

# KFF/KFG TURBINE FLOW SENSORS AND FLOWMETERS



Flow  
Pressure  
Level  
Temperature  
measurement  
monitoring  
control



## Series 1000 Flow Sensors

- Linear 0–5 VDC Output Signal
- Highly Repeatable
- Very Stable
- No Zero Drift
- Standard 12 VDC Input Power
- Liquid or Gas Versions

## Series 3000 Flowmeters

- All Features of the Series 1000 Flow Sensors
- Very Compact
- Power-Efficient LCD Display

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Model:  
KFF/KFG



## Features

### Series 1000 Flow Sensors

- Linear 0–5 VDC Output Signal
- Highly Repeatable
- Very Stable
- No Zero Drift
- Wide Variety of Wetted Materials
- Standard 12 VDC Input Power
- Liquid or Gas Versions

### Series 3000 Flowmeters

- All Features of the Series 1000 Flow Sensors
- Very Compact
- Power-Efficient LCD Display

KOBOLD KFF/KFG Flow Sensors can measure very low flow rates. They are suitable for a wide variety of industrial, commercial and laboratory flow applications involving media transparent to the near-infrared spectrum. The flow sensor uses a Pelton-type turbine wheel and photodiodes to generate an electrical signal linearly proportional to flow rate. This output signal (accessible via the included cable) can be either a pulse or 0–5 VDC analog output usable with a variety of data acquisition equipment. These sensors are available in Ryton®, brass or PTFE (Teflon®) construction for applicability to a wide variety of process situations.

Our PTFE sensors come standard with both analog (0-5 VDC) and frequency outputs. The frequency output on other models is optional. If price is a sensitive issue, the standard PTFE/Kalrez® fittings on the KFF/KFG-1500 series can be replaced with PVDF (aka. Kynar®)/Viton® for a slight cost reduction ... just call your factory representative for details.



## KOBOLD KFF-1003

### Specifications

|                      |                      |
|----------------------|----------------------|
| <b>Accuracy:</b>     | ± 3% of full scale   |
| <b>Linearity:</b>    | ± 3% of full scale   |
| <b>Repeatability</b> |                      |
| <b>Liquid:</b>       | ± 0.2% of full scale |
| <b>Gas:</b>          | ± 1% of full scale   |

### Temperature Ratings

|               |                |
|---------------|----------------|
| <b>Range:</b> | 32°F to 120 °F |
| <b>Drift:</b> | ±0.1%/°F       |

### Maximum Pressure Ratings

|                      |          |
|----------------------|----------|
| <b>Liquids (KFF)</b> |          |
| <b>Ryton®:</b>       | 100 PSIG |
| <b>Brass:</b>        | 500 PSIG |
| <b>PTFE:</b>         | 60 PSIG  |

|                       |         |
|-----------------------|---------|
| <b>Gases (KFG)</b>    |         |
| <b>All Materials:</b> | 40 PSIG |

|                  |             |
|------------------|-------------|
| <b>Fittings:</b> | Compression |
|------------------|-------------|

|                      |            |
|----------------------|------------|
| <b>Installation:</b> | Horizontal |
|----------------------|------------|

### Wetted Parts

|                    |                     |
|--------------------|---------------------|
| <b>Ryton Units</b> |                     |
| <b>Housing:</b>    | 60%Ryton/40%glass   |
| <b>Turbine:</b>    | 60%Ryton/40%glass   |
| <b>Bearing:</b>    | Sapphire            |
| <b>Support:</b>    | 316 Stainless Steel |
| <b>Gaskets:</b>    | Viton®              |
| <b>Fittings:</b>   | Acetal              |

### Brass Units

|                  |                     |
|------------------|---------------------|
| <b>Housing:</b>  | Brass & glass       |
| <b>Turbine:</b>  | 60%Ryton/40%glass   |
| <b>Bearing:</b>  | Sapphire            |
| <b>Support:</b>  | 316 Stainless Steel |
| <b>Gaskets:</b>  | Viton®              |
| <b>Fittings:</b> | brass               |

