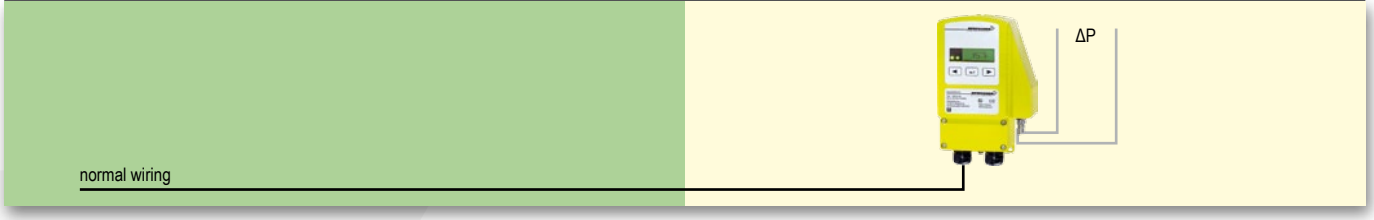
Type	Measurement range	Safe overload	Setting range	Special feature	Installation module
InBin-P- 100	0... 100 Pa	up to 5.000 Pa	1-stage adjustable switch-point in meas. range	adjustable switch activation delay 0…240 s	safe area
InBin-P- 500	0... 500 Pa	up to 5.000 Pa	1-stage adjustable switch-point in meas. range		safe area
InBin-P- 500-2	0... 500 Pa	up to 5.000 Pa	2-stage adjustable switch-point in meas. range		safe area
InBin-P-5000	0...5.000 Pa	up to 50.000 Pa	1-stage adjustable switch-point in meas. range		safe area
InBin-P-5000-2	0...5.000 Pa	up to 50.000 Pa	2-stage adjustable switch-point in meas. range		safe area

Accessories

Type	Technical data
Kit 2	Includes 2 meter pressure hose (inner diameter 6 mm) and 2 plastic fittings
MKR	Mounting bracket for installation on round air-ducts (diameter up to 600 mm)

Special options and offshore kits see page 50

Pressure, differential pressure (Filter / Fan belt monitoring) – binary, active



ExBin-FR / RedBin-FR / InBin-FR Frost protection thermostats

Explosion proof

ExBin-FR...
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx,
GOST-R, RTN, KOSHA

RedBin-FR...
Zone 2, 22
Gas + Dust
certified according
ATEX,
GOST-R, RTN, CSA

Industrial

InBin-FR...
NOT Explosion proof
and only for
use in safe area
IP66

Features ExBin-FR, RedBin-FR, InBin-FR

Description

ExBin-FR, RedBin-FR and InBin-FR are frost protection thermostats for HVAC systems, e.g. for frost protection monitoring of heating registers / heat exchangers.

Delivery:
1 Frost protection thermostat with integrated terminal box, with 3 m or 6 m capillary (depending on type), 3 tapping screws

Recommended accessory:
for ..Bin-FR3: Kit 1.3
for ..Bin-FR6: Kit 1.6

Basics for all ...Bin-FR sensors

- No additional module in the panel required!
- No intrinsically safe wiring required!
- 24 VAC/DC supply
- Temperature sensoring by capillary with 3 m or 6 m length (depending on type)
- Min. reaction length of capillary ~ 40 cm
- 1 potential-free contact
- Switch-point is mechanically adjustable
- Switching status display with LED
- Aluminium housing IP66 with integrated terminal box
- Dimensions (H × W × D) 180 × 107 × 66 mm

ExBin-FR... frost protection thermostats for zone 1, 2, 21, 22

Type	Capillary	Temperature range	Setting range	Installation module
ExBin-FR-3	3 m	−10 ... +15 °C	1-stage adjustable switch-point in temperature range	zone 1, 2, 21, 22
ExBin-FR-6	6 m	−10 ... +15 °C	1-stage adjustable switch-point in temperature range	zone 1, 2, 21, 22

RedBin-FR... frost protection thermostats for zone 2, 22

Type	Capillary	Temperature range	Setting range	Installation module
RedBin-FR-3	3 m	−10 ... +15 °C	1-stage adjustable switch-point in temperature range	zone 2, 22
RedBin-FR-6	6 m	−10 ... +15 °C	1-stage adjustable switch-point in temperature range	zone 2, 22

InBin-FR... frost protection thermostats for safe area

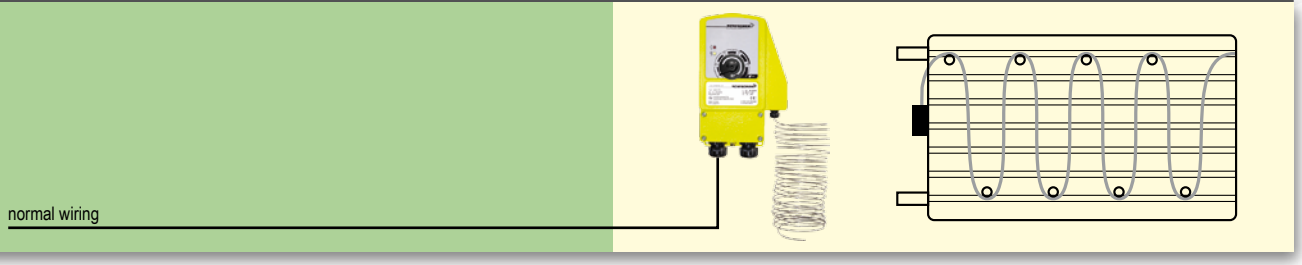
Type	Capillary	Temperature range	Setting range	Installation module
InBin-FR-3	3 m	−10 ... +15 °C	1-stage adjustable switch-point in temperature range	safe area
InBin-FR-6	6 m	−10 ... +15 °C	1-stage adjustable switch-point in temperature range	safe area

Accessories

Type	Technical data
Kit 1.3	Capillary duct, assembly cramp and 4 assembly brackets for frost protection thermostat ..Bin-FR-3
Kit 1.6	Capillary duct, assembly cramp and 8 assembly brackets for frost protection thermostat ..Bin-FR-6
MKR	Mounting bracket for installation on round air-ducts (diameter up to 600 mm)

Special options and offshore kits see page 50

Frost protection thermostat – binary, active



Safe area | **Ex area**

ExBin-N / RedBin-N / InBin-N Fan belt monitoring via speed control

Explosion proof

ExBin-N...
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx,
GOST-R, RTN, KOSHA

RedBin-N...
Zone 2, 22
Gas + Dust
certified according
ATEX,
GOST-R, RTN, CSA

Industrial

InBin-N...
NOT Explosion proof
and only for
use in safe area
IP66

Features of ExBin-N, RedBin-N, InBin-N

Description

ExBin-N, RedBin-N and InBin-N are fan belt monitoring modules for HVAC systems, via speed control of fan drive shaft.

Delivery:
1 Fan belt monitoring modul with integrated terminal box and provided, directly mountable Namur transducer, 3 tapping screws

Recommended accessory:
Dependend on air power and dimensions of ventilator / propeller a mounting console is required.
The indicated values in m³ / h are empirical values – they can vary depending on the construction of ventilator / propeller.

Basics for all ...Bin-N sensors

- No additional module in the panel required!
- No intrinsically safe wiring required!
- 24 VAC/DC supply
- Measurement of number of revolutions in min^{-1}
- Switch-point in min^{-1} is digitally adjustable
- Integrated, adjustable time switch relais
- 1-channel: 1 potential-free contact
- 2-channel (optional): 2 potential-free contacts
- Display with indication of actual value
- Switching status display with LED
- Aluminium housing IP66 with integrated terminal box
- Dimensions (H × W × D) 180 × 107 × 66 mm
- Namur transducer included in delivery

ExBin-N.. fan belt monitoring modules via speed control for zone 1, 2, 21, 22

Type	Sensor	Speed control range	Setting range	Installation module
ExBin-N	Namur transducer, inductive, DIN 19234	0 ... 10.000 min^{-1}	1-stage adjustable switch-point from 50...10.000 min^{-1}	zone 1, 2, 21, 22
ExBin-N-2	Namur transducer, inductive, DIN 19234	0 ... 10.000 min^{-1}	2-stage adjustable switch-point from 50...10.000 min^{-1}	zone 1, 2, 21, 22

RedBin-N.. fan belt monitoring modules via speed control for zone 2, 22

Type	Sensor	Speed control range	Setting range	Installation module
RedBin-N	Namur transducer, inductive, DIN 19234	0 ... 10.000 min^{-1}	1-stage adjustable switch-point from 50...10.000 min^{-1}	zone 2, 22
RedBin-N-2	Namur transducer, inductive, DIN 19234	0 ... 10.000 min^{-1}	2-stage adjustable switch-point from 50...10.000 min^{-1}	zone 2, 22

InBin-N.. fan belt monitoring modules via speed control for safe area

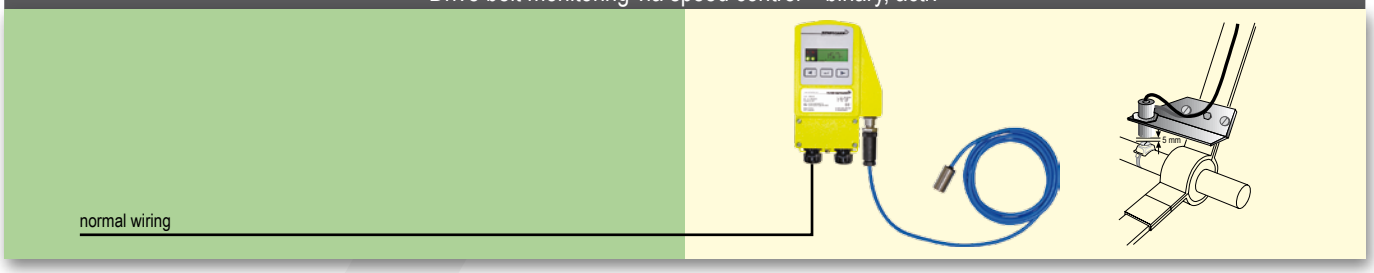
Type	Sensor	Speed control range	Setting range	Installation module
InBin-N	Namur transducer, inductive, DIN 19234	0 ... 10.000 min^{-1}	1-stage adjustable switch-point from 50...10.000 min^{-1}	safe area
InBin-N-2	Namur transducer, inductive, DIN 19234	0 ... 10.000 min^{-1}	2-stage adjustable switch-point from 50...10.000 min^{-1}	safe area

Accessories

Type	Technical data
Kit 3	Mounting set for Namur transducer onto ventilators / propellers *up to* approx. 20.000 m³ / h
Kit 4	Mounting set for Namur transducer onto ventilators / propellers *over* approx. 20.000 m³ / h
MKR	Mounting bracket for installation on round air-ducts (diameter up to 600 mm)

Special options and offshore kits see page 50

Drive belt monitoring via speed control – binary, activ



Safe area | **Ex area**

ExBin-D / RedBin-D / InBin-D Thermostats, hygrostats

Explosion proof

ExBin-D...
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx,
GOST-R, RTN, KOSHA

RedBin-D...
Zone 2, 22
Gas + Dust
certified according
ATEX,
GOST-R, RTN, CSA

Industrial

InBin-D...
NOT Explosion proof
and only for
use in safe area
IP66

Features of ExBin-D, RedBin-D, InBin-D

Description

ExBin-D, RedBin-D and InBin-D modules are used together with ExPro-B… / InPro-B… sensor probes as thermostats or hygrostats in HVAC systems.

Delivery: 1 Ex / Red / InBin.. module with socket for 1 ExPro-B… / InPro-B… sensor, 3 tapping screws

Required accessory (additional price):
ExPro-B… or InPro-B… sensor

Ordering example for one thermostat in an air duct, 150 mm sensor length, with sensor in Ex zone 21.

