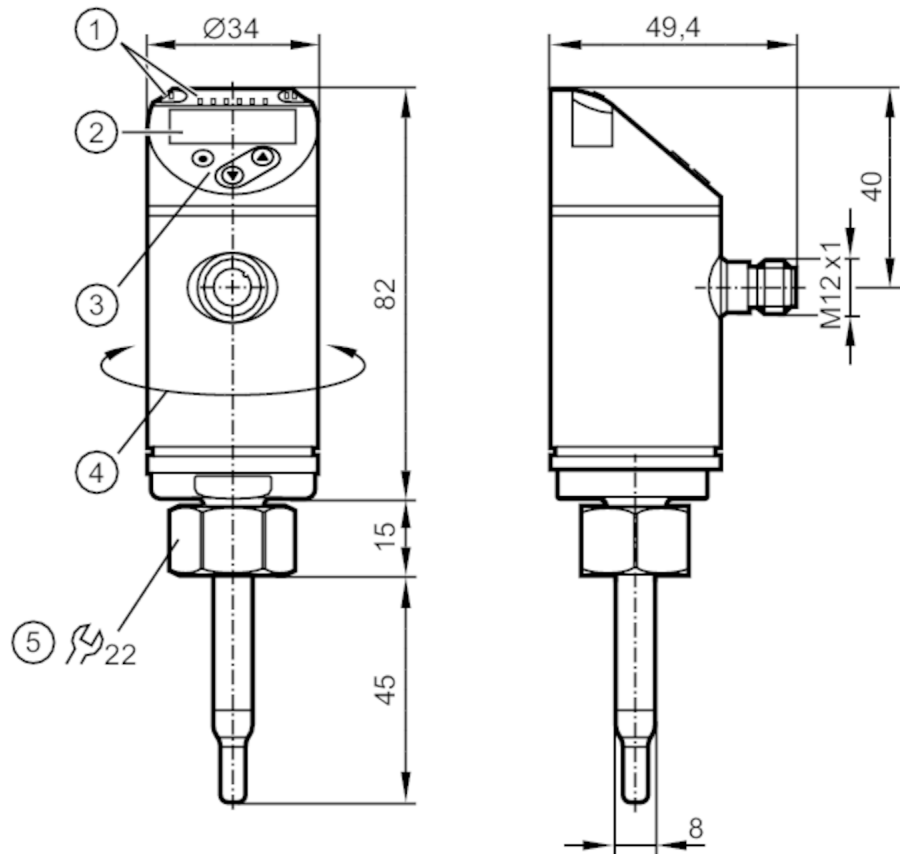


# SA5010



## Flow sensor

SAD10XDBFRKG/US-100



- 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°



| Product characteristics      |       |                                                                             |
|------------------------------|-------|-----------------------------------------------------------------------------|
| Number of inputs and outputs |       | Number of digital outputs: 2; Number of analogue outputs: 1                 |
| Process connection           |       | threaded connection M18 x 1,5 internal thread                               |
| Application                  |       |                                                                             |
| Special feature              |       | Gold-plated contacts                                                        |
| Media                        |       | water; glycol solutions; air; oils                                          |
| Note on media                |       | low-viscosity oils with viscosity: $\leq 40 \text{ mm}^2/\text{s}$ (104 °F) |
|                              |       | high-viscosity oils with viscosity: $> 40 \text{ mm}^2/\text{s}$ (104 °F)   |
| Medium temperature           | [°F]  | -4...194                                                                    |
| Pressure rating              | [bar] | 100                                                                         |
| Pressure rating              | [psi] | 1450                                                                        |
| 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                                                                          |



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| 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]                                  | 45                                                                                                                        |
| Operating mode                                       | relative; absolutely liquid; absolutely gaseous; (absolute: reference measurement recommended; Factory setting: relative) |
| Temperature monitoring                               |                                                                                                                           |
| Measuring range [°F]                                 | -4...194                                                                                                                  |
| Resolution [°F]                                      | 0.5                                                                                                                       |
| Liquid media - absolute operating mode               |                                                                                                                           |
| Setting range [ft/s]                                 | 0...9.85                                                                                                                  |
| Greatest sensitivity [ft/s]                          | 0.15...9.85                                                                                                               |
| Liquid media - relative operating mode               |                                                                                                                           |
| Setting range [ft/s]                                 | 0...19.5                                                                                                                  |
| Greatest sensitivity [ft/s]                          | 0.15...9.85                                                                                                               |
| Gases - operating mode "absolute"                    |                                                                                                                           |
| Setting range [ft/s]                                 | 0...328                                                                                                                   |
| Greatest sensitivity [ft/s]                          | 6...328                                                                                                                   |
| Gases - operating mode "relative"                    |                                                                                                                           |
| Setting range [ft/s]                                 | 0...656                                                                                                                   |
| Greatest sensitivity [ft/s]                          | 6...328                                                                                                                   |
| Accuracy / deviations                                |                                                                                                                           |
| Temperature drift [cm/s x 1/K]                       | 0,01 fps x 1/K (< 68 °F; > 158 °F)                                                                                        |
| Temperature gradient [K/min]                         | 100                                                                                                                       |
| Absolute operating mode                              |                                                                                                                           |
| Repeatability                                        | 0,05 m/s; (water; flow velocity: 0,05...3 m/s)                                                                            |

