



## TRACER<sup>®</sup> VMA with AutoReg<sup>™</sup> Flow Regulator

(patent pending)

### General Description

Tracer<sub>VMA</sub> with AutoReg Flow Regulator automatically adjusts flow rate to the required user-selected volume regardless of changes in line pressure. This results in a more consistent flow rate with more control over cooling water conditions in critical molding situations.

The User Interface communicates with the valve actuator that automatically adjusts the opening of the internal needle valve of the Delta-Q<sup>®</sup> or brass flow regulator to maintain the correct flow rate or Reynolds Number.

**Local or Remote User Interface** control allows for convenient installation. User Interface may be mounted up to 2.9M (9.5ft) away from the flow sensor and regulator assembly.

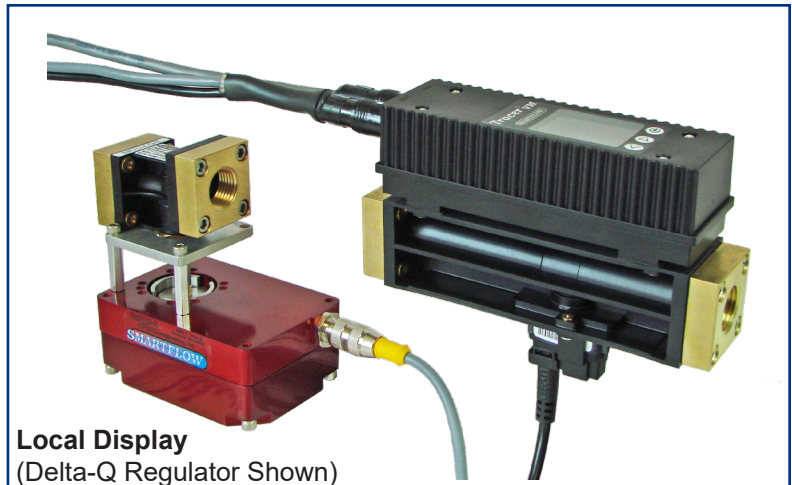
**Separate Analog Outputs** facilitate data collection of temperature and flow rates. The voltage outputs are user-selectable using on-screen menus: 0 to 3.5/4.1 Volts, 0 to 5 Volts or 0 to 10 Volts.

**FCI (Fluid Characteristic Indicator) Technology** helps optimize systemic water usage. "TF" on the digital display signifies the presence of Turbulent Flow, or optimum cooling water efficiency. 0, 10, 20 or 30% glycol mix is supported in Turbulent Flow calculations.

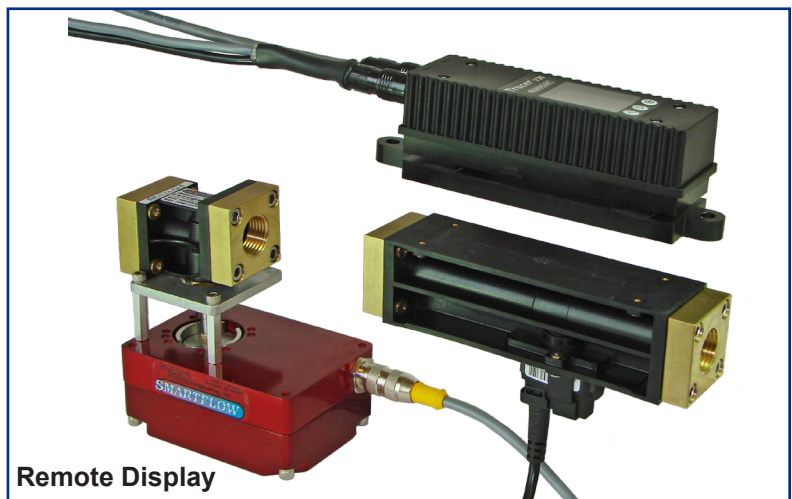
**SPDT Switch** is programmable for one to four set points: low flow, high flow, low temperature, high temperature or turbulent flow condition. Set points may be turned on or off in any combination to signify an alarm state. The switch may be connected to machine controls or a visual indicator such as a low voltage stack light.

**Actuator Alarm** notifies the user if the Tracer<sub>VMA</sub> with AutoReg is unable to maintain minimum required flow rate or Reynolds Number. The time interval is programmable.

