USER MANUAL

Invasive Liquid Flow Demo Kit

DOCUMENT PURPOSE

The purpose of this user guide is to give you a clear understanding of how to use our demo kit step-by-step.

DISPOSABLE SENSOR

REUSABLE BASE STATION

The liquid flow demo kit is used to demonstrate Honeywell Liquid Flow sensing technology (calibrated for clean water). The demo kit includes calibrated flow sensor(s), a reusable base station, and a PC application GUI as shown in Figures 1a and 1b. The sensor is compatible with any user-supplied flow source.

Figure 1a. Laptop and Sensor Setup

Honeywell

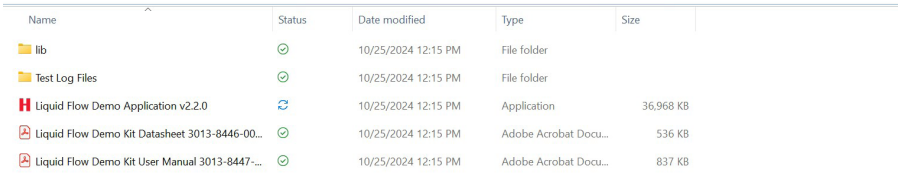
Figure 1b. Liquid Flow Demo Kit Contents

GUI START INSTRUCTIONS

Transferring the Executable:

Downloadable Software: A link to the software application will be provided with the demo kit, and can be found on the website. The zip file contains the application exe, user manual, and product datasheet. The zip file should be copied to the PC's main drive and extracted. (Once extracted, the .exe and lib folder must remain in the same directory to run the application).

Figure 2. GUI Screenshot



Name	Status	Date modified	Type	Size
lib		10/25/2024 12:15 PM	File folder	
Test Log Files		10/25/2024 12:15 PM	File folder	
Liquid Flow Demo Application v2.2.0		10/25/2024 12:15 PM	Application	36,968 KB
Liquid Flow Demo Kit Datasheet 3013-8446-00...		10/25/2024 12:15 PM	Adobe Acrobat Docu...	536 KB
Liquid Flow Demo Kit User Manual 3013-8447-...		10/25/2024 12:15 PM	Adobe Acrobat Docu...	837 KB

Step 1: Hardware setup to complete prior to using the GUI.

a. Connect tubing to flow sensor (refer to arrow marking on sensor for proper flow direction). Use of 3/16-inch ID soft tubing is recommended (and is provided with the demo kit)

b. Mount base station (mounting options shown in Figures 3 to 6) with flow direction arrow pointing up and plug flow sensor into base station

c. Connect Liquid Flow Sensor to base station

d. Connect PC to base station with USB-C cable

Figure 3. Ø 1/2-inch to 1½ inch Pole [Ø12,7 mm to Ø38,1 mm Pole

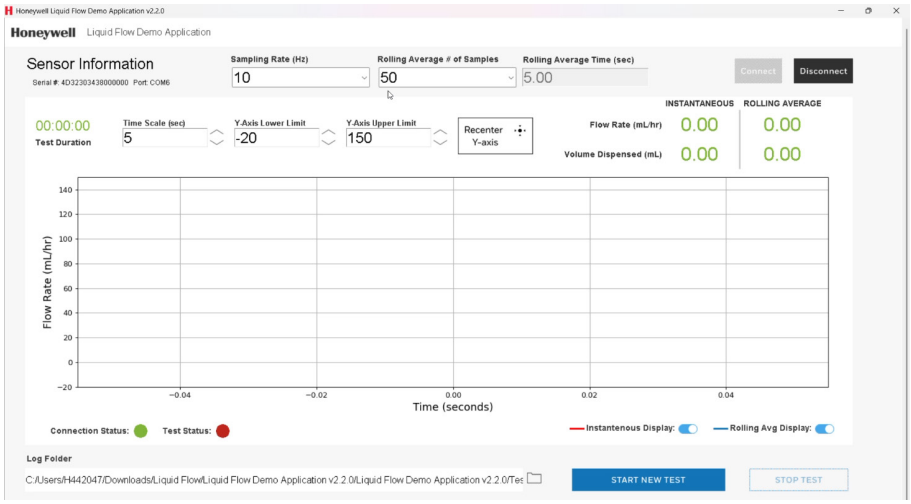
Figure 4. Standard 1-inch [25,4 mm] T-slotted Frame