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| Relative operating mode    |                                                                                                                                                                                                                                                                                  |                                                                                    |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
| Accuracy                   | ± (7 % MW + 2 % MEW); (for relative mode in the range of maximum sensitivity under the following conditions:; water: 68...158 °F; inlet length: 5 ft; 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)                                                                                                                                                                                                                                   |                                                                                    |
| Temperature monitoring     |                                                                                                                                                                                                                                                                                  |                                                                                    |
| Temperature drift          | ± 0,003 K/°F                                                                                                                                                                                                                                                                     |                                                                                    |
| Accuracy                   | [K]                                                                                                                                                                                                                                                                              | ± 0,3 / ± 1; (water; flow velocity: 1...9,85 fps / air; flow velocity: > 32,8 fps) |
| Response times             |                                                                                                                                                                                                                                                                                  |                                                                                    |
| Response time              | [s]                                                                                                                                                                                                                                                                              | 0.5; (T09; water; glycol: 0,8 s; air: 7 s; oil: 1,8 s; each T09)                   |
| Temperature monitoring     |                                                                                                                                                                                                                                                                                  |                                                                                    |
| Dynamic response T05 / T09 | [s]                                                                                                                                                                                                                                                                              | 1,5 (T09); (water; flow velocity: 1...9,85 fps)                                    |
| Software / programming     |                                                                                                                                                                                                                                                                                  |                                                                                    |
| 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                                          |                                                                                    |
| Interfaces                 |                                                                                                                                                                                                                                                                                  |                                                                                    |
| 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        | Type of operation                                                                                                                                                                                                                                                                | DeviceID                                                                           |
|                            | Factory setting / ModE = (REL)                                                                                                                                                                                                                                                   | 537                                                                                |
|                            | ModE = (GAS)                                                                                                                                                                                                                                                                     | 551                                                                                |
|                            | ModE = (LIQU)                                                                                                                                                                                                                                                                    | 544                                                                                |
| Operating conditions       |                                                                                                                                                                                                                                                                                  |                                                                                    |
| Ambient temperature        | [°F]                                                                                                                                                                                                                                                                             | -40...176                                                                          |
| Storage temperature        | [°F]                                                                                                                                                                                                                                                                             | -40...212                                                                          |
| Protection                 | IP 65; IP 67                                                                                                                                                                                                                                                                     |                                                                                    |
| Tests / approvals          |                                                                                                                                                                                                                                                                                  |                                                                                    |
| EMC                        | DIN EN 60947-5-9                                                                                                                                                                                                                                                                 |                                                                                    |
| Shock resistance           | DIN EN 60068-2-27                                                                                                                                                                                                                                                                | 50 g (11 ms)                                                                       |
| Vibration resistance       | DIN EN 60068-2-6                                                                                                                                                                                                                                                                 | 20 g (10...2000 Hz)                                                                |
| MTTF                       | [ANN]                                                                                                                                                                                                                                                                            | 143                                                                                |
| UL approval                | UL Approval no.                                                                                                                                                                                                                                                                  | I003                                                                               |
|                            | File number UL                                                                                                                                                                                                                                                                   | E174189                                                                            |
| Mechanical data            |                                                                                                                                                                                                                                                                                  |                                                                                    |
| Weight                     | [g]                                                                                                                                                                                                                                                                              | 259                                                                                |

# SA5010



## Flow sensor

SAD10XDBFRKG/US-100

|                          |                                                                                     |
|--------------------------|-------------------------------------------------------------------------------------|
| Materials                | stainless steel (1.4404 / 316L); stainless steel (1.4310 / 301); PBT-GF20; PBT-GF30 |
| Materials (wetted parts) | stainless steel (1.4404 / 316L); Gasket: FKM                                        |
| Process connection       | threaded connection M18 x 1,5 internal thread                                       |

### Displays / operating elements

|         |                  |                                                          |
|---------|------------------|----------------------------------------------------------|
| Display | Display unit     | 6 x LED, green (% , fps, gpm, cfm, °F, 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





## Flow sensor

SAD10XDBFRKG/US-100

### 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