

FLOW METER



Flow Meter Instructional Manual



Warranty Agreement

Limited Warranty

Advanced Thermal Solutions, Inc. (hereinafter “ATS”) warrants that: (1) the ATS Flow Meter family of products will perform in accordance with the written materials for a period of ninety (90) days from the date of purchase; and (2) Software will be free from defects and errors in materials and workmanship, and covered for a period of ninety (90) days from the date of purchase if utilized under normal use and service. Any implied warranties on the Software are limited to ninety (90) days.

Copyright

The ATS Flow Meter family and its operating software is a product of Advanced Thermal Solutions, Inc.

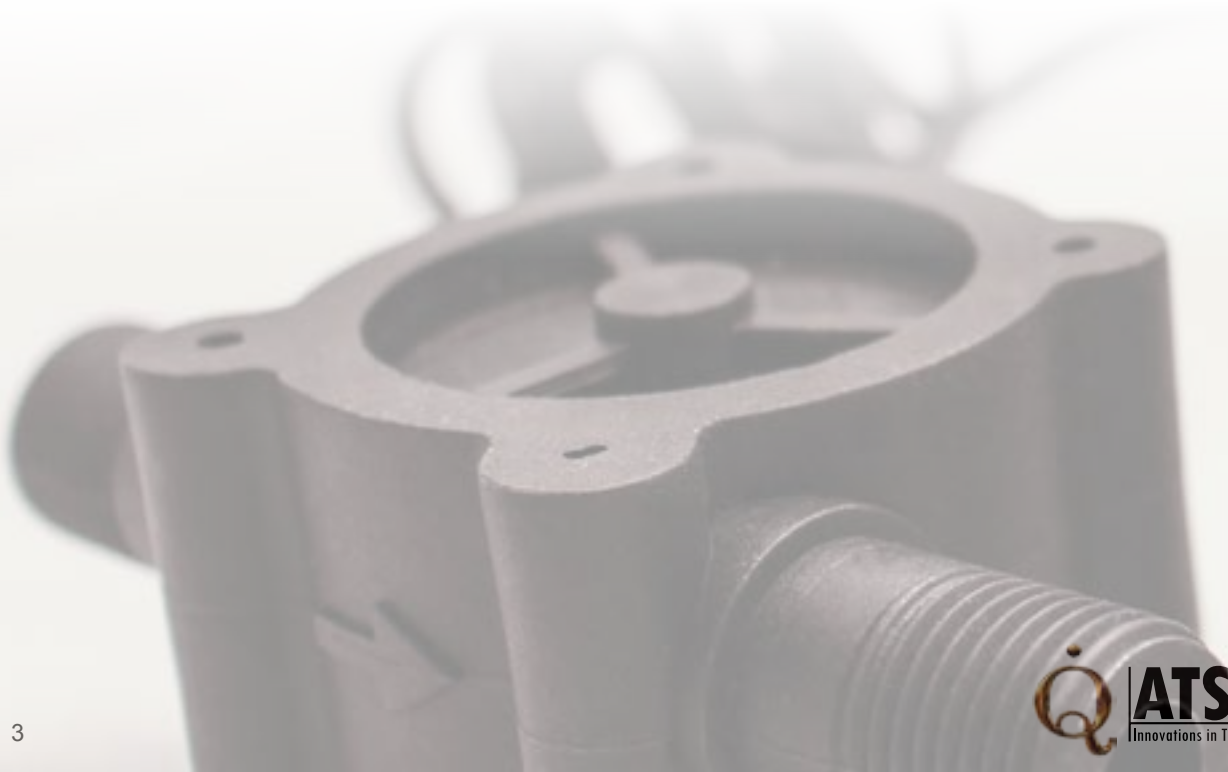
Disclaimer

While every effort is made to ensure accuracy, Advanced Thermal Solutions, Inc., cannot be held responsible for errors or omissions in this Manual. Furthermore, it reserves the right to revise this document and make changes without notice.



