

# SA4300



## Flow sensor

SAEXXXBFRKG/US-100



- L 200 mm  
1 LEDs Display unit / switching status  
2 alphanumeric display 4-digit red/green  
3 programming buttons  
4 upper part of the housing can be rotated 345°

ACS CRN DNV.COM/AF EC 1935/2004 FCM IO-Link KTW/W270 Reg31

### Product characteristics

|                              |                                                             |
|------------------------------|-------------------------------------------------------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1 |
| Process connection           | $\varnothing$ 8 mm                                          |

### Application

|                                                |                                                                                                                                                        |
|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| Special feature                                | Gold-plated contacts                                                                                                                                   |
| Media                                          | water; glycol solutions; air; oils                                                                                                                     |
| Note on media                                  | low-viscosity oils with viscosity: $\leq 40 \text{ mm}^2/\text{s}$ (40 °C)<br>high-viscosity oils with viscosity: $> 40 \text{ mm}^2/\text{s}$ (40 °C) |
| Medium temperature [°C]                        | -20...100                                                                                                                                              |
| Pressure rating [bar]                          | 50                                                                                                                                                     |
| Pressure rating [MPa]                          | 5                                                                                                                                                      |
| MAWP (for applications according to CRN) [bar] | 50                                                                                                                                                     |



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| Electrical data                                 |       |                                                                                                                           |
|-------------------------------------------------|-------|---------------------------------------------------------------------------------------------------------------------------|
| Operating voltage                               | [V]   | 18...30 DC                                                                                                                |
| Current consumption                             | [mA]  | < 100                                                                                                                     |
| Protection class                                |       | III                                                                                                                       |
| Reverse polarity protection                     |       | yes                                                                                                                       |
| Power-on delay time                             | [s]   | 10                                                                                                                        |
| Inputs / outputs                                |       |                                                                                                                           |
| Number of inputs and outputs                    |       | Number of digital outputs: 2; Number of analogue outputs: 1                                                               |
| Outputs                                         |       |                                                                                                                           |
| Total number of outputs                         |       | 2                                                                                                                         |
| Output signal                                   |       | switching signal; analogue signal; frequency signal; IO-Link; (configurable)                                              |
| Electrical design                               |       | PNP/NPN                                                                                                                   |
| Number of digital outputs                       |       | 2                                                                                                                         |
| Output function                                 |       | normally open / normally closed; (parameterisable)                                                                        |
| Max. voltage drop switching output DC           | [V]   | 2.5                                                                                                                       |
| Permanent current rating of switching output DC | [mA]  | 250                                                                                                                       |
| Number of analogue outputs                      |       | 1                                                                                                                         |
| Analogue current output                         | [mA]  | 4...20; (scalable)                                                                                                        |
| Max. load                                       | [Ω]   | 350                                                                                                                       |
| Short-circuit protection                        |       | yes                                                                                                                       |
| Type of short-circuit protection                |       | pulsed                                                                                                                    |
| Overload protection                             |       | yes                                                                                                                       |
| Frequency of the output                         | [Hz]  | 0...1000                                                                                                                  |
| Measuring/setting range                         |       |                                                                                                                           |
| Probe length L                                  | [mm]  | 200                                                                                                                       |
| Operating mode                                  |       | relative; absolutely liquid; absolutely gaseous; (absolute: reference measurement recommended; Factory setting: relative) |
| Temperature monitoring                          |       |                                                                                                                           |
| Measuring range                                 | [°C]  | -20...100                                                                                                                 |
| Resolution                                      | [°C]  | 0.2                                                                                                                       |
| Liquid media - absolute operating mode          |       |                                                                                                                           |
| Setting range                                   | [m/s] | 0.04...3                                                                                                                  |
| Greatest sensitivity                            | [m/s] | 0.04...3                                                                                                                  |
| Liquid media - relative operating mode          |       |                                                                                                                           |
| Setting range                                   | [m/s] | 0.04...6                                                                                                                  |
| Greatest sensitivity                            | [m/s] | 0.04...3                                                                                                                  |
| Gases - operating mode "absolute"               |       |                                                                                                                           |
| Setting range                                   | [m/s] | 0...100                                                                                                                   |
| Greatest sensitivity                            | [m/s] | 30...100                                                                                                                  |
| Gases - operating mode "relative"               |       |                                                                                                                           |
| Setting range                                   | [m/s] | 0...200                                                                                                                   |

