

FP1 Commands Listing

The user can enter data to the FP1 to be used in calculating flow rates, air density and other parameters of operation. The user can also enter commands to invoke a response or retrieve parameters from the FP1.

Entering Commands and Data

Commands and data are entered through the keyboard on your controlling computer.

Data or commands are entered in the following way:

FPcom, FPcomXL (PC)

Press a keyboard key, then press RETURN or ENTER.

FPcom.p (Pocket PC)

Display the software keyboard by touching the keyboard icon at the bottom of the screen.

Touch a keyboard key, then touch the RETURN key.

FPcom.pv (Casio PV S400)

- Touch the Casio display screen, the software keyboard should appear.
- Touch the letter for the command or data you want to enter, then touch the RETURN or NEXT key.

The current value for the entered command or data will be displayed, and “Enter New Value” will also be displayed.

Enter the new value, then touch the RETURN, ENTER or NEXT key to enter the data or command.

The FP1 should now continue to display pressure sensor readings.

If you enter the wrong letter, press the backspace key and reenter the correct letter.

If you just want to see what the value for your entry is, but don't want to change it, simply press RETURN or ENTER after the value has been displayed. The value will not be changed.

If you have displayed a value, and you do not want to change it, and you would like to see another value, simply enter the letter for the next value you would like to display and press RETURN or ENTER.

The FP1 will report “?” if you entered a command that it does not recognize.

Note: When entering a data value of 0 (zero), do not enter 0.0. Only enter 0. The FP1 software does not accept a value of 0.0.

Critical Data

Critical data is data that is set at manufacture and should not be changed unless authorized by a technician. Changing critical data will result in incorrect operation of the FP1. If you invoke a command that has critical data, you will be asked “**Critical Data! Are you sure? YN**”. Press N to indicate “No”. You will be returned to normal operation.

Commands and Data Listing

a (LC) Version 3.19.32 and later. Enables a third pressure sensor, PS3. 1 = PS1 enabled, 0 = disabled

A (UC) Assignment for Pitot calibration or orifice diameter. See **M** for more information.

b (LC) Barometric pressure. User input. Used to calculate Dry Air Density and Actual CFM (ACFM).

FP1 Commands Listing

B (UC) Assignment for Pitot calibration or orifice diameter. See **M** for more information.

C (LC) **Versions 3.15.32 and earlier** Calibration Pitot tube. User input. Used to calculate cfm for a Pitot tube. This value should be approximately the area of the cross section of the conduit in which the flow is being measured, in square feet.

Version 3.16.32 and later

c is used for the system-on calibration feature. See the document on System-On Calibration for more info. While flow testing a known flow rate, entering **c** enables the system on calibration feature. The + and - keys can be used to bump the current calibration factor up or down for the selected device.

e = 1 Pitot tube devices are selected. The Calibration factor for the currently selected calibration is bumped up or down by the + or - keys.

e = 0 (zero) Orifice devices are selected. The Cd value for the currently selected orifice, **A - F**, is bumped up or down by the + or - keys.

C (UC) Assignment for Pitot calibration or orifice diameter. See **M** for more information.

d (LC) Depression Conversion Value (DCV). User input. This value is used to compute the equivalent rate of flow to a depression other than the actual depression. For instance, if a measurement is made at 16"wc and the DCV is set to 28, the cfm reading will reflect what the cfm would be if the depression were actually 28"wc.

D (UC) Assignment for Pitot calibration or orifice diameter. See **M** for more information.

e (LC) Measuring device type. (**Version 3.16.32 and later**) User input. Determines which type of measuring device is being used for Flow Mode calibration factors **A - F**.

e = 1 (one) Pitot tube devices. **A - F** can be set to calibration factors for Pitot tubes. These calibration factors are generally area in square feet of the bounded path that the Pitot tube is located.

e = 0 (zero) Orifices devices. **A - F** can be set to the diameter of the orifices, in inches. **G - L** can be set to the orifice Cd rates for orifices **A - F** respectfully

E (UC) Assignment for Pitot calibration or orifice diameter. See **M** for more information.

f (LC) Depression Threshold Value (DTV). User input. This value determines when measurement readings will be scrolled onto the display screen as a result of the pressure applied to PS1. For instance, if the DTV is 10"wc, the measurement readings will be scrolled onto the display screen when the pressure applied to PS1 equals or exceeds 10"wc. These readings are also saved into the display buffer (Casio), or data file (depending on the controlling device) for review at a later time.

