

# SU7000

## Ultrasonic flow meter

SUR34HGBFRKG/W/US-100-IPF

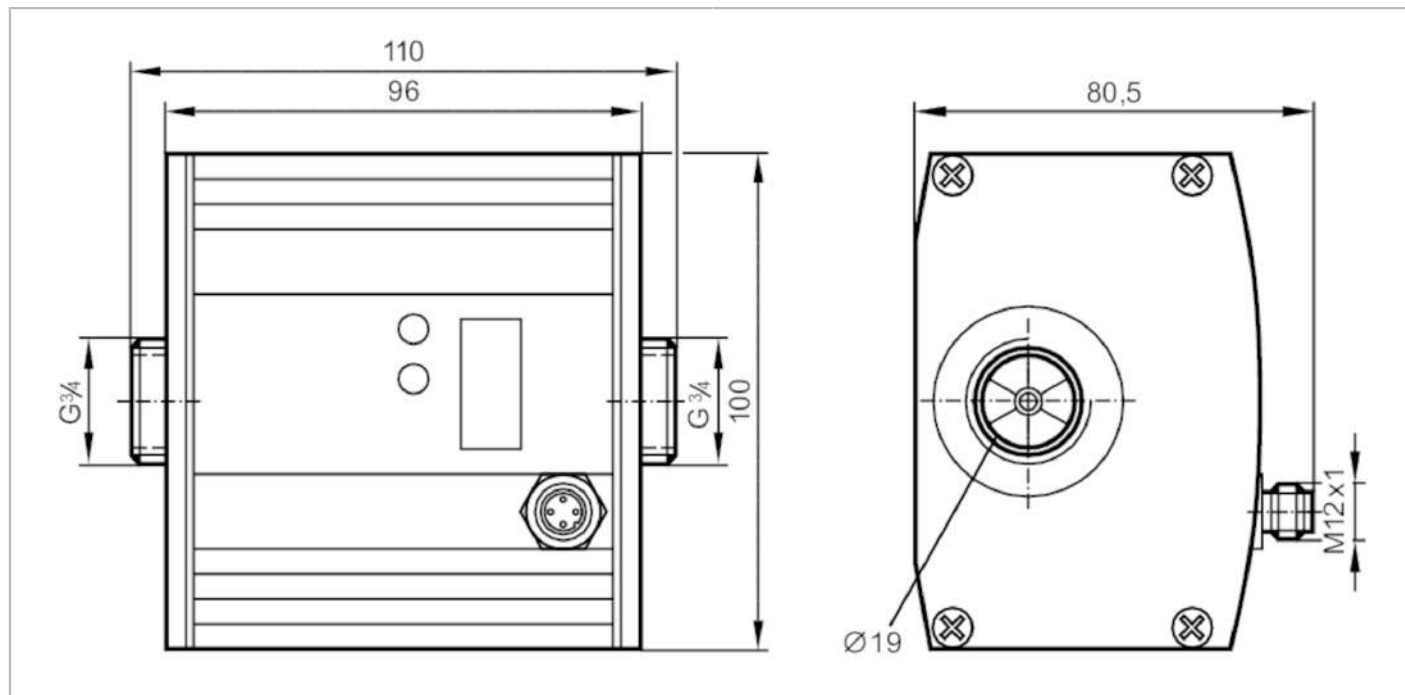


phase-out article

Discontinuation date: 12/31/2025

Alternative articles: SU7030

When selecting an alternative article and accessories please note that technical data may differ!



