



# K330U - 4-20mA Output KIT for Ultra Low Flow Sensor

## INSTRUCTION MANUAL

EN 10-11

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## 1. Introduction



### 1.1. Safety Instructions

#### General Statements

- ❑ Do not install and service the device without following the Instruction Manual.
- ❑ This unit is designed to be connected to other instruments which can be hazardous if used improperly. Read and follow all associated instrument manuals before using with this sensor.
- ❑ Installation and wiring connections should only be performed by qualified staff.
- ❑ Do not modify product construction.

#### Installation and Commissioning Statements

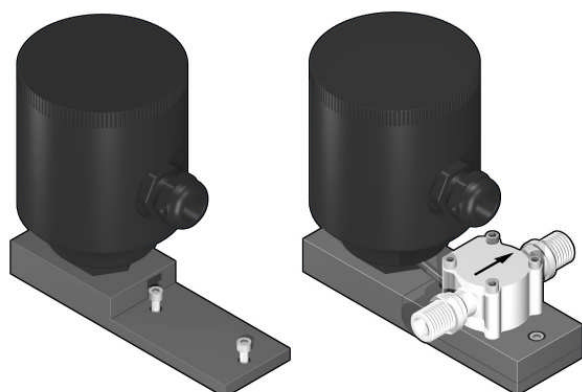
- ❑ Remove power to the device before wiring any connection.
- ❑ When the unit is powered and the cover is open, protection against electric shocks is not ensured.
- ❑ Do not exceed published specifications using this instrument.
- ❑ To clean the device, use only chemical compatible products.

### 1.2. Unpacking

Please verify that the product is complete and without any damage. The following items must be included:

- K330U – 4-20mA Output KIT for Ultra Low Flow Sensor with black sensor cap included
- Instruction Manual

## 2. Description



This Kit consists of an additional IP65 housing mounted aside the sensor via a PVC plate. It is a blind transmitter designed to convert the signal from the sensor into a 4...20 mA output for long distance transmission.

