

# ASM 105S, 115S F152: High-speed damper actuator with SAUTER Universal Technology (SUT)

## How energy efficiency is improved

Precise activation and electronic cut-off for efficient usage of energy

## Features

- For controllers with switching (2- and 3-point) or continuous output (0...10 V)
- Brushless motor with electronic activation and cut-out
- Intelligent adaptation of rotation angle
- Electronic force-dependent cut-off
- Direction of rotation selected with DIP switch ○○
- Pulse length correction in 3-point operation, i.e. internal adjustment of start-up time
- Self-centring spindle adapter
- Gear unit can be disengaged to position the damper and for manual adjustment
- Maintenance-free
- Fitting: Vertically upright to horizontal, not suspended



ASM115SF152



## Technical data

Power supply		
	Power supply 24 V~	±20%, 50...60 Hz
	Power supply 24 V=	+20%, -10%
Parameters		
	Angle of rotation	Max. 95°
	Admissible damper shaft	Ø 8...16 mm, □ 6.5...12.5 mm
	Admissible damper shaft (hardness)	Max. 300 HV
	Noise during operation (unloaded)	< 49 dB (A)
	Response time	10 ms (electrically compensated)
Positioner	Positioning signal y	0...10 V / 2...10 V, R <sub>i</sub> = 100 kΩ, 0...20 mA / 4...20 mA, R <sub>i</sub> = 500 Ω
	Positional feedback signal y <sub>0</sub>	0...10 V, load > 10 kΩ
	Starting point U <sub>0</sub>	0 or 10 V / 2 or 10 V
	Starting point I <sub>0</sub>	0 or 20 mA / 4 or 20 mA
	Control span ΔU	10 V
	Switching range X <sub>sh</sub>	100 mV
	Control span ΔI	20 mA
	Switching range X <sub>sh</sub>	0.1 mA
Ambient conditions		
	Operating temperature	-20...55 °C
	Storage and transport temperature	-30...65 °C
	Ambient humidity	5...85% rh, no condensation
Construction		
	Dimensions W x H x D	70 × 63 × 133 mm
	Weight	0.7 kg
	Housing	Lower section black, upper section yellow
	Housing material	Flame-retardant plastic
	Power cable	1.2 m long, 6 × 0.5 mm <sup>2</sup>
Standards, directives		
	Type of protection	IP54 (EN 60529)
	Protection class	III (EN 60730)
CE conformity	EMC Directive 2014/30/EU	EN 61000-6-1, EN 61000-6-2 EN 61000-6-3, EN 61000-6-4
UL and CAN compliance (ASM105SF152U only)	Electrical safety	UL 60730-1 Part 1, UL 60730-2-14 Part 2, CAN/CSA-E60730-1:02 Part 1 and Annex 1




### Overview of types

**i** *Rotational torque and holding torque: Holding torque is typically 1.5 Nm when the actuator is without power*

Type	Rotational torque and holding torque	Running time for 90°	Power consumption
ASM105SF152	5 Nm	3 s	6.0 W, 8.5 VA
ASM115SF152	10 Nm	6 s	6.5 W, 9.0 VA
ASM105SF152U	3 Nm	3 s	6.0 W, 8.5 VA

### Accessories

Type	Description
0313529001	Split-range unit for adjusting sequences, fitted in separate junction box
0372459102	External switching, 24 V version for parallel operation with A*M 1*4 or drives with limit switch, incl. junction box
0361977002	Assembly materials for M3R, M4R, MH32R/F, MH42R with ASM 105, 115
0372300001	Torsion protection, long (230 mm)
0372301001	Spindle adaptor for squared end hollow profile (x 15 mm), pack of 10 pcs.

 *The UL compliances of the ASM105SF152U do not apply to the accessories*

## Description of operation

Depending on the type of connection (see connection diagram), the actuator can be used as a continuous 0...10 V or 4...20 mA, 2-point (open/close) or 3-point (open/stop/close) actuator with an intermediate position.

The manual adjustment is performed by releasing the gear unit using the adjuster beside the connection cable and simultaneously adjusting the spindle adapter.

## Intended use

This product is only suitable for the purpose intended by the manufacturer, as described in the "Description of operation" section.

All related product regulations must also be adhered to. Changing or converting the product is not admissible.

## Additional technical data

The upper half of the lower section of the housing contains the DC motor and the SUT-II electronics. The bottom half of the lower section of the housing contains the maintenance-free gear unit, the gear-release lever and the spindle adapter.

### Auxiliary change-over contacts

Switch rating max. 230 V AC, current min. 20 mA at 20 V

Switch rating max. 4...30 V DC, current min. 1...100 mA

### Power consumption at nominal voltage

Type	Running time [s]	Status	Active power [W]	Apparent power S [VA]
ASM105SF152	3	Operation	6	
ASM105SF152U	3	Standstill <sup>1)</sup>	1	
		Sizing		8.5
ASM115SF152	6	Operation	6.5	
		Standstill <sup>1)</sup>	1	
		Sizing		9

## Pulse length correction

This optimisation guarantees that the actuator in 3-point mode processes the full length of the positioning command, and that it is not necessary to calculate the response time in the control.

