

**SOFTWARE**

# FT2A VIEW™

## Free PC-Based Software Tool

for the FT2A Thermal Gas Mass Flow Meter



### Software Instruction Manual

Document #105406

Rev C



*This publication must be read in its entirety before performing any operation. Failure to understand and follow these instructions could result in serious personal injury and/or damage to the equipment. Should this equipment require repair or adjustment beyond the procedures given herein, contact the factory at:*

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**Fox Thermal FT2A Manuals:**

- **Model FT2A Instruction Manual**
- **FT2A Anybus Manual**

*All Fox Thermal Manuals and software available in English only.*

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# FT2A View™

## Introduction

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### **Introduction**

Thank you for purchasing the Model FT2A Thermal Gas Mass Flow meter from Fox Thermal. The Model FT2A is one of the most technically advanced flow meters in the world. Extensive engineering effort has been invested to deliver advanced features, accuracy measurement performance, and outstanding reliability.

The FT2A View™ software allows users to easily display data and configure the FT2A to their specific application parameters. The software allows users to collect flow/temperature data and export to an Excel® file.

The Model FT2A is available with many different communication options: RS485 Modbus, BACnet MS/TP (RS485), Profibus-DP, DeviceNet, or Ethernet Modbus TCP. The FT2A View™ Software has been developed to react intuitively to the type of FT2A meter with which it is interfacing.

This Manual contains the installation and operation instructions for the FT2A View™ Software.

This manual is divided into the following sections: Introduction, Installation, Startup, Operation, Glossary and Index.

**Prepare the Flow Meter for Connecting to a PC**

Open the FT2A enclosure by loosening the four screws in the enclosure cover. Connect the FT2A to a PC with a USB (Type-A / Mini-B) cable. If the PC is connected to the internet and running Windows®, the PC will try to automatically load the VCP driver. If the driver does not load automatically, download the VCP driver at: [www.ftdichip.com/Drivers/VCP.htm](http://www.ftdichip.com/Drivers/VCP.htm)

**Download the FT2A View™ Software from Fox Website**

The latest version of the FT2A View™ software is available for download at [www.foxthermal.com/products/ft2a.php#ft2aview](http://www.foxthermal.com/products/ft2a.php#ft2aview)

The location of the FT2A View Software download link on the FT2A product webpage is shown below.

Fig. 2.1: Online Download Location for FT2A View™ Software

1 - Choose the FT2A View™ Software Sub-menu



2 - Click the button to download software

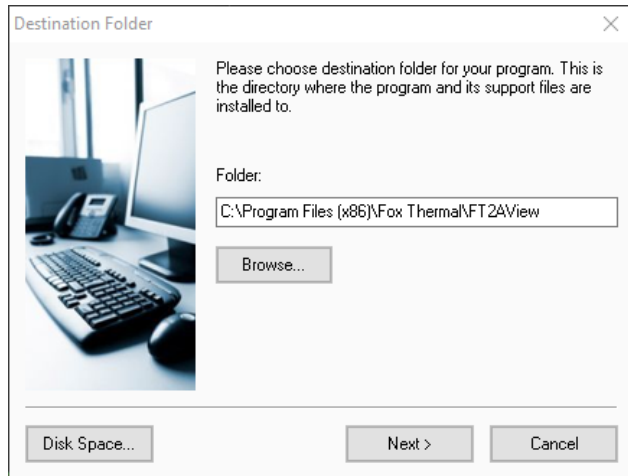
# FT2A View™

## Installation

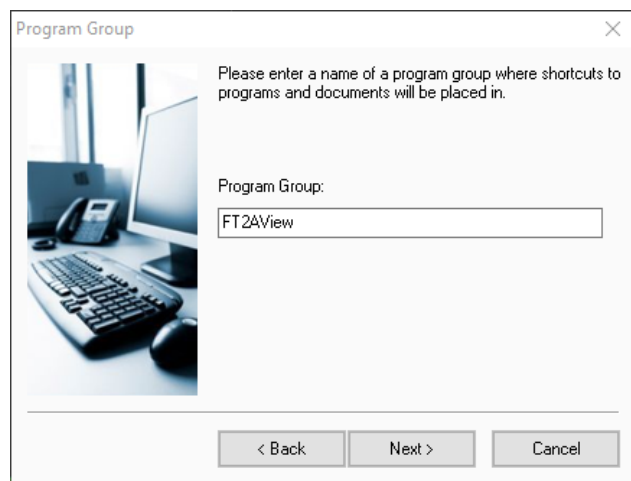
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### Install the FT2A View™ Software on a PC

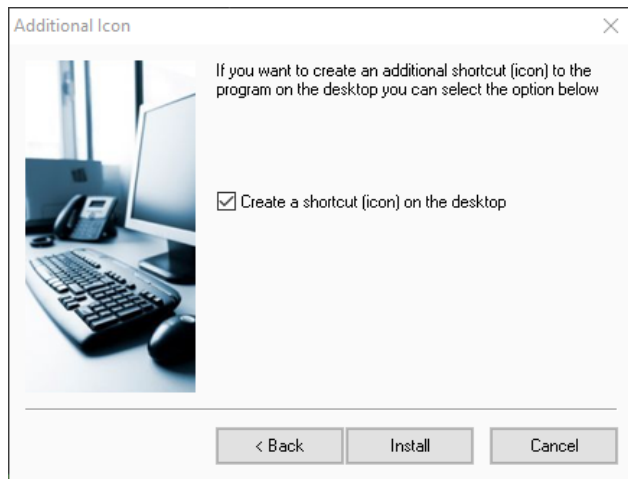
To install the FT2A View™ program, run the downloaded "FT2Aview-setup.exe" file. After clicking "Next" the screen will show:



