



## Flow Controller Inline-Kompakt SDN 552 GAPP

Flow controller for water and mixtures of water and glycol according to the thermodynamic principle

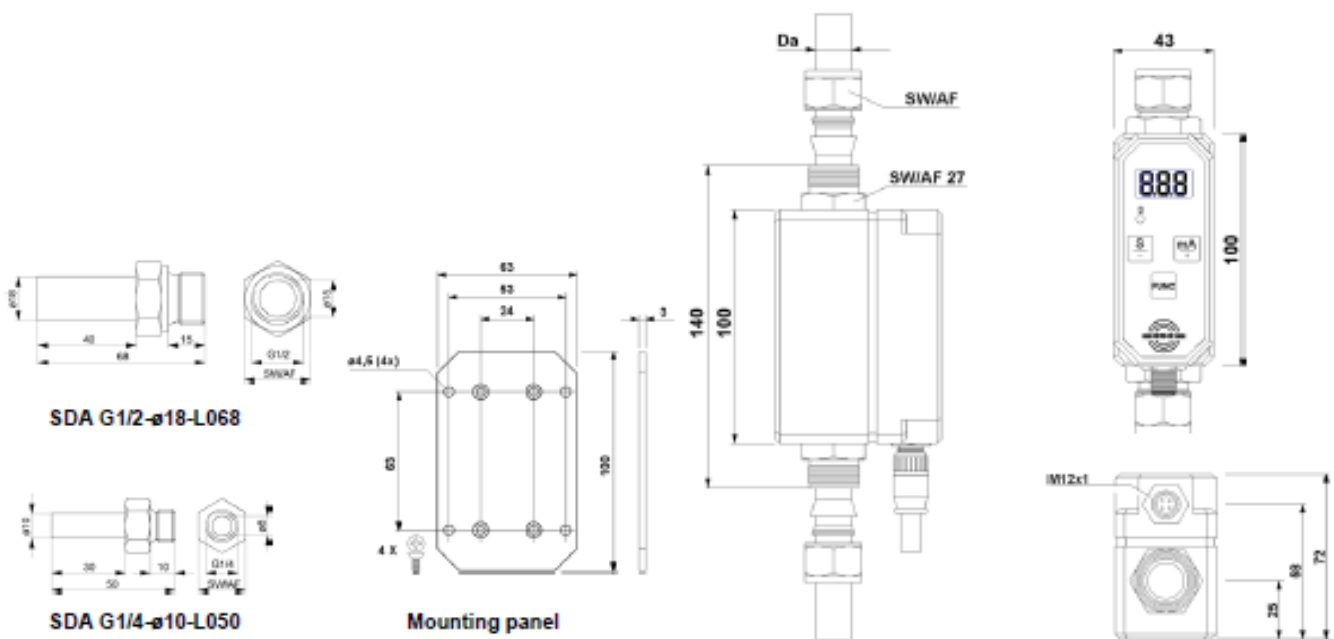


- Flow controlling and flow monitoring
- Digital display
- Programmable functions
- Analog and PNP-output
- Screw connections  $\varnothing 10$ ,  $\varnothing 15$ ,  $\varnothing 18$



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Type	ID		ØDa	ØDi	AF	(I)	(II)	(III)	(IV)	(V)	(VI)
SDN 552/1 GAPP	P11296	1 x PNP, 1 x analogue 4...20 mA	Ø10	Ø9,5	19	1.4571/FKM	IP65	20	0...60	-10...90	1...10
SDN 552/2 GAPP	P11297	1 x PNP, 1 x analogue 4...20 mA	Ø15	Ø15	25	1.4571/FKM	IP65	20	0...60	-10...90	2...20
SDN 552/3 GAPP	P11298	1 x PNP, 1 x analogue 4...20 mA	Ø18	Ø15	30	1.4571/FKM	IP65	20	0...60	-10...90	4...40
SDN 552/ G1/4-Ø10-L050	Z01175	Transition adapter G1/4 for SDN 552/1	Ø10	Ø8	19	1.4571					
SDN 552/ G1/2-Ø18-L068	Z01176	Transition adapter G1/4 for SDN 552/3	Ø18	Ø15	27	1.4571					
	Z01178	Mounting panel 100 x 63 x 3 incl. screws M4x8				Al					

