InnovaSonic 210 with Bluetooth Tablet PC

Quick Install Guide

This Quick Install Guide is Applicable for the InnovaSonic® 210

A copy of this Quick Install Guide and the InnovaSonic® 210 Series product instruction manual are also included on the product information CD included in your shipment. This information is also available for download at Sierrainstruments.com.

Description

The 210 is a portable ultrasonic transit-time flow meter that uses a bluetooth enabled tablet PC as the user interface. The tablet uses the Android OS 4.0 (operating system), and is shipped with the Sierra 210 mobile application ("Sierra 210 App") already loaded. The flow meter is powered by an internal 11.1 volt lithium battery.

Connections

Open the hinged front cover of the electronics. Shown from left to right on the panel of the InnovaSonic 210 are the battery recharge ports (charge the transmitter or connect to the standby power supply), power switch, power light (red), run indicator (green), upstream transducer connector, downstream transducer connector, and a 4-20mA output connector. At a minimum, you will need to connect the up and down stream transducers as shown below.

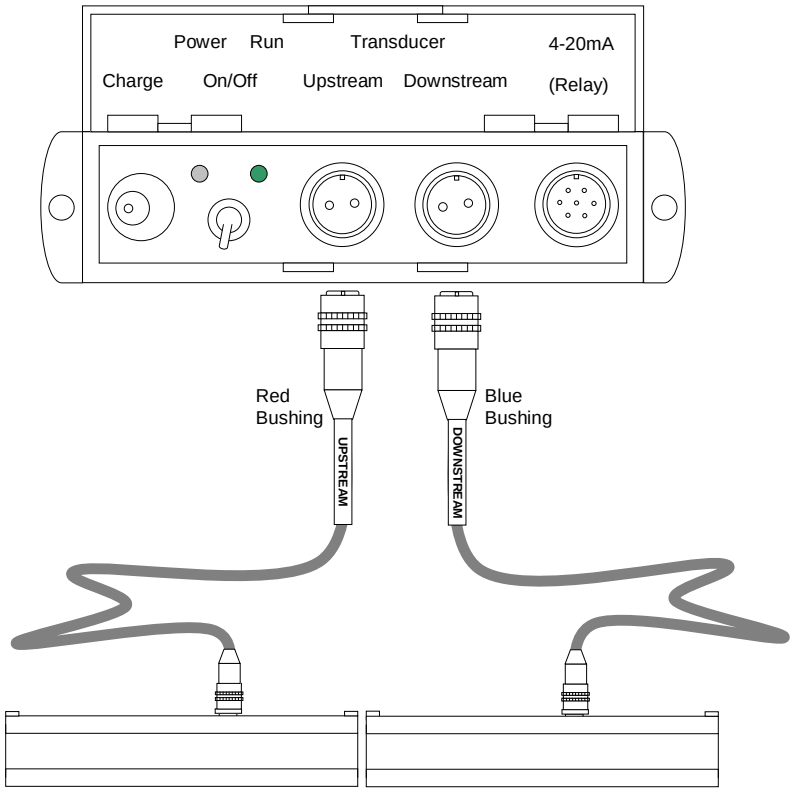


Figure 1: InnovaSonic 210 Electronic Connections

Powering Up

Turn on the flow meter before the tablet PC. The LED lights will blink during the first few seconds. After initialization, the power LED on the left will show the battery charge state: red equals discharged, orange equals low (<15%), and green equals fully charged. As soon as the tablet PC is switched on, the flow meter application should start. The right LED (run) will blink green each time the tablet PC talks to the flow meter. Normal operation is indicated by code "*R" on the upper left corner of the screen. Note: If the application doesn't automatically start, see Chapter 5 of the 210 instruction manual.

Key Tablet PC Functions

Key tablet PC functions are shown in the drawing below: identification area, information display area, entering display area, main key tablet PC area and the short cut key tablet PC area.