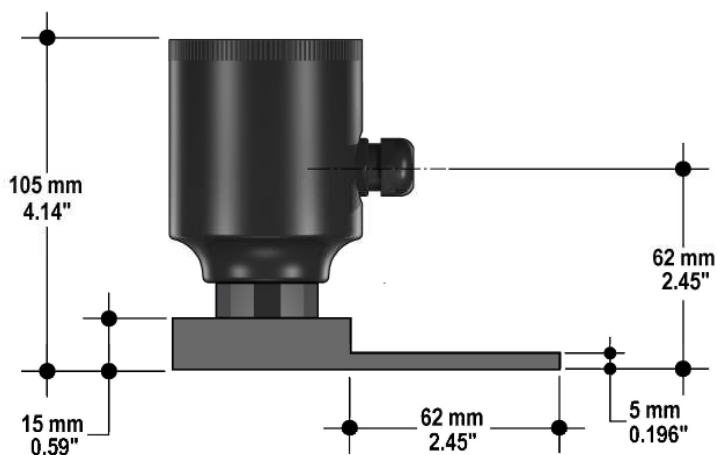
### 3. Specifications

#### 3.1. Technical Data

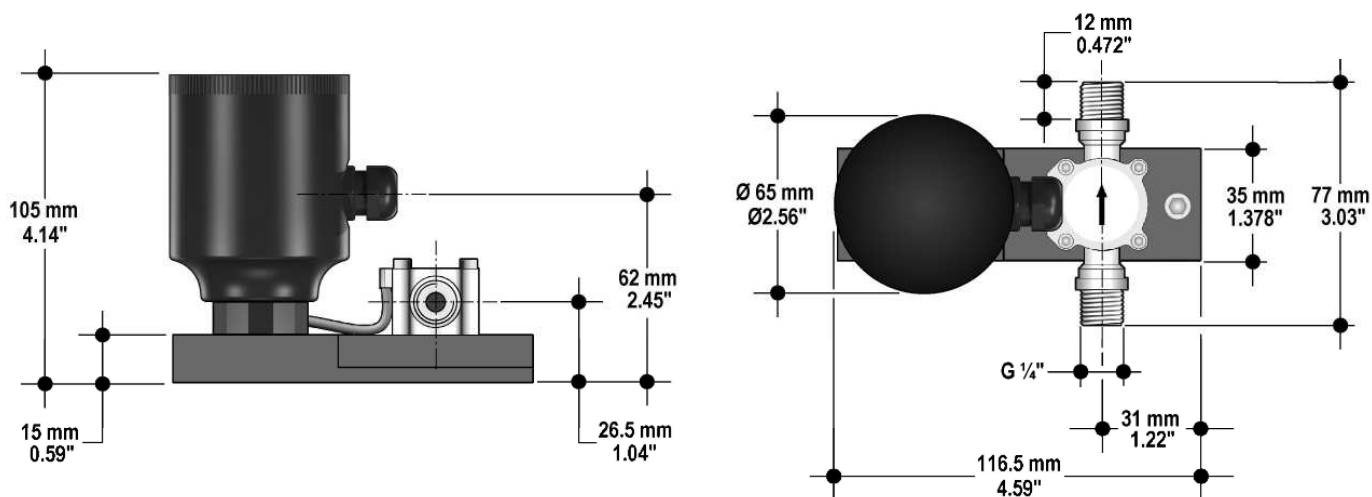
Associated Flow Sensor: Hall effect (ULFXX.H)  
 Supply voltage: 12 to 24 VDC regulated  
 Supply current: < 50 mA  
 Output signal: 4 to 20 mA, adjustable  
 Max load impedance: 800  $\Omega$  @ 24 VDC 300  $\Omega$  @ 12 VDC  
 Enclosure: IP65  
 Operating temperature: 0 to 60°C (32 to 140°F)  
 Relative humidity: 0 to 95% non-condensing  
 Housing material: PVC  
**Standards & Approvals**  
 Manufactured under ISO 9002  
 CE