Contents

| | |
|---|-----------|
| Section 1: ATS-FM-M Flow Meter | 4 |
| Features, Application, Electrical, Mechanical Drawing, Installation General, Operational Guide | |
| Section 2: ATS-FM-22 Flow Meter | 6 |
| Features, Application, Electrical, Mechanical Drawing, Installation General, Operational Guide | |
| Section 3: ATS-FM-34 Flow Meter | 8 |
| Features, Application, Electrical, Mechanical Drawing, Installation General, Operational Guide | |
| Section 4: ATS-FM-44 Flow Meter | 10 |
| Features, Application, Electrical, Mechanical Drawing, Installation General, Operational Guide | |
| Section 5: ATS-FM-66 Flow Meter | 12 |
| Features, Application, Electrical, Mechanical Drawing, Installation General, Operational Guide | |
| Section 6: ATS-FM-88 Flow Meter | 14 |
| Features, Application, Electrical, Mechanical Drawing, Installation General, Operational Guide | |



Section 1: ATS-FM-M Flow Meter

1. Features

- Flow totaling up to 99,999 L
- Flow rate display from 0.8-8.0 L/min.
- Battery operated - two (2) AA batteries
- Low battery power alert
- Data retained even without battery power



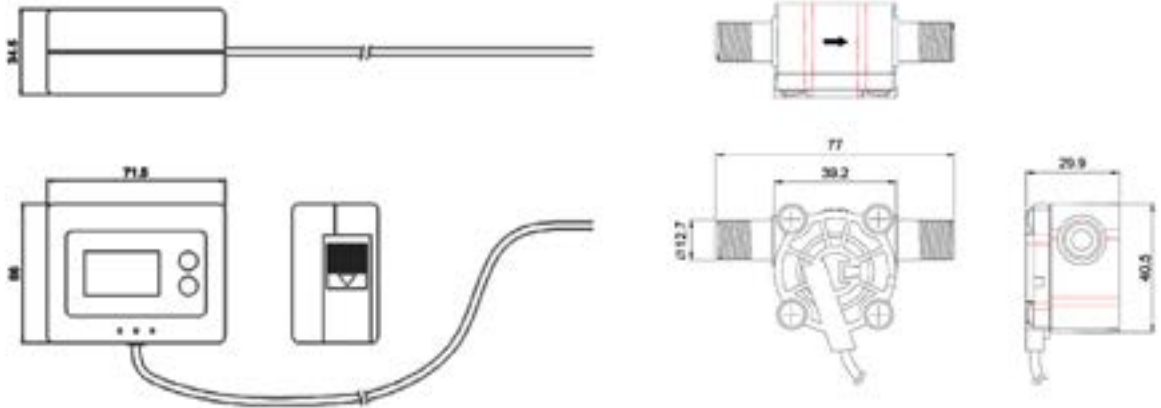
2. Application

- Water cooler
- Water dispenser
- Machinery cooling systems

3. Electrical

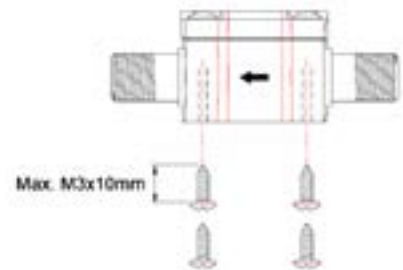
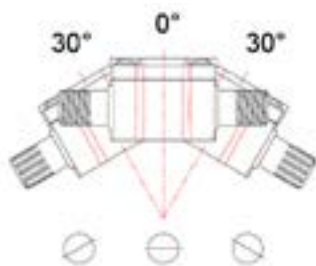
- Operating Voltage: 3 DC Volts
- Operating Current: 1.0 mA (active), 0.015 mA (idle)

4. Mechanical Drawing



5. Installation

- Installation Method: Horizontal installation ONLY
- Flow Direction: One way
- Flow Rate: 0.8-8.0 L/min



6. General

Temperature: 0 to 40°C (32 to 101°F)

Pressure: Max. 6.0 bar (85 psi)

Weight: 140 g (5.38 oz)

Accuracy: +/- 10%

Connection: 1/4" NPT male

Materials

Sensor Body: Acetal Copolymer, TICONA M90

Turbine: Acetal Copolymer, TICONA M90

Turbine Shaft: #304 Stainless Steel

O-Ring: EPDM Rubber

Housing: ABS resin

7. Operation Guide

7.1 Install Batteries

Slide off the cover of the battery compartment and insert two (2) AA batteries. Then slide the cover back.

7.2 Connecting Fitting

ATS-FM-M connectors are 1/4" NPT male.

7.3 Operating

The ATS-FM-M will automatically turn on when there is water flowing through the sensor. It will automatically turn off after 10 seconds when there is no water flowing.

