

Automation

SMARTRONIC AS-i

R1313

Type Series Booklet



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Type Series Booklet SMARTRONIC AS-i

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Automation

Positioner

SMARTRONIC AS-i



Main applications

- Water
- Waste water
- Energy
- Industry
- Shipbuilding
- Oil and gas

Operating data

Table 1: Operating properties

Ambient characteristics	Value
Min. permissible temperature [°C]	≥ -20
Max. permissible temperature [°C]	≤ +80
Enclosure	IP67 to EN 60529
Electromagnetic compatibility	To European Electromagnetic Compatibility Directive 2014/30/EU
Vibrations	IEC 68-2-6 Test Fc
Compressed air purity class	ISO 8573.1 Class 5

Design details

Design

- SMARTRONIC AS-i is a digital, electro-pneumatic positioner for connection to an AS-i field bus.
- For automation of:
 - Pneumatic quarter-turn actuators of the ACTAIR NG and DYNACTAIR NG type series
 - Quarter-turn actuators with standardised VDI/VDE 3845 interface
 - Linear actuators to NAMUR
- Position indicator under sight glass for remote indication
- SMARTRONIC AS-i features a LEXAN housing (polycarbonate with 20% glass fibre) accommodating the following 3 components:
 - Electrical connection
 - Printed circuit board
 - Control air supply
- The compressed air supply is connected via the base:
 - Direct (without piping) for the ACTAIR NG and DYNACTAIR NG type series
 - Via external piping for quarter-turn actuators with standardised VDI/VDE 3845 interface and for linear actuators to NAMUR
- The actuating times for open/close operations are set via the easily accessible air flow reducer.
- The autoadaptive angle sensor adjusts its travel automatically to the actuator travel.

Product benefits

- Positioner for connection to an AS-i field bus.
- Intuitive, user-friendly interface for local control and configuration via display and pushbutton
- Quick, straightforward installation and commissioning thanks to auto-calibration
- Mounted directly on pneumatic actuators without installation kits and with direct compressed air supply (without piping)
- Fully enclosed design avoids protruding, moving components

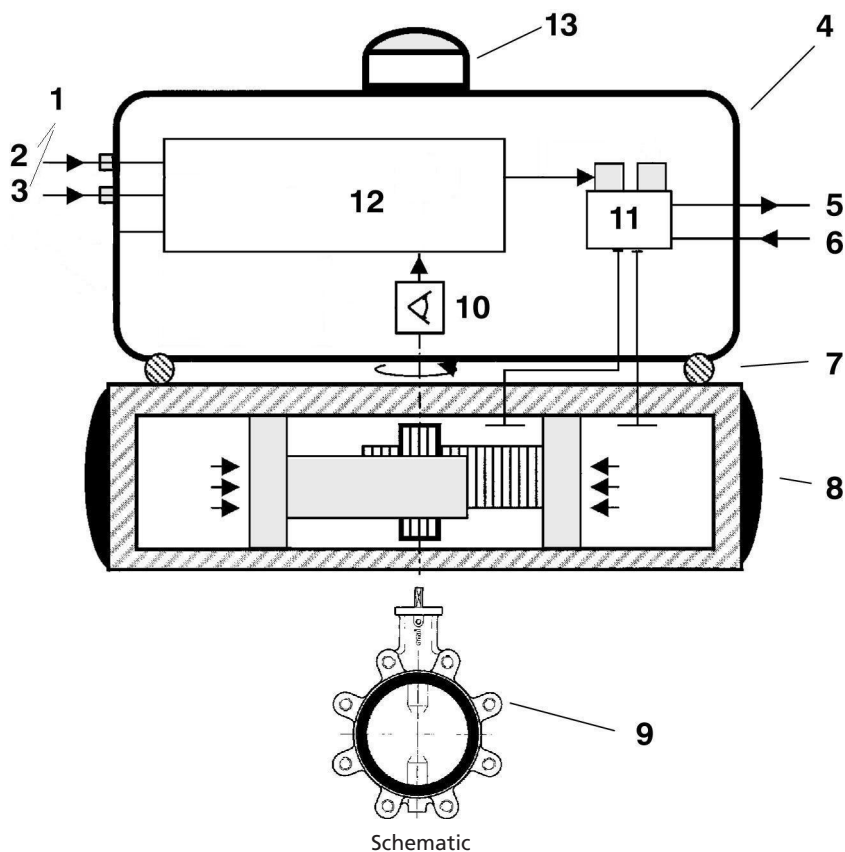
Related documents

Table 2: Information/documents

Document	Reference number
SMARTRONIC As-i operating manual	8520.8061

Technical data

Functional schematic



Schematic

Key:

1. Connections
2. Connection to user interface (MMI)
Both the configuration of SMARTRONIC AS-i and real-time display of process data are performed via a serial interface, Ethernet or Wi-Fi using a computer.
3. Connection to process control system
The open- and closed-loop control information of SMARTRONIC AS-i can be transmitted to the PLC or the monitoring system via the AS-i field bus.
4. SMARTRONIC AS-i
5. Exhaust
6. Control air supply
7. VDI/VDE interface
8. Pneumatic actuator
9. Valve
10. Position monitoring
The valve position is determined by an angle sensor mounted on the actuator's actuating shaft. This information is transmitted to the microprocessor and the PLC for processing. The angle sensor automatically adapts sensor travel to actuator travel.
A 4-20 mA signal provides actual-position feedback to the process control system.
11. Integrated pneumatic control
The pneumatic solenoid valve is integrated in the SMARTRONIC AS-i. The compressed air is supplied via the VDI/VDE interface, external pneumatic connections are not required (up to ACTAIR NG 120 and DYNACTAIR NG 50). The pneumatic directional control valve is a 4/3 directional control valve. It is controlled via two pilot solenoid valves. The fail-safe (Fail Open or Fail Close) position in the event of a power supply failure must be specified for each unit in the purchase order.
12. Integrated microprocessor
13. Visual position indicator

Technical specification

Housing	
Material	LEXAN (polycarbonate with 20% glass fibre)
Position indicator	Visual position indicator on the cover
Compressed air connection	2 x 1/4" gas ports
Electrical connection	2 cable glands for 6 to 12 mm cable diameters
Integrated connectors	For flexible conductors with a cross-section of 0.14 mm ² (26 AWG) to 0.5 mm ² (20 AWG) For flexible conductors with wire end sleeve with a cross-section of 0.25 mm ² (23 AWG) to 0.5 mm ² (20 AWG)
Weight	1,7 kg

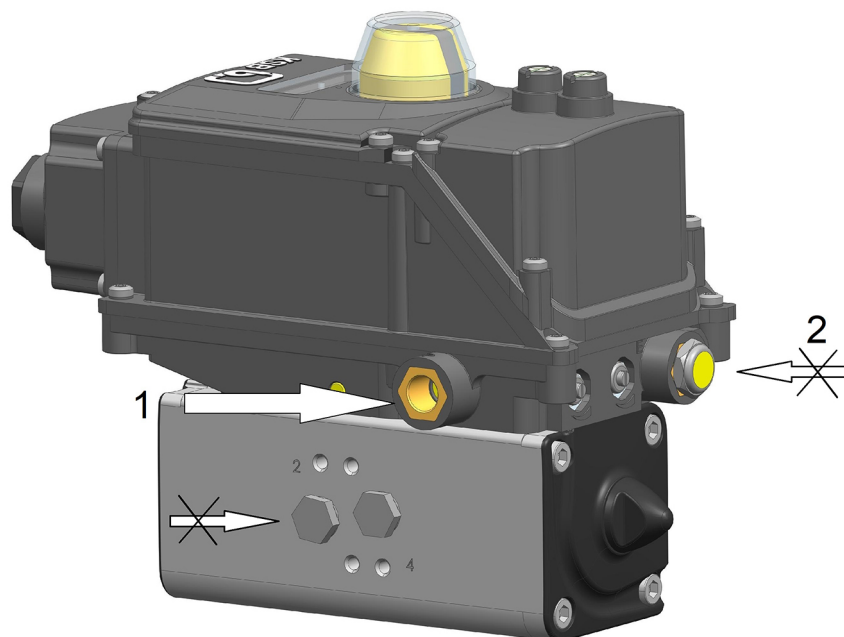
Control air supply	
Control air supply port	Port "P", 1/4" gas port, filter fitted in the base
Exhaust port	Port "E", 1/4" gas port, with silencer or for connection to an exhaust system
Operating pressure	3 to 8 bar (44 to 115 psi)
Filtration level	ISO 8573-1 Class 7 (< 40 µm)
Dew point	ISO 8573-1 Class 5 (< 7 °C, and in all cases 5 °C below ambient temperature)
Lubrication	ISO 8573-1 Class 5 (< 25 mg/m ³)
Max. flow rate	400 NI/min (at 25 °C)
Control air consumption in normal position	Zero

AS-i field bus	
Power consumption	4 W max.
Power supply	Via AS-i field bus (26.5 V DC to 31.5 V DC)
Profile	S-7.A.x.5
Max. number of slave components	62
Specifications	V3.0 (compatible with AS-i M4 master and higher)

Compressed air supply

The control air is connected to the SMARTRONIC AS-i positioner.

