FlowRental
Why Buy When You Can Rent the Best?

219 East Main Street
Mechanicsburg, PA USA, 17055
Phone: 866-337-4356
Fax: 717-697-2122
Email: sales@flowrental.com

# Simplified Installation of the F601 4-20 mA Current Output Feature

These few pages will guarantee your success. If you decide to install the F601 without our free telephone support, please follow these steps closely. If you have ANY questions, don't waste your valuable time; give us a call; we can answer your questions in seconds.

## Call us Toll Free at 866-337-4356

### F601 Keyboard Functions

- Switch the transmitter ON by pressing the "C" key
- Make Vertical selections by pressing the "2" or "8" keys
- Make Horizontal selections by pressing the "4" or "6" keys
- Return to the Main Menu by pressing the "BRK" key
- To Delete any entry, press the "C" key
- Switch the meter OFF by pressing the "BRK" key 3 times


### Choose the Appropriate Installation Site

Place your F601 within transducer cable distance of your measurement site, or use a transducer extension cable as needed. If you are unsure about choosing the exact mounting site on your unique pipes, please refer to a FlowRental document titled "***Selecting a Transducer Installation Site***" appended to these instructions.

### Connect your Transducers to the F601

The red point on the connector must align with the red marking on the socket. Remove the connector by pulling at the knurled surface. Please connect your transducers before beginning the programming below.

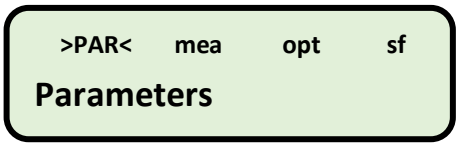
### Follow these Steps to Program the Current Output for your F601

Programming your F601 will require 3 simple steps:

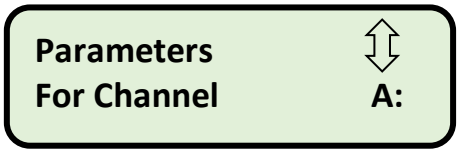
- Install Pipe and Fluid **PARAMETERS**
- Program the **OUTPUT** Options
- Enter the **MEASURING** mode and begin your measurements

# Entering PARAMETERS

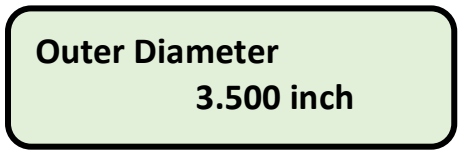
1) Press the **BRK** key to return to the Main Menu then the **4** or **6** key to place the carrots around the par menu selection and "Parameters" will appear on the lower line, then press either of the **ENTER** keys.



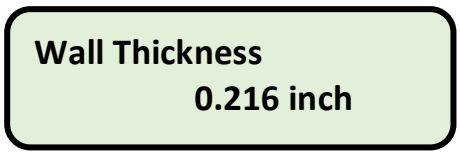

2) The following screen will appear that offers you the chance to change from **Channel A** or **Channel B**. Using the **2** and **8** keys will change the Channel letter. When the correct channel is displayed, press **ENTER**.



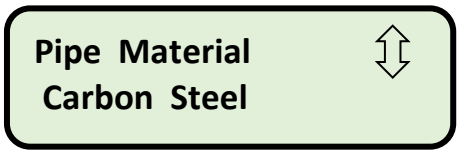

3) Using the keyboard, enter the **Outside Diameter** of the pipe. Remember this is the OD of the pipe and a 2 inch pipe is not 2 inches OD. Press **ENTER** once complete.



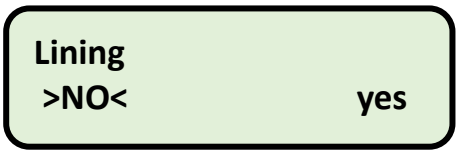

4) Using the keypad, enter the **Wall Thickness** of your pipe then press **ENTER** once complete.