F (UC) Assignment for Pitot calibration or orifice diameter. See **M** for more information.

g (LC) Servo Window High Value. User Input. The higher pressure reading that the FP1 should seek using the Servo Step High Value (**j**)

G (UC) Assignment for orifice A Cd or Pitot B comp factor. See **M** for more information.

Flow Performance FP1

FP1 Commands Listing

h (LC) Hysterisis. User input. (Must be in Mode 2) This value establishes a pressure window on PS1 using **f**, the DTV, as the window center. Whenever the pressure applied to PS1 falls within the window, the measurement readings are scrolled down the display. For instance, if **f** is 10'wc, and **h** is 0.05, then the window is 9.95 to 10.05'wc. Whenever the pressure applied to PS1 falls within this window, the measurement readings will be scrolled down the display screen.

H (UC) Assignment for orifice B Cd or Pitot B comp factor. See **M** for more information.

i (LC) Pitot tube calibration factor. (**Version 3.16.32 and later**) Approximately the area of the bounded path that the Pitot tube is located, in square feet. Even if **e** is set to orifice devices, if the Flow Mode is set to **P**, the user can use a Pitot tube device or velocity probe. **i** allows the user to supply the area being measured to calculate volume of flow.

I (UC) Assignment for orifice C Cd or Pitot D comp factor. . See **M** for more information.

j (LC) Servo Step High Value. User Input. The servo position value is stepped by this value. This is the servo high speed value, and is used while the FP1 is finding the servo window High Value **g**.

J (UC) Assignment for orifice D Cd or Pitot D comp factor. See **M** for more information.

k (LC) Servo Step Medium Value. User Input. The servo position value is stepped by this value. This is the servo high speed value, and is used while the FP1 is finding the servo window medium Value **q**.

K (UC) Assignment for orifice E Cd or Pitot F comp factor. See **M** for more information.

l (LC) Servo Step Low Value. User Input. The servo position value is stepped by this value. This is the servo low speed value, and is used while the FP1 is finding the Hysterisis window value (**h**).

L (UC) Assignment for orifice F Cd or Pitot F comp factor. See **M** for more information.

m (LC) Mode of operation. User Command. Mode determines how data is displayed.

Mode 0 The cfm values are converted to the equivalent cfm values of the Depression Conversion Value.

Mode 1 The cfm are the real cfm values and are not converted to the Depression Conversion Value (**d**).

Mode 2 Pressure Sensor 1 window mode. Readings are scrolled onto display only when pressure applied to PS1 fall within the pressure window established by **f** and **h**. FP1 Standard servo port is activated in mode 2.

Mode 3 Manometer mode. PS1 and PS2 are in manometer only operation.

Mode 4 FP1 Standard versions only. Simple velocity probe mode. A piece of tubing as velocity pressure sensing device to visualize velocity pressures. Not for use with Static/Pitot probes.

Flow Performance FP1

FP1 Commands Listing

M (UC) **Versions 3.0.32 through 3.15.32.** Flow measurement mode. User input.

Allows 6 calibrations for orifice systems. Calibrations are indicated as **A**, **B**, **C**, **D**, **E**, **F** and **P**. Flow mode is displayed in the Fpcom status bar next to the mode of operation.

Example: **1A** *Mode 1, Calibration A is selected*

Example: **0B** *Mode 0, Calibration B is selected*

P Pitot tube system or velocity probe. A Pitot tube or velocity probe is used to measure flow rates. The calibration value for the Pitot tube is stored in command **c** (see command **c** for more information). **P** can be selected while in either orifice or Pitot mode

A - F Orifice is used to measure flow rate. 6 different sized orifices sizes can be entered (A - F) for instant recall and use. Sizes entered should be in inches diameter.

G - L Orifice coefficient of discharge value A - F respectfully. The default Cd is .62
If the CD of the orifice is not known, this value can be adjusted while flow testing a calibration orifice to determine the proper Cd.

Versions 3.16.32 and later.