#### 3.2. Dimensions

##### K330U KIT

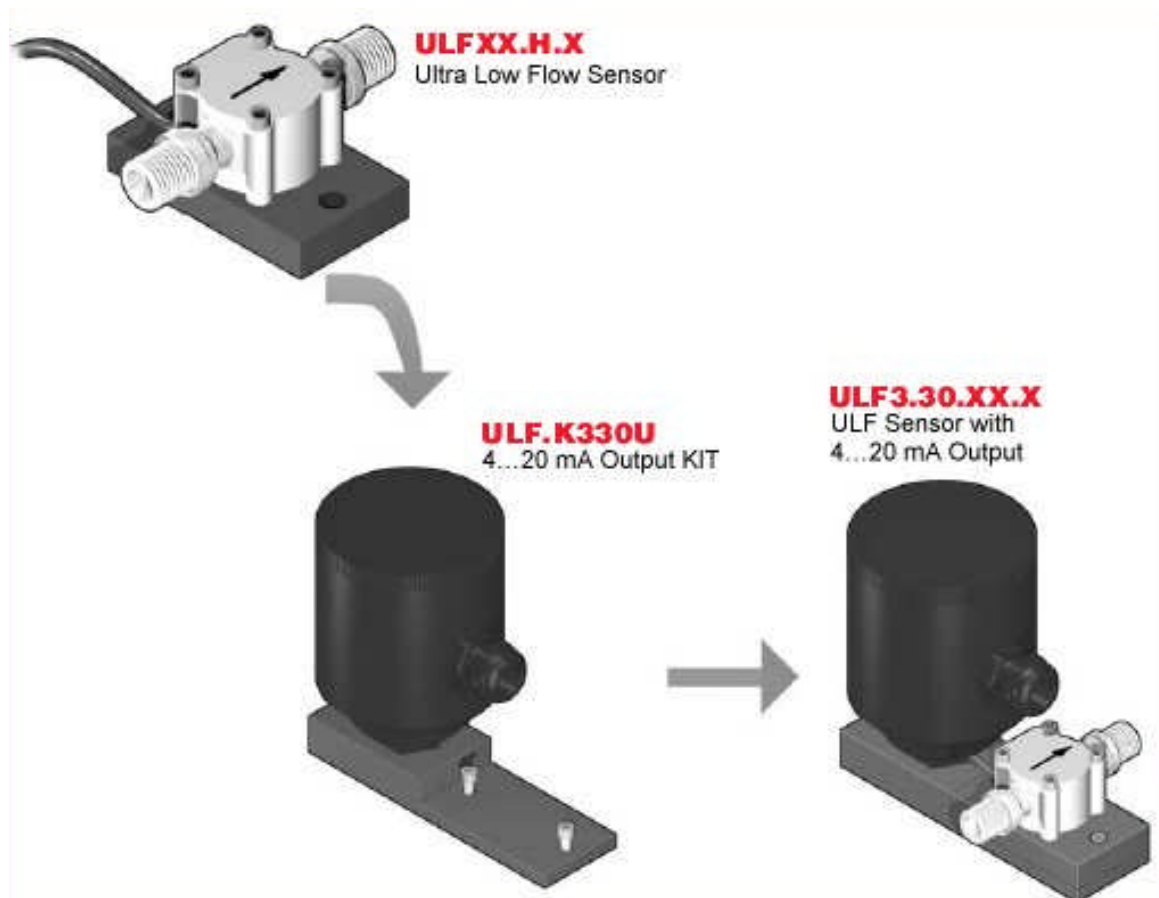


##### ULF3.30 Sensor with 4 –20mA Output



## 4. Installation

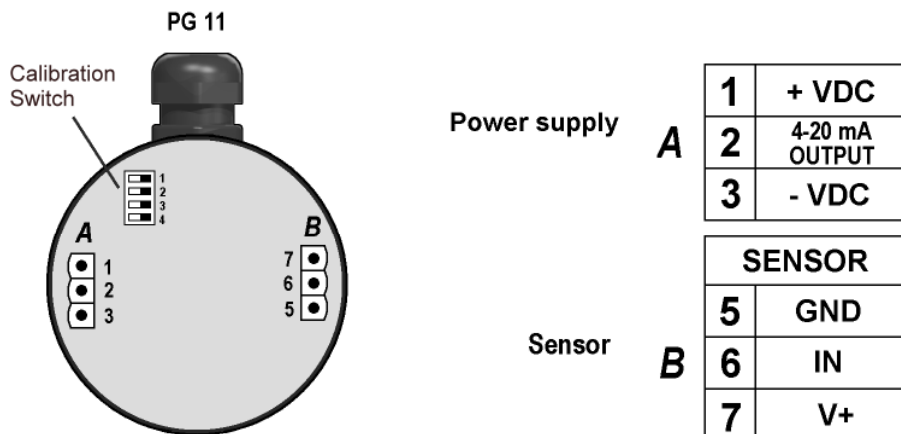
### 4.1. Sensor Assembly



Screw down completely the sensor onto the PVC plate and connect electric cables according to specifications.

### 4.2. Wiring

Unscrew the top cover to reach the electrical connections. All wiring connections to K330U are made via removable terminals.



