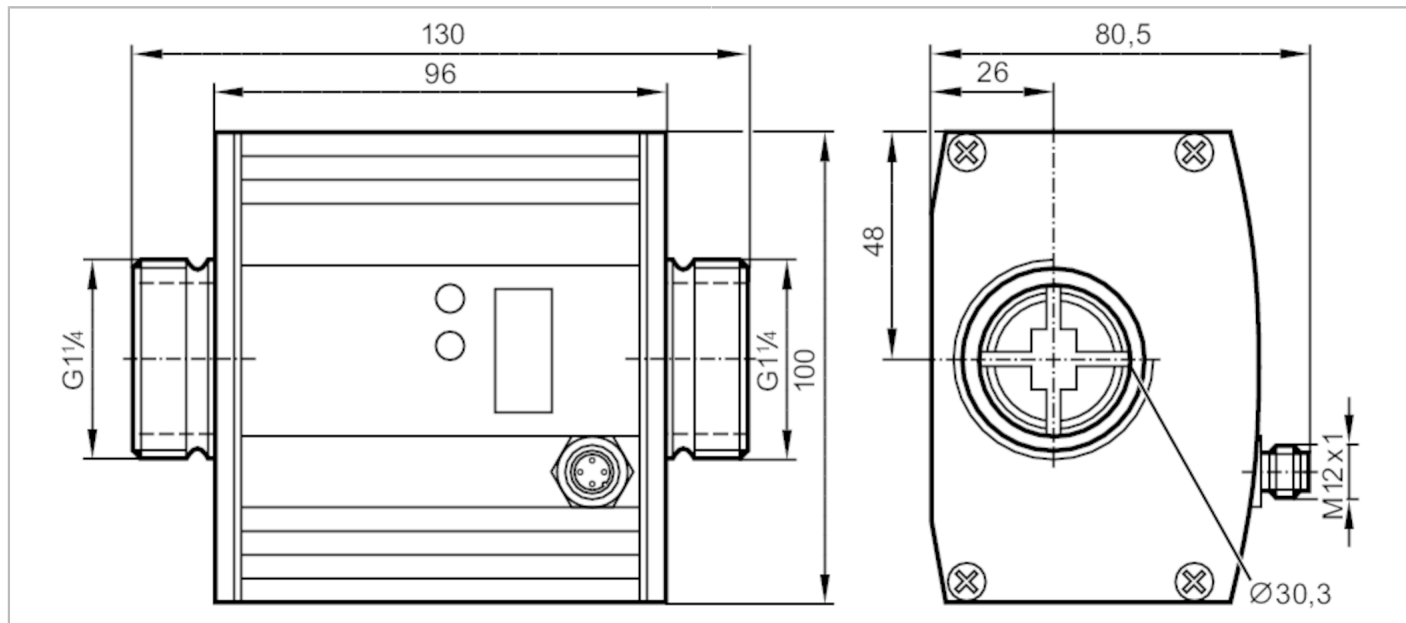


# SU9001



### Ultrasonic flow meter

SUR54HGBFRKG/W/US-100-IPF



## Application

|                    |       |                                                           |
|--------------------|-------|-----------------------------------------------------------|
| Application        |       | totaliser function; for industrial applications           |
| Installation       |       | connection to pipe by means of an adapter                 |
| Media              |       | water; glycol solutions; coolants; oil                    |
| Medien             |       | low-viscosity oils with viscosity: 7...40 mm²/s (40 °C)   |
|                    |       | high-viscosity oils with viscosity: 30...68 mm²/s (40 °C) |
| Medium temperature | [°F]  | 14...176                                                  |
| Pressure rating    | [bar] | 16                                                        |
| Pressure rating    | [psi] | 232                                                       |

## Electrical data

|                             |      |                                               |
|-----------------------------|------|-----------------------------------------------|
| Operating voltage           | [V]  | 19...30 DC; (according to EN 50178 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                                            |

## Inputs

|        |               |
|--------|---------------|
| Inputs | counter reset |
|--------|---------------|



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| 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...52.84 gpm                                                   | 0...3170 gph   |
| Display range                                        | 0...63.4 gpm                                                    | 0...3804 gph   |
| Resolution                                           | 0.02 gpm                                                        | 1 gph          |
| Set point SP                                         | 0.12...52.84 gpm                                                | 7...3170 gph   |
| Reset point rP                                       | 0...52.72 gpm                                                   | 0...3163 gph   |
| Analogue start point ASP                             | 0...42.46 gpm                                                   | 0...2547 gph   |
| Analogue end point AEP                               | 10.36...52.84 gpm                                               | 621...3170 gph |
| Max. flow rate                                       | 63.4 gpm                                                        | 3804 gph       |
| In steps of                                          | 0.02 gpm                                                        | 1 gph          |
| volumetric flow quantity monitoring                  |                                                                 |                |
| Pulse value                                          | 0.02...9000 * 10 <sup>3</sup> gal                               |                |
| In steps of                                          | 0.02 gal                                                        |                |
| Pulse length [s]                                     | 0,095...2                                                       |                |
| Temperature monitoring                               |                                                                 |                |
| Measuring range [°F]                                 | 14...176                                                        |                |
| Resolution [°F]                                      | 0.5                                                             |                |
| Set point SP [°F]                                    | 14.5...176                                                      |                |
| Reset point rP [°F]                                  | 14...175.5                                                      |                |
| Analogue start point [°F]                            | 14...144                                                        |                |
| Analogue end point [°F]                              | 46...176                                                        |                |
| In steps of [°F]                                     | 0.5                                                             |                |



