



Datasheet

Turbine Flow meter

SUP-LWGY

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## Datasheet

### Turbine Flow meter SUP-LWGY

The LWGY turbine flowmeter is connected with the converter through the flow sensor, and realizes various functions such as pulse output, current output, and on-site display. The flowmeter has the characteristics of high precision, wide measurement range, long life, simple operation and maintenance, etc. It can be widely used in food, medicine, petrochemical, metallurgy, papermaking and other industries, and is an ideal instrument for flow measurement.

The flowmeter is suitable for liquids that do not corrode stainless steel 304, 2Cr13, corundum (Al<sub>2</sub>O<sub>3</sub>), cemented carbide, etc., and have no impurities such as fibers and particles.

#### Application

- Food
- Medicine
- Petrochemical
- Metallurgy,
- Paper making

#### Features

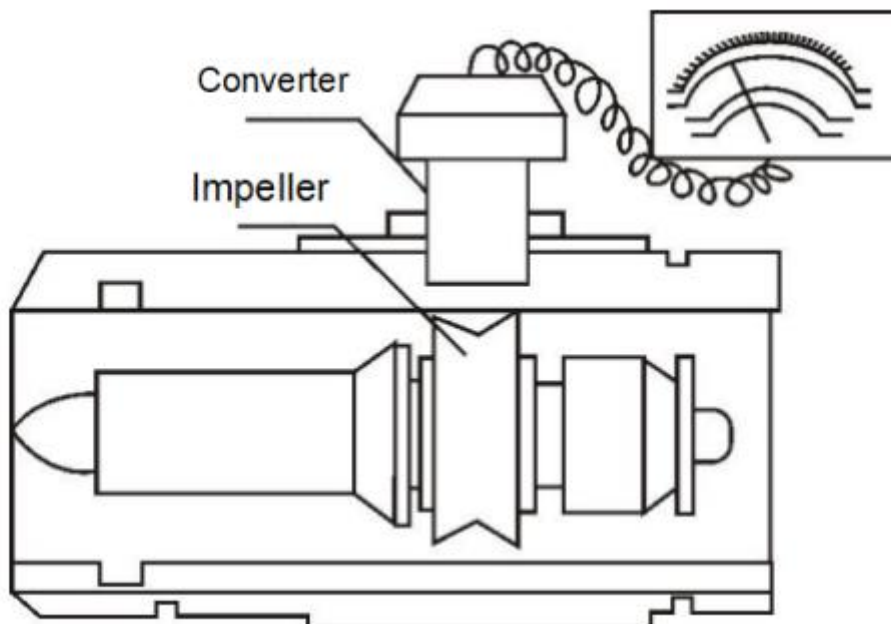
- Multiple functions
- High accuracy,
- Wide measuring range,
- Long life,
- Simple operation and maintenance



**Turbine flow meter**

## Principle

When the measured liquid flows through the flow meter sensor, its internal impeller rotates with the help of liquid kinetic energy. At this time, the impeller blade causes the magnetic resistance in the detection device to change periodically. Therefore, an electric pulse signal proportional to the flow rate is induced at both ends of the detection coil, and is amplified by the preamplifier then sent to the display unit. The single chip microcomputer system in the display unit calculates according to the number of pulses measured and the meter coefficient K of the flow meter, and displays the instantaneous flow rate and the accumulated total amount.



The relationship between the meter coefficient and instantaneous flow, frequency, pulse number, and cumulative total is:

$$K=f/Q \text{ and } K=N/V$$

In the formula:

f—flow signal frequency (Hz)

Q—instantaneous flow rate (m<sup>3</sup>/s, or /L/s)

N—pulse number

V—Total volume (m<sup>3</sup>)