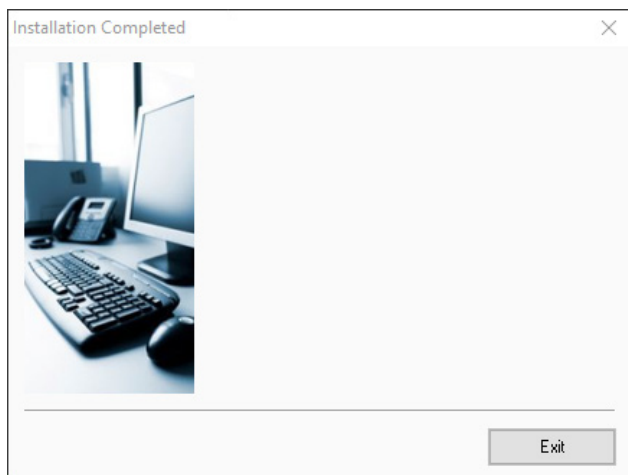
Select the folder in which you wish to install FT2A View™, then click "Next".



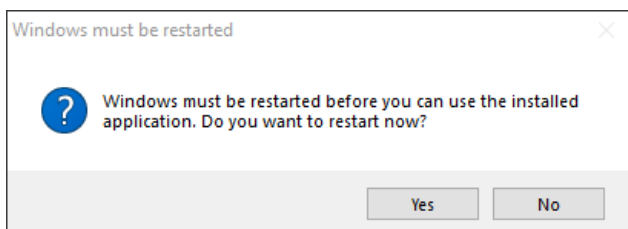
Please enter a name for the Program Group or use the default FT2AView name and click "Next".



To find the program easily, you may choose to create a shortcut icon for your PC desktop by placing a check in the checkbox. Click "Install" to continue.



When the program is done installing, click "Exit".



To complete the installation process, close all applications, and restart your computer. The FT2A View™ Software will be ready to use after the computer has rebooted.

