

Automation

SMARTRONIC AS-i

Positioner
SMARTRONIC AS-i R1313

Type Series Booklet



Legal information/Copyright

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

Operating data overview

Characteristic	Value
Enclosure	IP 67 to EN 60529
Electromagnetic compatibility	In conformity with the European EMC Directive 2004/108/EC and NF EN 61000-6-2/NF EN 61000-6-4
Wi-Fi version	In conformity with the European 2004/108/EC Directive (R and TTE)
Operating temperature	-20 °C to +80 °C
Vibrations	To IEC 68-2-6 Test Fc
Compressed air purity class	ISO 8573-1 Class 5

Design details

- SMARTRONIC AS-i is a digital, electro-pneumatic positioner for connection to an AS-i field bus.
- Used for the control of:
 - Quarter-turn actuators from the ACTAIR and DYNACTAIR type series

- Quarter-turn actuators with standardised VDI/VDE 3845 interface
- Linear actuators to NAMUR
- SMARTRONIC AS-i features a LEXAN housing (polycarbonate with 20% glass fibre) accommodating the following 3 components:
 - Electrical connection
 - Printed circuit board
 - Poppet valve with piezoelectric pilot valve (compressed air supply)
- The compressed air supply is connected via the base:
 - Direct connection to ACTAIR and DYNACTAIR
 - Connection 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.
- It is connected to the actuator in two ways: mechanically to the actuator itself and pneumatically to the inside of the actuator.

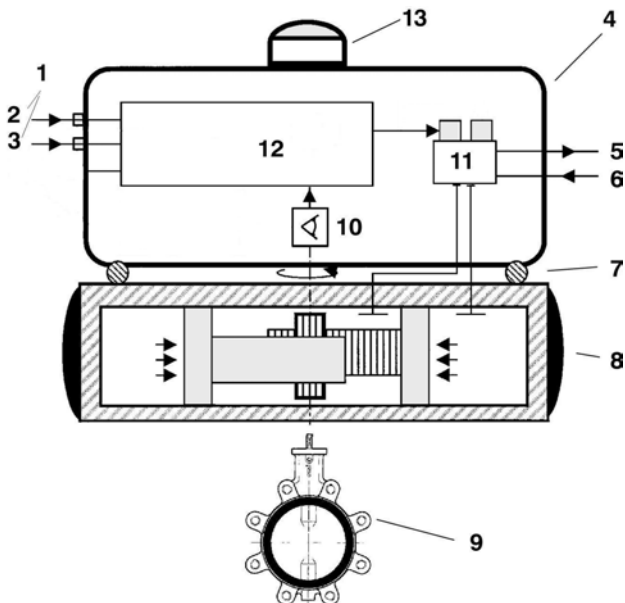
Product benefits

- Quick, straightforward installation and commissioning thanks to auto-calibration which allows optimal positioner adjustment. Can be quickly adapted to all types of actuators.
- Intuitive, user-friendly interface for local control and configuration via display and buttons
- Negligible consumption irrespective of position
- Position indicator under sight glass for remote indication
- Fully enclosed design avoids protruding, moving components
- The adjustable cams are reliable and facilitate the setting of the open/closed positions.
- Direct mounting to ACTAIR and DYNACTAIR
 - No installation components required (bracket and socket)
 - The compressed air is directly supplied via the VDI/VDE interface.
- The autoadaptive angle sensor adjusts itself to the actuator stroke.

Related documents

Other applicable documents

Document	Reference No.
Operating manual	8520.8061

Technical data
Functional schematic


1. Connections

2. 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 PC.

3. Process control system

The closed- and open-loop control information from SMARTRONIC AS-i can be transmitted to the PLC and the monitoring PC via a cable or field bus (Profibus DP).

4. SMARTRONIC AS-i

5. Exhaust

6. Compressed air supply

7. VDI/VDE interface

8. Pneumatic actuator

9. Valve

10. Position monitoring

The valve position is recorded by the angle sensor which is mounted on the actuator's stem. This information is transmitted to the microprocessor and the PLC for processing. The angle sensor is fitted with a stop mechanism which also ensures that the angle sensor is automatically adjusted to the actuator's stroke.

A 4-20 mA signal allows actual-position feedback to the process control system.