A sintered bronze filter is fitted in the housing's inlet port for safety reasons to prevent clogging and damage to the pneumatic directional control valve.



Illustration

To prevent any premature wear of mechanical components, especially actuator components, the use of oil-lubricated control air (between 5 and 25 mg/m³) is recommended.

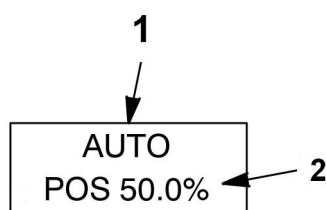
1 - Pneumatic supply port

2 - Exhaust

Pneumatic supply port: port "P"

Exhaust port: port "E", with silencer or for connection to an exhaust system

Display



Display schematic

1

Operating mode

AUTO: automatic positioning (4-20 mA setpoint)

MANU: manual positioning (local control)

NO CALIB: SMARTRONIC AS-i is not calibrated

The display provides information about the operating mode and the valve position.

If the instrument has never been calibrated, the angle sensor value is displayed (SSR).

Text display may be adjusted according to the positioner's installation position.

2

No communication with AS-i: "ASi com fault"

Communication with AS-i: valve position (%)

Materials

Materials of SMARTRONIC AS-i

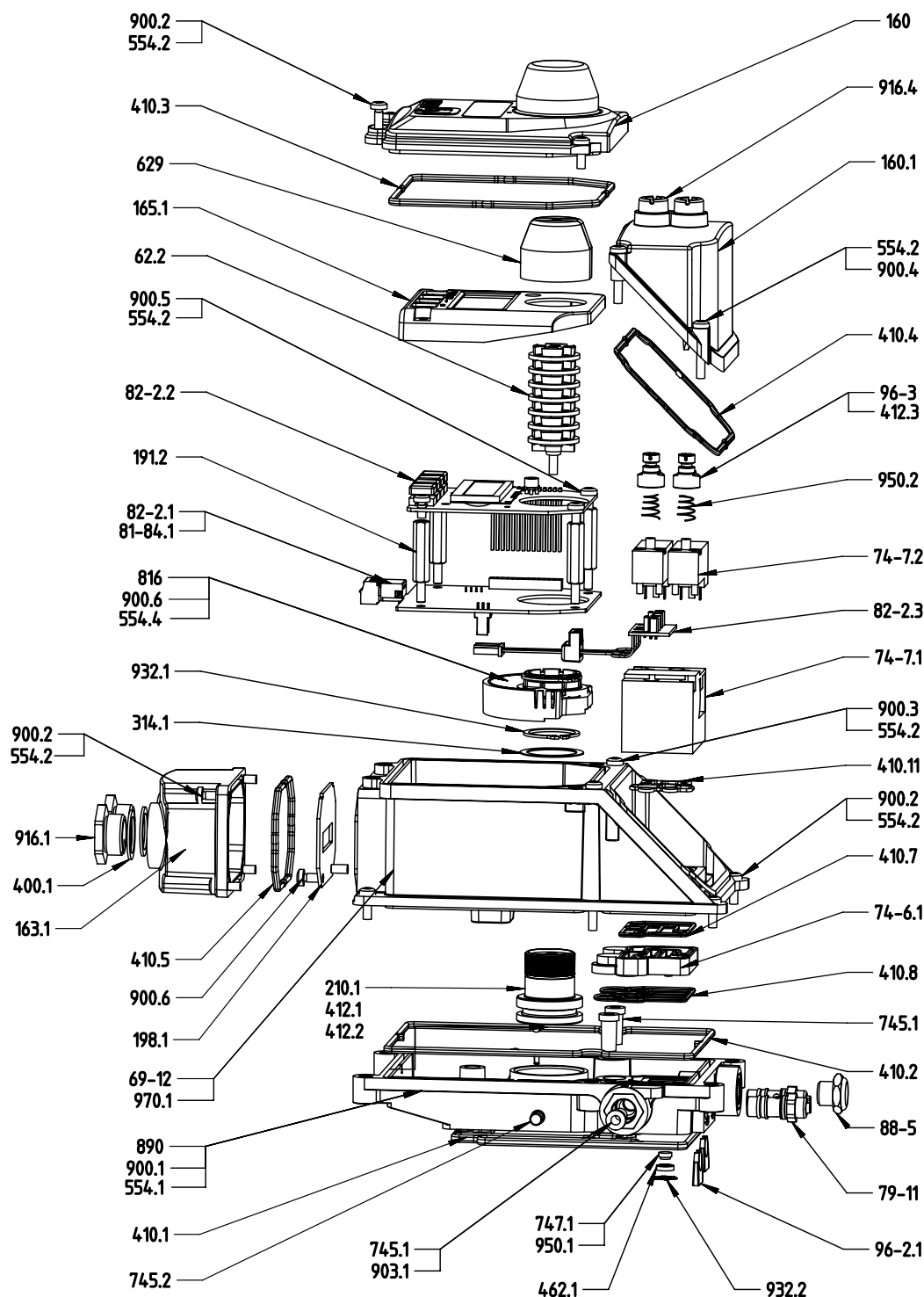


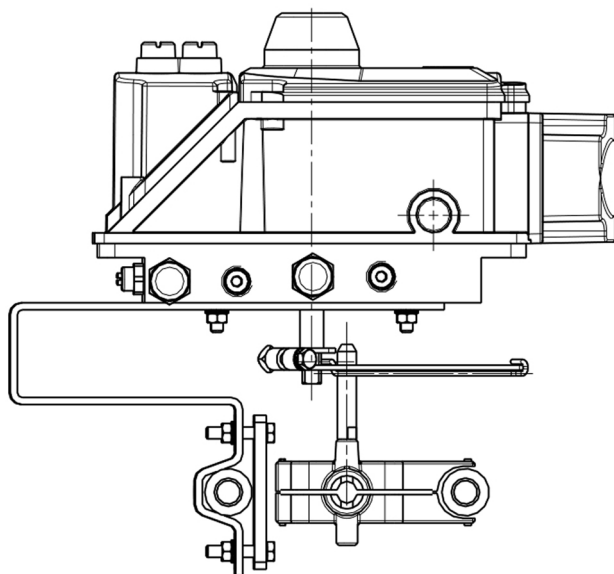
Fig. 1: Exploded view R1313

Table 3: List of components

Part No.	Description	Materials
160	Cover	LEXAN (polycarbonate with 20% glass fibre)
160.1	Cover (directional control valve)	LEXAN (polycarbonate with 20% glass fibre)
163.1	Housing (directional control valve)	LEXAN (polycarbonate with 20% glass fibre)