# FT2A View™

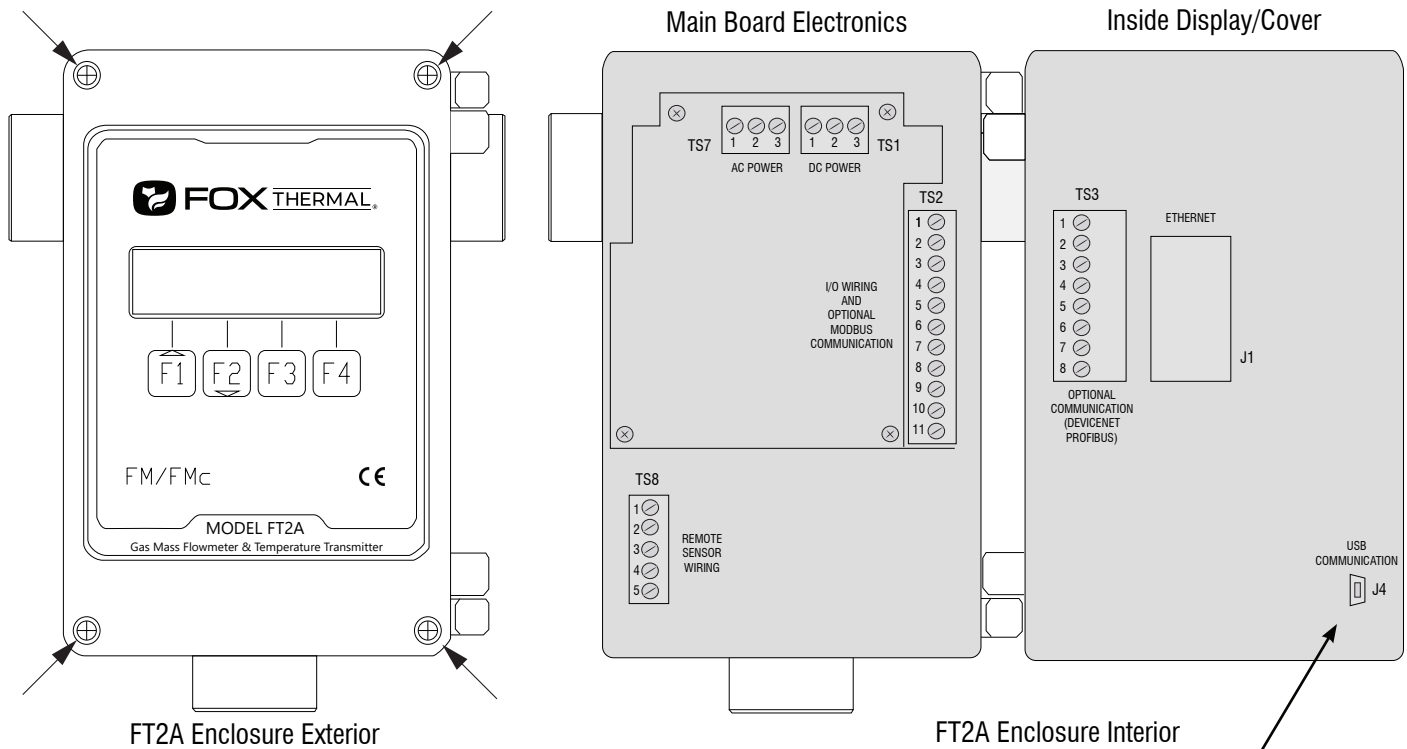
## Startup

### Power on the Meter

Refer to the FT2A Instruction Manual for Power input wiring instructions. The FT2A must be powered on to communicate with the FT2A View™ software tool.

### Connect the FT2A to a PC or Laptop via USB

Be sure to have your FT2A flow meter connected by USB to a PC or laptop that has FT2A View™ software successfully downloaded to the operating system.

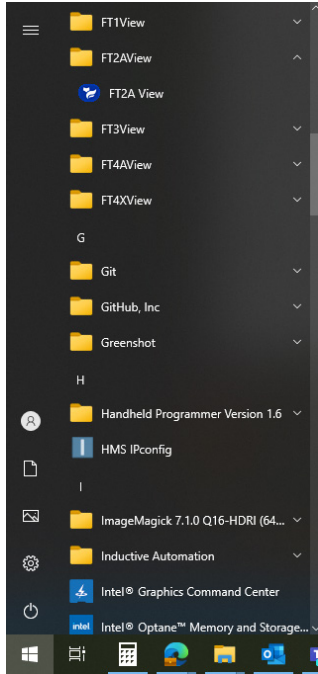


Access to the USB communication port is inside the display/cover



### Startup FT2A View™ Software

After re-boot and connecting to a PC via USB, startup the FT2A View™ software accessible in the Windows "Start" button or search bar.



### COM Port Assignment

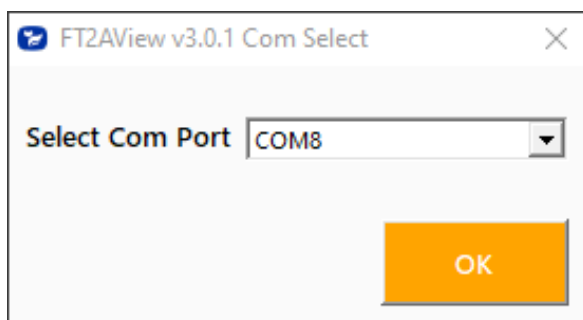
Upon opening FT2A View™ for the first time, Windows® will assign a "virtual COM port". The COM port number that has been assigned will appear automatically in the drop down box.

If the correct COM Port does not appear, go to Control Panel/Device Manager and click on Ports (COM & LPT). The COM port number should be displayed under the USB symbol.

If prompted, enter the assigned COM port in FT2A View™ by using the drop down menu and press **OK**.