### Product characteristics

|                              |                                                             |            |
|------------------------------|-------------------------------------------------------------|------------|
| Number of inputs and outputs | Number of digital outputs: 2; Number of analogue outputs: 1 |            |
| Measuring range              | 0...50 l/min                                                | 0...3 m³/h |
| Process connection           | threaded connection G 3/4 external thread flat seal         |            |

### Application

|                         |                                                                                                                      |         |
|-------------------------|----------------------------------------------------------------------------------------------------------------------|---------|
| Special feature         | Gold-plated contacts                                                                                                 |         |
| Application             | totaliser function; for industrial applications                                                                      |         |
| Installation            | connection to pipe by means of an adapter                                                                            |         |
| Media                   | water; glycol solutions; coolants; oils                                                                              |         |
| Note on media           | low-viscosity oils with viscosity: 7...40 mm²/s (40 °C)<br>high-viscosity oils with viscosity: 30...68 mm²/s (40 °C) |         |
| Medium temperature [°C] | -10...80                                                                                                             |         |
| Pressure rating         | 16 bar                                                                                                               | 1.6 MPa |

### Electrical data

|                                 |                            |  |
|---------------------------------|----------------------------|--|
| Operating voltage [V]           | 19...30 DC; (to SELV/PELV) |  |
| Current consumption [mA]        | 100                        |  |
| Min. insulation resistance [MΩ] | 100; (500 V DC)            |  |
| Protection class                | III                        |  |
| Reverse polarity protection     | yes                        |  |
| Power-on delay time [s]         | 10                         |  |



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|                                                      |                                                                 |                |
|------------------------------------------------------|-----------------------------------------------------------------|----------------|
| Measuring principle                                  | ultrasonic                                                      |                |
| Inputs / outputs                                     |                                                                 |                |
| Number of inputs and outputs                         | Number of digital outputs: 2; Number of analogue outputs: 1     |                |
| Inputs                                               |                                                                 |                |
| Inputs                                               | counter reset                                                   |                |
| Outputs                                              |                                                                 |                |
| Total number of outputs                              | 2                                                               |                |
| Output signal                                        | switching signal; analogue signal; pulse signal; (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                                                               |                |
| Permanent current rating of switching output DC [mA] | 250; (per output)                                               |                |
| Number of analogue outputs                           | 1                                                               |                |
| Analogue current output [mA]                         | 4...20; (scalable)                                              |                |
| Max. load [Ω]                                        | 500                                                             |                |
| Analogue voltage output [V]                          | 0...10; (scalable)                                              |                |
| Min. load resistance [Ω]                             | 2000                                                            |                |
| Pulse output                                         | flow rate meter                                                 |                |
| Short-circuit protection                             | yes                                                             |                |
| Type of short-circuit protection                     | pulsed                                                          |                |
| Overload protection                                  | yes                                                             |                |
| Measuring/setting range                              |                                                                 |                |
| Measuring range                                      | 0...50 l/min                                                    | 0...3 m³/h     |
| Display range                                        | 0...60 l/min                                                    | 0...3.6 m³/h   |
| Resolution                                           | 0.1 l/min                                                       | 0.005 m³/h     |
| Set point SP                                         | 0.1...50 l/min                                                  | 0.005...3 m³/h |
| Reset point rP                                       | 0...49.9 l/min                                                  | 0...2.995 m³/h |
| Analogue start point ASP                             | 0...40 l/min                                                    | 0...2.4 m³/h   |
| Analogue end point AEP                               | 10...50 l/min                                                   | 0.6...3 m³/h   |
| Max. flow rate                                       | 60 l/min                                                        | 3.6 m³/h       |
| In steps of                                          | 0.1 l/min                                                       | 0.005 m³/h     |
| Volumetric flow quantity monitoring                  |                                                                 |                |
| Pulse value                                          | 0.1 l...1 000 000 m³                                            |                |
| Pulse length [s]                                     | 0,05...2                                                        |                |
| Temperature monitoring                               |                                                                 |                |
| Measuring range [°C]                                 | -10...80                                                        |                |
| Resolution [°C]                                      | 0.2                                                             |                |
| Set point SP [°C]                                    | -9.8...80                                                       |                |
| Reset point rP [°C]                                  | -10...79.8                                                      |                |
| Analogue start point [°C]                            | -10...62                                                        |                |
| Analogue end point [°C]                              | 8...80                                                          |                |