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|                                |                                |                                                                                                                                                                                                                                                                                  |
|--------------------------------|--------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Greatest sensitivity           | [m/s]                          | 30...100                                                                                                                                                                                                                                                                         |
| <b>Accuracy / deviations</b>   |                                |                                                                                                                                                                                                                                                                                  |
| Temperature drift              | [cm/s x 1/K]                   | 0,003 m/s x 1/K (< 20 °C; > 70 °C)                                                                                                                                                                                                                                               |
| Temperature gradient           | [K/min]                        | 100                                                                                                                                                                                                                                                                              |
| <b>Absolute operating mode</b> |                                |                                                                                                                                                                                                                                                                                  |
| Repeatability                  |                                | 0,05 m/s; (water; flow velocity: 0,05...3 m/s)                                                                                                                                                                                                                                   |
| <b>Relative operating mode</b> |                                |                                                                                                                                                                                                                                                                                  |
| Accuracy                       |                                | ± (7 % MW + 2 % MEW); (for relative mode in the range of maximum sensitivity under the following conditions:; water: 20...70 °C; inlet length: 1.5 m; DN25 (DIN 2448); mounting position according to instructions; Accuracy can differ for other media and mounting positions.) |
| Repeatability                  |                                | 0,05 m/s; (water; flow velocity: 0,05...3 m/s)                                                                                                                                                                                                                                   |
| <b>Temperature monitoring</b>  |                                |                                                                                                                                                                                                                                                                                  |
| Temperature drift              |                                | ± 0,005 K/°C                                                                                                                                                                                                                                                                     |
| Accuracy                       | [K]                            | ± 0,3 / ± 1; (water; flow velocity: 0,3...3 m/s / air; flow velocity: > 10 m/s)                                                                                                                                                                                                  |
| <b>Response times</b>          |                                |                                                                                                                                                                                                                                                                                  |
| Response time                  | [s]                            | 0.5; (T09; water; glycol: 0,8 s; air: 7 s; oil: 1,8 s; each T09)                                                                                                                                                                                                                 |
| <b>Temperature monitoring</b>  |                                |                                                                                                                                                                                                                                                                                  |
| Dynamic response T05 / T09     | [s]                            | 1,5 (T09); (water; flow velocity: 0,3...3 m/s)                                                                                                                                                                                                                                   |
| <b>Software / programming</b>  |                                |                                                                                                                                                                                                                                                                                  |
| Parameter setting options      |                                | hysteresis / window; normally open / normally closed; switching logic; current/frequency output; medium selection; Damping; Teach function; display can be rotated and switched off; standard unit of measurement; process value colour                                          |
| <b>Interfaces</b>              |                                |                                                                                                                                                                                                                                                                                  |
| Communication interface        |                                | IO-Link                                                                                                                                                                                                                                                                          |
| Transmission type              |                                | COM2 (38,4 kBaud)                                                                                                                                                                                                                                                                |
| IO-Link revision               |                                | 1.1                                                                                                                                                                                                                                                                              |
| SDCI standard                  |                                | IEC 61131-9                                                                                                                                                                                                                                                                      |
| Profiles                       |                                | Smart Sensor: Process Data Variable; Device Identification, Device Diagnosis                                                                                                                                                                                                     |
| SIO mode                       |                                | yes                                                                                                                                                                                                                                                                              |
| Required master port type      |                                | A                                                                                                                                                                                                                                                                                |
| Process data analogue          |                                | 2                                                                                                                                                                                                                                                                                |
| Process data binary            |                                | 2                                                                                                                                                                                                                                                                                |
| Min. process cycle time        | [ms]                           | 3                                                                                                                                                                                                                                                                                |
| Supported DeviceIDs            | <b>Type of operation</b>       | <b>DeviceID</b>                                                                                                                                                                                                                                                                  |
|                                | Factory setting / ModE = (REL) | 533                                                                                                                                                                                                                                                                              |
|                                | ModE = (GAS)                   | 547                                                                                                                                                                                                                                                                              |
|                                | ModE = (LIQU)                  | 540                                                                                                                                                                                                                                                                              |
| <b>Operating conditions</b>    |                                |                                                                                                                                                                                                                                                                                  |
| Ambient temperature            | [°C]                           | -40...80                                                                                                                                                                                                                                                                         |
| Storage temperature            | [°C]                           | -40...100                                                                                                                                                                                                                                                                        |
| Protection                     |                                | IP 65; IP 67                                                                                                                                                                                                                                                                     |
| <b>Tests / approvals</b>       |                                |                                                                                                                                                                                                                                                                                  |
| EMC                            | DIN EN 60947-5-9               |                                                                                                                                                                                                                                                                                  |

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|                      |                   |                    |
|----------------------|-------------------|--------------------|
| Shock resistance     | DIN EN 60068-2-27 | 50 g (11 ms)       |
| Vibration resistance | DIN EN 60068-2-6  | 2 g (10...2000 Hz) |
| MTTF [ANN]           |                   | 180                |
| UL approval          | UL Approval no.   | I017               |
|                      | File number UL    | E174189            |

### Mechanical data

|                          |                                                     |
|--------------------------|-----------------------------------------------------|
| Weight [g]               | 345.5                                               |
| Materials                | stainless steel (1.4404 / 316L); PBT-GF20; PBT-GF30 |
| Materials (wetted parts) | stainless steel (1.4404 / 316L)                     |
| Process connection       | Ø 8 mm                                              |

### Displays / operating elements

|         |                  |                                                                          |
|---------|------------------|--------------------------------------------------------------------------|
| Display | Display unit     | 6 x LED, green (% , m/s, l/min, m <sup>3</sup> /h, °C, 10 <sup>3</sup> ) |
|         | switching status | 2 x LED, yellow                                                          |
|         | measured values  | alphanumeric display, red/green 4-digit                                  |

### Remarks

|               |                                          |
|---------------|------------------------------------------|
| Remarks       | MW = measured value                      |
|               | MEW = Final value of the measuring range |
| Pack quantity | 1 pcs.                                   |

### Electrical connection

Connector: 1 x M12; coding: A; Contacts: gold-plated





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### Connection



colours to DIN EN 60947-5-2

#### OUT1:

- switching output volumetric flow quantity monitoring
- frequency output volumetric flow quantity monitoring
- IO-Link

#### OUT2:

- switching output volumetric flow quantity monitoring
- switching output Temperature monitoring
- analogue output volumetric flow quantity monitoring
- analogue output Temperature monitoring
- frequency output volumetric flow quantity monitoring
- frequency output Temperature monitoring
- input External Teach

Core colours :

BK = black  
 BN = brown  
 BU = blue  
 WH = white