**NOTE!** The FT2A Meter must be plugged into the computer in order for the system to register it.

Fig. 3.1: COM Port Selection Window



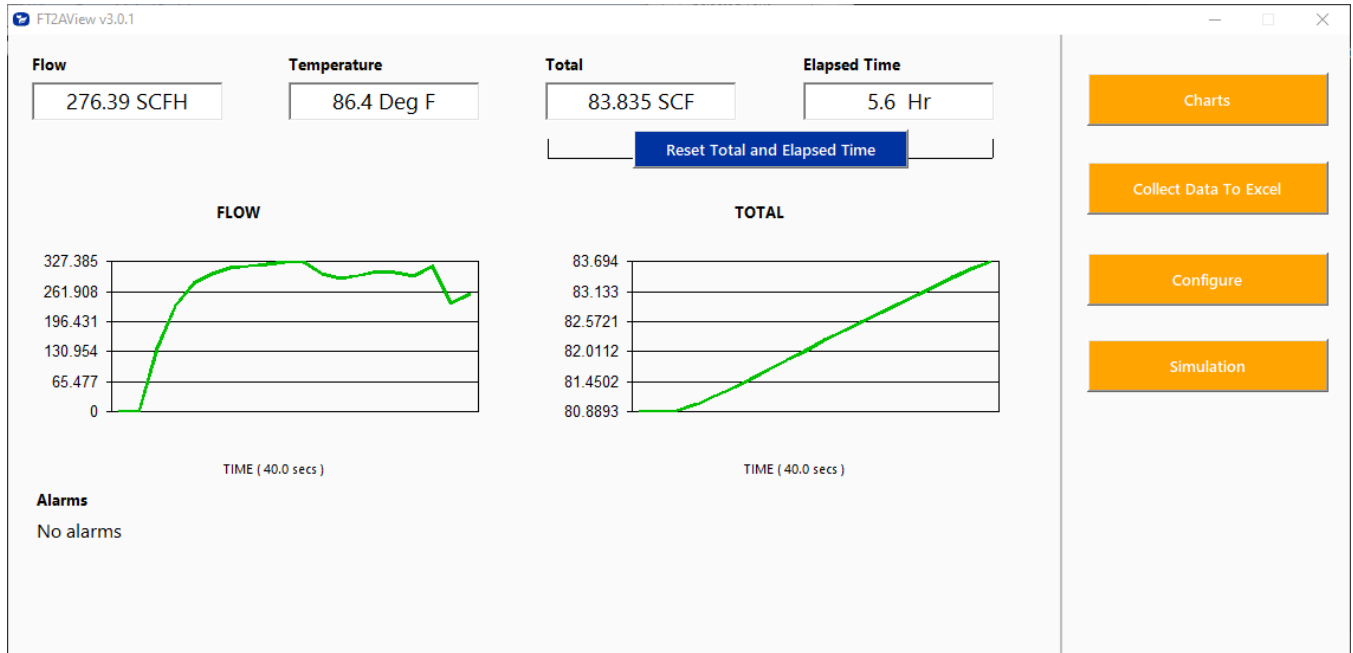
# FT2A View™

## Operation

### Main Screen

The image below depicts the main screen that appears upon entering FT2A View™.

Fig. 4.1: FT2A View™ Main Screen



### Flow & Temperature

FT2A View™ will show values for flow and temperature in the pipe in real time based on how the flow meter has been configured (in this case, SCFH and °F). These values are in the upper left of the screen.

### Total & Elapsed Time

Flow total and Elapsed Time are shown in the upper right of the screen and can be reset with the button just underneath the displayed values.

### Charts Button

This calls up two charts that can be configured for flow, temperature, or total flow. Each chart can be individually enlarged and rescaled from the original default settings. For more information on how to change the charts settings, refer to p. 12.



**NOTE!** Data on the screen is refreshed at user selected update rate.

**Collect Data to Excel Button**

Selecting the Collect Data to Excel button allows all selected data to be assembled into an Excel® file at the specified sample time. All readings are time/date stamped. For more information on using the data collection function, refer to "Collect Data to Excel" on p. 14.

**Configure Button**

This allows the operator to set the application parameters. This can be done using the FT2A View™ software or manually using the instrument's display. For more information on configuring application parameters, refer to "Configure" on p. 15.

**Simulation Button**

This function can be used to verify that all the flow meter outputs are working properly. The easiest way to perform this check is to enter a specific temperature/flow rate. The corresponding analog outputs can be verified using a DMM and using a timer for the pulse. Refer to p. 21 for more information on how to use the Simulation function.

### Charts Settings

From the main screen, click on "Charts". Two charts will appear side-by-side. Each chart can be selected for flow, temperature or total flow.

Fig. 4.2: Chart Settings Window - Chart 1

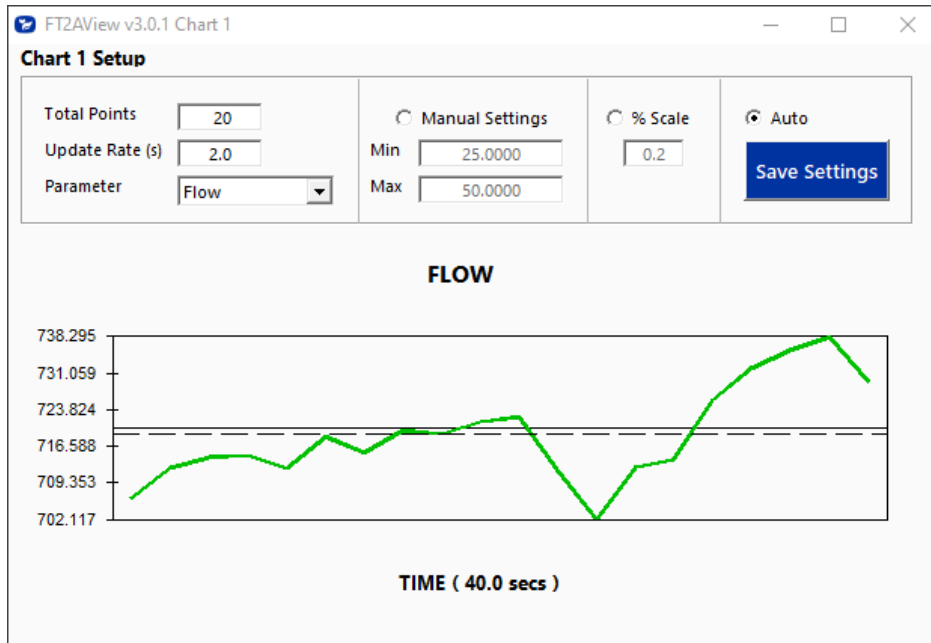
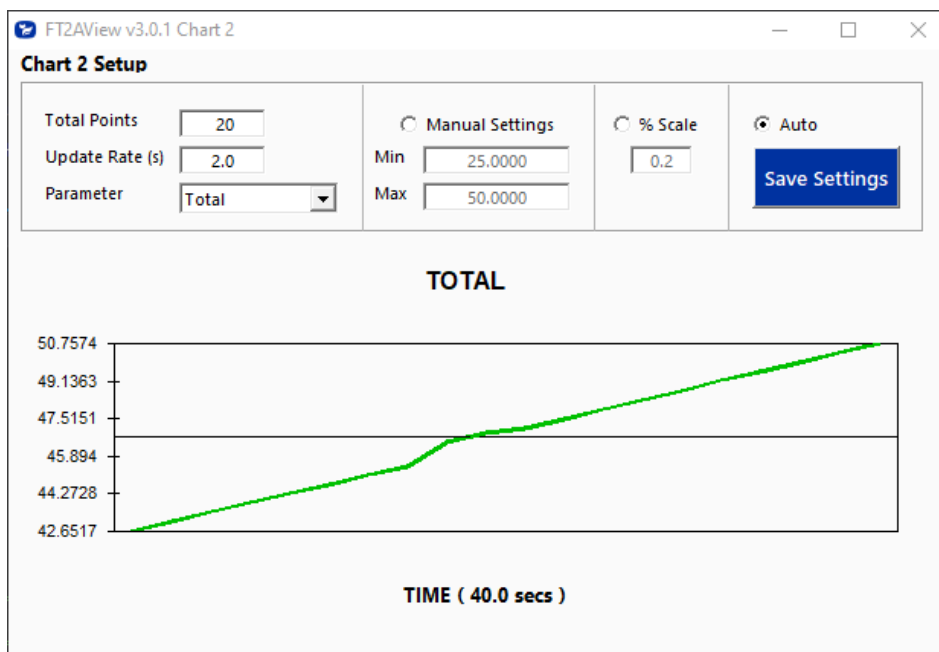