Figure 5. Mounted to a Flat Plate using a 1/4-20 machine screw

Figure 6. Mounted Using a Vice

Step 2: Run the "Liquid Flow Demo Application v2.1.0.exe" file

Figure 2. Application GUI



Step 3: Click the "Connect" Button

Step 4:

4a. Select data to view (instantaneous and/or rolling average)

4b. Select sampling rate (only when rolling average display is turned on)

4c. Select rolling average # of samples (only when rolling average display is turned on)

Sampling Rate (Hz) : This value indicates the frequency that data is received from the sensor. The higher the sampling rate, the more data is recorded from the sensor per second. Higher sampling rates are necessary to capture rapidly changing flow rates but will generate larger data log files. It is recommended to use the lowest sampling rate needed to capture flow events in the application.

Rolling Average Number of Samples : This value indicates the number of samples used to calculate the rolling average flow rate value. Higher rolling average number of samples will reduce more noise in the signal, but will reduce responsiveness to sudden changes in flow rate. It is recommended to use the lowest value of rolling average number of samples needed to minimize signal noise to an acceptable level for the application.

Rolling Average Time (secs) : This value is calculated using sampling rate and rolling average number of samples, and cannot be selected by the user. This reference value is displayed to indicate the duration of time used in the rolling average calculation.

Example:

$$\textit{Rolling Average Time (sec)} = \frac{\textit{Rolling Average Number of Samples}}{\textit{Sampling Rate (Hz)}}$$

$$\textit{5.00 (sec)} = \frac{\textit{50}}{\textit{10 (Hz)}}$$

Using the settings of 50 rolling average samples at a sampling rate of 10 Hz will result in a rolling average flow measurement based on the previous 5.00 seconds of data from the sensor.

STEP 5: Configure the live plot time scale and Y-Axis upper and lower limits.
Note: Time scale is locked and cannot be changed while a test is active.

STEP 6 (Optional): Change Log Folder Location by clicking folder icon and selecting directory. Default location is "Test Log Files" folder included in extracted zip file.

STEP 7: Click "START NEW TEST" and provide data log filename when prompted. Data is logged in .xlsx file format.

