

Appendix B. Glossary of Terms

A/D number	Analog to Digital number.
Area	Cross-sectional area for a process line. Area of a Circular duct = πr^2 or $\pi \left(\frac{I.D.}{2}\right)^2$ Area of rectangular duct = Length x Width
COM1 COM2	Serial ports located on a personal computer.
DeIR	The active RTD A/D number minus the reference RTD A/D number.
DVM	Digital Voltmeter.
EPROM	Erasable Programmable Read Only Memory.
Firmware	Software plus hardware. The software is written and then stored in a hardware EPROM chip.
Flow Element	The portion of the flow meter that contains the thermowells, RTDs, and produces a signal with a defined relationship to the flow rate.
Flow Transmitter	The portion of the flow meter that conditions, converts, and scales the flow element signal.
RefR	The A/D number corresponding to the reference RTD resistance.
RTD	A Resistance Temperature Detector operates on the principle of change in resistance as a function of temperature.
SFPS	Standard Feet Per Second.
ΔR	The difference between two resistance values.
ΔT	The difference between two temperature values.

ST98 Parameter Definitions

A. ANALOG INPUT	Menu Function.
Channel 0 - 7	Analog signals describing inputs to the electronics.
B. SENSOR BALANCE	Menu Function.
Code	A passcode (942) is required to continue into the menu selection.
Balance#	A number found in the D portion of the menu. This number electronically matches the active and reference RTD's when the heater is off.
C. CALIBRATE DISPLAY	Menu Function.
d=xxx	The display of Delta-R in the Calibrate Display menu.
r=xxx	The display of Ref-R in the Calibrate Display menu.

D. DIAGNOSTIC

Single Poly Fit

Menu Function.

The polynomial equation used by the electronics to interpret the signal from the flow element.

Two Poly Fit

The equation used by the electronics to interpret the signal from the flow element.

Brkpt

This is the break point (Delta-R) between the two poly fit equations.

Poly Segment 1

The first group of polynomial equations used to detect flow.

Poly Segment 2

The second group of polynomial equations used to detect flow.

C1 - C5

Calibration equation coefficients.

Balance

A number used to balance or match the active and reference RTD's when the heater is off.

Outz

An A/D number representing 4 mA. This is set during calibration.

Outf

An A/D number representing 20 mA. This is set during calibration.

Heater I

An A/D number representing heater current. This is set during calibration.

Factor

This is a conversion factor that is multiplied by SFPS to convert to customer units.

Eu

The ASCII code for engineering units are as follows:

English			Metric		
ASCII code	Letter code	Engineering Units	ASCII code	Letter code	Engineering Units
70	F	ft./sec.	77	M	SMPS
67	C	SCFM	78	N	NCMH
76	L	lbs./hr.	75	K	kg./hr.

Tot

A 1 after the Tot indicates the Totalizer is turned on. A 0 after the Tot indicates the Totalizer is turned off.

Tottemp

A 1 after the Tottemp indicates the Totalizer Temperature display is turned on. A 0 after Tottemp indicates the Totalizer Temperature display is turned off.

Tflow

This is the totalized flow in volumetric or mass units, it will change as the instrument totalizes flow.

Rollover

The place where the totalizer will roll over to zero. (1E9)

Roll cnt

Counts the number of times the Totalizer has rolled over to zero.

Outmode

The output mode is symbolized as follows:

Number that indicates output selection.		
0	1	2
4-20 mA	0-5 VDC	0-10 VDC

Max A/D

High end cut-off A/D number. Prevents false low flow readings.

Min A/D

Low end cut-off A/D number. Prevents false high flow readings.

Kfactor

User programmable correction factor. The corrected output equals K times the output.

Zero

An adjustment that establishes at what flow rate the flow transmitter's output is at its minimum (4 mA, 0 VDC). 0.00 is for zero based