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|                                   |                           |                                                                                                                                                                       |
|-----------------------------------|---------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| In steps of                       | [°C]                      | 0.2                                                                                                                                                                   |
| <b>Accuracy / deviations</b>      |                           |                                                                                                                                                                       |
| Flow monitoring                   |                           |                                                                                                                                                                       |
| Accuracy (in the measuring range) |                           | water: $< \pm (3 \% \text{ MW} + 0,2 \% \text{ MEW})$ ; glycol (35 %), oil (viscosity 68 mm <sup>2</sup> /s at 40 °C): $< \pm (5 \% \text{ MW} + 0,5 \% \text{ MEW})$ |
| Repeatability                     |                           | 0,1 l/min; 6 l/h; 0,006 m <sup>3</sup> /h                                                                                                                             |
| Temperature monitoring            |                           |                                                                                                                                                                       |
| Accuracy                          | [K]                       | $\pm 3 (Q > 1 \text{ l/min})$                                                                                                                                         |
| <b>Response times</b>             |                           |                                                                                                                                                                       |
| Flow monitoring                   |                           |                                                                                                                                                                       |
| Response time                     | [s]                       | 0.25; (dAP = 0)                                                                                                                                                       |
| Delay time programmable dS, dr    | [s]                       | 0...50                                                                                                                                                                |
| Damping process value dAP         | [s]                       | 0...1                                                                                                                                                                 |
| Temperature monitoring            |                           |                                                                                                                                                                       |
| Dynamic response T05 / T09        | [s]                       | T09 = 70 (Q > 5 l/min); (water)                                                                                                                                       |
| <b>Software / programming</b>     |                           |                                                                                                                                                                       |
| Parameter setting options         |                           | Flow monitoring; quantity meter; Preset counter; Temperature monitoring                                                                                               |
| <b>Operating conditions</b>       |                           |                                                                                                                                                                       |
| Ambient temperature               | [°C]                      | -10...60                                                                                                                                                              |
| Storage temperature               | [°C]                      | -25...80                                                                                                                                                              |
| Protection                        |                           | IP 67                                                                                                                                                                 |
| <b>Tests / approvals</b>          |                           |                                                                                                                                                                       |
| EMC                               | EN 61000-4-2 ESD          | 4 kV CD / 8 kV AD                                                                                                                                                     |
|                                   | EN 61000-4-3 HF radiated  | 10 V/m                                                                                                                                                                |
|                                   | EN 61000-4-4 Burst        | 2 kV                                                                                                                                                                  |
|                                   | EN 61000-4-5 Surge        | 0,5 kV                                                                                                                                                                |
|                                   | EN 61000-4-6 HF conducted | 10 V                                                                                                                                                                  |
|                                   | model number              | 001US                                                                                                                                                                 |
| CPA approval                      | accuracy class            | 3                                                                                                                                                                     |
|                                   | maximum allowable error   | -                                                                                                                                                                     |
|                                   | Q (min)                   | 0,5 m <sup>3</sup> /h                                                                                                                                                 |
|                                   | Q (t)                     | -                                                                                                                                                                     |
|                                   | Q (max)                   | 3 m <sup>3</sup> /h                                                                                                                                                   |
| Shock resistance                  | DIN IEC 68-2-27           | 20 g (11 ms)                                                                                                                                                          |
| Vibration resistance              | DIN IEC 68-2-6            | 5 g (10...2000 Hz)                                                                                                                                                    |
| MTTF                              | [years]                   | 175                                                                                                                                                                   |
| Pressure Equipment Directive      |                           | Sound engineering practice; can be used for group 2 fluids; group 1 fluids on request                                                                                 |
| <b>Mechanical data</b>            |                           |                                                                                                                                                                       |
| Weight                            | [g]                       | 1551.5                                                                                                                                                                |
| Housing                           |                           | rectangular                                                                                                                                                           |
| Dimensions                        | [mm]                      | 110 x 100 x 80.5                                                                                                                                                      |
| Materials                         |                           | housing: AlMgSi0,5 anodised; Sealing: FKM; PA 6.6; cover film: PA                                                                                                     |
| Materials (wetted parts)          |                           | Pipe section: stainless steel (316L/1.4404); Process connection sealing: NBR reinforced fibre Flat seal; FKM; PES                                                     |