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| Accuracy / deviations                |                                                                                                                |                                         |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| Flow monitoring                      |                                                                                                                |                                         |
| Accuracy (in the measuring range)    | < ± (3 % MW + 0,2 % MEW) / < ± (8 % MW + 0,5 % MEW);<br>(water; glycol: 35%; oil: viscosity 68 mm²/s at 40 °C) |                                         |
| Repeatability                        | 0,05 gpm; 3 gph                                                                                                |                                         |
| Temperature monitoring               |                                                                                                                |                                         |
| Accuracy                             | [K]                                                                                                            | ± 5,4 (Q > 0,26 gpm)                    |
| Response times                       |                                                                                                                |                                         |
| Flow monitoring                      |                                                                                                                |                                         |
| Response time                        | [s]                                                                                                            | 0.25; (dAP = 0)                         |
| Delay time programmable dS, dr       | [s]                                                                                                            | 0...50                                  |
| Damping for the switching output dAP | [s]                                                                                                            | 0...1                                   |
| Temperature monitoring               |                                                                                                                |                                         |
| Dynamic response T05 / T09           | [s]                                                                                                            | T09 = 30 (Q > 5 gpm); (water)           |
| Software / programming               |                                                                                                                |                                         |
| Parameter setting options            | Flow monitoring; quantity meter; Preset counter; Temperature monitoring                                        |                                         |
| Operating conditions                 |                                                                                                                |                                         |
| Ambient temperature                  | [°F]                                                                                                           | 14...140                                |
| Storage temperature                  | [°F]                                                                                                           | -13...176                               |
| Protection                           | IP 67                                                                                                          |                                         |
| Tests / approvals                    |                                                                                                                |                                         |
| 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                                    |
| 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]                                                                                                        | 185                                     |
| Pressure Equipment Directive         | Sound Engineering Practice; can be used for group 2 fluids; group 1 fluids on request                          |                                         |
| Mechanical data                      |                                                                                                                |                                         |
| Weight                               | [g]                                                                                                            | 1880.2                                  |
| Materials                            | housing: AlMgSi0,5 anodised; Sealing: FKM; connector housing: brass Optalloy-plated; PA 6.6; cover film: PA    |                                         |
| Materials (wetted parts)             | stainless steel (1.4404 / 316L); FKM; PPS; Centellen 200                                                       |                                         |
| Process connection                   | threaded connection G 1 1/4 flat seal                                                                          |                                         |
| Displays / operating elements        |                                                                                                                |                                         |
| Display                              | Display unit                                                                                                   | 5 x LED, green (gpm, gph, gal, °F, 10³) |
|                                      | switching status                                                                                               | 2 x LED, yellow                         |
|                                      | measured values                                                                                                | alphanumeric display, 4-digit           |
|                                      | programming                                                                                                    | alphanumeric display, 4-digit           |

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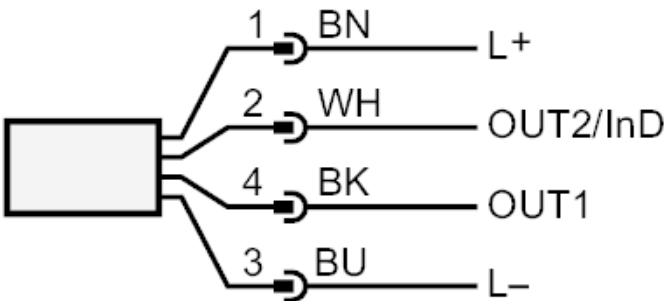
| Accessories            |                                                      |
|------------------------|------------------------------------------------------|
| Accessories (supplied) | sealings: 2, Centellen                               |
| Accessories (optional) | adapter for pipe: 1 x 1 NPT, stainless steel, E40206 |
| Remarks                |                                                      |
| Remarks                | sealing: only with supplied Centellen seals          |
|                        | MW = measured value                                  |
|                        | MEW = Final value of the measuring range             |
| Pack quantity          | 1 pcs.                                               |

### Electrical connection

Connector: 1 x M12; 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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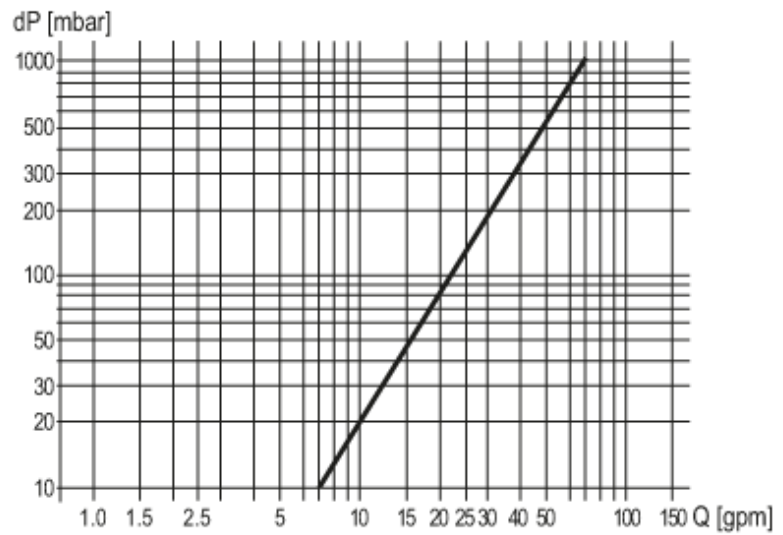
## Ultrasonic flow meter

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### Diagrams and graphs

Pressure loss



dP Pressure loss

Q volumetric flow quantity