

# OPERATING INSTRUCTIONS

## CALFLO™ CFHM THERMAL MASS LIQUID FLOW METER



## Introduction

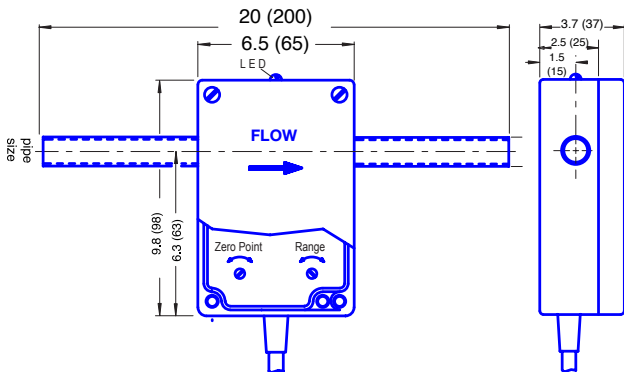
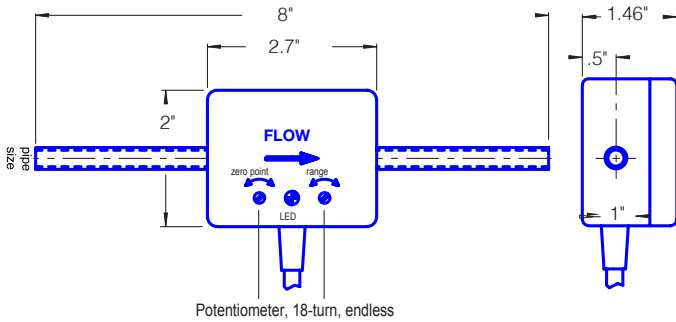
Please read carefully! No liability can be accepted for damage caused by improper use or installation of the CFHM Liquid Flow Meter

Ideal for monitoring low flow rates, the CalFlo™ CFHM is a self-contained, thermal mass liquid flow meter that is ideal for measurement and control applications. The CFHM is field adjustable and provides a 4-20 mA output for flow rate. The hollow stainless steel tube acts as the sensing device and provides intrusion-free flow monitoring. Typical applications include chemical dosing, oil lubrication monitoring, food and beverage processing, light to medium viscosity fluids and a variety of other industrial applications. Select the appropriate configurations based on your application or contact our Application Specialist for additional assistance.

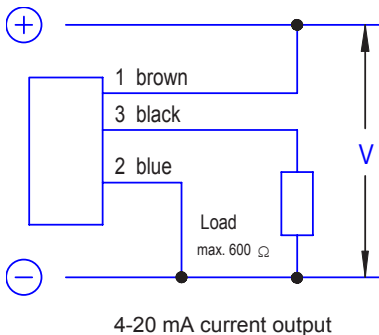
## Safety Precautions

If you are unsure of the suitability of the CFHM Thermal Mass Liquid Flow Meter for your installation, please consult your FLO-Corp representative for further information.

## Dimensions cm (mm)



## Connection Diagram



## Specifications



Sensor	
<b>Service</b>	Compatible liquids
<b>Measuring Range</b>	Continuously adjustable from 0.25-0.65 fps to 0.25-3.3 fps
<b>Response Time</b>	2-10 seconds
<b>Repeatability</b>	± 2% full scale
<b>Temperature Drift</b>	± 1.37°F (± 18.53°C)
<b>Protection Rating</b>	NEMA 4 (IP65)
Mechanical	
<b>Sensor Material</b>	Stainless steel (Std.) or Hastelloy®
<b>Connection Size</b>	1/8", 1/4", 1/2" 3/4"
<b>Connection Type</b>	Male NPT (Std.); Special Connection (Optional)
<b>Enclosure Material</b>	Makrolon®
<b>Process Temperature</b>	F: 14° to 176° C: -10° to 80°
<b>Ambient Temperature</b>	F: 14° to 140° C: -10° to 60°
<b>Pressure</b>	435 psi (30 bar)
Electrical	
<b>Supply Voltage</b>	24 VDC ±10%
<b>Consumption</b>	100 mA maximum
<b>Output Current</b>	4-20 mA
<b>Loop Resistance</b>	0-600 Ohms
<b>Measuring Range Adjustment</b>	The two potentiometers can be adjusted to set the measuring range and zero point. Operation within the measuring range is indicated by a green LED (within the range: ON; beyond the range: OFF)
Cable	
<b>Cable Jacket Material</b>	Oilflex
<b>Cable Length</b>	6.5 ft, 3-conductor 18 AWG

Note: Please Consult Factory for Special Requirements

## Items Delivered

1. CFHM - Each unit will differ based on user- specified configurations
2. Screwdriver for adjustment
3. Cable and manual

## Installation Instruction

Depending on the pipe system a variety of connectors can be used. (i.e. screw fittings, hose clamps, etc.)

CAUTION: The inline pipe element must not be subjected to any kind of force (i.e. twisting) or high temperatures (i.e. in welding processes). Torsion:  $10 \leq \text{Nm}$  up to  $\leq 104^\circ \text{F}$  ( $40^\circ \text{C}$ )

Installation Site: Preferably in horizontal pipes or vertical pipes with ascending flow.

## Initial Operation

Connect unit to 24 VDC as in connection diagram and wait approx. 2 minutes before adjusting.

Adjustments are possible from 0.25-0.65 fps up to 0.25-3.3 fps (related to water).

Zero point potentiometer is factory set. Range potentiometer is adjusted at the max. measuring range  $\geq 3.3$  fps.

## Adjustment Procedure

1. Zero point adjustment in stationary medium (roughly)
2. Adjust the potentiometer P2 after 2 minutes so that  $I_a = 4 \text{ mA}$ .  
i.e. if  $I_a > 4 \text{ mA}$  turn potentiometer to the **left**  
if  $I_a < 4 \text{ mA}$  turn potentiometer to the **right**
3. Adjustment of measuring range in max. flow rate of medium:  
Accelerate flow of the medium to a point, where the unit should give an output signal of 20 mA and wait approx. 2 minutes. Turn range potentiometer until  $I_a = 20 \text{ mA}$  (to the left  $I_a$  will be greater, to the right  $I_a$  will be smaller).  
LED 'ON' : Flow rate is within the measuring range  
LED 'OFF' : Flow rate exceeds measuring range
4. Fine adjustment of zero point: After waiting at least 2 minutes standstill of flow turn zero point slightly so that  $I_a$  is just 4 mA  
(turning direction as in step 1).
5. Repeat adjustment according to step 3 and 4 until the zero point (4 mA) or max. range setting (20 mA) remains constant.

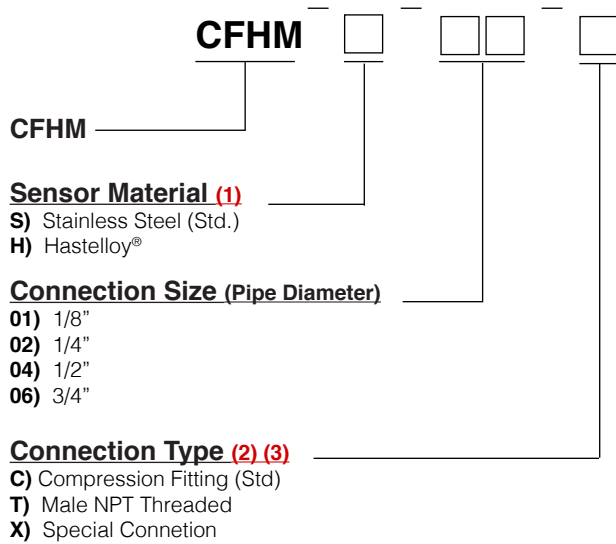
# Ordering Information

## FLO-CORP MODEL NUMBER BUILDER

For Assistance Call **877.356.5463**

Use the diagram below, working from left to right to construct your FLO-CORP Model Number.  
Simply match the category number to the corresponding box number.

**Example: CFHM-S-02-T** CalFlo™ CFHM Thermal Mass Liquid Flow Meter with Stainless Steel Sensor Material, 1/4" Connection Size, Male NPT Connection



### Ordering Notes:

- (1) Select the best configuration based on your requirements
- (2) If you require a Special Connection (X), please consult factory with your requirements
- (3) Comes complete with 6.5' (2m) pre-wired cable and manual

*Specifications are subject to change without notice.*