11. Integrated pneumatic control

The pneumatic directional control valve is fitted into the SMARTRONIC AS-i. The compressed air is supplied via the VDI/VDE interface, external connections are not required (up to ACTAIR 200 and DYNACTAIR 100). The pneumatic directional control valve is a 4/3 directional control valve. It is controlled via two pilot valves. The fail-safe (Fail Open or Fail Close) position in the event of a power supply failure is 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
Internal 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 and without insulating input sleeve, with a cross-section of 0.25 mm ² (23 AWG) to 0.5 mm ² (20 AWG)
Weight	1.7 kg

Compressed air supply	
Compressed air supply	Port "P" with filter fitted in the base
Exhaust	1/4" gas port, marked "E", with silencer or exhaust system connection
Operating pressure	2 to 8 bar (30 to 115 psi)
Filtration	ISO 8573-1 Class 5 (< 40 µm)
Dew point	ISO 8573-1 Class 5 (pressure dew point temperature < 7 °C, and in all cases a dew point temperature which is 5 °C below the ambient temperature)
Lubrication	ISO 8573-1 Class 5 (< 25 mg/m ³)
Max. flow rate	400 Nl/min
Consumption in "at rest" 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
Specification	V3.0 (compatible with AS-i M4 master and higher)

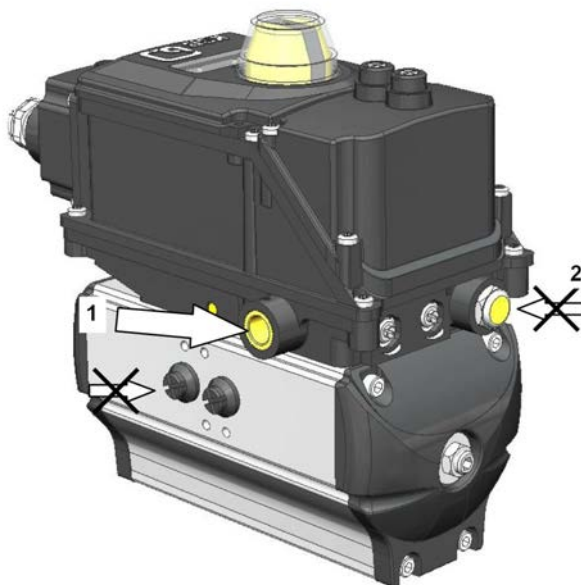
Compressed air supply

The compressed air is connected to the SMARTRONIC AS-i.

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.

The operating pressure ranges from 2 to 7 bar.

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



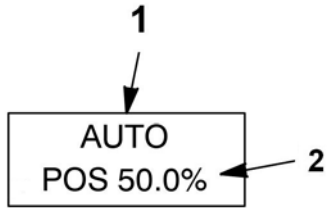
1 - Compressed air supply

2 - Exhaust

Compressed air supply: port "P"

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

Display



1
Operating mode:

2
No communication with AS-i:
<< ASi com fault >>

AUTO: Automatic positioning (4-20 mA setpoint) Communication with AS-i:
Valve position (%)

MANU: Manual positioning
(local control)

NO CALIB: SMARTRONIC AS-i
is not calibrated

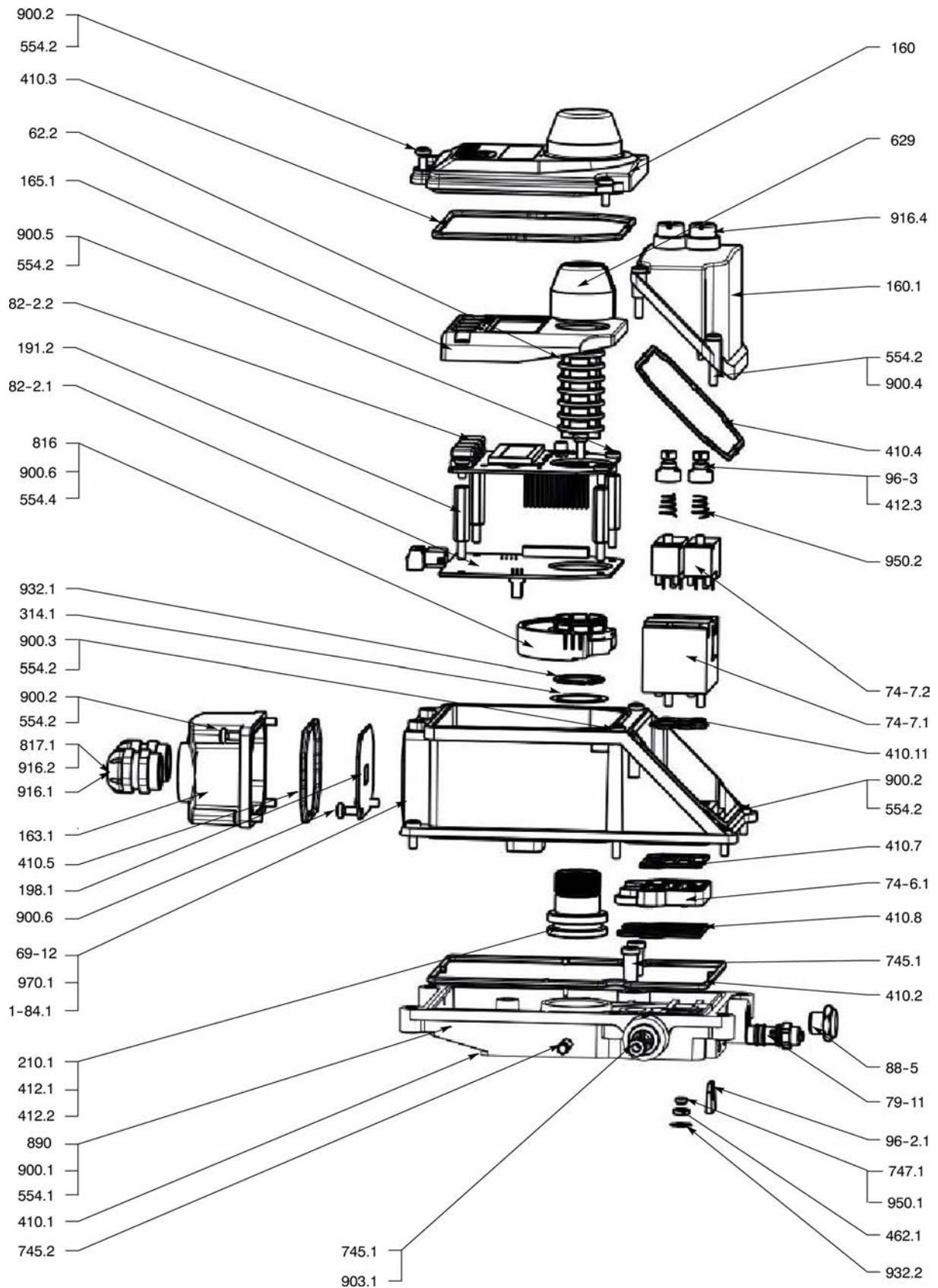
The display provides information about the operating mode and the valve position.