Fig. 4.3: Chart Settings Window - Chart 2



**Total Points**

The total points specifies the number of points plotted on the graph. Older data is automatically omitted.

**Update Rate**

The update rate controls the data refresh rate.

**Parameters**

Flow, temperature or total flow can easily be selected for charting.

**Manual Chart Setting**

The Manual mode allows a user to input min/max values for chart scaling. When entering new values, click on Save Settings for them to take effect.

**Percent (%) Scale**

This sets the scale to a plus/minus specified percentage from the initial measured value. Typically, the minimum/maximum is scaled at plus/minus 10% of that initial value.

**Automatic Chart Setting**

Automatic mode lets the program adjust the scaling on a real-time basis based on the entire range of values.

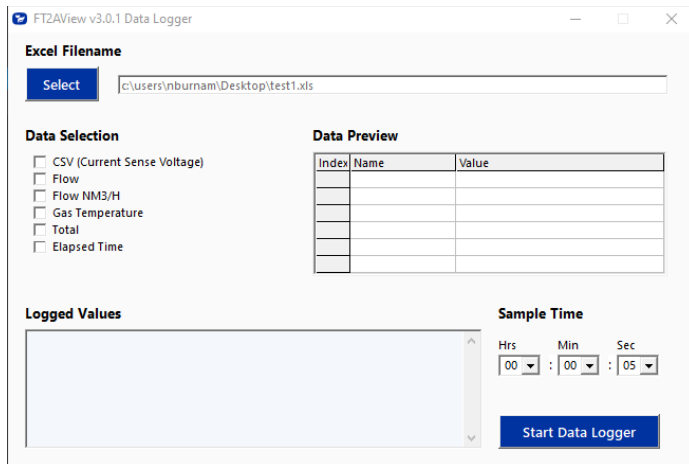
**Save Settings**

Click the Save Settings button to save the chart settings to the main screen window. These settings can then be closed by clicking on the "X" at the top right corner of the window.

### Collect Data to Excel

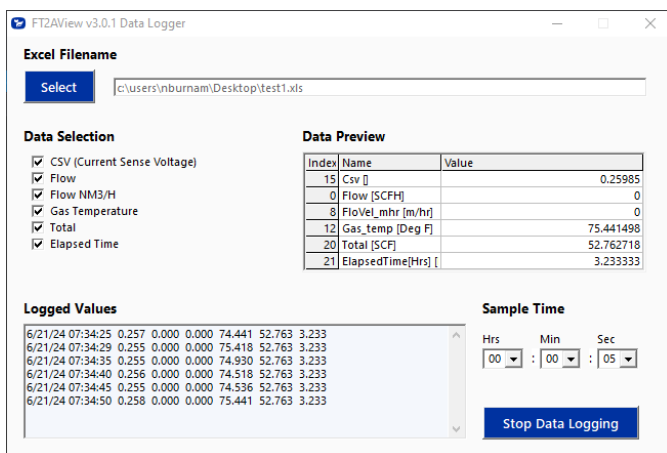
The Data Collection screen can be accessed from the main screen. Clicking the "Collect Data to Excel" function will prompt the user for a password. Enter a Level I (1234) or Level II (9111) password and the Data Collection window will appear.

Fig. 4.4: Data Collection Window - Logging Turned Off



Select the sample time from the drop menu, and then select the required data from the Data Selection list. Select or create a name for the Excel file and then press the "Start Data Logger" button.