<sup>1)</sup> Load-free

### Connection as 2-point control unit via the 6-wire connection cable

This open/close activation takes place via the switch cable of the preferred direction. The actuator is connected to the voltage via the supply cables and the cables for the direction of rotation, MM, LS and O1. The LS and O1 cables are connected together. The actuator turns clockwise, looking from the actuator to the spindle adapter, to end position 1 (clockwise 100% angle of rotation). When the voltage is also applied to cable O2, the actuator turns in the anti-clockwise direction to end position 2 (anti-clockwise direction to 0% angle of rotation). When the voltage is switched off at cable O2, the actuator returns to the opposing end position 1 (clockwise direction to 100% angle of rotation). In the end positions (limit stop of damper, limit stop due to angle-of-rotation limit, max. angle of rotation of 95° reached) or in the case of an overload, the electronic motor cut-off is activated (no limit switches). The direction of rotation is determined by DIP switch 1. If this is left in position 0, the actuator behaves as described above. If the DIP switch is put into position 1, the end positions are swapped - end position 1 becomes end position 2, and vice versa.

The unused wires must not be connected or come into contact with other wires. Therefore, the unused wires must be insulated individually.

### Connection as 3-point control unit via the 6-wire connection cable

The actuator is connected to the power supply via cables MM and LS, after which the damper actuator can be moved to any position by connecting the voltage to cable O1 or cable O2. Direction of rotation (viewing the spindle adapter from the actuator):

- The spindle adapter turns in the anti-clockwise direction, with voltage on cable O1.
- The spindle adapter turns in the clockwise direction, with voltage on cable O2.

In the end positions (limit stop of damper, limit stop due to angle-of-rotation limit, max. angle of rotation of 95° reached) or in the case of an overload, the electronic motor cut-off is activated (no limit switches). Direction of rotation changed by transposing the connections.

The direction of rotation can also be selected via DIP switch 1; if this is left in position 0, the actuator behaves as described above. If the DIP switch is put into position 1, the directions of rotation are swapped - direction 1 becomes direction 2, and vice versa.

The unused wires must not be connected or come into contact with other wires. Therefore, the unused wires must be insulated individually.

### Connection for control voltage 0...10 V or 4...20 mA

The built-in positioner controls the actuator depending on controller's output signal y.

Direction of rotation (viewing the spindle adapter from the actuator):

Direction of operation 1:

When the positioning signal is increasing, the spindle adapter turns in the clockwise direction.

Direction of operation 2:

When the positioning signal is increasing, the spindle adapter turns in the anti-clockwise direction.

The starting point and control span are fixed.

### Initialisation and feedback signal

The actuator initialises itself autonomously when it is connected. Once a voltage is applied to the actuator for the first time, the actuator moves to the first limit stop. Then it moves to the second stop and the value is detected and saved via a travel measurement system. The control signal and the feedback are adapted to this effective path. In case of a power failure or the removal of the power supply, no re-initialisation is required or carried out. The values remain saved.

For a re-initialisation, the actuator must be connected to the power supply. An initialisation is triggered by activating the manual adjuster twice within 4 s.

During initialisation, the feedback signal is active and corresponds to the input voltage. The re-initialisation is only valid when the whole process is complete. Activating the manual adjuster again interrupts this process.

If the actuator detects jamming, it reports this by setting the feedback signal to 0 V after about 90 s. During this time, the actuator tries to overcome the jamming. If the jamming can be overcome, the normal control function is activated again and the feedback signal is restored.

With 2-point or 3-point control, the same initialisation is performed. Afterwards, the feedback signal is active.

When control signal 0...10 V is interrupted and direction of operation 1 is selected via DIP switch 1, the actuator turns in the anti-clockwise direction to 0% angle of rotation.

When control signal 0...10 V is interrupted and direction of operation 2 is selected via DIP switch 1, the actuator turns in the clockwise direction to 100% angle of rotation.

#### Coding switch

ASM105SF152 90° ASM105SF152U 90° ASM115SF152 90°	S1	S2	S3
	Direction of operation	Select current or voltage	Increase working range
Direction of operation 1	OFF		
Direction of operation 2	ON		
Input 03 Voltage 0 (2)...10 V		OFF	
Input 03 Current 0 (4)...20 mA		ON	
Voltage 0 V / Current 0 mA			OFF
Voltage 2 V / Current 4 mA			ON

#### Split-range unit, accessory 0313529001

Starting point  $U_0$  and control span  $\Delta U$  can be set with the potentiometer. In this way, several control units can be operated in sequence or cascade by the control signal of the controller. The input signal (partial range) is amplified into an output signal of 0...10 V. This accessory cannot be built into the actuator but must be externally housed in an electrical junction box instead.