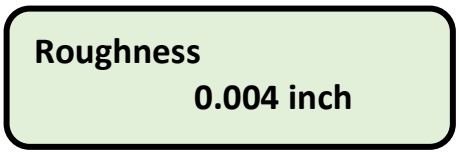

5) Using the **2** and **8** keys select the correct **Pipe Material** from the list, then press **ENTER**.



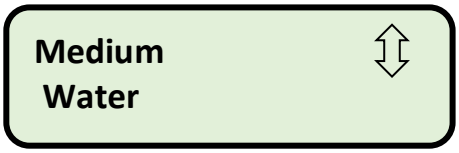

6) Using the **4** or **6** keys, chose **NO** or **YES** to indicate if your pipe has internal **Lining**, then press **ENTER** when the correct selection has been made.



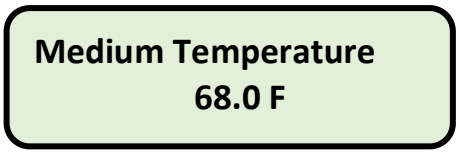

7) Using the keypad, enter the **Roughness** of the inside of your pipe. Change the value according to the conditions of the inner pipe wall and press **ENTER**. The default for a clean pipe is 0.004".




8) Using the **2** and **8** keys select the correct **Medium** from the list, then press **ENTER**.



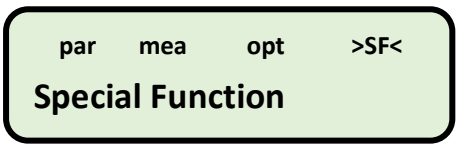

9) Using the keypad, enter the **Medium Temperature** of the fluid running through your pipe then press **ENTER**.



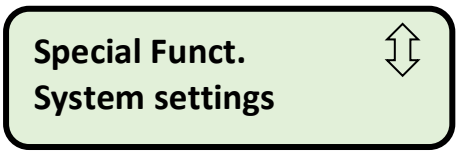

This will complete the input of all the **PARAMETERS** for your application
All the **PARAMETERS** will be saved in internal memory and you will automatically be return to the **Main Menu**.

# Setting up the 4 to 20 mA Output >SF<

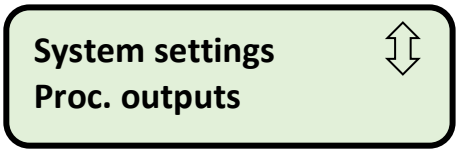
10. At the Main Menu, use the 4 and 6 keys to navigate to **>SF<** Special Functions menu



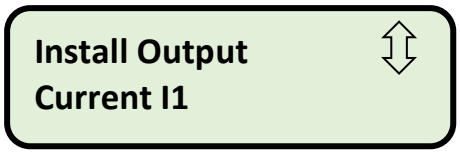

11. Scroll down to "**System Settings**" and press **ENTER**



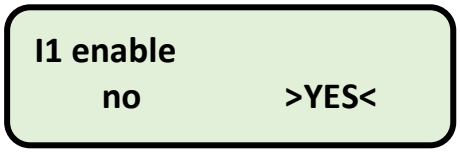

12. Scroll down to "**Proc. Outputs**" and press **ENTER**



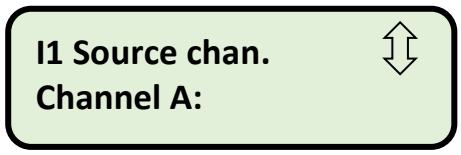

13. When the screen displays "**Install Output**" use the Up (**8**) and Down (**2**) keys to select "**Current I1**" then press **ENTER**.