165.1	Cover	
191.2	PCB support	Nickel-plated brass
198.1	Connection plate	
210.1	Shaft	Polycarbonate SM60/0
314.1	Anti-friction disc	Stainless steel, type 304L
410.1	Profile seal	NBR70
410.2	Profile seal	NBR70
410.3	Profile seal	NBR70
410.4	Profile seal	NBR70
410.5	Profile seal	NBR70
410.7	Profile seal	NBR70
410.8	Profile seal	NBR70
410.11	Profile seal	NBR70
412.1	O-ring	NBR70
412.2	O-ring	NBR70
412.3	O-ring	NBR70
462.1	Bearing disc	
554.1	Washer	Stainless steel
554.2	Washer	Stainless steel
554.4	Serrated lock washer	Steel
629	Position indicator assembly	
62-2	Adjustable cams assembly	
69-12	Housing	LEXAN (polycarbonate with 20% glass fibre)
745.1	Sintered filter	
745.2	Sintered filter	Bronze
74-6.1	Distribution plate	
74-7.1	Directional control valve	
74-7.2	Pilot valve	
747.1	Profile seal, valve	
79-11	Flow limiter RP 1/8"	
81-84.1	Circuit diagram	
816	Angle sensor assembly	
817.1	Plug	
82-2.1	Printed circuit board	
82-2.2	Communication PCB assembly	
88-5	Silencer 1/4" BSP	Bronze
890	Base	Polycarbonate SM60/0
96-2.1	Locking plate	Polycarbonate SM60/0
96-3	Manual override	Polycarbonate SM60/0
900.1	Screw	A2-70
900.2	Screw	A2-70
900.3	Screw	A2-70
900.4	Screw	A2-70
900.5	Screw	A2-70
900.6	Self-tapping screw	A2-80
903.1	Plug	
916.1	Screw plug	
916.2	Protecting plug	Rubber
916.4	Elastomer string	NBR HT 70
932.1	Circlip	Steel
932.2	Reinforced circlip	Steel
950.1	Closing spring	
950.2	Manual override spring, lockable	Stainless steel
970.1	Sticker	Adhesive polyester

