

## EQUFLOW

# Turbine Flow Sensor Signal Conditioning Options

Model Series PFA, PFAD and SS

### DESCRIPTION

The Equflow range of flow sensors has low flow sensing capabilities in a wide range of applications, and is suitable for clear, opaque, neutral, corrosive and aggressive liquids including fuel.

An ultra light-weight turbine follows the fluctuation of flow very accurately and generates a high resolution IR reflected digital output signal.



In either flow controlled or monitoring applications, the Series PFA, PFAD and SS flowsensors can measure flow rates and totalize. Optional elements built into the circuit include a programmable K factor/voltage divider, flow switch and a programmable batch feedback function for pump control.

External optional electronic packages include model 6100 digital to analog (4-20 mA) converter and model 5601, a professional, solid batch and flow controller that can be used as a monitor and/or totalizer. Model 6300 switching module is required when the internal flow switch or batch option is added to the flow sensor.

### INTERNAL CIRCUIT OPTIONS (NEED TO BE ORDERED WITH FLOW SENSOR)

#### FLOW SWITCH

The PFA turbine flow meter can be modified into a programmable flow switch. The adjustment of the switching point of the flow meter is established with a simple program. When the adjusted switch point is attained, the meter outputs a 24 VDC signal (NPN transistor) to a switching module (Model 6300). As soon as the flow decreases below the switching point, the switching module is turned off. This option is available for 5-30 VDC models only.

Applications:

- \* Flow monitoring
- \* Piping leakage detection

#### BATCH CONTROL

The PFA turbine flow meter can be equipped with an adjustable counter (preset function). A programmable microprocessor in the meter is employed to set a prescribed dosing volume. On/Off control via NPN transistor of an external 24V DC solid state relay is accomplished with switching module Model 6300. This option is available for 5-30 VDC models only.

Applications:

- Repeat dosing of a fixed volume such as in
  - \* coffee machines
  - \* soup machines
  - \* infusion bags
  - \* ampules
  - \* bottles



## EXTERNAL CIRCUIT OPTIONS

### **6100 DA CONVERTER- FREQUENCY TO ANALOG CONVERTER FOR STANDARD FLOW METER WITH ANALOG OUTPUT SIGNAL.**

Power supply DC model: 16 to 24 VDC

Output signal: 0 to 5 volt, 0 to 10 volt, 0-20 mA, 4-20 mA

Maximum output signal: adjustable between 500 and 4000 Hz input frequency

Adjustable response time.

Adjustable span: 20 mA

Output 5 volt supply for flow meter

#### ENVIRONMENTAL DATA

Storage Temperature: -20°C to 70°C (-4°F/158°F)

Operating Temperature: 0°C to 50°C (32°F/122°F)

Relative Humidity: 70% @ 0°C to 50°C

#### REAL TIME

Response time adjust: 0.01 to 1 seconds

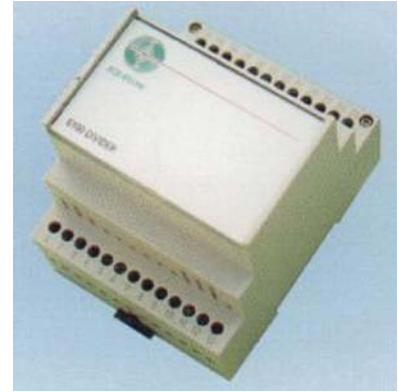
Max. frequency input: 5 kHz

#### MECHANICAL DATA

35 mm DIN Rail Mount per EN 50022

Height: 75.8 mm ( 2.98" )

Length: 71.4 mm ( 2.81" )



Width: 90.7 mm ( 3.57" )

Weight model DC: 0.154 kg ( 0.340 lbs)

Weight model AC: 0.309 kg ( 0.681 lbs)

EN 50081-1, EN 50082-2

### **FLOW AND BATCH CONTROLLER S601**

The S601 is a professional, solid batch and flow controller, that can be used as a monitor and/or totalizer. The distinctive features are:

- \* the extremely simple operation
- \* the very attractive and compact design
- \* clear readable display
- \* audible buzzer
- \* various casings (synthetic, aluminum, stainless steel)
- \* RS232 serial gate (Profibus as option)
- \* PID control
- \* High accuracy by automatic lagging compensation and adjustable damping factor

#### Application Flexibility:

The configuration can be determined easily by selecting the pushbutton codes. After pushing the buttons in the selected code, the S601 is changed from batch controller into flow controller or monitor or vice versa. The following functions are available:

- Filling 2 liquids simultaneously Dosing and filling of preset volumes
- Filling 2 liquids sequentially Dosing and filling of preset volumes
- Batch to main stream Flow-proportional dosing in batches to a main stream
- Batch in time Dosing in batches with an adjustable time interval
- Flow process Flow control for one liquid
- Proportional mixing Flow-proportional/in percentage/continuous dosing to a main stream
- Monitoring + totalizing Flow
- Pump control

#### General

Power supply 24 VDC

Dimensions 140 x 220 x 72 mm (WxHxD)

Casing High grade synthetic; others on request

Environment Temp. - 10 to +70 °C

Type of enclosure IP65

Display 2 x 16 digits

#### Input signals

2 x flow meters, pulse max. 5 KHz.

3 x analog (0-10V), 1 x analog (4-20mA)

external control for Alarm/Start-Stop/Up-Down

Output signals 1 x analog, 0 - 10 V



## FLOW SWITCH AND BATCH CONTROLLER 6300

Model 6300 is an external (to the flow sensor) switching module for use when the flow sensor internal flow switch or internal batch functions are ordered. The output of the module is a solid state switch rated for 110 mA @ 24 VDC

The switch or batch function is programmed via Equflow's "Equ Configurator" software, a windows based software employing a USB connection.

If the flow sensor is set to a batch function mode the output signal will drop to zero after starting model 6300 (powering up the sensor). This also triggers the opto coupler in the 6300 module which in turn powers the 6300 solid state relay. The liquid passing the flow sensor is counted inside the flow sensor and when the preset volume is reached the output will be set high causing the relay to reset.

If the start command to model 6300 is given and for a selected time there is no output measured, the output will be set to high.

The duration of dosing can also be limited with a timer for safety reasons in the event of a turbine failure.

The screenshot shows the 'Equflow configurator' software window. The interface is organized into several sections:

- Sensor mode:** Three radio buttons are present: 'SensorMode' (unselected), 'FlowswitchMode' (unselected), and 'BatchMode' (selected).
- Input:** Three spinners are shown: 'Level High' set to 8, 'Level Low' set to 7, and 'Pulsewidth' set to 5.
- Output:** Two spinners are shown: 'Multiplier' set to 2 and 'Batchsize' set to 5000.
- Timing (ms):** Two spinners are shown: 'NoFlow' set to 4000 and 'Maximum batchtime' set to 20000.
- Communication:** A dropdown menu for 'Communicatie poort' is set to 'COM1'. Below it is a large empty text input field.
- Buttons:** At the bottom left are three buttons: 'Connect', 'Read', and 'Send'. To the right of these is another large empty text input field.