Figure 7. Entering Log File

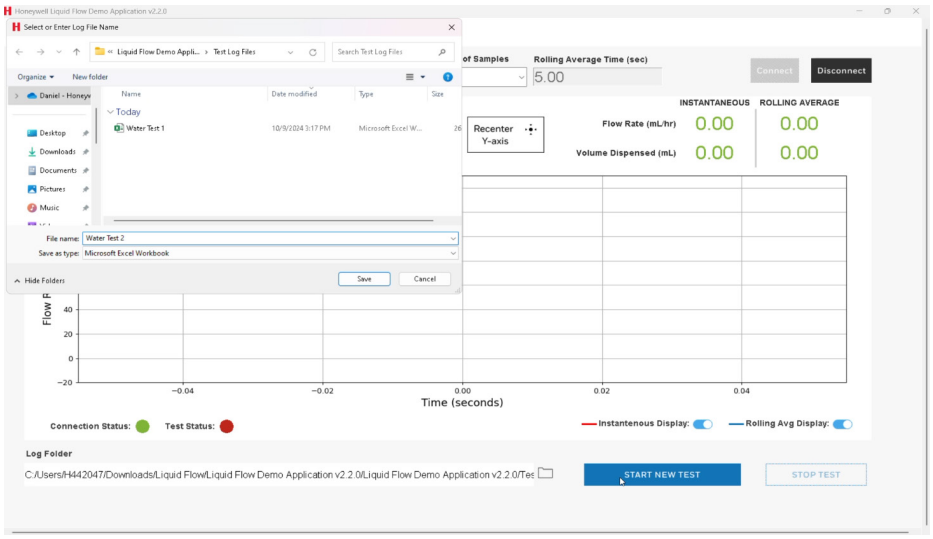
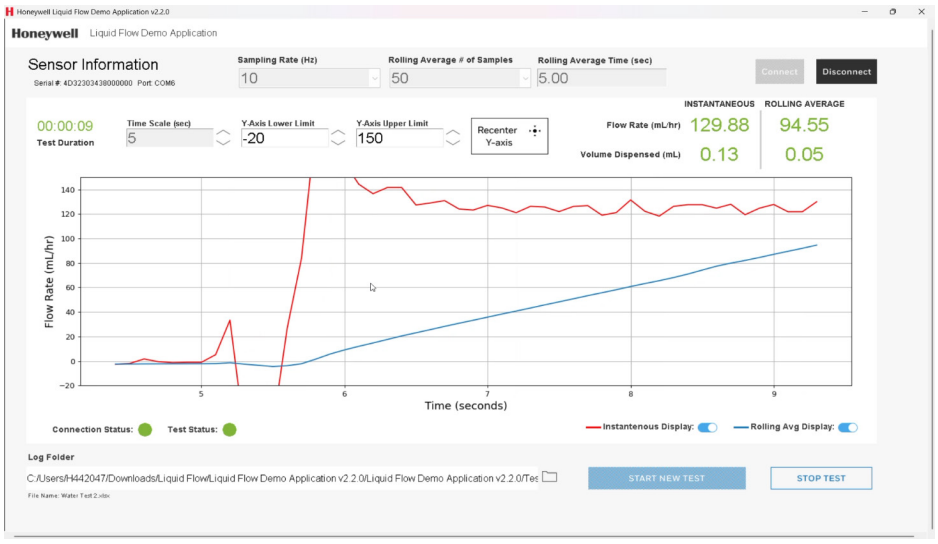


Figure 8. Active Test



NOTE

Instantaneous and Rolling Average measurements can be toggled in the lower right of the of the plot. The data for both with still be included in the log file

NOTE

If prompted with “Connection Failed” error message, check USB and hardware connections.

STEP 8: Flow fluid (distilled water) through sensor, purging air bubbles as needed. Click “STOP TEST” Button to stop data stream and analyze data log file.

CLEANING METHOD

To ensure optimal performance of the Liquid Flow Demo Kit, follow these cleaning steps using the recommended values

1. **Air Flush:** Perform an air flush at 500 sccm for five minutes with the sensors oriented vertically.
2. **IPA Flush:** Flush with approximately 99 % IPA at a rate of 100 ml/hr for 60 minutes.
3. **Repeat Air Flush**: Perform another air flush to remove the IPA for two minutes.
4. **Baking:** Bake the components in an oven at 60°C for two hours.

⚠WARNING
PERSONAL INJURY

DO NOT USE these products as safety or emergency stop devices or in any other application where failure of the product could result in personal injury.

Failure to comply with these instructions could result in death or serious injury.

⚠WARNING
MISUSE OF DOCUMENTATION

- The information presented in this product sheet is for reference only. Do not use this document as a product installation guide.
- Complete installation, operation, and maintenance information `is provided in the instructions supplied with each product.

Failure to comply with these instructions could result in death or serious injury.

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Specifications may change without notice. The information we supply is believed to be accurate as of this writing. However, Honeywell assumes no responsibility for its use.

REVISIONS

Rev	Page	Description	Date	App.
1.0		Liquid Flow Sensor Demo Kit User Manual Initial Release	10/24	1

Honeywell Sensing Solutions
830 East Arapaho Road
Richardson, TX 75081
www.honeywell.com

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