### PTFE Units

|                        |                 |
|------------------------|-----------------|
| <b>Housing:</b>        | PTFE            |
| <b>Turbine:</b>        | PTFE            |
| <b>Bearing:</b>        | Sapphire        |
| <b>Support:</b>        | PTFE            |
| <b>Gaskets:</b>        | Kalrez®         |
| <b>Fittings:</b>       | PFA             |
| <b>Output Signal:</b>  | 0–5 VDC         |
| <b>Option T:</b>       | 0–5 VDC & pulse |
| <b>PTFE Units:</b>     | 0–5 VDC & pulse |
| <b>Max. Frequency:</b> | 500 Hz          |

### Power Requirements

|                        |                   |
|------------------------|-------------------|
| <b>Voltage</b>         |                   |
| <b>Standard Units:</b> | 12.5 VDC ± 2 VDC  |
| <b>PTFE Units:</b>     | 12.5 VDC ± 1 VDC  |
| <b>Option B1:</b>      | 4.5 VDC ± 1.5 VDC |
| <b>Current:</b>        | 50 mA (typical)   |

**How to Order:**

KFF/KFG model numbers consist of two portions. The first portion is found in the flow range tables above and to the right. This number specifies the medium (air or water), the range, and the materials of construction. The second portion comes from the "Options" table to the lower right and specifies modifications to the standard series of meters. To order, combine a model number with all appropriate option suffixes.

**Example:** A brass water flowmeter, range 50–500 ml/min, with frequency output is:

KFF-1105T



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**Order Numbers**

| WATER        |                   |                 |              |          |          |
|--------------|-------------------|-----------------|--------------|----------|----------|
| Range ml/min | Pressure Drop PSI | Fittings (tube) | Model Number |          |          |
|              |                   |                 | Ryton®       | Brass    | PTFE     |
| 15– 100      | 15                | 1/8"            | KFF-1003     | KFF-1103 | KFF-1503 |
| 50– 500      | 10                | 1/4"            | KFF-1005     | KFF-1105 | KFF-1505 |
| 60–1000      | 7                 | 1/4"            | KFF-1006     | KFF-1106 | KFF-1506 |
| 100–2000     | 7                 | 1/4"            | KFF-1007     | KFF-1107 | KFF-1507 |
| 200–5000     | 10                | 3/8"            | KFF-1008     | KFF-1108 | KFF-1508 |
| 1–10L        | 10                | 3/8"            | KFF-1009     | KFF-1109 | KFF-1509 |

| AIR          |                                       |                 |              |
|--------------|---------------------------------------|-----------------|--------------|
| Range ml/min | Pressure Drop Inches H <sub>2</sub> O | Fittings (tube) | Model Number |
|              |                                       |                 | Ryton®       |
| 25– 100      | 20                                    | 1/8"            | KFG-1003     |
| 40– 200      | 10                                    | 1/8"            | KFG-1004     |
| 100– 500     | 3                                     | 1/8"            | KFG-1005     |
| 200–1000     | 2                                     | 1/8"            | KFG-1006     |
| 400–2000     | 2                                     | 1/4"            | KFG-1007     |
| 1– 5L        | 2                                     | 1/4"            | KFG-1008     |
| 2– 10L       | 2                                     | 1/4"            | KFG-1009     |
| 4– 20L       | 2                                     | 3/8"            | KFG-1010     |
| 10– 50L      | 2                                     | 3/8"            | KFG-1011     |
| 20–100L      | 2                                     | 1/2"            | KFG-1012     |
| 40–200L      | 2                                     | 1/2"            | KFG-1013     |
| 100–500L     | 3                                     | 1/2"            | KFG-1014     |

| Model # | Options  | Suffix |
|---------|--|--------|
|         | 5 VDC Input Power (Ryton® or brass sensors only) | B1     |
|         | Frequency Output (KFF liquid sensors only)       | T      |
|         | Brass Compression Fittings                       | C1     |
|         | Stainless Steel Compression Fittings             | C2     |



**Features**

- Low Volume Capable
- Digital Readout
- Low Cost
- Air or Liquids
- Ryton® or Brass

KOBOLD KFF/KFG Flowmeters combine the KFF/KFG Flow Sensor with a miniature display in an in-line configuration. The result is an economical electronic flow metering solution for gases and low viscosity liquids.