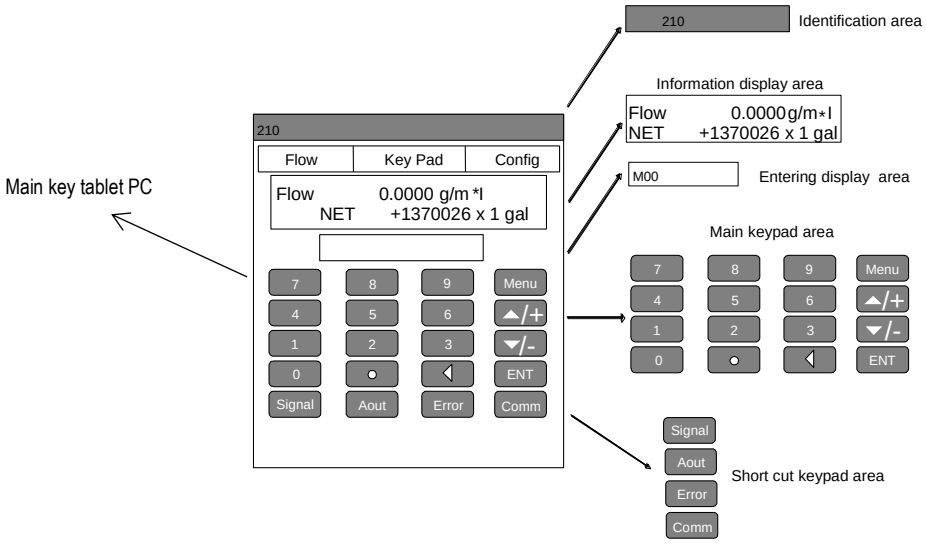


Figure 2: Key Tablet PC Functions

Keypad Functions

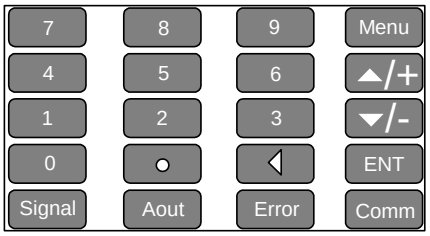


Figure 3: TPC Keypad

Follow these guidelines when using the tablet PC flow meter keypad:

0 ~ 9 and • input numbers.

◄ Backspace or delete characters to the left.

▲/+ and ▼/- Return to the last menu or open the next menu. Acts as "+" and "-" functions when entering numbers.

Menu Select a menu. Press this key first, input a two-digit menu number and the selected menu data will be displayed. For example, to input a pipe outside diameter, press Menu 1 1, where "11" is the window ID to display the pipe outside diameter.

Signal , Aout, Error and Comm are shortcut keys (explained later).

Select the Mounting Method Depending on the Pipe Diameter

V Method (most common): Applicable for pipes 2 inches to 16 inches (50 mm to 400 mm). With the V Method, the flow signal bounces off the pipe wall. For pipe sizes 8 inches (203.2 mm) or less, you may mount both transducers on the same rail. See Chapter 5 of the 210 instruction manual, for details.

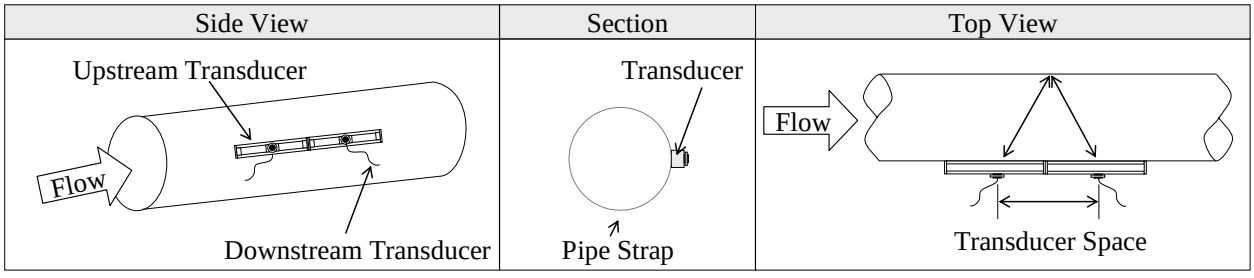


Figure 3: Installation Configuration - V Method

Z Method: Applicable for 16 inches to 48 inches (400 mm to 1200 mm). With the Z Method the flow signal is directly transmitted across the pipe.

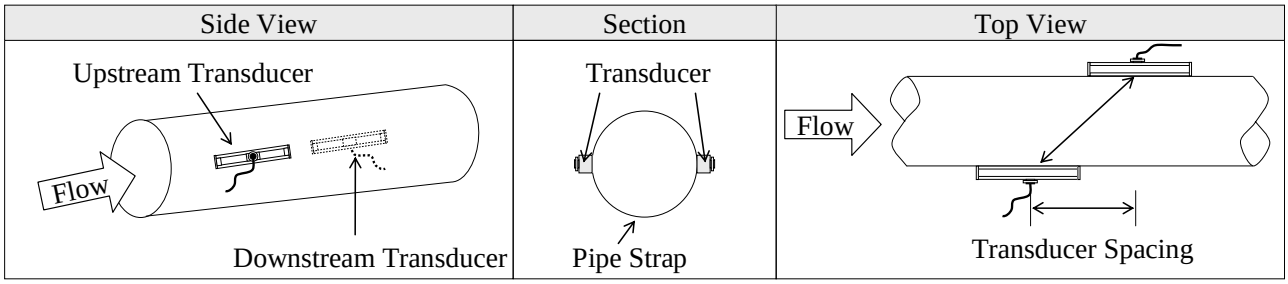


Figure 4: Installation Configuration - Z Method

Turn the Meter On (if the battery is charged the POWER LED will be green)

Enter the pipe parameters and the ultrasonic meter will calculate the transducer space.