A - F can now be used to store orifice diameters or Pitot tube calibrations. The **e** command is used to determine which type devices (Pitot of orifice) are being used (See command **e** for more information). **M** can also be set to **P** to use a Pitot tube device (velocity probe) even if orifices are the current mode of measurement (**e** = 0).

P Pitot tube or Pitot tube velocity probe device. Even if **e** has been set to orifice, the user can use a Pitot tube device or velocity probe when the Flow Mode is set to **P**. A calibration value for the Pitot device is stored in **i** (See command **i** for more information).

A - F Calibrations for flow measuring device. 6 calibrations are allowed. The user enters the calibration factor for the device selected (Pitot or orifice)

Pitot Tube Applications

If **e** = 1 Pitot tube device is selected. **A - F** are set to the approximate area of the bounded path that the Pitot tube is located (square feet). The flow mode is displayed in the status bar as a small letter:

Example: **1a** shows mode 1, Pitot calibration a selected.

Example: **2c** shows mode 2, Pitot calibration c selected

Version 3.19.32 and later

Calibrations **B**, **D** and **F** can have compensation factors for non-linear measurements. If no compensation is desired, comp values must be 0 (zero).

B compensation factors are located in **G** and **H**

D compensation factors are located in **I** and **J**

F compensation factors are located in **K** and **L**

Contact Flow Performance for info on compensation factors for non-linear measurements.

Flow Performance FP1

FP1 Commands Listing

M Versions 3.16.32 and later. continued...

Orifice Applications

If $e = 0$ (zero) Orifice measuring devices are selected. **A - F** are assigned to orifice diameters in inches. The flow mode is displayed in the status bar with an upper case letter.

Example: **1A** shows mode 1, Orifice A selected

Example: **2C** shows mode 2, Orifice C selected

G - L Orifice coefficient of discharge value A - F respectfully. The default Cd .62

If the Cd of the orifice is not known, this value can be adjusted while flow testing a calibration orifice to determine the proper Cd.

n (LC) Servo Minimum Position. User input. The minimum position setting for the servo port (AUX 3). The FP1 will not allow a servo position value greater than the Servo Maximum.

N (UC) Servo Mode. User input. This value reverses the operation of a servo motor. Generally, when controlling an air restriction or bleed valve, you want the valve fully open when not in operation, and to close to obtain the correct air pressure. This value will orient the servo operation correctly depending on how you have your servo positioned or mechanically connected to the valve. Values are either 0 or 1.

O (LC) Sleep timer. User input. Amount of time, in seconds, that will elapse before the processor will put itself into a sleep mode if one of two things do not occur in that time frame: 1, no user input to the processor. 2, no pressure applied to PS1. Values 1 to 255. This is to preserve battery life. **NOTE: If the battery level indicates BAT, the processor will turn itself off when entering into sleep mode.** This is because the processor will not be able to detect a dead battery condition while sleeping.

O (UC) Servo Start. User input. Version 3.5.32 and later

This determines the default position the servo will assume when mode 2 is enabled. In earlier FP1 versions, a value of 1 will position the servo to Servo Max, while a value of 0 will cause the servo to assume the position of Servo Min.

Newer FP1 versions (3.15.32 and later) allows **O** to be set to any value between Servo Max and Servo Min. This allows the servo to rest at other positions other than Max and Min. This can help shorten search times by starting the servo position half way between Max and Min. Values entered above Max or below Min will be saved as Max or Min.

If Servo Start is set to 0 (zero) or a value less than Servo Min, the servo will assume the Servo Min position. If Servo Start is greater than Servo Max, the servo will assume the Servo Max position.

If Servo Start is between Servo Min and Servo Max, the servo will assume the position of Servo Start.

p (LC) Test Pressure Minimum value. Version 3.3.32 and later. This value sets the minimum pressure on PS1 to calculate flow rates by the processor. Values are in inches of water column. A value of .100"wc will indicate to the processor to calculate flow rates only when the pressure on PS1 exceeds .100"wc. When pressure on PS1 is less than .100"wc, the processor goes into manometer mode to display the zero state of the pressure sensors. This does not apply to mode 3, manometer mode.