7.4 Display and Mode Selection

Press the "DISPLAY" button to turn on the Flow Meter LCD screen. Press the "DISPLAY" button again to display the accumulated flow volume (flow totalization) or real-time flow rate.

7.5 Reset

Press and hold the "RESET" button for four (4) seconds, to reset the total measured volume to zero (0).

7.6 Low Battery Power Alert

When battery power is lower than normal working level, a buzzer will beep twice and the battery symbol on the screen will blink to notify users to change the battery. Once the batteries are replaced, the alert will be turned off. Data will be stored in memory and restored when the user replaces the batteries.



Section 2: ATS-FM-22 Flow Meter



1. Features

- Flow totaling up to 99,999 L
- Flow rate display from 1.0 to 15.0 L/min.
- Battery operated - two (2) AA batteries
- Low battery power alert
- Data retained even without battery power

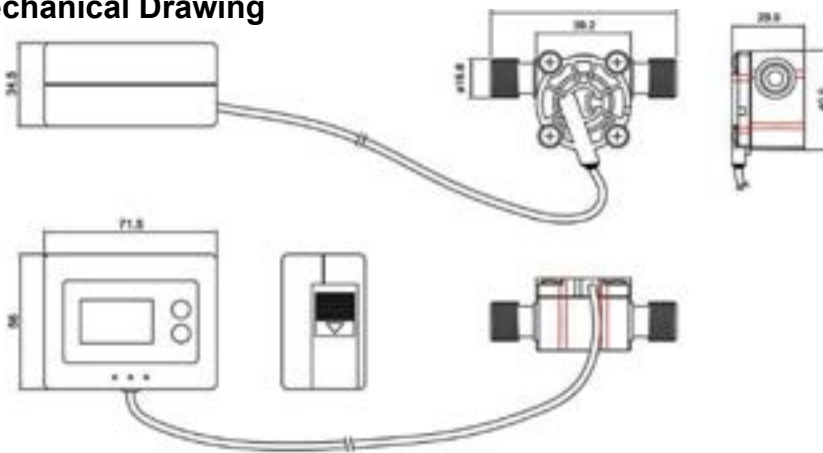
2. Application

- Water cooler
- Water dispenser
- Machinery cooling systems

3. Electrical

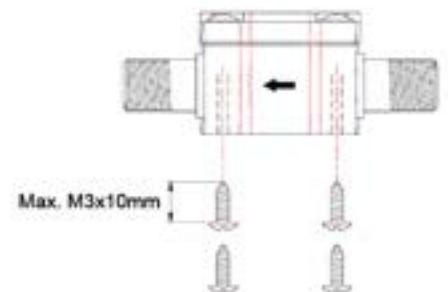
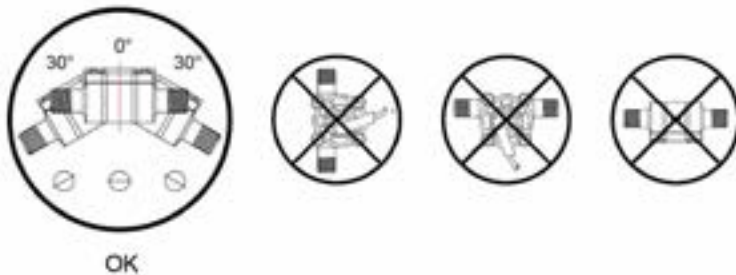
- Operating Voltage: 3 DC Volts
- Operating Current: 1.0 mA (active), 0.015 mA (idle)

4. Mechanical Drawing



5. Installation

- Installation Method: Horizontal installation ONLY
- Flow Direction: One way
- Flow Rate: 1.0 – 15.0 L/min



6. General

Temperature: 0 to 80°C (32 to 170°F)

Pressure: Max. 6.0 bar (85 psi)

Weight: 140 g (5.38 oz)

Accuracy: +/- 10%

Connection: 3/8" BSP male

Materials

Sensor Body: Acetal Copolymer, TICONA M90

Turbine: Acetal Copolymer, TICONA M90

Turbine Shaft: #304 Stainless Steel

O-Ring: EPDM Rubber

Housing: ABS resin

7. Operation Guide

7.1 Install Batteries

Slide off the cover of the battery compartment and insert two (2) AA batteries. Then slide the cover back.

7.2 Connecting Fitting

ATS-FM-22 connectors are 3/8" BSP male.