	applications. Minimum flow is for non-zero based applications.
Sensor	This lets the user know what resistance is being used for the RTD's. A 2 indicates a 1K ohm resistance.
Tslp	Slope coefficient for the temperature equation. $Caltemp = (Ref R)(tslp + Toff)$
Refr	Abbreviation for Reference Resistance.
Caltemp	Temperature at calibration. $Caltemp = (Ref R)(tslp) + toff$
Toff	Temperature offset.
Tcslp	The second slope coefficient for the temperature compensation equation.
Tcslp0	The third slope coefficient for the temperature compensation equation.
Tcslp2	The first slope coefficient for the temperature compensation equation.
Maxflow	Maximum calibrated flow in Standard Feet Per Second (SFPS).
Minflow	Minimum calibrated flow in Standard Feet Per Second (SFPS).
Density	The molecular weight of media is entered here. The software back calculates to the standard density of the media which is used when converting from mass to volumetric units. $M' = r \cdot Q.$ $M' = \text{Mass Flow Rate}$ $r = \text{Density}$ $Q = \text{Volumetric Flow Rate.}$
Line size0	This field indicates the diameter of a round duct or the length of a rectangular duct. The shape of the duct is dependent on the next field.
Line size1	This field indicates the width of a rectangular duct if it contains a value greater than zero. If the value is zero, then it indicates a round duct.
F.S.	This is the full scale value, in customer units, which gives the maximum output signal (20mA, 5 VDC, or 10 VDC).
E. SENSOR CURRENT SELECT	Menu Function.
Sensor Current Select	2.0 ma - 1k ohm is always displayed.
F. K-FACTOR	Menu Function.
K.F.	An abbreviation for K-Factor. A factor the user can input to modify the final flow reading from the calibrated flow rate.
G. EEPROM	Menu Function.
EEPROM	Only the factory has access to this area.
H. HEATER	Menu Function.
Heater Off	The user can turn the heater off.
Heater On	The user can turn the heater on.
I. OUTPUT CURRENT ADJUST	Menu Function.
Enter #	Entering a number (0-1000) will force the output to a corresponding level.
DAC	Digital to Analog Converter number corresponds to output level.
J. SERIAL NUMBER, CUSTOMER ORDER	

NUMBER	Menu Function.
S/N and CO No.	Only the factory has access to this area.
K. CONSTANTS SETUP	Menu Function.
Parameter Definitions	See the parameters in Menu Function D.
L. CALIBRATE OUTPUTS	Menu Function.
(U)p (P)down	Increases or decreases the DAC count.
(F)fast/slow	This controls the speed of the DAC counting.
M. MIN/MAX A/D LIMITS	Menu Function.
Max A/D	High end cut-off A/D number. Prevents false low flow readings.
Min A/D	Low end cut-off A/D number. Prevents false high flow readings.
N. SOFTWARE RESET	Menu Function.
Software Reset	Resets instrument without removing power.
O. SELECT SENSOR HEATER CURRENT	Menu Function.
xxxLO	Choosing xxxLO sets software flags to show user if flow values are out of range.
xxxMD	Choosing xxxMD does not set any software flags.
P. RECONFIGURE THE FC88 UNIT	Menu Function.
FC88 Reset	Re-configures the FC88 so it will function properly in conjunction with the ST98.
R. A/D CALIBRATE RESISTANCE	Menu Function.
A/D Delta-R	The difference between the RTD resistances as used by the A/D converter.
A/D Ref-R	The reference RTD resistance as used by the A/D converter.
r = xxx	A/D Delta-R resistance
R = xxx	A/D Ref-R resistance.
S. AUTO SCALE	Menu Function.
Auto Scale ON	Always on.
T. NORMAL OPERATING MODE	Menu Function.
U. DISPLAY TOTAL FLOW TIME	Menu Function.
Time	Time in minutes since the last reset
Reset	Resets time to zero.
V. OUTPUT MODE SELECT	Menu Function.
Output	Displays the selected instrument output (4-20 mA, 0-5 VDC, 0-10 VDC, 1-5 VDC).
W. TOTALIZER MODE	Menu Function.
Totalizer is	The Totalizer can be toggled on or off. If it is on, the results are displayed on the second line of the normal operating mode window.
Reset Totalizer	The Totalizer can be reset to 0 with this command.
During Powerup	The Totalizer can be automatically reset each time power is applied to the instrument.

- Temp Display is** The temperature display can be toggled on or off. If it is on, the results are displayed on the second line of the normal operating mode window. If the Totalizer is also on the totalized value and the temperature value will be alternately displayed.
- X. NAMUR OUTPUT FAULT INDICATOR** Menu Function.
- NAMUR Flag is** This function can be toggled on or off at this command.
- Z. FLOW UNITS SELECT** Menu Function.
- | | | | |
|------------------------|--------------|--------|--------|
| Flow Units Are: | Velocity | Volume | Mass |
| | English SFPS | SCFM | LLB/HR |
| | Metric SMPS | NCMH | KG/HR |
- Max =** This is the maximum value, in the customer's units, that the instrument can display.
- F.S.** This is the full scale value, in customer units, which gives the maximum output signal. This value can be input as anything less than the max value from above.
- Zero** This establishes at what flow rate the flow transmitter's output is at its minimum output. It is 0.00 for zero based applications. For non-zero based applications the zero is at minimum flow.