Flow Performance FP1

FP1 Commands Listing

P (UC) Servo Stop. User input. Version 3.5.32 and later

This determines the position the servo will assume when not in mode 2. If Servo Stop is set to 1, the servo will assume the position of Servo Max, while a value of 0 will cause the servo to assume the position of Servo Min.

Q (LC) Servo Window Medium Value. User Input. The medium pressure reading that the FP1 should seek using the Servo Step medium Value (**k**)

R (LC) Reset. User Command. Causes a software reset of the FP1 processor. Use reset if the FP1 processor appears to not be working correctly.

S (LC) Sample Duration. User input. Values 1 to 20. The sample duration taken on each pressure sensor for a reading. More duration takes more time to process but result in smoother readings. Less duration takes less time but result in less stable readings.

S (UC) Sample duration mode 2 only. User input. Range 1 to 20. 1 is the minimum pressure sample duration while 20 is the longest duration.

t (LC) Temperature. User input. Ambient temperature used to compute the DAD (Dry Air Density) and the ACFM (Actual CFM).

T (UC) Temperature compensation. User input. When T is set to 1 (one), a temperature compensation is applied to the FP1 sensors. This should be used when the FP1 is used in extreme temperatures (less than 60 degrees F or greater than 80 degrees F). The **t** temperature value must be correctly entered for the temperature compensation to operate correctly. The temperature displayed in the Fpcom status bar will have a capital T when temperature compensation is enabled. If the temperature compensation is not enabled, the temperature displayed in the Fpcom status bar will be a small t. To disable temperature compensation, set T to 0 (zero).

U (LC) Update delay. User input. Values 1 to 255. The amount of delay between sensor sampling and display cycles. About 10mS (.1 seconds) per unit. Slower computers may need longer delays. Longer delays may also be needed with FPcomXL on slower computers.

V (LC) Velocity Probe Multiplier. User input. FP1 Standard model only. For use with a simple velocity probe, not a real static/Pitot velocity probe. The value that the pressure sensor 1 reading will be multiplied by. Use this to set the sensitivity of your simple velocity probe.

V (UC) Velocity Probe reading format. User input. FP1 software version 3.1.32 and later. Determines how the velocity reading will be formatted on your display. If **V** is set to 0 (zero) the velocity reading will be displayed as Feet per Minute. If **V** is set to 1 (one), the velocity reading will be displayed as Feet per Second. The Feet per Second reading will have an s notation to indicate that the reading is in Feet/Seconds. Example: 456s

FP1 models with software versions before 3.1.32 only display velocity in Feet per Minute

FP1 Commands Listing

W (LC) Weather report. User Command. Calculate the DAD (dry air density) from the temp and barometric pressure and display. The FP1 Standard will display temp, barometric pressure and humidity.

X (LC) Servo Maximum Position. User Input. The maximum position setting for the servo port (AUX 3). The FP1 will not allow a servo position value greater than the Servo Maximum.

Y (LC) Damping Value. User Input. This value determines how much the cfm reading must change before the reading is actually reported as a new value. For instance, if the Damping value is 1.0 the cfm reading must be at least 1 cfm higher or lower than the previous reading to change the reading. Otherwise, the cfm reading remains the same. This helps steady readings of turbulent air flow or pressure fluctuations.

Z (LC) Zero pressure sensors. This causes the FP1 to zero the pressure sensors. There should be no pressure applied to the pressure sensors while zeroing, and the tubing connecting the FP1 to the flow measuring device should not be moved. If there is pressure applied to the pressure sensors above the value determined by **p**, the minimum pressure value when z is entered, then the FP1 will enter System-On calibration mode for Pitot tube type flow devices.

Z (UC) Hard zeroing. Version 3.6.32 and later. Hard zeroing causes the FP1 to zero the pressure sensors no matter what the minimum pressure value, **p**, is set for. This allows zeroing of the pressure sensors even while the minimum pressure value, **p**, is set to very low values.

; Edit. Pressing the ; key stops the FP1 from sending any further data and gives the user control of the Fpcom text editing. The user has about 90 seconds to enter a text character, and about 60 seconds after each character entered before Fpcom will allow the FP1 to begin transmitting data again. The user can exit the edit mode by pressing ; allowing the FP1 to resume data transmission. This gives the user an opportunity to enter notes and comments to the FP1 readings. Edit does not work with Casio PV S400+.