Types to order:
1 × ExBin-D
1 × ExPro-BT150 (Ex-i sensor probe)

Basics for all …Bin-D sensors

- No additional module in the panel required!
- No intrinsically safe wiring required!
- 24 VAC/DC supply
- Socket for ExPro-B… sensor
- Selectable on site if used for room or duct application
- Switch-point for °C and %rH separately adjustable (dependend on sensor probe type)
- 1-channel: 2 pot.-free contacts (1 × °C, 1 × %rH)
- 2-channel: 4 pot.-free contacts (2 × °C, 2 × %rH)
- Display with indication of actual value
- Switching status display with LED
- Aluminium housing IP66 with integrated terminal box
- Dimensions (H × W × D) 180 × 107 × 66 mm

ExBin-D thermostats and / or hygrostats, dependend on sensor probe type ExPro-B… for zone 1, 2, 21, 22

Type	Technical data	Installation module	Installation ExPro-B.. sensor
ExBin-D	Module for connection of one ExPro-B… sensor as thermostat and / or hygrostat, 1-stage	zone 1, 2, 21, 22	zone 1, 2, 21, 22
ExBin-D-2	Module for connection of one ExPro-B… sensor as thermostat and / or hygrostat, 2-stage	zone 1, 2, 21, 22	zone 1, 2, 21, 22

RedBin-D thermostats and / or hygrostats, dependend on sensor probe type ExPro-B… for zone 2, 22

Type	Technical data	Installation module	Installation ExPro-B.. sensor
RedBin-D	Module for connection of one ExPro-B… sensor as thermostat and / or hygrostat, 1-stage	zone 2, 22	zone 1, 2, 21, 22
RedBin-D-2	Module for connection of one ExPro-B… sensor as thermostat and / or hygrostat, 2-stage	zone 2, 22	zone 1, 2, 21, 22

InBin-D thermostats and / or hygrostats, dependend on sensor probe type InPro-B… for safe area

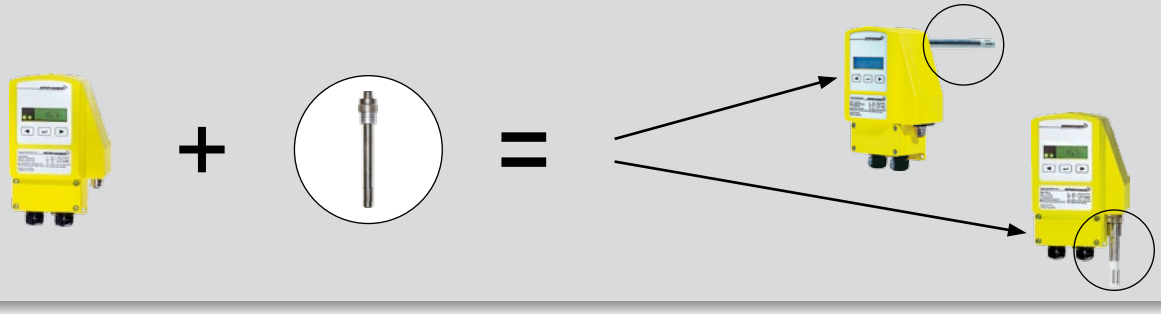
Type	Technical data	Installation module	Installation InPro-B.. sensor
InBin-D	Module for connection of one InPro-B… sensor as thermostat and / or hygrostat, 1-stage	safe area	safe area
InBin-D-2	Module for connection of one InPro-B… sensor as thermostat and / or hygrostat, 2-stage	safe area	safe area

Accessories

Type	Technical data
MKR	Mounting bracket for installation on round air-ducts (diameter up to 600 mm)

Special options and offshore kits see page 50

Example of combinations



ExPro-B / InPro-B Digital thermostat / hygrostat sensor probes

Explosion proof | Industrial | Features of ExPro-B.., InPro-B..

ExPro-B...
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx
PTB-certified in acc.
with ExBin-D / RedBin-D
modules

InPro-B...
Only for use with
InBin-D.. transducer!
NOT for use in
Ex area!

Description

ExPro-B... sensors are used for measurements of temperature and / or humidity in hazardous areas, for **exclusive** use with ExBin-D... / RedBin-D... modules!

InPro-B... sensors are suitable for temperature and / or humidity measurement in safe areas, for **exclusive** use with InBin-D... modules!

Delivery: 1 sensor with connector

Example: room-humidity sensor, 50 mm length
Type: 1 × ExPro-BF-50
Attention: only in combination with:
1 × ExBin-D or RedBin-D
(InBin-D... with InPro-B... sensors)

Basics for all ExPro-B... / InPro-B... sensors

- Sensors for connection to ExBin-D..., RedBin-D..., InBin-D... modules. Adaption via connector
- ExPro-B... / InPro-B... sensors can be optionally screwed to the housing at the back (duct measurement) or bottom (room measurement)
- When using humidity-sensors, the contamination and aggressiveness of the medium has to be regarded

Sensor probes for ExBin-D and RedBin-D modules

Type	Function	Measurement range	Sensor length	Main use	Connectable to		Installation area
ExPro-BT - 50	Thermostat	−40...+ 80 °C	50 mm	Room / Duct	ExBin-D	RedBin-D	zone 1, 2, 21, 22
ExPro-BT -100	Thermostat	−40...+ 125 °C	100 mm	Duct	ExBin-D	RedBin-D	zone 1, 2, 21, 22
ExPro-BT -150	Thermostat	−40...+ 125 °C	150 mm	Duct	ExBin-D	RedBin-D	zone 1, 2, 21, 22
ExPro-BT -200	Thermostat	−40...+ 125 °C	200 mm	Duct	ExBin-D	RedBin-D	zone 1, 2, 21, 22
ExPro-BF - 50	Hygrostat	0...100 %rH	50 mm	Room / Duct	ExBin-D	RedBin-D	zone 1, 2, 21, 22
ExPro-BF -100	Hygrostat	0...100 %rH	100 mm	Duct	ExBin-D	RedBin-D	zone 1, 2, 21, 22
ExPro-BF -150	Hygrostat	0...100 %rH	150 mm	Duct	ExBin-D	RedBin-D	zone 1, 2, 21, 22
ExPro-BF -200	Hygrostat	0...100 %rH	200 mm	Duct	ExBin-D	RedBin-D	zone 1, 2, 21, 22
ExPro-BTF- 50	Combination Thermostat / Hygrostat	−40...+ 80 °C, 0...100 %rH	50 mm	Room / Duct	ExBin-D	RedBin-D	zone 1, 2, 21, 22
ExPro-BTF-100	Combination Thermostat / Hygrostat	−40...+ 125 °C, 0...100 %rH	100 mm	Duct	ExBin-D	RedBin-D	zone 1, 2, 21, 22
ExPro-BTF-150	Combination Thermostat / Hygrostat	−40...+ 125 °C, 0...100 %rH	150 mm	Duct	ExBin-D	RedBin-D	zone 1, 2, 21, 22
ExPro-BTF-200	Combination Thermostat / Hygrostat	−40...+ 125 °C, 0...100 %rH	200 mm	Duct	ExBin-D	RedBin-D	zone 1, 2, 21, 22

Sensor probes for InBin-D modules

Type	Function	Measurement range	Sensor length	Main use	Connectable to	Installation area
InPro-BT - 50	Thermostat	−40...+ 80 °C	50 mm	Room / Duct	InBin-D	safe area
InPro-BT -100	Thermostat	−40...+ 125 °C	100 mm	Duct	InBin-D	safe area
InPro-BT -150	Thermostat	−40...+ 125 °C	150 mm	Duct	InBin-D	safe area
InPro-BT -200	Thermostat	−40...+ 125 °C	200 mm	Duct	InBin-D	safe area
InPro-BF - 50	Hygrostat	0...100 %rH	50 mm	Room / Duct	InBin-D	safe area
InPro-BF -100	Hygrostat	0...100 %rH	100 mm	Duct	InBin-D	safe area
InPro-BF -150	Hygrostat	0...100 %rH	150 mm	Duct	InBin-D	safe area
InPro-BF -200	Hygrostat	0...100 %rH	200 mm	Duct	InBin-D	safe area
InPro-BTF- 50	Combination Thermostat / Hygrostat	−40...+ 80 °C, 0...100 %rH	50 mm	Room / Duct	InBin-D	safe area
InPro-BTF-100	Combination Thermostat / Hygrostat	−40...+ 125 °C, 0...100 %rH	100 mm	Duct	InBin-D	safe area
InPro-BTF-150	Combination Thermostat / Hygrostat	−40...+ 125 °C, 0...100 %rH	150 mm	Duct	InBin-D	safe area
InPro-BTF-200	Combination Thermostat / Hygrostat	−40...+ 125 °C, 0...100 %rH	200 mm	Duct	InBin-D	safe area

Accessories

Type	Technical data
MFK	Mounting flange for duct-installation, for variable depth of immersion in the air duct
TH- VA	Probe made of stainless-steel V4A 1.4571, length 120 mm. Other lengths on request
Kit-FA-VA	Sinter filter cap for humidity sensor
MKR	Mounting bracket for installation on round air-ducts (diameter up to 600 mm)

ExBin-A / RedBin-A / InBin-A Switching modules

Explosion proof

ExBin-A
Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx,
GOST-R, RTN, KOSHA

RedBin-A
Zone 2, 22
Gas + Dust
certified according
ATEX,
GOST-R, RTN, CSA

Industrial

InBin-A
NOT Explosion proof
and only for
use in safe area
IP66

Features of ExBin-A, RedBin-A, InBin-A

Description

ExBin-A, RedBin-A and InBin-A modules are switching modules for direct mounting in Ex areas (except InBin-A) with 1, 2 or 5 channels, for connection of 1, 2 or 5 passive potential-free binary sensors, for use in HVAC systems.

Delivery: 1 module with sockets for 1 up to 5 ExSens sensors (dependent on type), 3 tapping screws

Accessory (optional): Binary sensors series ExSens, see next page

Basics for all ...Bin-A modules

- No additional module in the panel required!
- No intrinsically safe wiring required!
- Mounting of module directly in Ex area
- 24 VAC/DC supply
- 1 up to 5 passive, potential-free, binary sensors
- Sockets for 1 up to 5 ExSens sensors
- 1 up to 5 contacts with common supply unit
- 1 or 2 contacts with additional clamp for time switch relais, e.g. for 2 fan belt monitoring applications (time 120 sec.)
- Display with indication of actual value
- Switching status display with LED
- Aluminium housing IP66 with integrated terminal box
- Dimensions (H × W × D) 180 × 107 × 66 mm

ExBin-A.. Switching modules for 1 up to 5 passive binary sensors for zone 1, 2, 21, 22

Type	Technical data	Installation module	Installation sensor*
ExBin-A-1	Module (1 channel) to connect 1 binary ExSens sensor in Ex area	zone 1, 2, 21, 22	zone 0, 1, 2, 20, 21, 22
ExBin-A-2	Module (2 channel) to connect 2 binary ExSens sensors in Ex area	zone 1, 2, 21, 22	zone 0, 1, 2, 20, 21, 22
ExBin-A-5	Module (5 channel) to connect 5 binary ExSens sensors in Ex area	zone 1, 2, 21, 22	zone 0, 1, 2, 20, 21, 22

* in acc. with certification of sensor!

RedBin-A.. Switching modules for 1 up to 5 passive binary sensors for zone 2, 22

Type	Technical data	Installation module	Installation sensor*
RedBin-A-1	Module (1 channel) to connect 1 binary ExSens sensor in Ex area	zone 2, 22	zone 0, 1, 2, 20, 21, 22
RedBin-A-2	Module (2 channel) to connect 2 binary ExSens sensor in Ex area	zone 2, 22	zone 0, 1, 2, 20, 21, 22
RedBin-A-5	Module (5 channel) to connect 5 binary ExSens sensor in Ex area	zone 2, 22	zone 0, 1, 2, 20, 21, 22

* in acc. with certification of sensor!

InBin-A.. Switching modules for 1 up to 5 passive binary sensors for safe area

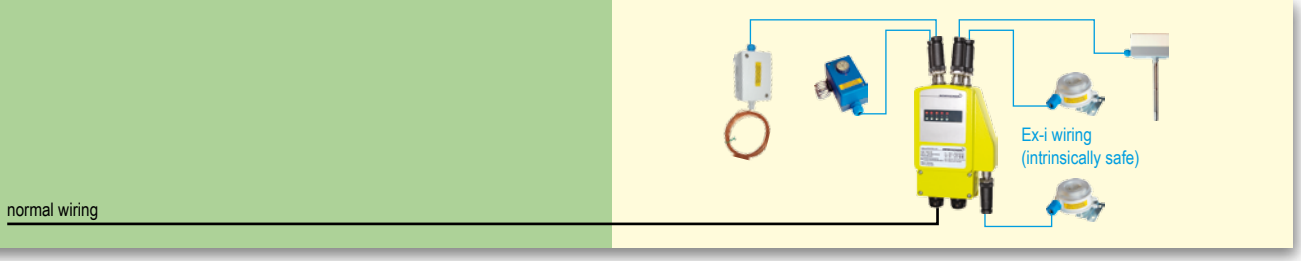
Type	Technical data	Installation module	Installation sensor
InBin-A-1	Module (1 channel) to connect 1 binary sensor	safe area	safe area
InBin-A-2	Module (2 channel) to connect 2 binary sensors	safe area	safe area
InBin-A-5	Module (5 channel) to connect 5 binary sensors	safe area	safe area

Accessories

Type	Technical data
MKR	Mounting bracket for installation on round air-ducts (diameter up to 600 mm)

Special options and offshore kits see page 50

1, 2 or 5-channel switching module for passive binary sensors



ExLine Ex-switching module for potential free, binary signals in zone 0, 1, 2, 20, 21, 22

Explosion proof

EXL-IRU-1

Zone 0, 1, 2, 20, 21, 22
Gas + Dust
certified according
ATEX

EXL-IRU-1

Features EXL-IRU-1

Description

EXL-IRU-1 module with intrinsically safe circuit to change a passive potential free binary signal (e.g. contact) into a contact in the safe area.