Available in either brass or Ryton®, the KFF/KFG-3000 line of flowmeters is compatible with a variety of common process fluids. Along with the 0.4" LCD display, the meters are delivered with an analog 0-5 VDC output as a standard feature.

Requiring only 35 mA at 12 VDC, this flowmeter is sufficiently power thrifty to allow operation off any appropriate battery. Your in-house 12 volt source may, of course, also be used ... just connect via the supplied cable.

**Specifications**

**Accuracy:** ± 3% of full scale  
**Linearity:** ± 3% of full scale  
**Repeatability**  
**Liquid:** ± 0.2% of full scale  
**Gas:** ± 0.5% of full scale  
**Temperature Ratings**  
**Range:** 32°F to 120 °F  
**Drift:** ±0.1%/°F



**KOBOLD KFF Flowmeter**

**Maximum Pressure Ratings**

**Liquids (KFF)**  
**Ryton®:** 100 PSIG  
**Brass:** 500 PSIG  
**Gases (KFG)**  
**All Materials:** 40 PSIG  
**Fittings:** Compression  
**Installation:** Horizontal

**Housing:** Brass & glass  
**Turbine:** 60%Ryton/40%glass  
**Bearing:** Sapphire  
**Support:** 316 Stainless Steel  
**Gaskets:** Viton®  
**Fittings:** brass

**Display**

**Type:** 3½ digit LCD  
**Character Height:** 0.4"

**Electrical Data**

**Output Signal:** 0-5 VDC  
**Power Requirements**  
**Voltage:** 12.5 VDC ± 2 VDC  
**Current:** 35 mA (typical)  
**Hook-Up:** via supplied cable

**Wetted Parts**

**Ryton Units**  
**Housing:** 60%Ryton/40%glass  
**Turbine:** 60%Ryton/40%glass  
**Bearing:** Sapphire  
**Support:** 316 Stainless Steel  
**Gaskets:** Viton®  
**Fittings:** Acetal  
**Brass Units**

**Order Numbers**

| WATER                                |                   |                 |                |          |
|--------------------------------------|-------------------|-----------------|----------------|----------|
| Range ml/min                         | Pressure Drop PSI | Fittings (tube) | Model Number   |          |
|                                      |                   |                 | Ryton®         | Brass    |
| 13-100                               | 10                | 1/8"            | KFF-3003       | KFF-3103 |
| 20-200                               | 10                | 1/8"            | KFF-3004       | KFF-3104 |
| 50-500                               | 10                | 1/4"            | KFF-3005       | KFF-3105 |
| 60-1000                              | 6                 | 1/4"            | KFF-3006       | KFF-3106 |
| 100-2000                             | 6                 | 1/4"            | KFF-3007       | KFF-3107 |
| 200-5000                             | 6                 | 3/8"            | KFF-3008       | KFF-3108 |
| Options                              |                   |                 | Model #/Suffix |          |
| Brass Compression Fittings           |                   |                 | C1             |          |
| Stainless Steel Compression Fittings |                   |                 | C2             |          |

| AIR          |                                       |                 |              |          |
|--------------|---------------------------------------|-----------------|--------------|----------|
| Range ml/min | Pressure Drop Inches H <sub>2</sub> O | Fittings (tube) | Model Number |          |
|              |                                       |                 | Ryton®       | Brass    |
| 20-100       | 20                                    | 1/8"            | KFG-3003     | KFG-3103 |
| 40-200       | 10                                    | 1/8"            | KFG-3004     | KFG-3104 |
| 100-500      | 3                                     | 1/8"            | KFG-3005     | KFG-3105 |
| 200-1000     | 3                                     | 1/8"            | KFG-3006     | KFG-3106 |
| 400-2000     | 3                                     | 1/4"            | KFG-3007     | KFG-3107 |
| 1-5L         | 3                                     | 1/4"            | KFG-3008     | KFG-3108 |
| 2-10L        | 3                                     | 1/4"            | KFG-3009     | -        |