Example: Let's assume you have a DN200 (8 inch) pipe, measuring water, and the material is carbon steel with no liner. If you are using English pipe sizes, press Menu 3 0, and chose English for dimensions in inches. To use the other pipe material or other liquid, see Chapter 6 of the InnovaSonic 210 instruction manual.

Enter your pipe parameters as follows:

Pipe Set Up

Menu 1 1

Pipe Outside Diameter

Enter the pipe outside diameter, which must range from 10 mm to 6000 mm. Pressing the down arrow will also display the next menu.

Menu 1 2

Pipe Wall Thickness

Enter the pipe wall thickness. If the pipe inside diameter is already known, skip this window and enter it in Window M13.

Menu 1 3

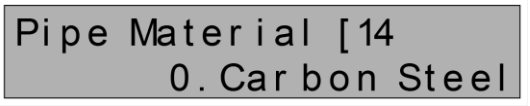
Pipe Inner Diameter

Enter the pipe inside diameter. However, because you already entered the Pipe OD and wall thickness, the pipe should already be displayed. press ▼/- to skip this window.

Menu 1 4

Pipe Material

Enter the pipe material. The following options are available (by ▲/+ ▼/- buttons or numerical keys):

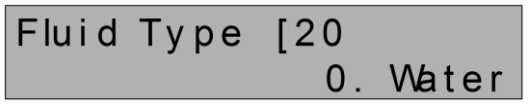


0. Carbon Steel	1. Stainless Steel
2. Cast Iron	3. Ductile Iron
4. Copper	5. PVC
6. Aluminum	7. Asbestos
8. Fiber Glass-Epoxy	9. Other

Menu 2 0

Select Fluid Type

The following options are available:



0. Water	1. Sea Water
2. Kerosene	3. Gasoline
4. Fuel Oil	5. Crude Oil
6. Propane (-45°C)	7. Butane (0°C)
8. Other	9. Diesel Oil
10. Castor Oil	11. Peanut Oil
12. Gasoline #90	13. Gasoline #93
14. Alcohol	15. Water (125°C)

Menu 2 3

Select Transducer Type

Please select "0.Standard".

Menu 2 4

Transducer Mounting Methods

Four mounting methods are available:

V Method –see Figure 3 (sound wave bounces 2 times)

Z Method–see Figure 4 (sound wave bounces once. The most commonly used method)

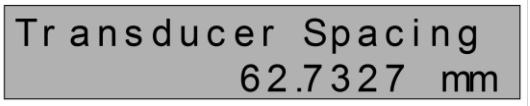
N (small pipe, sound wave bounces 3 times.)

Menu 2 5

Transducer Spacing

(this value is calculated by the flow meter)

The operator must mount the transducer according to the transducer spacing displayed (be sure that the transducer spacing is measured precisely during installation). The system will display the data automatically after the pipe parameters have been entered.



Put the Transducers on the Pipe

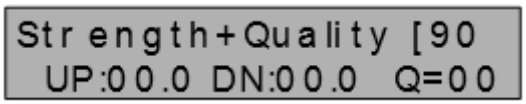
Put plenty of coupling compound between the transducer and pipe. If the pipe is magnetic, the racks will stick to the pipe. If the pipe is non-magnetic, use supplied hose clamps.

Check the Diagnostic Menus

Menu 9 0

Signal Strength and Signal Quality

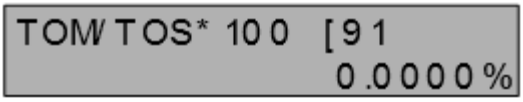
Display the measured signal strength and signal quality Q value upstream and downstream.



The signal strength is indicated from 00.0-99.9. A reading of 00.0 indicates no signal detected, while 99.9 indicates maximum signal strength. Normally the signal strength should be ≥60.0. Signal quality Q is indicated by 00-99. Therefore, 00 indicates the poorest signal while 99 indicates the best signal. Normally, then signal quality Q value should be better than 50.

Menu 9 1

TOM/TOS*100

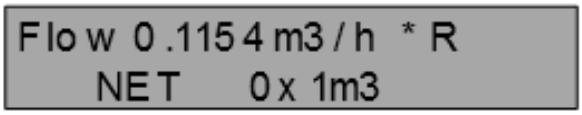


Display the ratio between the actual measured transit time and the calculated transit time according to customer's requirement. Normally the ratio should be 100 ±3%. If the difference is too large, the user should check if the parameters are entered correctly, especially the sound velocity of the fluid and the installation of the transducers.

Check the Diagnostics Menus

Menu 0 0

Flow Rate/Net Totalizer



Display flow rate and net Totalizer.

If the net totalizer has been turned off (refer to M34), the net totalizer value displayed is the total prior to it being turned off. *R indicates that the signal diagnostics are good. See Chapter 7 in the InnovaSonic 210 instruction manual for a full list of error codes.