Delivery:
1 Ex-i module for DIN rail mounting

Accessory (optional):
binary sensors type ExSens

Basics EXL-IRU-1

- 24 VAC/DC supply
- Input: passive potential free binary sensor
- Output: potential free contact in the safe area
- Integrated time running relais 30...120 sec.
- 2 LED to show switching position
- DIN rail mounting
- Module must be installed in the safe area, sensor in the hazardous area

EXL-IRU-1 switching module

Type	Technical data	Installation module	Installation sensor*
EXL-IRU-1	1 module (rail mounting) for 1 passive binary sensor series ExSens	safe area	zone 0, 1, 2, 20, 21, 22
Optional:			
N1 supply unit	Input 120…240 VAC, output 24 VDC, max. 0,5 A, max. 4 pcs. EXL-IRU-1 connectable. N1 supply unit is required only in case of 120…240 VAC supply!		

* in acc. with certification of sensor!

ExSens passive binary sensors for zone 1, 2, 22

Explosion proof

ExSens

Zone 1, 2, 22
Gas + Dust
certified according
ATEX
Manufacturer certificate

binary, passive

Features ExSens

Description

ExSens binary sensors for temperature, humidity or pressure measurement in hazardous areas with manufacturer certification in acc. with ATEX 94/9/EC. The sensors are passive and potential free.

Delivery: 1 Sensor
Ordering example for 1 frost protection thermostat
Type to purchase: 1 × TBK-FR-2G

Basics for binary ExSens sensors

- Sensors for installation in hazardous areas, connected to a switching module type ExBin-A, RedBin-A or EXL-IRU-1
- The module changes the passive binary signal into a contact in the safe area
- Sensor must be installed in the hazardous area, module in the safe area

Sensors, connectable to switching modules type ExBin-A, RedBin-A and EXL-IRU-1

Type	Function	Range	Sensor	Information	Connectable to module type	Sensor in zone
TBR -2G	Room thermostat	0…+40 °C, 1 K	Contact, 2-pos		EXL-IRU-1, ExBin-A, RedBin-A	1, 2
TBR -2G3D	Room thermostat (IP65)	−35…+30 °C, 2-20 K	Contact, 2-pos		EXL-IRU-1, ExBin-A, RedBin-A	1, 2, 22
TBR-2 -2G	Room thermostat 2 stage	0…+60 °C, 1 K	2 × Contact, 2-pos		2 × EXL-IRU-1, ExBin-A, RedBin-A	1, 2
TBR-AN-2G	Room temperature direct contact	0…+60 °C, 5 ± 1 K (fix)	Contact, 2-pos		EXL-IRU-1, ExBin-A, RedBin-A	1, 2
TBK -2G	Duct thermostat (IP65)	0…+65 °C, 2-20 K	Contact, 2-pos		EXL-IRU-1, ExBin-A, RedBin-A	1, 2
TBT -2G	Probe thermostat (IP54)	0…+90 °C, 3 K	Contact, 2-pos	L = 120 mm	EXL-IRU-1, ExBin-A, RedBin-A	1, 2
TBT-VA -2G	Probe thermostat with VA sleeve	0…+90 °C, 3 K	Contact, 2-pos	V4A	EXL-IRU-1, ExBin-A, RedBin-A	1, 2
TBK-FR-2G	Frost protection thermostat (IP65)	−10…+12 °C	Contact, 2-pos	capillary 6 m	EXL-IRU-1, ExBin-A, RedBin-A	1, 2
FBR -2G	Room hygrostat	35…100 %rH, ~ 4 %rH	Contact, 2-pos		EXL-IRU-1, ExBin-A, RedBin-A	1, 2
FBK -2G	Duct hygrostat	35…100 %rH, ~ 4 %rH	Contact, 2-pos	L = 180 mm	EXL-IRU-1, ExBin-A, RedBin-A	1, 2
DBK -2G	Differential pressure	20-300, 50-500, 100-1.000 Pa	Contact, 2-pos		EXL-IRU-1, ExBin-A, RedBin-A	1, 2
DBK -2G3D	Differential pressure (IP65)	40-125, 100-400, 350-1.400 Pa	Contact, 2-pos		EXL-IRU-1, ExBin-A, RedBin-A	1, 2, 22
WFBK -2G	Air paddle	2…8 m/s, paddle V2A	Contact, 2-pos		EXL-IRU-1, ExBin-A, RedBin-A	1, 2
SWBT -2G	liquid flow switch	−20…+60 °C	Contact, 2-pos		EXL-IRU-1, ExBin-A, RedBin-A	1, 2
NBW-K -2G	Fan belt protection (IP65)	up to < 20.000 m³/h	Namur sensor + bracket		EXL-IRU-1, ExBin-A, RedBin-A	1, 2
NBW-G -2G	Fan belt protection (IP65)	more than > 20.000 m³/h	Namur sensor + bracket		EXL-IRU-1, ExBin-A, RedBin-A	1, 2

Accessories

Type	Technical data
Kit 1	for frost protection sensor type TBK-FR-2G, PG entries for capillary, 6 brackets, support bracket
Kit 2-DBK	includes 2 meter pressure hose (inner diameter Ø 6 mm) 2 plastic fittings

..VA/..CT Special options for sensors – overview

Overview of special options of Schischek sensors for use under extreme weather conditions

Installation/Application area:

Usage in hazardous areas under extreme weather conditions and/or for offshore/onshore applications.

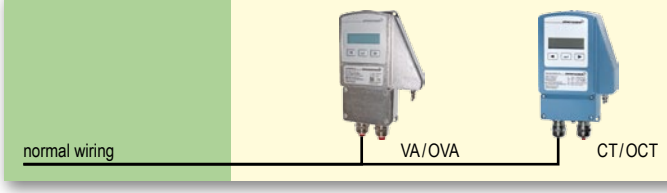
Advantages of special options:

- Resistant against corrosive and/or maritime atmosphere
- Usage under extreme weather conditions
- Approved for offshore-/onshore applications
- Robust and thereby extended period of application time of sensors

VA
OVA
CT
OCT

Cos/Bin/Reg

Special options sensors



Safe area | **Ex area**

Sensors

Housing material in stainless steel (VA) or aluminium housing with C5-M painting (CT) for use under extreme weather conditions. OVA and OCT version for offshore applications.

..Cos/..Bin/..Reg Special options for sensors

Explosion proof

Features ..Cos/..Bin/..Reg-...-VA/OVA/CT/OCT

Cos/Bin/Reg-...-..VA/..CT	Special options	Description	Basics ..Cos/..Bin/..Reg-...-VA/OVA/CT/OCT
available for all sensors In accordance with type for use in Ex area or safe area		VA version with housing material in stainless steel AISI 316, some parts nickel plated. OVA version also with stainless steel housing but suitable especially for offshore applications. CT version with aluminium housing and C5-M painting, resistant against corrosive and maritime atmosphere, some parts nickel plated. OCT version with painted housing like CT, but suitable especially for offshore applications. **Delivery:** 1 sensor with special option **Ordering example:** ExCos-P-250-CT	**VA:** • Housing material in stainless steel AISI 316, some parts nickel plated • Resistant against corrosive/maritime atmosphere **OVA:** • Basics like VA, but offered as offshore version with additionally tubes for clamping ring Ø 6 mm in stainless steel **CT:** • C5-M painted aluminium housing • Resistant against corrosive/maritime atmosphere • Cable glands brass nickel plated • Screws in stainless steel **OCT:** • Basics like CT, but offered as offshore version with M20 cable glands and additionally with tubes for clamping ring Ø 6 mm in stainless steel **For general basics see sensor technology.**

..Cos/..Bin/..Reg-.. options

Type	Description/Technical data
Cos/Bin/Reg-..- VA	Housing material in stainless steel AISI 316, some parts nickel plated (surcharge)
Cos-P/Bin-P/Reg-V..-OVA	Offshore version with seawater resistant stainless steel housing. M20 cable glands nickel-plated, pressure connection tubes and screws in stainless steel (surcharge)
Cos/Bin/Reg-..- CT	C5-M painted aluminium housing, resistant against corrosive and/or maritime atmosphere. Cable glands nickel-plated, screws in stainless steel (surcharge)
Cos-P/Bin-P/Reg-V..-OCT	Offshore version with seawater resistant C5-M painted Al-housing. M20 cable glands nickel-plated, pressure connection tubes and screws in stainless steel (surcharge)
Kit-S8- CBR	Cable glands 2 × M16 × 1,5 mm Ex-e (for cables Ø 5-10 mm) in brass nickel plated for replace the plastic cable glands of ..Cos/..Bin/..Reg sensors
Kit-Offs-GL-CBR	Cable glands 2 × M20 × 1,5 mm Ex-d in brass nickel plated for armoured cables suitable for ..Cos/..Bin/..Reg sensors
Kit-PTC- CBR	Pressure tube connection in stainless steel 316 L for 6 mm clamp fittings

ExPolar Heating system – overview

Overview of new heating system for use with Schischek sensors down to −50°C

Installation / Application area:

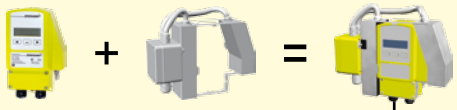
Usage in hazardous areas for temperatures down to −50 °C.

Advantages of ExPolar:

- Especially for usage under high sub-zero temperatures (down to −50°C)
- Suitable for applications with high temperature fluctuations (−50 °C up to +50 °C)
- Usage directly in hazardous locations
- Adaptable on all Schischek sensors

°C **ExPolar-..-CBR**

Heating system for sensors



Safe area | **Ex area**

ExPolar-..-CBR

Adaptable on Schischek sensors type ExCos-.., ExBin-.., ExReg-...

ExPolar / InPolar Heating system for ..Cos-../Bin-../Reg-.. sensors

Explosion proof

ExPolar-...-CBR

Zone 1, 2, 21, 22
Gas + Dust
certified according
ATEX, IECEx

Industrial

InPolar-...-CBR

NOT explosion proof
and only for
use in safe area
IP66

Features ..Polar-...-CBR

Description

Controlled heating system for use in sub-zero regions down to −50 °C or by high temperature fluctuations from −50 °C up to +50 °C.
Adaptable on Schischek sensors ..Cos-.., ..Bin-.. or ..Reg-...

Delivery: 1 heating system (adaptable)

Ordering example: ExPolar-240-CBR

Basics ..Polar

- 24/48 VAC/DC, 120/240 VAC
- 40 W
- −50 °C... +50 °C
- ExPolar for zone 1, 2, 21, 22
- InPolar for safe area

ExPolar-...-CBR / InPolar-...-CBR

Type	Adaptable on	Operation temperature	Supply				Power*	Installation area
ExPolar-...-CBR	ExCos-../ExBin-../ExReg-..	−50 °C up to +50 °C	24 VAC/DC	48 VAC/DC	120 VAC	240 VAC	40 W	zone 1, 2, 21, 22
InPolar- ...-CBR	InCos-../InBin-../InReg-..	−50 °C up to +50 °C	24 VAC/DC	48 VAC/DC	120 VAC	240 VAC	40 W	safe area

Supply voltage

***Nominal value**

VA option not considered!

ExMag Electric doorholder magnets according ATEX for zone 1, 2, 21, 22

Explosion proof

ExMag	Magnet
Zone 1, 2, 21, 22 Gas + Dust certified according ATEX	

Features ExMag

Description

ExMag doorholder magnets are electric magnets to keep doors open or closed as long as supply voltage is available.

Delivery: 1 magnet
Ordering example: 650 N magnet + anchor + Ex-terminal box
Type to purchase: 1 × EXM-650 + 1 GH 6 + 1 × EXC-K4/S

Basics ExMag

- Electric magnets, silicone free
- Force in acc. with type
- 24 VDC power supply
- 1 m cable, silicone and halogen free
- Ex-e terminal box is required for electrical connection
- The max. AC-ripple must not exceed 20%

ExMag magnets

Type	Force	Supply	Function	Current	Installation in
EXM- 650	650 N	24 VDC	Magnet	44 mA	Zone 1, 2, 21, 22
EXM-1300	1.300 N	24 VDC	Magnet	65 mA	Zone 1, 2, 21, 22
EXM-2000	2.000 N	24 VDC	Magnet	160 mA	Zone 1, 2, 21, 22

Accessories

Type	Technical data
GH-6	Anchor for EXM-650
GH-13/20	Anchor for EXM-1300 and EXM-2000
ExBox-3P	Ex-e terminal box, IP66
EXC-K4/S	Ex-e terminal box, IP66, with integrated fuse
EXC-T1	Ex-d push button
N1 supply unit	Input 120…240 VAC, output 24 VDC, max. 0,5 A

ExComp different Ex-components

Explosion proof

ExComp	Components
Zone 1, 2, 21, 22 (in acc. to type) Gas + Dust certified according ATEX	

Features ExComp

Description

Different explosion proof products like switches, safety temperature sensors, ...