Variants

Adaptation for mounting on linear actuators to NAMUR

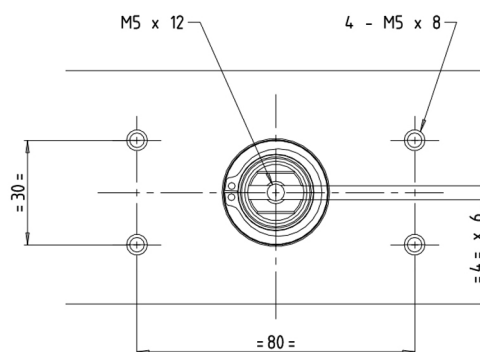
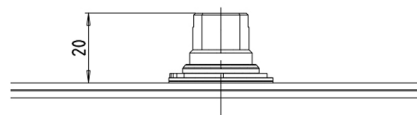


Front view

Mounting flange for actuators with VDI/VDE 3845 interface, not applicable to ACTAIR and DYNACTAIR



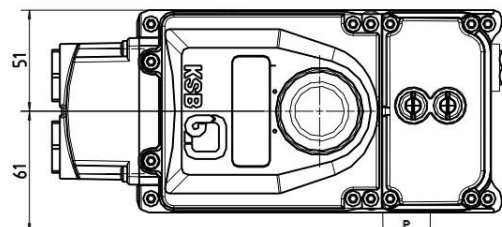
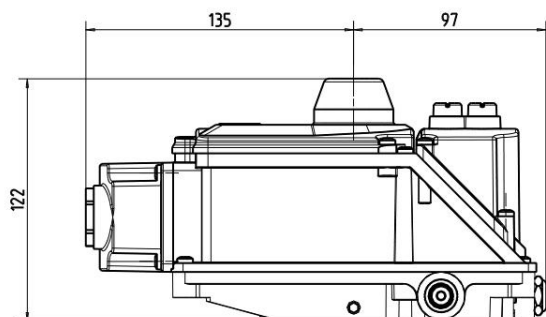
Front view



Dimensions to VDI/VDE 3845

Dimensions

Dimensions of SMARTRONIC AS-i



Type R1313

Purchase order specifications
Table 4: Type code for SMARTRONIC AS-i R1313

SMARTRONIC AS-i	R001313	0	0	0	0	0	0	0	.	R	7	.	.	2	1	0	6	6	0
Open/closed position signalling		0	0	0	0														
Auto-calibration																			
Position						0													
Fictitious open/closed																			
Actual-position feedback								0											
None																			
Electrical output									0										
With plug									1										
2 cable glands, plastic, M20, IP67 (diameter: 6 to 12 mm)									2										
2 cable glands, metal, M20 IP67 (diameter: 6 to 12)																			
Solenoid valve																			
4/3 centre closed										R									
Voltage, solenoid valve											7								
24 V DC																			
Actuator													2						
ACTAIR 3 to 200, stop position: Closed													3						
ACTAIR 3 to 200, stop position: Open													4						
ACTAIR 400 to 1600													5						
DYNACTAIR 1.5 to 25 normally closed													6						
DYNACTAIR 1.5 to 25 normally open													7						
DYNACTAIR 50 to 100 normally closed													A						
DYNACTAIR 50 to 100 normally open													B						
DYNACTAIR 200 to 800 normally closed													C						
DYNACTAIR 200 to 800 normally open													D						
ACTAIR NG 2 to 700													E						
DYNACTAIR NG 1 to 350 normally closed													W						
DYNACTAIR NG 1 to 350 normally open													Y						
Pneumatic quarter-turn actuator, double-acting													Z						
Pneumatic quarter-turn actuator, single-acting																			
Pneumatic linear actuator, double-acting																			
Pneumatic linear actuator, single-acting																			
Normal position																			
Fail Close in the event of power failure													A						
Fail Open in the event of power failure													B						
Fail Last in the event of power failure													C						
SMARTRONIC														2					
Intelligent positioner																			
Field bus															1				
AS-i S-7.A.*.5																			
Heating resistor																0			
None																			
Display																	6		
3D sight glass																			
Configuration																		0	
None																			
Diagnosis																			0
None																			



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