

# Flow Sensor

## FFAF180

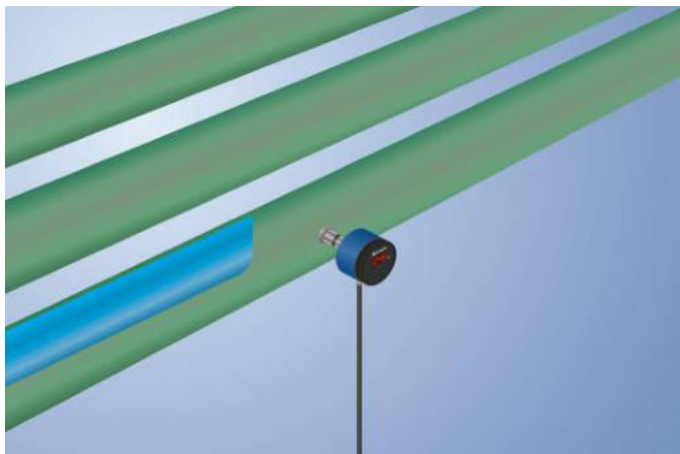
Part Number

UniFlow



- Highest precision of its class
- Installation in any position
- Measurement independent of flow direction
- Simple operation via the display
- Temperature of the medium: 0 ... 60° C (140° C for 24 hours without current measurement)

wenglor UniFlow flow sensors measure the flow rate of aqueous and oily media in closed piping systems. UniFlow flow sensors are very easy to operate thanks to the integrated display. The highly visible switching status display enables the rapid localization of affected sensors for maintenance processes.



### Technical Data

#### Sensor-specific data

|                                           |               |
|-------------------------------------------|---------------|
| Measuring Range                           | 15...100 cm/s |
| Adjustable Range                          | 20...100 cm/s |
| Medium                                    | Oil           |
| Measuring error                           | 2 %           |
| Switching Hysteresis                      | 5 %           |
| Temperature gradient                      | 30 K          |
| Response time in case of temperature jump | 10 s          |

#### Environmental conditions

|                                            |                     |
|--------------------------------------------|---------------------|
| Temperature of medium                      | 0...60 °C           |
| Ambient temperature                        | -20...70 °C         |
| Mechanical Strength                        | 60 bar              |
| EMC                                        | DIN EN 60947-5-9    |
| Shock resistance per DIN IEC 68-2-27       | 30 g / 11 ms        |
| Vibration resistance per DIN IEC 60068-2-6 | 20 g (10...2000 Hz) |

#### Electrical Data

|                                             |              |
|---------------------------------------------|--------------|
| Supply Voltage                              | 16...32 V DC |
| Current Consumption (U <sub>b</sub> = 24 V) | 60 mA        |
| Switching Outputs                           | 2            |
| Switching Output A1                         | Flow         |
| Switching Output A2                         | Flow         |
| Response Time                               | 4...15 s     |
| Switching Output/Switching Current          | < 250 mA     |
| Switching Output Voltage Drop               | < 2 V        |
| Short Circuit Protection                    | yes          |
| Reverse Polarity Protection                 | yes          |
| Protection Class                            | III          |

#### Mechanical Data

|                                 |                     |
|---------------------------------|---------------------|
| Setting Method                  | Menu                |
| Housing Material                | PBT; PC; FKM        |
| Material Control Panel          | Polyester           |
| Material in contact with media  | 1.4435; 1.4404; FKM |
| Degree of Protection            | IP67 *              |
| Connection                      | M12 × 1; 4-pin      |
| Process Connection              | G 1/4"              |
| Process Connection Length (PCL) | 42 mm               |
| Probe Length (PL)               | 10 mm               |

#### Safety-relevant Data

|                                  |           |
|----------------------------------|-----------|
| MTTFd (EN ISO 13849-1)           | 1341,35 a |
| Diagnostic Coverage (DC)         | 0 %       |
| Service Life TM (EN ISO 13849-1) | 20 a      |

PNP NO/NC switchable



Connection Diagram No.

536

Control Panel No.

A03

Suitable Connection Technology No.