Delivery: 1 component
Ordering example: Switch 20 A, 6 pole
Type to purchase: 1 × EXC-R 20/6

Basics ExComp

- No specific information
- Data in acc. with every single product/type

ExComp components

Type	Application	Explosion proof	Technical data
EXC-R 10/3...	Switch	II2G EEx ed IIC T6	10 A - 240/400 V - 2,5/4,6 KW - 3 pole
EXC-R 20/3...	Switch	II2G EEx ed IIC T6	20 A - 240/400 V - 4,5/9,0 KW - 3 pole
EXC-R 20/6...	Switch	II2G EEx ed IIC T6	20 A - 240/400 V - 4,5/9,0 KW - 6 pole
EXC-R 40/3...	Switch	II2G EEx ed IIC T6	40 A - 240/400 V - 11/20 KW - 3 pole
EXC-R 40/6...	Switch	II2G EEx ed IIC T6	40 A - 240/400 V - 11/20 KW - 6 pole
EXC-R 80/3...	Switch	II2G EEx ed IIC T6	80 A - 240/400 V - 23/40 KW - 3 pole
EXC-R 80/6...	Switch	II2G EEx ed IIC T6	80 A - 240/400 V - 23/40 KW - 6 pole
EXC-RIA-16	Actual value indication	II2G EEx ia IIC T6	4...20 mA, loop powered
EXC-DS1/VA	Safety temperature sensor	II2G EEx d IIC T6	Duct mounting, potential free contact, switching at 70°C…160°C (10°C steps)

Table of contents

Product codes / definitions

Description ..Max quarter turn actuators

Ex Max - 5.10 - SF

S = integrated auxiliary **switches**, switching at 5° and 85°
F = **spring return** (german word for spring is "Feder")
Y = **modulating** actuator 0…10 VDC or 4…20 mA and feedback signal
BF = **fire damper actuator**, intrinsically safe input for direct ExPro-TT connection (fire trigger)
F1 / F3 = actuator with **fast spring return** (number after letter F shows closing time in seconds, e.g. in 1 or 3 seconds)
C = **actuator for** direct communication with Ex/InReg **controller**

The numbers show the **torque in Nm**
Two numbers mean that the **torque is selectable** on site (e.g. 5 or 10 Nm)

Max is a **rotary (quarter turn) actuator** for dampers or rotary valves, such as ball or butterfly valves

Ex is for use in **zone 1, 2 , 21, 22**
Red is for use in **zone 2, 22**
In is for use in non classified **industrial** areas

Description ..Run valve actuators

Red Run - 5.10 - Y

Y = **modulating** actuator 0…10 VDC or 4…20 mA and feedback signal
U = **floating control** on/off, 3 pos. actuator with 0…10 VDC or 4…20 mA feedback signal

The numbers show the **force in N**
Two numbers mean that the **force is selectable** on site (e.g. 500 or 1000 N)

Run is a **linear actuator** for globe style control valves with a stroke between 5 and 60 mm

Ex is for use in **zone 1, 2 , 21, 22**
Red is for use in **zone 2, 22**
In is for use in non classified **industrial** areas

Description ..Cos modulating transducers

In Cos - P - 2500

The number shows the measuring range of the differential pressure sensor in ± **Pa**

P = **differential pressure** sensor
D = module for **temperature / humidity** for connection of ExPro-C.. sensors
A = transducer modul for connection of **passive** sensors

Cos modulating transducer with output 0…10 V or 4…20 mA

Ex is for use in **zone 1, 2 , 21, 22**
Red is for use in **zone 2, 22**
In is for use in non classified **industrial** areas

Product codes / definitions

Description ..Bin binary sensors

Ex Bin - P - 500 - 2

The number stands for **2-stage adjustable switch-point** in measurement range
Without number the sensor is 1-stage adjustable switch-point in measurement range

The number shows the max. adjustment range of the differential pressure switch in **Pa**

P = **differential pressure** switch
D = **thermostat- / hygrostat** modul for connection of ExPro-B.. sensors
FR = **frost protection** thermostat
N = **fan belt monitoring** via speed control
A1 = switching module for connection of **one passive switch**
A2 = switching module for connection of **two passive switches**
A5 = switching module for connection of **five passive switches**

Bin switching measuring module with output as a potential free contact (1 opener or 1 closer)

Ex is for use in **zone 1, 2 , 21, 22**
Red is for use in **zone 2, 22**
In is for use in non classified **industrial** areas

Description ..Pro-.. sensors for ..Cos-D or ..Bin-D modules

Ex Pro - CTF - 200

The number shows the **length** of the sensor **in mm**

T = **temperature** sensor
F = **humidity** sensor
TF = **combisensor** temperature / humidity
C = sensor for connection to Ex / Red / In**Cos**-D
B = sensor for connection to Ex / Red / In**Bin**-D

Pro-.. sensor for connection

Ex is for use in **zone 1, 2 , 21, 22**
In is for use in non classified **industrial** areas

Description ..Reg controller

Ex Reg - V - 300 - A

A = Type with **analog** signals for external communication
B = Type with **bus** communication (RS485)

The number shows the control range of the controller in **Pa** (V-type only)

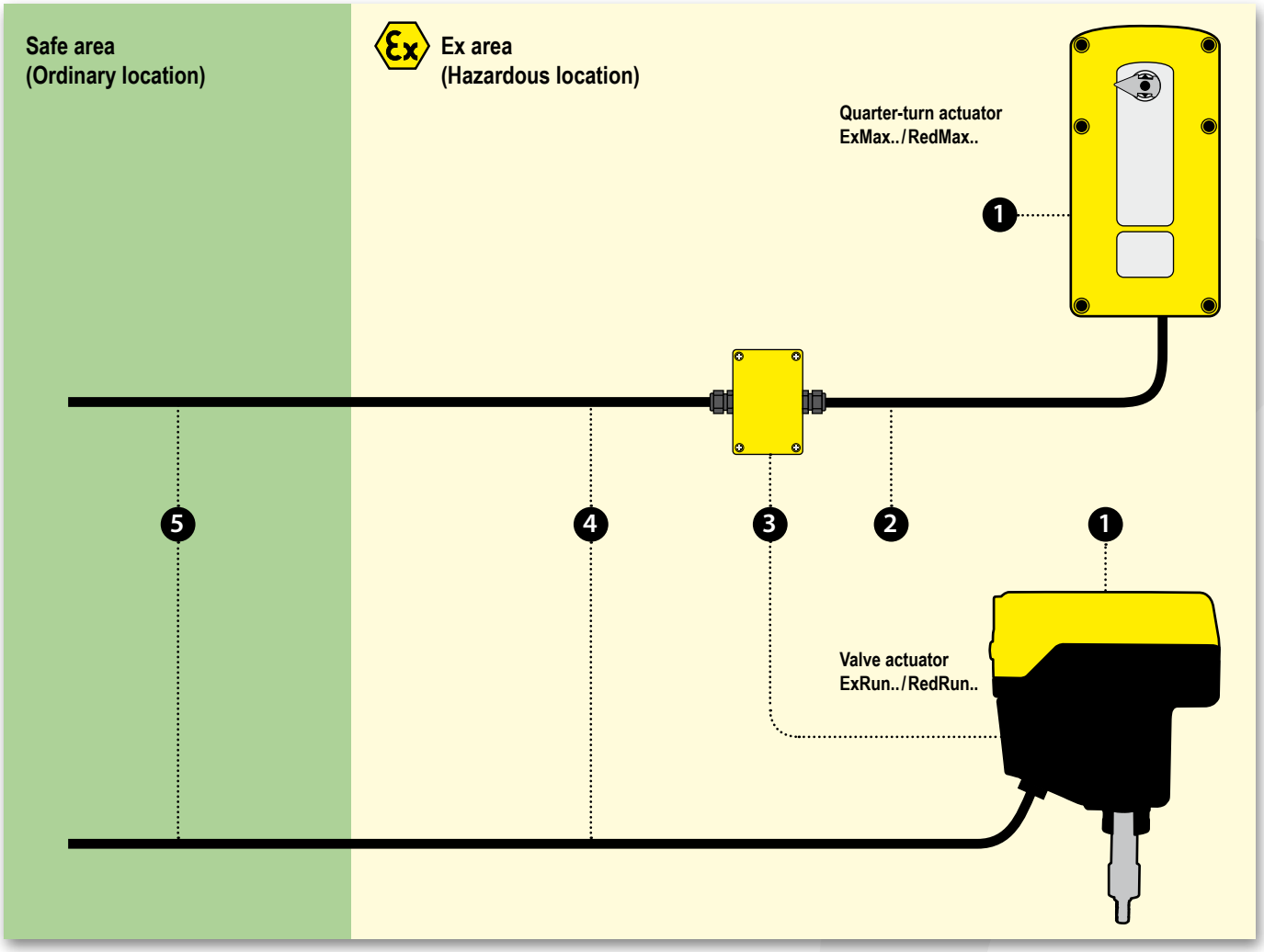
V = **volume flow** control / pressure control
D = **temperature / humidity** control

Reg controller

Ex is for use in **zone 1, 2 , 21, 22**
In is for use in non classified **industrial** areas

Installation according to ATEX (Zone system)

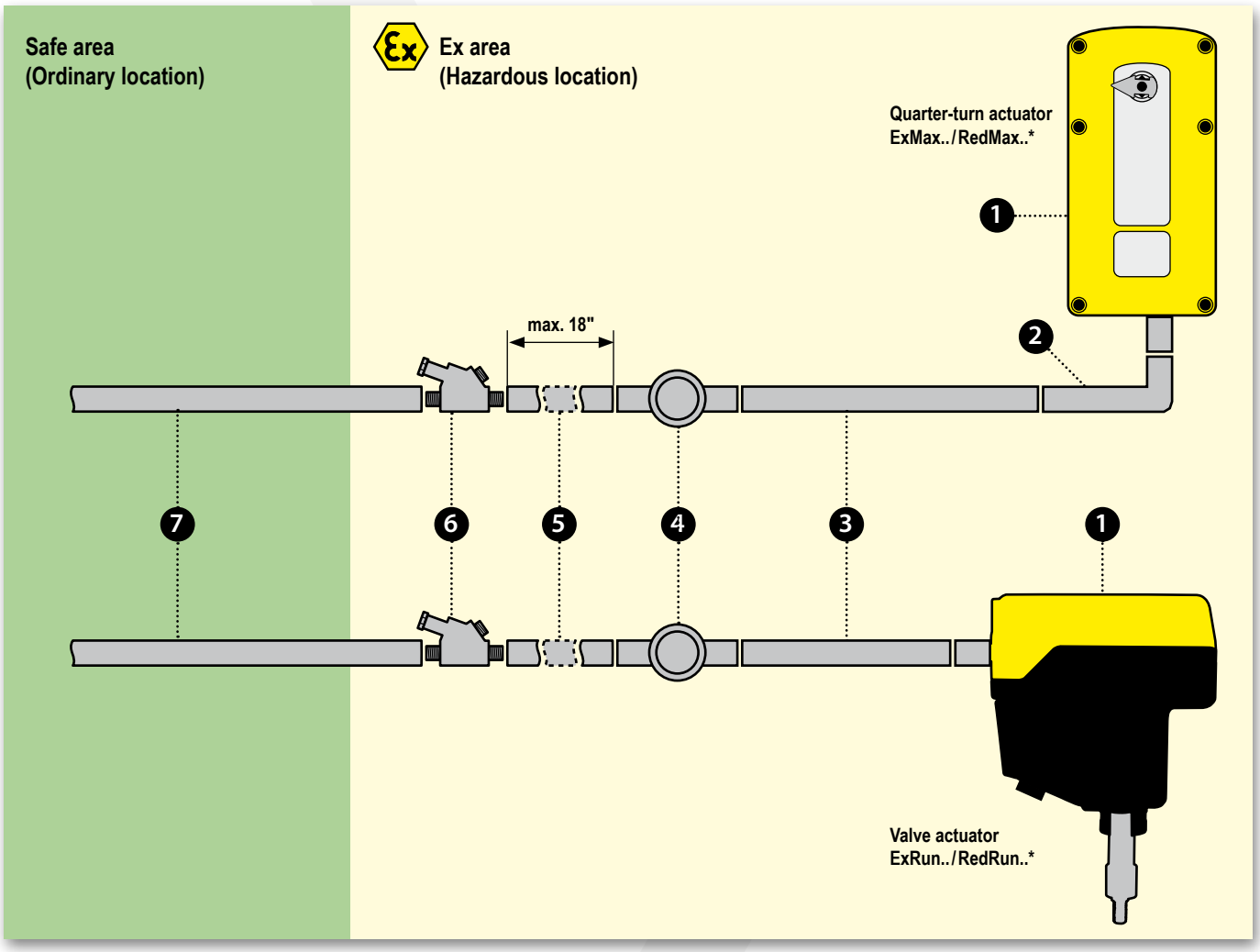
Installation zones



1. Explosion proof actuator (ExMax/RedMax, ExRun/RedRun)
2. Extension cable approximate ~ 1 m (39.4")
3. Junction box in increased safety Ex-e technology
4. Supply or control cable
5. Supply or control cable reaches into the safe area…