Fig. 4.5: Data Collection Window - Logging Turned On

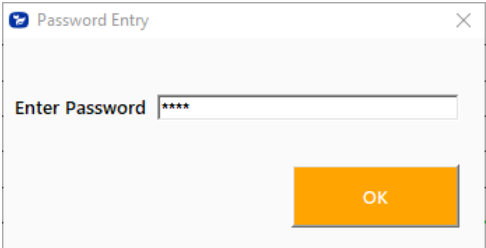


When "Start Data Logger" is pressed, the data is recorded in the specified Excel file - and also displayed in the Logged Values window. Pressing "Stop Data Logger" ends data acquisition.

### Configure

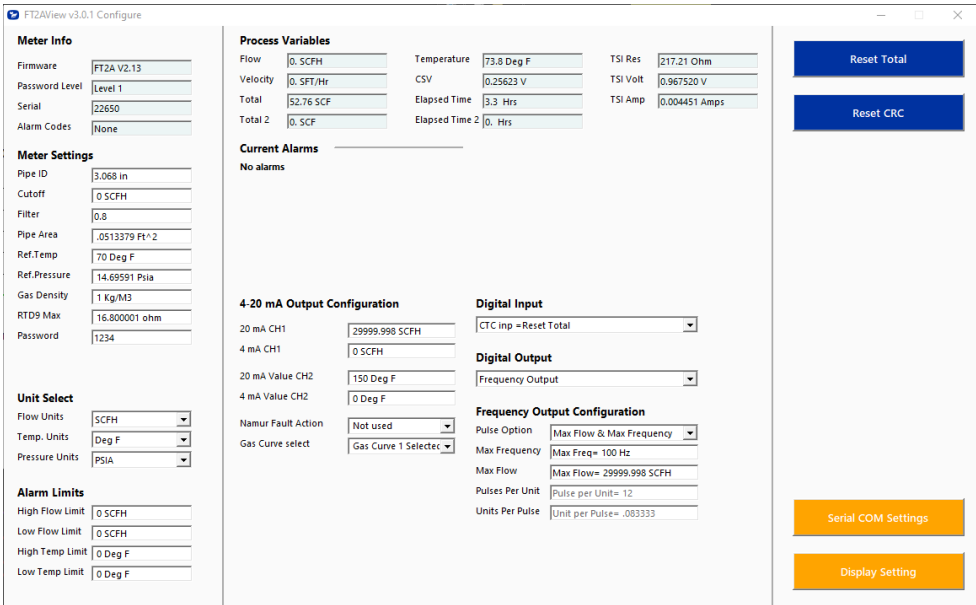
From the main menu, click on the "Configure" button and enter the requested password for either Level I (1234) or Level II (9111) access.

Fig. 4.6: Password Window



**NOTE!** Most users will only need access to the Level I screen to do basic setting of units, alarms and output scaling.

Fig. 4.7: Level I Configuration Screen



# FT2A View™

## Operation

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### Meter Info

- **Firmware:** FT2A meter firmware revision level.
- **Password level:** FT2A View Password level entered.
- **Serial Number:** Serial number of the meter (factory set)
- **Alarm Codes:** Displays the alarm codes as described in the meter manual. These codes are written out in the Current Alarms menu.

### Meter Settings

- **Pipe Inner Diameter (ID):** The pipe inner diameter can be entered in either inches or millimeters, depending on whether the flow or mass measurement units selected are metric or US standard. Once entered, the program will automatically recalculate the pipe cross-sectional area for the velocity/flow calculations. A precise ID is required to ensure accurate flow measurement.
- **Cut-off:** A gas flow rate at - or below - the cut-off setting will cause the meter to read zero. Default cut-off is set to 1% of maximum flow value.
- **Filter:** Changing this value will increase or decrease the damping of the flow rate reading. Increase the setting to increase damping. The default setting is 0.8.
- **Pipe Area:** The pipe internal cross-sectional area in square feet or square meters. This value can be entered directly - or it is automatically calculated by entering the pipe ID above.



**NOTE!** The ID unit is inches/mm, while the pipe area is in square feet/meters.

- **Ref. Temp:** Reference Temperature - Reference temperature and pressure are the standard (or normal) temperature and pressure (STP) for which the flow rate is calculated. This is set in the factory according to the customer's original ApplD data.
- **Ref. Pressure:** Reference Pressure - Reference temperature and pressure are the standard (or normal) temperature and pressure (STP) for which the flow rate is calculated. This is set in the factory according to the customer's original ApplD data.
- **Gas Density:** The gas density is required only when the selected output is mass units - either pounds or kilograms.
- **RTD9 Max:** The FT2A probe contains two sensing elements: a PowerPro™ and a precision RTD. The PowerPro™ sensor has a maximum resistance (measured in ohms) that corresponds to the maximum temperature/current at which it can operate, before it shuts down (factory set).
- **Password:** The level 1 password can be changed to a new value (number or letter characters up to 4 digits).
- **Kfact:** A K-Factor can be applied to the meter's settings to offset the meter's calibration. The K-Factor is a direct scaling of the meter's output across the entire full scale (requires Level II password).

### Unit Select

The "Unit Select" section is used to change the desired units of the flow rate, temperature and reference pressure.