K—Meter coefficient(1/m<sup>3</sup> or 1/L

## Parameters

| Parameters           | Details  |
|----------------------|--|
| Medium               | Liquid (water, beverage, lubricating oil, hydraulic oil, organic liquid, inorganic liquid without fiber and particle impurities, etc.)             |
| Nominal diameter     | DN4-DN200mm;   |
| Accuracy             | 1.0 %(standard),0.5%;  |
| Medium viscosity     | $<5 \times 10^{-6} \text{m}^2/\text{s}$ ( $>5 \times 10^{-6} \text{m}^2/\text{s}$ , the flow meter should be calibrated in real liquid before use) |
| Medium temperature   | -20 °C ~ + 120 °C (stainless steel pipe)   |
| Ambient temperature  | -20 °C ~ + 60 °C   |
| Relative humidity    | 5% ~ 90%   |
| Atmospheric pressure | 86kpa ~ 106kPa   |
| Power supply         | 3.6V, 12V, 24V   |
| Signal output        | pulse signal、4~20mA current signal、Modbus  |
| Ingress protection   | IP65(IP67, IP68 optional, pulse converter probe IP00)  |

Wiring

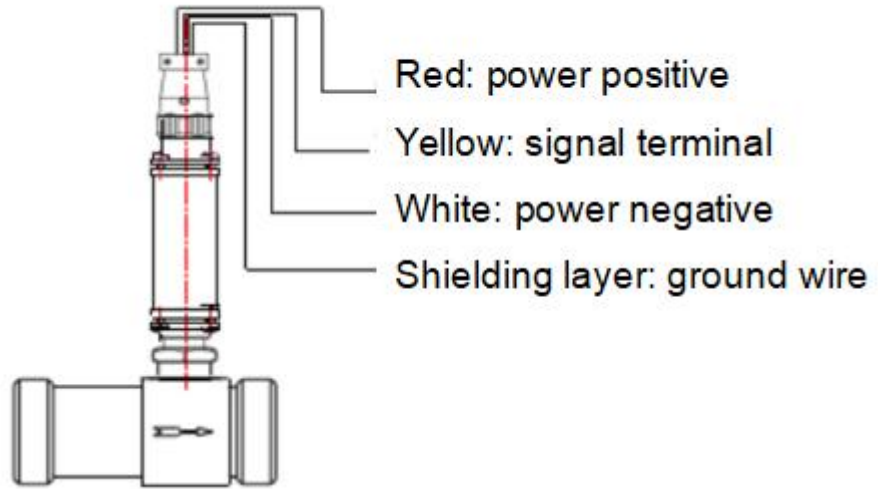


Figure1 Figure 11 Wiring diagram of sensor and display instrument

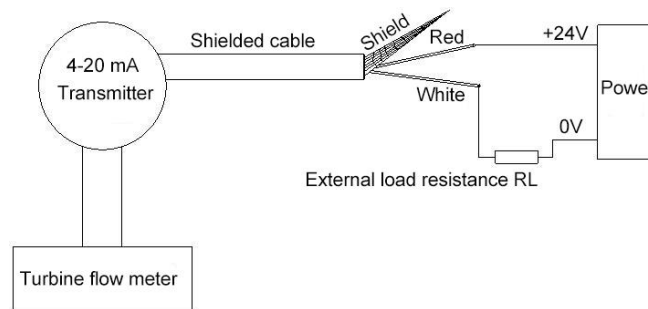
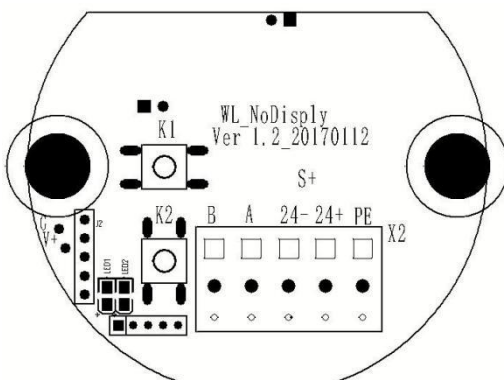


Figure 2 Schematic diagram of external wiring



|     |                     |
|-----|---------------------|
| PE  | Ground              |
| 24+ | 24V power supply+   |
| 24- | 24V power supply    |
| A   | 485 Communication A |
| B   | 485 communication B |