7.3 Operating

The ATS-FM-22 will automatically turn on when there is water flowing through the sensor. It will automatically turn off after 10 seconds when there is no water flowing.

7.4 Display and Mode Selection

Press the "DISPLAY" button to turn on the Flow Meter LCD screen. Press the "DISPLAY" button again to display the accumulated flow volume (flow totalization) or real-time flow rate.

7.5 Reset

Press and hold the "RESET" button for four (4) seconds, to reset the total measured volume to zero (0).

7.6 Low Battery Power Alert

When battery power is lower than normal working level, a buzzer will beep twice and the battery symbol on the screen will blink to notify users to change the battery. Once the batteries are replaced, the alert will be turned off. Data will be stored in memory and restored when the user replaces the batteries.



Section 3: ATS-FM-34 Flow Meter

1. Features

- Flow totaling up to 99,999 L
- Flow rate display from 0.04 to 1.0 L/min.
- Battery operated - two (2) AA batteries
- Low battery power alert
- Data retained even without battery power



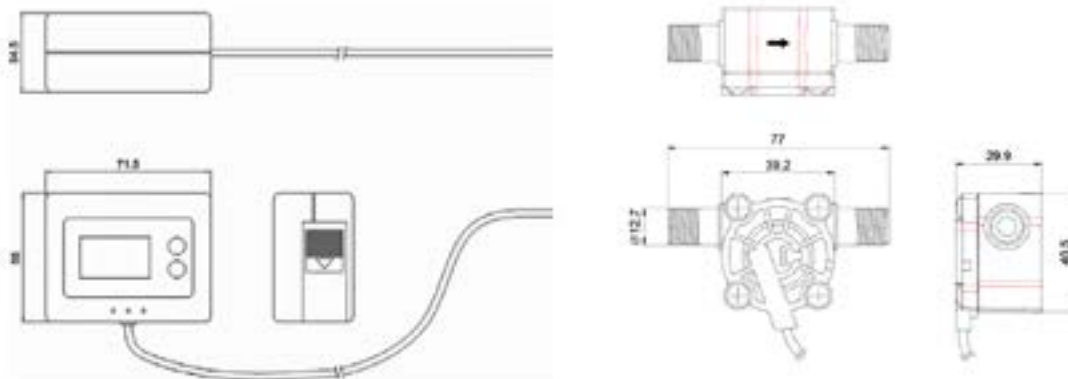
2. Applications

- Water cooler
- Water dispenser
- Machinery cooling systems

3. Electrical

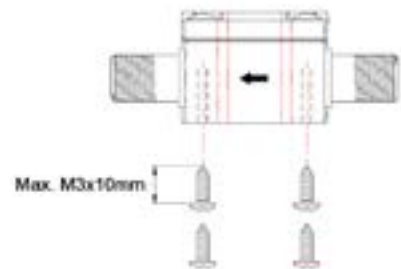
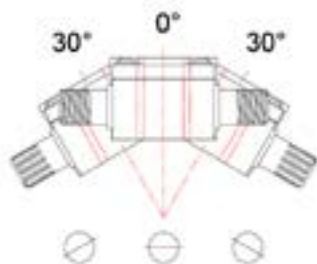
- Operating Voltage: 3 DC Volts
- Operating Current: 1.0 mA (active), 0.015 mA (idle)

4. Mechanical Drawing



5. Installation

- Installation Method: Horizontal installation ONLY
- Flow Direction: One way
- Flow Rate: 0.04 – 1.0 L/min



6. General

Temperature: 0 to 80°C (32 to 170°F)

Pressure: Max. 6.0 bar (85 psi)

Weight: 140 g (5.38 oz)

Accuracy: +/- 10%

Connection: 1/4" NPT male

Materials

Sensor Body: Acetal Copolymer, TICONA M90

Turbine: Acetal Copolymer, TICONA M90

Turbine Shaft: #304 Stainless Steel

O-Ring: EPDM Rubber

Housing: ABS resin

7. Operation Guide

7.1 Install Batteries

Slide off the cover of the battery compartment and insert two (2) AA batteries. Then slide the cover back.

7.2 Connecting Fitting

ATS-FM-34 Flow Meter connectors are 1/4" NPT male.

7.3 Operating

The ATS-FM-34 will automatically turn on when there is water flowing through the sensor. It will automatically turn off after 10 seconds when there is no water flowing.