- (I) Material 1.4571 ≙ AISI 316Ti
- (II) Protection Class
- (III) Compressive strength [bar]
- (IV) Ambient temperature [°C]
- (V) Medium temperature [°C]
- (VI) Detection range [l/min]



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### Installation of flow sensor

The in line flow sensors SDN 552 are built “inline” into a pipe line. The pipe may be connected directly via the compression tube fitting connection or via a matching adapter. Adapters come as accessories for a transition from  $\varnothing 10$  mm to G1/4 (Z01175) or  $\varnothing 18$  mm to G1/2 (Z01176). In order to achieve the best accuracy, the sensor must be installed in such a way that the electrical connection is opposite to the flow direction. The sensor additionally features an arrow imprint which indicates the preference direction. The medium must be free of air pockets and bubbles.

### Mounting of the compression tube fitting

If no pipe adapters are installed, then a precision-grade pipe, meeting the requirements of EN 10305-1, must be used. The pipes must feature the following diameters and wall thicknesses.

SDN 552/1:  $\varnothing 10 \times 1$

SDN 552/2:  $\varnothing 15 \times 1,5$

SDN 552/3:  $\varnothing 18 \times 1,5$

1. Cut pipe to length at a right angle and remove burr.
2. Push coupling nut and front and back ferrule, as shown overleaf, onto the pipe and insert pipe into the threaded joint until the shoulder of the fitting is reached.
3. Tighten coupling nut manually and check tube position.
4. Attach screw wrench AF27 to sensor connection and tighten coupling nut with an appropriate tool with  $1 \frac{1}{4}$  turns.
5. Check firm fit of pipe.

### Attention:

**Please ensure that no shear force between the two pipe connections is created during mounting and operation.**

### Mounting the flow sensor housing

At the housing bottom there are four M4 threaded sockets with a depth of 5 mm. These can be used for mounting on a base plate etc. Alternatively it is possible to use the accessory mounting panel 100 x 63 x 3 (Z01178) with the supplied screws for attachment to the sensor housing. This enables front mounting.

### Maintenance

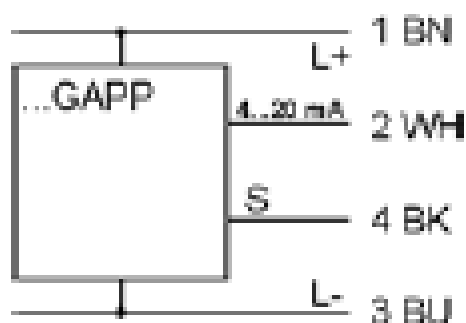
If operated in contaminated or calcareous water, deposits can build up, which may lead to measuring errors. Thus it may be necessary to clean the section of the sensor through which the liquid passes. The metal surface may not be damaged.



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### Electrical connection



### Operation

The inline flow sensors have front panel buttons for setting functions and displaying adjustments. All values are indicated via the 3-digit 7-segment display.

**Button [S/-]:** After a short press of the button, the set limit value for switch point S is indicated. In the programming mode, this button can also be used to decrease the indicated value.

**Button [mA/+]:** After a short press of the button, the actual current value in mA is indicated. In the programming mode, this button can also be used to increase the indicated value.

**Button [FUNC]:** After a short press of the button, the measured temperature value in °C is displayed for approx. 3 s. In the programming mode, this button can also be used to select functions and parameters.

### Programming

To enter the programming mode, press buttons [S/-] and [mA/+] for at least 3 s until the display starts flashing. For a short moment the character string [ ] is displayed. Followed by the number [ ], which can be modified according to the valid access code using buttons [S/-] and [mA/+]. Use button [FUNC] to select the required parameter. After selection, the parameter is displayed for approx. 2 s, followed by the associated value which can now be modified. During entry it is automatically verified whether the set parameter is admissible. Two decimal points of the display will flash to warn against an invalid entry. To terminate programming and save all values press button [FUNC] for at least 3 s until the display stops flashing.