Installation according to NEC 500 (Division system, North America)

Installation FM/CSA Div. classes



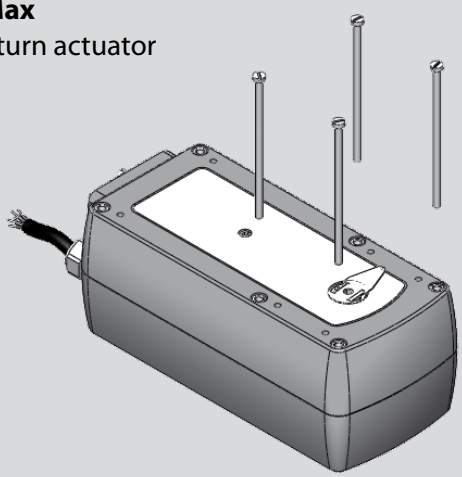
1. Explosion proof actuator (ExMax/RedMax, ExRun/RedRun)
2. Elbow device …
3. Connecting device …
4. Conduit box …
5. Connecting device, max. length 0,46 m (18")
6. Seal fitting for horizontal or vertical conduits …
7. Connecting device reaches into the safe area …

*** Variants for North America on request!**

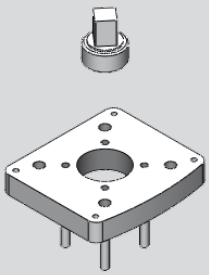
Valve automation

Quarter-turn actuators

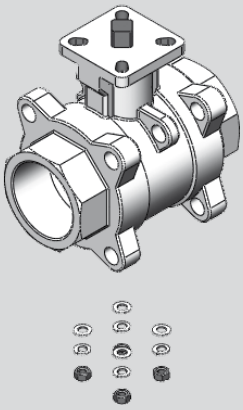
..Max
¼-turn actuator



Valve linkage
example

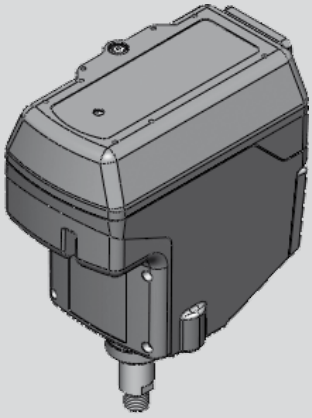


Valve
example

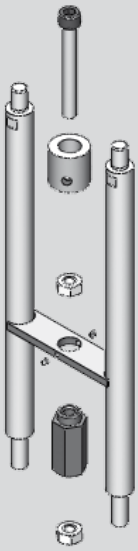


Linear motion actuators

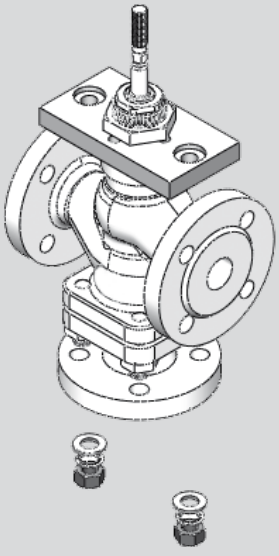
..Run
Linear valve actuator



Valve linkage
example



Valve
example

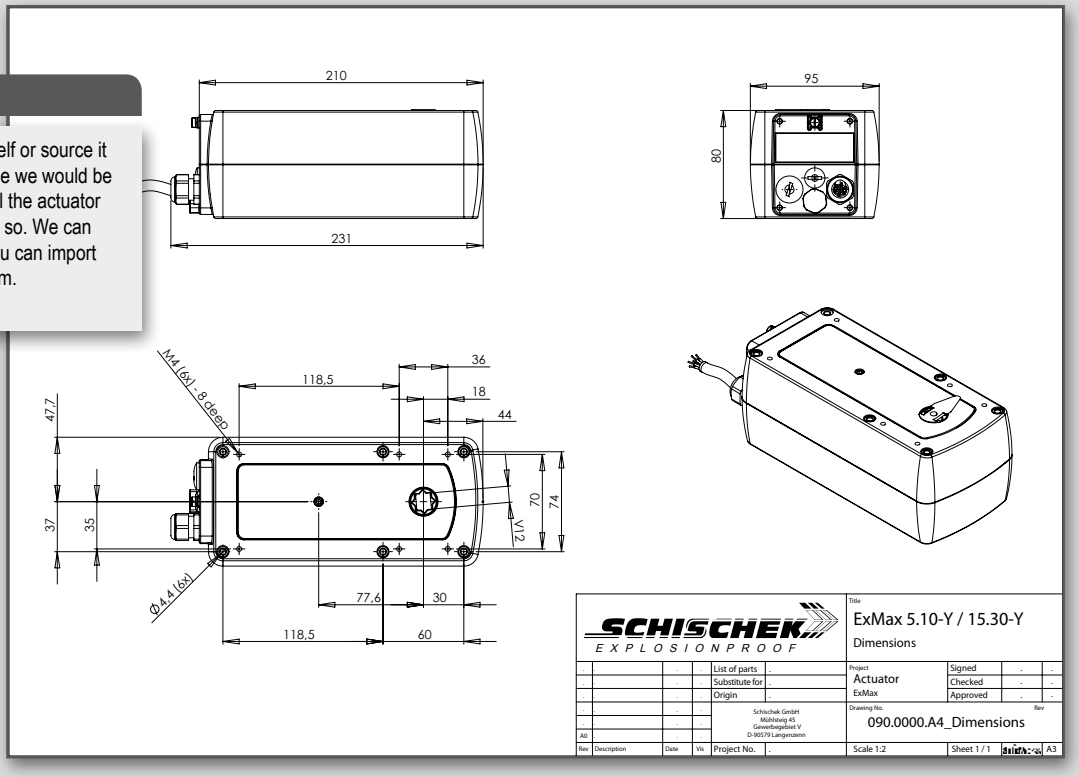


Valve automation

Schischek valve linkages

Option 1

You make the linkage yourself or source it somewhere else. In that case we would be happy to provide you with all the actuator dimensions necessary to do so. We can even give you STEP files you can import directly into your CAD system.

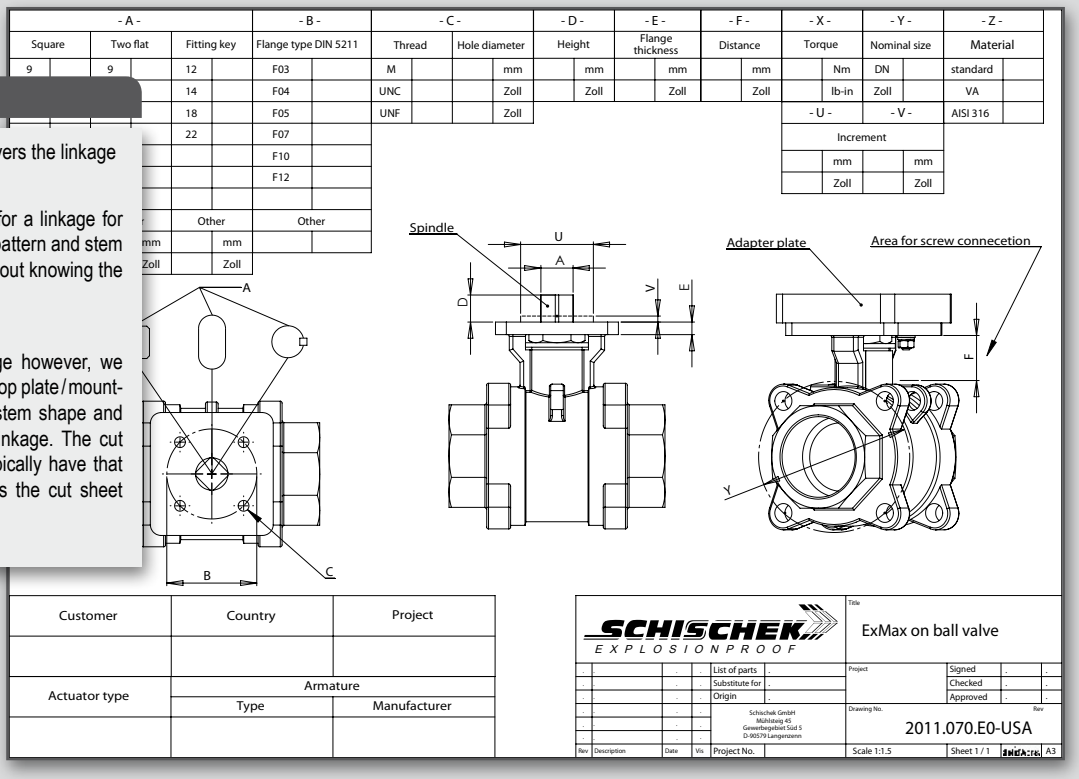


Option 2

Schischek designs and delivers the linkage

Price:
We can quote you a price for a linkage for any typical valve mounting pattern and stem (for example ISO 5211) without knowing the exact valve dimensions.

Order:
When you order the linkage however, we need the dimensions of the top plate / mounting pattern as well as the stem shape and dimensions to design the linkage. The cut sheet for your valve will typically have that information. Simply send us the cut sheet and we will do the rest.



Information about electrical explosionproof according ATEX 94/9/EC

Regulations for explosion protection

Explosion protection regulations in the EU member states are marked by the change of EU protection guideline 67/117/EWG ff to the two new EU guidelines 94/9/EC (ATEX 95) and 95/C 332/06 (ATEX 137). As a result of the new directives, explosion protection in European regulations there will be a harmonisation of standards. There will be a transitional period to adjust from the "old" to the "new" European law. The regulations covering the "old" law were in effect up to June 30th 2003.
Since July 1st 2003, electric explosion proof equipment must comply with ATEX Ex-protection guidelines in accordance with 94/9/EC – on the approximation of the laws of the Member States concerning equipment and protective systems for use in potentially explosive atmospheres.
Information on uniform classification of potentially explosive systems and how to use this as a basis for selecting and classifying systems and equipment, incl. their installation, can be found in guideline 1999/92/EC (ATEX 137).
ATEX: Guideline 94/9/EC of the European parliament and the Council from March 23rd 1994 brought the legislation of the member states, concerning equipment and protective systems for use in explosion risk areas, into line.
ExVO: Directive on the distribution of equipment and protection systems for potentially explosive areas – explosion protection prescription - 11.GSGV.
ElexV: Operational Safety regulation, minimum regulation in order to improve health-safety and security of employees at hazardous workplaces!

Certificates
Corresponding approvals and certificates are required for electrical explosion proof equipment. Testing must be carried out by an official testing agency (for example the PTB - Physikalisch Technische Bundesanstalt in Braunschweig/Federal German Physical and Technical Institute of Braunschweig). ATEX approvals are also accepted in many countries and states outside Europe.

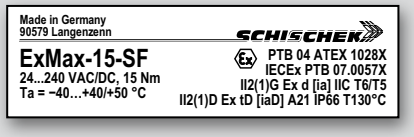
Responsibilities
The responsibility for compliance with all regulations and guidelines, from production to planning, up until installation, operation and maintenance, has greatly increased
Each individual must be conscious about the fact that he accepts personal responsibility as part of a total project:

- building owner
- end-user
- architect
- consulting engineer/control company
- inspection authority
- contractor/installer
- manufacturer
- product supplier
- maintenance engineers

The type plate and its components

The type plate and its components
From 1/7/2003 the new ATEX guidelines come into force. The then current legal bases for the certification and labelling of electric explosion proof equipment is the EC guideline:

Example, for the labelling of a quarter turn actuator:
Manufacturer's name, manufacturer's address, designation of type, electrical data (V, A, W, Hz) ambient temperature if different from −20 to +40°C, unit serial number, in addition to the classification of Ex protection.



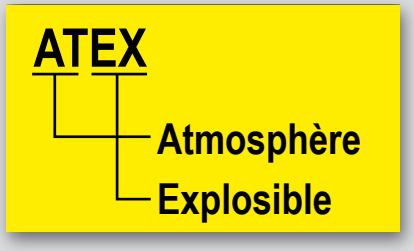
Correct installation

For the installation of electrical systems in areas with explosive gas atmospheres of group II, rule IEC 60 079-14 (EN 60079-14) will apply.

Electric circuits of protection types d, e, q, o, m, p
Installation in the panel is identical to "standard" installation, however the procedures for connecting Ex equipment must be followed. This refers, for example to voltage, current, fuses and motor protection equipment, etc. The requirements for specific products must be taken from their corresponding test certificates, standards and prescriptions as well as from the guidebook. It is only permitted to work on electric circuits within the Ex-area (for example when connecting to Ex-e terminal box if the voltage has been switched off). An Ex-e terminal box should only be opened after the voltage has been switched off.