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.

Materials

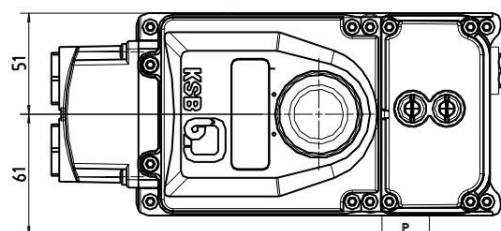
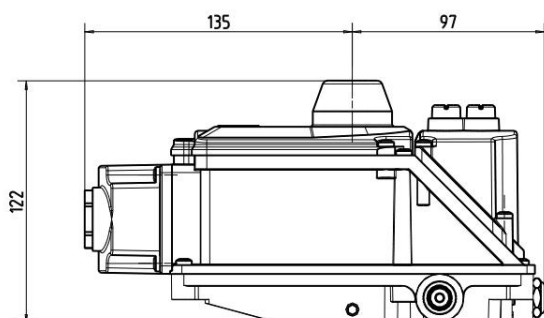
Exploded view



List of components

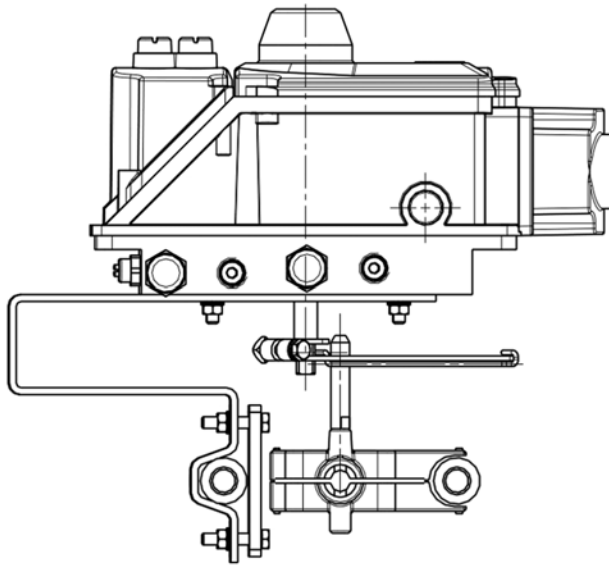
Part No.	Description	Material
160	Cover	LEXAN (PC with 20 % glass fibre)
160.1	Cover (directional control valve)	LEXAN (PC with 20 % glass fibre)
163.1	Housing (directional control valve)	LEXAN (PC with 20 % glass fibre)
165.1	Cover	
191.2	Support	Nickel-plated brass
198.1	Connection plate	
210.1	Actuating stem	Polycarbonate SM60/0
314.1	Stop disc	Stainless steel 304L
410.1	Profile joint	NBR70
410.2	Profile joint	NBR70
410.3	Profile joint	NBR70
410.4	Profile joint	NBR70
410.5	Profile joint	NBR70
410.7	Profile joint	NBR70
410.8	Profile joint	NBR70
410.11	Profile joint	NBR70
412.1	O-ring	NBR70
412.2	O-ring	NBR70
412.3	O-ring	NBR70
462.1	Spring washer	
554.1	Washer	Stainless steel
554.2	Washer	Stainless steel
554.4	Serrated washer	Steel
629	Visual indicator assembly	
62-2	Adjustable cams assembly	
69-12	Housing	LEXAN (polycarbonate with 20% glass fibre)
745.1	Filter	