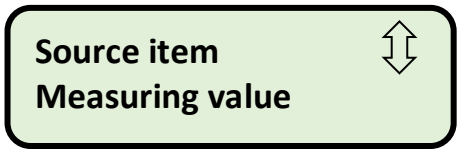

14. Use the Left (**4**) or Right (**6**) arrows to select **>YES<** at the "**I1 enable**" prompt then press **ENTER**.



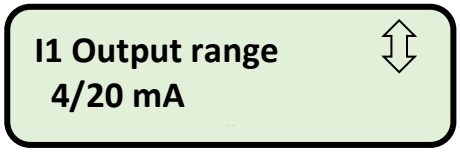

15. At the "**I1 Source Channel**" prompt use the Up (**8**) and Down (**2**) keys to select the channels into which the transducers are plugged (**step 2 above**). Press **ENTER** to continue.



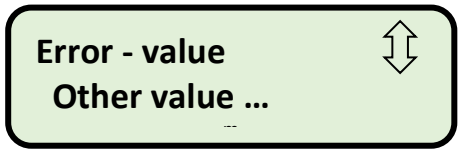

16. At the "**Source Item**" prompt, use the Up (**8**) and Down (**2**) keys to select the type of output you want the 4 to 20 mA output signal to reflect (**typically Measuring Value**), then press **ENTER**. Select the type of output from the next screen then press **ENTER**.




17. At the "**I1 Output Range**" prompt use the Up (**8**) and Down (**2**) keys to select "**4/20 mA**" then press **ENTER**.



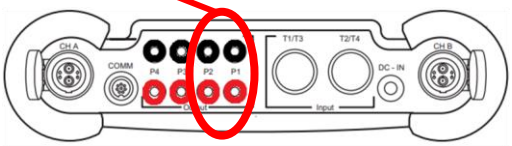

18. At the "**Error-value**" prompt use the use the Up (**8**) and Down (**2**) keys to select which value you'd like output if an error is encountered, then press **ENTER.**



19. The following screen will indicate which of the output terminals on the top of the F601 will produce the 4/20 mA signal. Hook a multi-meter set to measure DC mA to these terminals then press **ENTER**.

```
I1 = passive loop
Terminal: P1+, P1-
```

Current Outputs




20. At the "**Output Test**" prompt, enter a valid number between 4 and 20 mA then press **ENTER**. The value you entered will be output by the F601 and should appear on your multi-meter.

```
I1: Output Test
          10.0     mA
```

21. At the "**Again ? no >YES<**" prompt you can enter another number to test, or enter **NO**. It is recommended that you answer **YES** a number of times and enter a couple of values between 4 and 20 mA to ensure the 4-20 mA output feature is functioning correctly.

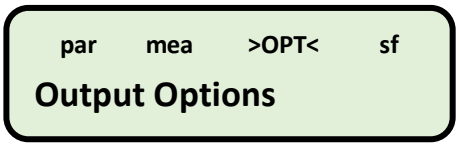
```
I1 = 10.0 mA
Again?      no    >YES<
```

22. Once you've answered **<NO>** to the above prompt you'll be returned to the **System Settings Menu** for the second (channel B) output or, you can press the **BRK** key once and you'll return to the **Main Menu**, and the 4 to 20 mA output on your multi-meter will drop to 0 mA.

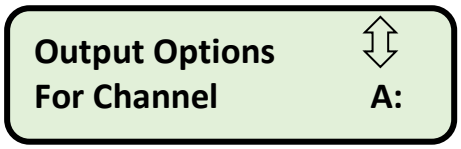
# Entering Output Options

The next step in programming your F601 will be programming the data display and storage details under **Output Options**.

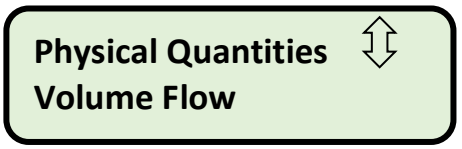
24) Using the **4** or **6** keys, place the carrots around **>OPT<** (**Output Options**) then press **Enter**.



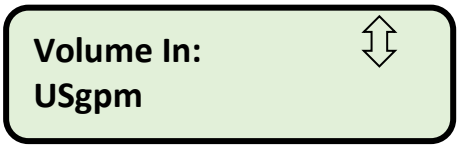

25) The following screen offers you the choice of **Channel A** or **Channel B**. Using the **2** and **8** keys will change the Channel letter. When the correct channel is displayed, (which is typically Channel A) press **ENTER**.