7.4 Display and Mode Selection

Press the "DISPLAY" button to turn on the Flow Meter LCD screen. Press the "DISPLAY" button again to display the accumulated flow volume (flow totalization) or real-time flow rate.

7.5 Reset

Press and hold the "RESET" button for four (4) seconds, to reset the total measured volume to zero (0).

7.6 Low Battery Power Alert

When battery power is lower than normal working level, a buzzer will beep twice and the battery symbol on the screen will blink to notify users to change the battery. Once the batteries are replaced, the alert will be turned off. Data will be stored in memory and restored when the user replaces the batteries.



Section 4: ATS-FM-44 Flow Meter

1. Features

- Flow totaling up to 99,999 L
- Flow rate display from 1.5 to 25.0 L/min.
- Battery operated - two (2) AA batteries
- Low battery power alert
- Data retained even without battery power



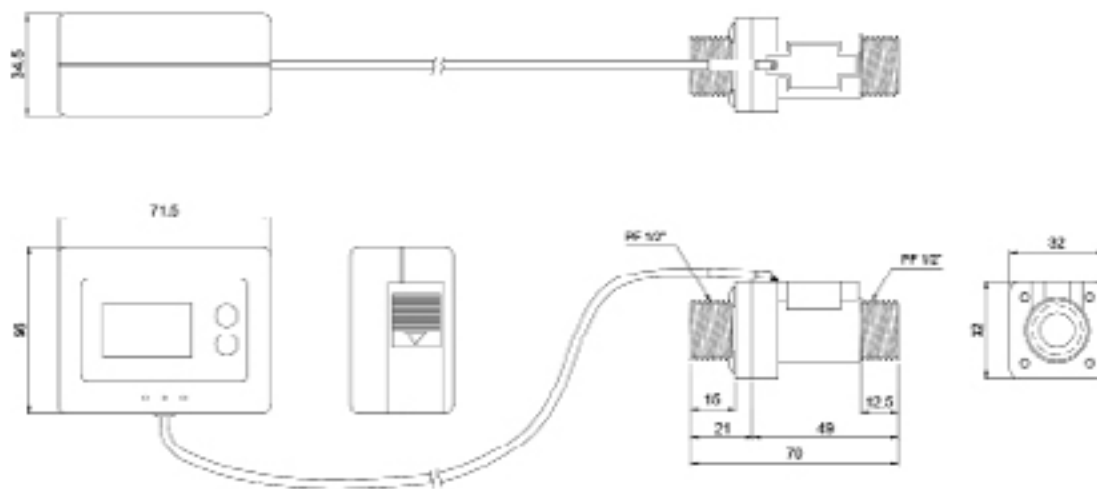
2. Application

- Water cooler
- Water dispenser
- Machinery cooling systems

3. Electrical

- Operating Voltage: 3 DC Volts
- Operating Current: 1.0 mA (active), 0.015 mA (idle)

4. Mechanical Drawing



5. Installation

- Mounting Method: Vertical, Horizontal or any angle installation for flow sensor
- Flowing Direction: One way
- Flow Rate : 1.5 – 25.0 L/min

6. General

Temperature: 0 to 60°C (32 to 140°F)

Pressure: Max. 6.0 bar (85 psi)

Weight: 140 g (5.38 oz)

Accuracy : +/- 5%

Connection: 1/2" BSP

Materials

Sensor Body: Glass Filled PPS

Turbine: PA composite Turbine holder Acetal Copolymer, TICONA M90

Turbine Shaft: Ceramic

O-Ring: EPDM Rubber

Control Unit Housing: ABS resin

7.0 Operation Guide

7.1 Install Batteries

Slide off the cover of the battery compartment and insert two (2) AA batteries. Then slide the cover back.

7.2 Connecting Fitting

ATS-FM-44 connectors are 1/2" BSP.

7.3 Operating

The ATS-FM-44 will automatically turn on when there is water flowing through the sensor. It will automatically turn off after 10 seconds when there is no water flowing.

7.4 Display and Mode Selection

Press the "DISPLAY" button to turn on the Flow Meter LCD screen. Press the "DISPLAY" button again to display the accumulated flow volume (flow totalization) or real-time flow rate.

7.5 Reset

Press and hold the "RESET" button for four (4) seconds, to reset the total measured volume to zero (0).