**English or Metric units** for flow and temperature can be changed at any time.



Local Display  
(Delta-Q Regulator Shown)



Remote Display

**Totalizer Function** provides volume display from a user-selected start point which is re-settable at any time. (Maximum value is approximately 42,949,000 liters or 11,338,000 gallons.)

**24VDC, 1.5A Power Source** with earth ground is required to supply the Tracer<sub>VMA</sub> AutoReg Flow Regulator.

**Actuator** may be rotated as a unit in relation to the regulator for ease of installation and accessibility.

**Corrosion Resistant Materials** are standard. 3/8" and 1/2" options include Delta-Q flow regulator. 3/4" and 1" flow regulator sizes are brass only.

**bunger &  
brown  
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*Design and specifications are subject to  
change without notice.*



# Tracer<sup>®</sup> VMA Flowmeter with AutoReg<sup>™</sup>

## Specification

Flow Ranges				
Body Size	Range (LPM)	Range (GPM)	Reynolds Number Deadband	Flow Rate Deadband
3/8" & 1/2"	1 to 18	.3 to 4.8	300	0.1LPM
3/8" & 1/2"	2 to 40	.5 to 10.6	300	0.1LPM
3/4" & 1"	5 to 100	1.3 to 26.4	1000	1.0LPM
1"	10 to 200	2.6 to 52.8	1000	2.0LPM

Flow Accuracy .....±1.5% of Full Scale  
 Temperature Range..... 0°C to 120°C  
 (32°F to 248°F)  
 Temperature Accuracy ..... ±2°C  
 Operating Pressure ..... 10.3 bar max.  
 (150 psi max.)

### Power

Power Supply ..... 24 VDC (external)  
 Switch Rating ..... 1A, 30 VDC/30VAC  
 Flow and Temp Signals ..... 0 to 5 or 0 to 10 VDC

### Materials

Sensing Element ..... Silicone-Based MEMS Sensor  
 Seal (sensor to housing)..... EPDM  
 Flowmeter Insert..... PPA 40 GF

### Flow Body

3/8" & 1/2" Body Size ..... Glass-Filled Nylon Flow Body with  
 Brass or Nylon End Caps  
 3/4" & 1" Body Size ..... Anodized Aluminum  
 or Stainless Steel Flow Body

### Flow Regulator

3/8" & 1/2" Delta-Q..... Brass or Glass-Filled Nylon End Caps  
 Glass-Filled Nylon  
 Stainless Steel Stem and Valve Seat  
 EPDM O-Rings  
 3/8" Brass .....Brass Body  
 Brass Stem and Valve Seat  
 EPDM O-Rings  
 3/4" & 1" .....Brass Body  
 Brass Stem and Valve Seat  
 EPDM O-Rings

## Applications

Tracer<sub>VMA</sub> with AutoReg Flow Regulator is designed to maintain steady flow rate where pressure fluctuations may adversely impact cooling water conditions. Upstream changes in cooling water pressure can cause unexpected increase or decrease in system pressure, changing the volume of flow. The Tracer<sub>VMA</sub> AutoReg compensates for these changes by adjusting the flow rate automatically according to user settings.

Menu selections on the User Interface allow input of a target Reynolds Number to maintain Turbulent Flow. The flow rate is automatically adjusted by the controller based on water temperature, flow rate, glycol content and the size of the flow path.

The Tracer<sub>VMA</sub> AutoReg is ideally suited for use in "lights out" injection molding or where cooling water conditions must be monitored for quality control and process validation.

Tracer<sub>VMA</sub> AutoReg Flow Regulator can be connected to data acquisition systems providing manufacturers real-time statistical process temperature and flow data.

Annual calibration is recommended for best results. Flow sensor, user interface electronics and valve actuator are matched and must be used together once calibration is complete.

### Directives

Flow sensors are in conformity with these Council directives on the approximation of the laws of the EC member states:

- Low Voltage Directive (2006/95/ED)  
Standards used: EN 61010-1:2001
- EMC Directive (2004/108/EC)  
Standards used: EN 61326-1:2006 and 61326-2-3:2006

Smartflow Vortex flow sensors fall under Article 3, 3 of PED Directive 97/23/EEC and are therefore not required to be CE-marked according to this directive.