### Alarm Limits

Users can set both high/low alarms for both flow and temperature. When a limit is reached, an alarm message is displayed. In addition, if the meter's digital output is activated, breaching the alarm limit automatically activates a discrete output to control an external buzzer, light or some other way to alert the operator.



**Process Variables**

**Flow:** Current flow rate in selected units

**Velocity:** Flow Velocity

**Total:** Cumulative mass or volume flow in selected units

**Total 2:** Cumulative mass or volume flow in selected units for curve 2

**Temperature:** Gas temperature (Fahrenheit or Celsius)

**CSV:** Current sense voltage of sensor measurement circuit

**Elapsed Time:** Time since the Totalizer was reset

**Elapsed Time 2:** Time since the Totalizer was reset

**TSI Res:** Calculated resistance of the temperature RTD element

**TSI Volt:** Measured voltage across the temperature RTD element

**TSI Amp:** Calculated current going through the temperature RTD element

**4-20mA Output: Channels 1 & 2**

Channel 1: This analog 4-20mA output is programmed for flow.

Channel 2: This analog 4-20mA output is configurable for either flow or temperature.

Though the FT2A will be scaled for the specific application coming from the factory, FT2A View™ allows the operator to easily re-scale the 4-20mA output as needed.

**Digital Input Select**

This menu allows the user to choose between Reset Total or None.

**Digital Output Select**

This menu allows the user to choose between dedicating the Output to Pulse, Alarms, or None.

**Frequency (Pulse) Output Configuration**

If the Frequency Output (counts) is selected, it can be programmed in three different ways using the pull-down menu "Pulse Option".

- Maximum flow and maximum frequency
- Pulses per Unit
- Units per Pulse

**Reset Total Button**

The Reset Total button will clear the total and elapsed time.

**Reset CRC Button**

CRC (Cyclical Redundancy Check) is a value that verifies that all critical values in the meter's database are good. This check is performed once every minute. The Reset CRC button clears and generates a new CRC value.

Fig. 4.8: Level 2 Configuration Screen

**Meter Info**

Firmware: FT2A V2.13  
 Password Level: Level 2  
 Serial: 22650  
 Alarm Codes: None

**Meter Settings**

Pipe ID: 3.068 in  
 Cutoff: 0 SCFH  
 Filter: 0.8  
 Pipe Area: .0513379 Ft^2  
 Ref.Temp: 70 Deg F  
 Ref.Pressure: 14.69591 Psia  
 Gas Density: 1 Kg/M3  
 RTD9 Max: 16.800001 ohm  
 Password: 1234  
 Kfact: 32.000000 %

**Unit Select**

Flow Units: SCFH  
 Temp. Units: Deg F  
 Pressure Units: PSIA

**Alarm Limits**

High Flow Limit: 0 SCFH  
 Low Flow Limit: 0 SCFH  
 High Temp Limit: 0 Deg F  
 Low Temp Limit: 0 Deg F

**Process Variables**

Flow: 0. SCFH  
 Velocity: 0. SFT/Hr  
 Total: \$2.76 SCFH  
 Total 2: 0. SCFH  
 Temperature: 74.17 Deg F  
 CSV: 0.25979 V  
 Elapsed Time: 3.4 Hrs  
 Elapsed Time 2: 0. Hrs  
 TSI Res: 217.36 Ohm  
 TSI Volt: 0.979539 V  
 TSI Amp: 0.004503 Amps

**Current Alarms**

No alarms

**4-20 mA Output Configuration**

20 mA CH1: 29999.998 SCFH  
 4 mA CH1: 0 SCFH  
 20 mA Value CH2: 150 Deg F  
 4 mA Value CH2: 0 Deg F  
 Namur Fault Action: Not used  
 Gas Curve select: Gas Curve 1 Selectec

**Digital Input**

CTC inp =Reset Total

**Digital Output**

Frequency Output

**Frequency Output Configuration**

Pulse Option: Max Flow & Max Frequency  
 Max Frequency: Max Freq= 100 Hz  
 Max Flow: Max Flow= 29999.998 SCFH  
 Pulses Per Unit: Pulse per Unit= 12  
 Units Per Pulse: Unit per Pulse= .083333

**Buttons:** Reset Total, Reset CRC, Calibration Table, Serial COM Settings, Display Setting

### Serial COM Settings

Use this function to set the serial communication settings for any of the optional FT2A bus communication options.

Fig. 4.9: Select Serial Communication Window

**Serial Communications**

Bus Type: Modbus  
 Address: 1  
 Baud Rate: 9600  
 Parity: None  
 Max Master: 127  
 BACnet ID: 123456  
 Name: FT2A\_FLOW

**Serial Communications**

Bus Type: Ethernet  
 Address: 0  
 Baud Rate: 9600  
 Parity: None  
 Max Master: 127  
 BACnet ID: 123456  
 Name: FT2A\_FLOW

Fig. 4.10: Select Serial Communication Window (cont'd)

FT2AView 3.0.1 Configure Serial Com

**Serial Communications**

Bus Type	BACnet	Max Master	127
Address	1	BACnet ID	123456
Baud Rate	9600	Name	FT2A_FLOW
Parity	None		