Figure 3 Schematic diagram of internal wiring diagram

**Instrument selection and model marking**

| DN<br>(mm) | Flange connection |           |           |           |           |                           | Whole<br>meter<br>height | Herssman<br>joint height |
|------------|-------------------|-----------|-----------|-----------|-----------|---------------------------|--------------------------|--------------------------|
|            | PN<br>(MPa)       | L<br>(mm) | D<br>(mm) | K<br>(mm) | d<br>(mm) | N<br>(Number of<br>holes) |                          |                          |
| 10         |                   |           |           |           |           |                           |                          |                          |
| 15         | 2.5               | 75        | 95        | 65        | 14        | 4                         |                          |                          |
| 20         | 2.5               | 85        | 105       | 75        | 14        | 4                         |                          |                          |
| 25         | 2.5               | 100       | 115       | 85        | 14        | 4                         | 290                      | 220                      |
| 32         | 2.5               | 120       | 140       | 100       | 14        | 4                         | 310                      | 240                      |
| 40         | 2.5               | 140       | 150       | 110       | 18        | 4                         | 318                      | 248                      |
| 50         | 2.5               | 150       | 165       | 125       | 18        | 4                         | 327                      | 257                      |
| 65         | 1.6               | 175       | 185       | 145       | 18        | 4                         | 347                      | 277                      |
| 80         | 1.6               | 200       | 200       | 160       | 18        | 8                         | 360                      | 290                      |
| 100        | 1.6               | 220       | 220       | 180       | 18        | 8                         | 388                      | 318                      |
| 125        | 1.6               | 250       | 250       | 210       | 18        | 8                         |                          |                          |
| 150        | 1.6               | 300       | 285       | 240       | 22        | 8                         | 448                      | 378                      |
| 200        | 1.6               | 360       | 340       | 295       | 22        | 12                        | 490                      | 420                      |

| DN<br>(mm) | Threaded connection |           |                           |                          |                        | Clamp connection |                                       |                                 |
|------------|---------------------|-----------|---------------------------|--------------------------|------------------------|------------------|---------------------------------------|---------------------------------|
|            | PN (MPa)            | L<br>(mm) | G<br>(External<br>thread) | Whole<br>meter<br>height | Herssman<br>joint high | PN<br>(MPa)      | Clamp<br>connection<br>length<br>(mm) | Clamp outer<br>diameter<br>(mm) |
| 4          | 6.3                 | 225       | G1/2                      | 244                      | 174                    | 1.6              | 50                                    | 50.5                            |
| 6          | 6.3                 | 225       | G1/2                      | 244                      | 174                    | 1.6              | 50                                    | 50.5                            |
| 8          | 6.3                 | 345       | G1/2                      | 244                      | 174                    | 1.6              | 50                                    | 50.5                            |
| 10         | 6.3                 | 345       | G1/2                      | 244                      | 174                    | 1.6              | 50                                    | 50.5                            |
| 15         | 6.3                 | 75        | G1                        | 244                      | 174                    | 1.6              | 75                                    | 50.5                            |
| 20         | 6.3                 | 85        | G1                        | 249                      | 179                    | 1.6              | 85                                    | 50.5                            |
| 25         | 6.3                 | 100       | G1 1/4                    | 258                      | 188                    | 1.6              | 100                                   | 50.5                            |
| 32         | 2.5                 | 120       | G1 1/2                    | 265                      | 195                    | 1.6              | 120                                   | 50.5                            |
| 40         | 2.5                 | 140       | G2                        | 273                      | 203                    | 1.6              | 140                                   | 64                              |
| 50         | 2.5                 | 150       | G2 1/2                    |                          |                        | 1.6              | 150                                   | 77                              |
| 65         | 1.6                 | 175       | G3                        |                          |                        | 1.6              | 175                                   | 91                              |
| 80         | 1.6                 | 200       | G3 1/2                    |                          |                        | 1.6              | 200                                   | 106                             |
| 100        | 1.6                 | 220       | G4 1/2                    |                          |                        | 1.6              | 220                                   | 119                             |
| 125        |                     |           |                           |                          |                        |                  |                                       |                                 |
| 150        |                     |           |                           |                          |                        |                  |                                       |                                 |
| 200        |                     |           |                           |                          |                        |                  |                                       |                                 |