Electric circuits of protection type "i" (intrinsically safe)
For the planning and operation of switchgears and control systems installed in the safe area, but which contain circuits leading into the Ex-area, certain requirements should be considered. This applies especially to intrinsically safe circuits. Intrinsically safe circuits and non-intrinsically safe circuits should be kept separate. Minimum distances (distances) between bare connections must be observed, the cables must not produce any inadmissible external inductance or capacitance. The maximum admissible electrical limits of Ex-i equipment must be observed at all times. Intrinsically safe and non-intrinsically safe electrical circuits should not cross, however it is allowed between two intrinsically safe circuits. Intrinsically safe circuits must be clearly marked. Intrinsically safe circuits are marked by a "light blue" color. This color is recommended for all intrinsically safe circuits to prevent confusion and/or linking up to a non-intrinsically safe circuit. Examples: cabels, cables, cable conduits, dampers, connection boxes, cable connectors,...
A minimum distance of 50 mm should be allowed between intrinsically safe and non-intrinsically safe circuits, and a minimum distance of 6 mm between two different intrinsically safe circuits. During installation the cables of intrinsically safe and non-intrinsically safe circuits should be laid out separately!

Suggestion on how to create a pannel
It is necessary to keep intrinsically safe and non-intrinsically safe equipment separate. It is recommended, in this case, that a sufficient distance be kept, to avoid extra costs in the future.
Large transformers, frequency rectifiers, large relays and other electric equipment that may influence intrinsically safe circuits by inductance or capacitance should be installed at a sufficient distance. As a precaution Ex-i equipment should have a suitable cover to protect it from incorrect handling. The appropriate standards and regulations must be observed.



Labelling of explosion proof equipment according to ATEX 94/9/EC

Classification and labelling of explosion proof areas

Flammable medium	Hazardous locations Probability of a potential explosive atmosphere occuring	Classification of explosion proof areas	Product classification: Product group	Product classification: Product category	Product level (EPL)
Gases, mists, vapours	Always, temporarily or often present	Zone 0	II	1G	Ga
	Occasionally present	Zone 1	II	2G	Gb
	Very seldom or only present for a short period	Zone 2	II	3G	Gc
Dusts	Always, temporarily or often present	Zone 20	II	1D	Da
	Occasionally present	Zone 21	II	2D	Db
	Does not occur or only seldom for a short period	Zone 22	II	3D	Dc

Official institutes

code number	Institute Notified Body (NB)
0102	PTB (Germany)
0158	EXAM (Germany)

Example:

CE 0158 Ex

II 2G Ex d IIC T6 Gb
II 2D Ex tb IIIC T80°C Db

NB 12 ATEX 1007 X

Classification Explosion groups & Temperature classes

Explosion group	Examples depending on - explosion group - temperature class					
IIA	Ammonia Methane Ethane Propane	Ethanol Cyclohexene n-Butane	Petrol Diesel fuel Fuel oil n-Hexane	Acetal-dehyde		
IIB	City gas Acrylic nitrile	Ethylene Ethylene oxide	Ethyl glycol Carbon hydrogen	Ethyl ether		
IIC	Hydrogen	Acetylene				Carbon disulphide

Attention: this list is only an extract of possible flammable mediums and does not claim to be complete!

Temperature class	
T1	<450 °C
T2	<300 °C
T3	<200 °C
T4	<135 °C
T5	<100 °C
T6	< 85 °C

Product use depending on temperature class (T1 - T6). The temperature class indicates the max. temperature of the exposed surface of the product. For dust explosion proof, the max. surface temperature is directly shown (e.g. T80°C).

Temperature class

Protection principle	Type of protection	Code	Symbol	To use in zone [6]	CENELEC
Prevents transmission of the explosion outside	flameproof enclosure	Ex d		1, 2	EN 60079-1
Prevents high temperatures and sparks	increased safety	Ex e		1, 2	EN 60079-7
Low current/voltage supply	intrinsic safety	Ex i [1] Ex iD [2]		0, 1, 2 20, 21, 22	EN 60079-11
Positive pressure device	pressurised apparatus	Ex p Ex pD		1, 2 21, 22	EN 60079-2
Encapsulated	moulding	Ex m [3] Ex mD [4]		0, 1, 2 20, 21, 22	EN 60079-18
Parts immersed in oil to isolate from explosive atmosphere	oil immersion	Ex o		1, 2	EN 60079-6
Prevents transmission of explosion outside	powder filling	Ex q		1, 2	EN 60079-5
As above, but for use in zone 2	protection "n"	Ex n		2	EN 60079-15
Dust explosion proof	protection "tD"	Ex t [5]	IP66	20, 21, 22	EN 60079-31

Protection principle – Type of protection – EN 60079-0 General Requirements

Code	Dust classification
IIIA	flammable fibres
IIIB	non conductive dust
IIIC	conductive dust

IP	Protection against solids/dust	Protection against water
8	–	long periods of immersion
7	–	the effects of temporary immersion
6	totally protected against dust	strong jets of water
5	dust - limited ingress	low pressure jets from all directions
4	solids objects > 1 mm	sprays from all directions
3	solids objects > 2,5 mm	direct sprays up to 60° from vertical
2	solids objects > 12,5 mm	direct sprays up to 15° from vertical
1	solids objects > 50 mm	vertical falling drops of water
0	no protection	no protection

Ingress Protection EN 60529

Application	Code
For common use	–
For use under special circumstances	X
This product is an Ex-certified component for use in a complete system	U

Further information

[1] ia (zone 0, 1, 2), ib (zone 1, 2), ic (zone 2)
[2] iaD (zone 20, 21, 22), ibD (zone 21, 22), icD (zone 22)
[3] ma (zone 0, 1, 2), mb (zone 1, 2), mc (zone 2)
[4] maD (zone 20, 21, 22), mbD (zone 21, 22), mcD (zone 22)
[5] ta (zone 20, 21, 22), tb (zone 21, 22), tc (zone 22)
[6] Highest possible application areas

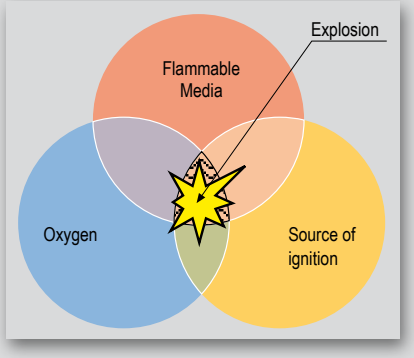
Where and when do I have to take explosion proof into consideration?

Explosion proof means: “Protection of Life. Health. Assets.”

When can a danger of explosion occur?
A danger of explosion occurs when a flammable medium (gas, vapor, mist or dust) in a dangerous quantity is present.

What creates an explosion?
An explosion may occur when the following 3 components are present at the same time:

- Flammable or combustible media
- Source of ignition
- Air (oxygen)



Typical sources of ignition
Very often the reason for accidents is self-ignition, extraordinary surface temperatures and sparks due to mechanical reasons. But there are also a lot of other sources of ignition, caused by either mechanical and/or electrical equipment.
These are for example:

- Self-ignition
- Extraordinary surface temperatures
- Open flames
- Sparks caused by mechanical reasons
- Static electricity
- Lightning strike
- Ultra-sonic
- Chemical sources of ignition
- Electric sparks
- Electric arcs
- Adiabatic compression
- Adiabatic shock waves
- Electric balancing power

Is your system safe?

We have the following situation NOW or in the FUTURE:

Yes.No (Please check)

- ☐ ☐ Flammable materials are stored.
- ☐ ☐ Flammable materials are used.
- ☐ ☐ Flammable materials are bottled.
- ☐ ☐ Flammable materials are used during the cleaning process.
- ☐ ☐ Flammable materials are used in the production process.
- ☐ ☐ Flammable materials will be produced during the production process.

6 × “No”: Obviously you do not need explosion proof

at least 1 × “YES”:
When planning you have to consider rules, regulations and instructions concerning explosion proof

Example: BetrSichV, ExVO, EX-RL

Remarks:
All information, tables, checklists and further documentation are only for your assistance and do not claim to be complete. In no way do they replace official regulations and rules or even laws by the authorities. We want to point out that it is very important to undertake all measures for an exact classification of the Ex-area.

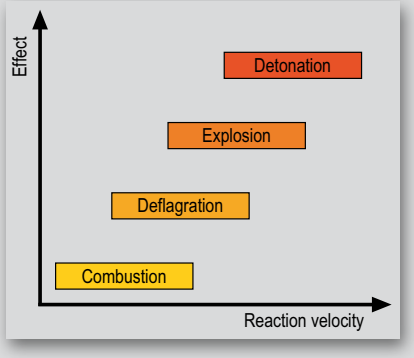
Typical Applications:

- Chemical, pharmaceutical and industrial plants
- Refineries, petrol depots, gas stations
- Paint and solvent shops
- Drying and coating cabinets
- Laboratories in industry and schools
- Water treatment works, power plants
- Compressor stations, gas works
- All kinds of storekeeping and stocks
- All kinds of filling stations
- All kinds of cleaning stations
- Mills, silos, silos for bulk goods
- Offhore and onshore
- Oil and gas pipelines
- Printing works, food industry, …

Schedule:

- Analyse whether you need explosion proof or not
- Ask experts in order to analyse the risk of danger
- Define zones, areas, categories, explosion groups and temperature classes
- Planning according to all necessary rules and regulations
- Choose the best supplier and the right product
- Keep to the installation rules
- Check the labelling of the equipment
- Make sure that the appliance will be put into operation correctly
- Confirm a final inspection by the responsible authority
- Guarantee regular and correct maintenance according to the regulations
- The correct documentation has to be maintained

From fire to detonation
Effect and reaction velocity increase significantly from combustion, deflagration, via explosion up to detonation.



Zones • Explosion groups • Temperature classes

Implementation

Potentially explosive areas should be divided into zones, and the equipment should be divided into groups and categories. The labelling on the identification plate of certified equipment indicates in which zone the explosion proof equipment can be used.

Division into equipment groups
Groups are divided into group I and group II. Group I equipment is intended for use in underground parts of mines.
Group II equipment is intended for use in areas where explosive atmospheres exist, except for underground mines.

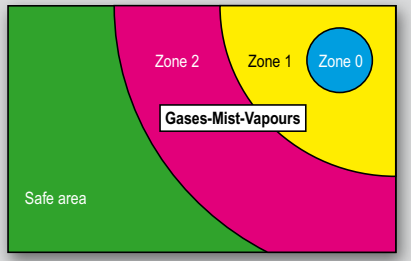
Division into zones
Potentially explosive areas are divided into six zones, according to time-related and local probability, that a potentially explosive atmosphere (p.e.a.) exists.
A distinction is made between combustible gases, mists, vapors and combustible dust. The zones are described in the accompanying table.
Gases, mists and vapors are placed in zones 0, 1 and 2, whereby the requirements for the chosen equipment increase from zone 2 to 0. Equipment in zone 0 must be built in a way "that even if a type of protection fails or if two faults occur, that sufficient explosion protection is guaranteed". Therefore for example a passive, potential free sensor, installed in zone 0, and connected to an intrinsically safe electric circuit (II2(1)G [Ex ia] IIC), must display current approval.
Zones 20, 21 and 22 are for dust, whereby the requirements for the chosen equipment increase from zone 22 to 20. Equipment in zone 20 and 21 need special approval.

Division into product categories
Product categories determine, in which zones the equipment should be installed. Once again there are six categories. Categories 1G, 2G and 3G are classifications for gas explosion protection (G = Gas); to which equipment with 1G for zone 0, 1 and 2, equipment with 2G for zone 1 and 2 and equipment with 3G for zone 2 are suited. Categories 1D, 2D and 3D are classifications for dust explosion protection (D = Dust); to which equipment with 1D for zone 20, 21 and 22, equipment with 2D for zone 21 and 22 and equipment with 3D for zone 22 are suited.

Classification and labelling of explosion proof areas

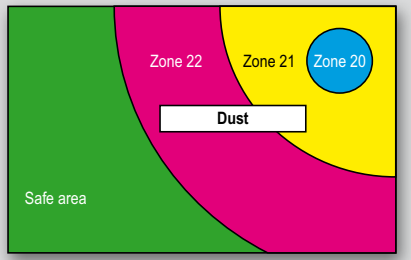
Flammable medium	Hazardous locations Probability of a potential explosive atmosphere occuring	Classification of explosion proof areas	Product classification: Product Group	Product classification: Product Category			Product level (EPL)		
Gases Vapours Mists	Always, temporarily or often present	Zone 0	II	1G			Ga		
	Occasionally present	Zone 1	II		2G			Gb	
	Very seldom or only present for a short period	Zone 2	II			3G			Gc
Dusts	Always, temporarily or often present	Zone 20	II	1D			Da		
	Occasionally present	Zone 21	II		2D			Db	
	Does not occur or only seldom for a short period	Zone 22	II			3D			Dc

Zone 0, 1 and 2



An Example of a typical zone activity would be filling a barrel of petrol in an enclosed area.

