

## Flowmeter Troubleshooting Guide

### Fox Thermal Instruments

Last updated: November 19, 2014

This document has been created to assist Fox's technical service staff to resolve flowmeter problems. Your assistance to provide complete details is appreciated.

#### **Section A: General information:**

1. What is the serial number and model number of the flowmeter?
2. Please describe the problems in detail.
3. Approximately when did the problem start? Did the flowmeter ever work properly or has the problem existed since the initial installation?

#### **Section B: Troubleshooting:**

4. If the problem is with a model FT2 flowmeter please provide all alarm codes shown on the display. If there is no display you can read the alarms using a laptop and Fox's FT2 view software.
5. Remote sensor units only: What are the wire/cable specifications (length, gauge) which connect the electronics housing to the sensor junction box?
6. The serial number on the electronics housing must match the serial number on the probe/sensor assembly. It is a common mistake to mix the serial numbers when multiple meters with remote electronics are ordered. Please confirm the probe serial number is the same as on the electronics housing.
7. If the sensor is remote, carefully check for proper wire terminations at the sensor junction box and at the electronics housing terminal block (please refer to the flowmeter Instruction Manual).
8. What is the measured input power to the flowmeter?
9. Test/Check fuses and LED status lights for FT2.
  - With the power off take a resistance measurement across the fuse to ensure it is a closed circuit.
  - Are the LP2 and LP 3 LED's on and steady?
  - Is the LP1 LED blinking at a rate of once per second?
10. Have any of the flowmeter settings been changed since you receive the meter from Fox?
11. If advised by a Fox technical representative please confirm the following sensor resistances are correct. Disconnect sensor wires from TS 8 (the sensor termination terminal strip located at the bottom of FT2 main board) before taking measurements.
  - For local mounted electronics (four wire sensor): White to White wires = 200 to 225 ohms, Red to Red = 9 to 10 ohms.
  - For remote mounted electronics (five wire sensor): White to White wires= 200 to 225 ohms, Red to Red = .1 ohms, Red to Yellow = 9 to 10 ohms.

Link to the Fox model FT2 Instruction Manual:

[http://www.foxthermalinstruments.com/pdf/ft2/FT2\\_Manual.pdf](http://www.foxthermalinstruments.com/pdf/ft2/FT2_Manual.pdf)

Link to the Fox model 10A Instruction Manual:

[http://www.foxthermalinstruments.com/pdf/10A/10A\\_Manual.pdf](http://www.foxthermalinstruments.com/pdf/10A/10A_Manual.pdf)

### **Section C: Investigating flowmeter inaccuracy:**

11. How high or low is the flowmeter reading, and at what flow rate? Please provide specific data.
12. Are the readings taken from the flowmeter display or from the customers system (PLC or DCS)? The 4mA and 20mA settings in the PLC or DCS must match the flowmeters settings. If you are using the 4 to 20 mA output also confirm that the measurement unit (SCFM, KG/HR, NM3H, etc.) in the Fox meter is the same as in your PLC/DCS.
13. Did the meter ever read accurately or do you believe it has read in error since it was installed?
14. Is the gas you are measuring the same as is shown of the flowmeter Calibration Certificate? If not, what gas are you currently measuring?
15. Has there been any change in meter location or pipe configuration?
16. For insertion flowmeters, is the insertion depth setting in accordance with the instruction manual?
17. What is the inside diameter (ID) of the pipe? Is the actual pipe ID the same as listed on the Calibration Certificate? Is the area setting programmed into the flowmeter correct?
18. How much straight pipe is upstream and downstream of the flowmeter?
  - For Insertion flow meters: Fox recommends a minimum of 15 diameters of straight pipe upstream of the flow meter and 10 diameters downstream.
  - For Inline flow meters: Fox recommends a minimum of 8 diameters of straight pipe upstream of the flow meter and 4 diameters downstream.
19. Is the arrow on the flow meter probe pointing in the direction of flow?
20. On model FT2 flowmeters: what is the CSV voltage? This information can be taken from the Engineering Display: press F1 and F2 at the same time and release. The screen will change to display #10. The CSV voltage will be on the lower line of the display. Record the CSV value then press F4 to return to the normal display showing the flow rate. Record the flow rate that corresponds to the CSV value just recorded.
  - Contact Fox for instructions for collecting CSV information for the model 10A flowmeter.

For assistance contact our Service Department:

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