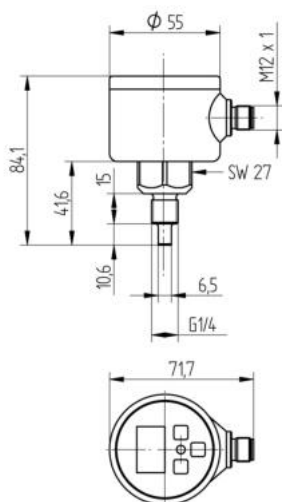
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\* Tested by wenglor

### Complementary Products

Seal G1/4" ZH5G001

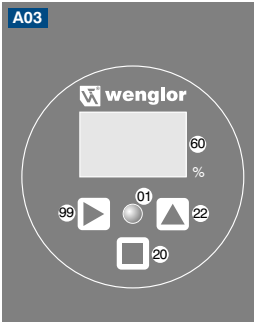
Software



All dimensions in mm (1 mm = 0.03937 Inch)

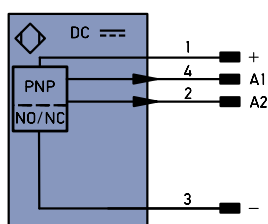


## Ctrl. Panel



01 = Switching Status Indicator  
20 = Enter Button  
22 = UP Button  
60 = Display  
99 = Right button

536



## Legend

|           |                                            |          |                              |
|-----------|--------------------------------------------|----------|------------------------------|
| +         | Supply Voltage +                           | PT       | Platinum measuring resistor  |
| -         | Supply Voltage 0 V                         | nc       | not connected                |
| ~         | Supply Voltage (AC Voltage)                | U        | Test Input                   |
| A         | Switching Output (NO)                      | U        | Test Input inverted          |
| Ā         | Switching Output (NC)                      | W        | Trigger Input                |
| V         | Contamination/Error Output (NO)            | O        | Analog Output                |
| Ṽ         | Contamination/Error Output (NC)            | O-       | Ground for the Analog Output |
| E         | Input (analog or digital)                  | BZ       | Block Discharge              |
| T         | Teach Input                                | AWV      | Valve Output                 |
| Z         | Time Delay (activation)                    | a        | Valve Control Output +       |
| S         | Shielding                                  | b        | Valve Control Output 0 V     |
| RxD       | Interface Receive Path                     | SY       | Synchronization              |
| TxD       | Interface Send Path                        | E+       | Receiver-Line                |
| RDY       | Ready                                      | S+       | Emitter-Line                 |
| GND       | Ground                                     | ±        | Grounding                    |
| CL        | Clock                                      | SnR      | Switching Distance Reduction |
| E/A       | Output/Input programmable                  | Rx+/-    | Ethernet Receive Path        |
| IO-Link   | IO-Link                                    | Tx+/-    | Ethernet Send Path           |
| PoE       | Power over Ethernet                        | Bus      | Interfaces-Bus A(+)/B(-)     |
| IN        | Safety Input                               | La       | Emitted Light disengageable  |
| OSSD      | Safety Output                              | Mag      | Magnet activation            |
| Signal    | Signal Output                              | RES      | Input confirmation           |
| BI-D+/-   | Ethernet Gigabit bidirect. data line (A-D) | EDM      | Contacting Monitoring        |
| EN0 RS422 | Encoder 0-pulse 0-0 (TTL)                  | ENAR5422 | Encoder A/A (TTL)            |
|           |                                            | ENBR5422 | Encoder B/B (TTL)            |

|        |                     |
|--------|---------------------|
| ENa    | Encoder A           |
| ENb    | Encoder B           |
| AMIN   | Digital output MIN  |
| AMAX   | Digital output MAX  |
| AOK    | Digital output OK   |
| SY In  | Synchronization In  |
| SY OUT | Synchronization OUT |
| OLt    | Brightness output   |
| M      | Maintenance         |
| rsv    | reserved            |

## Wire Colors according to DIN IEC 757

|      |              |
|------|--------------|
| BK   | Black        |
| BN   | Brown        |
| RD   | Red          |
| OG   | Orange       |
| YE   | Yellow       |
| GN   | Green        |
| BU   | Blue         |
| VT   | Violet       |
| GY   | Grey         |
| WH   | White        |
| PK   | Pink         |
| GNYE | Green/Yellow |