FT2AView 3.0.1 Configure Serial Com

**Serial Communications**

Bus Type	Profibus	Max Master	127
Address	0	BACnet ID	123456
Baud Rate	9600	Name	FT2A_FLOW
Parity	None		

FT2AView 3.0.1 Configure Serial Com

**Serial Communications**

Bus Type	Hart	Max Master	127
Address	0	BACnet ID	123456
Baud Rate	9600	Name	FT2A_FLOW
Parity	None		

FT2AView 3.0.1 Configure Serial Com

**Serial Communications**

Bus Type	DeviceNet	Max Master	127
Address	0	BACnet ID	123456
Baud Rate	9600	Name	FT2A_FLOW
Parity	None		

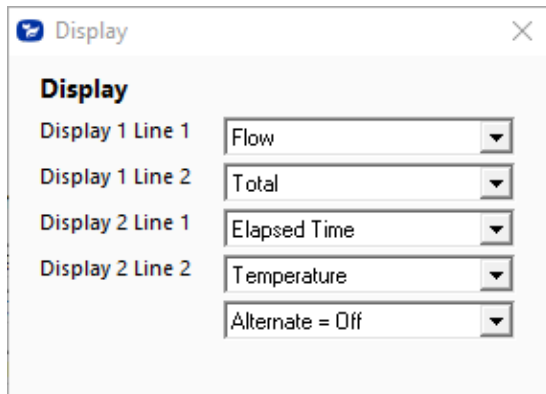


**NOTE!** This is only available on a meter configured for RS485 Modbus RTU, BACnet MS/TP (RS485), Profibus-DP, DeviceNet, or Ethernet Modbus TCP.

### Display Setting

The information displayed on the front panel of the FT2A can be configured by clicking on the "Display Setting" button in the lower right portion of the Configuration screen. With the top four drop-down boxes, the user can choose the data to display on the meter's LCD display screen. By selecting "Alternate = On", the screen automatically switches between the data screens.

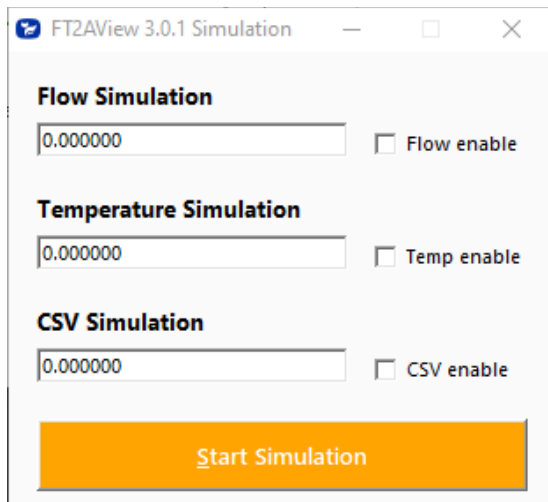
Fig. 4.11: Display Setting



## Simulation Mode

To enter simulation mode, click on the button marked "Simulation" in the Main screen and a password will be requested. Enter the password and then the Simulation screen will be shown.

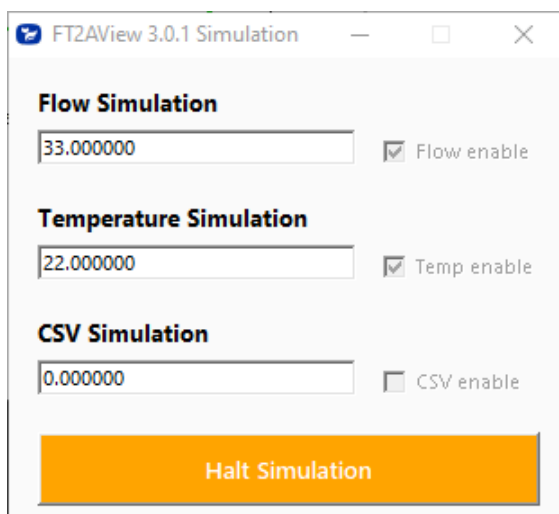
Fig. 4.12: Simulation Mode Window



The simulation mode simulates flow rate, temperature and/or CSV. Click on the required data and enter a value. Simulation mode allows users to verify the analog output, digital outputs and totalizer at simulated flow rates and temperature.

Enter the value, click **OK**, select the corresponding checkbox, and press "Start Simulation".

Fig. 4.13: Simulation Running



In Simulation mode, all FT2A outputs and the Totalizer respond as if in normal measurement mode. Click "Halt Simulation" to end.

### Glossary of Terms and Definitions

COM	Communication
CRC	Cyclical Redundancy Check
CSV	Current Sense Voltage
DMM	Digital Multimeter
ID	Inner Diameter
mA	Milliamps
PC	Personal Computer
RTD	Resistance Temperature Detector
STP	Standard Temperature and Pressure
TSI	Temperature Sense Current

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**Wiring**



**Troubleshooting Tips**



**Definition of Terms**



**NOTE!** is used for Notes and Information



**WARNING!** is used to indicate a hazardous situation which, if not avoided, could result in death or serious injury.



**CAUTION!** is used to indicate a hazardous situation which, if not avoided, could result in minor or moderate injury.



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