#### Engineering and fitting notes

The concept of DC motor and electronics enables electrical parallel operation of multiple air dampers with different torques when actuators of the same SUT type are used. It is plugged directly onto the damper spindle and clipped to the anti-torsion device. The self-centring spindle adapter protects the damper spindle. The damper actuator can be detached from the damper spindle very easily without removing the anti-torsion device.

The coding switches are accessible via an opening with a black plastic plug in the housing lid.

#### NOTICE!



Always disconnect the device from the mains before removing the plastic plug.

The angle of rotation can be limited on the device to between 0° and 90° and continuously adjusted between 5° and 80°. The limit is fixed using a set screw directly on the actuator and the limit stop on the self-centring spindle adapter. The self-centring spindle adapter is suitable for  $\varnothing$  8...16 mm and  $\square$  6.5...12.7 mm damper spindles.

#### WARNING!



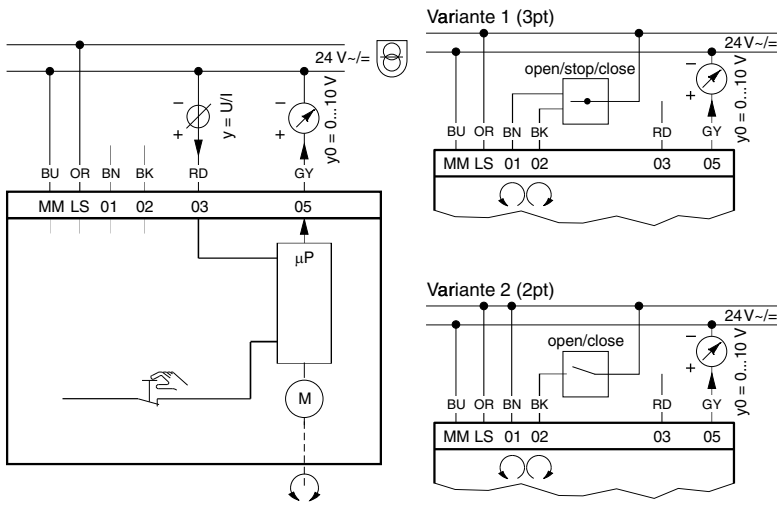
When the housing is opened, there is a risk of injury due to the return spring.  
► The housing must not be opened.

#### Outdoor installation

In case of installation outside buildings, the devices must also be protected from the weather.

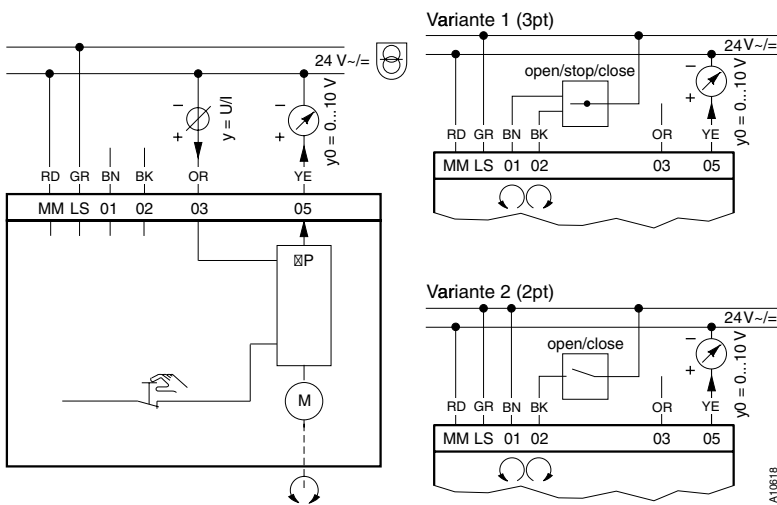
## Connection diagrams

### ASM105SF152 and ASM115SF152



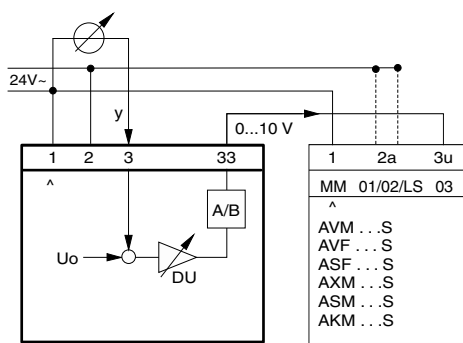
BU = blue  
 OR = orange  
 BN = brown  
 BK = black  
 RD = red  
 GY = grey

### ASM105SF152U



RD = red  
 GR = green  
 BN = brown  
 BK = black  
 OR = orange  
 YE = yellow

### Connection accessory 0313529001



Only available for ASM105SF152 and ASM115SF152

## Dimension drawing

All dimensions in millimetres.