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	Cod	0 ... 255	Enter access code EX factory setting: 0
1	USP	L or °C	Unit switch point S [l/min or °C]
2	SP	MIN + 0,2 ... MAX or -9 ... 90	Adjustable range switch point S [l/min or °C]
3	HS	02...2/5/10 or 1..10	Hysteresis switch point S [l/min or °C]
4	OU	NO or NC	Output switch point S [NO/NC]
5	dS	00...500	Switch-on delay S [s]
6	dr	00...500	Switch-off delay S [s]
7	nF <sub>1</sub>	1 ... 8	Average forming time [s]
8	GLY	0 5 10 ... 30	Selection of glycol contents [%]
9	CAL		Display correction +/- 25%
10	Cod	0 ... 255	Modification of access code

### Functions

#### Access code [Cod ]:

Without entry of an access code it is not possible to set or modify device parameters. The ex factory setting is "0". This value can be modified at the end of the programming menu.

#### Unit of switch point S [1]:

The switching point S may be used for flow rate [L] or temperature monitoring [°C]. Select [°C] to activate temperature control. The value units depending on the switch point will change accordingly.

#### Adjustable range switch point S [2 ]:

The switch point S is entered in l/min, or, if required, in °C. The switch point may be placed anywhere within the total adjustable range.

#### Hysteresis switch point S [3 ]:

The hysteresis is the difference between the switch- on value (which is identical to the programmed switch point S) and the switch-off value. It is entered in l/min, or, if required, in °C.



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### Output switch point S [4]:

The switching output S can be adjusted either for the NO or NC mode.

### Switch-on delay switch point S [5]:

If it is not required to update the output signal immediately after the switch point S has been exceeded, this value can be set in a range from 0...50 s. The signal will then only be updated after the set time has expired, provided the limit is still exceeded.

### Switch-off delay switch point S [6]:

If it is not required to update the output signal immediately after the switch point S has been underranged, this value can be set in a range from 0...50 s. The signal will then only be updated after the set time has expired, provided the limit is still underranged.

### Average forming [7]:

This parameter permits the entry of a value which defines the time interval during which a measuring value average is formed. Values between 1...8 s can be entered. A low value will lead to a fast response, whereas a high value steadies the display of the measuring value.

### Medium selection [8]:

The flow sensor series SDN 552 is generally suited for monitoring water circuits. If a cooling circuit contains Glycol (mono-ethylene-glycol), then this specific contents can be entered as a percentage in increments of 5 %. A possible measuring value deviation is thus compensated.

### Reference function [9]:

With this function, the displayed flow rate value can be modified by  $\pm 25\%$ . This can be useful in order to adapt the display exactly to a reference instrument.

### Reset function [rE5]:

Use the RESET function to set all values back to the ex factory settings. For this, the device must be disconnected from power. Button [FUNC] is then pressed during re-connection. The character string [ ] is displayed. Then you will be prompted to enter the access code. Press [FUNC] to confirm the entry and carry out the reset.



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Technical data	
Supply voltage [V DC]	24 ± 10%
Current consumption [mA]	< 100
Switching output	PNP NO/NC programmable
Switching current [mA]	Max. 200 (20°C)
Analogue output [mA]	4...20
Load R <sub>L</sub> [Ω]	200...500

	SDN 552/1	SDN 552/2	SDN 552/3
Detection range [l/min]	1...10	2...20	4...40
Adjustable range for S [l/min]	1,2...10	2,2...20	4,2...40
Hysteresis for S [l/min]	0,2...2	0,2...5	0,2...10

Temperature monitoring [°C]	-10...90
Adjustable range for S [°C]	-9...90 (if temperature monitoring is selected)
Hysteresis for S [°C]	1...10 (if temperature monitoring is selected)

Switch-on delay [s]	0...50
Switch-off delay [s]	0...50
Availability time [s]	6...10
Reaction time [s]	1...8
Material of housing	PBT
Flow rate / temperature display	7-segments / 3-digits
Connection	M12 Universal Plugsystem 4-pole

### Analogue output

The 4...20 mA analogue output provides a current value that is proportional to the flow rate over the total detection range. Between 0 l/min and the minimum value of the detection range, the output value is 4 mA.