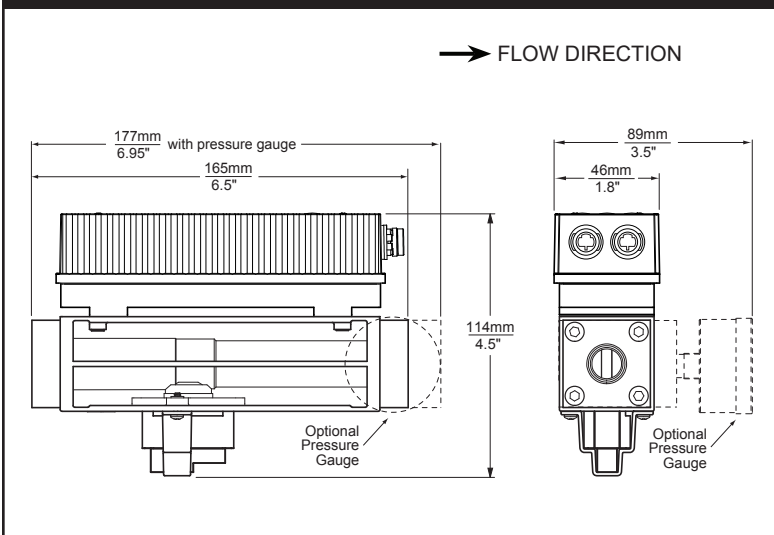


**Tracer<sup>®</sup> VMA Flowmeter  
with AutoReg<sup>™</sup>**

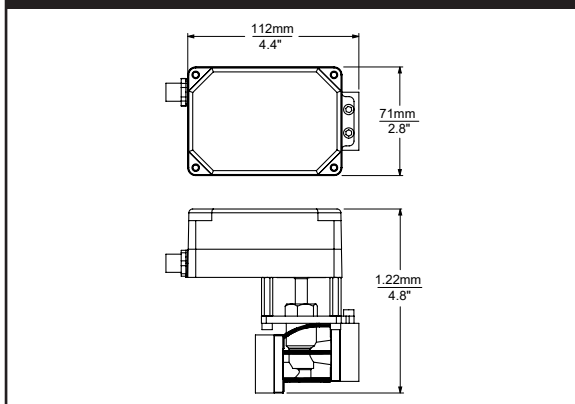
**Model Number**

<b>VMA 3 - B - 18H - L - QA3 - P1</b>					
<b>Body Size</b>				<b>Optional Pressure Gauges</b> (Located on User Interface)  <b>P1</b> 30 psi Pressure Gauge <b>P2</b> 60 psi Pressure Gauge <b>P3</b> 100 psi Pressure Gauge <b>P4</b> 160 psi Pressure Gauge (Pressure gauges not available with AL body material)	
3/8"NPT	<b>3</b>	<b>B or N</b>	<b>18H</b>		
3/8"BSPP	<b>3B</b>				
1/2"NPT	<b>4</b>				
1/2"BSPP	<b>4B</b>				
3/4"NPT	<b>6</b>	<b>AL or SS</b>	<b>100H</b>		
3/4"BSPP	<b>6B</b>				
1"NPT	<b>8</b>	<b>AL or SS</b>	<b>100H</b>		
1"BSPP	<b>8B</b>			<b>200H</b>	
<b>Body Material</b>				<b>Flow Regulator with Actuator</b> (match to User Interface size)  <b>QA3</b> 3/8"NPT Delta-Q Precision Flow Regulator <b>QA3B</b> 3/8"BSPP Delta-Q Precision Flow Regulator  <b>QA4</b> 1/2"NPT Delta-Q Precision Flow Regulator <b>QA4B</b> 1/2"BSPP Delta-Q Precision Flow Regulator  <b>FR3</b> 3/8"NPT Brass Flow Regulator <b>FR3B</b> 3/8"BSPP Brass Flow Regulator  <b>FR6</b> 3/4"NPT Brass Flow Regulator <b>FR6B</b> 3/4"BSPP Brass Flow Regulator  <b>FR8</b> 1"NPT Brass Flow Regulator <b>FR8B</b> 1"BSPP Brass Flow Regulator	
Glass-Filled Nylon with Brass End Caps Nylon End Caps (3/8" and 1/2" only)		<b>B</b> <b>N</b>			
Anodized Aluminum Stainless Steel (3/4" and larger only)		<b>AL</b> <b>SS</b>			
	<b>Flow Range</b>				
	1 to 18 LPM (.3 to 4.8 GPM)		<b>18H</b>		
	2 to 40 LPM (.5 to 10.6 GPM)		<b>40H</b>		
	5 to 100 LPM (1.3 to 26.4 GPM)		<b>100H</b>		
	10 to 200 LPM (2.6 to 52.8 GPM)		<b>200H</b>		
					<b>User Interface</b> <b>L</b> Local (display housing attached to flow body, standard) <b>R</b> Remote (display housing on mounting plate with 2.9(M) cable connection to flow body)

