



# UF Series installation instructions

The pulse output versions are recommended for best performance.  
The analogue 4-20mA versions must be connected to a measurement or display instrumentation with a total load impedance less than 100 ohms, including the wiring between the meter and the user equipment.



## Applications information

### Installation position

The unit should not be placed on the suction side of a pump, always on the outlet side. The unit may be supported by pipework or hoses due to its low weight, but should not be used to support pipework or be subjected to vibration.

### Liquids

The measuring tube is manufactured from a food grade plastic, so is safe for use with drinking water and other beverages. Most oils and other non-corrosive liquids can also be used. Liquid and ambient temperatures must not be exceeded.

### Pipe inlet diameter

A pipe diameter that matches the inlet on the unit is recommended. Inlet bore diameters are 10mm on the UF25 and 7mm on the UF08.

### Entrained gas/solids

This unit is designed to operate with clean liquids only. If amounts of gas or solids increase beyond 1% by volume, accuracy can be affected. Higher levels of gas or solids can prevent transmission of the ultrasonic signal and the output will fall to zero.

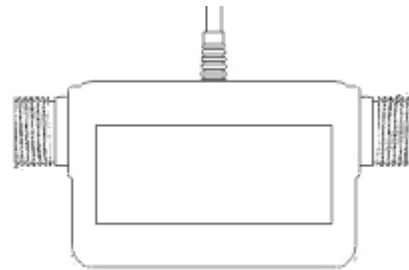
## Mechanical Installation

The unit may be installed at any angle, although it is recommended that it be installed with the pipe entry and exit horizontal and the cable entry at the top, so that the U-shaped measurement section remains full of liquid, should the process empty of liquid.

3/8BSP plastic fitting must be used to connect to the UF25 unit to avoid damaging the pipe connection threads. **DO NOT OVERTIGHTEN.** Max tightening torque 3Nm.

Suitable John Guest pushfit connectors are PI451613S for the UF25 and PI0412S for the UF08B100

The outer case is sealed to IP66



## Electrical Installation

An eight core cable is used to connect to this unit. This should be connected as follows:

Supply: - Red: + (8 - 24Vdc only), Black: common ground, Green: ground (internally connected to black).

Selectable outputs:- Blue: NPN Pulse, White: PNP Pulse, Orange: Voltage 0-5Vdc, Brown: Current 4-20mA

**Yellow wire should not be connected at all.**

Please see connection circuits overleaf

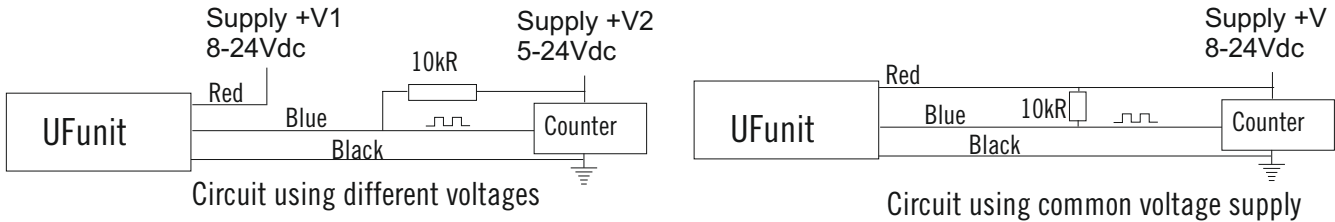


## Connecting an Open Collector Pulse Output device

The term **open-collector** typically refers to a transistor output where the collector (output) of the transistor is not connected to a positive voltage. Since a transistor used in outputs is a saturated switch, the collector needs to be connected to a positive voltage to complete the transistor circuit. This positive voltage need not be any specific value as long as it is above the saturation of the transistor. Because of this, an open collector output can be connected to a range of voltages using a pullup resistor. This resistor is required for the output to function as it completes the transistor's circuit.

### Many circuits use open-collector outputs to be able to provide **Different Voltage Interfacing**

Since the exact voltage of the pullup resistor is not critical, an open-collector output can be used to interface one logic voltage level with another.



## Connecting a 4-20mA Output device

### 4-20mA Standard

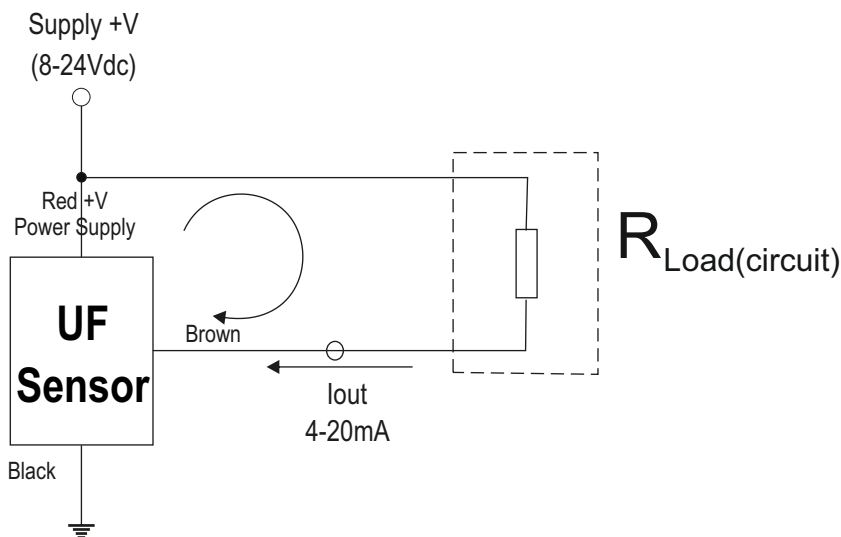
4-20mA output systems are an industrial control standard as they allow input signal changes, without affecting the output current. This also means that the output signal is relatively immune to noise (as most noise will cause voltage disturbances, and not affect the regulated current). This makes 4-20mA devices more suited to critical-control systems.

Cable Connections - Red: Power Supply +ve connection, Black: Common, Brown: Current Sink (4-20mA)

Excessive Load Resistance will cause current sourcing that will affect the accuracy of this device's current output.

$$\text{Maximum Load Impedance: } R_L = (V_{in} - 5) \times 40$$

Note: There is no requirement for a minimum Load resistance, as this is a current sink device



An ammeter (or suitably arranged multi-meter), placed in series at the lout point, will give an indication of the sensors current performance i.e. flow.

If the meter used has adjustable zero and span, then the meter could be altered to represent the flow in litres/min.