7.6 Low Battery Power Alert

When battery power is lower than normal working level, a buzzer will beep twice and the battery symbol on the screen will blink to notify users to change the battery. Once the batteries are replaced, the alert will be turned off. Data will be stored in memory and restored when the user replaces the batteries.

Section 5: ATS-FM-66 Flow Meter



1. Features

- Flow totaling up to 99,999 L
- Flow rate display from 2.4 – 60.0 L/min
- Battery operated - two (2) AA batteries
- Low battery power alert
- Data retained even without battery power

2. Application

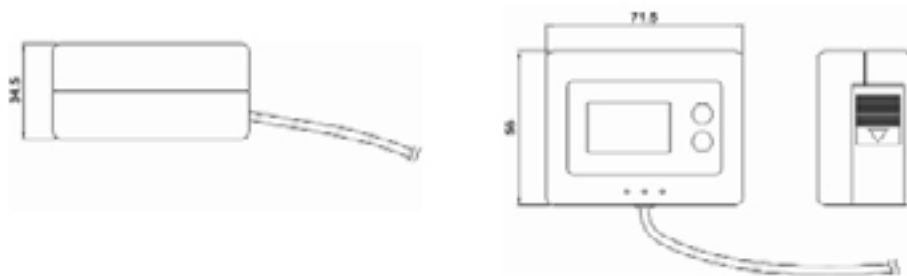
- Water cooler
- Water dispenser
- Cooling system for machinery

3. Electrical

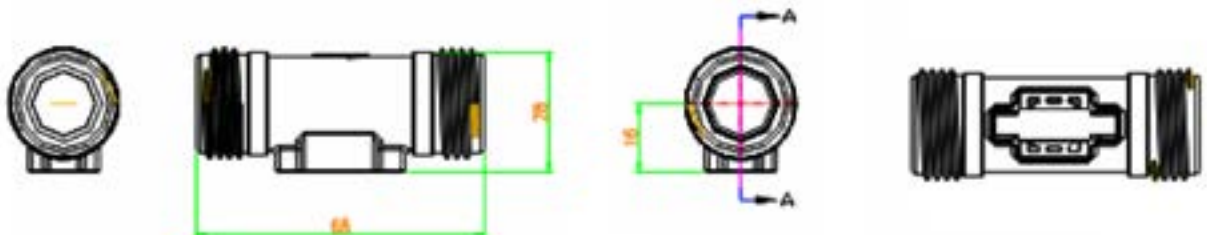
- Operating Voltage: 3 DC Volts
- Operating Current: 1.0 mA (work), 0.015 mA (sleep)

4. Mechanical Drawing

Electrical Control Box



Flow Sensor



5. Installation

- Installation Method: Vertical, Horizontal (any angles)
- Flow Direction: One way
- Flow Rate: 2.4 – 60 L/min

6. General

Temperature: 0 to 80°C (32 to 170°F)

Pressure: Max. 6.0 bar (85 psi)

Weight: 140 g (5.38 oz)

Accuracy: +/- 10%

Connection: 3/4" BSP male

Materials

Sensor Body: PA6, Nylon

Turbine: Plastic, Magnet

Turbine Shaft: #304 stainless steel (ceramic option available)

Control Box Housing: ABS resin

7. Operation Guide

7.1 Install Batteries

Slide off the cover of the battery compartment and insert two (2) AA batteries. Then slide the cover back.

7.2 Connecting Fitting

ATS-FM-66 connectors are 3/4" BSP male.

7.3 Operating

The ATS-FM-66 will automatically turn on when there is water flowing through the sensor. It will automatically turn off after 10 seconds when there is no water flowing.

7.4 Display and Mode Selection

Press the "DISPLAY" button to turn on the Flow Meter LCD screen. Press the "DISPLAY" button again to display the accumulated flow volume (flow totalization) or real-time flow rate.

7.5 Reset

Press and hold the "RESET" button for four (4) seconds, to reset the total measured volume to zero (0).

7.6 Low Battery Power Alert

When battery power is lower than normal working level, a buzzer will beep twice and the battery symbol on the screen will blink to notify users to change the battery. Once the batteries are replaced, the alert will be turned off. Data will be stored in memory and restored when the user replaces the batteries.