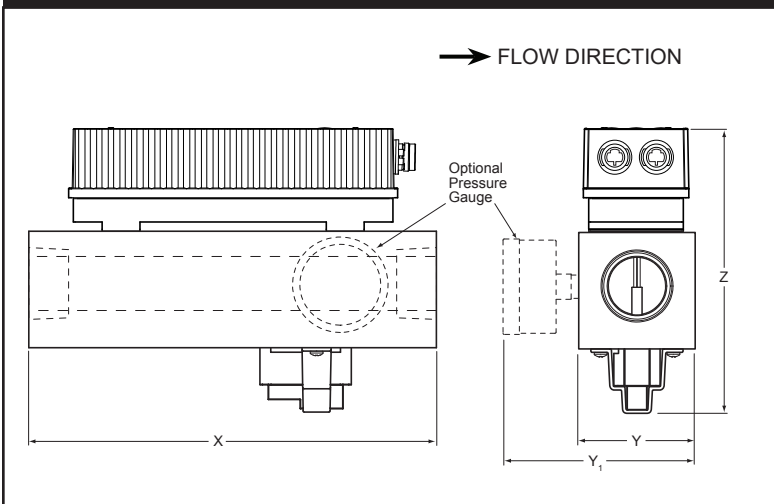
### 3/8" or 1/2" User Interface & Flow Body



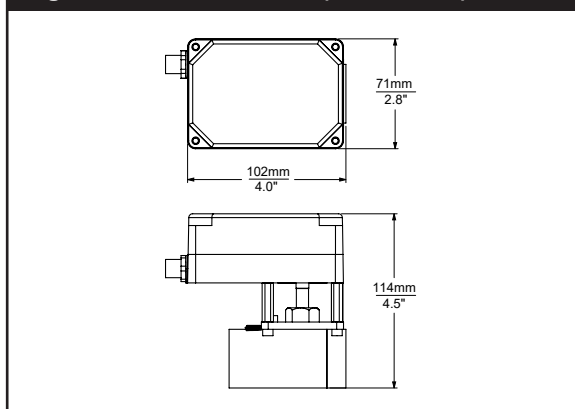
### Regulator with Actuator (3/8" & 1/2" Delta-Q®)



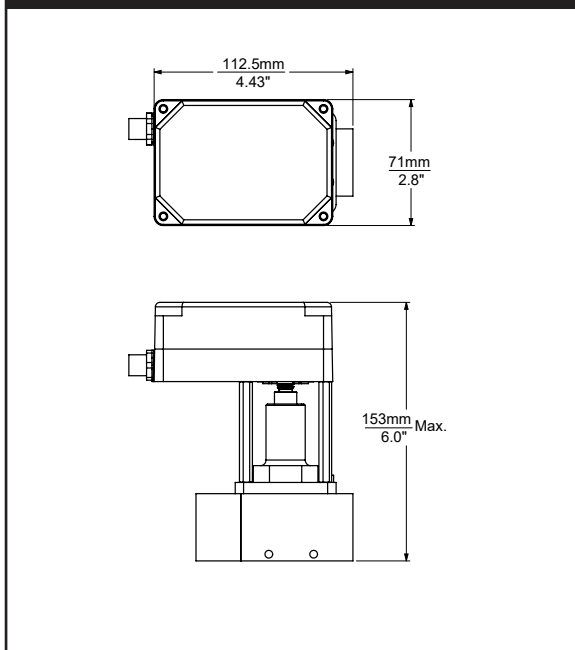
### 3/4" & 1" User Interface & Flow Body Aluminum or Stainless Steel (pressure gauge not available with AL body)



### Regulator with Actuator (3/8" Brass)



### Regulator with Actuator (3/4" & 1" Brass)



#### Dimensions (mm/inches)

Body Size	X	Y	Y <sub>1</sub>	Z
3/4", 5 to 100 LPM	178/7.0	45.7/1.8	77/3.1	117/4.6
1", 5 to 100 LPM	178/7.0	45.7/1.8	77/3.1	117/4.6
1", 10 to 200 LPM	178/7.0	51/2.0	84/3.3	122/4.8

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