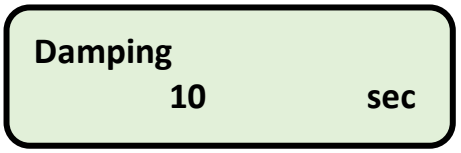

26) Using the **2** and **8** keys to change the Type of flow you'd like to measure. Your Options are **Volume Flow, Velocity Flow, Mass Flow and Heat Flow**. Press **ENTER**



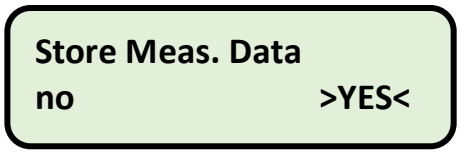

27) Using the **2** and **8** keys to change the units of flow here. Your Options are numerous, in **Metric** and **Imperial** units.



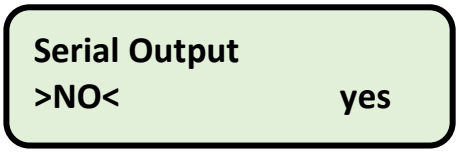

28) All displayed data will be applied to a **Floating Average** Function to remove minor spikes in data. Range 1 to 100 seconds.



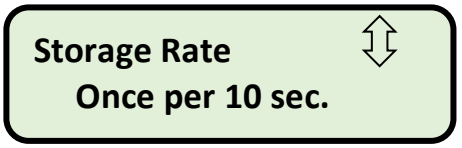

29) Use the **4** or **6** keys to make your data storeage selection. Choosing **>YES<** will initiate the data logging function that will be defined later.




30) Use the **4** or **6** keys to activate **RS232 Serial Output**. Unless you have specific need for this feature, we recommend to leave this off by choosing **>NO<**




31) Use the **2** and **8** keys to select your data storeage rate.




**That completes the Output Options programming.**

**You will be returned to the Main Menu**

**Follow the steps on the next page to begin gathering data.**

# Entering the MEASURING Mode

32) Using the **4** or **6** keys, place the carrots around **>MEA<** (**MEASURING**) then press **Enter**.

| par | >MEA< | opt | sf |
|---|---|---|---|
| MEASURING | | | |

33) A **Check Mark** (√) under a Channel indicates this channel will be making measurements. Use the **4** and **6** keys to move the carrots to the Channel you plan on activating then use the **2** and **8** keys to change the minus sign (**-**) to a check mark (√ ). A dot (**.**) under any Channel indicates this Channel has not been programmed.

| CHANN: | >A< | B | Y | Z |
|---|---|---|---|---|
| MEASUR | √ | – | . | . |

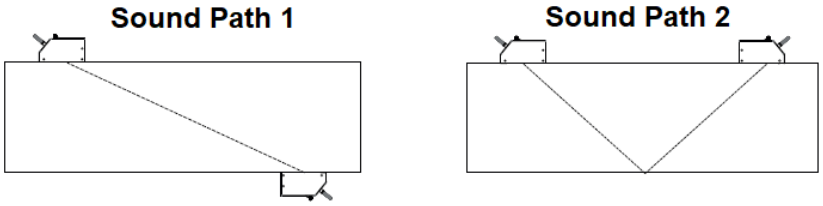
34) If you are recording data, this screen allows you to apply file numbers to the pipe you are measuring. For example, you can measure multiple pipes, assign different numbers to each pipe, and the data will be separated in memory by the **Measuring Point Number**.

**A: Meas. Point No.:**
**xxx (↑↓← →)**

35) Use the keypad to enter the **Sound Path** to indicate the placement of the transducers onto the pipe then press **ENTER**. **Sound Path 1** will place the transducers on opposite sides of the pipe. **Sound Path 2** places the transducers on the same side of the pipe. **Sound Path 2** is recommended and simpler to install.