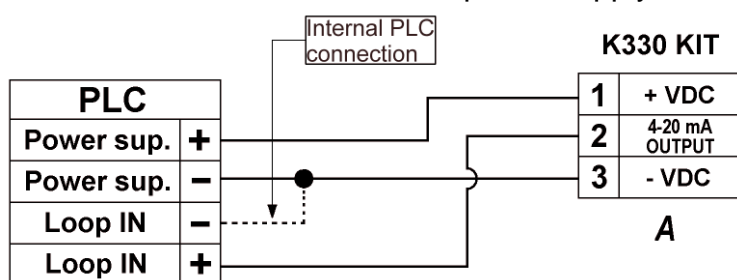


## General recommendation

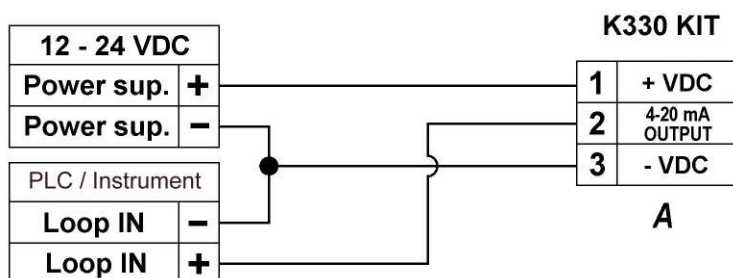
- ❑ Always ensure the power supply is switched off before working on the device.
- ❑ Terminals accept 26 to 12 AWG (0.08 to 2.5 mm<sup>2</sup>)
- ❑ Strip around 10 mm (0.4") of insulation from the wire tips and tin bare ends to avoid fraying.
- ❑ Ferrules are suggested when connecting more than one wire to a single terminal.
- ❑ Remove the upper part of the terminals for an easy cabling.
- ❑ Insert wire tip or ferrule completely into the terminal and fix with the screw until finger tight

## Power/Loop Wiring Diagram

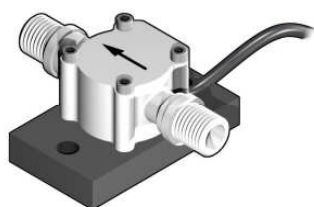
Connection to PLC with built-in power supply



Connection to PLC / Instrument with separate power supply



## Sensor Wiring Diagram



## 5. Calibration

The setting has to be done before powering up the instrument.

### 5.1. Full Scale Setting

The Full Scale value, corresponding to 20mA output, can be set from 50 to 400 Hz and is calibrated by means of the 2, 3 and 4 switches according to the following table:

SWITCH 2	SWITCH 3	SWITCH 4	Hz
ON	ON	ON	50
ON	ON	OFF	75
ON	OFF	ON	100
ON	OFF	OFF	150
OFF	ON	ON	200
OFF	ON	OFF	300
OFF	OFF	ON	400



### Full Scale Frequency calculation

Use the following formula

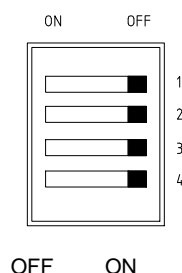
$$\text{Freq} = \frac{Q \text{ ( l/h ) } \times \text{K-Factor}}{t \text{ ( s )}} \text{ [ Hz ]}$$

**Freq** = frequency .

**Q** is the max. flow rate in l/h

**t** is the time in seconds

**K-Factor** is unique to the sensor model and to the pipe size and material. Refer to data in the sensor manual for the correct value.



### Example:

Consider an ULF03.H.

K-Factor = 3394

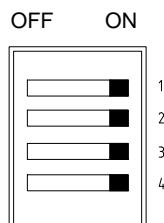
Qmax = 200 l/h (max. flow rate you may have in the plant)

$$\text{Freq} = \frac{200 \times 3394}{3600} = 188.56 \text{ Hz}$$

The full scale frequency to be set is 200 Hz

## 5.2. Filter Setting

The filter prevents fluctuations of the output current. There are two levels available according to the position of switch 1.



### Switch 1

**OFF** : low filter

**ON** : high filter

## 6. Troubleshooting

Problem	Reason	Solution
No output signal	<ul style="list-style-type: none"> <li>No or wrong power supply</li> <li>Incorrect cabling</li> </ul>	Verify : <ul style="list-style-type: none"> <li>Power supply (sec. <b>4.2. Wiring</b>)</li> <li>Correct wire insertions into terminal holes (sec. <b>4.2. Wiring</b>)</li> </ul>
Incorrect current output	Wrong full scale setting	Verify switch positions (sec. <b>5. Calibration</b> )

## 7. Ordering Data

Part No.	Housing	Gaskets	Enclosure	Description
ULF3.K330U	PVC	EPDM	IP65	4-20 mA Output KIT

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