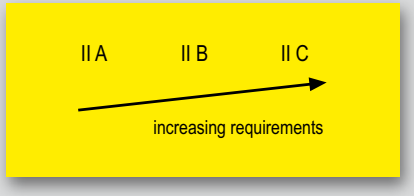
Zone 20, 21 and 22



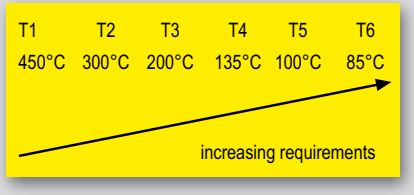
An example of a typical zone activity would be filling a grain silo in an enclosed area.

Explosion groups, temperature classes
The equipment groups and categories determine, in which zones the equipment should be installed, therefore the explosion groups and temperature classes determine, to which mediums inside the zones, the equipment is suited. The type of protection used is not a mark of quality but is instead a constructive solution for selecting equipment for explosion protection.

Division into explosion groups
Explosion proof equipment for gases, mists and vapors is divided into three explosion groups (IIA-IIB-IIC) according to the type of protection being used. The explosion group is a means to measure the ignitability of gases (potentially explosive atmospheres). The equipment requirements increase from II A to II C.



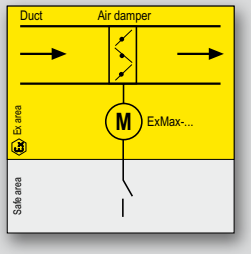
Division into temperature classes
Explosion proof equipment, installed within the Ex area, is divided into 6 temperature classes (T1 to T6). Temperature class is not – as it is often wrongly believed – the operating temperature range of the equipment, but the maximum permissible surface temperature of the equipment, in relation to + 40°C ambient temperature on any surface area, and should not be exceeded at any time. The maximum surface temperature must remain below the ignition temperature of the surrounding medium at all times. The equipment requirements increase from T1 to T6.



Ex applications

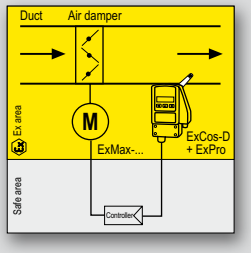
Air safety dampers • Air control dampers • Fire/smoke dampers

Air damper control



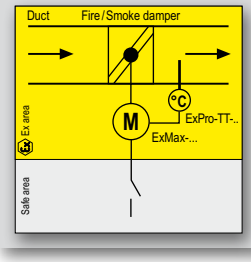
Schischek actuators are approved for direct installation and operation in explosion risk areas, as they are of the highest explosion groups and temperature class and are suitable for all gases, vapours, steam and dust. The electrical connection is made via an explosion proof terminal box (type ExBox-...). Please ensure during installation that all cables are securely fixed and connected in such a way that they are protected from mechanical damage.

Automatic air damper control



The automatic damper control system consists of an actuator and a ExCos-D transducer with ExPro-CT… probe. The combination can be installed directly into the Ex area. The transducer converts the probe signal into an active signal (0...10 VDC or 4...20 mA) for input in a PLC system. The output signal from the controller goes directly to the actuator. Between the sensor and controller there is no need for an Ex i module, or an intrinsically safe (IS) wiring method either. For the actuator and transducer the maximum permissible surface temperature(s) has to be taken into account.

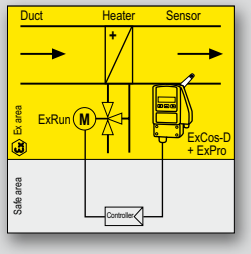
Control of fire/smoke dampers



In applications for fire/smoke dampers, the actuator has to reliably return the damper to its safety position via an external switch/contact. The actuator will return the damper to its safety position by an internal spring. The contact comes from a safety thermal trigger type ExPro-TT-.. which is directly connected to the actuator.

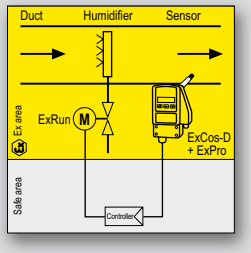
Heating • Cooling • Humidification • Diff.pressure control • VAV

Heating/cooling control



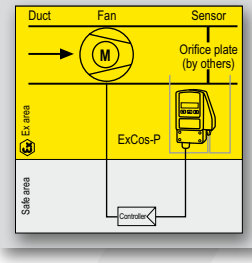
The heating/cooling control system consists of an actuator and a ExCos-D transducer with ExPro-CT… probe. The combination can be installed directly into the Ex area. The transducer converts the probe signal into an active signal (0...10 VDC or 4...20 mA) for input in a PLC system. The output signal from the controller goes directly to the actuator. Between the sensor and controller there is no need for an Ex-i module, or an intrinsically safe (IS) wiring method either. For the actuator and transducer the maximum permissible surface temperature(s) has to be taken into account.

Humidity control



The humidity control system consists of a ExRun valve actuator and an ExCos-D transducer with ExPro-CF… probe. The combination can be installed directly into the Ex area. The transducer converts the probe signal into an active signal (0...10 VDC or 4...20 mA) for input in a PLC system. The output signal from the controller goes directly to the actuator. Between the sensor and controller there is no need for an Ex-i module , or an intrinsically safe (IS) wiring method either. For the actuator and transducer the maximum permissible surface temperature(s) has to be taken into account.

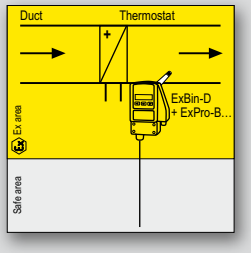
Differencial pressure control/VAV



The DP control system consists of an actuator and a differential pressure ExCos-P transducer. The combination can be installed directly into the Ex area. The transducer converts the differential pressure signal into an active signal (0...10 VDC or 4...20 mA) for input in a PLC system. The output signal from the controller goes directly to the actuator. Between the sensor and controller is no need for an Ex-i module , or an intrinsically safe (IS) wiring method either. The controller, situated in the safe area will, depending on changing circumstances will monitor, control a fan (must be Ex proof) or a modulating damper actuator (also Ex proof) to maintain the required air volume/pressure.

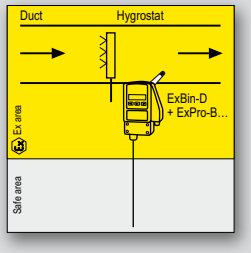
Thermostats • Humidistats • Pressurestats • Filter monitoring

Thermostats



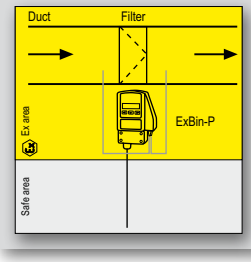
ExBin-D… modules with ExPro-BT… is a sensor probe with a thermostat for use in explosion proof areas. No intrinsic safe electrical circuit and no transducer in the electrical control-panel are necessary. The module should be installed directly into Ex area, depending on demand in zone 1, 2, 21 or 22. The output contact can be used for sequence functions (relays, contacts, direct circuit, …).

Hygrostats



ExBin-D… modules with ExPro-BF… is a sensor probe with a hygrostat for use in explosion proof areas. No intrinsic safe electrical circuit and no transducer in the electrical control-panel are necessary. The module should be installed directly into Ex area, depending on demand in zone 1, 2, 21 or 22. The output contact can be used for sequence functions (relays, contacts, direct circuit, …).

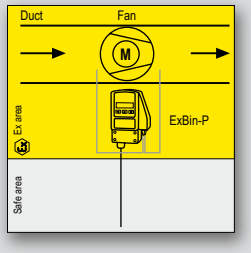
Filter monitoring



ExBin-P… modules are pressostats like Ex-differential pressure switches, e.g. for filter monitoring in explosion proof areas. No intrinsic safe electrical circuit and, no transducer in the electrical control-panel are necessary. The module should be installed directly into Ex area, depending on demand in zone 1, 2, 21 or 22. The output contact can be used for sequence functions (relays, contacts, direct circuit, …).

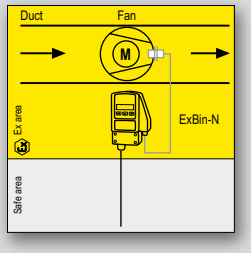
Fan belt monitoring • Frost protection

Drive belt monitoring with differential pressure sensor/air paddle



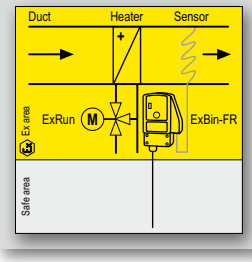
ExBin-P… modules are pressostats like Ex-differential pressure switches, e.g. for fan belt monitoring in explosion proof areas. No intrinsic safe electrical circuit and, no transducer in the electrical control-panel are necessary. The module should be installed directly into Ex area, depending on demand in zone 1, 2, 21 or 22. To indicate fan failure switching modules are delivered with integrated time running relay with delay on start up. The output contact can be used for sequence functions (relays, contacts, direct circuit, …).

Drive belt monitoring with inductive sensor



ExBin-N… modules with connected Namur sensor (inductive proximity switch) are especially for contact-free fan belt monitoring of ventilators, for use in explosion proof areas.
No intrinsic safe electrical circuit and, no transducer in the electrical control-panel are necessary. The module should be installed directly into Ex area, depending on demand in zone 1, 2, 21 or 22. To indicate fan failure switching modules are delivered with integrated time running relay with delay on start up. The output contact can be used for sequence functions (relays, contacts, direct circuit, …).

Frost protection



ExBin-FR… are sensors are for frost protection monitoring with a capillary as measuring element for use in explosion proof areas. No intrinsic safe electrical circuit are, no transducer in the electrical control-panel are necessary. The module should be installed directly into Ex area, depending on demand in zone 1, 2, 21 or 22. The output contact can be used for sequence functions (relays, contacts, direct circuit, …).

SIL “Safety Integrity Level”

Schischek “..Max” actuators with spring return according SIL

1. Functional Safety
The safety integrity level (SIL) allows to determine the potential risk for people, systems, devices and processes in case of a malfunction. Basis for the specification, design, and operation of safety instrumented systems is IEC standard 61508.

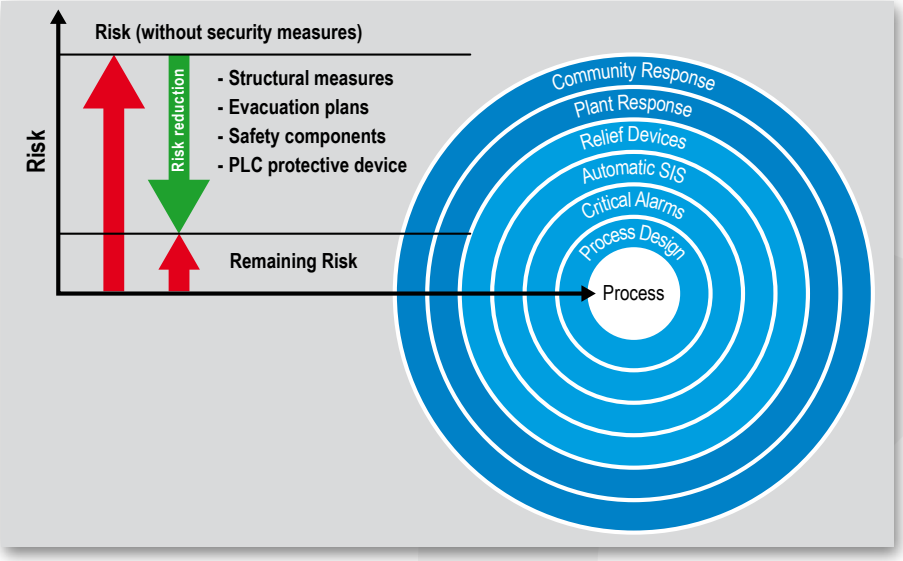
2. Standard
Standard 61508 defines safety depending on the level of integrity and the probability…
61508 encompasses its own risk assessment with which the safety integrity levels for the safety related devices and systems can be determined. The standard knows four levels, SIL 1 to SIL 4, characterizing safety levels for electrical and electronic devices. The SIL level is a measure for the safety function in case of a fault and answers the question: What is the probability of the system still functioning correctly in case of a fault?

3. Specific values

PFD = Probability of failure on demand
PFD_{av} directly describes the probability that the system will malfunction on demand, i.e. when a service request is made or during a continuous temperature measuring. The standard defines different levels of demand and high demand is, as the name implies, when safety related functions are required in a continuous mode of operation. Low demand is where the frequency of demands for operation made on a safety-related system is no greater than one per year. The differences are reflected in the mathematical treatment. High demand looks at failure probability per hour versus low demand at probability of failure per demand.

SIL – PFD_{av} – PFH – modes of operation

Safety Integrity Level (SIL)	Low demand mode operation	High demand mode operation
SIL4	≥ 10^{-5} to < 10^{-4}	≥ 10^{-9} to < 10^{-8}
SIL3	≥ 10^{-4} to < 10^{-3}	≥ 10^{-8} to < 10^{-7}
SIL2	≥ 10^{-3} to < 10^{-2}	≥ 10^{-7} to < 10^{-6}
SIL1	≥ 10^{-2} to < 10^{-1}	≥ 10^{-6} to < 10^{-5}



The goal is to assess the risk and to reduce it by use of suitable measures

MTBF = Mean Time Between Failure
MTBF is applicable only to repairable devices or systems and time between failures assumes that the device has been repaired after a failure. MTBF can be used to estimate failures per time interval. That allows to calculate the probability of a device failure during its life span (for example 10 years for Schischek actuators). MTBF for a given device can be estimated in life cycle tests. Those tests can be conducted under increased stress conditions of a highly accelerated life test, such as radiation, humidity, vibration, high temperatures etc.