Section 6: ATS-FM-88 Flow Meter



1. Features

- Flow totaling up to 99,999 L
- Flow rate display from 3.0 – 100.0 L/min
- Battery operated - two (2) AA batteries
- Low battery power alert
- Data retained even without battery power

2. Application

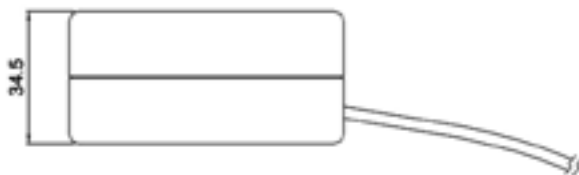
- Water cooler
- Water dispenser
- Machinery cooling systems

3. Electrical

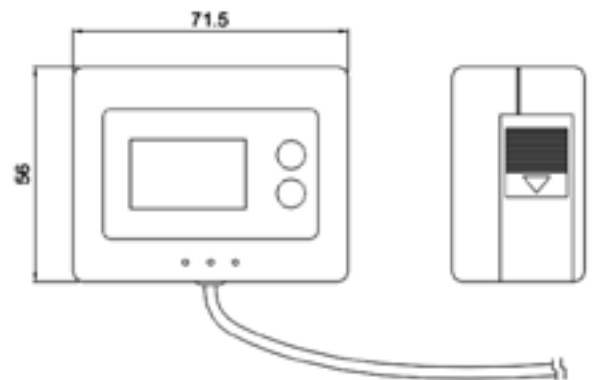
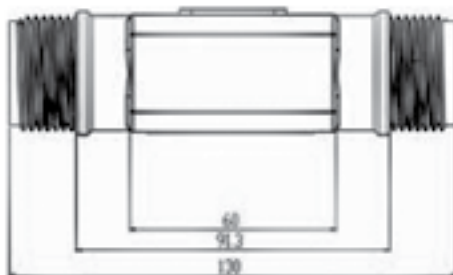
- Operating Voltage: 3 DC Volts
- Operating Current: 1.0 mA (active), 0.015 mA (idle)

4. Mechanical Drawing

Electrical Control Box



Flow Sensor



5. Installation

- Mounting Method: Vertical, Horizontal or any angle installation for flow sensor
- Flowing Direction: One way
- Flow Rate: 3.0-100.0 L/min

6. General

Temperature: 0 to 80°C (32 to 170°F)

Pressure: Max. 8.0 bar (85 psi)

Weight: 140 g (5.38 oz)

Accuracy: +/- 10%

Connection: 1" BSP male

Materials

Sensor Body: PA6, Nylon

Turbine: Plastic, Magnet

Turbine Shaft: #304 stainless steel (ceramic option available)

Control Box Housing: ABS resin

7. Operation Guide

7.1 Install Batteries

Slide off the cover of the battery compartment and insert two (2) AA batteries. Then slide the cover back.

7.2 Connecting Fitting

ATS-FM-88 connectors are 1" BSP male.

7.3 Operating

The ATS-FM-88 will automatically turn on when there is water flowing through the sensor. It will automatically turn off after 10 seconds when there is no water flowing.

7.4 Display and Mode Selection

Press the "DISPLAY" button to turn on the Flow Meter LCD screen. Press the "DISPLAY" button again to display the accumulated flow volume (flow totalization) or real-time flow rate.

7.5 Reset

Press and hold the "RESET" button for four (4) seconds, to reset the total measured volume to zero (0).

7.6 Low Battery Power Alert

When battery power is lower than normal working level, a buzzer will beep twice and the battery symbol on the screen will blink to notify users to change the battery. Once the batteries are replaced, the alert will be turned off. Data will be stored in memory and restored when the user replaces the batteries.

Advanced Thermal Solutions, Inc

Advanced Thermal Solutions, Inc. (ATS) is a leading thermal engineering and manufacturing company supplying complete thermal and mechanical packaging solutions from analysis and testing to final production. ATS is world-renowned for its portfolio of more than 5,000 high-performance heat sinks, research-quality test equipment, complete liquid cooling loop products and leading-edge R&D, specifically tailored to the telecom, LED and computing industries. In addition, ATS provides thermal design consulting services and training for the electronics cooling industry.

For further technical information, please contact

Advanced Thermal Solutions, Inc. (ATS) by calling **781.769.2800**, by emailing **ats-hq@qats.com** or by visiting **www.qats.com**.



Advanced Thermal Solutions, Inc
89-27 Access Road,
Norwood, MA 02062
phone: 718.769.2800