

# Flow Sensor

## FFAF188

Part Number

UniFlow



- Display can be switched between flow and medium temperature
- Highest precision of its class
- Measurement independent of flow direction
- Selectable measuring range
- Temperature of the medium: 0 ... 100° 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

|                                           |               |
|-------------------------------------------|---------------|
| Selectable measuring range                | 10...300 cm/s |
| Measuring range 1                         | 10...150 cm/s |
| Adjustable range 1                        | 15...150 cm/s |
| Measuring range 2                         | 20...300 cm/s |
| Adjustable range 2                        | 30...300 cm/s |
| Medium                                    | Water         |
| 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...100 °C          |
| Temperature of the medium, short-term      | 140 °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                           | 1                     |
| Analog Output                               | 4...20 mA Flow / Temp |
| Response Time                               | 1...5 s               |
| Switching Output/Switching Current          | < 250 mA              |
| Switching Output Voltage Drop               | < 2 V                 |
| Current Output Load Resistance              | < 500 Ohm             |
| 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)           | 1194,55 a |
| Diagnostic Coverage (DC)         | 0 %       |
| Service Life TM (EN ISO 13849-1) | 20 a      |

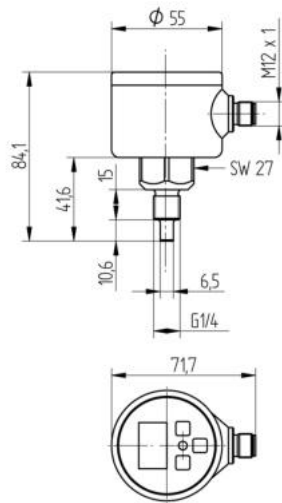
|                                                 |   |
|-------------------------------------------------|---|
| Analog output switchable to flow or temperature | ● |
| PNP NO/NC switchable                            | ● |

|                                    |     |
|------------------------------------|-----|
| Connection Diagram No.             | 533 |
| Control Panel No.                  | A03 |
| Suitable Connection Technology No. | 21  |

\* Tested by wenglor

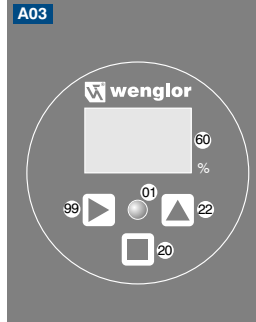
### Complementary Products

|                    |
|--------------------|
| Seal G1/4" ZH5G001 |
| Software           |



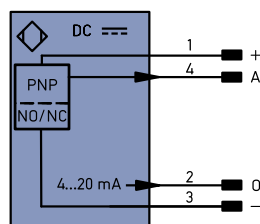
All dimensions in mm (1 mm = 0.03937 Inch)

## Ctrl. Panel



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

533



## 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      | Contactors 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 |