Another way to determine MTBF is the reliability prediction, often used in early design stages where devices and systems are not yet available. That allows to evaluate if the target reliability can be achieved but, it requires detailed knowledge of the construction of a device and its components. Failure rates are available for many components and published in manuals. Values given in FIT, which stands for failure in time and is a unite defined as 1 FIT = 10^9 per hour.

MTBF is the reciprocal of the calculated failure rate of the component, which in turn is the sum of the application condition dependent failure rates of the individual components. When used in MTBF calculations FIT is usually used without the unit “failures in 10^9 hours.” If, for example, MTBF for a repairable device is affected by a component for which FIT is known, then MTBF can be calculated based on the following formula:

Formula:

$$\text{MTBF} = \frac{114.000 \text{ years}}{\text{FIT}}$$

Example:
for a FIT of 1140 follows MTBF = 100 years

MTTF = Mean Time To Failure
also used as average mean time to failure MTTFd. The importance of MTTF has been increased by the European Norm EN ISO 13849-1 in connection with machine safety.

MTTF is a statistical quantity based on test results or empirical data and does not constitute a guaranteed life cycle or failure free operating time.

MTTF is based on the reliability function R(t) and is valid under the assumption that that the device in consideration is “as new” after a repair.

SIL “Safety Integrity Level”

Schischek “..Max” actuators with spring return according SIL

MTTR = Mean Time To Repair
is a measure of how long it takes on average to repair a device after failure and is therefore important in conjuction with system availability.

MTTR also encompasses work and material planning and should be kept as short as possible.

λ = Failure Rate
The failure is the reciprocal of MTBF. (λ = 1 / MTBF)

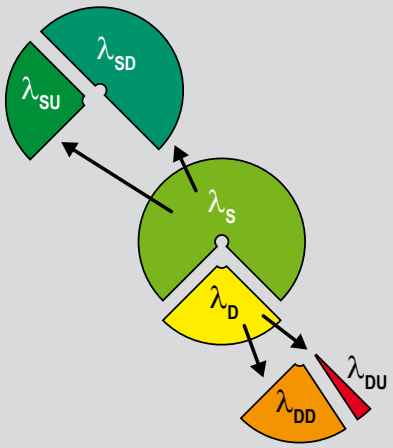
μ = Repair Rate
The repair rate is the reciprocal of MTTR. (λ = 1 / MTTR)

SFF = Safe Failure Fraction
SFF is the proportion of safe errors (λsafe) in relation to dangerous errors (λdangerous). The higher SFF the lower the probabilty of failure.

$\lambda_{total} = \lambda_S + \lambda_D$

$SFF = 1-\lambda_{DU}/\lambda_{total}$

λ_S = safe
λ_{SD} = safe detected
λ_{SU} = safe undetected
λ_D = dangerous
λ_{DD} = dangerous detected
λ_{DU} = dangerous undetected



HFT = Hardware Failure Tolerance
The hardware failure tolerance HFT together with the safe failure fraction SFF determines the safety integrity level SIL. HFT categorizes the amount of faults a system can endure without failing as a system. The higher HFT the higher is the system availability.

- HFT = 0: no redundancy, a single fault can result in loss of safety.
- HFT = 1: “simple” redundancy, at least two faults are necessary to cause a safety failure.
- HFT = 2: double redundancy, at least 3 faults are necessary to result in a loss of safety.

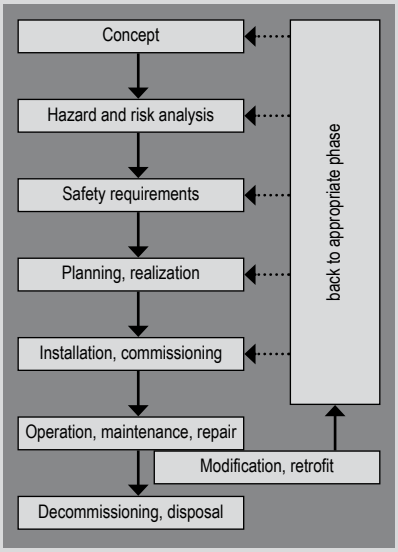
Since the safety function of all individual parts has to be taken into consideration a fully redundant architecture may be necessary depending on the required SIL level.

SFF – HFT – SIL – Type A, Type B

Safe Failure Fraction (SFF)	Hardware Fault Tolerance (Type A – simple subsystem)			Hardware Fault Tolerance (Type B – complex subsystem)		
	0	1	2	0	1 (0*)	2 (1*)
< 60%	SIL1	SIL2	SIL3	–	SIL1	SIL2
60%... < 90%	SIL2	SIL3	SIL4	SIL1	SIL2	SIL3
90%... < 99%	SIL3	SIL4	SIL4	SIL2	SIL3	SIL4
≥ 99%	SIL3	SIL4	SIL4	SIL3	SIL4	SIL4

* With proven-in-use demonstration acc. to IEC 61511 (only for SIL < 4)

Safety Lifecycle



Needed documents for certification:

- Product Specification
- Functional Specification
- Safety Requirement Specification
- Development plan
- Verification and Valdiation Plan
- Hardware development documents
- Software development documents
- Construction drawings
- Hardware Verification- and Testplans
- Hardware Test results
- Software Verifications and Testplans
- Software Test results
- Failure Mode and Effects Analysis (FMEA)
- Quantitativ verification of safety
- Technical customer documentation

Introduction

rotork®

For over fifty years, engineers have relied upon Rotork for the most innovative and dependable valve actuation and flow control solutions. From safety systems that may be needed just once in a lifetime to high precision controls that are constantly on the move, Rotork products remain the clear choice, worldwide.

Leaders in Flow Control

From its inception over 50 years ago, Rotork has grown to be a major international business with subsidiaries all around the world.

We are recognised as global leaders, designing and building the most reliable products, backed up by highly acclaimed customer service.

A genuine, long-term commitment to customers and partners underpins our culture of engineering excellence, making Rotork a consistently dependable choice for products and service.

Committed to Innovation

Throughout the company's history, our engineers have focused on solving customer challenges and developing new solutions with levels of engineering skill and creativity that our competitors still cannot match.

Some innovations are adopted almost immediately, whilst others may require thousands of hours of testing and certification before they can be offered to our customers.

With every product that Rotork develops, you can be sure of one thing: That quality and reliability are an integral part.

Serving the World

Rotork has always been committed to a global customer-base, supporting operations in some of the most remote and challenging environments.

We have established manufacturing facilities across the globe plus over 350 offices and regional centres of excellence. These provide our staff with all the training and support they need to deliver excellent service, wherever they are needed.

Whether you work directly with Rotork or engage through a partner, you can be confident that our products and support remain the best in the world.

Electric Control Valve Actuators (Extraction)

Linear and rotary actuators

CVA
range

- Linear: Thrust range 890 to 22,241 N (200 to 5,000 lbf)
- Rotary: Torque range 54.2 to 271 Nm (480 to 2,400 lbf.in)
- High performance, continuous unrestricted modulating duty - S9
- High resolution and repeatability
- Pakscan, HART®, Profibus®, Modbus and Foundation Fieldbus® available. Optional hard wired RIRO (Remote In Remote Out)
- Comprehensive data logging
- Watertight IP68 and explosionproof enclosures
- Programmable fail-to-position option
- Temp. range -30 to 70 °C (-22 to 158 °F) + Low Option
- 'Intrinsically Safe' control & instrumentation. Non-intrusive setup/calibration using *Bluetooth*® wireless technology
- Optional manual override

Linear, quarter-turn and rotary actuators

CMA
range

The Rotork CMA is suitable for almost all linear, quarter-turn and rotary control valve and pump applications requiring exact position control and unrestricted continuous modulation.

- Linear: Thrust range 178 to 3,336 N (40 to 750 lbf)
- Rotary/QT: Torque range 2.3 to 113 Nm (20 to 1,000 lbf.in)
- Permanently lubricated and maintenance free drive train
- Accurate and repeatable position control
- Pakscan, HART, Profibus, Modbus and Foundation Fieldbus available. Optional hard wired RIRO (Remote In Remote Out)
- Temp. range -30 to 70 °C (-22 to 158 °F) + Low Option
- Electronic thrust/torque limiting
- Manual override standard

IQ – multi-turn actuators

IQ
range

Intelligent communication options and multilingual display.
The IQ offers multi- and quarter-turn isolating/regulating duty.

- Torque range:
  Multi-turn direct drive 14 to 3,000 Nm (10 to 2,200 lbf.ft)
  Multi-turn with IS or IB gearbox, up to 40,800 Nm (30,000 lbf.ft)
  Quarter-turn with IW gearbox up to 250,000 Nm (185,000 lbf.ft)
- Complete integrated motor control
- Infra-red or *Bluetooth*® wireless technology for simple set-up and adjustment
- Digital, analogue or bus system remote control and status reporting
- Comprehensive software tools for plant records and valve performance analysis

ROM – compact and lightweight design

ROM
range

Building on the simple specification of the ROM/RBM range, Rotork now offer a more complete control solution with the introduction of the new ROMpak.
ROMpak introduces: Local controls for ease of operation; Dual local indicators – mechanical and LED; Phase rotation correction for ease of installation. Options include: *Bluetooth* non-intrusive configuration, bus communication, Folomatic/CPT and datalogger.

- Torque range 35 to 650 Nm (25 to 480 lbf.ft)
- Efficient yet simple gearing
- Wide range of supply voltages available
- Single-phase, three-phase and DC options
- Watertight IP67 rating

Fluid Power Actuators (Extraction)

Vane actuators

K-TORK range

- Pneumatic actuators in double-acting and spring-return configurations
- Compact no-sideload, constant-torque design with output to 16,950 Nm (150,000 lbf.in)
- Complies with EN60529 (1991) + (A1:2000) for IP67M
- Complies with ANSI/AWWA C540-02 and C541-08
- Conforms to VDI/VDE 3485 control accessory mounting standards
- Modulating accuracy of 0.25 % or better

Pneumatic rack and pinion actuator

GT range

- Pneumatic rack and pinion actuator
- Double-acting and spring-return configurations
- Constant torque range from 3 to 15880 Nm
- Valve interface according ISO 5211/DIN 3337
- Solenoid valve interface according NAMUR VDI/VDE 3845
- Feedback/accessory interface according NAMUR VDI/VDE 3845
- Standard certifications: ATEX, CE, SIL3, GOST, RTN
- Options: epoxy-coating, hardanodizing, electric nickel plating, stainless steel pinion, speed regulation (other possible, on request)
- Single limit stop or double limit stop version

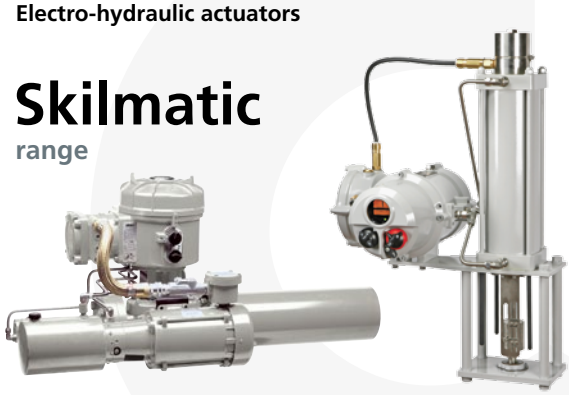
Compact scotch yoke actuators

RC200 RCI200 ranges

- Extremely compact scotch yoke pneumatic actuator
- Double-acting and spring-return configurations
- Contained spring module for safety and convenience
- Torque output to 4,400 Nm (38,000 lbf.in)
- Valve mounting dimensions per ISO 5211/DIN 3337
- Compatible with SVM partial stroke testing
- Certified suitable for use at SIL3 as a single device in accordance with IEC 61508
- Actuators certified in accordance with PED 97/23/EC
- Actuators certified to ATEX 94/9/EC

Electro-hydraulic actuators

Skilmatic range



Skilmatic range SIL3 certified Intelligent, self-contained electro-hydraulic actuators feature Rotork double-sealed terminal compartments and user displays for position, pressure, diagnostics and fault indication.

- Linear thrusts: 1.7 to 5,500 kN (382 to 1,230,000 lbf)
  ¼ turn torques: 65 to 600,000 Nm (575 to 5,000,000 lbf.in)
- Two-position, ESD or modulating operation in spring-return or double-acting executions
- Single-phase, three-phase or 24 VDC power supply
- Non-intrusive infrared configuration and *Bluetooth*® data transfer
- Optional bus communications via all major protocols
- Partial stroke test capability
- Watertight or explosionproof ATEX, FM, CSA IEC and GOST

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