Part No.	Description	Material
745.2	Filter	Bronze
74-6.1	Distribution plate	
74-7.1	Directional control valve	
74-7.2	Pilot valve	
747.1	Profile joint (valve)	
79-11	Flow reducer RP 1/8"	
81-84.1	Circuit diagram	
816	Angle sensor assembly	
817.1	Plug	
82-2.1	Printed circuit board	
82-2.2	COM printed circuit board assembly	
88-5	1/4" BSP silencer	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	Socket head cap screw	A2-70
900.3	Socket head cap screw	A2-70
900.4	Socket head cap screw	A2-70
900.5	Socket head cap screw	A2-70
900.6	Sheet metal screw	A2-80
903.1	Plug	
916.1	Screw plug	
916.2	Protective cap	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	Plate	Adhesive polyester

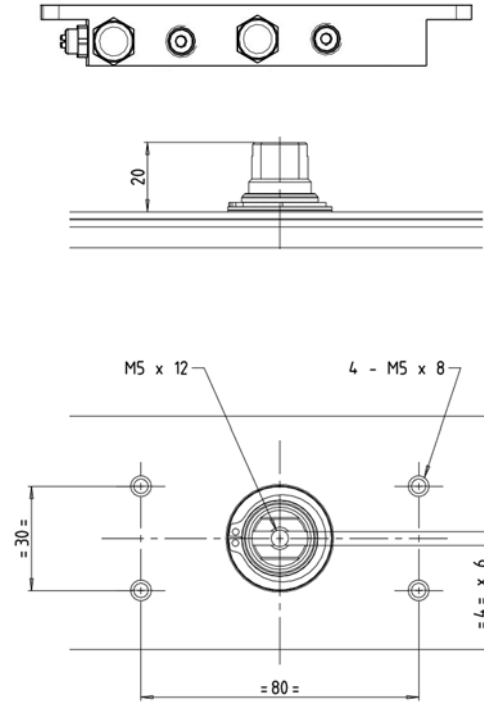
Dimensions


Variants

Mounting to linear actuator NAMUR



Base for actuators with VDI/VE 3845 interface, not applicable to ACTAIR and DYNACTAIR



Purchase order data

SMARTRONIC AS-i	R001313	0	0	0	0	0	0	0	.	R	7	.	.	2	1	0	6	0	0	
Sensors																				
Auto-calibration		0	0	0	0															
Position																				
Fictitious open/closed						0														
Actual-position feedback																				
None							0													
Electrical output																				
With plug									0											
2 cable glands, plastic, M20 IP67 (diameter: 6 to 12)									1											
2 cable glands, metal, M20 IP67 (diameter: 6 to 12)									2											
Directional control valve																				
4/3 closed in centre position - Position (POS)										R										
Power supply, directional control valve																				
24 V DC											7									
Actuator																				
ACTAIR 3 to 200, stop position: Closed																				2
ACTAIR 3 to 200, stop position: Open																				3
ACTAIR 400 to 1600																				4
DYNACTAIR 1.5 to 25, Fail Close in the event of air supply failure																				6
DYNACTAIR 1.5 to 25, Fail Open in the event of air supply failure																				7
DYNACTAIR 50 to 100, Fail Close in the event of air supply failure																				8
DYNACTAIR 50 to 100, Fail Open in the event of air supply failure																				9
DYNACTAIR 200 to 800, Fail Close in the event of air supply failure																				A
DYNACTAIR 200 to 800, Fail Open in the event of air supply failure																				B
Pneumatic quarter-turn actuator, double-acting																				W
Pneumatic quarter-turn actuator, single-acting																				X
Pneumatic linear actuator, double-acting																				Y
Pneumatic linear actuator, single-acting																				Z
Fail-safe position																				
Fail Close in the event of power supply failure																				A
Fail Open in the event of power supply failure																				B
Fail-in-last in the event of power supply failure																				C
SMARTRONIC																				
Intelligent positioner																				2
Field bus																				
AS-i S-7.A.*.5																				1
Heating resistor																				
None																				0
Position indicator																				
3D sight glass																				6
Configuration																				
None																				0
Diagnosis																				
None																				0