## Ordering code

| SUP -LWGY-I1-DN40-F1-J5-P2-B1-MQ1-IP2 |    |      |    |    |    |   |   |   |   |   |   |   |   | Description |  |  |
|---------------------------------------|----|------|----|----|----|---|---|---|---|---|---|---|---|-------------|--|--|
| SUP-LWGY                              | -  | -    | -  | -  | -  | - | - | - | - | - | - | - | - | -           |  |  |
|                                       | I1 |      |    |    |    |   |   |   |   |   |   |   |   |             |  | Threaded   |
| Installation                          | I2 |      |    |    |    |   |   |   |   |   |   |   |   |             |  | Flange   |
|                                       | I3 |      |    |    |    |   |   |   |   |   |   |   |   |             |  | Clamp  |
| Diameter                              |    | DNXX |    |    |    |   |   |   |   |   |   |   |   |             |  | DN4 - DN200  |
|                                       |    |      | F1 |    |    |   |   |   |   |   |   |   |   |             |  | No display: Herssman joint pulse output (24 VDC power supply)            |
|                                       |    |      | F2 |    |    |   |   |   |   |   |   |   |   |             |  | No display: Herssman joint 4-20mA output (24 VDC power supply)           |
|                                       |    |      | F3 |    |    |   |   |   |   |   |   |   |   |             |  | No display:pulse output (24 VDC power supply)                            |
|                                       |    |      | F4 |    |    |   |   |   |   |   |   |   |   |             |  | No display:4-20mA output (24 VDC power supply)                           |
| Converter                             |    |      | F5 |    |    |   |   |   |   |   |   |   |   |             |  | LCD display: No output (3.6V lithium battery supply)                     |
|                                       |    |      | F6 |    |    |   |   |   |   |   |   |   |   |             |  | LCD display: pulse output ( 24 VDC power supply)                         |
|                                       |    |      | F7 |    |    |   |   |   |   |   |   |   |   |             |  | LCD display: 4-20mA output (24 VDC power supply)                         |
|                                       |    |      | F8 |    |    |   |   |   |   |   |   |   |   |             |  | LCD display: pulse output(3.6V lithium battery and 24 VDC power supply)  |
|                                       |    |      | F8 |    |    |   |   |   |   |   |   |   |   |             |  | LCD display: 4-20mA output(3.6V lithium battery and 24 VDC power supply) |
| Accuracy                              |    |      |    | J6 |    |   |   |   |   |   |   |   |   |             |  | 1% (standard)  |
|                                       |    |      |    | J5 |    |   |   |   |   |   |   |   |   |             |  | 0.5%   |
|                                       |    |      |    |    | P2 |   |   |   |   |   |   |   |   |             |  | 1.0MPa   |
| Nominal pressure                      |    |      |    |    | P3 |   |   |   |   |   |   |   |   |             |  | 1.6MPa   |
|                                       |    |      |    |    | P4 |   |   |   |   |   |   |   |   |             |  | 2.5MPa   |
|                                       |    |      |    |    | P6 |   |   |   |   |   |   |   |   |             |  | 6.3MPa   |
|                                       |    |      |    |    | PZ |   |   |   |   |   |   |   |   |             |  | Others   |
| Pipe material                         |    |      |    |    | B1 |   |   |   |   |   |   |   |   |             |  | 304 stainless steel  |
|                                       |    |      |    |    | B2 |   |   |   |   |   |   |   |   |             |  | 316 stainless steel  |
| Impeller material                     |    |      |    |    |    |   |   |   |   |   |   |   |   |             |  | 2Cr13 impeller   |
|                                       |    |      |    |    |    |   |   |   |   |   |   |   |   |             |  | Duplex Steel Impeller  |
| Ingress protection                    |    |      |    |    |    |   |   |   |   |   |   |   |   |             |  | IP00(Pulse Converter Probe IP00)   |

|  |     |  |  |  |  |  |      |
|--|-----|--|--|--|--|--|------|
|  | IP1 |  |  |  |  |  | IP65 |
|  | IP2 |  |  |  |  |  | IP67 |
|  | IP3 |  |  |  |  |  | IP68 |