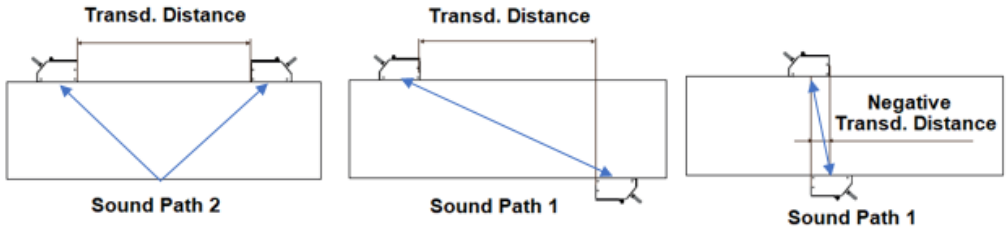
**A: Sound Path:**
**2**

**Sound Path 1** has stronger communications signals.



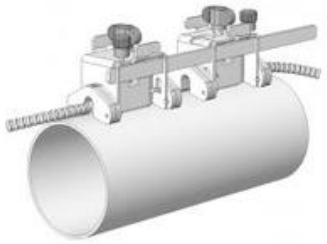

36) **Transd. Distance** indicates the separation distance between the two transducers as placed on the pipe. **<u>You MUST mount the transducers with this separation</u>**. Note that Negative Transducer Distance is possible in Sound Path 1 on small diameter pipes.

**Transd. Distance**
**A: 1.12 inch Reflex**

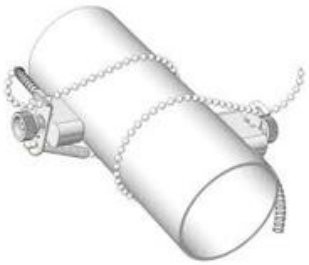


# Mounting the Transducers

Mounting your transducers onto the pipe can be a simple process depending upon the method of attachment.



Magnetic Mounts and Bar
(Chains Optional)



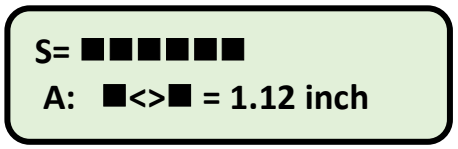
Clips and Chains

**Magnetic Mounts** with **Graduated Bar** can be used on steel pipes with great success. Ensure the **Transducer Distance** is fixed with the **Graduated Bar**. It is also possible to use optional **Chains and Springs** on pipes that won't accept the magnets.

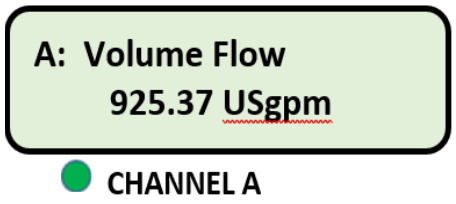
Make sure that a GENEROUS amount of **Acoustic Coupling Compound** is applied to the bottom of the transducers.

**Once the transducers are mounted onto your pipe, press ENTER** and the following screen will appear:

37) The upper line indicates the **Signal Strength** of the acoustic signal as it passes between the transducers. The goal is to make the most black boxes appear by tapping the transducers closer and farther apart until the maximum number appears. The bottom line indicates the **Transducer Distance.** When the **Channel A LED** below the screen turns **GREEN**, indicating a strong signal is being received, **press ENTER.**




38) A few seconds later, the screen will show two lines. The top line will indicate the Channel and the units of Flow Chosen under step # 12 above, and the bottom line will display the real-time flow rate as chosen under step # 13 above. This data will be recorded in memory per the value you installed in step # 17 above.




Data will continue to be displayed and recorded until the BRK key is pressed once, or three times to shut the meter off.

Congratulations, you have successfully installed and are now recording data with the most powerful flowmeter in the world.

If you have ANY questions, give us a call at:

866-337-4356