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|                    |                                                     |
|--------------------|-----------------------------------------------------|
| Process connection | threaded connection G 3/4 external thread flat seal |
|--------------------|-----------------------------------------------------|

Displays / operating elements

|         |                  |                                              |
|---------|------------------|----------------------------------------------|
| Display | Display unit     | 6 x LED, green (l/min, m³/h, l, m³, 10³, °C) |
|         | switching status | 2 x LED, yellow                              |
|         | measured values  | alphanumeric display, 4-digit                |
|         | programming      | alphanumeric display, 4-digit                |

Accessories

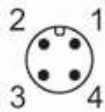
|                        |                                                     |
|------------------------|-----------------------------------------------------|
| Items supplied         | sealings: 2, Centellen                              |
| Accessories (optional) | adapter for pipe: 1 x R1/2, stainless steel, E40178 |
|                        | adapter for pipe: 1 x R1/2, brass, E40151           |

Remarks

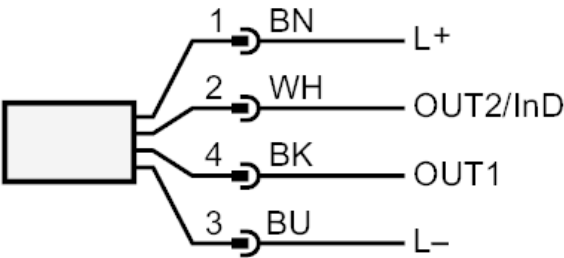
|               |                                             |
|---------------|---------------------------------------------|
| Remarks       | MW = measured value                         |
|               | MEW = Final value of the measuring range    |
|               | sealing: only with supplied Centellen seals |
| Pack quantity | 1 pcs.                                      |

Electrical connection

Connector: 1 x M12; coding: A; Moulded body: brass, Optalloy-plated; Contacts: gold-plated



Connection



|           |                                                                                                                                                                                      |
|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| OUT1:     | switching output volumetric flow quantity monitoring<br>Pulse output quantity meter<br>signal output Preset counter                                                                  |
| OUT2/InD: | switching output volumetric flow quantity monitoring / Temperature monitoring<br>analogue output volumetric flow quantity monitoring / Temperature monitoring<br>input counter reset |

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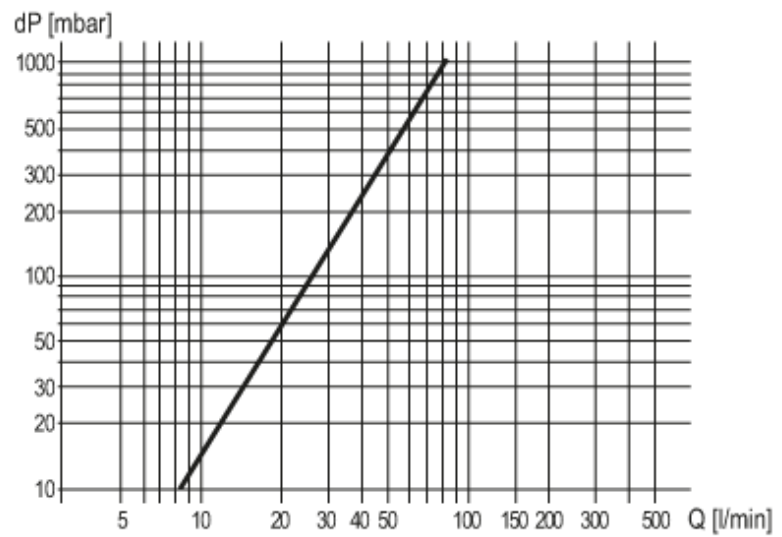
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### Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity