

# CoolPoint™

## Installation and Operation Manual

Series:

CP\*\*\*D2 Totalizing Vortex Flowmeters



**Effective with products having serial number 09010001 and greater**

**UNIVERSAL FLOW MONITORS, INC.**  
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**PROPRIETARY NOTICE**

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**NAMEPLATE EXAMPLE – CP6 THROUGH 16 WITH D2 TOTALIZER**

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## QUICK SET UP

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### PIPING

Install in pipe making sure to orient IN port to flow supply.

10 pipe diameters distance is required upstream and 5 down for best accuracy.

Use proportional spacing if this much space is not available.

50 pipe diameters are required upstream as distance from a valve.

No use of Teflon tape please. (See detailed piping instructions.)

Attach pin connector/cable assembly to unit. (See detailed wiring instructions.)

### CONFIGURATION OF METER

At start up , display shows 8.8.8.8.8.8 showing that it's digits are all functional.

8.8.8.8.8.8

Next firmware revision is displayed.

5.1 tr

Run mode achieved. Flow total displayed.

0

Note that if no adjustments are made, flow total in gallons displays and there is a pulse output (see chart for equivalence). Toggling displays between batch and running total assumed.

### RESETTING THE TOTAL

rSET

Press MENU button and release.

If you do not want to reset, press MENU button twice.

Press SET button to reset the total to zero.

0

## RESETTING UNITS OF MEASURE

Press MENU button twice. rSET

Press SET button to change between gallons and liters. Ltr

GAL

MENU button will take you back to run mode. Last one selected will be stored.

## TOGGLING BETWEEN GRAND TOTAL, TOTAL AND RATE

In run mode, press SET button. This switches from grand total to total and back. Total or Grand total are identified by the LED lights on the face plate. 7683

Press SET button again to toggle back to original total 42398

To see rate of flow, press SET button and hold for 3 seconds or longer. An "r" will show up at the left side of the display. (To return to total mode press and hold set button for 3 seconds or longer. ) r 23.6

## RESETTING GRAND TOTAL

Press and hold SET button as if toggling between grand total and total. When "Grand total" LED illuminates you have 1/2 second to press and hold MENU. "--" will show in display. --

Hold MENU button for 5 seconds. Now the master total is reset. "SET" will display. SET

Release MENU to go to run mode with grand total displayed. 0

Note: this is intentionally difficult to avoid inadvertent reset of master.

## GENERAL SPECIFICATIONS

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Maximum Operating Pressure:	300 PSIG (20.4 Bar)
Minimum Operating Pressure:	10 PSI of back pressure is required for the formation of vortices. 150 °F (66 °C), (This rating applies to both fluid and ambient temperature.)
Minimum Operating Temperature:	35 °F (2 °C) fluid and ambient
Maximum Flow:	Meters may occasionally be over-ranged up to 125% of capacity without damaging the meter.  Note: Output is clamped at 21mA (6.3% over-range) but the display will indicate up to 125% F.S.
Flow Capacities:	3/4" = 25 GPM (95 LPM)  1" = 50 GPM (190 LPM)  1 1/2" = 100 GPM (380 LPM)  2" = 200 GPM (750 LPM)
Turndown Ratio (max to min flow):	10:1 standard. 20:1 optional
Process Connections:	Female NPT
Wetted Parts:	Body is brass or 316 Stainless Steel. Sensor is. Seals are Viton®
Display:	Digit height = 0.3"  D2 (Totalizer) units have a 6 digit display
Enclosure Rating:	Type 1, 3, 4, 12, 13, IP65
Power:	10 - 30 VDC @ 80 mA



Caution: The unit shall be supplied by a SELV (separated extra-low voltage) source in accordance with CSA Standard C22.2 No.1010.1-92 Annex H.

Environmental conditions: This device has been designed for use in Installation Category I, pollution degree 4, at altitudes up to 2000 meters (6560 ft.), either indoors or outdoors as defined in CSA Standard C22.2 No.1010.1-9

\*Viton® is a registered trademark for DuPont Performance Elastomers.

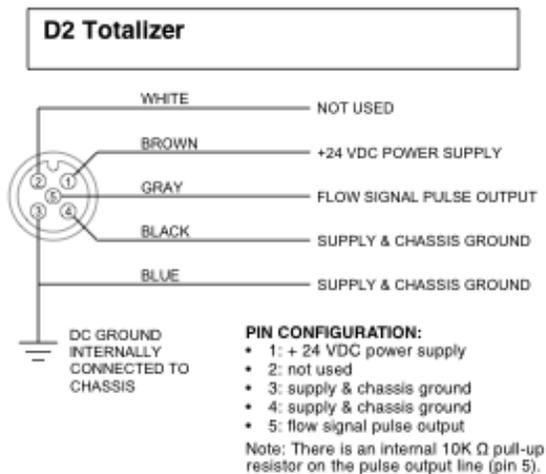
Electrical Service:	General Purpose
Electrical Classification:	Non-hazardous Type 1, 2, 3, 4 (equal to IP 65), 12, and 13
Power Requirements:	24 VDC (10-30 VDC) @ 80 mA
Cabling:	Female shielded cable to be used with micro connector
Grounding:	Note that DC and Chassis Grounds are internally connected to eliminate electrical noise. If this poses a problem with your control wiring, please contact UFM for alternative wiring. Do not connect shielding at the panel.
Accuracy:	2% of actual
Visual:	The CoolPoint totalizer is a 6 digit LED counter that can display a total or a Grand total. Grand total is the sum of all totals whereas total is tracking fluid since last reset. Optionally you can select to see total and flow rate.
Pulse Output:	There is an output pulse proportional to flow rate. Pulse rate does not change when LPM is displayed. It is driven by an internal solid-state relay with a 10K pull-up resistor to supply voltage (pulse width = 3 msec). It should be noted that the pulse output represents instantaneous flow rate, not an averaged value. Therefore, flow jitter may be present when an external rate indicator is used, unless the indicator is capable of filtering or signal averaging.

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The totalizer resolution and the corresponding flow rate pulse output depend on the full-scale setting of the flowmeter, as follows:

Full-scale flow (GPM)	Pulse Output (Per Gallon)	Totalizer Resolution	Max. Count
4.00	100	0.01	9999.99
6.00	100	0.01	9999.99
12.0	100	0.1	99999.9
25.0	100	0.1	99999.9
50.0	100	0.1	99999.9
100	100	1	999999
200	25	1	999999

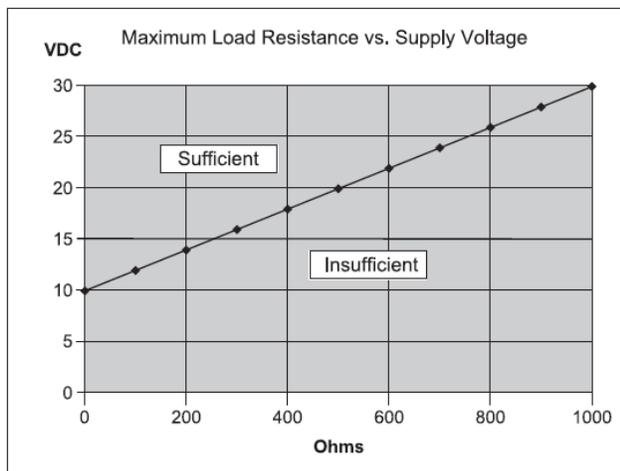
## WIRING



## DC POWER SUPPLY VOLTAGE REQUIREMENTS:

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## OPERATION

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**CoolPoint** is an inline flowmeter that utilizes the vortex shedding principle. The fluid strikes a bluff body, generating vortices (eddies) that move downstream. The vortices form alternately, from one side to the other. A piezoelectric sensor housed in a sensor tube directly downstream of the bluff senses the pressure zones created by the vortices. The sensor generates a frequency directly proportional to the vortices (flow).

## APPLICATIONS

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**CoolPoint** can be used on low viscosity, clean or dirty water-like liquids that are compatible with brass, PVDF and Viton. Metered fluids should not include long fibers or a significant level of abrasive solids. Should abrasive wear occur over time, bluffs as well as the sensors are replaceable. Typical applications include cooling loops using water, 50% solutions of glycol, and water-soluble machine coolant (up to 10%). These applications are found in most process industries, including rubber, steel, fabrication, manufacturing, refining, paper, chemical, food, petrochemical and power. They cannot be used on gases (including air), or on flammable liquids.

Note: If used outside the parameters specified in this manual, the proper operation of the flowmeter cannot be guaranteed.

Cleaning: These meters do not require any special cleaning of the external surfaces. If cleaning is deemed necessary, strong solvents, detergents, or chemicals should not be used. A damp cloth may be used to wipe off dirt or debris.

## INSTALLATION

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For best results, the meters may be installed in any position as long as proper piping installation requirements are observed. This includes sufficient support of adjacent piping to minimize the system's inherent vibration. Unions of the same pipe size and full port isolation ball valves may be installed for ease of removal and servicing of equipment, if necessary. Meters should be placed in horizontal, slightly ascending runs or vertical runs to prevent trapped air from accumulating in the meter. Furthermore, the meters should not be placed at the highest point in the piping. The piping system should be filled slowly to prevent water hammer from damaging the flow sensor. Please note that reverse flow can also damage the flow sensor.

In order to achieve the stated accuracy, a straight pipe run of 10 pipe-diameters (minimum) is required upstream of the meter, as well as 5 pipe-diameters downstream. Isolation ball valves, when used, should be in the full open position. Throttling valves should always be placed downstream of the meter. A minimum straight run of 50 pipe-diameters is required between an upstream valve and the flowmeter.

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If Teflon® tape or pipe sealant is used, the user must ensure that no loose parts become wrapped around the bluff or the flow sensor when flow starts.

Use of diaphragm or piston pumps affects the meter's performance unless they are installed with a properly sized pulsation dampener and pressure control. The piping system must create some backpressure on the meter to allow vortex formation and to prevent cavitation, especially at full flow. Minimum required backpressure is 10 PSIG at maximum flow and at 70 °F (21 °C). Higher backpressures are required at elevated temperatures and occasional surges to 125% of maximum flow.

In rare situations, the user may notice an intermittent flow display that drops off while the flow is held steady. In this case, please contact UFM to discuss the backpressure requirements.

## MODEL CODES

Flow maximum GPM (LPM)	Pipe size in inches	Model code	Material	Thread options available	Connector or conduit box options available	Special options
6 (23)	3/4	<b>CP6F9D2</b>	-M1*=Brass	<b>T1*=NPT</b>	<b>C1*=Pin connector</b>	<b>W1=20:1 extended turndown **</b>
12 (45)	3/4	<b>CP6F2D2</b>	-M2=316 Stainless Steel	<b>T2=BSPT</b>	<b>C2=Pig tails</b>	
25 (95)	3/4	<b>CP6D2</b>		<b>T3=BSPP</b>	<b>C3=Conduit box, terminal strip)</b>	
50 (190)	1	<b>CP8D2</b>				
100 (380)	1 1/2	<b>CP12D2</b>				
100 (380)	2	<b>CP16F5D2</b>				
200 (750)	2	<b>CP16D2</b>				

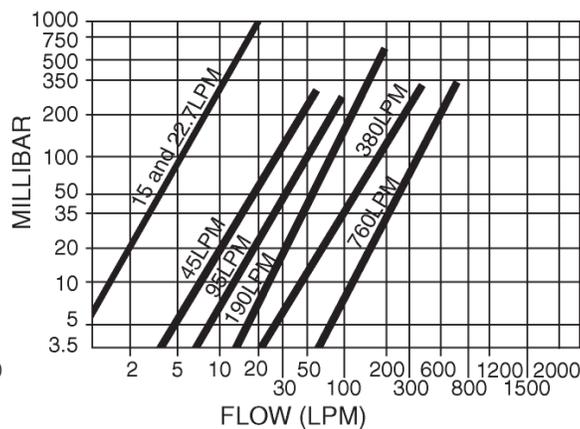
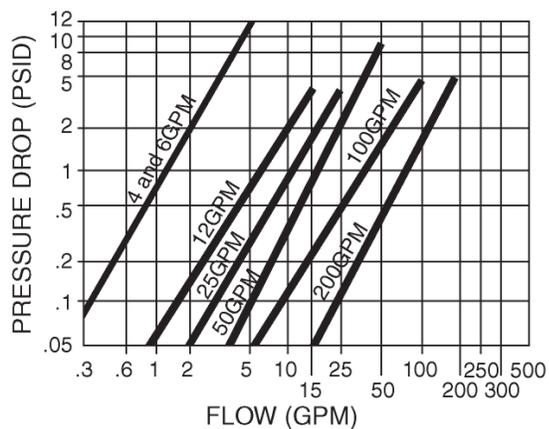
\* Indicates default selection. If no selection is made, this option is assumed.

\*\* Requires grounding

Turndown is 20:1 standard temp.

**Example: CP6F9D2** is the same as CP6F9D2-M1T1C1

**PRESSURE DROP CHARTS**



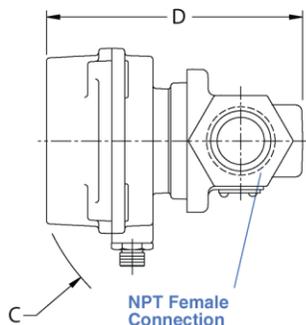
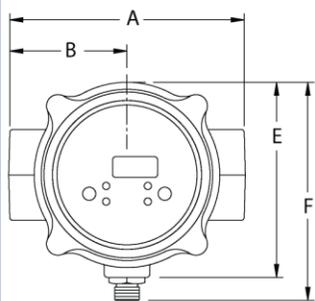
**CABLING**

**ACCESSORY CABLES AVAILABLE FOR PIN CONNECTOR METERS**

Series	Description	Length in Meters	Part Number
CP	5 pin female	1	6241-1M
		3	6241-3M
		10	6241-10M

## DIMENSIONS

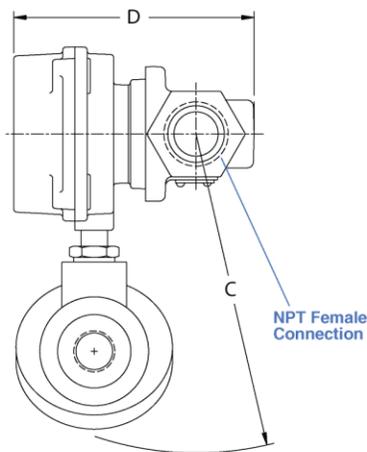
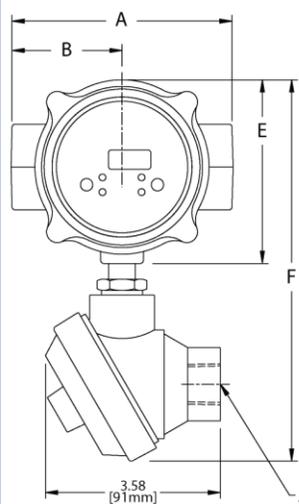
### INSTALLATION DRAWING – BASIC METERS



A	B	C	D	E	F
3.25 [83mm]	1.62 [41mm]	3.13 [80mm]	4.07 [103mm]	2.31 [59mm]	2.73 [69mm]
4.50 [113mm]	2.25 [57mm]	4.04 [103mm]	4.92 [125mm]	3.75 [95mm]	4.19 [106mm]
6.75 [171mm]	3.37 [86mm]	4.71 [120mm]	6.14 [156mm]	3.75 [95mm]	4.19 [106mm]

NOTE: The following units do not have a rotatable enclosure:  
CP2, CP3, CP4, CP6-F1, F2 and F9.

### INSTALLATION DRAWING – METERS WITH OPTIONAL JUNCTION BOX



A	B	C	D	E	F
3.25 [83mm]	1.62 [41mm]	5.42 [138mm]	4.07 [103mm]	2.31 [59mm]	6.39 [162mm]
4.50 [114mm]	2.25 [57mm]	6.52 [166mm]	4.92 [125mm]	3.75 [95mm]	7.79 [198mm]
6.75 [171mm]	3.37 [86mm]	6.87 [175mm]	6.14 [156mm]	3.75 [95mm]	7.79 [198mm]

NOTE: The following units do not have a rotatable enclosure:  
CP2, CP3, CP4, CP6-F1, F9 and F2.

## RMA NOTICE RETURN MERCHANDISE AUTHORIZATION

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***Please read the following UFM policy information carefully. By following the guidelines outlined below you will assist in providing a timely evaluation and response regarding the status of your flow meter. UFM evaluates all AUTHORIZED RETURNED MATERIALS in a timely manner and will promptly provide notification regarding the status of the related materials and/or a written quotation indicating the total charges and description of the necessary repairs.***

- 1 All returns must have a RMA form completed by the customer.
- 2 Any meter returned that was previously in service must have the OSHA requirements completed and a MSDS included where applicable.
- 3 An RMA number will only be issued when UFM has received a copy of the completed RMA form and any applicable MSDS.
- 4 A "Return Goods" shipping label (located in the back of the Instruction Manual) must be used for returning materials to UFM.
- 5 Returned goods must be shipped prepaid or they will be rejected.

### **REPAIRABLE MATERIAL**

Written or verbal authorization to proceed with the repair under an assigned Purchase Order, must be received within 30 days of repair quotation. If the unit(s) are repaired, the \$90.00 evaluation charge will be applied to the quoted repair costs. If no repairs are authorized within this 30 day period, the customer will be billed \$90.00 plus shipping charges and the materials will be returned to the customer.

### **NON-REPAIRABLE MATERIAL**

If materials are found not repairable, a written notice that the material is not repairable will be provided to the customer by UFM. If no disposition to scrap or return the material is received from the customer within 30 days, unrepairable material will be scrapped and the customer will be billed the \$90.00 evaluation charge. If a UFM replacement unit is purchased within 30 days of non-repairable condition notice, the \$90.00 evaluation fee will be waived. The return of non-repairable materials may be ordered by customer Purchase Order providing for shipping and handling charges.

**RETURN FOR RESTOCK** All goods returned for restock adjustment **must** be:

A. New and unused.

**B. Returned to the factory within ONE YEAR of date of original shipment.**

C. Returned through the distributor where the goods were originally purchased. This material will also be subject to an evaluation charge of \$90.00.

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The customer will be advised of the restocking adjustment for all restockable goods. Upon acceptance of the restocking adjustment, by the customer, the \$90.00 evaluation fee will be waived and a credit issued by UFM. The customer will be advised of any **non-restockable** goods and will be charged the \$90.00 evaluation fee plus any shipping charges if returned to the customer.

If no disposition is received by UFM within 30 days, the goods will be scrapped and the \$90.00 evaluation fee will be billed.

### **WARRANTY RETURNS**

Warranty returns must be shipped prepaid to UFM. UFM will review the goods and advise the customer of the evaluation and validity of the warranty claim. Valid warranty claims will be repaired or replaced at no charge. No evaluation fee will be charged for repairs made under warranty. Return shipping costs will be prepaid by UFM. Should UFM determine the returned material is not defective under the provisions of UFM's standard warranty, the customer will be advised of needed repairs and associated costs. All materials returned for warranty repair that are determined to not have a valid warranty claim will be subject to the "**Repairable Material**" policy outlined above.

# RMA FORM

<p style="text-align: center; margin: 0;">UNIVERSAL</p> <p style="font-size: 2em; font-weight: bold; margin: 0;">U M</p> <p style="text-align: center; margin: 0;">FLOW MONITORS</p>	<p style="margin: 0;"><b>ROCON LLC</b></p>	<p style="margin: 0;"><b>RETURN MATERIAL AUTHORIZATION</b></p> <p style="margin: 0;">E-MAIL: <a href="mailto:ufm@flowmeters.com">ufm@flowmeters.com</a></p> <p style="margin: 0;">1755 E. Nine Mile Rd., Hazel Park MI 48030</p> <p style="margin: 0;">PH: (248) 542-9635</p> <p style="margin: 0;">Fax: (248) 398-4274</p>
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**IMPORTANT:** This form must be filled out completely and faxed to the Repair Department prior to issuing a RMA # (UFM) / NRA # (ROCON)

Customer: _____	Product Information _____	Qty: _____
_____	Model Code: _____	_____
_____	S/N: _____	_____
_____	Sales Order: _____	_____
Contact Name: _____	_____	
Phone # _____	_____	
FAX # _____	Are before (as found) and after readings required?	
E-mail: _____	_____ Yes _____ No	
<b>Reason for return:</b> (Please be detailed as possible. Lack of Information may increase labor charges.)		
<p><b>Mechanical</b></p> <p><input type="checkbox"/> Leaks</p> <p><input type="checkbox"/> Sticks</p> <p><input type="checkbox"/> Calibration Off</p> <p><input type="checkbox"/> Switch does not work</p> <p><input type="checkbox"/> Other (describe below)</p>	<p><b>Electronics</b></p> <p><input type="checkbox"/> No signal</p> <p><input type="checkbox"/> Inaccurate signal</p> <p><input type="checkbox"/> No Display</p> <p><input type="checkbox"/> Other (describe below)</p>	
Details: _____		
_____		
_____		
<p><b>Note:</b> There will be a minimum evaluation charge of \$90.00 for all units returned (excluding units covered under warranty). Units WILL NOT be accepted without a valid Return Material Authorization Number (RMA#). A Material Safety Data Sheet on the process fluid must be received, when applicable, prior to the RMA# being issued.</p>		
<p>* OSHA Requirements: (to be filled out by customer) <b>NO EXCEPTIONS!!</b></p>		
Process Fluid: _____		
<b>Meter must be flushed to remove all process fluids.</b>		
I hereby certify that the material being returned has been properly flushed and cleaned of all hazardous materials and does not require any special handling.		
Print or Type Name _____	Signature: _____	
Title _____	Date: _____	

<p><b>Distributor Information</b>      <i><b>INTERNAL USE ONLY</b></i></p> <p>Company Name _____</p> <p>Contact Name _____</p> <p>PO # _____</p> <p>Phone # _____ FAX # _____</p>	<p style="font-size: 2em; font-weight: bold;"># _____</p> <p><b>Authorized by</b> _____</p> <p><b>Date</b> _____</p>
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